

SCOTT COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN

2023

This document was prepared by:



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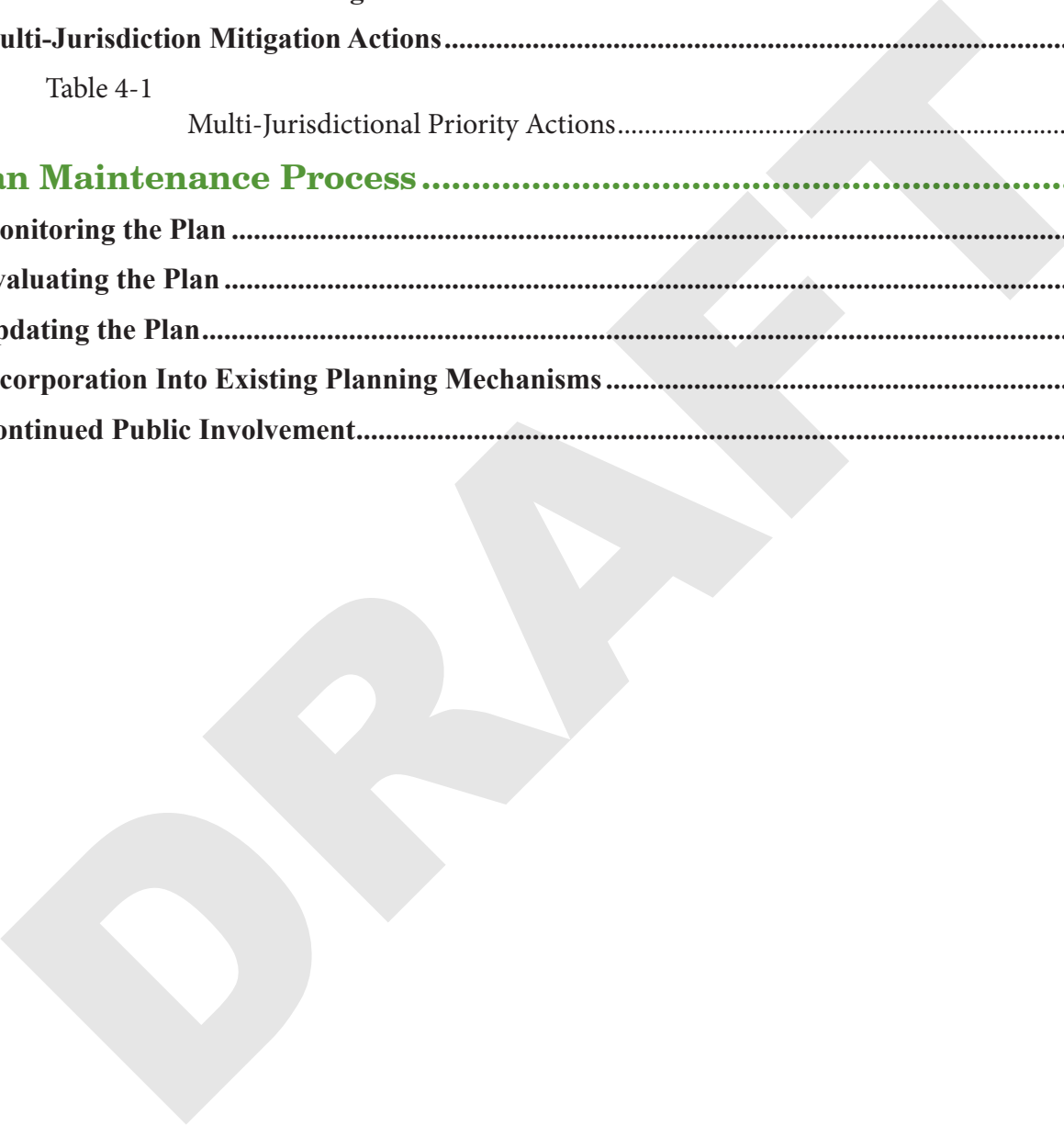
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EXECUTIVE SUMMARY

The *Scott County Multi-Jurisdictional Local Hazard Mitigation Plan* was developed to meet the requirements of the *Disaster Mitigation Act of 2000*, also known as DMA 2000. DMA 2000 places increased emphasis on local mitigation planning. It requires local governments to develop and submit mitigation plans as a condition of receiving Pre-Disaster Mitigation (PDM), Hazard Mitigation Grant Program (HMGP), and Building Resilient Infrastructure and Communities (BRIC) project funds from the Federal Emergency Management Agency (FEMA). These grant programs enable communities to be proactive in their hazard mitigation by minimizing or eliminating potential risk to hazards. In addition to supporting ongoing mitigation actions, the plan assesses the vulnerability of the planning area to natural hazards referenced in the 2018 *Iowa Hazard Mitigation Plan*. The plan identifies priority mitigation actions and establishes a process for implementation and maintenance of the plan.

Scott County received a grant of HMGP planning funds to initiate the Local Hazard Mitigation Plan update process. Thirteen of the incorporated municipalities, four community school districts, and one community college district in Scott County agreed to participate in order to make it a county-wide multi-jurisdictional plan. The active participation of all these jurisdictions is recorded within the plan document. As each jurisdiction adopts the plan, it receives the same eligibility to apply for and receive its own FEMA project funds as described above.

Requirements for FEMA approval of the plan document include adoption of the plan by the local governing body. Chapter 2 of the plan documents the planning process used and public participation. The process included a planning committee made up of representatives of the participating jurisdictions who assisted in reviewing and refining plan draft sections. Each participating jurisdiction designated one primary contact or more to receive information and to respond to requests for data pertinent to that jurisdiction. Although other representatives may have been called on to attend meetings or respond to data requests, the primary contact structure established some continuity in the flow of information for each jurisdiction. In addition, an extended advisory committee was invited to represent a broader range of community interests and expertise. A list of those who received advisory committee mailings or attended meetings during the planning process is included as an appendix to the document. For public participation, Scott County made use of its website to keep the public informed as the plan was developed and drafted. An e-mail subscription through the website was available to allow citizens the opportunity to receive additional information and news as the planning process progressed. In addition, a separate public notice was published at the kickoff and draft stages for the process as a whole, and afforded with hazards goals and priority review at respective board or council meetings, and as part of their respective adoption process.

Chapter 3 of the plan addresses hazard analysis and risk assessment. Fourteen natural and 4 human-caused hazards were identified for the planning area and profiled in this plan. A sample scoring methodology was reviewed by the Planning Committee for this plan and was used as a potential means of establishing an initial priority ranking of the hazards. That same methodology was provided to participating jurisdictions as a potential tool to assist them in their ranking process.

As a requirement of a multi-jurisdictional plan, each individual jurisdiction has its own risk assessment section in the plan. These highlight where local conditions differ from the county-wide planning area as a whole and reflect local hazard priorities.

Chapter 4 of the plan develops the mitigation strategy. The local hazard mitigation goals and objectives were established for the county-wide planning area in the 2012 plan, and these were reviewed and/or revised as part of the update process. The Planning Committee also received the range of categories for action strategies including prevention, property protection, public education and awareness, natural resource protection, and structural projects. The goals and objectives established from that original effort were reaffirmed for the plan update and distributed to participants for review. Plan participants were also asked to review their mitigation actions, provide a status update for each, and provide any new mitigation actions they wish to pursue. All mitigation actions considered were analyzed to be a low, moderate, or high cost; a low, moderate, or high benefit; and then assigned a low, medium, or high priority. The priority mitigation actions provide justification for future funding requests and grant applications.

Chapter 5 describes existing planning mechanisms that will assist participating jurisdictions in implementation of priority actions. This part also outlines procedures for monitoring, evaluating, and updating the local hazard mitigation plan. Based on federal requirements, once FEMA has reviewed and approved the plan document, it must be reviewed and updated every five years or in the event of a federal Presidential Disaster Declaration, whichever comes first. Chapter 5 provides for the schedule of continued plan maintenance and continued public input.

1 PREREQUISITES

ADOPTION BY THE LOCAL GOVERNING BODY

Scott County, Iowa is the subgrantee for the FEMA Hazard Mitigation Grant Program (HMGP) agreement for planning through the Iowa Homeland Security and Emergency Management Division (IHSEMD). Scott County is, therefore, the lead jurisdiction in a multi-jurisdictional plan process for the county and its constituent participating municipalities, school districts, and community college. As such, Scott County has adopted this multi-jurisdiction local hazard mitigation plan process and updated document in accordance with FEMA standards. A copy of the signed resolution is in Appendix I-2.

PLAN ADOPTION

In addition to Scott County, fifteen incorporated municipalities, four community school districts, and one community college district have participated in the multi-jurisdiction local hazard mitigation planning process with Scott County in order to receive individual approval of the plan. A draft resolution was provided as a sample for municipalities as shown in Appendix I-1. Each jurisdiction has adopted the plan process and document as dated below. A copy of each signed resolution as adopted is included in Appendix I-2.

<u>Participating Jurisdiction</u>	<u>Date of Plan Adoption</u>
Scott County (includes unincorporated)	TBD
City of Bettendorf	TBD
City of Blue Grass	TBD
City of Buffalo	TBD
City of Davenport	TBD
City of Dixon	TBD
City of Donahue	TBD
City of Eldridge	TBD
City of LeClaire	TBD
City of Long Grove	TBD
City of Maysville	TBD
City of Panorama Park	TBD
City of Princeton	TBD
City of Riverdale	TBD
City of Walcott	TBD
Bettendorf Community School District	TBD
Davenport Community School District	TBD
North Scott Community School District	TBD
Pleasant Valley Community School District	TBD
Eastern Iowa Community College District (Scott County Campuses)	TBD

PARTICIPATION

In addition to Scott County, incorporated municipalities within the county participated in the local hazard mitigation plan process as listed above. Similarly, the cities of Panorama Park and New Liberty were included in the plan advisory group; however, they chose not to participate in the full planning process.

The remaining participating jurisdictions took part in the planning process as more fully described in the “Plan Process” section. Initial kick-off meetings were held May 18 and 19, 2022, and it was discussed that satisfactory participation in the plan update process consisted of providing a primary contact, reviewing and updating lists of communities’ critical facilities, scoring identified hazards from jurisdiction perspective, providing input and review of individual jurisdiction’s risk assessment, submitting priority mitigation actions with ranking, and reviewing the draft plan. All of the above listed jurisdictions have met the necessary requirements to be considered a participating jurisdiction.

Each jurisdiction designated a primary contact and assigned staff to attend meetings as needed. The planning committee was responsible for providing oversight on research, reviewing document drafts, and approving the plan process and final document. Local jurisdictions responded to requests for data, provided information when conditions in an individual jurisdiction varied from the entire county-wide planning area, and took hazards goals and priorities to board and/or council meetings for public comment.

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2 PLAN PROCESS

Scott County was awarded a grant from the Federal Emergency Management Agency (FEMA) under its Hazard Mitigation Grant Program HMGP to develop an updated multi-jurisdiction local hazard mitigation plan. The grant is administered through the Iowa Homeland Security and Emergency Management Division (IHSEMD). The planning grant agreement between Scott County and IHSEMD included a performance period start date of May 14, 2022 and an end date of May 13, 2024. Scott County contracted on May 25, 2022 with Bi-State Regional Commission to guide the preparation of a local hazard mitigation plan that meets the requirements of the Disaster Mitigation Act of 2000.

The *Scott County Multi-Jurisdictional Hazard Mitigation Plan* will be an update from the plan adopted in 2018. The plan update will include thirteen incorporated municipalities, four community school districts, and one community college district.

The first meeting of the Planning Committee was held on May 10, 2022. This was an introductory meeting for the municipal representatives. Bi-State staff presented an overview of the plan requirements as outlined in FEMA guidance, with note of multi-jurisdictional requirements for individual participating communities and the project timeline. This introduction included reference to FEMA and IHSEMD hazard mitigation resources and the hazards that might be considered in the hazard assessment portion of the plan.

WHO WAS INVOLVED

The Scott County Emergency Management Director was designated as lead staff for Scott County in development of the plan and served as the principal contact person for Bi-State staff. Bi-State Regional Commission was subcontracted to assist with plan development. Bi-State staff made contact with constituent municipalities in Scott County regarding planning participation. It was determined by staff to follow a combination model for participation in the multi-jurisdiction plan. Bi-State was contracted by Scott County to assist with grant administration, support the plan process, and research and write the plan document. The core Planning Committee is made up of staff and representatives of thirteen participating municipalities, four community school districts, and one community college district in addition to Scott County as follows:

City of Bettendorf	City of Long Grove	Davenport Community School District
City of Blue Grass	City of Maysville	North Scott Community School District
City of Buffalo	City of Princeton	Pleasant Valley Community School District
City of Davenport	City of Riverdale	Eastern Iowa Community College District (Scott County Campuses)
City of Dixon	City of Walcott	
City of Donahue	Scott County (includes unincorporated)	
City of Eldridge	Bettendorf Community School District	
City of LeClaire		

Municipalities agreeing to participate in the multi-jurisdictional plan would designate a primary contact for all correspondence. This would follow the direct representation model as suggested in FEMA guidance for multi-jurisdictional plans. This primary contact, or another designated official or staff person, would attend planning meetings and form the core Planning Committee. The Planning Committee would be responsible for guiding decisions about the contents of the plan in relation to FEMA guidance and for reviewing staff-prepared documents. Since Planning Committee members would also be representing communities looking for individual FEMA approval of the multi-jurisdictional plan, they would also be responsible for noting any variation from the overall planning area for their community. Members of the Planning Committee and staff are listed in Appendix II-1. This includes primary contacts and other community representatives who attended meetings.

PLANNING AREA AND MAP

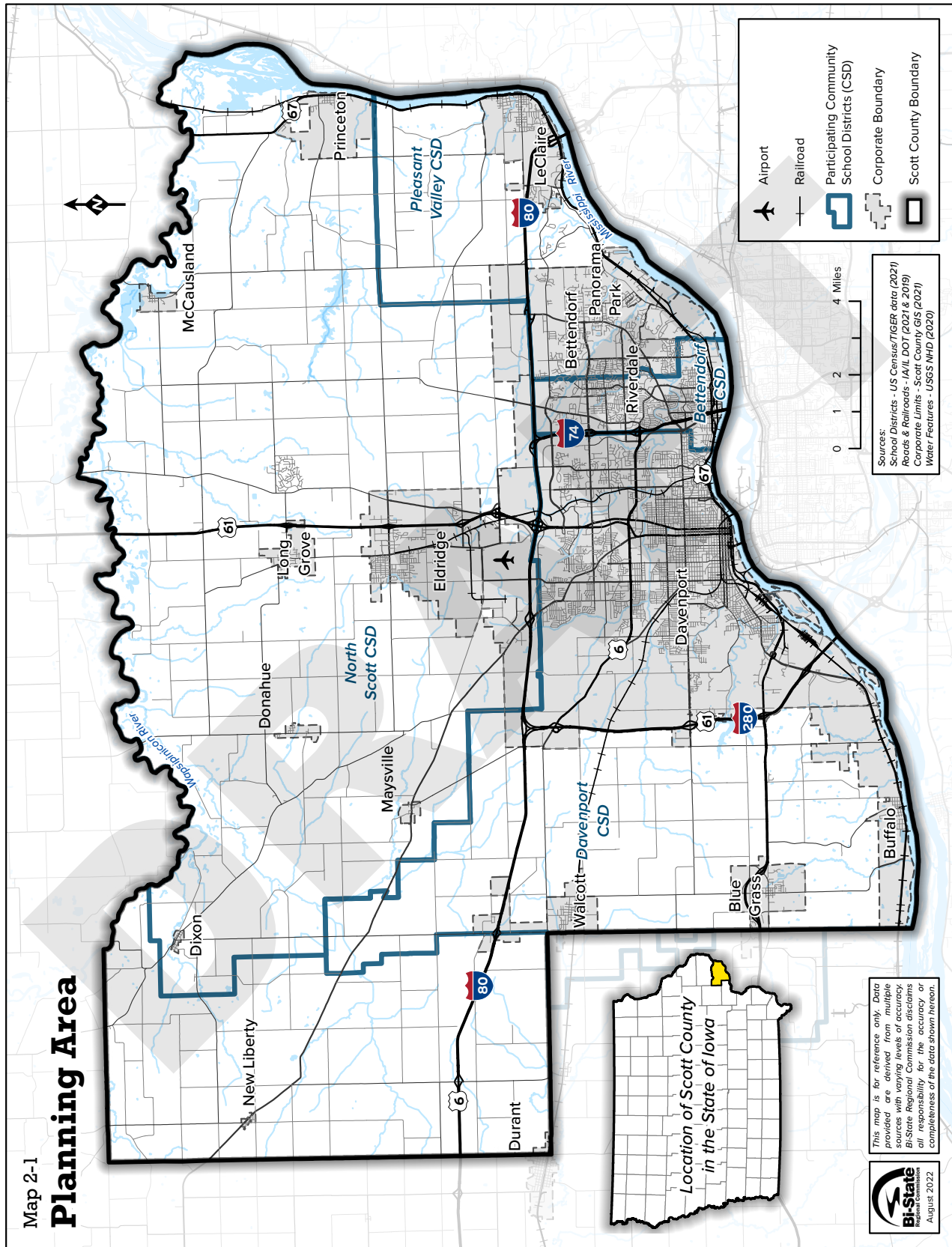
The planning area includes all of Scott County with participation of constituent municipalities as described above. A base map of the planning area was developed as follows (Map 2-1) showing jurisdictional boundaries and indicating which are participating in the plan process. The base planning area map includes rivers and water bodies; highways, major roadways, and roads; railroads; and streams and creeks. This map will be used to overlay identified hazard areas, vulnerable facilities, and other features with a geographic reference in following parts of the plan document.

PLAN DEVELOPMENT

Following the initial meeting, Bi-State staff reviewed each hazard profile to be included in the update. Hazards to be included were limited to the natural hazards required as defined by FEMA excluding hazards that would have no impact to the planning area. A final list of hazards considered in this update can be found in Chapter 3 of this plan. Once the hazard profiles had been updated, the draft profiles were made available to planning committee members and the public via posting on Scott County's website. Comments received were incorporated into the hazard profiles where appropriate.

Concurrently, while updating hazard profiles, Bi-State communicated with participating communities to acquire information regarding critical assets, status of and changes to mitigation actions, and a hazard scoring tool to help determine hazard prioritization. This communication was initiated via e-mail to individual participating jurisdictions. Follow-up was conducted via phone and e-mail to ensure participating jurisdictions were able to provide the necessary information. Some communities chose to affirm their input formally at council meetings open to the public.

Once input from communities was received, Bi-State incorporated it into the draft plan. The draft plan was made available for review via Scott County's website. The draft was provided to Iowa Department of Homeland Security and Emergency Management (IDHSEM) for review. Comments received from IDHSEM were incorporated into the plan, and a final draft was submitted to FEMA for review. After addressing technical assistance comments from FEMA the plan was approved by FEMA.



ADVISORY GROUP

In addition to the Planning Committee, a broader list of community groups and agencies was developed using FEMA guidance to add more participation and expertise to the planning process. Representatives were invited to participate in the planning process in an advisory capacity. They would be available to staff as resources in their respective areas of interest and provide an additional layer of review in development of document drafts. An invitation list of contacts was further developed. A copy of the invitation letter is included as Appendix II-2. A list of agencies contacted, indicating those who actively participated, is included as Appendix II-3. Media contacts were included in the Advisory Group invitation, which provided another opportunity for public information and participation.

PUBLIC INVOLVEMENT

At its first kick-off meeting, the Planning Committee discussed public involvement and participation. Scott County would make use of its website, <https://www.scottcountyiowa.com/planning/hazard-mitigation-plan> to provide information about the planning process, including meeting information and schedule, links to related mitigation information and plan guidance, and draft document sections for review and comment. Scott County has the ability to send out e-mail updates through a subscription process to those who would like updated information on the planning process. Hazard profiles were posted to the Scott County website prior to a full draft review, and notice was sent through the subscription group as a call for input on the hazards. The plan was also discussed at the Quad City Emergency Planning Committee meeting on August 25, 2022 as part of stakeholder outreach within the emergency planning community.

In order to assure formal notification of public participation in the plan, notice of meetings was published in newspapers of general circulation on at least two occasions, once during the plan update kickoff meeting and once prior to adoption of the plan. Publication of such notices would be included in two official newspapers used for countywide notices: Quad City Times and Bettendorf News. Participating jurisdictions were encouraged to have their own public meetings, and staff offered to make presentations to individual communities on request. A number reaffirmed the plan goals and their respective hazard priorities at council or county board meetings from August to _____. The first public meeting with published notification was held May 13, 2022. A public hearing was conducted on _____ for review of a draft plan prior to adoption by Scott County. No public comments were received.

EXISTING PLANNING MECHANISMS

In addition to the persons included in the planning process, many written resources, existing plans, studies, reports, and technical information were reviewed and used as reference in the plan process as appropriate. Technical resources used to develop the hazard profiles are referenced to each profiled hazard, but general references of note include:

- FEMA State and Local Mitigation Planning How-To Guides
- 2018 *State of Iowa Hazard Mitigation Plan*
- *Iowa Hazard Analysis and Risk Assessment*
- *Scott County, Iowa Multi-Jurisdictional Hazard Mitigation Plan 2018*

Participating jurisdictions were asked to review their existing planning and technical documents within their own communities as appropriate in developing their updated community profiles. (See Table 2-1)

Table 2-1
Available Local Documents for Reference

Existing Program/ Policy/ Technical Documents	
City of Bettendorf	
Zoning Ordinance	
Subdivision Regulations	
Building Codes	
Floodplain Management Ordinance	
Stormwater Management Ordinance	
Site Plan Review Requirements	
Solid Waste and Hazardous Waste Regulations	
Comprehensive/Land Use Plan	
Capital Improvement Plan	
Redevelopment Plan	
Open Space Plan	
Economic Development Plan	
Emergency Response Plan	
Emergency Management Plan	
Long Range Transportation Plan	
Recreation Plan	
Transportation Improvement Plan	
Existing Land Use Map	
Flood Insurance Study	
Downtown Redevelopment Program	
Stormwater Management Program	
City of Blue Grass	
Zoning Ordinance	
Subdivision Regulations	
Building Codes	
Site Plan Review Requirements	
Solid Waste and Hazardous Waste Regulations	
Comprehensive/Land Use Plan	
Open Space Plan	
Existing Land Use Map	
Emergency Plan	
City of Buffalo	
Zoning Ordinance	
Subdivision Regulations	
Building Codes	
Floodplain Management Ordinance	
Stormwater Management Ordinance	
Site Plan Review Requirements	
Solid Waste and Hazardous Waste Regulations	
Capital Improvement Plan	
Redevelopment Plan	
Existing Land Use Map	
Flood Insurance Study	
MSA Stormwater Outfall Study	
Stormwater Management Program	
City of Davenport	
Zoning Ordinance	
Subdivision Ordinance Building Codes	
Floodplain Management Ordinance	
Stormwater Management Ordinance	
Erosion Control Ordinance	
Site Plan Review Requirements	
Solid Waste and Hazardous Waste Regulations	
Comprehensive/Land Use Plan	
Capital Improvement Plan	
Redevelopment Plan	
Watershed Protection Plan	
Open Space Plan	
College Campus Development Plan	
Economic Development Plan	
Emergency Response Plan	
Emergency Management Plan	
Long Range Transportation Plan	

Existing Program/ Policy/ Technical Documents
Transportation Improvement Plan
Riverfront Development Plan
Critical Facilities Map
Existing Land Use Map
Flood Insurance Study
Hazard Vulnerability Study
Historic Preservation
Stormwater Management Program
City of Dixon
NONE
City of Donahue
Zoning Ordinance
Subdivision Regulations
Building Codes
Floodplain Management Ordinance
Site Plan Review Requirements
Solid Waste and Hazardous Waste Regulations
Comprehensive/Land Use Plan
Existing Land Use Map
Flood Insurance Study
City of Eldridge
Zoning Ordinance
Subdivision Regulations
Building Codes
Floodplain Management Ordinance
Stormwater Management Ordinance
Site Plan Review Requirements
Solid Waste and Hazardous Waste Regulations
Comprehensive/Land Use Plan
Capital Improvement Plan
Recreation Plan
Existing Land Use Map
Flood Insurance Study
City of LeClaire
Zoning Ordinance
Subdivision Regulations
Building Codes
Floodplain Management Ordinance
Stormwater Management Ordinance
Site Plan Review Requirements

Existing Program/ Policy/ Technical Documents
Solid Waste and Hazardous Waste Regulations
Comprehensive/Land Use Plan
Emergency Response Plan
Long Range Transportation Plan
Recreation Plan
Transportation Improvement Plan
Critical Facilities Map
Existing Land Use Map
Flood Insurance Study
Stormwater Management Program
Downtown Cultural & Entertainment District Designation (IDED)
City of Long Grove
Zoning Ordinance
Subdivision Ordinance
Building Codes
Comprehensive/Land Use Plan
Capital Improvement Plan
Watershed Protection Plan
Emergency Response Plan
Emergency Management Plan
Existing Land Use Map
City of Maysville
Zoning Ordinance
Solid Waste and Hazardous Waste Regulations
City of McCausland
Zoning Ordinance
Subdivision Regulations
Floodplain Management Ordinance (underway)
Stormwater Management Ordinance
Site Plan Review Requirements
Solid Waste and Hazardous Waste Regulations
Existing Land Use Map
City of Princeton
Zoning Ordinance
Subdivision Regulations
Building Codes
Floodplain Management Ordinance
Solid Waste and Hazardous Waste Regulations
Comprehensive/Land Use Plan

Existing Program/ Policy/ Technical Documents
Capital Improvement Plan
Emergency Response Plan
Existing Land Use Map
City of Riverdale
Solid Waste and Hazardous Waste Regulations
Building Codes
Floodplain Management Ordinance
Zoning Ordinance
Subdivision Regulations
Stormwater Management Program
City of Walcott
Zoning Ordinance
Subdivision Regulations
Building Codes
Floodplain Management Ordinance
Stormwater Management Ordinance
Site Plan Review Requirements
Solid Waste and Hazardous Waste Regulations
Comprehensive/Land Use Plan
Capital Improvement Plan
Scott County
Zoning Ordinance
Subdivision Regulations
Building Codes
Floodplain Management Ordinance

Existing Program/ Policy/ Technical Documents
Stormwater Management Ordinance
Site Plan Review Requirements
Solid Waste and Hazardous Waste Regulations
Comprehensive/Land Use Plan
Economic Development Plan
Emergency Response Plan
Emergency Management Plan
Long Range Transportation Plan
Recreation Plan
Transportation Improvement Plan
Critical Facilities Map
Existing Land Use Map
Flood Insurance Study
Bettendorf Community School District
Crisis Management Plan
Davenport Community School District
Crisis Manual
North Scott Community School District
North Scott Safety Policy
Pleasant Valley Community School District
Pleasant Valley CSD Crisis Response Guide
Eastern Iowa Community College District
Emergency Readiness Plan

INCORPORATION OF PREVIOUS MITIGATION PLANNING INTO EXISTING

PLANNING MECHANISMS

The large majority of participating jurisdiction stated they considered their mitigation actions when determining their annual budget.

PARTICIPATION IN THE NATIONAL FLOOD INSURANCE PROGRAM

The National Flood Insurance Program (NFIP) was established in 1968 to mitigate future flood losses nationwide through sound, community-enforced building and zoning ordinances and to provide access to affordable, federally-backed flood insurance protection for property owners. Participation in the NFIP is based on an agreement between local communities and the federal government that states that if a community will adopt and enforce a floodplain ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas (SFHAs), the federal government will make flood insurance available within the community and a financial protection against flood losses. Each participating jurisdictions’ floodplain is mapped in a Flood Insurance Rate Map (FIRM) that indicates where areas with a 1% or a 0.20% annual chance of flooding in any given year. The

FIRM helps determine the premium a property owner pays for the flood insurance. Each jurisdiction's FIRMs (also known as Special Flood Hazard Areas) are included in Appendix III-1 as one interactive map in which a specific jurisdiction may be viewed by zooming into that area.

The following jurisdictions have adopted and enforce floodplain ordinances as participating communities in the NFIP and will continue compliance:

- City of Bettendorf
- City of Eldridge
- City of Princeton
- City of Buffalo
- City of LeClaire
- City of Riverdale
- City of Davenport
- City of McCausland
- City of Walcott
- City of Donahue
- City of Panorama Park
- Scott County

The following jurisdictions do not have FIRMs and/or are not participating in the NFIP:

- City of Blue Grass
- City of Dixon
- City of Long Grove
- City of Maysville
- City of New Liberty

The City of Panorama Park participates in the NFIP. However, they chose not participate in this plan update process. The City of Blue Grass has shown interest in taking the necessary steps to participating in the NFIP and is evaluating the merits of participating in the NFIP.

DEMOGRAPHICS

This plan utilized the newest decennial Census data that was available at the time compiled, specifically the 2020 Decennial Census. Appendix II-5 includes a table with the populations of Scott County from 1950 to 2020 to show population growth and decline within Scott County. The plan also used the most recent American Community Survey five-year averages for data not yet available from the 2020 Census.

3 RISK ASSESSMENT

IDENTIFYING HAZARDS

At the Planning Committee’s kick-off meeting, participants were introduced to types of hazards to be considered in the Local Hazard Mitigation Plan process. Sources of possible hazards to consider included Federal Emergency Management Agency’s (FEMA) required natural hazards and natural hazards from *Scott County, Iowa Multijurisdictional Hazard Mitigation Plan, 2018*. Table 3-1 is a comparison table of natural hazards from each of these sources.

**Table 3-1
Comparison of Potential Natural Hazards**

FEMA	Scott County 2018
Avalanche	—
Coastal Erosion	—
Coastal Storm	—
Dam Failure	Dam Failure
Drought	Drought
Earthquake	Earthquake
Expansive Soils	Expansive Soils
Extreme Heat	Extreme Heat
Flood	Flash Flood
—	River Flooding
Hailstorm	Hailstorm, Thunderstorm, Lightning
Hurricane	—
Land Subsidence	Land Subsidence, Sinkholes, Landslide
Landslide	Landslide (Above)
—	Levee Failure
Severe Winter Storm	Severe Winter Storms
Tornado	Tornado
Tsunami	—
Volcano	—
Wildfire	Grass or Wildland Fire
Windstorm	Windstorm

In addition to natural hazards, which are required for consideration in the Local Hazard Mitigation Plan, the *Scott County, Iowa Multi-Jurisdictional Hazard Mitigation Plan, 2023* will address four man-made or human-caused hazards. Those hazards include cyber terrorism, human disease pandemic, public/civil disorder/unrest, and railway transportation incident.

Some natural hazards are not examined because they do not occur in the planning area or their effects are not considered significant in relation to other hazards. Table 3-2 lists these hazards and provides a brief explanation for their elimination.

**Table 3-2
Hazards Not Profiled in the Plan**

Hazard	Explanation for Omission
Avalanche	There are no mountains in the planning area.
Coastal Erosion	There are no coastal areas near the planning area.
Coastal Storm	There are no coastal areas near the planning area.
Hurricane	There are no coastal areas near the planning area.
Tsunami	There are no coastal areas near the planning area.
Volcano	There are no volcanic mountains in the planning area.

The Planning Committee decided to combine Land Subsidence with Sinkholes, and Landslide, since portions of Scott County are mined, and ground collapse has been known to happen, as will be described in the hazard profile. Scott County also decided that Hailstorms could be combined with Thunderstorm and Lightning. The term Derecho was added to Windstorm due to the 2019 windstorm that was classified as a derecho.

Based on the process discussed above, the Planning Committee identified a total of 14 natural hazards for the Scott County planning area. These hazards are listed below in alphabetical order.

- Dam Failure
- Drought
- Earthquake
- Expansive Soils
- Extreme Heat
- Flash Flood
- Grass or Wildland Fire
- Levee Failure
- River Flood
- Severe Winter Storm
- Sinkholes, Land Subsidence and Landslides
- Thunderstorm, Hailstorm, and Lightning
- Tornado
- Windstorm/Derecho

The four man-made or human-caused hazards are:

- Cyber Terrorism
- Human Disease Pandemic
- Public/Civil Disorder/Unrest
- Railway Transportation Incident

PROFILING HAZARDS

The format of this document reflects the 2018 *Scott County, Iowa Multi-Jurisdictional Hazard Mitigation Plan* and combines the required elements of hazard profiling for each hazard. Each hazard includes a narrative description of the following categories:

- Introduction, including definition, description, and historic occurrences
- Probability (of future events)
- Magnitude/Severity/Extent
- Warning Time
- Duration
- Location/Vulnerability (of planning area to future events)

The hazard profiles are provided for all of the Scott County planning area. As part of the multi-jurisdictional participation of this plan, additions or exceptions from the general planning area are noted for individual jurisdictions in their individual risk assessment profiles later in this chapter to the extent available and reported.

HAZARD SCORING METHODOLOGY/PRIORITIZATION

Following the review of the hazard profiles, the Planning Committee utilized the methodology from the 2018 *Iowa Hazard Mitigation Plan* to evaluate the identified hazards for further consideration, ranking, and priority. The results of this baseline assessment of hazard priorities were provided to each participant in the plan update. The participating jurisdictions were then asked to review each hazard and information for each hazard related to their own community. The Community School Districts (CSD) are already being covered in the hazard scoring process by a participating governmental jurisdiction. The jurisdictions scored each hazard as a single event, and only effects from that particular hazard were to be considered in the scoring.

This hazard analysis seeks to strike a balance between evaluation criteria; for example, the evaluation of low-probability, high-impact events versus high-probability, and low-impact events. Each category of a particular hazard was rated as low, moderate, or high. Each community was provided a hazard ranking tool, as outlined in Table 3-3 for potential use. The tool included probability, magnitude by type of impact, and level of preparedness and response. Table 3-3 shows the Scott County EMA ranking of the hazards. Each participating jurisdiction was asked to provide a low, moderate, or high ranking for each hazard.

Table 3-3
Scott County Hazard Scoring and Methodology

Event	Probability	Severity = (Magnitude - Mitigation)			Preparedness	Internal Response	External Response	Risk	
		Human Impact	Property Impact	Business Impact					
	<i>Likelihood this will occur</i>	<i>Possibility of death or injury</i>	<i>Physical losses and damages</i>	<i>Interruption of services</i>	<i>Preplanning</i>	<i>Time, effectiveness, resources</i>	<i>Community/Mutual Aid staff and supplies</i>	<i>Relative threat*</i>	
SCORE	<i>0 = N/A 1 = Low 2 = Moderate 3 = High</i>	<i>0 = N/A 1 = Low 2 = Moderate 3 = High</i>	<i>0 = N/A 1 = Low 2 = Moderate 3 = High</i>	<i>0 = N/A 1 = Low 2 = Moderate 3 = High</i>	<i>0 = N/A 1 = High 2 = Moderate 3 = Low or none</i>	<i>0 = N/A 1 = High 2 = Moderate 3 = Low or none</i>	<i>0 = N/A 1 = High 2 = Moderate 3 = Low or none</i>	<i>0 - 100%</i>	
Dam Failure	1	1	1	2	2	3	2	20%	Low
Drought	2	1	1	2	1	1	1	26%	Low
Earthquake	1	3	3	3	2	2	3	30%	Low
Expansive Soils	1	1	1	1	2	1	1	13%	Low
Extreme Heat	3	1	1	1	2	1	1	39%	Medium
Flash Flood	3	2	3	1	2	1	1	56%	High
Grass or Wild-land Fire	2	1	1	1	2	2	1	30%	Low
Levee Failure	1	1	3	3	1	1	1	19%	Low
River Flood	3	1	2	1	1	1	1	39%	Medium
Severe Winter Storm	3	1	1	1	1	2	2	44%	High
Sinkholes, Land Subsidence, Landslides	1	1	1	1	2	1	1	13%	Low
Thunderstorm, Hailstorm, Lightning	3	1	1	1	1	1	1	33%	Medium
Tornado	2	1	3	3	1	2	1	41%	High
Windstorm/Derecho	2	1	2	2	1	2	1	33%	Medium
Cyber Terrorism	3	1	1	2	2	3	2	61%	High
Human Disease Pandemic	1	3	1	3	1	1	3	22%	Low
Public/Civil Disorder/Unrest	2	1	1	2	2	2	2	37%	Medium
Railway Transportation Incident	2	2	1	2	2	2	1	37%	Medium

High = 40+

Medium = 30-39

Low = 0-29

ASSESSOR DATA

Property and building data for Scott County was utilized to create Table 3-4. This table shows the total number of structures by community as well as the total assessed value of land and existing structures by zoning type. Note for agricultural zoned areas, acres are shown rather than structures. Table 3-4 is intended to be used in conjunction with vulnerability assessments of hazards that affect the built environment.

**Table 3-4
Assessed Value of Land and Structures for Scott County**

		Agriculture	Residential	Commercial	Industrial	TOTAL
Bettendorf	No. of Structures	3272.88 Acres	14131	620	27	
	Value of Structures	\$4,406,750	\$3,344,330,062	\$493,255,583	\$43,418,850	\$3,885,411,245
	Land Value	\$4,821,200	\$716,001,588	\$159,747,342	\$7,941,160	\$888,511,290
Blue Grass	No. of Structures	953.36 Acres	633	59	5	
	Value of Structures	\$2,355,660	\$113,612,614	\$16,994,056	\$875,290	\$133,837,620
	Land Value	\$1,406,140	\$19,577,951	\$4,901,139	\$478,120	\$26,363,350
Buffalo	No. of Structures	1913.12 Acres	459	35	6	
	Value of Structures	\$1,566,520	\$49,191,284	\$28,062,036	\$26,856,050	\$105,675,890
	Land Value	\$1,658,990	\$8,314,297	\$6,737,243	\$5,165,950	\$21,876,480
Davenport	No. of Structures	14088.341 Acres	34680	2964	125	
	Value of Structures	\$19,457,010	\$4,714,213,828	\$1,614,733,232	\$231,904,791	\$6,580,308,861
	Land Value	\$22,699,980	\$916,102,560	\$462,730,347	\$31,229,555	\$1,432,762,442
Dixon	No. of Structures	18.57 Acres	95	7	0	
	Value of Structures	\$9,590	\$8,850,180	\$395,440	\$-	\$9,255,210
	Land Value	\$27,630	\$955,340	\$58,470	\$-	\$1,041,440
Donahue	No. of Structures	135.56 Acres	129	11	0	
	Value of Structures	\$582,490	\$19,797,691	\$2,548,599	\$-	\$22,928,780
	Land Value	\$218,910	\$3,628,478	\$248,662	\$-	\$4,096,050
Durant	No. of Structures	37.47 Acres	26	1	0	
	Value of Structures	\$0	\$5,224,170	\$207,430	\$-	\$5,431,600
	Land Value	\$66,850	\$704,520	\$-	\$-	\$771,370
Eldridge	No. of Structures	3807.73 Acres	2411	149	18	
	Value of Structures	\$2,774,700	\$542,434,851	\$85,156,399	\$14,397,870	\$644,763,820
	Land Value	\$6,884,030	\$100,816,687	\$20,316,513	\$2,279,810	\$130,297,040

		Agriculture	Residential	Commercial	Industrial	TOTAL
LeClaire	No. of Structures	908.63 Acres	1845	96	2	
	Value of Structures	\$1,004,670	\$413,097,407	\$30,029,673	\$651,910	\$444,783,660
	Land Value	\$1,337,060	\$110,879,061	\$12,816,609	\$137,950	\$125,170,680
Long Grove	No. of Structures	428.42 Acres	309	6	0	
	Value of Structures	\$229,340	\$72,088,400	\$408,860	\$-	\$72,726,600
	Land Value	\$684,330	\$12,038,704	\$97,816	\$-	\$12,820,850
Maysville	No. of Structures	108.93 Acres	58	3	0	
	Value of Structures	\$767,440	\$8,486,030	\$286,670	\$-	\$9,540,140
	Land Value	\$181,850	\$1,054,900	\$53,550	\$-	\$1,290,300
McCausland	No. of Structures	179.00 Acres	125	19	0	
	Value of Structures	\$833,170	\$16,621,940	\$1,399,940	\$-	\$18,855,050
	Land Value	\$173,790	\$2,357,040	\$251,710	\$-	\$2,782,540
New Liberty	No. of Structures	2.65 Acres	58	8	1	
	Value of Structures	\$16,050	\$5,857,086	\$567,739	\$651,160	\$7,092,035
	Land Value	\$3,800	\$879,560	\$143,340	\$50,450	\$1,077,150
Panorama Park	No. of Structures	0 Acres	62	0	0	
	Value of Structures	\$-	\$8,420,880	\$-	\$-	\$8,420,880
	Land Value	\$-	\$1,267,000	\$-	\$-	\$1,267,000
Princeton	No. of Structures	1567.85 Acres	352	13	6	
	Value of Structures	\$1,644,860	\$60,637,435	\$3,035,905	\$1,901,400	\$67,219,600
	Land Value	\$1,752,040	\$12,782,050	\$1,128,200	\$211,990	\$15,874,280
Riverdale	No. of Structures	0 Acres	178	11	5	
	Value of Structures	\$-	\$41,502,830	\$8,154,220	\$37,078,140	\$86,735,190
	Land Value	\$-	\$10,126,139	\$2,850,460	\$7,390,491	\$20,367,090
Walcott	No. of Structures	1125.97 Acres	506	64	5	
	Value of Structures	\$829,740	\$82,635,442	\$52,304,280	\$3,176,040	\$138,945,502
	Land Value	\$2,016,640	\$12,843,950	\$13,881,020	\$466,380	\$29,207,990
Scott County	No. of Structures	201031.50 Acres	26224	1283	85	
	Value of Structures	\$193,679,590	\$5,894,324,376	\$769,108,016	\$130,500,260	\$6,987,612,242
	Land Value	\$304,000,890	\$1,299,969,813	\$237,167,026	\$26,568,581	\$1,867,706,310

Source: Scott County, Iowa and Davenport, Iowa Assessors Offices

HAZARD PROFILES

Dam Failure

A dam is a barrier constructed across a watercourse in order to store, control, or divert water. Dams are usually constructed of earth, rock, concrete, or mine tailings. The water impounded behind a dam is referred to as the reservoir and is measured in acre-feet, with one acre-foot being the volume of water that covers one acre of land to a depth of one foot. Due to topography, even a small dam may have a reservoir containing many acre-feet of water. A dam failure is the collapse, breach, or other failure of a dam that causes downstream flooding. Another type of failure occurs when erosion through the dam foundation occurs. Both overtopping or erosion dam failure result in a high velocity or debris-heavy water that rushes downstream, causing damage within its path. In addition to natural events causing dam failure, improper design, improper maintenance, negligent operation, or failure of upstream dams may also lead to dam failures.

Dams are constructed for a variety of uses, including flood control, erosion control, water supply impoundment, hydroelectric power generation, and recreation. Flooding, operating error, poor construction, lack of maintenance, damage due to burrowing animals, vandalism, terrorism, and earthquakes can cause dam failure. Dams are classified into three categories based on the potential risk to people and property should a failure occur.

High Hazard – A high hazard area is where dam failure may create a serious threat of loss of human life.

Moderate (Significant) Hazard – A moderate (significant) hazard area is where failure may damage isolated homes or cabins, industrial or commercial buildings, moderately-traveled roads, or interrupt major utility services, but without substantial risk of loss of human life. Structures where the dam and its impoundment are themselves of public importance, such as dams associated with public water supply systems, industrial water supply, or public recreation, or are an integral feature of a private development complex are also classified as moderate hazard dams.

Low Hazard – A low hazard area is where damages from a failure would be limited to loss of the dam, livestock, farm outbuildings, agricultural lands, and lesser used roads, and where loss of human life is considered unlikely.

The classification may change over time because of development downstream from the dam since its construction. Older dams may not have been built to the standards of its new classification. Dam hazard potential classifications have nothing to do with the material condition of a dam, only the potential for death or destruction due to the size of the dam, the size of the impoundment, and the characteristics of the area downstream of the dam. The Iowa Department of Natural Resources tracks all dams in the State of Iowa with a height of at least 25 feet or a total storage of at least 50 acre-feet of water. The inventory excludes all dams less than 6 feet high regardless of storage capacity and dams less than 15 acre-feet of storage regardless of height.

There have been two historical occurrences of dam failure in the State of Iowa; one occurred in 1968 in Waterloo when the Virden Creek Dam failed. The incident claimed one life, and the dam is no longer in existence. The second occurrence happened at the Lake Delhi Dam in July of 2010 when a 92-year-old dam was breached at a nine-mile long lake that was owned by a local homeowner's recreation association. The breach caused significant property loss, an evacuation of as many as 700 near the dam, as well as severe economic effects to the tourism industry in the area. No dam failures have occurred in Scott County.

Probability. With increased attention to sound design, quality and construction, and continued maintenance and inspection, dam failure probability can be reduced. Eighty-five percent of the dams in the United States will be more than 50 years old (the design life of a dam) as of 2020. The 2018 *Iowa Hazard Mitigation Plan* has noted that precipitation extremes and increased frequency may lead to flooding and put stress on dam structures. When flows are greater than expected, spillway overflow events may occur. The Scott County Emergency Management Agency (EMA) rated dam failure as a low probability.

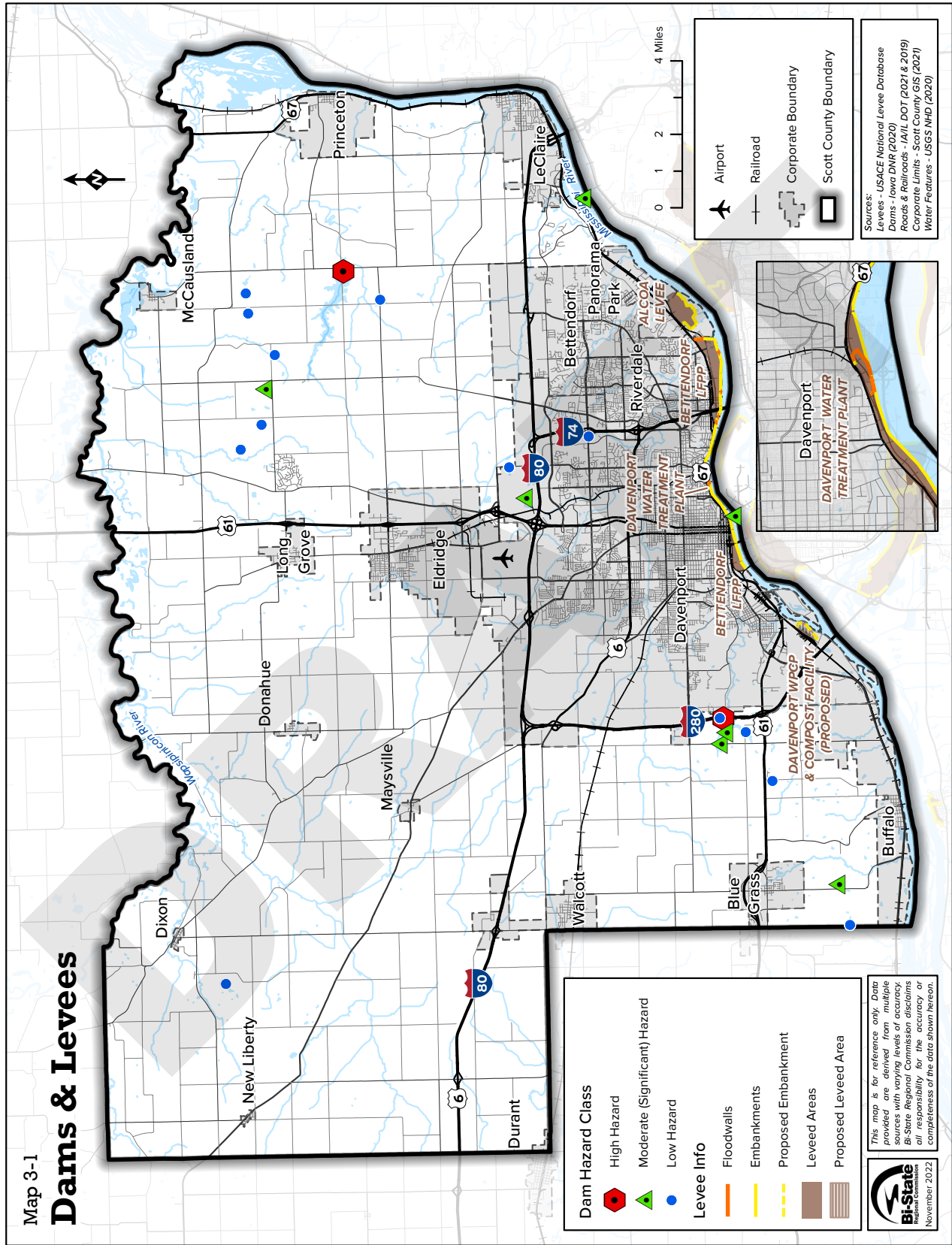
Magnitude/Severity/Extent. The extent of hazardous conditions due to dam failure is typically limited to those areas in and near the flood plain. People and property outside the floodplain could also be affected depending on the proximity to the dam and the height above the normal water level. Lost Grove Lake and Dam, located in east central Scott County between the Cities of Eldridge and Princeton is Scott County's newest dam. Lost Grove is a 350-acre recreational lake and has been classified as a high hazard dam. There is one other high hazard dam in Scott County, Lake of the Hills on Blackhawk Creek.

Locks & Dams 14 and 15 on the Mississippi River are classified as significant. The largest concern would be a series of dam breaks on the Upper Mississippi River that would cause low water levels. This would make barge travel on the Mississippi River unlikely and would have a significant impact on the region's economy. Iowa American Water Company, the water supply company for Bettendorf, Davenport, LeClaire, Riverdale, Panorama Park, and parts of unincorporated Scott County has water intakes in the Mississippi River. If water levels are too low, there would be a lack of water supply to a significant population of Scott County.

There are five other significant hazard dams in Scott County: Timber Lakes Estate Dam and Railroad Lake Dam on tributaries of Blackhawk Creek, Blue Grass Lake Dam on Blackhawk Creek, John Deere Davenport Works Dam on a tributary of Silver Creek, and Lake Hunnington on a tributary of Martins Creek (see Map 3-1.) Inundation maps do not currently exist for the dams in Scott County, so identifying potential losses and potentially affected areas is difficult at this time. The Iowa Department of Natural Resources (IADNR) has stated that it is one of their goals to have inundation areas and Emergency Action Plans on file for all high hazard dams within the state. Scott County will monitor this development and include inundation areas in future plan updates as they become available.

In general terms, jurisdictions potentially affected by dam failure due to downstream proximity are: Scott County, Davenport, Bettendorf, Riverdale, and LeClaire. People and property along streams are most vulnerable. Facilities and lives at considerable distances from the actual impoundment are not immune from the hazard. Depending on the size and volume of the impoundment as well as the channel characteristics, the flash flood can travel a significant distance. In addition to the dams included in the IADNR inventory, there are farm ponds and small dam structures. These and other stormwater detention basins should be checked to see if their holding capacity exceeds the 100-year flood plain area if failure should occur. Data of which structures are likely to be affected by a dam failure is not currently available; however, if such data becomes available, it will be included in the next update of this plan.

The severity of damage could range from property damage if a small subdivision impoundment failed, up to multiple deaths, injuries, and extensive property damage if a large, high hazard dam failed. Delivery of services may be affected due to flash flooding. If the water being held by the dam was used for source water, secondary source water will be needed until the water level can be restored. Much scouring would take place, and erosion would be extensive. Economic effects would vary widely depending on the damage done by released waters. The Scott County EMA estimated human and property impacts to be low and business impacts to be moderate.



The severity of damage could range from property damage if a small subdivision impoundment failed, up to multiple deaths, injuries, and extensive property damage if a large, high hazard dam failed. Delivery of services may be affected due to flash flooding. If the water being held by the dam was used for source water, secondary source water will be needed until the water level can be restored. Much scouring would take place, and erosion would be extensive. Economic effects would vary widely depending on the damage done by released waters. The Scott County EMA estimated human and property impacts to be low and business impacts to be moderate.

Warning Time. A dam failure can be immediate and catastrophic leaving little or no time to warn those downstream of the imminent hazard. With maintenance and monitoring, weak areas and possible failure points can be identified allowing time for evacuation and securing the dam. Most dams are only inspected periodically, thus allowing problems to go undetected until a failure occurs. Due to lack of warning time, Scott County EMA rates internal response time as low.

Duration. Response to the effect of a dam failure is extensive and requires wide-ranging recovery efforts for reconstruction of the original flood control structures.

Location/Vulnerability. In general terms, jurisdictions potentially affected by dam failure are those downstream, including Scott County, Davenport, Bettendorf, Riverdale, and LeClaire. Dam failure is typically an additional or secondary impact of another disaster such as flooding or earthquake. The effects to the planning area and its municipalities from a dam failure would be similar in some cases to those associated with flood events (see the flood hazard vulnerability analysis and discussion). Based on the hazard class definitions, failure of any of the high hazard dams could result in a serious threat of loss of human life and serious damage to residential, industrial, or commercial areas; important public utilities; public buildings; or major transportation facilities. Catastrophic failure of high hazard dams has the potential to result in greater destruction due to the potential speed of onset and greater depth, extent, and velocity of flooding. Another difference is that dam failures could flood areas outside of mapped flood hazards. As shown in Table 3-3, the overall risk for dam failure is rated low for Scott County while the preparedness to respond is rated moderate.

Sources	
State of Iowa, IHSEMD	<i>Iowa Hazard Mitigation Plan, 2018</i>
Scott County, Iowa	<i>Scott County Iowa Multi-Jurisdictional Hazard Mitigation Plan 2018</i>
National Dam Safety Program	https://www.fema.gov/national-dam-safety-program
Iowa Department of Natural Resources	http://www.iowadnr.gov/Environmental-Protection/Land-Quality/Dam-Safety
National Inventory of Dams	http://nid.usace.army.mil/cm_apex/f?p=838:1:0::NO

Drought

Drought is a period of prolonged lack of precipitation for weeks at a time producing severe dry conditions. There are four types of drought conditions that are relevant to Iowa:

- Meteorological drought – Refers to precipitation deficiency
- Hydrological drought – Refers to declining surface water and groundwater supplies
- Agricultural drought – Refers to soil moisture deficiencies
- Socioeconomic drought – Refers to when physical water shortages begin to affect people

Iowa experiences mainly agricultural and meteorological drought conditions as a result of low soil moisture or decline in recorded precipitation.

Droughts can be spotty or widespread and last from weeks to a period of years. A prolonged drought can have a serious economic effect on a community. Increased demand for water and electricity may result in shortages of resources. Moreover, food shortages may occur if agricultural production is damaged or destroyed by a loss of crops or livestock. While droughts are generally associated with extreme heat, droughts can and do occur during cooler months. One measure of the magnitude of drought conditions is provided by the Palmer Drought Severity Index (PDSI), which provides a scale of differences from the standard soil moisture conditions as follows:

Palmer Classifications	
INDEX	DEFINITION
4.0 or more	Extremely wet
3.0 to 3.99	Very wet
2.0 to 2.99	Moderately wet
1.0 to 1.99	Slightly wet
0.5 to 0.99	Incipient wet spell
0.49 to -0.49	Near normal
-0.5 to 0.99	Mild drought
-1.0 to -1.99	Mild drought
-2.0 to -2.99	Moderate drought
-3.0 to -3.99	Severe drought
-4.0 or less	Extreme drought

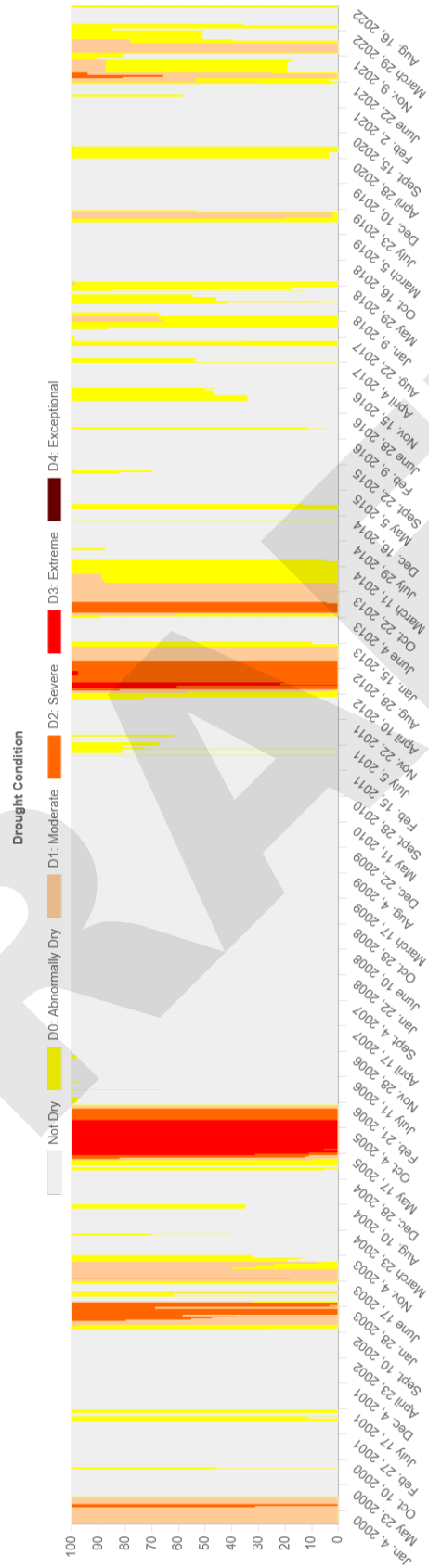
The National Drought Mitigation Center has a Drought Severity Classification system that takes into account the Palmer Drought Index, soil moisture, streamflow, and the Standardized Precipitation Index. It also looks at droughts as both short-term and long-term. Below is a table explaining the classification system and a graph showing droughts from 2000 until August 2022.

