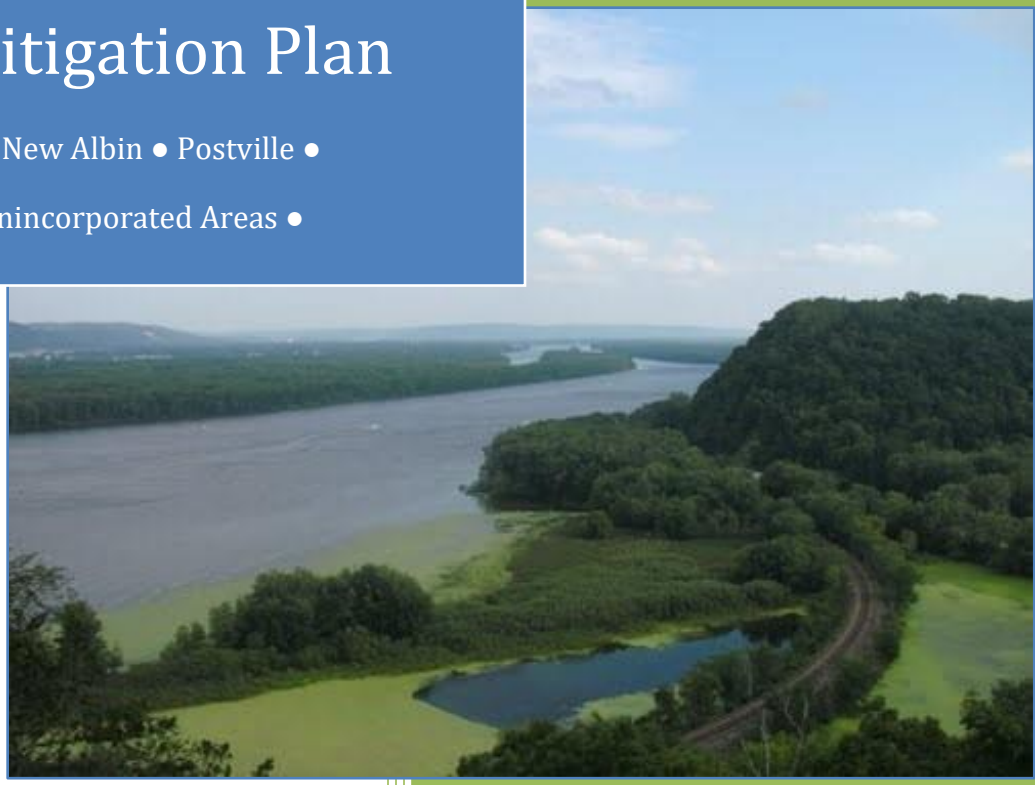
2023

Allamakee County, Iowa Multi-Jurisdiction (MJ-7) Multi-Hazard Mitigation Plan

● Harpers Ferry ● Lansing ● New Albin ● Postville ●

● Waterville ● Waukon ● Unincorporated Areas ●



FEMA APPROVED:

_____

EXPIRES:

_____

Developed by:

The Cities of Harpers Ferry, Lansing, New Albin, Postville, Waterville, Waukon and the County's unincorporated areas

Professional planning assistance provided by Upper Explorerland Regional Planning Commission (UERPC)

Acknowledgements

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City of Postville Dennis Koenig, Mayor** Rebecca Engelhardt** Ross Malcom** Devora Klein-Mahr* Larry Moore** Mary Engstrom** **City Clerk** Darcy Radloff**	**City of Waterville** Dave Monserud, Mayor* Jeff Mitchell** Robbie Burret** Jodi Van Iten** Dave Christianson** Jackie Hilleshiem** **City Clerk** Heather Bente**	**City of Waukon** Pat Stone, Mayor* Andrew Sires** Kevin Johnson** John Lydon** Arvid Hatlan** Stephen Wiedner** **City Clerk** Sarah Snitker*
**Hazard Mitigation Planning Committee Members*		***Attended City Planning Meetings*

Additional Hazard Mitigation Planning Committee Members:			
Clark Mellick, Sheriff, Allamakee County	Susan Snow Superintendent Effigy Mounds (NPS)	Jon Johnson New Albin Fire Dept.	Jay Mathis Superintendent, Allamakee CSD
David Mooney Manager Allamakee Solid Waste	Jacob Dougherty EMS Service Director, Veteran's Memorial	Fred MacVaugh National Park Service	Sheryl Darling Mooney Supervisor, Allamakee Public Health
Janel Clarke Resident	Sarah Murray Superintendent Eastern Allamakee CSD	Brian Ridenour Allamakee Co Engineer	

Allamakee County Emergency Management Commission			
Corey Snitker, Coordinator	Mark Reiser	Alberto Whitlatch	Clark Mellick
	Dennis Koenig	Melissa Hammell	Pat Stone
	David Monserud	Jerry Valley	

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Chapter 1- Introduction and Planning Process

What is Hazard Mitigation?

Hazard mitigation planning is the process through which hazards that threaten communities are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies to lessen impacts are determined, prioritized, and implemented. This plan documents the county-wide hazard mitigation planning process and identifies relevant hazards, vulnerabilities and strategies the Participating Jurisdictions will use to decrease vulnerability and increase resiliency and sustainability. It will affect activities and decisions for proactive mitigation planning that will help reduce the cost of disaster response. Hazard mitigation is described as:

- Action taken to reduce or eliminate long-term risk to people and property from natural hazards and their effects; effort to reduce loss of life and property by lessening the impact of disasters.
- Hazard mitigation is specifically dedicated to breaking the cycle of damage, reconstruction, and repeated damage.
- Mitigation is taking action now—before the next disaster—to reduce human and financial consequences later by analyzing risk, reducing risk and insuring against risk.

Why Do We Plan?

Each year in the United States natural disasters take the lives of hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters, because subsequent expenses incurred by insurance companies and nongovernmental organizations are not reimbursed by tax dollars. Many natural disasters are predictable, and much of the damage caused by these events can be minimized or even eliminated. Planning allows the stakeholders to identify policies and actions that can be implemented over the long term to reduce risk and future losses. Mitigation Plans form the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage. Plans create a framework for risk-based decision making to reduce damages to lives, property, and the economy from future disasters. Planning has many benefits:

- Planning identifies cost effective actions for risk reduction that are agreed upon by stakeholders and the public
- Planning focuses resources on the greatest risks and vulnerabilities
- Planning builds partnerships by involving people, organizations, and businesses
- Planning increases education and awareness of hazards and risk
- Planning communicates priorities to state and federal officials
- Planning aligns risk reduction with other community objectives

Key Steps in the Planning Process

Figure 1 illustrates the key steps in the planning process. More specifically, each step can be further described as:

Figure 1: Hazard Mitigation Planning Process

Step 1: From the start, communities should focus on the resources needed for a successful mitigation planning process. An essential first step is to identify and organize interested members of the community as well as including the technical expertise required during the planning process.

Step 2: Next, communities identify the characteristics and potential consequences of hazards through a hazard identification process. It is important to understand how much of the community can be affected by specific hazards and what the impacts would be on important community assets. This is accomplished through a vulnerability assessment.

Step 3: Armed with an understanding of the risks posed by hazards, communities determine what their priorities should be and then look at possible ways to avoid or minimize the undesired effects. The result is a hazard mitigation plan that identifies mitigation strategies and actions for implementation.

Step 4: Bring the plan to life. Communities can do this in a variety of ways, ranging from implementing specific mitigation projects to changes in day-to-day organizational operations. To ensure the success of an ongoing program, it is critical that the plan remains relevant. Therefore, it is important to conduct periodic evaluations and make revisions as needed, a plan maintenance process.

Participants

The Participating Jurisdictions developed this multi-hazard mitigation plan to reduce future losses in the planning area from identified potential hazards. This plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002, (44 CFR Part 201) and finalized on October 31, 2007. While the Disaster Mitigation Act emphasized the need for mitigation plans and more coordinated mitigation planning and implementation efforts, the regulations established the requirements that local hazard mitigation plans must meet or exceed in order for a local jurisdiction to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288).

Information in this plan will be used to help guide and coordinate mitigation and recovery to communities and their residents by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruptions. The planning area has been affected by hazards in the past and is therefore committed to reducing future impacts from hazard events and becoming eligible for mitigation-related federal funding.

The Disaster Mitigation Act requires that each jurisdiction participate in the planning process and officially adopt the multi-jurisdictional hazard mitigation plan. This plan includes several participating local governments and school systems:

- City of Harpers Ferry
- City of Lansing
- City of New Albin
- City of Postville
- City of Waterville
- City of Waukon
- Unincorporated Areas of Allamakee County
- Allamakee Community School District
- Eastern Allamakee Community School District
- Postville Community School District

Planners met directly with the city councils of each governmental unit. Each governing body reviewed their jurisdictional profiles; discussed their progress on and status of previously identified mitigation actions; determined the planning significance of various hazards within their communities; and identified the mitigation actions they would pursue throughout the implementation of this plan. The Hazard Mitigation Planning Committee and the Allamakee County Emergency Management Commission ensured that the county as a whole along with its unincorporated areas went through the same process of profile review, previous action status, determination of significance for specific hazards and mitigation action identification. See Acknowledgements for a listing of individuals involved.

Allamakee County school districts authorized Allamakee County Emergency Management and Upper Explorerland Regional Planning Commission planners to represent them on the countywide planning committee, though multiple school district representatives participated in the planning as well. School representatives also attended a targeted meeting to focus on school-specific risks and mitigation actions and provided information for the plan upon request. Also, school districts were provided the opportunity to review and provide feedback on the draft plan and were asked to adopt the final plan.

Table 1: Jurisdictional Involvement in the Development of MJ-7

Jurisdiction:	Involvement:
Allamakee County	• Representation on the HMPC (Reiser, Mellick, Mooney, Snitker, Ridenour) • Participation at HMPC meetings (see Appendix C) • Assistance with data collection • Mitigation Action Identification • Plan review and comment • Reviewed plan at meeting on 5/30/23 • Formally adopted plan on 05/30/23
City of Harpers Ferry	• Representation on the HMPC (Diggins) • Participation at HMPC meetings (see Appendix C) • Assistance with jurisdictional description • Mitigation Action Identification (city meeting on 11-14-22) • Plan review and comment • Host public meeting for presentation of plan

	• Formally adopted plan on _____
City of Lansing	• Representation on the HMPC (Becker) • Participation at HMPC meetings (see Appendix C) • Mitigation Action Identification (city meeting on 12-19-22) • Plan review and comment • Host public meeting for presentation of plan • Formally adopted plan on _____
City of New Albin	• Representation on the HMPC (Johnson) • Participation at HMPC meetings (see Appendix C) • Assistance with jurisdictional description • Mitigation Action Identification (city meeting on 11-14-22) • Plan review and comment • Host public meeting for presentation of plan • Formally adopted plan on _____
City of Postville	• Representation on the HMPC (Mahr) • Participation at HMPC meetings (see Appendix C) • Mitigation Action Identification (city meeting on 12-12-22) • Plan review and comment • Host public meeting for presentation of plan • Formally adopted plan on _____
City of Waterville	• Representation on the HMPC (Monserud) • Participation at HMPC meetings (see Appendix C) • Mitigation Action Identification (city meeting on 11-7-22) • Plan review and comment • Host public meeting for presentation of plan • Formally adopted plan on _____
City of Waukon	• Representation on the HMPC (Snitker, Stone) • Participation at HMPC meetings (see Appendix C) • Mitigation Action Identification (city meeting on 12-5-22) • Plan review and comment • Host public meeting for presentation of plan • Formally adopted plan on _____
Allamakee CSD	• Authorized representation form completed • Representation on the HMPC (Mathis) • Participation at HMPC meetings (see Appendix C) • Participation at focused school district meeting (1-27-23) • Mitigation Action Identification • Plan review and comment • Formally adopted plan on _____
Eastern Allamakee CSD	• Authorized representation form completed • Representation on the HMPC (Murray) • Participation at HMPC meetings (see Appendix C) • Participation at focused school district meeting (1-27-23) • Mitigation Action Identification • Plan review and comment • Formally adopted plan on _____
Postville CSD	• Authorized representation form completed • Plan review and comment • Mitigation Action Identification • Formally adopted plan on _____

Local Planning Process

Requirements §201.6(b)(1-3) and §201.6(c)(1):

An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval; (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

This plan is a full update of the previous FEMA-approved Allamakee County, Iowa Multi-Jurisdiction (MJ-7) Multi-Hazard Mitigation Plan approved by FEMA on May 17, 2018. The planning process began in the summer of 2022 and followed methodology prescribed by FEMA, with formation of a Hazard Mitigation Planning Committee comprised of key stakeholders from the Participating Jurisdictions. Key stakeholders included in the process included fire departments/emergency response and law enforcement; public school districts & staff; economic development; city clerks/mayors/councils; county representatives including supervisors/public health/assessor/engineer/solid waste/emergency management/social services; health clinics/hospitals; Iowa DNR; the National Park Service; and residents. Upper Explorerland Regional Planning Commission facilitated the process and assembled all input, information and data to develop the written document.

Local and regional agencies were invited to attend the hazard mitigation meetings and/or review and comment on the draft version Allamakee County Multi-Jurisdiction (MJ-7) Multi-Hazard Mitigation Plan. A press releases in the Waukon Standard, Postville Herald, and Driftless Journal (a regional publication) notified the general public and surrounding jurisdictions of initiation of the planning process, of the opportunity to get involved in the Hazard Mitigation Planning Committee, and of the opportunity to review the plan. And public hazard mitigation meeting notices for each community were placed on city websites and Facebook pages. Appendix D – Planning Process Documentation offers a sampling of the notices and information distributed by the planning agency and the emergency management coordinator.

As part of coordination with other agencies, the HMPC and Upper Explorerland collected and reviewed existing technical data, reports, and plans. These included the State of Iowa Hazard Mitigation Plan, literature on local communities as well as other data from state and federal agencies. This information was used in the development of the hazard identification, vulnerability assessment, and capability assessment and in the formation of goals, objectives, and mitigation actions. These sources are documented throughout the plan and in Appendix A - References.

Those who attended the Allamakee County Multi-Jurisdiction (MJ-7) Multi-Hazard Mitigation Plan public meetings to provide input, while not necessarily designated as HMPC members, are included in the record of all meeting participants and are noted in the minutes and sign-in sheets in Appendix D – Planning Process Documentation.

Several meetings were held throughout the development of this plan including five countywide planning meetings, three targeted discussions/stakeholder engagement meetings around flooding, mental heath, and school issues, and one meeting in each of the county's communities. At the completion of the draft plan, additional public meetings were held in each community to receive feedback on the plan.

Key reports that were consulted in the process included:

- 2018 State of Iowa Hazard Mitigation Plan
- 2021 Allamakee County Comprehensive Plan
- 2015 Waukon Comprehensive Plan
- 2018 Upper Iowa River Watershed Resiliency Plan
- Literature on local communities as well as other data from state and federal agencies.

Key agency contacts that were made during the process for data/information collection included:

- Allamakee County Engineer, Emergency Mgt. Coordinator, Assessor, GIS Coordinator, Zoning Administrator and County Social Services Justice Coordinator
- Northeast Iowa Behavioral Health Director
- Allamakee County Public Health
- Veteran's Memorial Hospital Mental Health Clinic
- Iowa Department of Natural Resources (DNR), NFIP Specialist
- Iowa Flood Center, Water Resources Engineer
- Iowa Department of Education, Education Program Consultant
- Iowa Department of Health & Human Services, Bureau of Health Statistics, Management Analysts & Open Records
- Iowa Dept. of Transportation
- Iowa Homeland Security and Emergency Mgt. Department, State Hazard Mitigation Planner

Key meetings with specific agencies/organizations included:

- A meeting with flood mitigation stakeholders (agencies, non-profits, county representatives, etc.)
- A meeting with school district representatives (superintendents, principals)
- A meeting with mental health stakeholders (law enforcement, school counselors, county social services, public health, behavioral health, etc.)

The planning timeline was laid out as follows:

1. A planning kick-off meeting was held on August 31, 2022. Attendees discussed the purpose of mitigation planning and what the planning process would entail. HMPC involvement was reviewed and confirmed. Participation requirements for jurisdictions were discussed. And there was discussion of current hazards in the plan.
2. The planning committee reconvened on September 26, 2022. The hazard analysis/risk assessment process was explained. Summary hazard information was provided, and the committee went through an exercise to identify hazards to incorporate or remove from the plan.

3. Hazard profiles and vulnerability information were developed by Upper Explorerland and reviewed in more detail by the HMPC at a meeting on October 25, 2022. The committee went through an exercise to group hazards from least to greatest risk and finalized risk prioritization for hazards in the county. Public hazard mitigation meetings in cities were discussed.
4. The next step was to discuss local risks and vulnerabilities and develop mitigation strategies and actions for each participating jurisdiction. Open meetings were held in each community from November to December of 2022 to: 1) review community profiles and capabilities, 2) discuss hazards specific to each community, 3) get feedback on existing hazard mitigation actions, and 4) develop future strategies and actions to minimize or mitigate harm from potential hazards.
5. Targeted hazard mitigation meetings were held with relevant stakeholders around the issues of flooding, mental health, and schools between January – February of 2023. Profile and capability information, hazard risks and vulnerabilities, and existing and proposed mitigation actions were all discussed around these separate issues.
6. The countywide HMPC met on February 28, 2023 to discuss the mitigation strategy, to review risk feedback and mitigation priorities arising out of the city and targeted meetings, to updated mitigation goals and objectives, to review existing county mitigation actions and provide recommendations on new mitigation actions.
7. On March 14, 2023 the HMPC met again to provide feedback on plan implementation information, and to complete an exercise to prioritize county hazard mitigation actions.
8. The written document was finalized by Upper Explorerland and reviewed by the HMPC and each jurisdiction (copies of the draft plan were emailed to jurisdictions for review and distributed to stakeholders for additional comments).
9. Public input was sought through several outlets:
    a. The draft plan was available on the Upper Explorerland Planning Website where comments could be left through an online form or by direct contact with planners. The Web address was announced through a press release in the Allamakee County newspapers.
    b. Presentations of the final plan are made at public meetings throughout the county.
10. Public input was incorporated into the planning document as appropriate. Questions were answered as part of the meeting and presentation process.
11. The plan was adopted by Allamakee County on 5/30/23 (see Table 2) and submitted to FEMA for approval by _____.
12. All revisions to the draft plan from FEMA were addressed, and the plan was adopted by each jurisdiction in the summer of 2023, with the final plan with adoption resolutions forwarded to FEMA by _____.

Requirement §201.6(c)(5):
[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of each jurisdiction requesting approval of the plan

The Allamakee County Multi-Jurisdiction (MJ-7) Multi-Hazard Mitigation Plan will be updated within a five-year timeframe and has been formally adopted by the following entities as shown in Table 2 below (adoption documentation in Appendix B).

Table 2: Jurisdiction Adoption Dates

Jurisdiction:	Adoption Date:
Allamakee County Board of Supervisors	5/30/2023
City of Harpers Ferry	
City of Lansing	
City of New Albin	
City of Postville	
City of Waterville	
City of Waukon	
Allamakee Community School District	
Eastern Allamakee Community School District	
Postville Community School District	

Chapter 2- Planning Area Profile and Capabilities

Overview

Requirement §201.6(c)(3):

[The plan shall] document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs

Requirement §201.6(d)(3):

[The plan shall] be revised to reflect changes in development, progress in local mitigation efforts and changes in priorities

Requirement §201.6(c)(3)(ii):

[The mitigation plan} must address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate

This section of the Allamakee County Hazard Mitigation includes a community profile for the county and incorporates each of the jurisdictions participating in the plan. This section will review the climate and weather, geography, land use, and other conditions that impact the county, as well an overview of location, history, demographic trends and background information for the county. This section will also include relevant data for communities within the county. The County is governed by a three member Board of Supervisors. Additional elected officials include:

- County Auditor
- County Recorder
- County Sheriff
- County Treasurer
- County Attorney

Key staff positions include:

- County Assessor
- County Conservation Director
- County Emergency Management Coordinator
- County Engineer
- County Environmental Health
- County GIS Coordinator
- County Waste Mgt. Coordinator
- County Planning & Zoning Administrator / Floodplain Administrator
- County Public Health Administrator
- County VA Administrator
- E911 Coordinator

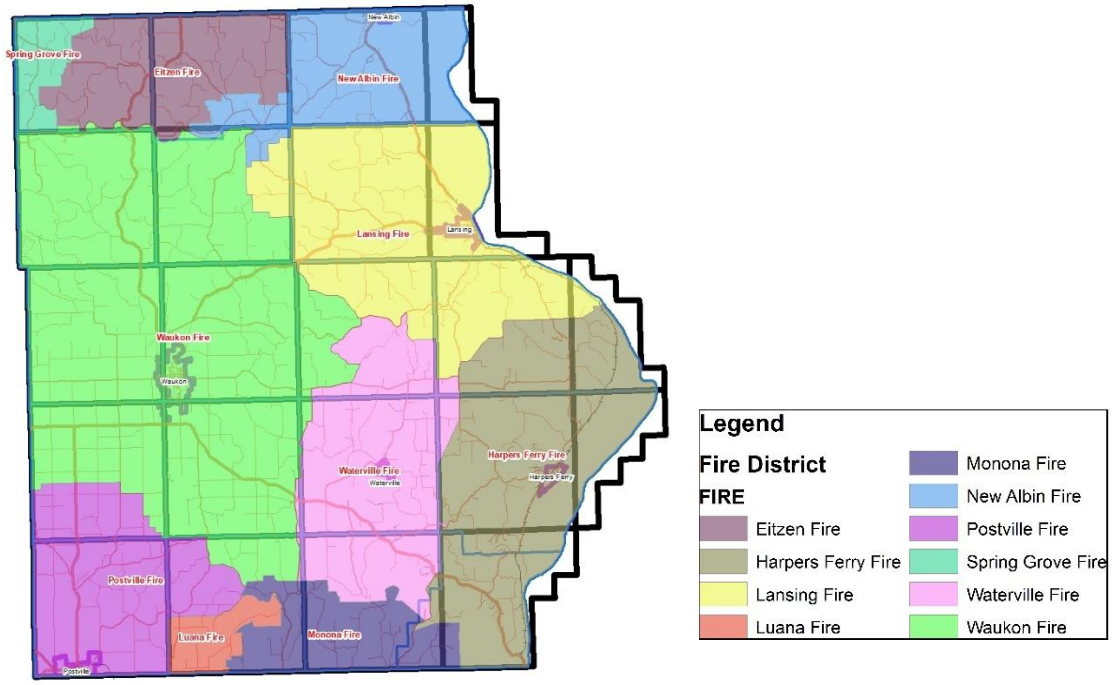
Property valuations for the county were $935,955,290 as of 2022 (Allamakee County Assessor, 2023). Fiscal tools for funding mitigation activities include bonding, both General Obligation and Revenue, loan agreements, fees, taxes for specific purposes and grants.

The County utilizes the Allamakee County Zoning Ordinance and a zoning administrator to control land use and direct decision-makers. It has not adopted a building code. In order to have county enforced building codes, it would have to be agreed upon by the public to be adopted. The County adopted the Allamakee County Comprehensive Plan 2021, which outlines goals and policies for housing, natural resources, land use, transportation, hazards and more. Further, the County utilizes the Allamakee County Comprehensive Emergency Management Plan. And all Response Personnel follow appropriate protocol and guidance.

The Allamakee County Sheriff's office provides law enforcement to the unincorporated parts of the county and Allamakee County Emergency Management provides emergency management services. Also, Allamakee County Emergency Management and the County GIS departments provide technical resources and services to the County and its emergency responders. Allamakee County contracts with the Northeast Iowa Response Group (NIRG), a specialized HAZMAT Team from the Waterloo Fire Department, to provide technician-level incident response throughout the county.

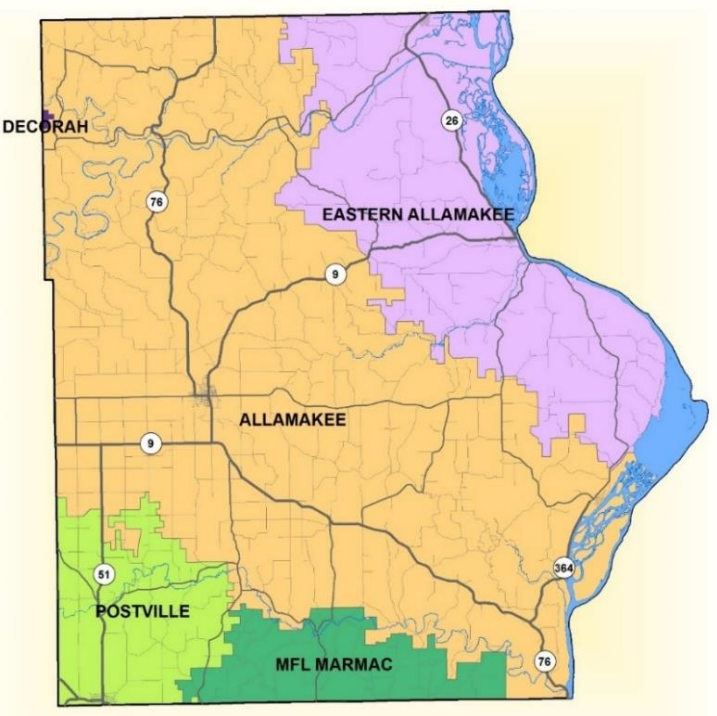
All Police Departments, Fire Departments, and Ambulance services in the County as well as some neighboring counties have a mutual aid agreement to respond and assist with an incident as appropriate. Fire Department coverage is illustrated in Figure 2 (Allamakee County GIS Coordinator, 2023).

Figure 2: Allamakee County Fire Department Coverage
(Allamakee County GIS Coordinator, 2023)



Allamakee County children attend one of five school districts covering the county. There are three independent community school districts and several private schools with administrative headquarters located within the county. School districts include: Allamakee CSD, Eastern Allamakee CSD and Postville CSD. Private schools include: Bais Sholom, Postville Alternative High School and St. Patrick Catholic School. Two other districts serve children from the county but are physically located in neighboring counties: MFL MarMac & Decorah Community School Districts. School District coverage is illustrated in Figure 3.

Figure 3: Allamakee County School District Boundaries
(Upper Explorerland Regional Planning Commission, 2020)



Mitigation Activities

Required Mitigation (Natural Hazards) or Elective Mitigation (Non-Natural Hazards)

Hazard: Numbers match a proposed mitigation action found in: ***Mitigation Actions to Pursue Through MJ-7 Implementation:***	**Natural Hazard DOESN'T impact community.** **No mitigation action required.**	**Natural Hazard DOES impact community.** **Mitigation action is required and was provided.**	**Non-Natural Hazard (NHH) DOES impact community –** **Mitigation is elective but was provided.**
Natural Hazards:			
Dam/Levee Failure		#12, #24	
Drought		#12, #24	
Extreme Heat		#12, #24	
Flood		#2, #5, #6, #7, #8, #9, #10, #12, #15, #16, #17, #18, #19, #20	
Hailstorm		#3, #5, #11, #12, #13, #19	
Landslide		#12, #24	
Severe Winter Storm		#1, #2, #3, #5, #11, #12, #13, #19	
Sinkholes		#12, #24	
Thunderstorm/Lightning		#3, #5, #11, #12, #13, #19	
Tornado		#1, #2, #3, #5, #11, #12, #13, #19	
Windstorm		#3, #5, #11, #12, #13, #19	
Animal/Plant/Crop Disease			#12
Hazardous Materials			#2, #4, #12
Human Disease			#12
Infrastructure Failure			#11, #12, #20
Mental Health			#2, #12, #21, #22, #23
Transportation Incident			#4, #12, #14, #18

Status and Progress on Previous Mitigation Actions

1. Establish and maintain a well-equipped and well-trained emergency response capabilities with active partnership
    - Train a CERT Team (Community Emergency Response Team) to perform limited life-saving capabilities to aid First Responders:
        - Not completed - County will remove this action and focus on a volunteer program for the time being.
    - Work with public health to develop an inventory of special needs individuals to provide to emergency response teams:
        - Not completed – In progress.
2. Purchase/improve warning & alert notification systems
    - Continue to use and build public knowledge of warning systems/alert notification providers, including reverse 911 through county dispatch, Alert Iowa, and Code Red:
        - Completed – But keep for plan update. Alert Iowa is being used now. The county would like to continue to build public awareness of the system, expand users, and enhance its uses.
    - County/cities to transition to sirens with the capability for automated activation by the Allamakee County Sheriff's Office:
        - Completed – Remove from plan update.
3. Generators / transfer switches / back-up power supply
    - Assist cities in identifying generator needs, including considering transfer switches, storage location and fuel needs:
        - Not completed – Keep in plan as emergency management continues to assist communities with this, with a focus on making community shelter locations and critical facilities more resilient.
4. Outreach to the public about hazards / encourage pre-disaster and recovery planning
    - Lead initiative to form a countywide disaster response coalition to serve residents during and following storm or emergency events:
        - Not completed – Keep for plan update.
5. Develop, upgrade, enhance, and protect infrastructure, and/or critical facilities
    - Maintain transportation infrastructure, including addressing safety and functionality during storm events (e.g. stormwater runoff minimization, debris cleanup at bridges, etc.)
        - Completed – But keep, as this effort continues.
6. Review routes in the county posing risk for truck accidents / material spills
    - Complete study of Volney Hill Curve fertilizer spill, and pursue mitigation actions if/when identified:
        - Completed – Remove from plan. County put a new reduced speed sign up.
    - Assess other county roads that are at risk of truck accidents/hazardous materials accidents due to steep topography, curvature, or conditions. Research applicable mitigation measures, and pursue implementation of measures at high risk locations.
        - Completed – But keep in plan. Load Road Safety Plan done in 2018 and being updated in 2023.
7. Develop city / county codes or plans to address hazard issues
    - Create a countywide Community Shelter Plan
        - Not completed – In progress. Keep for plan update.
    - Create a Rail Response Plan to prepare for the possibility of a rail accident
        - Not completed – In progress. Keep for plan update.

- Research and/or update zoning regulations to control development on landslide prone areas and steep slopes
    - Completed – County has bluff ordinance regulating development on steep slope areas. Remove from plan update.

8. Provide increased flood mitigation efforts and enhancements
    - Evaluate areas that experience flood damage, and for which mitigation tools and/or strategies could minimize flooding vulnerabilities:
        - Completed – Roads, bridges and key areas of the county with known flooding issues were identified with planning process. But efforts continue with regards to project identification, funding, etc. Keep action for plan update.
    - Participate in regional watershed planning and flood mitigation initiatives:
        - Completed – County implemented key project coming out of initial Upper Iowa River Watershed Plan process. Local representatives continue participation in watershed authority planning. And continue to assess needed projects for other county watersheds. Maintain this action under watershed planning instead.
9. Participate in watershed / waterway planning and initiatives
    - Review Upper Iowa River Watershed Management Authority Plan once complete, and implement recommended flood mitigation measures across county as applicable:
        - Completed – Finished the identified Allamakee mitigation project. Remove from plan.
    - Continue involvement in Upper Iowa River Watershed Management Authority activities:
        - Completed – But keep in plan as work on this continues.
    - Pursue opportunities for engaging cities and county agencies in watershed and flood mitigation planning and education:
        - Not completed – Keep in plan, as work on this is needed and should continue.
10. Create, maintain and utilize a communication network for quantity and quality reporting along water sources
    - Develop communication plan/system for local/county points of contact to exchange information on rainfall amounts, flooding conditions and contamination of waterways or water sources:
        - Not completed – Remove from plan. Not a focus right now.
11. Construct and stock FEMA-compliant tornado safe room(s)
    - Inventory high risk areas in the county (e.g. mobile home parks, recreation areas, schools, etc.), and assess locations for safe room sites:
        - Not completed – Remove from plan. However, this will be completed to some extent via completion of the community shelter plan.
12. Consider construction of on-road structures to protect county infrastructure from flooding
    - Construct on-road structures as funding becomes available; focus on Coon Creek Watershed:
        - Completed – Completed for Coon Creek Watershed on Prairie Dr. in 2021. Keep in plan for other on-road structure needs.
13. Ensure the plan is updated prior to expiration, and promote the plan to the public
    - Ensure that the Allamakee County MJ-7 Hazard Mitigation plan remains current and publicly available, is updated through public participation and is submitted for approval every 5 years with annual updates as needed
        - Completed – But keep in plan update as continued action. Emergency Manager connects with cities about planning annually, as well as with county and EMA board, etc.
14. Acquire and demolish damaged structures
    - No specific Allamakee County actions. Actions at city level are reviewed in jurisdictional sections. Keep in plan as city needs/actions continue.

15. National Flood Insurance Program (NFIP) participation / consideration
    - Continue membership in NFIP. Update floodplain regulations to continue to meet or exceed minimum State of Iowa regulations. Maintain work of floodplain administrator as identified in adopted floodplain ordinance.
        - Completed – Keep in plan as this action continues.

Mitigation Actions to Pursue Through MJ-7 Implementation:

1. Work with public health to develop an inventory of special needs individuals to provide to emergency response teams
2. Enhance and implement alert notification systems enhancing communication with local government, facilities, and vehicles from emergency management for planning, response, and recovery actions
3. Participation in the county shelter planning process as part of an overall planning, response and recovery program for emergencies and disasters
4. Create a Rail Response Plan to prepare for the possibility of a rail accident
5. Participation in the county volunteer program as part of an overall planning, response and recovery program for emergencies and disasters
6. Conduct a flooding mitigation review and implement feasible actions related to Cottage Rd and local flooding concerns
7. Conduct a flooding mitigation review and implement feasible actions related to flooding on Paint Creek in the locations at and close to E Railroad Lane
8. Conduct a flooding mitigation review and implement feasible actions related to watershed drainage and flooding in the general area of E Main Street and E 2nd St and locations east along Paint Creek affecting a lift station, E Main Street, and Pine Bluff Camp Site
9. Participate in other county or regional watershed planning and flood mitigation initiatives
10. Construct on-road structures as funding becomes available
11. Installation of emergency power sources to include generators, transfer switches and other alternate power sources to identified facilities to enhance county and community sheltering capabilities during periods of power outages and other disaster and emergency circumstances
12. Ensure that the Allamakee County MJ-7 Hazard Mitigation plan remains current and publicly available, is updated through public participation and is submitted for approval every 5 years with annual updates as needed
13. Creation and implementation of an ordinance requiring the construction of a storm shelter at a manufactured home community or mobile home park constructed after the approved start date of the ordinance per Iowa legislation
14. Assess county roads that are at risk of truck accidents due to steep topography, curvature, or conditions. Research applicable mitigation measures and pursue implementation of measures at high risk locations.
15. Continue involvement in Upper Iowa River Watershed Management Authority planning and engagement
16. Pursue opportunities for engaging cities and county agencies in watershed and flood mitigation planning and education
17. Maintain membership in NFIP
18. Maintain transportation infrastructure, including addressing safety and functionality during storm events (e.g. stormwater runoff minimization, debris cleanup at bridges, etc.
19. Operationalize equity, inclusion, and diversity in all emergency management efforts to include plans, policies, and procedures in providing emergency and disaster services to the County's socially vulnerable.

20. Pursue bioengineered bank stabilization techniques for infrastructure & critical facility projects when feasible
21. Create a Behavioral Health Task Force to provide education, seminars, and resource awareness to schools, county and municipal agencies and organizations. Work on providing and enhancing mental health services for area youth. Look at ways to expand telepsychiatry and counseling opportunities.
22. Create an Integrated Home Health (IHH) program to provide in-home and follow-up care.
23. Create a Crisis Stabilization Center for persons in crisis.
24. Improve the public's awareness of lower priority hazard risks (i.e. dam/levee failure, landslides, drought, extreme heat, sinkholes, etc): Develop educational materials for the general public and decision makers, pursue educational projects, provide information on public and private volunteer initiatives.

Brief History

French explorers Jacques Marquette and Louis Jolliet were likely the first Europeans to set eyes on this region. Beginning in 1673, they explored and mapped many parts of the Upper Mississippi River valley in areas of what are today Wisconsin and Iowa (Upper Explorerland Regional Planning Commission, 2021). Settlers of European descent first arrived in what is now Allamakee County around 1828, when soldiers from Fort Crawford at Prairie du Chien, Wisconsin, were sent to build a sawmill along the Yellow River (Upper Explorerland Regional Planning Commission, 2021).

At the time of European contact, the area Allamakee County now occupies was part of a vast wilderness brimming with wildlife. Allamakee County's 1984 comprehensive plan noted that the Mississippi River, numerous lakes, and smaller streams of the area provided an ample supply of water, fish, fur-bearing game, and water fowl to the indigenous people of the area, and herds of buffalo, elk, and deer roamed freely over meadows of wild rye and prairie grasses.

Native Americans living in the area were forced to relocate in 1848 by the U.S. government. Allamakee County was organized by the Iowa Legislature the following year, opening the door for white settlers to begin moving into the county. A period of white settlement and landscape transformation followed and continued into the 20th century (Upper Explorerland Regional Planning Commission, 2021).

Geography and Environment

Location

Allamakee County is located in the northeastern corner of the State of Iowa, shown in Figure 4. The county is approximately 25 miles by 30 miles in linear dimension. The northern boundary of the county borders the State of Minnesota and the eastern boundary approximately aligns with the Mississippi River, dividing Allamakee County from the State of Wisconsin. Beginning with the north and going clockwise, Allamakee County is bounded by Houston County, MN, Vernon County, WI, Crawford County, WI, Clayton County, IA, Fayette County, IA, and Winneshiek County, IA. Figure 4 illustrates the location of the incorporated communities within the county, and the bordering counties.

Figure 4: Location of Allamakee County in Iowa
(Iowa Department of Transportation, 2017)

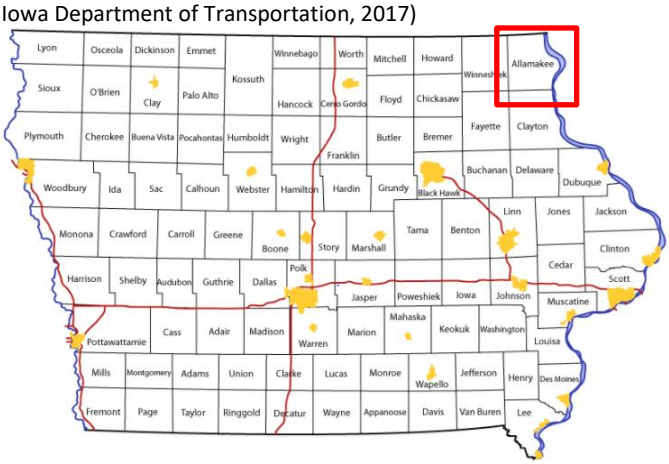


Figure 5: Base Map of Allamakee Co Communities

(Iowa Department of Transportation, 2017)

Land Cover and Land Use

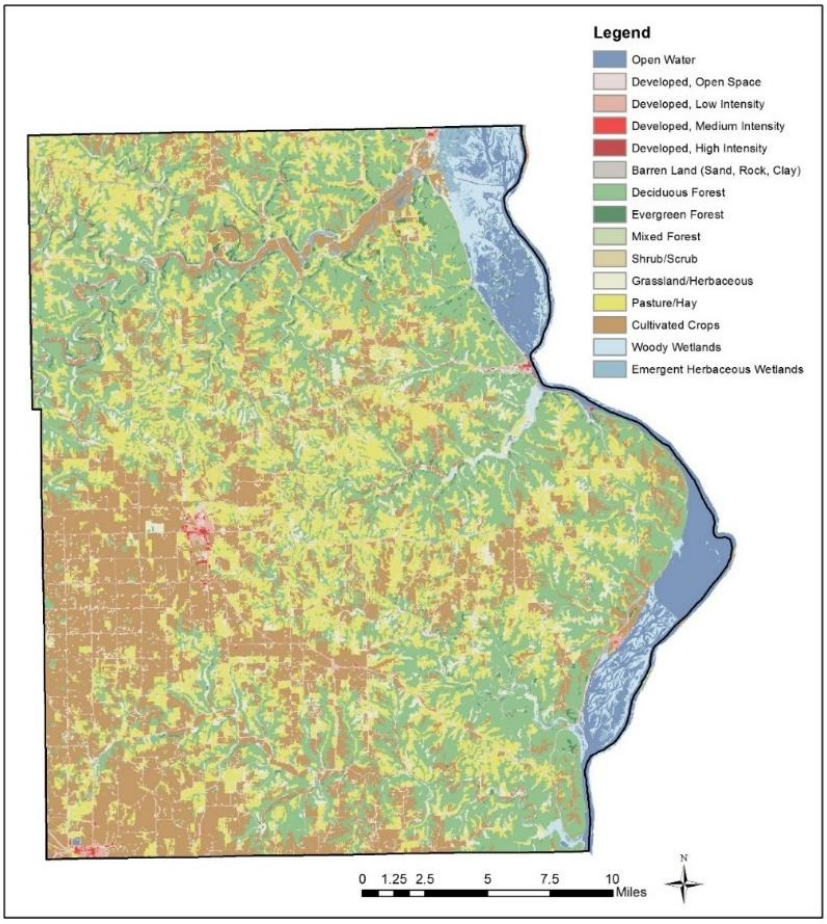
Originally, the land surrounding and including Allamakee County was covered with prairie grass and light forestation. Modern agricultural practices have changed this setting to predominately cultivated crops and pasture settings in the rural areas. Agricultural operations utilize 93,583 acres of land in the county, nearly 55% of the total land cover (U.S. Geological Survey, 2017). Table 3 breaks down the land cover by type for Allamakee County by area, and Figure 6 illustrates landcover in the county.

Table 3: Land Cover for Allamakee County

Land Cover Type:	Square Miles	% Total Area
Forest and Woodland	232.61	35.33%
Recently Disturbed or Modified	7.05	1.07%
Open Water	28.41	4.32%
Shrub land and Grassland	.52	.08%
Agricultural Vegetation	361.33	54.87%
Developed and other Human Use	28.47	4.32%
Introduced and Semi-Natural Vegetation	.07	.01%

Source: (U.S. Geological Survey, 2017)

Figure 6: Land Cover, Allamakee Co.



Source: (U.S. Geological Survey, 2017)

Land use differs from land cover in that various land covers could potentially fall under the same land use (agriculture, for example). The current land uses in Allamakee County, as categorized by the County Assessor for taxing purposes, are identified in Table 4. While not completely accurate as actual use and classification may differ slightly, the data provides a snapshot of how the land in the county is being utilized and taxed. The greatest land use in the county is agriculture, followed by exempt properties. Multi-residential & industrial land uses saw the greatest increase since 2017.

Table 4: Land Use Breakdown by Property Tax Classification

Land Use Classification	Acres (2017)	Acres (2022)	% Change
Agriculture	354,592.14	353,363.90	0%
Residential	12,612.55	14,635.00	+14%
Multi-Residential (3+)	70.88	146.92	+52%
Commercial	1,479.58	1,956.76	+24%
Industrial	233.37	349.17	+33%
Exempt Properties (non-taxable properties e.g. churches, government buildings and nonprofits)	32,626.25	33,387.70	+2%
Other (right-of-ways)	8,602.14	10,123.59	+15%
Total	410,216.91	413,963.04	

Source: (Allamakee County Assessor, 2023); (Allamakee County GIS Coordinator, 2023)

Elevation

The topography of Allamakee County ranges from the rare relatively flat farm land, to hilly terrain with bluffs overlooking valleys and the Mississippi River.

Rivers, Streams and Lakes

The surface waters of Allamakee County drain into the Mississippi River and its tributaries, the largest being the Upper Iowa River followed by the Yellow River. The major creek tributaries emptying into the Mississippi River are Village Creek and Paint Creek.

The Mississippi River forms the eastern boundary of the county. The floodplain of this river is about four miles wide and is now largely occupied by water of the lake formed by the lock and dam system in the river. The bluffs along the river rise to about 600 feet above the river, attaining an elevation of nearly 1200 feet above sea level. The floodplain of the Upper Iowa River, originating in Minnesota and crossing a small part of northeastern Iowa, has a width of three-fourths of a mile, widening at its lower end to about a mile. The Yellow River is similar in appearance, but has a smaller floodplain.

Stream divides and drainage areas consist of parallel or sub-parallel east-west ridges. The summits, which have not been reduced by the streams, rise to a common level testifying to the fact that, at an earlier geologic time, this was all a great plain at/or near sea level. Another erosion level exists at about 1100 feet near the Upper Iowa River and can be seen in the lateral spurs that separate the valleys. The crests of these spurs, capped by the Saint Peter sandstone, are all at nearly the same level. This plain, developed by the early Upper Iowa River, was about ten miles wide.

Watersheds

Watersheds are divided and subdivided into successively smaller units; each is given a number, called a Hydrologic Unit Code, or HUC. Eight-digit HUCs, called sub-basins, are the largest watershed units. As illustrated in Figure 7 (Upper Explorerland Regional Planning Commission, 2020), Allamakee County crosses two watershed sub-basins: Upper Iowa and Coon-Yellow. A negligible portion of the Turkey Watershed falls within the county on the very south edge. Figure 8 shows the HUC 12 subwatersheds falling within the HUC 8 units, and also illustrates cities, the Special Flood Hazard Areas (the 100 Year Flood), and creeks and rivers through the county.

Figure 7: Allamakee Co. Watershed Sub-basins

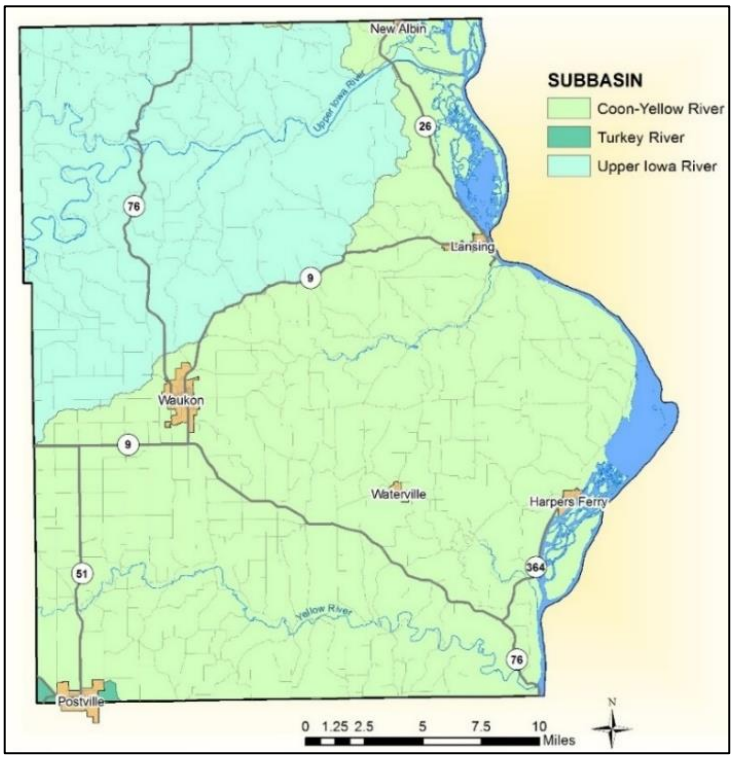
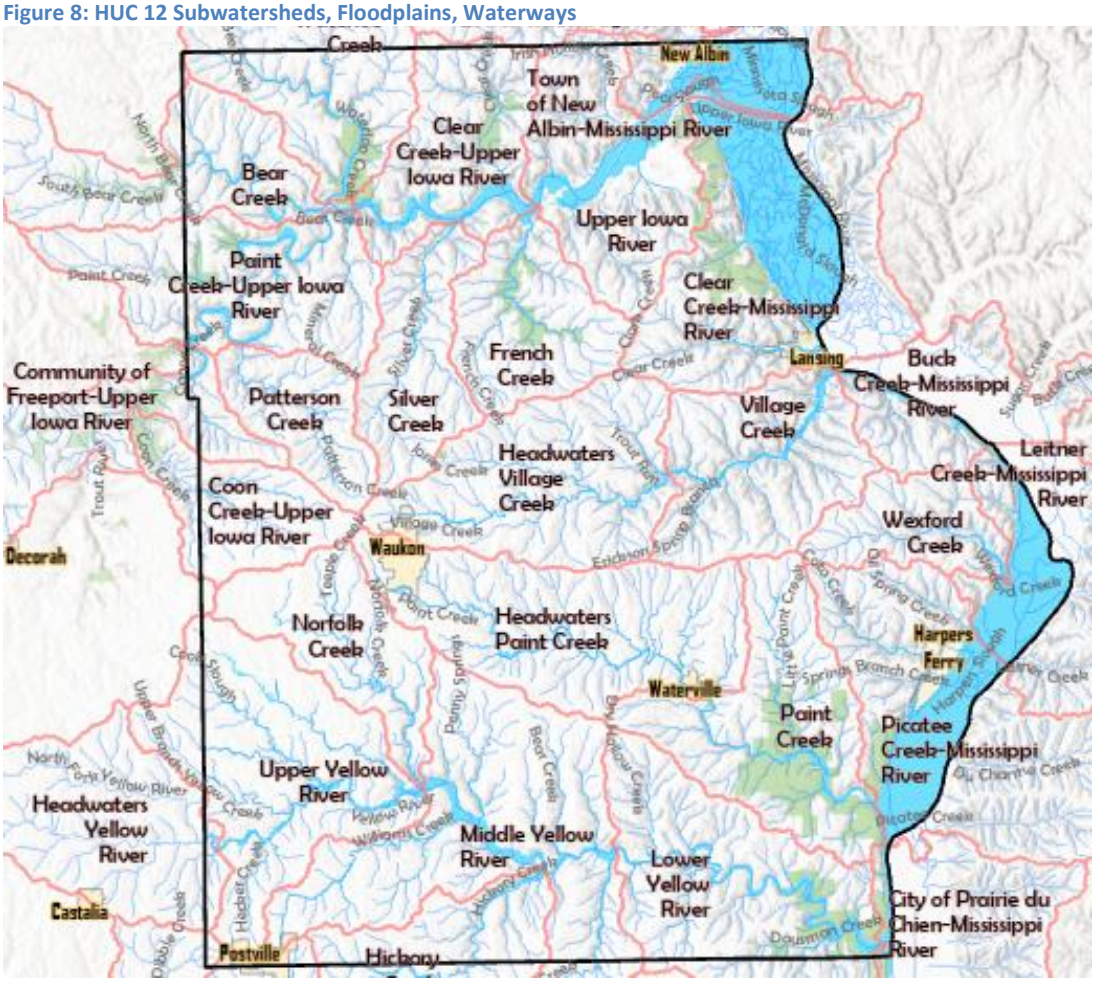


Figure 8: HUC 12 Subwatersheds, Floodplains, Waterways



Climate and Weather

The area experiences a temperate climate with warm and cold season extremes. The summer high is around 83 degrees in July and the winter low is 9 in January. Winter months can bring occasional heavy snows, intermittent freezing precipitation or ice and prolonged periods of cloudiness. The strongest storms can produce associated severe weather such as tornadoes, large hail or damaging wind. Both river flooding and flash flooding can occur, along with urban-related flood problems. The terrain can lead to mudslides in the area. Heat and high humidity are typically observed in June, July and August. The fall season usually has the quietest weather. Valley fog can commonly be seen in the late summer and early fall months. On calm nights, colder air settles into valleys leading to cooler low temperatures, compared to ridge top locations.

Table 5 compares the average county climate to the average U.S. climate. The annual total number of precipitation days has increased by 36 days since 2017 for the county, versus an increase of only 4 days for the U.S. (on average). At the same time, flooding is a significant impact for the county (examined further in the plan), the affects of which are anticipated to increase given the way climate change may be impacting the NE Iowa climate over time.

Table 5: Climate Statistics

Climate	Allamakee 2017	Allamakee 2023	U.S. 2017	U.S. 2023
Annual Rainfall (inches)	34.2	35.7 (+1.5)	39.2	38.1 (-1.1)
Annual Snow (inches)	38.8	38.5 (-.3)	25.8	27.8 (+2)
Precipitation Days (annual total)	64	100.4 (+36.4)	102	106.2 (+4.2)
Sunny Days (annual total)	192	192	205	205
Average July High Temperature (°F)	82	83 (+1)	86	85.8 (-.2)
Average January Low Temperature (°F)	9	9	23	21.7 (-1.3)

Source: (Sperlings Best Places, 2023)

National Flood Insurance Program

Allamakee County participates in the National Flood Insurance Program (NFIP) on behalf of unincorporated areas and is considered compliant. The County joined the NFIP on July 19, 2011, with an initial Flood Insurance Rate Map (FIRM) identified on September 25, 2009. The current effective FIRM map date is September 18, 2020.

As required by the NFIP, the County has adopted a floodplain ordinance, most recently updated in 2020. The ordinance meets minimum State of Iowa floodplain regulations (which exceed minimum FEMA regulations). The identified floodplain administrator is the Allamakee County Zoning Administrator. The floodplain administrator responsibilities and floodplain development permitting process identified in the floodplain ordinance will be implemented by the community in moving ahead to maintain compliance with the NFIP. The permitting process by the floodplain administrator includes a determination as to whether proposed floodplain development meets applicable standards of the floodplain ordinance.

According to the Iowa Dept. of Natural Resources NFIP Specialist, no community in Allamakee County has had a Community Assessment Visit (CAV), but they have all had recent Community Assistance Contacts (CAC), a less intensive meeting that covers much of the same aspects but doesn't go into as much detail (IDNR, Ken Bouma, NFIP Specialist, 2022). The date of the county's CAC visit was June 9, 2021. Community visits are identified in individual Jurisdictional Descriptions and Capabilities.

As shown on Table 44 Allamakee County and most jurisdictions have no repetitive loss properties. The community of Harpers Ferry has one repetitive loss property (IDNR, Ken Bouma, NFIP Specialist, 2022).

Population and Households

Population

The population of Allamakee County as of the 2020 Census was 14,061. In the last century, the County's population declined from a high in 1880 of 19,791 to a low of 13,855 in 1990 (U.S. Census Bureau, Decennial Census, n.d.). From 2000 to 2020, the County noted an overall decline of 4%. Table 6 compares the population growth or decline for each of the county's jurisdictions from 1980 to 2020 to the county as a whole and the state. The County's largest community is Waukon, the county seat, followed by Postville and Lansing.

Table 6: Population Comparison, 1980-2020, All Cities, County and State

Community	1980	1990	2000	2010	2020
Harpers Ferry	258	284	330	328	262
Lansing	1,181	1,007	1,012	999	968
New Albin	609	534	527	522	432
Postville	1,475	1,472	2,273	2,227	2,503
Waterville	157	140	145	144	109
Waukon	3,983	4,019	4,131	3,897	3,827
Allamakee County	15,108	13,855	14,675	14,330	14,061
State of Iowa	2,913,808	2,776,831	2,926,324	3,046,355	3,190,369

Source: (U.S. Census Bureau, Decennial Census, n.d.)

Allamakee County has a median population age of 43.5. Table 7 provides the median age, by rank, for each community in the county. The Mississippi River communities, including Harpers Ferry, Lansing, and New Albin, are aging as the median age has increased. While the median age of Waukon, Waterville and Postville has decreased. Postville has the lowest median age, at a number 39.3 points below the highest median age of 66.6 in Harpers Ferry.

Table 7: Median Age of Allamakee County Communities

Community:	Median Age (2017)	Median Age (2021)
Harpers Ferry	62.8	66.6
Lansing	51.1	57.3
New Albin	38.5	47.2
Waukon	45.5	42.3
Waterville	46.4	33.8
Postville	27.7	27.3

Source: (U.S. Census Bureau, American Community Survey 2017 - 2021, 2022)

Allamakee County has little diversity in race, with 90% of the population self-identifying as “white” in the 2020 Census. However, Postville is significantly more diverse than all other communities. As of the 2020 Census, only 53% of the population in Postville identified “white,” with the next largest proportion identifying as “Hispanic or Latino Origin” (43%).

Table 8: Race in Allamakee County Communities

Community:	“White Alone” Population (2010)	“White Alone” Population (2020)
Harpers Ferry	100%	99%
Lansing	99%	96%
New Albin	97%	97%
Postville	77%	53%
Waterville	99%	95%
Waukon	98%	96%
Allamakee County	96%	90%

(U.S. Census Bureau, Decennial Census, 2021)

Households

Table 9 provides additional household and family data for each jurisdiction. The U.S. Census 2021 American Community Survey estimates 5,814 households in the county, down from 6,048 during the 2010 Census. Of these households, 62% were families and 38% represented non-families (the latter share increasing by 3%). Harpers Ferry and Waukon have the highest percentages of householders over the age of 65 living alone, and also experienced the greatest increases in this metric since 2010. Postville and Waterville have the highest percentages of family households, and the average household and family size in Postville outpaces all other communities and the County as a whole.

Table 9: Household Data, Allamakee County and Communities

	Total households	Family households		Non-family households		Householder living alone	Householder 65 years and older living alone	Average household size	Average family size
	Number	Number	Percent	Number	Percent	Percent	Percent	Number	Number
Allamakee Co	5,814 (-234)	3,607	62%	2,207	38%	28% (+3%)	16% (+3%)	2.38	3.03
Harpers Ferry	130 (-43)	75	58%	55	42%	36% (+3%)	27% (+7%)	1.91	2.45
Lansing	470 (+19)	281	60%	189	40%	34% (-2.7%)	18.5% (+3.5%)	2.03	2.54
New Albin	190 (-32)	123	65%	67	35%	30% (-2%)	18.4% (+.4%)	2.47	3.12
Postville	828 (+84)	577	70%	251	30%	22% (-4%)	11.5% (-2.5%)	3.22	3.95
Waterville	56 (-3)	48	86%	8	14%	9% (-21%)	2% (-6%)	2.75	2.96
Waukon	1,692 (-89)	800	47%	892	53%	44% (+7%)	26% (+11%)	2.18	3.16

Source: (U.S. Census Bureau, 2010 Census, 2017); (U.S. Census, American Community Survey 5-Yr Estimates 2017 - 2021, 2021)

Housing

As of the 2020 Census, there were 7,668 housing units in the county. Table 10 demonstrates the change in the number of housing units in each of the jurisdictions. Single unit residential homes constitute the majority of housing in the county at nearly 99%, and three or more unit multi-family dwellings represent only 1% of dwellings (Allamakee County Assessor, 2023). Nearly 1/3rd of all housing units were built prior to 1940 (U.S. Census, American Community Survey 5-Yr Estimates 2017 - 2021, n.d.).

Table 10: Number of Housing Units from 2010-2020

Community	2010	2020
Harpers Ferry	578	575
Lansing	598	639
New Albin	257	239
Postville	902	859
Waterville	61	57
Waukon	1,946	1,939
Allamakee County	7,617	7,668
State of Iowa	1,336,417	1,412,789

Public and Private Infrastructure

Highways and Roads

Allamakee County public roads consist of approximately 961 total miles of roadway. The Allamakee County Road Department is responsible for the maintenance of 875 miles of County Secondary Roads and the IDOT maintains 86 miles of state roads, with the remainder being roads and streets within the boundaries of incorporated cities in the county (Allamakee County Engineer, 2023). There are 175 bridges within the county, with 16 categorized as deficient. All bridges are located within a floodplain. As of 2023, 17 of the bridge structures are posted with weight restrictions and zero are closed to traffic (Allamakee County Engineer, 2023).

Rural roads are labeled, and jurisdiction is determined, by the following classifications: local roads, minor collectors, major collectors, minor arterials, other principal arterials and interstates. Federal aid money is available to maintain major collectors, minor arterials and principal arterials. Table 11 indicates the classifications and jurisdictions of the county's "federal aid" roadways and provides a description of each classification as defined by the Federal Highway Administration.

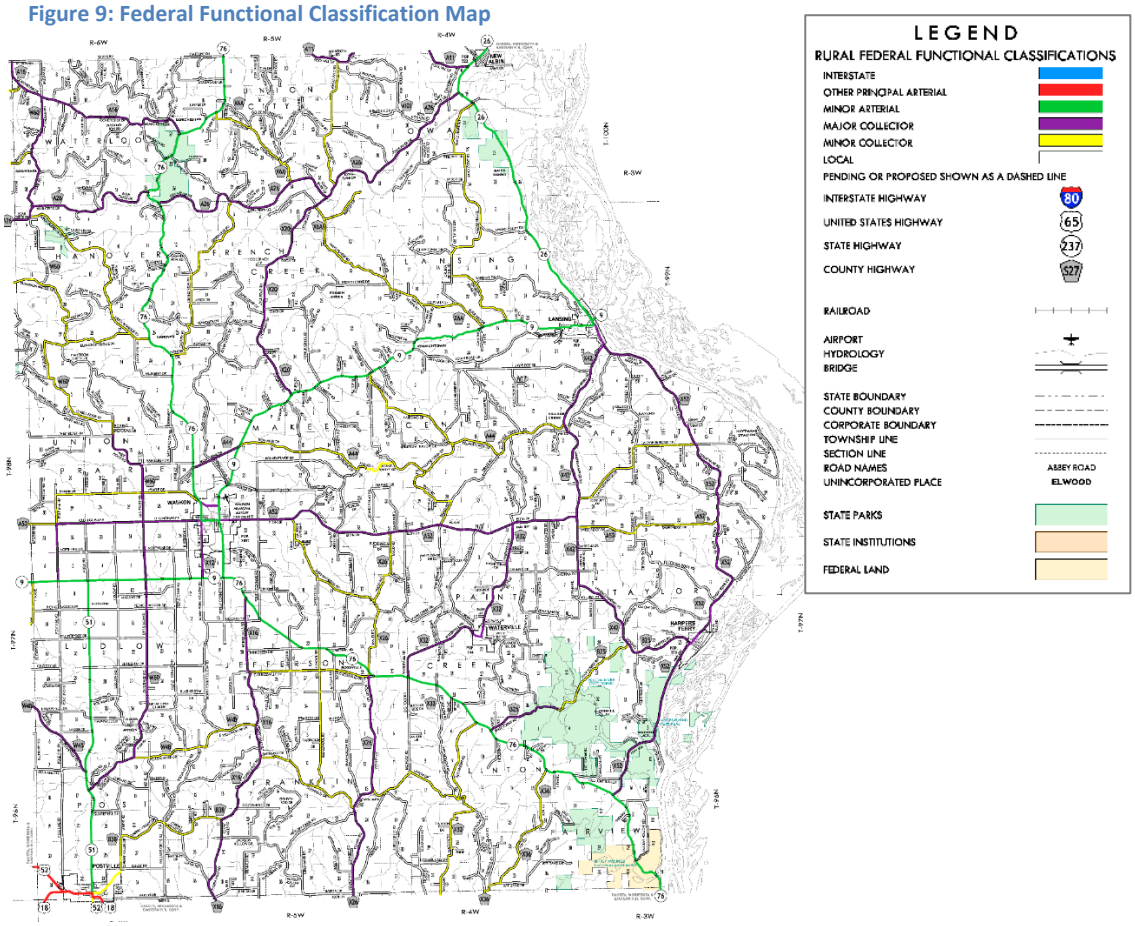
Table 11: Federal Functional Classifications, Allamakee County

Roadway	Classification	Jurisdiction	Classification Description
US Hwy 52	Principal Arterial	State	Consists of a connected network of continuous routes that have substantial trip length and travel density for statewide or interstate travel.
US Hwy 18	Principal Arterial	State	
State Hwy 9	Minor Arterial	State	With the principal arterials, form rural networks that link cities and larger towns and provide interstate and inter-county service. These roads are spaced so that all developed areas of the State are within a reasonable distance of an arterial highway.
State Hwy 76	Minor Arterial	State	
State Hwy 26	Minor Arterial	State	
State Hwy 51	Minor Arterial	State	
X52	Major Collector	County	These routes, also known as federal aid farm to market roads, provide service to any county seat not on an arterial route, to the larger towns not directly served by the higher systems, and to other traffic generators, such as schools, shipping points, county parks, important mining and agricultural areas and link these places with nearby larger towns or cities, or with routes of higher classification. Federal aid can be used by the county in conjunction with farm to market funds to maintain these roads.
X42	Major Collector	County	
A11	Major Collector	County	
A26	Major Collector	County	
X20	Major Collector	County	
A16	Major Collector	County	
W60	Major Collector	County	
A44	Major Collector	County	
A52	Major Collector	County	
X16	Major Collector	County	
W4B	Major Collector	County	
X26	Major Collector	County	
B25	Major Collector	County	
X32	Major Collector	County	

Source: (Iowa Department of Transportation, 2008)

There are several minor collectors throughout the county. Minor collectors are also considered farm to market only roads and are spaced at intervals, consistent with population density, to collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road. They also provide service to the remaining smaller communities and link the locally important traffic generators with the rural areas. Local roads constitute the rest of the roadways in the county. The rural local road system provides access to adjacent land and provides service to travel over relatively short distances as compared to collectors or other higher systems. There are no interstates within the county boundaries. illustrates the Federal Functional Classification roads in the county.

Figure 9: Federal Functional Classification Map



Source: (Iowa Department of Transportation, 2008)

Trails

Allamakee County has walking and biking trails as well as snowmobile trails as options for non-vehicular transportation. The City of Waukon has a trail located within its City Park. The City of Postville also has a trail within city limits. The County is also home to a portion of the Mississippi River Trail, a bike and pedestrian trail that extends the length of the Mississippi River along roadways and multi-use trails. All county communities have sidewalk infrastructure to some degree that supports walking and biking as a form of transportation.

Canoe and Kayak water trails are promoted on the Yellow River, Mississippi River and the Upper Iowa River. Snowshoeing and cross-country skiing trails are promoted at Yellow River State Forest. Snowmobilers enjoy miles of groomed and marked trails within the county.

Railway

There are a total of 40 miles of railway within the county (U.S. Dept. of Transportation, 2022). The Canadian Pacific Railroad operates two lines through Allamakee County. The railroad operates track running parallel to the Mississippi River through Harpers Ferry, Lansing and New Albin, and track running through Postville on the south edge of the County. Harpers Ferry, Lansing and New Albin currently experience 5 - 6 trains per day, and Postville experiences 2-3 trains per day (Surface Transportation Board, 2022).

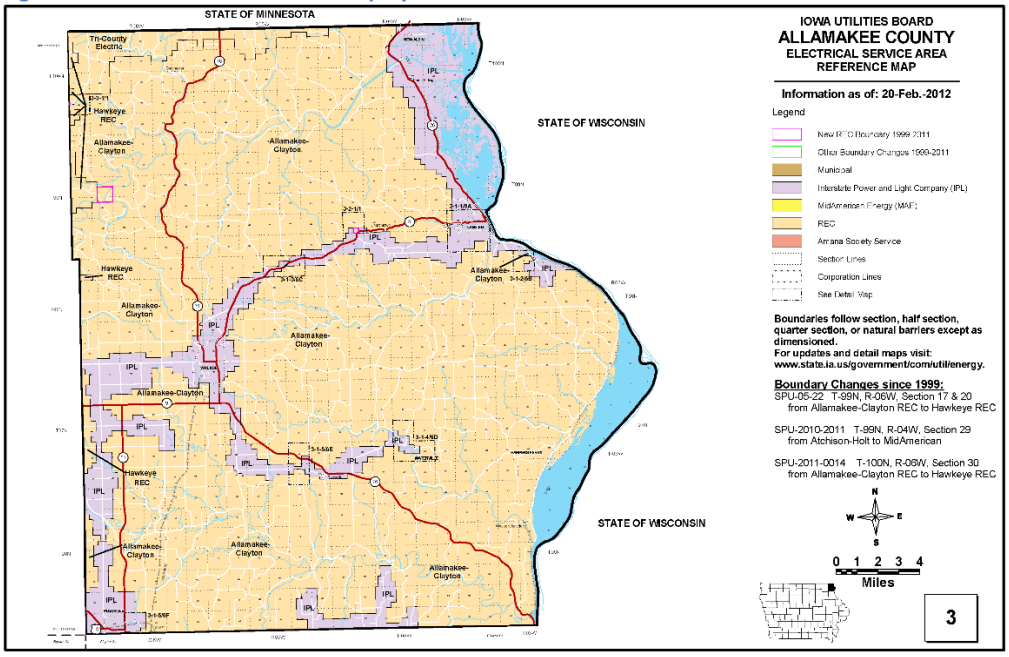
Airports

Allamakee County has one publicly owned general aviation airport, the Waukon Municipal Airport, located one mile northeast of the city. The airport has 4 single engine aircrafts based on the field, and averages around 83 operations per month, 75% of which are local general aviation and 25% transient general aviation (AirNav, LLC, 2023). Allamakee County has one heliport located at Veteran's Memorial Hospital in Waukon (AirNav, LLC, 2023).

