

2017 Updated Multi-Jurisdictional Hazard Mitigation Plan for Buchanan County, Iowa







Adopted By:

Buchanan County (12/12/2016)
City of Aurora (4/11/2017)
City of Brandon (Pending)
City of Fairbank (4/24/2017)
City of Hazleton (2/15/2017)
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Iowa Northland Regional Council of Governments

INRCOG

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HAZARD MITIGATION PLANNING COMMITTEE

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SECTION 1 – INTRODUCTION

INTRODUCTION

Natural, technological, and human-caused hazards have the potential to cause property loss, loss of life, economic hardship, and threats to public health and safety. While an important aspect of emergency management deals with disaster recovery – those actions that a community must take to repair damages and make itself whole in the wake of a natural disaster – an equally important aspect of emergency management involves hazard mitigation. Hazard mitigation measures are efforts taken before a disaster happens to lessen the impact that future disasters of that type will have on people and property in the community. They are things you do today to be more protected in the future. Hazard mitigation actions taken in advance of a hazard event are essential to breaking the typical disaster cycle of damage, reconstruction, and repeated damage. With careful selection, hazard mitigation actions can be long-term, cost-effective means of reducing the risk of loss and help create a more disaster-resistant and sustainable community.

The 2017 Buchanan County Multi-Jurisdictional Hazard Mitigation Plan (M-J HMP) was developed as an updated document to assist in making the planning area less susceptible to these hazards. The planning area includes the cities of: Aurora, Brandon, Fairbank, Hazleton, Independence, Jesup, Lamont, Quasqueton, Rowley, Stanley, and Winthrop. The plan also includes the unincorporated areas of Buchanan County as well as the East Buchanan Community School District (EBCSD), Independence Community School District (ICSD), and Jesup Community School District (JCSD).

What is a Hazard Mitigation Plan?

Generally the first question asked when communities begin the process of preparing a Hazard Mitigation Plan (HMP) is very simply "What is a Hazard Mitigation Plan and what is its intended purpose?" First, it is imperative to define what precisely the term mitigation entails. One definition of the term is stated most effectively by the Federal Emergency Management Agency (FEMA) and is as follows: *"Mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event. Mitigation, also known as prevention (when done before a disaster), encourages long-term reduction of hazard vulnerability. The goal of mitigation is to decrease the need for response as opposed to simply increasing the response capability." (www.fema.gov).*

A hazard mitigation plan is developed by local government(s) before a disaster strikes. The plan identifies local community policies, actions, and tools for on-going, short-, mid-, and long-term implementation to reduce risk and potential future losses of property and lives.

Purposes of Hazard Mitigation Planning

The following list identifies reasons to conduct hazard mitigation planning:

- To facilitate the protection of the health, safety and economic security of residents, workers, visitors and property owners by mitigating the impacts of natural and manmade hazards.
- Influence decision making in both the public and private sectors.
- Fulfill statutory requirements of the Disaster Mitigation Act of 2000 – as of November 1, 2004 a community must have a FEMA-approved hazard mitigation plan in order to be eligible for FEMA project grant monies under programs such as the Flood Mitigation Assistance Grant program (FMA), Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Grant program (PDM), Severe Repetitive Loss Grant program (SRL), Repetitive Flood Claims Grant program (RFC), and certain categories of aid under the Public Assistance Grant program (PA).
- Fulfill contractual obligations under the Hazard Mitigation Grant Program (HMGP).
- Receive credit under the Community Rating System (CRS).

WHAT IS A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN?

Requirement §201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning shall include: 1) 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 authority to regulate development, as well as businesses, academia and other private non-profit interests to be involved in the planning process; and 3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Requirement §201.6(c)(1): [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.

A multi-jurisdictional hazard mitigation plan is a plan jointly prepared by more than one local government or jurisdiction. Local jurisdictions have the option to participate in a multi-jurisdictional hazard mitigation plan under the Disaster Mitigation Action of 2000 (DMA 2000). A local government is defined by Title 44 Part 201 Mitigation Planning in the Code of Federal Regulations (CFR) as *"any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity."*

The Multi-Jurisdictional Hazard Mitigation Plan planning area includes the following local governments that participated in the planning process: Buchanan County unincorporated area; the cities of Aurora, Brandon, Fairbank, Hazleton, Independence, Jesup, Lamont, Quasqueton, Rowley, Stanley, and Winthrop; and school districts of East Buchanan Community School District, Independence Community School District, and Jesup Community School District.

Benefits of Multi-Jurisdictional Mitigation Planning

The following bulleted statements identify the many benefits for jurisdictions that participate in the multi-jurisdictional mitigation planning.

- Enables comprehensive approaches to mitigation of hazards that affect multiple jurisdictions;
- Allows economies of scale by leveraging individual capabilities and sharing costs and resources;
- Avoids duplication of efforts; and
- Imposes an external discipline on the process.



Figure 1.1: Hazard Mitigation Planning Process

PLANNING PROCESS

With support of the Buchanan County Board of Supervisors and participating City Councils, Buchanan County applied for, and received, a FEMA HMGP Grant for the development of this Multi-Jurisdictional Hazard Mitigation Plan (M-J HMP).

Requirement §201.6(a)(3): Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process…Statewide plans will not be accepted as multi-jurisdictional plans.

The planning process for this HMP involved a variety of local decision makers and stakeholders within the planning area. The planning leaders were able to customize the process to meeting the needs of the municipalities. The process was developed around the requirements laid out in FEMA's *Local Hazard Mitigation Crosswalk*, as well has FEMA's State and Local Mitigation Planning How-to Guide series of documents (FEMA 386-8 in particular). Figure 1 illustrates the key steps in the hazard mitigation planning process and the specifics of each planning step are provided below.

Step One: Organize Resources

The first step in developing the Multi-Jurisdictional HMP was to bring together a group of people with a variety of knowledge and backgrounds from all jurisdictions within the planning area, yet all having some connection to the goal of hazard mitigation.

Multi-Jurisdictional Planning Participation

Working in conjunction with Iowa Northland Regional Council of Governments (INRCOG), Buchanan County, Aurora, Brandon, Fairbank, Hazleton, Independence, Jesup, Lamont, Quasqueton, Rowley, Stanley, Winthrop, and school districts of East Buchanan Community School District, Independence Community School District, and Jesup Community School District developed a list of departments and positions they felt would best represent the knowledge base required to begin the planning process. Invitations were sent to representatives of the County, all incorporated cities, and all school districts in Buchanan County. The idea was to first establish a base committee and then invite other organizations and/or individuals as necessary. Table 1 provides the planning committee membership with

their jurisdictions and positions.

TABLE 1.1: BUCHANAN COUNTY MJ-HMP PLANNING COMMITTEE MEMBERS

Name	Jurisdiction	Position	Name	Jurisdiction	Position
Deborah Hundley	Aurora	Fire Captain	Doug Cook	Independence	Fire Chief
Jean Kivell	Aurora	Mayor	Jean Peterson	Independence Schools	Superintendent
Jeremy Paris	Aurora	Fire Department	Dave Bishop	Jesup	Mayor
Michael Hundley	Aurora	Fire Chief	Kandis Ciesielski	Jesup	Ambulance Chief
David Young	Aurora	Mayor	Nathan Marting	Jesup Schools	Superintendent
Danette Lujan	Brandon	City Clerk	Diane Anderson	Lamont	City Clerk
Jae Redenbaugh	Brandon	Council	Eleanor Riley	Lamont	Mayor
Robert Bearbower	Brandon	Fire Department	Joe Opperman	Lamont	Public Works Director
Clair Franzen	Buchanan County	EMA	Chad Staton	Quasqueton	Mayor
Don Shonka	Buchanan County	Supervisor	Brian Vanous	Quasqueton	Fire Chief
Larry Locke	Buchanan County	EMA	Rita Knutson	Rowley	Mayor
Rick Wulfekuhle	Buchanan County	EMA Coordinator	Rodger Sill	Stanley	Mayor
Tai Burkhart	Buchanan County	Public Health	Tom Sill	Stanley	Volunteer
Daniel Fox	East Buchanan Schools	Superintendent	Allan Nelson	Starmont Schools	Superintendent
Lee White	East Buchanan Schools	Teacher	Chad Garber	Wapsie Valley Schools	Superintendent
Travis Schueller	East Buchanan Schools	Principal	Ann Myers	Winthrop	Council
Bill Cowell	Fairbank	Mayor	Chris Hare	Winthrop	Fire Chief
Marlene Strempke	Fairbank	City Clerk	Gerald Dennie	Winthrop	Mayor
Chris Hayzlett	Hazleton	Citizen	Mark Kress	Winthrop	Council
Gerald VandeVorde	Hazleton	Mayor	Mary Ryan	Winthrop	City Clerk
Justin Duffy	Hazleton	Mayor Pro-Tem	Melissa Hesner	Winthrop	Council
Al Roder	Independence	City Manager	Shawn Curtis	Winthrop	Public Works

This initial group of people encompassed individuals representing local government, law enforcement, fire and rescue, local emergency management, public utilities, local schools, local non-profits and service providers, area employers, railroads, insurance, real estate, and citizen volunteers. Others invited to the meetings included EMA coordinators from surrounding counties as well as State officials from the Iowa Homeland Security and Emergency Management office and an official from FEMA Region 7. Once established, this assembly was considered the Hazard Mitigation Planning Committee. Table 1 lists the Hazard Mitigation Planning Committee individuals.

Beyond this core group of individuals, public notices for all committee meetings were published in four newspapers within the planning area, including the Independence Bulletin Journal, Jesup Citizen Herald, Lamont Leader, and Winthrop News. The publications were to inform neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties (including surrounding communities) and residents of the planning process and to invite all interested parties to attend and contribute to the development of the plan. Prior to the adoption of the M-J HMP, each jurisdiction advertised and held public hearings. Public notices and public involvement materials can be found in Attachment 4.

INRCOG organized the meetings in conjunction with the Buchanan County Emergency Management Coordinator. INRCOG was also responsible for compiling information and writing the final document.

At each committee meeting, each jurisdiction was tasked with reviewing their previous HMP information (if applicable), updating/developing/providing new community fact information, updating/identifying/rescoring hazards, and reviewing/discussing and updating their previous mitigation activities (if applicable) and reprioritizing the activities. All activities that were completed from the previous plans were marked as such and determined if they were to be omitted from the plan update or continued. If a jurisdiction wasn't present at a meeting, meeting materials were mailed/emailed and completed by said jurisdiction and sent back to INRCOG for placement in the document.

TABLE 1.2: MEETINGS SUMMARY

Location	Group	Date	Topic
Independence Public Library	Planning Committee	8/27/2015	Introductions; Purpose of HMP; Planning Process; Updating Community Profile; Review and Update Status of Existing Mitigation Action Steps
Independence Public Library	Planning Committee	9/10/2015	Review and Update Status of Existing Mitigation Action Steps; Introduce Hazards; Hazard Analysis/Risk Assessment
Independence Public Library	Planning Committee	9/23/2015	Finish Hazard Analysis/Risk Assessment; Update/Identify Vulnerable Populations and Buildings; Review and Update Future Mitigation Strategies; Review Community Profile
Independence Public Library	Planning Committee	10/6/2015	Future Mitigation Activities; Community Goals; Community Profiles
Independence Public Library	Planning Committee	10/21/2015	Complete Community Profiles, Hazard Analysis, and Future Mitigation Strategies and Goals
Independence Public Library	Planning Committee	10/17/2016	Plan Review
Buchanan County Courthouse	Board of Supervisors/ Public	12/12/2016	Public Hearing; Resolution approving plan

Committee Meetings

Five public meetings were held at the Buchanan County Courthouse on various dates, during the HMP planning process. Each meeting was open to all residents and stakeholders in the planning area, as well as neighboring communities. As mentioned previously, these meetings were advertised in the local newspapers. Attendance for each meeting

was documented and can be found in Attachment 4. Table 2 provides a list of the public meetings. All meeting, except for the Board of Supervisors and City Council meetings, started at 6:30 p.m. All public meetings were held in accordance with Open Meetings Laws as outlined in Chapter 21 of the State Code of Iowa.

Requirement §201.6(c)(5): For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

On December 12, 2016 a public hearing was held during the Board of Supervisors meeting to receive public comment regarding this plan and the update process. Following the hearing, the Buchanan County Board of Supervisors approved Resolution 16-72, adopting this plan.

Multi-Jurisdictional Plan Adoption

Once the Committee's feedback was addressed, a final draft HMP was prepared and sent to the each jurisdiction's governing body along with a resolution for adoption. Upon the first adoption, the final draft HMP was submitted to Iowa Homeland Security and FEMA for their review and feedback; at which time the draft was presented to the remaining governing bodies for their adoption as well. Resolutions can be found in Attachment 2.

Current & Previous Planning Documents Used

In addition to information obtained through the series of Committee Meetings, the INRCOG also investigated other previously prepared documents in order to garner supplementary relevant information and contacted each jurisdiction for relevant information. These documents and data include:

- Buchanan County 2012 Multi-Jurisdictional Hazard Mitigation Plan;
- Previous Single Jurisdiction Hazard Mitigation Plans for Aurora, Brandon, Fairbank, Hazleton, Independence, Jesup, Lamont, Quasqueton, and Stanley;
- Iowa State Hazard Mitigation Plan 2013;
- Plans, studies, reports, maps and technical information that were not available five years ago, including updated Flood Insurance Rate Maps and data;
- Documentation of communities current status in the National Flood Insurance Program (NFIP) and Community Rating System (CRS);
- Repetitive Loss Properties and /or Severe Repetitive Loss Properties information from FEMA;
- Reports of disaster and other hazard events that occurred within the past 5 years from available sources;
- Documentation of changes in the communities that impact vulnerability of structures and populations; and
- Documentation of mitigation projects and activities undertaken over the past 5 years.

Step Two: Identify & Assess Hazards

Identify and Profile Hazards

Through the planning process the hazards that pose a risk to the entire planning area, as well as unique hazards for each jurisdiction, were reviewed and updated. The identified hazards in this plan update have changed slightly from the 2012 plan. The committee elected to use the same set of hazards as identified in the State of Iowa's 2013 Hazard Mitigation Plan. Second, an updated assessment of the hazards was conducted that took into account historic occurrence, the number of people that would be or were impacted, the area of the planning area that was or would be affected, potential costs that the planning area, individuals, and organization have or may incur, the likelihood of future occurrence, and the amount of warning time before an event occurs. An updated composite score for each hazard was developed based on these factors. This process used information from previous and current hazard mitigation plans within the planning area, as well as the State of Iowa's hazard mitigation plan.

Vulnerability Assessment

An updated vulnerability assessment was conducted to identify: repetitive loss structures and repetitive loss properties and population located in the identified hazard areas; inventory of existing and proposed buildings, infrastructure, and critical facilities located within identified hazard area boundaries; estimating potential losses; and analysis of development trends.

Step Three: Establish Mitigation Goals & Actions (Action Plan)

Once Step Two was completed, an updated capability assessment was conducted on local municipalities' existing policies, practices, programs, regulations, and activities that either increase or decrease the planning area vulnerability to the identified hazards. Through this assessment, areas that can be improved upon were identified and developed into "action steps." Early in the planning process meeting attendees reconfirmed the 2012 plan goals. Every action step should, if implemented, work toward one or more of the goals of the plan. An action step may suggest continuing a current mitigation effort or propose a new project altogether.

Many of the identified action steps were projects that the local jurisdictions could independently accomplish. Other identified projects included efforts that either require the cooperation of two or more entities, or would not include the local jurisdiction at all. The intention is that each action step is considered at least on an annual basis. In order to increase the likelihood each jurisdiction implements the plan, each action step identifies the parties that would most likely be responsible for completing an annual review of that step.

During this step, the previous hazard mitigation plan for the planning area was consulted as a starting point in identifying goals and action steps.

Step Four: Implement the Plan and Monitor its Progress

Finally, once the hazards have been assessed, mitigation steps identified, and the action steps have been prioritized the plan makes some suggestions for implementation and makes estimates as to the costs of implementation. Some proposed projects are small in scope and thus relatively low cost. However, other projects are broad in nature and would require more funding than the local jurisdiction can reasonably provide. Therefore, the final piece of the plan suggests methods to implement the plan, how to keep the public involved, and what steps should be taken by local jurisdictions to ensure that the concept of hazard mitigation is always a priority.

When implemented appropriately, mitigation projects can save lives, reduce property damage, is cost-effective, and environmentally sound. This, in turn, can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical community facilities, reduce exposure to liability, and minimize disruption.

SECTION 2 – COMPOSITE COMMUNITY PROFILE

PHYSICAL ATTRIBUTES

Location

Buchanan County is located in the northeast quadrant of Iowa at latitude 42.48^{o} N x longitude 91.89^{o} W, covering an area of 576 square miles. State Highway 150 passes through the center of the county from north to south. U.S. Highway 20 crosses the county just south of Independence. Interstate 380 is approximately sixteen miles west of Highway 150. Please refer to *Attachments #1: Location Map for the exact locations of each participating community and the county as a whole.* Detailed community location maps are provided in each respective appendix.

Topography

The terrain in Buchanan County is generally the undulating topography that characterizes the agricultural areas of northeast Iowa. There are a few areas of steeper than normal slope with these being dispersed throughout the county adjacent to watercourses. The highest point in the county is located in the rural areas south of Stanley and lies at approximately 1,163 feet above sea level. The lowest point in the county is located southwest of Brandon and lies at approximately 780 feet above sea level.

Government Structure

Buchanan County is governed by a three-person Board of Supervisors; while each participating municipalities has a Mayor-Council government structure.

History / Development Trends

The first non-native settlers in Buchanan County were pioneers who arrived from Ohio, Pennsylvania, New York, and the New England states. German, Irish, Swiss, French, Dane, and English settled in areas adjacent to the rivers and started new settlements. They were drawn by the rich soil to grow crops, trees to build homes, swift running water to power flour and saw mills, brick clay with abundant sand to make bricks and lime rock for making mortar, all items needed for the building of homes, farms, and retail development.

In 1842 William Bennett and family became the first non-native residents of Buchanan County at what is now known as Quasqueton. Other settlers that arrived that year were S.G and H.T. Sanford, Ezra Allen, Dr. Edward Brewster, Rufus Clark and Frederick Kessler and their families.

Buchanan County is believed to be named after President James Buchanan. The State Legislature appointed three commissioners who selected the City of

Independence as the county seat. The Illinois Central Railroad arrived in Independence in 1859 creating an east/west rail corridor. That was followed by a north/south rail line the Milwaukee Division of the Burlington, Cedar Rapids and Minnesota Railroad.

The Wapsipinicon Mill, built in 1867 by Samuel Sherwood as a flourmill, later housed hydroelectric generators, generating power for the city of Independence. The mill was later used exclusively for the manufacture of livestock feed. The mill was a gift to the Buchanan County Historical Society by Mr. and Mrs. Oliver Greenley, and currently serves as a museum.

The need for a second state "hospital for the insane" was identified and the hospital was built on land purchased by the citizens of Independence on three hundred twenty acres west of the community in 1873. The site is still in operation and is known as the "Mental Health Institute".

Finally an Amish settlement was established in 1914. This settlement has grown to a community with over 100 families living in Fairbank, Hazleton, Perry and Washington townships.

NATURAL ENVIRONMENT

Soils

According to the Buchanan County Soil Survey conducted in 1982 by the United State Department of Agriculture Soil Conservation Service, the soils in the county range from nearly level to fairly steep and from well drained to poorly drained. The most common soils found in the county and a brief description is given below:

- Kenyon-Clyde-Floyd Association – Nearly level to moderately sloping, moderately well drained to poorly drained, loamy soils on uplands.
- Cresco-Clyde-Floyd Association - Nearly level to gently sloping, moderately well drained to poorly drained, loamy soils on uplands.
- Readlyn-Tripoli-Oran Association – Nearly level and very gently sloping, somewhat poorly drained and poorly drained, loamy soils on uplands.
- Klinger-Maxfield-Franklin Association – Nearly level and very gently sloping somewhat poorly drained and poorly drained silty soils on uplands.
- Seaton Association – Gently sloping to very steep, well-drained, silty soils on uplands.
- Olin-Sparta-Chelsea Association – Nearly level to moderately sloping, well-drained and excessively drained, loamy and sandy soils on uplands and stream benches.
- Spillville-Coland-Marshan Association – Nearly level, moderately well drained to poorly drained, loamy soils on floodplains and low stream benches. (Source: Buchanan County Soil Survey)

Vegetation

Originally the land surrounding and within Buchanan County was covered with deciduous forest; this vegetation is now predominant only along the banks and flood plains of watercourses. The original cover has been reduced to make room for additional cropland and construction of houses and businesses in suitable areas.

Tree cover can also be found throughout the county in residential areas, parks, and cemeteries. These remaining trees contribute to the aesthetics of the county and are viewed as an asset. Recreational areas are also important to the county and there are currently 33 designated parks in the county, comprising a total of 2,330 acres.

Table 2.1: Waterways of Buchanan County

Name of Stream	Tributary To
S. Fork of Maquoketa River	Maquoketa River
Prairie Creek	Maquoketa River
Wapsipinicon River	Mississippi River
Little Wapsipinicon	Wapsipinicon River
Buck Creek	Little Wapsipinicon
Otter Creek	Wapsipinicon River
Hunter Creek	Otter Creek
Harter Creek	Wapsipinicon River
Malone Creek	Wapsipinicon River
Pine Creek	Wapsipinicon River
Dry #1 Creek	Pine Creek
Nash-Smith-Honey Creeks	Wapsipinicon River
Dry #2 Creek	Wapsipinicon River
Walton Creek	Wapsipinicon River
Sand creek	Wapsipinicon River
Spring Creek	Cedar River
East Branch Spring Creek	Spring Creek
Mud Creek	Cedar River
Lime Creek	Cedar River
Bear Creek	Cedar River
Blue Creek	Cedar River
Wash Creek	Wapsipinicon River
Lamont Creek	Maquoketa River
Buffalo	Wapsipinicon River

Climate

The climate is identified as having cold snowy winters with humid hot summers. The climate is located in the polar front zone, the battleground of polar and tropical air masses. Being far removed from moderating influences of a large body of water, seasonal contrasts are quite distinctive and weather highly variable. Ample precipitation throughout the year is increased in the summer by invading maritime tropical air masses from the Gulf of Mexico. Cold winters are dominated by continental polar masses from the arctic regions.

The annual precipitation ranges from about 31.5 inches to 32.5 inches. Approximately 71 percent of a year's precipitation falls during the months of April to September. Precipitation can be expected to exceed one-half inch or more 20 days per year, or one-tenth inch or more 56 days a year. These storms, usually associated with extreme humidity, are capable of causing extensive damage to infrastructure. Often times it is the intensity of these rainstorms that are as telling as the frequency or duration. An extremely intense rainfall can render detention basins and small streams useless due to the extreme speed of onset of surface flow.

The annual temperature range is large, typical of a continental climate, with January, the coldest month, averaging 18.6 degrees Fahrenheit. July is the warmest month averaging 74.3 degrees Fahrenheit.

Major Rivers and Surface Water Systems

Information from the United States Environmental Protection Agency shows that Buchanan County is located in three watersheds, the Upper Wapsipinicon Watershed, the Maquoketa Watershed, and the Middle Cedar Watershed. The Upper Wapsipinicon has a drainage area of 1569.43 square miles and contains eight rivers and streams for a total of 2177.1 river miles. There are also 120 lakes covering 1632.7 acres. The Maquoketa represents a drainage area of 1879.27

square miles and has twenty rivers and streams totaling 3011.2 river miles. Sixty lakes in the watershed cover 1341.7 acres.

INFRASTRUCTURE

Transportation Systems

Two major highways serve Buchanan County: State Highway 151, which is a north/west route, and U.S. Highway 20, which is an east/west route. Old U.S. Highway 20, now Highway 939, also travels through the county and has now evolved into a secondary route due to the newly constructed U.S. Highway 20. Other significant roadways serving Buchanan County include county roads V62, V71, W13, W33, W35, W40, W45, C57, C64, D47, D48 and State Highways 281 and 187.

Two railroads pass through portions of Buchanan County. The Chicago Central and Pacific Railroad is a Class II railroad and passes through the county on an east/west route and travels through the cities of Winthrop, Independence, and Jesup. The Chicago Central and Pacific Railroad operate a total of 558 miles of track in Iowa and employ 226 persons in Iowa. The main products transported on this railroad include coal, farm products, food products, chemicals, and miscellaneous mixed shipments.

The Transco Railway Company, located in Oelwein, Iowa, also owns a small rail spur that passes through the extreme northwestern portion of the county. This rail spur is used to transport items from one company site to another.

One small airport, the Independence Municipal Airport, is located in Buchanan County, just 3 miles southwest of Independence. The airport maintains a concrete runway, which is approximately 4,000 feet long, but has no control tower. A total of 25 aircraft are based at the field, 22 single engine airplanes and 3 multi-engine airplanes. The airport sees an average of 27 aircraft operations daily, of these operations, 66 percent are local general aviation, 33 percent are transient general aviation, and 1 percent is military.

The closest major airport is the Waterloo Municipal Airport, located approximately 33 miles west/northwest of Independence, the Buchanan County seat. According to the latest statistics, the aircraft based at the airport include 60 single-engine airplanes, 20 multi-engine planes, one jet airplane, and 20 military aircraft. As of May 2003 the airport averaged 118 aircraft operations per day. Operations are made up of 43 percent transient general aviation, 28 percent local general aviation, 20 percent commuters, and eight percent military.

In Iowa there are 12,853 miles of pipeline and 45 pipeline suppliers. Iowa's pipeline system provides the state with liquid petroleum, natural gas and anhydrous ammonia. There is one large pipeline, owned by Alliant Energy, which runs through the extreme northeastern portion of the county. In addition, there are various smaller pipelines that supply natural gas to various sites in the county.

There are no major commercial watercraft routes in Buchanan County. The Wapsipinicon River does offer a location for recreational watercraft use by the public.

Potable Water Systems

Rural Water Association provides water to portions of the rural area; while the remaining rural areas rely on private wells for water. The incorporated communities provide water services to their communities. Additional information can be found in Appendix A-L.

Wastewater Treatment Facility and Collection System

Individual septic tanks systems are used in the rural area; while cities own and operate their own wastewater collection and treatment systems. Additional information can be found in Appendix A-L.

Storm Water Systems

Open ditches and a limited number of storm drains handle the storm water in the planning area. These systems are in good to fair condition.

Other Utilities

The following table lists the other utility providers for the planning area.

TABLE 2.2: PRIMARY PROVIDERS FOR UTILITIES IN PLANNING AREA							
Jurisdiction	**Electric**	**Natural Gas**	**Telephone/Internet**	**Cable TV**	**Water**	**Sewer**	**Sanitation**
Aurora	Alliant Energy	Black Hills Energy	EBTC	-	Central Iowa Water Association	City of Aurora	Waste Management
Brandon	Alliant Energy	Alliant Energy	Windstream	-	City of Brandon	City of Brandon	Waste Management
Fairbank	City of Fairbank	City of Fairbank	Windstream Mediacom	Mediacom	City of Fairbank	City of Fairbank	Black Hawk Waste Disposal
Hazleton	Alliant Energy	Alliant Energy	Mediacom Windstream CenturyLink	Mediacom	City of Hazleton	City of Hazleton	Waste Management
Independence	Independence Power & Light	MidAmerican Energy	Independence Power & Light	Independence Power & Light	City of Independence	City of Independence	Waste Management
Jesup	MidAmerican Energy	MidAmerican Energy	Farmers Mutual Telephone Company	Farmers Mutual Telephone Company	City of Jesup	City of Jesup	Corkery Waste Disposal & Recycling
Lamont	Alliant Energy	Black Hills Energy	Windstream	-	City of Lamont	City of Lamont	City of Lamont
Quasqueton	Alliant Energy	Alliant Energy	E.B. Phone	E.B. Phone	Central Iowa Water Association	City of Quasqueton	
Rowley	Alliant Energy	Alliant Energy	Windstream Indytel	U.S. Cellular Indy Power & Light	Central Iowa Water Association	City of Rowley	Waste Management
Stanley	Alliant Energy	Alliant Energy	East Buchanan	-	Private wells	City of Stanley	Waste Management
Winthrop	Alliant Energy East Central R.E.C.	Alliant Energy	E.B. Telephone	E.B. Telephone	City of Winthrop	City of Winthrop	Waste Management
ICSD	Independence Light & Power	MidAmerican Energy	Independence Light & Power	Independence Light & Power	City of Independence	City of Independence	City of Independence
EBCS	Alliant Energy East Central R.E.C.	Alliant Energy	E.B. Telephone	E.B. Telephone	City of Winthrop	City of Winthrop	Waste Management
JCSD	MidAmerican Energy	MidAmerican Energy	Farmers Mutual Telephone Company	Farmers Mutual Telephone Company	City of Jesup	City of Jesup	Corkery Waste Disposal & Recycling

Communication

Websites

The following jurisdictions have websites:

- Buchanan County: www.co.buchanan.ia.us
- Aurora: www.auroraiowa.com
- Fairbank: www.fairbank-ia.org
- Hazleton: www.hazletonia.com
- Independence: www.independenceia.com
- Jesup: www.jesupiowa.com
- Lamont: www.lamontiowa.com
- Quasqueton: www.quasky.com
- Winthrop: www.cityofwinthrop.com
- ICSD: www.independence.k12.ia/us
- EBSD: www.eastbuchananschools.com
- JCSD: https://www.jesup.k12.ia.us/

TABLE 2.3: HISTORIC POPULATION CHANGES FOR ENTIRE PLANNING AREA

Year	Population	Change
1950	21,927	-
1960	22,293	1.67 %
1970	21,762	-2.38 %
1980	22,900	5.23 %
1990	20,844	-8.98 %
2000	21,093	1.19 %
2010	20,958	-0.64 %

Source: U.S. Census Bureau and Iowa Data Center

Newspapers

Residents in Buchanan County rely on the following newspapers for local news and announcements:

- Jesup Citizen Herald
- Lamont Leader
- Winthrop News
- Independence Bulletin Journal

DEMOGRAPHICS

Population

The following figure shows the population and the percent change in population from 1950 to 2010 for the planning area. The largest percentage of increase in population was experienced in the 1970's (+5.2%). However, the most significant decrease in population seen in Buchanan County occurred between 1980 and 1989. This was common in counties throughout Iowa, as the farm crisis reached its peak. During the decade of the 1990's the county began to experience a slight increase in population, increasing by 1 percent; however, the population took a slight downturn between 2000 and 2010.

TABLE 2.5: TOTAL POPULATION IN PLANNING AREA

Jurisdiction	2010
City of Aurora	89
City of Brandon	309
City of Fairbank	1,113
City of Hazleton	823
City of Independence	5,966
City of Jesup	2,520
City of Lamont	461
City of Quasqueton	554
City of Rowley	264
City of Stanley	125
City of Winthrop	850
Buchanan County (unincorp.)	7,884
Buchanan County (Total)	20,958

Source: U.S. Census Bureau

Population Projections

Projections are only estimates of future population, and many factors have an effect on the future population, such as employment, housing, and educational opportunities. While some projections use some of this data in order to estimate future population, they cannot plan for unknown events, such as drastic changes in employment opportunities or the perilous effects of natural disasters.

The following projections are based on the linear and geometric methods, which assume that future population will continue to change based on past trends. The linear method adds or subtracts from the population the average number from each ten-year period since 1950, while the geometric method uses an average growth or decline rate. Table 2.4 shows the actual number change and the growth or decline rate for each decade and their averages.

Using the numbers derived in Table 2.3, population projections can be estimated using the two methods (Linear and Geometric). These projections are listed in Table 2.4. Given the planning area's population trends, it is projected the area will continue to experience a decline in population over the next twenty years. It is important to note that these projections are just estimates based on past trends. Many variables can affect an area's growth and/or decline in population. Nevertheless, projecting population can give some idea as to how to plan for the future.

TABLE 2.4: POPULATION PROJECTIONS FOR PLANNING AREA

Year	Linear Projections	Geometric Projections
2020	20,779	20,139
2030	20,602	19,320

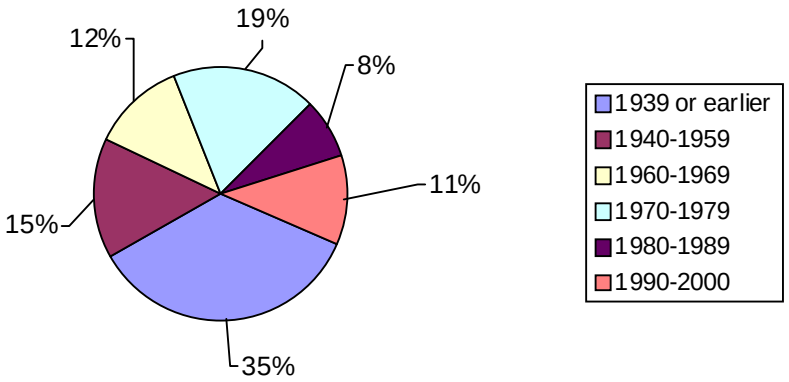
Source: INRCOG

Housing and Development Trends

Age of Housing

Over one-third of the homes in the planning area were constructed prior to 1939, a total of 3,056 homes (35 percent) were built in this time period. The county also saw increased development in the 1970s, during which 1,620 homes (19 percent) were built. The figure below shows the percentage of housing units built for each time period.

Figure 2.1: Age of Housing Units



Source: U.S. Census Bureau, 2000

Value of Housing

Information available from the U.S. Census, housing values in the planning area increased by 104 percent from 1990 to 2000. According to the Buchanan County Assessor's Office, the total residential valuation for the rural/unincorporated portions of Buchanan County for the year 2002 was $111,799,509. This valuation was based on a total of 4,520 residential properties, and includes all residential properties, with the exception of multi-family units. Based on the information from the Assessor's Offices, the average residential value for a home in rural Buchanan County was $79,357.

At the time of the 2000 Census, the median housing value for owner-occupied housing units in Buchanan County was $73,900, meaning that one-half of the housing units were valued at more than $73,900 and one-half of the housing units were valued below $73,900. The figure below represents the range of housing values in Buchanan County at the time of the 2000 Census.

Figure 2.2: Value of Housing in Planning Area (2000 U.S. Census Bureau)

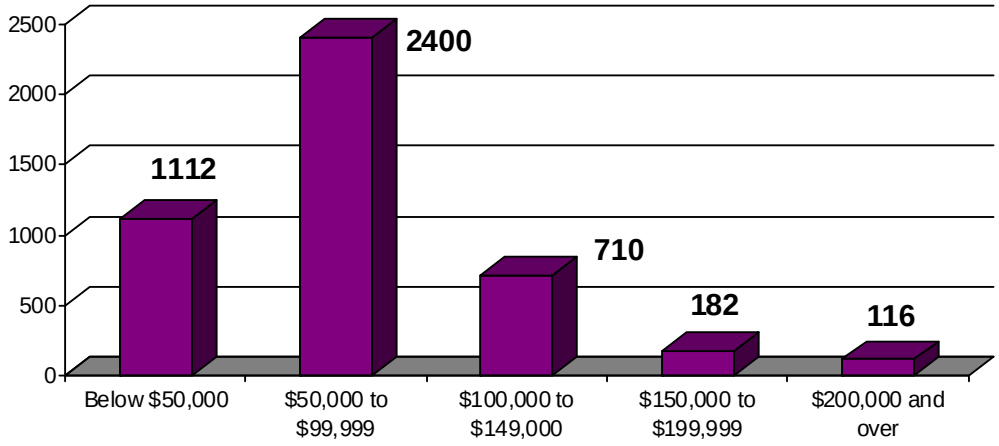


TABLE 2.6: PER CAPITA & MEDIAN HOUSEHOLD INCOME FOR PLANNING AREA

Community	Per Capita Income	Median Household Income
	2000	2000
City of Aurora	$16,254	$38,750
City of Brandon	$17,428	$34,219
City of Fairbank	$17,262	$36,900
City of Hazleton	$14,955	$32,625
City of Independence	$20,683	$36,554
City of Jesup	$17,160	$42,109
City of Lamont	$15,201	$30,000
City of Quasqueton	$15,913	$36,518
City of Rowley	$17,315	$36,563
City of Stanley	$19,631	$30,313
City of Winthrop	$19,183	$36,136
Buchanan County (Total)	$18,405	$38,036

Source: U.S. Census Bureau

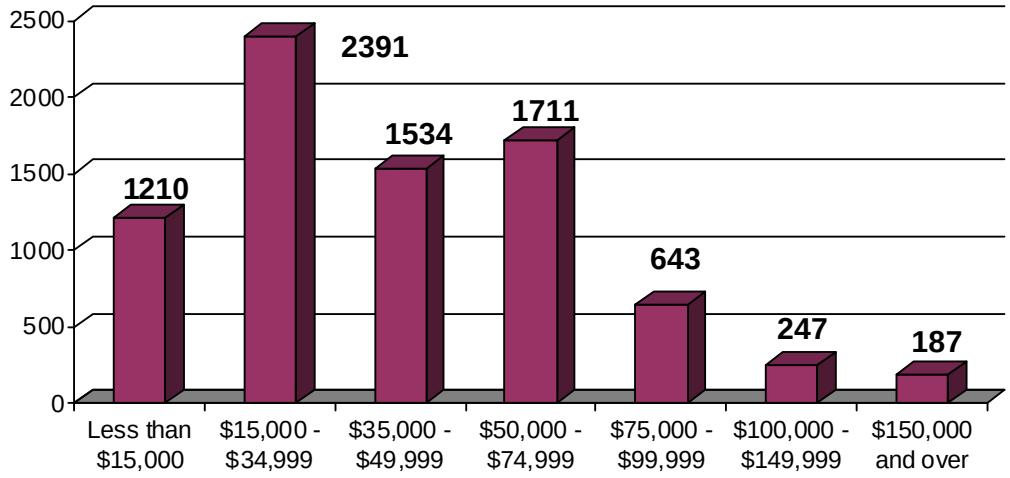
Economy

Income

According to the 2000 U.S. Census, there were a total of 7,933 households located within the planning area. Among these households, the median income was $38,036, meaning that one-half of the households earned more than $38,036 and one-half of the households earned below $38,036.

Among the planning area's households, income was mostly derived from wages and salaries, a total of 78 percent of households received income in this form. Also among households, 31 percent received income from Social Security and 17 percent received retirement income. Three percent of households received income from public assistance, and the poverty rate among individuals was nine percent and among family households the poverty rate was seven percent. The figure below shows the income distribution for Buchanan County households in 2000.

Figure 2.3: Household Income



Source: U.S. Census Bureau: 2000

Table 2.7: PLANNING AREA'S TOP TEN EMPLOYERS

Employer	Number of Employees
Independence School District	393
Iowa Ham	363
Mental Health Institution (MHI)	353
Bertch Cabinetry	232
TPI	195
Peoples Memorial Hospital	194
Jesup School District	135
Buchanan County	126
Weiland & Sons	121
East Buchanan School District	102
West Village	96
Walmart	95
Pries Aluminum	85
Fareway	72
Wapsie Valley Creamery	68

Source: Buchanan County Economic Development Corporation

Employment Sectors

According to the U.S. 2000 Census, there were 10,391 persons, aged 16 years and over, in the labor force. Listed in the table below are the ten largest employers in the Buchanan County according to Buchanan County Economic Development.

SECTION 3 – RISK ASSESSMENT

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 the probability of future hazard events.

Requirement §201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

This updated 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 Buchanan County, including loss of life, personal injury, property damage, and economic loss, from a hazard event. The risk assessment process allows the community to better understand their potential risk to various hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

Requirement §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

The risk assessment follows the methodology described in the FEMA publication 386-2, *Understanding Your Risks: Identifying Hazards and Estimating Losses* (2002), which includes a four-step process:

- Identify Hazards
- Profile Hazard Events
- Inventory Assets
- Estimate Losses

This section is divided into three parts: hazard identification, hazard profiles, and vulnerability assessment:

- **Hazard Identification** identifies the hazards that threaten the planning area and describes why some hazards have been omitted from further consideration.

- **Hazard Profiles** discusses the threat to the planning area and describes previous occurrences of hazard events and the probability of future occurrence.