Figure 3-1

Drought Severity Classification							
Category	Description	Possible Impacts	Ranges				
			Palmer Drought Index	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Short and Long-term Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9	21-30	21-30	-0.5 to -0.7	21-30
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9	11-20	11-20	-0.8 to -1.2	11-20
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10	6-10	-1.3 to -1.5	6-10
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9	3-5	3-5	-1.6 to -1.9	3-5
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0-2	0-2	-2.0 or less	0-2

Short-term drought indicator blends focus on 1-3 month precipitation. Long-term blends focus on 6-60 months. Additional indices used, mainly during the growing season, include the USDANASS Topsoil Moisture, Keetch-Byram Drought Index (KBDI), and NOAA/NESDIS satellite Vegetation Health Indices. Indices used primarily during the snow season and in the West include snow water content, river basin precipitation, and the Surface Water Supply Index (SWSI). Other indicators include groundwater levels, reservoir storage, and pasture/range conditions.

The National Drought Mitigation Center | 3310 Holdrege Street | P.O. Box 830988 | Lincoln, NE 68583-0988
 phone: (402) 472-6707 | fax: (402) 472-2946 | [Contact Us](#)



According to the National Climatic Data Center, there have been five drought periods reported for Scott County between 01/01/1995 and 10/14/2022. Noticeable droughts include:

- **August 1995:** A statewide drought, the dry weather conditions combined with well above normal temperatures produced the 4th warmest August in Iowa's history. Yield losses were greatest over southern Iowa where plantings were delayed by excessive spring rainfall. The dry conditions resulted in deterioration of corn and soybean crops.
- **August 2003:** A moderate to severe drought developed in August 2003. According to the Iowa State Climatologist, August 2003 was the driest on record with a statewide average of only 0.96 inches of rainfall (3.23 inches below the normal). These weather conditions placed extreme stress on corn and soybeans, which are in their main development stage of growing in August. Yields were reduced by 10% for the corn and 30% for the soybeans.
- **July 2005 – March 2006:** The drought of 2005-2006 began with below normal precipitation in June 2005, creating an official drought by July 2005. The drought conditions combined with high heat created unfavorable growing conditions for crops. By August 2005, Iowa's governor declared most of eastern Iowa an Agricultural Disaster Area. November 2005 marked the 10th consecutive month with below normal precipitation with the eastern $\frac{2}{3}$ of Iowa in the Extreme Drought category. By March 2006, the drought began to shrink in size and scope, and precipitation was near normal by April 2006. Total precipitation for 2005 was 17.86 inches (normal is 38.04 inches).
- **July 2012 – November 2012:** The drought of 2012 was a result of above average temperatures and little to no precipitation. The average precipitation for June 1-August 16 was 5.68 inches, or -5.22 inches from the normal amount (normal is 10.90 inches at the Davenport Station). By August 2012, Scott County along with 42 other counties in Iowa had been declared a primary natural disaster area by USDA. (On August 7, 2012, Scott County was listed as in D3-Extreme Drought conditions by the National Drought Mitigation Center). According to the USDA, \$12,921,164 of indemnity was paid for Federal Crop Insurance Claims for the crop year 2012.
- **August 2013 to June 2014:** After a wet start to the summer, atmospheric conditions developed in July through September that lead to less precipitation falling across the region. This led to Severe Drought conditions that were not fully alleviated until the middle of June 2014. Claims for Federal Crop Insurance totaled \$12,820,403 for the 2013 crop year.

Probability. Drought is part of normal climate fluctuations. Climatic variability can bring dry conditions to the region for up to years at a time. According to the National Drought Mitigation Center, periods of severe to extreme drought in the Upper Mississippi Basin occur cyclically, about once every ten years. The 2018 *Iowa Hazard Mitigation Plan* notes drought in Iowa as a fairly common occurrence with 22.7% of the state in drought condition at least one month per year. They also note drought in Iowa rarely reaches the severe stage and are typically minor. The Scott County EMA rated drought as a low probability, as shown in Table 3-3.

Magnitude/Severity/Extent. Those dependent on rain would be the most vulnerable to a drought. This means that agriculture, agribusiness, and consumers (if the drought lasted long enough or affected a large area) would be affected. A drought limits the ability to produce goods and provide services. Because citizens draw their drinking water from surface water and groundwater sources, a prolonged severe drought may affect all citizens if there were to be a dramatic drop in the stream flow coupled with the drop in the water table. Fire suppression

can also become a problem due to the dryness of the vegetation and possible lack of water. Claims for Federal Crop Insurance totaled \$12,820,403 for the 2013 crop year.

Warning Time. Drought warning is based on a complex interaction of many different variables, water uses, and consumer needs. Drought warning is directly related to the ability to predict the occurrence of atmospheric conditions that produce the physical aspects of drought, primarily precipitation and temperature. There are so many variables that can affect the outcome of climatic interactions that it is difficult to predict a drought in advance. In fact, an area may already be in a drought before it is even recognized. While the warning of the drought may not come until the drought is already occurring, the secondary effects of a drought may be predicted and forewarned weeks in advance.

Duration. From the historical records for the State of Iowa, most droughts occur for at least one month at a time. It is dependent on the climatic situation at the time of the drought.

Location/Vulnerability. The entire planning area is equally at risk for drought. Those dependent on rain would be the most vulnerable to a drought. This means that agriculture, agribusiness, and consumers (if the drought lasted long enough or affected a large area) would be affected. A drought limits the ability to produce goods and provide services. Because citizens draw their drinking water from surface water and ground water sources, a prolonged severe drought may affect all citizens if there was a dramatic drop in the stream flow coupled with the drop in the water table. Fire suppression can also become a problem due to the dryness of the vegetation and possible lack of water.

Drought in the U.S. seldom results directly in the loss of life, and more directly affects agricultural crops, livestock, natural vegetation, wildlife, and stream flows (fish and aquatic vegetation). Effects are costly economically, environmentally, and socially. Many areas could be affected by drought within Scott County, particularly local farms. Additionally, other agriculturally-based communities affected by drought could affect the economic welfare of Scott County. For possible damages to agricultural realty, please refer to Table 3-4, which shows assessed values for agricultural property in Scott County. Preparedness and response are rated as high for drought by the Scott County EMA.

Sources	
State of Iowa, IHSEMD	<i>Iowa Hazard Mitigation Plan, 2013</i>
National Drought Mitigation Center	http://www.drought.unl.edu/index.htm
National Climatic Data Center	http://www.ncdc.noaa.gov/oa/climate/severeweather/extremes.html
National Weather Service Quad Cities, IA IL Local Climate	http://www.crh.noaa.gov/dvn/climate/
FEMA	https://www.ready.gov/drought
U.S. Drought Monitor	http://droughtmonitor.unl.edu/
USDA Risk Management Agency	http://www.rma.usda.gov/data/indemnity/

Earthquake

An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of the rock beneath the surface of the Earth that may impose a direct threat to life and property. There are three general classes of earthquakes; tectonic, volcanic, and artificially produced. The shaking produced by the earthquake can cause buildings, bridges, and other structures to collapse and disrupt gas, electric, and phone services. Earthquakes also have the potential to trigger landslides, flash floods, and fires.

The effect of an earthquake on the surface of the Earth is called the intensity. The intensity scale takes into consideration responses such as people awakening, movement of furniture, and destruction. The scale that is currently used in the United States is the Modified Mercalli Intensity Scale, which was developed in 1931. The Modified Mercalli Intensity Scale contains 12 levels of increasing intensity, ranked by observed effects.

Modified Mercalli Intensity Scale	
LEVEL	DEFINITION
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed, walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Damage slight in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Source: Iowa Geological Survey (<http://www.igsb.uiowa.edu/earthqua/MERCALLI.htm>)

According to the State of Iowa Geological Survey, there have been 13 earthquakes in the state between 1867 and 2016, with four of those earthquakes occurring in Scott County. The largest earthquake in Scott County (and the State of Iowa) occurred in the City of Davenport on November 12, 1934. That earthquake registered as a VI on the Modified Mercalli Intensity Scale.

Being near the Mississippi River, Scott County would also feel vibrations from earthquakes with epicenters in Illinois or from the New Madrid seismic zone. The most recent of these was on April 18, 2008 when a Magnitude 5.2 earthquake occurred in the Wabash Valley Seismic Zone, located to the north of the New Ma-

drid seismic zone. The earthquake and subsequent aftershocks were felt widely throughout the central United States with as much as a Mercalli magnitude IV through Illinois and surrounding states to the east. In 2016, an earthquake was verified by the National Weather Service Office located in Davenport. It was the result of a 5.6 magnitude earthquake in Pawnee, Oklahoma and was felt in six states.

Probability. Seismologists attempt to forecast earthquakes size and frequency based on data from previous events. In the New Madrid seismic zone, this analysis is difficult because there are few historic moderate to large earthquakes, and the active faults are too deeply buried to monitor effectively. According to the United States Geological Survey (USGS), the chance of a magnitude 6 or higher earthquake in the next 50 years is 25-40% based on the history of past earthquakes in the New Madrid fault zone. The 2018 *Iowa Hazard Mitigation Plan* analysis estimated that the probability of future damaging earthquakes in Iowa as a very low probability. According to Table 3-3, the Scott County EMA rates the probability of earthquake as low.

Magnitude/Severity/Extent. Most structures built in Scott County and in the State of Iowa are not built to earthquake standards; although the effect of a possible earthquake will most likely be of low intensity resulting in mainly foundational damage. The most vulnerable structures in the county would be those built on poorly consolidated substrate, especially floodplain materials. The 2018 *Iowa Hazard Mitigation Plan* noted that FEMA estimates that there would be less than \$975,000 in damages annualized statewide as calculated by HAZUS-MH software. Scott County could experience vibrations similar to the passing of a heavy truck; rattling of dishes; creaking of walls and swinging of suspended objects. Fatalities would be very rare, with injuries limited to falls and injury from unsecured objects. Potential impacts to humans, property, and businesses are rated high for earthquakes in Scott County.

Warning Time. Earthquake prediction is an inexact science, and even in well monitored areas with scientific instruments, scientists very rarely predict earthquakes.

Duration. Due to the limited effects to Iowa, response to the occurrence of an earthquake would likely be in support of nearby states utilizing mutual aid agreements; in-state response would likely be very limited.

Location/Vulnerability. The historical occurrences of earthquakes in Scott County place all four incidents in the City of Davenport, with the possibility of the whole county feeling the effect. Map 3-2 indicates the seismic probability for the state of Iowa is low relative to other areas of the country. The entire planning area is equally at risk for earthquakes. Most structures in Iowa are not built to earthquake standards, but because of the relatively low magnitude of the possible quake, property damage would likely be minor foundational damage. The most vulnerable structures are those built on poorly consolidated substrate, particularly floodplain materials. Most of Iowa is located in Seismic Zone 0, the lowest risk zone in the United States. This does not mean that the county is not vulnerable to earthquake effects.

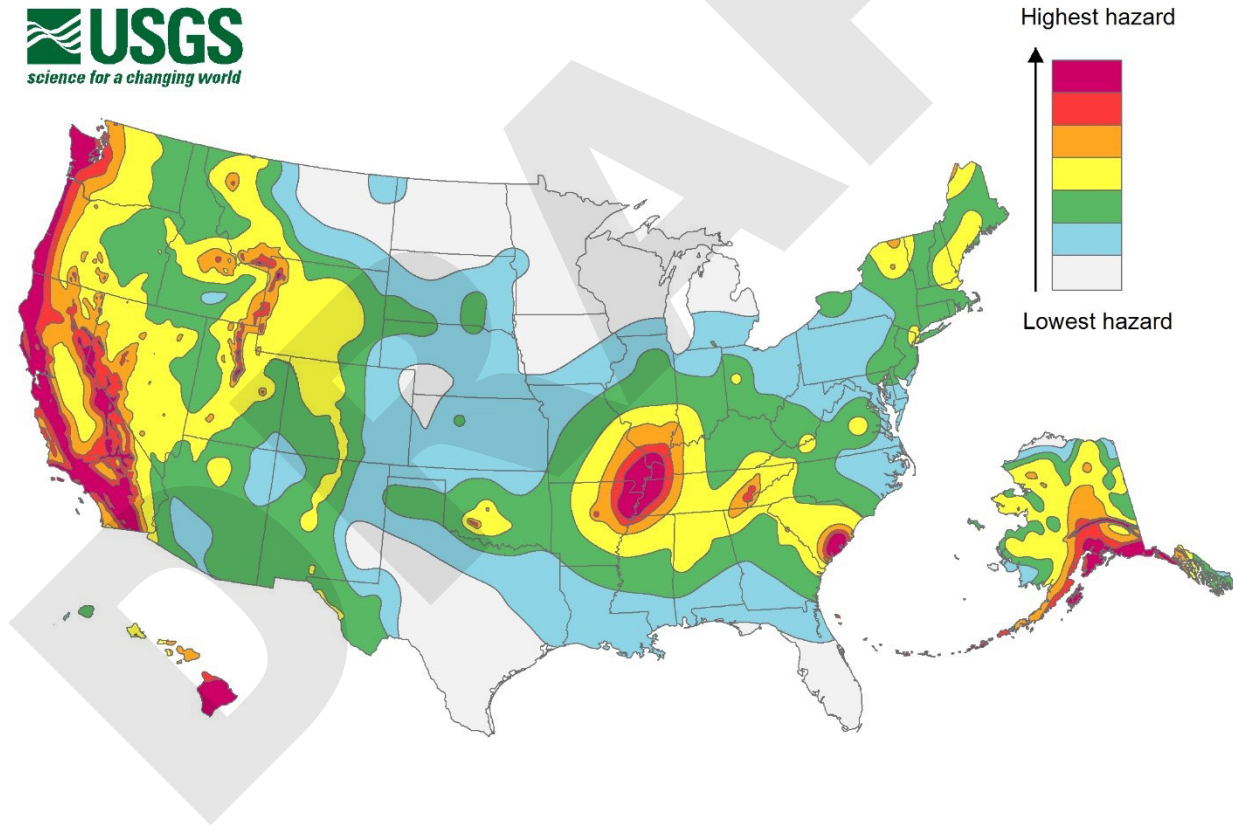
Seismologists attempt to forecast earthquake size and frequency based on data from previous events in the New Madrid Fault Zone, and estimate a 90% chance of a Richter scale 6.0 magnitude earthquake in the New Madrid Fault Zone by the year 2040. A magnitude 6.5 earthquake on the New Madrid Fault would create a Modified Mercalli intensity magnitude four (4) effect in most of Iowa resulting in minimal damages. In the unlikely event of a major earthquake in Scott County, it is safe to assume that the impact would be devastating considering a majority of the structures in the county are older structures not built to codes that encourage resistance to earthquakes.

As seen in the community profile, roughly 35.1% of all homes in Scott County were built before 1959. The age of the housing stock in Scott County represents a significant risk for damage from this hazard. Additionally,

new construction does not have to comply with any additional codes to ensure earthquake resistance. Overall, the community would suffer severe structural failure, injuries, and death if a major earthquake occurred. A majority of people and buildings could be injured or experience property damage from this hazard. The amount of possible property damage can be seen in Table 3-4 that shows the value of all assessed property in Scott County. All structures would have equal vulnerability to this hazard since the hazard is not confined to a specific geographic area within the county. Preparedness and internal response are rated moderate for earthquakes, and external response is low due to the wide spread nature of an event.

Sources	
State of Iowa, IHSEMD	<i>Iowa Hazard Mitigation Plan, 2018</i>
Iowa Geological Survey Bureau	http://www.igsb.uiowa.edu
U.S. Geological Survey	http://earthquake.usgs.gov/earthquakes/byregion/iowa.php

Map 3-2
USGS 2018 Long-Term National Seismic Hazard Map



Expansive Soils

Expansive soils are soils and soft rock that tend to swell or shrink excessively due to changes in moisture content. Expansive soils contain minerals such as clays that are capable of absorbing water. When they absorb water, they increase in volume, and the more water they absorb, the more their volume increases. Expansions of ten percent or more are not uncommon. This change in volume can exert enough force on a building or other structure to cause damage.

Ratings are dependent on the clay content of the soils. Soils that have a linear ability to be extended greater than 3% are of concern for dwellings with basements. In combination with areas of slope, floodplain, and hydric soils, future development should consider the suitability and limitations of soils, especially for dwellings with basements.

Expansive soils will also shrink when they dry out. This shrinkage can remove support from buildings or other structures and result in damaging subsidence. Fissures in the soil can also develop. These fissures can facilitate the deep penetration of water when moist conditions or runoff occurs. This produces a cycle of shrinkage and swelling that places repetitive stress on structures.

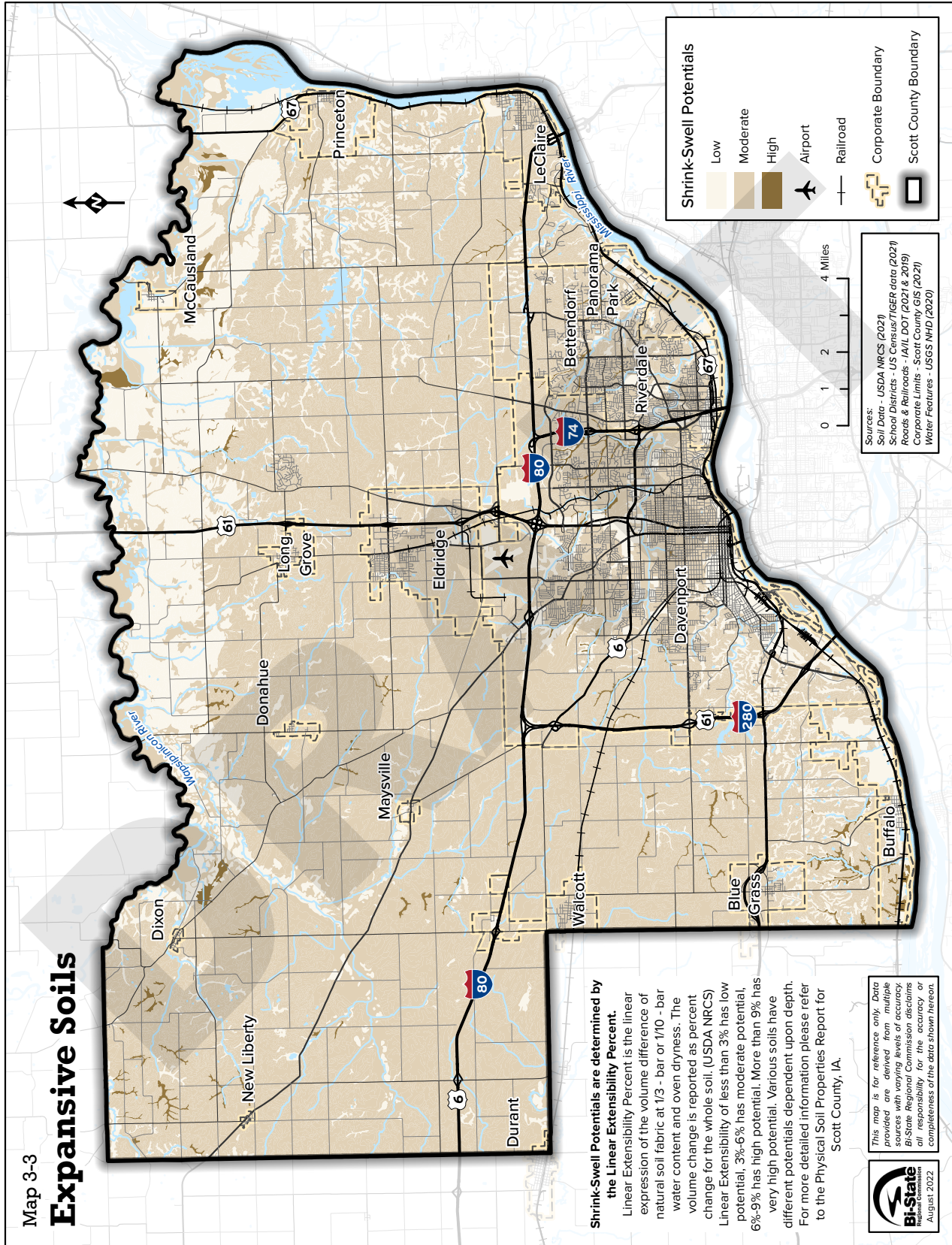
The American Society of Civil Engineers estimates that half of the homes in the United States are built on expansive soils, and half of these will have some damage. The group claims that these soils are responsible for more home damage every year than floods, tornados, and hurricanes combined.

The effects of expansive soils are most prevalent in regions of moderate to high precipitation, where prolonged periods of drought are followed by long periods of rainfall. The hazard is most common in the southern, central, and western United States. Recent estimates put the annual damage from expansive soils as high as \$7 billion. However, because the hazard develops gradually and seldom presents a threat to life, expansive soils have received limited attention, despite their costly effects.

Historical records of damage due to expansive soils are not kept on a county-wide scale due to the timeframe of such events.

Probability. Probability and frequency analyses have not been prepared because of the nature of occurrence of this hazard. This is consistent with other geologic hazards that occur slowly over time. However, it can be said that the probability of soil expansion is greater in the areas identified above and on Map 3-3, which shows the shrink-swell potential for soils within Scott County. The 2018 *Iowa Hazard Mitigation Plan* noted almost two-thirds of the state had not identified expansive soils as a top five hazard.

The majority of the soils in the urban areas of Scott County have a low to moderate shrink-swell potential. However, there are a few areas in the county with high potential for soil expansion. These areas are located in and around the City of Blue Grass, along the Mississippi River south of Davenport, and following the southwest to northeast expanse of bluff from Walcott to Eldridge. There is also a section of northern Scott County near McCausland with a low to high shrink-swell potential. The Scott County EMA rates expansive soils as a low probability as shown in Table 3-3.



Magnitude/Severity/Extent. There are few direct human effects. Effects commonly involve swelling clays beneath areas covered by buildings and slabs of concrete and asphalt, such as those used in construction of highways, walkways, and airport runways. The most extensive damage from expansive soils occurs to highways and streets. Houses and one-story commercial buildings are more apt to be damaged by expansion of swelling than are multi-story buildings, which usually are heavy enough to counter swelling pressures. The most obvious manifestations of damage to buildings are sticking doors, uneven floors, and cracked foundations, floors, walls, ceilings, and windows. Damage to the upper floors of the building can occur when motion in the structure is significant. Utilities could be affected because of constant pushing and pulling resulting in cracks, breaks, and severing of underground infrastructure. Since this a naturally-occurring phenomenon, environmental effects would be limited to spills and leaks of containment facilities. Economic and financial effects would be felt by individual owners of buildings and facilities. These would occur over time and would not be a one-time effect. Building code requirements may impose undue burden on construction to ensure proper performance of buildings and utilities in areas with expansive soils. The Scott County EMA rates the human, property, and business impacts of expansive soils as low.

Warning Time. This is consistent with other geologic hazards that occur slowly over time.

Duration. The response tied to damage that occurs due to expansive soils depends largely on the extent of the damage and when the damage is first noticed. Damage can be mitigated on new construction with proper building techniques for the soil type and moisture level. Damage can be mitigated on existing buildings by incorporating some of the same types of techniques used in new construction. This may take longer and cost more than new construction.

Location/Vulnerability. While the entire planning area is vulnerable to some structural damage as a result of shrinking and expanding soils, there is no data available to determine damage estimates for this hazard. In most cases, individual property owners, local governments, and businesses pay for repairs to damages caused by this hazard. Underground utility lines such as water and sewer pipes may be at risk to damages associated with expansive soils. However, there is no data to support damages and costs associated with this hazard at this time. While preplanning is rated as moderate for expansive soils, internal and external response abilities are rated high by the Scott County EMA.

Sources	
State of Iowa, IHSEMD	<i>Iowa Hazard Mitigation Plan, 2018</i>
USDA NRCS Soil Data Mart	
NRCS	http://websoilsurvey.nrcs.usda.gov/app
NRCS	<i>Using Soil Survey to Identify Areas With Risks and Hazards to Human Life and Property Expanding - Soils and Shrink-Swell Potential- 2004</i> By Phil Camp, State Soil Scientist, Arizona, USDA, NRCS
Geology.com	<i>Expansive Soil and Expansive Clay - The hidden force behind basement and foundation problems</i>

Extreme Heat

An extreme heat event is characterized as a prolonged period of excessive heat and humidity. Conditions for extreme heat are defined by summertime weather that is substantially hotter and/or more humid than average for a location at that time of year. This includes temperatures (including heat index) in excess of 100°F or at least three successive days of 90°F or higher. The heat index is a number in degrees Fahrenheit that tells how hot it really feels when relative humidity and air temperature are calculated together. Exposure to full sunshine can increase the heat index by at least 15°F. A heat advisory is issued when temperatures are greater than 100°F or higher for 8 hours or more. A heat advisory shall be continued through the overnight hours, following a day with excessive heat, if the heat index is not below 75°F. A heat advisory can be issued for a heat index less than 100°F when the cumulative effect of successive days of near advisory level heat leads to potentially life threatening conditions.

An excessive heat warning is used when a heat index of 105°F or higher is expected for a period of three hours or more. An excessive heat warning shall be continued through the overnight hours, following a day with excessive heat, if the heat index is not expected to fall below 75°F. An excessive heat warning can be issued for a heat index less than 105°F when the cumulative effect of successive days of near warning-level heat leads to life threatening conditions.

Extreme heat can impose stress on humans and animals. Heatstroke, sunstroke, cramps, exhaustion, and fatigue are possible with prolonged exposure or physical activity due to the body's inability to dissipate the heat. Urban areas are particularly at risk because of air stagnation and large quantities of heat absorbing materials such as streets and buildings. Extreme heat can also result in distortion and failure of structures and surfaces such as roadways and railroad tracks.

Incidents of extreme heat are likely to cover a large area. Urban areas pose additional risks in these occurrences when stagnant atmospheric conditions of the heat wave trap pollutants, adding to the stresses of hot weather. The following available information from the National Climatic Data Center and National Weather Service gives an indication of the magnitude and variety of such events. There have been six notable excessive heat events in Scott County since 1950; however, 1936 is still the all-time warmest July on record with 11 days in a row with temperatures over 100°F and an average monthly temperature of 85.0°F (the monthly average for July is 75.4°F, at the Quad Cities International Airport station).

- **July 1995:** This event covered all of Iowa from July 12 through the evening of July 14, causing three fatalities and \$3.8 million in damage. Dew points ranged from the upper 70s to the middle 80s for much of the time, with the highest dew points in the eastern half of the state. High temperatures were between 98°F and 108°F, and the highest temperature of 109°F was recorded in Council Bluffs. Most weather stations across the state broke the century record over the two-day period. The three fatalities were reported in Des Moines, Marshalltown, and Burlington. Two of the fatalities were elderly people. The majority of property damage losses were in the form of livestock.
- **July 1997:** Excessive heat indices of 105 to 110 were reached in the eastern half of the state during this event, which lasted through July 27. The highest temperatures were recorded on July 26 when record-setting high minimum temperatures were also experienced. The Quad Cities Bix 7 Run was also on July 26, and the heat caused 12 injuries and one fatality. Minimum property damage was experienced in the form of livestock.

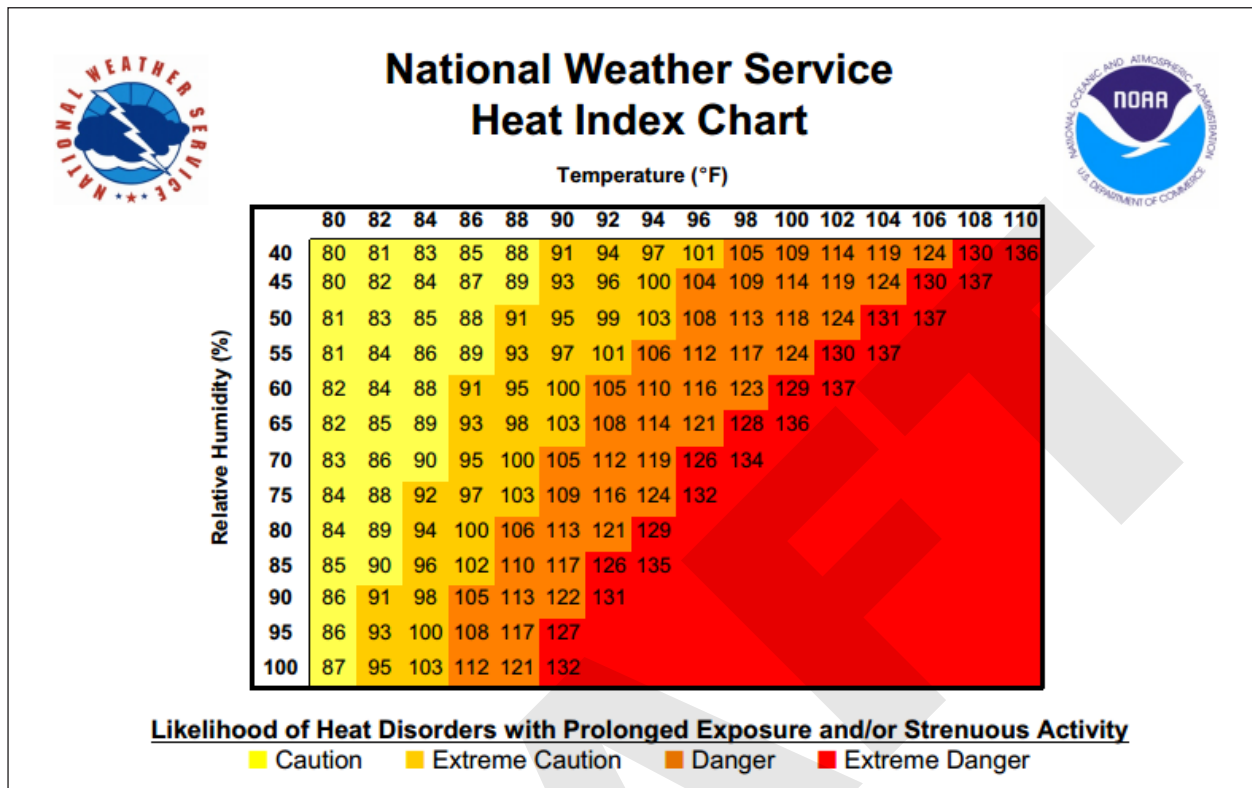
- **July 1999:** This event lasted July 19-31. Many heat advisories and warnings were issued for portions of eastern Iowa during this period. Temperatures around 100°F combined with dew points in the 70s produced heat indices of 105°F to 125°F. Although no fatalities were reported in Iowa, 19 people in Illinois and 27 people in Missouri died from heat-related factors over this time period.
- **August 2000:** No injuries, fatalities, or property damage were reported with this event that spread over middle and eastern Iowa. Temperatures topped out in the lower to middle 90s. These hot temperatures combined with high humidity resulted in dangerous heat indices of 105°F to 115°F during the afternoon.
- **July 2012:** The average temperature was 80.7°F, which makes this the sixth warmest July on record. There were 22 days with temperatures at or above 90° F, with five of those days at or above 100°F. The hottest day reported was on July 7 with a temperature of 104°F and heat indexes of 105-115°F. Genesis hospitals in the Quad Cities Area treated 14 people for heat-related illnesses on the 4th of July.
- **July 2013:** According to the National Weather Service, five consecutive days of temperatures above 90°F were recorded at the Davenport Municipal Airport, despite June-August of 2013 being ranked “Below Normal” for average regional temperature by the National Climatic Data Center.

The Scott County EMA ranks the overall risk for extreme heat as moderate.

Probability. Based on historical information, Iowa will likely experience about 26 days a year with temperatures above 90°F. There is a very good chance that there will be a period of three consecutive days or more with temperatures in the 90s. It is also common for the temperature to hit 100°F or more once every three years during the summer months. The 2018 *Iowa Hazard Mitigation Plan* notes that the U.S. Global Change Research Program states experts predict incidents of heat waves will be more frequent, severe, and longer, especially in larger cities. Scott County EMA has noted a high probability of an extreme heat event.

Magnitude/Severity/Extent. Certain populations, including the elderly, small children, chronic invalids, and others with medical problems are particularly susceptible to heat reactions. Low-income households without access to fans or air-conditioned rooms, particularly inner city dwellers, may also be more susceptible to heat reactions. The 2013 *Iowa Hazard Mitigation Plan* states that Scott County experiences approximately \$3,000 in damages annually from extreme heat. The National Climatic Data Center Storm Event Database does not have any reported property or crop damage reports for extreme heat. Following is the National Weather Service Heat Index Chart that rates the likelihood of heat disorders at various temperatures.

Figure 3-2-



The Scott County EMA lists human, property, and business impacts as low for extreme heat as shown in Table 3-3.

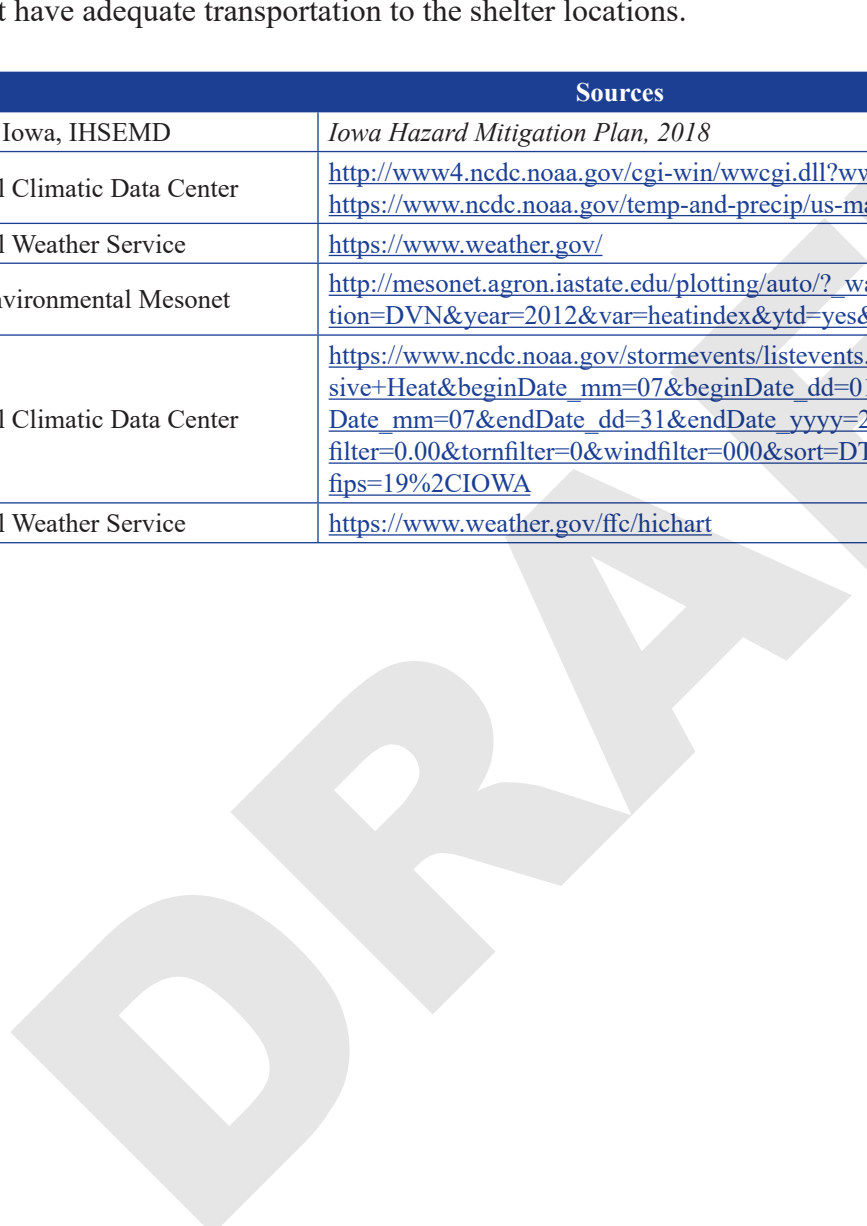
Warning Time. As with other weather phenomena, periods of extreme heat are predictable within a few degrees within 3 days or so. Variations in local conditions can affect the actual temperature within a matter of hours. The National Weather Service will initiate alert procedures when the heat index is expected to exceed 105°F for at least two consecutive days.

Duration. As noted previously, the 2018 *Iowa Hazard Mitigation Plan* notes the U.S. Global Change Research Center predicted that extreme heat events are likely to be more frequent, severe, and last longer.

Location/Vulnerability. The entire planning area is equally at risk for extreme heat. In Scott County, the majority of the community is at risk to extreme heat, especially elderly persons, small children, chronic invalids, those on certain medications or drugs (especially tranquilizers and anticholinergics), and persons with weight and alcohol problems. Healthy individuals working outdoors in the sun and heat are vulnerable as well. Low-income individuals and families are also susceptible due to poor access to air-conditioned rooms and this would likely include the 11.9 % of the population of Scott County that lives below the poverty level according to the American Community Survey five year average from 2016-2020. The 2018 *Iowa Hazard Mitigation Plan* notes that social factors and vulnerable counties in the state of Iowa based on those factors and indicates Scott County as one of the least vulnerable counties in the state.

There are some designated locations that have backup generators to provide shelter from extreme heat in the event of energy disruption, but additional generators are needed at critical and vulnerable facilities to ensure heat protections for vulnerable populations. Special attention should be given to nursing homes, senior housing facilities, K-12 schools, preschool facilities, and hospitals in the county during extreme heat conditions because of the number of vulnerable residents being served in those institutions. In addition, more rural areas of the county are at an elevated risk for vulnerable populations such as low-income, elderly, and children, who may or may not have adequate transportation to the shelter locations.

Sources	
State of Iowa, IHSEMD	<i>Iowa Hazard Mitigation Plan, 2018</i>
National Climatic Data Center	http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms https://www.ncdc.noaa.gov/temp-and-precip/us-maps/3/201308#us-maps-select
National Weather Service	https://www.weather.gov/
Iowa Environmental Mesonet	http://mesonet.agron.iastate.edu/plotting/auto/?_wait=no&q=93&network=IA_ASOS&zstation=DVN&year=2012&var=heatindex&ytd=yes&dpi=100&fmt=png
National Climatic Data Center	https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Excessive+Heat&beginDate_mm=07&beginDate_dd=01&beginDate_yyyy=2016&endDate_mm=07&endDate_dd=31&endDate_yyyy=2022&county=SCOTT%3A163&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitButton=Search&statefips=19%2CIOWA
National Weather Service	https://www.weather.gov/ffc/hichart



Flash Flood

A flash flood is an event occurring with little to no warning where water levels rise at an extremely fast rate. Flash flooding results from intense rainfall over a brief period, sometimes combined with rapid snow melt, ice jam release, frozen ground, saturated soil, or impermeable surfaces. Most flash flooding is caused by slow-moving thunderstorms or thunderstorms repeatedly moving over the same area. Flash flooding is an extremely dangerous form of flooding that can reach full peak in only a few minutes and allows little time or no time for protective measures to be taken by those in its path. Flash flood waters move at very fast speeds and can roll boulders, tear out trees, scour channels, destroy buildings, and obliterate bridges. Flash flooding often results in higher loss of life, both human and animal, than slower-developing river and stream flooding. Areas in the floodplain, downstream from a dam or levee, or in low-lying areas can be affected by flash flooding. The 2018 *Iowa Hazard Mitigation Plan* notes that six inches of swiftly moving water can knock people off their feet, and two feet of water can float a car. People and property in areas with narrow stream channels, saturated soils, or on land with large amounts of impermeable surfaces are likely to be affected in the event of significant rainfall. Unlike areas affected by river/stream flooding, flash floods can affect areas a good distance from the stream itself. Streets can also become swift-moving rivers, and basements can become deathtraps because flash floods can fill them with water in a matter of minutes.

Floods are the most common and widespread of all natural disasters except fire. According to the National Climatic Data Center, 30 flash flood events have been reported between January 2000 and August 2022. Of the 30 flash flood events, 20 have occurred since 2010. Below is a sample of the flash flood events, including a historic flash flood in June 1990.

- **June 1990:** The most devastating episode of local creek flooding occurred on June 16, 1990. Twenty-four hour rain totals of three to ten inches in the Quad Cities Area falling on already saturated soils created flash flooding along Black Hawk Creek and Duck Creek and its tributaries. Approximately two weeks later on June 29, 1990, a second flood event of slightly lesser magnitude occurred. Because of the close time period of these two floods, they are usually referred to as one event, such as the June 1990 floods.
- **June 14, 2001:** Various locations in Davenport and Bettendorf experienced flash flooding. Streets flooded, including 8-10 inches of water on the road near the intersection of Locust and Scott Streets, and major street flooding on River Drive and State Street. The flash flooding contributed to a five-car accident on the Interstate 74 bridge approach to the Mississippi River in Bettendorf. No injuries were reported. Spencer Creek Bridge at 249th Avenue, a private road and bridge, was under water making the road impassable.
- **June 3-4, 2002:** Heavy rains resulted in significant flash flooding throughout Scott County. The Wapipinicon River rose well above flood stage, and Duck Creek went out of its banks. Several roads were covered in water, especially at Division Street in Davenport, which was impassable in several locations due to high water. River Drive and Middle Road at 53rd Street closed due to flooding. High water inundated two mobile homes east of Highway 61. A driver was rescued from a stranded vehicle before the van was swept away by flood waters. Flooding was so significant that President George W. Bush declared 17 counties in eastern Iowa, including Scott County, a disaster area. In total, the flooding in 8 counties damaged an estimated 1,004 homes. Of those homes, 22 had major damage, and 8 were destroyed. Public property in eastern Iowa was estimated to be at least \$7.2 million.

- **March 12-13, 2006:** Thunderstorms in the Quad Cities Metro Area produced rainfall rates exceeding 1 inch per 30 minutes. The National Weather Service reported 2 feet of water over roads on the Davenport/Bettendorf city limits. Two to three feet of water was reported on Second Street in Davenport with River Drive and Third Streets in Davenport flooded with thigh-high levels of water. Numerous streets in Davenport were closed due to high water. The media reported sinkholes developing on some streets in Davenport with some residences flooded. Although unknown at the time, the Federal Building in downtown Davenport had its basement partially flooded. Law enforcement reported water 4 inches deep flowing into the Davenport Police Station on Harrison Street. The highest known rainfall amount for this event occurred in central Davenport where 3.50 inches fell.
- **June 2008:** On June 8, heavy rains resulted in flash flooding of Crow Creek about three miles north of Bettendorf. Heavy rains on June 12-13 resulted in flash flooding of several parts of Davenport and Bettendorf. The depth of the flood waters across much of the metro area ranged from 6 inches to as much as 5 feet. Streets, residential and commercial properties, and area creeks and streams all experienced flooding. Water rescues were performed to save some stranded motorists from high water. Several major traffic arteries were closed due to high flood waters.
- **June 15, 2010:** Heavy rains resulted in flash flooding of the intersections of Kimberly and Division and Kimberly and Marquette in Davenport during the afternoon. In addition, several streets and yards in Park View, IA were flooded. The flood waters in both areas were 8 to 12 inches deep.
- **March 2020:** Heavy rain from thunderstorms the evening of March 27 resulted in flash flooding, and this preceded the severe weather event that happened Saturday, March 28. Thunderstorms producing torrential rainfall directly impacted the Quad Cities Metropolitan area late in the evening March 27. Streets were flooded 1 to 3 feet deep in downtown areas of Davenport and Bettendorf, which stalled cars. Sources reporting this included the newspaper, police, and the Department of Transportation.

Probability. The 2018 *Iowa Hazard Mitigation Plan* notes that data to illustrate the probability of flash flooding is not available. However, considering past events, many minor flood events are very likely in any given year. According to the National Centers Environment Information (NCEI), there were over 1,500 flash flood events in Iowa between 1996 and 2017.

Also, the 2010 *Climate Change Impacts on Iowa Report* notes that there is a trend toward more frequent intense rainfall events. If this trend continues, flash flooding events and their associated impacts will likely occur more often in Iowa. The Scott County EMA has indicated a high probability for flash flooding.

Magnitude/Severity/Extent. Magnitude of flash flooding varies by watershed based on the effects of amounts of rain over time. Flash floods are the number one weather-related killer in the United States. Four people were reported to have lost their lives within the Quad Cities Area as a result of the 1990 creek flooding event. On July 4, 2007, a man and his son were canoeing on Duck Creek when flash floods overturned their canoe. They were both rescued. Velocity of flash flood waters may be hazardous to people in vehicles. There have been several reports of stalled or stranded vehicles in flash flood waters, and water rescues were performed to remove people from their vehicles. Rescuers are at a significant risk when attempting to work in swift moving floodwaters associated with flash flooding. Flash floods can often leave roads and intersections closed, resulting in the slowing or halting of operations. Fire Station #5 in Davenport is subject to creek flooding, affecting ingress and egress. Personal property can be extensively damaged and destroyed by swift moving water. Facilities and infrastructure can be scoured around, degrading its structural integrity. Because flash flood water is off premises

quickly, damages related to standing water are limited, but the current associated with flash floods causes abrasive type damages such as erosion and undercutting. Major damage exceeding 50% of the structural value has been recorded. Damage to infrastructure of roads and bridges could be severe due to the high velocity of water.

Urbanization increases runoff two to six times over what would occur on natural terrain. As more development occurs in the watersheds, the amount of runoff produced also increases. Often, aging storm systems are not designed to carry the capacity currently needed to handle the increased runoff in certain areas. Particularly at risk are those in low-lying areas; close to dry creek beds or drainage ditches; or near water or downstream from a dam, levee, or storage basin. People and property with insufficient storm sewers and other drainage infrastructure can also be put at risk. Nearly half of all flash flood fatalities are auto-related. Motorists often try to traverse water-covered roads and bridges and are swept away by the current. Six inches of swiftly moving water can float a full-sized automobile. Recreational vehicles and mobile homes located in low-lying areas can also be swept away by water. National Flood Insurance Plan (NFIP) Repetitive loss information is discussed in the River Flooding hazard profile. The 2018 *Iowa Hazard Mitigation Plan* indicates that Scott County's annual loss estimation for flash flooding is under \$250,000 based on the NCEI of NOAA. The Scott County EMA indicates flash floods have a possibility of a moderate impact on humans, a high impact on property, and a low impact on businesses.

Warning Time. Flash floods may be unpredictable, but there are factors that can point to the likelihood of the occurrence of a flash flood in the area. As little as a few minutes or hours of excessive rainfall, dam or levee failure, or a sudden release of water held by an ice jam can cause flash flooding. Warnings may not always be possible for the suddenness of flash floods. Predictability of flash floods depends primarily on the data available on the causal rain. Individual basins react differently to precipitation events. Weather surveillance radar is being used to improve monitoring capabilities of intense rainfall. Knowledge of the watershed characteristics, modeling, monitoring, and warning systems increase the predictability of flash floods. Depending on the location in the watershed, warning times can be increased. The National Weather Service forecasts the height of flood crests, the data, and the time the flow is expected to occur at a particular location.

Duration. The response to the effects of flash flooding in Iowa is short in duration due to the nature of the hazard. The Scott County EMA indicates high internal and external response effectiveness for flash flooding according to Table 3-3.

Location/Vulnerability. Areas in a flood plain, downstream from a dam or levee, or in low-lying areas can be affected by flash flood. People and property located in areas with narrow stream channels, saturated soil, or land with large amounts of impermeable surfaces are likely to be affected in the event of a significant rainfall. Unlike areas affected by a river/stream flood, flash floods can affect areas a good distance from the stream itself. A number of waterways were identified by participating jurisdictions as being particularly susceptible to flash flooding. These include the following: Duck Creek, Crow Creek and its tributaries in Bettendorf; Duck Creek and its tributaries including Silver, Goose, Pheasant Robin and Candlelight Creeks; and Crow and Hickory Creeks in Eldridge. Flash flood prone areas are not particularly those areas adjacent to rivers and streams. Streets can become swift moving rivers, and basements can become deathtraps because flash floods can fill them with water in a manner of minutes.

People and property in areas with insufficient storm sewers and other drainage infrastructure can also be put at risk because the drains cannot rid the area of the runoff quick enough. Nearly half of all flash flood fatalities are auto related. Motorists often try to traverse water-covered roads and bridges and are swept away by the current. Recreational vehicles and mobile homes located in low-lying areas can be swept away by the water also.

As land is converted from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Urbanization increases runoff two (2) to six (6) times over what would occur on natural terrain. As more development occurs in the watershed, the amount of runoff produced also increases. If measures are not taken to reduce the amount of runoff (or slow its movement), flash floods will continue to occur and may become more frequent. In certain areas, aging storm sewer systems were not designed to carry the capacity currently needed to handle the increased storm runoff. This combined with rainfall trends (that seem to be moving upwards) and rainfall extremes (that also seem to be patterning higher) all demonstrate the high likelihood, yet unpredictable nature, of flash flooding in the state.

The waterways identified in the location section of this profile are not meant to be an exhaustive list of all potentially affected areas. Additionally, flash flooding can affect a structure without damaging the entire building. Water in basements and lower levels is the most common cause of property damage. Of course, another major concern regarding flash flooding is the risk to people and animals, as fast moving water can quickly become overwhelming. Further data is needed to better assess vulnerability. Plans and ordinances by local communities are encouraged to minimize the impact of heavy rain events and the cost associated with cleanup.

Sources	
State of Iowa, IHSEMD	<i>Iowa Hazard Mitigation Plan, 2018</i>
National Climatic Data Center (NCDC)	http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms
<i>American Red Cross, Preparedness Fast Facts</i>	<i>Floods</i> http://www.redcross.org
Federal Emergency Management Agency (FEMA)	http://www.fema.gov/hazard/flood/index.shtm
Scott County	<i>Scott County Multi-Jurisdictional Hazard Mitigation Plan, 2018</i>
National Climatic Data Center	https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=880158



Grass and Wildland Fires

A grass or wild-land fire is an uncontrolled fire that threatens life and property in either a rural or a wooded area. Grass and wild-land fires can occur when conditions are favorable, such as during periods of drought when natural vegetation would be drier and subject to combustibility. It should be noted cropland is not considered wildland.

Keetch and Byram (1968) designed a drought index specifically for fire potential assessment. It is a number representing the net effect of evapotranspiration and precipitation in producing cumulative moisture deficiency in deep duff and upper soil layers. It is a continuous index relating to the flammability of organic material in the ground. The Keetch-Byram Drought Index (KBDI) attempts to measure the amount of precipitation necessary to return the soil to full field capacity. It is a closed system and represents a moisture regime from 0 to 8 inches of water through the soil layer. At 8 inches of water, the KBDI assumes saturation. Zero is the point of no moisture deficiency, and 800 is the maximum drought that is possible. At any point along the scale, the index number indicates the amount of net rainfall that is required to reduce the index to zero or saturation. The inputs for KBDI are weather station latitude, mean annual precipitation, maximum dry bulb temperature, and the last 24 hours of rainfall. Reduction in drought occurs only when rainfall exceeds 0.20 inch (called net rainfall). The KBDI scale and description of moisture conditions is as follows:

- KBDI = 0-200:** Typical of spring dormant season following winter precipitation. Soil moisture and large class fuel moistures are high and do not contribute to fire intensity.
- KBDI = 200-400:** Typical of late spring, early growing season. Lower litter and duff layers are drying and beginning to contribute to fire intensity.
- KBDI = 400-600:** Typical of late summer, early fall. Lower litter and duff layers actively contribute to fire intensity and will burn actively.
- KBDI = 600-800:** Often associated with more severe drought with increased wildfire occurrence. Intense, deep burning fires with significant downwind spotting can be expected. Live fuels can also be expected to burn actively at these levels.

The Keetch-Byram Drought Index map does not show a reporting weather station that includes Scott County. However, reporting weather stations in surrounding areas of Minnesota, Wisconsin, Illinois, and Missouri all show a KBDI of less than 100, or minimal risk of wildfire hazard.

The 2018 *Iowa Hazard Mitigation Plan* reports that according to the National Interagency Fire center, there have been 2,438 wildfires spanning 69,583 acres from 2013 to 2017 in Iowa. During this period, Iowa ranked 34th. It should be noted that many states with fewer fires were smaller states than Iowa. Since then, between 2018 and 2021, there have been 852 wildfires spanning 20,152 acres. The Scott County EMA rates the overall risk for grass or wildland fires as low.

Most grass fires are contained to highway right-of-way and rail right-of-way ditches and are less than a few acres in size. High winds can turn a small flame into a multi-acre grassfire within a matter of minutes. The extent is dependent upon conditions such as land use/land cover, moisture, and wind.

Significant events in Scott County include:

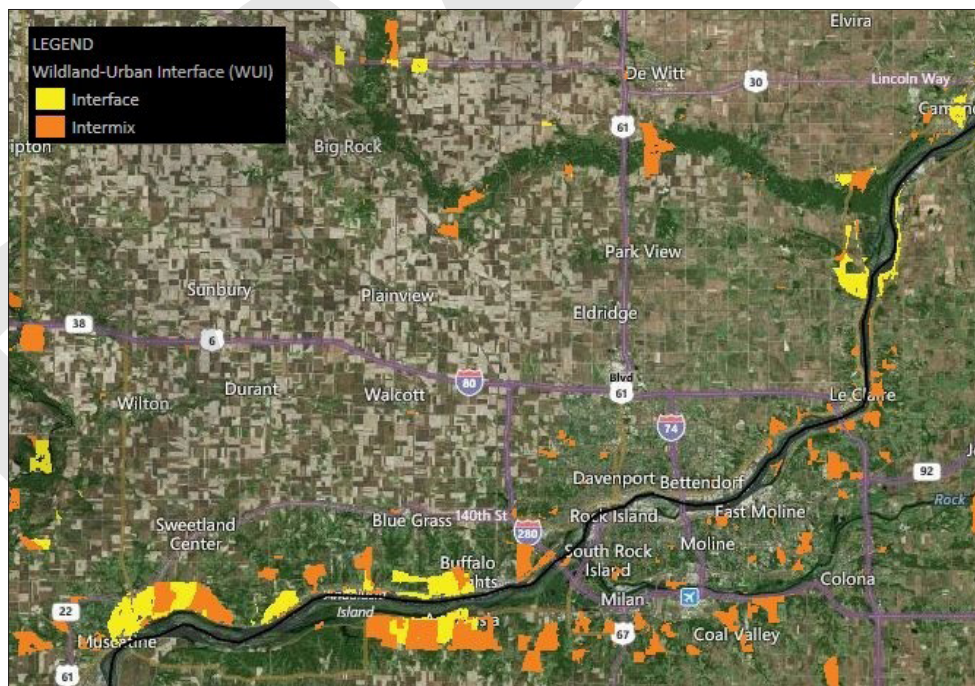
- **June 2005:** Grass fire along Interstate 80 in Northern Davenport.

- **March 2009:** Grass fires occurred throughout Scott County. One of the largest fires was caused by burning leaves that spread to a nearby field and burned approximately 100 acres.
- **September 2010:** Large grass fire in west Davenport.
- **October 2015:** During the period of October 12-20, a combination of very low humidity, strong winds, dry harvested and unharvested fields, and sunshine brought dangerous fire weather conditions. These conditions allowed many fires to spread to hundreds of acres of farmland before being contained.

No additional grass or wildfires have been recorded since this time, and some of these as noted included crop-land fires.

Probability. Grass and wildland fires will occur in areas where conditions are dry. The Scott County EMA lists the probability that a grass or wildfire will occur as moderate. The 2018 *Iowa Hazard Mitigation Plan* references the U.S. Forest Service Wildfire Hazard Potential and states almost the entire state of Iowa has very low wildfire potential for experiencing torching, crowning, or extreme fire behavior.

Magnitude and Severity. While wildfires have proven to be most destructive in the western states, they have become an increasingly frequent and damaging phenomenon nationwide. People choosing to live in wild-land settings are more vulnerable to wildfires, and the value of exposed property is increasing at a faster rate than population. Iowa is less vulnerable to wild-land fire because of the extremely large percentage of land that is farm land. Grass fires are often more easily contained and extinguished before there is damage to people or developed property. The 2018 *Iowa Hazard Mitigation Plan* states that no event in the state has been a historically significant wild fire, according to the National Interagency Fire Center.



Source: http://silvis.forest.wisc.edu/data/wui_change

Warning Time. Most grassfires occur without warning and travel at a moderate rate. The situation depends on conditions at the time such as moisture, wind, and land cover. However, methods for forecasting the probability of occurrence of conditions most suitable for wildfires to occur has increased with the use of the national wildland significant fire potential outlook issued by the National Interagency Fire Center and the National Oceanic and Atmospheric Administration (NOAA) Storm Prediction Center.

Duration. The majority of Iowa wildfires occur in short duration in areas of brush and forest lands.

Location/Vulnerability. As shown on Map 3-12 (Land Cover), Scott County has a significant amount of urban area (barren/fallow, structures, impervious) and farmlands (corn, soybeans, hay). Most jurisdictions have at least some wildland urban interface or intermix near border areas and ravines. The previous figure indicates the extent of wildland and urban interface in Scott County as of 2010. Although new data is not available for this resource, further urbanization as occurred.

The Scott County EMA indicates there is low risk for impacts to humans, property, or businesses due to grass or wildland fires. Locations that are at the most risk are housing developments outside of corporate limits. These houses are often in close proximity to undeveloped land and tend to be located in areas that have a longer fire response time. However, it is likely that any event from this hazard would be small and limited in scope and would not cause significant damage to life or property. The 2018 *Iowa Hazard Mitigation Plan* notes that Iowa and Illinois have the smallest percentage of wildlands in the U.S.

Sources	
State of Iowa, IHSEMD	<i>Iowa Hazard Mitigation Plan, 2018</i>
U.S. Forest Service – WFAS (Wildland Fire Assessment System)	http://www.wfas.net/index.php/keetch-byram-index-moisture--drought-49
<i>Keetch-Byram Drought Index Map (KBDI)</i>	http://www.fs.fed.us/land/wfas/kbdi.gif
Insurance Information Institute	https://www.iii.org/table-archive/23284
U.S. Geological Survey	https://www.sciencebase.gov/catalog/item/617bfb43d34ea58c3c70038f

Levee Failure

The Federal Emergency Management Agency (FEMA) defines a levee as “a manmade structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water in order to reduce the risk from temporary flooding.” Levees reduce the risk of flooding, but do not eliminate the risk. Levees and floodwalls are constructed from the earth, compacted soil, or artificial materials, such as concrete or steel. To protect against erosion and scouring, earthen levees can be covered with grass and gravel or hard surfaces like stone, asphalt, or concrete. A levee system comprises one or more levee segments and other features that collectively provide flood risk reduction to a defined area. The levee system is inclusive of all features that are integral to the performance of excluding flood waters from the leveed area. These levee features may consist of embankment sections, floodwall sections, closure structures, pumping stations, and interior drainage works. Highway and railroad embankments or other non-levee features that are integral to the performance of excluding flood water from the leveed area will be considered to be part of a levee system for evaluation purposes. Embankments that function as levees also exist in water conveyance systems, navigation channels, recreation areas, and habitat restoration projects.