Utilities and Pipelines

Residents in the county are provided electrical service from a mixture of investor-owned utilities (IOU) and rural electric cooperatives (REC). The largest power suppliers for the county are Allamakee Clayton Electric Cooperative and Interstate Power and Light (Alliant Energy). Figure 10 delineates the electrical service area for the county and indicates the provider responsible for that area.

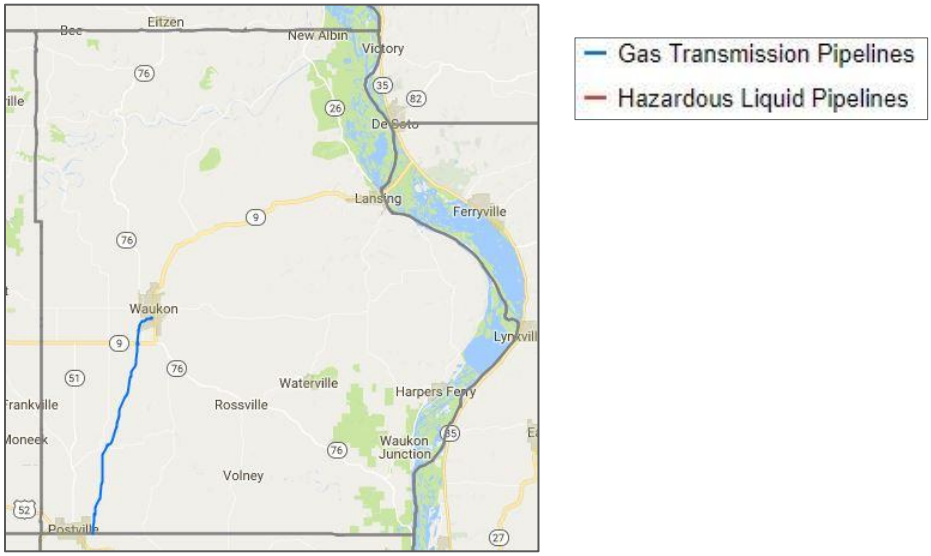
Figure 10: Electrical Service Area Map by Provider



Source: (Iowa Utilities Board, 2012)

Natural gas is not available in all parts of the County. Black Hills Energy provides natural gas service to the communities. Residents also have access to LP gas from a variety of private providers. There is one pipeline through the county, operated by Northern Natural Gas Company (Pipeline and Hazardous Materials Safety Administration, 2017). Figure 11 illustrates the location of this line within the county.

Figure 11: Transmission Pipelines through Allamakee County



Source: (Pipeline and Hazardous Materials Safety Administration, 2017)

Dams

There are 16 dams within the county with a low hazard potential. Their primary purposes are flood control, recreational or for small fish ponds (U.S. Army Corps of Engineers, n.d.).

Source Water

The water supply for county residents comes from public or private systems depending on the location. Both public and private systems operate on groundwater wells throughout the county and draw from several aquifers, depending on the depth of the well. For the most part, water is drawn from the Cambrian, Ordovician and Cambrian-Ordovician Aquifers. Municipal water systems provide water to over 7,700 residents and include the following (Iowa Department of Natural Resources, 2023): Lansing Water Supply, New Albin Water Supply, Postville Water Department, Waukon Water Department.

Wastewater

Allamakee County household wastewater is treated by either public sanitary systems or a private sewage disposal system such as a septic system. The Iowa Department of Natural Resources is responsible for the regulation of public sewer systems to ensure compliance with the state's minimum standards for wastewater treatment and disposal. The Allamakee County Board of Health is responsible for regulating sewer systems that serve no more than four homes or no more than 15 people. The department requires residents to file for permits before installation and enforces the minimum standards as adopted by the county. The following communities maintain public sewer systems: City of Harpers Ferry, City of Lansing, City of New Albin, City of Postville, City of Waterville, City of Waukon.

Communications

Landline telephone service is provided throughout the county by a variety of telecommunications companies depending on location, however only about 37% of American households still have landlines (Vorhaus, 2021). On the other hand, access to high-speed internet and cell phone coverage has become an important issue impacting economic development. Access to these services is critical to support and attract businesses and enhance overall communication. Further, emergency services are increasingly exploring options for automatic notification services and interagency communication that may relying on internet and cell phone service.

According to the Federal Communications Commission (FCC), there are 23 cellular towers within the county, and internet service is available at some level throughout most of the county (Federal Communications Commission, 2023). Connect Iowa reports that, depending on location, the county is served by fiber broadband, cable broadband, DSL broadband, fixed wireless broadband and mobile wireless broadband. County residents also have access to local radio, newspaper and website resources for communications. Not all providers reach all areas. The FCC recommends 12 to 25 Megabits per second (Mbps) for a household of 3 people with moderate use of the internet, and the average household size in the region is between 2 – 3 people. Figure 12 provides a map of FCC registered antenna structures and broadband by technology (25M/3M), Figure 13 provides a map of structures and mobile wireless coverage.

Figure 12: Broadband by Technology

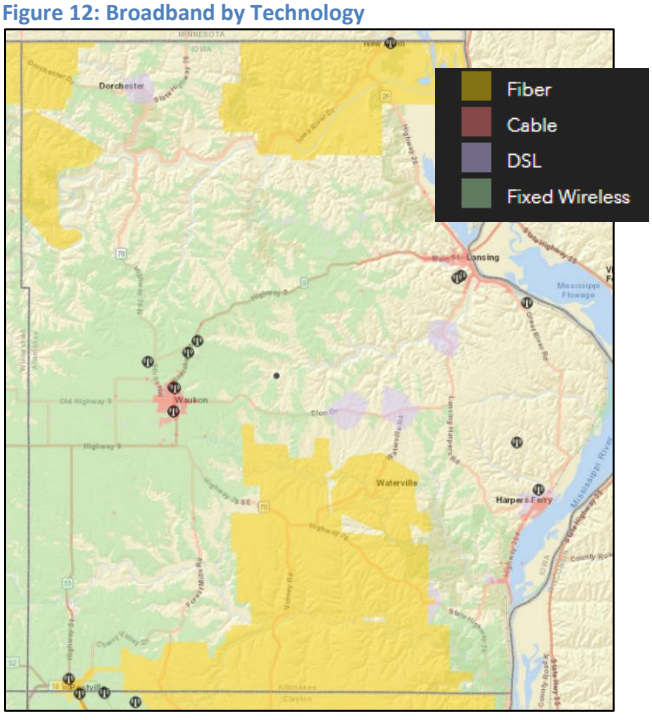


Figure 13: Mobile Wirless Coverage

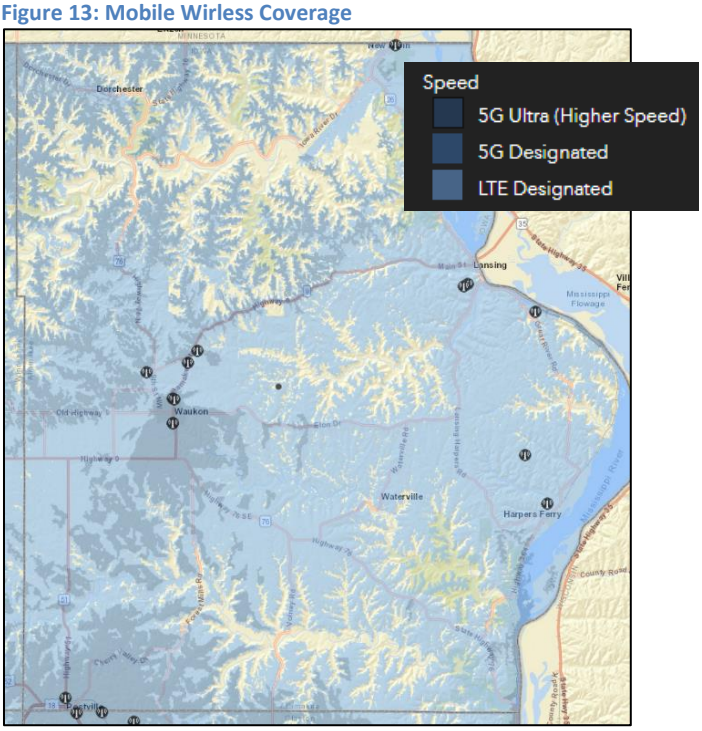


Table 12: Communications Provider List

Provider:		
Internet:		
AcenTek	NEIT Services, LLC	Ooma
Century Link	LTD Broadband	
Hughes Network Systems, LLC	Xtreme/Mediacom	
Mobile:		
AT&T	Verizon Wireless	Visible
Mint Mobile	T-Mobile	
Radio:		
KDHK 100.5 FM	KNEI 103.5 FM	
K256CS 99.1 FM		
Newspapers:		
Postville Herald Newspaper	The Driftless Journal	
The Waukon Standard		

(Connected Nation Iowa, 2022) ; (Radio Locator) (Internet, n.d.)

In addition to these local communication systems, several regional television stations from Iowa and Minnesota broadcast to the county. Most commonly watched local channels are broadcast from Cedar Rapids, Waterloo, Mason City, Iowa Public Television, Rochester, MN and La Crosse, WI.

Care Facilities

Medical and Hospital Facilities

One hospital and several clinics serve the residents of Allamakee County. The hospital is located in Waukon. Clinics can be accessed in Lansing, Postville and Waukon.

The Veterans Memorial Hospital is a Critical Access Hospital located in Waukon. The Hospital offers many services and programs including emergency services, weekend clinics, maternity services, rehabilitation and sports medicine, surgery, radiology and home health care among many others.

Table 13 lists the clinics and specialty care available to county residents within the county:

Table 13: Health Care Entities in Allamakee County

Facility Name	Facility Type	City
Gundersen Lansing Clinic	Rural health clinic	Lansing
Gundersen Palmer Lutheran Hospital & Clinics	Rural health clinic	Postville
VMH Medical Clinic - Waukon	Rural health clinic	Waukon
Veterans Memorial Hospital	Critical access hospital	Waukon

Source: (Iowa Department of Inspections and Appeals, Health Facilities Division)

Child and Senior Care Facilities

Allamakee County has 20 registered home care and child care centers within the county. Table 14 lists the licensed child care centers, their locations and licensed capacities.

Table 14: Child Care Providers, Allamakee County

Community	Provider Name	Provider Capacity
Waukon	Growing Bear Preschool & Daycare	81
Postville	NEICAC-Postville Head Start & CDC	50
Waukon	NEICAC-Waukon Head Start	59
Postville	Postville Child Care Services Inc	80
Waukon	St. Patrick's Clover Patch Preschool	50

Source: (Iowa Department of Human Services, n.d.)

Senior care within the county includes assisted living facilities, skilled nursing facilities and home health agencies. Table 15 lists the senior care facilities which are located in two of the county's communities. The Good Samaritan Society nursing facility in Postville recently closed.

Table 15: Senior Care Facilities, Allamakee County

Facility Name	Facility Type	City
Good Samaritan Society - Waukon	Free Standing Nursing Facility/Skilled Nursing Facility	Waukon
Northgate Care Center	Free Standing Nursing Facility/Skilled Nursing Facility	Waukon
Southcrest Manor II	Assisted living programs	Waukon
Thornton Heights Assisted Living	Assisted living programs	Lansing
Thornton Manor Care Center	Free Standing Nursing Facility/Skilled Nursing Facility	Lansing
VMH Community & Home Care	Home Health Agency	Waukon

Source: (Iowa Department of Inspections and Appeals, Health Facilities Division)

Economy

As shown in Table 16, the two leading employment industries in the county are "Educational services, health care and social services" and "Retail trade." Table 17 classifies employees into categories by occupation for the county and state. Occupations describe the type of work in which an employee is engaged, regardless of the industry.

Table 16: Economic Base of Allamakee County and the State of Iowa (2021)

Industry Category	Iowa		Allamakee Co	
	Number	Percent	Number	Percent
Agriculture, forestry, fishing, mining	59,850	3.7	810	11.9
Construction	108,302	6.7	695	10.2
Manufacturing	240,629	14.8	768	11.3
Wholesale trade	44,676	2.8	119	1.8
Retail trade	189,043	11.7	1,064	15.7
Transportation, warehousing and utilities	81,066	5.0	317	4.7
Information	23,698	1.5	73	1.1
Finance and insurance, real estate, rental and leasing	124,930	7.7	258	3.8
Professional, scientific, management, admin and waste services	121,124	7.5	258	3.8
Educational services, health care and social assistance	392,076	24.2	1,602	23.6
Arts, entertainment, recreation, accommodation and food	115,503	7.1	353	5.2
Other services, except public administration	68,951	4.3	220	3.2
Public administration	50,948	3.1	259	3.8
Total Employed Persons	1,620,796	100.0	6,796	100.0

Source: (U.S. Census Bureau, American Community Survey 2017 - 2021, 2022)

Table 17: Occupation Classification of Allamakee County Workers

Occupation Description	Iowa		Allamakee Co	
	Number	Percent	Number	Percent
Management, business, science, arts	609,180	37.6	2,098	30.9
Service	253,347	15.6	851	12.5
Sales and office	326,164	20.1	1,386	20.4
Natural resources, construction, maintenance	155,994	9.6	1,248	18.4
Production, transportation, material moving	276,111	17.0	1,213	17.8
Total Employed Persons	**1,620,796**	**100.0**	**6,796**	**100.0**

Source: (U.S. Census Bureau, American Community Survey 2017 - 2021, 2022)

The median household income in Allamakee County is $59,461. This compares to a state average of $65,429 (U.S. Census Bureau, 2017-2021 American Community Survey 5-year Estimates, 2021).

Jurisdictional Descriptions and Capabilities

Requirement §201.6(c)(3):

[The plan shall] document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs

Requirement §201.6(d)(3):

[The plan shall] be revised to reflect changes in development, progress in local mitigation efforts and changes in priorities

Requirement §201.6(c)(3)(ii):

[The mitigation plan} must address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate

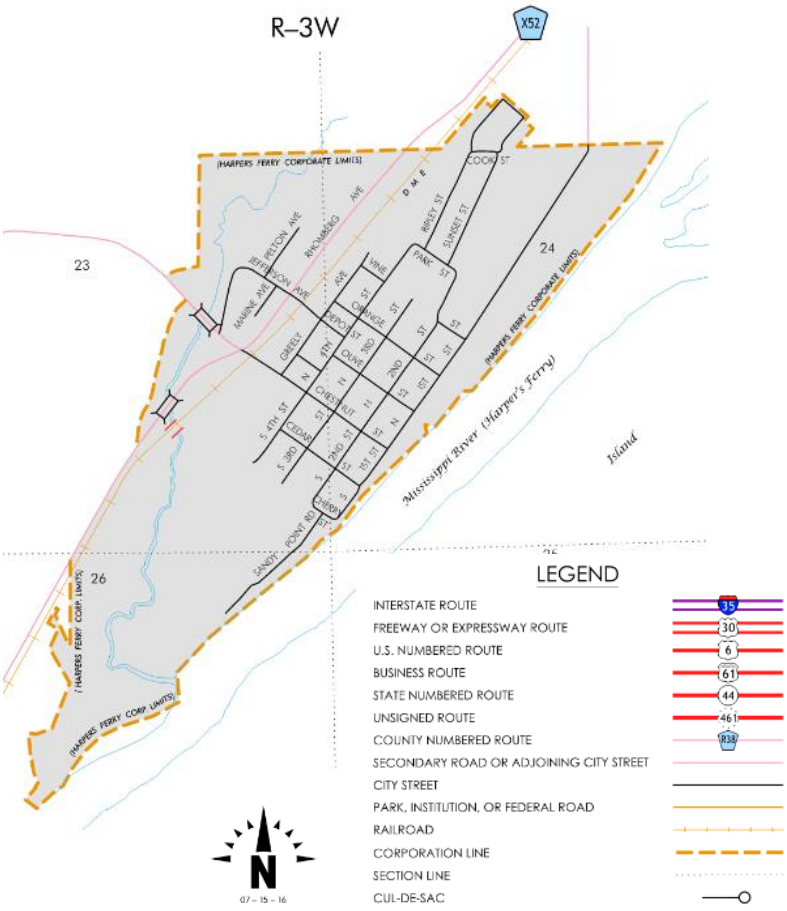
Requirement §201.6(c)(2)(i):

[The risk assessment shall include a] description of the type…of all natural hazards that can affect the jurisdictions…

This profile includes an overview of the jurisdictions and their organizational structure; a description of staff, fiscal, and technical resources; and information regarding existing hazard mitigation capabilities, such as adopted plan policies and regulations. Further, these jurisdictional sections review hazard risk issues discussed by the community, and community mitigation actions. The descriptions and capabilities assessments are based on available and applicable data, including information provided by the jurisdictions collected during the planning process.

City of Harpers Ferry

Figure 14: Harpers Ferry Street Map
Source: (Iowa Department of Transportation, 2022)



History and Overview

Harpers Ferry is located in eastern Allamakee County, situated primarily east of the Great River Road (County Route X52) and west of the Mississippi River. The total land area of city limits is .61 square miles (City-data.com, 2023) and is laid out as shown in Figure 14.

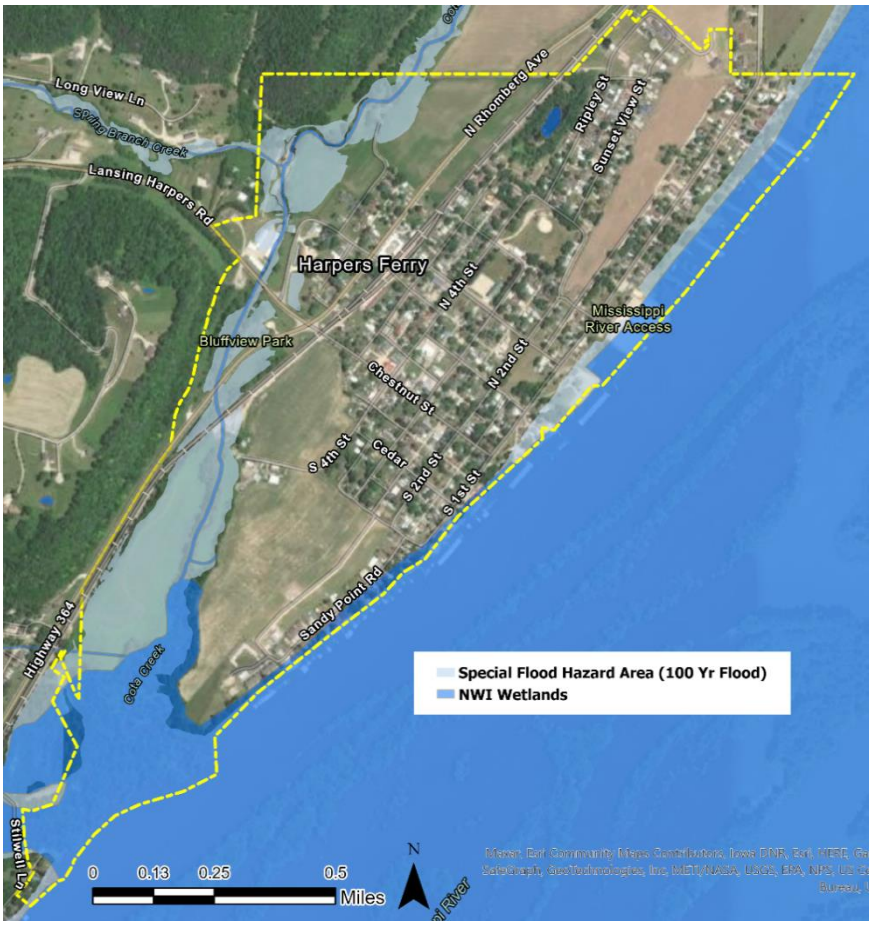
Harpers Ferry is located on a level plateau which extends back nearly a mile to the bluffs and three miles along the river. In the days of the steamboats, this town site was an important landing located on Harpers Slough, a secondary channel of the Mississippi which permitted large steamers to land here except in very low water.

Platted as the village of Winfield in 1852, Harpers Ferry, Iowa is one of the oldest settlements in Allamakee County. Once known as Vailsville, it was changed to Harpers Ferry in 1860 by an act of the Legislature. At that time, David Harper, for whom the town was named, was an influential man in the county and leading spirit in the development of the town. He did a large merchandising business, bought and shipped produce, and operated a ferry to McGregor and Prairie du Chien, Wisconsin. The town was incorporated December 24, 1901.

Natural Resource Inventory

The City of Harpers Ferry lies on a plateau of land adjacent to the Mississippi River. Land area within the corporate boundaries falls in the Federal Emergency Management Agency (FEMA) identified floodplains as shown on Digital Flood Insurance Rate (DFIRM) maps. Primarily undeveloped areas, but portions of developed parcels on the east side of the community abutting the river fall within the flood zone as well. Figure 15 illustrates the Mississippi River to the east, Cota Creek running along the south and west boundaries of the community, and the FEMA identified 100-yr. floodplain.

Figure 15: Floodplain, City of Harpers Ferry



Source: (Federal Emergency Management Agency, 2021)

As available, additional details regarding the Special Flood Hazard Area (SFHA) and valuation data are located within the Vulnerability Assessment portion of the plan.

Changes in Development / Future Land Use

The 2010 Census recorded a population of 328 for Harpers Ferry, and the 2020 Census recorded a slight decrease in population to 262. The 2010 Census recorded 578 housing units in Harpers Ferry, and the 2020 Census recorded a slight decrease in housing units to 575. No future land use plan was reported for Harpers Ferry, but the city shared information on a future residential development at the north end of the community called the DeCoteau Addition. The city boundaries were recently shifted slightly to encompass the addition, which is not found in or impacted by the floodplain. Any further feedback the city had regarding the impacts of hazards to specific locations or development in the community is further addressed under Key Hazard Issues.

National Flood Insurance Program

The City of Harpers Ferry participates in the National Flood Insurance Program (NFIP) and is considered compliant. The community joined the NFIP on July 1, 1997, with an initial Flood Insurance Rate Map (FIRM) identified on July 1, 1997. The current effective FIRM map date is September 18, 2020. No communities in Allamakee County are currently required to undergo Community Assistance Visits

(CAVs), but they have all fairly recently undergone a Community Assistance Contact (CAC), a less intensive meeting that covers similar aspects to CAVs. The last date of Harpers Ferry's CAC was June 3, 2020. As shown in Table 44 Harpers Ferry has one repetitive loss property through 2022.

As required by the NFIP, the community has adopted a floodplain ordinance, most recently updated in 2020 with the assistance of the Iowa Dept. of Natural Resources (DNR) in preparation for the September 18, 2020 FIRM maps. The ordinance meets minimum State of Iowa floodplain regulations. The identified floodplain administrator is the city clerk. The permitting process by the floodplain administrator includes a determination as to whether proposed floodplain development meets applicable standards of the floodplain ordinance. The floodplain administrator responsibilities and floodplain development permitting process identified in the floodplain ordinance will be implemented by the community in moving ahead to maintain compliance with NFIP.

Governance, Facilities and Services

City government:

- Officials: Mayor, one Mayor Pro-Tem and five council members
- Staff/employees: Treasurer/City Clerk, Assistant City Clerk, City Superintendent, Wastewater Operator

Public facilities:

- One government building - City Hall (built in 2001)
- Dolores Tillinghast Memorial Library

Public utilities:

- The City provides municipal sewer for property owners. Sewer infrastructure includes three lift stations installed in 1998. The three-celled lagoon was built in 1998, and was updated in 2021 to meet Iowa DNR requirements, including adding a fourth cell and a SAGR system (submerged attached growth reactor) for improved ammonia-nitrogen reduction.
- The City does not offer municipal water services.

Public services:

- Electric: Allamakee/Clayton Rural Electric Cooperative (REC)
- Internet: Mediacom, HughesNet, Viasat, NEIT, AcenTek
- Mobile: AT&T, Verizon, T-Mobile, Mint Mobile, Visible
- Communication Facilities/Towers: US Cellular, NEIT
- Schools: The City of Harpers Ferry is included in the Allamakee Community School District. No district buildings are located within city limits.

Emergency services:

- Harpers Ferry has a volunteer fire department.
- The Allamakee County Sheriff's Office is the County's 911 dispatch center and is also contracted to provide law enforcement for Harpers Ferry.

- Emergency services are provided by the Harpers Ferry Rescue Squad and Allamakee County Emergency Management. The Harpers Ferry Rescue Squad includes volunteers fully trained as EMS members. The EMS and ambulance are housed within the fire station. The City's ISO rating is: 9/10.
- Installed in 2001, the City has one warning siren in use, activated during emergencies from the Harpers Ferry Fire Station; tested yearly and other times, as needed.
- The community has two generators: one gasoline-powered generator at the City Shop, and one portable generator for city hall.
- St Ann Catholic Church on Orange Street serves as the community emergency shelter location.
- The entire County utilizes Alert Iowa services for their emergency communication notifications, with home, business and/or mobile phone voice capabilities.
- Allamakee County contracts with the Northeast Iowa Response Group, a specialized HAZMAT Team out of Black Hawk County (Waterloo, Iowa). Waterloo is located approximately 80 miles south of Allamakee County, Iowa.

Structures, Infrastructure, Community Resources

Structures:

- As of 2022, the value of all residential structures in the City of Harpers Ferry was over $51.3 million. In addition, commercial structures were valued at over $1 million (Allamakee County Assessor, 2023)

Infrastructure:

- The city has three marked railroad crossings (two flashing signals and one sign).
- Harpers Ferry has no dam or levees within city limits.
- There is a substation for electricity distribution within city limits.

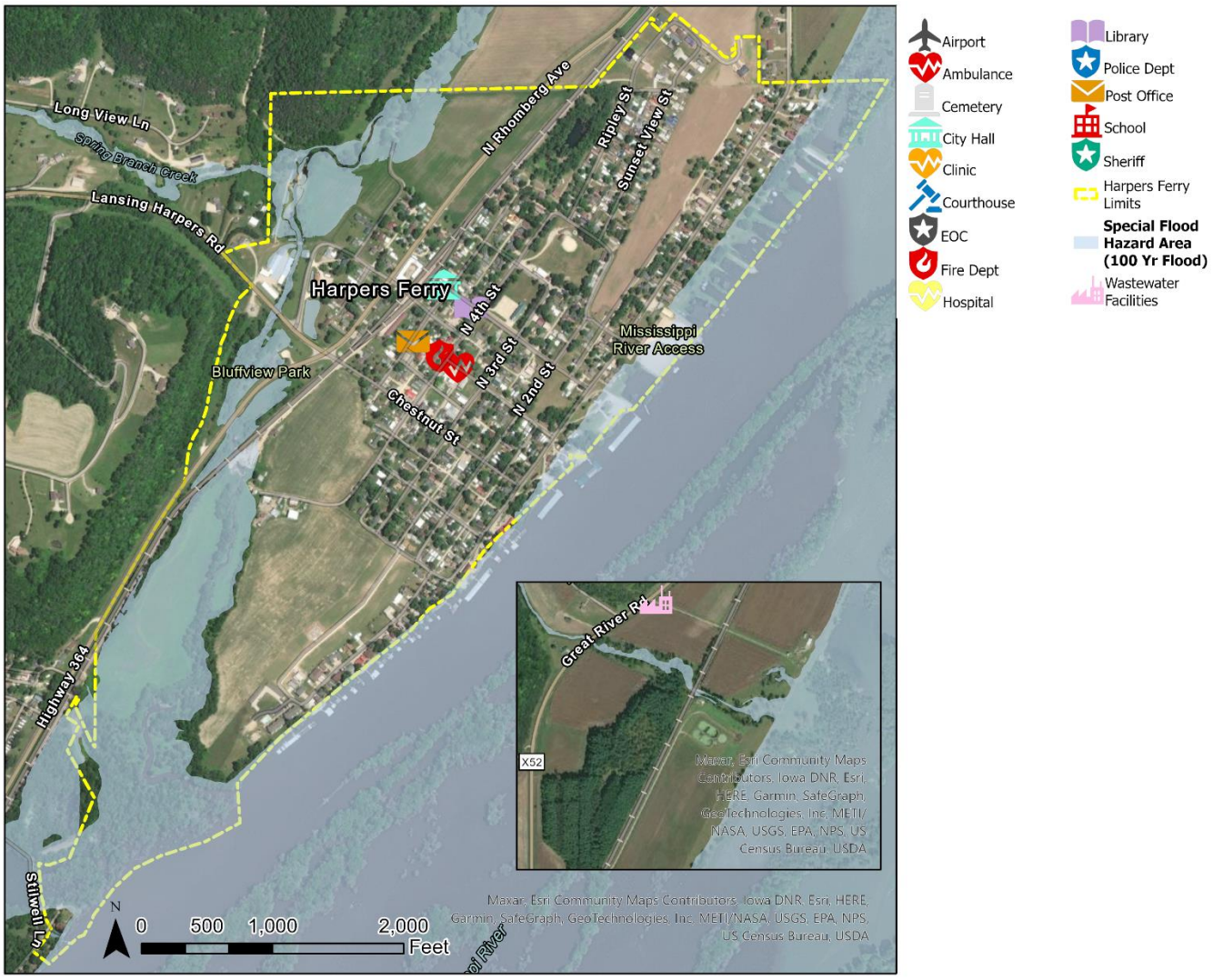
Community Resources:

- Historical: The National Register of Historic Places notes the following sites for Harpers Ferry:
    - Yellow River State Forest Fire Tower
- Cultural and Recreational: Effigy Mounds National Monument, Yellow River, Mississippi River, Trails (snowmobile, horse and walking), ball diamond, parks, marinas, and boat landings

Planning Area Map

The following Planning Area map illustrates updated information on the location of essential and critical facilities, government buildings, and infrastructure, against the location of the 100-year floodplain. Note, schools include public schools, private schools, preschools, and child care centers (UERPC, 2023).

Figure 16: Harpers Ferry Facilities & Floodplain



Fiscal Resources

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include the following:

- Fees for utility services
- Taxes for specific purposes
- Debt through general obligation bonds
- Debt through private activities
- Community Development Block Grants (CDBG)

Existing Plans and Policies

Updated via Iowa Codification 2019, Harpers Ferry city code includes ordinances on: dangerous buildings, building regulations, subdivision regulations, floodplain management, trees, building regulations ordinance, and more. The city does not have a full zoning ordinance, and has not adopted

the International Building Code. Limitations to adopting a building code would be capacity to both go through adoption process and enforce.

The city utilizes the Allamakee County Comprehensive Emergency Management Plan. All city response personnel follow appropriate protocol and guidance.

Key Hazard Issues

Key issues were identified at city meetings, in review of locality-specific hazard information, and in consideration of the countywide risk prioritization.

- Infrastructure Failure - There is a substation for electricity generation within city limits. Concern for loss of electricity in extreme weather events.
- River Floods – Mississippi River abuts east side of the town. Residential structures in floodplain are largely raised, and commercial structures are mostly marina related.
- Flash Floods – Previously there has been flooding in proximity to Cota Creek, located on the north end of town and running southwest through town.
- Landslides – City abuts the Mississippi River and is bordered to the west by steep terrain. Development on top and heavy rains could make bluffs more susceptible to landslides, but areas of concern would largely be outside city limits.
- Hazardous Materials - The railroad runs through the community and is in close proximity to residential development. Rail cars may carry materials that could pose a HAZMAT risk.
- Transportation Incident - The proximity of the rail line to city development means that a train derailment could cause physical damage to nearby structures, people or property.

Low Priority Natural Hazards

Some natural hazards do impact the community but weren't found to be key hazard issues. These hazards are either rare, or if they aren't rare, their impacts were found to be minimal. Mitigation actions were provided for the following hazards but are prioritized behind actions addressing key hazard issues. An explanation and list follows:

- Storm and weather/climatic events:[1]
    - Drought – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Extreme Heat – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Hail – Only three local events in 20 years with no injuries or damages.
    - Severe Winter Storm – The county is susceptible to these, but significant local impacts were not noted by planning participants.
    - Thunderstorm and Lightning - The county is susceptible to these, but significant local impacts were not noted by planning participants.
    - Tornadoes – The city only experienced 2 tornadoes over 170 years.
    - Windstorms – The county is susceptible to these, but significant local impacts were not noted by planning participants and related damages were minimal.

[1] Storm record references are from the NOAA National Centers for Environmental Information Storm Events Database or the National Weather Service, unless otherwise noted.

Natural Hazards Not Impacting Community

Some natural hazards do not impact this jurisdiction based on its location, environment or existing conditions. No mitigation actions were provided for these natural hazards for this reason. An explanation and list follows:

- Dam/levee failure - Not found in community.
- Sinkholes - City doesn't include karst area or known sinkholes.

Mitigation Activities

Required Mitigation (Natural Hazards) or Elective Mitigation (Non-Natural Hazards)

Hazard: Numbers match a proposed mitigation action found in: ***Mitigation Actions to Pursue Through MJ-7 Implementation***	**Natural Hazard DOESN'T impact community.** **No mitigation action required.**	**Natural Hazard DOES impact community.** **Mitigation action is required and was provided.**	**Non-Natural Hazard (NHH) DOES impact community –** **Mitigation is elective but was provided.**
Natural Hazards:			
Dam/Levee Failure	x		
Drought		#6	
Extreme Heat		#6	
Flood		#5	
Hailstorm		#1 , #2	
Landslide		#6	
Severe Winter Storm		#1 , #2	
Sinkholes	x		
Thunderstorm/Lightning		#1 , #2	
Tornado		#1 , #2	
Windstorm		#1 , #2	
Non-Natural Hazards (NNH):			
Animal/Plant/Crop Disease			
Hazardous Materials			#3
Human Disease			
Infrastructure Failure			#4
Mental Health			
Transportation Incident			#3

Mitigation Activities Already in Place

1. The entire County participates in emergency response exercises on a regular basis
2. The city utilizes local ordinances, defaulting to the State of Iowa for all other ordinances
3. The city utilizes the Allamakee County Comprehensive Emergency Management Plan
4. All city Response Personnel follow appropriate protocol and guidance
5. Allamakee County contracts with the Northeast Iowa Response Group for HAZMAT response
6. City is a part of the Iowa Mutual Aid Compact (IMAC)
7. City contracts with rural fire district for fire response and EMS

8. City utilizes two generators
9. City has a warning siren
10. The entire County utilizes Alert Iowa Emergency Notification System
11. Starting in 2023, the city will utilize the Allamakee County Disaster Recovery Plan

Status and Progress on Previous Mitigation Actions

1. Participate in Allamakee County Emergency Management Agency (EMA) effort to create countywide Community Shelter Plan to identify storm, community or evacuation shelter locations and prioritize needs for shelters, including back-up power supplies.
   - Not Completed - County is currently working with cities on this.
2. Support Allamakee County EMA initiative to form countywide volunteer group to serve residents with various needs during storm or emergency events.
   - Not Completed
3. Participate in Allamakee County EMA effort to create a Rail Response Plan to prepare for the possibility of a rail accident.
   - Not Completed - County is currently working with cities on this.
4. Attain a new generator for the fire station; consider options for making it a warming center.
   - Not completed
5. Support stormwater management in the community as needed, including infiltration, retention basins, bioswales, rain gardens, and siltation removal projects.
   - Completed. Updated storm sewer system over last five years.
6. Maintain and improve rural fire district and emergency response equipment.
   - Completed (ongoing)
7. Maintain partnerships for effective and prompt emergency response.
   - Completed (ongoing)
8. NFIP participation/consideration
   - Completed (ongoing)

Mitigation Actions to Pursue Through MJ-7 Implementation

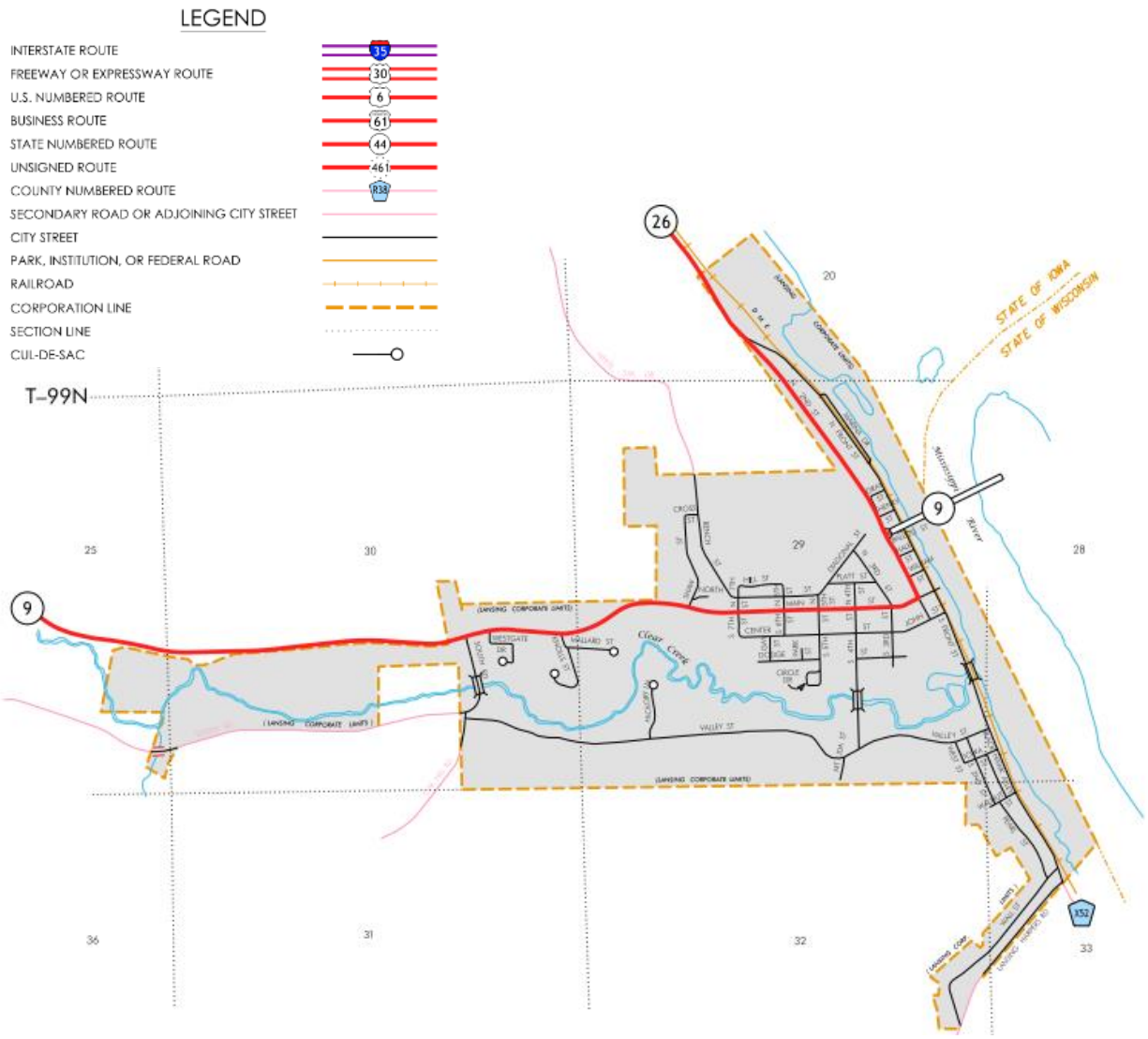
1. Participate in Allamakee County Emergency Management Agency (EMA) effort to create countywide Community Shelter Plan to identify storm, community or evacuation shelter locations and prioritize needs for shelters, including back-up power supplies.
2. Support Allamakee County EMA initiative to form countywide volunteer group to serve residents with various needs during storm or emergency events.
3. Participate in Allamakee County EMA effort to create a Rail Response Plan to prepare for the possibility of a rail accident.
4. Attain a new generator for the fire station; consider options for making it a warming center.
5. NFIP participation/consideration
6. Improve the public's awareness of lower priority hazard risks (i.e. landslides, drought, extreme heat, etc.): Develop educational materials for the general public and decision makers, pursue educational projects, provide information on public and private volunteer initiatives.

City of Lansing

History and Overview

Lansing is located in eastern Allamakee County, situated just west of the Mississippi River. The total land area of city limits is 1.08 square miles (City-data.com, 2023) and is laid out as shown in Figure 17.

Figure 17: Lansing Street Map



Source: (Iowa Department of Transportation, 2022)

Lansing was the second Allamakee County village to be surveyed and platted in 1851. The town was known to have one of the best steamboat landings on the river with its sprawling and available access to the Mississippi River. Lansing became a supply point for a large part of northeastern Iowa and southern Minnesota.

William Garrison, the first arrival in 1848, laid claim to some 14,000 acres of land in the valley and surrounding countryside. He was later joined the same year by John Haney Sr., his son, James, and H.H. Houghton of Galena, IL. Haney and Houghton purchased Garrison's land rights and laid out the new community in 1851, naming it after the original proprietor's native city in Michigan.

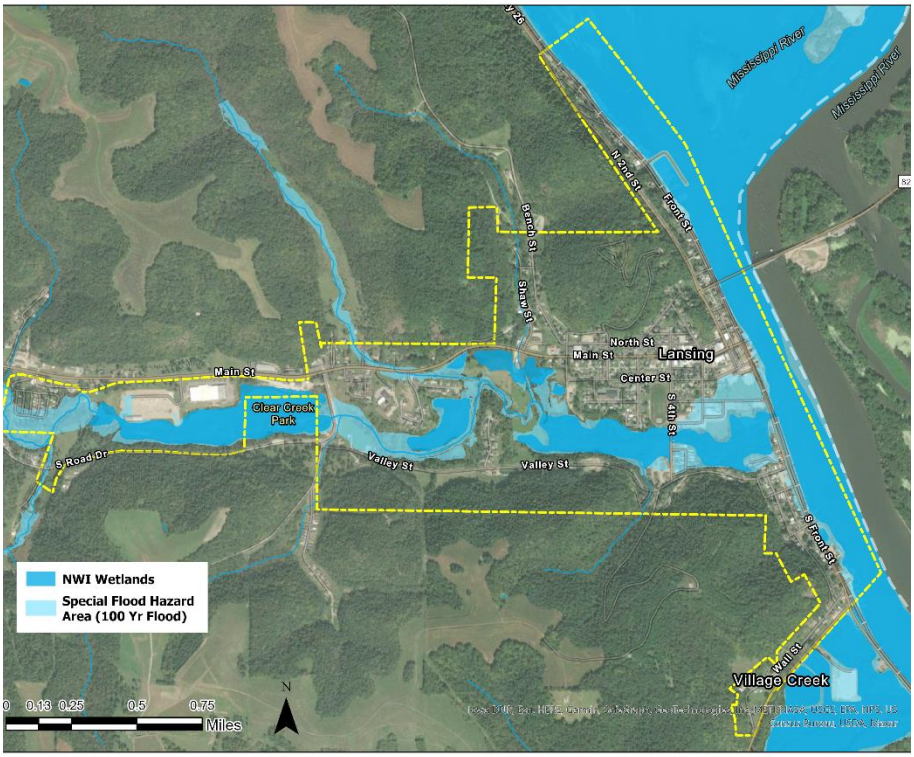
The new community was incorporated as a town in 1864 and S.V. Shaw became the first mayor. From its beginning, the community was a booming one, providing a port for steamboats shipping grain, merchandise and passengers on the Mississippi. In the early 1850's, farmers brought their grain to the top-notch Lansing mills and returned home with wares purchased or bartered from its merchants. The lumber mills were fed by large logs floated down river and they ran 24 hours a day. The Blackhawk Bridge that links the state of Iowa and Wisconsin at Lansing was dedicated on June 17, 1931.

Today, Lansing has become popular as a resort area, with many people having their summer homes along the Mississippi River dotting the Lansing perimeter. The boat harbors are often full of boats. Park and recreation opportunities in and around the community also draw visitors to the location.

Natural Resource Inventory

The City of Lansing lies at the base of steep limestone bluffs on land adjacent to the main channel of the Mississippi River. Mount Hosmer is located in north Lansing near the river. Significant land area falls in the Federal Emergency Management Agency (FEMA) identified floodplains as shown on Digital Flood Insurance Rate (DFIRM) maps. Figure 18 shows the river along the east boundary of Lansing, Clear Creek running through the south half of the community, and FEMA identified floodplains.

Figure 18: Floodplain, City of Lansing



Source: Source: (Federal Emergency Management Agency, 2021)

As available, additional details regarding the Special Flood Hazard Area (SFHA) and valuation data are located within the Vulnerability Assessment portion of the plan.

Changes in Development/Future Land Use

The 2010 Census recorded a population of 999 for Lansing, and the 2020 Census recorded a slight decrease in population to 968. The 2010 Census recorded 598 housing units in Lansing, and the 2020 Census recorded an increase in housing units to 639. No future land use plan was reported for Lansing. City boundaries have not changed since the 2018 county hazard mitigation plan. Any further feedback the city had regarding the impacts of hazards to specific locations or development in the community is further addressed in Key Hazard Issues.

National Flood Insurance Program

The City of Lansing participates in the National Flood Insurance Program (NFIP) and is considered compliant. The community joined the NFIP on October 4th, 2010, with an initial Flood Insurance Rate Map (FIRM) identified on September 25th, 2009. The current effective FIRM map date is September 18, 2020. No communities in Allamakee County are currently required to undergo Community Assistance Visits (CAVs), but they have all fairly recently undergone a Community Assistance Contact (CAC), a less intensive meeting that covers aspects similar to CAVs. The last date of Lansing's CAC was June 1, 2018. As shown on Table 44 Lansing has no repetitive loss properties through 2022.

As required by the NFIP, the community has adopted a floodplain ordinance, most recently updated in 2020 with the assistance of the Iowa Dept. of Natural Resources (DNR) in preparation for the September 18, 2020 FIRM maps. The ordinance meets minimum State of Iowa floodplain regulations. The identified floodplain administrator is the city clerk. The permitting process by the floodplain administrator includes a determination as to whether proposed floodplain development meets applicable standards of the floodplain ordinance. The floodplain administrator responsibilities and floodplain development permitting process identified in the floodplain ordinance will be implemented by the community in moving ahead to maintain compliance with the NFIP.

Governance, Facilities and Services

City government:

- Officials: Mayor, one Mayor Pro-Tem and five council members
- Staff/employees:
    - Full-time staff: City Clerk, Deputy City Clerk, Police Department staff, Public Works staff, Water/Sewer staff
    - Part-time staff: Library staff and Police Department staff
    - Seasonal staff: Four

Public facilities:

- The city has one government building, City Hall (built in 1933)
- Lansing Public Library

Public utilities:

- The City provides municipal sewer for property owners. Sewer infrastructure includes five lift stations. There are approximately 12 private septic systems in service.
- City of Lansing participates in the Iowa Rural Water Association (IRWA). The City's municipal ID for water is 0354054. Built in 1977, the City has one elevated water storage unit on Mt. Ida Road entitled "Mt. Ida Reservoir" which has capacity for 200,000 gallons of water. Since 2006, the City further provides water storage through a below ground storage 172,000 gallon reservoir on Mt. Hosmer Road entitled "Mt Hosmer Reservoir". In recent years, the City has added a new 400,000 gallon water storage unit. Current water main infrastructure includes 4", 6", and 8" ductile iron mains with some 4" and 8" PVC mains.

Public services:

- Electric: Alliant Energy
- LP Gas: AgVantage FS, Fauser Oil, New Horizon, Amerigas
- Fuel Oil: Innovative Energy
- Internet: CenturyLink, Mediacom, HughesNet, Viasat, NEIT, AcenTek
- Mobile: T-Mobile, Verizon, AT&T, Mint Mobile, Visible
- Hospital, Clinic: Gundersen Lutheran Clinic (Lansing)
- Schools: City of Lansing is included in the Eastern Allamakee Community School District. Kee High School and Lansing Middle School are located within city limits. There is also an alternative school.
- Childcare: One in-home provider
- Senior Care/Living Facilities: Thornton Heights Assisted Living & Thornton Manor Care Center

Emergency services:

- The Lansing Police Department
- The Lansing Fire Department supports the community for fire protection needs. Lansing Emergency Services has volunteers trained as members of fire department city and rural response. In addition, they have volunteers trained as EMS members of the Lansing Emergency Medical Systems Inc. team. The City's ISO rating is: 4.
- City of Lansing Ambulance provides ambulance services.
- The Allamakee County Sheriff's office located outside of Waukon is the County's 911 dispatch center.
- Allamakee County Emergency Management provides services to the City of Lansing.
- Installed in approximately 1950, the City has one warning siren in use, manually activated daily at noon and during emergencies from the Lansing Emergency Services.
- The city utilizes three generators, including one stationary at the sewer treatment plant, and two portables for the lift stations and well.
- The entire County utilizes Alert Iowa services for their emergency communication notifications, with home, business and/or mobile phone voice capabilities.
- Lansing United Methodist Church (490 Center St) and Eastern Allamakee Community High School (569 Center St) serve as community shelter locations.

- Allamakee County contracts with the Northeast Iowa Response Group, a specialized HAZMAT Team out of Black Hawk County (Waterloo, Iowa). Waterloo is located approximately 80 miles south of Allamakee County, Iowa.

Structures, Infrastructure, Community Resources

Structures:

- As of 2022, the actual value of all residential structures in the City of Lansing was over $54.9 million. In addition, commercial structures were valued at over $5.5 million (Allamakee County Assessor, 2023)

Infrastructure:

- Lansing has no dam or levees within city limits.
- There is an active railroad in Lansing with four public crossings and several private crossings.
- Other Infrastructure Includes: Trails, public ball diamond, Lansing Marina

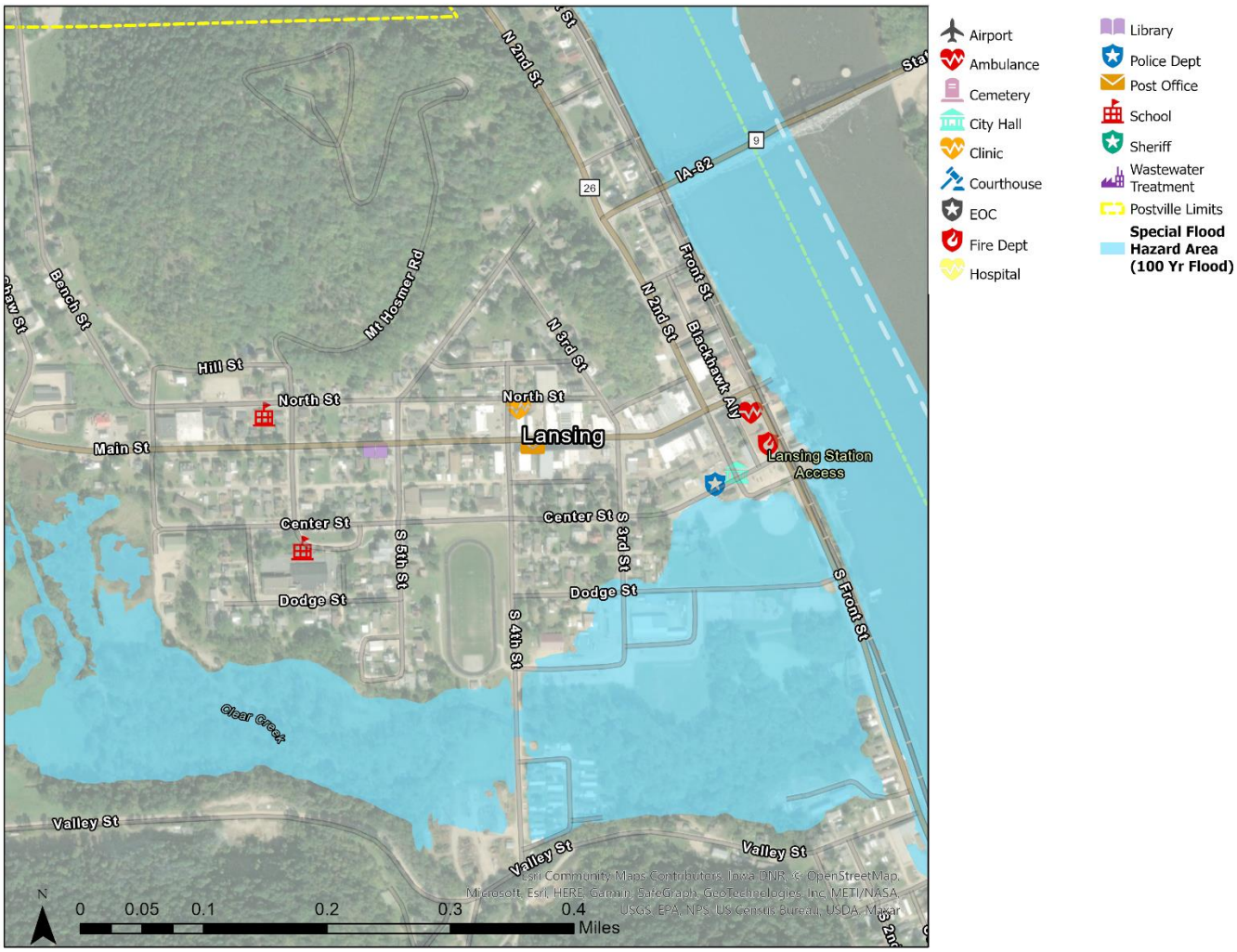
Community Resources:

- Historical: The National Register of Historic Places notes the following sites for Lansing:
    - Kerndt G., and Brothers Elevator and Warehouses, No. 11, No. 12 and No. 13
    - Kerndt, G., & Brothers Office Block
    - Lansing Fisheries Building (AKA: Lansing Fish Hatchery; Lansing Fish Rescue Station)
    - Lansing Main Street Historic District
    - Lansing Stone School
    - Old Allamakee County Courthouse
- Cultural and Recreational: Mt. Hosmer Park, city swimming pool/park complex, Mississippi River, Driftless Area Education and Visitor Center, Mississippi River Trail, Commercial Fishing Museum

Planning Area Map

The following Planning Area maps illustrate updated information on the location of essential and critical facilities, government buildings, and infrastructure, against the location of the 100-year floodplain. Note, schools include public schools, private schools, preschools, and child care centers (UERPC, 2023).

Figure 19: Lansing Facilities and Floodplains



Fiscal Resources

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include the following:

- Fees for utility services
- Taxes for specific purposes
- Debt through general obligation bonds
- Debt through private activities
- Community Development Block Grants (CDBG)

Existing Plans and Policies

City of Lansing code of ordinances were updated in 2022 and include: development regulations (restricted residence district), floodplain, subdivision, tree trimming, nuisance, and more. Planning documents in place include Comprehensive Plan (2010) and Community Builder Plan (1990). The city

has not adopted a building code. Limitations to adopting a building code would be capacity to both go through adoption process and enforce.

The city utilizes the Allamakee County Comprehensive Emergency Management Plan. All city response personnel follow appropriate protocol and guidance.

Key Hazard Issues

Key issues were identified at city meetings, in review of locality-specific hazard information, and in consideration of the countywide risk prioritization.

- Hazardous Materials – Rail cars through town regularly carry ethanol and crude oil materials, which pose a HAZMAT risk should an accident occur. Trains are now increasing in frequency.
- Transportation Incident – The railroad runs through the community within a block of the downtown area, and very near commercial and residential development, a public parking area and the fire station. A train derailment could cause physical damage to nearby structures, people or property. Cars in the public parking area have parked too close to the rail and been hit by the train in the past. And a derailment recently occurred just outside the community.
- Landslides - The community is in proximity to bluff areas with geology prone to landslides. The city has seen properties & roads near town impacted by landslides.
- Flooding – This was identified as an increasing risk. The ball diamond is repeatedly flooded, as well as a few other areas in the city.

Low Priority Natural Hazards

Some natural hazards do impact the community but weren't found to be key hazard issues. These hazards are either rare, or if they aren't rare, their impacts were found to be minimal. Mitigation actions were provided for the following hazards but are prioritized behind actions addressing key hazard issues. An explanation and list follows:

- Storm and weather/climatic events: [2]
    - Drought – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Extreme Heat – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Hail – According to NCEI storm events database, only 7 local events in 20 years with very minimal damages and no injuries.
    - Severe Winter Storm – The county is susceptible to these, but significant local impacts were not noted by planning participants.
    - Thunderstorm and Lightning - The county is susceptible to these, but significant local impacts were not noted by planning participants.
    - Tornadoes – The city experienced no tornadoes over 170 years, but the entire county is technically in a zone that could be impacted.
    - Windstorms – City only experienced two thunderstorm wind events over 20 years.

[2] Storm record references are from the NOAA National Centers for Environmental Information Storm Events Database or the National Weather Service, unless otherwise noted.

Natural Hazards Not Impacting Community

Some natural hazards do not impact this jurisdiction based on its location, environment or existing conditions. No mitigation actions were provided for these natural hazards for this reason. An explanation and list follows:

- Dam/levee failure - Not found in community.
- Sinkholes: The city sits in an area of karst geology, but there are no known sinkholes in city limits (Iowa Department of Natural Resources, 2022).

Mitigation Activities

Required Mitigation (Natural Hazards) or Elective Mitigation (Non-Natural Hazards)

Hazard: Numbers match a proposed mitigation action found in: ***Mitigation Actions to Pursue Through MJ-7 Implementation***	**Natural Hazard DOESN'T impact community.** **No mitigation action required.**	**Natural Hazard DOES impact community.** **Mitigation action is required and was provided.**	**Non-Natural Hazard (NHH) DOES impact community –** **Mitigation is elective but was provided.**
Natural Hazards:			
Dam/Levee Failure	x		
Drought		#4	
Extreme Heat		#4	
Flood		#5, #7	
Hailstorm		#1, #2	
Landslide		#4	
Severe Winter Storm		#1, #2	
Sinkholes	x		
Thunderstorm/Lightning		#1, #2	
Tornado		#1, #2	
Windstorm		#1, #2	
Non-Natural Hazards (NNH):			
Animal/Plant/Crop Disease			
Hazardous Materials			#3
Human Disease			
Infrastructure Failure			#6
Mental Health			
Transportation Incident			#3

Mitigation Activities Already in Place

1. The entire County participates in emergency response exercises on a regular basis
2. City utilizes local ordinances, defaulting to the State of Iowa for all other ordinances
3. The city utilizes the Allamakee County Comprehensive Emergency Management Plan
4. All city Response Personnel follow appropriate protocol and guidance
5. Allamakee County contracts with the Northeast Iowa Response Group for HAZMAT response
6. City is a part of the Iowa Mutual Aid Compact (IMAC)
7. City maintains own fire station and ambulance service

8. City utilizes three generators
9. City has a warning siren
10. The entire County utilizes Alert Iowa services
11. Starting in 2023, the city will utilize the Allamakee County Disaster Recovery Plan

Status and Progress on Previous Mitigation Actions

1. Participate in Allamakee County Emergency Management Agency (EMA) effort to create countywide Community Shelter Plan to identify storm, community or evacuation shelter locations, and to prioritize needs for shelters, including back-up power supplies.
    - Not Completed - County is currently working with cities on this.
2. Participate in Allamakee County Emergency Management Agency (EMA) effort to create a Rail Response Plan to prepare for the possibility of a rail accident.
    - Not Completed - County is currently working with cities on this.
3. Support Allamakee County Emergency Management Agency (EMA) initiative to form countywide volunteer group to serve residents with various needs during storm or emergency events.
    - Not Completed
4. Identify landslide prone areas and consider creation of an overlay district or other zoning requirements to better protect against landslides.
    - Not Completed - But City has taken the route of addressing this via the site plan review process, variance requests, etc.
5. Maintain/improve emergency responder equipment and training.
    - Completed (ongoing)
6. Educate public about landslide potential and building and development precautions to avoid landslide incidents in landslide-prone zones.
    - Not Completed
7. NFIP participation/consideration
    - Completed (ongoing)
8. Additional back-up generators for utility services
    - Not Completed – Recently submitted grant to purchase a generator, and hope to have two more before the end of Fiscal Year 2025.

Mitigation Actions to Pursue Through MJ-7 Implementation

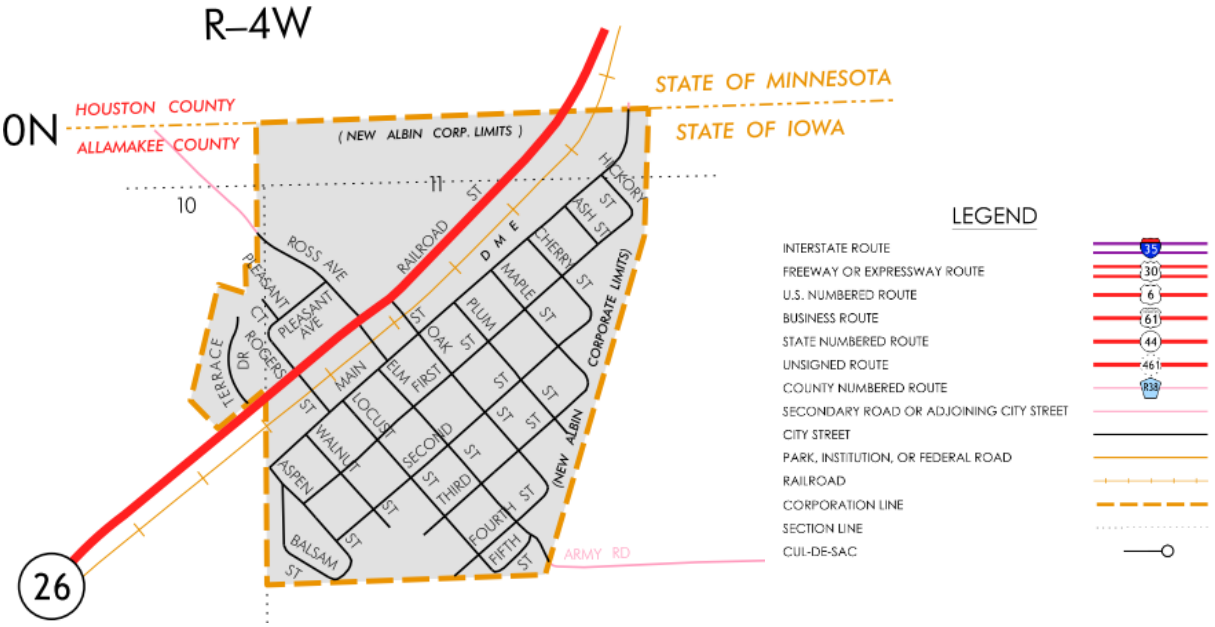
1. Participate in Allamakee County Emergency Management Agency (EMA) effort to create countywide Community Shelter Plan to identify storm, community or evacuation shelter locations, and to prioritize needs for shelters, including back-up power supplies.
2. Support Allamakee County Emergency Management Agency (EMA) initiative to form countywide volunteer group to serve residents with various needs during storm or emergency events.
3. Participate in Allamakee County Emergency Management Agency (EMA) effort to create a Rail Response Plan to prepare for the possibility of a rail accident.
4. Improve the public's awareness of lower priority hazard risks (i.e. landslides, drought, extreme heat, etc.): Develop educational materials for the general public and decision makers, pursue educational projects, provide information on public and private volunteer initiatives.
5. NFIP participation/consideration.
6. Additional back-up generators (2) or transfer switches for utility services, buildings & facilities.
7. Improve the stormwater drainage system and implement stormwater best practices with the Main Street project, in order to mitigate any drainage issues or flooding in the downtown area.

City of New Albin

History and Overview

New Albin is located in very northeastern Allamakee County, situated primarily along Highway 26 west of the Mississippi River. The total land area of city limits is 0.22 square miles (City-data.com, 2023) and is laid out as shown in Figure 20.

Figure 20: New Albin Street Map
Source: (Iowa Department of Transportation, 2022)

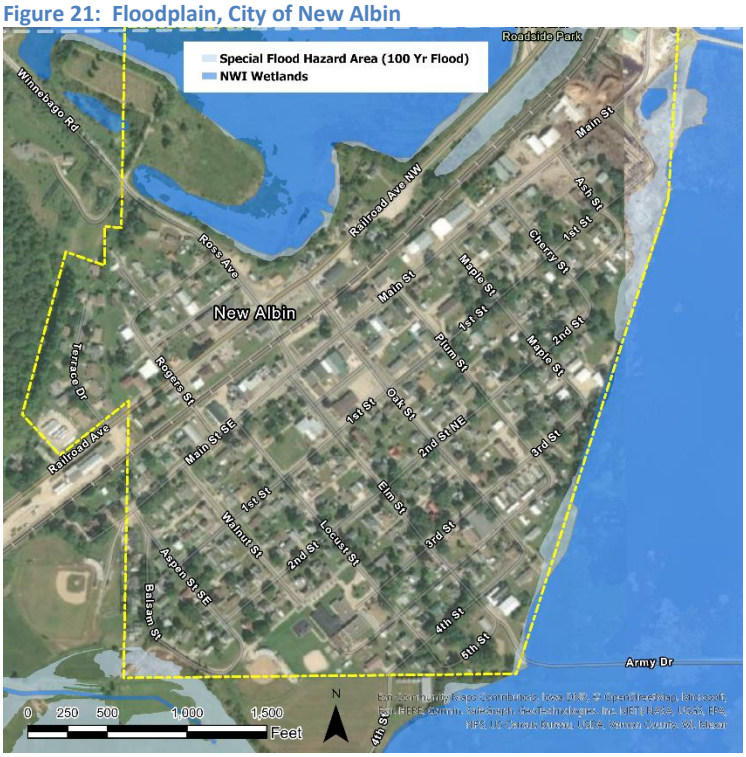


The history of this town dates from the 1872 construction of the river railroad, the Chicago-Dubuque-Minnesota Railroad, by the Ross family. The farthest most northeastern city in Iowa, New Albin was surveyed and platted in November, 1872. From the very beginning, the Village of New Albin was a rapidly growing community, where many stores built along with elevators, warehouses for the handling of grain, churches, schools, post office and newspapers.

Natural Resource Inventory

The City of New Albin lies at the base of steep bluffs on a low plateau of land adjacent to the Mississippi River. Winnebago Creek runs to the river just north of the city limit, and the Pool Slough Wildlife Management Area lies to the east at the river. Land area in the north of the city and portions of parcels extending towards the river fall in Federal Emergency Management Agency (FEMA) floodplains as shown on Digital Flood Insurance Rate (DFIRM) maps. Figure 21 illustrates the Mississippi River to the east and FEMA identified floodplains.

Figure 21: Floodplain, City of New Albin



Source: Source: (Federal Emergency Management Agency, 2021)

As available, additional details regarding the Special Flood Hazard Area (SFHA) and valuation data are located within the Vulnerability Assessment portion of the plan.

Changes in Development / Future Land Use

The 2010 Census recorded a population of 522 for New Albin, and the 2020 Census recorded a slight decrease in population to 432. The 2010 Census recorded 257 housing units in New Albin, and the 2020 Census recorded a slight decrease in housing units to 239. No future land use plan was reported for New Albin, but the city indicated they are land locked, which limits development, and that there is no further development planned in any floodplain areas. City boundaries have not changed since the 2018 county hazard mitigation plan. Any further feedback the city had regarding the impacts of hazards to specific locations or development in the community is further addressed in Key Hazard Issues.

National Flood Insurance Program

The City of New Albin participates in the National Flood Insurance Program (NFIP) and is considered compliant. The community joined the NFIP on September 30, 1988, with an initial Flood Insurance Rate Map (FIRM) identified on September 30, 1988. The current effective FIRM map date is September 18, 2020. No communities in Allamakee County are currently required to undergo Community Assistance Visits (CAVs), but they have all fairly recently undergone a Community Assistance Contact (CAC), a less intensive meeting that covers similar aspects to CAVs. The last date of New Albin's CAC was May 29, 2020. As shown on Table 44 New Albin has no repetitive loss properties through 2022.