- **Vulnerability Assessment** assesses the total exposure to natural hazards, considering critical facilities and other community assets at risk, and assessing growth and development trends. Hazards that vary geographically across the planning area are addressed in greater detail.

HAZARD IDENTIFICATION

In order to properly identify mitigation strategies and projects, the hazards that may affect the planning area must be identified and/or updated. The following section lists the potential hazards to the planning area that were identified by the Planning Committee. This section also discusses previous occurrences of the hazards, the areas of the planning area most at risk from each hazard, and the populations most at risk. By identifying the hazards and quantifying the risks, the planning area can better assess current mitigation strategies, develop future migitation strategies and identify needed mitigation projects.

The hazard analysis identifies potential hazards that could affect the planning area for the purpose of mitigation planning. It is important to note the focus of mitigation is on reducing long-term risks of damage or threats to public health and safety caused by hazards and their effects. Thus, in some cases the hazards identified for mitigation may not include all of or the same hazards identified for preparedness, response or recovery.

The Committee reviewed the recognized hazards in the 2012 Buchanan County Multi-Jurisdictional Hazard Mitigation Plan, the 2013 Iowa Hazard Mitigation Plan, and the contractual agreement between the County and FEMA. After review, the committee elected to use the same list of hazards as those identified in the 2013 Iowa Hazard Mitigation Plan. The terminology of these hazards varied slightly from the County's 2012 plan, but the committee believed the list used by the state covered all the hazards the planning area could anticipate a need to address.

The Iowa 2013 Hazards List has three categories of hazards: Natural, Technological, and Human Caused. The planning committee used the hazards identified in the Iowa plan, as well as evaluating the planning area to see if there were any circumstances that called for additional hazards to be identified. No additional hazards were identified.

Hazards identified for Buchanan County and its communities are listed in Table 3.1.

The identified hazards are discussed at length on the following pages. The discussion will include known historical occurrence, probabilty of future occurrence, magnitude/severity, warning time, and duration. The overall average results of the Committee's scoring efforts will be provided following this discussion, under Vulnerability Assessment. The individual community scores can be found in each respective appendix.

TABLE 3.1: BUCHANAN COUNTY HAZARD LIST

Natural	Technological
Animal/Plant/Crop Disease	HAZMAT Incident
Drought	Infrastructure Failure
Earthquake	Levee/Dam Failure
Expansive Soils	Radiological Incident
Extreme Heat	Transportation Incident
Flash Flood	
Grass/Wild Fire	**Human Caused**
Human Disease	Terrorism
Landslide	
River Flooding	
Severe Winter Storm	
Sinkholes	
Thunderstorm/Lightning/Hail	
Tornado/Windstorm	

Disaster Declaration History

One method used by the HMPC 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.

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 without the long-term federal recovery programs of major disaster declarations. The quantity and types of damage are the determining factor.

Table 3.2 lists Presidential Disaster Declarations received by Buchanan County. Many of the disaster events were regional or statewide; therefore, reported costs are not accurate reflections of losses to Buchanan County.

TABLE 3.2: PRESIDENTIAL DISASTER DECLARATION HISTORY FOR BUCHANAN COUNTY

Declared Date	Type	Declaration #
July 9, 1993	Flooding, Severe Storm	DR-996
May 21, 1999	Severe Storms, Flooding, and Tornadoes	DR-1277
July 22,1999	Severe Storms and Flooding	DR-1282
May 2, 2001	Severe Storms and Flooding	DR-1367
May 25, 2004	Severe Storms, Tornadoes, and Flooding	DR-1518
September 10, 2005	Hurricane Katrina Evacuation	EM-3239
March 14,2007	Severe Winter Storms	DR-1688
May 27, 2008	Severe Storms, Tornadoes, and Flooding	DR-1763
July 29, 2010	Severe Storms, Flooding, and Tornadoes	DR-1930
July 2, 2013	Severe Storms, Tornadoes, and Flooding	DR-4126
July 31, 2013	Severe Storms, Tornadoes, and Flooding	DR-4135
July 24, 2014	Severe Storms, Tornadoes, Straight-Line Winds, and Flooding	DR-4184

Source: FEMA

Methodology

The risk assessment identifies how people, properties, and structures could be damaged by the event. If the hazard can harm people or damage their homes and other structures, they are vulnerable. Finding the weak points in the system, for example, identifying building types that are vulnerable to damage and anticipating the loss in high risk areas, will help the community decide what mitigation measure should be undertaken and how to implement the activities they select.

The Hazard Mitigation Planning Committee used the following updated factors in determining the hazard risk assessment (as used by the State of Iowa in their HMP update). The Planning Committee considered the following for each identified hazard:

- Probability
- Magnitude/Severity
- Warning Time
- Duration

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = Final Hazard Assessment Score

Each hazard identified in this section is profiled individually. The level of information presented in the profiles varies by hazard based on the information available. With each update of this plan, new information will be incorporated to provide for better evaluation and prioritization of the hazards that affect the planning area.

The sources used to collect information for these profiles included previous and current hazard mitigation plan, available data from the National Climatic Data Center, the State of Iowa updated HMP and other available data from the County and incorporated communities. Detailed profiles for each of the identified hazards include information categorized as follows.

Probability

The probability score reflects the likelihood of the hazard occurring again in the future, considering both the hazard's historical occurrence and the projected likelihood of the hazard occurring in any given year. Many times the historical occurrence can be extrapolated into the future using best available data, but others, due to the nature of the hazard, are more difficult to estimate the probability of future occurrence. If a hazard or its impacts have been mitigated against, the probability of future occurrences decreases. Conversely, hazards that have not occurred in the past may present themselves to the community in the future. Table3.3 shows the probability scoring criteria.

TABLE 3.3: HAZARD PROBABILITY

Score	Description	
1	Unlikely	Less than 10% probability in any given year (up to 1 in 10 chance of occurring), history of events is less than 10% likely or the event is unlikely but there is a possibility of its occurrence.
2	Occasional	Between 10% and 20% probability in any given year (up to 1 in 5 chance of occurring), history of events is greater than 10% but less than 20% or the event could possibly occur.
3	Likely	Between 20% and 33% probability in any given year (up to 1 in 3 chance of occurring), history of events if greater than 20% but less than 33% or the event is likely to occur.
4	Highly Likely	More than 33% probability in any given year (event has up to a 1 in 1 chance of occurring), history of events is greater than 33% likely or the event is highly likely to occur.

Magnitude/Severity

The impact severity of a hazard event (past and perceived) is related to the vulnerability. Relevant factors include when the event occurs (year-round, seasonal), the location affected, community resilience, and the effectiveness of the emergency response and disaster recovery efforts. Quantifying impact severity is difficult to address at multiple levels simultaneously. Table 3.4 shows the Magnitude/Severity scoring criteria.

TABLE 3.4: HAZARD MAGNITUDE/SEVERITY

Score	Description	
1	Negligible	Less than 10% of property severely damaged, shutdown of facilities and services for less than 24 hours, and/or injuries/illnesses treatable with first aid.
2	Limited	10% to 25% of property severely damaged, shutdown of facilities and service for more than a week, and/or injuries/illnesses that do not result in permanent disability.
3	Critical	25% to 50% of property severely damaged, shutdown of facilities and services for at least two weeks, and/or injuries/illnesses that result in permanent disability.
4	Catastrophic	More than 50% of property severely damaged, shutdown of facilities and services for more than 30 days, and/or multiple deaths.

Warning Time

The speed of onset is the amount of warning time available before the hazard occurs. This should be taken as an average warning time. For many of the atmospheric natural hazards, there is a considerable amount of warning time as opposed to the human caused accidental hazards that occur instantaneously or without any significant warning time. Table 3.5 shows the warning time criteria.

TABLE 3.5: HAZARD WARNING TIME

Score	Description
1	More than 24 hours warning time
2	12 to 24 hours warning time
3	6 to 12 hours warning time
4	Minimal or no warning time (up to 6 hours warning)

Duration

This consists of the typical amount of time that the jurisdiction is impacted by the hazard. As an example, a snowstorm will likely last several hours, whereas a lightning strike would last less than a second. Table 3.6 shows the duration scoring criteria.

TABLE 3.6: HAZARD DURATION

Score	Description
1	Less than 6 hours
2	Less than 1 day
3	Less than 1 week
4	More than 1 week

Hazard Analysis Summary

Table 3.7A lists the average scores for all jurisdictions in the planning area, including unincorporated Buchanan County, incorporated cities, and school districts. Individual assessment scores for each jurisdiction can be found in their respective appendix. Table 3.7B shows the hazard analysis for the unincorporated areas of Buchanan County. Certain hazard rankings are different depending upon the jurisdiction affected, due to different topography, historical occurrences, vulnerability, severity of impact, and probability to that community. The identified hazards are discussed at length on the following pages, in alphabetical order. The discussion will include known historical occurrence, probability, magnitude/severity, warning time, and duration. Hazard Assessment scores for individual communities re located in their respective appendixes.

TABLE 3.7A: AVERAGE HAZARD ASSESSMENT SCORES OF ALL PARTICIPATING JURISDICTIONS						
Hazard Rank	**Hazard**	**Probability**	**Magnitude/Severity**	**Warning Time**	**Duration**	**Final Score**
1	Flash Flood	2.93	2.43	3.21	2.43	**2.77**
2	Thunderstorm/Lightning/Hail	3.36	2.14	2.93	1.64	**2.76**
3	Severe Winter Storm	3.07	2.36	1.93	2.79	**2.66**
3	Tornado/Windstorm	2.64	2.64	3.14	2.07	**2.66**
5	Transportation Incident	2.29	2.14	3.71	2.29	**2.46**
6	HAZMAT Incident	2.00	2.14	3.43	2.71	**2.33**
7	Extreme Heat	2.50	1.79	1.21	3.29	**2.17**
8	Infrastructure Failure	1.71	1.93	3.64	2.57	**2.15**
9	Terrorism	1.64	1.93	3.54	2.54	**2.10**
10	Drought	2.00	1.93	1.36	4.00	**2.08**
11	River Flooding	1.86	1.79	2.57	2.71	**2.03**
12	Grass/Wild Fire	1.79	1.57	3.79	1.57	**2.00**
13	Human Disease	1.71	1.79	1.86	3.57	**1.94**
14	Animal/Plant/Crop Disease	1.57	1.71	1.50	3.71	**1.82**
15	Radiological Incident	1.00	1.86	3.14	3.29	**1.81**
16	Expansive Soils	1.46	1.08	2.38	2.31	**1.57**
17	Earthquake	1.00	1.21	3.79	1.36	**1.52**
18	Sinkholes	1.07	1.07	2.93	2.43	**1.49**
19	Levee/Dam Failure	1.00	1.14	2.50	2.57	**1.43**
20	Landslide	1.00	1.00	2.43	2.00	**1.31**

As the table shows, on average, the hazards posing the greatest risk to communities are Flash Flood, Thunderstorm/Lightning/Hail, Severe Winter Storm, and Tornado/Windstorm.

TABLE 3.7B: HAZARD RISK ASSESSMENT FOR UNINCORPORATED BUCHANAN COUNTY						
Hazard Rank	**Hazard**	**Probability**	**Magnitude/Severity**	**Warning Time**	**Duration**	**Final Score**
1	River Flooding	3	4	2	4	**3.25**
2	Flash Flood	3	4	3	2	**3.2**
3	Tornado/Windstorm	3	4	1	3	**3**
4	Animal/Plant/Crop Disease	3	3	2	4	**2.95**
5	Thunderstorm/Lightning/Hail	3	4	1	2	**2.9**
6	Drought	3	3	1	4	**2.8**
7	Terrorism	2	3	3	4	**2.65**
8	Transportation Incident	2	3	4	2	**2.6**
9	Human Disease	2	3	2	4	**2.5**
10	Severe Winter Storm	2	3	1	3	**2.25**
11	Infrastructure Failure	1	2	4	4	**2.05**
12	Grass/Wild Fire	2	1	4	1	**1.9**
13	HAZMAT Incident	1	2	4	2	**1.85**
13	Extreme Heat	2	2	1	2	**1.85**
15	Radiological Incident	1	2	2	4	**1.75**
16	Earthquake	1	1	4	2	**1.55**
16	Expansive Soils	1	1	4	2	**1.55**
16	Sinkholes	1	1	4	2	**1.55**
19	Levee/Dam Failure	1	1	3	3	**1.5**
20	Landslide	1	1	4	1	**1.45**

In the unincorporared area of the county, the hazards determined to pose the greatest risk are River Flooding, Flash Flood, and Tornad/Windstorm.

HAZARD PROFILES

Animal/Plant/Crop Disease

Definition and Description

Disease is any impairment of normal physiological function affecting all or part of an organism, especially a specific pathological change cause by infection, stress, etc., producing characteristic symptoms; illness or sickness in general *(Collins)*. Also it is any medical, health, or sanitation threat to plants, wildlife, or domestic animals. For purposes of this discussion the topic will be contained to only communicable diseases and will largely deal with generalities.

Communicable diseases can have devastating effects on the health of the population of a community, the health of wild and domestic animals, and on the wide variety of plant life that is present in and around the community. Some of these diseases are considered to be a greater risk to the community than others.

Some diseases that affect livestock may include (but not limited to) West Nile Virus, Equine Infectious Anemia, Johne's Disease, Foot Rot, Coccidiosis, Pinkeye, Anaplasmosis, Anthrax, Bluetongue, Brucellosis, Trichomoniasis, Tuberculosis, Pseudorabies, Porcine Reproductive Respiratory Syndrome, Brucella ovis, Ovine Progressive Pneumonia, Scrapie, Micoplasma, Newcastle, Vesicular Stomatitis, Chronic Wasting Disease (CWD), Exotic Newcastle Disease, and Rabit calicivirus disease.

Some common plant diseases include cedar-apple and related rusts, anthracnose, oak wilt, Verticillium wilt, ash decline, Sphaeropsis blight of pine, Rhizosphaera of spruce, Cytospora of spruce, black knot of plum, and environmental or abiotic disease, and Dutch Elm disease among others.

Lastly, though not technically a disease, the threat from the Emerald Ash Borer poses an ever-increasing threat to ash trees in Buchanan County. According to the Iowa Department of Natural Resources, Bremer County and Black Hawk County have confirmed Emerald Ash Borer infestations. The damage caused by this invasive species is comparable to diseases such as Dutch elm disease.

Historical Occurrences

Instances of plant, crop, or animal disease are common across Iowa and Buchanan County. However, according to available data and input, there have been no widespread recorded occurrences of plant, crop, or animal diseases having a significant impact in the planning area.

Probability

Due to the lack of widespread diseases in the past, it is unlikely that a major animal, plant, or crop disease will develop in the future. That being the case, there is a much greater likelihood of complications, such as foodborne illness in humans, resulting from bacteria and viruses originating in livestock and crops. In addition, the presence of pests, weeds, and fungi poses another threat because organisms have the potential to develop resistances against chemical sprays (e.g. pesticides, herbicides, fungicides) which, in turn, could result in widespread crop damage. The Iowa Hazard Mitigation Plan determined that though it would have a high impact, the probability of this hazard occurring is low. The composite score (Table 3.3) determined the probability of this hazard event to be

between unlikely and occasional.

Magnitude/Severity
The severity of a plant, crop, or animal disease depends largely on the disease itself. Effects from a widespread crop disease in Buchanan County or the state could result in unprecedented crop damage. The same is true for livestock. This damage to plants, crops, and livestock could have devastating effects on the local and state-wide economy.

Warning Time
It is unlikely that there would be any warning before a plant, crop, or animal disease develops. However, it is possible that a small, localized discovery of a new disease could prevent the spread of that disease if properly contained and managed.

Duration
The duration of a plant, crop, or animal disease is likely to last weeks, months, or even years. This is because of the time required to first discover the disease and then develop methods to treat the disease and prevent it from spreading.

Dam/Levee Failure

Definition and Description
A dam is defined as an artificial barrier with the ability to impound water, wastewater, or any liquid-borne material, for the purpose of storage or control of water. Dams are constructed for a variety of uses, including flood control, erosion control, water supply impoundment, hydroelectric power generation, and recreation. A dam failure is a break in, or imposed threat from, any water retention fixture which may endanger population downstream of the containment area.

According to the Federal Emergency Management Agency, dams can fail for one or a combination of the following reason: Overtopping caused by floods that exceed the dam capacity; Deliberate acts of sabotage; Structural failure of materials used in dam construction; Movement and/or failure of the foundation supporting the dam; Settlement and cracking of concrete or embankment dams; Piping and internal erosion of soils in embankment dams; and inadequate maintenance and upkeep.
The Iowa Department of Natural Resources tracks all dams in the state of Iowa with a height of at least 25 feet or a total storage of at least 50 acre feet of water. The inventory excludes all dams less than six feet high regardless of storage capacity and dams less than 15 acre feet of storage regardless of height.

The Army Corps of Engineers classify dams into three categories based on the potential risk to people and property should a failure occur. Table 3.8 shows these classifications.

TABLE 3.8: DAM HAZARD POTENTIAL CLASSIFICATION	
High Hazard Potential	Dams assigned the high hazard potential classification are those whose failure or mis-operation will probably cause loss of human life.
Significant Hazard Potential	Dams assigned the significant hazard potential classification are those dams where failure or mis-operation results in no probable loss of human life but can cause economic loss, environment damage, disruption of lifeline facilities, or impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.
Low Hazard Potential	Dams where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.
Source: Army Corps of Engineers National Inventory of Dams	

The classification may change over time because of development downstream from the dam since its construction. Older dams may not have been built to the standards of its new classification. Dam hazard potential classifications have nothing to do with the material condition of a dam, only the potential for death or destruction due to the size of the dam, the size of the impoundment, and the characteristics of the area downstream of the dam.

According to the National Inventory of Dams, there are three low hazard dams in the planning area. According to information available from the Corps, there are no levees, which are registered with the agency, within the planning area. However, according to the County Engineer's office, the planning area has numerous rural, agricultural-related man-made levees, dikes, or berms to protect primarily agricultural lands and communities.

A levee is a man-made low ridge or embankment built along the edge of a stream or river channel to prevent flooding of the adjacent land. Artificial levees are typically needed to control the flow of rivers meandering through broad, flat floodplains. Levees are usually embankments of dirt built wide enough so that they will not collapse or be eroded when saturated with moisture from rivers running at unusually high levels. Grass or some other dense vegetation is planted on the top of the levee's bank so erosion is kept to a minimum.

A levee failure is the loss of structural integrity of a wall, dike, berm, or elevated soil by erosion, piping, saturation, or under seepage causing water to inundate normally dry areas.

Levees constructed of compacted clay with a high plasticity tend to crack during cycles of long dry spells. During heavy rainfalls that follow the dry spells, water fills the cracks and fissures. In addition to increasing the hydrostatics forces, the water is slowly absorbed by the clay. The effect of the absorbed water is an increase in the unit weight of the clay as well as a decrease in its shear strength. This results in a simultaneous increase of the slide (driving) forces and a decrease of the resisting (shear strength) forces. Furthermore, the cyclic shrink/swell behavior of the cracked clay zone results in a progressive reduction of the shear strength of the clay, perhaps approaching its residual strength. It also results in deepening of the cracked clay zone, which may eventually reach a depth of 9 ft. or more, especially for clays with a plasticity index greater than 40. The end result may be a sloughing failure following a heavy rainfall. It is believed that fast removal of the runoff water from the interconnected network of cracks could alleviate this surface instability problem.

Historical Occurrence

There have been no documented dam or levee failures in the planning area.

According to information available from the Army Corps of Engineers, there are no levees, which are registered with the agency, within the planning area. However, according to the County Engineer's office, the planning area has numerous rural, agricultural-related man-made levees, dikes, or berms to protect primarily agricultural lands and communities.

Independence has one dam, Mill Dam, located downtown. It is a gravity type dam owned by the local government and has a low hazard potential. The primary purpose of the dam is for recreation. This dam has never failed. Quasqueton also has a low-head dam. It was originally built to help an old mill. It has never failed, but the city is currently in the planning phase to update the dam. Fairbank has one low hazard dam. There has been no known failure in the history of the community.

Probability

While the possibility certainly exists, the probability of dam failure is unlikely. The structural stability of dams is periodically evaluated in order to ensure soundness. However, due to the age of dams, and the recent increase in the number and magnitude of high water events, the probability is somewhat elevated.

Given the fact that none of the known levees and berms in the planning area is listed in the Army Corps of Engineers database is an indication that the probability of failure is unlikely. Proper inspection, maintenance, design, and construction can limit the probability of a levee failure in the future.

Magnitude/Severity

Dams are classified into three categories on the potential risk to people and property should a failure occur: High, Significant, and Low. All dams in the planning area are defined as low-hazard dams. The severity of impact for the Fairbank, Independence, and Quasqueton dams is considered to be negligible.

All levees, dikes, berms, and floodwalls give a false sense of security. People feel that these devices will protect them and their property against any future flooding. While this is usually true, the hazard is only temporarily contained. Therefore, people, property, and utilities located on the other side of the levee are most at risk. However, the magnitude of a levee failure in the planning area is negligible. It is not known what the potential damages would be if one of the rural levees were to fail. Thus, potential damage estimates could not be determined due to lack of data and numerous unknown variables. There are also no maps of where these levees are located; however, the committee stated the areas to only be a few acres and would affect farm land.

Water bursting through a narrow levee breach is moving much faster than the floodwaters in the main channel. The breaking out of this front of 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. This alleviates some of the impacts associated with levee failures. Sudden failure in an urban setting could cause a catastrophe. In an urban setting the severity and duration may be important for health reasons, but in an agricultural area for economic reasons. Impacts would be similar to those experienced during a river or flash flood.

Warning Time

A dam failure can be immediate, leaving little or no time to warn those downstream of the imminent hazard. The conditions that may bring about a dam failure, i.e. heavy rains and river flooding, can be forecasted days in advance. However, there is no real way to predict at which point a dam will fail until just before the event occurs.

The amount of warning time depends on the type of levee failure. Local flood warning systems can help in determining the maximum water surface and the timing of a flood situation. Hours or days of warning may be available for high water that may overtop levees, but this does not provide complete security from a rupture in the levee itself. A sudden failure of a portion of the levee may send floodwaters gushing from this break within seconds. Normally, occupants of the floodplain can be warned about potential levee breaches or breaks when high water encroaches upon the levee.

Duration

The length of time that a dam or levee failure would impact the surrounding area depends largely on the amount of water the specific dam or levee held back. The duration of a failure's impact could range from hours to months.

Drought

Definition and Description

A drought is defined as a period of prolonged abnormally low precipitation producing severe dry conditions. There are four (4) types of drought conditions relevant to Iowa:

- Meteorological drought, which refers to precipitation deficiency;
- Hydrological drought, which refers to declining surface and groundwater supplies;
- Agricultural drought, which refers to soil moisture deficiencies;
- Socioeconomic drought, which refers to when physical water shortages begin to affect people.

The highest occurrences of drought conditions with recorded events in Iowa are associated with agricultural and meteorological drought as a result of either low soil moisture or a decline in recorded precipitation.

Droughts can be spotty or widespread and last from a few weeks to a period of years. A prolonged drought can have a serious impact on a community's water supply and economy. Increased demand for water and electricity may result in shortages of resources. Moreover, food shortages may occur if agricultural

production is damaged or destroyed by a loss of crops or livestock. While droughts are generally associated with extreme heat, droughts can and do occur during cooler months.

Historical Occurrence

According to the National Climatic Data Center, there have been two recorded drought events with impact on areas within Buchanan County from August 2001 to August 2015. Recorded drought dates include: August 2005 and July-November 2012. There was also a drought in 1995 affecting the whole state. More recently, much of the Midwest was afflicted with varying degrees of drought during the summer of 2003. The area in Northeast Iowa was considered to have suffered a moderate drought event.

Probability

Drought is part of normal climate fluctuations. Climatic variability can bring dry conditions to the region for up to years at a time. Research and observations of the El Nino/La Nina climatic events are resulting in more predictable climatic forecasts. The Committee determined the probability of a drought happening was occasional.

Magnitude/Severity

While the entire planning area would be affected by a drought, those dependent (persons, animals, and crops) on rain would be the most vulnerable. This means that agriculture, agribusiness, and consumers (if the drought lasted long enough or impacted a large area) would be impacted. A drought limits the ability to produce goods and provide services. Because the jurisdictions and rural residents draw their drinking water from groundwater sources, a prolonged severe drought may impact all residents of Buchanan County if there were to be a dramatic drop in the stream flow coupled with the drop in the water table. In addition, while a drought may not cause structural damage to properties, a drought could cause damage to the city utilities, especially the water and well system. Fire suppression can also become a problem due to the dryness of the vegetation and possible lack of water.

A drought in Buchanan County would likely also be affecting most of Iowa if not the Midwest as a whole. Because of the dependence on precipitation and water, the agricultural community would be impacted the most. The agricultural areas would be most adversely impacted, but the entire state would likely feel at least some impact.

Drought in the U.S. seldom results directly in loss of life. Deaths associated with drought are usually related to a heat wave. Drought more directly affects agricultural crops, livestock, natural vegetation, and stream flows (fish and aquatic vegetation). Impacts are costly economically, environmentally, and socially. Due to Buchanan County's strong agriculture based economy, including row crops and livestock, the impact of a drought could be critical.

Warning Time

Drought warning is based on a complex interaction of many different variables, water use, and consumer needs. Drought warning is directly related to the ability to predict the occurrence of atmospheric conditions that produce the physical aspects of drought, primarily precipitation and temperature. There are so many variables that can affect the outcome of climatic interactions, and it is difficult to predict a drought in advance. In fact, an area may already be in a drought

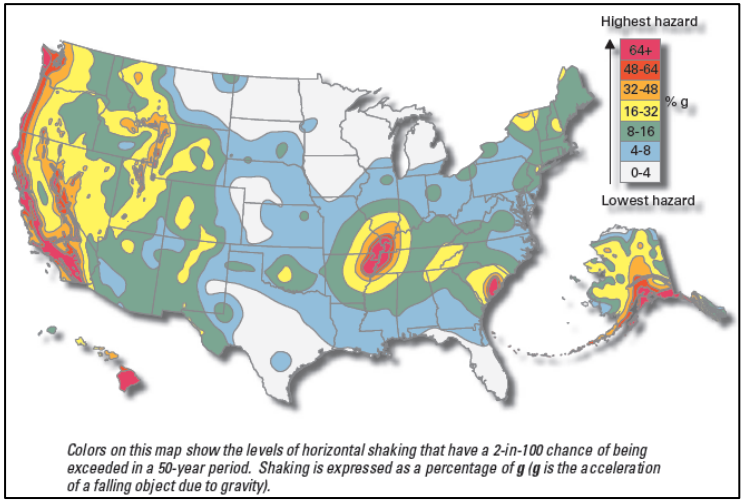
before it is even recognized. While the warning of the drought may not come until the drought is already occurring, the secondary effects of a drought may be predicted and warned against weeks in advance. Warning time is not a concern with a drought as the onset of drought can take weeks, months, and sometimes even years to feel the effects.

Duration

The duration of a drought can affect the planning area for days and weeks, months, or longer.

Earthquake

Figure 3.1: Earthquake Probability Chart
Source: USGS



Definition and Description

An earthquake is any shaking or vibration of the earth caused by the sudden release of energy that may impose a direct threat on life and property. Ground shaking from earthquakes can collapse buildings and bridges; disrupt gas, electric, and phone service; and sometimes trigger flash floods and fires. Buildings with foundations resting on unconsolidated landfill and other unstable soil, and trailers and homes not tied to their foundations are at risk because they can be shaken off their mountings during an earthquake. Earthquakes are generally associated with plate tectonics or volcanic activity, but a third type includes artificial earthquakes. In other words, a large explosion can cause the earth to quake resulting in substantial damage.

According to the Iowa Geological Survey, Plum Creek River Fault Zone and Structural and Stratigraphic Framework of Eastern Iowa study volume 13, printed in 1985, there are several areas with faults in Iowa. The two that appear to be closest and could affect the communities in this plan are the Plum River Fault Zone and the Fayette Structural Zone. The Fayette Structural Zone runs through the planning area starting north of the City of Waterloo, through the very southeast tip of Butler County and into Fayette County towards the City of Oelwein, at a diagonal from the southwest to the northeast. The Plum River Fault Zone can be found south of Cedar Rapids and running east towards Rockford, Illinois.

Historical Occurrence

Iowa as a whole has experienced the effects of only a few earthquakes in the past 175 years. The epicenters of 12 earthquakes have been located in the state. The first known occurrence was in 1867 near Sidney in southwest Iowa; the most recent occurrence was in 2004 near Shenandoah in southeast Iowa. The largest Iowa earthquake (Mercalli magnitude VI) occurred near Davenport in southeast Iowa in 1934. None of these events were instrumentally recorded.

On January 26, 1925 an earthquake occurred with a reported epicenter near Waterloo, Iowa (within an adjacent county). The event registered a magnitude of II (2) on the Mercalli Scale. Modified Mercalli Intensity Scale is commonly used in the United States by seismologists seeking information on the severity of earthquake effects. Intensity ratings are expressed as Roman numerals between I, at the low end, and XII at the high end. According to FEMA, when a Mercalli

magnitude II earthquake occurs only a few people might notice movement if they are at rest and/or on the upper floors of tall buildings.

While no other earthquakes with epicenters in Iowa have been recorded, earthquakes with far away epicenters can have minor effects on the region. For example, in 2002 an earthquake with an epicenter in Alaska caused temporary "black water" to occur in local wells.

Probability

Historic seismicity in the planning area in relation to the regional structural geology from 1800 to present has been slight. Assuming historic trends remain unchanged the likelihood of an earthquake causing any substantial damage to Buchanan County and its jurisdictions is unlikely, less than 10%. Figure 8 illustrates the probability of an earthquake occurring in Iowa and the planning area. The committee determined the probability of an earthquake in Iowa to be unlikely.

Magnitude/Severity

Even though most of Iowa is in Seismic Zone 0, the lowest risk zone in the country, if an earthquake were to occur, the entire planning area would be vulnerable to damage. The structures most at risk for damage would be those structures build on poor soil, such as a floodplain. It is expected that if an earthquake were to occur, the damage would be limited to the shifting of buildings off of their foundations, cracked plaster on walls and ceilings, and perhaps some bowed walls. Underground utilities would be at greater risk of damage during the winter season if the ground were frozen to depths of four feet or greater.

The damages associated with an earthquake would likely be relatively low. However, when considering the highly unlikely worst-case scenario, a large earthquake would have catastrophic effects on the planning area should it occur.

Warning Time

Earthquake prediction is an inexact science. Even in areas that are well monitored with instruments, such as California's San Andreas Fault Zone, scientists only very rarely predict earthquakes. There would be little warning time if an earthquake were to take place.

Duration

The duration of an earthquake would be minutes; however, if the earthquake was large enough, the planning area would feel aftershocks for hours – even days later.

Expansive Soils

Definition and Description

As defined in the State of Iowa Hazard Mitigation Plan, expansive soils are soils and soft rock that tend to swell or shrink due to changes in moisture content. The effects of expansive soils are most prevalent in regions of moderate to high precipitation, where prolonged periods of drought are followed by long periods of rainfall. The hazard occurs in many parts of the Southern Central and Western United States. Recent estimates put the annual damage from expansive soils as high as $7 billion. However, because the hazard develops gradually and seldom presents a threat to life, expansive soils have received limited attention, despite their costly effects.

Historical Occurrence

Similar to every other community in Iowa, the roadways in this planning area are affected by expansive soils. This hazard is most evident by potholes that cause damage to local roadways and vehicles every year during the freeze and thaw cycle.

Probability

Besides the historical occurrences of severe winter storms and the annual spring thaw cycle in the planning area, the probability of expansive soils impacting the planning area was determined by the Committee between unlikely and occasional , indicating there is a 0 percent to 20 percent chance of the event occurring.

Magnitude/Severity

The availability of data on expansive soils varies greatly. Little information is reported other than field observations of the physical characteristics of clay.

Expansive soils have little if any direct human impacts. Impacts commonly involve swelling clays beneath areas covered by buildings and slabs of concrete and asphalt, such as those used in construction of highways, walkways, and airport runways. Expansive soils can also contribute to or cause damage to roadways, bridges, pipelines, and other infrastructure. Local jurisdictions are burdened with the responsibility to repair the damage to roadways.

Houses and one-story commercial buildings are more apt to be damaged by the expansion of swelling than are multi-story buildings, which usually are heavy enough to counter swelling pressures. The most obvious manifestations of damage to buildings are sticking doors, uneven floors, and cracked foundations, floors, walls, ceilings, and windows.

Warning Time

The speed of onset is very slow, and is consistent with other geological hazards that occur over time. However, there are few warning signs of expansive soils until after structural damage becomes apparent, and that structural damage may occur slowly or extremely quickly.

Duration

The duration of an expansive soil event can be over hours, days, or weeks depending upon the severity and location of the occurrence.

Extreme Heat

Definition and Description

Extreme heat happens when summertime weather is substantially hotter and/or more humid than average for a given location at that time of the year. This includes temperatures (including heat index) in excess of 100 degrees Fahrenheit or at least three successive days of 90+ degrees Fahrenheit.

A heat advisory is issued when temperatures reach 105 degrees and a warning is issued at 115 degrees. When these extreme heat events occur, and even more so when they are prolonged, people, livestock, pets, wild animals and plant life are all affected to some degree.

In humans, extreme heat events make individuals much more susceptible to such heat related illnesses as heat cramps, heat exhaustion, heat rash, and heat stroke. Several factors affect the body's ability to cool itself during extremely hot weather. When the humidity is high, sweat will not evaporate as quickly, preventing the body from releasing heat quickly, Other conditions related to risk include age (the elderly and young children), obesity, fever, dehydration, heart disease, mental illness, poor circulation, sunburn, and prescription drug use and alcohol use.

Many similar physical reactions occur in animals during extreme heat events, but can go unnoticed by an unobservant caretaker. The susceptibility to heat varies on the type of animal and whether or not they have access to water to avoid dehydration.

Plant life can also suffer substantially during prolonged heat waves, especially if they occur in conjunction with moderately dry conditions or even drought. This is of substantial concern to the community as the area is surrounded by primarily agricultural uses. Any negative effects on the surrounding farm economy would undoubtedly have some impact on the communities' well-being.

Historical Occurrence

Heat kills by taxing the human body beyond its abilities. In a normal year, about 175 Americans succumb to the demands of summer heat. Among the large continental family of natural hazards, only the cold of winter – not lightning, hurricanes, tornadoes, floods, or earthquakes – takes a greater toll. In the 40-year period from 1936 through 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. In the disastrous heat wave of 1980, more than 1,250 people died (Source: NOAA).

The State of Iowa was impacted by a significant heat wave that occurred in the summer of 1995. In July of that year temperatures and dew points soared to new record levels across the State. The heat wave took a dramatic toll on the State as well as three human fatalities were attributed to the event. A significant loss occurred in livestock. Statewide figures indicate that there were property losses of approximately $3.8 million. Losses included 4,000 head of cattle, 370 hogs, 1,250,000 chickens, and 250,000 turkeys. On one farm alone 250,000 laying hens perished on the 2nd day of the heat. Another egg producer had 1.5 million laying hens on two farms. They reported a loss of at least 500,000 hens. Disposal became a serious problem as rendering plants were overwhelmed. In addition to problems caused to humans and livestock, there were numerous heat buckles reported on streets and highways around the state (Source: NCDC).

According to information obtained from the ISU Extension website, the highest recorded temperature in the metro area was 105 degrees Fahrenheit. This temperature was reached at least twice, in the months of July and August. July has recorded the most days, ten, with record high temperatures equal to or greater than 100 degrees Fahrenheit. The month of August is second with eight days equal to or greater than 100 degrees Fahrenheit. In total, there are 13 days that had record high temperatures at or above the 100 degree Fahrenheit mark. Perhaps the strangest record high temperature, for the Highway 20 corridor (including Ft. Dodge, Waterloo, Dubuque, and Independence), was recorded for April 22, 1980, which had a high of 100 degrees.

The National Climatic Data Center Storm Events Database indicates only one recorded Excessive Heat event in Buchanan County since 1996 on July 4, 2012. No injuries, deaths, or property damage resulted from this event.

Probability

The probability of another heat wave in the area is considered to be likely based on historical occurrence, climate, and geographic location. The Committee scored the probability between occasional and likely.

Magnitude/Severity

Everyone in the planning area is susceptible to the impacts of a heat wave/extreme heat event. Those who have an elevated risk include the elderly, young children, chronic invalids, those on certain medication or drugs, persons who are over their recommended weight, alcoholics, and individuals who work outdoors or in confined spaces without air conditioning. Furthermore, class can figure into the vulnerability. Those individuals or families who cannot afford air conditioning or do not have access to air conditioning are also more susceptible to the effects of elevated temperatures. Unfortunately, it is unknown how many of Buchanan County's population would fall into this category.

The amount of vulnerability can be greatly reduced by taking certain precautionary measures. Such measures include, but are not limited to, drinking plenty of water to stay hydrated, staying in air conditioned areas, using sun block, reducing the amount of physical exertion normally expended, etc.

The impacts of extreme heat events have historically been known to cause death. This possibility remains today. The severity of a heat wave event would likely be multiplied if it occurred in conjunction with other events such as a drought or a power failure. If the air were extremely dry this would increase the rate of dehydration among plants and animals. If a power failure were to occur, air conditioners, fans, freezers, and refrigerators would cease to operate. As these are items used to alleviate the stresses of heat waves, their loss would contribute to the severity of the disaster.

Within the planning area, it is anticipated that the actual impacts of a heat or excessive heat event would be less severe than what could potentially happen. More likely, a heat wave would likely result in increased energy consumption as a result of more air conditioning units operating. Increased numbers of people at public places such as malls, movie theaters, and swimming pools is also anticipated. Companies and organizations that rely on outdoor labor would likely see a reduction in productivity. Plant life would suffer severe stress possibly stunting growth, hurting crop yields, and thereby affecting the local economy.

Costs to the planning area directly may occur if roads, sidewalks, and foundations expanded enough to cause structural damage.

Warning Time
Heat waves are generally well forecasted; therefore, the onset speed is at least 24 hours. When temperatures or heat indices rise to dangerous levels, the National Weather Service will initiate alert procedures.

Duration
Extreme heat conditions have been known to last days and even weeks with little to no relief.

Flash Flood

Definition and Description
A flash flood event occurs with little or no warning where water levels rise at an extremely fast rate. Flash flooding results from intense rainfall over a brief period, sometimes combined with rapid snowmelt, ice jam release, frozen ground, saturated soil, or impermeable surfaces. Most flash flooding in Independence occurs within the designated FEMA 100-year floodplain. The 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 water move at very fast speeds and can roll boulders, tear out trees, scour channels, destroy buildings, and obliterate bridges. Flash flooding often results in higher loss of life, both human and animal, than slower developing river and stream flooding.

Historical Occurrence
According to the National Climatic Data Center, there have been 27 recorded flash flood events to impact areas within Buchanan County between 2000 and 2015. These events resulted in one fatality, one injury, $2.289 million dollars in property damage, and $7,000 in crop damage.

Records indicate that past flash flooding occurred during or after periods of heavy rain. The most damaging flash floods occurred in 2008 and 2010, in which fifteen flash flooding events occurred in the planning area. The 2008 flash flooding occurred after heavy rains of 4-8 inches over a short period of time. These flash flooding vents caused the washed out of a bridge in Lamont and damaged 240 basements of the town's 280 homes.

The 2010 flash flooding events caused Highway 939 near Winthrop to close, Highway 150 to close near the Buchanan-Fayette county line, pushed the Little Wapsipinicon River out of its banks and flooding Siggelkov Park in Fairbank, sandbagging the lift pump station in Lamont, and cars to stall on streets in low-lying areas in Independence.

Probability

Considering the historical occurrences of flash flood events, the probability of future flooding events is likely in the next five years. In the County composite score, the Committee determined the probability of flash flood events to be likely. The probability of flash flooding for communities located outside of FEMA's 100-year floodplain would be low.