Levees typically function in keeping the leveed area free from inundation. Hence, in common language, a levee does not perform (“that fails”) when people and property get wet. In technical terms, levees can “non perform” through four principal modes:

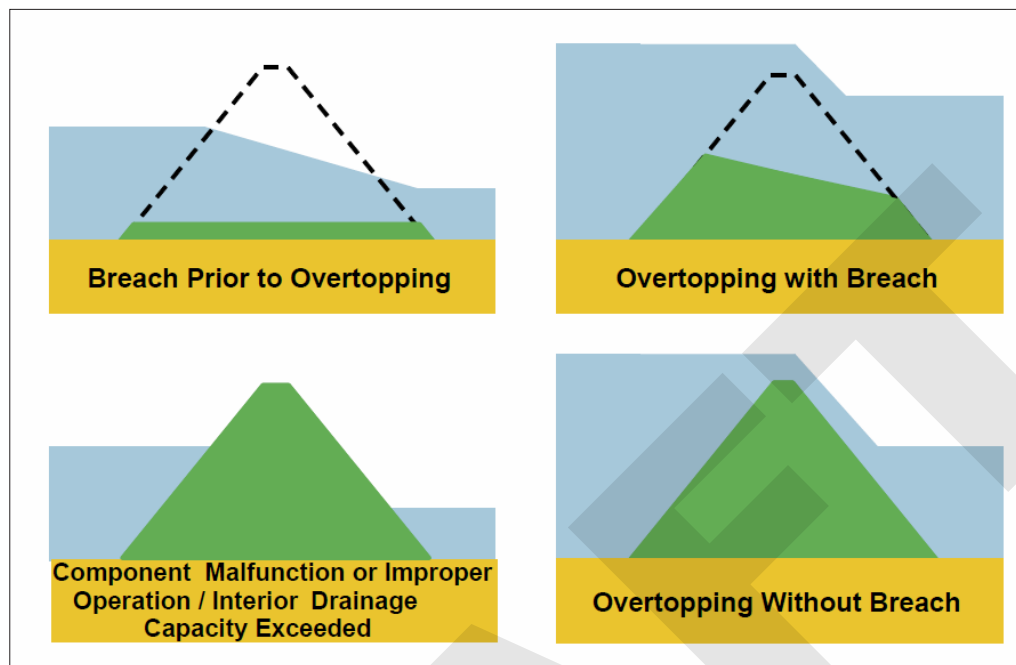
- Breach prior to overtopping
- Overtopping with breach
- Component malfunction or improper operation/interior drainage capacity exceeded
- Overtopping without breach

Levees are designed with an expected water height. Sometimes, this water height corresponds to a flood frequency such as a 10-year, 50-year, or 100-year return period. As longer records are kept, the flood frequencies are changed such that although the height of the levee remains constant, a levee that provided 100-year flood frequency may not always provide assurance that it will provide a leveed area free from inundation.

FEMA provides flood insurance to the nation. Rates for flood insurance are set by an examination of potential flooding using the best available information. Levees can be accredited by FEMA that allows for lower insurance rates if the levee is shown to have sufficient capability to resist nonperformance. Levees that have a minimum performance at the 100-year flood flow frequency can be accredited by FEMA and results in lower flood insurance rates.

It is difficult to assess the historical occurrence of levee failure as most structures of these types are not constructed by federal or state entities. The Department of Natural Resources does not keep records of levees and levee failure. There are many levees located throughout the county in subdivision and agricultural water retention structures.

Figure 3-3-
Levee Breach Diagram



The known levees within Scott County are shown on Map 3-1 according to the National Levee Database within the Dam Failure profile. No new levees are known to have been constructed since the 2018 *Scott County Multi-Jurisdictional Hazard Mitigation Plan*. It should be noted that the Davenport, Iowa Water Treatment Plant Levee System was constructed in 2013.

Probability. The rate of failure of a levee or floodwall is difficult to predict with sudden failure a possibility. Proper design and construction can limit the probability of a levee failure. Development in the watershed can raise flood levels and make a levee designed and constructed under previous characteristics inadequate for current runoff conditions. According to the 2018 *Iowa Hazard Mitigation Plan*, the lack of information on levees makes it difficult to estimate the probability of failure. They also noted the National Levee Database (NLD) began including more information about levees which provides risk characterization for some of the levees in the NLD. As part of the USACE's risk characterization approach, levees are assigned a Levee Safety Action Classification (LSAC). There are four existing levee systems shown on Map 3-1 and of these only two have been screened for risk. They are the Bettendorf, IA Levee System and the Davenport, IA Water Treatment Plant Levee System. Both have a low risk rating. Scott County EMA has rated the probability of levee failure as low.

Magnitude/Severity/Extent. People, property, and utilities in the floodplain are most at risk. Levees and floodwalls give a false sense of security, only temporarily containing the hazard. Information related to the property value and structures affected by a levee failure are shown in Table 3-5. Any location near a levee may be vulnerable to flooding due to failure, depending on the nature of the levee and its capacity. Levee failure in one area may also prevent flooding in another area. Reference Map 3-1 for more information. Floodwaters breaching a levee are usually contained in the historic floodplain. Scott County EMA has rated the potential impact of levee failure on humans as low, but the impacts of property and businesses as high. It should be noted that Davenport, IA Water Treatment Plant Levee System was built to protect to the 0.5% flood, and the Davenport Water Pollution Control Plant will be built to the 0.2% flood plus 3 feet freeboard.

Warning Time. The amount of warning time depends on the type of levee failure. Local flood warning systems can help determine the maximum water surface and the timing of a flood situation. Hours or days of warning may be available for high water that may overtop levees, but this does not provide complete security from a rupture in the levee itself. A sudden failure of a portion of the levee may send floodwaters gushing from the break within seconds. Normally, occupants of the floodplain can be warned about potential levee breaches and/or breaks when high water encroaches upon the levee. Scott County EMA rates preparedness and response effectiveness as low, but impacts on property and businesses as high.

Duration. The levee failure would last until flood waters have receded and water has been pumped out of the levee inundation area. This would take several weeks or months depending on the severity of the levee failure and river flooding associated with the failure.

Location/Vulnerability. Any location near a levee may be vulnerable to flooding due to failure. In addition to river flooding, Scott County Assessor's Office individual property information was used to provide general land and building values for the land classifications of properties located within the planning area levee inundation areas. With the use of GIS mapping, the parcel shapefiles were matched with the Scott County Digital Flood Insurance Rate Map, and IADNR provided inundation areas using the "Intersect" function. This function pulls parcels within and adjacent to the floodplain and inundation areas. Properties with only a portion of the floodplain and inundation areas were classified as completed within the inundation area and floodplain. Should a levee break occur on one of the four existing levees located within Scott County (see Map 3-1) during a flood event, the following tables indicate the land classification, land area, and land values of the property likely to be affected. Table 3-5 provides more detail.

**Table 3-5
Land Value of Levee Inundation Areas**

Classification	Acres	% of Total Within Inundation Area	Land Value	Building Value	Improved Value	Total Value	% of Total Value of Property Within Inundation Area
Davenport WPCP & Compost Facility (Future)							
Commercial	85.07	98.05%	\$1,122,140.00	\$—	\$8,459,270.00	\$9,581,410.00	98.40%
Industrial	1.69	1.95%	\$36,160.00	\$—	\$119,860.00	\$156,020.00	1.60%
TOTAL	86.75	100.00%	\$1,158,300.00	\$—	\$8,579,130.00	\$9,737,430.00	100.00%
Bettendorf LFPP in Davenport							
Commercial	171.64	88.39%	\$30,850,820.00	\$83,530.00	\$44,064,920.00	\$75,438,010.00	76.47%
Commercial/ Multi-Family	0.76	0.39%	\$152,400.00	\$813,225.00	\$1,327,135.00	\$3,169,870.00	3.21%
Commercial/ Residential	0.04	0.02%	\$7,500.00	\$11,978.00	\$37,932.00	\$57,410.00	0.06%
Exempt	4.72	2.43%	\$—	\$—	\$—	\$—	0.00%
Industrial	11.82	6.09%	\$2,443,070.00	\$—	\$6,128,350.00	\$8,571,420.00	8.69%
Multi-Family	2.84	1.46%	\$420,680.00	\$6,705,720.00	\$—	\$10,018,320.00	10.16%
Residential	2.35	1.21%	\$244,640.00	\$1,147,520.00	\$—	\$1,392,160.00	1.41%
TOTAL	194.18	100.00%	\$34,119,110.00	\$8,761,973.00	\$51,558,337.00	\$98,647,190.00	100.00%
Davenport Water Treatment Plant							
Commercial	8.63	64.63%	\$1,061,100.00	\$—	\$60,780.00	\$1,121,880.00	100.00%
Exempt	4.72	35.37%	\$—	\$—	\$—	\$—	0.00%
TOTAL	13.35	100.00%	\$1,061,100.00	\$—	\$60,780.00	\$1,121,880.00	100.00%
Bettendorf LFPP in Bettendorf							
Commercial	343.43	82.84%	\$25,394,700.00	\$—	\$149,858,690.00	\$175,253,390.00	80.03%
Commercial/ Multi-Family	0.76	0.18%	\$330,480.00	\$126,187.00	\$330,773.00	\$787,440.00	0.36%
Commercial/ Residential	0.37	0.09%	\$98,280.00	\$138,100.00	\$291,340.00	\$527,720.00	0.24%
Industrial	58.05	14.00%	\$4,022,750.00	\$—	\$12,524,260.00	\$16,547,010.00	7.56%
Multi-Family	3.20	0.77%	\$1,169,800.00	\$21,055,860.00	\$—	\$22,225,660.00	10.15%
Residential	8.76	2.11%	\$900,170.00	\$2,755,020.00	\$—	\$3,655,190.00	1.67%
TOTAL	414.56	100.00%	\$31,916,180.00	\$24,075,167.00	\$163,005,063.00	\$218,996,410.00	100.00%
Alcoa Levee							
Industrial	427.90	100.00%	\$6,527,000.00	\$—	\$35,615,440.00	\$42,508,770.00	100.00%
TOTAL	427.90	100.00%	\$6,527,000.00	\$—	\$35,615,440.00	\$42,508,770.00	100.00%

It should be noted that while the assessed property value of the Davenport Water Treatment Plant represents the potential risk to that property, the building value is not included, levee failure at the site could negatively affect water supply to the entire Quad Cities area. Not enough information is available to calculate the total financial impact of an inundation event for this site. Similarly, inundation of the future Davenport Water Pollution Central Plant and Compost Facility would also impact the Iowa Quad Cities. Either levee failure would result in a major disaster.

Sources	
The State of Iowa, IHSEMD	<i>Iowa Hazard Mitigation Plan, 2013</i>
USACE National Levee Database	https://levees.sec.usace.army.mil/#/levees/search/in=@county%20state:Scott,%20Iowa&view-Type=map&resultsType=systems&advanced=true&hideList=false&eventSystem=false
FEMA Factsheet	<i>What is a Levee</i> November 11, 2012
Land Values	Scott County and Davenport Assessors Office



River Flood

A river flood is the rising or overflowing of a tributary or body of water that covers adjacent land not usually covered by water when the volume of water in a stream exceeds the capacity of the channel. Floods are the most common and widespread of all natural disasters, except fire. Most communities in the United States can experience some kind of flooding after spring rains, heavy thunderstorms, winter snow thaws, waterway obstructions, or levee or dam failures. Often it is a combination of these elements that causes damaging floods. Floodwaters can be extremely dangerous. The force of six inches of swiftly moving water can knock people off their feet, and two feet of water can float a car. Floods can be slow, or fast rising, but generally develop over a period of days. River flooding is a natural and expected phenomenon that occurs annually, usually restricted to specific streams, rivers, or watershed areas. The 2018 *Iowa Hazard Mitigation Plan* notes floods are the most common and widespread of all natural disasters in Iowa, and that in the last 30 years, every county in the state of Iowa received at least four Presidential Disaster Declarations from flooding.

Flood categories in feet at the National Weather Service gage points in Scott County:

Flood Stages	Wapsipinicon River near DeWitt	Mississippi River at Lock & Dam 14	Mississippi River at Lock & Dam 15
Major Flood Stage (ft.)	12.5	13.5	18
Moderate Flood Stage (ft.)	11.5	12	16
Flood Stage (ft.)	11	11	15
Action Stage (ft.)	10	10	13

The National Center for Environmental Information (NCEI) reports 77 flood events within Scott County between 8/16/1993 and August 2022. The 2018 hazard mitigation plan had data on flooding through May 2016. Since then, an additional 7 events have been listed by the NCEI. Flood events listed by the NCEI document flooding on the major rivers in Scott County: the Wapsipinicon River and the Mississippi River and its tributaries. The top ten historic crests at National Weather Service gage points along the Wapsipinicon and Mississippi River are listed on the following page. There are two gage points along the Mississippi River – Lock and Dam 14 near the City of LeClaire and Lock and Dam 15 at Rock Island, IL, across from the City of Davenport. All of the top ten historic crests on the Wapsipinicon River occurred in the last 25 years. The Wapsipinicon experienced four of its top ten crests since the 2012 hazard mitigation plan was approved, including its flood of record. It is clear that the Wapsipinicon River is experiencing frequent and higher flooding than in the past. Six of the top ten historic crests on the Mississippi River at LeClaire and seven at Rock Island occurred within the last 25 years. Both river gages on the Mississippi River in Scott County experienced at least one of its top ten crests after the 2018 hazard mitigation plan was approved with the location at Lock and Dam 15 experiencing its highest ever crest on May 3, 2019.

The Mississippi River at Rock Island Lock and Dam 15 began the month above its major flood stage of 18 feet. The river stage at the beginning of the month was 21.10 feet. The river would rise to a crest of 22.70 feet at 4:50 p.m. CST on May 3. This crest is a new all-time highest crest for the Mississippi River at Rock Island. This broke the old record of 22.63 feet that had previously occurred on July 9, 1993. The river fell below major flood stage around noon on May 12. However, in 2019, the Mississippi River exceeded the flood stage for 103 days.

Mississippi River at Lock & Dam 14:

- | | |
|---------------------------|----------------------------|
| 1. 17.75 ft. on 4/28/1965 | 6. 14.84 ft. on 6/16/2008 |
| 2. 16.93 ft. on 4/24/2001 | 7. 14.61 ft. on 4/19/1997 |
| 3. 16.56 ft. on 7/08/1993 | 8. 14.60 ft. on 4/26/1969 |
| 4. 16.5 ft. on 5/02/2019 | 9. 14.45 ft. on 7/03/2014 |
| 5. 14.97 ft. on 4/22/2011 | 10. 14.03 ft. on 5/09/1975 |

Mississippi River at Lock & Dam 15:

- | | |
|---------------------------|----------------------------|
| 1. 22.70 ft. on 5/03/2019 | 6. 21.68 ft. on 6/01/2019 |
| 2. 22.63 ft. on 7/09/1993 | 7. 21.49 ft. on 6/16/2008 |
| 3. 22.48 ft. on 4/28/1965 | 8. 20.94 ft. on 7/04/2014 |
| 4. 22.33 ft. on 4/25/2001 | 9. 20.71 ft. on 4/22/2011 |
| 5. 22.00 ft. on 3/10/1868 | 10. 20.68 ft. on 4/08/2019 |

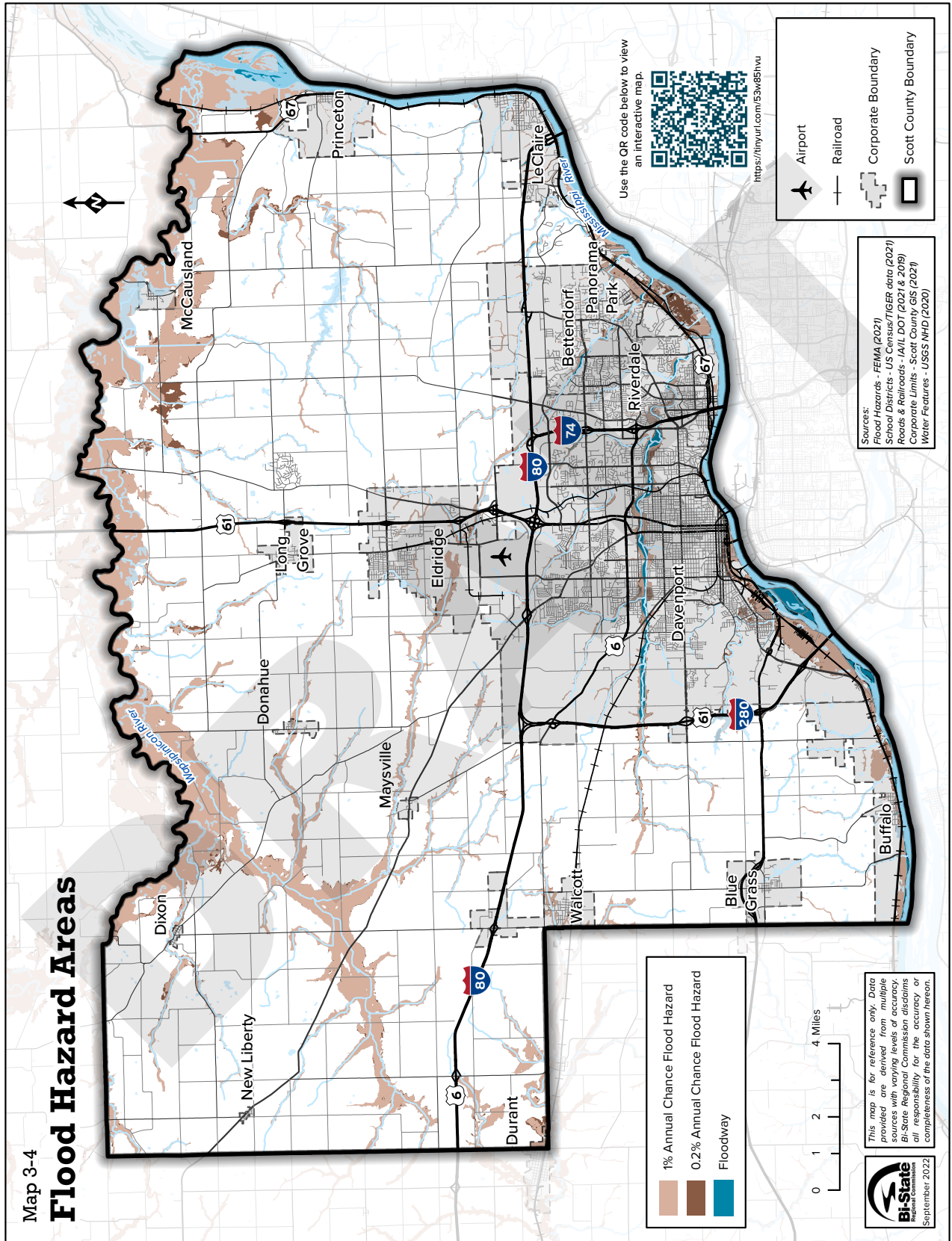
Wapsipinicon River near DeWitt:

- | | |
|----------------------------|----------------------------|
| 1. 14.32 ft. on 7/02/2014 | 6. 13.86 ft. on 10/01/2016 |
| 2. 14.19 ft. on 6/17/1990 | 7. 13.79 ft. on 5/30/2004 |
| 3. 14.13 ft. on 6/16/2008 | 8. 13.70 ft. on 4/19/2013 |
| 4. 13.97 ft. on 9/10/2018 | 9. 13.68 ft. on 5/30/2019 |
| 5. 13.92 ft. on 10/07/2018 | 10. 13.66 ft. on 5/24/1999 |

Probability. The 2018 *Iowa Hazard Mitigation Plan* stated that the probability of a flood event in Iowa in any given year is high. Areas delineated on Flood Insurance Rate Maps as Special Flood Hazard Areas (SFHA) indicate floodplains where there is a 1% and 0.5% probability of flooding in any given year. Given that the list of flood events for Scott County includes more than one event in some years, it might be estimated that at least minor flooding could occur nearly every year somewhere in the county. The Scott County EMA indicates the probability for a river flood as high (see Table 3-3) and the overall risk as moderate due to high ratings for preparedness and response effectiveness.

Magnitude/Severity/Extent. The vulnerability from river flooding is quite delineated. The Federal Emergency Management Agency (FEMA) has developed Flood Insurance Studies and Special Flood Hazard Areas in Flood Insurance Rate Maps (FIRMs). The FIRMs show areas where there is a 1% chance of flooding occurring in any given year. Generally, these areas are along streams and rivers. Map 3-4 also shows special flood hazard areas within Scott County. More detailed FIRMs for each participating jurisdiction can be viewed in an interactive map in Appendix III-1. The State of Iowa has undergone a floodplain remapping process, and the new floodplain maps have been adopted. The new maps did not have a significant impact on incorporated cities.

The National Flood Insurance Program (NFIP) was established in 1968 to mitigate future flood losses nationwide through sound, community-enforced building and zoning ordinances, and to provide access to affordable, federally-backed flood insurance protection for property owners. Participation in the NFIP is based on an agreement between local communities and the Federal



Government that states that if a community will adopt and enforce a floodplain ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community, as well as provide financial protection against flood losses. Much work in the area of flood hazard mapping has allowed many communities to restrict development in hazardous areas.

The following jurisdictions have adopted and enforce floodplain ordinances as participating communities in the NFIP and will continue compliance:

- City of Bettendorf
- City of Buffalo
- City of Davenport
- City of Donahue
- City of Eldridge
- City of LeClaire
- City of McCausland
- City of Panorama Park
- City of Princeton
- City of Riverdale
- City of Walcott
- Scott County

The following jurisdictions do not have FIRMs and/or are not participating in the NFIP:

- City of Blue Grass
- City of Dixon
- City of Long Grove
- City of Maysville
- City of New Liberty

The City of Blue Grass has shown interest in taking the necessary steps to participating in the NFIP and are evaluating the merits and need of participating in the NFIP.

The participation in the NFIP enables residents and businesses access to flood insurance. The NFIP keeps records of the numbers of claims and the claim amount for each address with insurance. Repetitive loss properties are any National Flood Insurance Program (NFIP) insured buildings for which two or more claims of more than \$1,000 each were paid by the NFIP within any 10-year period. The 257 repetitive loss properties within Scott County account for approximately 930 claims totaling over \$22,572,250 in damages. These claims are for both building and content losses. Of the repetitive loss properties in Scott County, there are 53 severe repetitive loss properties. Severe repetitive loss properties are properties with four or more claims exceeding \$5,000, each paid by the NFIP within any 10-year period or at least two separate claims within any 10-year period (building damage only) that cumulatively exceed the market value of the building. The 2018 *Iowa Hazard Mitigation Plan* indicates an average of \$400,000-\$500,000 in damages occur annually in Scott County based on events between 1996 and 2017. It should be noted that repetitive loss properties have increased since the 2018 *Scott County Multi-Jurisdictional Hazard Mitigation Plan* by 19, and severe repetitive loss properties have increased by 42 in part due to the historic 2019 Mississippi River Flood event.

The following table summarizes repetitive loss properties by jurisdictions:

Community	Mitigated	Not Mitigated	Severe Repetitive Loss Properties	Total Repetitive Loss	Total Claims	Total Payments
Bettendorf	4	29	9	42	144	\$5,573,624.07
Blue Grass	0	0	0	0		
Buffalo	0	8	1	9	29	\$210,422.95
Davenport	19	69	25	113	409	\$12,603,508.75
Dixon	0	0	0	0		
Donahue	1	0	0	1	2	\$28,884.43
Durant	0	0	0	0		
Eldridge	0	0	0	0		
LeClaire	0	6	1	7	18	\$267,631.70
Long Grove	0	0	0	0		
Maysville	0	0	0	0		
McCausland	0	0	0	0		
New Liberty	0	0	0	0		
Panorama Park	0	0	0	0		
Princeton	0	3	1	4	9	\$113,721.00
Riverdale	0	0	0	0		
Walcott	0	0	0	0		
Unincorporated Scott County	7	58	16	81	319	\$3,714,457.50
Total	31	173	53	257	930	\$22,512,250.40

The following table summarizes the property type of each repetitive loss property in Scott County:

Property Class	Mitigated	Not Mitigated	Severe Repetitive Loss Properties	Total Repetitive Loss	Total Claims	Total Payments
Agriculture	0	2	0	2	5	\$83,919.63
Commercial	16	22	14	52	195	\$9,088,974.75
Commercial/Multi Family	0	1	1	2	16	\$665,459.34
Commercial/Residential	0	1	1	2	10	\$211,309.37
Industrial	0	0	1	1	10	\$3,074,703.91
Multi-Family Residential	15	144	35	194	684	\$9,224,529.73
Total	31	173	53	257	930	\$22,512,250.40

Source: FEMA

Flooding effects include potential loss of life. River flooding does not have as high a risk as flash flooding because of the slower onset of the river flood. Personal property can be extensively damaged and destroyed by swift moving water. Facilities and infrastructure can be scoured around, degrading its structural integrity. There are health concerns from contamination of water and the duration of standing flood waters in residential structures. Even when water recedes, the growth of toxic mold can be a lingering health hazard.

Operations could be disrupted from direct effects if facilities are in the floodplain and indirectly from loss of critical services to maintain operations. Back-up power and other services can eliminate the impact to operations. Damage and disruption of communications, transportation, electric service, and community services are likely in severe cases. Water treatment and waste water treatment facilities are often located in or near the floodplain and are at high risk of flooding or eventually being taken offline. It should be noted the Iowa American Water Plant that serves much of Davenport, Bettendorf, Riverdale, and Panorama Park is protected by a levee built to protect at the 0.5% chance of flooding level. The City of Davenport Water Pollution Control Plant (WPCP) serves the same communities with an intergovernmental agreement and will be constructing a levee at the 0.5% chance of flooding level in the next two years.

River flooding also produces hazards of fire, health, and transportation accidents. Contamination of water supplies is a likely effect of flooding situations as well. There may be effects to the soils in the floodplain from the removal and deposit of silt, sand, and debris. Crop and livestock losses and interruption of businesses either from direct flooding or loss of the delivery of critical services can have damaging effects on the local economy. River flooding can last for weeks, and the effects can last for months or even years following the flood. Economic effects can be felt with only a few days of disruption. The 2019 Mississippi River Flood event caused significant damages to properties along the river front.

Warning Time. Gauges along streams and rain gauges throughout the county provide for an early flood warning system. River flooding usually develops over the course of several hours or even days depending on the basin characteristics and the position of the particular reach of the stream. The National Weather Service provides flood forecasts for Iowa. Flood warnings are issued over emergency radio and television messages, the National Oceanic and Atmospheric Administration (NOAA) Weather Radio, and cell phone messages through emergency channels. People in the paths of river floods may have time to take appropriate actions to limit harm to themselves and their property.

Duration. River flooding duration varies from a few hours to a few months depending on the severity of the flooding. As stated earlier, the 2019 Mississippi River Flood exceeded flood state for 103 days in Davenport. The response to the effect of river flooding can be extensive and require many days to weeks to adequately respond to the needs of the county, cities, school districts, citizens, and businesses.

Location/Vulnerability. The FIRM for Scott County delineates potential areas for river flood usually near rivers and streams. The Scott County Assessor's Office provides county-wide assessment information for residential, commercial, industrial, agricultural land, and exempt land properties. Data available includes land value, dwelling value, building/improvement value, and total value. Land value refers to just the land on which a structure is built. Dwelling value refers to the value of a habitable (residential) structure. Building/improvement value refers to the value of a structure used for non-residential properties. Total value equals the value of land, dwelling, and building/improvements.

With the use of GIS mapping, the parcel shapefiles were matched with the Scott County Digital Flood Insurance Rate Map (DFIRM) using the "Intersect" function. This function pulls parcels within and adjacent to the floodplain. Properties with only a portion of the floodplain were classified as completely within the inundation area and floodplain. Following are the property values for properties located within the 1% and 0.2% annual chance special flood hazard areas.

1% and 0.2% Annual Chance Special Flood Hazard Area						
Flood Zone / Property Class*	Count	Total Acres	Land Value	Dwelling Value	Improved Value	Total Value
Unidentified	62	262.2	\$-	\$-	\$-	\$-
Agricultural	2,230	71,030.2	\$93,540,960	\$-	\$2,025,880	\$99,146,780
Agricultural/Ad Dwelling	250	7,335.80	\$8,817,760	\$41,772,910	\$371,930,142	\$917,300,632
Commercial	1,402	9,661.7	\$106,829,410	\$-	\$371,930,142	\$917,300,632
Commercial/Multi-family	9	5.1	\$619,640	\$1,309,298	\$2,100,442	\$4,906,490
Exempt	13	6709.3	\$-	\$-	\$-	\$-
Industrial	111	1051.1	\$23,929,090	\$-	\$123,617,790	\$149,271,940
Industrial/Residential	1	0.45	\$29,250	\$549	\$101,871	\$131,370
Industrial/Multi-family	1	1.27	\$110,660	\$53,350	\$291,060	\$455,070
Multi-family	123	406.1	\$18,938,370	\$132,417,272	\$-	\$187,189,812
Residential	5,444	9,651.40	\$196,778,960	\$759,562,300	\$-	\$969,439,250
Total	9,646	106,114.62	\$239,786,330	\$892,033,471	\$1,131,935,562	\$1,306,487,442

Source: Scott County GIS, Scott County Assessor, Davenport Assessor, FEMA

Also using GIS mapping, the number of critical assets in the 1% and 0.2% Special Flood Hazard Areas by jurisdiction and type of asset. Building footprints within the DFIRMs were calculated using the “Intersect” function. Buildings with only a portion of the floodplain were classified as completely within the inundation area and floodplain. Buildings that intersected both the 1% and 0.2 % boundary were associated with the 1% boundary. The “Join by Location” function was used to assign jurisdiction information to the buildings. In cases where the building overlapped a jurisdictional boundary, it was associated with the jurisdiction that contained the majority of the building. The data used to count structures did not have building values or types (residential, commercial, and industrial), so that information has not been provided. It should be noted that the different classifications of structures (Building, Out Building, Houses, Tank Silo, Sheds, Tanks, and Trailers) and their assessed value were not available for this plan. The following information is provided as is, without any assumptions being made.

CRITICAL ASSETS IN FLOOD HAZARD AREAS (1% & 0.2%)								
NAME	Critical Facilities	Vulnerable Populations	Medical Facility	Economic Asset	Hist, Cultural, and Nat Res	Other important facilities	TOTAL	Notes
Bettendorf	7	1	0	7	0	2	17	9 addresses not matched
Blue Grass								
Buffalo	4	1	0	1	0	1	7	1 address not matched
Davenport	23	10	0	5	0	34	72	Includes mitigated and non-mitigated*
Dixon	0	0	0	0	0	0	0	
Donahue	2	0	0	0	0	0	2	
Durant							0	
Eldridge	2	0	0	1	0	0	3	
LeClaire	1	0	0	0	1	1	3	9 addresses not matched
Long Grove	0	0	0	0	0	0	0	
Maysville							0	
McCausland	0	0	0	0	0	0	0	1 address not matched
New Liberty	0	0	0	0	0	0	0	1 address not matched
Panorama Park							0	
Princeton	1	0	0	0	0	0	1	1 address not matched
Riverdale	0	0	0	1	0	0	1	
Walcott	3	0	0	0	0	0	3	2 addresses not matched
Bettendorf CSD	0	0	0	0	0	0	0	
Davenport CSD	0	1	0	0	0	0	1	
North Scott CSD	0	0	0	0	0	0	0	
Pleasant Valley CSD	0	0	0	0	0	0	0	1 address not matched
EICC	0	0	0	0	0	0	0	
TOTAL	43	13	0	15	1	38	110	

* 20 are mitigated or partially mitigated

Jurisdiction	Building Type	0.2% Flood Hazard Area	1% Flood Hazard Area
Bettendorf	Building	28	71
	Houses	177	458
	Out Building	78	215
	Pool	1	8
	Sheds	14	11
	Tank Silo	2	9
	Trailers	13	0
Buffalo	Building	25	38
	Houses	28	74
	Out Building	73	135
	Pool	0	3
	Sheds	5	13
	Tank Silo	37	30
Davenport	Building	521	900
	Courtyards	1	0
	Houses	899	800
	Out Building	1	2
	Pool	0	1
	Sheds	190	192
	Tank Silo	41	46
Dixon	Trailers	23	46
Dixon	Out Building	2	1
	Trailers	23	46
Donahue	Building	2	4
	Houses	7	16
	Out Building	4	30
	Tank Silo	0	5
Durant	Building	0	3
	Houses	0	23
	Out Building	0	3
Eldridge	Building	1	8
	Houses	9	14
	Out Building	5	9
	Pool	2	0
	Tank Silo	2	0

Jurisdiction	Building Type	0.2% Flood Hazard Area	1% Flood Hazard Area	
LeClaire	Building	11	9	
	Houses	52	41	
	Out Building	27	45	
	Pool	1	0	
McCausland	Building	0	1	
	Houses	1	2	
	Out Building	0	2	
Panorama Park	Houses	0	12	
	Out Building	0	14	
	Sheds	0	1	
Princeton	Building	5	7	
	Houses	20	22	
	Out Building	8	8	
	Tank Silo	0	2	
	Riverdale	Building	22	10
	Courtyards	9	0	
	Houses	16	20	
	Out Building	81	27	
	Pool	2	5	
	Sheds	16	5	
	Tank Silo	40	5	
Walcott	Building	3	14	
	Houses	3	3	
	Out Building	3	12	
	Sheds	1	2	
	Trailers	3	6	
	Unincorporated	Building	21	68
	Houses	33	290	
	Out Building	115	479	
	Pool	1	4	
	Sheds	12	35	
	Tank Silo	15	36	

HAZUS-MH

In the *Scott County Multi-Jurisdictional Hazard Mitigation Plan, 2012*, Scott County elected to utilize HAZUS-MH (Hazards U.S. Multi-Hazard) to model and analyze river flooding within the planning area. The following analysis is retained as historical information from the 2012 plan. Scott County intends to update the HAZUS-MH information in the future, but due to the pandemic and recent natural hazards, staffing capacity has been limited. HAZUS-MH is a regional multi-hazard loss estimation model that was developed by FEMA and the National Institute of Building Sciences (NIBS). The primary purpose of HAZUS is to provide a methodology and software application to develop multi-hazard losses at a regional scale. It is important to note that the intention of modeling flood events is to see how historic flood events would affect Scott County today. The top four flooding events from the Mississippi River and the Wapsipinicon River surrounding Scott County, Iowa were modeled for this project. For clarification, tailwater refers to the water surface just downstream from a hydraulic structure such as a dam, culvert, or bridge. The tailwaters used for the HAZUS modeling below are the equivalent of the river crests reported for each flood event. Flow refers to the amount of water moving through a hydraulic structure as velocity in cubic feet per second (f³/s).

The top four events for the Wapsipinicon River are:

Date	Wapsipinicon River Near DeWitt Tailwater (feet)	Wapsipinicon River near DeWitt Flow (f ³ /s)
6/17/1990	14.19	40000*
6/16/2008	14.13	38415
5/30/2004	13.79	25400
5/24/1999	13.66	28026*

* Actual flow values for that event were not available. Value calculated from available data.

The top four events from the Mississippi River are:

Date	Lock & Dam 14 Tailwater (feet)	Lock & Dam 14 Flow (f ³ /s)	Lock & Dam 15 Tailwater (feet)	Lock & Dam 15 Flow (f ³ /s)
4/28/1965	17.75	292075*	22.48	301808*
7/9/1993	16.56	267730	22.63	305498*
4/24/2001	16.93	274787	22.33	298118*
6/16/2008	14.84	236240	21.49	279850*

* Actual flow values for that event were not available. Value calculated from available data.

Each of the flood inundation area models was created using FEMA HAZUS-MH MR5 software for ArcGIS. Each model results represent a Level 1 analysis, which simply means that very little data has been manipulated or edited prior to being input into the model. The results obtained from these models should be considered rough at best, and should not be used to determine exact loss estimates if a similar event were to occur. These estimates are intended to show approximate losses, and a more detailed analysis would need to be made in order to more accurately estimate damages for future events.

Using a Level 1 analysis includes using the default inventory and valuation data that is built into the software. The general building stock data in the software’s database is a collection of data primarily from the U.S. Census (2000) and Dun & Bradstreet (2006). Due to the age of the data, it is expected that some results may (and

potentially) be different than actual values. More detailed information about the data used to create the default general building stock database can be found in section 3.2.1.2 of the HAZUS-MH MR5 Flood Technical Manual.

Though most of the data in the analysis was already a part of the HAZUS-MH software, some input data did come from other sources outside of HAZUS. Elevation data, which is a requirement for any level of analysis, was derived from Scott County internal data. The information contained in-house was of a better resolution than that which is available from other sources, so it was used in place of the National Spatial Data Infrastructure (NSDI) data that is recommended to be used if other data is not readily available.

Additionally, information related to the flow rates (tail water and velocity in cubic feet per second) was compiled from several government sources (specifically, the U.S. Army Corps of Engineers RiverGages.com website and the National Weather Service Advanced Hydrologic Prediction Service (AHPS)). Though these data were not 100% available, some interpretation of actual sources has allowed values to be estimated to the best capacity, which should accurately replicate these top flooding events. It is expected that these will not exactly replicate the inundation areas of these historic events, but they should be similar. Table 3-6 is a brief summary of the eight events modeled in HAZUS.

**Table 3-6
HAZUS Modeled River Flood Events for Selected Dates**

HAZUS Modeled Wapsipinicon River Flood Events				
Modeled Event	Estimated Number of Displaced Households	Estimated Number of People Seeking Short Term Shelter	Estimated % of Total Value of Residential Property Affected in County	Estimated % of Total Value of Properties Affected in County
6/17/1990	124	183	0.13%	0.11%
5/24/1999	112	165	0.10%	0.08%
5/30/2004	111	164	0.09%	0.07%
6/16/2008	123	184	0.13%	0.10%

HAZUS Modeled Mississippi River Flood Events				
Modeled Event	Estimated Number of Displaced Households	Estimated Number of People Seeking Short Term Shelter	Estimated % of Total Value of Residential Property Affected in County	Estimated % of Total Value of Properties Affected in County
4/28/1965	1367	2810	1.63%	5.36%
7/9/1993	1410	2951	1.64%	5.45%
4/24/2001	1349	2774	1.62%	5.27%
6/16/2008	1227	2539	1.49%	4.90%

The June 6, 2008 flood event on the Wapsipinicon River and the July 9, 1993 flood event on the Mississippi River were reviewed in more detail to ensure the modeling lines up properly with the predicted flood areas. Census blocks were reviewed to determine if structures within the census block would be damaged during a flood event. In addition, Modern Woodman Park was removed from damaged structures because the stadium is flood-proofed to one foot above the 100-year flood stage. The casino boats were also removed from damaged structures. If all properties identified in the HAZUS modeling were to be damaged to the extent similar to that of the Wapsipinicon River on June 6, 2008, approximately \$4.5-\$6.5 million in total property damage may occur. If all properties identified in the HAZUS modeling were to be damaged to the extent similar to that on the Mississippi River on July 9, 1993, approximately \$540-\$718 million in total property damage may occur.

HAZUS reports expected building damage by occupancy as part of its analysis. Below are the expected building damage by occupancy data for the June 6, 2008 flood event on the Wapsipinicon River and the July 9, 1993 flood event on the Mississippi River.

HAZUS Modeled 6/19/2008 Wapsipinicon Flood Event						
Estimated Damage by Occupancy Type						
Occupancy	1-10%	11-20%	21-30%	31-40%	41-50%	Substantially
Agriculture	0	0	0	0	0	0
Commercial	0	0	0	0	0	0
Education	0	0	0	0	0	0
Government	0	0	0	0	0	0
Industrial	0	0	0	0	0	0
Religion	0	0	0	0	0	0
Residential	0	0	9	45	9	1
Total	0	0	9	45	9	1

HAZUS Modeled 7/9/1993 Mississippi Flood Event						
Estimated Damage by Occupancy Type						
Occupancy	1-10%	11-20%	21-30%	31-40%	41-50%	Substantially
Agriculture	0	0	0	0	0	0
Commercial	2	14	2	15	8	0
Education	0	0	0	0	0	0
Government	0	1	2	0	0	0
Industrial	0	2	3	2	6	0
Religion	0	0	0	0	0	0
Residential	0	4	15	54	106	220
Total	2	21	22	71	120	220

Conclusions. Recovery from major flood events that damage a large area takes a significant amount of time, but with planning and mitigation, the effects of flooding can be minimized and the recovery period shortened. While river flooding cannot be prevented, there are several mitigation activities that can reduce the effects of flooding, including floodplain management, mitigation of flood prone properties, and recovery planning.

Sources	
State of Iowa, IHSEMD	<i>Iowa Hazard Mitigation Plan, 2018</i>
State of Iowa, IHSEMD	Public Disaster from declarations spreadsheet
Iowa Statewide Floodplain Mapping Project	http://www.iihr.uiowa.edu/iowafloodmaps/
Scott County	<i>Scott County Multi-Jurisdictional Hazard Mitigation Plan, 2018</i>
National Centers for Environmental Information (NCEI)	https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=826984
American Red Cross	http://www.redcross.org/get-help/prepare-for-emergencies/types-of-emergencies/flood#/Prepare
Department of Homeland Security	https://www.ready.gov/floods
Federal Emergency Management Agency (FEMA)	https://www.floodsmart.gov/floodsmart/
State of Iowa, DNR	State Floodplain Manager Repetitive Loss Report as of 6/30/2016
USACE	Rivergages.com

Severe Winter Storm

Severe winter storms are weather conditions that affect day-to-day activities. These can include blizzard conditions, heavy snow, blowing snow, freezing rain, heavy sleet, and extreme cold. Winter storms may occur at any time between October and April. The various types of extreme winter weather cause considerable damage. Heavy snows can cause immobilized transportation systems, downed trees and power lines, collapsed buildings, and loss of livestock and wildlife. Blizzard conditions are winter storms that last at least three hours with sustained wind speeds of 35 mph or more, reduced visibility of ¼ mile or less, and white-out conditions. Heavy snow of more than six inches in a 12-hour period or freezing rain greater than ¼ inch accumulation may cause hazardous conditions in the community that can slow or stop the flow of vital supplies, and disruptions of emergency and medical services may occur. Loose snow begins to drift when the wind speed reaches 9 to 10 mph under freezing conditions. The potential for some drifting is substantially higher in open country than in urban areas where buildings, trees, and other features obstruct the wind.

Ice storms can result in fallen trees, broken tree limbs, downed power lines and utility poles, fallen communication towers, and impassable transportation routes. Severe ice storms have caused total electric power losses over large areas of Iowa and rendered assistance unavailable to those in need due to impassable roads. Frigid temperatures and wind chills are dangerous to people, particularly the elderly and the very young. Dangers include frostbite or hypothermia. Water pipes, livestock, fish and wildlife, and pets are also at risk from extreme cold and severe winter weather. The 2018 *Iowa Hazard Mitigation Plan* states that Iowa continues to have a “host of winter related events” recorded by the NCEI.

There have been 142 winter weather events recorded in Scott County between January 2000 and August 2022 (NCEI). Events included were heavy snowfalls, extreme cold temperatures, blizzard conditions, freezing rain, blowing snow, frost, sleet, ice storms, and winter storm/winter weather. Below are significant events that have occurred in the county.

- **February 24, 2007:** A widespread and crippling ice/snow storm affected eastern Iowa, northwest and western Illinois, and extreme northeast Missouri. This massive ice storm was the worst to affect the region since January 22-23, 1965. Ice accumulations of around one inch were common, with some reports to near two inches. East winds gusting over 50 mph, combined with the heavy ice accumulation, brought down numerous tree branches and power lines, along with several thousand power poles. Several trees also fell from the weight of the ice. Widespread power outages occurred, affecting over 180,000 people, which lasted more than a week in some of the rural areas. Scott County was part of the declared disaster area and included in the Presidential Disaster Declaration (FEMA -1688-DR; March 14, 2007).
- **January 13-16, 2009:** Heavy snow fell January 13-14 (6-8 inches), then extreme cold temperatures set in on January 14-16. Actual air temperatures were -10° to -20° F (wind chills -30° to -50° F). Cedar Rapids set a record low of -29° F.
- **January 31-February 2, 2011:** A tremendous blizzard affected the region, with snowfall totals ranging from 10 to 20 inches and snow drifts as high as 7 feet. Many roads and interstates were closed. Blizzard conditions were widespread, and visibility was near zero with 55-65 mph wind gusts (Davenport recorded one of the strongest wind gusts of 56 mph). At the height of the blizzard, snowfall rates were as high as 1-3 inches per hour. Davenport received 19.7 inches of snowfall, with 15.0 measured in Park View.

- **February 1, 2015:** A prolonged snow event from the mid-afternoon on January 31 to late February 1 created widespread snow across the region. The heaviest snowfall of 9-15 inches fell along Interstate 80 corridor, with 13.3 inches measures in Davenport. Gusty northwest winds developed behind the system resulting in considerable blowing and drifting snow. Several areas experienced prolonged power outages and downed tree limbs due to heavy snow. The St. Ambrose University Athletic Dome collapsed under the weight on the snow accumulated during this event.
- **January 29-31, 2019:** A strong arctic high pressure system brought historic cold to much of the Midwest January 29 through January 31. Numerous low temperature records were broken, including all-time record lows at Cedar Rapids and Moline. In addition, life-threatening wind chills were reported with values below -30 degrees for many hours. Numerous schools, churches, and businesses closed during the arctic outbreak. Low temperatures on the 30th and 31st were -26 and -28 degrees Fahrenheit respectively. The lowest wind chill value at the Davenport Municipal Airport was -54 at 3:00 a.m. on January 30.

Probability. The 2018 *Iowa Hazard Mitigation Plan* states most Iowa counties can usually expect 2 or 3 winter storms per season with an extreme storm every 3 to 5 years on average. A snowfall of six inches or more from one storm only occurs in 49% of Iowa winters, while a large winter storm event of 10 inches or more will occur about once every 3 years. A simple average of recorded Scott County events yields about 5 days of winter storm incidents per year. The Scott County EMA indicates a high probability for a severe winter storm event and an overall high risk.

Magnitude/Severity/Extent. Hazardous driving conditions due to snow and ice on highways and bridges lead to many traffic accidents. Rural roads are not plowed after dark as a policy of Scott County's Secondary Roads Department, potentially delaying ambulatory services during winter weather events. People at risk are primarily either engaged in outdoor activity, such as shoveling snow, or are elderly or very young. The National Centers for Environmental Information Event Database reported \$570,000 in winter storm related property damage between January 2000 and August 2022. The 2018 *Iowa Hazard Mitigation Plan* indicates Scott County having an average of \$0.00-\$125,000 in crop or property damage due to winter storms.

Warning Time. The National Weather Service (NWS) has developed effective weather advisories that are promptly and widely distributed via radio, TV, internet, and weather alert radios. Winter storm information is made available to public officials and the public up to days in advance.

Duration. Winter storms may affect a large area, although local variations in storm intensity and quantity of snow or ice may occur. The duration of the storm will be determined by the local response to snow removal and any associated losses and dangers of electrical outages.

Location/Vulnerability. The entire planning area is equally at risk for severe winter storm. Hazardous driving conditions due to snow and ice on highways and bridges lead to many traffic accidents. Emergency services such as police, fire, and ambulance are unable to respond due to road conditions. Emergency needs of remote or isolated residents for food or fuel, as well as feed, water, and shelter for livestock, are unable to be met. The Iowa Department of Transportation, county road departments, and local public works agencies are responsible for the removal of snow and treatment of snow and ice with sand and salt on the hundreds of miles of streets and highways in the county.

Cold temperatures can cause frostbite and hypothermia, especially when combined with wind chills that further

reduce the perceived air temperature to exposed skin. Frostbite and hypothermia can affect anyone, but the elderly and the very young are particularly vulnerable. People engaged in outdoor activity (shoveling snow, digging out vehicles, or assisting stranded motorists) also have risk from prolonged exposure. Schools often close during extreme cold or heavy snow to protect children and bus drivers. As seen in the community profile, some districts in Scott County are large in square area, which could place bus drivers and children at risk in transit to school.

Immobilized transportation (including emergency vehicles) downed trees and electrical wires, building and communication tower collapse, and bodily injury/death are just a few of the effects of a severe winter storm. Vehicle batteries and diesel engines are stressed, and the fuel often gels in extreme cold weather, which can affect transportation, trucking, and rail traffic. Rivers and lakes freeze, and subsequent ice jams threaten bridges and can close major highways. Ice jams can also create flooding problems when temperatures begin to rise. Ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires, and similar objects and to produce widespread power outages. Buried water pipes can burst causing massive ice problems and loss of water and subsequent evacuations during sub-zero temperatures. Fire during winter storms presents a great danger because water supplies may freeze, and firefighting equipment may not function effectively, or personnel and equipment may be unable to get to the fire. If power is out, interiors of homes become very cold and lead to pipes freezing and possibly bursting. Citizens’ use of kerosene heaters, space heaters, and other alternative forms of heating create other hazards such as structural fires and carbon monoxide poisoning.

Cold temperature effects on agriculture are frequently discussed in terms of frost and freeze affects early or late growing seasons and unprotected livestock. The cost of snow removal, repairing damage, and loss of business can have large economic effects on the community. The loss of revenue and the economic impact due to property damage and crop damage could be significant for Scott County if they experienced several severe storm events within a short period of time.

In Scott County, a large majority of the community could be injured or experience property damage from this hazard. Winter storms damage the roofs of the structures and can cause the collapse of the roofs when ice and snow build up to a substantial level. The critical structures, however, are cleared of snow frequently to prevent this damage. The major risk is a secondary event of power loss due to the above ground power lines. All structures would have equal vulnerability to this hazard since the hazard is not confined to a specific geographic area within Scott County. There is particular risk to the elderly and children since major storms can trigger loss of electricity and thus and heat in winter months.

Sources	
State of Iowa, IHSEMD	<i>Iowa Hazard Mitigation Plan, 2018</i>
National Centers for Environmental Information (NCEI)	https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=804897
National Weather Service, Quad Cities	http://www.crh.noaa.gov/dvn/
FEMA	http://www.ready.gov/winter-weather
American Red Cross	http://www.redcross.org/prepare/disaster/winter-storm

Sinkholes, Land Subsidence, and Landslides

Sinkholes, land subsidence, and landslides are all geologic events that involve mass movement of earth. They all have an isolated and narrow effect with a low overall relative risk in Scott County (see Table 3-3). For these reasons, they have been combined into a single hazard profile for the purposes of this plan.

Sinkholes and land subsidence are a downward sinking, collapse, or a shifting of the land surface, oftentimes resulting from underground mining. Also, the geology of an area containing karst features may contribute to land subsidence. Karst is defined as a landscape that is characterized by the features of solution weathering and erosion in the subsurface. These features include caves, sinkholes, disappearing streams, and subsurface drainage.

Sinkholes range from broad, regional lowering of the land surface to localized collapse. The primary causes of most subsidence are human activities, such as underground mining of coal or limestone, groundwater or petroleum withdraw, and drainage of organic soils. Sinkholes are due also to erosion of limestone of the subsurface.

Early settlers in Iowa developed underground mines to extract coal. Land areas over these old mines were generally sparsely populated, and if settlement or collapse occurred, homes or other structures were seldom damaged. As towns or cities expanded over mined-out areas, subsidence damage to structures became increasingly common.

The Devonian limestone underlying Scott County has paleo-karst features that are usually found filled with overlying Pennsylvanian-Pottsville sandstone and shale. Observations in the Rock Island, Illinois area show that this limestone has old karst features of dissolved limestone areas forming large open spaces. The limestone in Scott County has been mined for decades in various locations in the county. All mining was done in open pits until the opening of the underground Linwood Mine near Buffalo in the 1960s. Sand and gravel are also extracted in Scott County in several locations. See maps for mines and types of product extracted.

Maximum Extent Damage consists primarily of direct structural damage and property loss and depreciation of land values, but also includes business and personal losses that accrue during periods of repair. In addition to the loss of habitat, land subsidence has the potential to reroute, displace, and contaminate ground water, altering the immediate land and aquatic ecosystems. Land subsidence not only affects the immediate environment, but can pollute and effect ecosystems far from the event with contaminants (hazardous materials, sewage, etc.) being transported throughout the aquifer.

If a pillar system fails in providing regional support within the limestone mine, a wide area collapse is likely to occur with associated surface subsidence.

Landslides occur when susceptible rock, earth, or debris moves downslope under the force of gravity and water. They may impose a direct threat to life and property. Landslides can range from very large to very small and can move at slow to very high speeds. Landslides can be activated by alternate freezing and thawing, ground saturation on steep slopes, steepening of the slopes by erosion or human modification, and removal of stabilizing vegetation.

The steep hillsides adjoining the Mississippi and creeks such as Duck Creek are prone to landslides or slumping. As shown in Map 3-5, areas with higher slopes can be found near the rivers and creeks within Scott County. Two recent occurrences were in the 2500 block of Middle Road in June 2008 and in March 2009 along the Prospect Terrace Hillside along River Drive both in Davenport. Both landslides occurred in years with excessive amounts of rainfall.

Seventy-eight percent of the landslides identified by county engineers that occurred in Iowa from 1993-2001 happened in the spring with the remaining 22% happening in the summer. Fifty percent of the failures were associated with water; 28% of the slope failures occurred after heavy rainfall, and 22% were associated with high ground water table conditions. Twenty-one percent of the slope failures occurred due to design issues. In addition, maintenance or construction activities accounted for 1.4% of the stability problems while loading at the crest of slope, and other causes account for 5% and 10%, respectively. Statewide, 25% of the slides occurred in slopes between 1 foot and 10 feet high, 41% occurred in slopes 11-20 feet high, 21% occurred in slopes 21-30 feet high, and 13% occurred in slopes greater than 30 feet high. Slope was 3:1 on 96% of slopes prior to slope failure (see Map 3-5).

Scott County has not had any recorded subsidence associated with karst topology. However, in 2008, sinkholes developed in a few roads due to excessive runoff. These are documented as there was also severe flooding in the county in 2008. In 2010, a 50-foot-wide sinkhole developed on Y-48 near Buffalo due to seepage into Linwood Mine. There have been instances of road collapse due to broken water or sewer pipes and rain washing soil away underneath pavement. These are generally very localized in nature and cause minor disruption to traffic or services.

The Linwood underground mine has been in operation since the 1960s and currently mines approximately 32 acres per year. The structural integrity of the mine is dependent on the geology and deposition of the limestone formation. During the mining operation, there may be areas where the geology (shale, sandstone) may not fully support the material above the mined out area. These areas pose a greater risk for collapse or subsidence. In fact, in 1993, an area of the Scott County landfill, operating above a mined out portion of the mine, subsided. Realizing the potential for this to occur in the future, the Department of Natural Resources has authorized AMSCO to place processed Coal Combustion By-Products, CCB (ash) in the mined out areas, beginning in areas underlying the landfill. This has successfully prevented a reoccurrence of the subsidence under the operating landfill. AMSCO continues to work with Linwood to determine mine reclamation locations for deposition of AMSCO's product. See the mine operation area for the Linwood Mine and the Davenport Plant on Map 3-6.

There have been no known subsidence issues related to the historic coal mining in Scott County. However, the known coal mining sites are largely located in undeveloped areas. New subdivision development has occurred in the vicinity of the recorded mine shafts north of Buffalo in Section 16. It is not known if any of these houses are located directly over a mined out area. The above ground area of the Blackwell Mine has not had any development occur in the vicinity.

Probability. Land subsidence occurs slowly and continuously over time, or on occasion abruptly, as in the sudden formation of sinkholes or collapse of mined out areas. As noted earlier, the Scott County EMA has rated the probability of sinkholes, land subsidence, and landslides as low.

According to the Iowa DNR, subsidence of the land surface has occurred over abandoned underground mines in Iowa, and this process can be expected to continue. There is an increased probability of subsidence occurring with the Linwood Mine due to continuing mine operation and the varied underground landscape. However, this is constantly monitored, and remediation solutions are in place to prevent occurrence. There is also increased probability with the small coal mines as no remediation or reclamation of these areas has taken place. The 2018 *Iowa Hazard Mitigation Plan* notes sinkholes may form in old mining locations; however, subsidence due to Karst features in Scott County would be very rare.

Per an IADOT survey of county engineers on the number of landslides that occurred in their county from 1993 to 2001, it was determined that southeast and western Iowa were high-risk areas for landslides. These high-risk areas contain deep to moderately-deep loess. Most of the counties in the eastern part of Iowa had a significant number of landslides from 1993 to 2001, ranging from 6 to more than 15, except Scott County with 1-5 landslides.

Scott County has many large areas of very hilly terrain with slopes exceeding 18%. The study of the slopes and outcrops along Duck Creek in Bettendorf in 2008 showed that hill slope instability was not an issue at the time along that portion of the Creek. No clay was found, nor were there any signs of hummocky topography or ponded water. However, future building should not occur on the slopes adjacent to the creek to guard against any future slope degeneration. The 2018 *Iowa Hazard Mitigation Plan* stated the not well understood and susceptible areas are found along steep terrain, such as major river valleys including the Mississippi River (see Map 3-5).

Magnitude/Severity/Extent. Although impacts may occur due to ground disturbance events as described below, the possibility of human, property, or business impacts are rated as low for this plan (see Table 3-3).