As required by the NFIP, the community has adopted a floodplain ordinance, most recently updated in 2020 with the assistance of the Iowa Dept. of Natural Resources (DNR) in preparation for the September 18, 2020 FIRM maps. The ordinance meets minimum State of Iowa floodplain regulations. The identified floodplain administrator is the city clerk. The permitting process by the floodplain administrator includes a determination as to whether proposed floodplain development meets applicable standards of the floodplain ordinance. The floodplain administrator responsibilities and floodplain development permitting process identified in the floodplain ordinance will be implemented by the community in moving ahead to maintain compliance with the NFIP.

Governance, Facilities and Services

City government:

- Officials: Mayor, Mayor Pro-Tem, and a five-member City Council
- Staff/employees:
    - Full-time staff: Public Works Superintendent, Public Works employee and Police Chief
    - Part-time staff: City Clerk, Fire Chief, Police Officers, Library Director & library staff

Public facilities:

- The city has one government building, City Hall (built in 1969)
- New Albin Public Library

Public utilities:

- The city provides municipal sewer for property owners. Sewer infrastructure includes one lift station originally installed in 1956, refurbished in 1998. The City utilizes a one celled lagoon built in 1956 with the sewer plant built in 1969. Floodwaters breached the sewer plant in 2001 and decimated the sewer dike in 2000 and 2008. The city is now working on a new wastewater treatment facility. The city meets Iowa DNR wastewater requirements.
- The City of New Albin participates in the Iowa Rural Water Association (IRWA). The City's municipal ID for water is 1010655. Built in 1925, the City's below ground water tower was installed in 1991. The current water main infrastructure through 90% of city limits includes 4" and 6" water mains.

Public services:

- Electric: Alliant Energy
- LP Gas: Hovden Oil
- Internet: Mediacom, HughesNet, Viasat, NEIT, AcenTek
- Mobile: AT&T, T-Mobile, Verizon, Mint Mobile, Visible
- Schools: City of New Albin is included in the Eastern Allamakee Community School District. The district's elementary school is located within city limits.
- Senior Care/Living Facilities: None
- Childcare: Two in-home providers

Emergency services:

- City of New Albin Police Department provides law enforcement.
- The City of New Albin Fire Department supports the community for fire protection needs. The City has volunteers trained as members of the New Albin Fire Department for city and rural response. New Albin's ISO rating is 6.
- The New Albin First Responders provides ambulance services. Fire department volunteers are trained as EMS members of the New Albin Ambulance team.
- The Allamakee County Sheriff's office located outside of Waukon is the County's 911 dispatch center.
- Allamakee County Emergency Management provides services to the City of New Albin.

- New Albin Elementary School (401 Locust St) serves as a community shelter location.
- Purchased and installed in 2003, the City has one warning siren in use, located outside the fire station. The siren is activated daily at noon and during emergencies from the New Albin Fire Station.
- The city utilizes two generators as follows: one stationary located at the well and one portable located at the sewer plant.
- The entire County utilizes Alert Iowa services for their emergency communication notifications, with home, business and/or mobile phone voice capabilities.

Structures, Infrastructure, Community Resources

Structures:

- As of 2022, the actual value of all residential structures in the City of New Albin was over $15.9 million. In addition, commercial structures were valued at over $2.2 million (Allamakee County Assessor, 2023)

Infrastructure:

- There is an active railroad within New Albin city limits, with 1 marked crossing.
- New Albin has no dam. The city has one levee within city limits: a causeway leading to the city's wastewater treatment field east of town.

Community Resources:

- Historical: The National Register of Historic Places notes the following sites for New Albin:
  - Fish Farm Mound Group
  - Iron Post
  - Thomas Reburn Polygonal Barn
- Other Cultural and Recreational: Army Road and Army Road Park, veteran's memorial, public ball diamonds, tourist park, city park, conservation commission park/rest area, splash park

Planning Area Map

The following Planning Area map illustrates updated information on the location of essential and critical facilities, government buildings, and infrastructure, against the location of the 100-year floodplain. Note, schools include public schools, private schools, preschools, and child care centers:

Figure 22: New Albin Facilities and Floodplains

Fiscal Resources

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include the following:

- Fees for utility services
- Taxes for specific purposes
- Debt through general obligation bonds
- Debt through private activities
- Community Development Block Grants (CDBG)

Existing Plans and Policies

Updated in 2019, the City of New Albin code of ordinance includes: Nuisance abatement, building and property maintenance, land use regulations (Restricted Residence District), tree trimming, floodplain management and more. The city has not adopted a building code or subdivision ordinance. Limitations to adopting a building code would be capacity to both go through adoption process and enforce.

The city utilizes the Allamakee County Comprehensive Emergency Management Plan. All city response personnel follow appropriate protocol and guidance.

Key Hazard Issues

Key issues were identified at city meetings, in review of locality-specific hazard information, and in consideration of the countywide risk prioritization.

- Hazardous Materials - The railroad runs through the community and rail cars regularly carry ethanol and crude oil materials, which pose a HAZMAT risk.
- Transportation Accident - The proximity of the rail line to city development means that a train derailment could cause damage to structures, people or property.
- Levee Failure – The city's levee/dike to the wastewater treatment site was destroyed by flooding three times and had to be rebuilt each time. A sewer pipe runs the length of the dike and was impacted as well resulting in sewage leaks from the nearby pond. Given the quick succession of incidents in which the dike was flooded out it is possible that future damage will occur.
- Flooding – No flash flooding within city limits. However, flooding of Hwy 26 north of town is a potential risk because it would cut the community off (which nearly occurred in the 1960s). Additionally, the Winnebago Creek bridge area has experienced flooding issues.

Low Priority Natural Hazards

Some natural hazards do impact the community but weren't found to be key hazard issues. These hazards are either rare, or if they aren't rare, their impacts were found to be minimal. Mitigation actions were provided for the following hazards but are prioritized behind actions addressing key hazard issues. An explanation and list follows:

- Storm and weather/climatic events:[3]
    - Drought – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Extreme Heat – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Hail – Only 6 local events in 20 years with no injuries and low damages.
    - Severe Winter Storm – The county is susceptible to these, but significant local impacts were not noted by planning participants.
    - Thunderstorm and Lightning - The county is susceptible to these, but significant local impacts were not noted by planning participants.
    - Tornadoes – Planning participants reported a tornado impacting the school's roof in the 1960s, but storm databases record no tornadoes in the city over 170 years.
    - Windstorms – The city had no thunderstorm wind events over 20 years.
- Landslides: The city sits near the Mississippi River where steep terrain could be at more risk to landslides but planning participants didn't have local incidents or impacts to report.

Natural Hazards Not Impacting Community

Some natural hazards do not impact this jurisdiction based on its location, environment or existing conditions. No mitigation actions were provided for these natural hazards for this reason:

- Dam failure - Not found in the community.
- Sinkholes - City doesn't include karst area or known sinkholes.

[3] Storm record references are from the NOAA National Centers for Environmental Information Storm Events Database or the National Weather Service, unless otherwise noted.

Mitigation Activities

Required Mitigation (Natural Hazards) or Elective Mitigation (Non-Natural Hazards)

Hazard: Numbers match a proposed mitigation action found in: ***Mitigation Actions to Pursue Through MJ-7 Implementation***	**Natural Hazard DOESN'T impact community.** **No mitigation action required.**	**Natural Hazard DOES impact community.** **Mitigation action is required and was provided.**	**Non-Natural Hazard (NHH) DOES impact community –** **Mitigation is elective but was provided.**
Natural Hazards:			
Dam Failure	x		
Levee Failure		#6	
Drought		#10	
Extreme Heat		#10	
Flood		#7, #8	
Hailstorm		#1, #2, #9	
Landslide		#10	
Severe Winter Storm		#1, #2, #9	
Sinkholes	x		
Thunderstorm/Lightning		#1, #2, #9	
Tornado		#1, #2, #9	
Windstorm		#1, #2, #9	
Non-Natural Hazards (NNH):			
Animal/Plant/Crop Disease			
Hazardous Materials			#3
Human Disease			
Infrastructure Failure			#4, #5, #6
Mental Health			
Transportation Incident			#3

Mitigation Activities Already in Place

1. The entire County participates in emergency response exercises on a regular basis
2. City utilizes local ordinances, defaulting to the State of Iowa for all other ordinances
3. The city utilizes the Allamakee County Comprehensive Emergency Management Plan
4. All city Response Personnel follow appropriate protocol and guidance
5. Allamakee County contracts with the Northeast Iowa Response Group for HAZMAT response
6. City is a part of the Iowa Mutual Aid Compact (IMAC)
7. City is a part of the Minnesota Mutual Aid Compact
8. City maintains own fire station and ambulance service
9. City utilizes two generators
10. City has one warning siren
11. The County utilizes Alert Iowa services
12. Starting in 2023, the city will utilize the Allamakee County Disaster Recovery Plan

Status and Progress on Previous Mitigation Actions (UPDATE)

1. Participate in an Allamakee County Emergency Management Agency (EMA) effort to create countywide Community Shelter Plan.
    - Not Completed – County is currently working with cities on this.
2. Participate in EMA effort to create a Rail Response Plan to prepare for the possibility of a rail accident.
    - Not Completed - County is currently working with cities on this.
3. Support EMA initiative to form countywide volunteer group to serve residents with various needs during storm or emergency events.
    - Not Completed
4. Enhance fire district facility to accommodate additional equipment & create a larger training room.
    - Not Completed
5. Maintain/improve emergency responder equipment and training.
    - Completed (ongoing)
6. Additional full-time police officer and surveillance equipment
    - Completed
7. New or enhanced water distribution system (new well, water mains, etc.)
    - Not Completed – A 2nd well still needs to be added.
8. Improved/enhanced infrastructure sought including new/enhanced lagoonless sewer plant.
    - Not Completed - The city is actively working on completion of this project.
9. City government and staff and/or schools to organize and participate in ALICE or other active shooter trainings through local contracted law enforcement.
    - Not Completed – This will be moved to a school district action.
10. NFIP participation/consideration
    - Completed (ongoing)

Mitigation Actions to Pursue Through MJ-7 Implementation

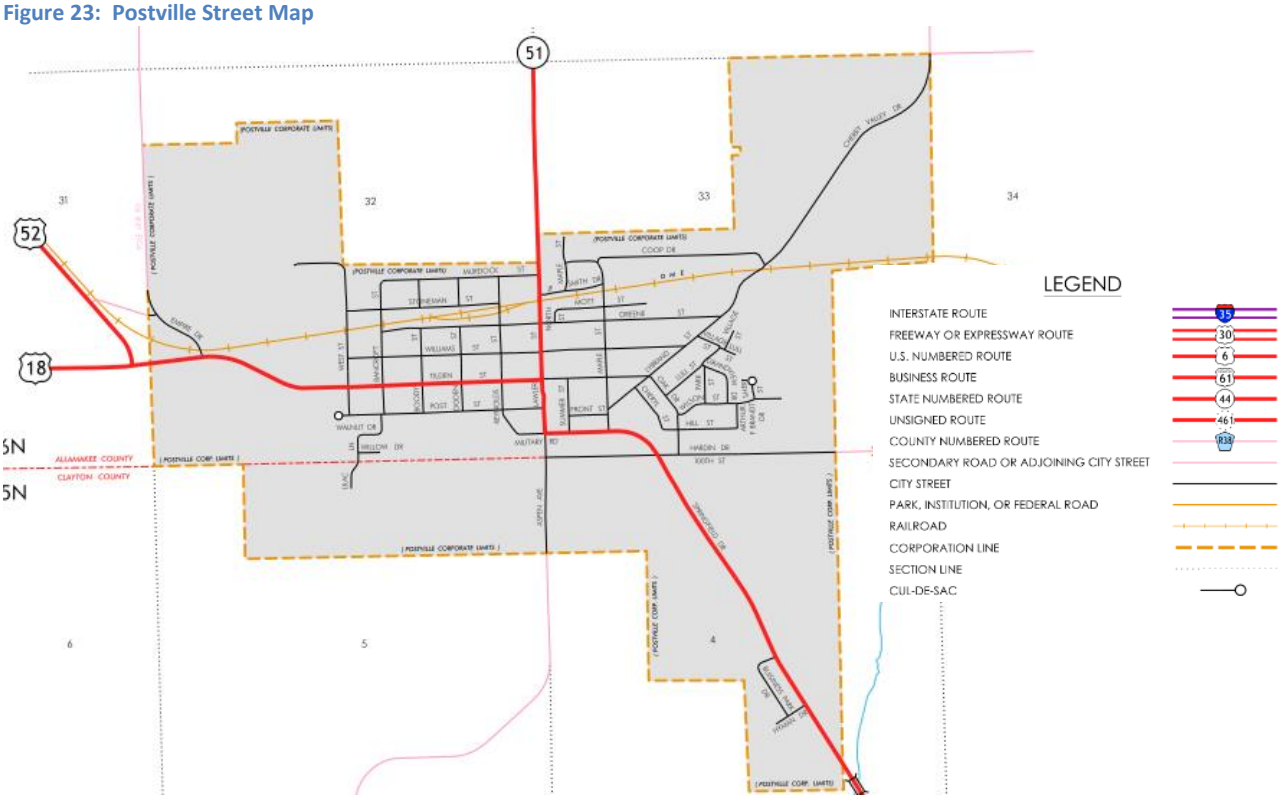
1. Participate in an Allamakee County Emergency Management Agency (EMA) effort to create countywide Community Shelter Plan to identify storm, community or evacuation shelter locations, and to prioritize needs for shelters, including back-up power supplies.
2. Support EMA initiative to form countywide volunteer group to serve residents with various needs during storm or emergency events.
3. Participate in EMA effort to create Rail Response Plan to prepare for a potential rail accident.
4. Expand/enhance fire district facility to accommodate additional equipment (hose drying area) and to create a larger training / meeting room.
5. New or enhanced water distribution system (add 2nd well).
6. Improved/enhanced infrastructure sought including new/enhanced lagoonless sewer plant.
7. NFIP participation/consideration.
8. Storm sewer system/stormwater management projects to address flooding near roads.
9. Attain a new generator for the community center so it can serve as a community shelter.
10. Improve the public's awareness of lower priority hazard risks (i.e. landslides, drought, extreme heat, etc.): Develop educational materials for the general public and decision makers, pursue educational projects, provide information on public and private volunteer initiatives.

City of Postville

History and Overview

Postville is located at the junction of Highway 18 and Highway 51 in the very southwestern corner of Allamakee County. The total land area of city limits is 2.08 square miles (City-data.com, 2023) and is laid out as shown in Figure 23.

Figure 23: Postville Street Map



Source: (Iowa Department of Transportation, 2022)

With rapid growth and development, the town of Postville was incorporated in 1873. When the "Old Military Road" and the new fort at Fort Atkinson were being built, it took two days to make the trip from Prairie du Chien, WI to the fort. In order to provide shelter for the night for the teamsters and others that might travel the road, the government built stables and a "half-way house" in 1840.

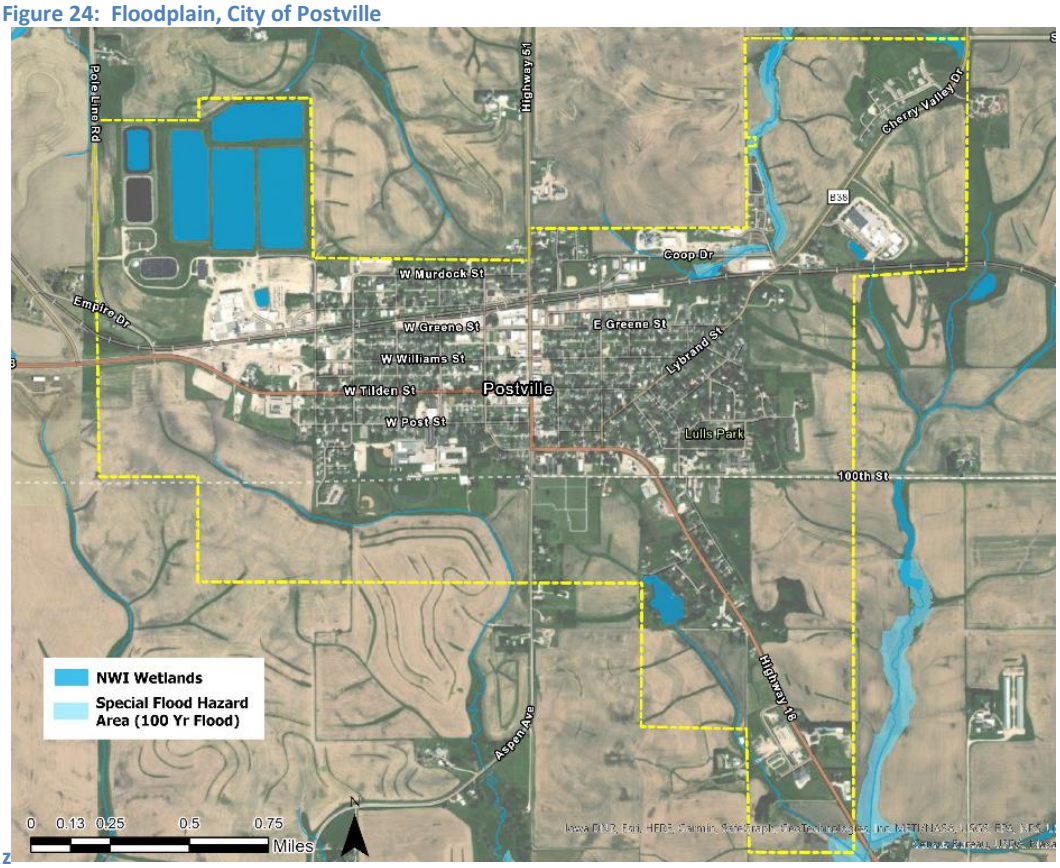
In 1841, Joel Post was granted permission to occupy the half-way house in return for his and his wife's labor in operating the house as an inn/tavern. By 1849, Mr. Post had passed away. Following his passing the surveying of Post Township was conducted – completed in 1850. In 1850, Mrs. Post filed legal claims to two adjoining quarter sections of land in southwest Allamakee County. The entire town of Postville is now located on land originally purchased by Mrs. Post.

Present day, the City of Postville host's a highly diverse ethnic population. Jewish, Hispanic, Russian, Ukrainian, Filipino, Norwegian, and many more cultures are reflected in local businesses, industries, and neighborhoods. There are several religious congregations within the city and county area of Postville including Protestant, Catholic, Jewish and many other faiths.

Natural Resource Inventory

Williams Creek terminates just inside the northeast city limits of Postville, and branches of Roberts Creek enter the south portion of the city. Minimal land area falls in the Federal Emergency Management Agency (FEMA) floodplains as shown on Digital Flood Insurance Rate (DFIRM) maps. Figure 24 illustrates the extent of Williams Creek and the FEMA identified floodplains.

Figure 24: Floodplain, City of Postville



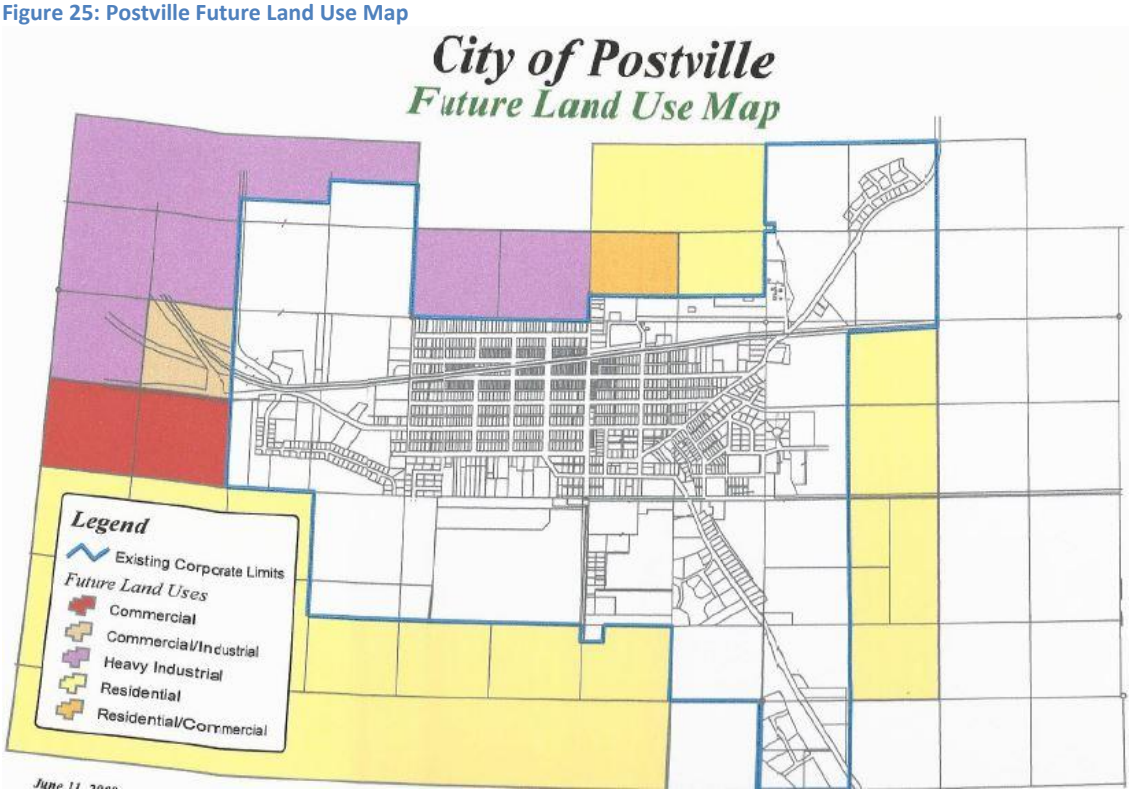
Source: (Federal Emergency Management Agency, 2021)

As available, additional details regarding the Special Flood Hazard Area (SFHA) and valuation data are located within the Vulnerability Assessment portion of the plan.

Changes in Development / Future Land Use

The 2010 Census recorded a population of 2,227 for Postville, and the 2020 Census recorded an increase in population to 2,503. The 2010 Census recorded 902 housing units in Postville, and the 2020 Census recorded a decrease in housing units to 859. The City of Postville 2008 Comprehensive Plan includes a Future Land Use Map (see Figure 25). Planned residential land use north of the city contains a very small portion of the 100-year flood plain, but the majority of planned development sits outside the FEMA floodplain. City boundaries have not shifted since the 2018 county hazard mitigation plan. Any further feedback the city had regarding the impacts of hazards to specific locations or development in the community is further addressed in Key Hazard Issues.

Figure 25: Postville Future Land Use Map



National Flood Insurance Program

The City of Postville participates in the National Flood Insurance Program (NFIP) and is considered compliant. The community joined the NFIP on October 4, 2010, with an initial Flood Insurance Rate Map (FIRM) identified on September 25, 2009. The current effective FIRM map date is September 18, 2020. Postville has a Flood Insurance Study (FIS) accomplished. No communities in Allamakee County are currently required to undergo Community Assistance Visits (CAVs), but they have all fairly recently undergone a Community Assistance Contact (CAC), a less intensive meeting that covers similar aspects to CAVs. The last date of Postville's CAC was August 8, 2019. As shown on Table 44 Postville has no repetitive loss properties through 2022.

As required by the NFIP, the community has adopted a floodplain ordinance, most recently updated in 2020 with the assistance of the Iowa Dept. of Natural Resources (DNR) in preparation for the September 18, 2020 FIRM maps. The ordinance meets minimum State of Iowa floodplain regulations. The identified floodplain administrator is the city clerk. The permitting process by the floodplain administrator includes a determination as to whether proposed floodplain development meets applicable standards of the floodplain ordinance. The floodplain administrator responsibilities and floodplain development permitting process identified in the floodplain ordinance will be implemented by the community in moving ahead to maintain compliance with the NFIP.

Governance, Facilities and Services

City government:

- Officials: Mayor, one Mayor Pro-Tem and five council members
- Staff/employees:
    - Full-time staff: Administrative staff, Deputy Clerk, Administrator/Clerk, Police Officers, and Public Works staff
    - Part-time staff: Library
    - Seasonal employees: Public Works and Lifeguard/city pool

Public facilities:

- There is one government building, City Hall (built in 2005)

Public utilities:

- The city provides municipal sewer for property owners. Sewer infrastructure includes eight lift stations.
- The City of Postville participates in the Iowa Rural Water Association (IRWA). The city's municipal ID for water is 375053. Built in 1973, the city's elevated water tower is located at the water treatment plant (485 Coop Drive) and has capacity for 500,000 gallons of water. Since 2005, the city further provides water storage through an above ground storage 1,000,000 gallon reservoir, also at the water treatment plant. AgriStar also has a water tower.

Public services:

- Electric: Black Hills Energy; Alliant Energy; Allamakee- Clayton Rural Electric Cooperative (REC)
- Natural Gas: Alliance Pipeline
- LP Gas: Black Hills Energy; Alliant Energy
- Internet: Century Link, Hughes Net, Viasat, LTD Broadband, NEIT
- Mobile: AT&T, T-Mobile, Verizon, Mint Mobile, Visible
- Schools: City of Postville is included in the Postville Community School District. The community has a total of six educational institutions: the three schools that make up the Postville Community School District, the Postville Alternative High School, and two private schools.
- Clinic: Gunderson Lutheran Clinic; Family Medical Clinic
- Senior Care/Living Facilities: None
- Childcare: Postville Child Care Services and Postville Head Start (within the same facility), and two registered child care homes (Iowa Child Care Resource & Referral, 2023)

Emergency services:

- The Postville Police Department provides law enforcement. The station was built in 2005.
- Built in 2005, the City of Postville Fire Department supports the community for fire protection needs. The city has volunteers trained as members of the Postville Fire Department for city and rural response. The City's ISO rating is 4.
- The Postville First Responders/EMS provides ambulance services. A few fire department volunteers are trained as first responder members of the City of Postville First Responders/EMS team; additional volunteers are trained as EMS.

- The Allamakee Co. Sheriff's office located near Waukon is the county's 911 dispatch center.
- Allamakee County Emergency Management provides services to the City of Postville.
- The city utilizes Turner Hall (119 E. Turner St.) as their community shelter location.
- The city has four warning sirens in use, activated from Postville Fire Station which are tested weekly in addition to daily at 6:00 P.M.
- City utilizes three generator as follows: one at Fire Station (portable generator powered by PTO), one at Turner Hall and one at Water Works.
- The entire County utilizes Alert Iowa services for their emergency communication notifications, with home, business and/or mobile phone voice capabilities.

Structures, Infrastructure, Community Resources

Structures:

- As of 2022, the actual value of all residential structures in the City of Postville was over $37.7 million. In addition, commercial structures were valued at over $10.6 million (Allamakee County Assessor, 2023)

Infrastructure:

- There is an active railroad within Postville city limits. There are four crossings; three are gated and one uses only lights.
- Postville has no dam or levees within city limits.

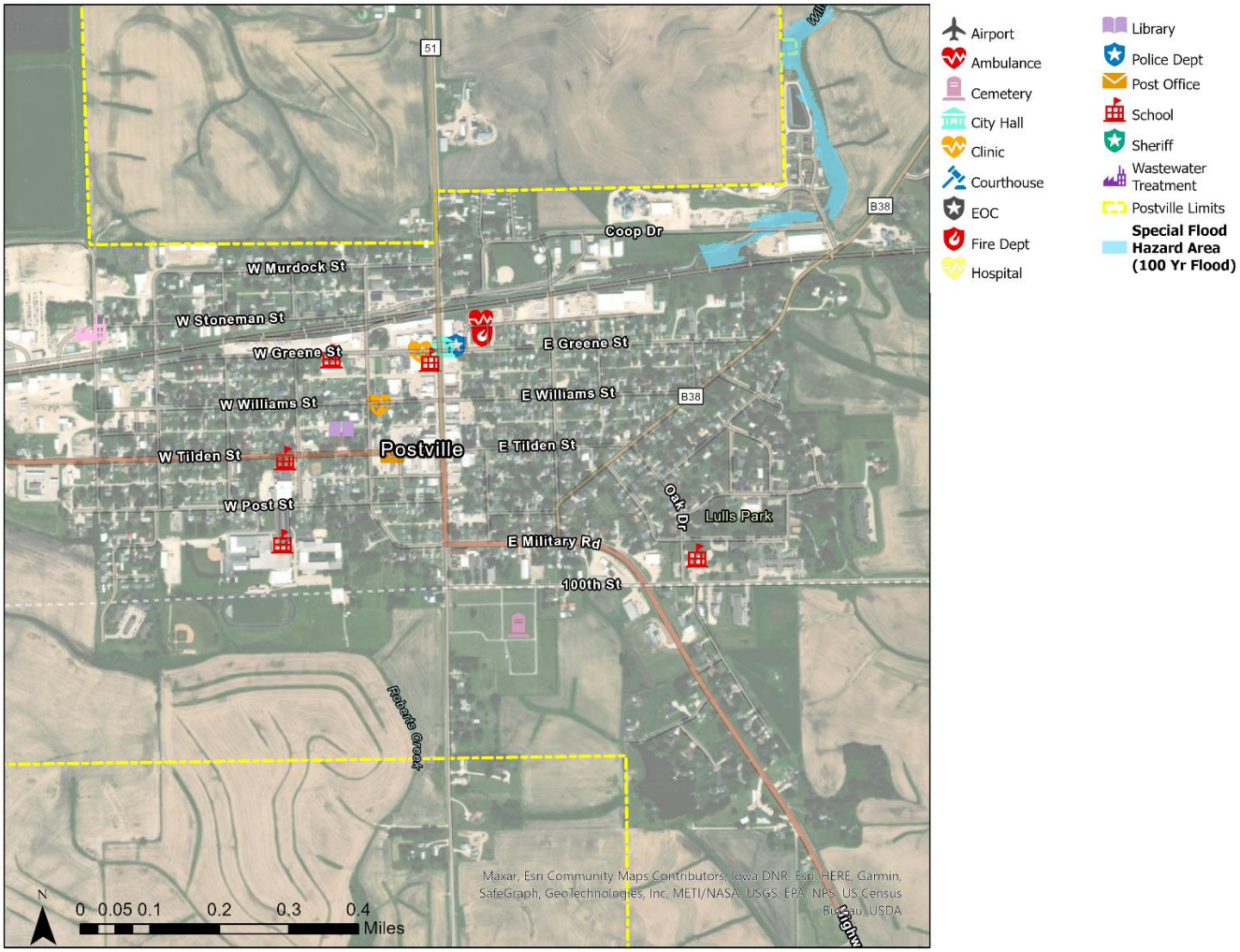
Community Resources:

- Historical: The National Register of Historic Places notes the following sites for Postville: Red Bridge, Turner Hall
- Cultural and Recreational: Postville Pool, Lull's Park, Meyer Park, Heritage Trail, Hall Robert's Park, YMCA, Big Four Fairgrounds, Big Four Campground, Trails, public ball diamonds, Postville Industrial Park, Postville Business Park, Postville Pool

Planning Area Map:

The following Planning Area map illustrates updated information on the location of essential and critical facilities, government buildings, and infrastructure, against the location of the 100-year floodplain. Note, schools include public schools, private schools, preschools, and child care centers (UERPC, 2023).

Figure 26: Postville Facilities and Floodplains



Fiscal Resources

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include the following:

- Fees for utility services
- Taxes for specific purposes
- Debt through general obligation bonds
- Debt through private activities
- Community Development Block Grants (CDBG)

Existing Plans and Policies

Postville ordinances include: zoning ordinance, tree trimming, subdivision ordinance, and others. The city has adopted the international building code. It also has a Comprehensive Plan (2008), a Transportation Plan (2008), a Watershed Plan (2006), and others, and updates a Capital Improvement Plan annually. The city utilizes the Allamakee County Comprehensive Emergency Management Plan. All city response personnel follow appropriate protocol and guidance.

Key Hazard Issues

Key issues were identified at city meetings, in review of locality-specific hazard information, and in consideration of the countywide risk prioritization.

- Hazardous Materials/Transportation - The railroad goes through town in proximity to development. HAZMAT products carried on the trains could be a threat in case of an accident. Also, Postville has several large industrial facilities operating with HAZMAT materials. Many of these sites are north of the railroad and raise the additional concern of increased danger from potential railroad/HAZMAT facility accidents.
- Windstorms / Tornadoes - Potential impacts to properties/structures a continued concern. The city only experienced one tornado over 170 years but it did result in injuries. There were 6 thunderstorm wind events over 20 years, but with no injuries and limited damages.

Low Priority Natural Hazards

Some natural hazards impact the community but weren't found to be key hazard issues. These are either rare, or if they aren't rare, their impacts were found to be minimal. Mitigation actions were provided for the following hazards but are prioritized behind actions addressing key hazard issues:

- Storm and weather/climatic events:[4]
    - Drought – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Extreme Heat – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Hail – Only two local events in 20 years with no injuries or damages.
    - Severe Winter Storm – The county is susceptible to these, but significant local impacts were not noted by planning participants.
    - Thunderstorm and Lightning - The county is susceptible to these, but significant local impacts were not noted by planning participants.
- Landslides – The city is located in an area considered 'moderate susceptibility – low incidence' for landslides. There were no local reports of these occurring.

Natural Hazards Not Impacting Community

Some natural hazards do not impact this jurisdiction based on its location, environment or existing conditions. No mitigation actions were provided for these natural hazards for this reason::

- Dam/levee failure - Not found in community.

[4] Storm record references are from the NOAA National Centers for Environmental Information Storm Events Database or the National Weather Service, unless otherwise noted.

- Sinkholes: The city sits in an area of karst geology, but there are no known sinkholes in city limits (Iowa Department of Natural Resources, 2022).

Mitigation Activities

Required Mitigation (Natural Hazards) or Elective Mitigation (Non-Natural Hazards)

Hazard: Numbers match a proposed mitigation action found in: ***Mitigation Actions to Pursue Through MJ-7 Implementation***	**Natural Hazard DOESN'T impact community.** **No mitigation action required.**	**Natural Hazard DOES impact community.** **Mitigation action is required and was provided.**	**Non-Natural Hazard (NHH) DOES impact community –** **Mitigation is elective but was provided.**
Natural Hazards:			
Dam/Levee Failure	x		
Drought		#9	
Extreme Heat		#9	
Flood		#6	
Hailstorm		#1, #2, #8	
Landslide		#9	
Severe Winter Storm		#1, #2, #8	
Sinkholes	x		
Thunderstorm/Lightning		#1, #2	
Tornado		#1, #2, #8	
Windstorm		#1, #2, #8	
Non-Natural Hazards (NNH):			
Animal/Plant/Crop Disease			
Hazardous Materials			#3
Human Disease			
Infrastructure Failure			#4,#5, #7
Mental Health			
Transportation Incident			#3

Mitigation Activities Already in Place

1. The entire County participates in emergency response exercises on a regular basis
2. City utilizes local ordinances, defaulting to the State of Iowa for all other ordinances
3. The city utilizes the Allamakee County Comprehensive Emergency Management Plan
4. All city Response Personnel follow appropriate protocol and guidance
5. Allamakee County contracts with the Northeast Iowa Response Group for HAZMAT response
6. City maintains own fire station and ambulance service
7. The entire County utilizes Alert Iowa services
8. City has three warning sirens in use
9. City actively participates in the Iowa Mutual Aid Compact (IMAC)
10. City has three backup generators in use
11. Starting in 2023, the city will utilize the Allamakee County Disaster Recovery Plan

Status and Progress on Previous Mitigation Actions (UPDATE)

1. Participate in an Allamakee County Emergency Management Agency (EMA) effort to create countywide Community Shelter Plan to identify storm, community or evacuation shelter locations, and to prioritize needs for shelters, including back-up power supplies.
   - Not Completed - County is currently working with cities on this.
2. Participate in Allamakee County Emergency Management Agency (EMA) effort to create a Rail Response Plan to prepare for the possibility of a rail accident.
   - Not Completed – County is currently working with cities on this.
3. Support Allamakee County Emergency Management Agency (EMA) initiative to form countywide volunteer group to serve residents with various needs during storm or emergency events.
   - Not Completed.
4. Additional/enhanced fire department training and equipment/supplies.
   - Completed (ongoing)
5. Additional generator(s), including at the water plant and fire station.
   - Completed – One added new at treatment plant. No more planned for near future.
6. Maintain/enhance water distribution system.
   - Completed – In areas, but this is an ongoing need. The DOT will work sections of highway this year, along with waterlines.
7. City government and staff and/or schools to continue to organize and participate in ALICE or other active shooter trainings through the local law enforcement department.
   - Not Completed - Will be moved to school district action.
8. Acquire and demolish damaged/nuisance structures.
   - Completed – But an ongoing need.
9. Participate in the Allamakee County Emergency Management Dept. planning effort to update the HAZMAT Response Plan included in the county's Emergency Support Function plan.
   - Not Completed – This is completed at county level by ESF 10 HAZMAT Plan.
10. NFIP participation
    - Completed (ongoing)

Mitigation Actions to Pursue Through MJ-7 Implementation

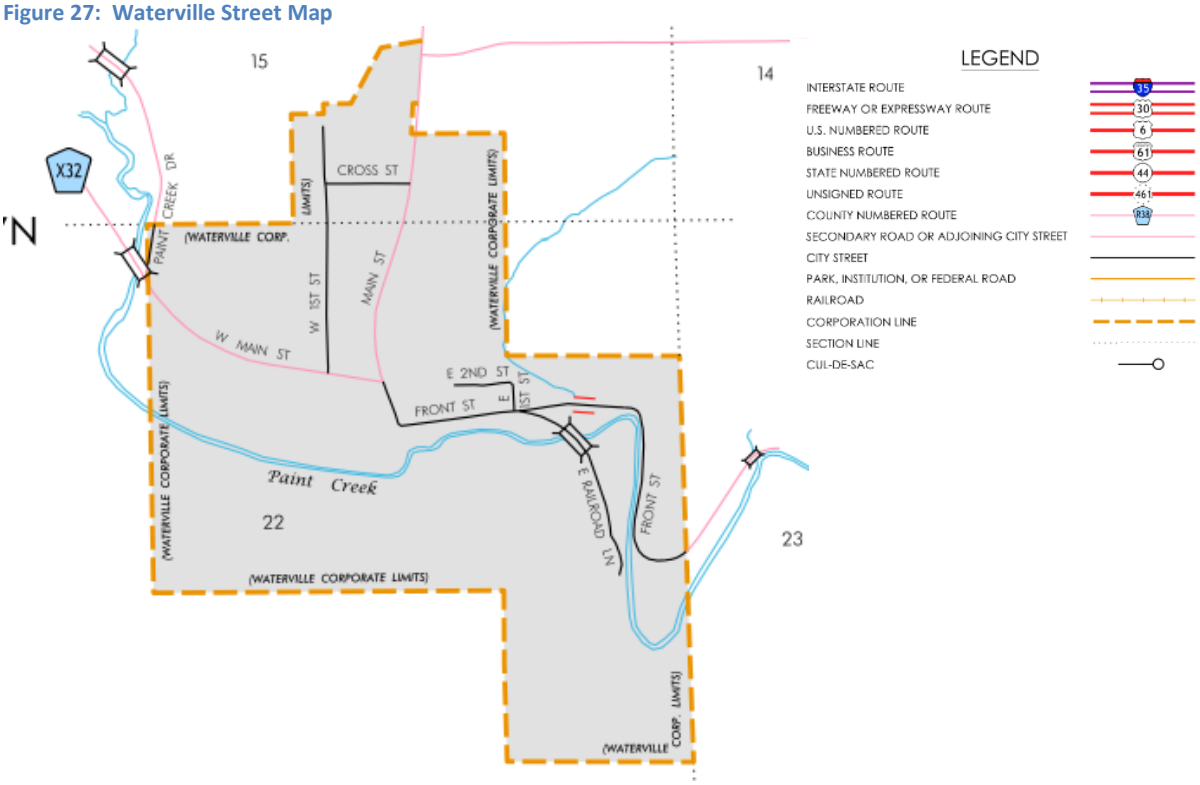
1. Participate in an Allamakee County Emergency Management Agency (EMA) effort to create countywide Community Shelter Plan to identify storm, community or evacuation shelter locations, and to prioritize needs for shelters, including back-up power supplies.
2. Support Allamakee County Emergency Management Agency (EMA) initiative to form countywide volunteer group to serve residents with various needs during storm or emergency events.
3. Participate in Allamakee County Emergency Management Agency (EMA) effort to create a Rail Response Plan to prepare for the possibility of a rail accident.
4. Maintain/enhance water distribution system.
5. Acquire and demolish damaged/nuisance structures.
6. NFIP participation
7. Security related enhancements for public facilities.
8. Pursue storm shelter options for trailer park.
9. Improve the public's awareness of lower priority hazard risks (i.e. landslides, drought, extreme heat, etc.): Develop educational materials for the general public and decision makers, pursue educational projects, provide information on public and private volunteer initiatives.

City of Waterville

History and Overview

Waterville is located in central Allamakee County, situated north of Highway 76. The total land area of city limits is 0.43 square miles (City-data.com, 2023) and is laid out as shown in Figure 27.

Figure 27: Waterville Street Map



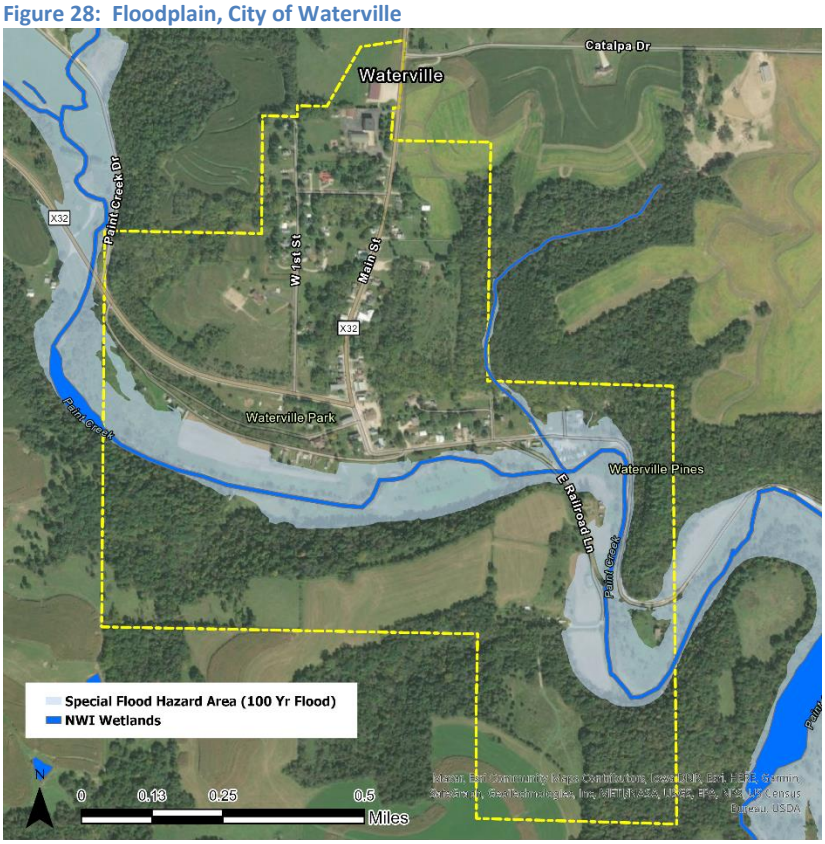
Source: (Iowa Department of Transportation, 2022)

The town of Waterville was incorporated in early 1912. In unique fashion, the town itself was never surveyed and platted. Instead, the lots were sold off by the owners one at a time to prospective buyers as needed. These lots were platted as land plots, instead of town lots of varying size and irregular shape according to the requirements of the purchasers and the contour of the land. With the advent of the Waukon and Mississippi Railroad in 1877, Waterville took on a new life with many new stores, a warehouse, modeling works, banks, and other stores.

Natural Resource Inventory

Paint Creek runs through the south and central portions of the City of Waterville. The creek flows to the Yellow River State Forest just southeast of Waterville. Waterville Pines Park abuts the community to the east. Significant land area within the corporate boundaries falls in the Federal Emergency Management Agency (FEMA) identified floodplains as shown on Digital Flood Insurance Rate (DFIRM) maps. Figure 28 illustrates the creek and FEMA identified floodplains.

Figure 28: Floodplain, City of Waterville



Source: Source: (Federal Emergency Management Agency, 2021)

As available, additional details regarding the Special Flood Hazard Area (SFHA) and valuation data are located within the Hazard and Vulnerability section.

Changes in Development / Future Land Use

The 2010 Census recorded a population of 144 for Waterville, and the 2020 Census recorded a decrease to 109. The 2010 Census recorded 61 housing units in Waterville, and the 2020 Census recorded a decrease of four housing units to 57. The city indicated that they have no future land use plan or planned development at this time in the community. There have been no recent boundary changes. Any further feedback the city had regarding the impacts of hazards to specific locations or development in the community is further addressed in Key Hazard Issues.

National Flood Insurance Program

The City of Waterville participates in the National Flood Insurance Program (NFIP) and is considered compliant. The community joined the NFIP on May 30, 2012, with an initial Flood Insurance Rate Map (FIRM) identified on September 25, 2009. The current effective FIRM map date is September 18, 2020. A Flood Insurance Study (FIS) of Waterville was conducted in 1977. No communities in Allamakee County are currently required to undergo Community Assistance Visits (CAVs), but they have all fairly recently undergone a Community Assistance Contact (CAC), a less intensive meeting that covers similar aspects to CAVs. The last date of Waterville's CAC was June 23, 2020. As shown on Table 44 Waterville has no repetitive loss properties through 2022.

As required by the NFIP, the community has adopted a floodplain ordinance, most recently updated in 2020 with the assistance of the Iowa Dept. of Natural Resources (DNR) in preparation for the September 18, 2020 FIRM maps. The ordinance meets minimum State of Iowa floodplain regulations. The identified floodplain administrator is the building inspector, with final review by the Mayor and City Council. The permitting process by the floodplain administrator includes a determination as to whether any proposed floodplain development meets applicable standards of the floodplain ordinance. The floodplain administrator responsibilities and floodplain permitting process identified in the ordinance will be implemented by the community in moving ahead to maintain compliance with the NFIP.

Governance, Facilities and Services

City government:

- Officials: Mayor, one Mayor Pro-Tem and five council members
- Staff/employees:
    - Part-time staff: City Clerk/Treasurer, Wastewater Superintendent, Sewer Operators, and Librarian
    - Seasonal employees: one staff person for lawn mowing and two for snow removal needs.
    - Contracted building inspector

Public facilities:

- The City has three government buildings: City Hall (built 1963), Fire Station (built in 2012) and Library (built in 2013)

Public utilities:

- The City of Waterville participates in the Iowa Rural Water Association (IRWA). The city does not have municipal water.
- The City has offered municipal sewer services since 1982. Sewer infrastructure includes three lift stations built in 1982 and a three cell lagoon.

Public services:

- Electric: Alliant Energy
- Schools: City of Waterville is included in the Allamakee Community School District
- LP Gas: AgVantage FS
- Internet: HughesNet, Viasat, NEIT, AcenTek
- Mobile: AT&T, Verizon, T-Mobile, Visible, Mint Mobile

Emergency services:

- Law enforcement for the community is provided by the Allamakee County Sheriff's office.
- The Waterville Rural Fire Protection District supports the community for fire protection needs. The city has volunteers trained as members of the district. Additional volunteers are trained as members of the Waterville Ambulance team. For Waterville Rural Fire Protection District usage, there is one underground water storage tank available. The City's ISO rating is: 9/10.
- The Allamakee Co. Sheriff's office located near Waukon is the county's 911 dispatch center.
- Allamakee County Emergency Management provides services to the City of Waterville.
- The city has one new warning siren (2023), located across the street from the old city hall.
- The city has one portable generator.
- The Waterville Community Center (115 Main St) serves as the community shelter location.
- The entire County utilizes Alert Iowa services for their emergency communication notifications.
- Allamakee County contracts with the Northeast Iowa Response Group, a specialized HAZMAT Team out of Black Hawk County (Waterloo, Iowa). Waterloo is located approximately 80 miles south of Allamakee County, Iowa.

Structures, Infrastructure, Community Resources

Structures:

- In 2022 the value of all residential structures in the City of Waterville was over $2.3 million. In addition, commercial structures were valued at $163,840 (Allamakee County Assessor, 2023)

Infrastructure:

- There are no active railroads within Waterville city limits.
- Waterville has no dam or levees within city limits.

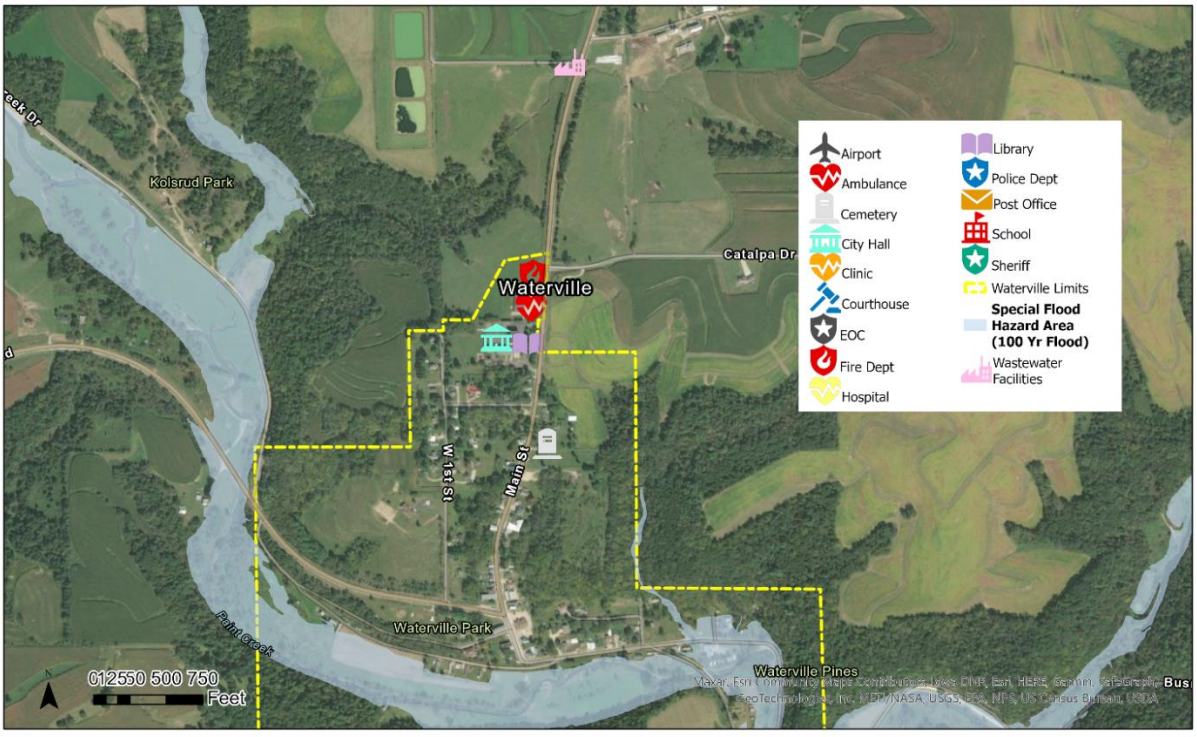
Community Resources:

- Historical: The National Register of Historic Places notes the following sites for Waterville:
  - West Paint Creek Synod Evangelical Lutheran Church and Cemetery
  - Old East Paint Creek Lutheran Church
- Cultural & Recreational: Waterville Pines Park, Pine Bluff & Corrigan's Corner Campgrounds

Planning Area Map:

The following Planning Area map illustrates updated information on the location of essential and critical facilities, government buildings, and infrastructure, against the location of the 100-year floodplain. Note, schools include public schools, private schools, preschools, and child care centers (UERPC, 2023).

Figure 29: Waterville Facilities and Floodplains



Fiscal and Technical Resources

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include:

- Fees for utility services
- Taxes for specific purposes
- Debt through general obligation bonds
- Debt through private activities
- Community Development Block Grants (CDBG)

Existing Plans and Policies

Updated via Iowa Codification 2011, Waterville ordinances in place include: restricted residential district, floodplain management, and others. Waterville has not adopted a building code and doesn't have a zoning ordinance. It does have basic land use regulations (e.g. setback requirements) incorporated in the city code. Hiring for code enforcement is a barrier to building code adoption.

The city utilizes the Allamakee County Comprehensive Emergency Management Plan. All city response personnel follow appropriate protocol and guidance.

Key Hazard Issues

Key issues were identified at city meetings, in review of locality-specific hazard information, and in consideration of the countywide risk prioritization.

- Flooding – Flash flooding events in 2013 and 2015 resulted in significant damage in the community, including impacts to the sewer lift systems, local roads, and the bridge and culvert on the south end of town. Flooding was less in recent years with upstream stormwater management and local culvert improvements, but small tributary on the east side of town poses ongoing flooding concern, as well as at bridge over Paint Creek to the south.
- Hazardous Materials – The issue of asbestos was raised at the public meeting.

Low Priority Natural Hazards

Some natural hazards do impact the community but weren't found to be key hazard issues. These hazards are either rare, or if they aren't rare, their impacts were found to be minimal. Mitigation actions were provided for the following hazards but are prioritized behind actions addressing key hazard issues. An explanation and list follows:

- Storm and weather/climatic events:[5]
    - Drought – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Extreme Heat – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Hail – Only one local event in 20 years with no injuries or damages.
    - Severe Winter Storm – The county is susceptible to these, but significant local impacts were not noted by planning participants.

[5] Storm record references are from the NOAA National Centers for Environmental Information Storm Events Database or the National Weather Service, unless otherwise noted.

- Thunderstorm and Lightning - The county is susceptible to these, but significant local impacts were not noted by planning participants.
- Tornadoes – The city only experienced one tornado over 170 years, but it did result in multiple deaths and injuries (over its entire course).
- Windstorms – One thunderstorm wind event in 20 years with no injuries and low damages.

- Landslides: Though the county as a whole is in an areas of the state more susceptible, there were no local reports of these occurring.

Natural Hazards Not Impacting Community

Some natural hazards do not impact this jurisdiction based on its location, environment or existing conditions. No mitigation actions were provided for these natural hazards for this reason. An explanation and list follows:

- Dam/levee failure - Not found in community.
- Sinkholes – The city sits in an area of karst geology but doesn't have any known sinkholes.

Mitigation Activities

Required Mitigation (Natural Hazards) or Elective Mitigation (Non-Natural Hazards)

Hazard: Numbers match a proposed mitigation action found in: ***Mitigation Actions to Pursue Through MJ-7 Implementation***	**Natural Hazard DOESN'T impact community.** **No mitigation action required.**	**Natural Hazard DOES impact community.** **Mitigation action is required and was provided.**	**Non-Natural Hazard (NHH) DOES impact community –** **Mitigation is elective but was provided.**
Natural Hazards:			
Dam/Levee Failure	x		
Drought		#7	
Extreme Heat		#7	
Flood		#4, #5	
Hailstorm		#1, #2	
Landslide		#7	
Severe Winter Storm		#1, #2	
Sinkholes	x		
Thunderstorm/Lightning		#1, #2	
Tornado		#1, #2	
Windstorm		#1, #2	
Non-Natural Hazards (NNH):			
Animal/Plant/Crop Disease			
Hazardous Materials			#6
Human Disease			
Infrastructure Failure			#3
Mental Health			
Transportation Incident			

Mitigation Activities Already in Place

1. The entire County participates in emergency response exercises on a regular basis
2. City utilizes local ordinances, defaulting to the State of Iowa for all other ordinances
3. The city utilizes the Allamakee County Comprehensive Emergency Management Plan
4. All city Response Personnel follow appropriate protocol and guidance
5. Allamakee County contracts with the Northeast Iowa Response Group for HAZMAT response
6. City is a part of the Iowa Mutual Aid Compact (IMAC)
7. City maintains partnership with rural fire district for fire/emergency response
8. City utilizes one generator
9. The entire County utilizes Alert Iowa Emergency Notification System
10. Starting in 2023, the city will utilize the Allamakee County Disaster Recovery Plan

Status and Progress on Previous Mitigation Actions (UPDATE)

1. Participate in an Allamakee County Emergency Management Agency (EMA) effort to create countywide Community Shelter Plan to identify storm, community or evacuation shelter locations, and to prioritize needs for shelters, including back-up power supplies.
    - Not Completed - County is currently working with cities on this.
2. Support Allamakee County Emergency Management Agency (EMA) initiative to form countywide volunteer group to serve residents with various needs during storm or emergency events.
    - Not Completed - County is currently working with cities on this.
3. New generator for the emergency warning siren located at the fire station.
    - Not completed – Will no longer pursue for siren but would like one for fire station and community center in general.
4. New/enhanced emergency warning system
    - Completed – By the end of 2023.
5. Maintain partnerships for effective and prompt emergency response.
    - Completed (ongoing)
6. Continue National Flood Insurance Program (NFIP) participation.
    - Completed (ongoing)

Mitigation Actions to Pursue Through MJ-7 Implementation

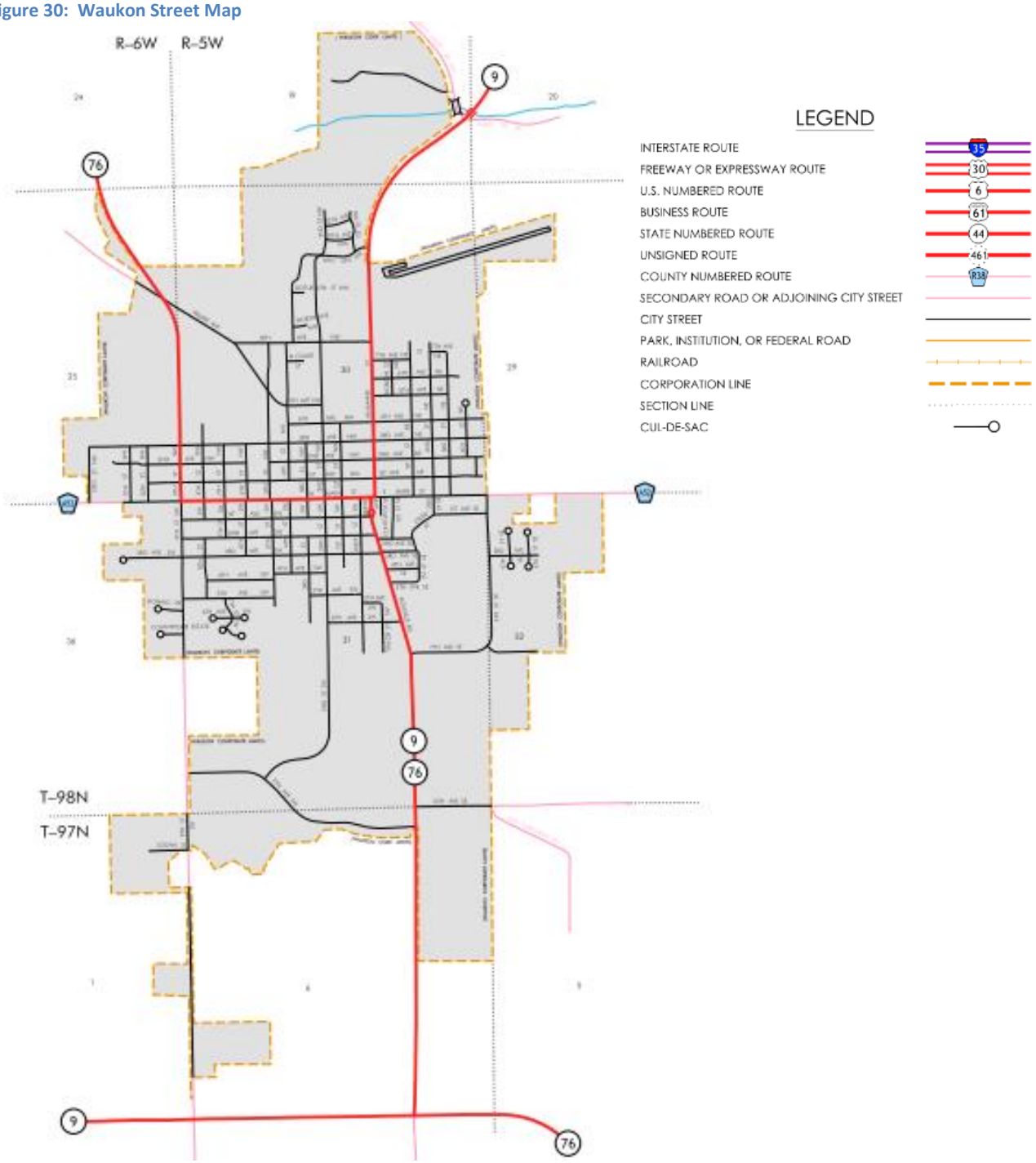
1. Participate in an Allamakee County Emergency Management Agency (EMA) effort to create countywide Community Shelter Plan to identify storm, community or evacuation shelter locations, and to prioritize needs for shelters, including back-up power supplies.
2. Support Allamakee County Emergency Management Agency (EMA) initiative to form countywide volunteer group to serve residents with various needs during storm or emergency events.
3. New generator and transfer switches for the fire station and community center
4. Continue National Flood Insurance Program (NFIP) participation.
5. Consider options for and potentially pursue retention project (or other flood mitigation) at the tributary before Pine Bluff Campground.
6. Address asbestos in public buildings
7. Improve the public's awareness of lower priority hazard risks (i.e. landslides, drought, extreme heat, etc.): Develop educational materials for the general public and decision makers, pursue educational projects, provide information on public and private volunteer initiatives.

City of Waukon

History and Overview

Waukon is located in central Allamakee County at the convergence of Highway 9 and Highway 76. The total land area of city limits is 2.94 square miles (City-data.com, 2023) and is laid out as shown in Figure 30.

Figure 30: Waukon Street Map



Source: (Iowa Department of Transportation, 2022)

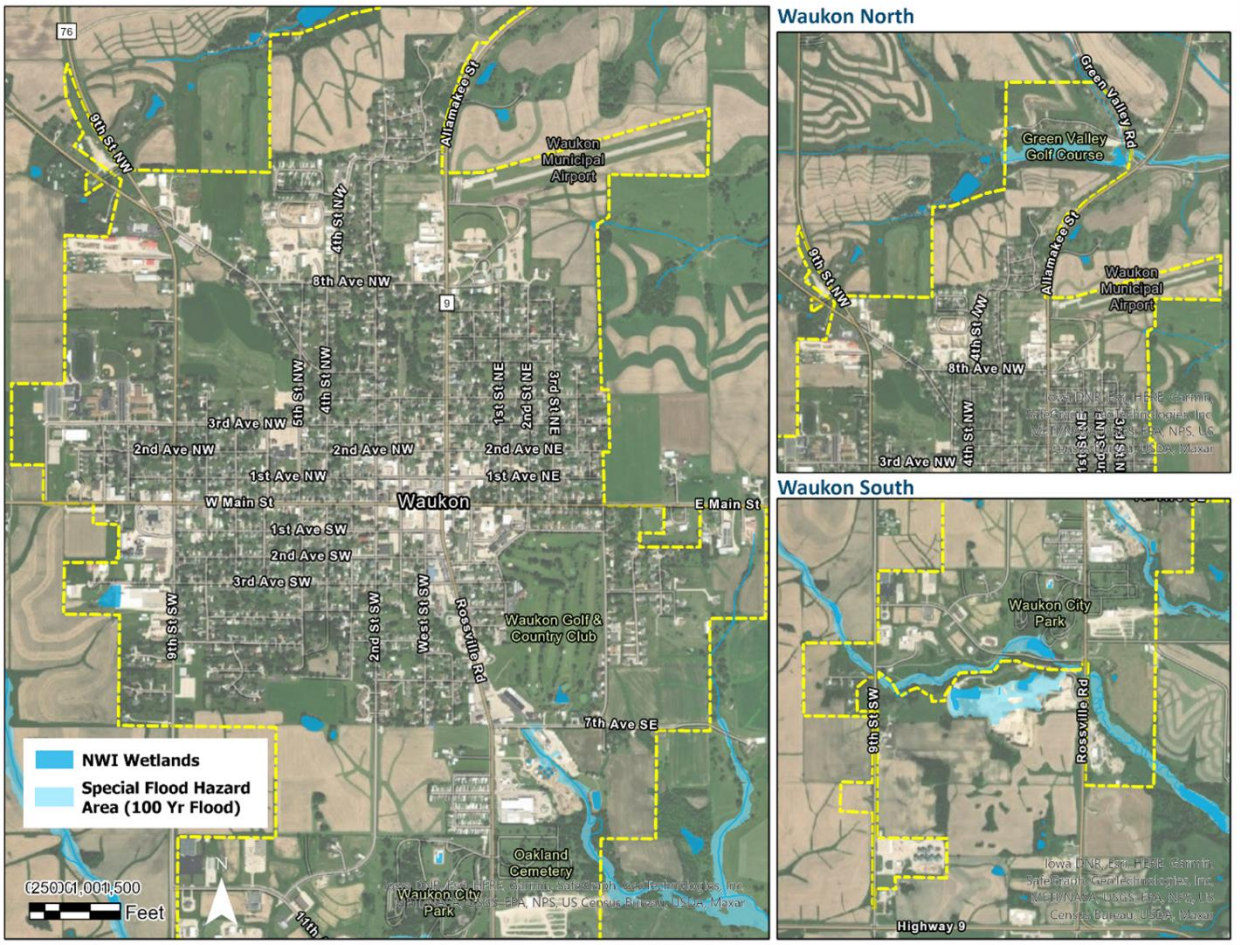
The original town plat for City of Waukon was filed for record December 3, 1853. The name Waukon comes from the name of the chief of the Ho-Chunk (Winnebago) Tribe, Chief John Waukon. Chief John Waukon (b. 1780 – d. 1868) was the grandson of Glory of the Morning (youngest son of The Buzzard) and he helped a band of the Ho-Chunk to relocate across the Mississippi in the mid-19th century.

In June of 1849 Geo C. Shattuck came to Allamakee County and built himself a hay shanty to shelter his family. This was the beginning of the town of Waukon, which was served by a branch of the Chicago, Milwaukee, St. Paul and Pacific Railroad (The Milwaukee Road). It ran as a branch line from Waukon Junction on the Mississippi River northwest to Waukon. It was abandoned in the late 1960's. Waukon became the county seat. A courthouse was completed in 1861.

Natural Resource Inventory

Paint Creek extends along the south boundary of the City of Waukon, and Village Creek cuts through the north portion. Figure 31 illustrates the extent of the two creeks and the FEMA DFIRM flood zones.

Figure 31: Waukon Floodplains



Source: (Federal Emergency Management Agency, 2021)

As available, additional details regarding the Special Flood Hazard Area (SFHA) and valuation data are located within the Vulnerability Assessment portion of the plan.

Changes in Development/Future Land Use

The 2010 Census recorded a population of 3,897 for Waukon, and the 2020 Census recorded a slight decrease in population to 3,827. The 2010 Census recorded 1,946 housing units in Waukon, and the 2020 Census recorded a slight decrease in housing units to 1,939. City boundaries have not shifted since the 2018 county hazard mitigation plan (Allamakee County GIS Coordinator, 2023). The City of Waukon 2015 Comprehensive Plan is the most up to date source of future land use for the community. That document describes the following regarding future land uses:

"The city has discussed potential areas for housing infill and expansion to help guide decisions regarding future growth and development. The city expects to see future development to occur in the agricultural areas already within city limits, as well as along Highway 9 on the south side of the community. Development is also occurring on the west side of the community, with space available for additional growth if needed."

In discussing planned development through 2023, the city provided several locations for potential housing or street development, and street or storm sewer update projects. None of the planned locations are outside of city limits, and all except one were outside of the Special Flood Hazard Area (SFHA). The project near the SFHA is a storm sewer project near 7th Ave. SE. Regarding potential extraterritorial development, most areas around Highway 9 south of present-day Waukon and in west Waukon do not appear to sit in the 100-yr floodplain.