Magnitude/Severity

Flooding has the potential to put the entire population of the planning area at some level of risk, whether through the flooding of their homes, businesses, or places of employment, or the road, sewer, and water infrastructure that serve them daily. High floodwaters can devastate homeowners with property damage, property loss, and extensive, time-consuming cleanup. Secondary effects caused by flooding can add to the property damage. Power loss can leave citizens without heat or air conditioning for extended periods of time. The transportation infrastructure of the community can be impacted by flooding events, which can endanger citizens attempting to travel or evacuate the area, as well as leave those remaining without goods and services.

Those who are directly vulnerable to future flooding in the planning area are all those residing in low-lying areas in the county. At greater risk are those with businesses or houses within the 100 and 500-year flood zones as indicated on the Flood Insurance Rate Maps (FIRM) created by the Federal Emergency Management Agency (FEMA).

While there are substantial areas of floodplain in the planning area, as a percentage of the entire county, these areas are considered to be limited. As mentioned previously, areas along rivers, creeks, and other tributaries are vulnerable to flooding, as well as developed jurisdictions that do not have proper drainage systems. Fortunately, the unincorporated area is mainly agricultural land with sporadic residential land use. Thus, this area may be subject to crop damage from flooding and not a huge number of property damage. Specific data on acres of land within the 100- and 500-year floodplain is not available. An assessed property value for the structures in the identified floodplain is could not be determined since the County has no spatial data. However, according to the Iowa 2010 HMP, the estimated average annual flood loss for Buchanan County is $4,000,000 to $11,999,999 million.

The communities of Aurora, Brandon, Fairbank, Independence, Lamont, Quasqueton and Winthrop would be affected by a flash flood since they are located near a river, its tributary or low lying areas that have experienced flash flooding in the past.

Approximately 510 buildings and 650 persons are located within the 100-year flood plain. An estimated loss couldn't be determined due to lack of spatial data; however, based on previous river flooding events there is potential for damages to run $1-3.1 Million depending on the severity of the flood.

In addition, there are over three hundred permanently and seasonally occupied cabins located along the Wapsipinicon River from Littleton to Independence. These cabins have been inundated, damaged or destroyed during flood events. Owners have been allowed to rebuild, modify, or in general fix-up the damaged cabin. In some cases the owner rebuilds to meet floodplain requirements. Over a large span in time certain cabins have been converted into full-time residences, thus making them eligible for flood disaster assistance. Development in the designated floodplain is discouraged, and if done it must meet the Floodplain Ordinances of the particular jurisdiction it is located in. However, agricultural buildings and land are not regulated by the Floodplain Ordnances.

The Committee, using available data and information, determined the vulnerable population and area would be negligible to limited for flash flooding. Those who are directly vulnerable to future flooding in the city include all those residing in low-lying areas of the community. At greater risk are those with businesses or houses within the 100 and 500-year flood zones as indicated on the Flood Insurance Rate Maps (FIRM) created by the Federal Emergency Management Agency (FEMA).

Warning Time

Flood warnings are disseminated from the National Weather Service, IAWAS, and Tornado Spotters to the Buchanan County Communications Center / Sheriff's Dispatch and the Buchanan County Emergency Management Coordinator, who, in turn, disseminates warnings to the affected areas of the city and county, using established procedures. Flash Flooding can result in a warning time of tens of minutes. The warning time for a flash flood is considered to be minimal (less than 6 hours of warning).

Duration

The duration of flash flooding is dependent on the severity of the flooding event. The duration of a flash flooding event would likely be under one day. However, damage and cleanup from an event may take several days to recover from.

Grass or Wild Fire

Definition and Description

A grass or wild fire is an uncontrolled fire that threatens life and property in a rural or a wooded area. Grass and wild fires are more likely to occur when conditions are favorable, such as during periods of drought when natural vegetation is drier and more combustible.

Historical Occurrence

According to the communities, the National Climatic Data Center and 2013 Iowa Hazard Mitigation Plan, there have been no events with significant impact that have been reported. According to data from the National Interagency Coordination Center Wildland Summary and Statistics Annual Report 2013, there were 433 wild land fires affecting 14,558 acres in Iowa in 2013.

Probability

Although much effort has been put into fire prevention in the community, based on historical occurrence, it is highly likely that numerous fires will occur in the community in the next year. Despite no major grass or wildland fires being recorded, it is still highly likely the county will face smaller grass and wildfires. Probability for grass or wild land fires increase during the dry seasons or when the area is experiencing a drought. Controlled burns, that have the potential of becoming out of control, post a threat as well. Given the historical occurrence of grass or wildfires in Buchanan County and the state, it is likely that the county will face threat of additional fires in the future, from both grass and wildland fires.

Magnitude/Severity
Grass and wildfires spread quickly; therefore, they require immediate attention from first responders. Those most vulnerable include residents in housing structures near fields and grasses, typically lying just outside or on the outer rim of the community.

Combustible building materials obviously are more vulnerable than structures constructed of steel or concrete. Structures without early detection devices are more likely to be completely destroyed before containment by response agencies. Structures in areas served by older, smaller, or otherwise inadequate water distribution infrastructure such as water mains and hydrants are also at significant risk. Problems vary from region to region, often as a result of climate, poverty, education, and demographics, but Iowa has about 13.4 fire related deaths per million annually.

The severity of impact would largely depend on how quickly the emergency agencies, fire, police, and ambulance, became aware that a fire had occurred. The worst-case scenario would occur if the responsive agencies had a delayed response or was not aware of the fire until it had spread to a larger area. A fire of this magnitude could cause drastic losses to crops and potentially rural homesteads.

Warning Time
Wildland and grass fire provides little warning before their onset. In addition, fire spreads very rapidly especially in dry, hot, and windy conditions. However, all communities in Buchanan County have mutual aid agreements to assist if the need arises.

Duration
The area immediately impacted by a grass or wildland fire will be impacted during the duration of the fire. Based on previous experience of fires, likely hours, but depending on size could be days.

Hazardous Materials/HAZMAT Incident

Definition and Description
A HAZMAT (hazardous materials) 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. Fixed hazardous materials incidents usually affect a localized area, and the use of planning and zoning can minimize the area of impact.

This hazard includes fixed hazardous materials, pipeline transportation, and transportation of hazardous materials. A HAZMAT or Radiological Transportation Incident is the accidental release of chemical substances or mixtures that presents danger to the public health or safety during transportation. 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. As many as 500,000 products pose physical or health hazards and can be defined as “hazardous chemicals.” Each year, over

1,000 new synthetic chemicals are introduced and transported across the county via semi-truck and train. Hazardous substances are categorized as toxic, corrosive, flammable, irritant, or explosive. Hazardous materials incidents generally affect a localized area, and the use of planning and zoning can minimize the area of impact.

A pipeline transportation incident occurs when a break in a pipeline creates the potential for an explosion or leak of a dangerous substance (oil, gas, etc.) possibly requiring evacuation. A pipeline incident can be caused by environmental disruption, accidental damage, or sabotage. Incidents can range from a small slow leak to a large rupture where an explosion is possible. Inspection and maintenance of the pipeline system along with marked gas line locations and an early warning and response procedure can lessen the risk to those near to the pipelines.

Historical Occurrence

According to data from the Iowa Department of Natural Resources Hazardous Material Release Database, there have been 116 hazardous material spills or incidents in Buchanan County from January 1, 2000 to December 31, 2015.

Probability

Buchanan County has averaged between eight and nine hazardous spill incidents per year over the past 15 years.

Hazardous materials are transported on roadways and railways, both common sites for the release of hazardous materials. The Department of Transportation regulates routes and speed limits used by carriers and monitor the types of hazardous materials crossing state lines. Despite increasing safeguards, more and more potentially hazardous materials are being used in commercial, agriculture, and domestic uses and are being transported on neighboring roads.

The Environmental Protection Agency manages a Toxics Release Inventory (TRI) dataset for communities to learn about toxic chemicals that industrial facilities are using and releasing into the environment. According to the EPA's 2014 National Analysis dataset, there are 5 TRI facilities in Buchanan County.

Due to the historical data and the planning area's diverse array of industrial and agricultural activities, the probability of a HAZMAT incident occurring is highly likely. The committee determined the probability to be occasional.

Magnitude/Severity

Most of the hazardous materials incidents are localized and are quickly contained or stabilized by the highly trained fire departments and hazardous materials teams. Depending on the characteristic of the hazardous material or the volume of product involved, the affected area can be as small as a room in a building or as large as five square miles or more. Many times, additional regions outside the immediately affected area are evacuated for precautionary reasons. More widespread effects occur when the product contaminates the municipal water supply or water system such as a river, lake, or aquifer.

A hazardous materials accident can occur almost anywhere, so any area is considered vulnerable to an accident. People, pets, livestock, and vegetation within approximately 3-4 blocks of facilities producing, storing, or transporting hazardous substances are at higher risk. Populations downstream, downwind, and

downhill of a released substance are particularly vulnerable.

Depending on the characteristics of the substance released, a larger area may be in danger from explosion, absorption, injection, ingestion, or inhalation. Occupants of areas previously contaminated by a persistent material may also be harmed either directly or through consumption of contaminated food and water.

Facilities are required to have an off-site consequence plan that addresses the population of the surrounding area. Responding personnel are required to be trained to HAZMAT Operations Level to respond to the scene, and those personnel that come into direct contact with the substances released are required to have HAZMAT Technician level training.

The close proximity and continued mutual aid agreement with the Northeast Iowa Response Group, located in northern Waterloo, will improve the likelihood of a quick response.

Warning Time

When managed properly under current regulations, hazardous materials pose little risk. However, when handled improperly or in the event of an accident, hazardous materials can pose a significant risk to the population. HAZMAT incidents usually occur very rapidly with little or no warning. Even if reported immediately, people in the area of the release have very little time. The Alert Iowa system the County has recently implemented would alert affected populations.

Duration

The duration of a HAZMAT incident is dependent upon the amount, type of hazardous material, and location of the release. A small release of gasoline or agricultural chemical on a roadway could close the road for a few hours to clean up. However, a large spill in a populated area or near a body of water would impact that area and possibly the area downstream for days or weeks – depending on several factors of the type of release.

Human Disease

Definition and Description

Disease is any impairment of normal physiological function affecting all or part of an organism, especially a specific pathological change caused by infection, stress, etc., producing characteristic symptoms; illness or sickness in general *(Collins)*. Also it is any medical, health, or sanitation threat to humans, plants, wildlife, or domestic animals. For purposes of this discussion the topic will be contained to only communicable diseases and will deal largely with generalities.

Communicable diseases can have devastating effects on the health of the population of a community, the health of wild and domestic animals, and on the wide variety of plant life that is present in and around the community. Some of these diseases are considered to be a greater risk to the community than others.

According to the Iowa Department of Public Health website, there are eleven "Emergency Reportable Diseases or Conditions" that are to be reported by telephone immediately should they be detected. These diseases include Botulism, Cholera, Diphtheria, Haemophilus influenza type b invasive disease, Measles, Meningococcal invasive disease, Plague, Polio, Rabies (human), Vancomycin-resistant Staph aureus, and Yellow fever. Other events that should be immediately reported by telephone include outbreaks of any kind, unusual syndromes, uncommon diseases, or agents of terrorism such as anthrax, mustard gas, sarin gas, ricin, tularemia, and smallpox.

Other diseases of recent concern include SARS, Monkey pox, and West Nile Virus. Also, there are a variety of sexually transmitted diseases that are monitored and treated by the medical community. These diseases include chlamydia, syphilis, gonorrhea, and HIV/AIDS.

Historical Occurrence

The historical occurrence of the outbreak of communicable diseases in the planning area is difficult to determine. There were no known historical occurrences of the outbreak of communicable diseases in Buchanan County. However, there are the typical seasonal episodes of influenza, also known as the flu, within the county. Influenza is spread or transmitted when a person who has the flu coughs, sneezes, or speaks and sends flu virus into the air, and other people inhale the virus. The virus enters the nose, throat, or lungs of a person and begins to multiply, causing symptoms of influenza. Influenza may, less often, be spread when a person touches a surface that has flu viruses on it – a door handle, for instance – and then touches his or her nose or mouth.

According the Center for Disease Control (CDC), West Nile Virus has been found in the state for several years, including confirmed cases within Buchanan County and neighboring counties, including Black Hawk and Grundy. First reported in the United States in 1999, the virus is most often transmitted to humans via mosquitoes. The CDC recommends taking preventative measures, including insect repellant and protective clothing. Less than 1 percent of infected individuals develop serious, potentially fatal, neurologic illness from the virus.

Probability

It is highly likely human disease as defined will affect Buchanan County residents on an annual basis. However, there is a far less likely probability of a human disease event making a severe impact on the county-wide level. Many safeguards from the Department of Public Health and other agencies are in place that

mitigates the occurrence of a human disease epidemic. Numerous hospitals and clinics in Buchanan County are available to provide care as well. Balancing the array of type of disease and impact, the probability has determined to be occasional.

Magnitude/Severity

The severity of a human disease outbreak depends entirely on the disease itself. There are numerous safeguards that have been put into place to help deter an event before it begins, respond to an event once it does occur, and recover from an event as quickly as possible. Examples of such precautions include measures by service agencies (i.e. American Red Cross), government agencies (i.e. Buchanan County EMA, State Veterinarian, USDA, etc.), and private medical facilities (i.e. hospitals and clinics) to detect and respond to an event before it becomes an epidemic.

Warning Time

Warning time for a human disease event ranges from just a few days to no time at all. The onset of a regional or county-wide epidemic could provide minimal or no warning time due to the nature of human diseases in our globalized society. Because of air travel, a disease that spawns in another part of the world could easily reach Buchanan County in a matter of days.

Duration

The duration of a human disease incident in the planning area would be dependent on the type of disease, notification and containment of said disease, and treatment.

Infrastructure Failure

Definition and Description

This hazard includes communication failure, energy failure, structural failure, and structural fire.

Energy failure or disruption is the loss of power as a result of a natural, man-made, or technological disaster or failure. Energy, for purposes of this plan, can also be described as a loss of power. For example, electricity is lost because a power line was accidentally cut, there was a malfunction at the power plant, etc. Another scenario would include the loss of natural gas, a fuel used by most in the community for purposes of hearing and occasionally cooking.

Communication failure is the widespread breakdown or disruption of normal communication capabilities. This could include major telephone outages, loss of local government radio facilities, and long-term interruption of electronic broadcast services, language barriers, and unfamiliarity with common emergency response terminology. AlertIowa, 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. Businesses and industry also rely heavily on various communication media. Mechanical failure, traffic accidents, power failure, line severance, and weather can affect communication systems and disrupt service. Disruptions and failure can range from localized and temporary to widespread and long-term. If switching stations are affected, outage could be more widespread. Communications failure can also be realized when individuals who speak different languages try to communicate, or when people use unfamiliar terminology. These types of communications failure are exacerbated during times of disaster.

Structural Failure is the collapse (part or all) of any public or private structure including roads, bridges, towers, and buildings. A road, bridge, or building may collapse due to the structural components or because the structure was overloaded. Natural events such as heavy snow may cause a roof of a building to collapse under the weight of the 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.

Enforcement of building codes can better guarantee that structures are designed to hold up under normal conditions. Routine inspection of older structures may alert inspectors to “weak” points. The level of damage and severity of the failure is dependent on factors such as the size of the building or bridge, the number of occupants of the building, the time of day, amount of traffic on the road or bridge, and the type and amount of products stored in the structure.

For this profile, fire is an uncontrolled fire in populated area that threatens life and property and is beyond normal day-to-day response capabilities. Structural fires present a far greater threat to life and property and the potential for much larger economic losses. Modern fire codes and fire suppression requirements in new construction and building renovations, coupled with improved firefighting equipment, training, and techniques, lessen the chance and impact of a major urban fire. Most structural fire occur in residential structures, but the occurrence of a fire in a commercial or industrial facility could affect more people and pose a greater threat to those near the fire or fighting the fire because the volume or type of the material involved.

According to the National Fire Protection Association (NFPA), eighty-five percent of fire deaths occur in the home (one- or two-family dwellings, apartments, or

manufactured housing). 72% of all fire deaths result from fires in one- and two-family dwellings, including manufactured homes. Most fires occur as a result of natural causes (i.e. lightning), accidents (i.e. gas leaks), carelessness (i.e. smoking in close proximity to combustibles), or criminal (i.e. arson) reasons. According to statistics obtained from the NFPA Iowa ranked 13th out of 50 states in the number of deaths per million in 1999.

Cooking is the leading cause of home fires in the U.S. It is also the leading cause of home fire injuries. Cooking fires often result from unattended cooking and human error, rather than mechanical failure of stoves or ovens. Careless smoking is the leading cause of fire deaths. Smoke alarms and smolder-resistant bedding and upholstered furniture are significant fire deterrents. Arson is both the second leading cause of residential fires and residential fire deaths. In commercial properties, arson is the major cause of deaths, injuries, and dollar loss. Heating is the third leading cause of residential fires. Heating fires are a larger problem in single-family homes than in apartments. Unlike apartments, the heating systems in single-family homes are often not professionally maintained.

Historical Occurrences

On numerous occasions there has been localized loss of telephone service, generally due to some type of weather phenomenon (e.g. high winds, ice). There have also been short-term instances of power failure, most commonly occurring during thunderstorm and high wind events. In addition, winter ice events have caused power failures in communities in the past.

There are not any recorded instances of structural failure in Buchanan County, nor are there any known instances of energy shortages. However, there have been a number of structural fire events in the county, typically house fires.

Probability

Although much effort has been put into fire prevention in the community, based on historical occurrence, it is highly likely that numerous fires will occur in the county and its jurisdictions in the next year. An overall evaluation of potential infrastructure failures by the Planning Committee determined the probability to be occasional.

Magnitude/Severity

The magnitude and severity of an infrastructure failure ranges from trivial to catastrophic. Regarding events that are most likely to take place, such as a brief power outage caused by a thunderstorm, the effects would be relatively insignificant. However, if a major structural failure event occurred, such as a building or bridge collapse, the magnitude of such an event would be unprecedented considering the scope of the property damage, personal injury, and likely fatalities that would ensue.

Warning Time

The warning time for the conditions that bring about infrastructure failures, such as a severe thunderstorm which could potentially cause a power outage, is relatively long and could be longer than a day. However, the warning time for the event itself, rather than the conditions that could cause an event, is very little to nonexistent. For example, structural engineers might know that a structure is in critical condition for months. However, it's impossible to predict at what time that structure would ultimately fail.

Duration
Just as the magnitude of an infrastructure failure can vary from trivial to catastrophic, the duration of such an event can also vary tremendously depending on the type of event.

Landslide

Definition and Description
A landslide is a downward and outward movement of slope-forming materials reacting under the force of gravity. Landslides occur when masses of rock, earth, or debris move down a slope. Although gravity acting on an over-steepened slope is the primary reason for a landslide, there are other contributing factors:

- Erosion by rivers, glaciers, or ocean waves create over steepened slopes
- Rock and soil slopes are weakened through saturation by snowmelt or heavy rains
- Earthquakes create stresses that make weak slopes fail
- Earthquakes of magnitude 4.0 and greater have been known to trigger landslides
- Volcanic eruptions produce loose ash deposits, heavy rain, and debris flows
- Excess weight from accumulation of rain or snow, stockpiling or rock or ore, from waste piles, or from man-made structures may stress weak slopes to failure and other structures

Slope material that becomes saturated with water may develop a debris flow or mud flow. The resulting slurry of rock and mud may pick up trees, houses, and cars, thus blocking bridges and tributaries causing flooding along its path (USGS). Landslides commonly occur in connection with other major natural disasters such as earthquakes, volcanoes, wildfires, and floods. (USGS)

Historical Occurrence
According to the National Climatic Data Center, there have been no reported landslide events in Buchanan County between 1996 and 2014. It is possible that landslides have occurred before 1996 or occurred and were not reported; however, there is no data available to determine this.

Probability
Based on the lack of reported landslides in the past, the probability of landslides occurring in Buchanan County is unlikely. Steep sloping areas, especially along waterways as well as areas that have been cleared of shrubbery or timber may have an increased probability. The topography of the planning area provides locations of sloping areas along waterways.

Magnitude/Severity
Maximum threat exists to those property owners located at the top or bottom of steep sloping areas without trees or shrubbery to absorb excessive amount of moisture. For structures located at the top or bottom of a landslide the severity of impact could be devastating. Earth giving way from underneath a structure could result in the structure giving way also. All ground that does give way will then topple onto anything located below.

Landslides can damage structures and disrupt electricity, water service, communications, and transportation routes in some areas along river banks or in areas where impair development has occurred. Injuries and deaths are very unlikely except in the case of undetected slope failure warning signs in structures overlooking steep slopes.

Warning Time
Great amounts of precipitation and moisture over time will greatly increase the warning time of a landslide event; however there is no official warning system in place, thus the warning time would be short.

Duration
Landslides are typically over within hours of occurring.

Radiological Incident

Definition and Description
A radiological incident is an occurrence resulting in a release of radiological material at a fixed facility or in transit. An incident resulting in a release of radiological material at a fixed facility includes, but is not limited to, power plants, hospitals, and laboratories. Although the term “nuclear accident” has no strict technical definition, it generally refers to events involving the release of significant levels of radiation. Most commercial nuclear facilities in the United States were developed in the mid-1960s and are designed to withstand an aircraft attack. Therefore, they should withstand most hazards even though they may not have been designed for those particular forces.

TABLE 3.9: UNITED NATIONS NUCLEAR REGULATORY COMMISSION EMERGENCY CLASSIFICATIONS	
Unusual Event	Events are in progress or have occurred which indicate potential degradation of the level of safety of the plant or indicate security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety system occurs.
Alert	Events are in the progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of Hostile Action. Any releases are expected to be limited to small fraction of the EPA protection action guides (PAGs)
Site Area Emergency	Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that resulted in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.
General Emergency	Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.
Source: US Nuclear Regulatory Commission, "Emergency Classification"	

The United States Nuclear Regulatory Commission (NRC) identifies four types of emergency classifications for nuclear power plants. Table 3.9 provides a brief description of these types of emergencies.

Historical Occurrence

There is only one nuclear power plant in the state of Iowa, The Duane Arnold Energy Center, which is located 9 miles northwest of Cedar Rapids. The Center is approximately 14 miles south of the Buchanan County border. This nuclear power unit is the closest in proximity to the planning area. The plant began construction in 1970 and became operational in 1974. Since 1990 the Duane Arnold Energy Center has had 7 Unusual Events, one Alert, no Site Area Emergencies and no General Emergencies.

Transportation of radiological materials is licensed and regulated by the federal government. Since 1990 there have been no rail transportation related radiological incidents in Iowa.

Probability

Operators of facilities that use radioactive materials and transporters of radioactive waste are circumspect in the packaging, handling, and shipment of the radioactive waste; and are closely regulated by a variety of federal, state, and local organizations. Based on the minimal history of radiological incidents affecting the planning area, the probability of an incident is unlikely (less than a 10% chance of occurring).

Magnitude/Severity

Three nuclear facilities are located near the Iowa border. These are the Ft. Calhoun Nuclear Power Plant located north of Omaha, NE; the Cooper Nuclear Power Plant south of Nebraska City, NE; and across the Mississippi River at the Quad Cities Nuclear Power Plant.

Time, distance, and shielding minimize radiation exposure to the body. Nuclear radiation above normal levels could be a health and safety consideration because of its ability to damage human cells biologically as well as its long-lasting effect on the environment. Depending on the level of exposure, radiation can cause loss of life, long- and short-term health effects, and property damage from contamination, and disruption of business because of potential evacuations. Therefore, multiple deaths could occur, thereby affecting the operation of essential facilities throughout the community, at least temporarily.

Although it is determined that the probability of an event was limited, it is recognized that if an event were to occur in, or in close proximity, to the community that the entire area would be vulnerable to the radiation.

Warning Time

Ionizing radiation cannot be seen, smelled, heard, or detected with human senses. Detection instruments are needed to indicate the existence of dangerous radiation. Distance from the incident would dictate the amount of time needed to avoid exposure from damaging radiation. Protective actions directed by state and county officials, will depend upon weather conditions and developments at the power plant. In an actual emergency, the public can turn to their local Emergency Alert System Station, NOAA Weather Radios, or through AlertIowa notifications.

Duration

Depending upon the severity of a radiological event, the planning area would be impacted from a few hours to possibly a day or two. In a worst case scenario event, the duration of the ensuing fallout could last decades.

River Flooding

Definition and Description

River floods is a rising or overflowing of a tributary or body of water that covers adjacent land not usually covered by water when the volume of water in a stream exceeds the channel's capacity.

River floods are the most common and widespread of all natural disasters, except fire. Most communities in the U.S. can experience some kind of flooding after spring rains, heavy thunderstorms, winter storm thaws, waterway obstructions, or levee or dam failures. Often it is a combination of these elements that causes damaging floods. Floodwaters can be extremely dangerous. The force of six inches of swiftly moving water can knock people off their feet and two feet of water can float of car. Floods can be slow-, or fast-rising but generally develop over a period of days. Flooding is a natural and expected phenomenon that occurs annually, usually restricted to specific streams, rivers or watershed areas.

Historical Occurrences

Buchanan County is located in a lower portion of the Upper Wapsipinicon watershed and as a result is susceptible to flooding due to rainfall outside of the local area. Buchanan County has experienced flooding on the Wapsipinicon River and Malone creek numerous times. Records indicate that past flooding on the Wapsipinicon River in Independence has occurred primarily between March and June as a result of a combination of spring snowmelt and rainfall or just heavy rainfall.

Table 3.10 lists the top 20 historical crests for the Wapsipinicon River in downtown Independence. According to available information and data, the Wapsipinicon hits flood stage at 12 feet, moderate flood stage at 13 feet, and major flood stage at 15 feet.

TABLE 3.10: HISTORICAL CRESTS OF WAPSIPINICON RIVER AT INDEPENDENCE GAUGE (STATION #5421000)

Date	Historical Crests (ft.)	Flood Category
5/18/99	22.35 ft.	Major
7/18/68	21.11	Major
8/26/90	20.30	Major
6/11/08	18.86	Major
7/24/99	18.80	Major
7/24/10	18.77	Major
6/14/47	18.74	Major
4/30/51	18.20	Major
5/23/04	18.00	Major
4/26/08	17.97	Major
8/30/79	17.31	Major
3/29/61	16.11	Major
7/2/69	15.76	Major
6/17/44	15.64	Major
3/30/60	15.63	Major
3/31/62	15.43	Major
8/24/79	15.37	Major
4/3/93	14.90	Moderate
7/9/93	14.88	Moderate
3/20/79	14.55	Moderate

Source: Advanced Hydrologic Prediction Service, as of 8/26/2016

According to the National Climatic Data Center, under the National Oceanic and Atmospheric Administration (NOAA), there have been 23 recorded flood events to impact areas within Buchanan County between 1/1/1950 and 8/1/2016. This data does not include "Flash Flood" events, which are discussed in the Flash Flood hazard section of this plan. According to NOAA data, Flood events have caused over $4 million in property damage. No deaths or injuries have been recorded. A list of Flood events in Buchanan County from 1950-2016 is shown in Table 3.11

Data regarding the These events resulted in one fatality, one injury, $134,789 million dollars in property damage, and $24.142 million in crop damage. Since 2010, NOAA has not officially recorded any flood events in Buchanan County. However, river and local flooding, though not necessarily meeting NOAA

guidelines, still persists.

Prior to the flooding of 1999, the previous flood of record and the highest level of destruction occurred in 1968. In that event, two homes were swept off their foundations and thirty other residences sustained damage. Significant damage also occurred in 1947, 1951, 1960 and 1961. There was also significant flooding due to heavy rains in 1991 and 1993.

The flooding of 1999 has resulted in the destruction and damage of numerous homes and facilities in the area. A total damage estimate of over one million dollars of infrastructure (not including housing) damage was reported in Buchanan County. The county participated in the federally funded buy-out program. Through this program the county was able to purchase 15 structures and relocate 2 tenants at a total cost of $713,060.

The 2008 flood in Iowa was a hydrological event involving most of the rivers in eastern Iowa, beginning around June 8, 2008 and ending July 1st. The flooding included the catchments of the Wapsipinicon River, Maquoketa River, and their tributaries. Independence experienced flooding in low-lying areas. Lamont experienced flash flooding from the South Fork Maquoketa River and all but two basements in the city, and five first floors. Most homeowners in Lamont lacked flood insurance and discovered their homeowners insurance did not cover this type of damage. Quasqueton, water overtook the campground and Veterans Memorial Park, but most of the city was not damaged. Fairbank experienced flooding along Little Wapsipinicon – mainly in the low-lying areas and parks. Small stream flooding threatened the county's northern tier of townships, including Hazleton, Fairbank, Aurora, and Stanley. The flooding closed the Iowa Highway 150 Bridge in Independence and County Road V62 from Jesup to Fairbank. Numerous low-lying areas in the county experienced some degree of flooding. Highway 30 was also closed near Hazleton. The 2008 floods caused 3.1 Million in property damages.

Buchanan County experienced flooding again in July of 2010, totally 1.0 Million in property damages. This flood event was caused by heavy rains during the first week of July resulting in the Wapsipinicon River to go above the moderate flood stage of 13 feet by July 7th. Due to the previous mitigation efforts (buy-outs, storm water improvements, elevations, and education), the impact of flooding was minimal, limited primarily to parks in Independence.

TABLE 3.11: BUCHANAN COUNTY FLOOD EVENTS, 1950-2016

Location	Date	Property Damage ($)	Crop Damage ($)
FAIRBANK	5/16/1999	0.00K	0.00K
BUCHANAN (ZONE)	5/17/1999	0.00K	0.00K
COUNTYWIDE	7/2/1999	0.00K	0.00K
COUNTYWIDE	7/20/1999	0.00K	0.00K
BUCHANAN (ZONE)	7/23/1999	0.00K	0.00K
COUNTYWIDE	7/23/1999	0.00K	0.00K
FAIRBANK	8/23/1999	0.00K	0.00K
INDEPENDENCE	4/19/2000	0.00K	0.00K
COUNTYWIDE	5/11/2000	0.00K	0.00K
BUCHANAN (ZONE)	6/1/2000	0.00K	0.00K
COUNTYWIDE	6/23/2000	0.00K	0.00K
ROWLEY	4/8/2001	0.00K	0.00K
INDEPENDENCE	7/21/2001	0.00K	0.00K
JESUP	7/21/2001	0.00K	0.00K
JESUP	7/24/2001	0.00K	0.00K
INDEPENDENCE	6/3/2002	0.00K	0.00K
INDEPENDENCE	8/21/2002	0.00K	0.00K
BUCHANAN (ZONE)	5/23/2004	0.00K	0.00K
INDEPENDENCE	4/1/2008	0.00K	0.00K
LITTLETON	6/1/2008	3.100M	0.00K
LITTLETON	6/9/2008	0.00K	0.00K
FAIRBANK	7/7/2010	500.00K	0.00K
FAIRBANK	7/23/2010	500.00K	0.00K
	Totals:	**4.100M**	**0.00K**

Source: National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center, data as of 8/26/2016

However, in Lamont the South Fork Maquoketa and Lamont Creek flooded for the second time in two days, affecting several businesses and up to 200 residential basements. Approximately 20 residences in Buchanan County, including some in Winthrop along Buffalo Creek, were also affected.

Probability

Due to the historical occurrences of flooding in Buchanan County, its topographical landscape, and the presence of the Wapsipinicon River, South Fork Maquoketa River, and all their tributaries, the probability of river flooding is likely.

Magnitude/Severity

Flooding has the potential to put the entire population of the planning area at some level of risk, whether through the flooding of their homes, businesses, or places of employment, or the road, sewer, and water infrastructure that serve them daily. High floodwaters can devastate homeowners with property damage, property loss, and extensive, time-consuming cleanup. Secondary effects caused by flooding can add to the property damage. Power loss can leave citizens without heat or air conditioning for extended periods of time. The transportation infrastructure of the community can be impacted by flooding events, which can endanger citizens attempting to travel or evacuate the area, as well as leave those remaining without goods and services.

Those who are directly vulnerable to future flooding in the planning area are all those residing in low-lying areas in the county. At greater risk are those with businesses or houses within the 100 and 500-year flood zones as indicated on the Flood Insurance Rate Maps (FIRM) created by the Federal Emergency Management Agency (FEMA). Tables 3.12 and 3.13 show the land, building, and dwelling values located in the: 1) Floodway (land areas adjacent to waterways that must be reserved in order to discharge base flood); 2) 1 percent floodplain (100-year floodplain); and 3) 0.2 percent floodplain (500-year floodplain).

TABLE 3.12: FLOODPLAIN VALUES OF ALL INCORPORATED CITIES IN BUCHANAN

	# of Parcels	Land Value	Building Value	Dwelling Value	Total Value
Floodway Values	230	$2,899,604	$1,260,300	$9,933,504	$14,093,408
1.0% Annual Chance Floodplain Values	919	$11,251,131	$11,101,875	$37,799,737	$60,152,743
0.2% Annual Chance Floodplain Values	376	$3,921,656	$4,341,585	$25,151,204	$33,414,445
Total Incorporated Floodplain Value	**1,525**	**$18,072,391**	**$16,703,760**	**$72,884,445**	**$107,660,596**

Parcel value information current as of 10/10/2016, source is the Buchanan County Assessor's Office; FEMA's Digital DFIRM maps current as of 10/10/2016; Incorporated boundaries current as of 6/27/2016; For actual determination if a location is within the floodplain contact your local floodplain administrator.

TABLE 3.13: FLOODPLAIN VALUES OF UNINCORPORATED BUCHANAN COUNTY					
	# of Parcels	Land Value	Building Value	Dwelling Value	Total Value
Floodway Values	31	$560,918	$35,630	$3,857,602	$4,454,150
1.0% Annual Chance Floodplain Values	5,754	$320,861,371	$16,384,168	$109,043,733	$446,289,272
0.2% Annual Chance Floodplain Values	17	$270,305	$17,320	$1,276,013	$1,563,638
Total Unincorporated Floodplain Value	**5,802**	**$321,692,594**	**$16,437,118**	**$114,177,348**	**$452,307,060**
Parcel value information current as of 10/10/2016, source is the Buchanan County Assessor's Office; FEMA's Digital DFIRM maps current as of 10/10/2016; Incorporated boundaries current as of 6/27/2016; For actual determination if a location is within the floodplain contact your local floodplain administrator.					

As the above Table 3.13 shows, there is combined $100 million in value of property and structures within the Floodway, 1.0 percent and 0.2% annual chance floodplains in incorporated areas.

Regarding the unincorporated areas of Buchanan County, $452,307,060 of land, buildings, and dwellings are located within the Floodway, 1.0 percent and 0.2% annual chance floodplains. However a majority of this value, approximately 70 percent, is from land values – which will not experience the same severity of impact as buildings or dwellings may. Agriculture, specifically row crop production, dominates the land use of the unincorporated area.

While there are substantial areas of floodplain (See *Map 3A: Flood Plain Map of the County and Maps 3B-3X Flood Plain Maps of individual communities*) in the planning area, as a percentage of the entire county, these areas are considered to be limited. As mentioned previously, areas along rivers, creeks, and other tributaries are vulnerable to flooding, as well as developed jurisdictions that do not have proper drainage systems. Fortunately, the unincorporated area is mainly agricultural land with sporadic residential land use. Thus, this area may be subject to crop damage from flooding and not a huge number of property damage.

Since river flooding is rarely localized to one area, a flooding event would likely affect a significant portion of the county in some regard. Whether it is closed roads resulting in limited access to farm, business or residential areas or simply the cost incurred by the county as a result to increased man-hours, much of the county would be affected. The greatest threats of flooding are that of the loss of life, limb, and loss of property.

Flooding impacts include loss of life; property damage and destruction; damage and disruption of communications, transportation, electric service, and community services; crop and livestock damage and loss and interruption of business. Those who are at the greatest risk are those living in identified flood zones. The communities of Aurora, Fairbank, Hazleton, Independence, Lamont, Quasqueton and Winthrop would be affected by a river flood since they are located near a river or its tributary.

In addition, there are over three hundred permanently and seasonally occupied cabins located along the Wapsipinicon River from Littleton to Independence. These cabins have been inundated, damaged or destroyed during flood events. Owners have been allowed to rebuild, modify, or in general fix-up the damaged cabin. In some cases the owner rebuilds to meet floodplain requirements. Over a large span in time certain cabins have been converted into full-time residences, thus making them eligible for flood disaster assistance. Development in the designated floodplain is discouraged, and if done it must meet the Floodplain Ordinances of the particular jurisdiction it is located in. However, agricultural buildings and land are not regulated by the Floodplain Ordnances.

A summary of the river flooding hazards for each community is described below.

Aurora

Due to the location of Aurora in relation to Buffalo Creek and the South Fork of the Maquoketa River (see *Maps 3C and 3D)* there is a minimal probability of flooding within the community due to overflow. However, as with most communities, there is a higher probability of flash flooding occurring within the City. Those who are directly vulnerable to future flooding in the city include all those residing in low-lying areas of the city. Also at risk are those with businesses or houses within the 100 and 500-year flood zones as indicated on the Flood Insurance Rate Maps (FIRM) created by the Federal Emergency Management Agency (FEMA). However, there are currently no areas of the city within the 100-year floodplain.

Brandon

The city of Brandon faces the threat of river flooding from Lime Creek, which flows east/west through the southern portion of the city. The city's floodplain maps are included in Attachment 1 as Maps 3E and 3F.

Fairbank

Due to the location of Fairbank in relation to the Little Wapsipinicon River, the City of Fairbank can expect there to be additional flooding events at some time in the future. When determining the extent of vulnerability the committee considered the fact strong possibility that almost all of the entire population would stand to be impacted by another major flood event, if only to a small extent. However, because of a variety of transportation routes running in all directions from the community, they felt this impact would be little more than an inconvenience to the much of the population.

Hazleton

Otter Creek enters the Hazleton corporate borders in the northwestern portion of the community. It then flows west and then drops southwesterly out of the municipality. The creek has experienced flooding numerous years (1968, 1990, 1993, 1999, and 2008). The Hazleton Otter Creek Bridge on Hayes Street has been damaged in past flood events and is prone to future flooding until the bridge deck is raised and the span increased. The city's main lift station for the wastewater facility has been impacted by past flood events; however, flood proofing and replacement of the motors resolved the issues. Maps 3I and 3J in *Attachment 1: Maps* shows the 100-year floodplain for Hazleton and the potential impact a flooding event would have on the community.

Independence

The City of Independence is bisected by the Wapsipinicon River. The city experienced major flooding in 1999 and as a result undertook aggressively participated in the flood buy-out program. In 2015 the city's Federal Insurance Rate Maps (FIRM) were updated. The new mapping resulted in additional properties being added to the floodplain. Refer to the floodplain maps, *3K and 3L Attachment 1*, which defines the estimated flood hazard areas in the City of Independence.

Lamont

Those who are directly vulnerable to future flooding in the city include all those residing in low-lying areas of the city. At greater risk are those with businesses or houses within the 100 -year flood zones as indicated in Attachment 1 on Maps 3O. The city of Lamont is threatened by flooding of Lamont Creek and South Creek. The primary flooding concern is the lack of the river's capacity to drain during high rain and flood events. Currently, the city is process of making a series of drainage improvements throughout the city.

Quasqueton

The City of Quasqueton is affected by flooding from the Wapsipinicon River. The city's floodplain maps are located in Attachment 1 as Maps 3Q and 3R. As shown on the maps, the City's lagoons and Veterans Memorial Park are located in the 100-year floodplain.

Rowley

Unlike many of the other communities in the county, the City of Rowley is not located close to a river. The city does not experience river flooding and no portion of the city is located in a floodplain

Winthrop

The probability of severe flooding within the city limits of Winthrop is low. In previous FIRM maps version, no areas of the community were within a floodplain. However, an area in the southwest portion of the city was included in the 100-year floodplain when the city's FIRM maps were updated in 2008.