General landslides, land subsidence, and sinkholes may pose a greater risk to property than to life. Sudden landslides may pose a threat to life, if warning signs of slope failure in structures overlooking steep slopes goes undetected or are ignored. Landslides are a component of many major natural disasters and may be responsible for greater losses than are generally recognized. The 2018 *Iowa Hazard Mitigation Plan* states jurisdictions have not reported any significant losses due to sinkholes.

Landslides, land subsidence, and sinkholes may have a significant adverse effect on buildings and infrastructure and threaten transportation corridors, fuel and energy conduits, and communications linkages. Road building and construction often exacerbate the landslide problem in hilly areas by altering the landscape, slopes, and drainages and by changing and channeling runoff, thereby increasing the potential for landslides. Landslides along roads can disrupt the use of that road until repairs are made to stabilize the slope and remove debris. Utilities such as pipelines, phone or fiber optic cables, power poles, etc. may be vulnerable to the downward movement of soil or rock, as seen with sinkholes and land subsidence. This may cause disruptions to water or sewer service, electricity, phone service, or internet access.

These forms of ground failure also have adverse environmental consequences, such as dramatically increased soil erosion, siltation of streams and reservoirs, blockage of stream drainages, and loss of valuable watershed, grazing, and timber lands. Breakage of sewer mains could release hazardous materials. Breakage of gas pipelines could result in fire and disruption of supply. Direct costs include the actual damage sustained by buildings and property, ranging from the expense of cleanup and repair to replacement. Indirect costs are harder to measure and include business disruption, loss of tax revenues, reduced property values, loss of productivity, losses in tourism, and losses from litigation. The indirect costs may exceed the direct costs.

Duration. Subsidence events occur gradually over time, while the collapse of abandoned mines can occur suddenly. Subsidence events are very isolated and localized. They are very hard to predict in advance due to undermined and destabilized rock and soil conditions or movements below ground. Many times, warning signs such as cracks and soil settlement do appear in advance and can be closely watched with inspections and over all monitoring of conditions. Events may occur over extended periods of time, although they have occurred

very rapidly with little advance warning. New technologies and software are being used by engineers and geologists to prevent mine subsidence in active mines and to fill and close off areas already mined and prone to roof or pillar failure.

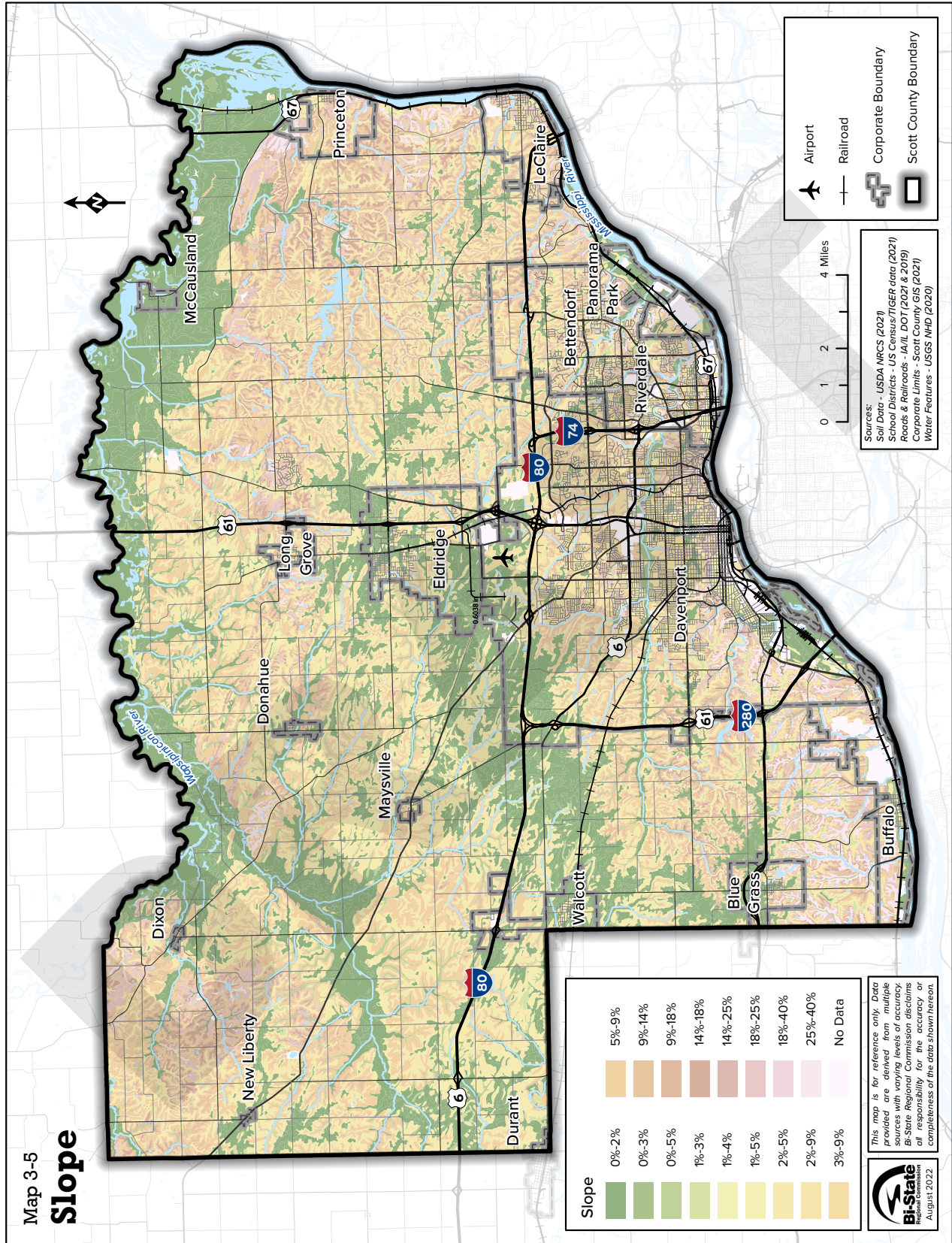
Landslide formation can be very slow or can occur very quickly. Landslides are often triggered by other natural hazards. Landslides and heavy rain or flooding and ground saturation can occur together. Landslides can be detected if areas at high risk are monitored for early signs of a slide such as cracks or a scarp at the top of the slope, a bulge at the bottom of the slope, diagonal cracks along the slope, ponded water indicating localized seepage, cattails or willows indicate localized seepage, and tilted tree trunks. Along roadways, instability below a roadway on foreslopes and backslopes can be indicated by pavement settlement, deformed guardrails, or erosion at the outlet of a drain structure. Instability above a roadway on foreslopes can be indicated by debris on the roadway and blocked drainage ditches.

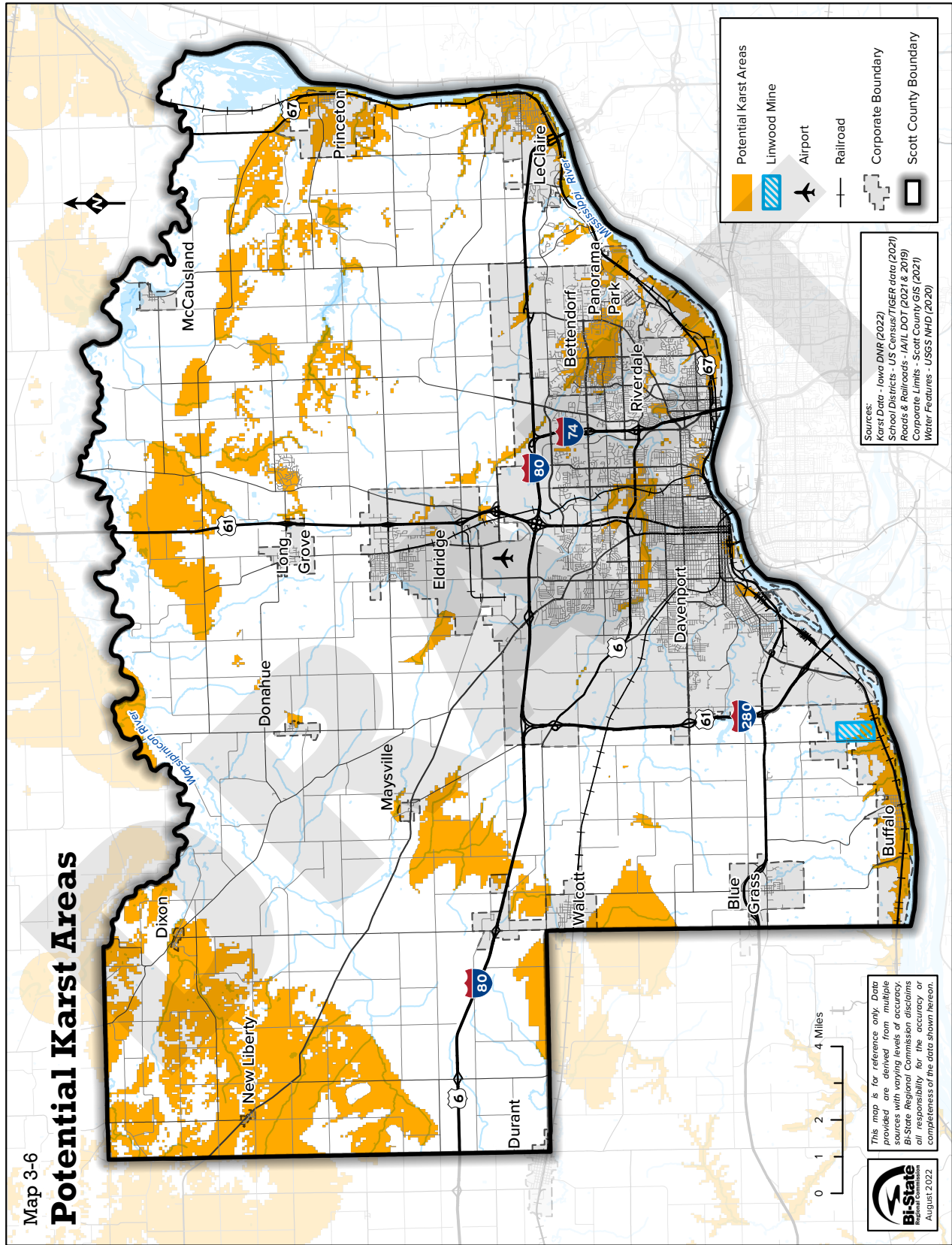
The response tied to ground failures is related to securing the immediate threat to life and property including immediate reroute of traffic from the affected infrastructure and search and rescue in the case of structural collapse. Return to use of facilities and roads could take hours to many days depending on the severity of the landslide and the actions needed to secure the slope.

Location/Vulnerability. The Iowa DNR Geological and Water Survey division reports that Scott County has at least one recorded karst feature. This feature is located at the Linwood Stone Company Quarry near Buffalo. A portion of a paleo-karst cavern complex has been preserved without sediment filling. The geology of Scott County consists of several areas with varying levels of karst development and potential (see Map 3-6)

The Linwood Mine is a large underground limestone mine located in Buffalo Township and adjacent to the former Buffalo Quarry, now the Linwood Stone Company Quarry. This quarry is an open pit mine. The Linwood Mine is a continuous underground mining operation and one of the largest in the country. The mine operates 12 months of the year. It is mined using the “room and pillar” method, which results in large underground voids on two “floors,” 90 and 130 feet below the ground’s surface. Linwood Mining and Mineral, Corp. has operated quarry and lime production facilities in this area since the 1940s. The Linwood underground mine has been in operation since the 1960s and currently mines approximately 32 acres per year.

The Iowa DNR Geological and Water Survey division has identified and recorded 37 underground coal mine locations in Scott County. Those records document mine operations as early as 1840 near Jamestown (former mine camp north of Buffalo, near 100th Avenue and Chapel Hill Road) and as late as 1936. Because mining activity was not regulated or documented until the late 1800s, little or no information is available for older mines. Most of the





coal mine shaft locations are in Buffalo Township, Sections 2, 3, 5, 6, 9, 11, and 16. There is also a coal seam near the former town of Black Hawk. This is near the intersection of Telegraph Road a few blocks east of Wisconsin Avenue. There is no record of mining in this area as the seam is very thin. Possible small mines were also located in the vicinity of Section 5 in Pleasant Valley Township. Iowa DNR has one underground coal mine map recorded for Scott County. This is for the Blackwell Mine that operated from 1932 to 1936 in the S. E. Part of the N.E. Part of Section 3, T77N, R2W. There are no maps for the other 36 known mines, just general shaft locations pinpointed to the nearest quarter or full section.

Sinkholes can aggravate flooding potential, collapses such as the sudden formation of sinkholes or the collapse of an abandoned mine may destroy buildings, roads, and utilities.

Land subsidence movements are not selective – all structures (building, sidewalks, driveways, fences, streets, curbs, etc.) in the immediate area will be affected with a subsidence event. The type and extent of damage to structures directly relates to their physical orientation and location in the subsidence area. Ground movements can also damage water and sewer lines, as well as other utilities. In most cases, damages range from minor to moderate in severity. Repair or renovations are usually sufficient to restore structural integrity. However, in severe cases, ground settlement and the resulting damages associated with land subsidence may require complete demolition and rebuilding. Due to the limited number of mined areas and their general locations in the county, the actual number of homes located in or near potential subsidence areas, vulnerability is considered to be very low. Greatest vulnerability is in the former coal mine areas north of Buffalo and on property above the Linwood Mine. New development in this area would increase the vulnerability of structures to subsidence. Areas of the Scott County Landfill located over newly mined out areas of the Linwood Mine would be vulnerable to future subsidence.

Homes and businesses in Princeton, LeClaire, Pleasant Valley Area, Bettendorf, Davenport, and homes on the bluffs above Buffalo all have a level of increased vulnerability. Construction can be a key factor in tipping the balance of slope stability. By building above unstable areas, humans create areas that exceed the bearing strength of the slope (the weight limit a slope can bear before failing). Building on these slopes can increase the saturation of unstable materials through runoff, leaky pipes, lawn wetting, and septic systems. No information on damages caused by landslides is available at this time, so estimating potential losses is difficult.

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U. S. Geological Survey Landslide Hazards Program	http://landslides.usgs.gov/
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Thunderstorm, Hailstorm, and Lightning

Thunderstorms are common in Iowa and can occur singly, in clusters, or in lines. Thunderstorms typically include thunder caused by lightning, heavy rains (which may cause flash flooding), and strong winds reaching or exceeding 58 mph producing tornados, and may also include surface hail of at least 1.00 inch in diameter. They are created from a combination of moisture, rapidly raising warm air, and a lifting mechanism such as clashing warm and cold air masses.

Most thunderstorms produce only thunder, lightning, and rain. Severe storms, however, can produce tornados, straight-line winds and microbursts above 58 mph, hailstorms, and flooding. The National Weather Service considers a thunderstorm severe if it produces hail at least one-inch in diameter, wind 58 mph or higher, or tornados. Straight-line winds can often exceed 60 mph, are common occurrences, and are often mistaken for tornados. A number of thunderstorms have caused other hazards such as flash flooding, river flooding, and tornados. The associated hazards related to thunderstorms are discussed further as separate hazards.

The National Centers Environment Information (NCEI) records 185 thunderstorm, lightning, and hail events for Scott County dating from January 2000 to August 2022. Because thunderstorms may occur singly, in clusters, or in lines, it is possible that several thunderstorms may affect the same area in the course of a few hours. The greatest number of injuries recorded for one event in this time period was for a thunderstorm in August 2001 with 2 injuries. The highest recorded property damage of \$2 million occurred on July 12, 2016 when a thunderstorm with high winds cause tree limb damage. It should be noted that there were many events that could have resulted in insurance claims that are not included in the damage losses. The Scott County EMA rates the overall risk for thunderstorms, hailstorms, and lighting as moderate.

- **August 2, 2001:** A surface boundary was in place, extending from southern Wisconsin into southwest Iowa. A moist and very unstable atmosphere interacted with the boundary to produce a line of powerful thunderstorms that raced across eastern Iowa and western Illinois during the afternoon and early evening hours. The primary threat was severe straight-line winds. There was one isolated report of nickel-sized hail. Numerous funnel clouds developed along the leading edge of the line, but there were no touch-downs reported. Two people were injured in rural Scott County when winds estimated at 70 mph caused an automobile accident. The car blew into a parked pick-up truck. The truck then struck a camper, and the car and truck both struck a nearby mobile home. The driver of the car and a passenger were treated for minor injuries at a local hospital.
- **August 25, 2014:** An upper level disturbance moved across eastern Iowa and northwest Illinois August 25, sparking some scattered showers and thunderstorms over areas north of Interstate 80. Some of the thunderstorms were severe, producing damaging winds from Clinton County in Iowa to Whiteside and Henry Counties in Illinois. Lightning struck an apartment building at 1080 39th Street in Bettendorf, IA around 2:40 p.m. CDT August 25. The attic fire was not discovered until 10:36 p.m. The estimated damage to the 18-unit building is \$400,000.
- **April 7, 2020:** Severe thunderstorms developed along a cold front that dropped south across eastern Iowa and northwest Illinois Tuesday evening. Heavy downpours and very large hail were reported. The hardest hit areas were the northeast side of Cedar Rapids and the Iowa side of the Quad Cities, where ping pong ball to baseball-sized hail fell.

The data for thunderstorms also includes other high wind events. Since windstorms are a separate hazard profile for Scott County, high wind events exceeding 72 MPH will be discussed in that profile. Because most of those windstorms were also associated with thunderstorms, they were not removed from the total number of thunderstorm events. It is common to have multiple entries in the database per day; however, that is being interpreted as separate storm events that can occur in quick succession.

Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a “bolt.” This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches temperatures approaching 50,000 degrees Fahrenheit in a split second. This rapid heating, expansion, and cooling of air near the lightning bolt creates thunder.

Hailstorms are an outgrowth of a severe thunderstorm in which ball- or irregularly-shaped lumps of ice greater than 1 inch in diameter fall with rain. Strong rising currents of air within a storm carry water droplets at a height where freezing occurs. Ice particles grow in size until they are too heavy to be supported by the updraft. Hail can be smaller than a pea or as large as a softball and can be very destructive to plants and crops. Pets and livestock are particularly vulnerable to hail.

A scale of hailstorm intensity has been developed by the Tornado and Storm Research Organization (TORRO) of the United Kingdom. The scale extends from H0 to H10 with its increments of intensity and damage potential related to hail size (distribution and maximum). Hail texture, numbers, fall speed, speed of storm translation, and strength of the accompanying wind are other factors that affect the damage effects. The scale as follows includes hail diameter size in both metric (mm) and inches measurements.

TORRO Hail Size Damage

Size code	Diameter		Description	Damage Effects
	mm	inches		
H0	5-9	0.2-0.4	Pea size	No damage
H1	5-15	0.2-0.8	Marble size	Makes holes in leaves
H2	10-20	0.2-1.2	Penny size	Strips leaves from plants
H3	20-30	0.4-1.8	Nickel size	Breaks glass panels and can scrape paint
H4	20-30	0.6-2.4	Golf ball size	Breaks windows and scrapes paint
H5	30-50	0.8-3.0	Tennis ball size	Breaks some roof tiles, dents cars, strips bark
H6	40-60	1.2-3.9	Baseball size	Breaks many roof tiles, damages roofs
H7	50-75	1.8-4.9	Grapefruit size	Shatter roofs, serious damage to cars
H8	60-90	2.4-5.0	Softball size	Cracks concrete roofs, splits trees, injury to people
H9	75-100	3.2-5.0	Softball size	Marks concrete walls, kills people, fells trees
H10	>100	4.0-7.0	Melon size	Destroys wooden houses, damages brick homes, kills people

Probability. The Scott County EMA places a high probability of thunderstorms, hailstorms, and lightning for Scott County. With Iowa’s location in the interior of the U.S., there is a very high likelihood that a few of these summer storms will become severe and cause damage. Because of the humid continental climate that Iowa experiences, ingredients of severe thunderstorms are usually available (moisture to form clouds and rain, relatively warm and unstable air that can rise rapidly, and weather fronts and convective systems that lift air masses). The 2018 *Iowa Hazard Mitigation Plan* notes lightning and hail events may occur in any county in the state, and Scott County as having about five days of one inch-sized or larger hail per year.

Magnitude/Severity/Extent. Those in unprotected areas, mobile homes, or automobiles during a storm are at risk. Sudden strong winds often accompany a severe thunderstorm and may blow down trees across roads and power lines. Lightning presents the greatest immediate danger to people and livestock during a thunderstorm. Livestock and people who are outdoors, especially under a tree or other natural lightning rods, in or on water, or on or near hilltops are at risk from lightning. Hail can be very dangerous to people, pets, and livestock if shelter is not available. Flash floods and tornados can develop during thunderstorms as well. People who are in automobiles or along low-lying areas when flash flooding occurs, and people who are in mobile homes are vulnerable to the effects of severe thunderstorms. For more details on the vulnerabilities from the flooding and tornado hazards, see that specific hazard profile.

Severe thunderstorms can be quite expansive with areas of localized severe conditions. Most severe thunderstorm cells are 5 to 25 miles wide with a larger area of heavy rain and strong winds around the main cell most non-severe thunderstorms have a lifespan of 20 to 30 minutes, while severe thunderstorms last longer than 30 minutes.

Like tornados, thunderstorms, hail, and lightning can cause death, serious injury, and substantial property damage. The power of lightning's electrical charge and intense heat can electrocute people and livestock on contact, split trees, ignite fires, and cause electrical failures. Thunderstorms can also bring large hail that can damage homes and businesses, break glass, destroy vehicles, and cause bodily injury to people, pets, and livestock. Hail only rarely results in loss of life directly, although injuries can occur. The potential for human, property, and business impacts are high according to the Scott County EMA (see Table 3-3).

High winds can damage trees, homes (especially mobile homes), and businesses, and can blow vehicles off of the road. Straight-line winds are responsible for most thunderstorm damage. One or more severe thunderstorms occurring over a short period (especially on saturated ground) can lead to flooding and cause extensive power and communication outages as well as agricultural damage. The 2018 *Iowa Hazard Mitigation Plan* estimates that losses from thunderstorms, hailstorms, and lightning total approximately \$100,000 or less annually in Scott County. This does not include subsequent insurance claims.

Warning Time. Some thunderstorms can be seen approaching, while others hit without much warning. The National Weather Service issues severe thunderstorm watches and warnings as well as statements about severe weather and localized storms. These messages are broadcast over NOAA Weather Alert Radios and area TV and radio stations. Advances in weather prediction and surveillance have increased the accuracy of storm location and direction. Weather forecasting and severe weather warnings issued by the National Weather Service usually provide residents and visitors with adequate time to prepare. Isolated problems arise when warnings are ignored.

Duration. Immediate responses related to severe thunderstorms and lightning events are more aptly associated with the cascading effects of multiple events occurring over a short time period in the case of flash and river flooding, and particularly severe thunderstorm events in the case of tornados. Response to thunderstorm events is relatively minor in scope. Preparedness and response effectiveness for thunderstorms, hailstorms, and lightning as high.

Location/Vulnerability. The entire planning area is equally at risk for thunderstorm, hailstorm, and lightning. Thunderstorms are hazards unto themselves, but can cause other hazards such as flash flooding, river flooding, and tornados. Those in unprotected areas, mobile homes, or automobiles during a storm are especially at risk. Sudden strong winds often accompany a severe thunderstorm and may blow down trees across roads and power

lines. Lightning presents the greatest immediate danger to people and livestock during a thunderstorm. Livestock and people who are outdoors, especially under a tree (or other natural lightning rods); in or on water; or on or near hilltops are at risk from lightning. Hail can be very dangerous to people, pets, and livestock if shelter is not available. People who are in automobiles or along low-lying areas when flash flooding occurs and people who are in mobile homes are vulnerable to the effects of severe thunderstorms.

In Scott County, a majority of people and buildings are vulnerable and may be injured or experience property damage from these hazards. The amount of possible property damage can be seen in Table 3-4 that shows the value of all assessed property in Scott County. Damage caused by a severe thunderstorm will likely most affect personal property, particularly older structures. Over 35.1% of the residential buildings in Scott County were built prior to 1959, and may be more likely to experience roofing damage and damage to the siding during high winds and lightning.

Mobile home parks may also sustain wind damage and are at risk for toppling over in high winds. All of the structures within the county, regardless of whether they are critical facilities or not, are at risk of damage due to this hazard.

These hazards could affect a large majority of the population and area of Scott County. However, there is particular risk to the elderly population since lightning and windstorms can trigger loss of electricity, thus cutting off air conditioning in the summer and heat in the cooler winter months. Elderly and children under 18 are populations that would be more adversely affected by loss of power than the remainder of the population.

Sources	
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TORRO Hailstorm Intensity Scale	http://www.torro.org.uk/TORRO/severeweather/hailscale.php
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National Weather Service	https://www.weather.gov/hazstat/

Tornado

A tornado is a violent whirling wind characteristically accompanied by a funnel-shaped cloud extending down from a cumulonimbus cloud that progresses in a narrow, erratic path. Rotating wind speeds can exceed 300 mph and travel across the ground at average speeds of 25 to 30 mph. A tornado can be a few yards to about a mile wide where it touches the ground, but an average tornado is a few hundred yards wide. It can move over land for distances ranging from short hops to many miles, causing great damage wherever it descends. The funnel is made visible by the dust sucked up and by condensation of water droplets in the center of the funnel.

In the U.S., Iowa is ranked third in the number of tornadoes per 10,000 square miles. Between 1950 and 2010, Iowa averaged approximately 40-50 tornadoes per year. In Iowa, most tornadoes occur in spring and summer months, but they can and have occurred in the fall and winter months. Tornadoes are most common in late afternoon to evening hours, but they can occur at any time of the day.

According to the National Climatic Data Center, there were 15 tornado reports for Scott County between January 2000 and August 2022. Most of the reports are of EF0 or EF1 tornadoes. Notable events include:

- **May 10, 2001:** A tornado touched down in LeClaire and was on the ground for five minutes, carving a path towards the Mississippi River. Numerous trees and power lines were down with damages around \$75,000.
- **June 14, 2001:** An F2 tornado touched down around the Muscatine-Scott County border near Highway 22 then moved northeast into Scott County where it ripped off the roofs of three homes in Blue Grass. The same storm also produced an F1 tornado in Bettendorf, just east of the Interstate 74-Highway 67 intersection. That tornado was on the ground for three minutes and tore off one roof. Three people in Blue Grass sustained minor injuries.
- **April 13, 2006:** An F1 tornado began north of Interstate 80, 4 miles west of LeClaire. The tornado traveled east crossing 257th Avenue just south of 205th Street. The tornado damaged buildings on a nearby farm. Damages were around \$60,000.
- **May 30, 2013:** An EF1 tornado touched down in Andalusia, IL and traveled north-northeast into Scott County, IA through eastern sections of Buffalo, IA, affecting a few houses. The primary impact was to the parks on the eastern edge of town. Wind speeds were estimated to be 95 mph. Some large trees were snapped and uprooted along the path. Some of the fallen trees fell onto houses, with total damages at \$100,000.
- **November 11, 2015:** An EF-1 Tornado formed Southwest of Le Claire, traveled to the north and east through the town, breaking and uprooting numerous trees, damaging outbuildings and causing roof and siding damage to about 25 homes. One home lost the roof completely. The tornado appeared with virtually no warning and was on the ground for about 2 miles. Total damage to private property exceeded \$500,000
- **October 6, 2016:** An EF1 tornado began in western Davenport, tracking to the northeast. Damage began on Credit Island and extended through downtown Davenport, the Village of East Davenport, Bettendorf, and into northeast Scott County. Along the path, damage was primarily to trees and outbuildings but also affected many residences and private properties. Many trees fell on homes and cars. In down-

town Davenport, the roof of the jail and the roof of a homeless shelter were also damaged. Peak wind was estimated at 100 mph.

- **March 6, 2017:** An EF2 tornado 1,000 yards wide began in Muscatine County and then tracked into Scott County near Blue Grass, through northwest Davenport and Eldridge. Power poles were snapped, a house lost its roof, and numerous farm buildings and trees were damaged. The tornado path was 25.3 miles.
- **May 17, 2017:** A tornado was rated as EF-1 with peak winds of 100 mph, a path length of 2.14 miles, and a max width of 25 yards. This tornado was associated with a squall line. Numerous trees were damaged or uprooted with a few rotten trees snapped about 20 feet above the ground. Roofing damage was observed to a new home and garage at the beginning of its path, which was approximately between Maysville and Donohue.
- **March 5, 2022:** An EF-1 tornado produced intermittent damage along a roughly 4 mile path. The peak estimated winds were 90 to 95 MPH with a maximum width of 300 yards. The most significant damage was noted at a farmstead on 160th Street, east of 100th Avenue, where several outbuildings were damaged or destroyed, and trees were damaged or snapped. Boards were also impaled into the roof and walls of a barn. Additional damage was noted at a farmstead on Utah Avenue north of Duck Creek. Several outbuildings were damaged with some losing roof panels and damaging other structures. Tree damage was noted with several trees uprooted or snapped. A wood plank was driven into the ground. Primarily intermittent tree damage was noted along the remainder of the track, with large branches down or trees snapped.

Probability. The 2018 *Iowa Hazard Mitigation Plan* notes that based on a 75-year history, the probability that a significant (EF-2 or higher) tornado will occur anywhere in Iowa in any given year is 0.2-0.3%. Data from the National Weather Service from 1985-2014 indicates the average number of tornados in Iowa was 47, and that a tornado in the state is almost certain. The question is how many, how strong, and the level of impact. The Scott County EMA indicates a moderate probability for tornados and high overall risk.

Magnitude and Severity. The rating scale used to rate tornado intensity is called the Fujita Scale that estimates wind speeds based on the damage caused by the tornado. This scale has been recently revised as the Enhanced Fujita (EF) Tornado Scale, which includes additional enhanced descriptions of damage to multiple types of structures and vegetation with photographs, a PC-based expert system, and enhanced training materials. The Enhanced Fujita scale replaced the original as of February 1, 2007 in all tornado damage surveys done in the United States.

The Enhanced Fujita (EF) Scale

Fujita Scale			Operational EF Scale	
F Number	Fastest ¼ mile (mph)	3-Second Gust (mph)	EF Number	3-Second Gust (mph)
0	40-72	45-78	0	65-85
1	73-112	79-117	1	86-110
2	113-157	118-161	2	111-135
3	158-207	162-209	3	136-165
4	208-260	210-261	4	166-200
5	261-318	262-317	5	Over 200

Those most at risk from tornados include people living in mobile homes, campgrounds, and other dwellings without secure foundations or basements. People in automobiles are also very vulnerable to tornados. The elderly, very young, and the physically and mentally handicapped are most vulnerable because of lack of mobility to escape the path of destruction. People who may not understand the watches and warnings due to language barriers are also at risk.

Generally, the destructive path of a tornado is only a couple of hundred feet in width, but stronger tornados can leave a path of destruction up to a mile wide. Normally, a tornado will stay on the ground for no more than 20 minutes; however, one tornado can touch ground several times in different areas. Large hail; strong, straight-line winds; heavy rains; flash flooding; and lightning are also associated with severe storms and may cause significant damage to a wider area. The 2018 *Iowa Hazard Mitigation Plan* estimates that losses from tornados in Scott County as under \$1,000,000 annually (based on information between 1950 and 2017). According to the National Centers Environment Information (NCEI) Storm Event Database, \$297,000 in property damage and \$0.00 in crop damage were estimated to have occurred within Scott County between January 2000 and August 2022. Note that this data does not include subsequent insurance claims. Also, between 2010 and 2020, the NCEI shows a total of 204 tornados reported in Iowa with total damages of over \$400,000,000.

Effects can range from broken tree branches, shingle damage to roofs, and some broken windows all the way to the complete destruction and disintegration of well-constructed structures, infrastructure, and trees. Tornados can affect many critical services, mainly electrical power. Buried services are not as vulnerable, but can be affected by their system components that are above ground.

Whole towns have been known to be “wiped off the map.” Economic effects can result from direct damage to facilities or business disruption from the lack of critical services such as power, gas, or water. While a tornado is unlikely to affect the entirety of the county on any given occurrence, tornados are likely to strike anywhere within the county. The Scott County EMA indicates a high potential for property and business impacts due to tornados, and a low possibility for human impacts (see Table 3-3).

Warning Time. Tornados strike with an incredible velocity. Wind speed may exceed 300 miles per hour, and the storm can travel across the ground at more than 70 mph. The advancement in weather forecasting has allowed watches to be delivered to those in the path of these storms for up to hours in advance. The best lead time for a specific severe storm and tornado is about 30 minutes. Tornados have been known to change paths very rapidly, thus limiting the time in which to take shelter. Tornados may not be visible on the ground due to blowing dust or driving rain and hail. The Scott County EMA indicates a high preplanning level for tornados with a moderate internal response effectiveness and a high external community response.

Duration. The response to a tornado event is tied to responding to the immediate threat to life and property immediately following the tornado event and in the shelter of affected families and individuals.

Location/Vulnerability. The entire planning area is equally at risk for tornados. Those most at risk from tornados include people living in mobile homes, campgrounds, and other dwellings without secure foundations or basements. People in automobiles are also very vulnerable to tornados. The elderly, very young, and the physically and mentally handicapped are most vulnerable because of the lack of mobility to escape the path of destruction. People who may not understand watches and warnings due to language barriers are also at risk.

In Scott County, possible injury and/or property damage due to this hazard would be widespread. The amount of possible property damage can be seen in Table 3-4 that shows the value of all assessed property in Scott County. A tornado would prove devastating to any structure it hit, regardless of whether it was a critical structure or not. The level of damage would be a total collapse of the structure in the most intense situation, with wind damage to roofs and siding to those structures not directly hit. Also, damage from flying debris could shatter windows and cause roof damage. Some critical structures in Scott County are susceptible to wind damage and if hit directly, would not be able to function. Older buildings, buildings in poor condition, and mobile homes would be especially susceptible.

Mobile home parks would be of particular concern as they are home to a high density of residents with structures not built to withstand high wind speeds. In addition, places with high densities of people such as schools, nursing homes, and large apartment buildings are also vulnerable.

Sources	
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	https://www.valuepenguin.com/damage-caused-by-tornadoes

Windstorm/Derecho

Windstorms can be described as extreme winds associated with severe winter storms, severe thunderstorms, downbursts, and very strong pressure gradients. Windstorms, other than tornados, are experienced in all regions in the United States. It is difficult to separate the various wind components that cause damage from other wind-related natural events that often occur with or generate windstorms.

Although Iowa does not experience direct effects of hurricanes, the state is no stranger to strong, damaging winds. Unlike tornados, windstorms may have a destructive path that is tens of miles wide, and the duration of the event could range from hours to days. These events can produce straight line winds in excess of 64 knots (73 mph) causing some power outages, property damage, impaired visibility, and crop damage. The Beaufort Wind Scale below identifies winds above 73 mph as hurricane force winds.

Beaufort Wind Scale

Windspeed in MPH	Description - Visible Condition
0	Calm smoke rises vertically
1 - 4	Light air direction of wind shown by smoke but not by wind vanes
4 - 7	Light breeze wind felt on face; leaves rustle; ordinary wind vane moved by wind
8 - 12	Gentle breeze leaves and small twigs in constant motion; wind extends light flag
13 - 18	Moderate breeze raises dust and loose paper; small branches are moved
19 - 24	Fresh breeze small trees in leaf begin to sway; crested wavelets form on inland water
25 - 31	Strong breeze large branches in motion; telephone wires whistle; umbrellas used with difficulty
32 - 38	Moderate gale whole trees in motion; inconvenience in walking against wind
39 - 46	Fresh gale breaks twigs off trees; generally, impedes progress
47 - 54	Strong gale slight structural damage occurs; chimney pots and slates removed
55 - 63	Whole gale trees uprooted; considerable structural damage occurs
64 - 72	Storm very rarely experienced; accompanied by widespread damage
73+	Hurricane-like devastation occurs

A derecho is a widespread, long-lived wind storm that is associated with a band of rapidly moving showers or thunderstorms. Although a derecho can produce destruction similar to the strength of tornados, the damage typically is directed in one direction along a relatively straight swath. As a result, the term “straight-line wind damage” sometimes is used to describe derecho damage. By definition, if the wind damage swath extends more than 240 miles (about 400 kilometers) and includes wind gusts of at least 58 mph (93 km/h) or greater along most of its length, then the event may be classified as a derecho. Scott County experienced a derecho event on August 10, 2020 which will be described below.

Historically, windstorms are associated with severe thunderstorms and blizzards. The National Weather Service has developed a windstorm warning system similar to other events such as tornado, winter storm, and thunderstorm. Watches are issued when conditions are favorable for windstorms to develop, and they come 12 to 24 hours in advance. Advisories are issued when existing or imminent high winds cover part or all of the forecast area and pose a threat to life and property.

The National Centers Environment Information (NCEI) records 125 events for Scott County between 2000 and August 2022 where high, strong, or thunderstorm strong winds were recorded. In some cases, there were

multiple instances of wind gusts exceeding 64 knots per a given event. Following are notable events during that period of time and the previous strongest wind in recorded history. It should be noted some of these events overlap with thunderstorm hazard events.

- **May 10, 1996:** A thunderstorm created winds of 85 knots (almost 98 mph), the strongest in Scott County's recorded history. This event affected 150 buildings in Parkview and caused over \$1 million in total damages. Parkview was part of a larger swath of damage from Durant in Cedar County, Iowa through Fulton in Whiteside County, Illinois.
- **September 11, 2000:** Winds estimated in excess of 70 mph at times battered much of the Iowa Quad Cities. The Cities of Bettendorf, Pleasant Valley, Riverdale, and Davenport were hit hardest with numerous trees and power lines knocked down. Twenty-eight thousand homes were without power in the Quad Cities, and many did not have power restored for days. The lack of power forced the cancellation of classes at Scott Community College. The storms also did considerable damage to many of the area's corn and soybean crops. Damage was widespread but variable, with as much as 10 percent of the corn crop damaged in some areas.
- **August 20, 2003:** Thunderstorms developed during the afternoon in Central Iowa along an old stationary front in hot and humid conditions. The thunderstorms moved into Eastern Iowa and became severe. Winds of 50 mph were common along the main gust front breaking many small limbs from trees. The storms reached maximum intensity between 1700 and 1800 CST in Eastern Iowa where a downburst caused severe damage to the National Weather Service (NWS) office in Davenport, Iowa. NWS personnel at Davenport Weather Forecast Office estimated winds of at least 80 knots (92 mph) lasting for 2 or 3 minutes. A total of \$91,000 in damages were reported.
- **November 12, 2003:** A strong fall storm system moved across the Upper Midwest during the day. In Bettendorf, Iowa, part of the wall at Bowe Manufacturing collapsed around 3:00 p.m. CST. Fortunately, the building was evacuated, and police closed down U.S. 67 before the failure occurred. Many observing sites recorded peak wind gusts in the 52 to 56 mph range (45 to 49 knots) with sustained winds of 30 to 40 mph (26 to 35 knots). Maximum measured winds were 53 knots (61 mph) by KWQC TV in Davenport.
- **August 10, 2020:** Widespread straight-line winds that produced extensive damage were reported throughout Scott County, associated with a derecho. These winds lasted around an hour in total at any one location, even though the initial line of storms moved out quickly. Damaging straight-line winds continued and were associated with the rear inflow jet. Maximum wind speeds were estimated to be 80 to 100 mph for much of the county. These estimates were determined based on damage reports and photos submitted through social media. The peak wind speed measured at the Davenport Airport ASOS was 86 mph before the power went out with several large tree limbs and trees blown down on the airport property, including at the NWS Weather Forecast Office in the Quad Cities. The duration of strong winds caused extensive damage or loss to most trees, powerlines, crops, and some roof damage in their path. The widespread damage also resulted in long duration power outages.

Probability. Large-scale extreme wind phenomena are experienced over every region of the United States. Historically, high wind events are associated with severe thunderstorms and blizzards. It is often difficult to separate windstorms and tornado damage when winds get above 64 knots (74 mph). Based on historical information, Scott County can expect to have 1-2 windstorms every one to two years. According to the 2018

Iowa Hazard Mitigation Plan, every part of the state is susceptible to wind, and every part of the state needs to understand and prepare for the risks of high wind. Scott County EMA rated the probability of windstorms as moderate and the overall risk as moderate.

Magnitude/Severity/Extent. The National Centers for Environmental Information reports a total of \$2.948 million in property damage caused by windstorms between 2000 and 2022. It should be noted that property damage figures do not include insurance claims. The 2018 *Iowa Hazard Mitigation Plan* notes Scott County as having average annual property damage of under \$75,000 based on NCEI data between 1996 and 2017. Those most at risk from windstorms include people living in mobile homes, campgrounds, and other dwellings without secure foundations or basements. People in automobiles are also very vulnerable to wind storms, particularly tornados. The elderly, very young, and the physically and mentally handicapped are most vulnerable because of the lack of mobility to seek shelter or escape the path of destruction. People who may not understand watches or warnings due to language barriers are also at risk.

Unlike tornados, windstorms may have a destructive path that is tens of miles wide and several hundred miles long. Large hail, strong straight-line winds (including derecho), heavy rains, flash flooding, and lightning are also associated with severe storms and may cause significant damage to a wider area. Effects can range from broken tree branches, shingle damage to roofs, and some broken windows all the way to the complete destruction of well-constructed structures, infrastructure, and trees. Crop damage is often associated with windstorms, laying down crops, breaking stalks, and twisting plants, reducing yield, and making it difficult to harvest. While NCEI data shows nearly \$3 million in damages caused in Scott County for wind events, it is known that the derecho alone caused over \$1.6 billion in damages in Iowa with over 200,000 insurance claims.

Windstorms can affect many critical services, especially electrical power. Disruption of critical services can also affect operations. Employees may be affected and unable to attend work-related functions. Economic effects can result from direct damages to facilities or business disruption from the lack of critical services such as electrical power.

Warning Time. Wind speed may approach 120 miles-per-hour, and the storm can travel across the ground at more than 50 mph. These winds can uproot trees and structures and turn harmless objects into deadly missiles, all in a matter of seconds. The advancement in weather forecasting has allowed watches to be delivered to those in the path of these storms up to hours in advance. The best warning lead time for a specific storm is about 30 minutes.

Duration. The response tied to windstorm events is one directly related to the immediate protection of vulnerable populations from the direct threat to life and property. Response time is limited to event duration and immediate impact. The Scott County EMA rates preparedness and response to wind events as high.

Location/Vulnerability. The entire planning area is equally at risk for windstorms. Windstorm is primarily a public safety and economic concern, and the planning area is located in a region with very high frequency of occurrence. Windstorm can cause damage to structures and power lines, which in turn create hazardous conditions for people. Debris flying from high wind events can shatter windows in structures and vehicles and can harm people who are not adequately sheltered. The possible human, property, and business impacts are rated high by the Scott County EMA (see Table 3-3).

Although windstorms occur frequently in the planning area and damages to property occur, much of the damage is generally covered by private insurance. This results in less affect to individuals and the community since recovery is facilitated by insurance. Occupants of campers, construction trailers, mobile homes, outbuildings,

barns, and sheds and other dwellings without secure foundations or basements are particularly vulnerable as windstorm events in Scott County can be sufficient in magnitude to overturn these lighter structures. Overhead power lines and infrastructure are also vulnerable to damages from windstorms. Potential losses would include cost of repair or replacement of damaged facilities, and lost economic opportunities for businesses. Public safety hazards include risk of electrocution from downed power lines. Specific amounts of estimated losses are not available due to the complexity and multiple variables associated with this hazard.

Sources	
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Cyber Terrorism

Cyberattacks involve the use of computers, electronic devices, and/or the Internet to attack computer systems in order to intimidate people and/or disrupt other systems. Examples of some types of cyberattacks include computer viruses, which damage many infected computers, denial-of-service (DOS) attacks, which shut down a targeted website, and hacking attacks, which damage sensitive information. These attacks may be used as part of extortion schemes, to undermine public confidence in the target's security, as a form of technological vandalism, or as military sabotage. A significant cyber disruption event is defined as an event that is likely to cause, or is causing, harm to critical functions and services across the public and private sectors by impairing the confidentiality, integrity, or availability, of electronic information, information systems, services, or networks; and/or threaten public safety, undermine public confidence, have a negative effect on the economy, or diminish the security posture of the jurisdiction.

Society is highly networked and interconnected. An attack could be launched from anywhere in the world and could cause effects as small as a computer lab to as large as the World Wide Web. Cyber-security and critical infrastructure protection are among the most important national security issues facing our country today, and they will only become more challenging in the years to come. Recent attacks on infrastructure components have shown that security has been a relatively low priority in the development of computer software and internet systems. These attacks not only have disrupted electronic commerce, but also have had a debilitating effect on public confidence in the internet and/or the business that was affected by the security breach. Attackers can inflict damage on physical infrastructure by infiltrating the digital systems that control physical processes, damaging specialized equipment and disrupting vital services without a physical attack.

“A 2020 International City/County Management Association (ICMA) report on local government cybersecurity identified five key reasons these governments are targeted:

- Number of local governments: There are 90,075 different local governments in the U.S., making it harder to produce and implement a unified public-sector cybersecurity strategy.
- Holders of sensitive information: Local and state governments store considerable amounts of sensitive personal information, such as names, addresses, driver's license numbers, credit card numbers, Social Security numbers and medical information. In addition, they store contractual, billing, and financial information of the governments themselves. Obtaining personal information is a particular priority for cyber criminals using ransomware.
- Inadequate cybersecurity: The ICMA report found that local government systems usually aren't well defended, particularly in relation to federal government systems. The Institute for Security and Technology's report on combating ransomware recommends addressing this imbalance in cybersecurity in the government sector.
- Financial constraints: According to the global study of cybersecurity professionals by the Information Systems Security Association (ISSA) and Enterprise Strategy Group (ESG), which surveyed over 500 cybersecurity professionals, it was reported by organizations that, “More than three-quarters said it was extremely or somewhat difficult to recruit and hire security professionals, but 38 percent said their organization doesn't offer competitive compensation, while 29 percent said their HR department doesn't understand the skills needed for cybersecurity and 25 percent said that job postings at their organization tended to be unrealistic.”

- Use of Internet of Things (IoT) technology: Local governments have adopted many of the benefits of IoT and smart cities technology by deploying Internet-connected devices to provide, monitor or manage services such as traffic lights, water meter reading, security cameras and solid waste collection. While these services benefit citizens, they also introduce new vulnerabilities and risks for local governments.”

While the majority of cyber-attacks affect only data and computer systems, sophisticated attacks have occurred against the supervisory control and data acquisition (SCADA) systems of critical infrastructure, which could potentially result in system failures on a scale equal with natural disasters. Facilities and infrastructure such as the electrical grid could become unusable. Recently in February 2021, a cyber-attack on a water treatment system in Oldsmar Florida put thousands at risk of being poisoned. A hacker accessed the system remotely and adjusted the level of sodium hydroxide to more than 100 times its normal levels. Cyber-attacks can interfere with emergency response communications, access to mobile data terminals, and access to critical preplans and response documents. According to the Cyber & Infrastructure Security Agency, cyber risks to 9-1-1 systems can have “severe impacts, including loss of life or property; job disruption for affected network users; and financial costs for the misuse of data and subsequent resolution.” The delivery of services can be impacted since governments rely to a great extent upon electronic delivery of services.

In Iowa, the Cedar Rapids Community School District was attacked in the summer of 2022 which forced the cancellation of summer school the following week. In the summer of 2021 Des Moines Area Community College in Ankeny was forced to shut down parts of its computer network, end online classes, delayed student registrations, and knocked out internet service for several weeks. In 2019, Scott County a malware attack spread throughout computers on the first floor of their administrative center. Although no data was breached, the event caused them to shut down work on that floor of the building for several days.

There are various common types of cyber-crime. Business email compromise send an email message that appears to come from a known source making a real request, such as when it appears to be a company updating its banking information. Ransomware is a type of malicious software, called malware, that prevents people from accessing computer files, systems, and/or networks. Criminals demand ransom for the “key,” usually a code, to unlock them. Paying the ransom doesn’t necessarily guarantee the information will be returned. Spoofing is when a person disguises an email address, sender name, phone number, or website URL to trick people into thinking they are interacting with a trusted source. Sometimes the address is changed by just one letter or number to make it hard to decipher if it is legitimate, which may lead to people downloading malware, sending money, or disclosing sensitive information. Phishing schemes often use spoofing techniques to lure people into giving information.

While many participants in this plan have experienced email and or phishing on single computer accounts, in this hazard mitigation plan, participants were asked to consider the risk of a significant cyber interruption that would lead to a system wide breach or shut down.

Probability. Security experts describe the threat as eminent and highly likely to occur in any given year in Scott County. The level of success or damage will vary greatly. Intrusion detection systems log thousands of attempts in a single month. There are constant probes by individuals and groups with intent to cause anything from total system shutdown to simple experimentation to breach a system to build personal confidence and or stature. The Scott County EMA rates the probability of cyber terrorism as high and the overall risk as high. The 2018 *Iowa Hazard Mitigation Plan* notes that there had been several issues related to cyber terrorism and the ability to connect to the internet in prior years and that incidents have increased and will likely continue to do so in future years.

Magnitude/Severity/Extent. Severity ranges by the type of impact and is noted below.

- A. Health and safety of persons in affected areas: Indirect injuries or deaths may result from secondary effects to critical life sustaining sectors such as energy, water, etc. Hostile takeover/ransom of private computers, theft of personal information including banking information may occur.
- B. Health and safety of response personnel: There may be a loss of communications and warning system networks may be compromised.
- C. Continuity of operations: Severe effects to continuity of operations could result if cyber-attack reached critical operational systems or systems that were needed to carry out the operation.
- D. Property, facilities, and infrastructure: Effects can range from annoyance to complete shutdown of critical infrastructures due to infiltration of supervisory control and data acquisition (SCADA) systems. Secondary effects could affect welfare of people and property by denying services or providing false readings. Power failure, utility shut down, disruption of services and or loss of services may occur.
- E. Delivery of services: effects may result if system was infiltrated and directed to malfunction by self-destructing, overloading, etc. and warning systems network could be compromised and loss of communications.
- F. Environment: Protection systems and networks may be compromised.
- G. Economic and financial conditions: Because of the heavy reliance on the electronic transfer of economic and commercial information and the transfer of funds, the economy could be affected because of communication difficulties. Disruption of service, hostile takeover/ransom of website, theft of business sensitive data, financial theft may occur.
- H. Regulatory and contractual obligations: Possible elimination of electronic records or regulatory and contractual obligations.
- I. Reputation of the entity: If exposed vulnerabilities were known and not reduced or eliminated before the attack, the entity would suffer major damage to their reputation for not acting before the incident. Public confidence may be undermined.

The possibility of human and property impacts related to cyber terrorism are rated low and for businesses as moderate by the Scott County EMA.

Warning Time. Because of the networks (formal and informal) that exist to share intrusion attempts and effects, warnings can be put out in advance to alert those in similar situations to take protective security recommendations such as updating virus detection software, making sure security patches are in place, etc. Warning times can range from no warnings to days. Because of our highly evolved computer networks and data sharing, bugs, viruses, and worms can proliferate rapidly. Effects of hacking can be instantaneous. Due to warning time internal response to cyber terrorism is rated low, while preparedness and external response is rated moderate.

Duration. Cyber terrorism may last from minutes to days depending upon the type of intrusion, disruption, or infection. Generally, there are no direct effects on the built environment, but secondary effects may be felt depending upon the system being terrorized. Inadequate security can facilitate access to critical computer systems, allowing them to be used to conduct attacks. Recovery depending on the severity of the attack may take months.

Location/Vulnerability. All entities within Scott County are vulnerable to cyber terrorism. Security professionals argue that current approaches to preventing cyber terrorism are inadequate. With companies increas-

ingly using the Internet to connect to suppliers and customers, they say organizations place too much faith in technology to protect their data and do not pay enough attention to security education and awareness. Inadequate security can facilitate access to critical computer systems, allowing them to be used to conduct attacks. No accurate method of estimating potential losses related to cyber terrorism is available at this time for Scott County; however, this will be reviewed for the next plan update.

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Human Disease Pandemic

A pandemic disease is defined as a disease/microbe that has spread around the world to many people. The word “pandemic” means that a disease has caused illness in a person on nearly every continent. A flu pandemic occurs when a new influenza virus emerges for which people have little or no immunity, and for which there is no vaccine. This disease spreads easily person-to-person, causing serious illness, and can sweep across the country and around the world in a very short time. The WHO defines pandemics, epidemics, and endemic diseases based on a disease’s rate of spread. Thus, the difference between an epidemic and a pandemic isn’t in the severity of the disease, but the degree to which it has spread. A pandemic cuts across international boundaries, as opposed to regional epidemics. This wide geographical reach is what makes pandemics lead to large-scale social disruption, economic loss, and general hardship. It’s important to note that a once-declared epidemic can progress into pandemic status. While an epidemic is large, it is also generally contained or expected in its spread, while a pandemic is international and out of control.

For instance, severe acute respiratory syndrome (SARS) is a viral respiratory disease caused by a SARS-associated coronavirus. It was first identified at the end of February 2003 during an outbreak that emerged in China and spread to 4 other countries. Victims of SARS were previously healthy adults aged 25-70 years. The World Health Organization coordinated the international investigation with the assistance of the Global Outbreak Alert and Response Network (GOARN) and worked closely with health authorities in affected countries to provide epidemiological, clinical, and logistical support and to bring the outbreak under control. Because the ability for this disease to spread globally was recognized early, it did not reach the stage of a pandemic.

The World Health Organization tracks and reports on epidemics and other public health emergencies through the Global Alert and Response. The following are some of the key pandemics in the past century:

- **2020-Ongoing COVID-19 (SARS-CoV-2):** The COVID-19 or novel coronavirus pandemic began in December 2019 and was declared a pandemic in March of 2020. As of September 2022, there were 96,581,755 cases and 1,057,975 deaths in the U.S and 859,502 cases and 10,125 deaths in Iowa. In Scott County, 46,806 cases and 5,609 deaths have been reported. The pandemic is expected to continue through 2023, although various vaccines were approved starting at the end of 2020 and have been dispersed.
- **2009-Influenza (H1N1):** The 2009 H1N1 Pandemic Influenza caused 659 hospitalizations with lab confirmed H1N1 since 9/1/09 and resulting in 41 fatalities. Typically, people who became ill were the elderly, the very young and people with chronic medical conditions and high risk behaviors. Reports of a new strain of influenza, known as H1N1, were first reported in April of 2009. While individual cases were not tracked in Scott County, there has been one known death from H1N1 within Scott County.
- **1968-69 Influenza (H3N2):** This strain caused approximately 34,000 deaths in the United States and more than 700,000 deaths worldwide. It was first detected in Hong Kong in early 1968 and spread to the United States later that year. Those over age 65 were most likely to suffer fatal consequences. This virus returned in 1970 and 1972 and still circulates today.
- **1957-58 Influenza (H2N2):** This virus was quickly identified because of advances in technology, and a vaccine was produced. Infection rates were highest among school children, young adults, and pregnant women. The elderly had the highest rates of death. A second wave developed in 1958. In total, there were about 70,000 deaths in the United States. Worldwide deaths were estimated between one and two million.

- **1918-19 Influenza (H1N1):** This flu is estimated to have sickened 20-40 percent of the world's population. Over 20 million people lost their lives. Between September 1918 and April 1919, 500,000 Americans died. The flu spread rapidly; many died within a few days of infection, others from secondary complications. The attack rate and mortality were highest among adults 20-50 years old; the reasons for this are uncertain.

Probability. Public health officials are working closely with other countries and the World Health Organization to strengthen systems to detect outbreaks of influenza that might cause a pandemic and to assist with pandemic planning and preparation. Public health agencies in Iowa protect residents from infectious diseases and preserve the health and safety of Iowans through disease surveillance, investigation of suspect outbreaks, education, and consultation to county, local, and public/private agencies. Historically influenza pandemics occur approximately every 30 years. The Scott County EMA rates the overall risk for a pandemic as low and the probability as low. The 2018 *Iowa Hazard Mitigation Plan* notes Iowans remain vulnerable to diseases known and unknown even though vaccines exist for many modern diseases.

However, world health officials are predicting that pandemics will occur on a more frequent basis due to disease from animals jumping to humans and global warming. Also, health professionals continue to monitor the possibility of an avian (bird) flu pandemic associated with a highly pathogenic avian H5N1 virus. Since 2003, avian influenza has been spreading through Asia. A growing number of human H5N1 cases contracted directly from handling infected poultry have been reported in Asia, Europe, and Africa, and more than half the infected people have died. There has been no sustained human-to-human transmission of the disease, but the concern is that H5N1 will evolve into a virus capable of human-to-human transmission. Pandemics are generally thought to be the result of novel strains of viruses.

Magnitude/Severity/Extent. An especially severe influenza pandemic could lead to high levels of illness, death, social disruption, and economic loss. Impacts could range from school and business closings to the interruption of basic services such as public transportation, health care, and the delivery of food and essential medicines. The entirety of Scott County is susceptible to a human pandemic disease as experienced with the COVID-19 Pandemic. The possibility of human and business impacts related to pandemics is rated high and to property as low by the Scott County EMA.

- A. Health and safety of persons in affected areas: Historically pandemics result in serious illness if not death. Some are treatable while only the symptoms of some diseases can be treated.
- B. Health and safety of response personnel: Doctors, nurses, paramedics, and emergency medical technicians are vulnerable to contagious diseases. Universal precautions can greatly diminish the transfer rate and risk to responders to human disease.
- C. Continuity of operations: Potential for severe or complete disruption.
- D. Property, facilities, and infrastructure: Effects can range from restricted access to complete shutdown of critical infrastructures due to quarantines, etc.
- E. Delivery of services: Healthcare and essential services infrastructure and human resource personnel infrastructure would be affected.
- F. Environment: Potential impact to essential environmental service personnel such as water, sewer, solid waste, etc.
- G. Economic and financial conditions: Large outbreaks may warrant travel advisories to the area and will affect the tourism and general commerce on the area. There would be a high number of ill human resources across the board.
- H. Regulatory and contractual obligations: None known.

- I. Reputation of the entity: If exposed vulnerabilities were known and not addressed when reasonably feasible, entities in charge would suffer major damage to their reputation for not acting to reduce disease movement.