Any further feedback the city had regarding the impacts of hazards to specific locations or development in the community is further addressed in Key Hazard Issues.

National Flood Insurance Program

The City of Waukon participates in the National Flood Insurance Program (NFIP) and is considered compliant. The community joined the NFIP on June 10, 1980, with an initial Flood Insurance Rate Map (FIRM) identified on September 25, 2009. The current effective FIRM map date is September 18, 2020. No communities in Allamakee County are currently required to undergo Community Assistance Visits (CAVs), but they have all fairly recently undergone a Community Assistance Contact (CAC), a less intensive meeting that covers aspects similar to CAVs. The last date of Waukon's CAC was August 12, 2019. As shown on Table 44 Waukon has no repetitive loss properties through 2022.

As required by the NFIP, the community has adopted a floodplain ordinance, most recently updated in 2020 with the assistance of the Iowa Dept. of Natural Resources (DNR) in preparation for the September 18, 2020 FIRM maps. The ordinance meets minimum State of Iowa floodplain regulations. The identified floodplain administrator is the Zoning Administrator (City Manager). The permitting process by the floodplain administrator includes a determination as to whether proposed floodplain development meets applicable standards of the floodplain ordinance. The floodplain administrator responsibilities and floodplain development permitting process identified in the floodplain ordinance will be implemented by the community in moving ahead to maintain compliance with the NFIP.

Governance, Facilities and Services

City government:

- Officials: Mayor, one Mayor Pro-Tem and five council members
- Staff/employees:
    - Full-time staff: Police staff, Water/Sewer staff, Street staff, Librarian, City Clerk/Treasurer, and Wellness/Park and Recreation Director
    - Part-time staff: Library staff, Wellness Center staff, Reserve Police staff, and Zoning Administrator
    - Seasonal employees: Park/recreation/pool

Public facilities:

- The city has one government building, City Hall (built in 1902)
- Waukon Public Library

Public utilities:

- The City provides municipal sewer for property owners. Sewer infrastructure includes seven lift stations.
- The City of Waukon participates in the Iowa Rural Water Association (IRWA). The City offers municipal water for the community, including two water storage units, one built in 1963 (620 W. St. SW; capacity 250,000 gallons) and one built from 1900-1902 (819 Allamakee St.).

Public services:

- Electric: Alliant Energy Electric: Alliant Energy; Allamakee/Clayton Rural Electric Cooperative (REC)
- Natural Gas: Black Hills Energy
- Internet: CenturyLink, Mediacom, Nextlink, HughesNet, Viasat, LTD Broadband, AcenTek, NEIT
- Mobile: AT&T, T-Mobile, Verizon, Mint Mobile, Visible
- Hospital, Clinic: Veterans Memorial Hospital
- Senior Care/Living Facilities: Good Samaritan Center Nursing Home; Northgate Care Center
- Schools: City of Waukon is included in the Allamakee Community School District, with the district's East Elementary, West Elementary, Middle School and High School all located within city limits. Additionally, the private St. Patrick's Catholic School (PK-6) is located within Waukon.
- Childcare: The city has one licensed childcare center, Growing Bear Daycare & Preschool, Waukon Head Start (within West Elementary), and four registered child care homes (Iowa Child Care Resource & Referral, 2023)

Emergency services:

- Law enforcement for the community is provided by the Waukon Police Department.
- The Waukon Area Fire Protection District supports the community for fire protection needs. The city has volunteers trained as members of the Waukon Area Fire Protection District for city and rural response. The City's ISO rating is: 5.
- Veterans Memorial Hospital Ambulance provides ambulance services.

- The Allamakee County Sheriff's office located outside of Waukon is the county's 911 dispatch center.
- Allamakee County Emergency Management provides services to the City of Waukon.
- The city has four warning sirens in use, automatically activated during emergencies from the Allamakee County Dispatch office. The siren locations include:
    - City Park
    - 101 Allamakee Street
    - 819 Allamakee Street
    - 1020 3rd Avenue S
- City utilizes nine generators (plus additional units) as follows:
    - Two located at the lift stations (one at each)
    - Two located at the nursing homes (one at each)
    - One located at the school
    - One at law enforcement site
    - One at hospital site
    - One at the courthouse
    - One portable generator
    - Numerous additional units (portable generators powered by gasoline fuel)
- Allamakee County Courthouse (110 Allamakee St) serves as the community shelter location.
- The entire County utilizes Alert Iowa services for their emergency communication notifications.
- Allamakee County contracts with the Northeast Iowa Response Group, a specialized HAZMAT Team out of Black Hawk County (Waterloo, Iowa).

Structures, Infrastructure, Community Resources

Structures:

- As of 2022, the value of all residential structures in the City of Waukon was over $160.2 million. In addition, commercial structures were valued at over $35.7 million (Allamakee County Assessor, 2023)

Infrastructure:

- There are no active railroads within Waukon city limits.
- Waukon has no dam or levees within city limits.

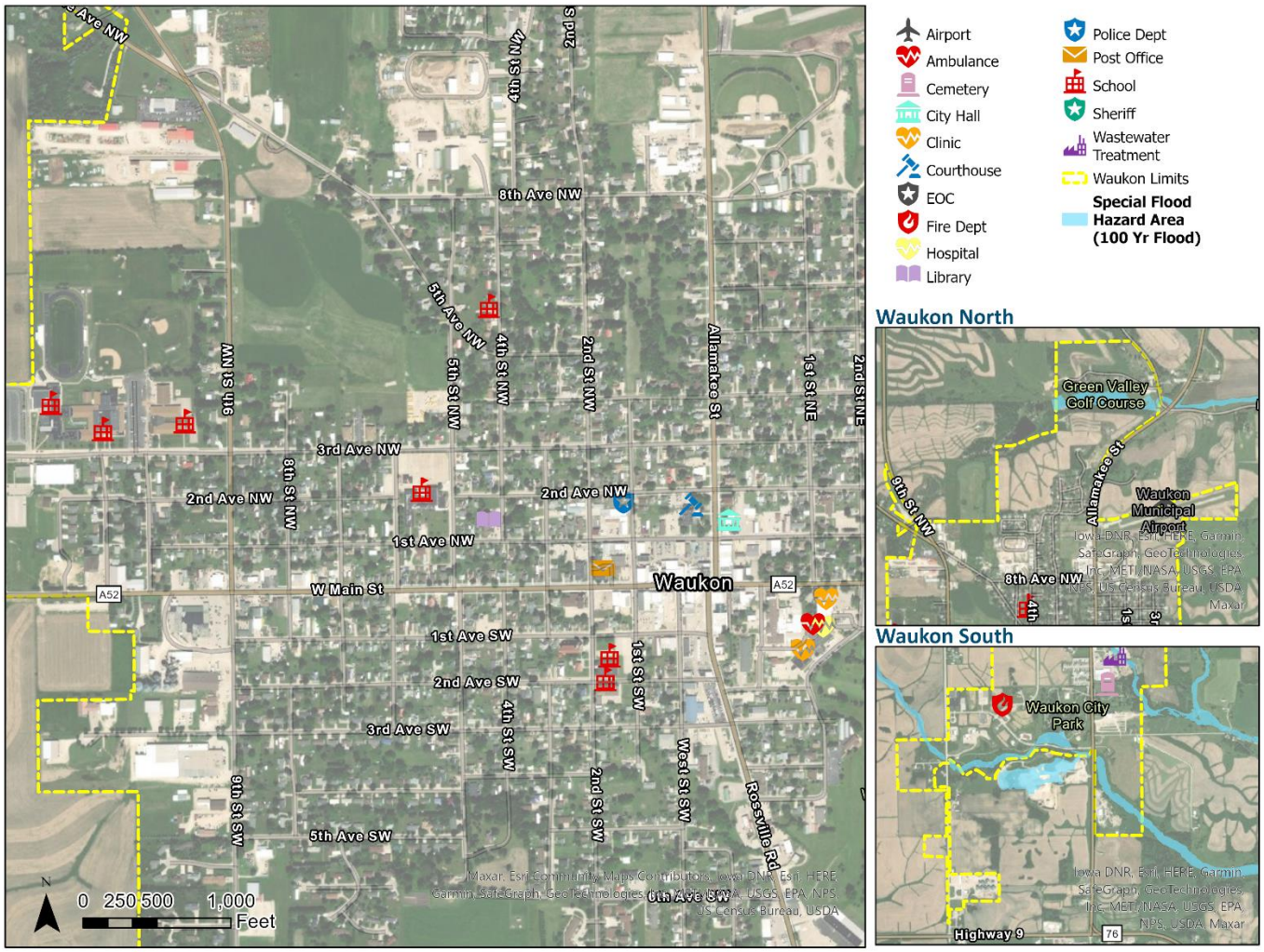
Community Resources:

- Historical:
    - The National Register of Historic Places notes the following sites for Waukon:
        - Allamakee County Court House
        - Allamakee County Historical Museum
        - Otto J. Hager House
    - Allamakee Historical Society (Museum)
- Cultural and Recreational: Waukon Wellness Center, Waukon Industrial Park; Public Ball Diamonds; City Park

Planning Area Map:

The following Planning Area map illustrates updated information on the location of essential and critical facilities, government buildings, and infrastructure, against the location of the 100-year floodplain. Note, schools include public schools, private schools, preschools, and child care centers (UERPC, 2023).

Figure 32: Waukon Facilities and Floodplains



Fiscal Resources

Fiscal tools or resources that the City could potentially use to help fund mitigation activities include the following:

- Debt through general obligation bonds
- Community Development Block Grants (CDBG)Capital improvements project funding (capital funding for departments)
- Fees for utility services (city has approved Natural Gas and Electric franchise fees, and stormwater utility fee)
- Taxes for specific purposes

Existing Plans and Policies

Updated via Iowa Codification 2011, Waukon ordinances in place include: zoning ordinance, subdivision, floodplain management, tree trimming and Storm & Surface Water Utility Ordinance (adopted Nov 17, 2016). Planning documents in place include Comprehensive Plan (2015) and Land Use Plan. The city has not adopted a building code. Limited capacity to complete the process and difficulty hiring to enforce are barriers to this.

The city utilizes the Allamakee County Comprehensive Emergency Management Plan. All City response personnel follow appropriate protocol and guidance.

Key Hazard Issues

Key issues were identified at city meetings, in review of locality-specific hazard information, and in consideration of the countywide risk prioritization.

- Infrastructure Failure - Stormwater Infrastructure – The city's stormwater infrastructure is very old (from the 1930s) and in need of updating.
- Windstorms / Tornadoes - Data from the National Oceanic and Atmospheric Administration (NOAA) illustrates a history of thunderstorm wind events in Waukon, and the National Weather Service records four tornadoes occurring in or near Waukon since 1850. The city is located at one of the highest elevations in the county and is therefore more susceptible to wind events.

Low Priority Natural Hazards

Some natural hazards do impact the community but weren't found to be key hazard issues. These hazards are either rare, or if they aren't rare, their impacts were found to be minimal. Mitigation actions were provided for the following hazards but are prioritized behind actions addressing key hazard issues. An explanation and list follows:[6]

- Storm and weather/climatic events:
    - Drought – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Extreme Heat – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Hail – 12 local events in 20 years, but with no injuries and very low damages.
    - Severe Winter Storm – The county is susceptible to these, but significant local impacts were not noted by planning participants.
    - Thunderstorm and Lightning - The county is susceptible to these, but significant local impacts were not noted by planning participants.
- Dam Failure: Two low hazard dams exist just outside north and south city limits.
- Sinkholes: Data on existing and potential sinkholes from the Iowa DNR illustrates that the city is surrounded by sinkholes, with a number having occurred inside city limits. Sinkholes and karst geology increase the risk of water quality impacts should surface contaminants make their way to ground water sources. However, there is significant depth to ground water sources in the

[6] Storm record references are from the NOAA National Centers for Environmental Information Storm Events Database or the National Weather Service, unless otherwise noted.

area (900 – 1,100 ft), which may help alleviate such risk. Planning participants did not have specific examples, and didn't see this as a priority at this time.

Natural Hazards Not Impacting Community

Some natural hazards do not impact this jurisdiction based on its location, environment or existing conditions. No mitigation actions were provided for these natural hazards for this reason. An explanation and list follows:

- Levee failure - Not found in community.
- Landslides – The city is at one of the highest elevations in the county and doesn't have steep, landslide prone topography. There were no reports of landslides nearby.

Mitigation Activities

Required Mitigation (Natural Hazards) or Elective Mitigation (Non-Natural Hazards)

Hazard: Numbers match a proposed mitigation action found in: ***Mitigation Actions to Pursue Through MJ-7 Implementation***	**Natural Hazard DOESN'T impact community.** **No mitigation action required.**	**Natural Hazard DOES impact community.** **Mitigation action is required and was provided.**	**Non-Natural Hazard (NHH) DOES impact community –** **Mitigation is elective but was provided.**
Natural Hazards:			
Dam Failure		#8	
Levee Failure	x		
Drought		#8	
Extreme Heat		#8	
Flood		#5, #6	
Hailstorm		#1, #2	
Landslide	x		
Severe Winter Storm		#1, #2, #4	
Sinkholes		#8	
Thunderstorm/Lightning		#1, #2, #4	
Tornado		#1, #2, #4	
Windstorm		#1, #2	
Non-Natural Hazards (NNH):			
Animal/Plant/Crop Disease			
Hazardous Materials			
Human Disease			
Infrastructure Failure			#3, #7
Mental Health			
Transportation Incident			

Mitigation Activities Already in Place

1. The entire County participates in emergency response exercises on a regular basis
2. City utilizes local ordinances, defaulting to the State of Iowa for all other ordinances

3. The city utilizes the Allamakee County Comprehensive Emergency Management Plan
4. All city Response Personnel follow appropriate protocol and guidance
5. Allamakee County contracts with the Northeast Iowa Response Group for HAZMAT response
6. City is a part of the Iowa Mutual Aid Compact (IMAC)
7. City maintains own fire station and ambulance service
8. City utilizes nine generators
9. The entire County utilizes Alert Iowa services
10. Starting in 2023, the city will utilize the Allamakee County Disaster Recovery Plan

Status and Progress on Previous Mitigation Actions (UPDATE)

1. Participate in an Allamakee County Emergency Management Agency (EMA) effort to create countywide Community Shelter Plan to identify storm, community or evacuation shelter locations, and to prioritize needs for shelters, including back-up power supplies.
   - Not Completed - County is currently working with cities on this.
2. Support Allamakee County Emergency Management Agency (EMA) initiative to form countywide volunteer group to serve residents with various needs during storm or emergency events.
   - Not Completed
3. Participate in an Allamakee County Emergency Management Dept. led effort to update the HAZMAT Response Plan for the county's Emergency Support Function (ESF) plan.
   - Not Completed – This is completed at county level by ESF 10 HAZMAT Plan.
4. Complete new sewer treatment plant by 2020
   - Completed
5. Continue to update/enhance the water distribution system.
   - Completed – But this is an ongoing need.
6. Create and implement a Continuity of Operations Plan (COOP) for the community
   - Not Completed
7. Maintain/improve emergency responder equipment and training.
   - Completed (ongoing)
8. Improved/enhanced storm sewer infrastructure sought, including replacing outdated storm sewer lines.
   - Completed – Some steps have been completed, but they area still working on replacing inground infrastructure and culverts.
9. Complete an Infiltration/Inflow study for the city's collection systems
   - Completed – And they are making progress on resultant actions.
10. Support stormwater management in the community as needed, including infiltration, retention basins, bioswales, rain gardens, and siltation removal projects.
    - Completed – Did a large wetlands project in city park area.
11. New/enhanced police station
    - Completed
12. Upgrade city's four emergency sirens.
    - Completed
13. Create and implement a Wellhead Protection Plan for rural areas, including an inventory of existing wells, analysis of potential pollution sources, etc. Work with DNR to identify management strategies for eliminating threats to local drinking water resources.

- Not Completed – Not considered a priority at this time.

14. Continue National Flood Insurance Program (NFIP) participation.
    - Completed (ongoing)
15. Improved/enhanced street infrastructure.
    - Completed (ongoing)

Mitigation Actions to Pursue Through MJ-7 Implementation

1. Participate in an Allamakee County Emergency Management Agency (EMA) effort to create countywide Community Shelter Plan to identify storm, community or evacuation shelter locations, and to prioritize needs for shelters, including back-up power supplies.
2. Support Allamakee County Emergency Management Agency (EMA) initiative to form countywide volunteer group to serve residents with various needs during storm or emergency events.
3. Continue to update/enhance the water distribution system.
4. Create and implement a Continuity of Operations Plan (COOP) for the community.
5. Improved/enhanced storm sewer infrastructure sought, including replacing outdated storm sewer lines and culvert work.
6. Continue National Flood Insurance Program (NFIP) participation.
7. Improved/enhanced street infrastructure.
8. Improve the public's awareness of lower priority hazard risks (i.e. sinkholes, dams, drought, extreme heat, etc.): Develop educational materials for the general public and decision makers, pursue educational projects, provide information on public and private volunteer initiatives.

Allamakee Community School District

Overview

The Allamakee Community School District (CSD) includes:

- East Elementary, located at 107 6th St. NW in Waukon, IA. East Elementary serves grades 3 – 5.
- West Elementary, located at 953 3rd Ave. NW in Waukon, IA. West Elementary serves grades PK – 2.
- Waukon Middle School, located at 1059 3rd Ave. NW in Waukon, IA. Waukon Middle School serves grades 6 – 8.
- Waukon High School, located at 1061 3rd Ave. NW in Waukon, IA. The Waukon High School serves grades 9 – 12.

No Allamakee Community School District schools are located in FEMA identified Special Flood Hazard Areas (SFHAs). FEMA Special Flood Hazard Areas (100 Yr) and Allamakee Community School District schools are shown in the Waukon Jurisdictional Description.

Changes in Development/Future Land Use

The Allamakee Community School District has no plans for future development at this time.

District Infrastructure and Resource Inventory

Public service providers for Allamakee Community School District are as follows:

- Water/Sewer: City of Waukon
- Electric: Alliant Energy
- Natural Gas: Black Hills Energy
- Internet: Mediacom
- Ambulance: Waukon Ambulance
- Hospital, Clinic: Veterans Memorial Hospital / Gundersen clinics

Allamakee Community School District schools have no tornado safe storm shelters or back-up generators at this time. There are security cameras in school facilities. The schools rely on City of Waukon warning sirens and school alarms during emergencies.

Fiscal and Technical Resources

Allamakee Community School District has no specific area of funding designated for hazard mitigation at this time. General school district fiscal tools or resources that could potentially be used to help fund mitigation activities include the following:

- Property taxes and income surtaxes
- Debt through bonding
- Fundraising
- Local Option Sales Tax (LOST) for infrastructure

Existing Plans and Policies

In addition to the planning and emergency response plans and policies available in each supporting community and the county, the school district maintains the following existing plans pertaining to hazard mitigation and emergency response:

- Guidelines to follow through emergency binder guides that are in each classroom.
- Emergency Response Plan

Key Hazard Issues

Key issues identified by the Allamakee Community School District in consideration of the countywide hazard prioritization and discussion of school hazard risks include:

- School safety - Active shooter, mental health
- Transportation safety - Have recently focused on safety improvements near some school intersections; areas around 76 & A52 as potential for signage and/or safety improvements.

Low Priority Natural Hazards

Some natural hazards do impact the community but weren't found to be key hazard issues. These hazards are either rare, or if they aren't rare, their impacts were found to be minimal. Mitigation actions were provided for the following hazards but are prioritized behind actions addressing key hazard issues. An explanation and list follows:[7]

- Storm and weather/climatic events:
    - Drought – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Extreme Heat – Has impacted the county as a whole but no records regarding specific or significant local impacts found. Most buildings have air conditioning at this point (about only 5% don't); however, AC is not available to students traveling on buses and this is occasionally a problem.
    - Hail – 12 local events in 20 years, but with no injuries and very low damages.
    - Severe Winter Storm – The county is susceptible to these, but significant local impacts were not noted by planning participants.
    - Thunderstorm and Lightning - The county is susceptible to these, but significant local impacts were not noted by planning participants.
- Dam Failure: Two low hazard dams exist just outside the north and south city limits.
- Sinkholes: Data on existing and potential sinkholes from the Iowa DNR illustrates that the city is surrounded by sinkholes, with a number having occurred inside city limits. Sinkholes and karst geology increase the risk of water quality impacts should surface contaminants make their way to ground water sources. However, there is significant depth to ground water sources in the area (900 – 1,100 ft), which may help alleviate such risk. Planning participants did not have specific examples, and didn't see this as a priority at this time.

[7] Storm record references are from the NOAA National Centers for Environmental Information Storm Events Database or the National Weather Service, unless otherwise noted.

Natural Hazards Not Impacting Community

Some natural hazards do not impact this jurisdiction based on its location, environment or existing conditions. No mitigation actions were provided for these natural hazards for this reason. An explanation and list follows:

- Levee failure - Not found in community.
- Landslides – The city is at one of the highest elevations in the county and doesn't have steep, landslide prone topography. There were no reports of landslides nearby.

Mitigation Activities

Required Mitigation (Natural Hazards) or Elective Mitigation (Non-Natural Hazards)

Hazard: Numbers match a proposed mitigation action found in: ***Mitigation Actions to Pursue Through MJ-7 Implementation***	**Natural Hazard DOESN'T impact community.** **No mitigation action required.**	**Natural Hazard DOES impact community.** **Mitigation action is required and was provided.**	**Non-Natural Hazard (NHH) DOES impact community –** **Mitigation is elective but was provided.**
Natural Hazards: (The school district sits within Waukon so would be included within the city's actions)			
Dam Failure		See Waukon's #8	
Levee Failure	x		
Drought		See Waukon's #8	
Extreme Heat		See Waukon's #8	
Flood		See Waukon's #5, #6	
Hailstorm		#5, #6	
Landslide	x		
Severe Winter Storm		#5, #6	
Sinkholes		See Waukon's #8	
Thunderstorm/Lightning		#5, #6	
Tornado		#5, #6	
Windstorm		#5, #6	
Non-Natural Hazards (NNH):			
Animal/Plant/Crop Disease			
Hazardous Materials			
Human Disease			
Infrastructure Failure			#1, #2, #3, #7
Mental Health			#4
Transportation Incident			

Mitigation Activities Already in Place

1. Weather radio (all schools)
2. Emergency warning systems/sirens (all schools)
3. Fire suppression system in kitchen (East & West Elementary)
4. Fire suppression and warning systems (Middle School & High School)
5. Emergency binders and response kits in each classroom (all but Middle School)
6. Regular evacuation and tornado drills (all schools)

7. Staff training on school safety (all schools)
8. Regular lock-down (High School)
9. Emergency buckets in each room (Middle School)

Status and Progress on Previous Mitigation Actions

1. Update electrical service in the Middle school and West Elementary
    a. Completed, remove
2. Incorporate hook ups for generators at each school location (or a minimum of two school locations) and rent generators if the need arises. Seek funding opportunities in the form of grants for purchasing permanent generators.
    a. Completed/Not completed – Incorporated hook ups, but still need to get generators
3. Update and improve emergency response plans for active shooter and other man-made disasters, natural disasters, and technological disasters. Work with local law enforcement and emergency management agencies in development of plan. Update on an annual basis and conduct an annual emergency operations drill based on the emergency operations plan.
    a. Completed – Emergency Response Plan created but will continue trainings & drills around it. And will update plan in future years.
4. Review of current facility protections to improve and enhance infrastructure security
    a. Completed/Not completed – Restricted access at buildings, recently elementary, and are currently doing a vulnerability assessment. Keep as ongoing effort.
5. New alert notification systems for students, staff and emergency responders for use during an emergency situation
    a. Completed/Not completed – Internal completed, external notification to be worked on

Mitigation Actions to Pursue Through MJ-7 Implementation

1. Purchase and installation of two-way radios and other communication resources in each school building allowing emergency communication with local and state law enforcement and other responding agencies.
2. Implement alert notification systems enhancing communication with school staff, facilities, and vehicles from outside school agencies.
3. Enhance and improve school infrastructure security in each school building.
4. Conduct training and exercises related to school safety with local responding agencies and partners.
5. Participation in the county and municipal shelter planning.
6. Participation in the county disaster response planning to include response and recovery activities.
7. Installation of emergency power sources to include generators, transfer switches and other alternate power sources to school facilities to enhance community sheltering capabilities during periods of power outages and other disaster and emergency situations.

Eastern Allamakee Community School District

Overview

The Eastern Allamakee Community School District (CSD) includes:

- New Albin Elementary, located at 401 Locust SE in New Albin, IA. New Albin Elementary serves grades PK – 6.
- Lansing Middle School/Kee High School, located at 569 Center St. in Lansing, IA. Lansing Middle School/Kee High School serves grades 7 – 12.

No Eastern Allamakee Community School District schools are located in FEMA identified Special Flood Hazard Areas (SFHAs). FEMA DFIRM floodplains and Eastern Allamakee Community School District schools are shown in the Lansing and New Albin Jurisdictional Descriptions.

Changes in Development/Future Land Use

The Eastern Allamakee Community School District has no plans for future development at this time.

District Infrastructure and Resource Inventory

Public service providers for Eastern Allamakee Community School District are as follows:

- Water/Sewer: City of New Albin, City of Lansing
- Electric: Alliant Energy (Lansing and New Albin locations)
- LP Gas: AgVantage FS, Fauser Oil, New Horizon, Amerigas (Lansing location); Hovden Oil (New Albin location)
- Internet: Mediacom (Lansing & New Albin locations), Qwest (Lansing location), Rconnect (Lansing location), Ace Communications (New Albin location)
- Land-Line Telephone: Qwest (Lansing location);
- Ambulance: Lansing First Responders/EMS; New Albin First Responders
- Hospital, Clinic: Gundersen Lutheran Clinic (Lansing)
- Other School Infrastructure Includes:

Eastern Allamakee Community School District schools have no tornado safe storm shelters or back-up generators at this time. The schools rely on City of Lansing or City of New Albin warning sirens and school alarms during emergencies.

Fiscal and Technical Resources

General school district fiscal tools or resources that could potentially be used to help fund mitigation activities include the following:

- Property taxes and income surtaxes
- Debt through bonding
- Grants
- Fundraising
- Local Option Sales Tax (LOST) for infrastructure

Existing Plans and Policies

Planning and emergency response plans and policies available in each supporting community and the county.

- Emergency Response Plan

Key Hazard Issues

Key issues for the Eastern Allamakee Community School District in consideration of the countywide hazard risk prioritization and discussion of local hazards include:

- Wind/Tornadoes/Severe storms – Especially needed protocol/practices related to transporting students during sever weather events
- School safety, mental health
- Extreme heat – Most buildings have air conditioning at this point, however AC is not available to students traveling on buses and that is occasionally a problem.

Low Priority Natural Hazards

Some natural hazards do impact the communities Eastern Allamakee Community School District facilities reside in, but they weren't found to be key hazard issues. These hazards are either rare, or if they aren't rare, their impacts were found to be minimal. Refer to the Lansing Low Priority Natural Hazards and New Albin Low Priority Natural Hazards.

Natural Hazards Not Impacting Community

Some natural hazards do not impact the communities Eastern Allamakee Community School District facilities reside in based on location, environment or existing conditions. No mitigation actions were provided for these natural hazards for this reason. Refer to Lansing's Natural Hazards Not Impacting Community and New Albin's Natural Hazards Not Impacting Community sections.

Mitigation Activities

Required Mitigation (Natural Hazards) or Elective Mitigation (Non-Natural Hazards)

Hazard: Numbers match a proposed mitigation action found in: ***Mitigation Actions to Pursue Through MJ-7 Implementation***	**Natural Hazard DOESN'T impact community.** **No mitigation action required.**	**Natural Hazard DOES impact community.** **Mitigation action is required and was provided.**	**Non-Natural Hazard (NHH) DOES impact community –** **Mitigation is elective but was provided.**
Natural Hazards: (The school district sits within Lansing & New Albin, so would be included within those cities actions)			
Dam/Levee Failure	x		
Drought		See Lansing's #4 See New Albin's #10	
Extreme Heat		See Lansing's #4 See New Albin's #10	
Flood		See Lansing's #5, #7 See New Albin's #7, #8	

Hailstorm		#5, #6	
Landslide		See Lansing's #4 See New Albin's #10	
Severe Winter Storm		#5, #6	
Sinkholes	x		
Thunderstorm/Lightning		#5, #6	
Tornado		#5, #6	
Windstorm		#5, #6	
Non-Natural Hazards (NNH):			
Animal/Plant/Crop Disease			
Hazardous Materials			
Human Disease			
Infrastructure Failure			#1, #2, #3, #7
Mental Health			#4
Transportation Incident			

Mitigation Activities Already in Place

1. Emergency kits in classrooms (all schools)
2. Fire and tornado drills (all schools)
3. Weather radio (all schools)
4. Fire extinguishers (all schools)

Status and Progress on Previous Mitigation Actions

1. Back-up power supply or equipment for facilities:
    a. Not completed
2. Update and improve emergency response plans for active shooter and other man-made disasters, natural disasters, and technological disasters. Work with local law enforcement and emergency management agencies in development of plan. Update on an annual basis and conduct an annual emergency operations drill based on the emergency operations plan.
    a. Completed – Emergency Response Plan created but will continue trainings & drills around it. And will update plan in future years.
3. Review of current facility protections to improve and enhance infrastructure security
    a. Ongoing, keep
4. New alert notification systems for students, staff and emergency responders for use during an emergency situation
    a. Completed/Not completed – Internal completed, external notification to be worked on

Mitigation Actions to Pursue Through MJ-7 Implementation

1. Purchase and installation of two-way radios and other communication resources in each school building allowing emergency communication with local and state law enforcement and other responding agencies.
2. Implement alert notification systems enhancing communication with school staff, facilities, and vehicles from outside school agencies.
3. Enhance and improve school infrastructure security in each school building.
4. Conduct training and exercises related to school safety with local responding agencies and partners.
5. Participation in the county and municipal shelter planning.

6. Participation in the county disaster response planning to include response and recovery activities.
7. Installation of emergency power sources to include generators, transfer switches and other alternate power sources to school facilities to enhance community sheltering capabilities during periods of power outages and other disaster and emergency situations.

Postville Community School District

Overview

The Postville Community School District (CSD) includes:

- Cora B. Darling Elementary, located at 314 W. Post St. in Postville, IA. Cora B. Darling Elementary serves grades PK – 6.
- Postville Middle School/John R. Mott High School, located at 314 Post St. in Postville, IA. Postville Middle School/John R. Mott High School serves grades 7 – 12.

No Postville Community School District schools are located in FEMA identified Special Flood Hazard Areas (SFHAs). FEMA DFIRM floodplains and Postville Community School District schools are shown in the Postville Jurisdictional Description.

Changes in Development/Future Land Use

The Postville Community School District has no plans for future development at this time.

District Infrastructure and Resource Inventory

Public service providers for Postville Community School District are as follows:

- Water/Sewer: City of Postville
- Electric: Black Hills Energy; Alliant Energy; Allamakee- Clayton Rural Electric Cooperative (REC)
- Natural Gas: Alliance Pipeline
- LP Gas: Black Hills Energy; Alliant Energy
- Internet: NEIT
- Land-Line Telephone: NEIT
- Ambulance: Postville First Responders/EMS
- Hospital, Clinic: Gunderson Lutheran Clinic; Family Medical Clinic
- Other School Infrastructure Includes: football field, all-weather running track, 2 ball diamonds, playground equipment

Postville Community School District schools have no tornado safe storm shelters or back-up generators at this time. The schools rely on City of Postville warning sirens and school alarms during emergencies.

Fiscal and Technical Resources

General school district fiscal tools or resources that could potentially be used to help fund mitigation activities include the following:

- Property taxes and income surtaxes
- Debt through bonding
- Grants
- Fundraising
- Local Option Sales Tax (LOST) for infrastructure

Existing Plans and Policies

In addition to the planning and emergency response plans and policies available in each supporting community and the county, the school district maintains handbooks for each school section. Handbooks

include prevention and response information for potential emergencies such as tornado, fire or weapons. The school also has a written crisis policy. All visitors to the school campus are required to check in at the main office to obtain permission to be in the building. An emergency response plan has been completed.

Key Hazard Issues

Key issues for the Postville Community School District in consideration of the countywide hazard risk prioritization and discussion of local hazards include:

- Hazardous materials: There was a gas leak recently very near the school. School was out and the leak was contained, but this is a risk to be aware of. The local fire department would assist in the case of an event.
- School safety, mental health

Low Priority Natural Hazards

Some natural hazards impact the community but weren't found to be key hazard issues. These are either rare, or if they aren't rare, their impacts were found to be minimal. Mitigation actions were provided for the following hazards but are prioritized behind actions addressing key hazard issues:

- Storm and weather/climatic events:[8]
    - Drought – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Extreme Heat – Has impacted the county as a whole but no records regarding specific or significant local impacts found.
    - Hail – Only two local events in 20 years with no injuries or damages.
    - Severe Winter Storm – The county is susceptible to these, but significant local impacts were not noted by planning participants.
    - Thunderstorm and Lightning - The county is susceptible to these, but significant local impacts were not noted by planning participants.
- Landslides – The city is located in an area considered 'moderate susceptibility – low incidence' for landslides. There were no local reports of these occurring.

Natural Hazards Not Impacting Community

Some natural hazards do not impact this jurisdiction based on its location, environment or existing conditions. No mitigation actions were provided for these natural hazards for this reason::

- Dam/levee failure - Not found in community.
- Sinkholes: The city sits in an area of karst geology, but there are no known sinkholes in city limits (Iowa Department of Natural Resources, 2022).

[8] Storm record references are from the NOAA National Centers for Environmental Information Storm Events Database or the National Weather Service, unless otherwise noted.

Mitigation Activities

Required Mitigation (Natural Hazards) or Elective Mitigation (Non-Natural Hazards)

Hazard: Numbers match a proposed mitigation action found in: ***Mitigation Actions to Pursue Through MJ-7 Implementation***	**Natural Hazard DOESN'T impact community.** **No mitigation action required.**	**Natural Hazard DOES impact community.** **Mitigation action is required and was provided.**	**Non-Natural Hazard (NHH) DOES impact community –** **Mitigation is elective but was provided.**
Natural Hazards: (The school district sits within Postville so would be included within the city's actions)			
Dam/Levee Failure	x		
Drought		Refer to Postville's #9	
Extreme Heat		Refer to Postville's #9	
Flood		Refer to Postville's #6	
Hailstorm		#5, #6	
Landslide		Refer to Postville's #9	
Severe Winter Storm		#5, #6	
Sinkholes	x		
Thunderstorm/Lightning		#5, #6	
Tornado		#5, #6	
Windstorm		#5, #6	
Non-Natural Hazards (NNH):			
Animal/Plant/Crop Disease			
Hazardous Materials			
Human Disease			
Infrastructure Failure			#1, #2, #3, #7
Mental Health			#4
Transportation Incident			

Mitigation Activities Already in Place

1. Emergency kits in staff room (all schools)
2. Fire and tornado drills (all schools)
3. Weather radios (but not able to get reception) (all schools)
4. Fire extinguishers (all schools)

Status and Progress on Previous Mitigation Actions

1. Tornado safe room
    a. Not completed, remove - No longer a priority
2. Back-up power supply or equipment for facilities
    a. Not completed, keep
3. Update and improve emergency response plans for active shooter and other man-made disasters, natural disasters, and technological disasters. Work with local law enforcement and emergency management agencies in development of plan. Update on an annual basis and conduct an annual emergency operations drill based on the emergency operations plan.

    a. Completed – Emergency Response Plan created but will continue trainings & drills around it. And will update plan in future years.
4. Review of current facility protections to improve and enhance infrastructure security
    a. Ongoing, keep
5. New alert notification systems for students, staff and emergency responders for use during an emergency situation
    a. Completed/Not completed – Internal completed, external notification to be worked on

Mitigation Actions to Pursue Through MJ-7 Implementation

1. Purchase and installation of two-way radios and other communication resources in each school building allowing emergency communication with local and state law enforcement and other responding agencies.
2. Implement alert notification systems enhancing communication with school staff, facilities, and vehicles from outside school agencies.
3. Enhance and improve school infrastructure security in each school building.
4. Conduct training and exercises related to school safety with local responding agencies and partners.
5. Participation in the county and municipal shelter planning.
6. Participation in the county disaster response planning to include response and recovery activities.
7. Installation of emergency power sources to include generators, transfer switches and other alternate power sources to school facilities to enhance community sheltering capabilities during periods of power outages and other disaster and emergency situations.

Chapter 3- Risk Assessment

The risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, and infrastructure to these hazards. The goal of the risk assessment is to estimate the potential loss in the county, including the loss of life, personal injury, property damage, and economic loss from a natural hazard event. The risk assessment process allows the community to better understand their potential risk from natural hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

The risk assessment for the County followed the methodology described in FEMA publication 386-2, Understanding Your Risks: Identifying Hazards and Estimating Losses (2001), which includes a four-step process:

1. Identify Hazards
2. Profile Hazards
3. Inventory Assets
4. Estimate Losses

This section is divided into four parts:

- **Hazard Identification** – Identifies the types of natural hazards that threaten the planning area and describes why some hazards have been omitted from further consideration.
- **Hazard Profiles** – Describes the location and extent of each natural hazard that can affect the planning area and describes previous occurrences of hazard events and the probability of future occurrences.
- **Vulnerability Assessment** – Assesses the County's vulnerability to hazards, considering the impact of each identified hazard on the communities' critical facilities and other identified assets. This is found within each hazard profile.
- **Repetitive Loss** – Addresses the NFIP insured structures within each jurisdiction that have been repetitively damaged by floods.

Multi-Jurisdictional Risk Assessment

For this county-wide, multi-jurisdictional plan, the risk assessment assesses the entire geographic area of the planning area's risks. Should the risks deviate for a participating jurisdiction; the location-specific information will be included in each identified hazard's profile, and are also addressed in Jurisdictional Descriptions and Capabilities. The participating jurisdictions are all located within Allamakee County; Allamakee County is not a large county geographically (639 square miles) and is fairly uniform in terms of climate. Accordingly, overall hazards and vulnerability do not vary greatly across the planning area for most hazards. Weather-related hazards, such as drought, extreme heat, hailstorm, lightning, severe winter storm, tornado, and windstorm affect the entire planning area. Hazards that do vary across the planning area include flooding, dam or levee failure, landslides, and potential for hazardous materials or transportation incidents.

Hazard Identification

Requirement §201.6(c)(2)(i):

[The risk assessment shall include a] description of the type…of all natural hazards that can affect the jurisdictions…

Selection Process

The county-wide Hazard Mitigation Planning Committee (HMPC) and other meeting attendees reviewed data and discussed the impacts of the hazards listed alphabetically below as suggested by Iowa Homeland Security and Emergency Management Division (HSEMD), hazards included in the statewide plan, and FEMA.

- Animal/Plant/Crop Disease
- Avalanche
- Coastal Erosion
- Coastal Storm
- Dam Failures
- Debris Flow
- Drought
- Earthquakes
- Expansive Soils
- Extreme Heat
- Fires
- Flash Floods
- Grass or Wild Land Fire
- Hailstorms
- Hazardous Material Events
- Human Disease
- Hurricane/Tropical Cyclones
- Infrastructure Failure
- Land Subsidence
- Landslides
- Levee Failure
- Nuclear/Radiological Accidents
- River Flooding
- Severe Winter Storms
- Sinkholes
- Terrorism
- Thunderstorms and Lightning
- Tornadoes
- Transportation Incident
- Tsunami
- Volcano
- Windstorms

Data on the past occurrences, impacts and future probability of these hazards in the planning area was collected from several sources including the following:

- Iowa Hazard Mitigation Plan, September 2018
- Information on past extreme weather and climate events from the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI) Storm Events Database
- Federal Disaster Declarations from the Federal Emergency Management Agency (FEMA)
- Federal Emergency Management Agency (FEMA) National Risk Index
- United States Department of Agriculture (USDA), Farm Service Agency (FSA), Disaster Declarations
- United States Department of Agriculture (USDA), Risk Management Agency, Cause of Loss Historical Data Files
- Indiana University, Crisis Technologies Innovation Lab, APRED Analysis Platform for Risk, Resilience and Expenditure in Disasters
- Iowa Homeland Security & Emergency Mgt., Hazard Mitigation Viewer
- Various websites, articles and publications (sources are referenced where data is cited)
- County Assessor
- County GIS data (base layers and assessor's data)
- Written descriptions of assets and risks provided by the Participating Jurisdictions
- Existing plans and reports
- Correspondence with HMPC members and other stakeholders

The HMPC eliminated certain hazards from further profiling due to no known history of occurrence in the planning area or their impacts were not considered significant in relation to other hazards. Table 18 lists alphabetically the hazards not profiled in the plan and provides the explanation for their omission.

Table 18: Hazards Considered, But Not Profiled in the Plan

Hazard	Explanation for Omission
Avalanche	There are no mountains in the planning area
Coastal Erosion	Planning area is not near coastal areas
Coastal Storm/Tsunami	Planning area is not near coastal areas
Debris Flow	Will be covered through river flooding
Earthquakes	Few recent or severe occurrences, and low chance of future impacts
Expansive Soils	There are no known expansive soils in the planning area and no known historical occurrences of this hazard
Fires	Will be covered through infrastructure failure
Grass & Wildfires	Few recent or sever occurrences, and low chance of future impacts
Hurricane/Tropical Cyclones	Planning area is not near coastal areas
Land Subsidence	There are no known subsurface void spaces in the planning area and no known historical occurrences of this hazard
Volcano	There are no volcanic mountains in the planning area
Nuclear/Radiological Accidents	Duane Arnold Energy Center (DAEC) located near Palo in Linn County was the nearest nuclear power plant, more than 50 miles away, but is now closed
Terrorism	Few identified incidents in the county

After review of the existing data on the remaining hazards, the HMPC considered and agreed upon the hazards to be included in the county list of identified hazards. The following 19 hazards were identified by the HMPC as significant to the planning area: 13 are natural hazards held to FEMA review standards (including providing a mitigation action for each jurisdiction), and six are non-natural hazards included for the community's benefit and which are not held to FEMAs review standards (marked as NNH below, and as "Non-Natural Hazard" in individual hazard profiles & Jurisdictional Descriptions and Capabilities).

- Animal/Plant/Crop Disease (NNH)
- Dam Failures
- Drought
- Extreme Heat
- Flash Floods
- Hailstorms
- Hazardous Material Events (NNH)
- Human Disease (NNH)
- Infrastructure Failure (NNH)
- Landslides
- Levee Failure
- Mental Health (NNH)
- River Flooding
- Severe Winter Storms
- Sinkholes
- Thunderstorms and Lightning
- Tornadoes
- Transportation Incident (NNH)
- Windstorms

The State of Iowa Hazard Mitigation Plan covers all natural and human caused/combination hazards identified for the State of Iowa. Accordingly, the State of Iowa hazard information, details, and risk assessment prevails for hazards not discussed for the County. The committee also decided to add a new non-natural hazard to the plan that was neither included in the state plan nor in the previous plan update, for the benefit of the communities. In discussions regarding whether to include terrorism as a hazard it was agreed that very few incidents of terrorism had occurred in the county, while a potentially related risk, mental health crisis incidents, had a well recorded history and growing impact in the county. In gathering initial data on mental health crisis, it quickly became apparent that both financial and human costs were prevalent and needed to be addressed in hazard mitigation planning.

Disaster Declaration History

One method used to identify hazards was to examine events that triggered federal and/or state disaster declarations. Federal and/or state declarations may be granted when the severity and magnitude of an event surpasses the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. Should the disaster be so severe that both the local and state governments' capacities are exceeded; a federal emergency or disaster declaration may be issued, allowing for the provision of federal assistance for affected areas.

The federal government may issue a disaster declaration through FEMA, the U.S. Department of Agriculture (USDA), and/or the Small Business Administration (SBA). FEMA also issues emergency declarations, which are more limited in scope and do not include the long-term federal recovery programs of major disaster declarations. Determinations for declaration type are based on the scale and type of damages, and institutions or industrial sectors affected. Table 19 reflects FEMA presidentially declared disasters received by multiple counties in Iowa including Allamakee County, and the Participating Jurisdictions from 2002 to 2021.

Table 19: Presidential Disaster Declarations Including Allamakee County, 2002 to 2021

Declaration Number	Declaration Date	Disaster Description	Counties Included
DR-4483-IA	3/23/20	Iowa Covid-19 Pandemic	All
DR-4421-IA	3/23/2019	Severe Storms and Flooding	Many, including Allamakee County
DR-4334	8/27/17	Severe Storms, Tornadoes, Straight Line Winds, Flooding	**Allamakee**, Bremer, Buchanan, Chickasaw, Clayton, Dubuque, Fayette, Mitchell, Winneshiek
DR-4289	11/1/2016	Severe Storms, Flooding	More than 10, including Allamakee County
DR-4281	9/30/2016	Severe Storms, Straight Line Winds, Flooding	**Allamakee**, Chickasaw, Clayton, Fayette, Floyd, Howard, Mitchell, Winneshiek
DR-4234	7/31/15	Severe Storms, Tornadoes, Straight Line Winds, Flooding	More than 10, including Allamakee County
DR-4184	7/24/2014	Severe Storms, Tornadoes, Straight Line Winds, Flooding	More than 10, including Allamakee County
DR-4135	7/31/2013	Severe Storms, Tornadoes and Flooding	**Allamakee**, Audubon, Benton, Buchanan, Butler, Cedar, Clayton, Delaware, Grundy, Howard, Jones, Winneshiek
DR-1763-IA	5/27/08	Severe Storms, Tornadoes and Flooding	Many, including Allamakee County
DR-1727-IA	9/14/07	Severe Storms and Flooding	More than 10, including Allamakee County
EM-3239-IA	9/10/05	Hurricane Katrina Evacuation	Many, including Allamakee County
DR-1518-IA	5/25/04	Severe Storms, Tornadoes, and Flooding	Many, including Allamakee County
DR-1420-IA	6/19/02	Severe Storms and Flooding	More than 10, including Allamakee County

Source: (Crisis Technologies Innovation Lab, 2022)

The State of Iowa can also declare disaster for counties, which is reflected in Table 20 from 2013 to 2022.

Table 20: State of Iowa Governor Disaster Declarations Including Allamakee County, 2013 to 2022

Declaration Number	Declaration Date	Disaster Description	Counties Included
2022-24	07/25/22	Severe weather	**Allamakee**, Clayton, Harrison, Shelby, and Winneshiek counties
2021-17	08/30/21	Severe weather	**Allamakee**, Buchanan, Cerro Gordo, Chickasaw, Clayton, Emmet, Floyd, Howard, Lyon, Palo Alto, and Winneshiek counties
2021-28	12/16/21	Severe weather	Many counties, including Allamakee County
03/09/2020 – 02/03/22	2020-01 – 2022-03	State of Public Health Disaster Emergency for COVID-19 Virus	All
2018-01	06/11/18	Severe Storm System	**Allamakee**, Bremer, Chickasaw, Cerro Gordo, Floyd, Howard, and Winneshiek (State resources and Individual Assistance)
2017-06	7/20/17	Severe Storms, Flash Flooding, Tornadoes	**Allamakee**, Clayton, Fayette, Winneshiek (State Resources and Individual Assistance)
2016-7/12	9/29/16	Severe Storms, Flooding, Tornadoes	Many counties, including Allamakee County
2016-04	8/25/16	Severe Storms, Flash Flooding	**Allamakee**, Clayton, Fayette, Howard, Winneshiek (State Resources and Individual Assistance)
2015-09	6/30/2015	Severe Storms, Damaging Winds, Straight Line Winds, Flash Flooding, Flooding, Tornadoes, Hail	**Allamakee**, Butler, Clayton, Des Moines, Howard, Lee, Mitchell, Winneshiek (State Resources); Adair, Appanoose, Dallas, Guthrie, Henry, Lucas, Marion, Polk, Wapello, Warren (State Resources and Individual Assistance)
2014-07	6/25/14	Severe Storms, Straight Line Winds, Flash Flooding, Flooding, Tornadoes	**Allamakee**, Buchanan, Butler, Chickasaw, Emmet, Fayette, Humboldt, Winnebago, Winneshiek (State Resources); Buena Vista, Cherokee, Franklin, Lyon, Palo Alto, Plymouth, Sioux (Individual Assistance)
2013-15	6/24/2013	Severe Storms, Heavy Rains, Thunderstorms, Flash Flooding, Flooding	**Allamakee** (State Resources); **Allamakee**, Clayton (Individual Assistance)

Source: (Iowa Homeland Security and Emergency Management, 2023)

A USDA disaster declaration certifies that the affected county has suffered at least a 30 percent loss in one or more crop or livestock areas and provides affected producers with access to low-interest loans and other programs to help mitigate disaster impacts. In accordance with the Consolidated Farm and Rural Development Act, counties neighboring those receiving disaster declarations are named as contiguous disaster counties and are eligible for the same assistance.

Table 21 reflects U.S. Department of Agriculture disaster declarations and their related causes for Allamakee County, which includes the Participating Jurisdictions, from 2012 to 2021.

Table 21: USDA Declared Disasters, 2012 to 2021

Source: (United States Department of Agriculture, 2022)

USDA Disaster No.	Start Date	Causes:							
		Drought	Flash Flooding	Excessive Rain, Moisture, Humidity	High Winds	Wildfire	Excessive Heat (high temp) Incl. Low Humidity	Frost/ Freezes	Insects
S3264	4/6/2012							x	
S3305	7/17/2012	x			x	x	x		x
S3389 (Primary)	7/17/2012	x			x	x	x		x
S3390	7/17/2012	x			x	x	x		x
S3392	7/17/2012	x			x	x	x		x
S3310	7/24/2012	x			x	x	x		x
S3605 (Primary)	4/1/2013		x	x					
S3553	1/1/2013			x				x	
S5037	6/15/2021	x							
Total:		6	1	2	5	5	5	2	5

Hazard Profiles-

Requirement §201.6(c)(2)(i):

[The risk assessment shall include a] description of the…location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Requirement §201.6(c)(2)(ii):

[The risk assessment shall include a] description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction; and address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods.

Each hazard that can affect the jurisdiction is profiled individually in this section. The level of information presented in the profiles varies by hazard based on the information available. This plan update has incorporated new information to provide for better evaluation and prioritization of the hazards that affect the county. Detailed profiles for each of the identified hazards include information on the following characteristics of the hazard:

Hazard Description

This section consists of a general description of the hazard and the types of impacts it may have on a community.

Previous Occurrences

This section includes information on historic incidents and their impacts to the affected area.

Location, Probability and Extent

The geographic extent or location of the hazard in the Planning Area; the strength or magnitude of the hazard (described in terms of a scientific scale and/or other hazard factors, such as duration and speed of onset); and information on future probability if available. When applicable, a specific jurisdiction's risks are noted if it varies from the risks facing the entire Planning Area. Where available, maps are utilized to indicate the areas of the Planning Area that are vulnerable to the subject hazard.

Summary of Vulnerability and Potential Losses

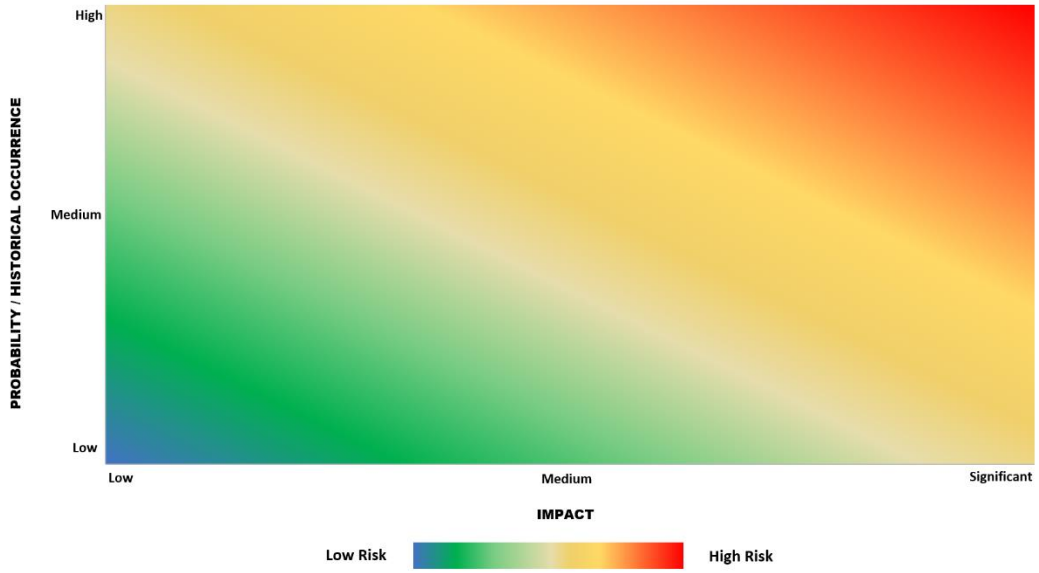
The vulnerability to each hazard identified and profiled in the plan. Where available the vulnerability summary includes evaluation of vulnerable buildings, infrastructure and critical facilities in hazard-prone areas, including a review of previous and ongoing losses, damages, human impacts, etc.

Hazard Summary

In the 2018 plan, a mathematical methodology was used to prioritize the hazards. This prioritization was based on a Calculated Priority Risk Index (CPRI) that considered five elements of risk: probability, magnitude, warning time, duration, and spatial extent. This plan update ranks risk according to methodology used in the 2018 Iowa Hazard Mitigation Plan, which rates hazards in terms of risk in relation to each other. To do this a **risk grid methodology** was used to determine and illustrate risk of each of the hazards.

According to FEMA's 2015 State Mitigation Plan Review Guide risk is defined as "the potential for damage or loss created by the interaction of natural hazards with assets, such as buildings,

infrastructure, or natural and cultural resources." Many people would describe the interaction of a single hazard event with assets on the ground, such as buildings or people, as the impact of the hazard event. Thus one axis of the risk grid was labeled "impact." The potential of multiple hazard events interacting with assets can then be illustrated on a grid where the x axis represents the impact of the hazard, and the y axis represents the probability of the particular hazard. Plotting a hazard at a point in relation to these two axes represents the risk, or the potential for damage or loss created by the interaction of the hazard with assets. Below is an example of the risk grid used to map relative hazard risk according to impact and probability:



The risk grid is colored as a heat map, with the warmer colors (orange and red) on the top right to represent highest risk, and the coolest colors (blue and green) on the bottom left to represent lowest risk. When a hazard's risk was not easily illustrated well by a single point on the grid, the location of the trend curve for the hazard was considered and a point within the heat map was then derived from that.

To complete risk grouping, the Hazard Mitigation Planning Committee (HMPC) broke apart into groups to discuss hazard profile information and complete the risk grid methodology. Groups were asked to list hazards in the red and orange areas of their risk grid as risk Group 1, which are those that pose the highest risk. Mitigation actions that address these hazards will be given more weight and priority. Hazards located in the yellow zone were listed as Group 2, and hazards plotted in the low-risk blue-green zone are in Group 3. Mitigation actions that address only a Group 3 hazard will have the least weight and priority. The entire Hazard Mitigation Planning Committee then came together to review the risk grid results and arrive at a final list of hazards to be identified under risk Group 1 (High Risk), Group 2 (Medium Risk) or Group 3 (Low Risk). Figure 33 below illustrates the risk group results:

Figure 33: Risk Prioritization

- Flash Flood
- River Flood
- Infrastructure Failure
- Transportation Incident
- Hazardous Materials
- Drought
- Tornadoes
- Human Disease
- Animal/Plant/Crop Disease
- Windstorms
- Hailstorm
- Winter Storm
- Mental Health
- Dam / Levee Failure
- Landslides
- Thunderstorm / Lightning
- Extreme Heat
- Sinkholes

Community Assets

This section describes (or provides a plan reference to) the assets at risk in the Participating Jurisdictions. This purpose being provision of an overall hazard vulnerability for buildings, infrastructure, and critical facilities located in hazard areas in the county.

Overall building and valuation counts by jurisdiction can be found on Table 25: Structures and Valuations by Community.

A map of key community facilities and critical facilities for each jurisdiction can be found by community in the Jurisdictional Descriptions and Capabilities section.

A critical facility is defined as one that provides essential public safety or mitigation functions during response or recovery operations. Table 22 offers examples of critical facilities separated by categories of essential, high loss potential and infrastructure. Critical facilities by participating geographic jurisdiction are inventoried in Table 23, Table 24 illustrates railroad & utility valuations, and Table 26 provides information on school district buildings throughout the county.

Table 22: Critical Facility Examples by Type

Essential Facilities	High Potential Loss Facilities	Transportation and Lifelines
Police Stations	Dams and levees	Highways, bridges and tunnels
Fire Stations	Military installations	Railroads and facilities
Emergency Operations Centers	Hazardous material sites	Airports
Hospitals and other medical facilities	Elder Care Facilities/Long Term Care Facilities	Natural gas pipelines and distribution stations
	Schools	Water and wastewater treatment facilities
	Storm Shelters	Petroleum pipelines & distribution stations
	Child care centers	Communications facilities
	Main government buildings	Power plants, transmission lines and distribution stations

Table 23: Critical Facilities by Jurisdiction

Facility	Harpers Ferry	Lansing	New Albin	Postville	Waterville	Waukon	Uninc. Areas
Police Stations	0	1	1	1	0	1	0
Fire Stations	1	1	1	1	1	1	0
Emergency Operations Centers	0	0	0	0	0	0	1
Hospitals/medical facilities	0	1	0	2	0	1	0
Dams and levees	0	0	1	0	0	0	Upper Iowa River levees
Military installations	0	0	0	0	0	0	0
Tier II Chemical Storage - Hazardous material sites	1	8	4	5	2	11	1
Elder Care Facilities/ Long Term Care Facilities	0	2 (same site)	0	0	0	4	0
Schools[9]	0	3 (2 same site)	1	6	0	7	0
Storm/Community Shelters	1	2	1	1	1	1	0
Child care centers	0	1	2	2	0	3	0
Main government buildings	1	1	1	1	1	1	0
Railroad/loading facilities	1/0	1	1	1	0/0	0/0	2
Airports/Heliports	0/0	0	0	0	0/0	1/1	0
Natural gas pipelines and distribution stations	0	0	0	1	0	1/0	1
Water Systems/wastewater treatment facilities	0/1	1/1	1/1	1/1	0/1	1/1	0
Petroleum pipelines and distribution stations	0	0	0	0	0	0	0
Communications facilities[10]	2	5	2	1	2	11	0
Power plants / distribution	0/1	0	0	0	0	0/0	0

Table 24: Railroad and Utility Valuations, FY 2023 / 2024 Tax Levies

Jurisdiction:	Railroad Valuations	Utilities without Gas & Electric	Gas & Electric Utility Valuation
City of Harpers Ferry	$256,813 (Urban)	$0	$85,234 (Urban)
City of Lansing	$445,647 (Urban)	$0	$406,370 (Urban)
City of New Albin	$143,514 (Urban)	$0	$204,942 (Urban)
City of Postville	$380,184 (Urban)	$0	$717,341 (Urban)
City of Waterville	$0	$0	$35,658 (Urban)
City of Waukon	$0	$0	$1,125,894 (Urban)
Unincorporated Areas	$8,885,233 (Rural)	$7,023,659 (Rural)	$51,156,965 (Rural)
Total:	$10,111,391	$7,023,659	$53,732,404

Source: (Iowa Department of Management, FY 2023 / 2024)

[9] Includes public, alternative, and private schools

[10] Includes all FCC registered antenna structures

Table 25: Structures and Valuations by Community

Structure Type	Dwelling Count	Building Valuations	Structure Type	Dwelling Count	Building Valuations
City of Harpers Ferry – Population 262			**City of Lansing – Population 968**		
Residential	398	50,397,865	Residential	457	53,537,726
R3+	16	943,816	R3+	13	1,384,119
Commercial	12	1,076,919	Commercial	82	6,383,455
Industrial	0	0	Industrial	2	790,900
Agricultural	Unknown	15,700	Agricultural	Unknown	22,500
Religious/NonProfit		171,100	Religious/NonProfit		1,820,700
Government/Schools		1,216,500	Government/Schools		2,307,900
City of New Albin – Population 432			**City of Postville – Population 2,503**		
Residential	206	15,614,362	Residential	586	35,711,045
R3+	3	331,700	R3+	11	2,064,535
Commercial	43	2,286,638	Commercial	102	10,605,620
Industrial	2	204,400	Industrial	8	11,168,900
Agricultural	Unknown		Agricultural	Unknown	2,200
Religious/NonProfit		2,544,300	Religious/NonProfit		3,570,300
Government/Schools		2,082,400	Government/Schools		3,946,200
City of Waterville – Population 109			**City of Waukon – Population 3,827**		
Residential	61	2,310,360	Residential	1450	155,700,473
R3+	1	20,100	R3+	22	4,532,234
Commercial	9	163,840	Commercial	215	35,750,593
Industrial	0	0	Industrial	13	6,704,600
Agricultural	Unknown	5,900	Agricultural	Unknown	15,100
Religious/NonProfit		0	Religious/NonProfit		17,050,100
Government/Schools		317,900	Government/Schools		17,056,000
Unincorporated Areas – Population 5,960			**Totals – Population 14,061**		
Residential	3436	407,526,539	Residential	6,594	720,798,370
R3+	10	1,109,881	R3+	76	10,386,385
Commercial	117	19,596,107	Commercial	580	75,863,172
Industrial	8	7,947,373	Industrial	33	26,816,173
Agricultural	Unknown	27,863,790	Agricultural	Unknown	27,925,190
Religious/NonProfit		8,667,600	Religious/NonProfit	0	33,824,100
Government/Schools		13,415,000	Government/Schools	0	40,341,900

(Allamakee County Assessor, 2023)

Table 26: School/Preschool Enrollment by Building and Community, 2022-2023

School District: Building	Location	Enrollment	In Floodplain?
Allamakee Community School District[11]: East Elementary School	Waukon	206	N
Allamakee CSD: West Elementary School	Waukon	265	N
Allamakee CSD: Middle School	Waukon	270	N
Allamakee CSD: High School	Waukon	380	N
Growing Bear Preschool	Waukon	6	N
St. Patrick's Preschool	Waukon	37	N
St. Patrick's School (PK – 6)	Waukon	241	N
Eastern Allamakee CSD: New Albin Elementary	New Albin	155	N
Eastern Allamakee CSD: Middle/High School	Lansing	76 / 99 175 Total	N
Postville CSD: Cora B. Darling Elementary School	Postville	312	N
Postville CSD: Middle/High School	Postville	351	N
Postville Preschool /REC Center	Postville	17	N
Postville Preschool / Childcare Center	Postville	14	N
TOTAL ALL STUDENTS:		2,429	

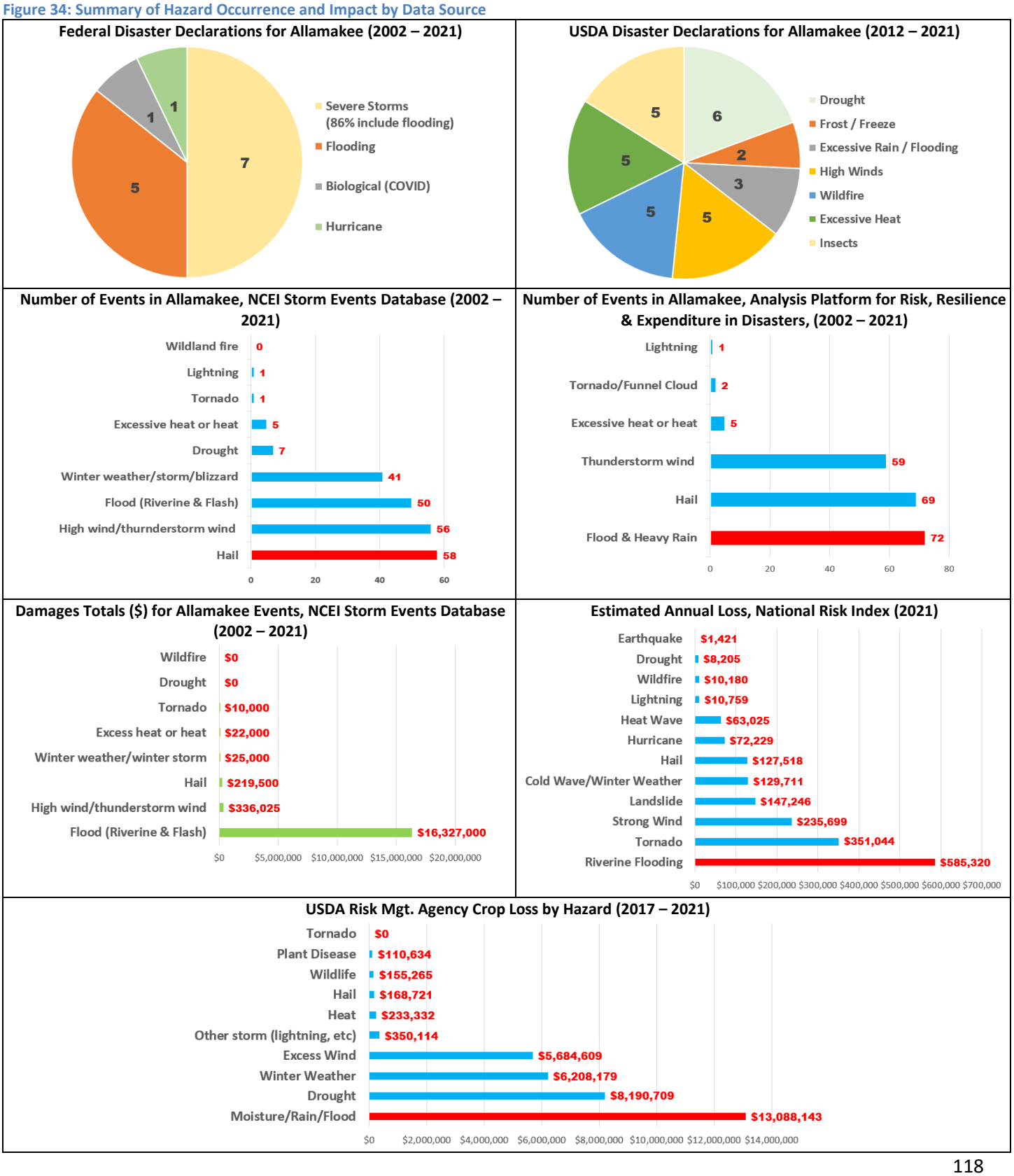
Source: (Iowa Department of Education, 2022-2023 PreK-12 Enrollments by Grade, Race and Gender) (Iowa Dept. of Education, 2021-2022 Iowa Non-Public School PreK-12 Enrollments by School, Grade, Race and Gender)

[11] Community School District is abbreviated as CSD in table

Hazard and Vulnerability Information

Summary of Hazard Occurrence and Impact by Key Data Source:

Figure 34: Summary of Hazard Occurrence and Impact by Data Source



Animal/Plant/Crop Disease

Risk Group 2: Medium Risk

Non-Natural Hazard

Description

An outbreak of disease that can be transmitted from animal to animal or plant to plant is an animal/crop/plant disease. An animal or plant disease outbreak could have serious economic or public health impacts, could cause significant production losses, and could result in environmental damage.

The introduction of high-consequence animal diseases could significantly limit or eliminate our ability to move, slaughter, and export animals and animal products. Response from and recovery to infectious animal disease outbreaks will be lengthy, and many producers may never be able to return to business. There would also be many indirect effects on our economy.

Plant pest infestations can cause widespread crop/plant loss as well, resulting in economic hardships on farmers, landowners, and related businesses. Once infestation occurs, the pest may become endemic, causing repeated losses in subsequent growing years. Loss of production could affect all related industries including fuel, food, synthetics, processors, etc.

Location and Extent

Animal, plant or crop disease can occur anywhere within the planning area, so data gathered was related to statewide risks.