While the vulnerability is minimal for flood damage anywhere in the community, there are areas that are more susceptible than others. One such area is a stretch of land that begins in the south central portion of the community; near the baseball fields and the city wells. The area then progresses downhill to the southwest, crosses Jefferson Street just west of the 4th Street intersection, crosses Washington Street near the 5th Street intersection, then progresses southwesterly through the Winthrop Building Supply facility on the southwest edge of town and then to the west of the city wastewater treatment facility

Warning Time

Flood warnings are disseminated from the National Weath
er Service, IAWAS, and Tornado Spotters to the Buchanan County Emergency Management Agency located in the Buchanan County Courthouse. In turn, the warning is then disseminated to the affected areas of the city and county, using established procedures. More adequate warning time is now possible due to the recent addition of an additional river gauge on the Wapsipinicon River, near the City of Tripoli. People in the path of river floods may have time to take appropriate actions to limit harm to themselves and their property. Floods may occur in the form of flash flooding which can occur in a matter of tens of

minutes. Other floods can be forecasted to allow for several hours, perhaps even days notification.

Duration

The duration of a flooding event varies based on the severity and location of the flooding event. Duration can range from a few hours to several days or longer.

Severe Winter Storms

Definition and Description

Severe winter storms are weather conditions that affect day-to-day activities. A brief description of various types of severe winter storms is described in Table 3.14. Winter storms are common during the winter months of October through April. The various types of extreme winter weather cause considerable damage. Heavy snows cause immobilized transportation systems, downed trees and power lines, collapsed buildings, and loss of livestock and wildlife. Loose snow begins to drift when the wind speed reaches 9 to 10 mph under freezing conditions. The potential for some drifting is substantially higher in open country than in urban areas where buildings, trees, and other features obstruct the wind. Frigid temperatures and wind chills are dangerous to people, particularly the elderly and the very young. Dangers include frostbite or hypothermia. Water pipes, livestock, fish and wildlife, and pets are also at risk from extreme cold and severe winter weather.

TABLE 3.14: SEVERE WINTER STORM DEFINITIONS

Storm Event Type	Description
Blizzard	A winter storm last at least 3 hours which produces sustained winds or frequent guests 35 mph or greater and falling and/or blowing snow reducing visibility to less than ¼ mile
Cold/wind Chill	A period of low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined advisory (typically value is -18®F or colder).
Heavy Snow	Snow accumulation meeting or exceeding the locally/regionally defined 12 and 24 hours warning criteria
Ice Storm	Ice accretion meeting or exceeding locally/regionally defined warning criteria (typical value is ¼ or ½ inch or more)
Winter Storm	A weather event which contains more than one significant hazard (i.e. heavy snow and blowing snow; snow and ice; snow and sleet) and meets or exceeds the locally/regionally defined 12 and/or 24 warning criteria

Source: "National Weather Service Instruction 10-1605" courtesy of the National Climatic Data Center

Historical Occurrence

Buchanan County has experienced winter storms of some type every winter on record. According to the National Climatic Data Center, there were been 87 severe winter events reported in Buchanan County from January 1, 1996 through and December 31, 2015. Over this twenty year period, the county averaged 4.35 events per year. As shown in Tables 3.15 and 3.16, in the past 10 years, 2006-2015, there were 41 (4.1 per year) Severe Winter Storm events.

December of 2000 remains one of the worst months on record for the accumulation of snowfall. Approximately 34 inches of snow fell during the month. In addition, on April 6, 1973 the county experienced a serious winter storm that resulted in a number of rural persons being stranded in their homes and many facilities were shut down for three days. There have been three presidential declarations of major disasters due to winter storms in Iowa since 1990, the most recent in February 2007. The ice storm of 2008 caused power outages for 14 hours in some locations in Buchanan County.

TABLE 3.15: HISTORIC SEVERE WINTER STORM, 1996-2015

Date	Type	Date	Type
2/2/2007	Extreme Cold/wind Chill	12/11/2010	Blizzard
2/24/2007	Winter Storm	12/23/2010	Winter Storm
3/1/2007	Winter Storm	2/1/2011	Blizzard
4/10/2007	Heavy Snow	1/11/2012	Winter Storm
12/1/2007	Winter Storm	1/20/2012	Heavy Snow
12/22/2007	Winter Storm	12/19/2012	Blizzard
1/24/2008	Extreme Cold/wind Chill	1/29/2013	Winter Storm
1/29/2008	Extreme Cold/wind Chill	2/21/2013	Winter Storm
2/5/2008	Winter Storm	2/26/2013	Winter Storm
2/10/2008	Extreme Cold/wind Chill	3/4/2013	Winter Storm
2/17/2008	Winter Storm	12/21/2013	Winter Storm
12/8/2008	Ice Storm	1/5/2014	Extreme Cold/wind Chill
12/18/2008	Heavy Snow	1/22/2014	Extreme Cold/wind Chill
12/20/2008	Blizzard	1/23/2014	Cold/wind Chill
1/9/2009	Heavy Snow	2/17/2014	Winter Storm
1/13/2009	Heavy Snow	1/5/2015	Winter Storm
1/14/2009	Extreme Cold/wind Chill	2/1/2015	Winter Storm
12/8/2009	Winter Storm	2/25/2015	Winter Storm
12/9/2009	Blizzard	11/20/2015	Winter Storm
12/23/2009	Ice Storm	12/28/2015	Heavy Snow
1/6/2010	Winter Storm		

Source: National Climatic Data Center, retrieved 9/14/16

Probability

Given the historical information and the geographical location of the planning area, the probability of a winter storm affecting the planning area is highly likely on an annual basis. Some winters have been historically worse than others, but the planning area can expect an average of 4-5 events per winter season.

Magnitude/Severity

Those most vulnerable to the effects of a winter storm are those who cannot fend for themselves in times of severe weather. Example populations would be the elderly or disabled who rely on outside entities for delivery of food or medicine for their livelihood. . People who work outdoors are also at greater risk of being affected by wind chill, extreme low temperature, and wet winter conditions.

The Committee determined a critical percentage of the planning area's population would be the most vulnerable to the impacts of a winter storm. These populations include those who cannot fend for themselves in times of severe weather – greater risk of being affected by wind chill, extreme low temperatures, and wet winter conditions.

Although the developments in technology have been very beneficial in reducing the long-term negative effects of winter storms, certain dangers still exist. The maximum extent of winter conditions would be realized if it was accompanied by power outages and elimination of travel due to hampered road conditions. This could result in the inability for some of the population to maintain temperatures necessary for the body. In addition long winter events that eliminate communication could result in the reduction of adequate medical response time. Thus, the maximum extent would be more than 50% of the planning area.

TABLE 3.16: Annual Winter Storm Events Average for Buchanan County, 1996-2015

Storm Event	Total Number of Events	Average Number of Events per year
Blizzard	5	0.5
Cold/wind Chill	8	0.8
Heavy Snow	6	0.6
Ice Storm	2	0.2
Winter Storm	20	2.0
Total	**41**	**4.1**

Source: National Climatic Data Center, retrieved on 9/14/2016

Duration

Depending on the type, duration, and the size of the event the entire population could feel the effect of a winter storm. Generally, due to existing snow removal services and other community services the influence of winter storms on Independence are short term. Although more of an inconvenience, and somewhat more dangerous, travel and communication is usually an option in less than 24-hours of any given event.

The Committee scored this as a limited to critical due to the fact that winter storms tend to have a cascading negative effect on transportation, energy failure to due ice on power lines, extreme wind chills that has been known to result in serious injury or illness.

Warning Time

The National Weather Service has developed effective weather advisories, which are promptly and widely distributed. Radio, TV, and Weather Alert Radios provide the most immediate means to do this. Accurate information is made available to public officials and the public up to days in advance. Again, weather prediction capabilities have made significant improvements in the past few years. There are several notifications made by the National Weather Service. These include winter storm watch, winter storm warning, blizzard warning, winter weather advisory, and a frost/freeze advisory. In addition, the County recently implemented the State of Iowa's Code RED notification system, which residents can sign up for alerts.

Sinkholes

Definition and Description

A sinkhole is the loss of surface elevation due to the removal of subsurface support. Sinkholes range from broad, regional lowering of the land surface to abrupt localized collapse. The primary causes of most subsidence are human activities such as underground mining of coal, groundwater/petroleum withdraw, or drainage of organic soils. Sinkholes can aggravate flooding potential, collapse of an abandoned mine may destroy buildings, roads and utilities.
Sinkholes are common where the rock below the land surface is limestone, carbonate rock, 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 just 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. New sinkholes have been correlated to land-use practices, especially from ground-water pumping and from construction and development practices. Sinkholes can also form when natural water-drainage patterns are changed and new water-diversion systems are developed. Some sinkholes form when the land surface is changed, such as when industrial and runoff-storage ponds are created. The substantial weight of the new material can trigger an underground collapse of supporting material, thus causing a sinkhole.

Historical Occurrence

According to the Iowa Department of Natural Resource's GIS database library, there is no history of sinkholes in Grundy County.

Probability

Based on their lack of historical occurrences in Grundy County, the probability of a sinkhole hazard is low.

Magnitude / Severity

Since there have been no recorded sinkholes in Grundy County, in the event of a hazard event, the magnitude of the impact will likely be minimal.

Warning time

Sink holes growing in mass is a slow yet gradual process. Land use practices in the area, soil type in addition to a number of other factors will impact the speed of onset. By identifying these areas city agencies and property owners will be able to implement the necessary precautions to slow and potentially eliminate the development of a sink hole. Catastrophic sinkholes can provide little visible warning, setting in in as little as a few minutes.

Duration

A sinkhole can affect the location in which it occurred for weeks.

Terrorism

Definition and Description

Terrorism is the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives *(Federal Bureau of Investigation).* The Federal Bureau of Investigation (FBI) categorizes terrorism in the United States as one of two types--domestic terrorism or international terrorism. Domestic terrorism involves groups or individuals whose terrorist activities are directed at elements of our government or population without foreign direction.

International terrorism involves groups or individuals whose terrorist activities are foreign-based and/or directed by countries or groups outside the United States or whose activities transcend national boundaries. A terrorist attack can take several forms, depending on the technological means available to the terrorist, the nature of the political issue motivating the attack, and the points of weakness of the terrorist's target. Bombings have been the most frequently used terrorist method in the United States. Other possibilities include an attack at transportation facilities, an attack against utilities or other public services or an incident involving chemical or biological agents.

Historical Occurrences

To date, there have been no known or reported instances of any terrorist attacks having been perpetrated in or near the planning area.

Probability

The probability of any type of terrorism occurring in the planning area is unlikely.

Magnitude / Severity

The maximum threat appears to be in the three categories listed in the previous section; danger to the water supply, bio-terrorism, and an attack on a nearby nuclear facility. The severity of impact would largely depend on how quickly the planning area became aware that an event had occurred. The worst-case scenario would occur if the public had no knowledge until all or most of the population had been contaminated or poisoned before a proper response could be made. This could result in widespread sickness and potentially death.

Warning Time

Depending on the type of event to occur the speed of onset could vary from immediate (no time) to days, weeks, even years (poisoned water, poisoned food, financial impacts).

Duration

The duration of an incident on the planning area would be dependent upon the type and size of the event. A small, remote/isolated incident would have a smaller duration than a large, urban-centered incident which could last for days or even weeks.

Thunderstorm/Lightning/Hail

Definition and Description

Thunderstorms are common in Iowa and can occur singly, in clusters, or in lines. Thunderstorms can result in heavy rains, high winds (reaching or exceeding 58 mph), tornados, or hail. Thunderstorms are created from a combination of moisture, rapidly raising warm air, and the lifting mechanism such as that caused when warm and cold air masses collide. The SHMT chose to combine previously separated hazards of Thunderstorm/Lightning and Hail. The combined hazard was then scored with lower of the two values for magnitude as well as warning time. The magnitude reduction was due to the fact that a majority of thunderstorms don't cause state level response, and tracking and prediction of thunderstorms is quite sophisticated.

Associated hazards related to thunderstorms are discussed further as individual hazards (tornado/windstorm and various kinds of flooding). Most thunderstorms produce thunder, lightning, and rain. Severe storms can also produce tornadoes, straight-line winds with microburst above 58 mph, hailstorms, and flooding. The National Weather Service (NWS) considers a thunderstorm severe if it produces hail at least 1-inch in diameter, wind 58 mph or higher, or tornadoes. Straight-line winds that exceed 60 mph are often mistaken for tornadoes.

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

Hailstorms are a product of a severe thunderstorm in which pellets or lumps of ice (of most concern when greater than 1 inch in diameter) fall with rain. Hail is produced in many strong thunderstorms by strong rising currents of air carrying water droplets to a height where freezing occurs, the ice particles grow in size until they are too heavy to be supported by the updraft and fall back to earth. Hail can be smaller than a pea or as large as a softball and can be very destructive to plants and crops. Pets and livestock are particularly vulnerable to hail. Table 3.17 outlines the different sizes of hail and Table 3.18 describes the categories used to classify hailstorms.

TABLE 3.17: HAILSTONE SIZE CODES

Size code	Maximum Diameter (mm)	Description
0	5-9	Pea
1	10-15	Mothball
2	16-20	Marble, grape
3	21-30	Walnut
4	31-40	Pigeon's egg, squash ball
5	41-50	Golf ball, pullet's egg
6	51-60	Hen's egg
7	61-75	Tennis ball, cricket ball
8	76-90	Large orange, soft ball
9	91-100	Grapefruit
10	>100	Melon

Source: The Tornado and Storm Research Organization

TABLE 3.18: TORRO HAILSTORM INTENSITY SCALE			
	Intensity Category	**Typical Hail Diameter (mm)***	**Typical Damage Impacts**
H0	Hard Hail	5	No damage
H1	Potentially Damaging	5-15	Slight general damage to plants, crops
H2	Significant	10-20	Significant damage to fruit, crops, vegetation
H3	Severe	20-30	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-40	Widespread glass damage, vehicle bodywork damage
H5	Destructive	30-50	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-60	Bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	50-75	Severe roof damage, risk of serious injuries
H8	Destructive	60-90	(Severest recorded in the British Isles) Severe damage to aircraft bodywork
H9	Super Hailstorms	75-100	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	>100	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Source: The Tornado and Storm Research Organization			

Historical Occurrences

Thunderstorms occur in the community on an annual basis. According to the National Climatic Data Center from 2001-2015 there were 110 Thunderstorm Wind events in Buchanan County on 51 separate days. During these events there was an associated $1.29 million worth of property damage and $45 thousand worth of crop damage. No deaths or injuries were recorded during this timeframe.

From 1996-2015 the National Climatic Data Center (NCDC) reported that there were four recorded lightning strikes. These lightning strikes had an estimated $26,000 dollars' worth of property damage associated with them. Due to the amount of thunderstorm activity that normally occurs in the area, it is safe to assume that much of the lightning that occurs in the area is underreported.

According to NOAA data, there were 68 hail events from 2006-2015. These 68 events occurred on 27 days in this time period. As Table 3.19 shows, the county experienced 20 hail events, occurring on 9 dates, in the past five years.

Probability

The probability of a Thunderstorm/Lightning/Hail occurring in Buchanan County and having an impact on the planning area in the next year is somewhere between Likely and Highly Likely (more than 20 percent likely to occur). This conclusion is based on the historical occurrences of thunderstorms in the area and the fact that the climate in the upper Midwest is very conducive to the development of thunderstorms. The climate in the area is of humid continental variety and therefore there is generally enough moisture to form clouds and rain, relatively warm and unstable air that can rise quickly, and fluctuating weather fronts that work to cause uplift in air masses.

Based on historical data from 2006-2015, the county can expect to experience approximately 3-4 Thunderstorm Wind Events per year.

TABLE 3.19: COUNTY HAIL EVENTS, 2011-2015

Location	Date	Magnitude	Location	Date	Magnitude
AURORA	5/24/2011	1.00 in.	AURORA	6/21/2013	0.88 in.
JESUP	6/8/2011	1.00 in.	INDEPENDENCE	6/21/2013	1.75 in.
JESUP	6/8/2011	1.25 in.	OTTERVILLE	6/21/2013	1.00 in.
BRANDON	6/8/2011	1.00 in.	QUASQUETON	6/21/2013	0.88 in.
ROWLEY	6/8/2011	0.88 in.	FAIRBANK	4/12/2014	0.88 in.
JESUP	7/14/2012	0.75 in.	JESUP	4/12/2014	0.75 in.
ROWLEY	7/25/2012	0.75 in.	INDEPENDENCE ARPT	4/12/2014	0.75 in.
AURORA	4/29/2013	1.00 in.	INDEPENDENCE	4/12/2014	1.00 in.
AURORA	4/29/2013	1.50 in.	JESUP	9/8/2014	0.75 in.
AURORA	4/29/2013	1.00 in.	INDEPENDENCE	5/7/2015	0.75 in.

Source: NOAA, data retrieved 9/8/16

Despite only four lighting strikes being reported by NOAA in a 20 year period, lighting strikes occur quite often. Data from NOAA, compiled using National Lighting Detection Network, found that the state of Iowa averaged 645,685 cloud-to-ground lighting flashes between 1997 and 2011; equating to an average of 11.4 flashes per square mile[1]. Therefore the planning area, which is approximately 580 square miles, should anticipate 6,612 flashes on an annual basis.

Based on historical data of Hail events in the county, as discussed in the previous section, the probability of a Hail event is highly likely. Buchanan County can expect to experience that hail events will two days per year – with multiple events occurring on the same date.

Magnitude/Severity

It is anticipated that a severe thunderstorm could impact 50% of the population (10,479 citizens) in the entire planning area. Because of the elements involved with a thunderstorm (lightning, high wind, heavy rain, possible funnel clouds, and hail), those vulnerable are very similar to what was identified in the Tornado event analysis. Those individuals most at risk would include those people outdoors, in mobile homes, in low lying areas susceptible to flash flooding, as well as disadvantage persons.

Based on the Iowa 2010 HMP, Buchanan County's estimated annual loss due to Thunderstorms and Lightning is $227,655.73.

[1] http://www.lightningsafety.noaa.gov/stats/Table-Flashes_by_State_1997-2011.pdf

Despite thunderstorms relative small size – typically 15 miles in diameter and last an average of 20 to 30 minutes – they can threaten the entire planning area. The severity of the storm would likely determine the extent of any associated damage. Although the developments in technology have been very beneficial in reducing the long-term negative effects of thunderstorms, certain dangers still exist. The maximum extent of a severe thunderstorm would be realized if it was accompanied by power outages and limitation of travel due to debris in the roadways. In addition lightning damage to communication centers could result in the reduction of adequate medical response time.

Thunderstorms affect relatively small areas when compared to winter storms. The typical thunderstorm is 15 miles in diameter and lasts an average of 20 to 30 minutes. Of the estimated 100,000 thunderstorms that occur each year in the United States, only about 10% are classified as severe. Despite their relatively small size, thunderstorms are large enough to impact the entire community. The severity of the storm would likely determine the extent of any associated damage.

Thunderstorms may occur singly, in clusters, or in lines. Some of the most severe weather occurs when a single thunderstorm affects one location for an extended time. Lightning is a major threat during a thunderstorm. It is the lightning that produces thunder in a thunderstorm. Lightning is very unpredictable, which increases the risk to individuals and property.

In the United States, 75 to 100 people are killed each year by lightning, although most lightning victims do survive. Persons struck by lightning often report a variety of long-term, debilitating symptoms, including memory loss, attention deficits, sleep disorders, numbness, dizziness, stiffness in joints, irritability, fatigue, weakness, muscle spasms, depression, and an inability to sit for long periods. It is a myth that lightning never strikes the same place twice. In fact, lightning will strike several times in the same place in the course of one discharge.

The most severe impacts with a thunderstorm would be realized when cascading events occurred as a result of the storm. For example, multiple lightning strikes may result in death, fire, destruction of infrastructure, loss of power, communications failure, etc.

The severity of a hailstorm depends on the size and amount of hail. Hail several inches in diameter can cause severe damage to an urbanized area (broken windows, down trees and power lines, and automobile damage). Hail as small as 0.5 inch diameter can cause damage to crops and other plants.

Warning Time

The National Weather Service has developed effective weather advisories, which are promptly and widely distributed. Radio, TV, and Weather Alert Radios provide the most immediate means to do this. The county also recently switched to the new State of Iowa's Code Red emergency notification system. Accurate information is made available to public officials and the public in advance of the storm.

Again, weather prediction capabilities have made significant improvements in the past few years. There are several notifications made by the National Weather Service. These include severe thunderstorm watch, severe thunderstorm warning, tornado watch, tornado warning, flash flood watch, and flash flood warning. Despite these advancements in technology, the potential for a storm to form quickly and without warning still exists. Therefore the Committee staggered the

score for the speed of onset. This allowed for the possibility if minimal or no warning time, but also acknowledged that there is generally some warning time before an event occurs.

Transportation Incident

Definition and Description

This hazard includes all modes of transportation - air, highway, railway, and waterway. Thus, transportation includes any incident involving a military, commercial, or private aircraft; single-multi-vehicle incident which requires responses exceeding normal day-to-day capabilities; derailment or a train accident which directly threatens life or property, or which adversely impacts a community's capabilities to provide emergency services; and an event involving any vessel that threatens life or which adversely impacts a community's capability to provide emergency services.

Air

An air transportation incident may involve a military, commercial, or private aircraft. Airplanes, helicopters, and other modes of air transportation are used to transport passengers for business and recreation as well as thousands of tons of cargo. A variety of circumstances can result in an air transportation incident including mechanical failure, pilot error, weather conditions, or an on-board fire could all lead to an incident at or near the airport. Air transportation incidents can occur in remote unpopulated areas, residential areas, or downtown business districts, incidents involving military, commercial, or private locations. An aircraft incident can also occur while the aircraft is on the ground.

The sole airport in the county is Independence Municipal Airport (KIIB). The airport is located approximately three miles southwest of Independence's central business district on the west side of the city and is accessible via US-20 and Iowa Highway 150. The facility is classified as an enhanced service airport offering a 5,500 foot long, 100 foot wide paved concrete runway, 31 hangar parking spaces, seven apron aircraft tie-down locations, rotating beacon, AWOS weather reporting, lighted wind indicator, runway snow removal, and 24 hours jet fueling. In 2010, there were 28 aircraft based at the airport generating approximately 7,000 annual operations. These figures are projected to increase to 36 aircraft and 9,000 annual operations by 2030.

TABLE 3.20: BUCHANAN COUNTY AUTOMOTIVE CRASH HISTORY, 2007-2011

Year	Number of Crashes	Total Fatalities	Total Injuries
2007	178	3	79
2008	219	5	123
2009	208	2	8
2010	224	1	89
2011	218	1	86
5-year Total	**1,047**	**12**	**464**
Annual Average	**209.4**	**2.4**	**92.8**

Source: Iowa Department of Transportation, retrieved 9/14/2016

Roads and Bridges

A highway transportation incident can be single or multi-vehicle requiring responses exceeding normal day-to-day capabilities. An extensive surface transportation network exists in Iowa; local residents, travelers, business, and industry rely on this network on a daily basis. Thousands of trips a day are made on the streets, roads, highways, and interstates of the county. If the designed capacity of the roadway is exceeded, the potential for a major highway incident increases. 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 week. Incidents involving buses and other high-occupancy vehicles could

trigger a response that exceeds the normal day-to-day capabilities of response agencies.

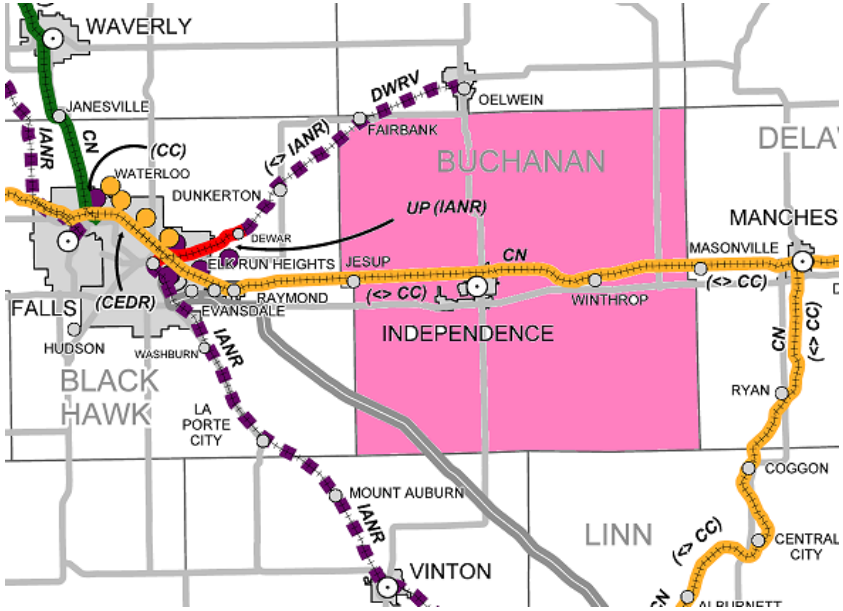
Two major highways serve Buchanan County: State Highway 151, which is a north/west route, and U.S. Highway 20, which is an east/west route. Old U.S. Highway 20, now Highway 939, also travels through the county and has now evolved into a secondary route due to the newly constructed U.S. Highway 20.

Rail

As shown in Figure 3.2, there are two rail lines that pass through the county. The Chicago Central and Pacific Railroad is a Class II railroad and passes through the county on an east/west route and travels through the cities of Winthrop, Independence, and Jesup. The Chicago Central and Pacific Railroad operate a total of 558 miles of track in Iowa and employ 226 persons in Iowa. The main products transported on this railroad include coal, farm products, food products, chemicals, and miscellaneous mixed shipments.

The Transco Railway Company, located in Oelwein, Iowa, also owns a small rail spur that passes through the extreme northwestern portion of the county. This rail spur is used to transport items from one company site to another.

FIGURE 3.2: RAIL ROUTES THROUGH BUCHANAN COUNTY

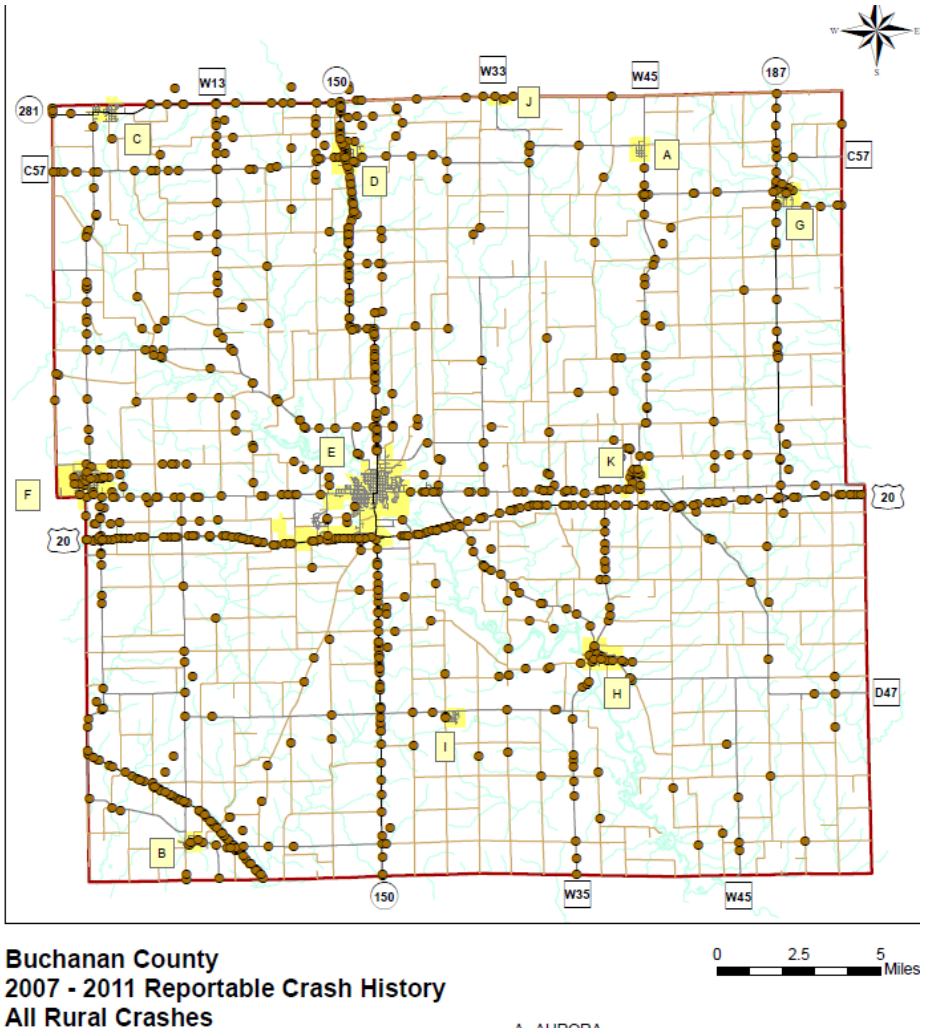


Courtesy of the Iowa Department of Transportation
http://www.iowadot.gov/iowarail/railroads/maps/maphome.htm

Waterways

A waterway incident is an accident involving any water vessel that threatens life, property, or adversely affects a community's capability to provide emergency services. Waterway incidents primarily involve pleasure craft on rivers and lakes. In the event of an incident involving a water vessel, the greatest threat would be drowning, fuel spillage, and/or property damage. Water rescue events are largely handled by first responding agencies. Waterway incidents may also include events in which a person, persons, or object falls through the ice on partially frozen bodies of water.

FIGURE 3.3: BUCHANAN COUNTY CRASH HISTORY



Courtesy of the Iowa Department of Transportation
www.iowadot.gov/crashanalysis/data

Historical Occurrence

Traffic accidents are fairly common occurrences in the county. According to the Iowa Department of Transportation[2], rural Buchanan County experience 1,047 reported vehicular crashes from 2007 to 2011

According to The Des Moines Register's Data Central, there were four train-vehicle accidents, resulting in two injuries, in Buchanan County over a ten year period from 2006 through 2015.

Probability

Based of historic crash data shown in Table 3.20, the County should expect several crashes each year, likely more than 200.

Magnitude / Severity

Due to the large volume of roadway and intersections located in the planning area, there is a chance of a traffic accident, especially with large farm equipment entering and leaving agricultural lands. Persons driving on major thoroughfares are more vulnerable to traffic accidents due to the increase number of drivers on these roads and the corresponding speed limits. However, motorists on the county's rural roadways are also vulnerable to traffic incidents with farm equipment and just the rural nature of the roadway.

Jurisdictions (Fairbank, Jesup, Winthrop, and Independence) in close proximity to local rail lines are more vulnerable to be harmed in the event of a train derailment. Furthermore, at locations where local roadways intersect with the railroad the potential for an accident is higher.

All residents of the planning area have the potential to be vulnerable to an air traffic event. Most at risk to air traffic events are those who live or work in flight paths originating from the Independence Municipal Airport

[2] Iowa Department of Transportation, Iowa Crash Data for Buchanan County, http://www.iowadot.gov/crashanalysis/data/county/bremer.htm, Retrieved September 2015.

or those near farms that use crop duster airplanes.

The exact areas that will be affected by a traffic event will likely be small, concentrated, and have a minimal impact on the residents as a whole, unless a large or extremely dangerous hazardous material spill should result from the event. The same can be said for a rail disaster. An air disaster may impact a larger portion of the county, depending on where the impact occurred and what type of aircraft actually wrecked. But for the most part, due to the planning area's rural environment, impact would be minimal.

Warning Time
Transportation incidents occur within seconds; therefore, there is no time to warn those in the pathway of the harmful effects.

Duration
The duration of time a transportation incident would impact the planning area is dependent upon the type and severity of the incident. For instance, a multiple-car incident could impact the surrounding community for a few hours, whereas a derailment blocking numerous crossing could impact the immediate area for a few days.

Tornado/Windstorm

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

The tornado funnel is made visible by the dust sucked up and by condensation of water droplets in the center of the funnel. The rating scale used to rate tornado intensity is the Fujita Scale. The Fajita Scale categorizes tornado severity based on observed damage. The six-step scales ranges from F0 (light damage) to F5 (incredible damage). As of February 2007, the National Weather Service uses the Enhanced Fujita Scale (EF Scale). This new scale ranges from EF0-EF5 and is shown in Table 3.21.

Windstorms are extreme winds associated with severe winter storms, severe thunderstorms, downbursts, and very steep pressure gradients. Windstorms, other than tornados, are experienced in all regions of the United States. It is difficult to separate the various wind components that cause damage from other wind-related natural events that often occur with or generate windstorms. Although Iowa does not experience direct impacts from hurricanes, the state is no stranger to strong, damaging winds. Unlike tornadoes, windstorms may have a destructive path that is miles wide and duration of the event could range from hours to days. These events can produce straight line winds in excess of 64 knots (73 mph) causing power outages, property damage, impaired visibility, and crop damage. It is often difficult to separate windstorms and tornado damage when winds get above 64 knots

TABLE 3.21: FUJITA SCALES FOR TORNADOES

Fujita Scale		Enhanced Fujita Scale		Type of Tornado	Description of Damage
Scale	3-Second Gust Speed (mph)	Scale	3-Second Gust Speed (mph)		
F0	45-78	EF0	65-85	Gale	Some damage to chimneys, broken tree branches, push over shallow rooted trees, damage to sign boards
F1	79-117	EF1	86-109	Moderate	The lower limit is the beginning of hurricane wind speed, peel surface off roofs, mobile homes pushed off foundations or overturned, moving automobiles pushed off roads
F2	118-161	EF2	110-137	Significant	Considerable damage: roofs torn off frame homes, mobile homes demolished, boxcars pushed over, large trees snapped or uprooted, light object missiles generated
F3	162-209	EF3	138-167	Severe	Severe damage: roofs and some walls torn off well-constructed houses, trains overturned, most trees in forest uprooted, heavy cars lifted off ground and thrown
F4	210-261	EF4	168-199	Devastating	Devastating damage: well-constructed houses leveled, structure with weak foundation blown off some distance, cars thrown and large missiles generated
F5	262-317	EF5	200-234	Incredible	Incredible damage: strong frame houses lifted off foundations and carried considerable distance to disintegrate, automobile sized missiles fly through the air in excess of 100 yards, trees debarked, incredible phenomena will occur.

Source: NOAA

Historical Occurrence

The County of Buchanan has unfortunately had numerous tornado events that have directly impacted the planning area. Table 3.22 provides a list of these events.

From 1950 through 2016, there have been 38 recorded tornados in Buchanan County. This equates to an average to roughly one tornado every two years, or 5.75 tornados per decade.

The most notable of these events occurred in 2001 when a tornado passed directly over Aurora. This event resulted in some roof and tree damage in the community.

Windstorms occur in the planning area on an annual basis. High winds are often associated with thunderstorms, but can be produced during severe snow storms or tornados. According to the National Climatic Data Center, the Buchanan County has had 110 Thunderstorm Wind events, over the course of 51 days, from 1/1/2001-12/31/2015. Over this 15 year time frame, Windstorms have resulting in an estimated $1.29 million in property damage and $45,000 in crop damage.

More recently, from 1/1/2016-12/31/2015, the county has recorded 42 Thunderstorm Wind events over the course of 14 days. This equates to an average of 8.4 Thunderstorm Wind events over 2.8 days per year in the county.

Probability

There have been 38 recorded tornados in Buchanan County since 1950. That averages, roughly, to 5.75 tornados per decade. Because tornados are sporadic, there cannot be a reliable long-term prediction made as to when or if they may occur. However, if the tornado events hold to their average, it is highly likely that Buchanan County will experience 2-4 tornadoes over the next five years. The county can also expect to experience approximately eight Thunderstorm Wind events per year.

Vulnerability

Everyone is vulnerable to the powerful forces that accompany a tornado. Thus, the vulnerability of a tornado event in the planning area is critical. Buchanan County is

TABLE 3.22: HISTORIC TORNADO EVENTS IN BUCHANAN COUNTY

Date	Fujita Scale	Injuries	Est. Property Damage $	Est. Crop Damage $
7/1/1950	F2	0	0.00K	0.00K
4/30/1954	F2	0	0.00K	0.00K
4/16/1960	F3	0	250.00K	0.00K
5/14/1961	F1	0	25.00K	0.00K
5/7/1964	F3	0	250.00K	0.00K
4/30/1967	F1	0	0.00K	0.00K
5/18/1967	-	0	25.00K	0.00K
7/6/1982	F1	0	25.00K	0.00K
5/8/1988	F1	0	250.00K	0.00K
7/9/1988	F0	0	250.00K	0.00K
4/26/1989	F1	0	2.50K	0.00K
6/2/1990	F2	0	250.00K	0.00K
8/29/1990	F0	0	0.00K	0.00K
7/27/1995	F3	0	1.000M	330.00K
6/18/1998	F2	0	800.00K	0.00K
6/18/1998	F1	0	35.00K	0.00K
5/11/2000	F0	0	0.00K	0.00K
5/11/2000	F0	0	2.00K	0.00K
5/11/2000	F1	0	1.500M	0.00K
5/11/2000	F0	0	50.00K	0.00K
4/23/2001	F1	0	1.000M	0.00K
5/10/2001	F0	0	0.00K	0.00K
6/1/2001	F1	0	125.00K	0.00K
6/1/2001	F0	0	0.00K	0.00K
6/1/2001	F0	0	0.00K	0.00K
6/1/2001	F0	0	20.00K	0.00K
6/1/2001	F0	0	0.00K	0.00K
6/1/2001	F0	0	10.00K	0.00K
6/1/2001	F0	0	0.00K	0.00K
9/6/2001	F0	0	100.00K	0.00K
9/6/2001	F2	0	300.00K	0.00K
5/30/2004	F0	0	0.00K	3.00K
5/30/2004	F0	0	5.00K	2.00K
8/11/2005	F0	0	0.00K	10.00K
5/25/2008	EF3	0	1.000M	0.00K
5/25/2008	EF1	0	50.00K	0.00K
8/19/2009	EF1	0	75.00K	0.00K
6/16/2014	EF1	0	50.00K	0.00K
	Totals	9	7.449M	345.00K

Source: National Climatic Data Center; as of 8/26/2016

located in the area referred to as "Tornado Alley," the area of the United States in which tornadoes are most frequent. Thus, tornado damages range from minor damage (minor roof damage, broken glass in doors and windows) to total destruction. Injuries range from injuries that can be self-treated or treated at hospital and released to death. Depending upon a tornado's touch location, its duration on the ground, and the developed or built environment, in its path will determine the level of vulnerability. For instance, if a tornado touched down near an incorporated jurisdiction, such as Independence, with a high resident population, the vulnerability to human life and property is higher than in a rural, remote area of the planning area.

People living in mobile homes are particularly vulnerable to extreme winds, particularly if building codes do not cover mobile homes or manufactured homes. There are an estimated 488 mobile homes in the planning area. As stated on the FEMA website[3], mobile homes are highly vulnerable to tornadoes. Even mobile homes that are tied down, offer little protection from tornadoes. The primary reason for the increased popularity of mobile homes is affordability. Although HUD regulations and local building codes have increased the safety components of these types of houses significantly in recent history, this affordability has often been accompanied with a reduced level of safety. Based on national data on circumstance of tornado fatalities between 1985 and 1997, it was found that 38% of fatalities were occupants of mobile homes, 27% were in permanent homes, 11% in vehicles, 9% outdoors (open), 4% in businesses, 4% in structures with long-span roofs, and 2% in schools. These data highlight the high exposure of occupants of mobile and manufactured homes (*AR State Hazard Mitigation Plan, 1999*).

In addition, persons living in some multi-family housing units may also be at risk, due to the lack of access to a proper tornado shelter. There are no FEMA designated tornado shelters or safe rooms in the planning area. A safe room is currently underway in Independence. In 2014 ACS Five-Year Estimate, there were 602 multi-family housing units in apartment buildings housing anywhere from 3 to 20 or more units in the planning area.

Older homes in deteriorating condition are also vulnerable. According to the 2014 ACS, there are 8,298 housing units located in the planning area. Thirty-one percent (31%) were building prior to 1939, which means they are almost 75 years old. Although conducted in the early 2000s and late 1990s, Condition of Housing Surveys for the participating jurisdictions estimated anywhere from 5-25% of their housing units were in deteriorated condition.

Nursing homes or skilled living centers are also highly vulnerable to tornadoes. These facilities are designed for caring for the elderly population, majority of which use wheelchairs or other assistance devices, limiting mobility. Also, the majority of nursing homes are constructed as a single-level building with or without basements. Therefore, additional attention needs to be taken to ensure the safety of the residents and employees before, during, and after a tornado event. The planning area currently has a nursing home or assisted living facilities, with a total of 156 beds, in Independence and Fairbank.