Warning Time. Because of our highly mobile society, diseases can move rapidly across the county, state, and nation within days, weeks, or months. If the disease is highly infectious by the time it is discovered, it will likely have already spread across the state or nation. This will put the people of Scott County at a severe disadvantage during response recovery. As seen with the COVID-19 pandemic, closures, cancelations, etc. began almost simultaneously at the federal, state, and local level. The Scott County EMA rate preparedness and internal response as high for pandemic hazards and external or community response as low.

Duration. Events that incite such activity can build up over hours, days, or years, and the violent disturbance is a culmination of the long-term situation. Civil disruptions can also escalate very rapidly following events where people are gathered such as sporting events, concerts, or speeches.

Location/Vulnerability. The entirety of Scott County is susceptible to a human pandemic disease as experienced with the COVID-19 Pandemic. A pandemic disease will have wide spread economic and societal implications for Scott County. As experienced with COVID-19, response and recovery to a pandemic disease will likely be lengthy. Disease transmission will also impact the extent and spread of the disease. Until those pathways are known the risk of transmission can be high.

In many cases, diseases may be contracted by anyone in the population. However, some people are more likely than others to get very sick if they are infected. This includes people who are older, are immunocompromised, those with chronic medical conditions, and those that have certain disabilities, or have underlying health conditions, and or those with high risk behaviors. The individuals that travel internationally and have high exposure to potential vectors of disease are most susceptible to infection.

Sources	
State of Iowa, IHSEMD	<i>Iowa Hazard Mitigation Plan, 2018</i>
Centers for Disease Control and Prevention	http://www.cdc.gov
Iowa Department of Public Health	http://www.idph.state.ia.us
Pandemic Flu	http://www.pandemicflu.gov
Historic Epidemics	www.who.int/en/ https://www.who.int/health-topics/severe-acute-respiratory-syndrome#tab=tab_1 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3329048/ https://www.publichealth.columbia.edu/public-health-now/news/epidemic-endemic-pandemic-what-are-differences

Public/Civil Disorder/Unrest

Public/Civil Disorder/Unrest are mass demonstrations or direct conflict by large groups of citizens such as marches, protest rallies, riots, and non-peaceful strikes that results in a disruption of essential functions by looting, arson, or other unlawful behavior.

These events usually involve people assembled together in a manner to substantially interfere with public peace constitute a threat, by use of unlawful force or violence against another person, causing property damage; or attempting to interfere with, disrupt, or destroy the government, political subdivision, or group of people. Large-scale civil disturbances rarely occur, but when they do they are usually an offshoot or result of one or more of the following events:

- 1) Labor disputes where there is a high degree of animosity between the participating parties.
- 2) High profile/controversial judicial proceedings.
- 3) The implementation of controversial laws or other governmental actions.
- 4) Resource shortages caused by a catastrophic event.
- 5) Disagreements between special interest groups over a particular issue or cause.
- 6) A perceived unjust death or injury to a person held in high esteem or regard by a particular segment of society.

Labor strikes and work stoppages are not considered in this hazard unless they escalate into a threat to the community. Vandalism is usually initiated by a small number of individuals and limited to a small target group or institution. Most events are within the capacity of local law enforcement. However, in extreme cases the National Guard may be called in.

On May 28, 2020, civil unrest ensued throughout the United States, Iowa, and Scott County as a result of the George Floyd verdict, which was seen as institutionalizing police brutality and racism against African Americans. On Saturday, May 30, 2020 more than 500 people congregated in LeClaire Park to protest and rocks were thrown during part of the protest. On Sunday, May 31, dozens of people gathered at NorthPark Mall late Sunday night and later fanned out across the City of Davenport in vehicles, firing guns and damaging businesses. Dozens of shots were fired all over the City of Davenport and at midnight, a 22-year-old female protester was shot in the back and died. On June 1, 2020 at around 3:00 a.m., three Davenport police officers were ambushed by gunfire while on patrol, and 2 of the officers were injured. As a result, the City of Davenport imposed a curfew of 9 p.m. through 5 a.m. beginning Monday, June 1, until lifted. Davenport's mayor requested assistance of the Iowa National Guard to help restore order. Other area communities followed suit. That same day, Scott County Emergency declared a civil emergency for the Davenport Area.

Probability. Although destructive civil disturbances are rare, the potential is always there for an incident to occur. This is even more true today, where television, radio, cell phones, and the internet provide the ability to instantly broadcast information (factual or not) in real time to the entire community. Oftentimes, that coverage helps to spread the incident to other uninvolved or unaffected areas, exacerbating an already difficult situation. This may result in people, previously not involved, to participate in the disturbance for no other reason than to riot and cause harm. With increased political and racial tensions probabilities for civil unrest may increase. The Scott County EMA rates the probability and overall risk for a public/civil disorder/unrest event as moderate.

Magnitude/Severity/Extent. The social rage that causes civil unrest events usually affects a localized area of the community. The local government units are left to order to a normal state, cleaning up the area, reestablishing services, repairing or replacing damaged public facilities and infrastructure, and trying to restore some level of citizen confidence in the community.

- A. Health and safety of persons in affected areas: Minimal to severe. Possibility of injuries to participants and by-standers. Deaths possible in worst cases scenario.
- B. Health and safety of response personnel: Moderate to high depending on potential for gunfire.

- C. Continuity of operations: Minimal. Usually localized event a reduction of hours of operation of public facilities due potential threats.
- D. Property, facilities, and infrastructure: Some damages, destruction possible based on nature or unrest.
- E. Delivery of services: Minor impact although curfew may cause a reduction of hours of operation due to curfews.
- F. Environment: No impact.
- G. Economic and financial conditions: Business disruptions and damages may occur at locations of event(s).
- H. Regulatory and contractual obligations: Impact unknown.
- I. Reputation of the entity: This will be dependent on how response is handled by enforcement teams and perceived impacts on civil liberties.

Warning. Events that incite such activity can build up over hours, days, or years, and the violent disturbance is a culmination of the pent up frustrations. Civil disruptions can also escalate very rapidly following events where people are gathered such as sporting events, concerts, speeches, court decisions, etc.

Duration. Events that incite such activity can build up over hours, days, or years, and the violent disturbance is a culmination of the long-term situation. Civil disruptions can also escalate very rapidly following events where people are gathered such as sporting events, concerts, or speeches.

Location/ Vulnerability. Civil disturbances are often difficult for local communities to handle. There is a fine line between the constitutional right of individuals and groups to assemble and air their grievances and the overall needs of the community to provide essential services, ensure personal safety of citizens, prevent property damage, and facilitate normal commerce. Fortunately, most demonstrations and large public gatherings are held in a peaceful, responsible manner. However, there are groups whose primary objective is to disrupt normal activities and perhaps even cause injury and property damage. People at risk are mainly the willing participants and law enforcement officials. Innocent bystanders and their property can be at risk as well.

Large venues including civic centers, malls and parks may be targeted. Public buildings such as court houses, city halls, communications centers, etc. may also be targeted.

Sources

Various Police Departments within Scott County, Scott County Sheriff Departments, and news media coverage

Railway Transportation Incident

A transportation incident is a derailment or train accident, collision, or roadway/rail crossing incidents including rail crossing blockage that directly threatens life or property, or that adversely affects community capabilities to provide emergency services.

Train incidents can result from a variety of causes. Human errors, mechanical failure, faulty signals, extended time periods of train blockages caused by significant rail traffic and train length, and trackage problems can all lead to railway incidents. Results of an incident can range from minor “track hops” to catastrophic hazardous materials incidents, passenger and nearby human casualties, and the inability to provide emergency services to many endangered human lives on the opposite side of the tracks. Scott County has approximately 58 miles of trackage and approximately 170 at-grade crossings. In addition, there are an average of 8 trains per day on the Canadian Pacific at trackage locations along the Mississippi River and 6 trains per day on the Iowa Interstate

Railroad.

From January 2012 through December 2021, there have been 61 documented rail incidents in Scott County, according to the Federal Railroad Administration (FRA). It should be noted that this database includes only self-reported incidents by railroad companies. Those incidents resulted in 39 injuries and one fatality. Seven of the incidents were not at grade crossings and 54 of the trains involved in these incidents were carrying hazardous materials. Five of the incidents were derailments.

The most recent derailment occurred on January 3, 2020 in downtown LeClaire and involved response teams and hazardous material mitigation by the Scott County Emergency Management Agency, LeClaire Fire and Police and the Canadian Pacific Command. Multiple rail cars were involved, and the clean-up operations took multiple days. Air and water monitoring were performed and reported to the Iowa Department of Natural Resources and Environmental Protection Agency. Initial evacuations of the immediate area were made and lasted several hours. A mobile command center had been established on site.

Probability. Map 3-8 shows the locations of railways within Scott County. Railway Transportation Incidents are most likely to occur within the railroad corridor. There were 61 self-reported rail incidents in Scott County between 2012 and 2021, according to the Federal Railroad Administration (FRA) with 54 of those incidents at grade crossings. With approximately 170 at-grade railroad crossings in Scott County, it is highly probable that there will be more than one railway incident somewhere in Scott County in any given year. There were also five derailments in the past 10 years with one derailment including hazardous materials. There is a proposal to merge the Canadian Pacific (CP) with the Kansas City Southern Railroad. Traffic on the CP is expected to increase three-fold if the merger occurs and the trackage in Scott County is identified as an area of higher impact in the Draft Environmental Impact Statement. Induced increases may occur along rail lines other than the CP. With increased traffic, the probability of rail incidents will also increase. The probability of a railway incident occurring in a specific jurisdiction will be addressed in each jurisdiction's individual risk assessment narrative. The Scott County EMA rates the probability and overall risk of a rail transportation incident as moderate. The 2018 Iowa Hazard Mitigation Plan stated 16 counties noted transportation incidents (all modes) as one of their top five hazards.

Magnitude/Severity/Extent.

- A. Health and safety of persons in affected areas: Deaths and injuries can range from those directly involved to citizens in the community affected by hazardous materials. Depending on the materials involved, evacuations may occur, moving residents away from dangerous products and the possibility of explosion.
- B. Health and safety of response personnel: If hazardous materials are involved, railroad officials have specially trained personnel and equipment to respond to rail incidents.
- C. Continuity of operations: No significant effects.
- D. Property, facilities, and infrastructure: Damage may be limited to the train, railcars, and cargo involved, but it could also include rail infrastructure and adjacent properties.
- E. Delivery of services: Rail transportation routes may be out of commission until the accident is cleaned up and the infrastructure repaired. Cargo will be delayed significantly as well as services that depend on that cargo.
- F. Environment: Gases, liquids, and solids can contaminate air soil and water in and near the incident scene.

- G. Economic and financial conditions: Effects include loss of production, business disruption due to evacuations, and business disruptions of those served by the railroad. Business and traffic disruptions could last several days until the clean-up efforts are complete.
- H. Regulatory and contractual obligations: None known.
- I. Reputation of the entity: Most communities with rail routes in them are familiar with the level of rail traffic, but they may not be familiar with the cargo that may be transported on them. Most are not aware of the significant risk that hazardous materials pose to the community. Education, public information, and a timely and effective response will determine the impact to the reputation of the jurisdiction.

The Scott County EMA notes the possibility of impacts to humans and businesses of rail transportation incident as moderate and to property as low.

Warning. Like other transportation incidents, a railway incident could occur with no warning. There may be a limited amount of time to warn those in the pathway of the harmful effects. In addition, there could be an accidental release of chemical substances or mixtures that presents danger to the public health or safety as a result of transportation on rail. Hazardous materials incidents usually occur very rapidly with little to no warning. Even if reported immediately, people in the area of the release have very little time to be warned and evacuated safely. Public address systems, television, radio, and the NOAA Weather Alert Radios are used to disseminate emergency messages about hazardous materials incidents. The Scott County EMA ranks preparedness for rail transportation incidents as moderate and internal response as moderate due to warning time but community related to response as high.

Location/Vulnerability. Map 3-8 shows the locations of railways within Scott County. Railway Transportation Incidents are most likely to occur within the railroad corridor. Vehicle/train collisions, train/train collisions, and detrimental rail blockages are located in areas in and around rail lines. The area of impact may be small, but depending on the products and materials being transported, the number trains, the length of blockages and the amount of human activity separated from emergency services, the impact could become extensive. If hazardous materials are being transported, the area could expand several miles from the scene and potentially result in fire and/or explosions.

Sources	
State of Iowa, IHSEMD	<i>Iowa Hazard Mitigation Plan, 2018</i>
Iowa Department of Transportation	http://www.dot.ia.us/rail/index.htm
National Transportation Safety Board	https://safetydata.fra.dot.gov/OfficeofSafety/PublicSite/Crossing/Crossing.aspx
Federal Railroad Administration	http://www.nts.gov http://www.fra.dot.gov/site/index.htm http://safetydata.fra.dot.gov/officeofsafety/publicsite/Query/incabbr.aspx
Association of American Railroads	http://www.aar.org https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/TenYearAccidentIncidentOverview.aspx

ASSESSING VULNERABILITY: OVERVIEW

This section analyzes the vulnerability of the county to hazards in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities. The first part is a general profile of Scott County that describes the characteristics of the county and its historic development.

Community Profile: Scott County, Iowa

The community profile for Scott County provides highlights on a variety of subjects, including climate and weather; communications; education; labor force, economy, and employment; geography and land use; housing; infrastructure; local history; medical and healthcare; and demographics. These county characteristics provide background on what might be at risk due to hazards including people, homes, communications, and economic centers.

Climate and Weather

The climate in Scott County is subhumid midcontinental with an average annual temperature of 49.9 degrees Fahrenheit. The average summer temperature is 72.2 degrees Fahrenheit, and the Winter average temperature is 25.3 degrees Fahrenheit. The average annual precipitation in Scott County is 36.17 inches.

Monthly Normals for Davenport Municipal Airport

Month	Average Temperature (°F)	Precipitation (inches)
January	21.9	1.14
February	26.3	1.44
March	38.6	2.34
April	50.3	3.61
May	61.7	4.82
June	71.1	4.73
July	73.7	4.07
August	71.7	3.96
September	64.6	3.47
October	52.5	2.70
November	39.2	2.25
December	27.6	1.64

Source: National Oceanic & Atmospheric Administration. National Environmental Satellite, Data, and Information Service. Davenport Municipal Airport Station. 1991-2020 Station Normals.

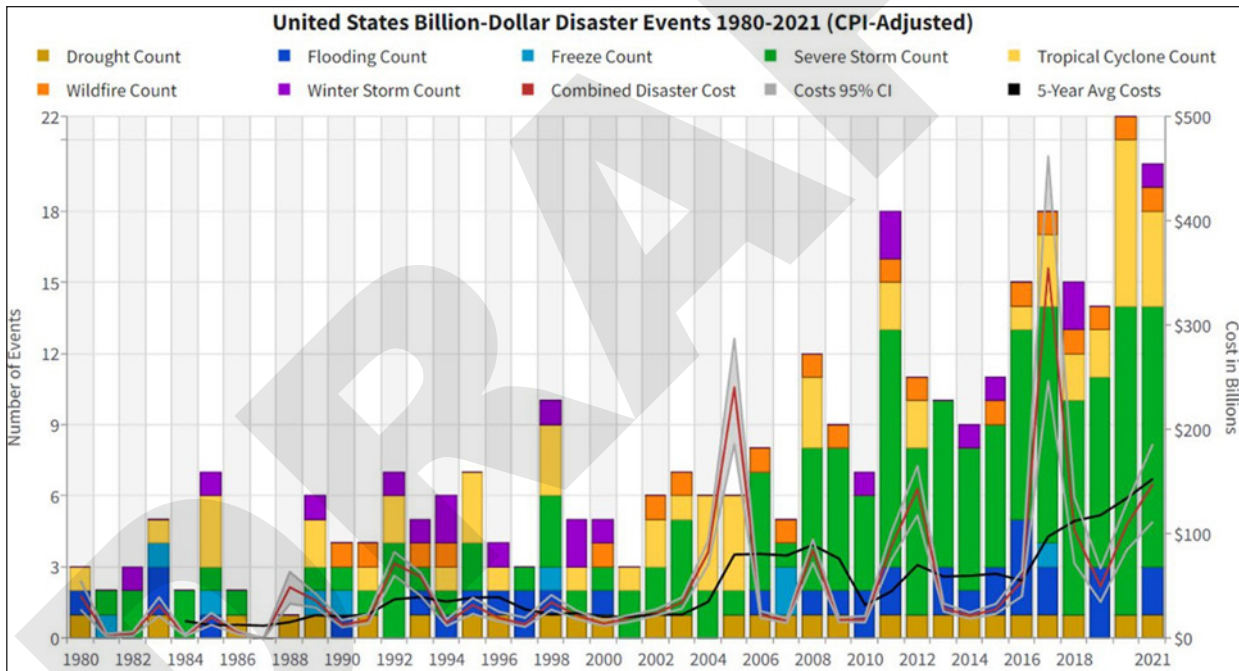
Seasonal Normals for Davenport Municipal Airport

	Winter	Spring	Summer	Autumn	Annual
Average Temperature (°F)	25.3	50.2	72.2	52.1	49.9
Precipitation (inches)	4.22	10.77	12.76	8.42	36.17

Source: National Oceanic & Atmospheric Administration. National Environmental Satellite, Data, and Information Service. Davenport Municipal Airport Station. 1991-2020 Station Normals.

Climate Change

Proficient preparation for future hazard events requires an informed understanding of climate change and analysis of climate change impacts, as evidenced by historic climate trends and scientific research. Climate change has altered the severity, frequency, and types of hazard events experienced globally and in Iowa. Research indicates that climate change will have an even greater impact in the future. Already, the U.S. has been majorly impacted by climate change. Disaster events are becoming more severe and costly, and communities across the world have struggled to adapt to changing weather patterns and storm occurrences.



Source: NOAA National Centers for Environmental Information. *U.S. Billion-Dollar Weather and Climate Disasters (2022)*.

Temperatures in Iowa have risen more than 1°F since the beginning of the 20th century. Temperatures in the 2000s have been higher than in any other historical period, with the exception of the early 1930s Dust Bowl era. The warming is due to increases in nighttime minimum temperatures; daytime maximum temperatures, however, show no trend. Increases in humidity may be one cause of this asymmetric warming between night and day. The hottest year on record was 2012, with an annual average temperature of 52.1°F, which is 4.5°F above the long-term (1895-2020) average. Warming has been concentrated in winter and fall, while summers have not warmed substantially, a feature characteristic of much of the Midwest. This lack of summer warming is reflected in a below average number of very hot days and no overall trend in warm nights. The winter warming trend

is reflected in a below average number of very cold nights since 1990, with the exception of the 2010-2014 period.

Communications

Scott County and the greater Quad Cities Area is covered by NOAA Weather Radio call sign WXJ73 out of Rock Island, Illinois at frequency 162.550.

There are multiple media communications within the greater Quad Cities Area that serve Scott County from print media, radio, and television, both network and cable. The table below highlights the main media.

Newspapers	Radio Stations	Local TV Stations
The Quad City Times (Davenport, IA)	30 FM Stations	CH 4: –WHBF/CBS – Rock Island
The Dispatch / The Rock Island Argus (Moline, IL)	6 AM Stations	CH 6: KWQC/NBC Davenport
Star Courier (Kewanee, IL)		CH 8: WQAD/ABC Moline
The North Scott Press (Eldridge, IA)		CH 18: KLJB/FOX Davenport
Aledo Times-Record (Aledo, IL)		CH 24: WQPT PBS-Moline
The River Cities Reader (Davenport, IA)		CH:26: WBQD-LP - Davenport
Quad Cities Business Journal (Davenport, IA)		CH 26: KQIN/IPTV Davenport

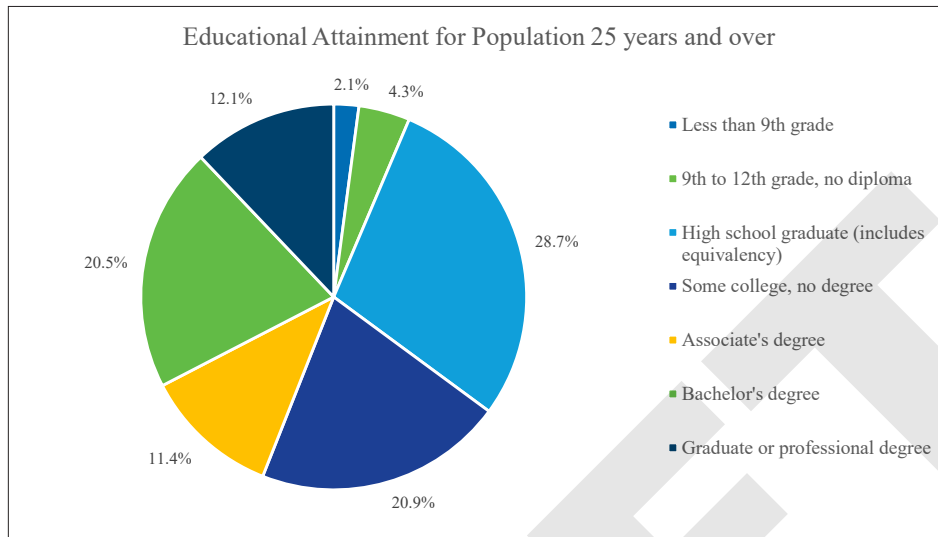
Education

Nearly 93.5% of the population in Scott County 25 years and over has attained at least a high school education, as shown in the following table and figure. Scott County contains portions of or all of the following school districts: Bettendorf Community School District, Davenport Community School District, North Scott Community School District, and Pleasant Valley Community School District. Colleges and universities within Scott County include Scott Community College, Palmer College of Chiropractic, St. Ambrose University, and technical/trade schools.

Scott County Educational Attainment for the Population 25 years and over	
Population 25 and over	117,528
Less than 9th Grade	2,504
9th to 12th grade (no diploma)	5,096
High School Graduate (included equivalency)	33,704
Some college, no degree	24,554
Associate's Degree	13,359
Bachelor's Degree	24,064
Professional or Graduate Degree	14,247
Percent High School Graduate or Higher	93.5%
Percent Bachelor's Degree or Higher	32.6%

Source: U.S. Census Bureau, American Community Survey, 5-year estimates 2016-2020.

Figure 3-4
Educational Attainment in Scott County

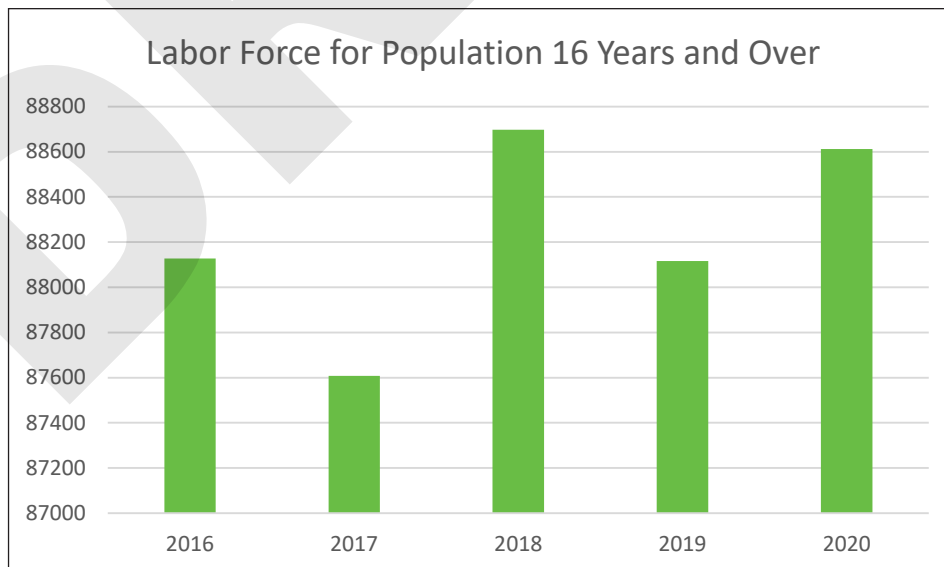


Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

Labor Force, Economy, and Employment

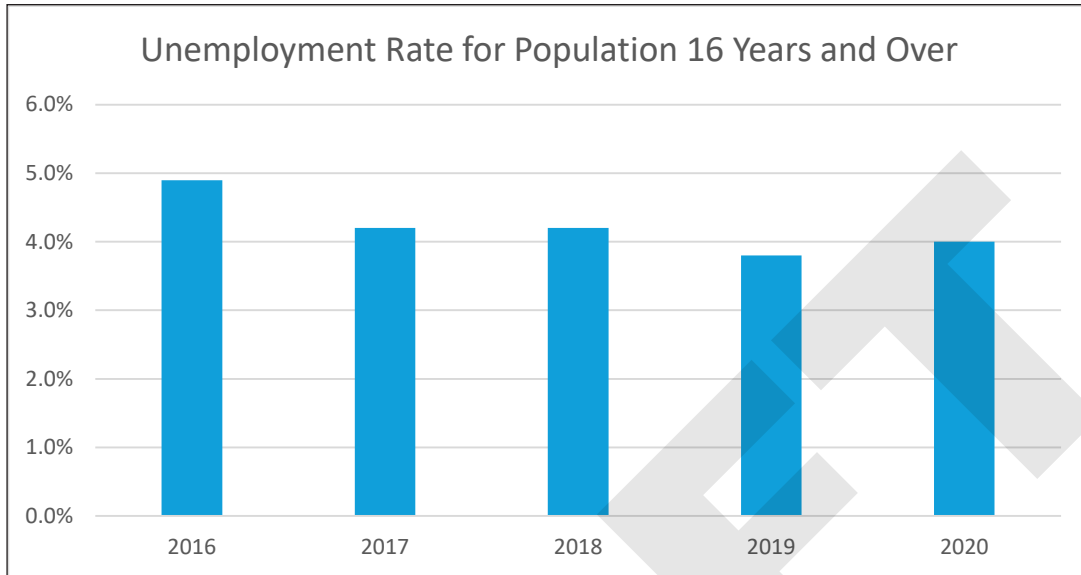
The largest employer in the metropolitan area is the Rock Island Arsenal. While located in Rock Island County, Illinois, it employs residents living in Scott County. In Scott County, Genesis Health Systems, Hy-Vee, and the Davenport School District are the top three employers located at multiple sites. These top employers are followed by Arconic, formerly Alcoa, and Oscar Mayer Foods Corporation. Manufacturing is the largest sector employer.

Figure 3-5
Labor Force 2016-2020



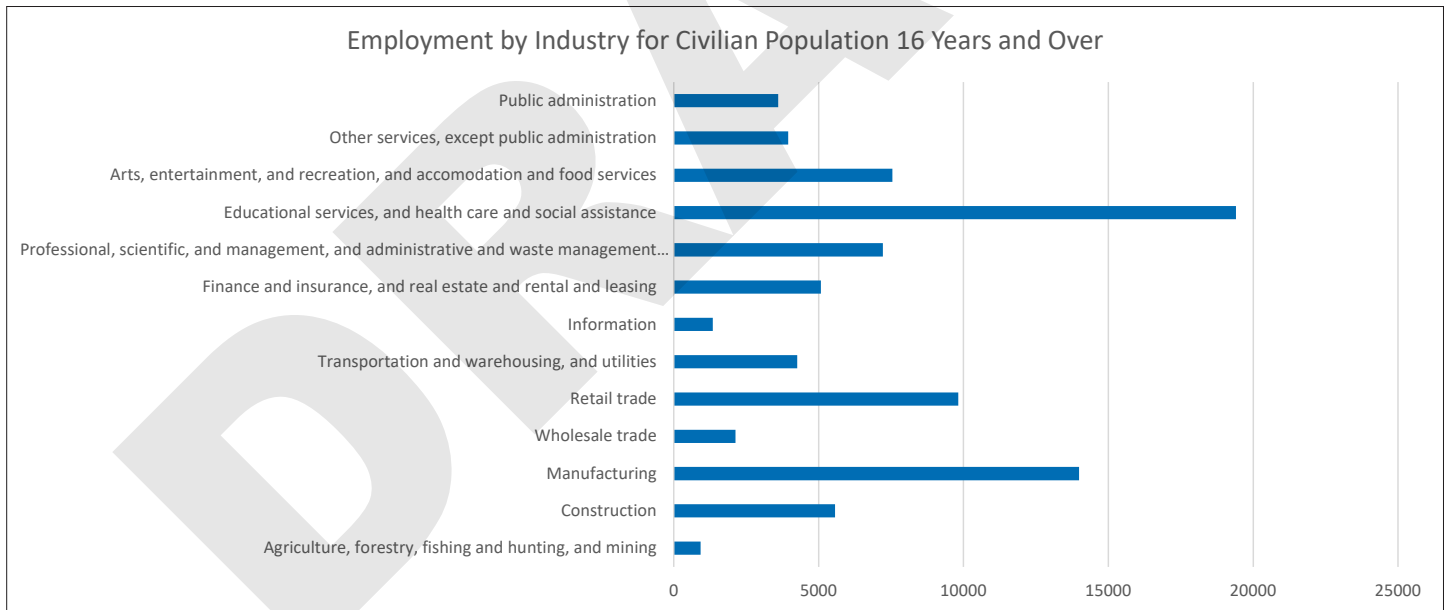
Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

Figure 3-6
Unemployment Rate 2010-2015



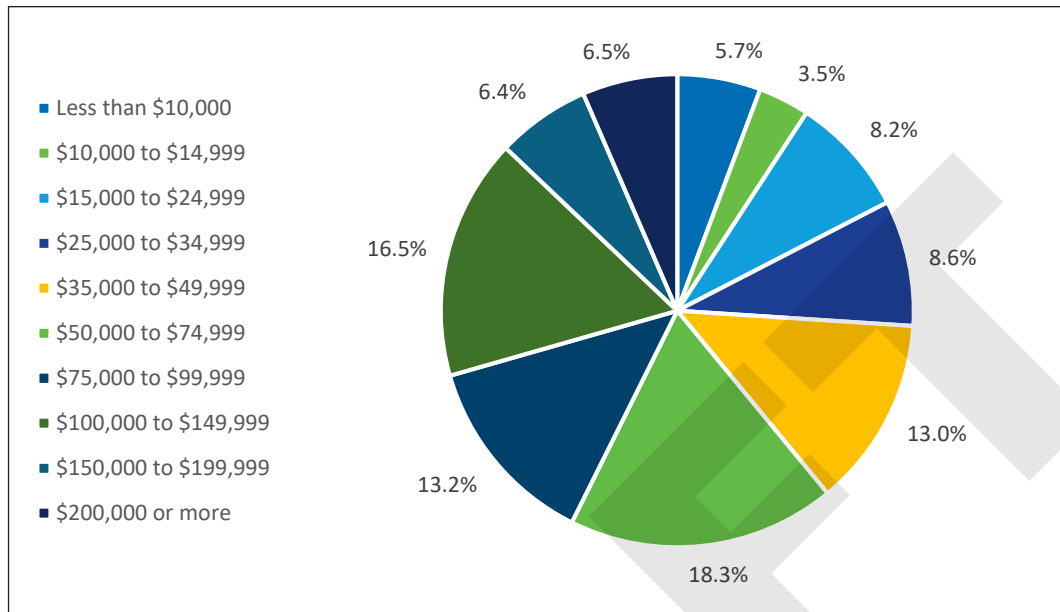
Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

Figure 3-7
Employment by Industry



Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

**Figure 3-8
Household Income**



Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

Top 10 Employers in Scott County, IA		
Employer	Rank	Employees
Davenport School District	1	2,500
Deere & Co	2	2,000
Arconic	3	2,000
Genesis Medical Center	4	1,574
Tri City Engineering & Integration	5	1,200
Elite Casino Resorts LLC	6	1,000
Cobham North America	7	900
City of Davenport	8	800
Direct TV	9	600
Bettendorf Event Center	10	600

Source: Data Axle and supplemental sources, 2022.

Note: Estimated provided are derived from multiple sources with varying levels of accuracy.

Geography and Land Use

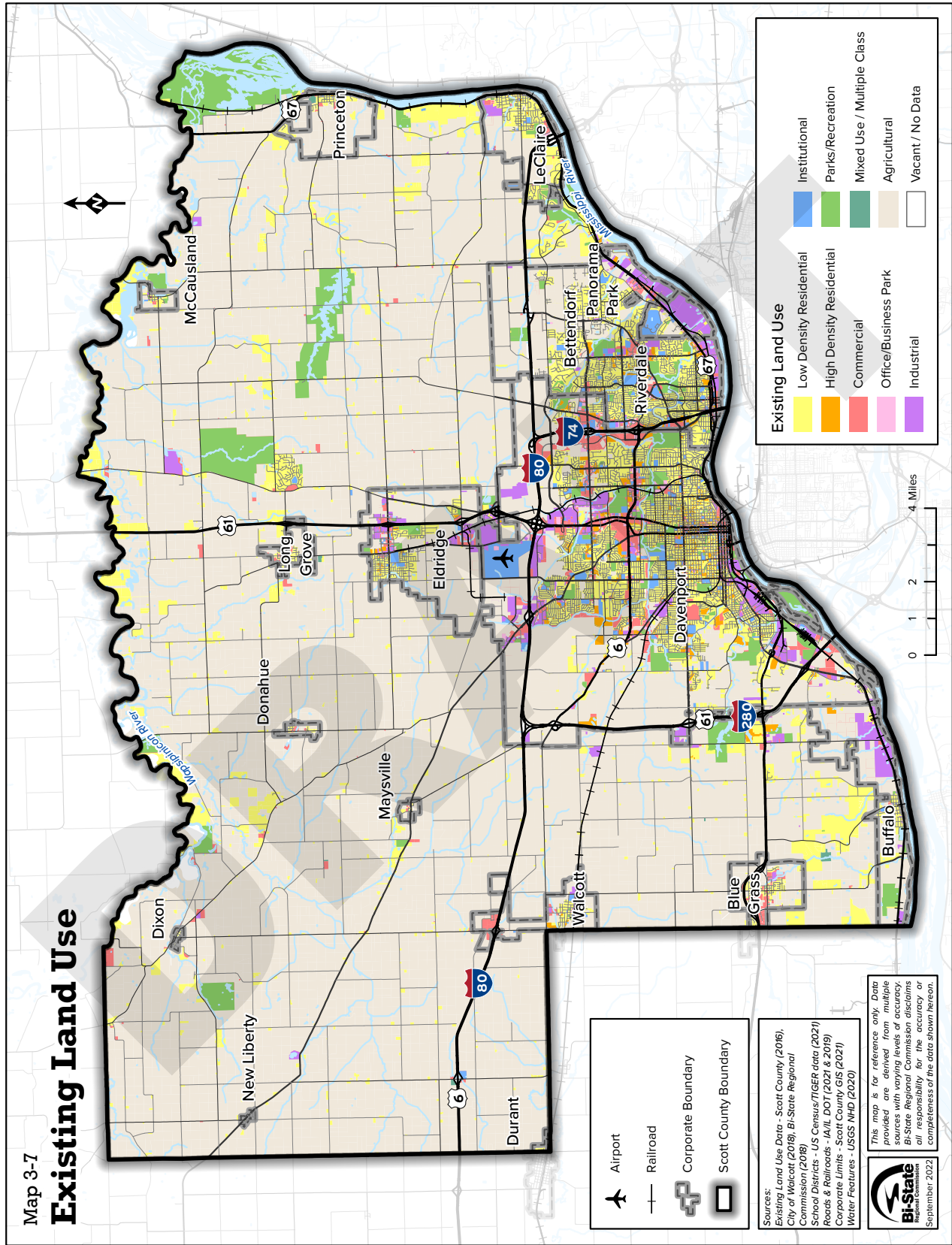
Scott County is located in eastern Iowa where Interstate 80 crosses the Mississippi River. The county is bordered by the Wapsipinicon River and Clinton County, Iowa to the north, the Mississippi River and Rock Island County, Illinois, on the east and south, Muscatine County, Iowa on the southwest, and Cedar County, Iowa on the west. Davenport is the largest city and the county seat.

The soils in Scott County are nearly level to steeply sloping. The topography of the uplands along the Mississippi River has steep side slopes and flat narrow foot slopes with alluvial bottomlands formed in alluvium. A

river terrace parallels the Wapsipinicon River, and the topography in this area is not as steep as along the Mississippi River. The topography switches to gently rolling land away from the rivers in the central and western parts of the county. About half of the county drains to the Mississippi River while the other half flows to the Wapsipinicon River. The Wapsipinicon River flows into the Mississippi River in the northeast corner of Scott County.

Primary crops grown within Scott County include corn, soybeans, and forage crops such as alfalfa and smooth brome. Wheat, oats, barley, sod, some vegetables, nursery stock, and orchard crops are also harvested. The county also has some of the highest priced farmland in the state; however, the agricultural productivity is only a minor portion of the total economy of Scott County due to the large urban center located in the county. Residential areas within Scott County are primarily located within incorporated areas, but approximately 2% or 5,440 acres of the existing land use within unincorporated Scott County is residential developments. The Park View subdivision as well as residential development along the Mississippi River accounts for a large portion of this land area. Commercial and industrial areas are predominantly located within incorporated areas, especially Davenport. Map 3-7 shows existing land use in Scott County.

DRAFT



Housing

The following tables provide information on housing units in Scott County, as well as the years structures were built, and home ownership. Home heating information is also noted.

Units in Structure		
Total Housing Units	74,662	
1-unit detached	51,743	69.3%
1-unit attached	4,455	6.0%
2 units	2,228	3.0%
3 to 4 units	2,746	3.7%
5 to 9 units	3,888	5.2%
10 or more units	7,749	10.3%
Mobile home	1,847	2.5%

Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

Year Structure Built		
Year	Housing Units	Percent
2014 or later	1,846	2.5%
2010 to 2013	2,590	3.5%
2000 to 2009	7,981	10.7%
1980 to 1999	13,190	17.6%
1960 to 1979	22,792	30.6%
1940 to 1959	10,856	14.5%
1939 or earlier	15,407	20.6%

Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

Home Ownership and Median Rent	
Occupied Housing Units	67,437
Specified Owner Occupied Units	47,289
Median Value of Owner Occupied Units	\$167,900
Specified Renter Occupied Units	19,439
Median Rent	\$812

Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

House Heating Fuel		
Total	67,437	
Utility Gas	51,444	76.3%
Bottled, Tank, or LP Gas	2,437	3.6%
Electricity	12,765	18.9%
Fuel oil, Kerosene, etc.	49	0.1%
Coal or Coke	0	0.0%
Wood	211	0.3%
Solar Energy	9	0.0%
Other Fuel	171	0.3%
No Fuel Used	351	0.5%

Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

Infrastructure

Scott County is traversed by three Interstates 74, 80, and 280 that frame the Iowa Quad Cities Metropolitan Area and carry some of the heaviest traffic in Scott County. Other major highways and roads within Scott County include U.S. Routes 61 and 67, and State Route 22. Five automobile bridges span the Mississippi River within Scott County limits: the I-280 Bridge, the Centennial Bridge, the Government Bridge at Lock and Dam 15, the I-74 Bridge, and the I-80 Bridge. These five crossings carry a total of 173,900 average annual vehicles per day.

There are two airports in the Quad Cities Area: The Quad Cities International Airport for commercial aviation and the Davenport Municipal Airport for general aviation. The Quad Cities International Airport, located in Moline, Illinois is the regional airport for Western Illinois and Eastern Iowa. It serves the area with dozens of daily flights and non-stop service to eleven destinations, connecting to multiple national and international destinations. There are two air freight carriers currently at the Quad City International Airport. General aviation needs are met privately by Elliott Aviation in Moline and publicly by the Davenport Municipal Airport in Davenport, Iowa. The Davenport Municipal Airport provides vital connections to businesses and their customers.

Currently, there are three rail companies operating in Scott County, the Burlington Northern Santa Fe (BNSF), Canadian Pacific (CP), and Iowa Interstate (IAIS) (see Map 3-8). There is no passenger rail service to Scott County at this time. The two existing rail crossings over the Mississippi River to Scott County are the Crescent Bridge (BNSF) and Government Bridge (IAIS).

Waterways within the county include the commercially-navigable Mississippi River and the Wapsipinicon River

(the Wapsipinicon River is a tributary of the Mississippi River). Lock and Dam 14 and Lock and Dam 15 on the Mississippi River are located within the county border and provide movement for barges carrying freight up and down the Mississippi River. There are 19 active barge terminals located within Scott County, seven of which are served by rail. In addition, the Channel Cat, a water taxi/passenger ferry service on the Mississippi River, has docks located in Bettendorf and Davenport. The Channel Cat provides transportation between Bettendorf and Davenport on the Iowa side of the Mississippi River and Moline on the Illinois side.

Source water for municipalities in the county comes from the Mississippi River and wells. The Iowa American Water Company, which serves Davenport, LeClaire, Riverdale, Panorama Park, and unincorporated parts of Scott County, has an average demand of 16,600,000 gallons of water per day. The Cities of Bettendorf, Davenport, Panorama Park, and Riverdale share waste water treatment facilities. The treatment plant has a design capacity of approximately 26 million gallons per day, but can accept up to 60 million gallons per day during storms and can perform at that capacity for 48 hours. Eldridge and LeClaire both have facilities that can operate secondary treatments.

Local History

Native Americans historically lived along the shores of the area rivers and streams where areas of potential archeologically-significant sites may be found. There is a rich history of settlement as westward expansion of the United States created a crossroads of rail and river navigation in the heart of the Quad Cities Metropolitan Area. The first railroad bridge across the Mississippi River was located between Davenport, IA, Rock Island, IL, and the Rock Island Arsenal Island. Other areas up and down the Mississippi River in Scott County were the sites of Civil War activities.

The area of Scott County first settled in 1833 was in a place called Valley City. Today it is an unincorporated area known as Pleasant Valley. By 1836, the first survey of public land in Iowa was called for, and by March 1837, the Scott County area had been completely surveyed. Scott County was established in 1837 and was named in honor of General Winfield Scott, who presided the signing of the treaty ending the Black Hawk War. The first elections were held in 1838 with the first courthouse being built by 1841. It was located on land donated by Antoine LeClaire in Davenport, IA at the same site as the courthouse today. In addition to Mr. LeClaire and General Scott, another famous resident was William Cody, who was born at the Cody homestead in rural Scott County in 1846 and became known as Buffalo Bill of Wild West fame.

Medical and Healthcare

Scott County is serviced by Genesis Health Systems and Unity Point Health Care, operating a total of three campuses. In addition, Community Health Care, Inc. has an outpatient facility.

Demographics

This plan utilized the newest Census data that was available at the time compiled. The individual jurisdiction profiles were updated for the summary below and in the section for each jurisdiction using the American Community Survey 5-year estimates (2016-2020).

The following tables highlight characteristics of the people living in Scott County, Iowa. They include population, age, race, ethnicity, household type, and population change.

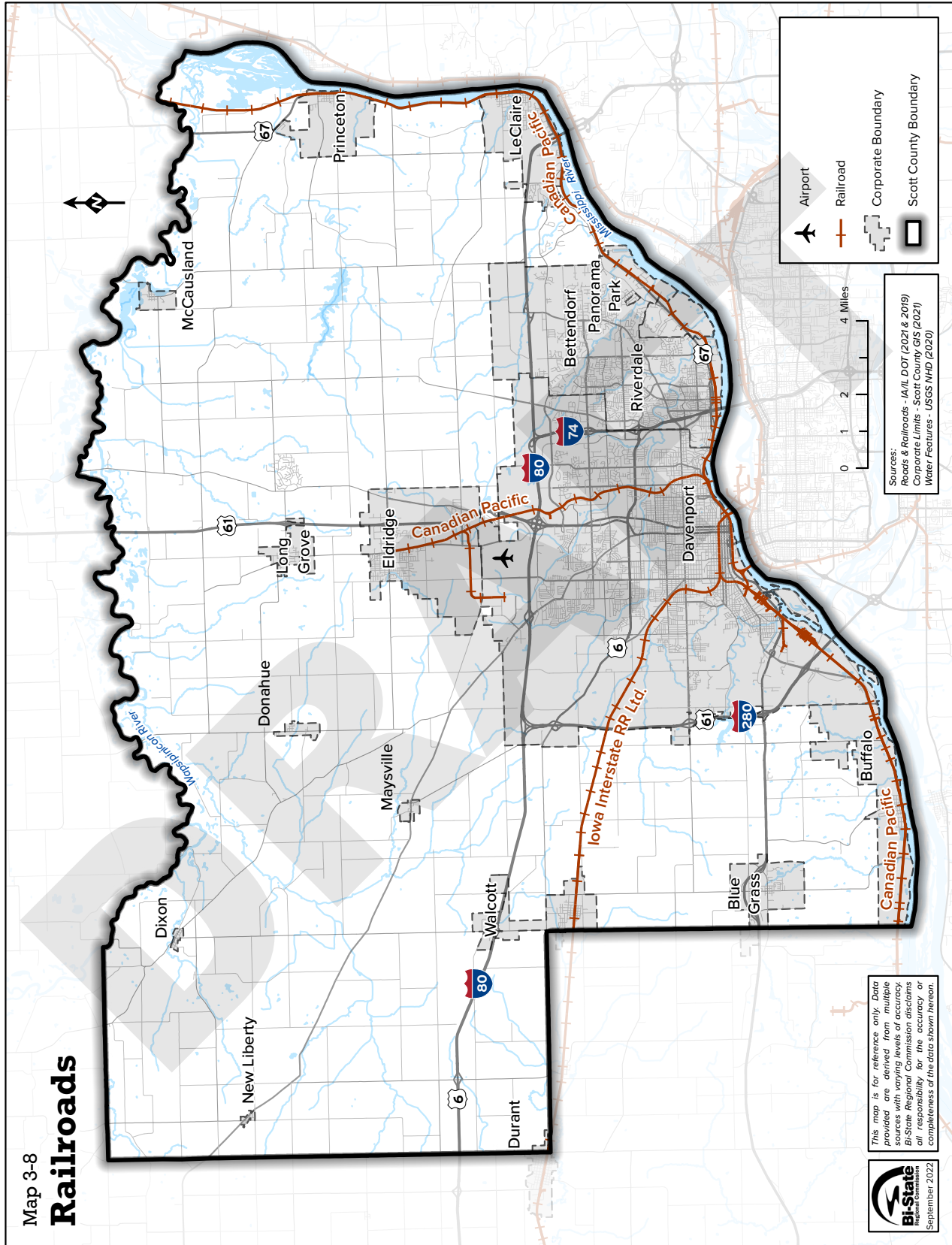
Population		
Total	172,938	
Male	84,813	49.0%
Female	88,125	51.0%

Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

Age		
	Number	Percent
Under 5 years	10,986	6.4%
5 to 14	23,218	13.4%
15 to 19	11,202	6.5%
20 to 34	32,724	18.9%
35 to 54	43,882	25.4%
55 to 64	22,899	13.2%
65 to 84	24,454	14.1%
85 +	3,573	2.1%
Median Age	38.4	

Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

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Race and Ethnicity		
	Number	Percent
White alone	145,722	84.3%
Black or African American alone	12,765	7.4%
American Indian and Alaskan Native alone	505	0.3%
Asian alone	4,827	2.8%
Native Hawaiian and Other Pacific Islander alone	21	0.0%
Some other race	1,509	0.9%
Two or more races	7,589	4.4%
Hispanic or Latino Ethnicity (of any race)	12,031	7.0%

Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

Households by Type		
	Number	Percent
Total Households	67,437	
Married-couple Households	32,540	48.3%
Cohabiting couple Households	4,837	7.2%
Male householder, no spouse/partner present	11,985	17.8%
Living Alone	9,093	13.5%
65 years and over	2,560	3.8%
Female householder, no spouse/partner present	18,075	26.8%
Living Alone	11,171	16.6%
65 years and over	5,559	8.2%
Households with one or more people under 18 years	20,206	30.0%
Households with one of more people 65 years and over	19,428	28.8%
Average Household Size		2.51 persons
Average Family Size		3.14 persons

Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

	1970	1980	1990	2000	2010	2020	% of the County Population	% Change 1970 - 2020
Scott County	142,687	160,022	150,973	158,668	165,224	174,669	100.0%	+22.4%
City of Bettendorf	22,126	27,381	28,139	31,275	33,217	39,102	22.4%	+76.7%
City of Blue Grass	1,032	1,377	1,214	1,169	1,452	1,666	1.0%	+61.4%
City of Buffalo	1,513	1,441	1,250	1,321	1,270	1,176	0.7%	-22.3%
City of Davenport	98,469	103,264	95,333	98,359	99,685	101,724	58.2%	+3.3%
City of Dixon	276	312	228	276	247	202	0.1%	-26.8%
City of Donahue	216	289	316	293	346	335	0.2%	+55.1%
City of Eldridge	1,535	3,279	3,378	4,159	5,651	6,726	3.9%	+338.2%
City of LeClaire	2,520	2,899	2,734	2,847	3,765	4,710	2.7%	+86.9%
City of Long Grove	269	596	605	597	808	838	0.5%	+211.5%
City of McCausland	226	381	308	299	291	313	0.2%	+38.5%
City of Maysville	170	151	170	163	176	156	0.1%	-8.2%
City of New Liberty	141	136	139	121	137	138	0.1%	-2.1%
City of Panorama Park	219	145	127	111	129	139	0.1%	-36.5%
City of Princeton	633	965	904	946	886	923	0.5%	+45.8%
City of Riverdale	684	462	419	656	405	379	0.2%	-44.6%
City of Walcott	989	1,425	1,356	1,528	1,629	1,551	0.9%	+56.8%
Unincorporated Area	11,669	15,519	14,349	14,548	15,130	14,591	8.4%	+25.0%

Source: U.S. Census Bureau, Decennial Census 1970-2020.

Recreation and Tourism

There are numerous parks, recreational areas, and open spaces including conservation areas, within Scott County. Scott County Park, a 1,280-acre park located nine miles north of the City of Davenport, is the largest park in Scott County. Its features include picnic areas, camping sites, an equestrian area, playgrounds, a swimming pool, and baseball fields. West Lake Park, located on 110th Avenue west of Interstate 280, is a 620-acre park with four lakes, fishing, swimming, picnic areas, playgrounds, a beach, and campgrounds. The Wapsi River Environmental Education center has been named one of 77 areas in Iowa with premium wildlife viewing. In combination with Sherman Park, the area boasts 432 acres of rich plant and animal diversity. The center also offers environmental education for the public, schools, and other groups. Each jurisdiction within Scott County also has numerous parks, golf courses, pools or aquatic centers, and sports areas, with some of the larger parks being located within the City of Davenport. Credit Island, on the Mississippi River, is approximately 420 acres and has amenities such as a golf course, several sporting areas, biking, hiking, boating, and fishing.

Other tourist attractions include the Buffalo Bill Museum; Figge Art Museum; Family Museum; the Putnam Museum & Giant Screen Theater; Modern Woodmen Park, home of the Quad City River Bandits; Buffalo Bill Cody Homestead; Walnut Grove Pioneer Village; Isle of Capri Casino; Rhythm City Casino; the Adler Theater; the River Center; the Waterfront Convention Center; and many more entertainment venues. The Mississippi Valley Fairgrounds located in southwest Davenport hosts the Scott County Fair, which is one the largest fairs in Iowa. The fair attracts approximately 300,000 people during its weeklong event with over 600,000 people visiting annually for other events held at the fairgrounds.

In addition to regional attractions and facilities, Scott County’s communities host a number of large events throughout the year that draw large numbers of people. These events include the Bix 7 Road Race, Bix Beiderbeck Jazz Festival, River Roots Live, and the LeClaire Tug Fest.

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ASSESSING VULNERABILITY: IDENTIFYING STRUCTURES

Determining Community Assets

The types of community assets that are considered include critical facilities and buildings, vulnerable populations, economic elements, and historical, cultural, and natural resources. Information regarding the presence of these types of assets within the county is discussed as available. Additionally, a description of the assets selected by participating jurisdictions is included within the individual multi-jurisdictional risk assessments found later in this chapter.

Critical Buildings and Facilities

Essential Facilities – These facilities are essential to the health and welfare of the whole population and are especially important following hazard events. The potential consequences of losing them are great; an inventory of these facilities is crucial. These facilities are based on their structural integrity, content value, and the effects on the community if there was an interruption in their functions. *The vulnerability is based on the service they provide rather than simply their physical aspects.*

- **Hospitals**
 1. Genesis Medical Centers
 2. Trinity Medical Center
- **Other Medical Facilities**
- **Police and Fire Stations**

	Police Department	Fire Department
Bettendorf	X	X
Blue Grass	X	X
Buffalo	X	X
Davenport	X	X
Dixon *		X
Donahue *		X
Eldridge	X	X
LeClaire	X	X
Long Grove *		X
McCausland *		X
Maysville *		X
New Liberty *		X
Panorama Park *		X
Princeton	X	X
Riverdale *		X
Walcott	X	X

* Indicates Volunteer Fire Department

- **Emergency Operations Centers**

1. County Wide Emergency Operation Center
2. City of Bettendorf
3. City of Davenport

- **Evacuation Shelters**

1. Available throughout the county, residents will be notified of the locations as needed.

- **Schools and Colleges**

1. Bettendorf Community School District
2. Davenport Community School District
3. North Scott Community School District
4. Pleasant Valley Community School District
5. St. Ambrose University
6. Palmer College of Chiropractic
7. Scott Community College
8. Kaplan College
9. Hamilton Technical College

- **Transportation Systems**

- **Airways (Airports and Heliports)**

1. Davenport Municipal Airport
2. Genesis Medical Center East Campus Heliport
3. Genesis Medical Center West Campus Heliport

- **Highways (Bridges, Tunnels, Roadbeds, Overpasses, and Transfer Centers)**

1. Interstates: I-80, I-280, I-74
2. U.S. Highways: 6, 61, 67
3. State Highways: 130
4. Bridges: Centennial Bridge, Government Bridge (Rock Island Arsenal), I-74 Bridge, I-80 Bridge, and I-280 Bridge.

- **Railways**

1. Canadian Pacific
2. Iowa Interstate

- **Waterways (navigable)**

1. Mississippi River

- **Lifeline Utility Systems**

• Potable Water

	City/Public Water Sources	Local Groundwater Sources	Private Water Source
Bettendorf *			X
Blue Grass		X	
Buffalo		X	
Davenport *			X
Dixon		X	
Donahue		X	
Eldridge	X		
LeClaire *			X
Long Grove		X	
McCausland			X
Maysville		X	
New Liberty		X	
Panorama Park *			X
Princeton		X	
Riverdale *			X
Walcott		X	

* Served by Iowa American Water Company

• Wastewater

	City Wastewater Treatment Facility	Sewage Lagoon	Private Septic Systems
Bettendorf	X*		
Blue Grass		X	
Buffalo		X	
Davenport	X*		
Dixon		X	
Donahue		X	
Eldridge	X		
LeClaire	X		
Long Grove		X	
McCausland			X
Maysville			X
New Liberty		X	
Panorama Park	X*		
Princeton		X	
Riverdale	X*		
Walcott		X	

* Intergovernmentally funded and located in Davenport

- **Oil**
- *Natural Gas*
 1. Alliant Energy Company
 2. Eastern Iowa Light and Power Company
 3. Mid-American Energy Company
- **Electric Power**
 1. Alliant Energy Company
 2. Eastern Iowa Light and Power Company
 3. Mid-American Energy Company
- **Communication Systems**
- **High Potential Loss Facilities**
- **Hazardous Material Facilities**

Participating jurisdictions provided an inventory of their community assets that could be potentially damaged by a hazard event. They individually determined which facilities were vulnerable. These assets and critical facilities are described in general terms for each participating jurisdiction in the Multi-Jurisdictional Risk Assessment section and were mapped to determine those in a Special Flood Hazard Area or impacted by Karst topography. Specific lists and map are not shown to protect vulnerable assets.

Vulnerable Populations in Scott County

Vulnerable populations can include small children, persons with disabilities, elderly persons, or non-English speaking residents that may require special response assistance or special medical care after a disaster.

Population	Number	Percent
Total Population under 5 years	10,986	6.4%
Total Population over 65 years	28,027	16.2%
Total Persons with a Disability (all age groups, noninstitutionalized)	18,162	10.6%
Total Population 5 years and over that speak English “less than very well”	3,996	2.5%

Source: U.S. Census Bureau, American Community Survey, 5-year estimates, 2016-2020.

Maps 9-11 display median household income, percent minority population, and Hispanic/Latino populations in Scott County. Maps are illustrated using census tracts, and the data is derived from five-year estimates using 2016 to 2020 American Community Survey data. The overall goal is to identify particular areas of the Scott County that are geographically located in vulnerable areas. As can be see, the urbanized city centers appear to have densities of these populations, and some occur along creeks, rivers, and rail corridors. Census information such as this may be referenced by plan participants as mitigation actions that are implemented. It should be noted that buyout programs for flood mitigation often target these types of areas.

Economic Elements

Economic elements could affect the local or regional economy if significantly disrupted.

- Major Employers
- Financial Centers

Special Considerations

Additional areas of high-density residential or commercial development that, if damaged, could result in high death tolls and injury rates.