The Iowa Department of Agriculture & Land Stewardship identifies key reportable domestic animal diseases in the state as Chronic Wasting Disease, Johne's Disease, Scrapie, and Rabbit Hemorrhagic Disease Virus; and key foreign animal diseases as African Swine Fever, Foot-an-Mouth Disease, Highly Pathogenic Avian Influenza, and Newcastle Disease (Iowa Dept. of Agriculture and Land Stewardship, 2022). Many of these haven't been common in the county yet. Animal farming is still largely dairy-based, with some hog confinements. And large farms with chickens or turkeys are not common. Tight and fully closed confinements aren't typical for cows, who are still likely to have more space or open air opportunities which are less conducive to the quick spread of disease. Therefore, disease that may have occurred on dairy farms locally would have impacted a smaller number of animals.

Key Iowa tree pests are the Gypsy Moth, Emerald Ash Borer, Asian Longhorned Beetle, and the Spotted Lanternfly, while the European Corn Borer is a key crop pest (Iowa Dept. of Agriculture and Land Stewardship, 2022). Bur Oak Blight is another common plant disease caused by a species of fungus.

The Emerald Ash Borer (EAB) is an invasive beetle from Asia discovered in southeastern Michigan in 2002 that has become a significant threat to the urban and rural forests. The beetle spread widely across the U.S. and Canada, killing hundreds of millions of ash trees and costing municipalities, property owners, nursery operators, and forest products industries hundreds of millions of dollars. It was first identified in Iowa in 2010 and is now found in most Iowa counties (Iowa State University Extension and Outreach, 2022).

Previous Occurrence, Probability of Future Occurrence

The 2018 Iowa Hazard Mitigation Plan describes the following statewide animal disease incident:

"In 2015, Iowa experienced significant impacts to our avian populations when highly pathogenic avian influenza (HPAI) affected 77 sites in Iowa in 18 counties across the state. The more than 33 million affected birds had to be euthanized and disposed of, the facilities had to be sanitized, and the stocks replaced once assurances were made that the disease would not recur (Iowa Homeland Security and Emergency Management, 2018)."

Allamakee County is not listed on any recent Governor or Presidential disaster declarations involving Avian Influenza, and during the 2014-2015 avian influenza outbreak no cases were confirmed in Allamakee County (Iowa Department of Agriculture and Land Stewardship, 2015).

With regard to plant diseases, Emerald Ash Borer was discovered in Allamakee County between 2010 – 2012, and the entire county now sits within an Iowa Treatment Area zone within 1 – 5 miles of a known infestation (Iowa Dept. of Agriculture and Land Stewardship, 2022). In addition, both Bur Oak Blight and Gypsy Moth impacts have been spotted in Allamakee County.

As climate change occurs, animal, plant and crop diseases are likely to increase as changes such as earlier springs and warmer winters and shifting weather patterns create conditions that increase the survival rate of pathogens and parasites (Cho, Jinxiu, McCarl, & Yu, 2011). The 2018 Iowa Hazard Mitigation Plan describes that surface wind speeds (standard measurement height of 32 feet) over Iowa have been declining, which provides less crop ventilation and more heat stress for plants and animals, creates favorable conditions for survival and spread of unwanted weeds, fungi, pests, and pathogens, and results in waterlogged soil conditions during early plant growth connected to shallower root systems more prone to disease and nutrient deficiencies. In 2010 wet soil conditions are cited as cause for the epidemic of soybean sudden death syndrome that occurred that year.

In addition, growing presence of Concentrated Animal Feeding Operations (CAFOs) for hogs in the county may increase the probability of animal disease due to significant numbers of animals being confined in tight quarters where viruses, bacteria, parasites, and other pathogens spread rapidly throughout an animal population.

Summary of Vulnerability and Impacts

Table 27: Records of Animal/Plant Disease Vulnerability or Losses in Allamakee County

Topic:	Source:	Years:	Data:
Crop Loss Due to Plant Disease	United States Department of Agriculture (USDA), Risk Management Agency	5 yrs. (2017 – 2021)	$110,634

Animal and plant disease have had economic impacts, but generally with no lasting damage to infrastructure or buildings. Crop/plant pest infestations can cause widespread crop/plant loss and severe economic hardship for farmers and related businesses. And loss of production has a trickle-down effect on related industries and nearby communities. The direct economic impact of replacing the affected birds in the 2015 Avian Influenza was in excess of $83.6 million. This figure does not include unemployment during the timeframe of the disaster nor the cost of euthanizing and disposal of the carcasses (Iowa Homeland Security and Emergency Management, 2018). Further, rumors of an infectious animal disease outbreak could cause significant damage to the markets, as occurred in the 2009 H1N1 (swine flu) influenza outbreak, where lack of understanding about the transmission of the virus caused market loss in Iowa's pork markets.

Dam Failure

Risk Group 3: Low Risk

CRS Step 4(b)(1)b.

4(b) Plan includes assessment of less frequent floods

4(b)(1)b. Prepare an inventory of dams that would result in a flood of developed areas if they failed;

4(b)(2) Map the area(s) affected

4(b)(3)Summarize the hazard(s) in lay terms

Description

Dam failure is the uncontrolled release of impounded water that can result in flooding. Dams are built for a variety of reasons such as flood control, erosion control, water supply storage, power generation, and recreation.

Dam failures can be caused by several events including flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation and poor construction, vandalism, or terrorism. Failure of earthen dams occurs through three scenarios: overtopping, seepage, and/or structural issues. Overtopping failures result from the erosive action of water on the embankment. Erosion is due to uncontrolled flow of water over, around and adjacent to the dam. Earth embankments are not designed to be overtopped and therefore are particularly susceptible to erosion. Once erosion has begun during overtopping, it is almost impossible to stop.

All earth dams have seepage resulting from water permeating slowly through the dam and its foundation. Seepage must be controlled in both velocity and quantity. If uncontrolled, it can progressively erode soil from the embankment or its foundation, resulting in rapid failure of the dam. Erosion of the soil begins at the downstream side of the embankment, either in the dam proper or the foundation, progressively works toward the reservoir, and eventually develops a direct connection to the reservoir. This phenomenon is known as "piping." Piping action can be recognized by an increased seepage flow rate, the discharge of muddy or discolored water, sinkholes on or near the embankment or a whirlpool in the reservoir. Once a whirlpool (eddy) is observed on the reservoir surface, complete failure of the dam will probably follow in a matter of minutes. As with overtopping, fully developed piping is virtually impossible to control and will likely cause failure. Seepage can cause slope failure by creating high pressures in the soil pores or by saturating the slope. The pressure of seepage within an embankment is difficult to determine without proper instrumentation. A slope which becomes saturated and develops slides may be showing signs of excessive seepage pressure.

Structural failures can occur in either the embankment or the appurtenances[12]. Structural failure of a spillway, lake drain or other appurtenance may lead to failure of the embankment. Cracking, settlement, and slides are the more common signs of structural failure of embankments. Large cracks in either of an appurtenance or the embankment, major settlement and major slides will require emergency measures to ensure safety, especially if these problems occur suddenly.

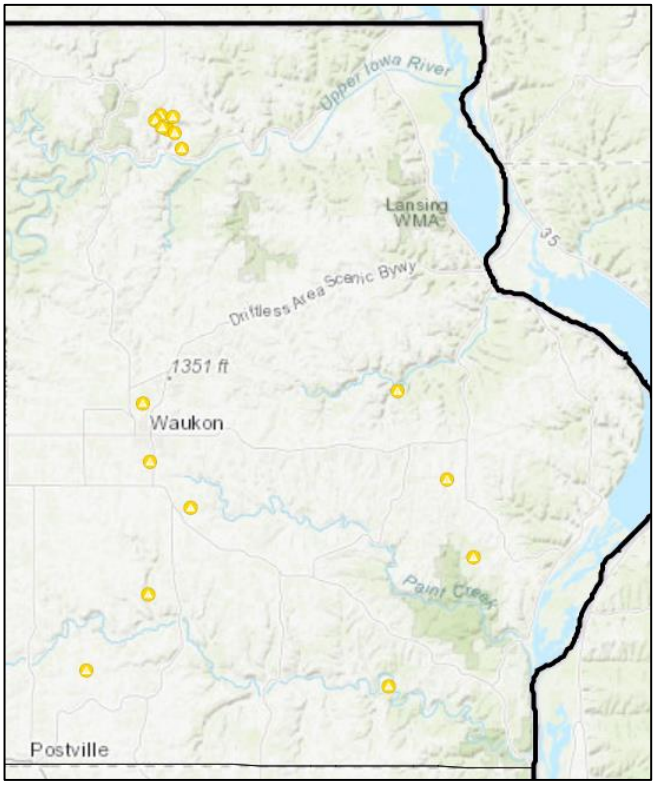
The three types of failure described are often interrelated in a complex manner. For example, uncontrolled seepage may weaken the soil and lead to a structural failure, structural failure may shorten the seepage path and lead to piping failure, and surface erosion may result in structural failure.

[12] Structures associated with dams such as spillways, gates, outlet works, ramps, docks, etc. that are built to allow proper operation of dams.

Location and Extent

There are sixteen low hazard dams in Allamakee County, as shown in Figure 35 (Iowa Homeland Security & Emergency Mgt., 2022). Fire protection, stock, small fish ponds, flood risk protection, and grad stabilization are uses for dams in the county.

Figure 35: Allamakee County Dam Sites



Previous Occurrence, Probability of Future Occurrence

There has never been a dam failure within the county. Probability of future dam failure could be impacted by dam age. The average age of the dams in the county is 43 years, and by 2025, over 60% of the existing dams will be more than 50 years old (the normal design life of a dam), at which point probability of failure could increase if maintenance or updates aren't implemented on a timely basis.

Also, long term climate patterns are a consideration with regards to the probability of dam failure. Shifts in seasonal and geographic rainfall patterns could cause the flow behavior of rivers to deviate. When flows are greater than expected, spillway overflow events (i.e. design failures) occur, resulting in increased discharges and flooding potential downstream.

Summary of Vulnerability and Impacts

All of the dams in the county have a low hazard potential. Dam hazard potential classifications have to do with the potential for death and/or destruction due to the size of the dam, the size of the impoundment, and the characteristics of the area downstream of the dam. Damages from a failure of a low hazard dam 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. Based on this, it would seem that overall vulnerability to dam failure in the county is minimal.

Drought

Risk Group 2: Medium Risk

Description

Drought is generally defined as a period of prolonged lack of precipitation producing severe dry conditions. There are three types of droughts: Meteorological drought, which refers to precipitation deficiency; hydrological drought, which refers to declining surface water and ground water supplies; agricultural drought, which refers to soil moisture deficiencies; and socioeconomic drought, when physical water shortages begin to affect people.

Periods of drought are normal occurrences in all parts of Iowa. Drought in Iowa is caused by severely inadequate amounts of precipitation that adversely affect farming, surface and ground water supplies, and uses of surface waters for navigation and recreation. Drought can cause significant economic and environmental impacts and also create favorable conditions for wildfires and wind erosion. While droughts are generally associated with extreme

heat, droughts can and do occur during cooler months. Drought can lead to shortages in municipal water supplies due to deficiency of the raw water supply and greatly increased customer water demand. In other cases, the raw water supply may remain adequate, but problems can be encountered due to limited treatment or distribution capacity.

Location and Extent

Table 28: Records of Drought Probably/Extent in Allamakee County

Topic:	Source:	Years:	Data:
Drought Risk Rating	FEMA National Risk Index	2021 Version	Very Low Risk

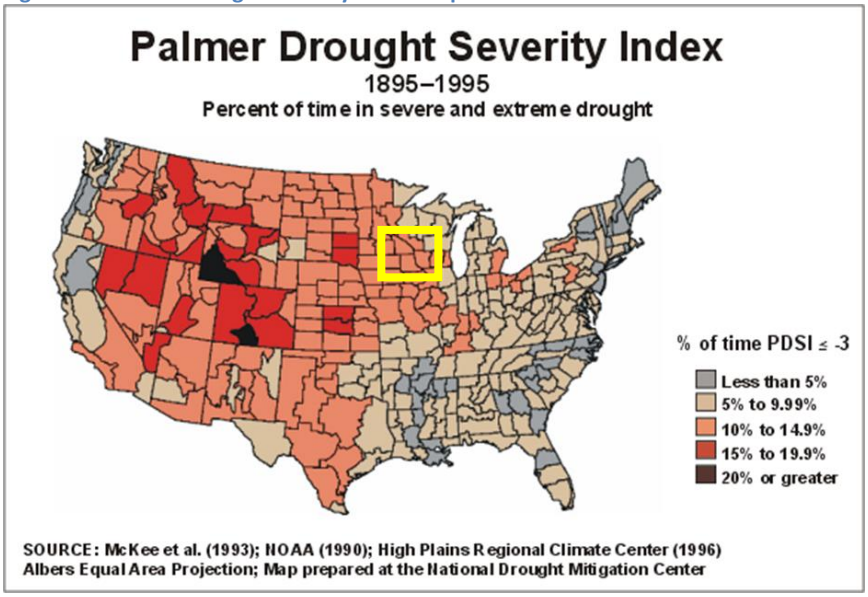
Drought can occur in any part of the planning area, can be localized or widespread, and can last from weeks to years. The most common trend for statewide occurrence of drought periods was during the month of August. Agricultural areas are generally more keenly impacted than urbanized areas. The Palmer Drought Severity Index helps communicate the extent of drought. Figure 36 defines impacts surrounding the severity of droughts, and the map in Figure 37 shows where Allamakee lands in the severity index. From 1895 – 1995 the county experienced severe and extreme drought 10-14.9 percent of the time.

Figure 36: Palmer Drought Severity Index Impacts

Drought Severity	Return Period (years)	Description of Possible Impacts	Drought Monitoring Indices		
			Standardized Precipitation Index (SPI)	NDMC* Drought Category	Palmer Drought Index
Minor Drought	3 to 4	Going into drought; short-term dryness slowing growth of crops or pastures; fire risk above average. Coming out of drought; some lingering water deficits; pastures or crops not fully recovered.	-0.5 to -0.7	D0	-1.0 to -1.9
Moderate Drought	5 to 9	Some damage to crops or pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing or imminent, voluntary water use restrictions requested.	-0.8 to -1.2	D1	-2.0 to -2.9
Severe Drought	10 to 17	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.	-1.3 to -1.5	D2	-3.0 to -3.9
Extreme Drought	18 to 43	Major crop and pasture losses; extreme fire danger; widespread water shortages or restrictions.	-1.6 to -1.9	D3	-4.0 to -4.9
Exceptional Drought	44+	Exceptional and widespread crop and pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells creating water emergencies.	less than -2	D4	-5.0 or less

*NDMC - National Drought Mitigation Center

Figure 37: Palmer Drought Severity Index Map



Previous Occurrence, Probability of Future Occurrence

Table 29: Records of Drought Occurrence in Allamakee County

Topic:	Source:	Years:	Data:
Major Disaster Declarations for drought	Federal Emergency Management Agency (FEMA)	Covering 20 yrs. (2001 – 2022)	None
Agriculture Disaster Declarations for drought	U.S. Secretary of Agriculture	Covering 10 yrs. (2012 – 2021)	6
Drought events	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	7

Iowa experienced 1,412 drought events in 20 years from 2002 – 2021. In the same time period, Allamakee Co. experienced only 7 events (4 in 2012, 2 in 2017, & 1 in 2021), only .5% of the state's total (National Oceanic and Atmospheric Administration (NOAA), 2002 - 2021). Details around some of the NOAA recorded drought events in Allamakee County follow:

- **July 17 – 31, 2012.** Persistent below normal precipitation allowed severe drought conditions to develop across all of Northeast Iowa.
- **September 1 – 30, 2012.** Severe drought conditions continued across Allamakee County because of a persistent lack of precipitation. Effects of drought include damaged crops, pastures that have stopped growing, river flows that were less than 20 percent of normal on the Upper Iowa River and falling ground water levers.
- **September 12 – 30, 2017**. Persistent below normal precipitation since July 2017 allowed severe drought conditions to develop across the northwest corner of Allamakee County. These conditions continued into October 2017.

- **October 1 - 10, 2017**. The severe drought that started in September, ended as 3 to 6 inches of rain fell across Allamakee County during the first part of October.
- **June 15 – 29, 2021**. Persistent below normal precipitation since February 2021 allowed severe drought conditions to develop across Allamakee County.

Summary of Vulnerability and Impacts

Table 30: Records of Drought Vulnerability or Losses in Allamakee County

Topic:	Source:	Years:	Data:
Estimated Annual County Loss Due to Drought	FEMA National Risk Index	2021 Version	$8,205
Crop Loss Due to Drought	United States Department of Agriculture (USDA), Risk Management Agency	5 yrs. (2017 – 2021)	$8,190,709
Drought events, Damages and Injuries	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	No losses or injuries reported for 7 events in county

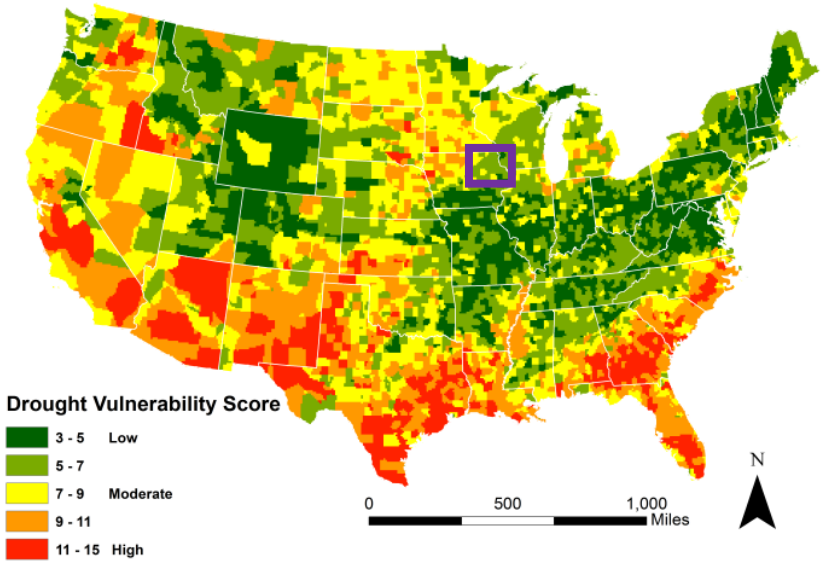
Drought impacts are wide-reaching and may be economic, environmental, and/or societal.

The overall economic impact of a drought depends on the severity and length of the occurrence. The economic impact of droughts on agriculture are a particular concern in Iowa and Allamakee County, where the agricultural industry still provides an economic base. And reduction in agricultural income can affect revenues in the retail and service sectors as well. According to USDA Risk Management Agency (RMA) Cause of Loss Historical Data Files, Allamakee County crop loss from drought between 2017 – 2021 totaled over 8 million (United States Dept. of Agriculture (USDA), 2017 - 2021). For the five-year period, this is an annual average crop loss from drought of approximately $1.6 million for the county. Other long-term economic impacts to agriculture can result from drought as well. Droughts that carry over from year to year can impact the health of the subsoil. And drought conditions can cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding. Areas of Allamakee County already struggle with creek and flash flooding, which could be exacerbated.

A prolonged drought can also have serious impacts on a community. Drought triggers an increased demand for water and electricity which can result in shortages. And food shortages may occur if agricultural production is damaged or destroyed by a loss of crops or livestock. Droughts rarely result in the loss of life, although high heats that contribute to droughts may also contribute to heat related illnesses and even death. Property damage is not a direct impact of droughts, but drought conditions may increase the likelihood of fires.

Overall vulnerability of the county to drought can be illustrated by the Tufts University map of nationwide drought vulnerability shown in Figure 38 Allamakee County has a drought vulnerability score of low to moderate (Tufts University, 2012)

Figure 38: US Drought Vulnerability Map



Extreme Heat

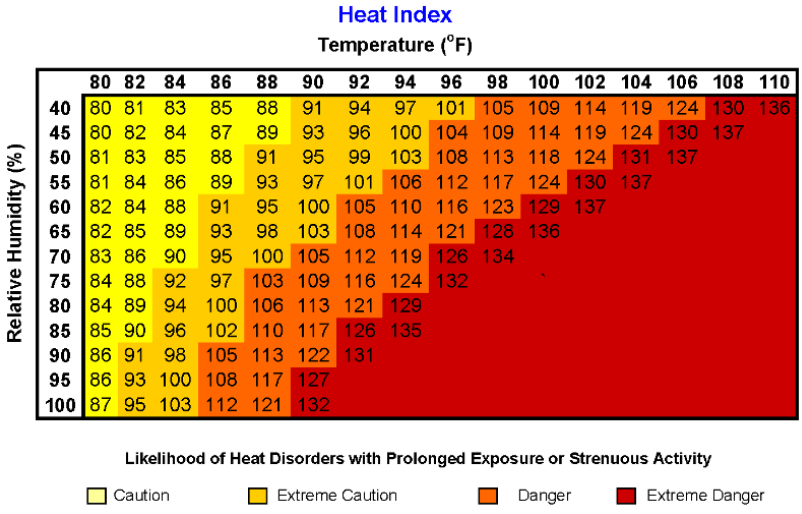
Risk Group 3: Low Risk

Description

Extreme temperature events, both hot and cold, can have severe impacts on human health and mortality, natural ecosystems, agriculture, and other economic sectors. 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 degrees Fahrenheit (°F) or at least three (3) successive days of 90+ °F. Ambient air temperature is one component of heat conditions, with relative humidity being the other. The relationship of these factors creates what is known as the apparent temperature, often referred to as the heat index.

Figure 39 reflects the National Weather Service Heat Index chart, producing a guide for the apparent temperature or relative intensity of heat conditions.

Figure 39: Heat Index (HI) Chart
Source: (National Weather Service, 2019)



The National Weather Service has a system in place to initiate alert procedures (advisories or warnings) when the Heat Index is expected to have a significant impact on public safety. The expected severity of the heat determines whether advisories or warnings are issued. A common guideline for issuing excessive heat alerts is when the maximum daytime Heat Index is expected to equal or exceed 105°F for two or more consecutive days.

Location and Extent

Table 31: Records of Extreme Heat Probably/Extent in Allamakee County

Topic:	Source:	Years:	Data:
Heat Wave Risk Rating	FEMA National Risk Index	2021 Version	Relatively Low Risk

The entire planning area is subject to extreme heat.

Previous Occurrences, Probability of Future Occurrence

Table 32: Records of Extreme Heat Occurrence in Allamakee County

Topic:	Source:	Years:	Data:
Major Disaster Declarations for heat	Federal Emergency Management Agency (FEMA)	Covering 20 yrs. (2001 – 2022)	None
Agriculture Disaster Declarations for Excessive Heat	U.S. Secretary of Agriculture	Covering 10 yrs. (2012 – 2021)	5
Excessive Heat or Heat events	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	5

Periods of high heat generally occur on an annual basis, while currently events that cause significant health impacts occur less frequently. However, based on past occurrences and changing climate conditions, the probability of future extreme heat is likely. According to the Fourth Annual Climate Assessment, warm-season temperatures are projected to increase more in the Midwest than any other region of the United States. By the middle of this century (2036–2065), 1 year out of 10 is projected to have a 5-day period that is an average of 13°F warmer than a comparable period at the end of last century (1976–2005) (U.S. Global Change Research Program (USGCRP) , 2018).

During the period from 2002-2021, the NCEI database lists five incidents of extreme heat that include Allamakee County. The following summarizes some of the more extreme impacts:

- **July 17, 2011.** Afternoon heat indices routinely topped out between 110 and 120….The heat caused four people to visit the emergency room in Allamakee County.
- **June 29, 2018.** Heat indices of 105 to 110 were common across Allamakee County on June 29th and 30th. The highest calculated heat index was 110 from a station in Postville.

Summary of Vulnerability and Impacts

Table 33: Records of Extreme Heat Vulnerability or Losses in Allamakee County

Topic:	Source:	Years:	Data:
Estimated Annual Loss Due to Heat Waves	FEMA National Risk Index	2021 Version	$63,025
Crop Loss Due to Heat	United States Department of Agriculture (USDA), Risk Management Agency	5 yrs. (2017 – 2021)	$233,332
“Excessive heat” or “heat” event, damages or injuries	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	$22,000 property damage & 4 injuries, for 5 events in county

Heat is one of the leading weather-related causes of death in the United States. Those at greatest risk for heat-related illness include infants and children up to four years of age, people 65 years of age and older, people who are overweight, and people who are ill or on certain medications (Centers for Disease Control and Prevention, 2012). However, even young and healthy individuals are susceptible if they participate in strenuous physical activities during hot weather. In agricultural areas, the exposure of farm workers, as well as livestock, to extreme temperatures is a major concern. And urban areas are generally more vulnerable due to an increase in heat absorbing surfaces. Table 34 lists typical symptoms and health impacts of exposure to extreme heat.

Table 34: Typical Health Impacts of Extreme Heat

Heat Index (HI)	Disorder
80-90°F (HI)	Fatigue possible with prolonged exposure and/or physical activity
90-105°F (HI)	Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity
105-130°F (HI)	Sunstroke, heat cramps or heat exhaustion likely, and heatstroke possible with prolonged exposure and/or physical activity
130°F (HI) or higher	Heatstroke/sunstroke highly likely with continued exposure

Source: (National Weather Service, 2005)

In Allamakee County, public health, economic impacts in the agricultural community, and impacts to transportation infrastructure (roads, bridges, etc.) are the primary concerns with extreme heat. With regards to public health, segments of the county most at risk from extreme heat are the elderly, the very young and individuals living below the poverty line. Table 35 records the estimated number of affected people in Allamakee County vulnerable to an extreme heat event based on these variables.

Table 35: Vulnerable Population Data for Allamakee County

	Number	Percent
Population 65 years and over	3,160	22.5%
Population 5 years and younger	959	6.8%
Population below poverty level	1,449	10.5%
Population 65 years and over below poverty level		6.9%
Population 17 years and younger below poverty level		13.9%
Hispanic origin population below poverty level		32.6%

Source: (U.S. Census Bureau, 2017-2021 American Community Survey 5-year Estimates, 2021)

Lastly, extreme heat can result in an economic impact to the agricultural sector as a result of livestock and crop loss. According to USDA Risk Management Agency (RMA) Cause of Loss Historical Data Files, Allamakee County crop loss due to heat between 2017 – 2021 totaled $233,332 (United States Dept. of Agriculture (USDA), 2017 - 2021).

Flood (Flash and Riverine)

Risk Group 1: High Risk

CRS Step 4(a) and 4(c) (Also found in Jurisdictional Descriptions)
4(a) Plan includes an assessment of the flood hazard with:
(1) A map of known flood hazards
(2) A description of known flood hazard
(3) A discussion of past floods
4(c) Plan includes assessment of areas likely to flood
CRS Step 5(c) and 5(f)
5(c) Review of all damaged buildings/flood insurance claims
5(f) Impact of future flooding conditions outlined in 4(c) on people, property, and natural floodplain functions

As done in the 2018 Iowa Hazard Mitigation Plan, the hazards of flash flooding and riverine flooding are discussed together here because often people just refer to "flooding", especially when referring to the damage they cause. In fact, FEMA disaster declarations usually do not designate in the title of a disaster whether flooding was flash or riverine. Also note, this flood analysis references the Upper Iowa River Flood Resiliency Plan. When this is the case, chapter and section of the watershed plan is denoted.

Description

A flash flood is an event that occurs with little or no warning where water levels rise at an extremely fast rate, and can quickly inundate areas thought to be out of flood-prone areas. Flash flooding results from intense rainfall over a brief period, sometimes combined with rapid snowmelt, 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 which can reach full peak in only a few minutes and allows little or no time for protective measures to be taken by those in its path. Flash flood waters move at very fast speeds and can move boulders, tear out trees, scour channels, destroy buildings, and obliterate bridges. The duration of flash flood conditions is generally less than one day, but in exceptional cases can extend for much longer periods. Flash flooding often results in higher loss of life, both human and animal, than slower developing river and stream flooding.

River flooding is a natural and expected phenomenon that occurs annually, usually restricted to specific streams, rivers or watershed areas. River flooding is defined as when a watercourse exceeds its "bank-full" capacity and is the most common type of flood event. River flooding generally occurs as a result of prolonged rainfall, or rainfall that is combined with solids already saturated from previous rain events. The area adjacent to a river channel is its floodplain. In its common usage, "floodplain" most often refers to that area that is inundated by the 100-year flood, the flood that has a 1 percent chance in any given year of being equaled or exceeded. The 1 percent annual flood is the national standard to which communities regulate their floodplains through the National Flood Insurance Program (NFIP).

Location and Extent

Table 36: Records of Flood Probably/Extent in Allamakee County

Topic:	Source:	Years:	Data:
Riverine Flood Risk Rating	FEMA National Risk Index	2021 Version	Relatively Low Risk

Some key factors affecting the location and amount of flood runoff include precipitation, location of waterways and low areas, the amount of soil surface or vegetation intercepting floodwaters, and impervious surface/development. Other physical factors influencing the impact of flooding in local watersheds includes soil health, land use, topography, conservation practice location, and even road, culvert and bridge size and placement. The presence, absence and extent of karst development and how karst features influence runoff direction, quantity and intensity are also important (UIR Watershed Plan / Ch. 3 Challenges and Opportunities / 3.3 Impact of Flooding / 3.3.1.2) (Upper Iowa River Watershed Management Authority, 2019).

With regards to locations of waterways, the Yellow River, Upper Iowa River, and small creeks and streams weave throughout the county, and the Mississippi River lines its eastern border. The communities of Harpers Ferry, Lansing, and New Albin sit adjacent to the Mississippi River and are in proximity to tributaries (Cota Creek, Clear Creek, and Winnebago Creek, respectively). Paint Creek runs through Waterville in the eastern part of the county. And Postville and Waukon are not near a major river or creek. Generally, it is the low-lying elevations and properties near these waterways that are most at risk to flooding, but all communities have been impacted by flash floods.

Figure 40 below illustrates the 2020 Flood Insurance Rate Map (FIRM) for the county, with the Special Flood Hazard Areas/100 Yr. flood (the flood that has a 1% chance in any given year of being equaled or exceeded) shown adjacent to streams and rivers, and within the HUC 12 subwatersheds. In addition, the 10-year and 500-year flood inundations for the Upper Iowa River can be viewed in the Upper Iowa River Watershed Resiliency Plan (UIR Watershed Plan / Ch. 3 Challenges and Opportunities / 3.2 Breakdown of Upper Iowa Flood Events / 3.2.1). And flood hazard boundary maps for individual communities can be found in the Jurisdictional Descriptions and Capabilities section.

Figure 40: Allamakee County Waterways, HUC 12 Subwatersheds, and 100 Yr. Flood Zones

Table 37 below illustrates the number of flood events per community and in repeatedly impacted unincorporated areas between 2002 – 2021 (National Oceanic and Atmospheric Administration (NOAA), 2002-2021). Regular flooding occurred mainly in unincorporated areas, while flash floods occurred throughout the county and in cities, most commonly Waukon (16% of events) & Lansing (8% of events).

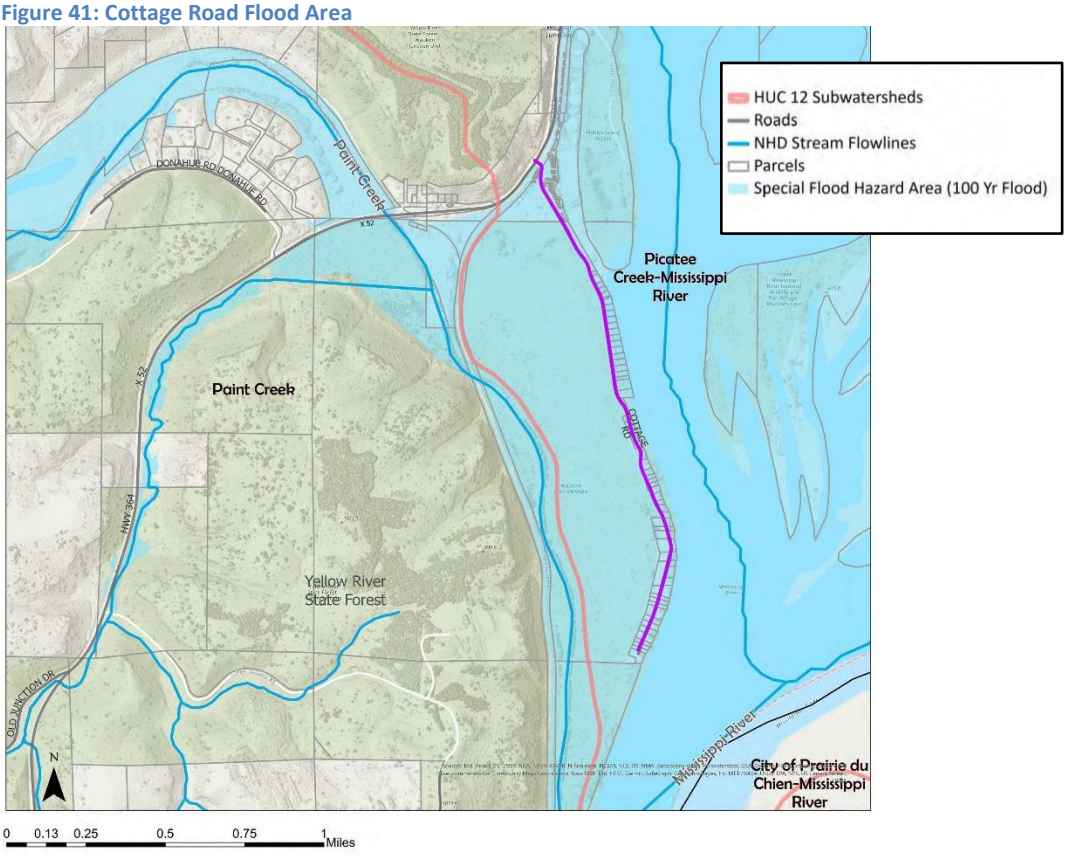
Table 37: Flood Events by Community

Location	Flood (Regular)	Flash Flood
Unincorporated (Chester)	15	2
Unincorporated (Hanover)	1	3
Unincorporated (Ludlow)		2
Unincorporated (Quandahl)	1	2
Unincorporated (Waukon Jct)	1	3
City of Harpers Ferry		
City of Lansing	2	2
City of New Albin		1
City of Postville	1	1
City of Waterville		
City of Waukon	2	4

Due to the winding, hilly terrain and high number of road miles in the county, many roads intersect with surface water, including stormwater runoff. Bridges and roadways adjacent to water courses or stormwater runoff are often at risk of washouts during large rain events. Of the 175 bridges in the county, the Allamakee County Engineer identified four locations that are shown to get overtopped during heavy flooding: Lycurgus Road/X20 south approach to Upper Iowa Bridge, Great River Road/X52 north approach of Village Creek Bridge, Forest Mills Road/X16 south approach to Yellow River Bridge, and Old Stage Road/W60 north approach to Yellow River Bridge (Allamakee County Engineer, 2023).

With regards to road impacts, the County Engineer explained that many gravel roads get overtopped during heavy flooding, almost annually at Cottage Road and Army Drive (shown below in Figure 41 outside of Harpers Ferry). In addition, the Iowa River Drive/A26 pavement by English Bench Road intersection and IA Hwy 76 by the south Smokey Hollow Road Intersection have gotten overtopped during flooding. HMPC members also focused on IA Hwy 76 along the Mississippi River and in the vicinity of Effigy Mounds National Monument, where water movement off of nearby bluffs can cause debris movement downslope impacting the road system.

Figure 41: Cottage Road Flood Area



The magnitude of flooding events in the county has been significant in recent years. The next two tables, pulled from the Upper Iowa River Watershed Resiliency Plan (UIR Watershed Plan / Ch. 3 / 3.2 / 3.2.1), breakdown historic crests, and peak stages and stream flows for just the Upper Iowa River. The two highest recorded crests ever on the Upper Iowa occurred just since 2008 at the Dorchester gauge station in Allamakee, and streamflow highs (cfs) occurred in 2008 and 2016 at the Dorchester gauge station as well.

Table 38: Historic Crests of the Upper Iowa River

at Dorchester	at Decorah	at Bluffton
(1) 24.30 ft on 08/25/2016	**(1) 17.90 ft on 06/09/2008**	(1) 18.30 ft on 03/27/1961
(2) 22.46 ft on 06/09/2008	(2) 15.20 ft on 05/29/1941	**(2) 15.49 ft on 06/09/2008**
(3) 22.20 ft on 02/28/1948	(3) 14.35 ft on 08/17/1993	(3) 15.35 ft on 06/21/1954
(4) 21.80 ft on 05/30/1941	**(4) 13.68 ft on 08/24/2016**	**(4) 14.41 ft on 08/24/2016**
(5) 20.89 ft on 03/05/1937	(5) 13.08 ft on 03/27/1961	(5) 13.56 ft on 06/23/2013
(6) 20.02 ft on 06/23/2013	(6) 12.31 ft on 06/01/2000	(6) 12.66 ft on 08/22/2007
(7) 20.00 ft on 08/17/1993	(7) 12.20 ft on 03/17/1945	(7) 12.24 ft on 07/25/2005
(8) 19.34 ft on 03/07/1950	(8) 12.10 ft on 01/05/1946	(8) 10.54 ft on 09/25/2010
(9) 19.20 ft on 07/26/1953	(9) 11.85 ft on 02/28/1948	(9) 10.48 ft on 03/24/2011
(10) 18.95 ft on 09/06/1946	(10) 11.67 ft on 06/23/2013	(10) 10.26 ft on 05/23/2004

Table 39: Upper Iowa River Summary of Peak stages, streamflows and flood probability estimates

Site Name	Date	Stage (ft)	Streamflow (cfs)	25-yr flood (estimated cfs)	50-yr flood (estimated cfs)	100-yr flood (estimated cfs)	500-yr flood (Estimated cfs)
UIR at Bluffton	06/2008	15.49	16,600	16,300	19,300	22,300	29,600
UIR at Bluffton	06/2013	13.56	12,000				
UIR at Bluffton	08/2016	14.41	13,800				
UIR at Decorah	06/2008	17.90 *	34,100	19,200	22,800	26,400	35,300
UIR at Decorah	06/2013	11.67	17,000				
UIR at Decorah	08/2016	13.68	19,800				
UIR at Dorchester	06/2008	22.46	31,200	21,800	26,500	31,200	42,800
UIR at Dorchester	06/2013	20.02	25,500				
UIR at Dorchester	08/2016	24.30 *	38,000				

*Gage record high Blue: stream flow levels above 100-year flood

Flooding in the United States Midwest, 2008 Professional Paper 1775 U.S. Department of the Interior U.S. Geological Survey By Robert R. Holmes, Jr., Todd A. Koenig, and Krista A. Karstensen

Previous Occurrences, Probability of Future Occurrence

Table 40: Records of Flooding Occurrence in Allamakee County

Topic:	Source:	Years:	Data:
Major Disaster Declarations involving flooding	Federal Emergency Management Agency (FEMA)	Covering 20 yrs. (2001 – 2022)	12 (5 for flooding alone, 7 for severe storms including flooding)
Agriculture Disaster Declarations for Excessive Rain or Flash Flooding	U.S. Secretary of Agriculture	Covering 10 yrs. (2012 – 2021)	3

Flood events[13]	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	25
Flash Flood[14] events	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	25
Heavy Rain, Flood or Flash Flood Events	APRED Analysis Platform for Risk, Resilience and Expenditure in Disasters	Covering 20 yrs. (2002 – 2021)	72 (30 Flash) (42 Flood or Heavy Rain)

Except fire, floods are the most common and widespread of all-natural disasters. Flood events are becoming more frequent in Northeast Iowa with more frequent heavy rainfall events. While mean precipitation totals have not significantly changed in the last 50 years, the intensity of individual precipitation events has increased and is trending upward (Upper Iowa River Watershed Management Authority, 2019).

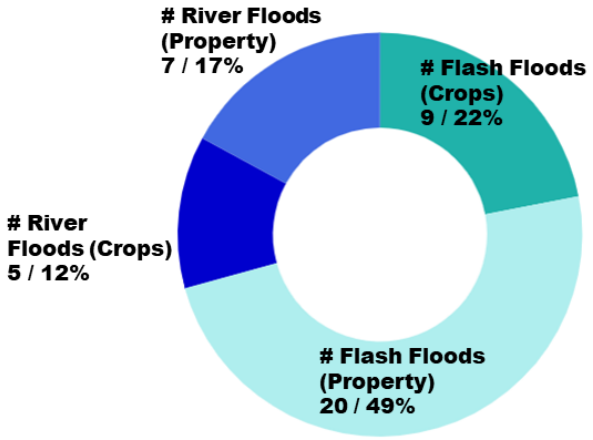
An analysis of Federal Emergency Management Agency (FEMA) declarations conducted by the Iowa Flood Center found that Iowa has experienced more federal flood disasters than the majority of other states in the Nation. It ranked fourth in the number of flood related disaster declarations from 1988-2016. It also found that many of the FEMA declarations were in Northeast Iowa (UIR Watershed Plan / Ch. 3 Challenges and Opportunities / 3.3 Impact of Flooding / 3.3.1.5) (Upper Iowa River Watershed Management Authority, 2019). In a recent survey of just Upper Iowa River watershed landowners, 38% of respondents reported having their home, land or business directly impacted by flooding, and over 75% had been impacted more than 2 times within five years. In addition, 83% of respondents reported knowing others impacted by flooding and 56% of respondents reported that a road or bridge they use regularly was closed due to flooding (UIR Watershed Plan, Ch. 3 Challenges and Opportunities / 3.1 Increased Flood Frequency) (Upper Iowa River Watershed Management Authority, 2019).

In Allamakee County, there have been twelve federal disaster declarations involving flooding since 2002, and three U.S. Department of Agriculture (USDA) declared disasters involving excessive rain or flooding since 2012. Major historical floods and flash floods for the county occurred in: 1880, 1965, 1969, 1993, 1997, 2001, 2008 and 2016 (National Oceanic and Atmospheric Administration, 2010). Figure 42 below illustrates the breakdown of recent flood events in the county according to flash or regular flooding type, and whether they impacted crops or property (Iowa Homeland Security and Emergency Mgt., 2022).

[13] Low-impact flooding that does not pose a significant threat to life or property in the same way a flash flood does.

[14] A flash flood is a life-threatening, rapid rise of water into a normally dry area beginning within minutes to multiple hours of the causative event. Flash flooding, such as dangerous small stream or urban flooding and dam or levee failures, requires immediate action to protect life and property. Flash flooding can transition into flooding as rapidly rising waters abate.

Figure 42: Records of Flooding Occurrence in Allamakee County



The National Centers for Environmental Information (NCEI) reports 25 flood events and 25 flash flood events in Allamakee between 2002 – 2021 (National Oceanic and Atmospheric Administration (NOAA), 2002 - 2021). 80% of the floods occurred in just the last eight years from 2013 – 2021. Some notable details available from NCEI regarding these flood events follow. They demonstrate a variety of impacts and vulnerabilities associated with flooding:

- **June 7, 2008.** Thunderstorms produced excessive rainfalls of 1 to 2 inches per hour. Many roads were closed due to rainfall, flooding, mudslides or partial washouts occurring over several days….sandbagging and some evacuations…All time record crests were set at a few locations, with top 5 records at many others. Preliminary damage estimates of 70 to 80 million.
- **June 22. 2013.** Thunderstorms with very heavy rain rolled across Northeast Iowa, producing widespread flash flooding…Numerous mudslides occurred…Officials had to evacuate around 80 people from a campground south of Harpers Ferry.
- **June 22, 2015.** Locally heavy rains caused Waterloo Creek near Dorchester to come out of its banks. Locally heavy rain caused some street flooding in Waukon.
- **August 24, 2016.** Runoff from heavy rain caused flooding to occur in Lansing along Clear Creek. Two people had to be rescued when the cabin they were sleeping in was moved off its foundation. The cabin became lodged against some trees allowing rescuers to reach them with a boat. 5.2 inches of rain was reported. A mudslide also occurred north or Lansing.

Previous occurrences indicate a strong probability of flooding happening in any given year somewhere in the county. And records of flooding in just the last ten years appear to demonstrate an increasing rate of occurrence. This occurrence rate, as well as the magnitude of flood events, is likely to continue to increase in the future versus decrease. As land is converted from fields or woodlands into roads, parking lots, buildings and mowed lawn, it loses its ability to absorb and slow rainfall. Urbanization increases runoff 2 to 6 times over what would occur on natural terrain. So as more development occurs in watersheds, the amount of runoff produced also increases, increasing flash flooding conditions.

Further, as earth's climate changes, extreme floods now described as "'100-year' and "500-year" events are expected to become more frequent. According to Iowa Flood Center modeling, the strength of the flow measured in cubic feet/second and the height of water during flood events is increasing over the past 50 years, causing increases in the severity of 50, 100 and 500 year floods. These increases in strength of floods are predicted to continue in the next 50

years (UIR Watershed Plan / Ch. 3 Challenges and Opportunities / 3.2 Breakdown of Upper Iowa Flood Events / Understanding Flood Probability 3.2.1.4) (Upper Iowa River Watershed Management Authority, 2019).

Summary of Vulnerability and Impacts

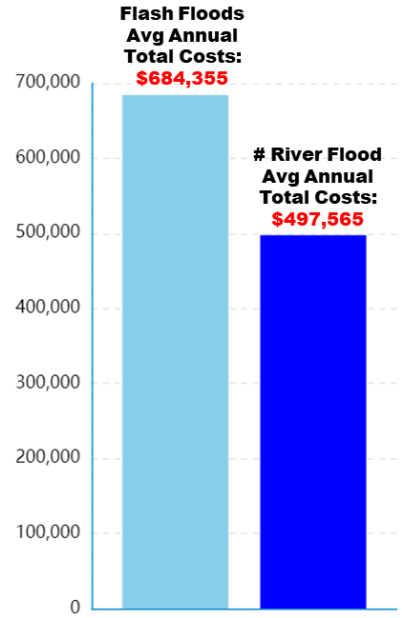
Table 41: Records of Flood Vulnerability or Losses in Allamakee County

Topic:	Source:	Years:	Data:
Estimated Annual Loss Due to Riverine Flooding	FEMA National Risk Index	2021 Version	$585,319
Crop Loss Due to Moisture, Rain, Flood	United States Department of Agriculture (USDA), Risk Management Agency	5 yrs. (2017 – 2021)	$13,088,143
"Flooding" event damages or injuries	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	Over $2M in property damage & $1.5M in crop damages, no injuries
"Flash Flooding" event damages or injuries	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	Over $10.8M in property damage & $1.8M in crop damages, 3 injuries

Safety concerns, long-term health consequences and loss of life; property damage and destruction; damage and disruption of communications, electric service, community services and water treatment or wastewater treatment facilities; impacts to transportation, including closed or damaged roads and bridges; crop and livestock damage and loss; and interruption of business are common impacts from flooding. Downstream residents can be impacted as floodwaters carry hazardous material and debris into fields and backwaters, impacting downstream farms and natural areas, and overall ecological impacts can include water quality degradation, terrestrial and aquatic habitat loss, and soil and nutrient loss and loading (UIR Watershed Plan / Ch. 3 Challenges and Opportunities / 3.1 Increased Flood Frequency + 3.3 Impact of Flooding) (Upper Iowa River Watershed Management Authority, 2019). And beyond the immediate effects of flooding, the resulting damage can lead to limited access to homes and businesses, including critical services, post-flood isolation, as well as other unexpected costs that are incurred.

Historic property, crop and infrastructure losses from flooding demonstrate the ongoing economic impacts and vulnerabilities of floods in the region. As shown in Figure 43, almost 60% of average annual flood costs in the county are attributed to flash flooding, with about 40% attributed to river flooding (Iowa Homeland Security and Emergency Mgt., 2022). As was shown in Figure 42 above, flash flooding is having a noticeably higher rate of impact on properties, while river floods are having a slightly higher rate of impact on crops.

Figure 43: % Flash or River Flood Events by Damage Type



Crop losses related to flooding in the county are significant. According to the USDA Risk Management Agency, insured crop losses in Allamakee as a result of moisture, rain, or flood from 2017 to 2021 totaled $13,088,143, an average of $2.6 million per year over the 5-year period (United States Dept. of Agriculture (USDA), 2017 - 2021). And the NCEI reports that property damages from flooding between 2002 – 2021 was also significant, totaling $12.9 million, an average of $645,900 per year (National Oceanic and Atmospheric Administration (NOAA), 2002 - 2021).

Flood impacts to county road and bridge infrastructure can also have a very high price tag. County Engineers estimated damage to county roads and bridges in the UIR Watershed at $3.4 million for the 2008 flood, and $2.1 million for the 2016 flood (UIR Watershed Plan / Ch. 3 Challenges and Opportunities / 3.1 Increased Flood Frequency / Flood of 2008 3.2.1.5 & Flood 2016 3.2.1.6 + 3.3 Impact of Flooding / 3.3.1.14) (Upper Iowa River Watershed Management Authority, 2019).

Table 42 reflects the building vulnerability for flooding events based on the Special Flood Hazard Areas (100-year floodplain) in each jurisdiction. The table shows the overall number of structures in each community and their assessed value (Allamakee County Assessor, 2023), as well as the number and replacement value of structures located in the 100-year floodplain (Iowa Homeland Security and Emergency Mgt., 2022). To summarize, the information demonstrates a potential dollar loss for structures in the floodplain and points to which land uses could be most impacted. Figure 44 provides a map of the 100-year floodplain and structures in the floodplain throughout the county. It also illustrates the waterways, HUC 12 subwatersheds, recent highwater marks, and County Engineer-identified flooded road segments.

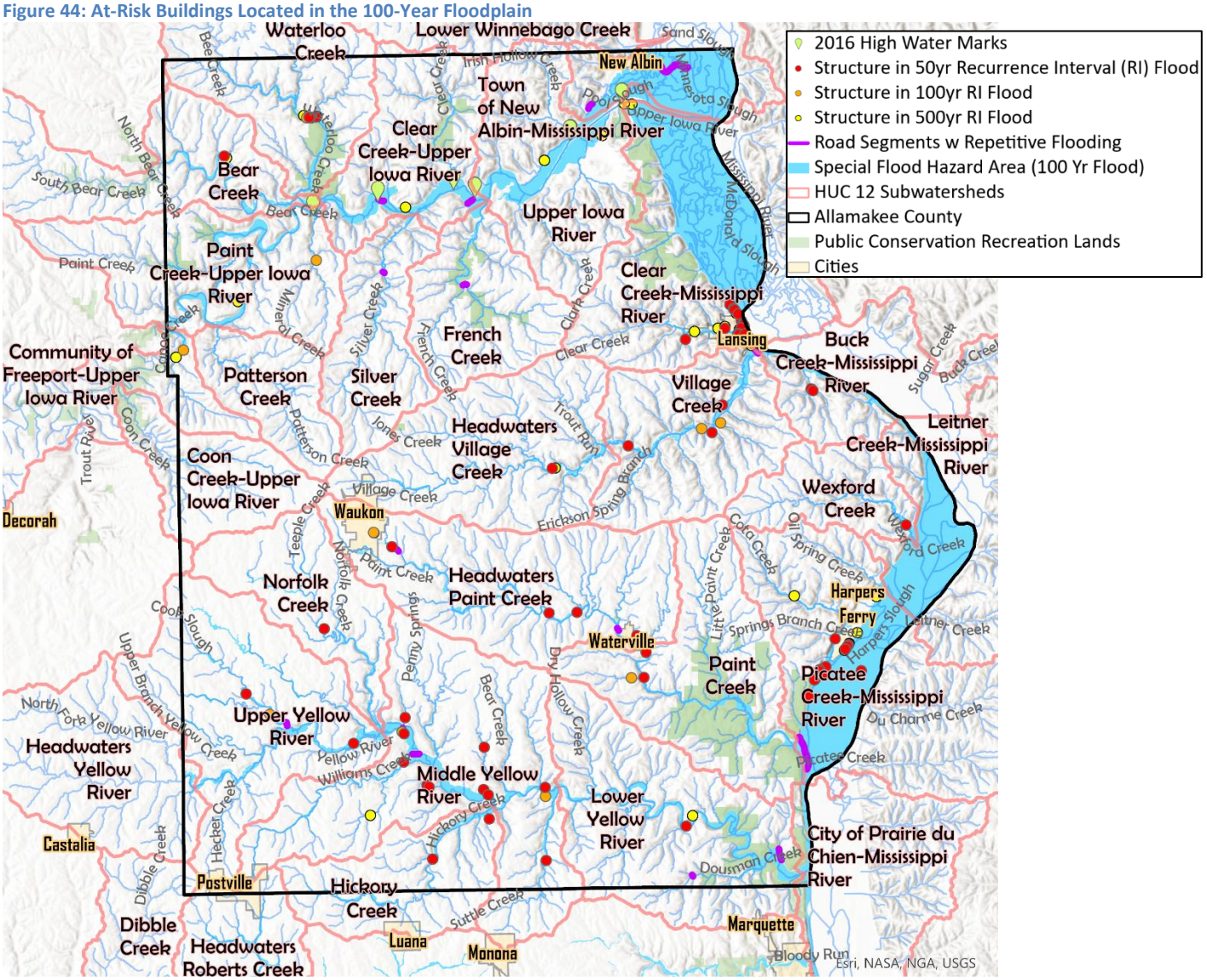
Table 42: Flood Vulnerability by Jurisdiction, 2022

City of Harpers Ferry						
	Number of Structures			Value of Structures		
Structure Type:	In Community	In Hazard Area	% In Hazard Area	$ Value in Community (Assessor)	$ Value in Hazard Area (Bldg Loss Est - IHSEMD)	% In Hazard Area
Residential	398	7	2%	$50,397,865	$64,703	.01%
R3+	16		0%	$943,816		
Commercial	12		0%	$1,076,919		
Industrial	0		0%	$0		
Agricultural	Unknown		0%	$15,700		
Religious/Non-Profit			0%	$171,100		
Government/Schools			0%	$1,216,500		
TOTAL	426	7	2%	$53,821,900	$64,703	.01%
City of Lansing						
	Number of Structures			Value of Structures		
Structure Type:	In Community	In Hazard Area	% In Hazard Area	$ Value in Community	$ Value in Hazard Area (Bldg Loss Est - IHSEMD)	% In Hazard Area
Residential	457	56	12%	$53,537,726	$941,476	2%
R3+	13			$1,384,119		
Commercial	82	11	13%	$6,383,455	$24,478	.4%
Industrial	2	2	100%	$790,900		
Agricultural	Unknown			$22,500		
Religious/Non-Profit				$1,820,700		
Government/Schools				$2,307,900		
TOTAL	554	69	12%	$66,247,300	$965,954	1%
City of New Albin						
	Number of Structures			Value of Structures		
Structure Type:	In Community	In Hazard Area	% In Hazard Area	$ Value in Community	$ Value in Hazard Area (Bldg Loss Est - IHSEMD)	% In Hazard Area
Residential	206			$15,614,362		
R3+	3			$331,700		
Commercial	43			$2,286,638		
Industrial	2			$204,400		
Agricultural	Unknown					
Religious/ Non-Profit				$2,544,300		
Government/Schools				$2,082,400		
TOTAL	254			$23,063,800		
City of Postville						
	Number of Structures			Value of Structures		
Structure Type:	In Community	In Hazard Area	% In Hazard Area	$ Value in Community	$ Value in Hazard Area (Bldg Loss Est - IHSEMD)	% In Hazard Area
Residential	586			$35,711,045		
R3+	11			$2,064,535		

Commercial	102			$10,605,620		
Industrial	8			$11,168,900		
Agricultural	Unknown			$2,200		
Religious/ Non-Profit				$3,570,300		
Government/Schools				$3,946,200		
TOTAL	707			$67,068,800		

City of Waterville						
	Number of Structures			Value of Structures		
Structure Type:	In Community	In Hazard Area	% In Hazard Area	$ Value in Community	$ Value in Hazard Area (Bldg Loss Est - IHSEMD)	% In Hazard Area
Residential	61	2	3%	$2,310,360	$19,073	.8%
R3+	1			$20,100		
Commercial	9			$163,840		
Industrial	0			$0		
Agricultural	Unknown			$5,900		
Religious/ Non-Profit				$0		
Government/Schools				$317,900		
TOTAL	71	2	3%	$2,818,100	$19,073	.7%
City of Waukon						
	Number of Structures			Value of Structures		
Structure Type:	In Community	In Hazard Area	% In Hazard Area	$ Value in Community	$ Value in Hazard Area (Bldg Loss Est - IHSEMD)	% In Hazard Area
Residential	1,450			$155,700,473		
R3+	22			$4,532,234		
Commercial	215	1	.5%	$35,750,593	$0	0%
Industrial	13			$6,704,600		
Agricultural	Unknown			$15,100		
Religious/ Non-Profit				$17,050,100		
Government/Schools				$17,056,000		
TOTAL	1,700	1	.06%	$236,809,100	$0	0%
Unincorporated Areas						
	Number of Structures			Value of Structures		
Structure Type:	In Community	In Hazard Area	% In Hazard Area	$ Value in Community	$ Value in Hazard Area (Bldg Loss Est - IHSEMD)	% In Hazard Area
Residential	3,436	63	2%	$407,526,539	$1,435,612	.4%
R3+	10			$1,109,881		
Commercial	117	7	6%	$19,596,107	$7,750	.04%
Industrial	8			$7,947,373		
Agricultural	Unknown	3	Unknown	$27,863,790	$768	.003%
Religious/ Non-Profit				$8,667,600		
Government/Schools				$13,415,000		
TOTAL	3,571	73	2%	$486,126,290	$1,444,130	.3%

Figure 44: At-Risk Buildings Located in the 100-Year Floodplain



Source: (Iowa Homeland Security and Emergency Mgt., 2022) (UERPC, 2023); (Iowa Flood Center, 2022)

In reviewing the location of structures in the 100-year floodplain by subwatershed, certain areas were found to be more vulnerable. Table 43 shows subwatersheds with vulnerable structures. The Picatee Creek-Mississippi River HUC 12 subwatershed (including the City of Harpers Ferry) and the Clear Creek-Mississippi River subwatershed (including the City of Lansing) had the highest rates of flood prone structures in the county, followed by the Middle Yellow River and Hickory Creek subwatersheds. The combined building and content loss estimates for those structures was greater for the Picatee HUC 12 at around $1.2 million (primarily residential uses), while the Clear Creek-Mississippi HUC 12 still had a significant amount but less at a combined estimated loss of $482.5k (spread between commercial, industrial and residential uses) (Iowa Homeland Security and Emergency Mgt., 2022).

The City of Lansing expressed concerns about flooding in the town during their public hazard mitigation meeting, while the City of Harpers Ferry had fewer concerns regarding city flooding. However, Cottage Road, which sits south of Harpers Ferry within the Picatee Creek subwatershed, has experienced regular flooding issues according to reports from the county. Figure 45 provides a scaled in map of the City of Lansing within the Clear Creek-Mississippi River

subwatershed, and Figure 46 provides a scaled in map of the City of Harpers Ferry in the Picatee Creek-Mississippi River subwatershed.

Table 43: Loss Estimates by Vulnerable Subwatersheds

HUC 12 Subwatershed:	# of Structures in 100 Yr. Floodplain	Building Loss Estimates ($)	Content Loss Estimates ($)	Combined Estimated Loss ($) [15]	Number Properties by Land Use Class and Combined Estimated Loss ($)
Picatee Creek-Mississippi River	35	$801,127	$407,570	$1,208,697	1 Comm ($22,269) 34 Res ($1,186,428)
Clear Creek-Mississippi River	36	$338,537	$143,930	$482,467	7 Comm ($35,337) 1 Industrial ($0) 22 Res ($447,130)
Middle Yellow River	11	$222,844	$71,226	$294,070	1 Ag ($120) 10 Res ($293,950)
Hickory Creek	2	$111,804	$35,033	$146,837	2 Res ($146,837)
Paint Creek	3	$67,418	$24,808	$92,226	3 Res ($92,226)
Village Creek	5	$55,643	$23,458	$79,101	1 Ag ($3,922) 4 Res ($75,179)
Headwaters Paint Creek	5	$36,432	$18,088	$54,520	2 Comm ($5,176) 3 Res ($49,344)
Waterloo Creek	6	$24,921	$22,357	$47,278	3 Comm ($16,475) 3 Res ($30,803)
Buck Creek-Mississippi River	1	$32,118	$10,639	$42,757	1 Res ($42,757)
Wexford Creek	1	$26,668	$7,895	$34,563	1 Res ($34,563)
Headwaters Village Creek	1	$20,208	$12,572	$32,780	1 Res ($32,780)
Town of New Albin-Mississippi River	1	$23,662	$6,897	$30,559	1 Res ($30,559)
Bear Creek	1	$17,725	$5,384	$23,109	1 Res ($23,109)
Lower Yellow River	1	$15,890	$4,798	$20,688	1 Res ($20,688)
Upper Yellow River	2	$7,817	$2,633	$10,450	2 Res ($10,450)
Paint Creek-Upper Iowa River	1	$4,147	$1,418	$5,565	1 Res ($5,565)
Community of Freeport-Upper Iowa River	1	$22	$3	$25	1 Res ($5)
Norfolk Creek	1	0	$3	$3	1 Ag ($3)

[15] Represents combined building and content estimated annual loss

Figure 45: Clear Creek – Mississippi River HUC 12 Near the City of Lansing

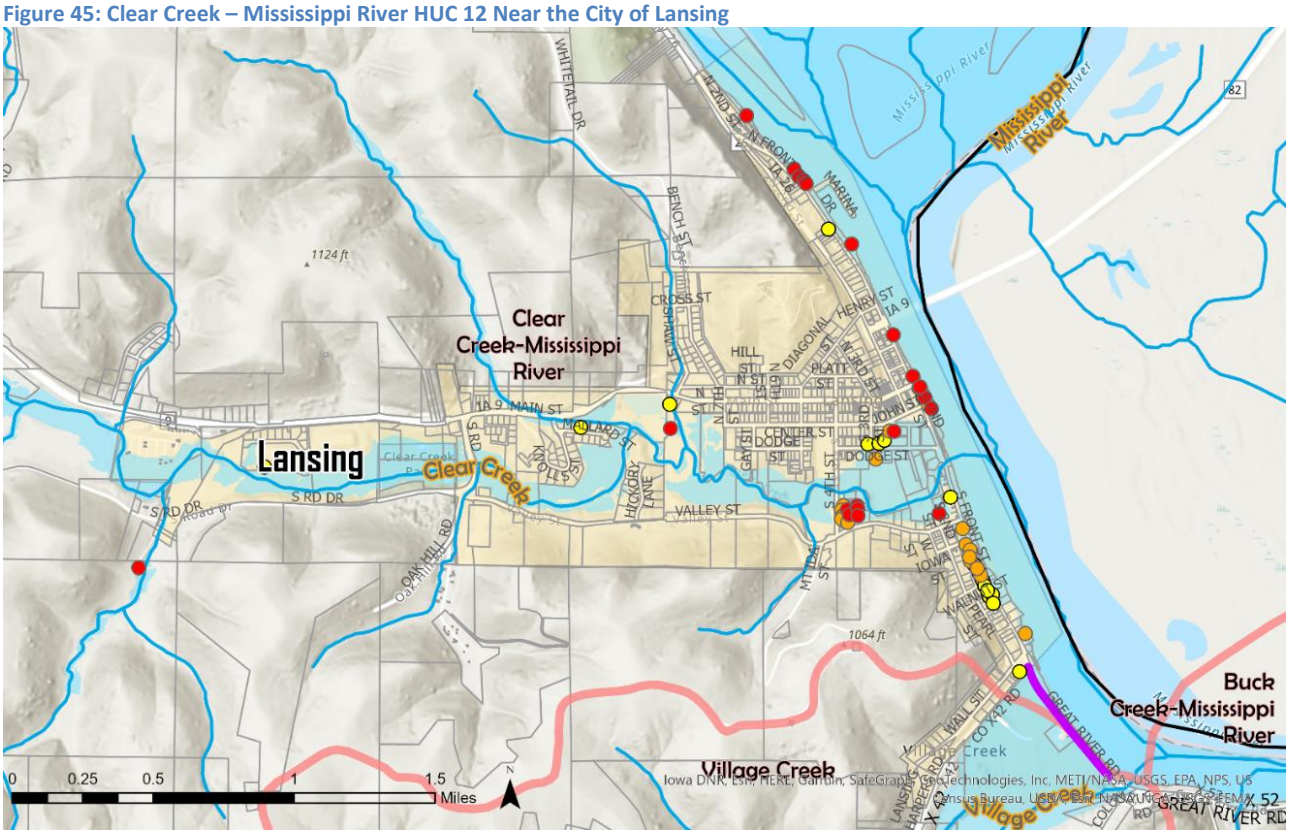
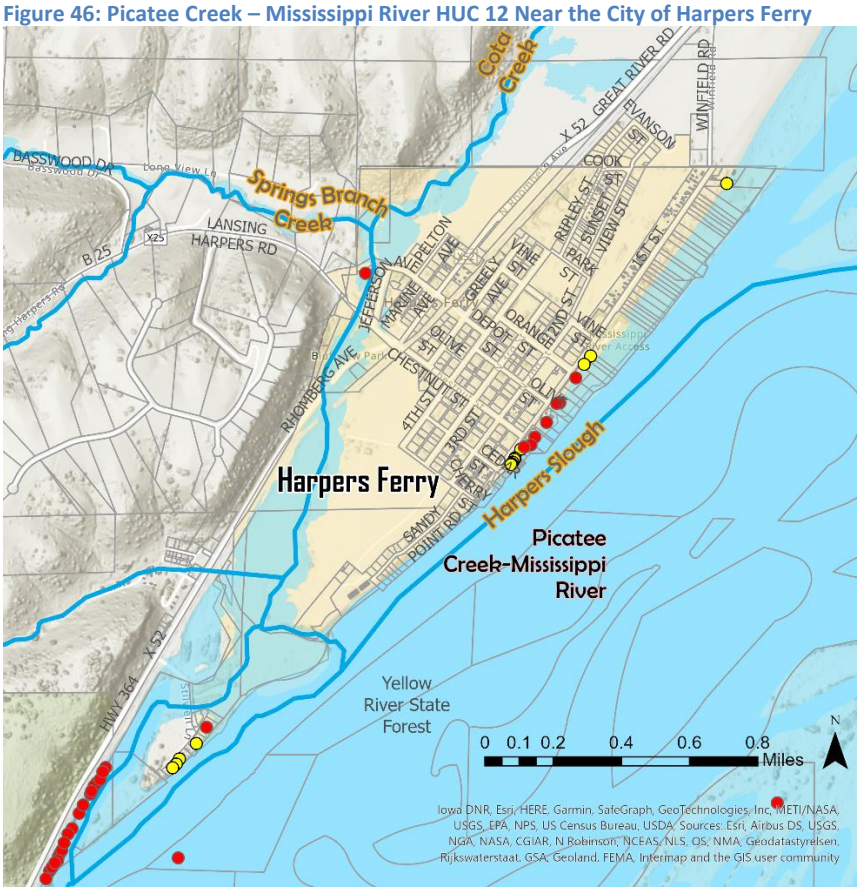


Figure 46: Picatee Creek – Mississippi River HUC 12 Near the City of Harpers Ferry



- 2016 High Water Marks
- Structure in 50yr Recurrence Interval (RI) Flood
- Structure in 100yr RI Flood
- Structure in 500yr RI Flood
- Road Segments w Repetitive Flooding
- Special Flood Hazard Area (100 Yr Flood)
- HUC 12 Subwatersheds
- Allamakee County
- Public Conservation Recreation Lands
- Cities

Some structures in the floodplain areas end up being insured through the National Flood Insurance Program (NFIP). Table 44 reflects NFIP status and Repetitive Loss (RL) Flood Property counts for eligible communities within the Planning Area. The County is currently participating in the NFIP.