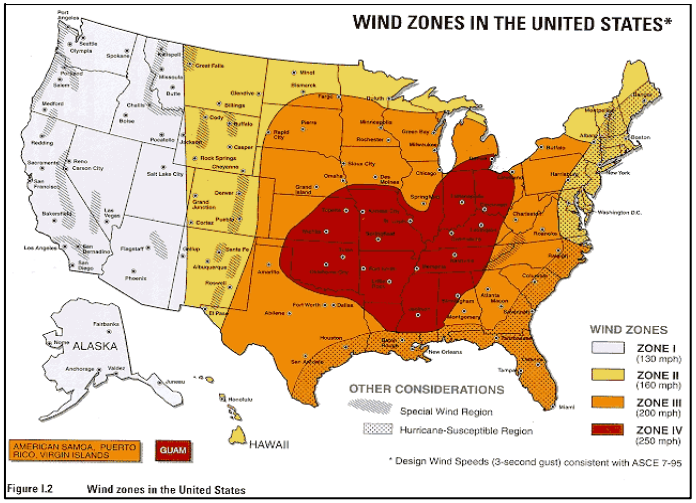
[3] Federal Emergency Management Agency (FEMA), http://www.fema.gov/areyouready/tornadoes.shtm

Magnitude/Severity

Tornados consist of strong, often destructive, winds. The winds in the strongest tornados are the fastest winds experienced anywhere on Earth, with rotation velocities up to 300 mph. Generally, the damage associated with a tornado is greatest within several hundred feet of the column. The maximum extent of a tornado occurs when a tornado stays on the ground for an extended period of time. The risk becomes even greater when the tornado event is accompanied by hail, heavy rain, and lightning. Given this information and historical information, the Committee determined the maximum extent in the planning area to be critical to catastrophic.

A tornado event will impact each jurisdiction differently depending on the severity of the tornado and its path. Lower severity tornadoes, such as EF0 and EF1, would not cause major or widespread damage. It is unlikely any structure would suffer a total loss. Therefore, it is difficult to predict the estimated dollar amount loss to these structures. All of the cities within the jurisdiction have trees and elevated power lines in the residential areas. Lower severity tornadoes could down trees and power lines, which could then fall on homes, cars or even people. We know that tornadoes higher on the Fujita Scale can completely devastate any structures or vegetation in its path. The cities within the planning area are small and a direct hit from an EF5 would likely impact, if not destroy, every structure within the city. Although the probability of such an event is low, if it were to occur, the structures in the cities tend to be older and are less likely to survive an EF5 than a newer structure. However, as was evidenced in the May 25, 2008 Parkersburg tornado, old and new structures were completely destroyed. EF0 and EF1 tornadoes will probably cause more damage to power lines and trees, where most structure damage will be collateral from downed trees and power lines. EF2 and EF3 tornadoes will impact structures, mainly causing severe roof and siding damage; total losses are not expected. EF4 and EF5 tornadoes have enough intensity to level a structure and create a total loss. Our research estimates the maximum percent damage to an impacted structure at each tornado intensity: EF0 and EF1 – 25%; EF2 and EF3 – 50%; and EF4 and EF5 – 100%.

FIGURE 3.3: WIND ZONES



The severity of a tornado event would likely be determined by five primary components: 1) the size of the tornado, with an F5 posing the most severe risk to the community; 2) the time the tornado stayed in or around the city; 3) the time of day would be a major factor; 4) the density of the population at the point of impact; and 5) the area of the community that was directly impacted (i.e. a mobile home park or an undeveloped portion of the community).

Historically, there have been nine injuries and zero deaths reported as a result of tornados throughout the county since 1950. While these injuries are bad enough, the damage associated with a tornado could potentially be dramatically greater than what has been historically experienced in Buchanan County.

A Tornado Scenario Map was developed for each of the eleven cities. These Maps are located in the plan as Map 4b through 4w.

Warning Time

Although the advancement in radar and forecasting has improved and continues to improve it cannot predict when and where a tornado may strike. They can however inform a community of when the conditions are right for an event to occur. In fact, it is estimated that approximately 95 percent of all tornados occur in areas where a tornado watch has been issued.

Nevertheless, the five percent of the time that they do not accurately predict, or someone is simply uninformed can result in an almost immediate onset, with little or no warning time.

Duration

Duration of the actual event of a tornado or windstorm can range from a few minutes to several hours. However considering the resulting damage, and the threat this damage poses, some jurisdictions deemed the duration could last up to a week or longer in the case of major infrastructure damage.

VULNERABILITY ASSESSMENT

Once hazards were identified and profiled, a vulnerability assessment was conducted. The vulnerability assessment identifies how people, properties, and structures will be damaged by the event. If the hazard can harm people or damage their homes and other structures, they are vulnerable. Finding the weak points in the system, for example, identifying building types that are vulnerable to damage and anticipating the loss in high risk areas, will help the planning area decide what mitigation measure should be undertaken and how to implement the activities they select.

Vulnerability Analysis Methodology

A Vulnerability Analysis (VA) evaluates risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. The VA provides in-depth knowledge of all hazards, their associated risks, and vulnerabilities that affect the entire planning area.

The VA requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Six criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions. The vulnerability discussion for each hazard can be found in the Hazard Profiles, while additional information is below.

Vulnerability –Critical Facilities

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). Due to the county's historical occurrences of tornadoes, this hazard was added to the assessment. The following discussion only considers the assets in the unincorporated areas of the county. An assessment was conducted for each municipality, and can be found in their respective appendix.

Identifying the location of critical facilities and designated shelters (Table 3.23) in the planning are is important in order to assess their vulnerability to hazards, in addition to, them being important to the operation of a community and the economic sector. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. Attachments 5A – 5L illustrate the location of identified critical facilities throughout the county and within the municipalities. As shown on the attached maps, the rural county area has little critical facilities besides roadways and bridges. As shown, many of the county's critical facilities (minus bridges and roadways) and designated shelters are located within municipalities.

As discussed in Section 2, Buchanan County's population is expected to remain steady for the next ten years.

TABLE 3.23: DESIGNATED SHELTERS IN PLANNING AREA

Aurora	Independence, continued	Jesup, continued
St. Paul Lutheran Church	Super 8 Motel	Jesup School Outside Classroom
Methodist Church	Fair Grounds Public Building	City Hall/Community Center
American Legion Post	Library – basement	**Lamont**
Fire Station	Living Waters	American Legion Hall
Brandon	Country Inn & Suites	Lamont Scout House
Community Center	Starlight Theatre	Lamont Kids Center
Fire Station	St. Johns School Old Gym	Lamont Community Room/Fire Station
Methodist Church	Presbyterian Church	Viafield Basement
Fairbank	Episcopal Church	Methodist Church
Triumph School (Amish)	South Baptist Church	**Quasqueton**
Prairie Grove School (Amish)	Hope Wesleyan Church	City Hall
Center School (Amish)	Lutheran Church	Church
Wapsie Community School	St. John School New Gym	Shower House
Immaculate Conception School and Church	Kidsville Pre School	Fire Station
United Methodist Church	Mental Health Institute	Old School
First Baptist Church	Heartland Acres (Event Center)	**Rowley**
St. John Lutheran Church	Falcon Civic Center	United Methodist Church
American Legion Post	Senior Center	Fire Station
Hazleton	**Jesup**	Presbyterian Church
City Hall	Jesup School	Community Center
Fire Station	St. Anthanasius School/Gym	**Stanley**
Tornado Shelter in Mobile Home Park	St. Anthanasius Church	Fire Station
Independence	Methodist Church	Union Church
Rivers Edge	Grace Lutheran Church	**Winthrop**
Methodist Church	American Legion Post	East Buchanan School
Jr./Sr. High School	American Lutheran Church	Fire Station
First Baptist Church	American Lutheran Church Hall	St. Patrick's Meeting Hall
West Elementary School	First Baptist Church	Fellowship Meeting Hall
Four Square Church	Presbyterian Church	St. Patrick's Church
Rush Park Motel	Masonic Temple	City Hall

Source: Communities

River and Flash Flooding

A facility vulnerable to flooding is normally low, since these structures are not often constructed within the 100-year floodplain. According to the information provided, bridges and roadways would be impacted by flooding. This disruption in the transportation infrastructure would create a longer time period to receive and provide services and supplies to an area if a bridge was washed away due to flooding.

TABLE 3.24: BUCHANAN COUNTY UNINCORPORATED AREA 100-YEAR FLOODPLAIN PROPERTIES

Number of Parcels	5,754
Land Value	$320,861,371
Building Value	$16,384,168
Dwelling Value	$109,073,733
Total Value	**$446,289,272**

Table 3.24 shows the value of land, buildings, and dwelling values of property of unincorporated Buchanan County that are in the 1.0% (100-year) floodplain. According to the data provided by Buchanan County Assessor's Office analyzed by INRCOG, there are 5,754 parcels of land with a total value, including structures, of $446,289,272 located within the 100-year floodplain. See Map 3A for a map of the county's floodplain and Map 3B for a map of parcels impacted by the floodplain.

Table 3.25 shows the total value of assets in the incorporated areas of the county within the 100-year floodplain. As shown, the total estimated value of property in incorporated areas of the county within the 100-year floodplain is $60,152,743. Floodplain data for specific communities can be found in their respective appendixes.

TABLE 3.25: BUCHANAN COUNTY INCORPORATED AREAS 100-YEAR FLOODPLAIN PROPERTIES

Number of Parcels	919
Land Value	$11,251,131
Building Value	$11,101,875
Dwelling Value	$37,799,737
Total Value	**$60,152,743**

Source: INRCOG

Tornado/Wind Storms

Nursing homes or skilled living centers are also highly vulnerable to tornadoes. These facilities are designed for caring for the elderly population, majority of which use wheelchairs or other assistance devices, limiting mobility. Also, the majority of nursing homes are constructed as a single-level building with or without basements. Therefore, additional attention needs to be taken to ensure the safety of the residents and employees before, during, and after a tornado event. The planning area currently has a nursing home or assisted living facilities, with a total of 156 beds, in Independence and Fairbank. Another group quarter potentially vulnerable is the State Mental Hospital in Independence.

The county owned Buchanan County Health Center (BCHC) is located in Independence, providing service for the entire county. The BCHC has 25 acute care beds, 39 long-term care beds, an independent living apartment complex and Emergency Department that serves over 5,600 patients annually[4]. The hospital has more than 225 full and part-time employees.

[4] http://www.iahospitaljobs.com/hospital-profiles/view?id=115

Vulnerability – Social Assets

The social vulnerability assessment identified how the hazards affect the population of Buchanan County and it is assumed that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population.

The "at-risk" population must be identified and targeted in successful mitigation efforts. Table 3.26 presents an overview of the at-risk population in Buchanan County according to information retrieved from the 2014 U.S. Census and American Community Survey (ACS) 5-year estimates.

Elderly populations can be more susceptible to some hazard events. An estimated 15.8 percent (3,319) of residents are 65 years or older. Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young persons often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, 22.2 percent of the county's total population under the age of 18.

According to the ACS 5-year estimate there are 2,222 persons residing in the county with a disability.

In addition, persons living in mobile homes, also known as manufactured housing may also be at risk from tornadoes or high winds. At the time of the 2010 Census, there were 488 mobile homes in the county. Based on the county wide average persons per household (2.53), there is an estimated 1,235 persons living in these housing units.

Of the estimated 488 mobile homes in the county, 165 are in the unincorporated area. Table 3.27 displays the estimated number of mobile homes in each community based on the 2010-2014 ACS 5-year Average.

TABLE 3.26: "AT-RISK" POPULATION FOR PLANNING AREA

Total Population, 2014	20,947
Elderly (65 yrs. and older), 2014	3,319
Youth (14 yrs. and under), 2010	4,644
Householder Living Alone, 2010	2,091
Population Living in Poverty, 2014	28%
Non-English Speaking Population (speak English less than 'very well')	206
Population in Multi-Family Structures, 3+ units, 2014 (602 units)	1,523
Population in Mobile Homes, 2014* (488 units)	1,235
Group Quarters Population, 2010	343
Persons with Disabilities, 2014	2,222

*Source: 2010 U.S. Census, 2014 American Community Survey 5-Year Estimates;*Based on total number of units multiplied by the 2010 U.S. Census average household size of 2.53 persons*

The primary reason for the increased popularity of mobile and manufactured homes is affordability. Although HUD regulations and local building codes have increased the safety components of these types of houses significantly in recent history, this affordability has often been accompanied with a reduced level of safety. Based on national data on circumstance of tornado fatalities between 1985 and 1997, it was found that 38% of fatalities were occupants of mobile or manufactured homes, 27% were in permanent homes, 11% in vehicles, 9% outdoors (open), 4% in businesses, 4% in structures with long-span roofs, and 2% in schools. These data highlight the high exposure of occupants of mobile and manufactured homes (*AR State Hazard Mitigation Plan, 1999.*

TABLE 3.27: NUMBER OF MOBILE HOMES BY JURISDICTION

Aurora	12
Brandon	10
Fairbank	47
Hazleton	46
Independence	110
Jesup	50
Lamont	4
Quasqueton	26
Rowley	4
Winthrop	14
Buchanan Co. (Unincorp.)	165
Total	**488**

Source: 2010-2014 ACS 5-year Average

River and Flash Flooding

Portions of Buchanan County are highly vulnerable to floods, especially Wapsipinicon River, which flows diagonally through the county from the northwest to the southeast. . Flooding puts the entire population at some level of risk, whether through the flooding of their homes, businesses, or places of employment, or the road, sewer, and water infrastructure that serve them daily. High floodwaters can devastate homeowners with property damage, property loss, and extensive, time-consuming cleanup. Secondary effects caused by flooding can add to the property damage. Power loss can leave citizens without heat or air conditioning for extended periods of time. The transportation infrastructure of the community can be impacted by flooding events, which can endanger citizens attempting to travel or evacuate the area, as well as leave those remaining without goods and services.

Buchanan County's flood rate insurance maps (FIRM) were July 16, 2008. The City of Independence more recently updated maps that went into effect on June 16, 2015. Combined, the new floodplain maps have approximately 6,673 parcels of land located within the 100-year floodplain in the rural, unincorporated area of the county.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a catastrophic disaster.

The valuations for Buchanan County are available from the County Assessor's office. It should be noted however that these dollar amounts do not include gas and electric utility valuations or infrastructure. In addition, some tax exempt properties are not included in the valuation. These values should be considered preliminary.

Table 3.28 lists the values of structures in Buchanan County for the unincorporated area, the combined totals of the incorporated areas, and the total unincorporated and incorporated areas combined. This data, and data for each city, was considered in the vulnerability discussion in each of the Hazard Profiles

TABLE 3.28: VALUE BY STRUCTURE TYPE IN BUCHANAN COUNTY

Type of Structure	Incorporated Areas			Unincorporated Area			Total		
	Number of Structures	Value of Structures ($)	Land Value ($)	Number of Structures	Value of Structures ($)	Land Value ($)	Number of Structures	Value of Structures ($)	Land Value ($)
Residential	3,711	285,799,400	49,670,470	2,387	251,406,910	36,599,550	6,098	537,206,310	86,270,020
Commercial	853	51,829,102	6,535,882	198	10,315,510	1,500,112	1,051	62,144,612	8,035,994
Industrial	32	6,194,490	544,580	32	43,398,750	3,276,760	64	49,593,240	3,821,340
Agriculture	NA	413,010	9,029,100	NA	42,936,180	729,276,917	NA	43,349,190	738,306,017
Total	**4,596**	**$344,236,002**	**$65,780,032**	**2,617**	**$348,057,350**	**$770,653,339**	**7,213**	**$692,293,352**	**$836,433,371**

Source: Buchanan County Assessor; Values as of 10/14/2014; does not include exempt properties, utilities, or infrastructure values. Results should be considered preliminary as an entire assessment of the planning area has not been completed. Residential include residential dwellings on agricultural realty but does not include the land value of the residential agricultural realty.

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development.

National Flood Insurance and Repetitive Loss Properties

Buchanan County and nine (of the eleven) cities participate in the National Flood Insurance Program (NFIP). Table 3.29 shows which communities participate in NFIP and details to the extent of their participation. As of February 2, 2017 there were 222 NFIP policies in place in the county. As stated in the County's previous MJ-HMP, there were 207 NFIP policies in place in the county in 2009.

TABLE 3.29: NFIP STATISTICS IN BUCHANAN COUNTY

Community	Participates in NFIP?	CID #	# of NFIP Policies	NFIP Insurance in Force ($)
Aurora	Yes	190698	-	-
Brandon	Yes	190328	1	$72,100
Fairbank	Yes	190329	2	$280,900
Hazleton	Yes	190329	0	-
Independence	Yes	190031	135	$16,424,000
Jesup	Yes	190599	0	-
Lamont	Yes	190331	11	$1,396,300
Quasqueton	Yes	190332	5	$550,600
Rowley	No SFHA*	190798	-	-
Stanley	No	190333	-	-
Winthrop	No	190690	-	-
Buchanan County (Unincorporated)	Yes	190848	68	$9,025,000
TOTAL	**-**	**-**	**222**	**$27,748,900**

*Source: Federal Emergency Management Agency (FEMA); NFIP Statistics as of 02/02/2017; *No Special Flood Hazard Area*

The cities of Stanley and Winthrop do not participate in NFIP. Both communities have been mapped and do have small portions within the 100-year floodplain. However, these areas do not contain residential developments.

River flooding is the most common cause of flooding and repetitive loss properties in Buchanan County. FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. Table 3.30 illustrates which jurisdictions in Buchanan County have repetitive loss properties. These numbers do not include previous repetitive loss properties that have been mitigated. According to FEMA's data, there are 30 repetitive loss properties in Buchanan County. As of 11/30/2014, only Independence, Lamont, Quasqueton, and unincorporated Buchanan County have active repetitive loss properties. The City of Independence has 21 of the 30 properties.

TABLE 3.30: BUCHANAN COUNTY REPETITIVE LOSS PROPERTIES						
Community	**Total number of RL Buildings**	**RL Buildings Insured**	**Total number of RL Instances**	**RL Instances Insured**	**Total RL Losses($)**	**RL Losses Insured ($)**
Aurora	-	-	-	-	-	-
Brandon	-	-	-	-	-	-
Fairbank	-	-	-	-	-	-
Hazleton	-	-	-	-	-	-
Independence	21	16	64	53	$621,925.35	$506,991.81
Jesup	-	-	-	-	-	-
Lamont	1	0	2	0	$14,557.99	$0.00
Quasqueton	1	1	2	2	$25,370.82	$25,370.82
Rowley	-	-	-	-	-	-
Stanley	-	-	-	-	-	-
Winthrop	-	-	-	-	-	-
Buchanan County (Unincorporated)	7	3	19	9	$199,174.99	$48,577.01
TOTAL	**30**	**20**	**87**	**64**	**$861,029.15**	**$580,939.64**

Source: Iowa Department of Natural Resources; Data does not include properties that have been mitigate; RL = Repetitive Loss; Data as of 11/30/2014

Buchanan County HMP attempts to reduce loss by identifying potential natural hazards. As a result of many natural and manmade hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs.

A majority of Buchanan County's FIRMs (Flood Insurance Rate Map) were updated in July 2008. In June 2015, the City of Independence's, and parts of the surrounding unincorporated area, FIRM maps were updated. These 2014 maps included, in addition to 100-year and 500-year floodplains, floodway areas.

A Floodway is a channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Communities must regulate development in these floodways to ensure that there are no increases in upstream flood elevations.

A 1.0 percent annual flood event (100-year flood) referrers to areas that have a 1 percent change of being equaled or exceeded in any given year.

A 0.2 percent annual flood event (500-year flood) referrers to areas that have a 0.2 percent change of being equaled or exceeded in any given year

Table 3.31 displays the values of properties in the Floodway, 100-Year and 500-Year floodplains.

TABLE 3.31: ESTIMATED POTENTIAL PROPERTY LOSSES RESULTING FROM FLOODING IN BUCHANAN COUNTY

	# OF PARCELS	LAND VALUE	BUILDING VALUE	DWELLING VALUE	TOTAL VALUE	PERCENT OF AREA AFFECTED
Incorporated Floodway	230	$2,899,604	$1,260,300	$9,933,504	$14,093,408	2.29%
Incorporated Area 100-Year Floodplain	919	$11,251,131	$11,101,875	$37,799,737	$60,152,743	9.76%
Incorporated Area 500-Year Floodplain	376	$3,921,656	$4,341,585	$25,151,204	$33,414,445	5.42%
Incorporated Area Total	**1,525**	**$18,072,391**	**$16,703,760**	**$72,884,445**	**$107,660,596**	**17.47%**
Unincorporated Floodway	31	$560,918	$35,630	$3,857,602	$4,454,150	0.36%
Unincorporated Area 100-Year Floodplain	5754	$320,861,371	$16,384,168	$109,043,733	$446,289,272	35.93%
Unincorporated Area 500-Year Floodplain	17	$270,305	$17,320	$1,276,013	$1,563,638	0.13%
Unincorporated Area Total	**5,802**	**$321,692,594**	**$16,437,118**	**$114,177,348**	**$452,307,060**	**36.41%**
Total Floodway	261	$3,460,522	$1,295,930	$13,791,106	$18,547,558	2.65%
Total Area in 100-Year Floodplain	6,673	$332,112,502	$27,486,043	$146,843,470	$506,442,015	45.69%
Total Area in 500-Year Floodplain	393	$4,191,961	$4,358,905	$26,427,217	$34,978,083	5.55%
Total County Area	**7,327**	**$339,764,985**	**$33,140,878**	**$187,061,793**	**$559,967,656**	**53.89%**

Parcel value information current as of 10/10/2016, source is the Buchanan County Assessor's Office; FEMA's Digital DFIRM maps current as of 10/10/2016; Incorporated boundaries current as of 6/27/2016; For actual determination if a location is within the floodplain contact your local floodplain administrator.

SECTION 4 – MITIGATION STRATEGY

HAZARD MITIGATION PLAN GOALS FOR PLANNING AREA

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.

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.

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.

Broad-based goals were developed to address a multitude of hazards and encompass a variety of mitigation activities. The overall multi-jurisdictional hazard mitigation plan goals identified are as follows:

- Minimize to the greatest possible extent the number of injuries and/or loss of life associated with all identified hazards.
- Reduce or eliminate property damage due to the occurrence of disasters.
- Identify ways that response operations, in the event of a disaster, can be improved.
- Return the community to either pre-disaster or improved conditions in a timely manner in the wake of a disaster.
- Develop strategies that can be used to reduce the community's overall risk to the negative effects of natural, technological, and man-made disasters.
- Reconvene the planning committee on an annual basis to review the plan document, check for compliance with the plan goals, and track progress in achieving the mitigation strategies.
- Maintain the Multi-Jurisdictional format for future plan updates.

CURRENT HAZARD MITIGATION ACTIONS

Mitigation actions are grouped into six broad categories: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects. Detailed information for each incorporated jurisdictions can be found in their respective appendix.

Prevention Mitigation Actions

Table 4.1 lists the planning and regulatory documents for the planning area.

TABLE 4.1: PLANNING DOCUMENTS AND REGULATIONS FOR PLANNING AREA

Community	Hazard Mitigation Plan	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
City of Aurora	Yes	No	No	Restricted Residential	No	Yes	No	No	
City of Brandon	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes
City of Hazleton	Yes	Yes	No	Yes	No	No	No	No	
City of Fairbank	Yes	No	No	No	No	Yes	No	No	
City of Independence	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City of Jesup	Yes	Yes	Yes	Yes	Yes	No	No	No	
City of Lamont	Yes	No	No	Restricted Residential	No	Yes	No	Yes	
City of Quasqueton	Yes	Yes	No	Yes	No	Yes	No	No	
City of Rowley	Yes	No	No	No	No	No	No	No	
City of Stanley	Yes	No	Yes	No	No	Yes	No	No	
City of Winthrop	Yes	No	No	No	No	No	No	No	
Buchanan County	Yes	Yes	No	Yes	Yes	Yes	No	No	
Source: Communities									

Property Protection Mitigation Actions

Numerous flood studies have been conducted within the planning area. The NFIP status of each community is listed in Table 3.29 (page 83). Table 4.2 lists the fire and flood information for the planning area.

As mentioned above, the county participated in the 1993 Flood recovery program by using funds made available through HUD and the Iowa Department of Economic Development to purchase several homes in the Littleton area of the county, along the Wapsipinicon River.

After the 1999 floods both Cities of Independence and Fairbank have participated in Hazard Mitigation 404 Voluntary Housing Buy Out programs through the Iowa Department of Emergency Management. Funds provided by the Iowa Department of Economic Development were allocated to remove several homes in the Littleton area, a buildup of pre-flood ordinance, and residential homes along the Wapsipinicon River in rural Buchanan County. In all a total of 15 homes

were purchased and the residents relocated. The total cost of the project was $713,096.

A number of factors complicate and acerbate the problem of purchasing of homes from the flood prone areas. A number of the homes were found to be cabins that are used part of the year and therefore not eligible under the buyout program. Other homes started out as seasonal cabins and have been converted to full year occupancy. Many of the later homes were built on leased land, which by FEMA rule must be dedicated to open space once the residence has been removed. County officials have become acutely aware of the problems of floodplain management and as a result are reviewing the current ordinance.

TABLE 4.2: FIRE & FLOOD INFORMATION FOR PLANNING AREA

Community	Fire Insurance Rating	National Flood Insurance Program (NFIP)	NFIP CID #
City of Aurora	9	Yes, 7/16/2008	190698
City of Brandon	7	Yes, 4/1/1997	190328
City of Fairbank	8	Yes, 4/19/86	190329A
City of Hazleton	8	Yes, 7/16/2008	190330
City of Independence	4	Yes, 5/16/1977	190031
City of Jesup	6	Yes, 2010	190599
City of Lamont	8	Yes, 7/16/2008	190331
City of Quasqueton	4	Yes, 7/2/1987	190332
City of Rowley	9	Not Participating	190798
City of Stanley	8	Not Participating	190333
City of Winthrop	8	Not Participating	190690
Buchanan County	7-10	Yes	190848

Source: Communities & FEMA

Public Education and Awareness Mitigation Actions

Various public education and awareness activities occur within the planning area. The major communication devices are E911 and ALERT Iowa. Other communications include radio and television addresses, newspaper, warning sirens, internet, and NOAA Radio Services. Facebook, county and city websites, and message board systems are also used to educate and inform the public.

Emergency Services Mitigation Actions

Buchanan County Emergency Management

All jurisdictions within the planning area works with the Buchanan County Emergency Management Coordinator which is based out of the City of Independence. The Emergency Management Coordinator works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community. The communities also work with the American Red Cross Hawkeye Chapter in order to set up and operate these local shelters during and/or following a disaster.

A past and continuing mitigating effort is the Buchanan County Contingency (Emergency) Plan that is on file with the Emergency Management Office. This plan outlines steps to be taken in the case of a large-scale emergency in Buchanan County. This plan identifies and gives standard operating procedures that are to be followed for any number of disasters, including those disasters not covered in depth in this plan. In fact the plan is broken down into 17 parts. Those seventeen sections are as follows:

- Command and Control
- Communications and Warning
- Damage Assessment
- Emergency Public Information
- Evacuation
- Fire Services
- Health and Medical
- Law Enforcement
- Mass Care
- Protective Shelter
- Public Works/Utilities
- Radiological Protection
- Resource Management
- Human Services
- Search and Rescue
- Hazardous Materials
- Terrorism

In the contingency plan a list of shelters for the county can be found. Mutual Aid agreements between all Buchanan County Fire Departments are present. The final section outlines the most dangerous identified sites so far as Hazardous Materials in the county are concerned. This list includes such critical sites as major intersections of highways, railroads, pipelines, etc.

In addition, the Duane Arnold Energy Center has its own separate mitigation activities and planning documents that take into account its needs as well as the potential needs of the surrounding area in the event of a disaster at the center. The center also conducts annual drills to ensure the success of its mitigation plans.

Finally, the County also is a part of the Iowa Mutual Aid Compact, which ensures emergency response agencies from neighboring counties will respond to a disaster in Buchanan County if needed.

Law Enforcement

The Buchanan County Sheriff's Department is the primary law enforcement agency in the county. The jurisdiction for this agency includes the entire county. Currently, they have 14 sworn officers, including the sheriff. There are 10 full-time jailers who also are in charge of intake/booking and two clerical staff-members assigned to the jail. In addition to the unincorporated parts of the county, the department provides police service for Hazleton, Winthrop, Rowley, Quasqueton, Stanley, Aurora, and Lamont under contract, and all of the cities share dispatch services through the Joint Communication Center. Furthermore, the unincorporated communities of Littleton and Otterville are included in the service area of the Buchanan County Sheriff's Office.

Fire Protection

There are twelve independent fire departments in the county. Each of the eleven incorporated cities has its own volunteer fire department. In addition, the Mental Health Institute located in Independence has its own independent fire department. Each department is responsible for fire protection services to a particular area within the county. The individual Fire Departments house vehicles and equipment, and respond as needed with the appropriate equipment to

fires in the rural area. Volunteer firefighters are dispatched via electronic pagers directly to the scene in most cases. In addition, Buchanan County provides a pumper truck, tanker truck, grass buggy, and two boats.

By law, every township must provide fire protection to those citizens living within its borders. The location of these fire departments can be referenced on the Critical Sites Map, *Attachment 6*. Every department within Buchanan County has signed a mutual aid agreement with one another. This document is on file with Buchanan County Emergency Management and can be viewed as a portion of the Buchanan County Contingency Plan.

Various cities and townships in the County have also signed Mutual Aid Agreements with Fire Departments in neighboring counties. These include the Coggon Fire Department, Ryan Fire Department, Walker Fire Department, Troy Mills Fire Department, and the Oelwein Fire Department.

Fire Insurance Ratings are set for communities or areas based on several factors. These factors include distance from fire protection, water supply available, and population density. Communities are rated on a scale that ranges from 1 (being the best) to 10 (being the poorest). These fire rating may eventually be affected by the development of rural water and the placement of dry hydrants near local streams, ponds, and lakes in the county. The current rating for most rural areas of Buchanan County is 7-10. The rating is determined by availability of a volunteer fire department and the distance from the community providing the fire coverage. Homes greater than five miles from a volunteer fire department may be rated 10. Water supply and distance from service center determine the variation in rates from 7-10.

These fire insurance ratings are largely based on location from service. Therefore, it is appropriate to mention that Buchanan County is divided into several fire districts. These fire districts determine which department in the county is primarily responsible for fire suppression in these areas. Of course, due to mutual aid agreements, more than the primary department may be present at any fire call.

Medical Facilities

Buchanan County has one major medical facility, Buchanan County Health Center, which is located in Independence. The three regional hospitals, Covenant Medical Center, Allen Memorial Hospital, and Sartori Memorial Hospital, are located in Waterloo and Cedar Falls; in addition to, St. Luke's Hospital and Mercy Medical Center in Cedar Rapids, Strawberry Point Medical Center in Strawberry Point, Regional Medical Center in Manchester, and Mercy Hospital in Oelwein.

The Buchanan County Health Center (BCHC) has and is currently undergoing significant improvements to their facility in Independence that are expected to be completed in Spring of 2018. The facility will serve Buchanan County and the surrounding areas. Upgrades include: 74,000 sqaure foot expansion to existing facility; expanded and remodeled Wellness Center and Therapy Department; construction of a new two-sotry medical office building which will house the Specialty Clinic and provide room for service growth; and remodeled and expanded surgical center. Addition information on the project as well as status updates can be found online at www.BCHealth.org/BuildingForYou.

In addition to the medical health field, Buchanan County has services available to deal with those who require mental health assistance. Abbe Center and the Mental Health Institute provide psychiatric and counseling services to citizens who are in need of support. A variety of services are also provided to residents of Buchanan County through the Buchanan County Human Services department.

An important measure of county response is the number of people trained in the medical field and the level of training achieved. In addition to traditional medical personnel (doctors, nurses, etc.), Buchanan County has been given 129 certifications by the Iowa Bureau of Emergency Management Services.

According to the Iowa Bureau of Emergency Management Services, Buchanan County has three (3) ambulance services within its borders. Of the three services, two (2) are EMT-Basic and one (1) is EMT-I (intermediate). Dialing the E-911 Emergency Response system can activate ambulance service. There are approximately 17 medical hospitals located outside of, but within forty miles of Buchanan County.

The Buchanan County Public Health department provides surveillance for disease outbreaks and risk of injury. The department is located within an incorporated area. Staff maintains 24/7 contact for emergency situations with public health complications.

HAZMAT

All participating jurisdictions contract with Buchanan County hazardous materials response has been contracted out to the Linn County HAZMAT Team. In the event of a hazardous materials spill this team provides quick response to Buchanan County and its municipalities. Contact information for the county hazardous materials response is through the Buchanan County Emergency Management Coordinator.

In order to properly address methamphetamine labs, Buchanan County has become a member of the Rural Area Interdiction Drug Task Force (RAID Task Force). The RAID Task Force responds to all methamphetamine labs found in the counties of Buchanan, Benton, Delaware, and Fayette. The RAID Task Force consists of 15 officers trained in investigation and cleans up at a hazardous materials training facility in Quantico, Virginia. The RAID Task Force has hazardous materials equipment and is responsible for responding to methamphetamine lab sites and preparing the sites for clean-up. The State of Iowa contracts with a clean-up company that takes care of final clean up.

Warning Systems

Buchanan County Emergency Management is capable of activating sirens throughout the county from their offices in the county courthouse. The county has three back-up systems in place in the event the siren system at the courthouse should become inoperable. These back-ups are located at the Independence Fire Department, Jesup Fire Department, and Fairbank Fire Department. In order to help determine when the sirens must be activated there is an organized effort to dispatch spotters throughout the county. These spotters consist of on duty police officers, volunteer fire personnel, and several independent groups, clubs, and individuals throughout the county.

Flood warning systems also exist in the count. Three staff gages are located throughout the county to provide early warning for citizens of Buchanan County and those communities downstream. These gages are located along the Wapsipinicon River in Fairbank, along the Wapsipinicon River Bridge on County Road C57, and in Crane Creek in the northwestern portion of the county. To the northwest of the Buchanan County line in Tripoli there is another gage on the Wapsipinicon River.

NOAA Radio service is available in Buchanan County and can provide excellent warning to residents who utilize this resource. These radios are available to the public at large but are not provided by the public sector. Radio stations KQMG and KMCH, and television station KWWL are the designated Emergency Alert System contacts for Buchanan County Emergency Management. They provide weather alerts via broadcast to the public.

In January, 2016 Buchanan County switched their emergency notification system from CODE RED to the state's new ALERT IOWA program. Buchanan County Iowa Alerts can send emergency messages to the entire county, individual communities, or to targeted areas in case of an emergency situation that requires immediate action (such as a boil-water notice, missing child, flash flood, evacuation notices, etc.). Iowa Alerts is pre-populated with published landline telephone numbers associated with property address. County residents can sign up to be notified of potentially dangerous emergency situations with a phone call, text message or e-mail message.

Roads and Public Works Departments

Each participating community has a small public works and/or street department with a small staff to maintain various aspects of the community. Staff is generally charged with snow removal, trimming trees, and ensuring water safety.

The County operates a number of vehicles and equipment, such as: dump trucks, end loader, road grader, backhoe, and pick-up trucks. As part of the emergency plan, the County maintains a list of companies with equipment that may be needed in a hazard event such as flat-bed trucks, cement trucks, tractors with hydraulic power supply pumps, and generators.

Natural Resource Protection Mitigation Actions

There have been some natural resource protection mitigation actions undertaken within the planning area, see refer to each individual Appendices for additional details.

Structural Projects Mitigation Actions

There are have been structural projects done in Buchanan County, see refer to each individual Appendices for additional details.

FUTURE HAZARD MITIGATION ACTIVITIES

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

TABLE 4.3: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Table 4.4, lists the future hazard mitigation activities for Buchanan County (unincorporated area). A table for each participating jurisdiction can be found in each city's appendices.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The local community will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities. In addition, private property owner expenses will be necessary to implement some activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).
- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Implementation Strategy

Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a time line for each activity, identified the responsible party (ies) for each activity and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above (Buchanan County unincorporated area only). Implementation Strategies / Action Plans for each participating jurisdiction can be found in their respective appendix.

Requirement §201.6(c)(3)(iii): [The mitigation strategy section shall include] an action plan describing how the actions identified in section (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 benefit review of the proposed projects and their associated costs.