- Shopping districts and malls
- High density residential developments
- High rise residential or commercial buildings
- High attendance event venues (i.e. sports fields, entertainment facilities)
- College dormitories

Historical, Cultural and Natural Resource Areas

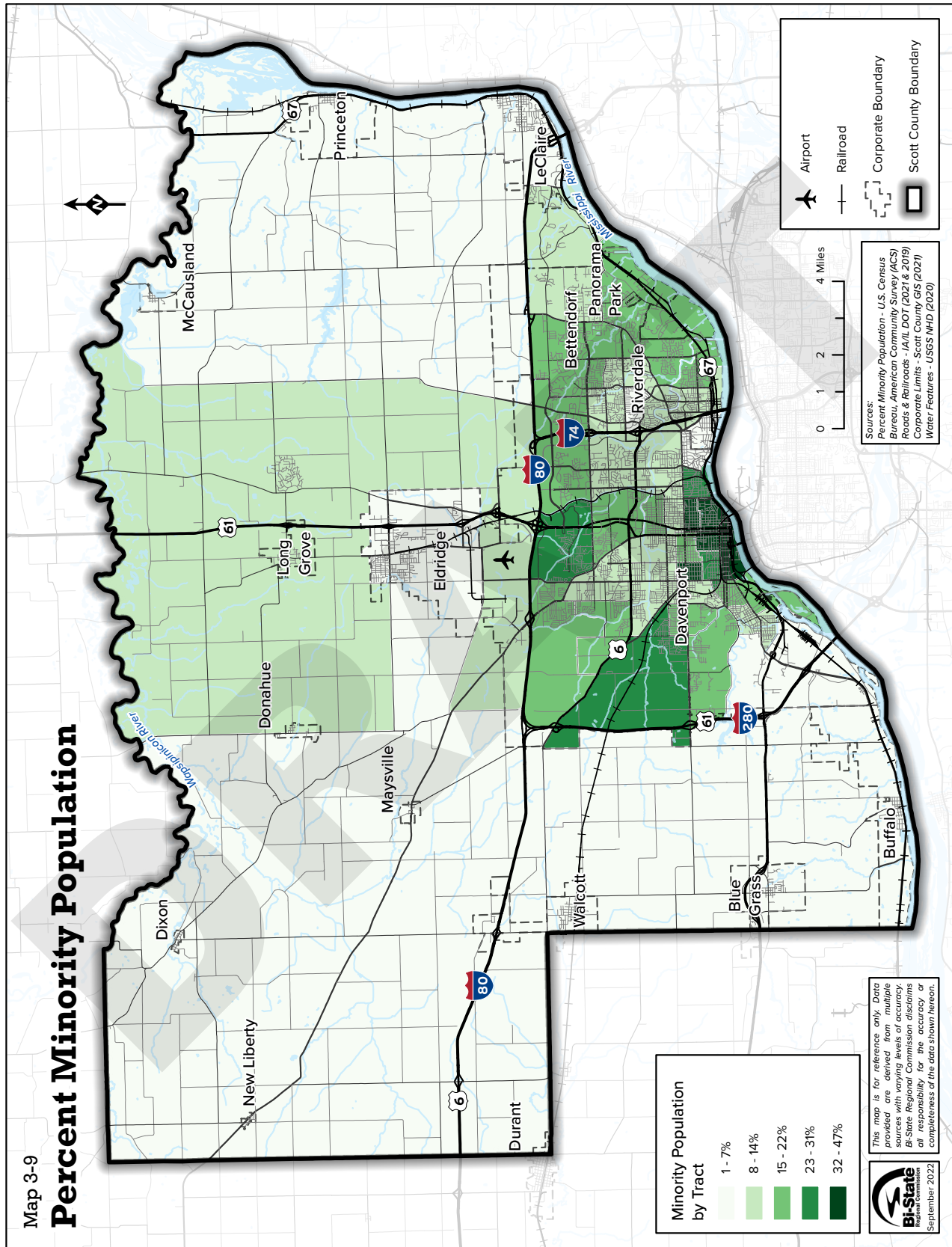
These are areas that could be identified and protected under state and federal laws.

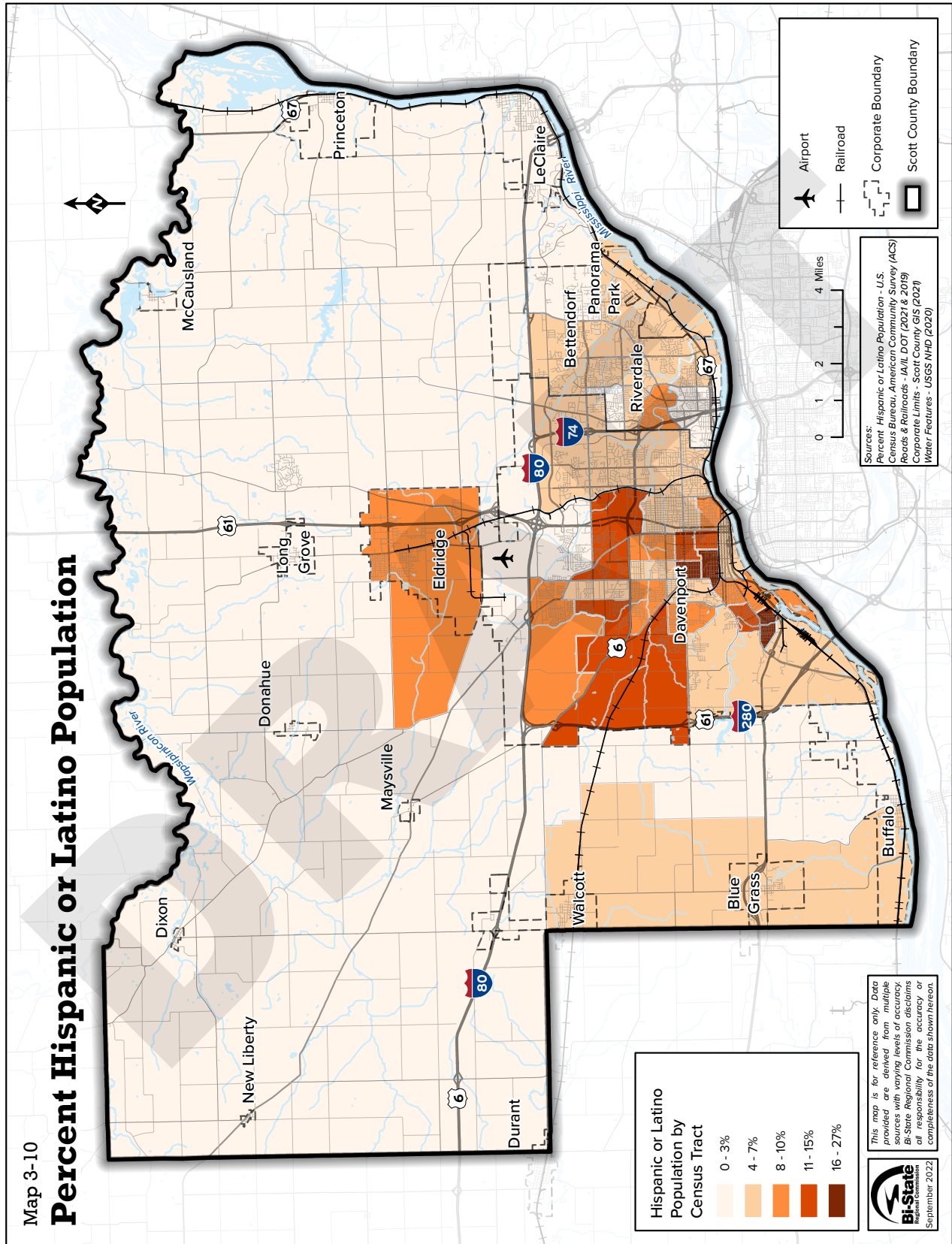
Other Important Facilities

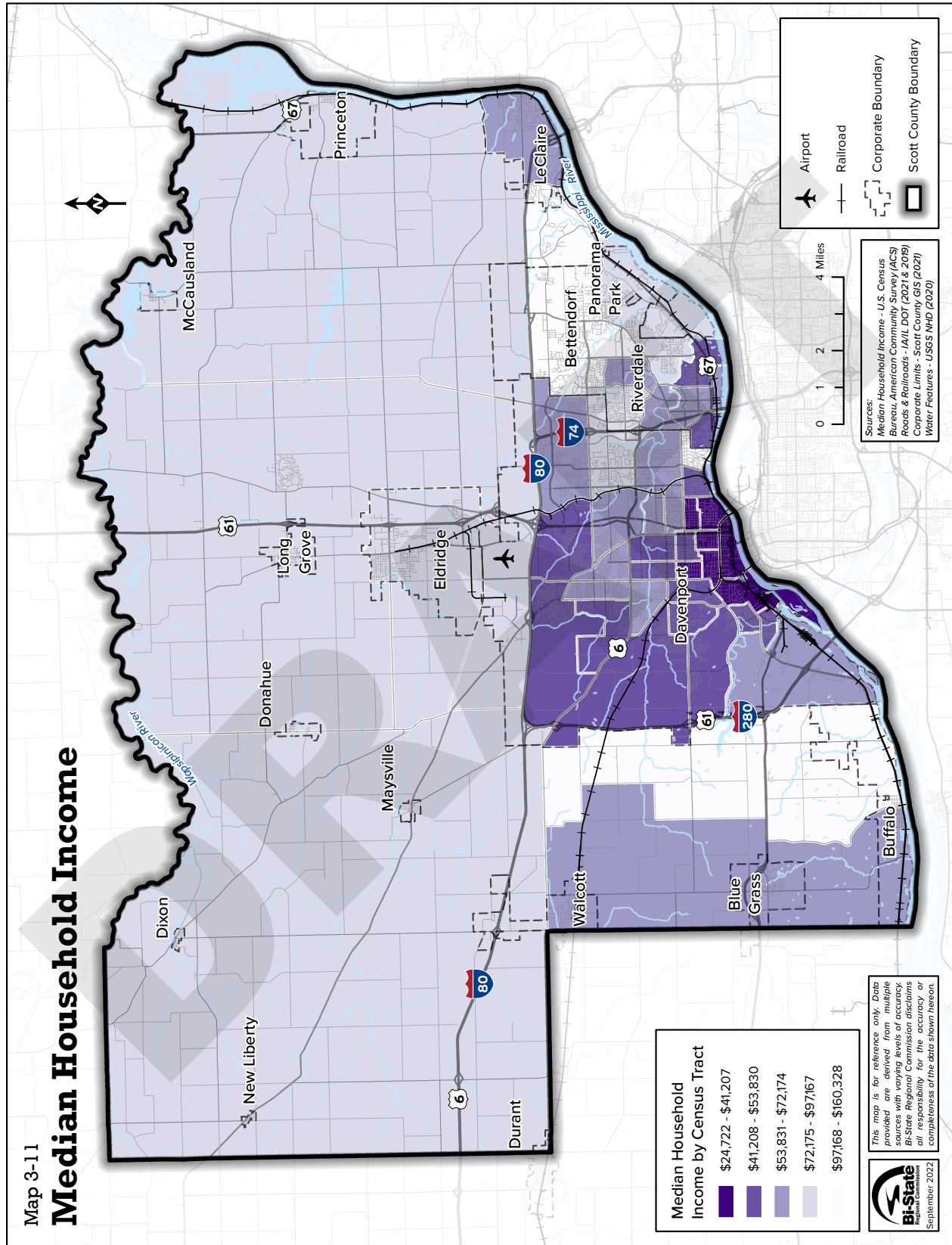
These include facilities that would help ensure a full recovery of the community following a hazard event.

- Government Functions and Facilities
- U.S. Army Facilities
- U.S. Army Reserve Center
- Iowa Army National Guard
- Iowa Army Aviation
- Major Employers
- Banks
- Establishments that provide essential day-to-day needs (i.e. grocery stores, gas stations, pharmacies, and hardware stores)

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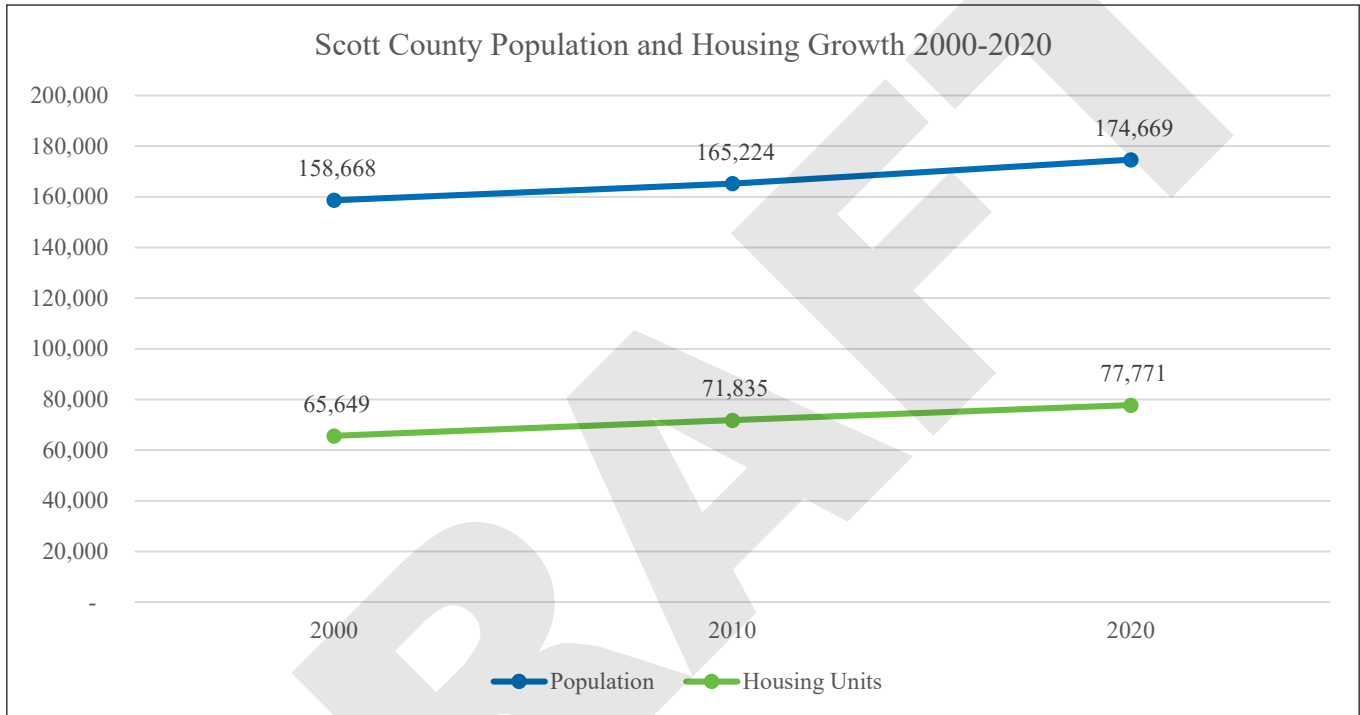


ASSESSING VULNERABILITY: ANALYZING DEVELOPMENT TRENDS

Population and Housing Trends

Scott County has shown steady growth in both population size and housing units. Since 2000, the population has increased by 10.1% (16,001), while the housing units have increased by 18.5% (12,122). Figure 3-10 (Scott County Population and Housing Growth 2000-2020) shows the change in population and housing units in more detail.

Figure 3-9



Source: U.S. Census Bureau, Decennial Census, 2000-2020.

Residential building permits also reflect the growth of housing units in Scott County. An average of 352.6 single-family units and an average of 112.5 multi-family units have been built per year since 2012. In the past few years, private residential building permits have declined, but it still shows there is a need within the county. Table 3-8 shows the residential building permits by year.

Table 3-8
Scott County Privately Owned Residential Building Permits

Year	Single-Family	Multi-Family		Total	
	Units	Buildings	Units	Buildings	Units
2012	381	1	60	382	441
2013	371	2	16	373	387
2014	331	7	34	338	365
2015	319	11	157	330	476
2016	363	8	130	371	493
2017	321	8	272	329	593
2018	365	2	38	367	403
2019	426	9	206	435	632
2020	342	9	97	351	439
2021	307	28	115	335	422

Source: U.S. Census Bureau - Manufacturing, Mining, and Construction Statistics; Annual Building Permits.

Land Cover

Utilizing 2009 land cover data from the Iowa Department of Natural Resources, the land cover in Scott County consists of mainly agriculture (61.10%), of which nearly 35.74% of the total land cover is corn. The remaining areas in the county are classified as grassland (15.65%), forest (13.00%), water and wetlands (3.46%), roadways and impervious (4.91%), structures (1.56%), and other (0.32%). Refer to Map 3-12 for more details.

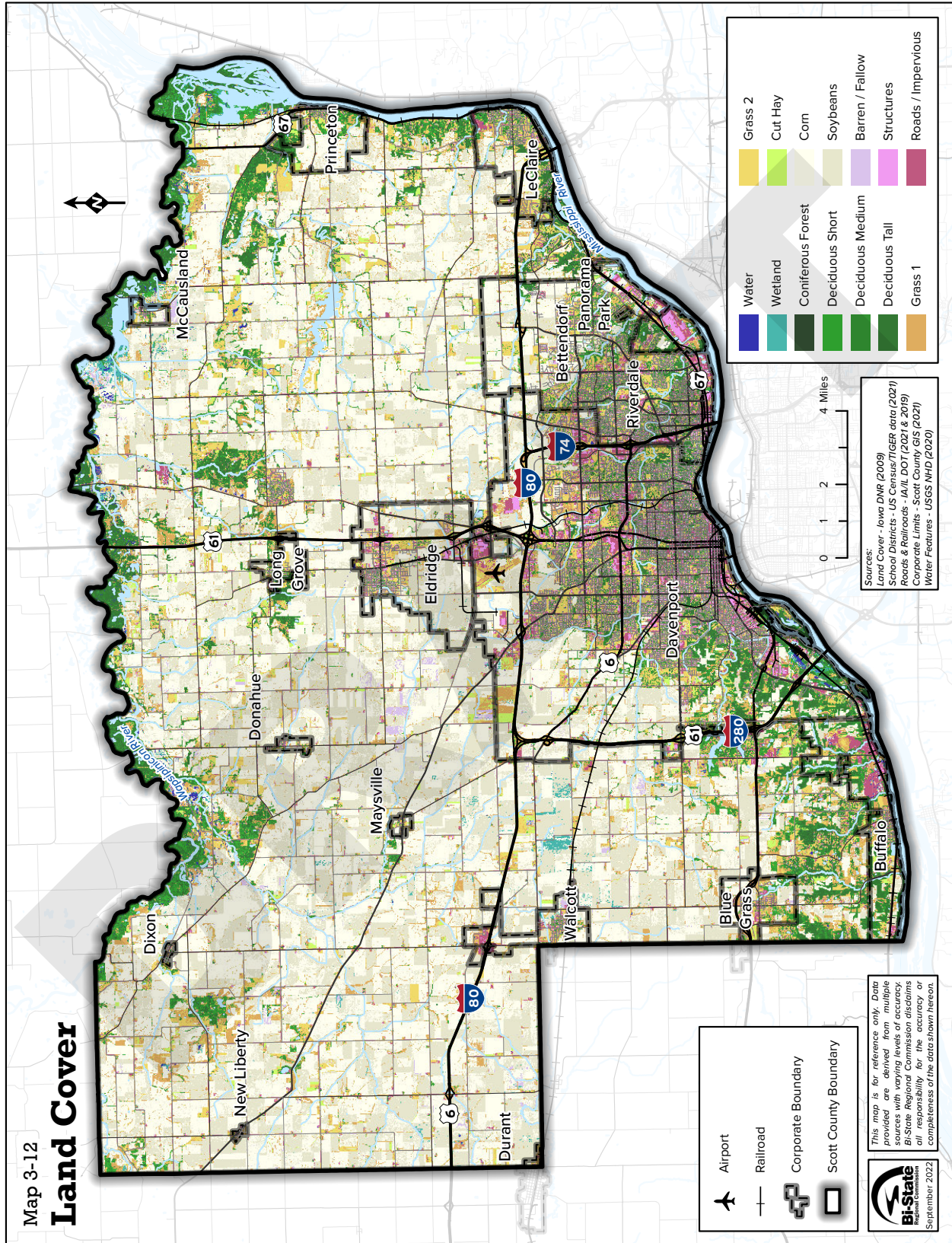
Existing Land Use

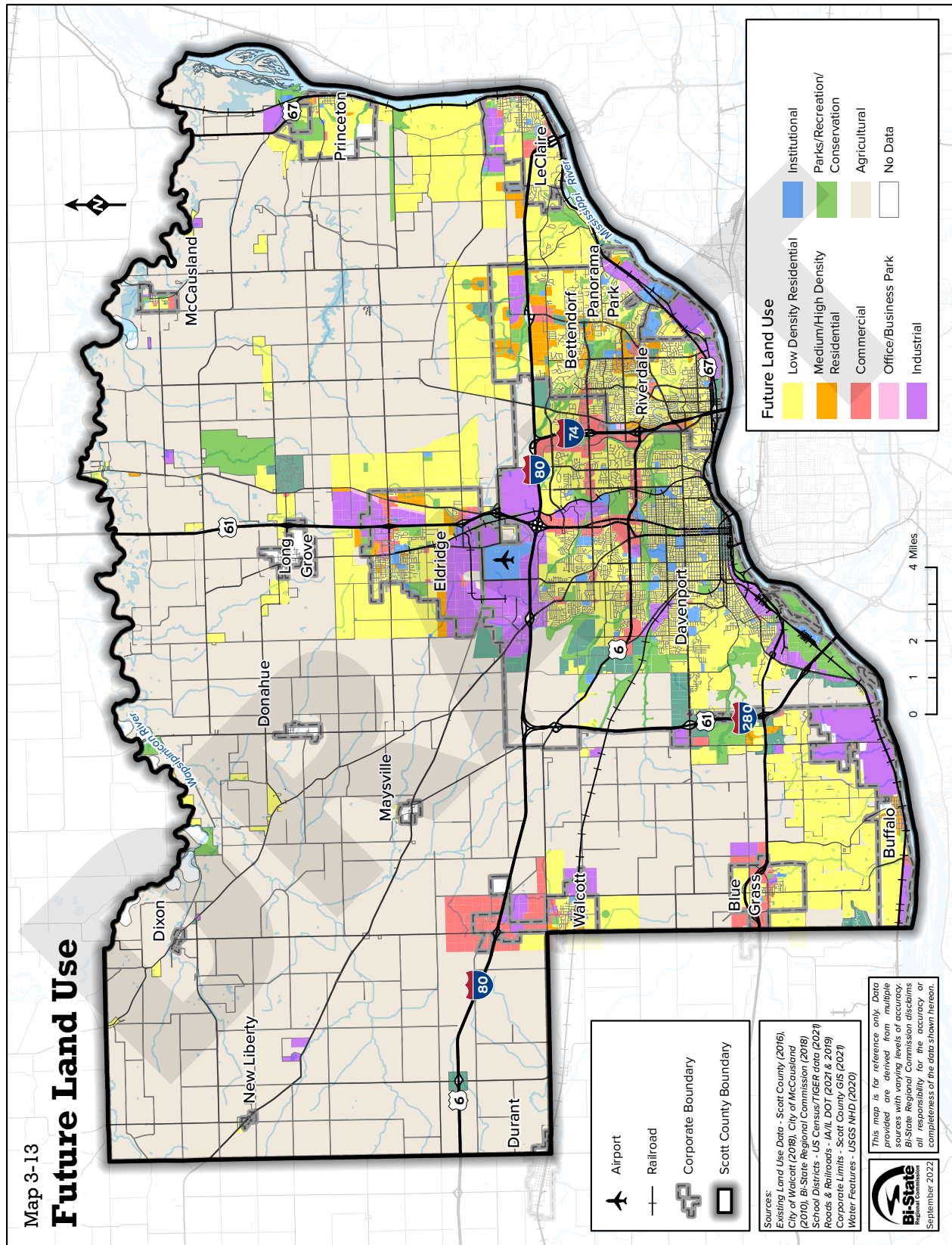
Existing land use in Scott County is mostly agricultural (73%). Residential use accounts for 11% of the total land area, with multi-use (6%) and parks/recreation (4%) also being a significant percentage of the total land area. Commercial, office, industrial, institutional, and vacant land uses (0-2%) make up the remaining land area. Refer to Map 3-7 for more details.

Future Land Use

Map 3-13 shows future land uses proposed within Scott County. There is a significant increase in industrial future land use areas expected. Manufacturing has been the historical base of Scott County, and it will continue into the future. An industrial expansion is planned for northern Davenport, IA and southern Eldridge, IA along I-80 as well as along Highway 61 in Eldridge. Recent activity includes the relocation of Kraft Foods North America and siting of a new Sterlite facility. As part of the Eastern Iowa Industrial Center, a transload freight facility has been constructed. There are already plans for an expansion of this freight facility. The Davenport Municipal Airport serves as a general aviation facility in this area, providing air service, in addition to highway and rail transportation in this area of Scott County. The City of Buffalo also has industrial expansion planned to the east of the city north of Highway 22. With its multi-modal transportation assets, Scott County has opportunities for freight logistics, both in the agricultural and manufacturing sectors.

Commercial expansions are planned in the Cities of Blue Grass and Walcott. The City of Bettendorf has areas along I-74 and the northern city boarder to expand office areas. A regional sports complex is being located at Middle Road and I-74. The Davenport riverboat casino moved from the river to north Davenport, south of I-80. Low-density residential growth is expected in the northern portions of the Iowa Quad Cities, Blue Grass, Buffalo, Eldridge, and LeClaire. In the rural communities, intermittent residential growth on a smaller scale is envisioned, or retaining quality bedroom communities.



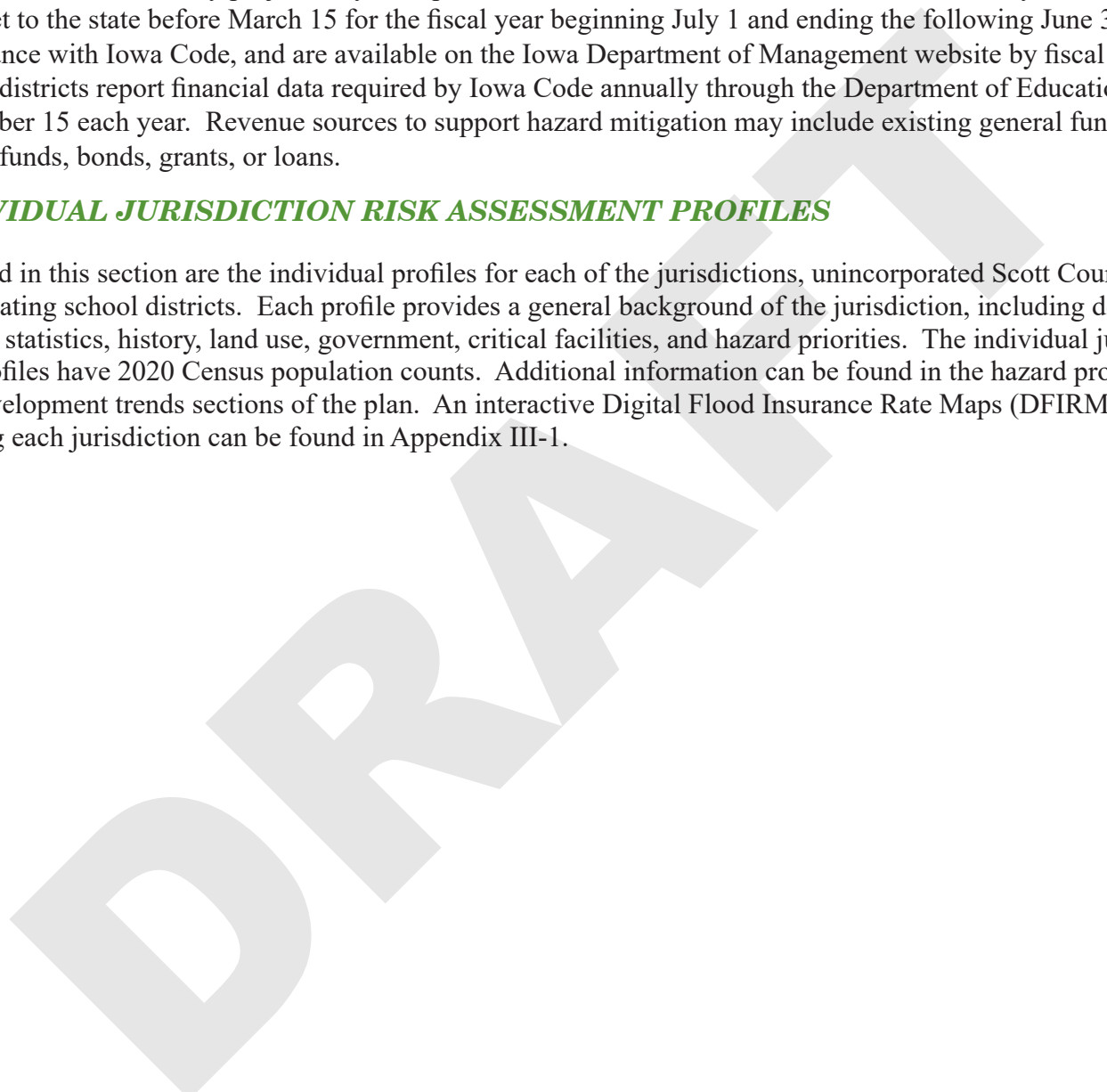


Financial Capabilities

All participating jurisdictions in this plan have taxing authority either as a governmental entity or school district. Communities such as Davenport and Bettendorf prepare five-year comprehensive capital improvement programs. Scott County also prepares a five-year capital improvement plan as part of its annual budget process. Some communities develop strategic plans and have capital improvement projects lists, where they set aside funds for more costly projects beyond operations and maintenance. All cities and the county must submit a budget to the state before March 15 for the fiscal year beginning July 1 and ending the following June 30, in accordance with Iowa Code, and are available on the Iowa Department of Management website by fiscal year. School districts report financial data required by Iowa Code annually through the Department of Education, by September 15 each year. Revenue sources to support hazard mitigation may include existing general funds, TIF district funds, bonds, grants, or loans.

INDIVIDUAL JURISDICTION RISK ASSESSMENT PROFILES

Included in this section are the individual profiles for each of the jurisdictions, unincorporated Scott County, and participating school districts. Each profile provides a general background of the jurisdiction, including demographic statistics, history, land use, government, critical facilities, and hazard priorities. The individual jurisdiction profiles have 2020 Census population counts. Additional information can be found in the hazard profiles and development trends sections of the plan. An interactive Digital Flood Insurance Rate Maps (DFIRMs) for viewing each jurisdiction can be found in Appendix III-1.



City of Bettendorf

Overview

2010 Census Population: 33,217
2020 Census Population: 39,102 (+17.7%)
Land Area: 21.27 square miles

Land Use and Geography

The City of Bettendorf is located in south-eastern Scott County in Pleasant Valley Township in between the Cities of Davenport, Riverdale, Panorama Park, and LeClaire. Bettendorf is located along the Mississippi River, which is the prominent natural feature in the county. The major waterways in Bettendorf include Duck Creek, Crow Creek, Pigeon Creek, and Spencer Creek, along with lesser streams and tributaries. These waterways serve as drainage systems for the upland regions of Bettendorf and northern Scott County. According to Bettendorf's 2017 Comprehensive Plan, Bettendorf is primarily residential (47%). The rest of the city is classified as commercial (10%), park and open space (10%), public (7%), and industrial (5%). Part of Bettendorf is in special flood hazard areas (see Appendix III-1); mainly along larger creeks (Duck Creek, Crow Creek, Pigeon Creek, and Spencer Creek). Bettendorf is the only jurisdiction in Scott County that has a levee (see Map 3-1). The FEMA Accredited Levee System protects a 325 acre area and consists of a 3.0 mile long system of levees and floodwalls with appurtenant closures, ramps, and interior drainage facilities which provide protection for the City against a 200-year flood, on the (385,000 c.f.s.) and 200- year criteria on Duck Creek. A flood warning system was installed to alert the city of interior in 1990. The Levee consists of 0.1 mile downstream tie-off (10th Street), 2.3 miles along the Mississippi River, and 0.6 mile of upstream tie-off along Duck Creek (42nd Street). The levee was constructed in phases between 1982 and 1988 and protects approximately 964 residents and 232 buildings with an estimated property value of \$254 Million. The permanent section provides protection for the highest flood event recorded.

Two interstate highways are located within city limits, I-74 and I-80. One Class I railroad line is located within city limits owned and operated by Canadian Pacific.

There is no known occurrence of sinkholes or land subsidence in Bettendorf.

Government Structure

Bettendorf is organized as mayor-council form of government. The city council consists of the mayor and seven city council members, one for each of the city's five wards and two "at large" council members. The mayor and city council members are elected to four-year terms.

City Departments

- Fire
- City Administration
- Human Resources
- Legal
- Library
- City Council
- Mayor
- Community Development
- Family Museum
- Parks and Recreation
- Economic Development
- Police
- Engineering
- Public Information Office
- Finance
- Public Works

Boards and Commissions

- Appeals – Building Codes
- Park and Recreation Commission
- Electrical Commission
- Planning and Zoning Commission
- Family Museum Board of Trustees
- Plumbing Commission
- Library Board of Trustees
- Board of Adjustment

Critical Facilities

Bettendorf has identified 259 community assets within the city. The critical facilities include city offices, police department, fire stations, sewer infrastructure, telecommunications towers, and bridges. Vulnerable populations include students at the elementary and secondary schools, medical care facilities, senior living centers, day care centers, high density population buildings, and trailer parks. Important cultural centers community gathering locations, economic assets, and other facilities were also identified. These can be seen on Map 3-8.

Hazard Priorities

Following the hazard scoring process, the Bettendorf Hazard Mitigation Committee scored the hazards as shown in Table 3-4 and Table 3-5. The city participates in the National Flood Insurance Program and is currently applying for admittance as a Community Rating System community. Levee failure is important for Bettendorf because the city has one of three levees within Scott County, and the only levee within an incorporated area. To prevent inundation of the levee, the city acknowledges the importance of routine inspections and maintenance. Hazards such as severe winter storms and windstorms occur frequently within the city and provide consistent damage and additional costs to the city. Downed trees from windstorms, thunderstorms and lightning, and severe winter storms can cause energy failures. Pre-treating roads during severe winter storms is essential in order to ensure safe travel of citizens and emergency responders and will also reduce the risk of highway transportation incidents within the city. While Bettendorf does have housing stock with basements, public education on tornado safety is essential. Due to the potential merger of Canadian Pacific and Kansas City Southern railways, increased rail traffic and the increased risk of a railway incident has been identified a hazard.

Mitigation Actions

The city puts an emphasis on planning and public education within their mitigation actions, but also includes structural projects, emergency services, property protection and natural resource protection actions to obtain a full range of mitigation measures. The City of Bettendorf's mitigation actions are listed in Chapter 4 of this plan and will be managed by the appropriate city department with council approval as needed.

The following table lists all considered natural hazards ranked from highest to lowest score as described in the Hazard Scoring Methodology in this chapter.

2017 Ranked Hazards
Thunderstorm, Lightning, Hail
Flash Flood
Windstorm
Grass and Wildland Fires
Levee Failure
Severe Winter Storm
Extreme Heat
River Flood
Tornado
Drought
Earthquake
Landslide/Sinkhole
Dams
Expansive Soils

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
high	Drought
low	Earthquake
low	Expansive Soils
high	Extreme Heat
medium	Flash Flood
low	Grass or Wildland Fire
medium	Levee Failure
medium	River Flood
high	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
high	Thunderstorm, Hailstorm, and Lightning
high	Tornado
medium	Windstorm/Derecho
high	Cyber Terrorism
high	Human Disease Pandemic
medium	Public/Civil Disorder/Unrest
medium	Railway Transportation Incidents

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City of Blue Grass

Overview

2010 Census Population: 1,452
2020 Census Population: 1,666 (+14.7%)
Land Area: 3.15 Square Miles

Geography and Land Use

The City of Blue Grass is located along the southwestern border of Scott County and extends into Muscatine County, Iowa, with the majority of Blue Grass located in Scott County. The city is bordered by unincorporated land with the U.S. Hwy 61 bi-pass running through the northern portion of the city. Blue Grass is primarily residential and agricultural with a small area of industrially and commercially zoned land south of U.S. Hwy 61 in eastern Blue Grass, along the Mayne Street corridor and south of U.S. Hwy 61 along Blue Grass's western corporate limits. No special flood hazard areas (see Appendix III-1) or levees are located within Blue Grass. There are no known occurrences of sinkholes or land subsidence in Blue Grass.

Government Structure

The City of Blue Grass has a mayor-council form of local government. The mayor is elected in two year terms, while the city council consisting of a mayor pro-tem and four other elected officials is elected to four-year staggered terms. The city keeps a city attorney and a city engineer on retainer.

Building Department

- Police Department
- Finance/City Administration
- Public Works
- Fire Department

Boards and Commission

- City Council
- Plan & Zone Commission
- Park Board
- Zoning Board

Critical Facilities

Critical facilities within the City of Blue Grass include City Hall; the Public Safety Building, which houses police, fire, and ambulance; post office; MidAmerican's substation; water plant; wells; and sewage lagoon. Economic assets include local banks, the U.S. Hwy 61, CY Y-40, local grocery and convenience stores, and a lumber yard. Vulnerable populations include the elementary school and local churches. No assets are located within the floodplain.

Hazard Priorities

The City of Blue Grass has elected to utilize their individual hazard scores to create their top priority hazards. They are focusing on making sure all public critical facilities are equipped with backup generators. The city understands the importance of flood education and is in the process of evaluating the amount of special flood

hazard areas in the city and the need to join the National Flood Insurance Program. The city will use the newly adopted Scott County Flood Hazard Map for regulating construction. The city focused on hazards such as thunderstorm and lightning, tornado, and hail storm due to their frequency within the city. They are also focusing on cyber terrorism. The city will provide public education on the dangers of these hazards and what to do during a hazard event. The City of Blue Grass’s mitigation actions are listed in Chapter 4 of this plan and will be managed by the appropriate city department with council approval as needed.

The following tables list all considered hazards ranked from the prior plan and this plan (see scoring tool listed previously in this chapter).

2017 Ranked Hazards
Tornado
Windstorm
Severe Winter Storm
Thunderstorm, Lightning, Hail
Grass and Wildland Fires
Drought
Extreme Heat
Flash Flood
Earthquake
Dams
Expansive Soils
Landslide/Sinkhole
Levee Failure
River Flood

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
medium	Drought
low	Earthquake
low	Expansive Soils
medium	Extreme Heat
medium	Flash Flood
medium	Grass or Wildland Fire
low	Levee Failure
low	River Flood
high	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
high	Thunderstorm, Hailstorm, and Lightning
medium	Tornado
medium	Windstorm/Derecho
high	Cyber Terrorism
medium	Human Disease Pandemic
low	Public/Civil Disorder/Unrest
low	Railway Transportation Incidents

City of Buffalo

Overview

2010 Census Population: 1,270

2020 Census Population: 1,176 (-7.4%)

Land Area: 6.74 square miles

Geography and Land Use

The City of Buffalo lies along the Mississippi River in the southwestern part of Scott County in Buffalo Township. Buffalo is bordered by Davenport to the east and Blue Grass to the north. State Highway 22 runs through downtown along the river. The City of Buffalo has special flood hazard areas that are located along the Mississippi River (see Appendix III-1). There are no levees located within the City of Buffalo. The City of Buffalo is the only jurisdiction in the county to have a known occurrence of land subsidence, which occurred at the Linwood Mine in 1993. Refer to the “Sinkholes and Land Subsidence” hazard profile. The city is working on providing housing incentives and anticipates housing development to the north of the city near Buffalo Elementary School.

Government Structure

The City of Buffalo has a mayor-council form of government. There are five city council members who serve four year terms. The mayor is elected to two-year terms.

City Departments

- Building Inspections
- Fire Department
- City Attorney
- Floodplain Ordinance Enforcement
- City Clerk – Finance Officer
- Mayor
- City Council
- Police Department
- City Treasurer
- Public Works

Boards and Commissions

- Board of Appeals
- Park Board
- Community Center Commission
- Plan & Zone Commission
- Local Disaster Relief Commission
- Zoning Board of Adjustment

Critical Facilities

Buffalo has identified 32 community assets within the city. The critical facilities include the fire station, police station, public works, and elementary school. Vulnerable populations include students at the primary school facilities, post office, senior housing, rehab center, YMCA Camp, and larger employers within the city. Econom-

ic, historical, and other facilities were also identified. One critical facility and one economic asset are located in the 1% floodplain. Three economic assets are located in the 0.2% floodplain.

Hazard Priorities

The city identified high ranked hazards including flooding, tornado, and railway transportation incident due to its location on the Mississippi River and near the CP railroad. The City of Buffalo will focus on constructing and replacing culverts and floodgates to assist in high water times. The city is part of the National Flood Insurance Program and will continue participation. The city also focused on hazards such as windstorm, severe winter storm, and tornado as their top priorities. The city will promote the locations of community shelters and consider safe room construction where adequate facilities are not available. The city will also promote the use of social media as both an education tool and as a warning system for residents. The City of Buffalo’s mitigation actions are listed in Chapter 4 of this plan.

The following tables list all considered hazards ranked from the prior plan and this plan (see scoring tool listed previously in this chapter).

2017 Ranked Hazards
Landslide/Sinkhole
Windstorm
River Flood
Thunderstorm, Lightning, Hail
Tornado
Severe Winter Storm
Extreme Heat
Grass and Wildland Fires
Flash Flood
Drought
Expansive Soils
Levee Failure
Dams
Earthquake

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
low	Drought
low	Earthquake
low	Expansive Soils
low	Extreme Heat
medium	Flash Flood
low	Grass or Wildland Fire
low	Levee Failure
high	River Flood
medium	Severe Winter Storm
medium	Sinkholes, Land Subsidence, Landslides
medium	Thunderstorm, Hailstorm, and Lightning
high	Tornado
medium	Windstorm/Derecho
high	Cyber Terrorism
high	Human Disease Pandemic
high	Public/Civil Disorder/Unrest
high	Railway Transportation Incidents

City of Davenport

Overview

2010 Census Population: 99,685
2020 Census Population: 101,724 (+2.1%)
Land Area: 63.90 Square Miles

Geography and Land Use

The City of Davenport is located in south central Scott County. It is the largest incorporated jurisdiction within the County in terms of population and land area. The city is bordered by the Mississippi River to the south, the City of Buffalo to the southwest, the City of Eldridge to the north, and the City of Bettendorf to the east. The city is primarily within the Mississippi River-Duck Creek watershed of Iowa, and its topography is characterized by the low-lying Mississippi River floodplain, the adjacent river bluff, and gentle to rolling uplands dissected by the Mississippi River tributaries. Commercial, industrial, and older residential structures occupy the lowland and bluff areas, while the northern portion of the community tends to contain more recent commercial and residential development. The City of Davenport has special flood hazard areas along its over 100 miles of creeks and nine miles of Mississippi River shoreline (see Appendix III-1). While there are no levees, the city currently maintains structural berms as a form of flood defense in four areas along and near the riverfront, and there is no known occurrence of sinkholes or land subsidence.

Government Structure

Davenport has a mayor-council form of government with an appointed city administrator. Both the mayor and council are elected to 2-year terms. City council consists of ten elected officials, with eight of those officials being elected to represent one of the eight wards within the city, and the other two are alderman-at-large. Every public-facing public service in the agency is accredited in a related professional field: Development and Neighborhood Services (American Association of Code Enforcement (AACE)), Fire (Commission on Fire Accreditation International (CFAI)), Library (State of Iowa), Parks and Recreation (Commission for Accreditation of Park and Recreation Agencies (CAPRA)), Police (Commission on Accreditation for Law Enforcement Agencies (CALEA)), and Public Works (American Public Works Association (APWA)).

Emergency management, mitigation, response, and recovery operations are primarily shared among the police, public works, and fire departments. The fire department has seven stations throughout the city; additional auxiliary facilities also support equipment storage and training needs for police and fire. Public works has five operating locations: a primary operational facility, a secondary facility, the Water Pollution Control Plant, Compost Facility, and Ground Transportation Center. Davenport collaborates with and is supported by the Scott County Emergency Management and Emergency Communication Agencies. The city maintains several emergency management plans, and the city's Cross Departmental Preparedness Team is currently working to develop a Continuity of Operations Plan.

City Departments

- City Administration
- City Assessor
- Community & Economic Development
- Davenport Civil Rights Commission
- Development & Neighborhood Services
- Finance
- Fire
- Human Resources
- Information Technology
- Legal
- Parks and Recreation
- Police
- Public Library
- Public Works

Boards and Commissions

- City Council
- Affirmative Action Advisory Commission
- Assessor's Board of Review (State Required)
- Citizens Advisory Committee
- Civil Rights Commission
- Civil Service Commission
- Combined Construction Code Board of Appeals and Review
- Plan & Zoning Commission
- Design Review Board
- Historic Preservation Commission
- Housing Commission
- Library Board of Trustees
- Parks & Recreation Advisory Board
- Riverfront Improvement Commission
- Zoning Board of Adjustment

Critical Facilities

The City of Davenport inventoried 369 community assets that included 113 critical structures. Critical structures include local, state, and federal government/administrative and public works facilities; flood control structures; law enforcement; fire, water, wastewater, electricity and natural gas; correctional facilities; aviation support; cell towers; warning sirens; reserves; postal service; and critical transportation corridors. Of these, five unmitigated critical structures were reported as located within the Special Flood Hazard Area. One facility will be removed from the floodplain upon construction of a new fire station in 2023.

Other community assets are facilities with vulnerable populations, medical facilities, economic assets, and facilities with Tier 2 hazardous chemical designation. Vulnerable populations include high-density housing, skilled care and assisted living facilities, schools, and mobile home parks. Of these facilities, one apartment building, one mobile home park, and five Tier 2 hazardous chemical designation facilities were identified as located within a Special Flood Hazard Area (SFHA), and without known flood mitigation in place.

Hazard Priorities

As a city positioned along nine miles of the Mississippi River and having over 100 miles of streambank, the possibility for flooding is high. In particular, flash flooding has impacted homes along Duck Creek and Black Hawk Creek as they meet the Mississippi. Experience has motivated past efforts to remove at-risk properties in these flood-prone areas. This work continues today, along with implementing other risk reduction strategies, including but not limited to floodplain and stormwater management policies, programs, and practices, as funding is available. The city has also positioned itself for readiness through its commitment to participation in the National Flood Insurance Program (NFIP) Community Rating System (CRS) program.

While riverine and flash floods are of concern, the city has also experienced an extremely damaging Derecho and frequently sees severe winter storms, thunderstorms and lightning, high wind events, and hail. These events have had minor to major impacts, including property damage, loss of power, and loss of tree canopy.

New threats have also surfaced in the community in the last five years. Civil unrest resulting in multiple injuries and one death in 2020, the COVID pandemic, and the potential for rail traffic to triple, with potential increases in hazardous rail incidents, are emerging concerns and trends as we move into the 2023-2028 hazard mitigation planning period.

The following tables list all considered hazards scored and described in the Hazard Scoring Methodology in this chapter.

2017 Ranked Hazards
Flash Flood
Thunderstorm, Lightning, Hail
Windstorm
Severe Winter Storm
River Flood
Tornado
Grass and Wildland Fires
Earthquake
Extreme Heat
Expansive Soils
Landslide/Sinkhole
Levee Failure
Dams
Drought

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
low	Drought
low	Earthquake
low	Expansive Soils
low	Extreme Heat
high	Flash Flood
medium	Grass or Wildland Fire
medium	Levee Failure
medium	River Flood
medium	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
medium	Thunderstorm, Hailstorm, and Lightning
medium	Tornado
medium	Windstorm/Derecho
low	Cyber Terrorism
medium	Human Disease Pandemic
medium	Public/Civil Disorder/Unrest
medium	Railway Transportation Incidents

City of Dixon

Overview

2010 Census Population: 247
2020 Census Population: 202 (-18.2%)
Land Area: 0.12 Square Miles

Geography and Land Use

Dixon is located in northwest Scott County approximately 1.5 miles south of the Wapsipinicon River. Dixon is situated in eastern Liberty Township and western Allens Grove Township. No highways run through Dixon. The major roads through Dixon are County Road Y40, which runs north/south, and County Road Y4E, which runs east/west. The City of Dixon is primarily residential with Dixon Cemetery located on the west side of the city. A Special Flood Hazard Area exists along Walnut Creek, which is located to the north of the city (see Appendix III-1). There are no levees located within the city, and there are no known occurrences of land subsidence in Dixon.

Government Structure

The City of Dixon has a mayor-council form of local government. The mayor and a three-member city council are elected to four-year staggered terms. The city keeps a city attorney on retainer.

City Departments

- Administration
- Sewer
- Fire Department
- Water
- Police Department (operated by County Sheriff City Boards and Commissions)
- Planning and Zoning Board

Critical Facilities

Critical facilities within the City of Dixon include the water tower (now owned by Iowa American Water), lift station, sewer lagoon, and fire department. Locations of all critical facilities can be found on Map 3-8. There are no assets within the floodplain.

Hazard Priorities

The City of Dixon chose to focus on severe winter storms due to their location in the county. The city sits in the northwest corner of the county and has an intergovernmental agreement with the county for plow service. Pre-treating the roads prior to a severe winter storm will assist with necessary travel and lessen the impact on the road service crews. The city also focused on hazards such as thunderstorm and lightning due to frequent occurrences. Continual public education is essential to keeping the residents informed on the dangers of hazards and what to do during a hazard event. The City of Dixon's mitigation actions are listed in Chapter 4 of this plan and will be managed by City Council.

The following tables list all considered hazards ranked from the prior plan and this plan (see scoring tool listed previously in this chapter).

2017 Ranked Hazards
Severe Winter Storm
Windstorm
Tornado
Dams
Drought
Earthquake
Expansive Soils
Extreme Heat
Flash Flood
Grass and Wildland Fires
Landslide/Sinkhole
Levee Failure
River Flood
Thunderstorm, Lightning, Hail

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
high	Drought
low	Earthquake
medium	Expansive Soils
high	Extreme Heat
high	Flash Flood
medium	Grass or Wildland Fire
low	Levee Failure
low	River Flood
medium	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
high	Thunderstorm, Hailstorm, and Lightning
medium	Tornado
high	Windstorm/Derecho
high	Cyber Terrorism
high	Human Disease Pandemic
low	Public/Civil Disorder/Unrest
low	Railway Transportation Incidents



City of Donahue

Overview

2010 Census Population: 346
2020 Census Population: 335 (-3.2%)
Land Area: 0.37 square miles

Geography and Land Use

The City of Donahue is located in the north central part of Scott County, west of Long Grove in Allen's Grove Township. Donahue is primarily residential and agricultural. The City of Donahue has special flood hazard areas along a tributary of Mud Creek (see Appendix III-1). There are no levees located in Donahue, and no known occurrences of land subsidence.

Government Structure

The City of Donahue has a mayor-council form of government. There are five city council members. The mayor and the city council are elected to four-year terms.

City Departments

- City Attorney
- City Treasurer
- City Clerk
- Floodplain Ordinance Enforcement
- City Council
- Mayor

Boards and Commissions

- Board of Adjustment
- Planning & Zoning Board

Critical Facilities

Critical facilities within the City of Donahue include City Hall, city equipment building, volunteer fire department, water and wastewater treatment plants, elementary school, bank, grain terminal, and a park. Donahue has one historic/cultural structure in the 1% floodplain.

Hazard Priorities

The city identified hazards such as flooding as a top priority due to its proximity to Mud Creek and special flood hazard areas. The city participates in the National Flood Insurance Program and will continue to do so. The city will also put emphasis on maintaining and constructing drainage systems to assist in high water times. The city also focused on hazards such as severe winter storm and thunderstorm and lightning due to their frequency and larger effect on the community. The city recognizes the importance of having roads clear during severe winter storms to assist with emergency responders. The City of Donahue's mitigation actions are listed in Chapter 4 of this plan and will be managed by city staff and considered by City Council where needed.

The following tables list all considered hazards ranked from the prior plan and this plan (see scoring tool listed previously in this chapter).

2017 Ranked Hazards
Thunderstorm, Lightning, Hail
Grass and Wildland Fires
Windstorm
Severe Winter Storm
Drought
Flash Flood
River Flood
Tornado
Extreme Heat
Dams
Levee Failure
Earthquake
Expansive Soils
Landslide/Sinkhole

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
high	Drought
low	Earthquake
low	Expansive Soils
medium	Extreme Heat
high	Flash Flood
high	Grass or Wildland Fire
low	Levee Failure
low	River Flood
high	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
high	Thunderstorm, Hailstorm, and Lightning
high	Tornado
high	Windstorm/Derecho
low	Cyber Terrorism
high	Human Disease Pandemic
medium	Public/Civil Disorder/Unrest
low	Railway Transportation Incidents



City of Eldridge

Overview

2010 Census Population: 5,651
2020 Census Population: 6,726 (+19.0%)
Land Area: 9.75 square miles

Geography and Land Use

The City of Eldridge is located in the center of Scott County along U.S. Hwy 61 just north of the City of Davenport in Sheridan Township. According to Eldridge's Comprehensive Plan (2011), Eldridge is primarily agricultural (72.69%). The remainder of the city is defined as low-density residential (11.07%), high-density residential (1.55%), commercial (1.55%), heavy industrial (4.05%), light industrial (2.67%), recreational (3.27%), and commercial (1.83%). Residential development is mainly in the northwest section of town while industrial is clustered in the southern portion.

The City of Eldridge has special flood hazard areas along creeks (Crow Creek and Hickory Creek) that mainly affect agricultural areas of the city (see Appendix III-1). There are no levees located in Eldridge, and no known occurrences of land subsidence.

Government Structure

The City of Eldridge has a mayor-council form of government. There are five city council members. Both the mayor and city council members serve four-year terms.

City Departments

- Building Inspections
- Fire Department
- City Administrator
- Mayor
- City Attorney
- Police Department
- City Clerk
- Public Works
- City Council
- Utilities, Water, and Wastewater Departments

Boards and Commissions

- Community Center Board
- Electric, Water, and Utility Board
- Park Board
- Plan & Zone Board
- Zoning Board of Adjustment

Critical Facilities

Eldridge has identified 35 community assets within the city. The critical facilities include City Hall, police department, fire department, water treatment plant, city wells, wastewater treatment plant, public works, and water towers. Vulnerable populations include students at the elementary and secondary schools, preschools, and medical facilities. Medical, economic assets, and other facilities were also identified. Eldridge has one critical facility in the 1% floodplain.

Hazard Priorities

The city is focusing on creating a traffic re-routing plan and posting warning signs near facilities. Flooding is also a priority due to the city’s location near two creeks. The city is a participant in the National Flood Insurance Program, and enforces floodplain regulations. They will use the newly adopted Scott County Flood Hazard Map for regulating construction. The city also understands the necessity for essential services during hazard events, they are providing back up power to facilities such as the water treatment plant to ensure residents have all services if possible. Hazards such as thunderstorms and lightning and windstorms can cause energy failures. The city is educating their residents on the importance of tree maintenance and ensuring they are up-to-date on building codes. The city also knows the importance of being prepared for when a drought occurs. They are creating a water conservation plan that will be the guide to maintaining water systems and educating citizens on the importance of water conservation. The City of Eldridge’s mitigation actions are listed in Chapter 4 of this plan. City staff will manage mitigation action with approval of the council where needed.

The following tables list all considered hazards ranked from the prior plan and this plan (see scoring tool listed previously in this chapter).

2017 Ranked Hazards
Windstorm
Tornado
Thunderstorm, Lightning, Hail
Extreme Heat
Severe Winter Storm
Drought
Earthquake
Grass and Wildland Fires
Flash Flood
Expansive Soils
Dams
Landslide/Sinkhole
Levee Failure
River Flood

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
low	Drought
low	Earthquake
low	Expansive Soils
medium	Extreme Heat
medium	Flash Flood
medium	Grass or Wildland Fire
low	Levee Failure
low	River Flood
high	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
high	Thunderstorm, Hailstorm, and Lightning
high	Tornado
high	Windstorm/Derecho
medium	Cyber Terrorism
low	Human Disease Pandemic
low	Public/Civil Disorder/Unrest
low	Railway Transportation Incidents

City of LeClaire

Overview

2010 Census Population: 3,765
2020 Census Population: 4,710 (+25.1%)
Land Area: 4.65 Square Miles

Geography and Land Use

The City of LeClaire is situated in the northeastern portion of the Quad Cities Metropolitan Area in southern LeClaire Township. The Mississippi River and U.S. Hwy 67 borders the eastern and southern part of the community, while Interstate 80 bisects the southwestern third of the community. The unincorporated community of Pleasant Valley is located to the west of LeClaire. An active quarry operates on the north side of the city and taps into bedrock including sandstone, limestone, shale, and dolomite. LeClaire has steep slopes along the riverfront bluff area and in the vicinity of Silver Creek. More gentle slopes are found on top of the bluff west of the riverfront area. LeClaire has special flood hazard areas along the Mississippi River, Silver Creek, McCarty Creek, and Sycamore Creek and their tributaries (see Appendix III-1). There are no levees located in LeClaire and no known occurrences of land subsidence.

According to the LeClaire 2016 Comprehensive Plan, the majority of LeClaire's existing developed land use is low-density residential. Commercial development is located mainly in the downtown Central Business District (CBD) along U.S. 67, as well as south on U.S. 67. Agricultural or unclassified land makes up approximately two-thirds of the community. The 2016 Comprehensive Plan identifies 75.35% of proposed future land use as low-density residential.

Government Structure

LeClaire has a mayor-council form of government with an appointed city administrator. The mayor is elected to a 2-year term while the council members are elected to 4-year staggered terms. City council consists of five elected officials. LeClaire keeps an attorney on retainer.

City Departments

- City Administration
- Police Department
- Fire Department
- Public Works
- Library
- Parks and Recreation

Boards and Commissions

- Board of Adjustment
- Parks and Recreation Board
- Library Board
- Tourism Board
- Planning and Zoning Commission

Critical Facilities

Critical facilities within the City of LeClaire include City Hall, public works facility, waste water treatment plant and lift stations, police station, fire station, the Mississippi River, I-80 Bridge, Sycamore Creek Bridge, McCarty Creek Bridge, U.S. Hwy 67, Interstate 80, Mississippi River Bridge, one cell tower, an electrical substation, natural gas regulating substation, water tower, one water feeder main, water pressure regulating stations, and storm sirens. LeClaire has one critical facility, one historic/cultural structure, and two other important structures in the 1% floodplain. There is one building classified as "other important structure" within the 0.2%

floodplain. Vulnerable population facilities include elementary schools.