Table 44: NFIP and RL Information

Participating Jurisdiction	Community Identification (CID) Number	NFIP Status	Repetitive Loss (RL) Properties
Allamakee County	190005	Participating	0
City of Harpers Ferry	190316	Participating	1
City of Lansing	190006	Participating	0
City of New Albin	190942	Participating	0
City of Postville	190641	Participating	0
City of Waterville	190317	Participating	0
City of Waukon	190008	Participating	0

Source: (FEMA, 2022); (IDNR, Ken Bouma, NFIP Specialist, 2022)

Table 45 reflects the National Flood Insurance Program (NFIP) policy statistics within those eligible communities participating in the NFIP.

Table 45: Allamakee County NFIP Policy Statistics, March 2023

Participating Jurisdiction	Policies in Force	Insurance In-Force Whole ($)	Written Premium In-Force ($) (Annual)
Allamakee County	23	$3,610,000	$15,924
City of Lansing	6	$862,000	$4,726
City of New Albin	1	$350,000	$581
City of Waterville	2	$87,000	$895
City of Waukon	1	$700,000	$2,918
Unknown	6	$973,000	$16,018

Source: (IDNR, Ken Bouma, NFIP Specialist, 2022)

Hailstorm

Risk Group 2: Medium Risk

Description

Hailstorms in Iowa cause damage to property, crops, and the environment, and harm livestock. Because of the large agricultural industry in Iowa, crop damage and livestock losses due to hail are of great concern to the state. Even relatively small hail can cause serious damage to crops and trees. Vehicles, roofs of buildings and homes, and landscaping are the other things most commonly damaged by hail. Hail has been known to cause injury and the occasional fatality to humans, often associated with traffic accidents.

Hail is associated with thunderstorms that can also bring powerful winds and tornadoes. A hailstorm forms when updrafts carry raindrops into extremely cold areas of the atmosphere where they condense and freeze. Hail falls when it becomes heavy enough to overcome the strength of the updraft and is pulled by gravity towards the earth. The onset of hailstorms is generally rapid. Table 46 describes typical damage impacts due to various sizes of hail.

Table 46: Tornado and Storm Research Organization Hailstorm Intensity Scale

Intensity Category	Diameter (mm)	Diameter (inches)	Size Description	Typical Damage Impacts
Hard Hail	5	0.2	Pea	No damage
Potentially Damaging	5-15	0.2-0.6	Mothball	Slight general damage to plants, crops
Significant	10-20	0.4-0.8	Marble, grape	Significant damage to fruit, crops, vegetation
Severe	20-30	0.8-1.2	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
Severe	25-40	1.0-1.6	Pigeon's egg > squash ball	Widespread glass damage, vehicle bodywork damage
Destructive	30-50	1.2-2.0	Golf ball > Pullet's egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	40-60	1.6-2.4	Hen's egg	Bodywork of grounded aircraft dented, brick walls pitted
Destructive	50-75	2.0-3.0	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
Destructive	60-90	2.4-3.5	Large orange > Softball	(Severest recorded in the British Isles) Severe damage to aircraft bodywork
Super Hailstorms	75-100	3.0-4.0	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	>100	4.0+	Melon	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Source: (TORRO, 2019)

Note: In addition to hail diameter, factors including number and density of hailstones, hail fall speed and surface wind speeds affect severity.

Location and Extent

Table 47: Records of Hail Probably/Extent in Allamakee County

Topic:	Source:	Years:	Data:
Hail Risk Rating	FEMA National Risk Index	2021 Version	Relatively Low Risk

The entire planning area is at risk to hailstorms, but certain communities have historically experienced more. Table 48 illustrates how many hail events participating jurisdictions in the county experienced between 2002 – 2021, relative to the county's total (National Oceanic and Atmospheric Administration (NOAA), 2002 - 2021).

Table 48: Hail Events by Jurisdiction (2002 – 2021)

Community	# Hail Events	% of County Total
Allamakee Co.	58	
Unincorporated	27	47%
Harpers Ferry	3	5%
Lansing	7	12%
New Albin	6	10%
Postville	2	3%
Waterville	1	2%
Waukon	12	21%

Previous Occurrences, Probability of Future Occurrence

Based on NCEI data, there were 58 hail reports in Allamakee County between 2002 - 2021, an average of 2.9 each year. 78% of the reports were of severe or destructive sized hail with the potential to cause significant damage.

Table 49: Records of Hail Occurrence in Allamakee County

Topic:	Source:	Years:	Data:
Hail events	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	58
Hail events	APRED Analysis Platform for Risk, Resilience and Expenditure in Disasters	Covering 20 yrs. (2002 – 2021)	69

Table 50 shows, by the size of hail, the number of hail reports in Allamakee County from 2002-2021.

Table 50: Reports of Allamakee County Hail, 2002-2021

Hail Size (inches)	Number of Reports, 2002-2021
0.75	13
0.88	16
1.00	21
1.25	2
1.50	1
1.75	3
2.00	2

Source: (National Oceanic and Atmospheric Administration (NOAA), 2002 - 2021)

The NCEI provides numerous details regarding the 58 hailstorms in the county from 2002 – 2021. Just a few examples are provided below:

- **October 4, 2006.** A supercell moved across Northeast Iowa during the early morning hours of October 4th, producing large hail up to the size of baseballs in rural Allamakee County.
- **April 12, 2014.** Several rounds of thunderstorms moved across the county on April 12th. These storms developed along a very slow moving cold front and primarily produced large hail, although some occasional high winds also were reported. Quarter-size hail was reported in Waukon.

Summary of Vulnerability and Impacts

Table 51: Records of Hail Vulnerability or Losses in Allamakee County

Topic:	Source:	Years:	Data:
Estimated Annual Loss Due to Hail	FEMA National Risk Index	2021 Version	$127,518
Crop Loss Due to Hail	United States Department of Agriculture (USDA), Risk Management Agency	5 yrs. (2017 – 2021)	$168,721
Hail events, damages or injuries	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	$219.5K in damages & no injuries, for 58 events in county

In general, assets in the planning area that are vulnerable to hail damage include crops and built structures. If hail size is large enough in diameter and crops are at a vulnerable stage in the plant/harvest cycle, it is possible for a great percentage of crop yields to be lost as result of even a single hail event. Structural damage to roofs, siding and windows occurs frequently with hail and is usually covered under private insurance. Specific structural damages in the planning area as a result of hail damage are not easily available. Personal injury, although rare, can also occur as a result of very large hail if individuals are outdoors during a hail event.

According to the National Centers for Environmental Information (NCEI) Storm Events Database, the 58 hail events in Allamakee County between 2002 - 2021 resulted in 219.5K in damages. The FEMA National Risk Index estimates county losses at the much greater scale of $127,518 annually.

Hazardous Materials

Risk Group 1: High Risk

Non-Natural Hazard

Description

This hazard incorporates Fixed Hazardous Materials Incidents, Pipeline Transportation Incidents, and Hazardous Materials Transportation Incidents. This includes the accidental release of flammable or combustible, explosive, toxic, noxious, corrosive, oxidizable, an irritant or radioactive substances or mixtures that can pose a risk to life, health or property possibly requiring evacuation.

A **Fixed Hazardous Materials (HAZMAT) Incident** is the accidental release of chemical substances or mixtures, which presents a danger to the public health or safety, during production or handling at a fixed facility. A hazardous substance is one that may cause damage to persons, property, or the environment when released to soil, water, or air. Chemicals are manufactured and used in ever-increasing types and quantities, each year as many as 500,000 products pose physical or health hazards and can be defined as "hazardous chemicals." Hazardous substances are categorized as toxic, corrosive, flammable, irritant, or explosive.

A **Hazardous Materials Transportation Incident** is the accidental release of chemical substances or mixtures, which presents a danger to the public health or safety, during transport via air, roadway, railway, or waterway.

Location and Extent

Table 52: Records of Hazardous Materials Probably/Extent in Allamakee County

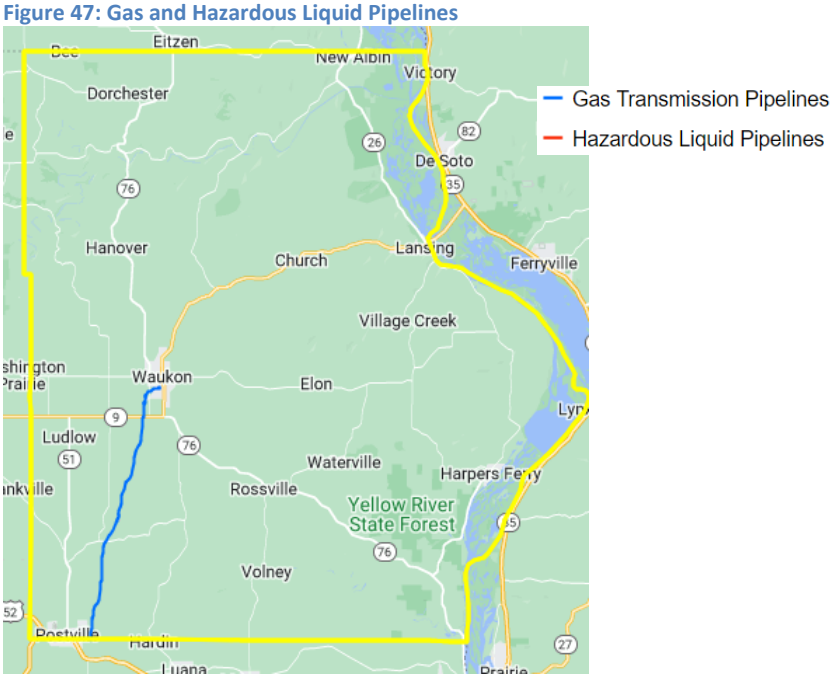
Topic:	Source:	Years:	Data:
Incident Reports: HAZMAT Transportation	U.S. DOT Pipeline and Hazardous Materials Safety Administration	2002 - 2021	4 reported HAZMAT transportation incidents

In the event of a hazardous materials (HAZMAT) incident, most are localized and are quickly stabilized by the highly trained fire departments and HAZMAT teams. Depending on the characteristic of the HAZMAT or the volume of product involved, the affected area can be as small as a room in a building or as large as 5 square miles or more. Many times, additional regions outside the immediately affected area are evacuated for precautionary reasons. The occurrence of a HAZMAT incident many times shuts down transportation corridors for hours at a time while the scene is stabilized, the product is off-loaded, and reloaded on a replacement container. More widespread effects occur when spilled product contaminates the municipal water supply or water system such as a river, lake, or aquifer.

Despite increasing safeguards, more hazardous materials are being used in commercial, agricultural, and domestic uses and being transported on Iowa roads and railways. Given the history of occurrences and the increase in hazardous material moving through the county, it is probable that future HAZMAT incidents could occur.

Pipelines - There are 14.4 miles of transmission pipelines for gas and no transmission pipelines for hazardous liquids in Allamakee County (Pipeline and Hazardous Materials Safety Administration, 2022). Figure 47 illustrates their location in the county, and the communities served in the case of natural gas.

Figure 47: Gas and Hazardous Liquid Pipelines



Source: (Pipeline and Hazardous Materials Safety Administration, 2022)

Fixed HAZMAT Sites - There are 32 sites in Allamakee County that because of the volume or toxicity of the materials on site are designated as Tier Two facilities under the Superfund Amendments and Reauthorization Act. Private and public facilities are required by federal law to provide an inventory of potentially dangerous chemicals stored on their properties. Tier II reports are filed with the Iowa Department of Natural Resources, county emergency managers and local fire departments. Knowing where large stores of chemicals are located can help first responders be more prepared for fires, spills and other situations. All communities in the county have at least one Tier II site (Allamakee County Emergency Coordinator, 2022). Table 53 below breaks down the number of Tier II sites by community.

Table 53: Tier II Hazardous Materials Sites in Allamakee Co.

Location	No. Tier II Sites
Unincorporated	1
City of Harpers Ferry	1
City of Lansing	8
City of New Albin	4
City of Postville	5
City of Waterville	2
City of Waukon	11
Total:	32

HAZMAT Transportation - The Participating Jurisdictions are located along U.S., State, or County Highways and the transportation of HAZMAT will often stay on these main roads for travel efficiency as much as possible. There are peak periods for certain agricultural chemicals and heating products, but hazardous materials are a risk year-round. Thus, all communities in the county have the potential of being exposed to hazardous materials should a transportation incident occur. The impacted area could be very small or very large, depending on the magnitude of the incident.

The Canadian Pacific Railroad, owner of Dakota, Minnesota & Eastern Railroad Corporation, operates two lines through Allamakee County. The railroad operates track running parallel to the Mississippi River through Harpers Ferry, Lansing and New Albin. It also operates track running through Postville on the south edge of the County. Some of the products handled by the rail, including certain chemicals and allied products and waste products, are considered hazardous should an accident occur.

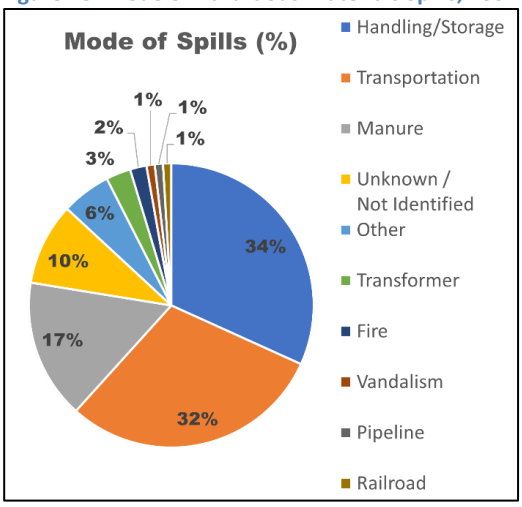
Previous Occurrences, Probability of Future Occurrence

Table 54: Records of HAZMAT Incident Occurrence in Allamakee County

Topic:	Source:	Years:	Data:
Hazardous Spill Incidents	Iowa DNR, Hazardous Material Release Database	Covering 20 yrs. (2002 – 2021)	93
HAZMAT transportation incidents	DOT Pipeline and Hazardous Materials Safety Administration	Covering 20 yrs. (2002 – 2021)	4

From 2002 to 2021, the Iowa Department Natural Resources (DNR) reports 93 hazardous spills in Allamakee County (Iowa Dept. of Natural Resources, 2023). Figure 48 provides details around the mode of the HAZMAT spills. 2/3rds of those were Handling and Storage incidents (32, or 34%) and transportation spill incidents (30, or 32%).

Figure 48: Mode of Hazardous Materials Spills, 2002 - 2021



There have been four reported HAZMAT transportation incidents in Allamakee County between 2002 – 2021 (Pipeline and Hazardous Materials Safety Administration, 2022), summarized below:

- **April 2, 2008. Postville.** While driver was using a "T" pump to pump diesel fuel into an above ground tank, the other side cap came off of the "T" pump causing a spill of 10 gallons of diesel fuel.

- **July 30, 2009. Waukon.** Highway was under construction. Front right tired dropped off pavement, where there was no shoulder. Driver lost control, rolled over causing a slight leak where a gauge broke off. Plugged hole with golf tee. Leak was contained within 1 hour. Fire Dept. was on the scene to hose it down if necessary, but hosing was not necessary.
- **April 9, 2012. Dorchester.** Tank carrying liquid ammonia slid off roadway and over turned. Both withdraw valves were broken off. Excess flow values did not completely seal. Vapor was dischared into the air under fire and EMS supervision. This was a no fault accident per sheriff's report. No charges were filed.

Also, participants of the 2018 Hazard Mitigation Planning Committee meeting report a more recent hazardous materials transportation incident in 2017 that is not recorded yet on the Pipeline and Hazardous Materials Safety Administration website. The following details were provided, and indicate this too was a serious occurrence in the county:

- **May 8, 2017**. **Volney**. A crash involving 22 tons of pelletized fertilizer (21-0-21) causing significant property damage, destruction of the truck, injury to the driver, citation to the driver, closing of the county road for 6 hours, and costs of clean-up (unknown).

There were five railway accidents in the county between 2012 – 2021 (Federal Railroad Administration, 2022), at least one of which involved hazardous materials (Iowa Dept. of Natural Resources, 2023).

The US DOT National Pipeline Mapping System records no gas or hazardous liquid pipeline accidents in Allamakee County. However, the Iowa Department Natural Resources (DNR) spill incident reports included at least one with a model listed as "pipeline". Further details on that incident identify that it was a natural gas pipeline incident.

Summary of Vulnerability and Impacts

Table 55: Records of Hazardous Materials Vulnerability or Losses in Allamakee County

Topic:	Source:	Years:	Data:
Cost of clean-up of recorded HAZMAT transportation incidents	U.S. DOT Pipeline and Hazardous Materials Safety Administration	2002 - 2021	Total for 4 incidents: $72,761

A HAZMAT accident can occur almost anywhere, so any area is considered vulnerable to an accident. People, pets, livestock, and vegetation in close proximity to facilities producing, storing, or transporting hazardous substances are at higher risk. And all structures and infrastructure within the impacted area are at risk for contamination. Immediate dangers from hazardous materials include fires and explosions. The release of some toxic gases may cause immediate death, disablement, or sickness if absorbed through the skin, injected, or inhaled. Some chemicals cause painful and damaging burns if they come in direct contact with skin. Contamination of air, ground, or water may result in harm to fish, wildlife, livestock, and crops, and may cause debilitation, disease, or birth defects over a long period of time.

Concern over the increase in rail traffic carrying potential hazardous materials was expressed by several communities in the county. Derailments and collisions with vehicles can cause spills. One of the main products handled by the rail include chemical and allied products (29% of what is hauled). A planned merger of Canadian Pacific and Kansas City Southern railroads will double the trains per day in Harpers Ferry, Lansing and New Albin, and will likely significantly increase the communities exposure to these hauled hazardous products (Surface Transportation Board, 2022).

Human Disease

Risk Group 2: Medium Risk

Non-Natural Hazard

Description

This hazard covers a human disease incident and pandemic human disease. This includes a medical, health, or sanitation threat to the general public (such as contamination, epidemics, plagues, infestations, and pandemics).

A notifiable disease is any disease that is required by law to be reported to government authorities. The collation of information allows the authorities to monitor the disease and provides early warning of possible outbreaks. As of 2020, there were 76 to 77 infectious diseases that are designated as notifiable at the national level (Wikipedia, 2020). Iowa Health and Human Services lists 50 reportable diseases on their "CADE - Reportable Communicable Diseases and Infectious Conditions" website (Iowa Department of Health and Human Services, 2023). Table 56 lists the more numerous cases of acute infectious diseases found in Iowa.

Table 56: Top Acute Diseases Reported in Iowa, 2018 - 2022

Infectious Disease:	Reported Cases:	Infectious Disease:	Reported Cases:
Campylobacteriosis	1,239	E-Coli (STEC)	300
Salmonellosis	963	Shigellosis	127
Cryptosporidiosis	415	Pertussis	99
Giardia	304	Lyme Disease	66

Source: (Iowa Department of Health and Human Services, 2018 - 2022)

A pandemic human disease is defined as a disease that has spread around the world to many people, causing illness in a person on nearly every continent. Examples include HIV/AIDS/Influenza, and most recently, the COVID-19 pandemic. Historically pandemics occur every 30 years.

Location and Extent

Human disease can occur anywhere within the planning area, and most recently the COVID-19 pandemic affected all communities versus being localized. There have also been annual outbreaks of influenza that have affected Iowans. Iowa Department of Health and Human Services reports show that the peak impact of the various strains of flu occur from January through March with an occasional occurrence from August through October.

Postville has a larger immigrant community, where potential lack of immunizations may impact likelihood of disease. Planning participants indicated measles is known to be more of a threat in this regards, however it was difficult to confirm this. County level data on communicable disease incidence was difficult to attain.

Previous Occurrences, Probability of Future Occurrence

The Iowa Department of Health and Human Services tracks epidemiological statistics at the state level, but county level data on most infectious disease cases is difficult to attain, with the exception of data on the impacts of the COVID-19 pandemic which have been more readily available. Table 57 below summarizes COVID-19 cases and related metrics.

Table 57: COVID-19 County Statistics

COVID-19 County Statistics:	% and/or Number		
Total Positive Cases (Iowa)	853,840		
Total Positive Cases (County)	3,090		
Total Deaths (since start of pandemic)	62		
Vaccination Rates (Fully Vaccinated)	52.7% (7,186)		
Vaccine Rates by Age (County Vs State)	**County:**	**IA:**	**Difference:**
0 -9	7%	13%	-6%
10 – 19	33%	44%	-11%
20 - 29	40%	52%	-12%
30 – 39	51%	60%	-9%
40 – 49	57%	65%	-8%
50 – 59	60%	71%	-11%
60 – 64	72%	79%	-7%
65+	83%	90%	-7%

Source: (State of Iowa, 2022); (Centers for Disease Control and Prevention (CDC), 2022)

Summary of Vulnerability and Impacts

Typically, people who become ill are the elderly, the very young and people with chronic medical conditions and high risk behaviors. Socioeconomic factors such as poverty level or lack of health insurance could also play a role, especially when thinking about barriers to healthcare access that can contribute to poor health status. Table 58 identifies these populations within Allamakee County where data was available.

Table 58: Vulnerable Population Data for Allamakee County

	Number	Percent[16]
Total Population (ACS 2017 – 2021):	14,068	
Population 65 years and over	3,160	22.5%
Population 55 - 64	2,163	15.4%
Population 5 years and younger	959	6.8%
Population with a disability[17]	1,664	12%
Population with a disability, Age 65 and over	920	31% of 65+ population 7% of overall population
Population below poverty level[18]	1,449	10.51%
Uninsured population[19]	943	7% of overall population 27% of Hispanic or Latino population
Adults w/Pre-existing Chronic Conditions	4,929	47% of population

Source: (U.S. Census Bureau, 2017-2021 American Community Survey 5-year Estimates, 2021);

[16] Percent of overall population or households unless otherwise noted

[17] Based on population for whom disability status has been determined (only 13,848 individuals)

[18] The Census Tract including Postville has over 20% of its population below poverty level. All other Census Tracts in the county have less than 15% of the population in poverty.

[19] Based on population for whom insurance status has been determined (only 13,848 individuals)

Infrastructure Failure

Risk Group 1: High Risk

Non-Natural Hazard

Description

This hazard incorporates the following hazards: Communication Failure, Energy Failure, Structural Failure, and Structural Fire. This includes an extended interruption, widespread breakdown, or collapse (part or all) of any public or private infrastructure that threatens life and property.

Communication failure is the widespread breakdown or disruption of normal communication capabilities. Mechanical failure, traffic accidents, power failure, line severance, and weather can affect communication systems and disrupt service.

Energy failure is an extended interruption of service of either electric, petroleum or natural gas. Natural events, human destruction, price escalation, and national security energy emergencies could all cause unavoidable energy shortages. International events typically affect supplies of energy producing products, while local conditions could affect the distribution of those products.

The collapse (part or all) of any public or private structure including roads, bridges, towers, and buildings is considered a structural failure. A road, bridge, or building may collapse due to the failure of the structural components or because the structure was overloaded. Natural events such as heavy snow may cause the roof of a building to collapse (under the weight of snow). Heavy rains and flooding can undercut and washout a road or bridge. The age of the structure is sometimes independent of the cause of the failure.

An uncontrolled structural fire in populated areas that threatens life and property may be beyond normal day-to-day response capability. Structural fires present a threat to life and property and the potential for much larger economic losses.

Location and Extent

Communications, energy and structural failures, and structural fires, can occur in any area of the county for a variety of reasons and with varying severity.

Communication disruptions and failures can range from localized and temporary, to widespread and long-term. If switching stations are affected the outage could be more widespread. Communication failure could include major telephone outages, loss of local government radio facilities, or long-term interruption of electronic broadcast services. In addition, there could be impacts to the vital services which rely on communication systems to effectively protect citizens, such as emergency 911, law enforcement, fire, emergency medical services, public works, and emergency warning systems.

Storm-related energy failures may impact a few homes or the entire community and surrounding areas. Response to such disruptions depends on the severity of the damage and the availability of staff to repair the system. Energy failures such as an extended interruption of energy supplies or service could create a potential safety and health problems for residents, and the effects of such an energy shortage could be felt throughout the state.

Structural failure can occur in any area of the county and includes the failure of roads, bridges, buildings and towers. The impacts of the failed structures would be contained to the immediate area and adjacent properties. This could be as small as a house with a fallen chimney, or the area could be relatively extensive if the structure that failed was a multi-story building or bridge. Dam and levee failures would affect a much larger area and are discussed as separate hazards.

Structural fires can occur anywhere in the county.

Previous Occurrence, Probability of Future Occurrence

No widespread communication failures have occurred in Iowa. Some areas in Allamakee County, especially those located in valleys, experience communication disruptions more frequently. Previous occurrences would indicate low probability of a major communications failure occurring in any given year. Localized incidents of communication failure due to weather, etc. are likely to occur on a yearly basis, but it is unlikely that these incidents would last long-term. Widespread communication losses are unlikely due to backup systems and redundant system designs.

Because Iowa is still partially dependent on out-of-state resources for energy, world and regional fuel disruptions can continue to be felt here. And increasing prices may continue to occur as market mechanisms are used to manage supply disruptions. However, the State of Iowa and the federal government have strategies to limit the likelihood of an energy shortage or failure and keep energy supply and demand in check.

The cause of structure failure is often found in deficiencies of design, material, or inspection. In addition, natural disasters such as flooding can easily impact things like roads and bridges. With the aging structures in Allamakee County, efforts to inspect and maintain them, and implement mitigation measures where necessary, may lessen the probability of a future structural failure.

Much of the fire prevention efforts have gone into nonresidential fires and the results have been highly effective. Even with an increase in the prevention efforts in residential fires as well, both residential and nonresidential fires will continue to occur. But structural fires with the potential to exceed local fire department response resources and their mutual aid partners are unlikely in any given year.

Summary of Vulnerability and Impacts

Communication Failure Vulnerability - Communication failure could include major telephone outages, loss of local government radio facilities, long-term interruption of electronic broadcast services, emergency 911, law enforcement, fire, emergency medical services, public works, and emergency warning systems are just a few of the vital services which rely on communication systems to effectively protect citizens. Business and industry rely on continuous communications to conduct business.

Energy Failure Vulnerability - This will disproportionately affect the low-income population. Agricultural, industrial, and transportation sectors are also vulnerable to supply, consumption, and price fluctuations. Individual consumers such as commuters are also vulnerable. Extended interruption of electric, petroleum or natural gas service could also create potential safety and health problems for county residents, who rely on these for heating, cooling, cooking, etc.

Structure Failure Vulnerability - The impacts of the failed structure would be contained to the immediate area and adjacent properties. Table 59 summarizes the amount of key types of structures in the county that could be impacted.

Table 59: Structure Inventory

Structure Type:	Amount:
Roads	961 miles
Bridges	175
Buildings	Over 7,200 (does not include agricultural buildings)
Towers	23

Source: (Allamakee County Engineer, 2023); (Allamakee County Assessor, 2023) (Federal Communications Commission, n.d.)

About 1/3rd (32%) of the dwellings in the county were built prior to 1940. Older homes are at increased risk of structural failure.

Bridges are a concern as all are located within the floodplain and 16 are ranked as deficient (Allamakee County Engineer, 2023). There are 175 bridges within the county, with 16 categorized as deficient. 17 of the bridges are posted with weight restrictions and none are closed to traffic (Allamakee County Engineer, 2023).

Structural Fire Vulnerability - With regards to structural fires, rural areas are more susceptible to total losses given the distance a fire department might need to travel to respond. ISO (Insurance Services Office) maintains information regarding property/casualty risk that includes ratings for municipal fire protection efforts in communities. ISO analyzes relevant data such as the community's alarm system, engine companies and water supply, and assigns a Public Protection Classification (PPC™) — a number from 1 to 10. Class 1 generally represents superior property fire protection, and Class 10 indicates that the area's fire suppression program does not meet ISO's minimum criteria. Fire Insurance Ratings are listed inTable 60. They are for homes in communities; properties in rural areas or in communities without fire departments have varying ratings depending on how far they are from the servicing fire department.

Table 60: ISO Public Protection Classification

Jurisdiction	Fire Suppression Rating/Public Protection Classification
Harpers Ferry	9/10
Lansing	4
New Albin	6
Postville	4
Waterville	9/10
Waukon	5

Source: (Allamakee County Emergency Coordinator, 2022)

Landslide

Risk Group 3: Low Risk

Description

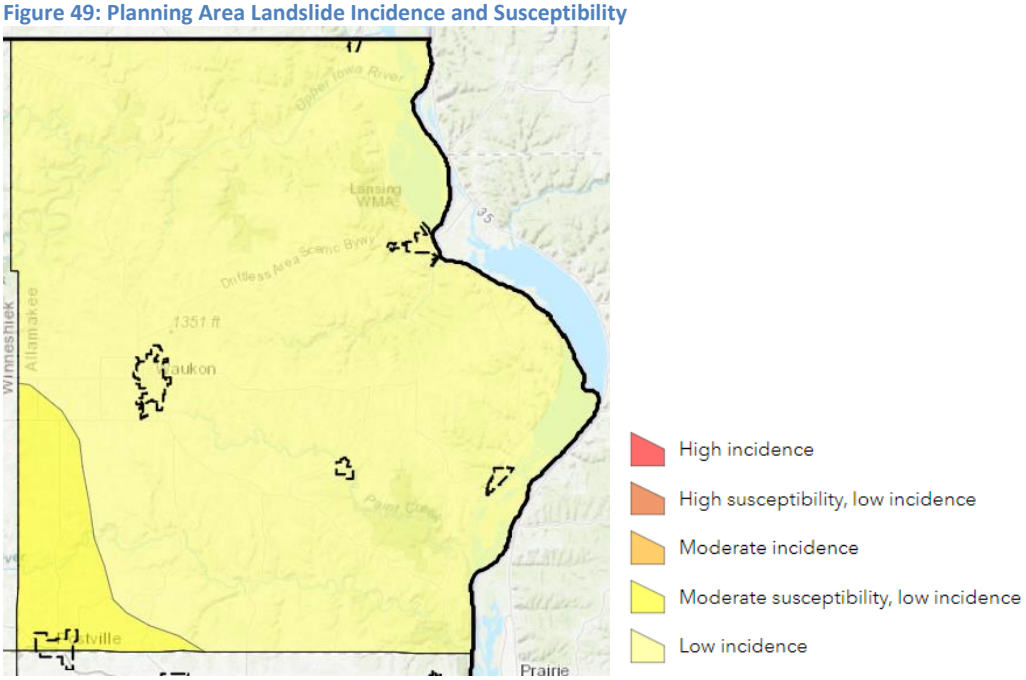
Landslides occur when susceptible rock, earth, or debris moves down a slope under the force of gravity and water. Landslides may be very small or very large, and can move at slow to very high speeds. A natural phenomenon, small

scale landslides have been occurring in slide-prone areas of Iowa long before human occupation. New landslides can occur because of rainstorms, fires, earthquakes, and various human activities that modify slope and drainage.

Location and Extent

When landslides occur, it tends to be on a localized scale. Special geology and soils, and gravity are contributing causes to events. Northeastern Iowa is one of two places in the state identified by the Iowa Hazard Mitigation Plan as vulnerable to a moderate incidence of landslides, related to areas along the Silurian Escarpment with layering of dolomite over shale, which is prone to landslides. Susceptible areas are also found along steep terrain associated with the major river valleys, such as the Mississippi River. However, according to the Iowa Homeland Security and Emergency Mgt. Hazard Mitigation Viewer, Postville is the only city in Allamakee County located in an area considered 'moderate susceptibility – low incidence' for landslides (shown in the area shaded dark yellow in Figure 49). All other cities, even those along the Mississippi River, are shown to have 'low incidence' of landslides.

Figure 49: Planning Area Landslide Incidence and Susceptibility



Source: (Iowa Homeland Security and Emergency Mgt., 2022)

Previous Occurrences, Probability of Future Occurrence

There have been numerous small-scale landslide events in Iowa. The geographic extent of the historic events has been limited to less than a city block in size and has "run out" over the stretch of less than 100 yards.

No known agency documents historical data on landslides, so county level data was difficult to attain. The best available data was personal knowledge of the HMPC, particularly the Allamakee County Emergency Coordinator and Allamakee County Engineer and individual communities. It was noted by these local entities that landslides have occurred in the past along the bluffs of the Mississippi River, near Effigy Mounds National Monument on Highway 76, outside of Harpers Ferry city limits, and on properties and roads near the City of Lansing. In addition, Columbus bluff on Columbus Road has been an historic landslide hazard, with the county road in that area having been blocked several times over the years. Overall, an exact number of historical events wasn't attained. One contact noted that a few years ago dozens of landslides in the driftless areas occurred due to rainfall events.

Summary of Vulnerability and Impacts

Because of the localized nature of landslides, injuries and deaths are very unlikely except in the case of undetected slope failure warning signs in structures overlooking steep slopes. Property damage would be limited to a very small percentage of structures. Infrastructure damages would be more significant. Utilities such as pipelines, cables, power poles, etc. are often vulnerable to downward movements of the soil. Transportation routes can be disrupted.

There have been numerous small-scale landslide events in Iowa, none resulting in injury or death.

Levee Failure

Risk Group 3: Low Risk

CRS Step 4(b)(1)a.

4(b) Plan includes assessment of less frequent floods

4(b)(1)a. Prepare an inventory of levees that would result in a flood od developed areas if they failed or were overtopped during a flood

4(b)(2) Map the area(s) affected

4(b)(3) Summarize hazard(s) in lay terms

Description

A levee is any artificial barrier together with appurtenant works that will divert or restrain the flow of a stream or other body of water for the purpose of protecting an area from inundation by flood waters. The failure of a levee can be attributed to the loss of structural integrity of a wall, dike, berms, or elevated soil by erosion, piping, saturation, or under seepage causing water to inundate normally dry areas.

Location and Extent

According to the Army Corps of Engineer's National Levee Database, there are no levees in Allamakee County. However, the Iowa Homeland Security and Emergency Management Hazard Mitigation View lists 18 levee centerlines for the county, including 14 agricultural and four natural area levees. Most noticeably, there is a concentration of agriculture levees (10+) running approximately 8 miles from Sec/Twp/Rng 31-100-4 to the mouth of the Mississippi River to the east in the north part of the county. Not shown on the below map, the New Albin is the only community that identified a levee within city limits. The New Albin levee is a essentially a dike to the wastewater treatment pond east of the community.

Figure 50: Allamakee Levees

The rate of failure of a levee or floodwall is difficult to predict, and sudden failure is a possibility. Water bursting through a narrow levee breach is moving much faster than the floodwaters in the main channel. The breaking out of this front water and its fast flow can cause more destruction to structures behind the levee than floodwaters in the main channel would have caused. A failed levee continues to cause damage long after it breaks. The breach allows large volumes of water to enter formerly dry areas, forming temporary lakes. Such lakes do not go away immediately, because the lake is blocked from returning to the main channel by levee segments that were not destroyed. Consequently, the water level drops along the main river days before it drops behind breached levees. Often, pumps behind the levees are needed to remove floodwaters that breach the levees. This alleviates some of the impacts associated with levee failures.

Previous Occurrences, Probability of Future Occurrence

Table 61: Records of Levee Breaching in Allamakee County

Topic:	Source:	Years:	Data:
Number of Breached Levees	Iowa Homeland Security & Emergency Mgt. Hazard Mitigation Viewer	2022	13

The 2018 Iowa Hazard Mitigation Plan states that of the 275 Corps of Engineers levees affected by 1993 flooding, 85% held, while the performance of non-federal levees was much worse: only 43% withstood the trauma, and 800 of 1,400 failed. The failure of non-federal levees, specifically in rural areas in the county, is a continued possibility given presence in the county.

Local records of levee failure are minimal but exist. The Iowa Homeland Security Hazard Mitigation Viewer records 13 levees in the county being breached but doesn't provide additional details. The New Albin dike was washed out by flooding several times in recent years, including in 2014 and 2016. The dike had to be re-constructed each time. In addition, representatives of the Upper Iowa River District indicate that the extended levee along the Upper Iowa River was damaged by flooding in 2016 with over $300,000 in damages. This rural levee was damaged by flood waters that impacted rock points along the levee, which in turn caused additional levee damage. The rock points had to be restored. In addition, the levee was breached near its origin and flooded several agricultural properties, and also impacted nearby roads for a short time (Iowa River Dr./A26 and Morgan Bridge Rd.).

Summary of Vulnerability and Impacts

Residents behind levees often have a false sense of security. If the actual risk is not communicated to the residents, the impacts of a failure could be devastating. In an urban setting the severity and duration may be important for life safety and health reasons, but in an agricultural area for economic reasons. When the New Albin dike failed from flooding no homes or businesses were impacted because of the location of the structure outside the community. However, the dike contained a sewer pipe to the wastewater treatment pond that was impacted, resulting in the release of wastewater into surrounding areas. With the breach of the levee along the Upper Iowa River in 2016 agricultural lands in the vicinity were flooded for some time, resulting in crop losses.

Mental Health

Risk Group 2: Medium Risk

Non-Natural Hazard

Description

According to the Centers for Disease Control and Prevention, mental health includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make healthy choices. Mental and physical health are equally important components of overall health. For example, depression increases the risk for many types of physical health problems, particularly long-lasting conditions like diabetes, heart disease, and stroke. Similarly, the presence of chronic conditions can increase the risk for mental illness (Centers for Disease Control and Prevention, 2022).

Common mental health conditions can include, but are not limited to, things like anxiety disorders, mood disorders (depression, bipolar disorder, etc.), and psychotic disorders (e.g. schizophrenia). These conditions can affect daily activities and relationships for individuals and families involved (Veteran's Memorial Hospital & Clinics, 2022). And according to the Substance Abuse and Mental Health Services Administration, there are also serious mental illnesses (SMI) that create functional impairment that substantially interferes with or limits one or more major life activities.

Mental health conditions require timely and appropriate treatment. Untreated conditions can result in substance abuse or substance use disorder, unemployment, homelessness, suicide, incarceration, or deterioration of physical health condition(s). Long-term mental illness shorter lifespans, and increased co-occurrence of chronic diseases such as diabetes, obesity, epilepsy, cancer, and cardiovascular disease.

Previous Occurrences, Probability of Future Occurrence

In Iowa, 473,000 adults have a mental health condition, 128,000 have a serious mental illness, and 37,000 12–17 year olds have depression (National Alliance on Mental Illness, 2021). Records of mental health occurrence in Allamakee County are prevalent as well. According to the Allamakee Co. 2019 Community Health Needs Assessment, “Counseling/Mental Health” was one of top four problems to address for the county (48% of respondents) (Veteran's Memorial Hospital, 2019). From the Iowa Dept. of Health & Human Services Behavioral Risk Factor Surveillance System (BRFSS), when asked for how many days during the past 30 days their mental health was not good, only 80% of county respondents answered “none,” which means that up to 20% of respondents either chose not to answer or did experience substandard mental health days.

From Youth Surveys conducted by the Iowa Dept. of Public Health, there are increasing rates of mental health occurrence in young people in the county. When asked if they had a suicide plan in the past 12 months, 13% of 6th grade respondents, 7% of 8th grade respondents, and 11% of 11th grade respondents said “yes” (Iowa Department of Public Health, 2012 - 2021). In viewing the responses to the survey over 10 years, there was a trajectory of 6th grade mental health occurrence growing in particular. Only 4.1% of 6th grade respondents had made a plan to kill themselves in 2016, and by the 2021 survey, the number had increased to 13%.

There is growing recognition among NE Iowa communities that mental health is a serious issue that will require planning, collaboration and mitigation. The Regional Planning Commission completed a 2020 government survey that went out to more than 50 cities with a 50% response rate. When asked to identify how the COVID-19 pandemic

impacted fourteen existing community needs and challenges, support for mental health received the 2nd highest number of votes as a challenge that is more pressing (Upper Explorerland Regional Planning Commission, 2020).

Local stakeholders including county social services, behavioral health providers, school counselors, law enforcement, emergency management, and more were invited to a targeted mental health hazard mitigation meeting to discuss mental health risks, impacts, vulnerabilities and potential mitigation actions. Guidance from almost all participants was that mental health occurrence has grown and will continue to do so in the future unless action is taken.

Location and Extent

To better understand where mental health occurrence is happening in the county we looked at records of behavioral health appointments at the Veteran's Memorial Hospital Mental Health Clinic in Waukon[20], which show that the makeup of those seeking care was 71% adult and 29% pediatric, and 61% female and 39% male (Laura Baxter). This provides a snapshot but doesn't necessarily give the full picture of who is experiencing mental health occurrence. Males are known to be less likely to seek care and there may be other factors influencing who can actually access care via an appointment.

A survey of law enforcement agencies across the county, including the County Sheriff and local police departments (Lansing/New Albin, Postville, Waukon), identified mental health-related emergency response incidents. This both helped identify locations of mental health incidence, but also provided a window into the severity of calls. Table 62 below details the number and type of mental health related calls. Consensus amongst several of the law enforcement agencies contacted was that these reported numbers are generally lower than actually occurred or would occur historically.

Table 62: Locations and Types of Mental Health-Related Emergency Calls in Allamakee County

Type of Incident	Totals:
LAW ENFORCEMENT mental health calls[21] (Co. Sheriff dispatch records, all county, no Waukon)	**27**
Psychiatric / Mental / Suicide:	2 / 7 / 18
Law enforcement mental health calls (Waukon Police Dept.)	**11**
Total Law Enforcement "Mental Health" Calls:	38
MEDICAL ASSIST mental health calls (from Waukon & Lansing/New Albin Police Departments)[22]	116

Data from County Social Services provides further insight into where and how mental health incidence is happening in the county (Sheri Vierkant, FY 2022 / 2023). Mobile Crisis Response (MCR) is an emergency mental health service anyone can call (individuals, schools, community members, law enforcement), where trained providers assist in de-escalating a mental health crisis on site or in getting a person to a place that can help (e.g. hospital or crisis center). And Integrated Telehealth Partners (ITP) is a provider County Social Services contracts with for emergency mental health assessments/psychiatric help in hospital emergency rooms and jails. Figure 51 below illustrates the number of MCR and ITP calls by age, month and location for Allamakee County. Mental health assessments/psychiatric are

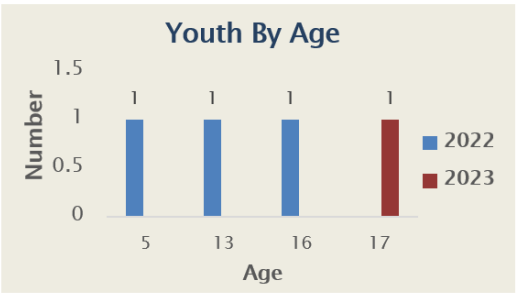
[20] Based on just the first twelve weeks of data tracking
[21] "Calls" indicate initiation of service
[22] Waukon Police Chief noted that all arrests in 2022 (60) either included being under the influence of something or being under mental duress; 1/3 of medical assist calls were mental health related; and almost 1/3 of all calls were mental health related.

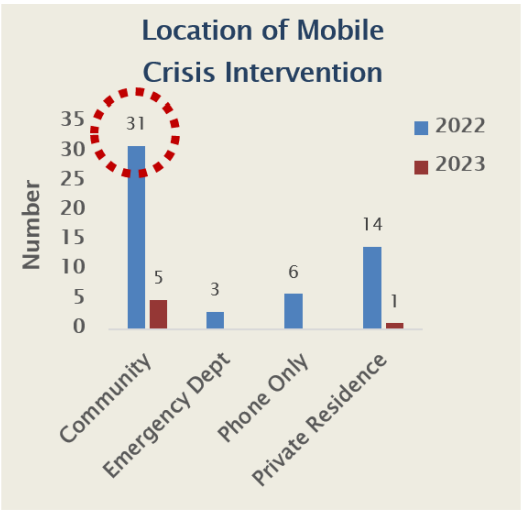
largely occurring in the Veteran's Memorial Hospital Emergency Room, with almost 60 in 2022. With regards to mobile crisis calls, most of them are happening right out in the community, largely to serve adults in crisis.

Figure 51: Mental Health Crisis Response Incidents

Type of Incident	Adult (18+) 2022	Adult (18+) 2023*	Youth 2022	Youth 2023*
Mobile Crisis Response Calls	51	5	3	1
Integrated Telehealth Partners (ITP) – Veterans Memorial Hospital, Emergency Room Calls**	58 FY 2022			
ITP Jail Calls**	7 CY 2022			

* Through November 2022 ** Number of calls, not number of people





Summary of Vulnerability and Impacts

Certain mental health vulnerabilities apply across the United States. For example, 33% of young adults 18 – 25 have experienced a mental illness in the U.S., and 32% of mixed/multi-racial adults and 44% of lesbian/gay/bisexual adults are shown to have a prevalence of mental illness (National Alliance on Mental Illness, 2021). However, rural areas have special vulnerability to mental health conditions and the human impacts that come with it. This could stem from various reasons. Social isolation is identified as a risk factor contributing to mental health problems. Because rural communities are smaller and more spread apart, individuals may be at a higher risk of social and geographic isolation. Rural communities are also unique because a higher percentage of the population is over 65. Since older individuals often face significant life changes, such as changes in health, loss of a spouse or partner, and decreased independence, they may be at higher risk for mental health conditions. Lack of resources related to poverty and limited educational opportunities are risk factors for developing mental health conditions as well. Overall, rural populations have lower median household incomes, levels of employment, and educational attainment than the general populace. Finally, individuals in rural areas have higher rates of death by suicide in comparison to the general population, and mental health conditions are a known risk factor to suicide (Veteran's Memorial Hospital & Clinics, 2022).

A very serious vulnerability for rural populations is barriers to treatment to address mental health conditions. Six common barriers unique to rural populations include (Veteran's Memorial Hospital & Clinics, 2022):

1) Desire to (or acceptability of) receiving care for a mental health problem can be challenging because of issues of stigma, especially for men.

2) Anonymity and privacy are particularly challenging in rural communities. Because of societal stigma, community members may be embarrassed if friends or family members find out they are seeking mental health treatment.

3) Workforce shortages in mental healthcare are greatest in rural and low-income areas. These provider shortages may lead to rural patients being put on long waitlists or having to drive great distances to receive necessary care. One of the main issues that results is that 60% of mental healthcare visits are through a primary care provider versus specialty care. Without appropriate integration of mental health services, primary care alone may not provide the specific treatment necessary for individuals with a mental health condition. Further, Medicaid enrollment tends to be higher in rural areas and there are often billing restrictions for this and other programs (Medicare, private insurance), which may deter behavioral health providers from choosing to work in rural areas.

In Iowa, 154,000 adults and 21,460 youth age 12-17 didn't receive needed mental health care (National Alliance on Mental Illness, 2021). And the problem is felt locally in Allamakee Co. The rate of mental health providers in Allamakee Co. is 3,410:1 (approximately 4 in a population of 13,642), versus a lower ratio of 570:1 for the state as a whole (Robert Wood Johnson Foundation, 2022 Rankings). And in the Allamakee County 2019 Community Health Needs Assessments, access to mental health services and availability of local providers were identified as key issues to be addressed (Veteran's Memorial Hospital, 2019).

The nearest mental health service in Allamakee is the Northeast Iowa Mental Health Center in the Veteran's Memorial Hospital and Clinic in Waukon. After that, additional services within 20-40 miles can be found in Decorah, including Northeast Iowa Behavioral Health (the designated Community Mental Health Center for the region) and three other clinics, and in Prairie du Chien, WI (three clinics). These existing clinics are said to have very long waiting lists in general. After that, services would be located more than 50 miles away and outside of the county.

4) Rural areas in the United States are racially and ethnically diverse (more than 20% of rural residents identify as American Indians or people of color), with immigrants playing a large roll in these numbers. However, this group of individuals often faces difficulty when accessing healthcare because of language barriers and cultural differences. Local stakeholders expressed this as a particular challenge for the community of Postville.

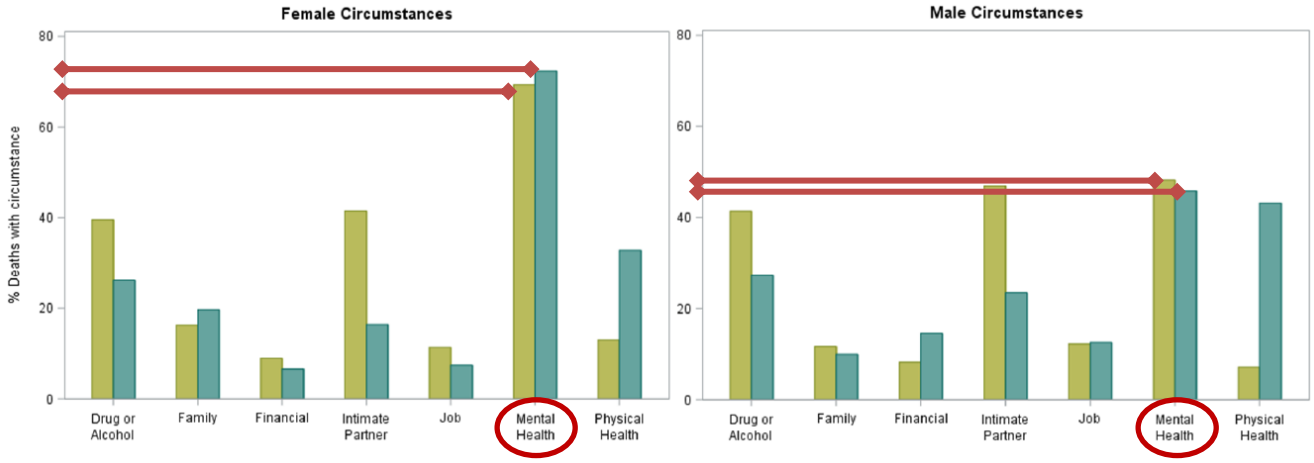
5) In rural areas, one of the main barriers to treatment is the cost of mental healthcare. Some insurance companies do not cover certain mental health services making these services too expensive for a patient to pay out of pocket. Other times, individuals in rural communities may not have health insurance, which can also make healthcare costly.

6) In rural settings, not all individuals have access to reliable transportation to healthcare and this problem specifically impacts the most vulnerable, including low-income communities and disabled individuals. Rural community members are more likely than urban residents to rely on automobiles as a means of transportation, meaning rural residents without automobiles are more isolated from proper treatment. Iowans are over 2x more likely to be forced out-of-network for mental health care than primary care, possible requiring travel for services, and without access to transportation care may be inaccessible (National Alliance on Mental Illness, 2021).

Mental health impacts can be significant when we consider the connection between mental health and suicide. According to the National Alliance on Mental Illness (NAMI), 90% of people who die by suicide have experienced symptoms of mental health conditions, and on average 1 person in the U.S. dies by suicide every 11 minutes. A report from the Iowa Department of Public Health addressing the "Factors Contributing to Death from Suicide" in the 3-year period from 2016 – 2018 found that mental health is the most likely contributing factor for both males and

females, and for all age groups, as shown in Figure 52 below (Iowa Department of Public Health, 2016 – 2018). In all, the report noted that there were 1,393 deaths from suicide in Iowa in that period, including 1,142 males (82% of deaths) and 251 females (18%).

Figure 52: Factors Contributing to Death from Suicide in Iowa



Severe Winter Storm

Risk Group 2: Medium Risk

Description

Winter storms in Iowa typically involve snow, extreme cold, and/or freezing rain (ice storms). These conditions pose a serious threat to public safety, disrupt commerce and transportation, and can damage utilities and communications infrastructure. Winter storms can also disrupt emergency and medical services, hamper the flow of supplies, and isolate homes and farms.

The National Weather Service describes different types of winter storm conditions as follows:

- **Blizzard** – Winds of 35 mph or more with snow and blowing snow reducing visibility to less than 1/4 mile for at least three hours.
- **Blowing Snow** – Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
- **Snow Squalls** – Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.
- **Snow Showers** – Snow falling at varying intensities for brief periods of time. Some accumulation is possible.

- **Freezing Rain** – Measurable rain that falls onto a surface whose temperature is below freezing. This causes the rain to freeze on surfaces, such as trees, cars, and roads, forming a coating or glaze of ice. Most freezing rain events are short lived and occur near sunrise between the months of December and March.
- **Sleet** – Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects.

Location and Extent

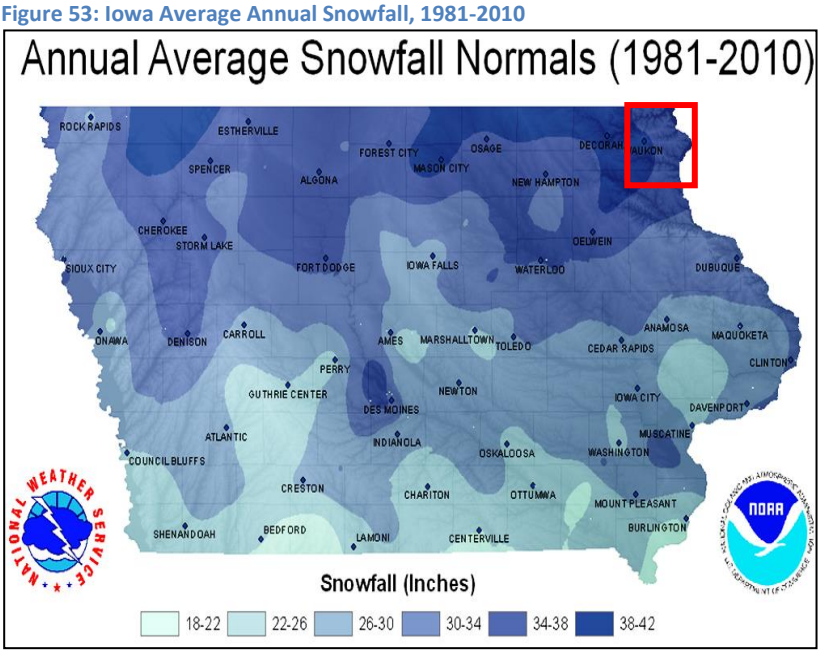
Table 63: Records of Winter Storm Extent in Allamakee County

Topic:	Source:	Years:	Data:
Cold Wave, Ice Storm, Winter Weather, Risk Ratings	FEMA National Risk Index	2021 Version	Relatively Moderate, Very Low, Relatively Low risks (respectively)

The entire State of Iowa is vulnerable to heavy snow and freezing rain. The far northern portion of Iowa near the Minnesota border receives the greatest average annual snowfall in Iowa with upwards of 38 inches per year. The southwestern portion of Allamakee County is among the region that receives the greatest average annual snowfall, but the remaining portion of the county receives an average annual snowfall of 34 to 38 inches per year. Figure 53 reflects the State of Iowa average annual snowfall from 1981 to 2010.

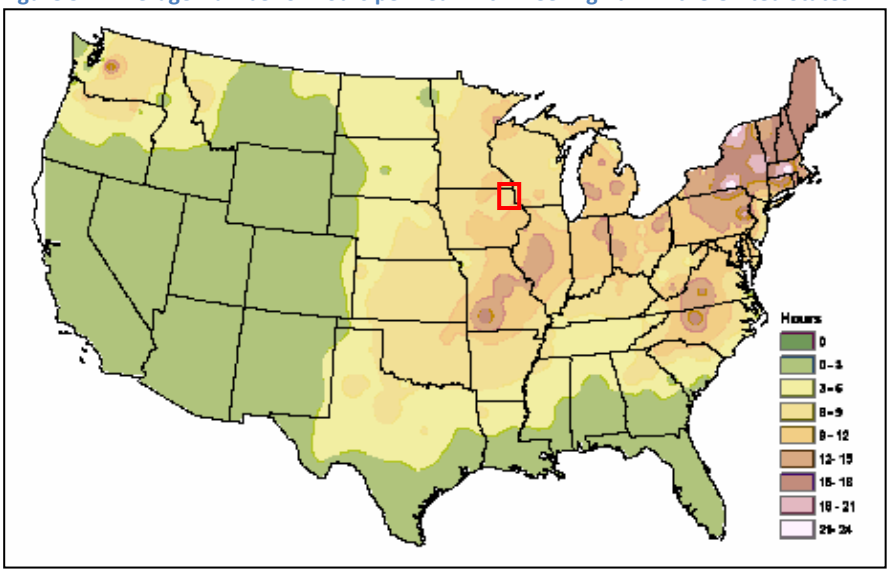
The segment of Northeastern Iowa that includes the Participating Jurisdictions receives 8-9 hours of freezing rain on average per year. Figure 54 reflects United States zones for annual average hours of freezing rain.

Figure 53: Iowa Average Annual Snowfall, 1981-2010



Source: (National Weather Service, 2012)

Figure 54: Average Number of Hours per Year with Freezing Rain in the United States



Source: (Houston & Cnangnon, 2003)

Previous Occurrences, Probability of Future Occurrence

Table 64: Records of Winter Storm Occurrence in Allamakee County

Topic:	Source:	Years:	Data:
Agriculture Disaster Declarations for frost/freeze	U.S. Secretary of Agriculture	Covering 10 yrs. (2012 – 2021)	2
Variety of winter weather, cold, freeze and snow events	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	68

The National Centers for Environmental Information (NCEI) Storm Events Database states that 68 winter storm events were reported between 2002 – 2021 (including winter weather, winter storms, blizzards, cold/wind chill, extreme cold/wind chill, frost/freeze, and heavy snow events). Summaries of selected winter storm events available are listed below:

- **March 17, 2005**. A slow moving area of low pressure tracked across Iowa, bringing a prolonged period of heavy snow to portions of Northeast Iowa. Storm total accumulations of 6 to 12 inches were common, with the locally higher amounts of around 18 inches….In addition to the heavy snow, strong easterly winds caused drifting problems, with snow drifts in some locations as deep as 3 to 4 feet.
- **February 20, 2011.** Freezing rain developed across the county during the early morning hours of the 20th with ice accumulations up to a quarter of an inch on exposed surfaces…The ice accumulations caused power outages, downed power and telephone lines, a few vehicle accidents and school cancellations.
- **December 28, 2015.** A winter storm hit northeast Iowa…with heavy snow, sleet and strong winds… This caused a rapid deterioration in road conditions causing travel conditions to quickly become dangerous and some county sheriff departments recommended no travel…

Previous occurrences would indicate a high probability of winter storm occurring in any given year. Heavy snow and winter weather occurs annually and the ramifications of such weather are considered a normal part of life in Allamakee County. Duration of the most severe impacts of winter storms is generally less than one week, though dangerous cold, snow, and ice conditions can remain present for longer periods in certain cases.

Summary of Vulnerability and Impacts

Table 65: Records of Winter Storm Vulnerability or Losses in Allamakee County

Topic:	Source:	Years:	Data:
Estimated Annual Loss Due to Cold Wave/Ice Storm/Winter Weather	FEMA National Risk Index	2021 Version	$129,711
Crop Loss Due to Frost/Freeze/Cold & Wet	United States Department of Agriculture (USDA), Risk Management Agency	5 yrs. (2017 – 2021)	$6,208,179
Winter weather, winter storm or blizzard events, damages or injuries	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	$25,000 property damage & no injuries, for 41 events
Winter Storm Avg Annual Total Costs	Iowa Homeland Security & Emergency Mgt. Agency, Hazard Mitigation Viewer	2023 Version	$2,933 (property only -- not crop -- based on 7 events)

Direct and indirect economic impacts of winter storms include cost of snow removal, damage repair, increased heating bills, business and crop losses, power failures and frozen or burst water lines. Table 65 above details recorded winter storm condition losses from the FEMA National Risk Index, the USDA Risk Management Agency, Iowa Homeland Security and Emergency Management, and the National Centers for Environmental Information.

Injury or even death is possible from severe winter storm conditions when proper shelter is not available to protect against severely cold temperatures. For humans, extreme cold can cause hypothermia (an extreme lowering of the body's temperature) and permanent loss of limbs due to frostbite. Infants and the elderly, or those without shelter or who live in a home that is poorly insulated or without heat, are particularly at risk. Extreme cold conditions can also stress or kill unprotected livestock. Other potential health and safety threats include toxic fumes from emergency heaters and household fires caused by fireplaces or emergency heaters.

Ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires, and similar objects. Further, freezing rain and drizzle accumulating on utility poles and power lines can cause widespread power outages. Since the power outages associated with winter storms occur during cold weather, the population is at risk to cold temperature exposures and pipes could freeze or burst. Again, the elderly and poverty populations are considered to be more vulnerable. Table 66 reflects the percentage of persons over age 65 and the percentage of persons below the federal poverty level in the Participating Jurisdictions compared to the state and national averages.

Table 66: Selected Demographic and Economic Characteristics

Jurisdiction	2020 Population	65 Years and Over (%)	Persons Below Poverty (Number)
Harpers Ferry	262	54.8%	9.3%
Lansing	968	35.2%	18%
New Albin	432	20.9%	8.2%
Postville	2,503	13.8%	24.1%
Waterville	109	20.1%	7.8%
Waukon	3,827	25.3%	10.3%
Allamakee County	14,061	22.5%	10.5%
Iowa	3,190,369	17.0%	11%
United States	331,449,281	16.0%	12.6%

Source: (U.S. Census Bureau, 2020 Decennial, 2023); (U.S. Census Bureau, 2017 - 2021 ACS 5-Yr Estimates, 2023); (U.S. Census Bureau, 2017 - 2021 ACS 5-Yr Estimates, 2023)

During periods of icing and/or heavy snow fall, transportation can also be treacherous. Severe winter storms increase the probability of automobile accidents which can result in serious injury or death. Further, response personnel are exposed to cold temperatures and traffic accidents when responding to the victims' needs, operations can be limited or halted when critical services are not available, and workers may not be able to make it to their place of work, limiting the continuity of operations.

Fire during winter storms presents a great danger as water supplies can freeze and firefighting equipment may not function effectively, or personnel and equipment may be unable to get to the fire.

Finally, rivers and lakes freeze and subsequent ice jams can create flooding problems as temperatures begin to rise.

Sinkholes

Risk Group 3: Low Risk

Description

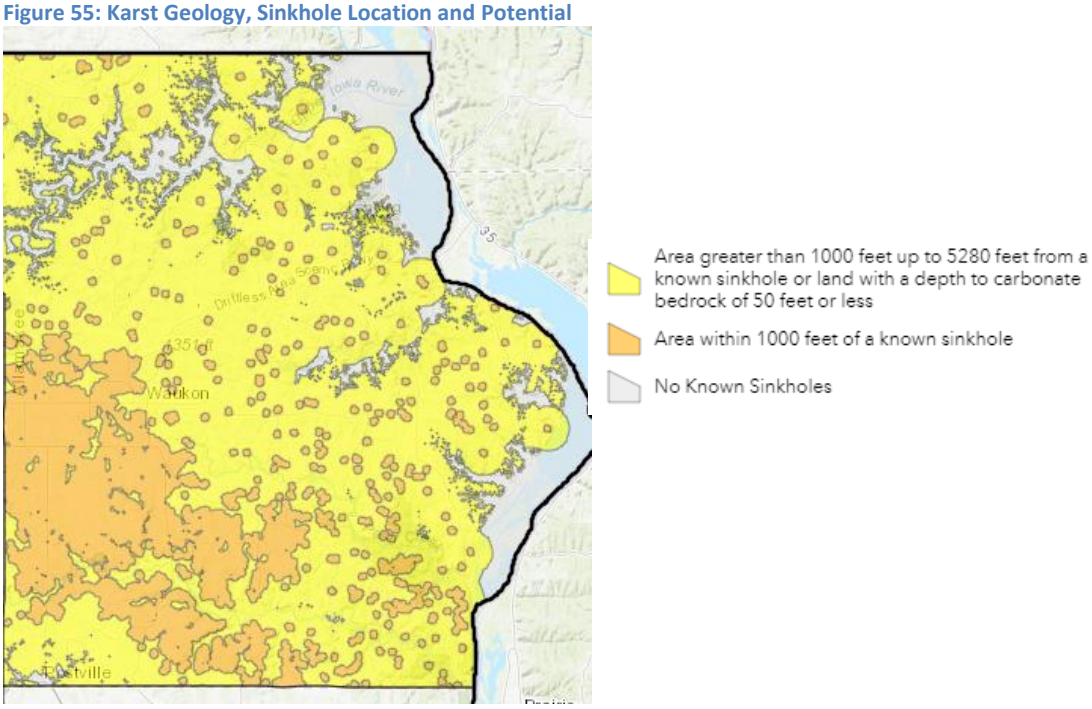
Sinkholes are common where the rock below the land surface is limestone, carbonate, salt beds, or rocks that can naturally be dissolved by ground water circulating through them. As the rock dissolves, spaces and caverns develop underground. Sinkholes are dramatic because the land usually stays intact for a while until the underground spaces get too big. If there is not enough support for the land above the spaces then a sudden collapse of the land surface can occur. Sinkholes range from broad, regional lowering of the land surface to localized collapse. The primary causes of most sinkholes are human activities: Underground mining of coal, groundwater or petroleum withdraw, and drainage of organic soils. In addition, this is due to the erosion of limestone of the subsurface. 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.

Karst is a landscape formed from the dissolution of soluble rocks including limestone, dolomite and gypsum. Sinkholes are a common indication of karst; caves and underground drainage systems are other indicators. With limestone commonly found in northeast Iowa, sinkholes have the potential to occur.

Location and Extent

Areas of karst geology and known sinkholes in the county area shown in Figure 55 below. Based on this graphic, heavy concentrations of sinkholes can be found largely in the unincorporated areas in the southwest portion of the county, and also near Waukon. Overall, 23% of the county is classified as an area within 1,000 ft of a known sinkhole, and over 63% of the county is classified as an area greater than 1,000 ft up to 5,280 ft from a known sinkhole or made up of karst geology which is prone to sinkholes).

Figure 55: Karst Geology, Sinkhole Location and Potential



Source: (Iowa Department of Natural Resources, 2009)

Damage from sinkholes consists primarily of direct structural damage and property loss and depreciation of land values, and also includes business and personal losses that accrue during periods of repair. Damage to property, facilities, and infrastructure would only occur if the event undermined foundations.

Previous Occurrences, Probability of Future Occurrence

Data from the Iowa Department of Natural Resources (DNR) indicates there are 10,274 known and historic sinkholes or depressions in Allamakee County (Iowa Department of Natural Resources, 2022). Some HMPC members recalled sinkhole occurrences near them but weren't able to provide details or specific locations. Other official records of specific sinkhole occurrence and details were not readily available.

Previous occurrences would indicate a high probability of sinkholes occurring in the future.

Summary of Vulnerability and Impacts

Damage consists primarily of direct structural damage and property loss and depreciation of land values, and also includes business and personal losses that accrue during periods of repair. Damage to property, facilities, and infrastructure would only occur if the event undermined foundations.

Thunderstorms and Lightning

Risk Group 3: Low Risk

Description

Atmospheric imbalance and turbulence may result in thunder, heavy rains (which may cause flooding), strong winds, microbursts, high straight-line winds (often mistaken for tornadoes), tornadoes, surface hail or lightning. Most thunderstorms produce thunder, lightning and rain. Because thunderstorms may occur singularly, in clusters, or in lines, it is possible that several thunderstorms may affect the same area in the course of a few hours. One system may spawn multiple events. The National Weather Service considers a thunderstorm severe if it produces hail at least one inch in diameter, wind 58 mph or higher, or tornadoes.

Lightning is an electrical discharge between positive and negative regions of a thunderstorm. It is sudden, extremely destructive and potentially deadly. Due to its nature as a powerful electrical phenomenon, lightning causes extensive damage to electronic systems that it contacts. A particular concern in Iowa is the protection of facilities and communications systems that are critical for maintaining emergency response systems, protecting public health, and maintaining the state's economy.

Average duration of each lightning stroke is 30 microseconds and duration of thunderstorm events is usually less than six hours. Thunderstorm forecasting and warning time for lightning occurrence is generally less than six hours.