TABLE 4.4: FUTURE HAZARD MITIGATION ACTIVITIES- BUCHANAN COUNTY (UNINCORPORATED AREA)						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Primary Agency Responsible for Implementation**	**Timeline (short-term = annually)**	**Costs**	**Funding Source**
Prevention						
H	Adopt and enforce a building code	ALL	Board of Supervisors	On-Going	Minimal	Local
M	Modify zoning ordinance to require underground wiring for new housing	Tornadoes, Windstorms, Severe Winter Storms, Hailstorms, Thunderstorm & Lightning, Structure Fire	Board of Supervisors	On-Going	Minimal	Local
H	Review and update the County Multi-Hazard Plan as necessary	ALL	Emergency Management Commission	Short-Term	Minimal	Local
H	Maintain, update, and enforce County Zoning Ordinance and Floodplain Ordinance	ALL	County Zoning and Board of Supervisors	On-Going	Minimal	Local
M	Enforce County guidelines for burning	Drought, Extreme Heat, Structure Fire, Grass & Wildland Fire	Board of Supervisors and Fire Chiefs	On-Going	Minimal	Local
L	Promote and supplement buffer Initiative	River Flood, Flash Flood, Watershed Health & Contamination	Board of Supervisors and Emergency Management Commission	On-Going	Minimal	Local
Property Protection						
M	Flood proof structures in the 100-year floodplain	River Flood, Flash Flood	Board of Supervisors, Emergency Management Commission, County Zoning	On-Going	Low-High	Local, Private, State, Fed.
M	Acquisition and enhancement of flood protection lands	River Flood, Flash Flood	Board of Supervisors, Emergency Management Commission, County Zoning	On-Going	Low-High	Local, State, Fed.
M	Acquisition and removal of structures from the floodplain as funds become available	River Flood, Flash Flood	Board of Supervisors, Emergency Management Commission, County Zoning	On-Going	Low-High	Local, State, Fed.
Public Education & Awareness						
H	Continue Code Red System	ALL	Emergency Management Commission and 911 Commission	On-Going	Minimal	Local
H	Develop a NOAA Weather Radio awareness program	ALL	Emergency Management Commission, National Weather Service	On-Going	Minimal	Local
H	Educate farmers on early detention of animal diseases	Disease (Human & Animal)	ISU Extension, Public Health	On-Going	Minimal	Local
H	Educate the public on reporting suspicious activities	Explosion, Terrorism	Law Enforcement	On-Going	Minimal	Local

H	Continue Reduce/Reduction education	ALL	Community Emergency Response Team and Emergency Management Commission	On-Going	Minimal	Local
H	Continue community education and distribution of community preparedness kits	ALL	Emergency Management Commission, Fire Association	On-Going	Minimal	Local
H	Continue to provide the public with information regarding all hazards and how to prevent, respond, and recover if a hazard was to occur	ALL	Emergency Management Commission	On-Going	Minimal	Local
H	Continue fire safety education	Structure Fire, Grass & Wildland Fire	Fire Association	On-Going	Minimal	Local
M	Provide education on hazardous materials to industries and the public, including storage and disposal of household hazardous chemicals	Fixed HAZMAT Incident	Emergency Management Commission, Fire Association	On-Going	Minimal	Local
M	Continue to work with ISU Extension to provide pesticide applicator training	Fixed HAZMAT Incident, Transportation Incident – HAZMAT, Watershed Health & Contamination	ISU Extension	On-Going	Minimal	Local
M	Improve public awareness of flood risk, flood insurance, and floodplain construction regulations	River Flood, Flash Flood	County Zoning and Emergency Management Commission	On-Going	Minimal	Local
M	Work with ISU Extension Office to provide fire extinguishers to residents	Structure Fire, Grass & Wildland Fire	ISU Extension	On-Going	Minimal-Low	Local, State
M	Educate the public on the location of pipelines within the county	Explosion	Emergency Management Commission and Pipeline Association	On-Going	Minimal	Local
M	Develop a Tornado Safe Room awareness program	Tornadoes, Windstorms	Emergency Management Commission, Fire Association	On-Going	Minimal	Local
M	Continue programs to teach CPR/First Aid	ALL	Red Cross, American Heart Association	On-Going	Minimal	Local
Natural Resource Protection						
M	Expand easement programs on agricultural land along rivers and streams	River Flood, Flash Flood, Watershed Health & Contamination	County Zoning, County Conservation	On-Going	Minimal-Mod.	Local, State, Fed.
M	Protection of wetland and other natural areas existing along waterways	River Flood, Flash Flood, Watershed Health & Contamination	County Zoning, Board of Supervisors, County Conservation	On-Going	Minimal-Mod.	Local, State,
M	Follow watershed monitoring requirements set forth by the Iowa Department of Natural Resources	Watershed Health & Contamination	County Sanitarian, County Conservation	On-Going	Minimal-Mod.	Local
Emergency Services						
H	Backup generator is needed at public health facility.	ALL	Buchanan County, Buchanan County Public Health	Short-Term	Moderate	Local, State, Fed.
H	Back up IT switches and servers as needed.	ALL	Buchanan County Public Health	On-Going	Low	Local

H	Continue to provide necessary training to the Hazardous Materials Team on an annual basis	Fixed HAZMAT Incident, Transportation Incident - HAZMAT	Emergency Management Commission, Fire Association	Short-Term	Minimal-Low	Local
H	Continue contract with Linn County HAZMAT Team	Fixed HAZMAT Incident, Transportation Incident - HAZMAT	Emergency Management Commission, Fire Association	Short-Term	Minimal	Local
H	Continue contract with Linn County HAZMAT Team	Fixed HAZMAT Incident, Transportation Incident - HAZMAT	Emergency Management Commission, Fire Association	Short-Term	Minimal	Local
H	Continue support of the Buchanan County Disaster Recovery Coalition	ALL	Board of Supervisors and Emergency Management Commission	On-Going	Minimal	Local
H	Maintain existing Mutual Aid Agreements with surrounding communities and counties for emergency assistance during a hazard or disaster	ALL	Emergency Management Commission	On-Going	Minimal	Local
H	Continue to provide necessary training and equipment to the Sheriff's Department as needed	ALL	Law Enforcement, Board of Supervisors	On-Going	Minimal-High	Local, State, Fed.
H	Continue to provide education, training, and drills/exercises for emergency response personnel to handle all types of hazards	ALL	Emergency Management Commission, Airport and Emergency Responders	Short-Term	Minimal	Local, State
H	Continue to upgrade radio communications equipment as needed	ALL	911 Commission	Short-Term	Minimal-Low	Local, State, Fed.
H	Expand promotion of and recruitment of volunteer firefighters	ALL	Fire Association	On-Going	Minimal	Local
H	Continue education and training of health officials and emergency response personnel regarding communication, early detection, and emergency response to human and animal diseases	Disease (Human & Animal)	Public Health, Sanitarian, Board of Supervisors, Emergency Management Commission	On-Going	Minimal	Local, State
H	Create a written Disease Response Plan	Disease (Human & Animal)	Public Health	Short-Term	Minimal	Local
H	Review and improve evacuation plans and file with LEPC	ALL	Emergency Management Commission	Short-Term	Minimal	Local
H	Determine possible sheltering locations in the event of a nuclear emergency	Fixed Radiological or Nuclear Incident	Emergency Management Commission	On-Going	Minimal	Local
H	Adopt a recovery ordinance	ALL	Disaster Coalition, Board of Supervisors	Short-Term	Minimal	Local
H	Develop a Continuity of Operations Plan	ALL	Emergency Management Commission	Short-Term	Minimal	Local
H	Update Emergency Response Plan as needed	ALL	Emergency Management Commission	Short-Term	Minimal	Local
M	Continue participation in the Iowa Mutual Aid Compact	ALL	Emergency Management Commission	On-Going	Minimal	Local

M	Continue and/or expand training for the HEAT Team	Fixed HAZMAT Incident, Transportation Incident - HAZMAT	Emergency Management Commission, Fire Association	Short-Term	Minimal-Low	Local
M	Implement physical staff gages up river and down river in Fairbank, Crane Creek, Quasqueton, Littleton, and Otterville	River Flood	Emergency Management Commission, Community Emergency Response Team	Mid-Term	Minimal-Mod	Local, State, Fed.
M	Continue to work with certified floodplain manager regarding floodplain issues	River Flood, Flash Flood	County Zoning, Emergency Management Commission, Board of Supervisors	On-Going	Minimal	Local
M	Continue to review and update Airport Emergency Plan as needed	Transportation Incident	City of Independence, Board of Supervisors	On-Going	Minimal	Local
M	Conduct air traffic exercise to train emergency personnel	Transportation Incident	Emergency Management Commission, Airport and Emergency Responders	Short-Term	Low	Local, State
M	Continue to update emergency generator list and incorporate it into appropriate plans	ALL	Emergency Management Commission	Short-Term	Minimal	Local
M	Encourage local utilities to install surge protectors on major electric lines	ALL	Board of Supervisors, Cities	On-Going	Minimal	Local
M	Continue to review and update Incident Command procedures as needed	ALL	Emergency Management Commission	On-Going	Minimal	Local
M	Provide personnel with training for the Community Emergency Response Team (CERT) as needed	ALL	Emergency Management Commission	On-Going	Minimal	Local, State, Fed.
M	Install Global Positioning Systems in all emergency vehicles	Communication Failure	Fire Association, 911 Commission	On-Going	Low-Mod	Local, State, Fed.
M	Update equipment with GIS/GPS technology	Communication Failure	Fire Association, 911 Commission	On-Going	Low	Local, State, Fed.
M	Purchase cellular phones with E911 systems	Communication Failure	Fire Association, 911 Commission	Mid-Term	Minimal	Local, State, Fed.
M	Evaluate current terrorism mitigation efforts	Terrorism	Law Enforcement	On-Going	Minimal	Local
L	Establish local cooling and heating sites for at-risk populations such as the elderly and/or disabled	Drought, Extreme Heat, Severe Winter Storms	Cities, Emergency Management Commission	On-Going	Minimal	Local
L	Continue to work with local agencies and organizations in the distribution of fans to at-risk populations	Extreme Heat	Cities, Emergency Management Commission, Disaster Coalition	On-Going	Minimal	Local
L	Expand storm spotter training program	Tornadoes, Windstorms, Thunderstorm & Lightning	Emergency Management Commission	On-Going	Minimal	Local
L	Continue to work with Iowa Rural Water Association to hook-up cities and rural households to the water supply	Structure Fire	Cities, Board of Supervisors	Mid-Term	Low-High	Local, State, Fed.
L	Continue to install additional dry hydrants as funds become available	Structure Fire, Grass & Wildland Fire, Explosion	Fire Association	On-Going	Minimal-High	Local, State, Fed.

Structural Projects						
M	Continue county road mitigation projects	ALL	Secondary Roads	On-Going	Minimal-High	Local, State, Fed.
L	Continue to make necessary inspections and repairs to existing dams	Dam Failure	Cities	On-Going	Minimal-High	Local, State, Fed.

SECTION 5 – PLAN MAINTENANCE

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.

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 plans or capital improvement plans, when appropriate.

Requirement §201.6(c)(4)(ii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

Amendment

This is a five-year plan, commencing upon FEMA Certification, and any future amendments to the plan shall occur only after an official Public Notice has been posted in a local publication announcing a Public Hearing on the matter. After the public has had the opportunity to review the proposed amendments the City Council and/or Board of Supervisors may, by resolution, choose to accept any amendment to the plan. Once the a City Council and/or Board of Supervisors has adopted the amendment, the remaining elected board of each participating municipality shall hold a public hearing to receive public input on the amendment prior to local adoption. Any and all amendments made to this plan should be shared with each participating jurisdiction, the Buchanan County Emergency Management Agency and the Iowa Department of Homeland Security and Emergency Management Division. At a minimum, this Plan will be evaluated for consistency with FEMA and IHSEMD requirements and formally updated every five (5) years.

Phasing

Phasing is a process by which the completion of a project occurs over several budget cycles. It is recommended that this review be incorporated into the City's or County's annual Capital Improvements Program update procedure. For projects that require a local match commitment, the Council or Board of Supervisors should begin setting aside appropriate resources to meet their match liability.

Each jurisdiction will consider the findings from this document when updating other planning documents in the future. Examples of planning documents that would benefit from information provided in this Plan include, but are not limited to: Comprehensive Land-Use Plans and Urban Renewal Plans, existing and future Zoning and Subdivision Ordinances as well as Building Codes should consider the goals, guidelines, and actions presented in this Plan. In addition, the projects defined herein may be prioritized for funding through the jurisdictions' budgeting process. Finally, the information presented in the Plan may be used as documentation for grant and/or loan programs, including the Hazard Mitigation Grant Program (HMGP).

Each of the jurisdictions with previous HMPs has incorporated their plans into their comprehensive land use plans (if they have one). Although the wording differs in each plan, all the land use plans state the jurisdiction will protect the general health, safety and welfare of the community, adhere to the NFIP, avoid

development in the floodplain, and work with neighboring jurisdictions on planning issues of common interest. INRCOG develops transportation plans for the entire planning region and many jurisdictions include projects in the plan that will make the roadways safer and reduce accidents. The County Emergency Management Office works on disaster response and preparedness plans and regularly holds meetings with the jurisdictions.

Evaluation & Review Process

Ultimately, the Buchanan County Emergency Management Coordinator and City Councils from all jurisdictions are responsible for the Hazard Mitigation Plan and implementation of the goals and actions contained herein, and they may seek assistance from other city staff, Council of Governments, and consultants in order to accomplish mitigation projects. To assist in the review process, the Hazard Mitigation Committee (as mentioned in Section 1) will reconvene annually upon the request of the Buchanan County Emergency Management Coordinator.

As mentioned in Section 1, said Committee will be comprised of representatives from each participating jurisdiction as well as from neighboring communities, schools, businesses, nonprofits, agencies, academia, and other interested parties and together they will be charged with reviewing and evaluating implementation progress of the mitigation plan. In addition, a public notice will be posted at all city government buildings, on jurisdictional websites, and in the local newspapers inviting the general public to participate as members of the Committee and/or to review the Plan and provide comments. Copies of the Plan and the Committee's review will be available at all government offices (city halls and courthouse). Following the Committee's completion of the annual review process, the findings of the review and recommended changes, if applicable, will be presented during a City Council or Board of Supervisors meeting, which is a public meeting. Evaluation forms to assist in the review, evaluation, and updating process can be found in Appendix P.

Appendix N details the progress each jurisdiction has made since the adoption of their previous plans. Since many activities fall under the normal duties of most city governments (e.g. funding and maintaining emergency services), not many activities were deleted.

Incorporation into Other Planning Mechanisms

Each jurisdiction will consider the findings from this document when updating other planning and operating documents in the future. Examples of planning documents that would benefit from information provided in this plan include, but are not limited to: Comprehensive Land-Use Plans and Urban Renewal Plans. Existing and future Zoning and Subdivision Ordinances as well as Building Codes should consider the goals, guidelines, and actions presented in this Plan.

Continued Public Participation

Buchanan County is fortunate to have one of the most enthusiastic and experienced coordinators in Iowa. Because of this, the cities typically do not initiate meetings with the public to discuss hazard mitigation issues; the Emergency Management Office conducts meetings, whereby the cities and public are invited to cover disaster response and recovery issues. The coordinator attends city council meetings in every jurisdiction to discuss and inform on these issues. The most

common issues discussed include, tornado sirens, safe rooms, generators, storm spotter training and other training issues. The coordinator also ensures each jurisdiction regularly refers to their HMP; participate in any HMP development meetings, and to monitor the plan expiration dates. The coordinator also sends each jurisdiction updates in the mail and email, regularly updates the county website.

In order to ensure that the public remains involved in the future implementation of this Plan, it shall remain on hand at all participating city halls and the county courthouse. This Plan shall be made available to any party who requests to see it. If a jurisdiction intends to make or discuss amendments to the plan, a meeting with corresponding agenda shall be developed and posted; a newspaper notice shall be submitted and if necessary a legal notice will be published; and the Hazard Mitigation Committee members will be notified of the meeting via email, telephone, or regular mail. Also, the amendments shall also be made available prior to a City Council or Board of Supervisors action so that the public may be made aware. Consistent with the Iowa Open Meeting and Records Laws (Iowa Code Chapters 21 and 22), said meetings will be open to the public and all records shall be available for inspection. The coordinator will continue to work with each participating jurisdiction in ensuring the plan goals are followed and that these jurisdictions are properly prepared for any disaster that may come.

APPENDIX A: AURORA

COMMUNITY PROFILE

Location

The City of Aurora is located in the northeastern quadrant of the State of Iowa. More specifically, Aurora is located in the northeastern corner of Buchanan County.

The topography of Aurora is characterized as undulating. Much of the community is relatively flat, while other areas, primarily along established waterways, have more extreme slope. The highest point in the community is located in the northern reaches of the City and has an elevation of approximately 1,150 feet above mean sea level. The lowest elevation, which is approximately 1,110 feet above mean sea level, is found in the southwestern part of the community.

Development Trends

The City of Aurora was incorporated on May 25, 1899, with 240 acres of the community located in Buffalo Township and 60 acres located in Madison Township. George Jakway originally acquired the land for the City from the United States.

Bishop Warren, the community's founder from East Aurora, New York, filed the original plat for the City in 1886. Situated on the Dubuque Northwestern Railroad, Aurora's birth came the same year that the railroad acquired the right of way to build from Dubuque to Oelwein.

As soon as the town was platted, the community began to experience growth. Residents of Mudville, a small community two miles south of Aurora, began to move north to Aurora. These individuals were drawn by the community's location on the railroad. Shortly thereafter, the community of Mudville would fall victim to Aurora's early growth.

TABLE A1.1: AURORA'S DEMOGRAPHICS

Government Framework	Mayor – City Council
General Population, 2010 Census	
Total Population, 2010	185
Total Males, 2010	100
Total Females, 2010	85
Median Age, 2010	43.7
At-Risk Population, <18 Yrs, 2010	41
At-Risk Population, >64 Yrs, 2010	32
One Race-White, 2010	176
One Race-Black or African American, 2010	1
Two or More Races, 2010	8
Hispanic or Latino (of any race), 2010	3
Total Household Population, 2010	79
Total Population in Group Quarters,2010	0
Total Family Households, 2010	58
Total Family Households with Children under 18, 2010	23
Male Householder, no wife present, with children under 18, 2010	5
Female Householder, no husband present, with children under 18, 2010	5
Households with individuals 65yrs and over, 2010	21
Householder living alone, 2010	19
Average household size, 2010	2.34
Average family size, 2010	2.69
Housing Characteristics, 2010 Census	
Total Housing Units, 2010	89
Occupied Housing Units, 2010	79
Vacant Housing Units, 2010	10
Rental Vacancy Rate, 2010	7.7%
Owner-Occupied Housing Units, 2010	67
Population in Owner-Occupied Housing Units, 2010	158
Rental-Occupied Housing Units, 2010	12
Population in Rental-Occupied Housing Units, 2010	27

As will be discussed in detail, the City of Aurora has experienced a number of disasters throughout its history. Examples of this included a tornado that ripped through northern Buchanan County in October 1886, and a severe fire that burned the west side of Main Street in 1931.

Demographics

Tables A1.1 and A1.2 provide a brief glimpse at Aurora's demographics. The community saw a small decrease in population, nine persons, between 2000 and 2010. The median age increased from 37.3 years in 2000 to 43.7 years in 2010.

TABLE A1.2: CITY OF AURORA DEMOGRAPHICS

Economics Characteristics, 2010-2014 ACS (Est.)	
Population In Labor Force (16 yrs and over)	170
Persons in Civilian Labor Force	108
Persons Employed	100
Persons Unemployed	8
Persons in Armed Forces	0
Mean Travel Time to Work in Minutes (16 yrs & over)	22.5
Persons Employed in Management, Professional, or Related Occupations	28
Persons Employed in Service Occupations	20
Persons Employed in Sales and Office Occupations	10
Persons Employed in Farming, Fishing, or Forestry Occupations	0
Persons Employed in Construction, Extraction, and Maintenance Occupations	13
Persons Employed in Production, Transportation, or Material Moving Occupations	29
Median Household Income	$49,167
Median Family Income	$53,750
Per Capita Personal Income	$21,809
Social Characteristics, 2010-2014 ACS (Est.)	
School Enrollment (3 yrs and over)	61
Nursery School, Preschool	2
Kindergarten and Elementary School (grades K-8)	34
High School (grades 9-12)	23
College or Graduate School	2
Education Attainment: Population 25 Years and Over	149
Persons with Less than 9th Grade	5
Persons with 9th to 12th Grade, No Diploma	15
Persons with High School Degree or Equivalency	61
Persons with Some College, No Degree	23
Persons with Associate Degree	13
Persons with Bachelor's Degree	23
Persons with Graduate or Higher Degree	9

Natural Environment

The South Fork of the Maquoketa River is the largest water body to pass near the City of Aurora. It runs northeast of the community through the extreme northeast corner of Buchanan County. The river's flow is generally from northwest to southeast.

Buffalo Creek is a smaller body of water that is located to the west of the community. Neither Buffalo Creek nor the South Fork of the Maquoketa River is a significant threat to the City of Aurora, which is situated on relatively high elevation. Storm drainage flowing from city streets to low ground is a greater threat to local residents.

According to the United States Environmental Protection Agency watershed maps, the City of Aurora is located in two watersheds. The eastern half of the community falls into the Maquoketa Watershed, while the western half of the community falls into the Upper Wapsipinicon Watershed. According to the City officials, the division of these two watersheds occurs roughly along Main Street.

According to the Soil Survey of Buchanan County (issued March 1982), the majority of soils in the City of Aurora are of the Kenyon Series. This series "consists of moderately well drained, moderately permeable soils on convex ridges and side slopes in the uplands. These soils formed in about 14 to 24 inches of loamy sediments and in the underlying glacial till." Slopes in this series range from 2 to 9 percent. Kenyon soils are similar to Bassett soils are commonly found adjacent to Bassett, Oran, Readlyn, and Tripoli soils.

Transportation

Two highways serve the City of Aurora. These are County Roads C57 and W45. County Road C57 is an east-west route that connects Aurora to the City of Hazleton. County Road W45 is a north-south route that connects Aurora to the City of Winthrop and provides access to Highway 20.

The nearest public airport in Buchanan County is located in Independence, approximately 13 miles southwest of Aurora. The airport itself does not offer any regular commercial service. Located approximately three miles southwest of downtown Independence, the airport lays just north of Highway 20.

The elevation of the runway is reported to be 978 feet above mean sea level. The runway is concrete and measures 4000 feet in length and 75 feet in width. The airport maintains one white/green beacon and medium intensity runway edge lighting. There are 28 aircraft based at the airfield; 22 are single engine airplanes, two multi-engine aircraft, and four ultra-lights. The airport is reported to average 27 operations per day.

The Dubuque and Northwestern Railroad that once ran through the City of Aurora is no longer in service. Like many railroad segments in the state of Iowa, the railroad through Aurora was abandoned during the 1980's.

The bodies of water near Aurora are not of sufficient size to support any large commercial traffic. Different areas of the water near the community are also occasionally used for swimming and other recreational activities.

Community Services

Water within the City of Aurora is supplied by the Central Iowa Water Association. The water tower will have a capacity of 300,000 gallons.

The City of Aurora constructed its sanitary sewer in 1976. The system is comprised of two miles of PVC thermoplastic resin piping. Flow is gravity-driven, with the exception of one lift station at the end of Alice Street. Wastewater treatment is performed in the City's three cell lagoon, which is located southwest of the community. Drainage from the lagoon flows into a branch of Buffalo Creek. The average load for the treatment facility is 15,000 gallons per day. The design capacity of the system is 33,000 gallons per day.

Table A2 shows the primary utility providers in the city.

TABLE A2: AURORA UTILITY PROVIDERS

Electric	Natural Gas	Telephone/Internet	Cable	Water	Sewer	Sanitation
Alliant Energy	Black Hill Energy	EBTC	-	Central Iowa Water	City of Aurora	Waste Management

HAZARDS & RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Aurora evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Aurora's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions including: Historical Occurrence, Probability, Magnitude/Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
= Final Hazard Assessment Score

Table A3 is the analysis scores for the City of Aurora. As seen in Table A3, the top four hazards for Aurora are Severe Winter Storm, Flash Flood, Thunderstorm/Lightning/Hail, and Tornado/Windstorm.

TABLE A3: AURORA'S IDENTIFIED HAZARDS						
Hazard Rank	**Hazards**	**Probability**	**Magnitude/Severity**	**Warning Time**	**Duration**	**Assessment Score**
1	Severe Winter Storm	4	3	2	3	**3.3**
2	Flash Flood	4	2	4	1	**3.1**
2	Thunderstorm/Lightning/Hail	4	2	4	1	**3.1**
2	Tornado/Windstorm	4	2	4	1	**3.1**
5	Extreme Heat	4	2	1	4	**2.95**
6	HAZMAT Incident	3	3	4	1	**2.95**
6	Terrorism	2	2	4	4	**2.5**
8	Expansive Soils	3	1	1	4	**2.2**
9	Infrastructure Failure	2	2	4	1	**2.2**
9	Transportation Incident	2	2	4	1	**2.2**
9	Drought	2	2	1	4	**2.05**
12	Landslide	1	1	4	4	**1.75**
13	River Flooding	1	1	4	4	**1.75**
13	Sinkholes	1	1	4	4	**1.75**
13	Levee/Dam Failure	1	1	4	4	**1.75**
13	Radiological Incident	1	1	4	4	**1.75**
13	Earthquake	1	1	4	2	**1.55**
18	Grass/Wild Fire	1	1	4	1	**1.45**
19	Animal/Plant/Crop Disease	1	1	1	4	**1.3**
19	Human Disease	1	1	1	4	**1.3**

Vulnerability – Identifying Assets (Critical Facilities) & Social Asset Populations

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Aurora.

TABLE A4: SHELTERS IN AURORA

St. Paul Lutheran Church	Methodist Church
American Legion Post Building	Aurora Community Center
Fire Station	

Source: Community

Identifying the location of critical facilities and designated shelters (see Table A4) in Aurora is important in order to assess their vulnerability to hazards since these facilities are important to the community's operations, quality of life, and are key components of the economic sector. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. *Attachment 8* illustrates the location of identified critical facilities throughout Aurora.

It should be noted that there are several other structures that could serve as suitable shelters in certain events. The list consists of those structures that meet the specific requirements of a fallout shelter as defined by the State of Iowa. The Emergency Management Coordinator is responsible for reviewing the fallout shelter compliance of the above named structures during the regular plan reviews.

While the mentioned shelter locations have been identified for use if deemed necessary, there may also be occasions, such as during a radiological or HAZMAT incident, where the situation dictates sheltering "in place". Therefore, any location could potentially become a makeshift shelter for purposes of disaster response.

TABLE A5: "AT-RISK" POPULATION FOR AURORA

Total Community Population, 2010	185
Elderly (65 yrs and older), 2010	32
Youth (17 yrs and under), 2010	38
Householder Living Alone, 2010	19
Population Living in Poverty, 2010-2014	27
Population in Multi-Family Structures*, 2014 - 0 units	0
Population in Mobile Homes, 2014 – 12 units	32
Group Quarters Population, 2010	0
Persons with Disabilities, 2010-2014	23

Source: U.S. Census, 2010, 2010-2014 ACS (Est.), and Iowa Data Center
**Excludes 1-unit attached and detached, and 2-units*

The social vulnerability assessment also identified how the hazards affect the population of Aurora and it is assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. Table A5 presents an overview of the at-risk population in Aurora according to available information retrieved from the 2010 U.S. Census, 2010-2014 American Community Survey estimates, and Iowa Data Center.

According to Table A5, 17.3% of residents are 65 years or older. There are 19 residents living alone. The average household size of renter-occupied units is 2.25, while the average household size for owner-occupied units is 2.36. (2.78), there are 186 residents living in these units.

Persons under the age of 17 are also at higher risk during some disasters. This is mostly due to the fact that young persons often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, there was 20.5% of the city's total population under the age of 17, 5.4% of which are children under the age of five.

Another population considered to be more at risk than others are those in mobile homes. According to 2010-2014 American Community Survey data, the City of Aurora had 12 mobile home units within the city limits. According to available data, we can estimate that the number of people residing in mobile homes in the City of Aurora is approximately 32.

Attachment 6: Tornado Scenario Map of the City illustrates the impact on of tornado based on the same path as an F2 tornado that passed through Aurora on September 6, 2001. Aurora has no properties that lie within the 100-year floodplain (see *Attachment 3: Aurora Floodplain Map).* This is largely due to the fact that Buffalo Creek and the South Fork of the Maquoketa River are miles to the west and east respectively. Parcel data information, in spatial form, is available to calculate the potential property losses in a targeted area impacted by either a tornado or flood.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (A6) lists assets that could be affected in the event of hazard.

This information was made available from the Buchanan County Assessors, planning committee, American Community Survey data, and data reviewed by INRCOG planning staff. It should be noted however that these dollar amounts do not include gas and electric utility valuations or all tax exempt facilities (e.g. religious of government buildings). These results should be considered preliminary, as a full accounting of assets has not been completed.

TABLE A6: ASSET INVENTORY - ESTIMATED POTENTIAL PROPERTY LOSSES FOR AURORA				
Type of Structure	**Number of Structures**	**Land Value ($)**	**Building/Dwelling Value ($)**	**Total Value ($)**
Residential	92	478,690	4,158,520	4,637,210
Multi Residential	1	15,040	71,320	86,360
Agricultural	3	522,420	76,710	599,130
Commercial	25	242,866	1,102,500	1,345,366
Industrial	0	0	0	0
Religious/Non-Profit	2	0	500,000	500,000
Government	3	0	1,300,000	1,300,000
Education	0	0		0
Utilities	1	0	299,486	299,486
Total	**127**	**$1,259,016**	**$7,508,536**	**$8,767,552**
Sources: City of Aurora, Buchanan County Assessor, Planning Committee; INRCOG *Notes: Government = City Hall, Fire Stations, Public Works Buildings, Community Buildings, Libraries; Utilities = Water and Waste Water facilities; Residential, Industrial, and Agricultural values based on 2015 data; Religious/Non-Profit, Government, Education, and Utilities values based on 2012 data.*				

Aurora's Federal Insurance Rate Maps (FIRM) were last updated July 16, 2008. Using GIS spatial data from FIRM maps, in combination with property value data from the Buchanan Assessor's office, estimates of value in the floodplain were calculated. Table A7 shows the estimated value of land, buildings, and dwellings, within the city, in a floodplain. As is demonstrated in the table, as well as on Maps 3c and 3d, only a small portion of the city is affected by a floodplain.

TABLE A7: FLOODPLAIN DATA FOR AURORA						
	Number of Parcels	**Land Value**	**Building Value**	**Dwelling Value**	**Total Value**	**Percent of City Affected**
1% Annual Floodplain	3	$165,090	$43,450	0	$208,540	3.09%
0.2% Annual Floodplain	0	0	0	0	0	
Source: Buchanan County Assessor's Office; Analysis conducted by INRCOG; Parcel values and FIRM maps as of 6/6/2016						

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware

of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development.

Repetitive Loss Properties

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. According to FEMA data (as of 11/30/2014), the City of Aurora participates in the National Flood Insurance Program and does not have any repetitive loss properties.

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at their second committee meeting. The committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for the City of Aurora are as follows:

1. Prevent avoidable disasters.
2. Take steps to mitigate the probable negative consequences that may occur as a result of natural, technological, and/or man-made disasters.
3. Identify potential funding sources needed to accomplish identified mitigation projects.
4. Protect the health and welfare of the entire community and increase the city's ability to respond to natural disasters and man-made hazards by sufficiently maintaining all first responder organizations and fire department personnel.
5. Return to pre-disaster or improved conditions as soon as possible after a disaster occurs.
6. Maintain the multi-jurisdictional format for future plan updates.

Current Mitigation Actions

Prevention Mitigation Actions

Table A8 provides a compilation of the current planning and regulatory documents in place for Aurora.

TABLE A8: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR AURORA

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes (2012)	No	No	Restricted Residential	No	Yes	No	No	Yes

Property Protection Mitigation Actions

Due to the City's location in relation to Buffalo Creek and the South Fork of the Maquoketa River, there are no areas of the community that are vulnerable to significant flooding. Therefore there are no structures that are vulnerable to damage from flooding events due to overflow. Due to the minimal threat of flooding in the City, the community has not participated in any sort of flood recovery program or housing buyout program to date.

Public Education and Awareness Mitigation Actions

Aurora currently has in place E-911 Emergency Assistance. Other communications used by City personnel include pagers, radios, and cellular phones. Radio, television, cellular telephones, landline telephones, newspapers, warning sirens, and NOAA Radio Service are available to the public at large.

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community. The current contact information is as follows:

Fire Department

The City of Aurora Fire Department currently has a staff of seventeen (17) volunteer firefighters. The department's coverage area is 32 square miles. Equipment owned and operated by the local fire department includes a pumper, tanker, rescue van, Jaws of Life, ten SCBA units, and four portable generators. The fire department has in place 28E agreements with surrounding communities to provide and receive assistance as needed on a mutual aid basis. The communities that the Aurora Fire Department maintains 28E agreements include Buchanan County communities as well as Madison, Buffalo, and Scott Townships.

The fire department ensures communication through several methods. Those methods include E-911 Service, Radio Communication, Pagers, Alarm Systems, Sirens, and Cellular Phones. To date the fire department is not GPS equipped.

Medical Services

The hospital, Mercy Hospital of Franciscan Sisters, nearest to Aurora is located in Oelwein, approximately 15 miles west-northwest of the community. According to the hazard mitigation planning committee, some members of the community utilize Buchanan County Health Center in Independence (17 miles away). There are six other hospitals available in a 30-mile radius of the City of Aurora.

Emergency rescue and ambulance service is provided by an Independence hospital throughout the county. There are currently fourteen personnel that provide service to the EMS department. The primary means of communication is by way of cell phones and two-way radios. The EMS Department maintains mutual aid agreements with all of the communities within Buchanan County, the County Sheriff's Department, and the Aurora Fire Department. Ambulance service is also provided out of the cities of Oelwein and Strawberry Point.

Police

Buchanan County Law Enforcement and the Iowa State Patrol provide police protection to the City of Aurora.

Snow Removal

The City has one plow truck for snow and ice removal. A driver is hired seasonally to remove snow in the community. In an ideal winter storm scenario, the city

roads would be adequately cleared within hours.

Warning Systems

In the event of a tornado the City of Aurora has an early warning siren to warn the public of an oncoming storm. The siren is operated on site, and not under the control of the County Emergency Management Director. In 2016, Buchanan County began utilizing g in the state's ALERT Iowa emergency notification system. Residents can sign up to receive an electronic notification either by phone, text, or email.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step,

TABLE A9: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table A8) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly, or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).
- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each

activity's progress, the City chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table A10 is the City of Aurora's Implementation Strategy.

TABLE A10: IMPLEMENTATION STRATEGY FOR AURORA						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation**	**Timeline**	**Est. Cost**	**Associated Goals**
Prevention						
Medium	Create an annual fire inspection program for commercial and industrial properties	Tornado/Windstorm, Infrastructure Failure	Fire Department	Active	Low	1,2
Medium	Move anhydrous and fuel storage to safer locations on the outskirts of town	HAZMAT Incident	City Council, Mayor, Fire Department	Long-Term	Moderate	1,2,4
Low	Enforce tree inspection and trimming program	Animal/Plant/Crop Disease	City Council, Mayor	Active	Minimal	1,2
Low	Adopt and enforce building code requirements	Infrastructure Failure	City Council, Mayor	Active	Minimal	1,2
Low	Adopt and enforce a snow ordinance	Infrastructure Failure	City Council, Mayor	Active	Minimal	1,2
Low	Maintain, enforce, and update Zoning and Floodplain Ordinances, as needed	Flash Flood, River Flooding	City Council, Mayor	Active	Minimal	1,2,4
Low	Enforce county guidelines for burning	Grass/Wild Fire	Fire Department	Active	Minimal	1,2,4
Low	Update and install improved signage as it becomes necessary	Transportation Incident	City Council, Mayor	Active	Minimal	1,2
Low	Ensure all members of the pubic, including pets, have had all required immunizations	Human Disease	City Council, Mayor	Active	Minimal	1,4
Low	Spray for mosquitoes in the community	Human Disease	City Council, Mayor	Active, seasonal	Minimal	1,4
Low	Control pet populations that inhabit local residences	Animal/Plant/Crop Disease, Human Disease	City Council, Mayor	Short-Term	Minimal	1,4
Low	Establish restricted routes for the transport of hazardous materials and explosive material	HAZMAT Incident	City Council, Mayor	Long-Term	Moderate	1,2,4
Low	Develop a plan for rationing water within the community	Animal/Plant/Crop Disease	City Council, Mayor, Fire Department	Long-Term	Minimal	2,4,5
Property Protection						
Low	Maintain access to gas detectors	Earthquake, Flash Flood, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Transportation Incident	Buchanan County EMA	Active	Low	1,2,3,4,5
Low	Increase security measures taken to protect	Infrastructure Failure, Terrorism	City Council, Mayor	Active	Low	2

	and secure city's critical facilities					
Public Education & Awareness						
Medium	Improve public awareness of proper steps to be taken in a hazard event	Earthquake, Flash Flood, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Transportation Incident	City Council, Mayor, Buchanan County EMA	Active	Minimal	1,2,4,5
Medium	Develop a "Tornado Safe Room" awareness program	Earthquake, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Transportation Incident	Fire Department, City Council, Mayor	Mid-Term	Moderate	1,2,3,4
Medium	Install additional outdoor early warning sirens, and provide battery backup for the existing siren	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Fire Department, City Council, Mayor	Mid-Term	Low	2,3,4
Low	Develop a NOAA Weather Radio awareness program	Flash Flood, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm	Fire Department, Buchanan County EMA, City Council, Mayor	Active	Minimal	1,2,4,5,6
Low	Inform – and encourage - the public of the benefits of planting shade trees near dwellings	Animal/Plant/Crop Disease	City Council, Mayor, Black Hills Energy	Active	Minimal	3,4
Low	Educate the community about the dangers of groundwater contamination	Animal/Plant/Crop Disease, Human Disease	Buchanan County EMA, Fire Department, City Council, Mayor, Public Health	Active	Minimal	1,2,4,5
Low	Provide education on hazardous materials to industries and the public, including household chemicals.	Human Disease	Buchanan County EMA, Fire Department, City Council, Mayor, Public Health	Active	Minimal	1,2,4,5
Natural Resource Protection						
Medium	Follow monitoring requirements set forth by the Iowa Department of Natural Resources	Human Disease, Infrastructure Failure	City Council, Mayor, Central Iowa Water Association	Active	Minimal	1,2,3,4
Low	Consider development of a storm water management program	Flash Flood, Human Disease	City Council, Mayor	Active	Minimal	1,2,3,4,5
Low	Encourage the use of buffer strips	Grass/Wild Fire	Fire Department, Buchanan County EMA	Active	Minimal	1,2,3,4
Low	Provide a local household hazardous waste site	Human Disease, HAZMAT Incident	City Council, Mayor, Fire Department	Long-Term	Minimal	1,3,4
Low	Develop a wellhead protection program	Human Disease	City Council, Mayor	Long-Term	Minimal	1,2,3,4
Emergency Services						
Medium	Maintain existing and purchase additional street maintenance, fire, police, and ambulance equipment as needed	All	Fire Department and First Responders, Buchanan County, City Council, Mayor, Sheriff's office	Active	Moderate	1,2,3,4,5,6

Medium	Regularly review and amend fire, medical, and hazardous material response standard operating procedures	All	Fire Department and First Responders, Buchanan County EMA	Active	Minimal	1,2,3,4,5,6
Medium	Expand weather spotting training	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Fire Department	Active	Minimal	1,2,3,4,5
Medium	Ensure natural gas connections are regularly inspected	Infrastructure Failure	Black Hills Energy	Active	Minimal	1,2,3
Medium	Continue working relationship with the Linn County HAZMAT team	HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	Fire Department, Buchanan County EMA	Active	Low	1,2,4,5
Medium	Develop a plan for sandbagging in the community	Flash Flood, River Flooding, Thunderstorm/Lightning/Hail, Tornado/Windstorm	Fire Department	Active	Minimal	2,4,5
Medium	Ensure hazardous materials are reported (Tier II reports) in accordance with applicable laws	Animal/Plant/Crop Disease, Human Disease, HAZMAT Incident	Fire Department, Buchanan County EMA, Mayor	Mid-Term	Low	1,2,4
Medium	Acquire more water pumps	Flash Flood	Fire Department, City Council, Mayor	Mid-Term	Minimal	2,3,4
Medium	Purchase new generators to provide emergency power in times of need	Flash Flood, Severe Winter Storm, Extreme Heat, Infrastructure Failure	Fire Department, City Council, Mayor	Mid-Term	Low	1,3,4,5
Low	Update Emergency Response Plan	Earthquake, Flash Flood, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Radiological Incident	Fire Department, Buchanan County EMA, City Council, Mayor	Active	Minimal	1,2,3,4,5
Low	Continue to provide adequate training to Fire Department, Law Enforcement, and Ambulance personnel	All	Fire Department, Buchanan County Sheriff's office	Active	Low	1,2,3,4,5,6
Low	Maintain existing agreements with surrounding communities for mutual aid emergency assistance	All	Fire Department and First Responders	Active	Minimal	1,2,3,4,5,6
Low	Develop a list of structures to be used as gathering sites in the event of an emergency situation	Earthquake, Extreme Heat, Flash Flood, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Radiological Incident	Fire Department, City Council, Mayor	Active	Minimal	2,3,4,5
Low	Encourage local utility to install surge protectors on major electric lines	Infrastructure Failure	Alliant Energy	Active	Minimal	1,2,4,5
Low	Consider use of Incident Command procedures	All	Fire Department, City Council, Buchanan County EMA, Mayor	Active	Minimal	1,2,3,4,5
Low	Backup electronic data at city hall and emergency response locations	Severe Winter Storm, Sinkholes, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Terrorism	City Council, Mayor, Fire Department, First Responders	Active	Minimal	2,3,5
Low	Ensure proper training of Floodplain Manager(s)	Flash Flood, River Flooding	City Council, Mayor	Active	Low	1,2,4,5
Low	Maintain access to Geiger counters for first	Radiological Incident	Fire Department	Active	Minimal	2,3,4,5

	responders					
Low	Upgrade radio communications equipment as needed	All	Fire Department, City Council, Mayor	Active	Low	1,3,4,5
Low	Install Global Positioning Systems in all emergency vehicles	Transportation Incident	Fire Department, City Council, Mayor	Mid-Term	Minimal	3
Low	Establish local 'heating and cooling sites' for at risk populations, such as the elderly and/or disabled	Extreme Heat, Human Disease	City Council, Mayor, Fire Department	Long-Term	Low	2,3,4,5
Low	Work with local utility to develop a program to bury existing lines	Infrastructure Failure	Alliant Energy	Long-Term	Minimal	1,2,4
Low	Develop a Continuity of Operations Plan	All	City Council, Mayor, Fire Department	Long-Term	Minimal	1,2,4,5
Structural Projects						
Medium	Continue improvements to the storm water system	Flash Flood, Infrastructure Failure	City Council, Mayor	Mid-Term	Low	1,3,4
Low	Construct rigid barriers around sites that store explosive materials	HAZMAT Incident, Infrastructure Failure	City Council, Mayor	Mid-Term	Low	1,3,4

APPENDIX B: CITY OF BRANDON

COMMUNITY PROFILE

Location

The City of Brandon is located on 0.3 square miles in southwest Buchanan County, just off of Interstate 380 on County Road V71.