Hazard Priorities

The city understands the importance of utilizing traffic calming measures and pretreatment of roadways prior to storms to help lessen the likelihood of a traffic incident. The city also looked at hazards such as windstorm, thunderstorm and lightning, and severe winter storms. These hazards occur more frequently and can affect residents. The city understands the importance of educating residents about tree health, snow removal policies, and shelter locations to lessen the effects during hazard events. The city will identify critical facilities where backup generators could be installed, limiting the effect of energy failures. The city is located along the Mississippi River and numerous creeks. The city is a participant in the National Flood Insurance Program and will look into conducting a watershed study. They will use the recently adopted Scott County Flood Hazard Map for regulating construction. The city has had historical occurrences of tornado touchdowns and will consider safe room construction where adequate facilities do not exist. The City of LeClaire’s mitigation actions are listed in Chapter 4 of this plan and they will use city staff to manage the actions with approval by City Council as needed.

The following tables list all considered hazards ranked from the prior plan and this plan (see scoring tool listed previously in this chapter).

2017 Ranked Hazards
Windstorm
Severe Winter Storm
Thunderstorm, Lightning, Hail
Tornado
Grass and Wildland Fires
Extreme Heat
Flash Flood
Levee Failure
River Flood
Dams
Landslide/Sinkhole
Earthquake
Drought
Expansive Soils

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
medium	Drought
low	Earthquake
low	Expansive Soils
medium	Extreme Heat
medium	Flash Flood
medium	Grass or Wildland Fire
medium	Levee Failure
high	River Flood
high	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
high	Thunderstorm, Hailstorm, and Lightning
high	Tornado
high	Windstorm/Derecho
medium	Cyber Terrorism
medium	Human Disease Pandemic
low	Public/Civil Disorder/Unrest
medium	Railway Transportation Incidents

City of Long Grove

Overview

2010 Census Population: 808
2020 Census Population: 838 (+3.7%)
Land Area: 1.15 square miles

Geography and Land Use

The City of Long Grove is located in the north central part of the county, just north of Eldridge in between Donahue and Park View (an unincorporated part of the county) in Winfield Township. Within the city limits, Long Grove is mainly single-family residential and suburban agriculture. There are small commercial districts near the center of the city on First Street and along County Road F-41. Long Grove does not have an industrial land use policy, and there is no industrial district on the Long Grove official zoning map (*Long Grove Comprehensive Plan*, 2007).

The City of Long Grove has a small area of town that is in the special flood hazard area near the sewage lagoon (see Appendix III-1). There are no levees within Long Grove and no known occurrences of land subsidence.

Government Structure

Long Grove is organized as mayor-council form of government. The city council consists of the mayor and five city council members. The mayor is elected to a two-year term and city council members are elected to four-year terms.

City Departments

- City Attorney
- City Council
- City Clerk
- Mayor

Boards and Commissions

- Park Board
- Planning and Zoning Commission

Critical Facilities

Critical facilities within the City of Long Grove include City Hall, fire station, water and wastewater treatment plants, municipal electric system, post office, civic center, and Wellhouse-Shulz Park. An elementary school has been identified as a vulnerable population. There are no assets within the floodplain.

Hazard Priorities

The City of Long Grove recognizes the importance of keeping building codes current, which aids in limiting the effect of certain hazards like tornados and structural fire. Hazards such as severe winter storms, windstorm, and thunderstorm and lightning are frequent occurrences in the city. The city will look into constructing a new sand/salt storage facility in order to be better prepared for storms. The city will also be examining public facilities that need backup generators to be able to provide residents with essential services during hazard events. The City of Long Grove's mitigation actions are listed in Chapter 4 of this plan and would be managed by city staff

with approval of the council where needed.

The following tables list all considered hazards ranked from the prior plan and this plan (see scoring tool listed previously in this chapter).

2017 Ranked Hazards
Severe Winter Storm
Windstorm
Thunderstorm, Lightning, Hail
Tornado
Drought
Earthquake
Extreme Heat
Grass and Wildland Fires
Dams
Flash Flood
Expansive Soils
Landslide/Sinkhole
Levee Failure
River Flood

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
medium	Drought
low	Earthquake
low	Expansive Soils
medium	Extreme Heat
medium	Flash Flood
low	Grass or Wildland Fire
low	Levee Failure
low	River Flood
high	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
high	Thunderstorm, Hailstorm, and Lightning
high	Tornado
medium	Windstorm/Derecho
low	Cyber Terrorism
high	Human Disease Pandemic
low	Public/Civil Disorder/Unrest
low	Railway Transportation Incidents

DRAFT

City of Maysville

Overview

2010 Census Population: 176
2020 Census Population: 156 (-11.4%)
Land Area: 0.27 square miles

Geography and Land Use

The City of Maysville is located in the west-central part of Scott County along U.S. Highway 130, north of Walcott and Davenport and west of Eldridge in Hickory Grove Township. Maysville is single-family residential and surrounded by agriculture. Hickory Creek lies to the north of town. There are no special flood hazard areas (see Appendix III-1), levees, or any known occurrences of land subsidence in the City of Maysville.

Government Structure

Maysville is organized as mayor-council form of government. The city council consists of the mayor and five city council members. The mayor and three city council members are elected to four-year terms, and two council members are elected to two-year terms.

City Departments

- City Attorney
- Mayor
- City Clerk
- Treasurer
- City Council

Critical Facilities

The critical facilities of Maysville have been identified as fire station, city water facilities, and community center. There are no assets within the floodplain.

Hazard Priorities

The city focused on hazards such as severe winter storms and energy failure. These hazards happen frequently within the city and can affect many residents. The city will continue to communicate the location of community shelters to its residents. The city emphasizes that public education of the dangers of tornados and what to do during a storm is very important. The City of Maysville's mitigation actions are listed in Chapter 4 of this plan. They will be managed by the City Clerk and City Council.

The following tables list all considered hazards ranked from the prior plan and this plan (see scoring tool listed previously in this chapter).

2017 Ranked Hazards
Thunderstorm, Lightning, Hail
Grass and Wildland Fires
Severe Winter Storm
Drought
Windstorm
Extreme Heat
Earthquake
Expansive Soils
Tornado
Dams
Flash Flood
Landslide/Sinkhole
Levee Failure
River Flood

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
medium	Drought
medium	Earthquake
low	Expansive Soils
medium	Extreme Heat
low	Flash Flood
medium-high	Grass or Wildland Fire
low	Levee Failure
low	River Flood
high	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
high	Thunderstorm, Hailstorm, and Lightning
high	Tornado
high	Windstorm/Derecho
low	Cyber Terrorism
low	Human Disease Pandemic
low	Public/Civil Disorder/Unrest
low	Railway Transportation Incidents

DRAFT

City of McCausland

Overview

2010 Census Population: 291
2020 Census Population: 313 (+7.6%)
Land Area: 0.58 Square Miles

Geography and Land Use

McCausland is located in the northeastern corner of Butler Township in northeastern Scott County just south of the Wapsipinicon River. A special flood hazard area is located in the north and south eastern part of the city (see Appendix III-1). There are no levees located in McCausland and no known occurrences of land subsidence. McCausland is primarily agricultural and residential use with a small portion of commercial. McCausland Cemetery is located in the northern part of the city. County Road F33 and Z30 are the major roads running through McCausland.

Government Structure

The City of McCausland has a mayor-council form of government with both the mayor and the 5-member city council serving 4-year staggered terms. McCausland has an attorney on retainer and a volunteer fire department.

City Departments

- Administration
- Maintenance

City Boards and Commissions

- Park Board (currently inactive)
- Labor Day Committee

Critical Facilities

The critical facilities of McCausland have been identified as City Hall, fire station, city sewer lagoon, community center, post office, and warning siren. The city has also identified two local businesses as economic assets. There are no assets within the floodplain.

Hazard Priorities

The city has joined the National Flood Insurance Program and understands the importance of educating their residents about the floodplain. They will use the recently adopted Scott County Flood Hazard Map for regulating construction. Hazards such as thunderstorms and lightning and windstorms occur frequently within the city, often causing energy failures. The city recognizes the importance of having backup generators at critical facilities and educating the residents about what to do during storms. The city will also look at constructing safe rooms where adequate facilities do not exist. Severe winter storms can affect all residents, so the city will take a proactive approach by pretreating roads and educating their residents about snow removal policies. The City of McCausland's mitigation actions are listed in Chapter 4 of this plan and will be managed by city staff with approval of the council where needed.

The following tables list all considered hazards ranked from the 2013 plan and this plan (see scoring tool listed previously in this chapter).

2012 Ranked Hazards
Tornado
River Flood
Flash Flood
Grass and Wildland Fires
Extreme Heat
Levee Failure
Thunderstorm, Lightning, Hail
Windstorm
Drought
Severe Winter Storm
Landslide/Sinkhole
Expansive Soils
Dams
Earthquake

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
low	Drought
low	Earthquake
low	Expansive Soils
medium	Extreme Heat
medium	Flash Flood
medium	Grass or Wildland Fire
low	Levee Failure
low	River Flood
high	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
high	Thunderstorm, Hailstorm, and Lightning
high	Tornado
medium	Windstorm/Derecho
low	Cyber Terrorism
high	Human Disease Pandemic
low	Public/Civil Disorder/Unrest
low	Railway Transportation Incidents

DRAFT

City of New Liberty (Non-Participating)

Each community in Scott County was invited to participate in this plan update. New Liberty chose not to participate, therefore, other than census information, the information below is carried forward from the *Scott County Multi-Jurisdictional Hazard Mitigation Plan, 2012*, and map or table references are not accurate for this plan. Data is updated.

Overview

2010 Census Population: 137

2020 Census Population: 138 (+0.7%)

Land Area: 0.09 square miles

Geography and Land Use

The City of New Liberty is located in the northwest corner of Scott County in Liberty Township. The city is located on State Hwy 130, which runs directly through town. New Liberty is primarily single-family residential and agriculture. There are no special flood hazard areas (see Appendix III-1), levees, or any known occurrences of land subsidence within the City of New Liberty.

Government Structure

New Liberty is organized as mayor-council form of government. The city council consists of the mayor and five city council members. The mayor is elected to a two-year term, and city council members are elected to four-year terms.

City Departments

- City Clerk
- Mayor
- City Council
- Water Superintendent
- City Treasurer

Critical Facilities

The critical facilities of New Liberty have been identified as City Hall, city water and wastewater facilities, and the city park shelter. There are no assets within the floodplain.

Hazard Priorities

After reviewing their weighted hazard scores as shown in Table 3-4 of this chapter, the City of New Liberty determined the top 12 hazards ranked by scoring were hazards that the city had little to no control or authority to mitigate. The city reviewed the county-wide hazard priorities and determined those as more appropriate to their city authority and ability; however, river flood, flash flood, and fixed hazardous materials incident were replaced with drought, extreme heat, and grass or wildland fire. The City of New Liberty has no floodplain or areas with known flash flooding, and there are no fixed hazardous materials sites within the city. The city identified the first priority hazards such as tornados due to historical occurrences within the city. Hazards such as severe winter storm, thunderstorm and lightning, and extreme heat occur frequently in the city. Public education is continually needed about the dangers of the hazards, what to do during a hazard and use of NOAA weather radios. The City of New Liberty's mitigation actions are listed in Chapter 4 of this plan.

The following table lists all considered hazards ranked from highest to lowest score from the 2012 plan.

2012 Ranked Hazards
Thunderstorm, Lightning, Hail
Extreme Heat
River Flood
Severe Winter Storm
Windstorm
Tornado
Earthquake
Grass and Wildland Fires
Landslide/Sinkhole
Dams
Drought
Expansive Soils
Flash Flood
Levee Failure

DRAFT

City of Panorama Park (Non-Participating)

Each community in Scott County was invited to participate in this plan update. New Liberty chose not to participate, therefore, other than census information, the information below is carried forward from the *Scott County Multi-Jurisdictional Hazard Mitigation Plan, 2018*, and map or table references are not accurate for this plan. Data is updated.

Overview

2010 Census Population: 129

2020 Census Population: 139 (+7.8%)

Land Area: 0.06 Square Miles

Geography and Land Use

Panorama Park is the city with both the smallest land area and lowest population within Scott County. Panorama Park is completely surrounded by the City of Bettendorf in southern Scott County. Panorama Park is zoned entirely for single-family residential use. A special flood hazard area is located south of 2nd Street to the corporate limits (see Appendix III-1). There are no levees located in Panorama Park and no known occurrences of land subsidence.

Government Structure

The City of Panorama Park has a mayor-council form of local government. Both the mayor and the city council, consisting of five elected officials, are elected to two-year terms.

Critical Facilities

- City Hall is Panorama Park's only critical facility and asset. It is not located within the floodplain.

Hazard Priorities

The City of Panorama Park participates in the National Floodplain Insurance Program and puts an emphasis on educating their residents on the dangers of hazards and locations of community shelters. The city consists of all single-family residences and also put a focus on structural fire, by educating the importance of having smoke detectors and what to do during a fire. The City of Panorama Park's mitigation actions are listed in Chapter 4 of this plan.

The following table lists all considered hazards ranked from highest to lowest score from the 2018 plan.

2017 Ranked Hazards
Thunderstorm, Lightning, Hail
Extreme Heat
River Flood
Severe Winter Storm
Windstorm
Flash Flood
Tornado
Earthquake
Grass and Wildland Fires
Landslide/Sinkhole
Drought
Dams
Expansive Soils
Levee Failure

DRAFT

City of Princeton

Overview

2010 Census Population: 886
2020 Census Population: 923 (+4.2%)
Land Area: 3.23 square miles

Geography and Land Use

The City of Princeton is located along the Mississippi River in the northeast part of the county, just north of LeClaire and south of the Wapsipinicon River in Princeton Township. U.S. Highway 67 runs through the city alongside the Iowa-Chicago and Eastern Railroad. According to Princeton's Land Use Plan (2007), Princeton is primarily agriculture (87.99%). The rest of the city is classified as low-density residential (8.21%), high-density residential (1.41%), commercial (0.28%), industrial (0.23%), institutional (0.81%), and recreation (1.06%). The City of Princeton has special flood hazard areas that are located along the Mississippi River and the tributary creeks that drain into the Mississippi River (see Appendix III-1). There are no levees located within Princeton and no known occurrences of land subsidence.

Government Structure

The City of Princeton has a mayor-council form of government. The mayor is elected to two-year terms, and there are five city council members who serve four-year terms.

City Departments

- City Attorney
- City Clerk/Treasurer
- City Council
- City Engineer
- Fire Department
- Mayor
- Police Department
- Public Works

Boards and Commissions

- Board of Adjustment
- Park Board
- Princeton Community Center Board
- Planning & Zoning Commission
- Trail Committee

Critical Facilities

Princeton has identified 25 community assets within the city. The critical facilities include City Hall, fire and police departments, maintenance buildings, city water and wastewater facilities, and other city buildings. Vulnerable populations include elementary school, mobile home park, and senior housing. One cultural resource was also identified. Princeton has one critical asset located within the 1% and/or 0.2% floodplain.

Hazard Priorities

The City of Princeton elected to utilize their individual hazard scores in selecting their top hazard priorities. The city focused on hazards such as flooding (river and flash) in their first priority hazards due to their proximity along the Mississippi River and tributary creeks. The city participates in the National Flood Insurance Program and recognizes the importance of public education regarding flooding and implementing flood control measures that help lessen the impact of an event. They also realize the importance of planning before flooding events and will be creating a detour and road closure plan. The city will look into installing backup generators at critical facilities to ensure residents are not without essential services. The city is considering safe room construction in areas where adequate facilities do not exist to be prepared for tornados, windstorms, and other events where residents would need additional shelter. The city has also ranked railway transportation incidents high due to the proximity to the CP railroad and the potential of increased traffic. The City of Princeton’s hazards are listed below and their mitigation actions are listed in Chapter 4 of this plan. The city staff will manage implementation of the actions with City Council approval as needed.

The following tables list all considered hazards ranked from the prior plan and this plan (see scoring tool listed previously in this chapter).

2017 Ranked Hazards
Tornado
River Flood
Flash Flood
Grass and Wildland Fires
Drought
Extreme Heat
Levee Failure
Thunderstorm, Lightning, Hail
Windstorm
Severe Winter Storm
Landslide/Sinkhole
Expansive Soils
Dams
Earthquake

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
medium	Drought
low	Earthquake
low	Expansive Soils
medium	Extreme Heat
high	Flash Flood
medium	Grass or Wildland Fire
medium	Levee Failure
high	River Flood
medium	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
high	Thunderstorm, Hailstorm, and Lightning
high	Tornado
high	Windstorm/Derecho
medium	Cyber Terrorism
medium	Human Disease Pandemic
low	Public/Civil Disorder/Unrest
high	Railway Transportation Incidents

City of Riverdale

Overview

2010 Census Population: 405
2020 Census Population: 379 (-6.4%)
Land Area: 1.81 Square Miles

Geography and Land Use

The City of Riverdale is located in southern Scott County in southern Pleasant Valley Township. Riverdale is bordered by the Mississippi River to the south, and the City of Bettendorf on the east, west, and north. Duck Creek forms part of the western border between Bettendorf and Riverdale. U.S. Hwy 67 and the Canadian Pacific Railroad line runs through Riverdale. Arconic (f.k.a. ALCOA, Inc.), with 135 acres under roof, is the second largest sheet and plate rolling facility in the U.S. and is located between U.S. Hwy 67 and the Mississippi River, comprising a large amount of Riverdale's land area. Also located within the boundaries of Riverdale are Scott Community College; Pleasant Valley High School; Magellan Pipe Line's tank farm, which holds several million gallons of gasoline and diesel fuel (with approximately $\frac{1}{3}$ of the Quad Cities' gas supply coming through this facility); small commercial and light industry districts; and six distinct residential areas. Arconic, Pleasant Valley High School, and Scott Community College generate a transient population in excess of 7,500 people. A special flood hazard area is located along the Mississippi; however, the majority of the floodplain is located south of U.S. Hwy 67 (see Appendix III-1). There are a few residential homes within the Duck Creek Special Flood Hazard Area near where Duck Creek meets the Mississippi River. After the 1966 Mississippi River flood, Arconic (f.k.a. ALCOA, Inc.) built a private levee around the plant. When the City of Bettendorf built their Mississippi River levee system, a combination levy/flood wall was built on the western side of Duck Creek from U.S. Hwy 67 south to the Mississippi River. On the eastern side of Duck Creek, adjacent to the western end of Wisteria Lane, there is a short flood wall and levee that ties into the adjacent railroad tracks, and offer some protection to roughly half of Riverdale's Havens Acres subdivision. Duck Creek was dredged and realigned as part of this project and is maintained by the City of Bettendorf. There are no known occurrences of land subsidence or sinkholes in Riverdale.

Government Structure

The City of Riverdale has a mayor-council form of local government. The mayor is elected in two-year terms while the city council, consisting of five elected officials, is elected to four-year staggered terms. The city keeps a city attorney, engineer, and administrator on retainer. City staff consists of a full-time city manager, deputy clerk, and an operations manager/code enforcement official/zoning administrator.

City Departments

- City Administration
- Fire Department
- Operations

Boards and Commissions

- Zoning Board of Adjustment
- Planning and Zoning Commission
- Sewer and Utilities Review Committee

Critical Facilities

Critical facilities within the City of Riverdale include City Hall, fire department, local large businesses, community college campus, high school, and a fuel depot. There were 11 areas of vulnerable populations identified throughout the city as well. None of Riverdale’s assets are located within the floodplain.

Hazard Priorities

The City of Riverdale is located along the Mississippi River and Duck Creek. Although part of the city is protected by private levees, the city recognizes the need for all residents to be prepared for an event and participates in the National Flood Insurance Program. Havens Acres is impacted by flooding on Duck Creek. Flash floods occur in Havens Acres because of ice jams in Duck Creek and rain water runoff from greater Scott County. The Cities of Bettendorf and Riverdale as well as Scott County installed a stream gage to monitor water levels in the Haven Acres neighborhood in cooperation with the Iowa Flood Center in 2020. Severe winter storms have immobilized the city for periods of time in excess of 14 hours. Power outages, usually due to severe weather, have lasted as long as three days. The city has experienced a tornado (1979) and understands the importance of advance storm warnings, and would like to add an additional siren in the Havens Acres subdivision that has no storm warning coverage. The city encourages residents to keep a “File of Life” kit that contains all necessary medical information and can be lifesaving during a hazard event. The City of Riverdale’s mitigation actions are listed in Chapter 4, and city staff will manage their implementation with approval of the City Council as needed.

The following tables list all considered hazards ranked from the prior plan and this plan (see scoring tool listed previously in this chapter).

2017 Ranked Hazards
River Flood
Severe Winter Storm
Tornado
Windstorm
Grass and Wildland Fires
Flash Flood
Drought
Thunderstorm, Lightning, Hail
Extreme Heat
Levee Failure
Dams
Landslide/Sinkhole
Expansive Soils
Earthquake

2023 Ranked Hazards High, Medium, or Low	
medium	Dam Failure
medium	Drought
low	Earthquake
low	Expansive Soils
medium	Extreme Heat
high	Flash Flood
low	Grass or Wildland Fire
high	Levee Failure
high	River Flood
medium	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
high	Thunderstorm, Hailstorm, and Lightning
high	Tornado
high	Windstorm/Derecho
low	Cyber Terrorism
high	Human Disease Pandemic
low	Public/Civil Disorder/Unrest
high	Railway Transportation Incidents

City of Walcott

Overview

2010 Census Population: 1,629

2020 Census Population: 1,551 (-4.8%)

Land Area: 3.12 Square Miles

Geography and Land Use

The City of Walcott is located along the western border of Scott County and extends into Muscatine County. The majority of Walcott is located within Scott County. Walcott is located in northwestern Blue Grass Township, southwestern Hickory Grove Township, and southeastern Cleona Township. Iowa Interstate railroad runs through the southern portion of the town, while I-80 runs through the northern portion of the city. Walcott has the world's largest truck stop (Iowa 80) at the I-80 interchange that serves 5,000 customers per day. The City of Walcott is primarily suburban agriculture and single-family residential in the southern portion of the city with industrial uses along the Iowa Interstate Railroad and along Walcott Road and Main Street. There are two-family and multi-family residential areas within Walcott. The Interstate Highway Commercial District is located north of Wolf Road and spans across I-80 to the northern corporate boundary. Walcott participates in the National Flood Insurance Program. A special flood hazard area is located along Mud Creek between Iowa Interstate Railroad and Walcott Road (see Appendix III-1). They will use the recently adopted Scott County Flood Hazard Map for regulating construction. There are no levees located in Walcott and no known occurrences of land subsidence.

Government Structure

The City of Walcott has a mayor-council form of local government. The mayor and city council, consisting of five elected officials, are elected to four-year staggered terms. Walcott has a city attorney on retainer.

City Departments

- Building Department
- Plan and Zoning Department
- City Clerks Department
- Police Department
- Fire Department
- Public Works Department
- Parks and Recreation Department

Boards and Commissions

- Plan and Zoning Commission
- Zoning Board of Adjustment
- Parks and Recreation Board

Critical Facilities

Critical facilities within Walcott include City Hall and fire station (same building), police station, water treatment facility, sewer treatment facility, wells, and post office. One critical facility and one other important building are located in the 1% floodplain.

Hazard Priorities

Hazards such as severe winter storm, thunderstorm and lightning, and windstorm are frequent occurrences within the city. Public education on the dangers of storms and locations of shelters are important to keep residents safe during those times. The city will also consider safe room construction where adequate facilities are not available largely due to the mobile home park in town. While the City of Walcott is not on the Mississippi River, flash flooding on Mud Creek does occur. There are several businesses and residential housing near the creek that are at risk of potential flooding. The City of Walcott's mitigation actions are listed in Chapter 4 with city staff managing the actions with City Council approval as needed. The city has begun using an Emergency Alert System to notify residents of potential or actual risks. By advertising this to the community, the city is working to minimize potential damage and protect humans from hazards.

The following tables list all considered hazards ranked from the prior plan and this plan (see scoring tool listed previously in this chapter).

2017 Ranked Hazards
Windstorm
Thunderstorm, Lightning, Hail
Severe Winter Storm
Tornado
Earthquake
Flash Flood
Extreme Heat
Grass and Wildland Fires
Expansive Soils
Landslide/Sinkhole
Drought
Dams
Levy Failure
River Flood

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
low	Drought
low	Earthquake
low	Expansive Soils
medium	Extreme Heat
medium	Flash Flood
low	Grass or Wildland Fire
low	Levee Failure
low	River Flood
medium	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
medium	Thunderstorm, Hailstorm, and Lightning
medium	Tornado
medium	Windstorm/Derecho
medium	Cyber Terrorism
medium	Human Disease Pandemic
low	Public/Civil Disorder/Unrest
low	Railway Transportation Incidents

Unincorporated Scott County

Overview

2010 Census Population: 15,130
2020 Census Population: 14,591 (-3.6%)
Land Area: 346.91 Square Miles

Geography and Land Use

Scott County is located in the eastern part of the State of Iowa. The unincorporated areas of the county are mainly located in the northern half of the county in the northwest and northeast sections. There are two larger unincorporated residential areas within the county: Park View, which is located just east of the City of Long Grove, and Pleasant Valley, which is located in between the Cities of Bettendorf and LeClaire. The Mississippi River is located along the east/southeast boarder, and the Wapsipinicon River is located along the northern border the county. Much of the Mississippi River border is occupied by incorporated cities, while much of the Wapsipinicon River is bordered by unincorporated area. Much of the unincorporated areas of Scott County are classified as agricultural/open space/not classified or park/recreation/conservation areas, with small pockets of low-density residential. Refer to Map 2-1 and Map 3-7 for more information. The 1% special flood hazard areas of the county are located along the Mississippi River in the northeast corner of the county, along the Wapsipinicon River in the northern part of the county, and along larger streams within the county. A 0.2% special flood hazard area is found in the northeast corner of the county, north of the City of Princeton where the Mississippi and Wapsipinicon Rivers meet. Levees are located in the northeast corner of the county along the Mississippi and Wapsipinicon Rivers. There are approximately six dams located in the unincorporated areas of the county. Refer to Map 3-1 for more information. There are no known occurrences of land subsidence in the unincorporated areas of Scott County. Areas identified as potential karst areas are located in the northwest corner of the county, along the northern border near U.S. Hwy 61, and near the City of Princeton.

Government Structure

Scott County government is organized by a Board of Supervisors. There are five county board members who are elected to 4-year staggered terms. Additionally, the county attorney, auditor, recorder, sheriff, and treasurer are elected positions for 4-year terms.

County Departments

- Administrator
- Assessor
- Community Services
- Conservation
- County Engineer
- Facility and Support Services
- Health Department
- Human Resources
- Information Technology
- Juvenile Detention Center
- Planning and Development
- Secondary Roads

Boards and Commissions

- Board of Adjustment
- Board of Health
- Civil Service Commission
- Conservation Board
- Emergency Management Commission
- Mental Health Board
- Veteran's Commission
- Zoning Commission

Critical Facilities

Critical facilities located within the unincorporated areas include government buildings, pipelines, and pipeline pumping stations. Vulnerable populations include a large senior care facility in Pleasant Valley and the residential areas of Park View and Pleasant Valley. None of Scott County’s assets within unincorporated Scott County are in the floodplain.

Hazard Priorities

Flooding (flash and river) is considered due to the county’s proximity to numerous creeks, as well as the Mississippi and Wapsipinicon Rivers. The county participates in the National Flood Insurance Program and will continue to do so. Hazards such as thunderstorm and lightning, windstorm, and severe winter storm occur frequently within the county and cause damage and result in additional costs to the county. Public education, promotion of NOAA weather radios, and providing shelters to the community will help reduce the risk to the residents. The unincorporated county’s mitigation actions are listed in Chapter 4 of this plan.

The following tables list all considered hazards ranked from the prior plan and this plan (see scoring tool listed previously in this chapter).

2017 Ranked Hazards
Flash Flood
River Flood
Thunderstorm, Lightning, Hail
Windstorm
Severe Winter Storm
Tornado
Grass and Wildland Fires
Earthquake
Drought
Expansive Soils
Extreme Heat
Dams
Landslide/Sinkhole
Levee Failure

2023 Ranked Hazards High, Medium, or Low	
low	Dam Failure
medium	Drought
medium	Earthquake
low	Expansive Soils
medium	Extreme Heat
high	Flash Flood
medium	Grass or Wildland Fire
low	Levee Failure
medium	River Flood
high	Severe Winter Storm
low	Sinkholes, Land Subsidence, Landslides
medium	Thunderstorm, Hailstorm, and Lightning
low	Tornado
medium	Windstorm/Derecho
medium	Cyber Terrorism
high	Human Disease Pandemic
low	Public/Civil Disorder/Unrest
medium	Railway Transportation Incidents

Bettendorf Community School District (BCSD)

Overview

Schools in District	Location	2022 Enrollment
Bettendorf Community School District (PreK-12)		4,663
Bettendorf High School	3333 18 th Street	1,439
Bettendorf Middle School	2030 Middle Road	1,084
Grant Wood Elementary School	1423 Hillside Drive	447
Herbert Hoover Elementary School	3223 S Hampton Drive	408
Mark Twain Elementary School	1620 Lincoln Road	407
Neil Armstrong Elementary School	3311 Central Avenue	284
Paul Norton Elementary School	4485 Greenbrier Drive	429
Administration Center	3311 18 th Street	
Thomas Edison Academy	438 16 th Street	
Operations Center	2727 Tanglefoot Ln	

Geography

Bettendorf Community School district is located in the southern part of Scott County bordering the Mississippi River and serves the western half of the City of Bettendorf and the northeast area of the City of Davenport. See Map 3-14 for district location.

Critical Facilities

Bettendorf Community School District’s critical facilities include all eight schools in the district, as well as all school athletic facilities. None of the schools in the district are located in the special flood hazard areas of Scott County. See digital Flood Hazard Areas in Appendix III-1.

Hazard Priorities

Bad weather including floods (both flash and river), thunderstorm and lightning, windstorms, severe winter storm, and hailstorms affect the busing of students. One of the largest concerns for the BCSD in terms of mitigation actions is the evaluation and planning for tornado safe rooms within the school district buildings. The hazard mitigation plans consider the students and faculty within school buildings to be vulnerable populations due to the concentration of youth within the buildings. The BCSD wants to evaluate the need for tornado safe rooms and proceed with construction when funding becomes available. Energy failure is also a major issue within the BCSD. School cannot be in session when there is no power in a building. Having back-up generators at each school would ensure that classes can continue with little disturbance. Finally, having the knowledge of impending hazards is important. By having NOAA weather radios at each school and sports field, the BCSD can act before a hazard affects the area and minimize the threat to life and property. The BCSD’s mitigation actions are listed in full in Chapter 4.

Davenport Community School District (DCSD)*Overview*

Schools in District	Location	October 2022 Enrollment
Davenport Community School District		13,781
Adams	3029 N. Division St., Davenport	515
Blue Grass	226 Sycamore St., Blue Grass	326
Buchanan	4515 N. Fairmount St., Davenport	351
Buffalo	1000 Jefferson St., Buffalo	293
Eisenhower	2827 Jersey Ridge Rd., Davenport	505
Fillmore	7307 N. Pacific St., Davenport	399
Garfield	902 E. 29th St., Davenport	436
Harrison	1032 W. 53rd St., Davenport	515
Hayes and Children's Village	622 S. Concord St., Davenport	356
Jackson	1307 Wisconsin Ave., Davenport	367
Jefferson	1027 Marquette St., Davenport	476
Madison	116 E. Locust St., Davenport	386
McKinley	1716 Kenwood Ave., Davenport	413
Monroe	1926 W. 4th St., Davenport	387
Truman	5506 N. Pine St., Davenport	350
Washington	1608 E. Locust St., Davenport	283
Wilson	2002 N. Clark St., Davenport	433
Smart	1934 W. 5th St., Davenport	321
Sudlow	1414 E. Locust St., Davenport	525
Walcott (K-8)	545 E. James St., Walcott	429
Williams	3040 N. Division St., Davenport	429
Wood	5701 N. Division St., Davenport	434
Mid City High	3801 Marquette St., Davenport	177
Central	1120 Main St., Davenport	1,520
North	626 W. 53rd St., Davenport	1,332
West	3505 W. Locust St., Davenport	1,451
Children's Village at Hoover	1002 Spring St., Davenport	114
Children's Village West	1757 W 12th St., Davenport	258
Davenport Learning Center	1002 W. Kimberly Rd., Davenport	
Athletic Compiled	3501 Brady St., Davenport	
Admin/Young Opportunity Center	1709 Harrison St., Davenport	
Bus Lot	3640 Davenport Ave., Davenport	
National Guard Complex, et. al.	3615 Brady St., Davenport	
Operations Center	1008 W. Kimberly Rd., Davenport	

Geography

The Davenport Community School District is located in the southwest section of Scott County in eastern Iowa along the Mississippi River. The district encompasses both urban and rural areas and includes the cities of Blue Grass, Buffalo, Davenport, and Walcott. See Map 3-14 for district location.

Critical Facilities

Davenport Community School District’s critical facilities include all schools in the district, as well as its athletic, administrative, and operations facilities. None of the schools in the district are located in the special flood hazard areas of Scott County. See digital Flood Hazard Areas Map 3-8.

Hazard Priorities

Eastern Iowa Community College District (EICC) (Scott County Campuses)

Overview

Buildings in Scott County	Location	2022 Enrollment (Fall)
EICC		3,650*
Scott Community College - Main Campus	Riverdale	1,209
Urban Center	Davenport	226
Blong Technology Center	Davenport	135
West Davenport Center	Davenport	6
Scott Community College - Sites at High Schools ₁	Throughout County	2,074

* Total enrollment is for Scott County buildings only.

₁ Locations include: Assumption HS, Bettendorf HS, Davenport Central HS, Davenport North HS, Davenport West HS, North Scott HS, and Pleasant Valley HS.

Geography

EICC district campuses are located throughout Scott County. EICC district covers Clinton, Jackson, Muscatine, and Scott Counties as well as parts of Cedar and Louisa Counties. Campuses are located in Clinton, Muscatine, and Scott Counties. However, for the purposes of this plan, only Scott County will be discussed.

Critical Facilities

EICC’s critical facilities include all buildings and facilities in the district. EICC’s buildings are located throughout the entire county. No buildings are located in the special flood hazard areas.

Hazard Priorities

The Eastern Iowa Community College District (EICCD), in fact, encompasses the entire county and beyond. That is why the EICCD agreed to use the county-wide hazard scoring. All of the county-wide hazards do affect the EICCD’s commuting students, building maintenance, and business. Hazardous weather including floods (both flash and river), thunderstorm and lightning, windstorms, severe winter storm, and hailstorms affect the safety of students, faculty, and staff. The EICCD does have a Commercial Driver’s License and Trucking School, and that program in particular could be affected by a highway transportation incident. One of the largest concerns for the EICCD in terms of mitigation actions is the evaluation and planning for tornado safe rooms within the school district buildings. This plan considers the students and faculty within school buildings to be

vulnerable populations due to the concentration of youth within the buildings. The EICCD wants to evaluate the need for tornado safe rooms within EICCD-owned and operated buildings and proceed with construction when funding becomes available. Energy failure is also a major issue within the EICCD. School cannot be in session when there is no power in a building. Having back-up generators at each school would ensure that classes can continue with little disturbance. Finally, having the knowledge of impending hazards is crucial to being proactive. By having NOAA weather radios at each school and sports field, the EICCD can act before a hazard affects the area and minimize the threat to life and property. The EICCD's mitigation actions are listed in full in Chapter 4.

North Scott Community School District (NSCSD)

Overview

Schools in District	Location	2021-2022 Enrollment
North Scott Community School District (K-12)		3,393
North Scott Senior High School	Eldridge	1027
North Scott Junior High School	Eldridge	499
Alan Shepard Elementary School	Long Grove	441
Edward White Elementary School	Eldridge	579
John Glenn Elementary School	Donahue	208
Neil Armstrong Elementary School	Eldridge	371
Virgil Grissom Elementary School	Princeton	184

Geography

North Scott Community School district is located in the northern half of Scott County and serves the Cities of Dixon, Donahue, Eldridge, Long Grove, Maysville, McCausland, and Princeton. See Map 3-14 for district location.

Critical Facilities

North Scott Community School District's critical facilities include all seven schools in the district, as well as all school athletic facilities. None of the schools in the district are located in the special flood hazard areas of Scott County. See digital Flood Hazard Areas in Appendix III-1.

Hazard Priorities

The school districts are in a unique situation. The boundaries of the school districts do not line up perfectly with any of the cities within Scott County. The North Scott Community School District (NSCSD) covers a huge expanse of Scott County that serves northern Davenport and Bettendorf, Dixon, Donahue, Eldridge, Long Grove, Maysville, McCausland, and Princeton as well as all of the unincorporated Scott County in between these cities. That is why the school district agreed to use the county-wide hazard priorities. All of the county-wide hazards do affect the NSCSD's transportation of students, building maintenance, and business. Hazardous weather including floods (both flash and river), thunderstorm and lightning, windstorms, severe winter storm, and hailstorms affect the busing and safety of students. One of the largest concerns for the NSCSD in terms of mitigation actions is the evaluation and planning for tornado safe rooms within the school district buildings. This plan considers the students and faculty within school buildings to be vulnerable populations

due to the concentration of youth within the buildings. The NSCSD wants to evaluate the need for tornado safe rooms within NSCSD-owned and operated buildings and proceed with construction when funding becomes available. Energy failure is also a major issue within the NSCSD. School cannot be in session when there is no power in a building. Having back-up generators at each school would ensure that classes can continue with little disturbance. Finally, having the knowledge of impending hazards is crucial to being proactive. By having NOAA weather radios at each school and sports field, the NSCSD can act before a hazard affects the area and minimize the threat to life and property. The North Scott Community School District’s mitigation actions are listed in full in Chapter 4.

Pleasant Valley Community School District (PVSCD)

Overview

Schools in District	Location	2022-2023 Enrollment
Pleasant Valley Community School District (K-12)		5,622
Pleasant Valley High School	Riverdale	1,706
Pleasant Valley Junior High School	LeClaire	866
Bridgeview Elementary School	LeClaire	303
Cody Elementary School	LeClaire	463
Forest Grove Elementary School	Bettendorf	325
Hopewell Elementary School	Bettendorf	643
Pleasant View Elementary School	Bettendorf	675
Riverdale Heights Elementary School	Bettendorf	641

Geography

Pleasant Valley Community School District is located in the southeastern section of Scott County and serves the Cities of Bettendorf (eastern half), LeClaire, Panorama Park, and Riverdale. See Map 3-14 for district location.

Critical Facilities

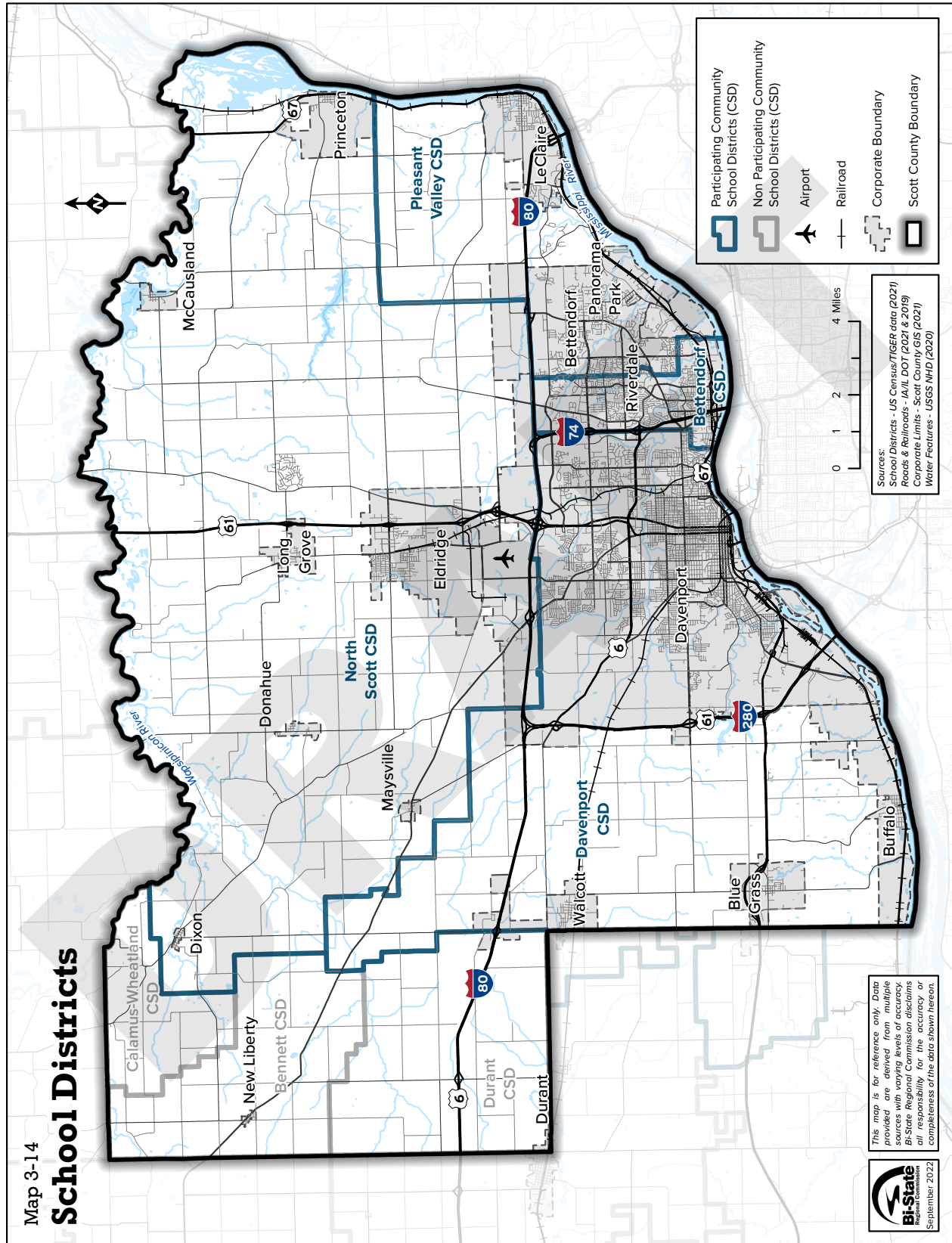
Pleasant Valley Community School District’s critical facilities include all eight schools in the district, as well as all school athletic facilities. None of the schools in the district are located in the special flood hazard areas of Scott County. See digital Flood Hazard Areas in Appendix III-1.

Hazard Priorities

The school districts are in a unique situation. The boundaries of the school districts do not line up perfectly with any of the cities within Scott County. The Pleasant Valley Community School District (PVSCD) covers an area that serves most of Bettendorf, as well as Riverdale, Panorama Park, LeClaire and all of the unincorporated Scott County in between these cities. That is why the school district agreed to use the county-wide hazard priorities. All of the county-wide hazards do affect the PVSCD’s transportation of students, building maintenance, and business. Hazardous weather including floods (both flash and river), thunderstorm and lightning, wind-storms, severe winter storm, and hailstorms affect the busing and safety of students. One of the largest concerns for the PVSCD in terms of mitigation actions is the evaluation and planning for tornado safe rooms within the school district buildings. This plan considers the students and faculty within school buildings to be vulnerable populations due to the concentration of youth within the buildings. The PVSCD wants to evaluate the need for tornado safe rooms within PVSCD-owned and operated buildings and proceed with construction when funding

becomes available. Energy failure is also a major issue within the PVCSD. School cannot be in session when there is no power in a building. Having back-up generators at each school would ensure that classes can continue with little disturbance. Finally, having the knowledge of impending hazards is crucial to being proactive. By having NOAA weather radios at each school and sports field, the PVCSD can act before a hazard affects the area and minimize the threat to life and property. The Pleasant Valley Community School District's mitigation actions are listed in full in Chapter 4.

DRAFT



4 MITIGATION STRATEGY

This section presents the mitigation strategy developed in consultation with the Hazard Mitigation Planning Committee based on the risk assessment. The mitigation strategy was developed through a collaborative group process. The FEMA *State and Local Mitigation Planning: How-To Guide* from March 2013 states that goals are general guidelines that explain what a jurisdiction wants to achieve. They are usually long-term, broad, policy-type statements. Mitigation actions are specific actions that help achieve goals and objectives.

General goals were selected to guide jurisdictions in their efforts to mitigate disaster effects and create mitigation actions that each jurisdiction can put in place to reduce vulnerability to hazards and their associated losses.

LOCAL HAZARD MITIGATION GOALS

Goals are general guidelines that explain what a jurisdiction wants to achieve. They are broad policy-type statements and are long term. The Planning Committee reviewed the 2018 goals to provide direction for reducing hazard-related losses in Scott County. These goals were initially based upon the results of the risk assessment and a review of mitigation goals from other state and local plans, specifically, the *Iowa State Mitigation Plan*, published in 2007 and 2010, and the *City of Davenport, Iowa Mitigation Plan, 2007*. The 2018 *Iowa Hazard Mitigation Plan* was referenced for this plan update. The Planning Committee decided to reaffirm the 2018 goals because they represent a long-term vision of hazard risk reduction in Scott County. The goals are listed in priority order, as agreed during Planning Committee meetings.

- Goal 1: Protect human life and public health from the effects of hazards
- Goal 2: Minimize vulnerability of property within Scott County from the effects of hazards
- Goal 3: Minimize damage to critical facilities, infrastructure, and other community assets from the effects of hazards
- Goal 4: Improve public communication, education, and awareness of hazards and their risks in Scott County
- Goal 5: Strengthen intergovernmental communication among jurisdictions within Scott County

HAZARD MITIGATION OBJECTIVES

Objectives are defined as strategies or implementation steps to attain goals. In 2012, the Planning Committee developed objectives based on six broad categories used in FEMA guidance documents to describe a range of mitigation measures. This provided objectives that would be consistent throughout each jurisdiction regardless of size, population, or available resources. In 2018 and now 2022, the Planning Committee reviewed the objectives from 2012 and reaffirmed them. The objectives are listed in priority order as agreed upon by the Planning Committee.

- Objective 1: Develop and implement government administrative or regulatory actions or processes to influence the way land and buildings are developed and built (Preventative Measure)
- Objective 2: Protect buildings and structures from hazards by modifying or removing them from hazard areas (Property Protection)

- Objective 3: Inform and educate citizens, elected officials, and property owners about hazards and ways of mitigating (Public Education and Awareness)
- Objective 4: Preserve or restore functions of natural systems while minimizing hazard losses (Natural Resource Protections)
- Objective 5: Construct and maintain structural projects to reduce or redirect the impact of hazards away from at-risk populations and facilities (Structural Projects)
- Objective 6: Protect people and property during and after a disaster event in order to minimize its impact and preserve community health and safety (Emergency Services)

IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS

FEMA guidance for local hazard mitigation planning requires examining a comprehensive range of mitigation actions and projects for each hazard. Six broad categories are used in FEMA guidance documents to describe a range of mitigation measures.

Range of Mitigation Measures

1. Preventative Measures (PM) – Government administrative or regulatory actions or processes are developed and implemented that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Preventive measures are used to keep problems from getting started or getting worse. Mitigation measures that fall into this group include planning and zoning, building codes, conducting technical studies, inspection, enforcement, implementation, hazard analysis and risk assessment, security, capital improvement programs, open space preservation, and storm water management regulations. Community participation in the National Flood Insurance Program (NFIP) also protects both individuals and the community as a whole from devastating losses.
2. Property Protection (PP) – These are measures that involve the modification of existing buildings or structures to protect them from a hazard(s) or removal from the hazard area. They are implemented in order to remove people, property, and businesses permanently out of unsafe areas where, in terms of wise disaster planning, they should not have been in the first place. Property protection measures include acquisition, elevation, relocation, and structural retrofits.
3. Public Education and Awareness (PE) – These measures help to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. These measures include outreach projects, real estate disclosure, hazard information centers, and school age and adult education programs.
4. Natural Resource Protections (NR) – These are actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor protections and restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
5. Structural Projects (SP) – These projects involve the construction and maintenance of structures to reduce or redirect the impact of a hazard away from at-risk populations and facilities. Such structures include, but are not limited to, dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

6. Emergency Services (ES) – These actions protect people and property during and after a disaster event in order to minimize its impact and preserve the community’s health and safety. Emergency services include warning systems, monitoring systems, response and recovery planning, emergency response services, evacuations, protection of critical facilities, acquisition of equipment to facilitate the delivery of these services, and training for responders in emergency situations.

EVALUATION OF ALTERNATIVE MITIGATION ACTIONS

For the previous effort, the Planning Committee brainstormed possible mitigation actions to address the first priority hazards. The actions were assigned to appropriate goals and objectives. The original action concepts were edited into consistent language of actionable items. Existing mitigation actions were reviewed by each jurisdiction to determine what progress had been made and to evaluate efficacy.

MULTI-JURISDICTION MITIGATION ACTIONS

Each participating jurisdiction identified at least one action to carry out. Each mitigation action identified the goal(s), objective(s), and hazard(s) it was addressing. Each jurisdiction completed the benefit-versus-cost evaluation for each mitigation action their jurisdiction intended to carry out, and these are included in the mitigation action Table 4-1. The individual jurisdiction priorities for each action are stated in Table 4-1 as low, medium, or high based on the benefit costs. Costs for each mitigation action were considered as low, moderate, or high from the jurisdiction’s perspective and financial capabilities. Benefits were considered as moderate or high again from the jurisdiction’s perspective. As an example, for a similar project, one jurisdiction may have a High/High rating for Cost/Benefit while another may have Low/Moderate depending on differing circumstances within their jurisdiction. The following table was provided as a guide to then assign a priority based on the cost benefit.

A status of each action is included to indicate what progress has been made toward actions since the 2018 plan. The status abbreviations correspond with the following:

- (C) Complete
- (I) Incomplete
- (OC) On-going as part of a continuous cycle
- (OP) Ongoing, In Progress or In Development
- (R) Remove

Finally, actions were identified as new from the prior plan with “Y” for Yes, “N” for No, or “R” for Revised. There is no obligation to carry out the mitigation actions listed due to the fiscal, economic, political, and logistical limitations jurisdictions may face. Mitigations listed have been re-evaluated during the plan update to determine if they are still relevant to each jurisdiction and/or new actions have been added. Note removed actions are crossed out, but remain for reference.