Location and Extent

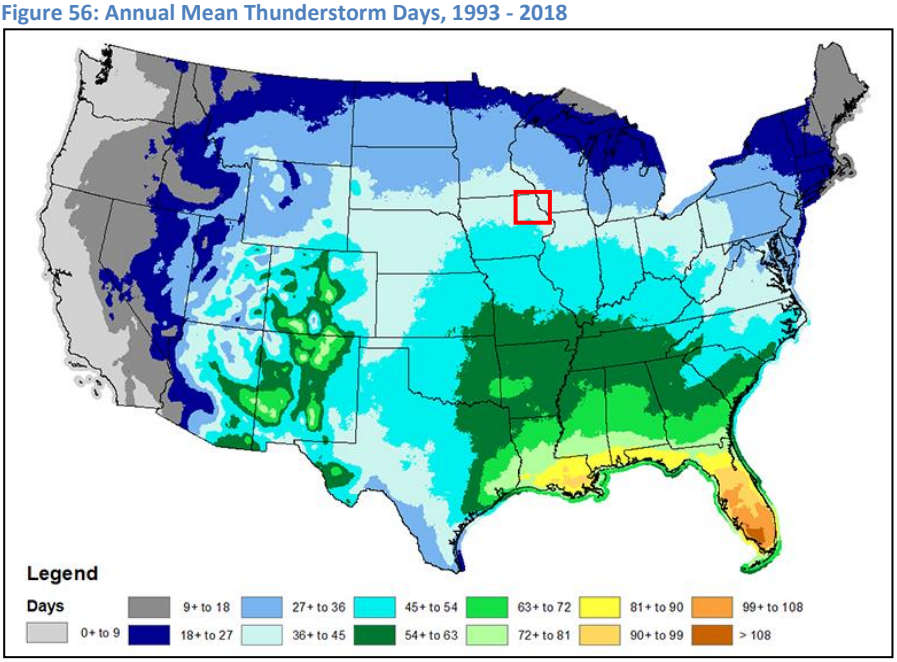
Table 67: Records of Lightning or Thunderstorm Extent in Allamakee County

Topic:	Source:	Years:	Data:
Lightning Risk Rating	FEMA National Risk Index	2021 Version	Very Low Risk

With Iowa's location in the interior of the U.S., the ingredients of a severe storm are often present (moisture, warm and unstable air, and a lifting mechanism). The county is similar to the surrounding area and the entire state of Iowa with the frequency of thunderstorms and lightning flashes. The region that includes Allamakee County averages 36 - 45 days with thunderstorms per year and 6 - 12 lightning strikes per square mile per year.

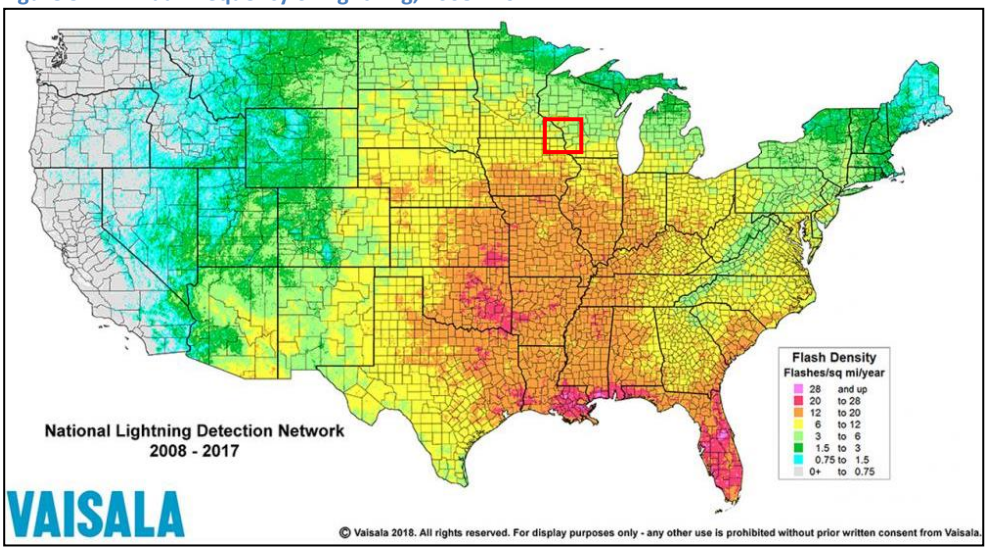
Figure 56 reflects the average number of thunderstorm days each year throughout the U.S. from 1993 – 2018, and Figure 57 reflects the United States annual frequency of lightning from 2008 - 2017.

Figure 56: Annual Mean Thunderstorm Days, 1993 - 2018



Source: (Koehler, Thomas L., 1993 - 2018)

Figure 57: Annual Frequency of Lightning, 2008 - 2017



Source: (Vaisala, 2008 - 2017)

Like tornadoes, thunderstorms 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. Although the frequency of lightning events is high, the magnitude is negligible. Generally damages are limited to single buildings and in most cases, personal hazard insurance covers any losses.

Previous Occurrences, Possibility of Future Occurrence

Table 68: Records of Thunderstorm or Lightning Occurrence in Allamakee County

Topic:	Source:	Years:	Data:
Major Disaster Declarations for severe storms	Federal Emergency Management Agency (FEMA)	Covering 20 yrs. (2001 – 2022)	7
Lightning Events	APRED Analysis Platform for Risk, Resilience and Expenditure in Disasters	Covering 20 yrs. (2002 – 2021)	1
Lightning events	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	1
Thunderstorm wind events	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	53

Thunderstorms are common in Iowa, ranging from 40 storms per year in the north portion of the state to 60 per year in the southeast portion. Of these, most occur from April to September with the peak month being June. The NCEI reports one lightning event in the county between 2002 – 2021 affecting the community of Postville. In the same time period 53 thunderstorm wind events are reported in the county, affecting unincorporated areas, and the communities of Harpers Ferry, Lansing, Postville and Waukon.

There have been seven Presidential Disaster Declarations between 2002 - 2021 related to severe storms in Allamakee County.

Previous occurrences would indicate a high probability that a severe thunderstorm might occur in any given year. As climate patterns change, there is a very high likelihood that a few of these summer storms will become severe and cause damage.

Summary of Vulnerability and Impacts

Table 69: Records of Thunderstorm and Lightning Vulnerability or Losses in Allamakee County

Topic:	Source:	Years:	Data:
Estimated Annual Loss Due to Lightning	FEMA National Risk Index	2021 Version	$10,758
Crop Loss Due to "Other (e.g. Lightning)"	United States Department of Agriculture (USDA), Risk Management Agency	5 yrs. (2017 – 2021)	$350,114
Thunderstorm wind events, damages or injuries	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	$272.8K property damage, $38.25K in crop damages, and 1 injury for 53 events
Lightning events, damages or injuries	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	$3K in property damages for 1 event

Like tornadoes, thunderstorms 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, cause electrical failures and impact electronic equipment located inside buildings. Communications equipment and warning transmitters and receivers could be knocked out by lightning strikes as well. 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. And other hazards resulting from a thunderstorm, such as high straight-line winds, microbursts, rain and flooding also bring risk for property damage and injury.

According to the National Centers for Environmental Information (NCEI) Storm Events Database, the 53 thunderstorm wind events in Allamakee County between 2002 - 2021 resulted in approximately $272.8K in property damages and $38.25K in crop damages. 47 of 53 days of the thunderstorm wind events resulted in some degree of property damage. One lightning event in the same period resulted in $3K in property damage.

Transportation Incident

Risk Group 1: High Risk

Non-Natural Hazard

Description

This hazard includes incidents in air, roadway and rail transportation, any transportation accident involving any mode that directly threatens life and which results in property damage, death, injury and/or adversely impacts a community's capabilities to provide emergency services.

An air transportation incident may involve a military, commercial, or private aircraft. Air transportation is playing a more prominent role in transportation as a whole; airplanes, helicopters, and other modes of air transportation are used to transport passengers for business, health and recreation as well as freight. Mechanical failure, pilot error, weather conditions are among a variety of circumstances that can result in an air transportation incident.

A roadway transportation incident can be single or multi-vehicle requiring responses exceeding normal day-to-day capabilities. There are approximately 875 total miles of roadway in the county (Allamakee County Engineer, 2023); local residents, travelers, business, and industry rely on this network on a daily basis. Weather conditions play a major factor in the ability of traffic to flow safely in and through the state as does the time of day and day of week. Numerous traffic accidents occur in the county and can result in property damage and injury; major accidents involving multiple vehicles and serious injury are not uncommon.

A rail transportation incident is a train accident that directly threatens life and/or property, or adversely impacts a community's capabilities ability to provide emergency services. Railway incidents may include derailments, collisions, and highway/rail crossing accidents. Train incidents can result from a variety of causes; human error, mechanical failure, faulty signals, and/or problems with the track. Results of an incident can range from minor "track hops" to catastrophic hazardous material incidents and even human/animal casualties.

Location and Extent

A vehicle incident can occur anywhere on the 1,175 miles of roads in the county and would generally be localized. Figure 58 shows the location of vehicle crashes that occurred between 2013 and 2022 (Iowa Dept. of Transportation, 2022). They include 1,744 crashes, over 90% of which occurred in rural areas/edges of communities. Collision with animals is the most likely cause (31%) followed by running off the road to the right (13%), and single vehicle collisions are the most likely manner (60%). Figure 59 and Figure 60 show vehicle accidents at the local level for participating jurisdictions with the greatest number of incidents (Postville & Waukon), with key problem areas identified.

Figure 58: Countywide Vehicle Crash Locations, 2013 - 2022

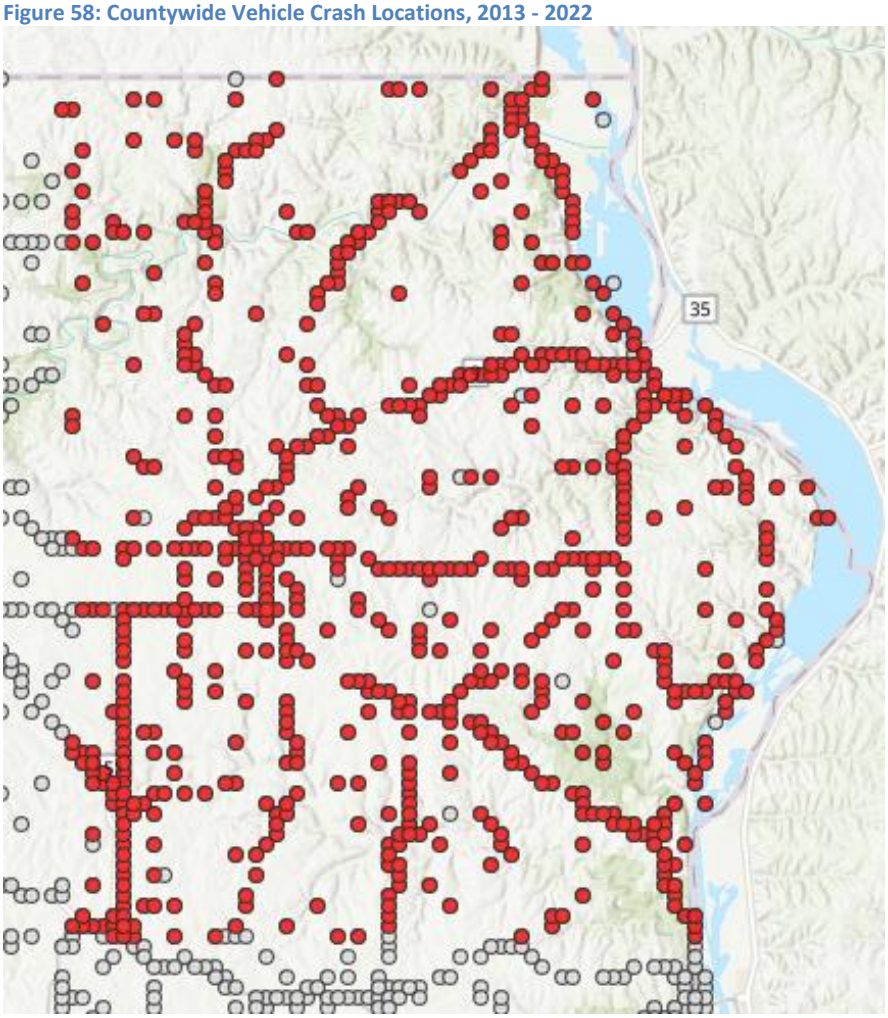


Figure 59: Postville Vehicle Crash Locations, 2012 - 2021

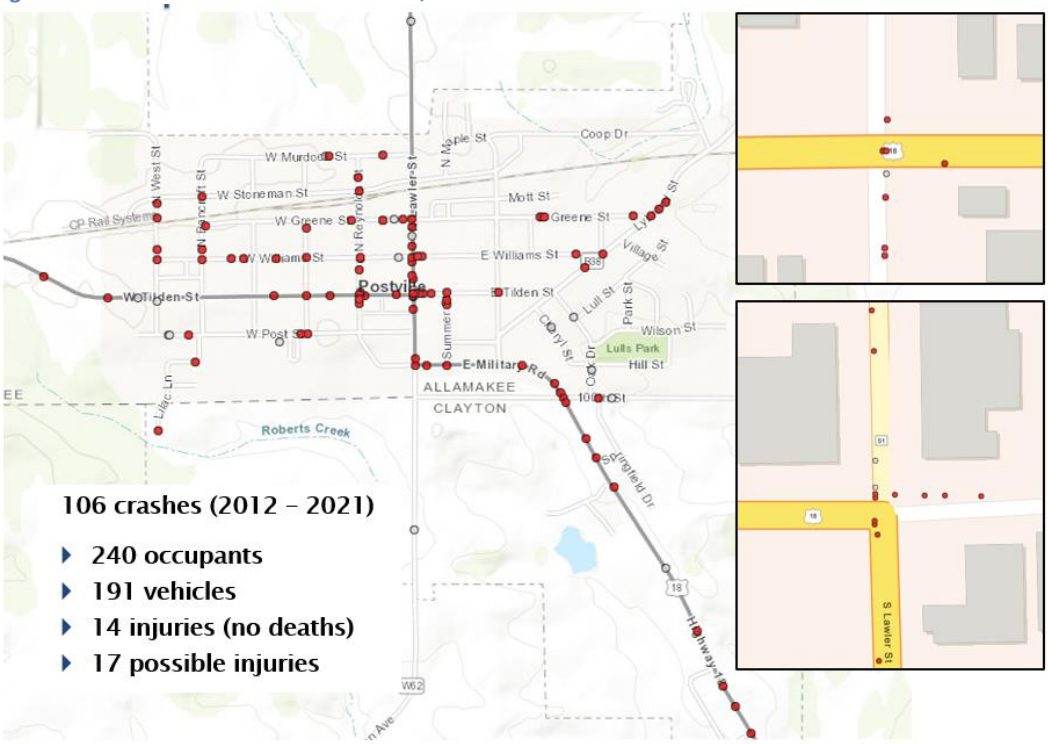
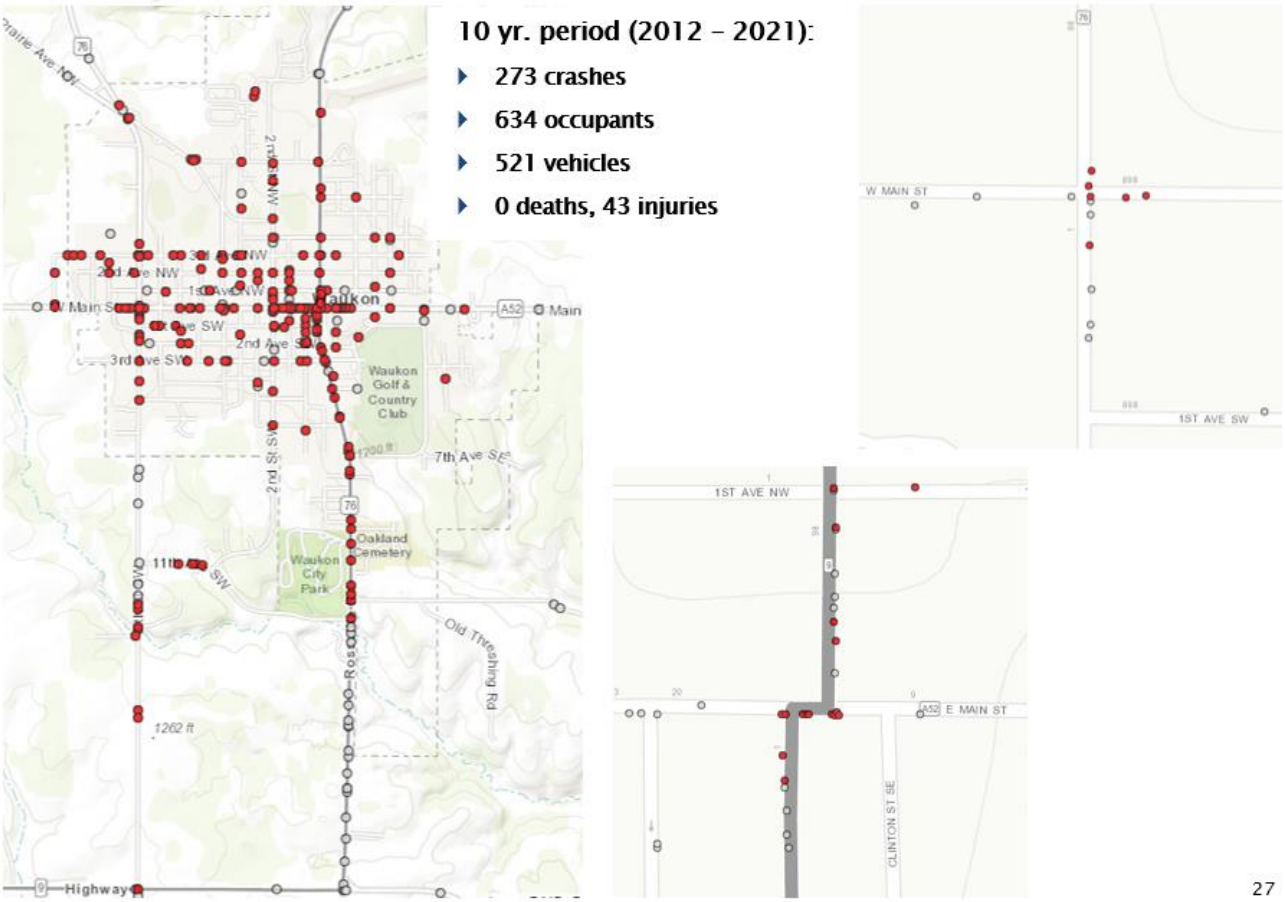


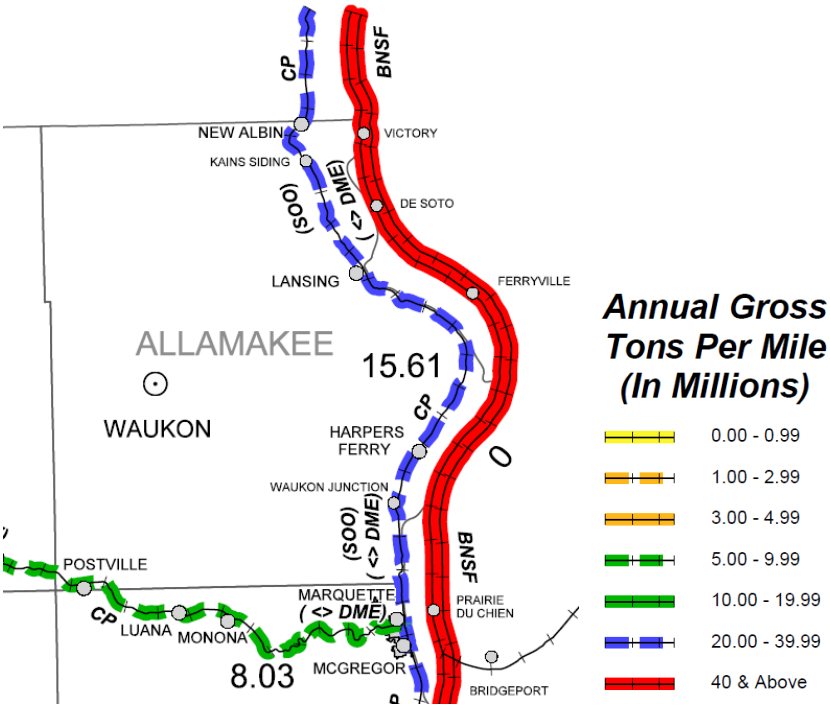
Figure 60: Waukon Vehicle Crash Locations, 2012 - 2021



Allamakee County has one airport outside of Waukon, Iowa, but airspace usage is not limited to traffic from that facility. A transportation incident can occur anywhere within the planning area.

The Canadian Pacific Railroad, owner of Dakota, Minnesota & Eastern Railroad Corporation, operates two lines through Allamakee County, with a total of 40 miles of railway (freight only, no passenger) (U.S. Dept. of Transportation, 2022). The railroad operates track running parallel to the Mississippi River through Harpers Ferry, Lansing and New Albin (5 – 6 trains per day), and through Postville on the south edge of the county (2 – 3 trains per day) (Surface Transportation Board, 2022). The main products handled by the rail include chemical and allied products (29%), coal (20%), food and kindred products (19%), wasted scrap materials (11%), primary metal products 7%), non-metallic minerals (6%) and farm products (4%) (Iowa Department of Transportation, 2022). Figure 61 shows the railroad traffic density based on Annual Gross Tons Per Miles (in millions). The rail along the Mississippi River past Harpers Ferry, Lansing and New Albin has the second highest density of 20 – 39 annual gross tons per mile (Iowa Dept. of Transportation, 2022).

Figure 61: Iowa Railroad Traffic Density Map



Previous Occurrences, Probability of Future Occurrence

Table 70: Records of Transportation Incident Occurrence in Allamakee County

Topic:	Source:	Years:	Data:
Vehicle crash incidents	Iowa Dept. of Transportation, ICAT Iowa Crash Analysis Tool	Covering 10 yrs. (2013 – 2022)	1,744
Railway incidents	Federal Railroad Administration, Office of Safety Analysis	Covering 10 yrs. (2012 – 2021)	5
Air incidents	National Transportation Safety Board	Covering 10 yrs. (2012 – 2021)	1

There are 10,536 licensed drivers in the county, with an additional 28,571 licensed drivers in the adjacent Iowa counties (Iowa Department of Transportation, 2022), and historically vehicle crashes are common on an annual basis and in all areas of the county. As stated earlier, according to the Iowa DOT Crash Analysis Tool, from 2013 – 2022 there were 1,744 vehicle crashes in Allamakee County.

The National Transportation Safety Board reports 104 air transportation incidents in Iowa between 2012 - 2021, with one occurring in Allamakee County in Waukon (National Transportation Safety Board, 2022).

From 2012 through 2021 there were five railway accidents or incidents reported. Four of them were highway-rail incidents and three happened at public crossings (Federal Railroad Administration, 2022). The potential for rail accidents may increase in the future due to a merger of Canadian Pacific and Kansas City Southern railroads which will increase trains per day (TPD) significantly. In Harpers Ferry, Lansing and New Albin TPD will double from 5-6 a day currently to 11 – 12 per day (Surface Transportation Board, 2022). Postville TPD is anticipated to be impacted very little with the merger.

The probability of a transportation incident of some type occurring within the county in any given year is high, with a vehicle crash being the most likely (an average of 174 vehicle crashes occur in the county each year when considering aggregate crashes from 2013 - 2022). Rail and air accidents have historically occurred less frequently in the region. However, communities along the Mississippi River report that the CPR railroad has increased traffic in recent years, which does increase the probability of a future accident occurring.

Summary of Vulnerability and Impacts

Vehicle crashes have a demonstrated economic and human impact. Table 71 illustrates the property damages from the vehicle crashes that occurred between 2013 - 2022 in the county (Iowa Dept. of Transportation, 2022). Property damages totaled $13.6 million for the 10-year period, an average of $1.36 million per year and $7,808 per crash. And Table 72 illustrates fatalities and injuries resulting from the 1,744 crashes, including twenty-six deaths and 272 known injuries, and involving 3,156 occupants and 2,341 vehicles. In addition, there were 297 possible injuries (Iowa Dept. of Transportation, 2022).

Table 71: Property Damage from Vehicle Crashes, 2013 - 2022

Property/Vehicles/Occupants	
Property Damage Total (dollars):	13,625,490.00
Average (per crash dollars):	7,808.30
Total Vehicles:	2,341.00
Average (per crash):	1.34
Total Occupants:	3,157.00
Average (per crash):	1.81

Table 72: Injury Status from Vehicle Crashes, 2013 - 2022

Injury Status Summary	**616**
Fatalities	26
Suspected serious/incapacitating	81
Suspected minor/non-incapacitating	191
Possible (complaint of pain/injury)	297
Unknown	21

The county may be more vulnerable to certain types of vehicle crashes. Approximately 31% of all crashes over the past decade were caused by animal encounters, by far the greatest cause of accidents (Iowa Dept. of Transportation, 2022). The increasing volume and size of agricultural vehicles and oversized loads locally may cause conflict on the roads as well. Agricultural vehicles carry products that in concentrated form can be quite hazardous, such as fertilizers, pesticides, liquified hog/cattle manure, etc., that when spilled in a transportation accident pose a risk to properties and the environment, potentially impacting water quality amongst other things.

Regarding the noted increase in rail traffic in the county, there are raised local concerns over the increasing volume of cars carrying hazardous materials and the increased vulnerability to economic, human or environmental impacts should an accident occur. Depending on where rail accidents occur, an incident could impact communities anywhere from 262 people in Harper's Ferry to 2,503 people in Postville. Table 73 details the distance of schools from railroads in communities, as well as the potential youth population at risk as seen through current enrollment.

Table 73: Potential Student Exposure to Railway Incidents

Community:	School District(s):	Distance from Railroad:	Enrollment in School:
New Albin	Eastern Allamakee Community School District: New Albin Elementary	1/5 mile (1,000 ft)	155
Lansing	Eastern Allamakee Community School District: Middle School/Kee High School	1/3 mile (1,980 ft)	175
Postville	Bais Shalom	221 ft	Public record not found
Postville	Postville Child Care Services / Head Start	1/6 mile (950 ft)	31
Postville	Postville Elementary / Middle / High School	¼ mile (1,495 ft)	663

Source: (Iowa Department of Education, 2022-2023 PreK-12 Enrollments by Grade, Race and Gender) (Iowa Dept. of Education, 2021-2022 Iowa Non-Public School PreK-12 Enrollments by School, Grade, Race and Gender)

Tornado

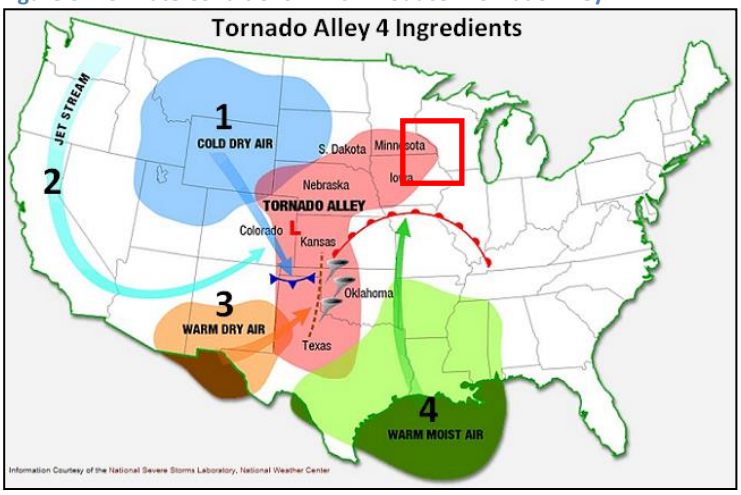
Risk Group 2: Medium Risk

Description

The National Weather Service defines a tornado as a "violently rotating column of air extending from a thunderstorm to the ground." Tornadoes are the most violent of all atmospheric storms and are capable of tremendous destruction. Wind speeds can exceed 250 mph, and damage paths can be more than one mile wide and 50 miles long. High winds not associated with tornadoes are profiled separately in this document.

According to National Severe Storms Laboratory, Northeast Iowa is located just on the edge of an area that is generally known as "Tornado Alley." Climatological conditions are such that warm and cold air masses meet in the center of the country to create conditions of great instability and fast moving air at high pressure that can result in formation of tornados. Figure 62 reflects the geographic location and the climatological conditions that create "Tornado Alley."

Figure 62: Climate Conditions Which Produce "Tornado Alley"



Source: (Kirk, 2011)

Tornado intensity is measured by the Enhanced Fujita Scale (EF). This is a set of wind estimates (not measurements) based on damage. An EF Scale category is assigned based on the highest wind speed that occurred in three second gusts to a set of damage indicators (E.g. type of building impacted), and anticipated levels at which damage will occur for indicators. For additional information on the EF-scale, see https://www.weather.gov/oun/efscale. Table 74 illustrates the EF-scale. The higher the EF, the greater the potential damage.

Table 74: EF-Scale for Tornado Damage

Enhanced Fujita (EF) Scale	
EF Number	3 Second Gust (mph)
0	65-85
1	86-110
2	111-135
3	136-165
4	166-200
5	Over 200

Source: (National Weather Service, n.d.)

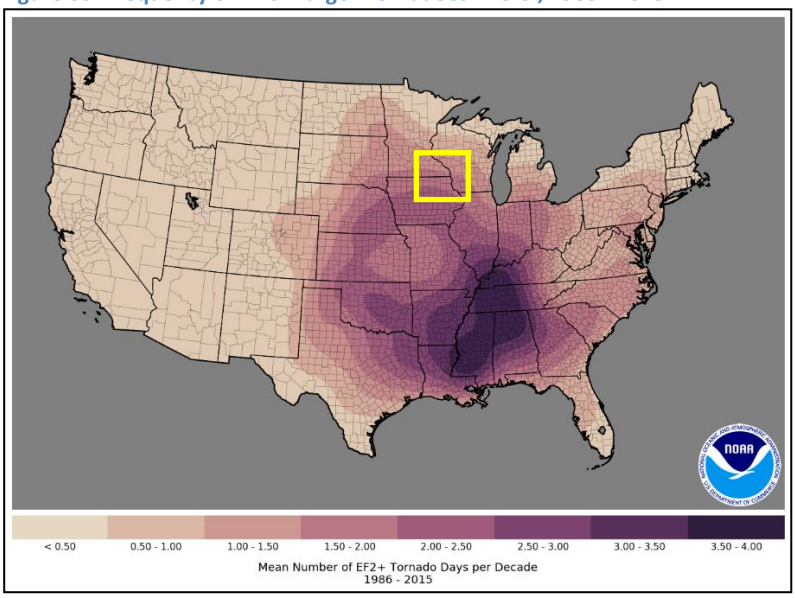
Location and Extent

Table 75: Records of Tornado Extent in Allamakee County

Topic:	Source:	Years:	Data:
Tornado Risk Rating	FEMA National Risk Index	2021 Version	Relatively Low Risk

While tornadoes can occur in all areas of the state, historically some areas have been more susceptible. Figure 63 reflects the United States' frequency of a tornado rated F2 or larger, based on number of days per decade, from 1986 - 2015. Allamakee County is shown to experience 1.5 – 2 EF2+ tornado days per decade, less than the south portion of the state shown to experience 2 – 2.5 days per decade on average.

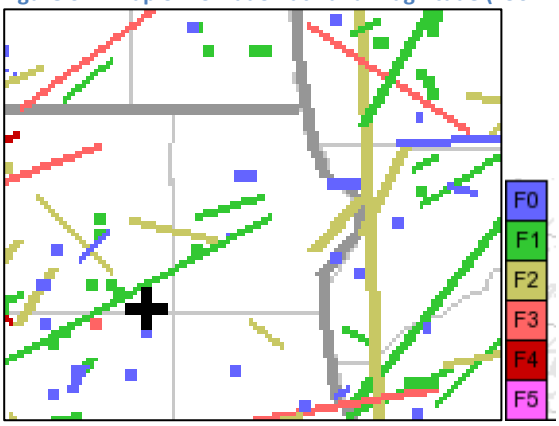
Figure 63: Frequency of F2 or Larger Tornadoes in U.S., 1986 - 2015



Source: (National Weather Service, Storm Prediction Center, n.d.)

Figure 64 illustrates the path & magnitude of recorded tornado occurrences in Allamakee Co. from 1962 – 2011 (National Oceanic & Atmospheric Administration (NOAA), n.d.). The NW and central portion of the county, including the City of Waukon, appears to have experienced more tornado activity.

Figure 64: Map of Tornado Path and Magnitude (1962 – 2011)



In Iowa, most tornadoes occur during the months of April, May, and June. However, tornadoes can strike in any of the 12 months. Significant tornadoes show a common peak in probability in late spring, while violent tornadoes have overall less probability but do not have as distinct a time of probability. While most tornadoes occur between 4:00 and 9:00 p.m., a tornado can strike at any time.

Impacts can range from broken tree branches, shingle damage to roofs, and some broken windows; to complete destruction and disintegration of well-constructed structures, infrastructure and trees. Generally, the destructive path of a tornado is only a couple hundred feet in width, but stronger tornadoes can leave a path of devastation up to a mile wide. Injury or death related to tornadoes most often occur when buildings collapse, people are hit by flying objects, or are caught trying to escape the tornado in a vehicle.

Previous Occurrence, Probability of Future Occurrence

Table 76: Records of Tornado Occurrence in Allamakee County

Topic:	Source:	Years:	Data:
Major Disaster Declarations for Tornadoes	Federal Emergency Management Agency (FEMA)	Covering 20 yrs. (2001 – 2022)	None
Tornado events	National Centers for Environmental Information (NCEI) Storm Events Database	(1964 – 2022)	9
Tornado events	National Weather Service	1881 - 2002	12 events

According to records from the NCEI database and the National Weather Service there were 11 tornadoes in Allamakee County between 1964 and 2022, and only one since the last plan update (in 2022). Of these 11 tornadoes, three were rated F0, five were rated F1, two were rated F2, and one was rated F4. Waukon was the community most often hit, and both tornadoes that occurred in the last twenty years happened in Waukon. Table 77 reflects details of recorded tornadoes from 1964 to 2022 from both sources.

Table 77: Recorded Tornadoes in Allamakee County, 1964-2022

Date	Magnitude	Location
May 4, 1964	F2	Harpers Ferry area
October 14, 1964	F1	County? (NWS records)
April 11, 1965	F1	Waukon
October 14, 1966	F4	Southwest portion of county
November 9, 1975	F1	Southwest portion of county
July 29, 1987	F2	Waukon
July 6, 1994	F0	Harpers Ferry
July 19, 1994	F1	Waukon
July 2, 2000	F0	North portion of county (Hanover area)
May 8, 2002	F0	Waukon
July 23, 2022	EF1	Waukon
Total tornadoes:	11	

Source: (National Oceanic and Atmospheric Administration (NOAA), 1964 - 2022)

The NCEI provided the following details on the two tornadoes that occurred in the past 20-year period:

- **May 8, 2002.** Straight-line winds of 80 to 100 mph damaged several buildings in a lumberyard on the south side of Waukon…Along Highway 76, just southeast of Waukon, a small tornado hit a farm, damaging part of the house and at least one outbuilding. A nearby church was damaged by the same tornado.

- **May 8, 2002**. A line of storms moved across northeast Iowa during the evening of July 23rd. These storms produced an EF1 tornado west of Waukon (Allamakee County) that damaged a farm and trees.

No Federal Disaster Declarations covering the county listed tornadoes.

Previous occurrences would indicate a low probability that an F2 or larger tornado would occur in any given year.

Summary of Vulnerability and Impacts

Table 78: Records of Tornado Vulnerability or Losses in Allamakee County

Topic:	Source:	Years:	Data:
Estimated Annual Loss Due to Tornadoes	FEMA National Risk Index	2021 Version	$351,044
Crop Loss Due to Tornadoes	United States Department of Agriculture (USDA), Risk Management Agency	5 yrs. (2017 – 2021)	$0
Tornado events, damages or injuries	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	$10,000 property damage & 0 injuries for 1 event in 2002

Tornado impacts can range from broken tree branches, shingle damage to roofs, and some broken windows, to complete destruction and disintegration of well-constructed structures, infrastructure and trees. Generally, the destructive path of a tornado is only a couple hundred feet in width, but stronger tornadoes can leave a path of devastation up to a mile wide. Injury or death related to tornadoes most often occur when buildings collapse, people are hit by flying objects, or are caught trying to escape the tornado in a vehicle.

The planning area is located in a region of the U.S. with high frequency of dangerous and destructive tornadoes. However, since 1950 no tornadoes were recorded to have resulted in injuries to residents in Allamakee County. According to NCEI, property damages from tornados in the county between 2002 - 2021 was only $10,000. If you look back further from 1950 – 2022, total damages would be $3.3 million, and crop damages were $25,000 (National Oceanic and Atmospheric Administration (NOAA), 2002 - 2021).

Warning time for tornados is relatively short. Children, the elderly, disabled persons and populations without access to adequate shelter (e.g. mobile homes, campers, etc.) are particularly vulnerable to hazards with rapid onset. See Table 35 for a breakdown of youth and elderly individuals. Campgrounds can be found in Harpers Ferry, Lansing, Waterville and Waukon., the latter being the most likely to be struck by a tornado based on records of previous events (with 5 in Waukon since 1965). Some communities in the county have previously considered their need and ability to construct storm shelters that can withstand the force of a major tornado in order to better protect vulnerable residents or locations. All infrastructure and structures are at risk for damage since currently the majority are not built to resist tornado wind speeds.

Windstorm

Risk Group 2: Medium Risk

Description

Windstorms are extreme straight-line winds associated with severe winter storms, severe thunderstorms, downbursts, and very strong pressure gradients. Straight-line winds are generally any thunderstorm wind that is not associated with rotation (i.e., not a tornado). These winds, which can exceed 100 mph, represent the most common type of severe weather and are the most common cause of thunderstorm damage. Since windstorms do not have a narrow track like a tornado, associated damage can be extensive and affect broad regions including multiple counties. Objects like trees, barns, outbuildings, high-profile vehicles, and power lines/poles can be toppled or destroyed, and roofs, windows, and homes can be damaged as wind speeds increase. One type of straight-line wind is the downburst, which can cause damage equivalent to a strong tornado and can be extremely dangerous to aviation. Windstorms in Iowa typically happen between late April and early September, but given the right conditions, can develop as early as March. They are usually produced by super cell thunderstorms or a line of thunderstorms that typically develop on hot and humid days.

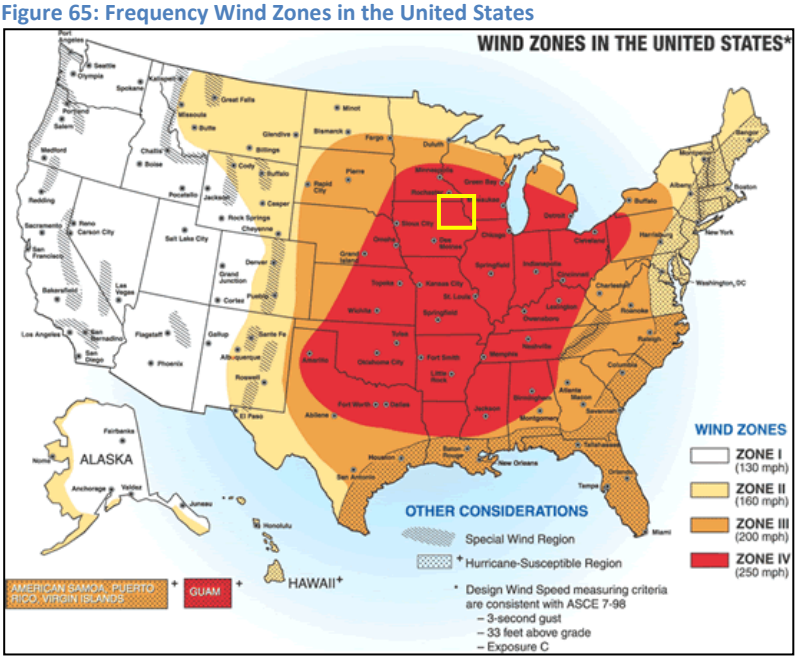
Location and Extent

Table 79: Records of Windstorms in Allamakee County

Topic:	Source:	Years:	Data:
Strong Wind Risk Rating	FEMA National Risk Index	2021 Version	Relatively Low Risk

The county is susceptible to high wind events. Allamakee County (and the State of Iowa) is located in Wind Zone IV, which is susceptible to winds up to 250 mph (the highest inland category). Figure 65 reflects the United States Wind Zones based on maximum wind speeds.

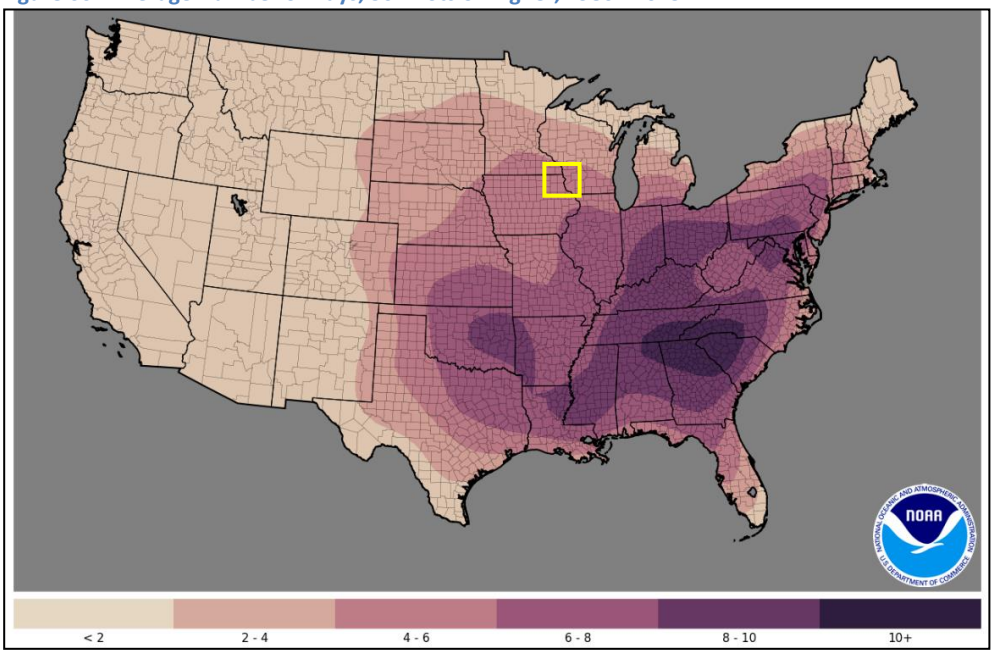
Figure 65: Frequency Wind Zones in the United States



Source: (FEMA, 2012)

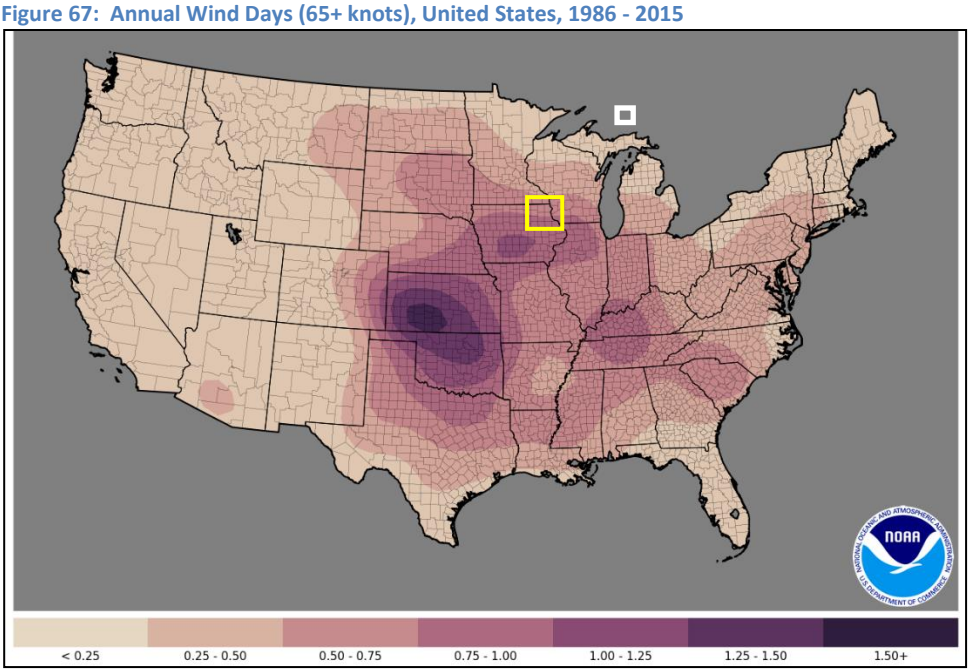
Figure 66 is a map of the average number of 50-knot wind days per year from 1986-2015. Allamakee County has an average of 4 – 6 days of this type per year. Figure 67 reflects the average number of wind days of 65 knots or greater occurring per year, of which the county averages .5 - .75 days.

Figure 66: Average Number of Days, 50 Knots or Higher, 1986 - 2015



Source: (National Weather Service, Storm Prediction Center, n.d.)

Figure 67: Annual Wind Days (65+ knots), United States, 1986 - 2015



Source: (National Weather Service, Storm Prediction Center, n.d.)

Previous Occurrences, Probability of Future Occurrence

Table 80: Records of Windstorm Occurrence in Allamakee County

Topic:	Source:	Years:	Data:
Major Disaster Declarations for Severe Storms w/Straight-Line Winds	Federal Emergency Management Agency (FEMA)	Covering 20 yrs. (2002 – 2021)	3
Agriculture Disaster Declarations for High Winds	U.S. Secretary of Agriculture	Covering 10 yrs. (2012 – 2021)	5
High/Strong/ Thunderstorm Wind	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	56
Thunderstorm Wind events	APRED Analysis Platform for Risk, Resilience and Expenditure in Disasters	Covering 20 yrs. (2002 – 2021)	59

According to the NCEI database, there were 56 wind events in Allamakee County from 2002 – 2021, including those classified as high, strong or thunderstorm wind events (National Oceanic and Atmospheric Administration (NOAA), 2002 - 2021). For a full accounting of occurrence and damages from thunderstorm wind events please refer to the thunderstorm and lightning analysis. In addition, notable details from high and strong wind events experienced during this time period follows:

- **May 8, 2002.** Straight-line winds of 80 to 100 mph damaged several buildings in a lumberyard on the south side of Waukon… Along Highway 76, just southeast of Waukon, a small tornado hit a farm, damaging part of the house and at least one outbuildings. A nearby church was damaged by the same tornado….
- **July 23, 2016.** Thunderstorms with locally heavy rain moved across portions of Northeast Iowa throughout the day on July 23rd. Trees and branches were blown down in Lansing. Boat docks were damaged when the wind pushed some boats several feet upstream and onto the shore.
- **July 9, 2020.** Thunderstorms rumbled across much of northeast Iowa during the late morning and early afternoon of July 9th….Trees and a power lines were blown down in Postville and Waukon (Allamakee County).

Three Federal Disaster Declarations covering the county listed straight-line winds from 2002 – 2021.

Previous occurrences and climatological patterns would indicate a high probability of a windstorm occurring in any given year in the county, with storms under 65 knots being more likely.

Summary of Vulnerability and Impacts

Table 81: Records of Windstorm Vulnerability or Losses in Allamakee County

Topic:	Source:	Years:	Data:
Estimated Annual Loss Due to Strong Wind	FEMA National Risk Index	2021 Version	$235,699

Crop Loss Due to Excess Wind	United States Department of Agriculture (USDA), Risk Management Agency	5 yrs. (2017 – 2021)	$5,684,609
High/Strong/ Thunderstorm Wind event, damages or injuries	National Centers for Environmental Information (NCEI) Storm Events Database	Covering 20 yrs. (2002 – 2021)	$336.3K property & crop damages and 1 injury for 56 events in county

Damaging windstorms are a common occurrence in the planning area. Damages frequently occur to structures and power lines. Debris flying from high wind events can shatter windows in structures and vehicles and can harm people that are not adequately sheltered.

According to the National Centers for Environmental Information (NCEI) Storm Events Database, the 56 wind events in Allamakee County between 2002 - 2021 resulted in approximately $336.3K in property damages and crop damages. And according to the USDA Risk Management Agency, crop loss from excess wind from 2017 – 2021 totaled the much larger figure of $5,684,609 (United States Dept. of Agriculture (USDA), 2017 - 2021). The wind events reported by the NCEI recorded one injury.

Summary of Key Hazard Issues

CRS Step 5(a)

(a) Summary of each hazard identified in the hazard assessment and their community impact

The following section summarizes key issues brought out by the risk assessment, arranged alphabetically by hazard.

Animal/Plant/Crop Disease

- The Emerald Ash Borer is a significant pest impacting local forest systems.
- As climate change occurs, animal, plant and crop diseases are likely to increase as changes such as earlier springs and warmer winters create conditions that increase the survival rate of pathogens and parasites.
- Increasingly industrialized animal operations (e.g. Confined Animal Feeding Operations), may increase animal, and resultantly human, exposure to certain diseases and health threats.

Dams

- All of the dams in the county have a low hazard potential.
- The average age of the dams in the county is 43 years, and by 2025, over 60% of the existing dams will be more than 50 years old (the normal design life of a dam), at which point probability of failure could increase if maintenance or updates aren't implemented on a timely basis.

Droughts

- From 1895 – 1995 the county experienced severe and extreme drought 10-14.9 percent of the time. But relative to the state, the occurrence of drought in the county is less (only .5% of drought events that happened in the state between 2002 – 2021).
- The economic impact of droughts on agriculture are a particular concern. County crop loss from drought between 2017 – 2021 totaled $8.2 million, an annual average crop loss of approximately $1.6 million.
- A prolonged drought could have serious impacts, such as triggering an increased demand for water and electricity which can result in shortages, or food shortages resulting from impacted agricultural production.
- Drought could be associated with fires at certain times of year.

Extreme Heat

- Extreme heat can impose stress on humans and animals (e.g. heatstroke, exhaustion, etc.). Segments of the county most at risk from extreme heat are the elderly, the very young, individuals living below the poverty line, people who are ill, and people with strenuous physical activity (e.g. farm workers).
- Due to changing climate conditions the probability of future extreme heat is likely. Warm-season temperatures are projected to increase more in the Midwest than any other region.

Floods

- There have been 12 federal disaster declarations involved with flooding in the last two decades. Flood events are common, generally occurring on an annual basis. The National Centers for Environmental Information (NCEI) recorded 25 flood and 25 flash flood events over a 20 year period from 2002 – 2021, and the APRED platform recorded 72 flood events over the same time.
- 40% of flood loss in the county results from river flooding and 60% results from flash flooding.
- All areas of the county are at risk from flash floods. The communities of Lansing, Waterville and areas around Harpers Ferry are at higher risk from riverine/creek floods.
- The Clear Creek and Picatee Creek HUC 12 subwatersheds near Lansing and Harpers Ferry (respectively) have the highest rate of flood prone structures and potential losses, with combined (building/content) annual average estimated losses of 1.7 million. Cottage Road, which sits south of Harpers Ferry within the Picatee Creek subwatershed, has experienced regular flooding issues according to reports from the county.

- Historical losses from flooding (recorded property damages, crop loss, estimated annual loss, etc.) indicate that this hazard has more financial impact on the county than other hazards.
- Flooding in just the last ten years appear to demonstrate an increasing rate of occurrence. This occurrence rate, as well as the magnitude of flood events, is likely to continue to increase in the future versus decrease in consideration of climate change.
- There are initial public safety and long-term health concerns from floods. Residents and natural areas can be impacted as floodwaters carry hazardous material and debris downstream; ecological impacts can include water quality degradation, terrestrial and aquatic habitat loss, and soil and nutrient loss and loading.
- Several roads and bridges in the county are impacted from repeated flooding. This is a particular concern where it limits access in the case of emergencies.

Hailstorm

- The entire planning area is at risk to hailstorms, but certain communities have historically experienced more, such as Waukon.
- Hail events are very common in the county. There were 58 hail events in the county from 2002 - 2021 (an average of about 3 a year), with many events involving severe or destructive sized hail.
- Crops, structures, and vehicles can be damaged by large hail events, and NOAA, FEMA, USDA and others record related losses.

Hazardous Materials

- Hazardous materials in both liquid and gas form are transported on the county's roadways, railways and pipelines year round. The entire planning area -- and beyond, depending on the substance and character of the spill -- could be susceptible should an incident occur.
- The greatest % of materials hauled by trains in the county are chemicals and allied products. Railroads in New Albin, Harpers Ferry, Lansing and Postville are all in close proximity to development and often near critical facilities like schools. Should a rail/HAZMAT incident occur populations and infrastructure are at risk, and there are examples of rail accidents in the county. Concern over the increase in rail traffic carrying potential hazardous materials was expressed by several communities.
- There were 93 hazardous spill incidents in the county from 2002 – 2021, so they are fairly common and are probable in the future. Structures, infrastructure, people and natural areas in proximity to spills are at risk.

Human Disease

- Human disease can occur anywhere within the planning area. Typically people who become ill are the elderly, the very young and people with chronic medical conditions and high risk behaviors.
- Pandemics were unlikely, but the COVID-19 pandemic experienced between 2020 – 2022 illustrated that communicable diseases can have a noticeable impact on human lives and the economy. Between 60 – 70 people lost their lives to this pandemic in the county.

Infrastructure Failure

- Communications, energy and structural failures and structural fires can occur in any area of the county for a variety of reasons.
- Nearly 1/3rd of the dwellings in the county were built prior to 1940. Older homes are at increased risk of structural failure. Further, almost 10% of bridges are ranked as deficient. With the aging structures and infrastructure in the county, efforts to inspect and maintain them, and implement mitigation measures, may lessen the probability of a future failure.
- The impacts of flooding on road and bridge infrastructure are a regular occurrence.

Landslide

- In northeast Iowa along the Silurian Escarpment you can find blocks of dolomite slumped onto the underlying Maquoketa Shale, which creates situations vulnerable to landsides. Susceptible areas are also found along steep terrain associated with the major river valleys, such as the Mississippi River. Recorded incidence of landslides were difficult to attain, but local communities recall local occurrences, typically near the bluffs of the Mississippi River.

Levees

- Most levees in the county are in agricultural and natural areas, most notably a stretch of levees within the Upper Iowa River District. Rural levees have been breached or damaged in the past by flooding, causing agricultural losses and resulting in repairs/reconstruction.
- New Albin is the only urban area with a dike/levee, and this has been washed out by flooding several times in recent years, impacting their wastewater treatment facility. They are seeking a long term solution to these issues.

Mental Health

- Mental health is similar to human disease in that it has significant impacts on human lives, well-being, and the economy.
- Records of mental health vulnerabilities and occurrence in the county are prevalent, gathered from multiple sources.
- Both youth and adults are at risk to mental illness, and certain populations may be more vulnerable, such as older individuals, young adults, multiracial or LGBTQ individuals, and more.
- Mental health risk to human life is significant when the close connection between mental illness and suicide is considered. Men are more at risk to death by suicide stemming from mental illness.
- Rural areas have special vulnerability to mental health issues stemming from challenges such as lack of access to care, lack of providers, transportation difficulties, higher isolation, lack of insurance, lack of resources, costs, and more.
- Mental health incidents impact law enforcement, the health system, schools, families, and more.

Severe Winter Storms

- The northern portion of Iowa near the Minnesota border receives the greatest average annual snowfall in Iowa and is also impacted by freezing rain. 68 winter weather, cold, freeze or snow events were reported in the county between 2002 – 2021. Previous occurrences indicate a high probability of winter storms occurring in any given year.
- Crop losses resulting from winter conditions can be significant, totaling $6.2 million between 2017 – 2021. Other direct and indirect economic impacts of winter storms include cost of snow removal, damage repair, increased heating bills, business losses, power failures and frozen or burst water lines, closure of schools or businesses, and limited access to livestock.
- Since power outages associated with winter storms occur during cold weather, the population is at risk to cold temperature exposure and pipes could freeze or burst. The elderly and poverty populations are considered to be more vulnerable. Other human impacts could include unsafe driving conditions.

Sinkholes

- Sinkholes are prolific in Allamakee County, and can be associated with the area's karst geology. There are 10,274 known and historic sinkholes or depressions here, concentrated in the SW portion of the county. Overall, 23% of the county's area is classified as an area within 1,000 ft of a known sinkhole, and over 63% of the county is classified as an area greater than 1,000 ft up to 5,280 ft from a known sinkhole or made up of karst geology which is prone to sinkholes.

- Sinkholes can aggravate flooding potential, and collapses caused by their sudden formation may destroy buildings, roads, and utilities.

Thunderstorms and lightning

- With Iowa's location in the interior of the U.S., the ingredients of a severe storm are often present (moisture, warm and unstable air, and a lifting mechanism). 7 major disaster declarations since 2001 were for severe storms, and 53 thunderstorm wind events occurred in the county between 2002 – 2021.
- Associated winds and hail can cause damage to power infrastructure, structures, and vehicles.
- Direct lightning strikes can cause damage to the power infrastructure or structures, start a fire or cause death.

Tornadoes

- Though the county sits at the edge of tornado alley, tornado events are a fairly rare occurrence here. There were only 12 tornadoes between 1881 – 2002. Further, the chance of an F2 or greater tornado is low, with only 1.5 – 2 of these occurring per decade.
- When they do come, damage endured from a tornado could range from minimal to complete devastation. Nonetheless, in Allamakee County there are minimal records of financial losses or human injuries or death resulting from tornadoes.
- Children, the elderly, disabled persons and populations without access to adequate shelter (e.g. mobile homes, campers, etc.) are particularly vulnerable to hazards with rapid onset. Campgrounds can be found in Harpers Ferry, Lansing, Waterville and Waukon., the latter being the most likely to be struck by a tornado based on records of previous events (with 5 in Waukon since 1965).

Transportation Incident

- Roadway transportation incidents are extremely common in the county, with 1,744 having occurred over just 10 years from 2013 – 2022 in all areas of the county. Rural areas and the communities of Waukon and Postville have particularly high records of incidents.
- Collisions with animals is the most likely cause of roadway incidents, followed by driving off the road.
- Roadway incidents have resulted in significant losses, including $13.6 million in property damage (an average of $7,808 per crash) for the incidents between 2013 – 2022.
- Between 2008 – 2018 property damage totals from vehicle crashes was nearly $24 million. Twenty-eight deaths and 183 major injuries resulted from the crashes. Fatalities and injuries from roadway incidents are also pretty common. The same 10-yr incidence history resulted in 26 fatalities and 569 known or suspected injuries.
- A doubling of trains per day along the Mississippi River railroad resulted from a recent rail merger. Increasing volume of rail cars carrying hazardous materials in the county, and the higher potential for economic, human or environmental impacts should an accident occur, are a particular risk and concern for local communities.

Windstorms

- The county is located in Wind Zone IV, which is susceptible to winds up to 250 mph (the highest inland category). From 2002 – 2021, three Federal Disaster Declarations covering the county listed Severe Storms w/Straight-Line Winds, and 56 high/strong/thunderstorm wind events occurred.
- Crop losses from windstorms are significant, with almost $5.7 million in losses occurring over just 5 years from 2017 – 2021. Property damages are less significant but still notable ($336.3K for 56 events).
- Unsecured mobile homes, campers, barns, and sheds and their occupants are specifically vulnerable, and human safety and wellbeing can be a concern.

Chapter 5- Mitigation Strategy

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

- Goals – General guidelines that explain what you want to achieve. They are usually long-term, policy-type statements and represent broad visions
- Strategies – Implementation steps to attain the identified goals
- Mitigation Actions – Specific actions that help achieve goals and objectives

Goals/Strategies

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

Goals were used to provide direction for reducing hazard-related losses in the Participating Jurisdictions, and strategies identified implementation areas for achieving identified goals:

Goal 1: Minimize vulnerability of the people and their property in the Participating Jurisdictions to the impacts of hazards

Strategy 1: Develop safe and functioning shelters and evacuation plans for the public in the event of a disaster

Strategy 2: Provide ample warning to people and business to reduce loss of life or property

Strategy 3: Develop hazard specific plans, conduct studies or assessments, and retrofit cities to mitigate for hazards and minimize their impact

Strategy 4: Minimize and control the impact of hazard events through enacting or updating ordinances, permits, laws or regulations

Strategy 5: Increase public knowledge regarding the location and use of community shelters and evacuation sites

Goal 2: Protect critical facilities, infrastructure and other community assets from the impacts of hazards

Strategy 1: Ensure that communities have the ability to take necessary actions to lessen the impact of a disaster on the community

Strategy 2: Maintain the function of critical facilities and services to provide continued support in the event of a disaster

Strategy 3: Develop hazard specific plans, conduct studies or assessments, and retrofit facilities, infrastructure and community assets to mitigate for hazards and minimize their impact

Strategy 4: Minimize and control the impact of hazard events through enacting or updating ordinances, permits, laws or regulations

Goal 3: Improve education and awareness regarding hazards and risk in the Participating Jurisdictions

Strategy 1: Increase public knowledge and awareness of potential hazards and the individual and collaborative actions that can be taken to reduce or eliminate the risk and impact of an event

Strategy 2: Increase public knowledge regarding the location and use of community shelters and evacuation sites

Goal 4: Strengthen communication among agencies and between agencies and the public

Strategy 1: Ensure that emergency responders have the ability and protocol to communicate effectively with one another and the public before, during and after a hazard event

Strategy 2: Increase public knowledge and awareness of potential hazards and the warning and response systems in place to react to an event

Strategy 3: Improve communication and coordination between federal, state and local experts responsible for assisting the public after a hazard event has occurred

Identification and Analysis of Mitigation Actions

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

After review of hazards and defining the level of concern placed on each by the county and its communities, mitigation actions were developed by each jurisdiction to address those hazards deemed most critical. Community, planning committee, and targeted stakeholder meetings all informed action review and identification. Mitigation actions fell into broad categories as defined below:

- **Local plans and regulations:** Actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.
- **Structure and infrastructure projects:** Actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- **Natural systems protection:** Actions that minimize damage and losses and also preserve or restore the functions of natural systems.
- **Education and awareness programs:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Education/awareness may help lead to more direct actions in the future.

For each action identified in this plan, a mitigation action implementation worksheet and action prioritization exercise was completed, described further in Implementation of Mitigation Actions (next page).

Implementation of Mitigation Actions

Requirement §201.6(c)(3)(iii):

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

After the actions to include in the mitigation strategy for each jurisdictions were determined, the planning committee determined the priority or rank of all the actions. The committee used a scoring methodology to assist in the ranking based on the State of Iowa Hazard Mitigation Plan (2018) Hazard Mitigation Strategy. Depending on the score, each action was ranked in priority compared to the other mitigation actions in its respective category, according to these ranking classifications:

- **High priority** (abbreviated as priority A in places)
- **Medium-high priority** (abbreviated as priority B in places)
- **Medium priority** (abbreviated as priority C in places)

Actions that ranked below medium (C) priority, were determined to be actions that will be delayed (and so marked D) for now, and implementation would not be pursued in the next five years unless a very good opportunity suddenly appeared that made implementation easy with little commitment of existing resources.

The criteria that the planning committee used to score the actions included criteria meant to evaluate how cost effective, environmentally sound, and technically feasible each action is. The actions were also considered relative to how much progress has been achieved by that action, or how much more progress the committee felt still needed to be made implementing the particular action. Finally, the actions were also considered relative to which hazard or hazards each one addressed, and the risks and vulnerabilities associated with such hazard(s).

To score the actions, the following mitigation action evaluation/scoring factors were applied to each action:

1) **Cost Effective Score**: Each action given a score based on its considered likelihood of getting more benefit than cost. Scores given based on:
    - 5 points = Benefit expected to be five times or more than cost, OR will prevent deaths/injuries
    - 4 points = Benefit expected to be four to five times cost
    - 3 points = Benefit expected to be three to four times cost
    - 2 points = Benefit expected to be two to three times cost
    - 1 point = Benefit expected to be one to two times cost
    - 0 points = Unsure if benefit will exceed cost
    - -1 point = Cost expected to exceed benefit, but not by much

2) **Environmentally Sound Score**: Each action given an “environmental” score according to how closely it matched the following:
    - 5 points = Great benefit to the environment and most everyone knows it!
    - 4 points = Most likely a benefit to the environment
    - 3 points = Perhaps some benefit to the environment, certainly no harm

- 2 points = Generally accepted as causing no harm to environment, though not really considered a benefit either
- 1 point = More likely NOT to damage the environment than to damage the environment
- 0 points = Questionable if environmentally sound or not

3) **Technical Feasibility - Cost**: Each action considered in terms of ability for a jurisdiction to pay for it. Scores given on how closely each action matched the following:
    - 5 points = Cost easily covered within jurisdiction's budgets or funding avenues (which may be from outside sources)
    - 4 points = Cost within jurisdiction budgets or funding streams, but it would be tight and sometimes implementation would have to be delayed due to competing priorities
    - 3 points = Could probably only do this action on a part-time basis, or provide sometimes
    - 2 points = Could only do this action as a tangent or auxiliary to another purpose
    - 1 point = Would need to find funding for this, as none currently available, but there is hope
    - 0 points = Maybe we could do it/maybe not, chances are equal
    - -1 point = Not likely to be able to find funding for this now due to various barriers

4) **Technical Feasibility - Capability**: Other than cost, how technically feasible is the action? How capable is a jurisdiction to handle it?
    - 5 points = Already have an established program that does this very thing
    - 4 points = Fairly easy – have capable staff, resources, political support, etc.
    - 3 points = Would need to juggle staff and resources, but it is possible
    - 2 points = Would need some technical assistance to do this, because currently not entirely capable
    - 1 point = Very little capacity to do this, or political or other leaders do not seem to support
    - 0 points = Political or other factors make this idea hinge in the balance
    - -1 point = Political or other factors are against, but there is a chance tide could turn

5) **How much more to do**: According to 44 CFR 201.4d, the plan needs to be updated to reflect progress on past mitigation efforts, and priorities must reflect that. To reflect that, points will be given based on the following:
    - 5 points = A lot more left to be done
    - 2-4 points = Somewhere between above and below
    - 1 point = So much past progress that little need left for this, but still some need
    - 0 or -1 points = So much past progress little or no need for this action

6) In addition to points for the above, each mitigation action gets **3 points for each Group 1 high risk** hazard to which the action applies, **2 points for each Group 2 risk** hazard to which it applies, and **1 point for applicability to all other hazards**.

Requirement §201.6(c)(3)(iv):
For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan
CRS Step 8(a)
8(a) Draft an action plan - Actions must be prioritized

Table 82 lists the general mitigation actions the Participating Jurisdictions selected to include in the plan, the action category, the action priority (ranking and priority category), applicable goals, and hazards addressed by the mitigation action.

Strategies for hazard mitigation in any jurisdiction reduce overall damage in the county, but not all of the mitigation actions included in the plan are relevant to all jurisdictions. **Error! Reference source not found.** tables that follow provide more detailed implementation information on each general mitigation actions, including the jurisdiction, the responsible agency for pursuing the action, potential funding sources and timeframes. Timeframes listed as "ongoing" indicate that the action is something that the jurisdiction has started and will continue to pursue and/or an action (like training) that re-occurs throughout the life of the planning document. Specific actions can also be found listed in each jurisdictional section of this plan.