Development Trends

The community began when a small group of settlers headed west and stopped along Lime Creek and found an area that provided clean water and ample grazing for their livestock. The surrounding land was settled and became known as Brandon. The town was incorporated in 1905 and received city sewer and water in 1923. At one time an inter-urban electric railroad connecting Cedar Rapids and Waterloo ran forty trains per day through the community. In the early 1970's the railroad discontinued operation and the tracks were removed. The Cedar Valley Nature Trail now uses the old railroad line as a biking and hiking trail from Cedar Rapids to Waterloo.

Demographics

Tables B1.1 and B1.2 provide a brief glimpse at Brandon's demographics. The community's population remained strong, only losing two residents between 200 and 2010. The community's median age decreased less than 2 percent over the past ten years.

Natural Environment

Brandon is located on relatively flat ground or gently sloping ground in the midst of some of the most fertile farm ground in the world. The soils are well drained and were formed by glacial till and thousands of years of succession ending in the board expanse of prairie that once covered Iowa. The town is located in the Lime Creek Watershed.

TABLE B1.1: BRANDON'S DEMOGRAPHICS

Government Framework	Mayor – City Council
General Population, 2010 Census	
Total Population, 2010	309
Total Males, 2010	151
Total Females, 2010	158
Median Age, 2010	36.1
At-Risk Population, <18 Yrs, 2010	82
At-Risk Population, >64 Yrs, 2010	44
One Race-White, 2010	305
One Race-Black or African American, 2010	1
American Indian and Alaska Native, 2010	4
Two or More Races, 2010	4
Hispanic or Latino (of any race), 2010	16
Total Household Population, 2010	309
Total Family Households, 2010	130
Total Family Households with Children under 18, 2010	41
Male Householder, no wife present, with children under 18, 2010	4
Female Householder, no husband present, with children under 18, 2010	13
Households with individuals 65yrs and over, 2010	35
Householder living alone, 2010	39
Average household size, 2010	2.38
Average family size, 2010	2.95
Housing Characteristics, 2010 Census	
Total Housing Units, 2010	152
Occupied Housing Units, 2010	130
Vacant Housing Units, 2010	22
Rental Vacancy Rate, 2010	13%
Owner-Occupied Housing Units, 2010	84
Population in Owner-Occupied Housing Units, 2010	207
Rental-Occupied Housing Units, 2010	46
Population in Rental-Occupied Housing Units, 2010	102

Transportation

As mentioned, the town is located off of Interstate 380. It is served by County Road V71 and D48. The local streets are seal coated, black top and gravel. The streets consist of approximately eight miles. There are no airports in the community. The closest airport is 30 miles away in Waterloo. The community is also connected to Cedar Rapids and Waterloo by the Cedar Valley Nature Trail on the old railroad line.

Community Services

Water supply for the City of Brandon is supplied by two active wells with a capacity of 186 and 125 gallons per minute that are located on Cedar and Main Street. The city has one above ground water storage tower which holds a maximum of 50,000 gallons of water. The city's chlorination water treatment plan is 26 years old and is also located on Main Street. Average water usage for the city is 25,000 gallons per day. The water distribution system consists of two miles of 4-inch and 6-inch cast iron water mains.

The City is in compliance with Iowa DNR Well field protection requirements, but has no security or emergency backup electrical power generator for the water treatment plant or wells.

Brandon has an aerated lagoon system located along Lime Creek in the southwest quadrant of the city. The system was constructed in 1990 and has a capacity of 40,000 gallons per day. Average daily use is 30,000 gallons per day. The collection system consists of 2.1 miles of cast iron pipe. It is entirely gravity fed and has no lift stations.

Table B2 displays the primary utility providers for the city.

TABLE B1.2: BRANDON'S DEMOGRAPHICS

Economics Characteristics, 2010-2014 ACS (Est.)	
Population In Labor Force (16 yrs and over)	256
Persons in Civilian Labor Force	183
Persons Employed	181
Persons Unemployed	2
Persons in Armed Forces	0
Mean Travel Time to Work in Minutes (16 yrs & over)	28.2
Persons Employed in Management, Professional, or Related Occupations	39
Persons Employed in Service Occupations	31
Persons Employed in Sales and Office Occupations	32
Persons Employed in Natural Resources, Construction, and Maintenance Occupations	16
Persons Employed in Production, Transportation, or Material Moving Occupations	63
Median Household Income	$41,000
Median Family Income	$50,000
Per Capita Personal Income	$19,699
Social Characteristics, 2010-2014 ACS (Est.)	
School Enrollment (3 yrs and over)	67
Nursery School, Preschool	10
Kindergarten and Elementary School (grades K-8)	46
High School (grades 9-12)	8
College or Graduate School	3
Education Attainment: Population 25 Years and Over	251
Persons with Less than 9th Grade	7
Persons with 9th to 12th Grade, No Diploma	28
Persons with High School Degree or Equivalency	128
Persons with Some College, No Degree	41
Persons with Associate Degree	28
Persons with Bachelor's Degree	18
Persons with Graduate or Higher Degree	1

TABLE B2: BRANDON UTILITY PROVIDERS

Electric	Natural Gas	Telephone/Internet	Cable	Water	Sewer	Sanitation
Alliant Energy	Alliant Energy	Windstream	-	City of Brandon	City of Brandon	Waste Management

HAZARDS & RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Brandon's evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Brandon's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions including: Historical Occurrence, Probability, Magnitude or Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
= Final Assessment Score

Table B3 is the analysis scores for the City of Brandon. As seen in Table B3, the top three hazards for Brandon are Flash Flood, Severe Winter Storm, and Tornado/Windstorm.

TABLE B3: BRANDON HAZARD ASSESSMENT						
Hazard Rank	**Hazards**	**Probability**	**Magnitude/Severity**	**Warning Time**	**Duration**	**Assessment Score**
1	Flash Flood	4	4	4	4	**4.00**
1	Severe Winter Storm	4	4	4	4	**4.00**
1	Tornado/Windstorm	4	4	4	4	**4.00**
4	Thunderstorm/Lightning/Hail	4	4	3	3	**3.75**
5	Grass/Wild Land Fire	4	3	4	3	**3.60**
6	Transportation Incident	4	3	3	3	**3.45**
7	HAZMAT Incident	3	3	4	3	**3.15**
7	River Flooding	4	3	1	3	**3.15**
9	Drought	3	4	1	4	**3.10**
10	Extreme Heat	3	2	3	4	**2.80**
11	Radiological Incident	1	3	1	4	**1.90**
11	Human Disease	2	1	4	1	**1.90**
13	Expansive Soils	1	2	1	4	**1.60**
14	Animal/Plant/Crop Disease	1	1	4	1	**1.45**
14	Earthquake	1	1	4	1	**1.45**
14	Landslide	1	1	4	1	**1.45**
17	Dam / Levee Failure	1	1	1	1	**1.00**
17	Infrastructure Failure	1	1	1	1	**1.00**
17	Sinkholes	1	1	1	1	**1.00**
17	Terrorism	1	1	1	1	**1.00**

Vulnerability – Identifying Assets (Critical Facilities) & Social Asset Populations

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Brandon.

TABLE B4: SHELTERS IN BRANDON

Community Center	Brandon Fire Station
Brandon Methodist Church	

Source: Community

Identifying the location of critical facilities and designated shelters (see Table B4) in Brandon is important in order to assess their vulnerability to hazards since these facilities are important to the community's operations, quality of life, and are key components of the economic sector. *Attachment 8* illustrates the location of identified critical facilities throughout Brandon.

The social vulnerability assessment also identified how the hazards affect the population of Brandon and it is assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. Table B4 presents an overview of the at-risk population in Brandon according to available information retrieved from the 2010 U.S. Census (what was available), 2000 U.S. Census, and Iowa Data Center.

TABLE B5: "AT-RISK" POPULATION FOR BRANDON

Total Community Population, 2010	309
Elderly (65 yrs and older), 2010	44
Youth (17 yrs and under), 2010	82
Householder Living Alone, 2010	39
Population Living in Poverty (2010-2014)	49
Population in Multi-Family Structures*, 15 units (2010-2014)	28
Population in Mobile Homes – 10 units (2010-2014)	16
Group Quarters Population, 2010	0
Persons with Disabilities (2010-2014)	83

Source: U.S. Census, 2010, 2010-2014 ACS (Est.), and Iowa Data Center
**Excludes 1-unit attached and detached, and 2-units*

According to Table B5, 14.2% of residents are 65 years or older. There are 39 residents living alone. The average household size of renter-occupied units is 2.22 while the average household size for owner-occupied units is 2.46. Since 2006 there has been a 10-plex and 4-plex apartment complex built. Using the average household size for renter-occupied units, there are approximately 31 residents living in these units.

Persons under the age of 17 are also at higher risk during some disasters. This is mostly due to the fact that young persons often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, there was 26.5% of the city's total population under the age of 17.

City of Brandon is potentially affected by flooding from Lime Creek. *Attachment 3: Flood Map of the City* and *Attachment 4: Flood Scenario Map of the City* shows the 100-year floodplain for Brandon and the potential impact a flooding event would have on the community. According to available information shown in Table B6, there are still approximately 35 people living within the floodplain.

Vulnerability – Estimating Potential Property Losses

TABLE B6: FLOODPLAIN INFORMATION FOR BRANDON	
Population in Hazard Area*	35
1-4 Family Structures in Hazard Area*	15
Other Structures in Hazard Area*	8
Buildings in 100-Year Floodplain**	41
Buildings not in 100-Year Floodplain**	341
Source: FEMA, INRCOG & Buchanan County Assessor **Per FEMA 6/4/2009 information* ***Per INRCOG, City & County GIS Information, and FEMA Q3 flood data supplied by IDNR, 500-year floodplain includes all the 100-year floodplain*	

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (B7) lists assets that would be affected in the event affected the unincorporated area of the county. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Buchanan County Assessors and analyzed by INRCOG planning staff. It should be noted however that these dollar amounts do not include gas and electric utility valuations or all tax exempt facilities (e.g. religious of government buildings). These results should be considered preliminary, as a full accounting of assets has not been completed.

TABLE B7: ASSET INVENTORY - ESTIMATED POTENTIAL PROPERTY LOSSES FOR BRANDON

Type of Structure	Number of Structures	Land Value ($)	Building/Dwelling Value ($)	Total Value ($)
Residential	178	661,419	8,276,734	8,938,153
Multi Residential	1	7,210	74,270	81,480
Agricultural	0	171,248	0	171,248
Commercial	37	302,434	321,620	624,054
Total	**216**	**1,142,311**	**8,672,624**	**9,814,935**

Sources: Buchanan County Assessor, Planning Committee; INRCOG
Notes: Residential, Industrial, and Agricultural values based on 2015 data;

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development.

Repetitive Loss Properties/National Flood Insurance Program

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. According to FEMA data (as of 11/30/2014), there are no repetitive loss properties within the city

According to FEMA data (as of 8/31/2016), the City of Brandon had one property participating in the National Flood Insurance Program (see table 3.29).

The City of Brandon's FIRM maps were updated on July 16, 2008. Using GIS spatial data from FIRM maps, in combination with property value data from the Buchanan Assessor's office, estimates of value in the floodplain were calculated. Table B8 shows the estimated value of land, buildings, and dwellings, within the city, in a floodplain. As is demonstrated in the table, approximately 10 percent of the city is within the 100-year floodplain. As shown on Maps 3e and 3f, the floodplain is adjacent Lime Creek; an east/west flowing river which passes through the southern portion of the city.

TABLE B8: FLOODPLAIN DATA FOR BRANDON

	Number of Parcels	Land Value	Building Value	Dwelling Value	Total Value	Percent of City Affected
1% Annual Floodplain	42	$174,334	$182,030	$656,202	$1,012,566	10.08%
0.2% Annual Floodplain	-	-	-	-	-	-

Source: Buchanan County Assessor's Office; Analysis conducted by INRCOG; Parcel values and FIRM maps as of 6/6/2016

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at their second committee meeting. The committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for the City of Brandon are as follows:

1. Improve the quality of life by mitigating potential hazards.
2. Take steps to mitigate the probable negative consequences that may occur as a result of natural and human caused/combination disasters.
3. Identify potential funding sources needed to accomplish identified mitigation projects.
4. Protect the health and welfare of the entire community by enhancing the training and capabilities of all first responder organizations.
5. Return to pre-disaster or improved conditions as soon as possible after a disaster occurs.
6. Protect businesses and industries by reducing the impact of hazards in order to ensure economic viability of the city.
7. Compliance with NFIP requirements.

Current Mitigation Actions

Prevention Mitigation Actions

Table B9 provides a compilation of the current planning and regulatory documents in place for Brandon.

TABLE B9: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR BRANDON

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes – 2012	No	Yes	Yes	Yes	Yes	Yes	No	Yes

Property Protection Mitigation Actions

The city has a generator that can run the city wells and the fire station is equipped with an emergency electrical power generator.

Public Education and Awareness Mitigation Actions

Besides a storm system siren, on duty law enforcement officers and a network of volunteer storm spotters are activated when conditions are favorable for severe weather. In 2006, the Buchanan County Emergency Management Commission purchases 50 NOAA weather radios from Region VI Iowa Homeland Security and distributed them free of charge to every county and city office, library, school and care facility in Buchanan County.

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community. The current contact information is as follows:

Fire Department

The City of Brandon receives fire protection from the Brandon Fire Department. The department is staffed with 30 volunteer firefighters. The department provides mutual aid an average of four times per year and receives mutual aid an average of three times annually. The department's apparatus fleet includes a brush/attack truck, two pumpers, two tankers, and a rescue/EMS unit. The coverage area encompasses 52 square miles.

Medical Services

Initial emergency medical service is provided by Brandon First Responders. The non-transport service is staffed with four volunteer EMS providers who are

trained to the EMTA level. EMS transport service is provided by the North Benton Ambulance Service in Vinton, 15 miles away. The provisional paramedic level service is staffed with 15 volunteers and a full-time director trained to the Emergency Medical Technicians or Paramedic level.

The nearest hospitals are Virginia Clay Hospital in Vinton, 20 miles away, and Buchanan County Health Center in Independence, 15 miles away.

Police

The City of Brandon contracts of law enforcement services with the Buchanan County Sheriff's Office.

HAZMAT Services

A regional Hazardous Materials Team in on hand to assist the City of Brandon with a Hazard Materials event or catastrophe. The Team is located 25 minutes from Brandon and is operated by the Linn County Hazardous Materials Response Team headquartered in Cedar Rapids. The Team assists Buchanan County fire departments with hazard materials emergency procedures and training, thus reducing the possibility of additional contamination in hazardous materials emergency. An evacuation plan is also in place in Buchanan County Multi-Hazard Emergency Operations Plan that can be used in conjunction with activities of the HAZMAT team and Brandon Fire Department.

Warning Systems

The City of Brandon maintains an antiquated storm siren warning system to alert residents of storms and other emergencies. In 2012, the City of Brandon recently received a HMGP grant to remove the existing warning system and siren and replace it with a new, advanced system. Recently, Buchanan County began utilizing the state's new ALERT IOWA Program. Residents can sign up for voice, text, and/or email alerts in the event of an emergency or severe weather condition.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table B10) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly,

TABLE B10: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).
- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and indicated at least which of the city's goals the action addresses. Table B11 below is the City of Brandon's Implementation Strategy.

TABLE B11: FUTURE HAZARD MITIGATION ACTIVITIES- BRANDON						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation**	**Timeline**	**Est. Cost**	**Associated Goal(s)**
Prevention						
High	Continue implementation and enforcement of planning, zoning, building codes, and capital improvement program	Infrastructure Failure	City Council	Active	Low	3
Medium	Continue participation in the National Flood Insurance Program	Flash Flood, River Flooding, Levee/Dam Failure	City Council	Active	Minimal	7
Medium	Discourage development in floodplain areas	Flash Flood, Landslide, River Flooding, Sinkholes, Levee/Dam Failure	City Council	Active	Minimal	6
Property Protection						
Medium	Review and improve security at critical facilities in the city	HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	City Council	Active	Minimal	2
Low	Relocate the fire department	Infrastructure Failure	Fire Department	Active	Low	5
Public Education & Awareness						
High	Inform pubic on flood zone locations	Flash Flood, Landslide, River Flooding, Sinkholes, Levee/Dam Failure	City Council	Active	Minimal	1
High	Improve public awareness of all hazard risks – what to do before, during and after an event	Earthquake, Flash Flood, Grass/Wild Fire, Landslide, River Flooding, Tornado/Windstorm, HAZMAT Incident	Fire Department, City Council	Active	Minimal	4
High	Promote NOAA weather radio use	Extreme Heat, Flash Flood, Grass/Wild Fire, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident	Fire Department	Active	Minimal	1,7
High	Encourage residents purchase and use smoke detectors	Drought, Extreme Heat, Grass/Wild Fire, Thunderstorm/Lightning/Hail	Fire Department	Active	Minimal	1
Medium	Establish Good Neighbor programs	Human Disease, Infrastructure Failure	City Council	Active	Minimal	1,2
Medium	Encourage residents to have disaster supply kits on hand to use in the event of a disaster event	Earthquake, Extreme Heat, Flash Flood, Grass/Wild Fire, Landslide, River Flooding, Severe Winter Storm, Tornado/Windstorm, Infrastructure Failure, Levee/Dam Failure, Transportation Incident, Terrorism	Fire Department, City Council	Active	Minimal	4
Natural Resource Protection						
Medium	Rerouting flood water by digging out or dredging creek bed	Flash Flood, River Flooding, Sinkholes, Thunderstorm/Lightning/Hail	Public Works	Short-Term	Low	6
Low	Maintenance of watershed management behind fire department – reseeded to control flood waters	Animal/Plant/Crop Disease, Flash Flood, Tornado/Windstorm	Public Works	Active	Low	1

Emergency Services						
High	Continue 28E agreements for fire department and first responders	Flash Flood, Grass/Wild Fire, Landslide, River Flooding, Severe Winter Storm, Tornado/Windstorm	City Council, Fire Department, Buchanan County EMA	Active	Minimal	4
High	Maintain generator to lessen the loss of power at well	Infrastructure Failure	Public Works	Active	Minimal	4
High	Maintain generator for fire department	Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Terrorism	Public Works	Active	Minimal	4
High	Stay in contact with representatives from Palo	Infrastructure Failure, Radiological Incident, Transportation Incident, Terrorism	Buchanan County EMA, Fire Department	Active	Minimal	4
High	Continue to provide adequate emergency/disaster response training	Flash Flood, Grass/Wild Fire, Severe Winter Storm, Tornado/Windstorm, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	Fire Department, Buchanan County EMA	Active	Minimal	4
High	Maintain list of special needs residents	Animal/Plant/Crop Disease, Extreme Heat, Human Disease, Severe Winter Storm, Tornado/Windstorm	Fire Department	Active	Minimal	4
High	Develop plans to address utility outages and emergencies	Flash Flood, River Flooding, Severe Winter Storm, Tornado/Windstorm	Public Works, Buchanan County EMA	Active	Minimal	2
High	Purchase new firefighter PPE, air packs (SCBA-self-contained breathing apparatus), vehicle extrication equipment, and fire trucks	Grass/Wild Fire, Human Disease, HAZMAT Incident, Radiological Incident	Fire Department, City Council	Active	Low	4
High	Continue to provide upgraded equipment and up-to-date training so the fire department is capable of appropriate and effective response	Flash Flood, Grass/Wild Fire, River Flooding, Tornado/Windstorm	Fire Department	Active	Minimal	4
High	Support EMS training	Grass/Wild Fire, Tornado/Windstorm, HAZMAT Incident, Transportation Incident	Fire Department	Active	Minimal	4
High	Continue HAZMAT agreements and support regional HAZMAT teams	Flash Flood, River Flooding, Tornado/Windstorm	City Council, Fire Department	Active	Minimal	2
Low	Improve warning system	Flash Flood, Severe Winter Storm, Tornado/Windstorm, Levee/Dam Failure	City Council	Active	Minimal	7
Low	Develop community shelters for use as cooling, heating, and storm sites	Extreme Heat, Flash Flood, River Flooding, Severe Winter Storm, Tornado/Windstorm, Terrorism	City Council	Short-Term	Minimal	2
Structural Projects						
High	Conduct necessary sanitary sewer improvements	Infrastructure Failure	City Council, Public Works	Active	High	1
High	Continue sewer system rehabilitation	Infrastructure Failure, Terrorism	City Council, Mayor	Active	High	3
Medium	Maintain culvert on Cedar Street	Flash Flood, Sinkholes	Public Works	Short-Term	Minimal	1
Medium	Install new fire hydrants	Infrastructure Failure	City Council, Public Works	Active	Minimal	1

Low	Maintain Methodist Church safe room	Severe Winter Storm, Tornado/Windstorm, Infrastructure Failure	Boards and Commissions	Active	Minimal	2

APPENDIX C: CITY OF FAIRBANK

COMMUNITY PROFILE

Location

The City of Fairbank is located in the northeastern quadrant of the State of Iowa. More specifically, Fairbank is located in extreme northwestern Buchanan County.

The topography of Fairbank is characterized as undulating. Much of the community is relatively flat, while other areas, primarily along established waterways, and has areas of extreme slope. The highest point in the community is located in the northeastern reaches of the city and has an elevation of approximately 1,000 feet above mean seal level. The lowest elevation, which is approximately 960 feet above mean sea level, is found along the Little Wapsipinicon River that runs through the middle of the community

Development Trends

Fairbank was platted in 1854. The first store was built shortly thereafter in 1855. A German language Lutheran Church was established in the community in 1868. The City was incorporated in 1891, 37 years after its platting.

Fairbank is located on the northern border of an old-order Amish settlement. This particular settlement stretches through the greater part of an area between Fairbank, Hazleton, and Independence. The first Amish family settled in the area in 1914. There are approximately 145 family in the area that still follow the traditional way of life, forgoing conveniences such as electricity and modern machinery.

Today the City of Fairbank has become a "craft community boasting several craft and gift shops." The City offers a well-equipped fire department and ambulance crew, medical clinic, pharmacy, municipal library, and swimming pool. Recreational opportunities for the area include a park system with picnic shelters, athletic facilities,

TABLE C1.1: FAIRBANK'S DEMOGRAPHICS

Government Framework	Mayor – City Council
General Population, 2010 Census	
Total Population	1,113
Total Males	549
Total Females	564
Median Age	37.6
At-Risk Population, <18 Yrs.	299
At-Risk Population, >64 Yrs.	173
One Race-White	1,091
One Race-Black or African American	3
One Race-American Indian and Alaska Native	1
Two or More Races	14
Hispanic or Latino (of any race)	20
Total Household Population	1,113
Total Family Households	307
Total Family Households with Children under 18	106
Male Householder, no wife present, with children under 18	16
Female Householder, no husband present, with children under 18,	17
Households with individuals 65yrs and over,	127
Householder living alone,	127
Average household size,	2.41
Average family size	2.98
Housing Characteristics, 2010 Census	
Total Housing Units	498
Occupied Housing Units	461
Vacant Housing Units	37
Rental Vacancy Rate	7.6%
Owner-Occupied Housing Units	352
Population in Owner-Occupied Housing Units	903
Rental-Occupied Housing Units	109
Population in Rental-Occupied Housing Units	210

boating, fishing, and golfing. The community has a beautiful island park located on the Little Wapsipinicon River as it passes through the City.

Demographics

Tables C1.1 and C1.2 provide a brief glimpse at Fairbank's demographics. The community saw an increase of 72 residents between 2000 and 2010. In addition, the median age increased slightly (0.8%).

Natural Environment

The Little Wapsipinicon River is the most prevalent water body to pass through the City of Fairbank. The main branch of the Wapsipinicon River is the largest, most influential water body to pass through Buchanan County. The Wapsipinicon River's flow is generally from northwest to southeast. The drainage area at the mouth of the river is approximately 2,540 square miles.

The headwaters of the Wapsipinicon River can be found in Mower County, Minnesota. However, the vast majority of the Wapsipinicon Watershed area is actually located in the State of Iowa, with only approximately 13 square miles is located in Minnesota.

The United States Environmental Protection Agency shows that the City of Fairbank is located near the middle of the Upper Wapsipinicon Watershed. The Upper Wapsipinicon has a drainage area of 1,569.43 square miles and contains eight rivers and streams for a total of 2177.1 river miles. There are also 120 lakes covering 1632.7 acres.

The climate of Fairbank is of the continental variety, which is marked by a great variation in both temperature and precipitation. The average annual precipitation for Fairbank is 35.1 inches with the vast majority of this falling between April and September. The yearly temperature range is quite large also, with January averaging about 15.1°F and July averaging about 72.6°F.

Originally the land surrounding and including Fairbank was covered with deciduous

TABLE C1.2: FAIRBANK'S DEMOGRAPHICS

Economics Characteristics, 2010-2014 ACS (Est.)	
Population In Labor Force (16 yrs and over)	818
Persons in Civilian Labor Force	606
Persons Employed	580
Persons Unemployed	26
Persons in Armed Forces	0
Mean Travel Time to Work in Minutes (16 yrs & over)	24.2
Persons Employed in Management, Professional, or Related Occupations	161
Persons Employed in Service Occupations	44
Persons Employed in Sales and Office Occupations	142
Persons Employed in Natural Resources, Construction, and Maintenance Occupations	99
Persons Employed in Production, Transportation, or Material Moving Occupations	134
Median Household Income	$62,917
Median Family Income	$70,125
Per Capita Personal Income	$30,018
Social Characteristics, 2010-2014 ACS (Est.)	
School Enrollment (3 yrs and over)	294
Nursery School, Preschool	22
Kindergarten and Elementary School (grades K-8)	199
High School (grades 9-12)	41
College or Graduate School	32
Education Attainment: Population 25 Years and Over	756
Persons with Less than 9th Grade	12
Persons with 9th to 12th Grade, No Diploma	19
Persons with High School Degree or Equivalency	354
Persons with Some College, No Degree	159
Persons with Associate Degree	89
Persons with Bachelor's Degree	102
Persons with Graduate or Higher Degree	21

forest; this vegetation is now predominant only along the banks and flood plains of watercourses. The original cover has been reduced to make room for additional cropland and construction of houses and businesses in suitable areas.

Today, surrounding vegetation is primarily used for agricultural purposes, with corn and soybeans being the most popular crop choices for area farmers. Within the community, while there are some areas that are still used for agricultural purposes, a variety of grasses, trees, shrubs, and flowers can be found.

According to the Soil Survey of Buchanan County (1978), the majority of soils are listed as "prime" agricultural soils. Further, the Soil Survey Supplement indicates the Corn Suitability Ratings (CSR), which is a commonly accepted agricultural productivity measure for the soils; support the fact that the soils will be conducive to agriculture. As a general rule, soils that will easily support agriculture will accommodate urban development. Therefore, it appears as if most of the soils, excepting those that are impacted or created by the Wapsipinicon River and its floodplain, may be able to accommodate development.

The majority of the soils within Fairbank east of the Little Wapsipinicon River are of the Schley type. "This gently sloping, somewhat poorly drained soil is on glaciated uplands. Areas are irregularly shaped… The Schley soil is moderately permeable. It has a seasonal high water table. Available water capacity is high. Surface runoff is slow." The majority of the soils within Fairbank on the west side of the Little Wapsipinicon River are of the Whalan type. "This gently sloping, well-drained soil is on uplands. Areas are irregularly shaped… Permeability is moderate. Available water capacity is low. Surface runoff is medium."

Transportation

There are two highways that run through the City of Fairbank. These are State Highway 281 and County Road V62. State Highway 281 is an east-west route, while County Road V62 is a north-south route. Fairbank is also approximately 13 miles north of U.S. Highway 20, which is a convenient east-west route across the State.

The nearest public use airport is located in Oelwein. The City of Oelwein is approximately 6 miles northeast of Fairbank. Oelwein Municipal Airport itself does not offer any regular commercial service.

The nearest airport that is certified for carrier operations is Waterloo Municipal Airport, approximately 26 miles southwest of Fairbank. The airport has three operable runways. The longest is a paved runway extending 8400 feet. The elevation of the airport is approximately 873 above sea level. Currently, there are five commercial airlines that have flights originating or passing through the airport. Service is available to and from several cities including Chicago, Minneapolis, and Saint Louis. In addition to its commercial flights, the airport is also host to the Iowa National Guard Air Wing, 194th Air Cavalry. This complex operates 25 helicopters and is involved in routine reconnaissance flights.

The Union Pacific Railroad Company also maintains a rail line that passes through the middle of the community. This rail line is part of a line that runs from Waterloo to Oelwein.

North of the dam, the Little Wapsipinicon River is commonly used for recreational purposes. The river is not of sufficient size to support any large commercial traffic. Different areas of the water in and around the community are also occasionally used for swimming.

Community Services

Average water consumption in the City of Fairbank is approximately 75,000 gallons per day. Peak consumption is close to 90,000 gallons per day. The capacity of the City water plant is 288,000 gallons, and the City has an elevated storage capacity of 200,000. In 2001, 200,000 gallons of the current capacity was added with the completion of the new water tower. This added water capacity will enhance the City's ability to provide adequate fire protection and maintain an adequate water supply in the case of power, pump, or well loss; while removing an old 50,000 gallon water tower.

All of the community is served by the City sewage treatment system. The average load of the system is 123,000 gallons per day. The peak load is 130,000 gallons per day. The design capacity for the system is 197,000 gallons per day. As a result of flooding problems, lift stations have received added protection. This should help maintain proper operation during a 100-year flood event. In 2015, the city made significant upgrades to their sewer plant to meet new permit regulations.

Table C2 displays the primary utility providers for the city.

TABLE C2: FAIRBANK UTILITY PROVIDERS

Electric	Natural Gas	Telephone/Internet	Cable	Water	Sewer	Sanitation
City of Fairbank	City of Fairbank	Windstream Mediacom	Mediacom	City of Fairbank	City of Fairbank	Black Hawk Waste Disposal

HAZARDS & RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Fairbank's evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Fairbank's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions including: Historical Occurrence, Probability, Magnitude or Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
= Final Hazard Assessment Score

Table C3 is the analysis scores for the City of Fairbank. As seen in Table C3, the top three hazards for Fairbank are Thunderstorm/Lightning/Hail, Flash Flood, and River Flooding.

	TABLE C3: FAIRBANK'S IDENTIFIED HAZARDS					
Hazard Rank	**Hazards**	**Probability**	**Magnitude/Severity**	**Warning Time**	**Duration**	**Assessment Score**
1	Thunderstorm/Lightning/Hail	3	4	4	2	**3.35**
1	Flash Flood	3	3	4	4	**3.25**
1	River Flooding	3	3	4	4	**3.25**
4	Severe Winter Storm	3	3	3	3	**3**
4	HAZMAT Incident	2	4	4	3	**3**
4	Transportation Incident	2	4	4	3	**3**
7	Extreme Heat	3	3	1	4	**2.8**
7	Tornado/Windstorm	2	4	4	1	**2.8**
9	Grass/Wild Fire	2	2	4	3	**2.4**
10	Terrorism	1	3	4	3	**2.25**
11	Radiological Incident	1	4	1	4	**2.2**
12	Human Disease	2	2	2	2	**2**
13	Levee/Dam Failure	1	3	1	3	**1.8**
14	Drought	1	2	1	4	**1.6**
15	Animal/Plant/Crop Disease	1	2	1	3	**1.5**
15	Sinkholes	1	2	1	3	**1.5**
17	Earthquake	1	1	4	1	**1.45**
17	Infrastructure Failure	1	2	2	1	**1.45**
19	Expansive Soils	1	1	1	2	**1.1**
20	Landslide	1	1	1	1	**1**

Vulnerability – Identifying Assets (Critical Facilities) & Social Asset Populations

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Fairbank.

TABLE C4: SHELTERS IN FAIRBANK

Triumph School – Amish	American Legion Post
Prairie Grove School – Amish	First Baptist Church
Center School – Amish	Wapsie Comm. School classroom
United Methodist Church	St. John Lutheran Church
Wapsie Community School	Immaculate Conception School/Church

Source: Community

Identifying the location of critical facilities and designated shelters (see Table C4) in Fairbank is important in order to assess their vulnerability to hazards since these facilities are important to the community's operations, quality of life, and are key components of the economic sector. Table C4 shows the various facilities that can be used as a shelter in the event of an emergency. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. See Map 5D, in Attachment 1, for a map of the city's critical facilities.

The social vulnerability assessment also identified how the hazards affect the population of Fairbank and it is assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. Table C5 presents an overview of the at-risk population in Fairbank according to available information retrieved from the 2010 U.S. Census, 2010-2014 American Community Survey estimates, and Iowa Data Center.

TABLE C5: "AT-RISK" POPULATION FOR FAIRBANK

Total Community Population, 2010	1,113
Elderly (65 yrs. and older), 2010	173
Youth (17 yrs. and under), 2010	299
Householder Living Alone, 2010	127
Population Living in Poverty, 2000	92
Population in Multi-Family Structures*, 38 units (2010-2014)	51
Population in Mobile Homes – 21 units (2010-2014)	47
Group Quarters Population, 2010	0
Persons with Disabilities (2010-2014)	123

Source: U.S. Census, 2010, 2010-2014 ACS (Est.) and Iowa Data Center
**Excludes 1-unit attached and detached, and 2-units*

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (C7) lists assets that would be affected in the event affected the unincorporated area of the county. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Buchanan County Assessors and analyzed by INRCOG planning staff. It should be noted however that these dollar amounts do not include gas and electric utility valuations or all tax exempt facilities (e.g. religious of government buildings). These results should be considered preliminary, as a full accounting of assets has not been completed.

TABLE C6: FAIRBANK FLOODPLAIN INFORMATION	
Population in Hazard Area*	1
1-4 Family Structures in Hazard Area*	1
Other Structures in Hazard Area*	5
Buildings in 100-Year Floodplain**	13
Possible Buildings in 100-Year Floodplain (no floodplain data for Fayette County)**	15
Total number of buildings within City Limits**	711

Source: FEMA, INRCOG & Buchanan County Assessor
**Per FEMA 6/4/2009 information*
***Per INRCOG, City & County GIS Information, and FEMA Q3 flood data supplied by IDNR, 500-year floodplain includes all the 100-year floodplain*

TABLE C7: ASSET INVENTORY - ESTIMATED POTENTIAL PROPERTY LOSSES FOR FAIRBANK				
Type of Structure	**Number of Structures**	**Land Value ($)**	**Building/Dwelling Value ($)**	**Total Value ($)**
Residential	306	3,579,574	27,563,685	31,143,259
Multi Residential	8	104,280	1,304,590	1,408,870
Agricultural	5	11,720	17,500	29,220
Commercial	39	412,070	2,432,085	2,844,155
Industrial	0	NA	0	NA
Religious/Non-Profit	6	NA	NA	NA
Government	5	NA	327,643	327,643
Education	1	NA	NA	NA
Utilities	3	NA	244,264	NA
Total	**373**	**$4,107,644**	**$31,889,767**	**$35,997,411**

Sources: City of Aurora, Buchanan County Assessor, Planning Committee; INRCOG
Notes: Government = City Hall, Fire Stations, Public Works Buildings, Community Buildings, Libraries; Utilities = Water and Waste Water facilities; Residential, Industrial, and Agricultural values based on 2015 data; Religious/Non-Profit, Government, Education, and Utilities values based on 2012 data.

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development.

Repetitive Loss Properties/National Flood Insurance Program

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. As of 11/30/2014, there were no repetitive loss properties within the city.

According to FEMA data (as 8/31/2016), the City of Fairbank has two properties participating in the National Flood Insurance Program with at total insurance in force of 280,900. There are no repetitive loss properties in the community.

The city's FIRM maps were updated on July 16, 2008. Using GIS spatial data from FIRM maps, in combination with property value data from the Buchanan Assessor's office, estimates of value in the floodplain were calculated. Table C8 shows the estimated value of land, buildings, and dwellings, within the city, in a floodplain. As is demonstrated in the table, as well as on Maps 3g and 3h the city's floodplain properties are adjacent to the north/south flowing Little Wapsipinicon River which bisects the town.

TABLE C8: FLOODPLAIN DATA FOR FAIRBANK

	Number of Parcels	Land Value	Building Value	Dwelling Value	Total Value	Percent of City Affected
1% Annual Floodplain	59	$653,820	$1,350,155	$2,795,180	$4,799,155	15.72%
0.2% Annual Floodplain	-	-	-	-	-	

Source: Buchanan County Assessor's Office; Analysis conducted by INRCOG; Parcel values and FIRM maps as of 6/6/2016

This HMP attempts to reduce loss by identifying potential natural and manmade hazards. As a result of many natural and manmade hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs.

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at their second committee meeting. The committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for the City of Fairbank are as follows:

1. Prevent avoidable disasters.
2. Take steps to mitigate the probable negative consequences that may occur as a result of natural, technological, and/or man-made disasters.
3. Identify potential funding sources needed to accomplish identified mitigation projects.
4. Protect the health and welfare of the entire community by sufficiently maintaining all first responder organizations.
5. Return to pre-disaster or improved conditions as soon as possible after a disaster occurs.
6. Maintain the Multi-Jurisdictional format for future plan updates.

Current Mitigation Actions

Prevention Mitigation Actions

Table C9 provides a compilation of the current planning and regulatory documents in place for Fairbank.

TABLE C9: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR FAIRBANK

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes – 2012	Yes	No	Yes	Yes	Yes	No	No	No

Property Protection Mitigation Actions

As a result of the 1993 Flood, the City conducted a Housing Buy-Out program to remove existing housing from the floodplain. Seven houses were removed with the assistance of federal funds. This program proved to be correct alternative flood mitigation, as the 1999 flooding would have inundated the same housing. As the new flood of record, the 1999 Flood would have caused even greater damage to the homes that were purchased and removed.

Public Education and Awareness Mitigation Actions

The City has a public awareness plan for natural gas. Citizens receive a detailed letter regarding what to do in case of a gas emergency. The City also informs citizens of Iowa One Call and ALERT IOWA program.

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community.

Fire Department

Fire protection in the City of Fairbank is provided by a staff of 30 volunteer firefighters, 10 of whom are also EMT personnel. Of these firefighters, 10 are HAZMAT certified, and 15 have Firefighter I status. The fire department has in place 28E agreements with surrounding communities to provide and receive assistance as needed on a mutual aid basis. The communities that the Fairbank Fire Department maintains 28E agreements include all of Buchanan County and Fayette County, as well as the Fairbank.

The department currently operates the following equipment: 2000 Pumper; 1977 Pumper; 1985 Tanker; 2010 Grass Rig Pickup; 2007 Sterling Rescue Truck; and a 2014 Wheel Coach Ambulance

The fire department ensures communication through several methods. Those methods include E-911 Service, Radio Communication, Pagers, Alarm Systems, Sirens, and Cellular Phones. To date the fire department is not GPS equipped.

Medical Services

The hospital nearest to Fairbank is located in Oelwein. Therefore, Mercy Hospital is the primary hospital for the community. Although Mercy Hospital in Oelwein is closer, the planning committee noted that most residents of Fairbank utilize Allen Memorial Hospital in Waterloo. There are six other hospitals available in a 30-mile radius of the City of Fairbank. There are currently 20 EMT personnel that provide service to the community. Of these 20 EMT personnel, 10 also serve as firefighters. The city purchased a new ambulance in 2014.

Police

The Fairbank Police Department, Buchanan County Law Enforcement, and the Iowa State Patrol provide police protection to the City of Fairbank. The Fairbank Police Department currently employs one full-time and one part-time position. The department has a 2003 and 2004 squad car 2013 Ford Taurus Interceptor in its service.

Warning Systems

In the event of a tornado the City of Fairbank has two outdoor warning sirens that, given enough time, can allow people to search for suitable shelter. In addition, there are a wide variety of early warnings provided through local radio and television stations and the cable Weather Channel. The sirens are also used to inform citizens of utility outages. Recently, Buchanan County began utilizing the state's new ALERT IOWA Program. Residents can sign up for voice, text, and/or email alerts in the event of an emergency or severe weather condition.

Snow Removal

The City of Fairbank views proper snow and ice removal from roadways to be essential in mitigating negative effects of these events. Snow removal and ice prevention techniques are practiced by city and state employees on the corresponding local and state roadways within the city limits. The City currently employs one part time driver for snow removal efforts. Equipment used for snow and ice removal includes: 2007 dump truck with snow plow, 1985 Road Grader, and two John Deere tractors with end loaders. In the event that the part-time cannot perform his or her duties, drivers can be pulled from other City departments as necessary.