Cost/Benefit	Priority
High (cost) / Moderate (benefit)	Low
Low (cost) / Moderate (benefit) Moderate (cost) / Moderate (benefit) High (cost) / High (benefit)	Medium
Low (cost) / High (benefit) Moderate (cost) / High (benefit)	High

**Table 4-1
Multi-Jurisdictional Priority Actions**

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Bettendorf									
1.1	1	1, 6	Ensure First Responders are aware of hazardous materials kept at each site.	PM, ES	Fixed Hazardous Materials Incident	C			N
1.2	1	1, 6	Create detour and road closure plans for flooded areas	PM, ES	Flash Flood, River Flood	C			N
1.3	1	3	Encourage use of NOAA weather radios	PE	All Hazards	C			N
1.4	1	6	Identify potential treatment locations for biological, radiological and chemical exposures	ES	Biological Terrorism, Radiological Terrorism, Fixed Radiological Incident, Transportation of Radiological Materials Incident, Chemical Terrorism	C			N
1.5	1	6	Provide treatment locations for pandemic disease and fixed radiological incident	ES	Human Disease Pandemic, Fixed Radiological Incident	OC	moderate/moderate	high	N
1.6	1, 2	1	Encourage use of certain routes for transportation of hazardous materials	PM	Transportation of Hazardous Materials	C			N
1.7	1, 2	2, 6	Pre-treat roads before severe winter storms	PP, ES	Severe Winter Storm, Highway Transportation Incident	C			N
1.8	1, 4	3, 2, 6	Encourage those dependent on oxygen extractors to install back-up generators	PE, PP, ES	Energy Failure	OC	high/high	medium	N
1.9	1, 2, 3	4, 5	Monitor tree health and remove damaged or weak branches	NR, SP	Windstorm, Animal/Plant/Crop Disease	C			N
2.1	2	1	Create additional railroad right-of-way separation requirements from residential areas.	PM	Railway Transportation Incident	OP	high/high	medium	N
2.2	2	1	Install at-grade railroad crossing safety measures and equipment	PM	Railway Transportation Incident	OP	high/high	high	Y
2.21	2	1	Continue NFIP compliance by enforcing floodplain ordinances based on the State of Iowa Model Code	PM	River Flood	C			N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
2.3	2	1	Maintain controlled burn measures and procedures implemented by the Fire department	PM	Grass and Wildland Fire	C			N
2.4	2	1	Require utility companies to mark approximate locations of pipeline utilities	PM	Pipeline Transportation Incident	C			N
2.5	2	2, 5	Adopt and enforce current building codes	PP, SP	Windstorm, Severe Winter Storm, Tornado, Structural Fire	C			N
2.6	2	3	Educate public about plant disease, infestation and plant removal techniques	PE	Animal/Plant/Crop Disease	C			N
2.7	2, 3	1	Ensure hazardous materials sites are monitored.	PM	Fixed Hazardous Materials Incident	C			N
2.8	2, 3	1	Encourage development where adequate facilities and infrastructure exists	PM	All Hazards	OC	high/high	medium	N
2.9	2, 3	1, 4	Develop and implement stormwater regulations and drainage plans	PM, NR	Flash Flood, River Flood	OP	moderate/moderate	medium	N
2.10	2, 3	1, 2, 4	Seek all appropriate available grants for the purpose of mitigating flood prone residential properties by use of buyout programs and return the properties in the flood zone back to open space eliminating future flood threats.	PM, PP, NR	Flash Flood, River Flood	OP/OC	high/high	high	N
2.11	2,3	1,2,4	Develop and implement mitigation action plan for repetitive flash flooding at Sivyer Steel Casting factory and see grant funding to implement the plan through Iowa Homeland Security and Emergency Management for any available FEMA grant to address the related issues.	PM, PP, NR	Flash Flood	C			Y

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
3.1	3	1	Encourage the planting of more drought resistant landscape	PM	Drought	C			N
3.2	3	1, 3	Educate the public on water conservation measures such as low flow plumbing devices or reuse of grey water for irrigation	PE, PM	Drought	C			N
3.3	3	1, 6	Analyze high traffic accident locations for possible solutions	PM, SP	Highway Transportation Incident	C			N
3.4	3	1, 6	Conduct safety inspections of levees and maintain protection certification through US Army Corps of Engineers	PM, SP	Levee Failure	C			N
3.5	3	2	Be proactive with virus protection and store back-up data in offsite location	PP	Cyber Terrorism	C			N
3.6	3	3	Assist in promotion of vaccination programs with local, state and federal officials	ES	Human Disease Pandemic, Human Disease Incident	C			N
3.7	3	6	Ensure all critical facilities have back-up generators	ES	Energy Failure	OP	high/high	medium	N
4.1	4	3	Communicate snow removal policies with the public to ensure most efficient removal of snow	PE	Severe Winter Storm	C			N
4.1	4	1, 3	Implement wildfire prevention program	PM, PE	Grass and Wildland Fire	C			N
4.11	4	3	Educate citizens on fire hazards and what to do in the event of a fire	PE	Structural Fire	C			N
4.12	4	3	Educate citizens on the importance of smoke detectors and encourage their use	PE	Structural Fire	C			N
4.13	4	3	Educate the public on what river flood levels on the Mississippi and Wapsipicon actually mean	PE	River Flood	C			N
4.14	4	3	Educate the public on sand-bagging techniques and other flood prevention technologies	PE	River Flood	C			N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
4.15	4	3	Educate the public on the dangers of flash flooding	PE	Flash Flood	C			N
4.16	4	3	Promote state and federal remediation programs for windstorm and animal/crop/plant disease incidents	PE	Windstorm, Animal/Plant/Crop Disease	OC	low/low	low	N
4.17	4	3, 6	Educate the public in the area surrounding hazardous materials sites of emergency procedures in case of a spill or release.	PE, ES	Fixed Hazardous Materials Incident	OC	low/low	low	N
4.18	4	3, 6	Educate the public on river flooding and what they need to do when an event occurs	PE, ES	River Flood	C			N
4.19	4	3, 6	Educate the public on how to minimize damage their residences and businesses	PE, ES	River Flood	OC	low/moderate	medium	N
4.2	4	3	Educate the public on the dangers of lightning	PE	Thunderstorm & Lightning	C			N
4.2	4	3, 6	Consider the use social media such as Twitter, Facebook or mass texting systems to notify the public on hazardous events	PE, ES	All Hazards	C			N
4.21	4	6	Create and/or regularly review procedures for chemical, biological, radiological, enemy attack or flooding incidents	ES	Biological Terrorism, Radiological Terrorism, Fixed Radiological Incident, Transportation of Radiological Materials Incident, Chemical Terrorism, Enemy Attack, River Flood	OC	low/moderate	medium	N
4.22	4	6, 1	Monitor water levels and notify the public when flooding will occur and where	ES, PM	Flash Flood, River Flood	C			N
4.3	4	3	Educate the public and businesses about NFIP and the floodplain in general	PE	River Flood	C			N
4.4	4	3	Utilize ITS signs to communicate safe driving messages and to alert drivers to hazardous conditions	PE	Highway Transportation Incident	C			N
4.5	4	3	Notify the public on warming shelter locations	PE	Severe Winter Storm, Energy Failure	C			N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
4.6	4	3	Educate the public on the dangers of traveling during severe winter storms	PE	Severe Winter Storm	C			N
4.7	4	3	Educate the public on maintaining a fire safe home or business	PE	Structural Fire	C			N
4.8	4	3	Educate the public on the dangers of tornados and what to do during a tornado	PE	Tornado	C			N
4.9	4	3	Communicate the locations of community shelters	PE	Severe Winter Storm, Energy Failure, Extreme Heat	C			N
5.1	5	1	Make sure hazardous materials sites keep their inventory of materials current.	PM	Fixed Hazardous Materials Incident	C			N
5.2	5	1	Have regular training for water rescue and updated equipment	PM	Waterway Incident	OC	low/high	medium	N
5.3	5	1	Maintain mutual aid response policy established by local governments/agencies	PM	All Hazards	OC	medium/high	high	N
5.4	5	1, 6	Ensure First Responders have rescue plans for severe weather.	PM, ES	All Natural Hazards	C			N
5.5	5	1, 6	Encourage First Responders to share resources and equipment	PM, ES	All Hazards	C			N
5.6	5	1, 6	Maintain communication and training with military and law enforcement efforts in case of enemy attack	PM, ES	Enemy Attack, Conventional Terrorism	OC	low/moderate	medium	N
5.7	2	2, 4	2019 HMGP (4386) Duck Creek Floodplain Buyout	PM, PP, SP	Flash Flood, River Flood	OP	medium/moderate	high	Y
5.8	2	2, 4	2019 Emergency Protective Measures (4421) 2019 Flood	PM, PP, SP	Flash Flood, River Flood	OP	medium/moderate	high	Y
5.9	2	2, 4	2021 HMGP (4557) Duck Creek Floodplain Buyout	PM, PP, SP	Flash Flood, River Flood	OP	medium/moderate	high	Y

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
6	2	2, 5	2021 HMGP (4557) 33rd Street Basin	PM, PP, SP	Flash Flood, River Flood, Thunder Storm	OP	low/low	medium	Y
6.1	4	1, 3	FEMA - Community Rating System Application	PP, PE	River Flood, Flash Flood	OP	low/moderate	low	Y

* Bettendorf chose not to do cost benefits or ranking for completed actions

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Blue Grass									
1.1	1	1, 6	Ensure First Responders are aware of hazardous materials kept at each site.	PM, ES	All Hazards	OC	Low Cost/ High Benefit	High	N
1.2	1	3	Promote use of NOAA weather radios	PE	All Hazards	OC	Low Cost/ High Benefit	High	N
1.3	1, 2	5, 2	Ensure each public critical facilities have back-up generators	SP, PP	All Hazards	I	Moderate Cost/ High Benefit	High	N
2.1	2	1	Join the National Flood Insurance Program	PM	Flash Flood	R	Low Cost/Low Benefit	Low	N
2.2	2, 3	1	Ensure hazardous materials sites are monitored.	PM	All Hazards	OC	Low Cost/High Benefit	High	N
2.3	2, 3	5	Ensure hydrants are maintained and well identified	SP	All Hazards	OC	Low Cost/ High Benefit	High	N
3.1	3	5	Construct, retrofit or maintain drainage systems to provide adequate and proper functioning systems to include sewage systems and retention/detention ponds.	SP	Thunderstorm, Hailstorm and Lightning	OC	Low Cost/ High Benefit	High	N
4.1	4	3	Notify the public on warming shelter locations	PE	Severe Winter Storm	OC	Low Cost/ High Benefit	High	N
4.2	4	3	Educate the public on the dangers of tornados and what to do during a tornado	PE	Tornado	OC	Low Cost/ High Benefit	High	N
4.3	4	3	Educate citizens on fire hazards and what to do in the event of a fire	PE	All Hazards	OC	Low Cost/ High Benefit	High	N
4.4	4	3	Educate citizens on the importance of smoke detectors and encourage their use	PE	All Hazards	OC	Low Cost/ High Benefit	High	N
4.5	4	3	Promote the Waste Commission of Scott County Household Hazardous Material collection facilities for proper disposal of household hazardous waste	PE	All Hazards	OC	Low Cost/ High Benefit	High	N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
4.6	4	3, 6	Educate the public in the area surrounding hazardous materials sites of emergency procedures in case of a spill or release.	PE, ES	All Hazards	OC	Low Cost/High Benefit	High	N
4.7	4	3, 6	Encourage the public to check on the disabled, elderly, and other vulnerable populations	PE, ES	All Hazards	OC	Low Cost/High Benefit	High	N
5.1	5	1	Make sure hazardous materials sites keep their inventory of materials current.	PM	All Hazards	OC	Low Cost/High Benefit	High	N
5.2	5	1, 6	Require First Responders to have rescue plans for severe weather.	PM, ES	All Natural Hazards	OP	Low Cost/High Benefit	High	N
5.3	5	1, 6	Encourage First Responders to share resources and equipment and have intergovernmental agreements in place	PM, ES	All Hazards	OC	Low Cost/High Benefit	High	N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Buffalo									
1.1	1	5	Consider safe room construction where vulnerable populations may not have other sources of shelter	SP	Tornado	I	High/Moderate	Low	N
1.2	1, 2	5, 2	Ensure each public critical facilities have back-up generators	SP, PP	Energy Failure	OP	High/High	Medium	N
2.1	2	1	Continue NFIP compliance by enforcing floodplain ordinances based on the State of Iowa Model Code	PM	River Flood	OC	Low/High	High	N
3.1	3	5	Replace or retrofit bridges and culverts to meet capacity requirements	SP	River Flood, Levee Failure, Flash Flood, Dam Failure, Transportation of Hazardous Materials Incident, Fixed Hazardous Materials Incident, Structural Failure, Highway Transportation Incident, Waterway Incident	C			N
3.2	3	5	Construct, retrofit or maintain levees, dams, floodwalls, culverts and floodgates to ensure adequate capacity and protection levels for property and critical facilities	SP	River Flood, Flash Flood, Levee Failure, Dam Failure, Structural Failure	OC	High/High	Medium	N
4.1	4	3	Communicate the locations of community shelters	PE	Severe Winter Storm, Energy Failure, Extreme Heat	I	Low/High	High	N
4.2	4	3, 6	Use social media such as Twitter, Facebook or mass texting systems to notify the public on hazardous events	PE, ES	All Hazards	OP	Low/High	High	N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
Davenport										
1.1	1,4	3, 6	A robust communication plan is essential in reducing risk, preparing for, responding to and recovering from floods, weather, transportation and other incidents of disaster. The City of Davenport shall employ, maintain and enhance its available communication tools and strategies to support a safer, more resilient, and informed community.	PE, ES	All	OC	Low Cost/High Benefit	Operational Priority	No Revised	PW; ADMIN; DNSD
1.2	1,2,3	5	The City has identified the need for improvements to its flood defense system on Black Hawk and Walnut Creeks. The City is seeking funding to reduce adjacent residential and commercial property owner's risk by improving and better maintaining the City's permanent berm, stormwater, and pumping systems. Projects for berm restoration, storm sewer and pump and pump improvements have been identified.	SP	Flood, Flash Flood	OP	Moderate Cost/High Benefit	High Priority	No Revised	PW
1.3	1,2	2, 4	The City maintains a comprehensive set of data to identify flood prone property, including but not limited to the FIRM, Corps of Engineers Hazus Mapping Layers, Repetitive Loss Data, internal and Iowa Flood Center flood mapping tools. The City is seeking funds to reduce risk based on available data. Risk reduction measures identified include a flood proofing cost-share program, and a flood prone buy-out program that would equitably compensate property owners for their property, removal of structures and return of the property to greenspace.	PP, NR	Flood, Flash Flood	OP	Moderate Cost/Moderate Benefit	Medium Priority	No Revised	PW; DNSD

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
1.4	1,2,3	5	The City maintains a strong flood plan. Structural berms and walls are an essential part of the plan to reduce flood risk to critical infrastructure. Knowing the importance and value of these systems, the City shall continue to regularly conduct and document inspection and maintenance on all of its permanent flood defense structures: Black Hawk and Walnut Creek berms; Compost Facility and Water Pollution Control Plant berms; Modern Woodman Park berm and flood wall system; and the Iowa American Water Company flood wall system.	SP	Flood	OC	Operational Cost/High Benefit	High Priority	No Revised	PW
1.5	1	6	As an agency that provides local, regional, and state-wide support for hazardous material response, it is essential that the City maintain a HazMat program for prevention of hazardous material incidents, inspection and enforcement of regulatory requirements, and response to incidents and spills that occur. Not only does the City support outreach, training, and response in Clinton and Jackson counties under 28E agreements, but the City also assists neighboring communities in the IA/IL Quad Cities and itself has increased exposure to incidents with 9 miles of Mississippi River shoreline, over 55 miles of rail line, a transload facility, Municipal Airport, numerous manufacturing sites, and nearby interstate access.	ES	All Hazards	OC	Operational Cost/High Benefit	Operational Priority	No Revised	FD

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
1.6	1,2	1, 4	Maintaining healthy public vegetation and tree canopy is important to reduce the hazards of dead/dying trees, run-off, heat islands, and improperly functioning stormwater BMPs. The City shall continue to maintain and implement its Landscape Management Plan in order to reduce the hazards associated with pests, disease, and poorly maintained landscapes and vegetation.	PM, NR	Extreme Heat, Flood, Flash Flood, Winter Storm	OC	Operational Cost/High Benefit	Operational Priority	No Revised	PW
1.7	1,3	6	The City shall maintain resource inventories of equipment type and personnel credentials/certifications to ensure operational readiness for response and recovery to disasters.	ES	All	OC	Operational Cost/High Benefit	Operational Priority	No Revised	PW; FD; PD
1.8	1	6	Develop resiliency plans (post disaster recovery planning) by utilizing data from past and continued participation in the Notre Dame Global Adaptation Initiative, ND-Gain Urban Adaptation Assessment and STAR Community programs.	PM, PE	All	OP			Remove	
1.8	1,2,3	6	The ability to quickly establish and coordinate on-site response activities for a variety of incidents can be critical to response and recovery. The City is seeking funding to obtain an inventory of site support devices, including but not limited to portable lighting, tents/canopies, visual barriers, and crowd control barriers.	ES	All	OP	Moderate Cost/Moderate Benefit	Medium Priority	New	PD; FD; PW
1.9	1,4,5	6	Based on experience, weather and community trends, the City shall continue to develop, enhance, and train on its Debris Management Plan and associated resources to ensure efficient, timely, and safe recovery to disaster.	ES	All	OC	Operational Cost/High Benefit	High Priority	No Revised	PW

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
1.10	1	6	Winter weather can present hazardous conditions including slick roads, low visibility, and ice that can lead to accidents, property damage and power outages. The City shall maintain and train on its Snow and Ice Control Plan to reduce hazards, improve emergency response during winter weather events, accommodate commerce, and provide reasonable access to municipal facilities, hospitals and clinics.	ES	Winter Storm	OC	Operational Cost/High Benefit	High Priority	No Revised	PW
1.11	1	3(All)	Participate in developing flood inundation mapping resources with the Iowa Flood Center when opportunity is identified.	PE	Flood	OP			Remove	
1.11	1,2	6	Experience has identified the need to equip and prepare a Mobile Field Force. Regional law enforcement agencies are seeking funding in support of a Mobile Field Force including training and equipment (riot gear) to equip personnel for response to public disorder, safe dispersal, and de-escalation.	ES	Civil Unrest	OP	Moderate Cost/Moderate Benefit	Medium Priority	New	PD
1.12	All	All	The City shall maintain and enhance all relevant hazard mitigation, preparedness and response GIS data and services, up-to-date and ready for use, including but not limited to asset and infrastructure detail, flood risk data, HAZUS – MH (multi-hazard), USN National Grid, IDNR watershed details, Iowa Flood Center information, FIRM details, overland flow floodplain, rail infrastructure, critical facilities and infrastructure, and most recent land contour data.	All	All	OC	Operational Cost/High Benefit	Operational Priority	No Revised Formerly 4.4	PW; DNSD

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
1.13	1	6	To assist with efficient transportation, redirection of traffic, and effective communication of hazardous rail incidents, the City would like to install changeable message boards/signs on Hwy 22/Rockingham at Wapello and at River Dr and S Concord to quickly communicate rail incidents to the traveling public. The City will also consider programmable traffic arms at both location to prevent heavy truck traffic and other vehicles and equipment from entering the zone and having difficulty maneuvering to safety. The City may add additional locations based on identified need and applicable regulatory guidance or standards.	ES	Rail Transportation Incident	OP	Low to Moderate Cost/High Benefit	High Priority	New	PW
1.14	1	6	The City's Fire Rescue Operation on the Mississippi River needs a permanent boat dock to ensure quick deployment of water rescue services year-round. In support of year-round water rescue, the City is seeking funds to install a permanent boat dock.	ES	All	OP	Low to Moderate Cost/Moderate Benefit	Medium Priority	New	FD
1.15	1	6	Alternate, redundant and permanent water rescue access to the Mississippi River is necessary due to increased rail traffic and potential for a rail incident adjacent to the riverfront. A second temporary fire boat rescue point is available, however is only available during floods with river levels in excess of 17 to 18 FT. In support of a second year-round water rescue point, the City is seeking funds to install an additional permanent boat dock for water rescue services.	ES	All	OP	Low to Moderate Cost/Moderate Benefit	Medium Priority	New	FD

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
1.16	1	6	The City's current Hazmat response apparatus is a 22-year-old tractor-trailer type apparatus showing signs of structural fatigue and deficiencies related to design and age. These have reduced its reliability and increased the cost of maintaining the essential equipment. Due to Davenport Fire's role in local, regional, and state-wide Hazmat response, replacing the City's Hazmat vehicle with a newer rig would increase reliability, the safety of personnel, and hazardous material response efficiency and capabilities.	ES	All	OP	Moderate Cost/ High Benefit	High Priority	New	FD
1.17	1	6	The City's current inventory of Rescue Boats is limited to three boats with a propeller and one flat bottom boat for flood response. There have been multiple incidents where having additional water rescue equipment would have improved response. The City is seeking funds to expand its water rescue fleet in support of public safety and quick response.	ES	All	OP	Low Cost/ Moderate Benefit	Medium Priority	New	FD
1.18	1	6	The City has experienced many power outages. Some short-term, some as long as five or more days. Outages result in dark signals at critical intersections and reduces travel safety. While the legal standard is to treat the intersection as a four-way stop, some do not observe the rules, become confused, or the intersection is not even visible due to no/poor lighting. To help improve transportation safety, the City would like to make upgrades to its traffic signals, including but not limited to models with backplates for reflective tape application and battery backup.	ES	All	OP	Moderate Cost/ Moderate Benefit	Medium Priority	New	PW

Action ID	Goals	Objectives	Action Strategy	Action Measures Addressed	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
2.1	2,4	1,2,3	Both awareness of flood prone areas and recognition of precipitation trends indicate the need for community preparedness and recovery to flood events. The City shall continue program compliance and accreditations for NFIP, CRS, StormReady, and Weather Ready Nation status to reduce community risk to flood conditions and promote community awareness, education, notification, and access to preparedness and recovery resources.	PM, PP, PE	Flood, Flash Flood, Winter Storm, Other Weather Events	OC	Operational Cost/High Benefit	Operational Priority	No Revised	DNDS; PW
2.2	2,3	1,4,5	Precipitation trends, changing land use, development and population growth require an effective watershed management plan to reduce flood risk, infrastructure degradation, and pollution of our water resources. The City shall continue its work with the Corps of Engineers to take existing plans, combine, evaluate, and improve as needed to produce a more comprehensive Stormwater Management Plan for the City. The results of the project will help guide decisions about potential projects, programs, policies and procedures such as grade control, regional detention, conveyance system improvements, corridor floodplain enhancement, habitat improvements, upland detention to reduce down flooding/flow, retention and infiltration practices, stream and streambank improvements.	PM, NR, SP	Flash Flood	OC	Moderate Cost/High Benefit	High Priority	No Revised	PW; DNDS
2.3	2	1, 4	The City has implemented a 50 FT public and private stream buffer regulation. Needed improvements to the ordinance have been identified for better implementation. The City will pursue improvements to code that will provide for a clearer enforcement procedure for the regulation and align code enforcement, planning, zoning and stormwater codes.	PM, NR	Flash Flood	OC	Operational Cost/High Benefit	High Priority	No Revised	PW

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
2.4	2,3	4	The City will continue to implement and seek funding for programs that increase floodplain storage and that stabilize public and private streambanks. Currently the City continues to complete projects identified in the 2011 stream assessments of Duck and Black Hawk Creeks as funding is available, and to address private streambank issues through the City's cost-share program as community interest and funding is available. Staff continues to evaluate public and private streambank conditions through a seasonal sanitary adjacent stream inspection program where inspection of banks with nearby sanitary sewer lines is performed. Under the program results of inspection are added to the current streambank condition list.	NR	Flash Flood	OC	Moderate Cost/ Moderate Benefit	Medium Priority	No Revised	PW; DNSD
2.5	2,3	4	The City will continue to improve resilience to significant rain events through the promotion of its cost-share program for private stormwater infiltration projects installed. The program is offered as funding is available, however, could be expanded and enhanced as a sub-watershed program with additional funding sources.	NR	Flash Flood	OC	Moderate Cost/ Moderate Benefit	Medium Priority	No Revised	PW
2.6	2	6	Climate extremes are trending. Periods of drought present the hazards associated with wildfire. The City seeks to establish a field fire education program to reduce the risk of wildfire spread.	ES	Wildfire, Drought	OP	Low Cost/High Benefit	High Priority	New	FD

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
2.7	2	6	As climate extremes and periods of drought increase, the need to be prepared for potential response to field fires has equally increased. Having the right equipment on hand supports efficient response and can reduce risk to life and property. The City is seeking funding to secure a bulldozer and disc plow for field fire fighting and other emergency support services.	ES	Wildfire, Drought	OP	Moderate Cost/ Moderate Benefit	Medium Priority	New	FD
2.8	2	1	The City recognizes the need for sound floodplain management to reduce flood risk, and shall continue to maintain and implement its Flood Damage Prevention Ordinance and participation in the NFIP CRS program. The ordinance shall be reviewed regularly and modified or strengthened as needed as opportunity exists. The City will continue to seek a higher CRS Class rating as part of continuous process improvement in floodplain management.	PM	Flood, Flash Flood	OP	Operational Cost/High Benefit	Operational Priority	New	DNSD
2.9	2	4	As a City with 102 miles of streams, we recognize the benefits of greenway corridors as another tool to help reduce run-off and water pollution. The City actively preserves and grows the number of greenway corridors that often include natural floodplains and can dually provide recreational benefits, however growth is limited by funding. The City will actively pursue the creation of additional corridors provided grants or other funding sources.	NR	Flash Flood	OP	Moderate Cost/ Moderate Benefit	Medium Priority	New	PW; DNSD

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
2.10	2	5	The City has identified many undersized stormwater pipes and pipes located under private facilities and buildings that need modification to improve the conveyance of stormwater and reduce operational need/expense during precipitation events. Additional funding sources for these improvements are necessary to address known issues.	SP	Flash Flood	OP	Moderate Cost/ High Benefit	High Priority	New	PW
3.1	3, 2, 1	ALL	With a 9-mile riverfront on the Mississippi River, Davenport has historically experienced high river levels and flooding. For context, the Mississippi River at Lock and Dam 15 has reached flood stage 18 FT - 273 times between 1878 and 2020, with 142 of those events happening in the last 20 years, and reached stage 22 FT 18 times during the period of record, with 7 of those events occurring in the last 20 years. Unique to other river communities, the City has long embraced its riverfront views and connectivity by co-existing with rising river stages using a multi-pronged approach that includes removal of low-lying buildings and infrastructure, adding greenspace, installing structural mitigation, and flood fighting on a limited basis to protect City assets and maintain access to key public rights-of-way. Following the historic floods of 2019, the City began to reflect on river stage frequency and flood response activities and pursued a flood resilience study to help the identify actions that would reduce resources needed to respond to high river levels and potentially reduce the risk to flood-prone property. Along with planning for improvements, the City will need additional funding sources to help assist with implementation of the measures identified.	ALL	Flood	OP	High Cost/ High Benefit	Medium Priority	No Revised	PW; DNSD

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
3.2	3	2,6	Periodic assessment of critical facilities helps to identify needs and to plan for corrective actions that reduce or eliminate risk and vulnerability. The City shall continue a program for periodic assessment in order to reduce risk, support on-going delivery of critical services, and promote employee and public safety.	PP, ES	All	OC	Moderate Cost/ High Benefit	Medium Priority	No Revised	ALL
3.3	3	2, 5, 6	The City's regional Davenport Water Pollution Control Plant, serving the cities of Davenport, Bettendorf, Riverdale, and Panorama Park, and neighboring Davenport Compost Facility serving Scott County, are co-located near the shores of the Mississippi River and at risk during high river stages. The City is currently constructing Phase 1 mitigation for these critical facilities by making pumping improvements and installing a structural berm on the riverside of the properties. Additional funding will be needed to assist with Phase 2 and 3, which includes the installation of structural improvements on the north side of the properties and improved access during river stages greater than 21 FT.	PP, SP, ES	Flood	OC	High Cost/ High Benefit	High Priority	No Revised	PW; DNSD
3.4	3	2, 5, 6	Pursue funding for flood protection for the Davenport Compost Facility which serves all of Scott County. Flood protection is needed to prevent structural damage to the facility that could occur at river level 27 FT. This protection is for the southeast biosolid conveyance and processing area between the Water Pollution Control Plant and the Compost Facility. Implement based on available funding.	PP, NR, ES, SP	Flood	OP	N/A	N/A	Remove - Combined with WPCP	

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
3.4	3	6	Threats to networks across the nation are vulnerable to cyberattacks and infrastructure failure/natural disaster. The City is seeking funding to enhance the redundancy and resiliency of the City's network by adding dual core switches at two critical infrastructure locations or moving the network to a mesh system in order to ensure the City's ability to quickly recover and respond.	ES	Cyber Terrorism	OP	High Cost/ High Benefit	High Priority	New	IT
3.5	3, 2, 1	1, 4, 5	Investigate and seek funding to implement an electronic plan review, permit and inspection workflow and recordkeeping system. Such system will enhance communication between staff, and the homeowner or developer and ensure codes related to hazard mitigation are adhered to.	PP, NR, ES, SP	All Hazards	C	N/A	N/A	Complete/Remove - The City has a system in place	
3.5	3	6	When the Mississippi River rises above the 14.5 FT river stage, roads around the regional Davenport Water Pollution Control Plant begin to cover with river water. Potable water supply lines are located under the road, placing the facility at risk of losing potable water in the event of a water main break or similar failure. The City needs to identify and install a permanent alternate potable water source to ensure ongoing operation of the plant in the event of source failure during times of flood.	ES	Flood	OP	Moderate Cost/ High Benefit	High Priority	New	PW

Action ID	Goals	Objectives	Action Strategy	Action Measures Addressed	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
3.6	3	2	Continue consideration for flood defense systems for the City of Dav- enport's Municipal Stadium, current- ly named Modern Woodman Park. Constructed between 1928 and 1931 as a depression project, the stadium is significant to the city's history, is a city asset and community landmark that promotes tourism and economic vitality. Improvements identified as part of on-going flood plan devel- opment and implementation will enhance flood fighting efficiency and increase existing flood protection. Implement based on available funds.	PP, SP	Flood	OP			Removed	
3.6	3	2, 5	As a result of the flood resilience study, the City identified a storm sewer improvements between Iowa and Harrison, backflow prevention and a new outfall on to the Missis- sippi River could reduce flood risk to stage 22. This project will require funding.	PP, SP	Flood	OP	High Cost/ High Benefit	Medium Pri- ority	New	PW

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
3.7	3	2, 4, 5	Credit Island Park is a historical, recreational asset in the City. Located on the riverfront, access to the park via the causeway is cut-off at a little over 15 FT river stage. Island amenities do not become impacted until river stages are over 18 FT. Due to the higher frequency and duration of high river levels, the causeway frequently needs to be maintained following flood events. Storm sewer improvements have also been identified to help improve the island's overall resilience to flooding. The City would like to pursue reconstructing the causeway with a bridge span and higher opening that will provide ecological and recreational benefits to the slough and reduce the expense required to maintain the causeway continually. Storm sewer system improvements will support some of the environmental benefits of the project as well as improve the island's resilience to flooding.	PP, SP, NR	Flood	OC	High Cost/ High Benefit	Medium Priority	No Revised	PW
3.8	3	2, 5	The City's historic Union Station and adjacent Package Express Building is located on the riverfront and at risk of flooding during higher river stages. The City is currently working through a FEMA application process to construct a berm and make associated infrastructure improvements to improve flood protection for the facility.	PP, SP	Flood	OC	Moderate Cost/ High Benefit	High Priority	No Revised	PW
3.9	3	6	Located on the Mississippi River and experiencing high river stages regularly, it is critical for the City to continue to maintain, train, and exercise the City's Flood Plan to ensure operational and resource readiness.	ES	Flood	OC	Operational Cost/High Benefit	Operational Priority	No Revised	ALL

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
3.11	3	2, 5	Adding a floodwall from the Government Bridge north abutment to the southwest corner wall at Bechtel Park will help improve flood defense systems and improve flood operations. Implement based on available funds.	PP, SP	Flood	OP	Moderate Cost/ High Benefit	High Priority	No Revised	PW; DNSD
3.12	3	5, 6	The area of River Dr and Mound St is impacted at river stage 19.5 FT. When this happens, connectivity between Davenport and Bettendorf on River Dr is interrupted, and access to businesses off of Mound St becomes more difficult with the addition of detours. Funding is needed to support raising low areas of River Dr at Mound St and improve storm sewer infrastructure to keep the area open to travel without staff intervention through 22 FT. Over 22 FT, less frequently experienced stage, overland flow will occur, and temporary defense systems will need to be placed at Mound St.	SP, ES	Flood	OP	High Cost/ High Benefit	Medium Priority	No Revised	PW
3.13	3	6	In an environment where the long-term loss of energy (gas, electric, fuel) is possible, it is essential the City continue to participate in and engage stakeholders in periodic maintenance and exercise of the Davenport/Scott County Local Energy Assurance Plan to prepare for and mitigate to the extent possible the impact of long-term energy loss.	ES	All Hazards	OC	Operational Cost/ Moderate Benefit	Medium Priority	No Revised	ALL
3.14	3	2, 5	The City's Oneida Landing requires pumping and gate wells at river levels greater than 19 FT. To reduce operational resources to protect City assets in the area, storm sewer intakes will need reconfigured and a permanent pump installed.	PP, SP	Flood	OC	Low Cost/ Moderate Benefit	Low Priority	No Revised	PW

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
3.15	3	6	The need for redundancy and resilience of any network is critical to recovery and response activities. The City is seeking funding install fiber redundancy for the City's west critical facility loop to ensure on-going operation.	ES	Cyber Terrorism	OP	High Cost/ High Benefit	High Priority	New	IT
3.16	3	5	The City expends many resources keeping east/west streets open for travel and access to business between the area bounded on the east by 3 rd and 4 th Streets as they intersect with River Dr and Marquette St on the west. The City has identified a package of storm sewer improvements, road raises, and signal improvements that could be made to reduce operational resource requirements and provide for a permanent flood detour during times of flood. The eight geographically situated projects, when combined, will keep travel flowing smoothly with a permanent flood detour route, removes flood response activities and resources that occur between 14.5 FT and 17.5 FT, supports fewer resource requirements from 17.5 to 22FT, and ensures interstate access to the Centennial and Government Bridges during flood events greater than 22 FT river stage.	SP	Flood	OP	High Cost/ High Benefit	High Priority	New	PW
3.17	3, 2, 1	5, 6	A durable and reliable storm and wastewater pump station system is needed to mitigate the impacts of flashy precipitation events and river flood events. Several of the City's pump stations need maintenance, rehabilitation, or replacement. In addition, SCADA system improvements are needed. Funding is needed to support improvements to these critical assets.	SP, ES	Flood, Flash Flood	OP	High Cost/ High Benefit	High Priority	New	PW

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
3.18	3	5	Based on experience and examination of past practice, the City could greatly benefit from a floodwall tie-in at Lock and Dam 15, across the CP Rail track and onto City ROW. The addition would improve reliability of defense systems placed and mitigate seepage issues.	SP	Flood	OP	High Cost/ High Benefit	High Priority	New	PW; DNSD
3.19	3	5	The flood resilience study identified three areas where storm sewer separation and installation of backflow devices could reduce pumping requirements up to stage 18 and keep roadways open longer without intervention: Gaines and Warren, Myrtle and Taylor, Sturdevant and Howell. Implement as funding becomes available.	SP	Flood	OP	High Cost/ High Benefit	Medium Priority	New	PW
4.1	4	3	The City shall continue to update and enhance its existing public education, outreach, and messaging related to flooding and CRS. As part of that on-going effort, the City plans to coordinate with other cities in the County and stakeholders to develop a Program for Public Information based on CRS.	PE	Flood, Flash Flood	OP	Operational Cost/Moderate Benefit	Operational Priority	No Revised	PW; DNSD
4.2	4	3	Support/partner with Scott County efforts to establish a Safeguard Iowa Chapter.	PM, PE	All	OP			Remove	
4.3	4	3	Identify and map at risk/vulnerable populations based on age, disability and income. Target outreach to groups.	PE, ES	All	OP			Remove	

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R	Responsible Party
4.4	4	1	The City shall maintain and enhance all relevant hazard mitigation, preparedness and response GIS data and services, up-to-date and ready for use, including but not limited to asset and infrastructure detail, flood risk data, HAZUS – MH (multi-hazard), USN National Grid, IDN watershed details, Iowa Flood Center information, FIRM details, overland flow information inside and outside of the floodplain, rail infrastructure, critical facilities and infrastructure, and most recent land contour data.	PM	All	OP	Operational Cost/High Benefit	Operational Priority	No Revised And Moved to 1.12	
5.1	5	1, 3, 6	The City shall maintain a Cross Departmental Preparedness Team in support of hazard mitigation, preparedness, response and recovery to hazards. The team shall plan and initiate one cross departmental exercise annually, and meet periodically in support of information sharing, procedural conversation and process improvement, and relationship building.	PM, PE, ES	All	OC	Operational Cost/High Benefit	Operational Priority	No Revised	ALL
5.2	5	1, 6	The City is developing and will adopt a Continuity of Operations Plan to support response, recovery and resilience to disaster by planning for on-going delivery of critical services and continuity of operations.	PM, ES	All	OP	Operational Cost/High Benefit	Operational Priority	No Revised	ALL

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Dixon									
1.1	1	3	Promote use of NOAA weather radios	PE	All Hazards	O/C	Low Cost/High Benefit	High	N
1.2	1, 3	1	Pre-treat roads before severe winter storms	PM	Severe Winter Storm	O/C	Low Cost/High Benefit	High	N
2.1	2, 3	6	Ensure hydrants are maintained and well identified	ES	All Hazards	O/C	Low Cost/High Benefit	High	N
4.1	4	3	Educate the public on the dangers of tornados and what to do during a tornado	PE	Tornado	O/C	Low Cost/High Benefit	High	N
4.2	4	3	Develop a check-on-neighbor program for vulnerable populations	PE	All Hazards	O/P	Low Cost/High Benefit	High	N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Donahue									
3.1	3	5	Construct, retrofit or maintain drainage systems to provide adequate and proper functioning systems to include sewage systems and retention/detention ponds.	SP	River Flood, Levee Failure, Flash Flood, Dam Failure, Drought, Human Disease Incident, Structural Failure, Sinkholes & Land Subsidence	O/P			N
5.1	5	6, 1	Recommend a policy change to assign an on call secondary roads plow to ambulance and fire stations to ensure safety of responders during extreme weather hazards	ES, PM	Severe Winter Storm	O/P			N
	1	6	Construct 250 mph FEMA approved community safe room at John Glenn school	SP	Severe winds/Tornados	C			Y

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Eldridge									
1.1	1	1	Evaluate need for traffic re-routing plan and create plan if needed	PM	Fixed Hazardous Materials Incident	O/P		Low	N
1.2	1	2	Provide back-up power for essential services such as water plant, water wells, sewer lift stations and emergency shelter.	PP	Thunderstorm & Lightning, Windstorm, Severe Winter Storm, Energy Failure, Tornado	C		High	N
1.3	1, 2	1	Enforce building codes for prevailing winds	PM	Windstorm, Structural Fire	O/C		High	N
1.4	1, 2	1	Evaluate traffic hazards in likely areas	PM	Transportation of Hazardous Materials Incident, Highway Transportation Incident	O/P		Low	N
2.1	2	1	Enforce floodplain regulations	PM	Flash Flood; River Flood	O/C		Low	N
2.2	2	1	Enforce property maintenance and building codes	PM	Structural Fire	O/C		High	N
2.3	2	5	Evaluate storm sewer system and detention ponds	SP	Flash Flood	O/C		Low	N
3.1	3	1	Have water conservation plan in place	PM	Drought	O/P		Medium	N
3.2	3	5	Maintain water system (adequate well, storage and treatment capacity)	SP	Drought	O/C		High	N
4.1	4	1	Make sure Hazardous Material warning signs are posted as required	PM	Fixed Hazardous Materials Incident	O/C		Medium	N
4.2	4	3	Educate public on Thunderstorm & Lightning hazards and Tornadoes and inform on siren use	PE	Thunderstorm & Lightning, Tornado	O/C		Medium	N
4.3	4	3	Inform public on value of managing trees properly (remove dead branches, etc)	PE	Windstorm	O/C		Medium	N
4.4	4	3	Inform public of availability of emergency shelter	PE	Windstorm, Severe Winter Storm, Energy Failure, Tornado	O/C		High	N
4.5	4	3	Educate public on need to be prepared for severe winter storms	PE	Severe Winter Storm	O/C		Medium	N
4.6	4	3	Educate public to stay indoors during Severe Winter Storms, Thunderstorm & Lightning, Tornadoes, and Hailstorm	PE	Severe Winter Storm, Thunderstorm & Lightning, Tornado, Hailstorm, Windstorm	O/C		Medium	N
4.7	4	3	Educate public on need for water conservation	PE	Drought	O/C		Medium	N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
5.1	5	1	Verify siren operation	PM	Thunderstorm & Lightning, Tornado, Windstorm	C		High	N
5.2	5	6	Make sure emergency crews are prepared	ES	Transportation of Hazardous Materials Incident, Highway Transportation Incident	O/C		High	N



Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
LeClaire									
1.1	1	5	Consider safe room construction where vulnerable populations may not have other sources of shelter	SP	Tornado	I	High\high	High	N
1.2	1, 2	2, 6	Pre-treat roads before severe winter storms	PM, ES	Severe Winter Storm	OC	Low\High	High	N
1.3	1, 2, 3	4, 5	Monitor tree health and remove damaged or weak branches	NR	Windstorm, Derecho	OC	Low\High	High	N
1.4	1	1, 5	Utilize railroad intersection controls and devices	PM, SP	Tain Derailment Incident	I	High\High	Medium	N
2.1	2, 3	1	Encourage development where adequate facilities and infrastructure exists	PM	All Hazards	OC	Low\High	High	N
3.1	3	2	Be proactive with virus protection and store back-up data in off-site location	PP, PM	Cyber Terrorism	OC	Medium\High	Medium	N
3.2	3	4	Complete watershed and hydrology studies of the creeks and rivers within City of LeClaire	NR	River Flooding, Flash Flood, Dam Failure, Drought, Sinkholes & Land Subsidence, Landslide, Expansive Soils	I	High\high	High	N
3.3	3	5	Utilize traffic calming measures	PE, SP	Severe Winter Storm	OP	High\Medium	High	N
3.4	3	5	Identify critical facilities such as lift stations where back-up power generators should be installed; seek funding for installation as needed.	SP	Energy Failure, River Flood	OP	High\high	High	N
3.6	3	5	Develop stream modification/channel improvement project	SP	River Flood, Flash Flood, Levee Failure, Dam Failure	R	High\high	High	N
3.7	3	5	Remove asbestos from public buildings	SP	Fixed Hazardous Materials Incident, Human Disease Incident, Structure Failure, Structural Fire	I	High\high	Medium	N
4.1	4	3	Notify the public on warming shelter locations	PE	Severe Winter Storm, Energy Failure	OP	Low\High	High	N
4.2	4	3	Communicate snow removal policies with the public to ensure most efficient removal of snow	PE	Severe Winter Storm	OC	Low\High	High	N
4.3	4	3	Communicate the locations of community shelters	PE	All Hazards	OP	Low\High	High	N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
4.4	4	3, 6	Use social media such as Twitter, Facebook or mass texting systems to notify the public on hazardous events	PE, ES	All Hazards	OC	Low\High	High	N
5.1	5	1, 6	Require First Responders to have rescue plans for severe weather.	PM, ES	All Natural Hazards	OP	Low\High	High	N
5.2	5	1, 6	Encourage First Responders to share resources and equipment and have intergovernmental agreements in place	PM, ES	All Hazards	OP	Low\High	High	N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Long Grove									
2.1	2	1	Adopt and enforce current building codes	PM	Windstorm, Severe Winter Storm, Tornado	C	Moderate/High	High	R
3.1	3	1, 6	Construct sand and salt storage facility	PM, ES	Severe Winter Storm	C	High/High	Medium	N
3.2	3	6	Ensure each public facility has back-up generators	ES	All Hazards	OP	Moderate/High	High	R
3.3	3, 1	5, 1	Install second well	SP, PM	Drought	C	High/High	Medium	N
3.4	3, 2	1	Adopt SUDAS for Infrastructure Construction standards	PM	Severe Winter Storm	C	Moderate/High	Medium	R

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Maysville									
4.1	4	3	Educate the public on the dangers of tornados and what to do during a tornado	PE	Tornado	OC	Low Cost/ High Benefit	High	N
4.2	4	3	Communicate the locations of community shelters	PE	Severe Winter Storm, Energy Failure, Extreme Heat	OC	Low Cost/ High Benefit	High	N
4.3	4	3	Educate citizens on the importance of smoke detectors and encourage their use	PE	Structural Fire	OC	Low Cost/ High Benefit	High	N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
McCausland									
1.1	1, 2	2, 3	Pre-treat roads before severe winter storms	PP, ES	Severe Winter Storm, Highway Transportation Incident	Built & Stocked a salt shed	Low/High	High	R
1.2	1, 2	5, 2	Ensure each public critical facilities have back-up generators	SP, PP	All Hazards	New generators ordered for lift stations. Planning for generator for City Hall	Medium/High	High	R
1.3	1, 3	5	Construct public safe rooms for government facility functions, critical facility functions, recreational areas, manufactured home parks, schools and day care centers	SP	Tornado, Thunderstorm & Lightning, Hailstorm, Windstorm	OP	Low/High	Medium	N
1.4	1, 4	3, 2, 6	Encourage those dependent on oxygen extractors to install back-up generators	PE, PP, ES	All Hazards	OC	Low/High	High	N
1.5	1, 2, 3	4, 5	Monitor tree health and remove damaged or weak branches	NR, SP	Windstorm, Derecho	OP	Medium/High	High	R
2.1	2	1	Join the National Flood Insurance Program	PM	River Flood, Flash Flood	OP	Low/High	High	N
3.2	3	5	Identify critical facilities such as lift stations where back-up power generators should be installed	SP	All Hazards	OP	Low/High	High	N
4.1	4	3	Educate the public and businesses about NFIP and the floodplain in general	PE	River Flood	OC	Low/High	High	N
4.2	4	3	Educate the public on the dangers of traveling during severe winter storms	PE	Severe Winter Storm	OC	Low/High	High	N
4.3	4	3	Communicate snow removal policies with the public to ensure most efficient removal of snow	PE	Severe Winter Storm	OC	Low/High	High	N
4.4	4	3	Educate the public on the dangers of tornados and what to do during a tornado	PE	Tornado	OC	Low/High	High	N
4.5	4	3	Communicate the locations of community shelters	PE	Severe Winter Storm, Energy Failure, Extreme Heat	OC	Low/High	High	N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
4.6	4	3	Educate citizens on fire hazards and what to do in the event of a fire	PE	All Hazards	OC	Low/High	High	N
4.7	4	3	Promote the Waste Commission of Scott County Household Hazardous Material collection facilities for proper disposal of household hazardous waste	PE	All Hazards	OC	Low/High	High	R
4.8	4	3, 6	Encourage the public to check on the disabled, elderly, and other vulnerable populations	PE, ES	All Hazards	OC	Low/High	High	N
3.1	3	2	Be proactive with virus protection and store back-up data in offsite location	PP	Cyber Terrorism	OP	Medium/High	Medium	R

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Princeton									
1.1	1	1, 6	Ensure First Responders are aware of hazardous materials kept at each site.	PM, ES	Rail Transportation Incident	OC	Low/High	High	N
1.2	1	1, 6	Create detour and road closure plans for flooded areas	PM, ES	Flash Flood, River Flood	OC	Low/High	High	N
1.3	1	3	Promote use of NOAA weather radios	PE	All Hazards	OC	Low/High	High	N
1.4	1, 2	5, 2	Ensure each public critical facilities have back-up generators	SP, PP	All Hazards	OP	Moderate/High	High	N
1.5	1, 3	5	Construct public safe rooms for government facility functions, critical facility functions, recreational areas, manufactured home parks, schools and day care centers	SP	Tornado, Thunderstorm & Lightning, Hailstorm, Windstorm	I	High/High	Medium	N
3.2	3	2, 5	Construct or implement flood controls for city infrastructure to include ditch re-profiling, culvert expansion, Hesco barriers, and potential berms.	PP, SP	River Flood, Flash Flood	I	High/High	High	N
4.1	4	3	Educate the public on what river flood levels on the Mississippi and Wapsipicon actually mean	PE	River Flood	OC	Low/High	High	N
4.2	4	3, 6	Educate the public on river flooding and what they need to do when an event occurs	PE, ES	River Flood	OC	Low/High	High	N
4.3	4	3, 6	Educate the public on how to minimize damage their residences and businesses	PE, ES	River Flood	OC	Low/High	High	N
4.4	4	6, 1	Monitor water levels and notify the public when flooding will occur and where	ES, PM	Flash Flood, River Flood	OC	Low/High	High	N
4.5	4, 5	3	Provide NOAA weather radios to schools, municipal buildings, and public assembly facilities where large groups of people may congregate	PE	All Hazards	OP	Low/High	High	N
5.1	5	1, 6	Require First Responders to have rescue plans for severe weather.	PM, ES	All Natural Hazards	OP	Low/High	High	N
3.1	3	2	Be proactive with virus protection and store back-up data in offsite location	PP	Cyber Terrorism	OC	Low/High	High	N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Riverdale									
1.1	1	5	Add tornado siren in Haven Acres subdivision.	SP	Tornado	O	Medium/High	Medium	N
1.2	1, 2, 3	6	Maintain existing fire equipment	ES	All Hazards	O	Low/High	High	N
1.3	1, 2, 3	6	Purchase additional fire equipment as required	ES	All Hazards	O	Medium/High	High	N
1.4	1, 2, 3, 5	1, 3	Distribute the a "File of Life" kit to each citizen of Riverdale. Make sure that each resident understands the importance of medical information readily available.	PM, PE	Flash Flood, Structural Fires, Tornado, Energy Failure, Human Disease Incident, Human Disease Pandemic, Severe Winter Storms, Energy Failure	C			N
2.1	2, 3	5	Install new storm water sewer line or replace existing storm water sewer line with appropriately sized sewers as city land use changes.	SP	Flash Flood	P	High/High	Medium	N
3.1	3	6	Revise the severe winter storms snow removal plan to keep City Hall/Fire Department clear and open, followed by clearing 1 1/2 lanes open on all roads, and finally clearing all roads completely.	ES	Severe Winter Storms				
5.1	5	6	Continue education and certification of fire fighters	ES	All Hazards	O	Low/High	High	N
*note we added the flood gage									
*we're considering adding an air pollution monitoring gage in light of Sivyer's violations									
*we would like to consider something like a 205 project, but our bonding capacity limits our ability to do much of anything									
*we follow CDC guidance on pandemic issues, and did as much as we could to minimize impacts									
*we're working with CP and Bettendorf on a revised crossing layout to reduce railway issues.									
*we set up heating and cooling centers at the fire station when necessary.									

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
			<p>*we've taken several actions with our IT provider to prepare for cyber terrorism issues (multi-factor authentication on all systems, etc) and we've got an insurance policy for it as well I believe.</p> <p>*we participate in and host the QC flood resiliency alliance group on a quarterly basis in hopes of educating residents and getting better prepared for flood events.</p>						



Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Walcott									
1.3	1	5	Consider safe room construction where vulnerable populations may not have other sources of shelter	SP	Tornado	I	High/High	Medium	N
1.4	1, 2, 3	4, 5	Monitor tree health and remove damaged or weak branches	NR, SP	Windstorm/Derecho	O/C	Low/High	High	N
4.1	4	3	Educate the public on the dangers of lightning	PE	Thunderstorm & Lightning	O/C	Low/High	High	N
4.2	4	3	Notify the public on warming shelter locations	PE	Severe Winter Storm, Energy Failure	O/C	Low/High	High	N
4.4	4	3	Communicate snow removal policies with the public to ensure most efficient removal of snow	PE	Severe Winter Storm	O/C	Low/High	High	N
4.5	4	3	Educate the public on the dangers of tornadoes and what to do during a tornado	PE	Tornado	O/C	Low/High	High	N
4.9	4	3, 6	Encourage the public to check on the disabled, elderly, and other vulnerable populations	PE, ES	All Hazards	O/C	Low/High	High	N
	1,2,4	3, 4	Utilize emergency alert system-encourage citizens to download the alert app	PE	All Hazards	OC	Low/High	High	Y
	1,2,3	5,6	Consider a regional water detention basin south of the Iowa 80 Interchange area to alleviate flash flooding	PM	Flash Flood	I	High/High	Medium	Y
	1	6	Stock PPE for emergency responders	ES	Human Disease Pandemic	OC	Moderate/High	High	Y
	3	6	Security devices at water plant	PM	Cyber Terrorism	OC	High/High	Medium	Y
	1,3	6	Retain IT company with security & backup protocols	PM	All Hazards	OC	Moderate/High	High	Y

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Bettendorf CSD									
1.1	1	5	Consider safe room construction where vulnerable populations may not have other sources of shelter	SP	Tornado	OP			N
1.2	1, 2	2, 5	Ensure each public critical facilities have back-up generators	SP, PP	Energy Failure	OP			N



Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Davenport CSD									
1	1,2	1, 3, 6	Review existing emergency policies and procedures and amend as needed	PM, PE, ES	All Hazards	C	Low/High	High	N
2	1,3,4	3, 6	Continue public communication of existing emergency procedures	PE, ES	All Hazards	OC	Low/High	High	N
3	1	2	Complete installation of security cameras at all schools	SP	Civic/Public Disorder/Unrest	C	High/High	Medium	N
4	1	5	Secure vestibules with outdoor camera	SP	Civic/Public Disorder/Unrest	OP	High/High	Medium	N
5	1	2	Reinforce doors at school for tornado safety and increased security	SP	Tornado, Civic/Public Disorder/Unrest	OP	High/High	Medium	N
6	1	2, 5, 6	Harden all exterior doors with stronger door or ballistic film on glass in all schools	PP, SP, ES	Terrorism, Tornado	C	Moderated/High	High	N
7	1	5	Construct a tornado shelter at Kimberly Center	SP	Tornado	OP	High/High	Medium	N
8	1	5	Construct multi-purpose safe rooms at multiple district locations within the district	SP	Tornado	OP	High/High	Medium	N
9	1,2	1, 2, 4, 5	Build a berm around Brady Street Stadium to prevent flash flooding. This would include compensatory storage for displaced water.	PM, PP, NR, SP	Flash Flood, River Flood	R	High/High	Medium	N
10	4	6	Purchase radios at 800mhz to run off city network for emergency response	ES	All Hazards	C	High/High	Medium	N
11	1	1	Provide NOAA weather radios for all district properties	PM	All Hazards	C	Medium/High	High	N
12	1,2	1,6	Install back-up generators at district facilities as feasible	PM, ES	All Hazards	OP	High/High	Medium	N
13	1	1	Research lightning detectors for schools and athletic venues. Purchase and install if feasible.	PM	Thunderstorm, Lightning, Hail	OP	Moderate/Low	Low	N
14	4	1, 6	Upgrade radios to run off our own system	PM, ES	All Hazards	OP	High/High	Medium	Y
15	4	1, 3, 6	Update tornado and fire response/action plans	PM, PE, ES	All Hazards	OP	Low/Moderate	Medium	Y

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
16	4	1, 3, 6	Emergency plain language training/codes	PM, PE, ES	All Hazards	OP	Low/High	High	Y
17	3	2	Cyber Attack/Hackers	PM, ES	Cyber Terrorism	OP	High/High	Medium	Y



Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
EICCD									
1.1	1	5	Consider safe room construction where vulnerable populations may not have other sources of shelter	SP	Tornado	O/P	High/High	Medium	N
1.2	1, 2	2, 5	Ensure each public critical facilities have back-up generators	SP, PP	Energy Failure	O/P	Moderate/High	Medium	N
4.1	4, 5	3	Provide NOAA weather radios to schools, municipal buildings, and public assembly facilities where large groups of people may congregate	PE	All Hazards	O/P	Low/High	High	N

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
North Scott CSD									
1.1	1	5	Consider safe room construction where vulnerable populations may not have other sources of shelter	SP	Tornado	C			Y
1.2	1, 2	2, 5	Ensure each public critical facilities have back-up generators	SP, PP	Energy Failure	O/P			Y
4.1	4, 5	3	Provide NOAA weather radios to schools, municipal buildings, and public assembly facilities where large groups of people may congregate	PE	All Hazards	O/P			Y

Action ID	Goals	Objectives	Action Strategy	Action Measures	Hazards Addressed	Status of Action	Cost/Benefit	Priority	New for 2023 (Y/N) or Revised R
Pleasant Valley CSD									
1.1	1	5	Consider safe room construction where vulnerable populations may not have other sources of shelter	SP	Tornado	O/P			N
1.2	1, 2	2, 5	Ensure each public critical facilities have back-up generators	SP, PP	Energy Failure	O/P			N
4.1	4, 5	3	Provide NOAA weather radios to schools, municipal buildings, and public assembly facilities where large groups of people may congregate	PE	All Hazards	O/P			N

5 PLAN MAINTENANCE PROCESS

MONITORING THE PLAN

Scott County will be the lead in the overall monitoring of the plan. The Planning Committee structure as described in the “Planning Process” section will be maintained to assure that each jurisdiction participates. Jurisdictions will be asked to fill vacancies at least annually to maintain a primary contact for the plan maintenance process. In addition, whenever possible, two contacts for each participant will be maintained. The Scott County Emergency Management Agency will schedule an annual meeting of the Planning Committee to track progress made on implementation of priority actions for both the planning area as a whole and individual jurisdictions. Generally, jurisdictions with their own ordinances and enforcement procedures will be responsible for monitoring their individual mitigation actions. At the annual meeting, the Planning Committee will also review the plan and make recommendations whether plan amendments or updates are needed due to changing conditions. Individual jurisdictions will be encouraged to provide a summary of the monitoring activities to their respective boards/councils.

EVALUATING THE PLAN

Criteria used in evaluating the plan will be based on the success of carrying out priority mitigation actions as identified in the plan. As part of the annual meeting described above, the Planning Committee will also evaluate whether events of the previous year have affected the priority ranking of identified hazards. Finally, the Planning Committee will evaluate whether the benefits of the priority actions are addressing the identified goals and objectives of the plan. The Scott County Emergency Management Agency will be responsible for preparing periodic progress reports on the plan. This report will be copied to the chief elected officials of the participating jurisdictions and other primary contacts as appropriate. It will also be shared with the EMA Commission in a public meeting with media notification.

UPDATING THE PLAN

The plan will be updated within five years of the date of the Federal Emergency Management Agency’s (FEMA) approval of the plan as required by part 201.6(c)(4)(i) of the Local Hazard Mitigation Plan Review Crosswalk. The plan may be updated earlier at the discretion of the Planning Committee, or in the event of a Presidential Disaster Declaration, which requires an update by regulation. The Scott County Emergency Management Agency will be responsible for collecting and maintaining information pertinent to future plan updates based on recommendations of the Planning Committee. Any changes will be documented and appended to the plan document in a section titled “Amendments” until such time as a full update is scheduled. If no earlier update is needed, the Planning Committee will evaluate need for funding assistance for the update at its third annual meeting. This will allow time to make an application for planning grant funds and identify whether a contract with a consultant will be necessary for the update process. Actions to undertake the plan update should be scheduled so that there is continuity of FEMA approval for the applicable plan document.

INCORPORATION INTO EXISTING PLANNING MECHANISMS

Early in the planning process, participating jurisdictions were asked to list their own existing local planning mechanisms and ordinances to evaluate what was already in place to incorporate the requirements of the mitigation plan. These lists are summarized in Chapter 2 of the plan.

What:

Incorporating requirements of the mitigation plan will focus on existing planning mechanisms common among several participating jurisdictions. These include:

- Comprehensive/Land Use Plans
- Subdivision Regulations
- Zoning Ordinances
- Building Codes
- Flood Plain Management Ordinances

Comprehensive/land use plans, or subdivision regulations for communities without a current comprehensive plan, provide the guidance for a community's ongoing and future development. The remaining ordinances and regulations listed above provide the enforcement tools for those development plans.

For communities that do not currently have the planning mechanisms in place listed above, the mitigation plan will be considered in annual budgeting processes and other plans listed in Table 2-1 as appropriate. Related plans and documents will be reviewed as they are updated to align with goals, objectives, and mitigation strategies outlined in this plan where appropriate.

Who:

Scott County Emergency Management Agency will collect information on review and incorporation of requirements of the mitigation plan. Smaller communities that do not have their own planning and ordinance enforcement officials will contract out their enforcement. Larger communities with their own planning and ordinance enforcement officials will review their own existing planning mechanisms. Larger communities may communicate adjustments in their planning mechanisms through their representation on the Planning Committee as appropriate.

How:

Existing planning mechanisms will be reviewed for consistency with the requirements of the Local Hazard Mitigation Plan in order to avoid duplication of efforts among jurisdictional departments or enforcement officials. Risk analysis and vulnerability data from the Local Hazard Mitigation Plan may be incorporated in the comprehensive/land use plans of each participating jurisdiction during regular review and update cycles as appropriate. Risk analysis and vulnerability data and mitigation actions will be incorporated into enforcement tools where appropriate. For example, references to the scale of earthquake intensity may be appropriate to building codes. Any adjustments or amendments to existing planning mechanisms will be made through the regular review cy-

cle of the participating jurisdiction. Substantive inconsistencies found between existing planning mechanisms and the Local Hazard Mitigation Plan should be reported to the Scott County Emergency Management Agency for the annual plan review meeting.

When:

Scott County Emergency Management Agency will report at least annually on the progress of incorporating requirements of the mitigation plan through the meeting of the Planning Committee as described in the “Monitoring the Plan” section above. Any issues reported of substantive inconsistencies between the Local Hazard Mitigation Plan and existing planning mechanisms will be considered for plan amendments or updates.

CONTINUED PUBLIC INVOLVEMENT

Scott County intends to make use of its website for continued public involvement. The website has been used in the plan process to keep the public informed about the plan document drafts in progress and related public meetings. The website will continue to be used to post the final Local Hazard Mitigation Plan document as adopted and approved by FEMA. The website also contains related hazard mitigation resources and links. Annual meetings of the Planning Committee will be posted on the website as well as Scott County’s normal means of meeting posting. Progress reports will also be posted on the website as issued. Public comments on the plan process or document will be recorded and reported at the annual meeting of the Planning Committee.

DRAFT

APPENDIX I-1 SAMPLE RESOLUTION

Resolution #MM-DD-YY-??

APPROVAL AND ADOPTION OF THE SCOTT COUNTY MULTI-JURISDICTION LOCAL HAZARD MITIGATION PLAN

WHEREAS, Scott County applied for and was awarded funding from the Hazard Mitigation Grant Program (HMGP) administered by the Federal Emergency Management agency (FEMA) and through the Iowa Homeland Security and Emergency Management Division (IHSEMD) for developing a multi-jurisdictional local hazard mitigation plan; and

WHEREAS, the County contracted with the Bi-State Regional Commission (BSRC) for assistance in preparing the Plan; and

WHEREAS, the BSRC and local government representatives have prepared the Plan in accordance with guidelines provided by FEMA; and

WHEREAS, those municipalities within Scott County that have participated in the multi-jurisdictional plan process will each pass their own resolutions to approve and adopt the plan; and

WHEREAS, the Plan process has been subject to public review and comment during its development; and

NOW, THEREFORE, BE IT RESOLVED by the _____ of the _____ that the updated 5-Year Scott County Multi-Jurisdictional Hazard Mitigation Plan is approved as presented. The plan and any applicable FEMA-required amendments shall become adopted and effective on the date the plan is approved by FEMA.

Passed and approved this _____th day of _____, 20__.

ATTEST:

**APPENDIX I-2
ADOPTION RESOLUTIONS**

DRAFT

APPENDIX II-1 PLANNING COMMITTEE LIST

Jurisdiction	Name	Position
Scott County	Dave Donovan	EMA Director
Scott County	Brian Payne	EMA Deputy Director
Scott County	Jim Hawkes	EMA Emergency Planning
Scott County	Chris Mathias	Planning Director
Scott County	Mary Thee	PIO
Bettendorf	Mark Hunt	Community Development Director
Bettendorf	Taylor Beswick	City Planner & Floodplain Manager
Blue Grass	Ann Schmidt	Clerk
Blue Grass	Brad Schutte	Mayor
Buffalo	Sally Rodriguez	Mayor
Buffalo	Doug Anderson	Fire Chief
Buffalo	T.J. Behning	Police Chief
Davenport	Robbin Dunn	Communications and Preparedness Manager
Dixon	Steve Laughlin	Mayor
Donahue	Ken Schoenthaler	Mayor
Donahue/Dixon	Laurie Ganzer	City Clerk
Eldridge	Tony Rupe	City Administrator
LeClaire	Dennis Bockenstedt	City Administrator
LeClaire	Dennis Gerard	Mayor
Long Grove	Michael Limberg	Mayor
Long Grove	Rosina Guyer	City Clerk
Maysville	Tess Haas	City Clerk
McCausland	Sheila Bosworth	Village Clerk
McCausland	Brian Holland	Mayor
New Liberty	Raymond Pratt	Mayor - Chose not to participate
Panorama Park	Ron Rice	Mayor - Chose not to participate
Panorama Park	Gary Gleason	City Clerk - Chose not to participate
Princeton	Kevin Kernan	Mayor
Princeton	Markisa Tweed	City Clerk
Riverdale	Anthony Heddlesten	Mayor
Riverdale	Kelly Krell	City Clerk
Walcott	Lisa Rickertsen	City Clerk
Walcott	Jackie Huston	Deputy City Clerk
Bettendorf CSD	Curt Pratt	Director of Operations
Davenport CSD	Josh Urmanski	Director of Operations
North Scott CSD	Joe Stutting	Superintendent
Pleasant Valley CSD	Patrick Eshelman	Assistant Director of Operations
Eastern Iowa CCD	Ellen Bluth	Vice Chancellor