Table 82: General Mitigation Actions by Jurisdiction and Priority

Mitigation Action:	Jurisdiction:	Action Category:	Priority Rating:	Priority Category:	Goal Addressed:	Priority Hazard Addressed:
Provide increased flood mitigation efforts and enhancements	Allamakee Co., Waterville	Structure & Infrastructure, Natural Systems Protection, Education & Awareness	22.75	High	1,2,4	Floods
NFIP participation/consideration	Allamakee Co., all jurisdictions	Ed & Awareness	22.25	High	1,2,3	Floods
Generators/transfer switches/back-up power supply	Allamakee Co., school districts, all jurisdictions	Structure & Infrastructure	22	High	1,2	Floods, All Storms
Acquire and demolish damaged structures	Postville	Structure & Infrastructure, Natural System Protection	21.25	High	1,2	All Priority Hazards
Participate in watershed/waterway planning and initiatives	Allamakee Co.	Local Plans & Regulations, Natural Systems Protection, Structure & Infrastructure	20.75	Md - High	1,2	Floods
Develop, upgrade, enhance, and protect infrastructure, and/or critical facilities	Allamakee Co., Lansing, New Albin, Postville, Waukon, school districts	Structure & Infrastructure, Natural Systems Protection	21	Md - High	1,2	All Priority Hazards
Outreach to the public about hazards/encourage pre-disaster and recovery planning	Allamakee Co., all jurisdictions, school districts	Education & Awareness	20.5	Md - High	1,2,3,4	All Priority Hazards
Develop city/county codes or plans to address hazard issues	Allamakee Co., all jurisdictions, school districts	Local Plans & Regulations	20.25	Md - High	1,2,3,4	All Priority Hazards
Purchase/improve warning & alert notification systems	Allamakee Co., school districts	Structure & Infrastructure	20	Md - High	1,2,4	All Priority Hazards
Consider the application and construction of on-road structures to protect county infrastructure from flooding	Allamakee Co.	Structure & Infrastructure, Natural Systems Protection	20	Md - High	1,2	All Floods

Improve transportation safety	Allamakee Co.	Structure & Infrastructure, Ed & Awareness	19.75	Md - High	1,2,3	Hazardous Materials, Transportation Incidents
Plan, develop and maintain appropriate mental health services through countywide collaborations	Allamakee Co.	Local Plans & Regulations, Structure & Infrastructure, Ed & Awareness	19.5	Md - High	1,2,3,4	Mental Health
Ensure the plan is updated prior to expiration, and promote the plan to the public	Allamakee Co.	Ed & Awareness	18.5	Md - High	1,2,3,4	All Priority Hazards

High Priority Actions & Implementation

1. Provide increased flood mitigation efforts and enhancements

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Allamakee County	Conduct a flooding mitigation review and implement feasible actions related to Cottage Rd and local flooding concerns	Allamakee Co. Emergency Management Agency	Local funds and grants	Ongoing	Est >$25,000
	Pursue bioengineered bank stabilization techniques for infrastructure & critical facility projects when feasible	Allamakee Co. Engineer	Grants, county road budget	Ongoing	Variable
Waterville	Conduct a flooding mitigation review and implement feasible actions related to flooding on Paint Creek in the locations at and close to E Railroad Lane	Waterville Mayor	Local funds and grants	Ongoing	Est >$25,000
	Conduct a flooding mitigation review and implement feasible actions related to watershed drainage and flooding in the general area of E Main Street and E 2nd St and locations east along Paint Creek affecting a lift station, E Main Street, and Pine Bluff Camp Site	Waterville Mayor	Local funds and grants	Ongoing	Est >$25,000

Requirement §201.6(c)(3)(ii):

[The mitigation plan} must address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate

2. NFIP participation/consideration

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Allamakee County	Continue membership in NFIP. Update floodplain regulations to continue to meet or exceed minimum State of Iowa regulations. Maintain work of floodplain administrator as identified in adopted floodplain ordinance.	Allamakee Co. Emergency Management Agency, Allamakee Supervisors	County general funds	Ongoing	>$10,000 & <$100,000
Harpers Ferry	Continue membership in NFIP. Update floodplain regulations to continue to meet or exceed minimum State of Iowa regulations. Maintain work of	Harpers Ferry Mayor	City general funds	Ongoing	>$10,000 & <$100,000

	floodplain administrator as identified in adopted floodplain ordinance.				
Lansing	Continue membership in NFIP. Update floodplain regulations to continue to meet or exceed minimum State of Iowa regulations. Maintain work of floodplain administrator as identified in adopted floodplain ordinance.	Lansing City Clerk	City general funds	Ongoing	>$10,000 & <$100,000
New Albin	Continue membership in NFIP. Update floodplain regulations to continue to meet or exceed minimum State of Iowa regulations. Maintain work of floodplain administrator as identified in adopted floodplain ordinance.	New Albin Clerk	City general funds	Ongoing	>$10,000 & <$100,000
Postville	Continue membership in NFIP. Update floodplain regulations to continue to meet or exceed minimum State of Iowa regulations. Maintain work of floodplain administrator as identified in adopted floodplain ordinance.	Postville Clerk	City general funds	Ongoing	>$10,000 & <$100,000
Waterville	Continue membership in NFIP. Update floodplain regulations to continue to meet or exceed minimum State of Iowa regulations. Maintain work of floodplain administrator as identified in adopted floodplain ordinance.	Waterville Clerk	City general funds	Ongoing	>$10,000 & <$100,000
Waukon	Continue membership in NFIP. Update floodplain regulations to continue to meet or exceed minimum State of Iowa regulations. Maintain work of floodplain administrator as identified in adopted floodplain ordinance.	Waukon City Manager	City general funds	Ongoing	>$10,000 & <$100,000

3. Generators/transfer switches/back-up power supply

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Allamakee County	Installation of emergency power sources to include generators, transfer switches and other alternate power sources to identified facilities to enhance county and community sheltering capabilities during	Allamakee Co. Emergency Management Agency, cities	Time, local funding sources, grants	1 – 2 years	City $ for generators- $20,000-$50,000

	periods of power outages and other disaster and emergency circumstances				
Community School Districts	Installation of emergency power sources to include generators, transfer switches and other alternate power sources to school facilities to enhance community sheltering capabilities during periods of power outages & disaster/emergency situations	Community School District facilities staff & administrator, and Allamakee Co. Emergency Management Agency	Grants, local funds, and outside agency funding	Ongoing	Est $2,000 - $50,000
Harpers Ferry	Attain a new generator for the fire station	Fire Chief, Harpers Ferry Fire Dept.	City general funds, Fire grants, FEMA (HMGP), Community Foundation	1yr. after funding	$20,000 – $50,000
New Albin	Attain a new generator for the community center so it can serve as a community shelter	New Albin Public Works Superintendent	City general funds, Fire grants, FEMA (HMGP), Community Foundation	1yr. after funding	$40,000 – $50,000
Waterville	New generators and transfer switches for the fire station and community center	Waterville Mayor	City general funds, FEMA (HMGP), Community Foundation	1yr. after funding	$20,000 – $50,000
Lansing	Additional back-up generators (2) and/or transfer switches for utilities, buildings & facilities	Lansing Public Works Superintendent	City general funds, FEMA (HMGP), Community Foundation	Within 3 years	$40,000 – $100,000

4. Acquire and demolish damaged structures

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Postville	Acquire and demolish damaged/nuisance structures	Postville Clerk	HMGP grant, DNR grant, IEDA grant	Ongoing	Estimated $2,000 - $60,000 per property

Medium-High Priority Actions

5. Develop, upgrade, enhance, and protect infrastructure, and/or critical facilities

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Allamakee County	Maintain transportation infrastructure, including addressing safety and functionality during storm events (e.g. stormwater runoff minimization, debris cleanup at bridges, etc.)	Allamakee County Engineer & Emergency Management Agency	Local, state & federal road/bridge funds, CDBG, FEMA (HMGP, FMA), USDA, IDNR (SRF)	Ongoing	Variable, >$1,000,000
Lansing	Improve the stormwater drainage system and implement stormwater best practices with the Main Street project, in order to mitigate any drainage issues or flooding in the downtown area	Lansing Water/Sewer Superintendent	City general funds, USDA, DOT STBGP, FEMA grants, CDBG	1 – 3 years	Est>$20,000 <$100,000
New Albin	New or enhanced water distribution system, including adding 2nd well	New Albin Mayor, City Council, water/sewer rep.	City general/enterprise funds, CDBG, USDA, IDNR (SRF program)	1 – 2 years after funding	$1 million
	Improved/enhanced infrastructure sought including new/enhanced lagoonless sewer plant	New Albin Mayor, City Council, water/sewer rep.	City general/enterprise funds, CDBG, USDA, IDNR (SRF program)	1 – 2 years after funding	$4 million
	Three stormwater drainage system updates / stormwater management projects to address flooding (french drains, etc.)	New Albin Mayor, City Council, water/sewer rep.	City general funds, USDA, DOT STBGP, FEMA grants, CDBG	1 per year, 3 years total	>$5,000 <$25,000
Postville	Maintain/enhance water distribution system	Water/Sewer Superintendent	City general/enterprise funds, CDBG, USDA, IDNR (SRF program)	Ongoing	>$100,000 & <$300,000
	Security related enhancement for public facilities, including security cameras & bullet proof glass	Postville Clerk	City general/enterprise funds, grants	1 year after funding	$100,000
	Pursue storm shelter options for trailer park	Postville Mayor and Allamakee EMA	City general/enterprise funds, grants	1 year after funding	>$100,000 & <$800,000
Waukon	Continue to update/enhance the water distribution system	Water/Sewer Superintendent	City general/enterprise funds, CDBG, USDA, IDNR (SRF program)	Ongoing	>$10,000 & <$400,000

	Improved/enhanced street infrastructure	Street Superintendent	City general funds, USDA, DOT STBGP, DOT TAP, SRF applied for sidewalk/bioswale improvements	On-going	>$5,000 & <$1,000,000
	Improved/enhanced storm sewer infrastructure sought, including replacing outdated storm sewer lines & culvert work	Street Superintendent	City general funds, USDA, DOT STBGP, FEMA grants	On-going	>$1,000,000
Community School Districts (CSD)	Enhance and improve school infrastructure security in each school building	CSD superintendents & local law enforcement (Lansing, Postville and Waukon Police Dept., Allamakee Co. Sheriff)	Governor's School Safety Initiative, grants, and local funds	1 – 3 years	$50,000
Private Schools[23]	Enhance and improve school infrastructure security in each school building	Bais Sholom, Postville Alternative High School and St. Patrick Catholic School administrators, Postville and Waukon Police Dept./officers	Local funds and grants	1 – 5 years	$50,000

6. Participate in watershed/waterway planning and initiatives

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Allamakee County	Continue involvement in Upper Iowa River Watershed Management Authority planning and engagement	Allamakee Soil & Water Conservation District Commissioner, Allamakee Supervisor (UIRWMA rep)	Local funds, grants	Ongoing	Unknown
	Participate in other county or regional watershed planning & flood mitigation initiatives	County EMA, engineer, conservation director, zoning administrator, Supervisors, Allamakee Soil & Water Conservation District	Local funding sources, grants	Ongoing	Unknown
	Pursue opportunities for engaging cities and county agencies in watershed and flood mitigation planning and education	County conservation director and staff	Dept. budgets, small grants, organizational funds & initiatives	Ongoing	Unknown

[23] Private Schools are any schools not part of the Allamakee, Eastern Allamakee, and Postville Community School Districts.

7. Outreach to the public about hazards/encourage pre-disaster and recovery planning

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Allamakee County	Participation in the county volunteer program as part of an overall planning, response and recovery program for emergencies and disasters	Allamakee Co. Emergency Management Agency	Time, local funding	1 – 2 years	N/A
	Improve the public's awareness of lower priority hazard risks (i.e. landslides, drought, extreme heat, etc.). Educational materials, etc.	Allamakee Co. Emergency Management Agency	Time, local funding	Ongoing	Est <$1,000
Harpers Ferry	Form/participate in county volunteer group for storms/emergency events	Appointed council member (Barta as of 2023)	Time	1 – 2 years	N/A
	Improve the public's awareness of lower priority hazard risks (i.e. landslides, drought, extreme heat, etc.). Educational materials, etc.	Harpers Ferry Mayor, Allamakee EMA	Time, local funding	Ongoing	Est <$1,000
Lansing	Form/participate in county volunteer group for storms/emergency events	Fire Chief Lansing Fire Dept.	Time	1 – 2 years, ongoing	N/A
	Improve the public's awareness of lower priority hazard risks (i.e. landslides, drought, extreme heat, etc.). Educational materials, etc.	Lansing Mayor, Allamakee EMA	Time, local funding	Ongoing	Est <$1,000
New Albin	Form/participate in county volunteer group for storms/emergency events	Fire Chief, New Albin Fire Dept.	Time	1 – 2 years, ongoing	N/A
	Improve the public's awareness of lower priority hazard risks (i.e. landslides, drought, extreme heat, etc.). Educational materials, etc.	New Albin Mayor, Allamakee EMA	Time, local funding	Ongoing	Est <$1,000
Postville	Form/participate in county volunteer group for storms/emergency events	Fire Chief Postville Fire Dept.	Time	1 – 2 years, ongoing	N/A
	Improve the public's awareness of lower priority hazard risks (i.e. landslides, drought, extreme heat, etc.). Educational materials, etc.	Postville Mayor, Allamakee EMA	Time, local funding	Ongoing	Est <$1,000
Waterville	Form/participate in county volunteer group for storms/emergency events	Fire Chief Waterville Rural Fire Protection District	Time	1 – 2 years, ongoing	N/A
	Improve the public's awareness of lower priority hazard risks (i.e. landslides, drought, extreme heat, etc.). Educational materials, etc.	Waterville Mayor, Allamakee EMA	Time, local funding	Ongoing	Est <$1,000

Waukon	Form/participate in county volunteer group for storms/emergency events	Fire Chief Waukon Fire Dept.	Time	1 – 2 years, ongoing	N/A
	Improve the public's awareness of lower priority hazard risks (i.e. landslides, drought, extreme heat, etc.). Educational materials, etc.	Waukon Mayor, Allamakee EMA	Time, local funding	Ongoing	Est <$1,000
Community School Districts (CSDs)	Participation in the county disaster response planning to include response and recovery activities	CSD superintendents & Emergency Management Agency	Local funds and outside agency funding	1 – 2 years	Est >$1,000

8. Develop city/county codes or plans to address hazard issues

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Allamakee County	Participation in the county shelter planning process as part of an overall planning, response and recovery program for emergencies and disasters	Allamakee Co. Emergency Management Agency	Time, local funding	1 – 2 years	<$5,000 inventory of basic needs, emergencies
	Create a Rail Response Plan to prepare for the possibility of a rail accident	Allamakee Co. Emergency Management Agency	Time	1 – 2 years	N/A
	Creation and implementation of an ordinance requiring the construction of a storm shelter at a manufactured home community or mobile home park constructed after the approved start date of the ordinance per Iowa legislation	Allamakee Co. Emergency Management Agency & Zoning Administrator	Time	1 – 2 years	N/A
Harpers Ferry	Participate in county shelter planning process	Appointed council member (Kaeppel as of 2023)	Time, local funding (shelter needs)	1 – 2 years	<$5,000 emergency basic needs
	Participate in Allamakee EMA effort to create a Rail Response Plan	Appointed council member (Garin as of 2023)	Time	1 – 2 years	N/A
Lansing	Participate in county shelter planning process	Lansing Police Chief	Time, local funding (shelter needs)	1 – 2 years	<$5,000 emergency basic needs
	Participate in Allamakee EMA effort to create a Rail Response Plan	Fire Chief, Lansing Fire Dept./EMS	Time	1 – 2 years	N/A

New Albin	Participate in county shelter planning process	Lansing Police Chief (PD serves New Albin too)	Time, local funding (shelter needs)	1 – 2 years	<$5,000 emergency basic needs
	Participate in Allamakee EMA effort to create a Rail Response Plan	Fire Chief, New Albin Fire Dept./EMS	Time	1 – 2 years	N/A
Postville	Participate in county shelter planning process	Postville Mayor/Police Chief	Time, local funding (shelter needs)	1 – 2 years	<$5,000 emergency basic needs
	Participate in Allamakee EMA effort to create a Rail Response Plan	Postville Mayor/Police Chief	Time	1 – 2 years	N/A
Waterville	Participate in county shelter planning process	Waterville Mayor	Time, local funding (shelter needs)	1 – 2 years	<$5,000 emergency basic needs
	Make plan to address asbestos in public buildings, and implement identified actions	Waterville Mayor			
Waukon	Participate in county shelter planning process	Waukon Police Chief	Time, local funding (shelter needs)	1 – 2 years	<$5,000 emergency basic needs
	Create and implement a Continuity of Operations Plan (COOP) for the community	City Clerk/County Emergency Coordinator	Local funding	1-3 years	<$5,000
Community School Districts (CSDs)	Update and improve emergency response plans	CSD superintendents	Local funding	1- 2 years	Est. <$5,000
	Conduct training and exercises related to school safety with local responding agencies and partners	CSD superintendents, local law enforcement (Lansing, Postville & Waukon Police Dept., County Sheriff) and Emergency Management Agency	Local funds, grants, and outside agency funding	Ongoing	Est >$1,000
	Participation in the county and municipal shelter planning	CSD superintendents, Emergency Management Agency, city clerk (etc)	Local funds and outside agency funding	1 – 2 years	Est >$1,000
Private Schools	Conduct training and exercises related to school safety with local responding agencies and partners	Bais Sholom, Postville Alternative High School and St. Patrick Catholic School administrators, Postville & Waukon Police Dept., EMA	Local funds, grants, and outside agency funding	1 – 5 years	Est >$1,000

9. Purchase/improve warning & alert notification systems

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Allamakee County	Enhance and implement alert notification systems enhancing communication with local government, facilities, and vehicles from emergency management for planning, response, and recovery actions	Allamakee EMA	Time	Ongoing	<$1,000
Community School Districts	Purchase and installation of two-way radios and other communication resources in each school building allowing emergency communication with local and state law enforcement and other responding agencies	CSD superintendents and local law enforcement (Lansing, Postville, & Waukon Police Dept., Allamakee Co. Sheriff)	Governor's School Safety Initiative, grants, and local funds	1 – 2 years	Est $6,000 - $8,000
	Implement alert notification systems enhancing communication with school staff, facilities, and vehicles from outside school agencies	CSD superintendents, Emergency Management Agency	Local funds, grants, and outside agency funding	1 – 2 years	Est >$1,000
Private Schools	Purchase and installation of two-way radios and other communication resources in each school building allowing emergency communication with local and state law enforcement and other responding agencies	Private school administrators and local law enforcement (Postville & Waukon Police Dept.)	Local funds and grants	1 – 5 years	Est $6,000 - $8,000
	Implement alert notification systems enhancing communication with school staff, facilities, and vehicles from outside school agencies	Private school administrators and Emergency Management Agency	Local funds, grants, and outside agency funding	1 – 2 years	Est >$1,000

10. Consider the application and construction of on-road structures to protect county infrastructure from flooding

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Allamakee County	Construct on-road structures as funding becomes available	Allamakee County Engineer	Local funding sources, HUD NDR	Ongoing	>$100,000

11. Improve Transportation Safety

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Allamakee County	Assess county roads that are at risk of truck accidents/hazardous materials accidents due to steep topography, curvature, or conditions. Research applicable mitigation measures, and pursue implementation of measures at high risk locations.	Allamakee Co. Engineer and Allamakee EMA	LRSP/IDOT	Complete 2023	Countywide $30,000 Full LRSP Study

12. Plan, develop and maintain appropriate mental health services through countywide collaborations

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Allamakee County	Create a Behavioral Health Task Force to provide education, seminars, and resource awareness to schools. Provide and enhance mental health services for youth. Look at ways to expand telepsychiatry and counseling.	Allamakee EMA, Co. Social Services Justice Coordinator, Public Health Supervisor, Police Chiefs and County Sheriff, Psychiatric Mental Health Nurse Practitioner (VMH), school counselors, other mental health providers	Time, local funding, grants	1 year	>$1,000 <$10,000
	Create an Integrated Home Health (IHH) program to provide in-home and follow-up care.	Northeast IA Behavioral Health Director, Co. Social Services Coordinator, Public Health Supervisor, Psychiatric Mental Health Nurse Practitioner, other mental health providers	Time, local funding, grants	1 – 2 years	
	Create a Crisis Stabilization Center for persons in crisis.	County Social Services Coordinator, Public Health Supervisor, local law enforcement Police Chiefs, County Sheriff, Psychiatric Mental Health Nurse Practitioner at VMH, other local mental health providers	Time, local funding, grants	3 – 4 years	

13. Ensure the plan is updated prior to expiration, and promote the plan to the public

Jurisdiction:	Specific Actions:	Responsible Agency:	Funding Source:	Timeframe:	Cost:
Allamakee County	Ensure that MJ-7 Hazard Mitigation plan remains current and publicly available, is updated through public participation and is submitted for approval every 5 years with annual updates as needed	Allamakee County EMA	Time, County emergency mgmt. funds, HMPG	On-going	>$10,000 & <$30,000

Chapter 6- Plan Maintenance Process

This section provides an overview of the overall strategy for plan maintenance and outlines the method and schedule for monitoring, updating, and evaluating the plan. It also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

Monitoring, Evaluating, and Updating the Plan

Requirement 201.6(c)(4)(i):
[The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five year cycle.

With adoption of this plan, the Allamakee County Emergency Management Agency and the governing body with legal authority for each Participating Jurisdiction will be tasked with jointly monitoring, evaluating, and maintaining the plan. The Allamakee County Emergency Management Agency will be the lead agency in this process.

The above-mentioned organizations have agreed to meet annually to monitor and evaluate the plan and the Allamakee County Emergency Management Coordinator will coordinate the time for the meeting and notify the members of the Participating Jurisdiction accordingly, normally during a scheduled public meeting and that it is identified on the agenda.

The core duty of the above-mentioned organizations in relation to this plan is to see it successfully carried out and to report to the community governing boards and the public as needed on the status of plan implementation and mitigation opportunities.

Other duties include reviewing and promoting mitigation proposals, hearing stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information for the public to see through various media sources.

More specifically:

- Meet annually to monitor and evaluate the implementation of the plan;
- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high priority, low- or no-cost recommended actions;
- Maintain vigilant monitoring of multi-objective, cost-share, and other funding opportunities to help the community implement the plan's recommended actions or which no current funding exists;
- Monitor and assist in implementation and update of this plan;
- Keep the concept of mitigation in the forefront of community decision making by identifying plan recommendations when other community goals, plans, and activities overlap, influence, or directly affect increased community vulnerability to disasters;
- Report on plan progress and recommended changes to the governing body with legal authority of the Participating Jurisdictions; and
- Inform and solicit the public for input.

Plan Maintenance Schedule

Annually, the Allamakee Co. Emergency Management Coordinator will meet with the participating jurisdictions to discuss their past, current, and future activities and action status regarding the plan.

A five-year written update of the plan will be submitted to the Iowa Homeland Security and Emergency Management Division (HSEMD) and FEMA Region VII per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act (DMA) of 2000 and adopted by the governing body with legal authority of the Participating Jurisdictions within a five-year period from the final approval of this plan unless a disaster or other circumstances (e.g., changing regulations) require a change to this schedule.

Plan Maintenance Process

Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the plan. Changes in vulnerability can be identified by noting:

- Decreased vulnerability as a result of implementing recommended actions or other changes,
- Increased vulnerability as a result of failed or ineffective mitigation actions, and/or
- Increased vulnerability as a result of new development (and/or annexation).

Updates to this plan will:

- Consider changes in vulnerability due to action implementation,
- Document success stories where mitigation efforts have proven effective,
- Document areas where mitigation actions were not effective,
- Document any new hazards that may arise or were previously overlooked,
- Incorporate new data or studies on hazards and risks,
- Incorporate new capabilities or changes in capabilities,
- Incorporate growth and development-related changes to inventories, and
- Incorporate new action recommendations or changes in action prioritization.

In order to best evaluate any changes in vulnerability as a result of plan implementation, the Participating Jurisdictions will undergo the following process during the annual meetings conducted by the Allamakee County Emergency Management Coordinator:

- A representative from the responsible office identified in each mitigation action will be responsible for tracking and reporting on the action status. The representative will also provide input on whether the action, as implemented, meets the defined objectives and is likely to be successful in reducing vulnerabilities.
- If the action does not meet identified objectives, the jurisdiction will determine what additional measures may be implemented, and will be responsible for defining action scope, implementing the action, monitoring success of the action, and making any required modifications to the plan.

Changes will be made to the plan to accommodate actions that have failed or are not considered feasible after a review of their adherence to established criteria, time frames, community priorities, and/or funding resources. Actions that were not ranked high but were identified as potential mitigation activities will be reviewed during the annual monitoring and update of this plan to determine feasibility for future implementation. Updating of the plan will be enacted through written changes and submissions as the the Allamakee County Emergency Management Agency Coordinator, deems appropriate and necessary, and as approved by the governing body with legal authority of the Participating Jurisdictions.

Incorporation into Existing Planning Mechanisms

Requirement §201.6(c)(4)(ii):
[The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

Where possible, the Participating Jurisdictions will use existing plans/programs to implement hazard mitigation actions. Based on capability assessments of the Participating Jurisdictions, the communities will continue to plan and implement programs to reduce loss of life and property from hazards. This plan builds upon the momentum developed through previous related planning efforts and mitigation programs, and recommends implementing actions, where possible, through the following means:

- Allamakee County Comprehensive Emergency Management Plan
- Comprehensive Plans of Participating Jurisdictions
- Ordinances of Participating Jurisdictions
- Capital Improvement Plans and budgets
- Allamakee County Multi-Jurisdiction Mitigation Plan developed in future
- Other community plans either in existence or developed in the future
- Other county/regional plans either in existence or developed in the future

The governing body with legal authority of the participating jurisdictions adopting this plan will encourage other relevant planning mechanisms under their authority to consult this plan to ensure minimization of risk to natural hazards as well as maximum coordination of activities. The local data collected will be included in the State of Iowa Hazard Mitigation Plan, where appropriate.

HMPC members involved in updating these existing planning mechanisms will be responsible for integrating the findings and actions of the mitigation plan, as appropriate. The HMPC is also responsible for monitoring this integration and incorporating the appropriate information into the five-year update of the multi-hazard mitigation plan.

Appendix A - References

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Appendix B – Jurisdictional Resolutions

Allamakee County Board of Supervisors

ALLAMAKEE COUNTY
RESOLUTION NO. 23.218

A RESOLUTION OF THE ALLAMAKEE COUNTY BOARD OF SUPERVISORS ADOPTING THE 2023 ALLAMAKEE COUNTY, IOWA MULTI-JURISDICTION (MJ-7) MULTI-HAZARD MITIGATION PLAN

WHEREAS the Allamakee County Board of Supervisors (Board) recognizes the threat natural and man-made hazards pose to people and property within Allamakee County; and

WHEREAS the Board has prepared a multi-hazard mitigation plan, hereby known as the "2023 Allamakee County, Iowa Multi-Jurisdiction (MJ-7) Multi-Hazard Mitigation Plan" in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS the "2023 Allamakee County, Iowa Multi-Jurisdiction (MJ- 7) Multi-Hazard Mitigation Plan" identifies mitigation goals and actions to reduce or eliminate long term risk to people and property in Allamakee County from the impacts of future hazards and disasters; and

WHEREAS adoption by the Board demonstrates their commitment to hazard mitigation and achieving the goals outlined in the "2023 Allamakee County, Iowa Multi-Jurisdiction (MJ-7) Multi-Hazard Mitigation Plan."

NOW THEREFORE, be it resolved that the Allamakee County, Iowa Board of Supervisors approves and adopts the "2023 Allamakee County, Iowa Multi-Jurisdiction (MJ-7) Multi-Hazard Mitigation Plan," as an official plan.

ADOPTED by a vote of 3 in favor; Ø against; Ø abstaining, this 30th day of MAY 2023.

By: _____
Chair, Allamakee County Board of Supervisors

ATTEST:

By: Denise A Beyer
Allamakee County Auditor

City of Harpers Ferry

City of Lansing

City of New Albin

City of Postville

City of Waterville

City of Waukon

Allamakee Community School District

Eastern Allamakee Community School District

Postville Community School District

Appendix C –Authorized Representation for Planning Process

Allamakee Community School District

Resolution for Authorized Representation
Resolution for authorizing the Plan Author to act on behalf of Local Jurisdiction

Allamakee Community School District
Allamakee Community School District School Board
1059 3rd Ave N.W., Waukon, IA, 52172

RESOLUTION

WHEREAS, *Allamakee Community School District* has limited capability to undertake extensive participation in the preparation of a hazard mitigation plan; and

WHEREAS, Allamakee County Emergency Management is able to act on behalf of *Allamakee Community School District* in the analysis and development of a hazard mitigation plan; and

WHEREAS, Allamakee County Emergency Management shall prepare a hazard mitigation plan in accordance with 44 FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, Allamakee County Emergency Management shall deliver a draft copy of the Plan for public comment as well as the governing body's comment during the planning process and prior to adoption.

NOW THEREFORE, *Allamakee Community School District School Board* authorizes Allamakee County Emergency Management on behalf of *Allamakee Community School District* to participate in the preparation of the Allamakee County Multi-Hazard Mitigation Plan, which shall be reviewed and considered for adoption by *Allamakee Community School District School Board* upon completion.

ADOPTED this 17th day of October, 2022 at the meeting of the *Allamakee Community School District School Board*

Allan Rissman
Allamakee Community School District School Board President

Eastern Allamakee Community School District

Resolution for Authorized Representation
Resolution for authorizing the Plan Author to act on behalf of Local Jurisdiction

Eastern Allamakee Community School District
Eastern Allamakee Community Schools Board of Directors
569 Center Street Lansing IA, 52151

RESOLUTION

WHEREAS, *Eastern Allamakee Community School District* has limited capability to undertake extensive participation in the preparation of a hazard mitigation plan; and

WHEREAS, Allamakee County Emergency Management is able to act on behalf of *Eastern Allamakee Community School District* in the analysis and development of a hazard mitigation plan; and

WHEREAS, Allamakee County Emergency Management shall prepare a hazard mitigation plan in accordance with 44 FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, Allamakee County Emergency Management shall deliver a draft copy of the Plan for public comment as well as the governing body's comment during the planning process and prior to adoption.

NOW THEREFORE, *Eastern Allamakee Community Schools Board of Directors* authorizes Allamakee County Emergency Management on behalf of *Eastern Allamakee Community School District* to participate in the preparation of the Allamakee County Multi-Hazard Mitigation Plan, which shall be reviewed and considered for adoption by *Eastern Allamakee Community Schools Board of Directors* upon completion.

ADOPTED this 21st day of November, 2022 at the meeting of the *Eastern Allamakee Community Schools Board of Directors*

Bobbie Goetzinger
Eastern Allamakee Community School Board President of Directors

Postville Community School District

Resolution for Authorized Representation
Resolution for authorizing the Plan Author to act on behalf of Local Jurisdiction

Postville Community School District
Postville Community School District Board of Education
314 W. Post St., P.O. Box 717, Postville, IA, 52162

RESOLUTION

WHEREAS, *Postville Community School District* has limited capability to undertake extensive participation in the preparation of a hazard mitigation plan; and

WHEREAS, Allamakee County Emergency Management is able to act on behalf of *Postville Community School District* in the analysis and development of a hazard mitigation plan; and

WHEREAS, Allamakee County Emergency Management shall prepare a hazard mitigation plan in accordance with 44 FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, Allamakee County Emergency Management shall deliver a draft copy of the Plan for public comment as well as the governing body's comment during the planning process and prior to adoption.

NOW THEREFORE, *Postville Community School District Board of Education* authorizes Allamakee County Emergency Management on behalf of *Postville Community School District* to participate in the preparation of the Allamakee County Multi-Hazard Mitigation Plan, which shall be reviewed and considered for adoption by *Postville Community School District Board of Education* upon completion.

ADOPTED this 14th day of November, 2022 at the meeting of the *Postville Community School District Board of Education*

Travis Koenig
Postville Community School District Board of Education President

Appendix D – Planning Process Documentation

Hazard Mitigation Planning Committee Meetings

Kick-off Meeting, August 31, 2022

Agenda

upper explorerland regional planning commission

Serving Allamakee, Clayton, Fayette, Howard and Allamakee Counties
325 Washington Street, Suite A, Decorah, IA 52101
Phone: 563-382-6171 Fax: 563-382-6311
www.uerpc.org

Hazard Mitigation Planning Committee
Meeting 1 Agenda
Allamakee County, Iowa

Meeting Date: August 31, 2022
Meeting Time: 4:00 - 6:00 p.m.
Meeting Location: Waukon City Hall

1. Welcome and introductions
2. Overview of the hazard mitigation planning project
   - Brief explanation & review of existing plan
   - Key steps of planning process
   - Project timeline
   - Planning Committee participation needs
   - Questions & Answers
3. Discuss Community Profile
4. Review summary information on hazards and identify hazards to incorporate in plan
5. HMPC members fill out availability/contact sheet
6. Next steps:
   - Planning Committee members submit changes to community profile information
   - Planning Committee members respond to requests for data
7. Adjourn

Meeting Sign-In Sheet

Postville Hazard Mitigation Planning Meeting

Date: 12/12/2022

Time/Place: 7 pm, Postville Council Chambers, 147 N. Lawler St.

Printed Name:	Organization/City:	Email Address:
Kristine Turner	Postville	Kristy.lou.delp@hotmail.com
Annette Frey	Postville	afrey35@yahoo.com
Clara Lensing	Postville	—
Judy Egeland	Postville	—
Crystal Duffy	Castalia	
Cindy Berns	Postville	

Sign-in Sheets

Meeting #2, September 26, 2022

Agenda

upper explorerland regional planning commission

Serving Allamakee, Clayton, Fayette, Howard and Winneshiek Counties
325 Washington Street, Suite A, Decorah, IA 52101
Phone: 563-382-6171 Fax: 563-382-6311
www.uerpc.org

Hazard Mitigation Planning Meeting Agenda
Meeting 2: Hazard Identification, Profile Review & Risk Grouping
Allamakee County, Iowa

Meeting Date: September 26, 2022
Meeting Time: 4:00 p.m.
Meeting Location: Allamakee County Sheriff's Office

1. Welcome and introductions
2. Explanation Hazard Analysis/Risk Assessment
3. Review Summary Hazard Profile Information
4. Exercise to identify hazards to incorporate in plan
5. Next steps:
   - Planning Committee members respond to requests for data regarding community capabilities, future land use, community facilities & infrastructure and local hazard impacts
6. Discuss city meetings, and date of next planning committee meeting
7. Adjourn

Meeting Sign-In Sheet

Allamakee County - Hazard Mitigation Planning Committee Mtg 2

Date: 9/26/2022

Time/Place: 4 pm / Allamakee County Sheriff's Office

Printed Name:	Organization/City:	Phone:	Email Address:
Sarah Sitker	Waukon	568-3491	cityclerk@cityofwaukon.com
Jan Johnson	New Albin, FD	563-217-0168	JCJohnson580@Gmail.com
Sheryl Darling Mooney	Allamakee Public Health	563-568-5660	smooney@vmhospital.com
Mark Reiser	allamakee county Supervisor	563-568-1095	M.Reiser.com
Jay Mathis	Allamakee Community School District	563-568-7762	jmathis@allamakee.k12.ia.us
Janel Clarke	public	319-540-4905	clark18@yahoo.com
Sarah Murray	FACS	563-538-4201	smurray@kee.k12.ia.us
Jacob Dougherty	Veterans Memorial Hospital Waukon	(563)568-3913	jdougherty@vmhospital.com
Michelle Barness	UERPC		
Corey Snitker	Allamakee Co EMA		

Sign-in Sheets

Meeting #3, October 25, 2022

Agenda

upper explorerland regional planning commission

Serving Allamakee, Clayton, Fayette, Howard and Winneshiek Counties
325 Washington Street, Suite A, Decorah, IA 52101
Phone: 563-382-6171 Fax: 563-382-6311
www.uerpc.org

Hazard Mitigation Planning Meeting Agenda
Meeting 3: Hazard Risk Prioritization
Allamakee County, Iowa

Meeting Date: October 25, 2022
Meeting Time: 4:00 p.m.
Meeting Location: Allamakee County Sheriff's Office

1. Welcome and introductions
2. Brief review of hazard profile & identification step
3. Small group exercise to group hazards from least to highest risk
4. Large group exercise to finalize risk groupings
5. Next steps:
   - Planning Committee members respond to requests for data regarding community capabilities, future land use, community facilities & infrastructure and local hazard impacts
6. Discuss city meetings
7. Adjourn

Meeting Sign-In Sheet

Allamakee County - Hazard Mitigation Planning Committee Mtg 3

Date: 10/25/2022

Time/Place: 4 pm / Allamakee County Sheriff's Office

Printed Name:	Organization/City:	Phone:	Email Address:
Brian Ridenour	Allamakee Co. Engr.	(563) 568-4574	bridenour@co.allamakee.ia.us
Fred MacLaughlin	National Park Service	(563) 873-3491	fred_maclaughlin@nps.gov
Jacob Dougherty	VMH Ambulance	(563) 568-3313	jdougherty@vmhospital.com
Jay Mathis	Allamakee CSD	568 7762	jmathis@allamakee.k12.ia.us
Tom Diccion	Harpers Ferry	319-329-0841	CITYCLERK@HARPERSFERRYIOWA.COM
Clark Mellick	Allamakee Sheriff	563-568-7505	cmellick@co.allamakee.ia.us
Sheryl Darling Mooney	Public Health Allamakee	5635685060	smooney@vmhospital.com
Jon Johnson	New Albin Fire	Zoomed in	
Michelle Barness	UERPC		
Corey Snitker	Allamakee Co EMA		

Sign-in Sheets

Meeting #4, February 28, 2023

Agenda

upper explorerland regional planning commission

Serving Allamakee, Clayton, Fayette, Howard and Winneshiek Counties
325 Washington Street, Suite A, Decorah, IA 52101
Phone: 563-382-6171 Fax: 563-382-6311
www.uerpc.org

Hazard Mitigation Planning Meeting Agenda
Meeting 4: Mitigation Strategy
Allamakee County, Iowa

Meeting Date: February 28, 2023
Meeting Time: 4:00 p.m.
Meeting Location: Allamakee County Sheriff's Office

1. Welcome and introductions
2. Review risk and mitigation feedback from city and focused meetings (flood, mental health, schools)
3. Review and update mitigation goals and objectives
4. Review current mitigation actions, discuss status, update or remove
5. Identify new mitigation actions
6. Adjourn

Sign-in Sheets

ALLAMAKEE COUNTY PLANNING ROSTER

Event:		Location:	
Date:	Start Time:	End Time:	

Name	Signature	Organization	Email	Cell Number
Corey Snitker	[illegible]	Allamakee EMA		
Sarah Murray	[illegible]	EACS		
Tom Diggins	[illegible]	HF City Council		
Clark Mellick	[illegible]	Allamakee Sheriff		
Brian Ridenour	[illegible]	Allamakee Co. Engr.		
Susan Snow	[illegible]	Effigy Mounds NM		
Sherry Darlingmurray	[illegible]	All PHN		

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Meeting #5, March 14, 2023

Agenda

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Phone: 563-382-6171 Fax: 563-382-6311
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Hazard Mitigation Planning Meeting Agenda
Meeting 5: Mitigation Strategy Prioritization
Allamakee County, Iowa

Meeting Date: March 14, 2023
Meeting Time: 4:00 p.m.
Meeting Location: Allamakee County Sheriff's Office

1. Welcome and introductions
2. Review draft mitigation strategy
3. Exercise completed to prioritize mitigation actions using scoring factors and risk groupings
4. Adjourn

Scoring Factor	Develop Mental Helath Services through Countywide Collaborations Rating	Warning & Alert Systems Rating	Protect Infrastructure / Critical Facilities Rating	Codes or Plans to Address Hazard Issues Rating	Outreach to Public re: Hazards / Pre-disaster & Recovery Planning Rating	Increased Flood Mitigation Efforts & Enhancements Rating
Cost Effective: **5** = Benefit 5x the cost, or will prevent death/injuries **4** = Benefit 4x to 5x the cost **3** = Benfit 3x to 4x the cost **2** = Benefit 2x to 3x the cost **1** = Benefit 1x to 2x the cost **0** = Unsure if benefit will exceed cost **-1** = Cost to exceed benefit						
Environmentally Sound: **5** = Great benefit to the environment **4** = Most likely a benefit to the environment **3** = Perhaps benefit to environment, certainly no harm **2** = Generally accepted causes no harm to environment, but not considered benefit either **1** = More likely not to damage environment than to cause damage **0** = Questionable if environmentally sound						
Technical Feasibility - Cost: **5** = Cost easily covered w/budgets or funding avenues **4** = Cost within budgets or funding streams, but would be tight & implementation could be delayed bc of competing priorities **3** = Could probably only do this on part time basis, or provide sometimes **2** = Could only do action auxiliary to another purpose **1** = Would need to find funding as none currently available, but there is hope **0** = Maybe could do it, maybe not. Equal chance **-1** = Not likely to find funding now due to various barriers						
Technical Feasibility - Capability: **5** = Already have program that does this **4** = Fairly easy, have capable staff, resources, political support, etc. **3** = Would need ot juggle staff & resources, but is possible **2** = Would need technical assistance to do, bc. currently not entirely capable **1** = Little capacity to do, or political/other leaders don't support **0** = Political & other factors make this hinge in balance **-1** = Politcal & other factors are against this, but chance tide could turn						
How much more to do: **5** = A lot more left to be done **2 - 4** = Somewhere between above & below **1** = So much past progress, only some need left for this **0 or -1** = So much past progress, little to no need left for this						
Risk group points: **3** = Group 1 (High Risk) **2** = Group 2 (Md - High Risk) **1** = All other hazards						
Total score:	**0**	**0**	**0**	**0**	**0**	**0**

	On Road Structures to Mitigate Flooding of Infrastructure	Generators, Transfer Switches, Back-up Power	Update & Promote HM Plan	Improve Transportation Safety	Watershed Planning & Initiatives	Acquire / Demo Nuisance Structures	NFIP Participation
Scoring Factor	**Rating**	**Rating**	**Rating**	**Rating**	**Rating**	**Rating**	**Rating**
Cost Effective:							
5 = Benefit 5x the cost, or will prevent death/injuries							
4 = Benefit 4x to 5x the cost							
3 = Benfit 3x to 4x the cost							
2 = Benefit 2x to 3x the cost							
1 = Benefit 1x to 2x the cost							
0 = Unsure if benefit will exceed cost							
-1 = Cost to exceed benefit							
Environmentally Sound:							
5 = Great benefit to the environment							
4 = Most likely a benefit to the environment							
3 = Perhaps benefit to environment, certainly no harm							
2 = Generally accepted causes no harm to environment, but not considered benefit either							
1 = More likely not to damage environment than to cause damage							
0 = Questionable if environmentally sound							
Technical Feasibility - Cost:							
5 = Cost easily covered w/budgets or funding avenues							
4 = Cost within budgets or funding streams, but would be tight & implementation could be delayed bc of competing priorities							
3 = Could probably only do this on part time basis, or provide sometimes							
2 = Could only do action auxiliary to another purpose							
1 = Would need to find funding as none currently available, but there is hope							
0 = Maybe could do it, maybe not. Equal chance							
-1 = Not likely to find funding now due to various barriers							
Technical Feasibility - Capability:							
5 = Already have program that does this							
4 = Fairly easy, have capable staff, resources, political support, etc.							
3 = Would need ot juggle staff & resources, but is possible							
2 = Would need technical assistance to do, bc. currently not entirely capable							
1 = Little capacity to do, or political/other leaders don't support							
0 = Political & other factors make this hinge in balance							
-1 = Politcal & other factors are against this, but chance tide could turn							
How much more to do:							
5 = A lot more left to be done							
2 - 4 = Somewhere between above & below							
1 = So much past progress, only some need left for this							
0 or -1 = So much past progress, little to no need left for this							
Risk group points:							
3 = Group 1 (High Risk)							
2 = Group 2 (Md - High Risk)							
1 = All other hazards							
Total score:	0	0	0	0	0	0	0

Sign-in Sheets

Allamakee County Meeting Roster

Date: 14 MAR 23	Topic: Hazard Mitigation Planning Team MTG	
PRINT Name	**Department**	**Signature**
Corey Smith	Allamakee EMA	
DEVORA MAHR	Postville	
TOM DIGGINS	HARPERS FERRY	
Susan Snow	Effigy Mounds	
Dan Monsen	Waterville	
Sarah Murray	Lansing · Eastern Allamakee CSD	ON ZOOM
Jay Mathis	Allamakee Schools	
Sheryl Darling Mooney	Public Health	
Katie Becker	Lansing	ON ZOOM

Page 1 of ___

Focused Meetings

Flood Meeting, February 7, 2023

Agenda

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Phone: 563-382-6171 Fax: 563-382-6311
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Hazard Mitigation Planning Meeting Agenda
Focused Meeting: Flooding
Allamakee County, Iowa

Meeting Date: February 7, 2023
Meeting Time: 4:00 p.m.
Meeting Location: Harpers Ferry Community Room

1. Welcome and introductions
2. Review plan and meeting purpose
3. Review flood risks: county flood risk map, areas flood risk maps, flood loss estimates, etc.
4. Discuss flood risk in county
5. Discuss flood mitigation needs and opportunities
6. Adjourn

Sign-in Sheets

In attendance (in-person):

Brian Ridenour, Allamakee Co. Engineer
Susan Snow, Superintendent, Effigy Mounds National Monument
Carrie Nelson, Natural Resource Manager, Effigy Mounds National Monument
Val Reinke, Director, Allamakee Co. Economic Development & Tourism
Sara Berges, Soil Conservationist, USDA-NRCS
Michelle Barness, Upper Explorerland Regional Planning Commission
Corey Snitker, Allamakee Co. Emergency Mgt. Coordinator

Mental Health Meeting, January 25, 2023

Agenda

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325 Washington Street, Suite A, Decorah, IA 52101
Phone: 563-382-6171 Fax: 563-382-6311
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Hazard Mitigation Planning Meeting Agenda
Focused Meeting: Mental Health
Allamakee County, Iowa

Meeting Date: January 25, 2023
Meeting Time: 1:00 p.m.
Meeting Location: Allamakee County Sheriff's Office

1. Welcome and introductions
2. Review plan and meeting purpose
3. Review mental health response capacity
4. Review mental health occurrence and impacts
5. Review mental health vulnerabilities
6. Mental health hazard mitigation action information & discussion
7. Adjourn

Meeting Sign-In Sheet

Mental Health Hazard Mitigation Planning Meeting

Date: 1/25/2023

Time/Place: 1 pm, Allamakee Co Sheriff's Office

Printed Name:	Organization/City:	Email Address:
Jason Howes	County Social Services	jhowes@countysocialservices.org
Denise Mauss	Postville Schools	dmauss@postville.k12.ia.us
Tara Fink	VMH	tfinn@vmhospital
Amy Wasson	ACSD	awasson@allamakee.k12.ia.us
Carrie Niehaus	ACSD	cniehaus@allamakee.k12.ia.us
Stacie Cooper	ACSD	scooper@allamakee.k12.ia.us.
Sheryl Darling Mooney	Allamakee Public Health	Smooney@vmhospital.com
CLARK MELLICK	ALLAMAKEE SHERIFF	cmellick@co.allamakee.ia.us
Corey Smith	Allamakee EMS	
Charlie Woodcock	NEIBH	Zoom
Sarah Murray	Eastern Allamakee CSD	Zoom

Sign-in Sheets

School Meeting, January 27, 2023

Agenda

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325 Washington Street, Suite A, Decorah, IA 52101
Phone: 563-382-6171 Fax: 563-382-6311
www.uerpc.org

Hazard Mitigation Planning Meeting Agenda
Focused Meeting: Schools
Allamakee County, Iowa

Meeting Date: January 27, 2023
Meeting Time: 1:00 p.m.
Meeting Location: Virtual (Zoom)

1. Welcome and introductions
2. Review plan and meeting purpose
3. Review school risks
4. School hazard mitigation action information & discussion
5. Adjourn

Sign-In Sheets

In attendance (via Zoom):

Jay Mathis, Superintendent, Allamakee CSD
Sara Murray, Superintendent, Eastern Allamakee CSD
Michelle Barness, Upper Explorerland Regional Planning Commission
Corey Snitker, Allamakee Co. Emergency Mgt. Coordinator

City Meetings

Common Agenda

upper explorerland regional planning commission

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Phone: 563-382-6171 Fax: 563-382-6311
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Hazard Mitigation Planning Meeting Agenda
Harpers Ferry, Iowa
Allamakee County, Iowa

Meeting Date: November 14, 2022
Meeting Time: 1:00 p.m.
Meeting Location: Harpers Ferry City Hall

1. Welcome and introductions
2. Review plan purpose / process
3. Review of community profile information
4. Discussion of hazards most relevant to community
5. Status of existing mitigation actions, discuss new mitigation actions for inclusion in plan
6. Adjourn

Meeting Sign-In Sheet

Harpers Ferry Hazard Mitigation Planning Meeting

Date: 11/14/2022

Time/Place: 1 pm, Harpers Ferry City Hall

Printed Name:	Organization/City:	Email Address:
Alan Garin		
Sandi Rita	Harpers Ferry, Ia	
Shelby Schwartz		
Kelli Melcher	Harpers ferry, IA	
Jerry C Valley	Harpers Ferry IA	
Tom Diccens	Harpers Ferry, IA	
Ken Barta	Harpers ferry, IA	
Daven Kaeppel	Harpers Ferry, IA	
Don Loes	Harpers Ferry, Iowa	
Karren Boot	Harpers Ferry, Iowa	
Bill Nation	Harpers Ferry IA	
Bob Ryan	Harpers Ferry IA	
Sheila Diggins	Harpers Ferry. IA	

Sign-in Sheets

Meeting Sign-In Sheet

Lansing Hazard Mitigation Planning Meeting

Date: 12/19/2022

Time/Place: 7 pm, Lansing City Hall

Printed Name:	Organization/City:	Email Address:
✓ CURT SNITKER	City Council in Lansing IA	CSNIKR@GMAIC.COM
✓ Ian Zahren	City Council	ian.zahren@gmail.com
Katie Becker	City Clerk - Lansing	lansing52151@yahoo.com
✓ Melissa Hammell	Mayor - Lansing	mayorlansing@gmail.com
✓ Lisa Welsh	city Council - Lansing, IA	lwelshlansing@yahoo.com
✓ MIKE MANNING	" "	mike.manning52151@gmail.com
✓ Steve Murray	City council Lansing	Steve.murray19@mchsi.com.
Nick Hammell	Citizen / LFD	nick Hammell @ yahoo.com
KEN RIPP	STREET SUPERVISOR - LANSING	DWLANSING52151@GMAIL.COM
Duane Estebo	water/sewer - Lansing	destebo@peopleservice.com
Maynard R Johnson	Lansing resident	Maynard R Johnson @Gmail.Comm

Meeting Sign-In Sheet

New Albin Hazard Mitigation Planning Meeting

Date: 11/14/2022

Time/Place: 7 pm, New Albin Town House

Printed Name:	Organization/City:	Email Address:
Jake Reburn	New Albin	
Steve Meiners	New Albin	
✓ GEORGE BLAIR	NEW ALBIN COUNCIL	
✓ Deb Crane	New Albin City Council	
Alberto Whitlatch	New Albin	
DEBRA STANTIC	NEW ALBIN	QTS 425@AOL.COM
✓ Alexie Grotegut	New Albin	
✓ Dale Mann	New Albin	
✓ Maria Stahl	New Albin City Council	maria.stahl@gmail.com
Conrad Rosendall	Lansing / New Albin Police	LansingPD@mchsi.com
Sandy Darling	Lansing 19	darlingsandy@gmail.com

Meeting Sign-In Sheet

Postville Hazard Mitigation Planning Meeting

Date: 12/12/2022

Time/Place: 7 pm, Postville Council Chambers, 147 N. Lawler St.

Printed Name:	Organization/City:	Email Address:
BECKY ENGELHARDT	Postville CC	fidelandbecky@gmail.com
Mary Engstrom		mjengstrom52@gmail.com
Ross Malcom		malcom1626@gmail.com
Dennis Koenig		ddkoenigmoore@gmail.com
Jamy Radloff		postcityclerk@neitel.net
Matt Ellis		police@cityofpostville.com
DEVORA KLEIN-MAHR		CPLMAHR@GMAIL.COM
Larry A Moore DVM		doc mj moore@gmail.com

Meeting Sign-In Sheet

Postville Hazard Mitigation Planning Meeting

Date: 12/12/2022

Time/Place: 7 pm, Postville Council Chambers, 147 N. Lawler St.

Printed Name:	Organization/City:	Email Address:
Kristine Turner	Postville	Kristy.lou.delp@hotmail.com
Annette Frey	Postville	afrey35@yahoo.com
Clara Lensing	Postville	—
Judy Egeland	Postville	—
Crystal Duffy	Castalia	
Cindy Berns	Postville	

Meeting Sign-In Sheet

Waterville Hazard Mitigation Planning Meeting

Date: 11/8/2022

Time/Place: 6 pm, Waterville City Hall / Community Center

Printed Name:	Organization/City:	Email Address:
David Christianson	Council Waterville	dj.christianson70@gmail.com
Robbie Burnett	Council Waterville	rburnett@acegroup.cc
Dave Monsend	Mayor / Waterville	watmayor@hotmail.com
Heather Bente	City clerk Waterville	Watervilleclerk@acegroup.cc
Jackie Hilleshiem	Council - Waterville	paintcreeksoaps@gmail.com
Bethany Dondee	Council - Waterville	bethanygayledondee@gmail.com
Jodi Van Iten	Council - Waterville	jlvaniten@aol.com
Gene Leiran	citizen Waterville	Leira@acegroup.cc
Loren Mitchell	Waterville Fire	
Jeff Mitchell	Waterville Fire Dept	jmitchell3273@gmail.com

Meeting Sign-In Sheet

Waukon Hazard Mitigation Planning Meeting

Date: 12/5/2022

Time/Place: 7 pm, Waukon City Hall

Printed Name:	Organization/City:	Email Address:
Jim Cooper	Waukon Water	watersup@cityofwaukon.com
Paul Wagner	Waukon Police	wagner@waukonpolice.com
Jeremy Straub	Waukon PW	director@waukonairport.com
SAM ERTL	FEHR GRAHAM	sertl@fehrgraham.com
Joe Moses	The Standard Newspaper	reports@waukonstandard.com
✓ Andrew Sires	Council	andysires802@gmail.com
✓ Kevin Johnson	City Council	Johnsonat Image3@gmail.com
✓ Arvid Hatlan	City Council / Ward 3	arvidhatlan@yahoo.com
Sarah Snitker	City of Waukon - City Clerk	cityclerk@cityofwaukon.com
✓ Pat Stone	City of Waukon Mayor	
GARY W. BODEN	CITY OF WAUKON	citymanager@cityofwaukon.com
✓ John Lydon	City Council	LYDON ELECTRIC@LIVE.COM

Meeting Sign-In Sheet

Waukon Hazard Mitigation Planning Meeting

Date: 12/5/2022

Time/Place: 7 pm, Waukon City Hall

Printed Name:	Organization/City:	Email Address:
Steve Wiedner	City Council	steve.wiedner@yahoo.com
Kevin Stinn	City Attorney	swartzlawwaukon@gmail.com

Press Releases

FOR IMMEDIATE RELEASE: BE INVOLVED IN THE ALLAMAKEE COUNTY HAZARD MITIGATION PLANNING COMMITTEE!

Hazard risks can be natural or man-made, and cover a variety of things, such as storms and flooding, hazardous materials, infrastructure, terrorism, human disease, and more. The public is invited to be involved in Allamakee County Hazard Mitigation Planning Committee (HMPC) meetings to identify hazard risks and discuss ways communities can prevent, or mitigate, these risks in the future. Planning committee members require no previous experience to be involved. The planning process will provide the data, materials, and questions necessary to engage stakeholders in thinking about hazard mitigation needs for their community. Planning committee members will attend up to five meetings over the course of the coming year. The initial planning meeting will be held from 4 – 6 pm on Wednesday August 31st at the Waukon City Hall (101 Allamakee St NW, Waukon, IA).

Planning will culminate in an update to the Allamakee County Hazard Mitigation Plan, encompassing unincorporated areas, the cities of Harpers Ferry, Lansing, New Albin, Postville, Waterville and Waukon, and the Postville, Allamakee and Eastern Allamakee Community School Districts.

For additional information on the plan or to get involved in the Hazard Mitigation Planning Committee (HMPC) please reach out to Michelle Barness, Regional Planner for Upper Explorerland Regional Planning Commission, at (563) 419 – 6243 / mbarness@uerpc.org, or Corey Snitker, Allamakee County Emergency Management Coordinator, at (563) 568 – 4233 / csnitker@co.allamakee.ia.us.

FOR IMMEDIATE RELEASE: HAZARD MITIGATION PLAN AVAILABLE FOR PUBLIC REVIEW

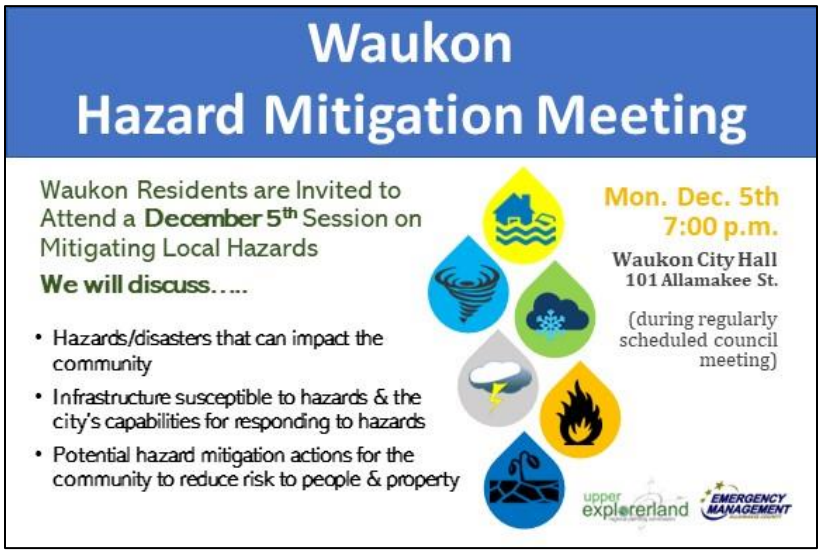
Allamakee County and its jurisdictions have worked over the last year to complete an update to a countywide Hazard Mitigation Plan. The planning process was led by the Allamakee County Emergency Management Agency with assistance from Upper Explorerland Regional Planning Commission and a countywide Hazard Mitigation Planning Committee.

The plan identifies the characteristics and consequences of hazards and assesses vulnerabilities within communities to those hazards. The plan also looks at possible ways to avoid or minimize the undesired effects of hazard risks, culminating in a list of mitigation actions local stakeholders can work on.

Beginning on May 4th 2023, a draft of the Allamakee Co. Hazard Mitigation Plan is available for review and comment on the Upper Explorerland Regional Planning Commission website at: https://uerpc.org/items-for-public-comment/. Comments can be submitted through Thursday May 18th. Feedback will be incorporated in the plan, after which point the plan will be adopted by local jurisdictions and reviewed and approved by the Federal Emergency Management Agency (FEMA).

For additional information on the plan or to provide feedback directly, contact Regional Planner Michelle Barness at Upper Explorerland Regional Planning Commission, at 563-419-6243 or mbarness@uerpc.org.

Print & Website / Facebook Notifications (samples)



Appendix E – Sample Mitigation Actions Reviewed in Meetings

Examples of Mitigation Actions

EMERGENCY SERVICES OR GENERAL HAZARD RESPONSE
Sirens – additions/replacements/upgrades
Fire Station expansions/construction
Maintain/improve emergency responder training
Maintain/improve emergency responder equipment
Maintain partnerships for effective and prompt emergency response
New emergency responder vehicles
Improvements to transportation safety and response
Generators/transfer switches
Develop/update/publicize emergency management plans
Maintain Emergency Operations Center (EOC) with 24 hour capability
Develop inventory of special needs population to promote hazard mitigation and emergency management training specific to needs of special needs population
Install dry hydrants in areas without water mains and domestic fire hydrants
CRITICAL FACILITIES
Install and maintain protective measures for the safety and security of critical facilities
Ensure that proper security measures are in place for critical facilities
Flood protection for critical facilities / Relocate critical facilities for flood protection

PUBLIC EDUCATION AND OUTREACH
Promote the Hazard Mitigation Plan to the public & ensure plan is updated
Improve the public's awareness of hazard risks: Develop educational materials for the general public and decision makers, pursue educational projects, provide information on public and private volunteer initiatives
STRUCTURES/INFRASTRUCTURE
Storm shelter – FEMA compliant safe room (also consider public safe rooms for government & critical facility function, recreation areas, mobile home parks, etc.)
Improved/upgraded water/sewer facilities (wells, systems, hydrants, lagoons…)
Non-structural retrofit of public structures
Acquire and demolish damaged structures
Electrical utility retrofit/hardening
PREVENTATIVE / POLICY SPECIFIC
Develop city codes & ordinances to address issues (zoning and land use requirements, building codes/construction regulation, floodplain ordinances, etc.)
Support legislation increasing shelter standards and provide safe room education for builders and developers

Examples of Mitigation Actions

FLOODING SPECIFIC
Maintain/improve flood mitigation equipment
Acquire flood prone properties and convert to open space/green space; or elevate to or above base flood elevation
Develop water and/or soil conservation strategies
Develop and implement watershed studies or plans, and conduct hydrology studies and studies of groundwater problems
Support stormwater management, including infiltration, retention basins, bioswale, rain garden, and siltation removal projects
Encourage NFIP community and individual participation, and survey of flood prone areas, and river channel studies, and update of existing flood maps
Waterway and structural changes/maintenance/upgrades/construction (e.g. construct flood walls, construct measures to direct water away from structures)
Construct/elevate wastewater lift station
Establish natural vegetation buffers and removal of dead vegetation next to sensitive lands and forestry improvements/tree planting (sinkholes, floodplains, etc.)
Construct, retrofit or maintain drainage systems (pipes, culverts, and channels) to provide adequate and proper functioning systems
Replace or retrofit bridges and culverts to meet capacity requirements
Raise roads to reduce hazard risk
Install soil stabilization, drainage and erosion protection measures
Develop stream modifications/channel improvement projects
HAZARDOUS MATERIALS SPECIFIC
Remove asbestos from public facilities
Remove underground fuel storage tanks
Plan and monitor Hazardous Materials decontamination sites
Develop/maintain list of facilities that produce, process, store or transport hazardous materials
Install safety and warning signage in appropriate vulnerable locations
TECHNOLOGY & COMMUNICATION
Expand/improve communications/technology infrastructure and equipment
Promote/purchase/subsidize "all-hazards" radios for community members
OTHER
Develop tree treatment and replacement plan
Identify and map existing sinkholes and evaluate the potential for new sinkholes in hazard plans

Prioritizing Potential Projects in Iowa for Funding with Hazard Mitigation Assistance

With limited hazard mitigation assistance (HMA) funds and continual need for hazard mitigation projects in the state, the Iowa Homeland Security and Emergency Management Department (HSEMD) has identified processes and criteria to evaluate hazard mitigation project proposals for funding. The criteria HSEMD utilizes align with FEMA grant guidance and the recently adopted Iowa Hazard Mitigation Plan. The steps of the evaluation process and criteria are briefly described here:

Step 1: Meet the basics
First, the applicant must be a participant in the planning process for the FEMA approved local hazard mitigation plan and the project must be identified as a mitigation action within the plan. The applicant must also meet the financial risk assessment and local match requirements.

Step 2: The project fits into which priority category?
Project proposals will be categorized and ranked in accordance with the *Iowa Hazard Mitigation Plan* (the "State Plan").

Projects will be placed in one of three categories: A, B or C. These categories are based on priority mitigation actions established by the State Hazard Mitigation Team (see section 5.6 of the State Plan). Over a five-year period, available grant funding will be divided among the project categories with the majority designated for category A projects. Category B will receive the next portion of funding, followed by Category C. Historically, for example, safe rooms have received 6 percent of HMA funding and are designated as a Category C project. It is anticipated safe room projects will receive a similar percentage of grant funding over the next five years. There is a possibility additional funds will be made available for category C projects but the allocation will not exceed the total allotted for projects in Category B.

Category A Projects include (see the last table in section 5.6 of the State Plan for all mitigation actions with priority A):

- Property acquisition and conversion to green space
- Projects that elevate at least one foot above base flood elevation
- Restoration of floodplain, including oxbows, that reduce peak flow
- Streambank stabilization projects that reduce peak flow
- Channel improvements that reduce peak flow
- Channels, culverts and structures connected together as a system for flood protection
- Farm/Rural Pond for flood protection
- Detention basins to prevent flooding
- Urban infiltration projects that prevent flooding, including bioswales or infiltration trenches
- Riparian forest buffers done in cities for flood prevention
- Wet detention systems in cities
- Urban wetlands for flood prevention
- Vegetated swales for flood prevention in cities
- Permeable pavement resulting in flood prevention
- Other green infrastructure in accordance with Iowa Storm Water Management Manual design criteria
- Sanitary sewer improvements
- Hardening/retrofitting line and constructing design failure structures
- System, series or collection of practices and small projects that together provide flood protection for roads and bridges downstream
- Bridge retrofit or reconstruction
- Road reconstruction and installation of unconnected culvert(s) that cross under a road (typically rural)
- Signage or educational materials to improve awareness of hazard risks and ways to prevent/reduce impacts (typically limited to 5% of HMA funding)
- Watershed plans and studies of hydrology, study of groundwater issues and study of areas of risk to erosion
- Projects recommended in watershed plans, hydrology studies, and similar documents
- Warning sirens (no more than 5% of HMA funds)
- River/flood gauges and other alert devices installed to provide advance warnings and alerts (limited to 5% of HMA funding)

Category Priority B projects include (see the last table in section 5.6 of the State Plan for all mitigation actions with priority B):

- Elevate or protect wastewater lift stations
- Projects that promote the use of NOAA all-hazards weather radio
- Wetlands outside of cities
- Prairie strips and other vegetated cover outside of cities for flood prevention
- Purchase/install backup power generators

Category C projects include (see the last table in section 5.6 of the State Plan for all mitigation actions with priority C):

- Public safe rooms
- Obtain and distribute copies of *ICC/NSSA Standard for the Design and Construction of Storm Shelters* and *FEMA P-320 - Taking Shelter from the Storm: Building a Safe Room for Your Home or Small Business* to cities, architects, and builders
- Small flood-control measures
- Projects that provide model standards and guides, including the *Iowa Stormwater Management Manual,* to local jurisdictions about construction, design and landscaping measures that direct water away from structures

Step 3: Rank the projects within each category

Step 3 A: Prioritize projects according to criteria in the *Iowa Hazard Mitigation Plan*

There are several criteria mentioned in the State Plan (section 4.2.6) upon which to evaluate different projects. These include:

1. Number of repetitive loss and/or severe repetitive properties that can be resolved
2. Number of highly-vulnerable people that can be protected
3. Places under the most development pressure
4. Preservation of essential services by protecting critical facilities
5. Applicant's demonstrated commitment to mitigation
6. Quality of the application

Each project will be evaluated and/or scored according these criteria.

Step 3 B: Prioritize according to criteria stipulated by the specific grant NOFA

Certain competitive grant programs have additional criteria which will be used to supplement the above criteria. For instance, a Notice of Funding Availability may prioritize projects for small, impoverished communities or projects with private partnerships. Iowa HSEMD will make accommodations for these factors when ranking project proposals for specific grant programs.

Step 4: Analyze the benefits and costs and compute a BCR

Once ranked according to above criteria, FEMA's BCA tool is used to analyze costs and benefits of the top 10 to 20 projects. The analysis also considers ongoing maintenance costs and certain beneficial impacts besides loss avoidance. (Another prioritization factor stated in the State Plan is a criteria to consider measures designed to accomplish multiple objectives, including damage reduction and environmental enhancement.) After an initial benefit to cost ratio (BCR) is calculated with the BCA tool, projects with a BCR of at least .75 can receive additional benefit credit according to how much ecosystem service benefits the project brings. So, for example, for each acre of green open space created by the project, an extra benefit of $8208 per year is credited to the project in the BCA tool. Riparian areas restored or created reap a benefit credit of $39,535 an acre per year, wetlands $6010 an acre per year, and forest $554 an acre per year. With these additional benefit credits added into the BCA tool, a BCR is recalculated for the project. Projects with the highest BCRs within the defined category will be first priority for funding.

Appendix F – FEMA Approval Letter