Natural Resource Protection Mitigation Actions

The City conducted an island restoration project – dredging of the river channel – and a river bank stabilization project.

In 2016, the city undertook $4 million upgrade to the sanitary sewer treatment facility to remain in compliance with DNR and EPA regulations. The city funded this project through the DNR's State Revolving Loan Fund (SRF). As a benefit of the SRF program, the city will be able to use a percentage of the interest paid on the loan for water quality improvements. The city is planning to install permeable pavers, to reduce runoff and sedimentation, on the west bank of the Little Wapsipinicon River next to the existing boat ramp.

Structural Projects Mitigation Actions

The City has rebuilt a flood gate to regulate the water flow.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table C10) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly, or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

TABLE C10: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).
- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and indicated at which of the city's goals the action addresses. Table C11 below is the City of Fairbank's Implementation Strategy.

TABLE C11: FAIRBANK'S FUTURE HAZARD MITIGATION ACTIVITIES						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation**	**Timeline**	**Est. Cost**	**Associated Goal(s)**
Prevention						
High	Improve city's water quality by drilling a new well, treating, or other alternatives to reduce the risk of radium in the city's water supply.	Human Disease	Mayor, City Council	Long-Term	High	1
High	Continue participation in the National Flood Insurance Program	Flash Flood	City Engineer	Long-Term	Minimal	2
High	Maintain, enforce, and update Zoning and Floodplain Ordinances as needed	River Flooding	City Council	Long-Term	Minimal	2
Medium	Work towards adoption of Building Code	Infrastructure Failure	City Council	Long-Term	Minimal	6
Medium	Continue to enforcement of snow ordinance	Severe Winter Storm	Public Works	Active	Moderate	2
Low	Make necessary updates to and enforce city guidelines for burning, as well as enforcing the county-wide guidelines for burning	Grass/Wild Fire	Fire Department	Active	Minimal	1
Low	Create an annual fire inspection program for commercial and industrial properties	Infrastructure Failure	Fire Department	Long-Term	Minimal	2
Low	Continue to enforce tree inspection and trimming program	Tornado/Windstorm	Public Works	Active	Minimal	1
Low	Develop a plan for rationing water use with the community	Drought	Environmental Health	Long-Term	Minimal	4
Property Protection						
Medium	Flood proof structures in the floodplain	River Flooding	City Engineer	Active	Moderate	4
Low	Install back-flow valves at residences	Flash Flood	Public Works	Long-Term	High	1
Natural Resource Protection						
High	Keep working on river channel	River Flood	City Engineer	Active	Moderate	3
Medium	Develop a wellhead protection program	Infrastructure Failure	Public Works	Active	High	4
Medium	Consider development of a storm water management program	Flash flood	City Engineer	Short-Term	Moderate	2
Medium	Encourage the use of buffer strips	River Flooding	City Engineer	Active	Moderate	2
Public Education & Awareness						
High	Increase community awareness of all hazards through use of newsletters, utility billings, city website, etc.	Infrastructure Failure	City Council	Active	Minimal	2

High	Continue to promote use of Buchanan County's Code Red System	Tornado/Windstorm	Fire Department	Active	Low	2
Medium	Educate the public on what to do before, during, and after all hazard events	HAZMAT Incident	Fire Department	Active	Low	4
Medium	Provide hazardous materials education for industry and community, including household chemical education	HAZMAT Incident	Environmental Health	Mid-Term	Low	4
Medium	Encourage all residents, and pets, to have up-to-date immunizations	Human Disease	Police Department	Short-to-Mid-Term	Moderate	2
Medium	Develop a 'tornado safe room' awareness program	Tornado/Windstorm	Fire Department	Active	Low	2
Low	Provide an annual local household hazardous waste drop off site	HAZMAT Incident	Public Works	Short-Term	Minimal	2
Low	Continue to promote use of Iowa One Call	Infrastructure Failure	Public Works	Mid-Term	Low	2
Low	Develop a NOAA Weather Radio awareness program	Tornado/Windstorm	Fire Department	Long-Term	Low	2
Low	Encourage residents to plant shade trees near dwellings	Extreme Heat	City Council, Public Works	Long-Term	Low	1
Emergency Services						
High	Maintain fire and rescue services	Infrastructure Failure	Fire Department	Active	High	2
High	Identify possible funding sources for projects and programs	Infrastructure Failure	Mayor	Active	Low	3
High	Continue HAZMAT Training	HAZMAT Incident	Fire Department, Public Works	Active	Moderate	1
High	Upgrade radio communication equipment	Infrastructure Failure	Fire Department, Police Department	Active	Moderate	3
High	Keep sirens updated	Tornado/Windstorm	Public Works	Active	Moderate	1
High	Continue to put electric lines underground	Infrastructure Failure	Public Works	Active	Moderate	1
High	Develop a plan for sandbagging in the community	River Flooding	Fire Department, Police Department	Active	Low	1
High	Continue to provide necessary training to fire department, law enforcement, and ambulance crews	Infrastructure Failure	Fire Department, Police Department	Active	Moderate	4
High	Maintain existing and purchase new firefighting equipment as needed	Infrastructure Failure	Fire Department, Police Department	Active	High	4
High	Maintain existing 28E agreements with surrounding communities for mutual aid assistance	Infrastructure Failure	City Council	Active	Moderate	6
High	Encourage local utility to install surge protectors on major electric lines	Infrastructure Failure	Public Works	Active	High	5
High	Continue working with the Linn County HAZMAT response group	HAZMAT Incident	Fire Department, Police Department	Active	Moderate	4

gh	Ensure hazardous materials are reported (Tier II reports) in accordance with applicable laws	HAZMAT Incident	Public Works	Active	Low	4
High	Regularly review and amend fire, medical, and hazardous material response standard operating procedures	Infrastructure Failure	Fire Department, Police Department, Public Works	Active	Low	4
High	Maintain weather spotter training	Tornado/Windstorm	Fire Department, Police Department	Active	Low	1
High	Update Emergency Response Plan	Tornado/Windstorm	Fire Department, Police Department	Active	Low	1
Medium	Return to normal as soon as possible	Infrastructure Failure	Fire Department, Police Department, Public Works	Active	Moderate	5
Medium	Mitigate potential hazards and disasters	HAZMAT Incident	Fire Department, Police Department, Public Works	Mid-Term	Low	1
Medium	Maintain multi-jurisdictional hazard mitigation plan through regular evaluations and updates	HAZMAT Incident	City Council	Active	Low	6
Medium	Have access to senior housing for checks	Infrastructure Failure	Police Department	Active	Low	4
Medium	Centralize equipment and materials	Infrastructure Failure	Public Works	Active	Moderate	5
Medium	Ensure proper training of Floodplain Manager	River Flooding	City Engineer, Public Works	Active	Moderate	1
Medium	Update and install improved signage as it become necessary	Infrastructure Failure	City Council	Short-Term	Moderate	1
Medium	Consider the use of Incident Command procedures	Infrastructure Failure	Police Department, Fire Department	Active	Low	4
Medium	Establish local ‘heating’ and ‘cooling’ sites for at-risk populations	Infrastructure Failure	Fire Department, Police Department, City Council	Active	Moderate	4
Medium	Install Global Positioning Systems (GPS) in all emergency vehicles	Infrastructure Failure	Fire Department, Police Department, Public Works	Short-Term	Moderate	3
Low	Maintain a list of available translators in the community	Infrastructure Failure	City Council	Long-Term	Low	4
Low	Maintain access to Geiger counters for first responders	Radiological Incident	Public Works	Long-Term	Moderate	3
Low	Develop a Continuity of Operations Plan	ALL	City Council, City Departments, Fire Department, Police Department, Ambulance Service, Buchanan County EMA	Long-Term	Low	2
Structural Projects						
Medium	Continue with improvements to the storm sewer system	Flash Flood	Public Works	Active	Moderate	3
Low	Construction rigid barriers around sites that store explosive materials	Infrastructure Failure	Fire Department	Long-Term	High	4
Low	Replace inadequate bridges to increase weight capacity, structural issues, and maximize water flow	Transportation Incident	City Engineer, City Council	Long-Term	High	3

APPENDIX D: CITY OF HAZLETON

COMMUNITY PROFILE

Location

The City of Hazleton is located in north central Buchanan County. The city is located approximately 4 miles south of Oelwein and about 11 miles north of the City of Independence. Hazleton is located on Highway 150, which connects Hazleton to U.S. Highway 20 and Interstate 380 to the south and Highway 3 to the north.

Development Trends

Hazleton has been literally a city on the move. In 1852, Allen Coy built a store at what was called Coytown. The next year, two stores and a post office were built two miles south and were called Greeley's Grove (later named Hazleton). Then, in 1873, the Burlington, Cedar Rapids and Northern Railroad was built one mile west of Greeley's Grove. The entire community of shops, stores and dwellings were moved to the railroad and became the Hazleton of today. Hazleton incorporated in 1892 and had grown to a population of 500 by the census of 1900. By 1980, Hazleton's population had grown to 877, a 40% increase since the 1970 census and 75% since 1900.

Demographics

Tables D1.1 and D1.2 highlight Hazleton's demographics. Hazleton's population experienced a 13% decline since 2000, falling to 823 from 950 residents. The median age jumped 7.2% to 40.7 instead of 33.5.

Natural Environment

To the west of the Hazleton lies a large Amish farm community, with a number of shops and crafts located throughout. Shops include cabinet, lawn furniture, furniture, machine parts, harness, buggy and a cedar chest shop. You can also find quilts, clock repair,

TABLE D1.1: HAZLETON'S DEMOGRAPHICS

Government Framework	Mayor – City Council
General Population, 2010 Census	
Total Population, 2010	823
Total Males, 2010	444
Total Females, 2010	379
Median Age, 2010	40.7
At-Risk Population, <18 Yrs., 2010	202
At-Risk Population, >64 Yrs., 2010	111
One Race-White, 2010	797
One Race-Black or African American, 2010	4
One Race – American Indian and Alaska Native, 2010	13
Two or More Races, 2010	9
Hispanic or Latino (of any race), 2010	13
Total Household Population, 2010	823
Total Population in Group Quarters,2010	0
Total Family Households, 2010	207
Total Family Households with Children under 18, 2010	91
Male Householder, no wife present, with children under 18, 2010	12
Female Householder, no husband present, with children under 18, 2010	25
Households with individuals 65yrs and over, 2010	84
Householder living alone, 2010	125
Average household size, 2010	2.32
Average family size, 2010	3.00
Housing Characteristics, 2010 Census	
Total Housing Units, 2010	402
Occupied Housing Units, 2010	354
Vacant Housing Units, 2010	48
Rental Vacancy Rate, 2010	25%
Owner-Occupied Housing Units, 2010	281
Population in Owner-Occupied Housing Units, 2010	681
Rental-Occupied Housing Units, 2010	73
Population in Rental-Occupied Housing Units, 2010	142

bakeries, garden products, handmade baskets, shoe repair and bulk food stores.

To the south of Hazleton you can visit Fontana Park, a major county park located on Otter Creek, with a lake, nature center and wildlife display. There are also nature trails, a playground, picnic areas and full service campground.

Transportation

Hazleton is located along Highway 150 and County Road C57.

Community Services

The city's water system is supplied by wells, and the city has an elevated storage capacity of 100,000 gallons. The average daily consumption is 45,000 gallons per day (gpd) with a peak use of 80,000-gpd. The Iowa Department of Natural Resources recommends that a community water supply should provide a minimum storage capacity for two day's emergency use in case of power or pump failure. To meet minimum recommended storage capacity, the city would require a 120-150 gallon storage facility.

Nearly all of the community is served by the city's sewage treatment system. The average load in gallons per day is 110,000 with a peak load of 170,000-gpd. The wastewater treatment facility has a design capacity of 489,000 gpd. A major lift station was flood prone, however after the 1999 Flood event that facility was flood proofed.

The City of Hazleton currently has a number of open swales and ditches used for storm runoff through residential areas of the community. The storm water runoff is generally fairly quick and causes flooding of residential homes. The damage is from surface waters and at times will flood basements and residential yards in the path of the drainage. No dedicated storm sewer system is in place.

TABLE D1.2: HAZLETON'S DEMOGRAPHICS

Economics Characteristics, 2010-2014 ACS (Est.)	
Population In Labor Force (16 yrs. and over)	637
Persons in Civilian Labor Force	435
Persons Employed	389
Persons Unemployed	46
Persons in Armed Forces	0
Mean Travel Time to Work in Minutes (16 yrs. & over)	21.2
Persons Employed in Management, Professional, or Related Occupations	66
Persons Employed in Service Occupations	86
Persons Employed in Sales and Office Occupations	76
Persons Employed in Natural Resources, Construction, and Maintenance Occupations	57
Persons Employed in Production, Transportation, or Material Moving Occupations	104
Median Household Income	$39,632
Median Family Income	$41,607
Per Capita Personal Income	$17,347
Social Characteristics, 2010-2014 ACS (Est.)	
School Enrollment (3 yrs. and over)	223
Nursery School, Preschool	16
Kindergarten and Elementary School (grades K-8)	125
High School (grades 9-12)	83
College or Graduate School	15
Education Attainment: Population 25 Years and Over	534
Persons with Less than 9th Grade	23
Persons with 9th to 12th Grade, No Diploma	32
Persons with High School Degree or Equivalency	247
Persons with Some College, No Degree	156
Persons with Associate Degree	55
Persons with Bachelor's Degree	21
Persons with Graduate or Higher Degree	0

Table D2 displays the primary utility providers for the city.

TABLE D2: HAZLETON UTILITY PROVIDERS

Electric	Natural Gas	Telephone/Internet	Cable	Water	Sewer	Sanitation
Alliant Energy	Alliant Energy	Mediacom Windstream	Mediacom Dish	City of Hazleton	City of Hazleton	Waste Management

HAZARDS & RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Hazleton's evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Hazleton's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions including: Historical Occurrence, Probability, Magnitude or Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
= Final Hazard Assessment Score

Table D3 is the analysis scores for the City of Hazleton. As seen in Table D3, the top two hazards for are Severe Winter Storm and Transportation Incident.

	TABLE D3: IDENTIFIED HAZARDS IN HAZLETON					
Hazard Rank	**Hazards**	**Probability**	**Magnitude/Severity**	**Warning Time**	**Duration**	**Assessment Score**
1	Severe Winter Storm	3	4	2	3	**3.15**
1	Transportation Incident	3	3	4	3	**3.15**
3	Tornado/Windstorm	2	4	4	4	**3.1**
3	Infrastructure Failure	2	4	4	4	**3.1**
5	Drought	2	3	4	4	**2.8**
6	Animal/Plant/Crop Disease	2	2	4	4	**2.5**
6	Thunderstorm/Lightning/Hail	3	2	3	1	**2.5**
6	HAMZAT Incident	2	2	4	4	**2.5**
6	Terrorism	2	2	4	4	**2.5**
10	River Flooding	3	2	2	2	**2.45**
11	Extreme Heat	3	2	1	3	**2.4**
12	Human Disease	2	2	3	3	**2.25**
13	Flash Flood	2	2	3	2	**2.15**
14	Sinkholes	1	1	4	4	**1.75**
14	Levee/Dam Failure	1	1	4	4	**1.75**
14	Radiological Incident	1	1	4	4	**1.75**
17	Earthquake	1	1	4	1	**1.45**
17	Expansive Soils	1	1	4	1	**1.45**
17	Grass/Wild Fire	1	1	4	1	**1.45**
17	Landslide	1	1	2	3	**1.35**

Vulnerability – Identifying Assets (Critical Facilities) & Social Asset Populations

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Hazleton.

TABLE D4: SHELTERS IN HAZLETON

City Hall	Fire Station
Tornado Shelter in Mobile Home Park	

Source: Community

Identifying the location of critical facilities and designated shelters (see Table D4) in Hazleton is important in order to assess their vulnerability to hazards since these facilities are important to the community's operations, quality of life, and are key components of the economic sector. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. Map 5E, in Attachment 1, illustrates the location of identified critical facilities throughout Hazleton.

The social vulnerability assessment also identified how the hazards affect the population of Hazleton and it is assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. Table D4 presents an overview of the at-risk population in Hazleton according to available information retrieved from the 2010 U.S. Census and Iowa Data Center.

According to Table D5, 13.4% of residents are 65 years or older. There are 19 residents living alone. The average household size of is 2.32.

TABLE D5: "AT-RISK" POPULATION FOR HAZLETON

Total Community Population, 2010	823
Elderly (65 yrs and older), 2010	111
Youth (17 yrs and under), 2010	202
Householder Living Alone, 2010	125
Population Living in Poverty (2000)	110
Population in Multi-Family Structures*, 20 units (2010-2014)	34
Population in Mobile Homes (2010-2014), 46 units	129
Group Quarters Population, 2010	0
Persons with Disabilities (2010-2014)	118

Source: U.S. Census, 2010, 2010-2014 ACS (Est.) and Iowa Data Center
**Excludes 1-unit attached and detached, and 2-units*

Persons under the age of 17 are also at higher risk during some disasters. This is mostly due to the fact that young persons often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, there was 24.5% of the city's total population under the age of 17.

Otter Creek enters the Hazleton corporate borders in the northwestern portion of the community. It then flows west and then drops southwesterly out of the municipality. The creek has experienced flooding numerous years (1968, 1990, 1993 and 1999). The Hazleton Otter Creek Bridge on Hayes Street has been damaged in past flood events and is prone to future flooding until the bridge deck is raised and the span increased. The city's main lift station for the wastewater facility has been impacted by past flood events; however, flood proofing and replacement of the motors resolved the issues.

Attachment 3: Flood Map of the City and *Attachment 4: Flood Scenario Map of the City* shows the 100-year floodplain for Hazleton and the potential impact a flooding event would have on the community.

TABLE D6: FLOODPLAIN INFORMATION FOR HAZLETON

Population in Hazard Area*	12
1-4 Family Structures in Hazard Area*	4
Other Structures in Hazard Area*	1
Buildings in 100-Year Floodplain**	3
Buildings outside of 100-Year Floodplain**	607

Source: FEMA, INRCOG & Buchanan County Assessor
**Per FEMA 6/4/2009 information*
***Per INRCOG, City & County GIS Information, and FEMA Q3 flood data supplied by IDNR, 500-year floodplain includes all the 100-year floodplain*

According to available information shown in Table D6, there are still approximately twelve people living within the floodplain. There are four 1-4 family structures and one other within the hazard area.

Another population considered to be more at risk than others are those in mobile homes. According to 2010-2014 American Community survey estimates, the City of Hazleton has 46 mobile home units within the city limits. Using the available data, we can estimate that the number of people residing in mobile homes in the City of Hazelton is approximately 129 (see Table 54). The city's mobile home park does have a tornado shelter.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (D7) lists assets that could be affected in the event of a hazard within the city.

This information was made available from the Buchanan County Assessors and analyzed by INRCOG planning staff. It should be noted however that these dollar amounts do not include gas and electric utility valuations or all tax exempt facilities (e.g. religious of government buildings). These results should be considered preliminary, as a full accounting of assets has not been completed.

TABLE D7: ASSET INVENTORY - ESTIMATED POTENTIAL PROPERTY LOSSES FOR HAZLETON				
Type of Structure	**Est. # of Structures**	**Land Value ($)**	**Building/Dwelling Value ($)**	**Total Value ($)**
Residential, Single Family	305	2,284,200	15,245,561	17,529,761
Multi Residential	7	112,320	540,330	652,650
Agricultural	2	89,389	15,350	104,739
Commercial	39	411,677	1,813,815	2,225,492
Industrial	0	0	0	0
Religious/Non-Profit	2	NA	500,000	500,000
Government	4	NA	750,000	750,000
Education	0	0	0	0
Utilities	1	NA	1,500,000	1,500,000
Total	**360**	**$2,897,586**	**$20,365,056**	**$23,262,642**
Sources: City of Aurora, Buchanan County Assessor, Planning Committee; INRCOG *Notes: Government = City Hall, Fire Stations, Public Works Buildings, Community Buildings, Libraries; Utilities = Water and Waste Water facilities; Residential, Industrial, and Agricultural values based on 2015 data; Religious/Non-Profit, Government, Education, and Utilities values based on 2012 data.*				

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development.

Repetitive Loss Properties/National Flood Insurance Program

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. As of 11/30/2014, the city did not have any repetitive loss properties.

The city participates in the National Flood Insurance Program (NFIP). However, according to FEMA data (as of 8/31/2016), the City of Hazleton has no properties participating in the National Flood Insurance Program.

The city's FIRM maps were updated on July 16, 2008. Using GIS spatial data from FIRM maps, in combination with property value data from the Buchanan Assessor's office, estimates of value in the floodplain were calculated. Table D8 shows the estimated value of land, buildings, and dwellings, within the city, in a

floodplain. As shown on floodplain maps Map 3i and Map 3j, the majority of the city's floodplain area is on the north and east sides of the community, adjacent to the north/south flowing Otter Creek.

TABLE D8: FLOODPLAIN DATA FOR HAZLETON

	Number of Parcels	Land Value	Building Value	Dwelling Value	Total Value	Percent of City Affected
1% Annual Floodplain	63	$623,429	$189,210	$1,193,870	$2,006,539	9.51%
0.2% Annual Floodplain						

Source: Buchanan County Assessor's Office; Analysis conducted by INRCOG; Parcel values and FIRM maps as of 6/6/2016

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at their second committee meeting. The committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for the City of Hazleton are as follows:

1. Prevent avoidable disasters.
2. Take steps to mitigate the probable negative consequences that may occur as a result of natural, technological, and/or man-made disasters.
3. Identify potential funding sources needed to accomplish identified mitigation projects.
4. Protect the health and welfare of the entire community by sufficiently maintaining all first responder organizations.
5. Return to pre-disaster or improved conditions as soon as possible after a disaster occurs.
6. Maintain the Multi-Jurisdictional format for future plan updates.

Current Mitigation Actions

Prevention Mitigation Actions

Table D8 provides a compilation of the current planning and regulatory documents in place for Hazleton.

TABLE D8: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR HAZLETON								
Previous HMP	**Comprehensive Plan**	**Building Code**	**Zoning Ordinance**	**Subdivision Regulations**	**Floodplain Management Ordinance**	**Tree-Trimming Ordinance**	**Storm Water Ordinance**	**Snow Removal Ordinance**
Yes – 2012	Yes	No	Yes	Yes	No	Yes	Yes	Yes

Property Protection Mitigation Actions

The City has installed several large storm water pipes under Highway 150 in order to alleviate flooding in residential areas and overflowing certain streets. The City acquired two abandoned homes. The sewer lift station has a standalone generator. A portable generator was purchased and the water tower and lift stations are setup for generators. Smoke alarms were installed at city properties and a heat detector was installed at the fire station. The City also passed an ordinance stating city properties were weapon free zones.

Public Education and Awareness Mitigation Actions

City employees, including Mayor and Council members are educated regularly so the public can be properly informed of disaster events.

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community.

Fire Department

The Fire and Ambulance Departments are viewed as community strengths. Currently, the Fire Department has 18 volunteers. The city has four First Responders who serve the community. The needs of both departments include more space, updating equipment, and improving the city's insurance audit for fire service. The City has two pumpers; one is a 1970 and the second is a 1994 unit. The community's tank truck was rebuilt in 1998. There is no ambulance based within the community. Hazleton is served by Oelwein and Independence.

In 2014 it was estimated that the firefighters responded to 20 fire calls and approximately 100 medical calls. In 2015 the city, with use of city funds and private donations, built a new fire station.

Public Works Department

The Public Works employee is contacted by radio when on the job or as needed in the case of an emergency. The City operates a number of vehicles and

equipment including dump trucks and pick-up trucks. As part of the emergency plan, the city has a list of companies with additional equipment that may be needed in the case of an emergency or hazard situation.

Medical Services

The hospital, Mercy Hospital of Franciscan Sisters, nearest to Hazleton is located in Oelwein. According to the hazard mitigation planning committee, some members of the community utilize People's Regional Hospital in Independence.

Police

Buchanan County Law Enforcement and the Iowa State Patrol provide police protection to the City of Hazleton.

Warning Systems

An early warning siren is operated by the County Emergency Management Director on a 24-hour basis. In addition, there are a wide variety of early warnings provided through local radio and television stations, and the cable Weather Channel. In recent years the city has updated their warning sirens. In addition, the city is now participating in the ALERT IOWA program, a statewide emergency notification program in which residents can sign up for text, phone, or email alerts when there is a disaster threat.

Natural Resource Protection Mitigation Actions

A mower and tractor were purchased. In addition, a special mower was purchased to maintain lagoons to prevent breaches in sewage confinement.

Structural Projects Mitigation Actions

Since the last MJ-HMP, the city has completed the C57 Bridge which passes over Otter Creek. The city also purchased a backup generator for their lift station. Hazleton has or is currently doing: emergency sirens have been updated; installed standalone generator at South Life Station; installed quick connect to portable generator for North Life Station; erected new water tower; connected with rural water for additional water source, if needed.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table D9) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly,

TABLE D9: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).
- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and indicated at which of the city's goals the action addresses. Table D10 below is the City of Hazleton's Implementation Strategy.

TABLE D10: FUTURE HAZARD MITIGATION ACTIVITIES- HAZLETON						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation**	**Timeline**	**Est. Cost**	**Associated Goal(s)**
Prevention						
Medium	Develop and maintain tree trimming program to reduce the chances of falling branches on infrastructure and property	Animal/Plant/Crop Disease, Thunderstorm/Lightning/Hail, Severe Winter Storm, Tornado/Windstorm	Public Works	Active	Minimal	1
Medium	Buyout of flood prone residential hours	Flash Flood, River Flooding, Thunderstorm/Lightning/Hail	City Council, Mayor	Long-Term	Low	1,3,4
Medium	Maintain, Enforce, and Update City Ordinances (includes Zoning & Floodplain) and Building Codes	Animal/Plant/Crop Disease, Infrastructure Failure	City Council, Mayor, Public Works	Active	Minimal	1,4
Medium	Improve storm water drainage throughout city as well as specifically in Hazleton City Park	Flash Flood, River Flooding	Public Works	Short-Term	Low	1
Medium	Enforce burn bans	Drought, Extreme Heat, Grass/Wild Fire	Fire Department	Active	Low	1,4
Low	Explore the adoption of a countywide building code with shared enforcement	Flash Flood, River Flooding, Severe Winter Storm, Tornado/Windstorm, Infrastructure Failure	Mayor, City Council, Buchanan County Board of Supervisors	Active	Low	1,2,3
Public Education & Awareness						
High	Public Awareness	Animal/Plant/Crop Disease, Drought, Extreme Heat, Flash Flood, Grass/Wild Fire, Human Disease, River Flooding, Severe Winter Storm, HAZMAT Incident, Tornado/Windstorm, Infrastructure Failure, Thunderstorm/Lightning/Hail, Radiological Incident, Transportation Incident, Terrorism	Mayor, City Council, Fire Department, Public Works	Active	High	1,2,4
Medium	Continue participation in NFIP	Flash Flood, River Flooding, Thunderstorm/Lightning/Hail	Mayor, City Council, Buchanan County Board of Supervisors	Active	Minimal	1,3,4,5
Emergency Services						
High	Update communication radios	Flash Flood, Grass/Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Fire Department, Ambulance Service	Active	Low	1,3,4
High	Develop an emergency evacuation and notification plan (including identifying detour and evacuation routes)	All	Fire Department, Public Works, Mayor, City Council	Active	Minimal	1

High	Continue to test local drinking water supply to monitor quality	Animal/Plant/Crop Disease, Drought, Earthquake, Extreme Heat, Flash Flood, Grass/Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Radiological Incident, Transportation Incident, Terrorism	Public Works	Active	Minimal	1
High	Maintain a well trained and equipped fire department and first responders for all potential hazards	Animal/Plant/Crop Disease, Drought, Extreme Heat, Flash Flood, Grass/Wild Fire, Human Disease, Landslide, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Radiological Incident, Transportation Incident, Terrorism	Mayor, City Council, Fire Department	Active	Moderate-High	1,3,4
High	Continue donations of smoke detectors to community	Extreme Heat, Grass/Wild Fire, Thunderstorm/Lightning/Hail, Tornado/Windstorm	Fire Department	Active	Minimal	1,4
Medium-High	Evaluate & update outdoor siren system for the east side of town	Flash Flood, Grass/Wild Fire, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	Mayor, City Council, Fire Department	Short-Term	Low	1,3
Medium-High	Maintain Public Works Equipment	Animal/Plant/Crop Disease, Extreme Heat, Flash Flood, Grass/Wild Fire, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/Dam Failure, Transportation Incident, Terrorism	City Council, Mayor, Public Works	Active	Moderate	1,3
Medium-High	Continue to back-up city data and store offsite	Extreme Heat, Flash Flood, Grass/Wild Fire, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Mayor, City Council, City Clerk	Active	Low	1,2
Medium-High	Continue good working practices of wastewater management during flood events	Flash Flood, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Transportation Incident	Mayor, City Council, Public Works	Active	High	1,3
Medium	Keep HAZMAT manuals current and easily accessible	Animal/Plant/Crop Disease, Extreme Heat, Flash Flood, Grass/Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Radiological Incident, Transportation Incident, Terrorism	City Council, Mayor, Public Works	Active	Minimal	1
Low	Work with designated authorities to ensure dead animals as properly disposed of	Animal/Plant/Crop Disease, Drought, Extreme Heat, Flash Flood, Grass/Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Mayor, City Council, Environmental Health, Compliance Officer	Active	Minimal	1
Low	Restrict water usage during drought necessary to maintain water supply	Animal/Plant/Crop Disease, Drought, Extreme Heat, Flash Flood, Grass/Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Mayor, City Council, City Engineer, Public Works	Active	Minimal	1,4

Low	Eliminate and cap private and abandoned wells in city	Animal/Plant/Crop Disease, Flash Flood, Grass/Wild Fire, Human Disease, River Flooding, Thunderstorm/Lightning/Hail, Radiological Incident, Terrorism	City Engineer, Public Works, City Council, Mayor	Active	Minimal	1,2
Structural Projects						
Medium	Install additional Storm Sewer System	Flash Flood, Landslide, River Flooding, Infrastructure Failure, Levee/Dam Failure, Radiological Incident, Transportation Incident	Mayor, City Council, City Engineer	Long-Term	High	1,3

APPENDIX E: CITY OF INDEPENDENCE

COMMUNITY PROFILE

Location

The City of Independence is located in the northeastern quadrant of the State of Iowa. More specifically, Independence is located in the middle of Buchanan County, of which it serves as the county seat.

Development Trends

In 1846, the cabin of Rufus B. Clark, a well-known pioneer and hunter of the time, occupied the present site of Independence. In 1847, to protect his land claim, Clark sought the assistance of his friend and advisor N. A. McClure of Milwaukee, and with S. P. Stoughton they succeeded in purchasing four 40-acre lots. In June of that same year, three commissioners appointed by the state visited the county and on the 15th of June, established the county seat and named it Independence.

As time passed, Independence became more important as a trading point and although there were many new residents, little advance was made in the permanent population for several years. By 1859, Independence had grown into a city of 1,500 inhabitants that consisted of mills and mechanic shops, churches, hotels, a courthouse, numerous stores and hundreds of private residences. The railroad came to Independence in 1859 and was instrumental in the continued growth of the community as well as the county.

In 1864, in order "…to make and enforce…rules and regulations as are necessary for the health and good order of a town," a petition for incorporation was filed and the act of incorporation was recorded on August 6, 1864, with the first election occurring in mid-December of that year. May 1st, 1873 marked the opening of the "State Hospital for the Insane," located west of town on 300 acres of land. This facility was renamed as a "State Hospital," and subsequently renamed again as a "Mental Health Institute". Currently, the facility serves a 20-county area of northeast Iowa.

Presently there are nine buildings in Independence listed on the National Register of Historic Places, the Wapsipinicon Mill and the Munson Building are two of the more recognizable of these buildings. The seven other locations that are listed on the National Register of Historic Places in the City of Independence include the Fisher-Plane Commercial Building (119 and 121 1st Street East), Maas Commercial Building (209 1st Street East), the Purdy, Eliphalet W. and Catherine E. Jaquish House (215 3rd Avenue Southwest), the Shellito, Dr. Judd D. and Margaret S. Clarke House (310 5th Avenue Southeast), the Wapsipinicon River Bridge (Highway 150 over Wapsipinicon River), the Weins Commercial Building (129-131 2nd Avenue Northeast), and the R.R. Plane Residence (301 3rd Avenue Southeast).

More recently, like many surrounding communities, the City of Independence experienced a rather bleak financial outlook during the farm crisis of the 1980s. During the 1980s the community dealt with population loss for the first time in seven decades. Fortunately, this trend reversed itself in the 1990s.

The city is constantly growing, with a variety of projects being undertaken by both private and public interests. A number of structures, following the floods of the 1990s, were identified as repetitive flood loss properties. Many of these identified properties have been purchased and removed in a cooperative effort between landowners, the City, and the Federal Emergency Management Agency. Besides population, the city has recently annexed in additional area that will eventually develop, providing jobs and security to the people of Independence and surrounding communities.

TABLE E1.1: INDEPENDENCE'S DEMOGRAPHICS

Government Framework	Mayor – City Council
General Population, 2010 Census	
Total Population, 2010	5,966
Total Males, 2010	2,793
Total Females, 2010	3,173
Median Age, 2010	43.3
At-Risk Population, <18 Yrs, 2010	1,427
At-Risk Population, >64 Yrs, 2010	1,177
One Race-White, 2010	5,825
One Race-Black or African American, 2010	18
Two or More Races, 2010	64
Hispanic or Latino (of any race), 2010	71
Total Household Population, 2010	5,809
Total Population in Group Quarters,2010	157
Total Family Households, 2010	1,566
Total Family Households with Children under 18, 2010	679
Male Householder, no wife present, with children under 18, 2010	55
Female Householder, no husband present, with children under 18, 2010	161
Households with individuals 65yrs and over, 2010	774
Householder living alone, 2010	813
Average household size, 2010	2.30
Average family size, 2010	2.92
Housing Characteristics, 2010 Census	
Total Housing Units, 2010	2,745
Occupied Housing Units, 2010	2,521
Vacant Housing Units, 2010	224
Rental Vacancy Rate, 2010	6.7%
Owner-Occupied Housing Units, 2010	2,521
Population in Owner-Occupied Housing Units, 2010	4,426
Rental-Occupied Housing Units, 2010	722
Population in Rental-Occupied Housing Units, 2010	1,383

Today, Independence has over 5,966 residents and numerous amenities: Buchanan County Health Center, Buchanan County Safety Center, Independence Police and Fire, Independence Light and Power Telecommunications, East Central Iowa Rural Electric Cooperative, superior parks and recreational opportunities, municipal airport, public pool and library, an active railroad, and many community service organizations. Recent development trends have seen commercial and residential along the Highway 20 corridor. The east northeast and southwest part of town has seen quite a bit of recent single family home construction.

Demographics

Tables E1.1 and E1.2 provide a brief glimpse at Independence's demographics. The community saw a small decrease in population, nine persons, between 2000 and 2010. The median age increased from 39.1 years in 2000 to 43.3 years in 2010.

Natural Environment

The topography of Independence is characterized as undulating. Much of the community is relatively flat, while other areas, primarily along established waterways, and has areas of extreme slope. The highest point in the community is located in the northeastern reaches of the city and has an elevation of approximately 980 feet above mean sea level. The lowest elevation, which is approximately 902.3 feet above mean sea level, is found along the Wapsipinicon River in the southeastern part of the community

The Wapsipinicon River is the most prevalent water body to pass through the City of Independence. It is also the largest, most influential water body to pass through Buchanan County. The Wapsipinicon River's flow is generally from northwest to southeast. The drainage area at the mouth of the river is approximately 2,540 square miles. At Independence, the drainage area is estimated to be 1,048 square miles.

TABLE E1.2: INDEPENDENCE'S DEMOGRAPHICS

Economics Characteristics, 2010-2014 ACS (Est.)	
Population In Labor Force (16 yrs. and over)	4,720
Persons in Civilian Labor Force	3,151
Persons Employed	3,020
Persons Unemployed	131
Persons in Armed Forces	0
Mean Travel Time to Work in Minutes (16 yrs. & over)	15.4
Persons Employed in Management, Professional, or Related Occupations	955
Persons Employed in Service Occupations	675
Persons Employed in Sales and Office Occupations	555
Persons Employed in Natural Resources, Construction, and Maintenance Occupations	307
Persons Employed in Production, Transportation, or Material Moving Occupations	528
Median Household Income	$51,169
Median Family Income	$68,821
Per Capita Personal Income	$27,603
Social Characteristics, 2010-2014 ACS (Est.)	
School Enrollment (3 yrs. and over)	1,238
Nursery School, Preschool	116
Kindergarten and Elementary School (grades K-8)	739
High School (grades 9-12)	242
College or Graduate School	141
Education Attainment: Population 25 Years and Over	4,006
Persons with Less than 9th Grade	159
Persons with 9th to 12th Grade, No Diploma	189
Persons with High School Degree or Equivalency	1,528
Persons with Some College, No Degree	654
Persons with Associate Degree	552
Persons with Bachelor's Degree	704
Persons with Graduate or Higher Degree	220

The headwaters of the Wapsipinicon River can be found in Mower County, Minnesota. However, the vast majority of the Wapsipinicon Watershed area is actually located in the State of Iowa, with only approximately 13 square miles is located in Minnesota. Upstream from Independence there are nearly 96 miles of stream, with an average basin width of about 13 miles. The United States Environmental Protection Agency (EPA) shows the City of Independence is located near the bottom of the Upper Wapsipinicon Watershed. The Upper Wapsipinicon has a drainage area of 1,569.43 square miles and contains eight rivers and streams for a total of 2177.1 river miles. There are also 120 lakes covering 1632.7 acres.

Transportation

Two major highways that intersect on the southern edge of town serve Independence; these are U.S. Highway 20 and State Highway 150. Highway 20 provides a direct east-west route to Waterloo and Dubuque, while Highway 150 in a north-south route from Decorah to Cedar Rapids. Independence is also served by County Highway D22.

The City of Independence has and maintains a local airport that is open to the public. The airport itself does not offer any regular commercial service. Located approximately three miles southwest of downtown Independence, the airport lays just north of Highway 20.

The elevation of the runway is reported to be 978 feet above mean sea level. The runway is concrete and measures 5,500 feet long and 100 feet wide. The airport maintains one white/green beacon and medium intensity runway edge lighting. In 2010, there are 28 aircraft based at the airfield; 22 are single engine airplanes, two multi-engine aircraft, and four ultra-lights. The aircraft generate approximately 7,000 annual operations per year. These figures are projected to increase to 36 aircraft and 9,000 annual operations by 2030.

The Canadian National Railway Company also maintains a rail line that passes through the north end of the community. This rail line is part of a line that runs from Dubuque to Sioux City and beyond.

North of the Mill Dam, the Wapsipinicon River is commonly used by small watercraft (i.e. fishing boats, pontoons, jet-skis, etc.) for recreational purposes. The river is not of sufficient size to support any large commercial traffic. Different areas of the water in and around the community are also occasionally used for swimming.

Community Services

The City of Independence has a municipal water supply with over 2,800 connections. The water is taken from five locally located wells. The city has three water towers with a total capacity of 1,050,000 gallons. Typical daily usage is about 600,000 to 700,000 gallons per day and over 250 million gallons are used annually in the city. The water is treated with fluoride and chlorine at each well. One recent major upgrade to the water system was the addition of a third water tower and no major improvements are projected for the near future.

As a result of expanding development into areas along the south side of town, water service infrastructure was put in place to provide service to an additional 1,200 acres of property. In recent years, water mains have been extended to four subdivisions. Further extensions are planned in the near future. To date, heavy flooding has not impacted the water supply system.

The current Waste Water Treatment Facility consist of a waste management mechanical treatment facility (two-stage trickling filter), located southeast of the city limits that can be reached via Three Elms Park Road SE. The facility is situated to the south of the ball complex. The wastewater is transported to the ponds

with the assistance of two wastewater lift stations. The primary wastewater lift station is located along Lovers Lane on the south central edge of the city. There has been substantial improvement recently made to this lift station including the replacement of a pump, which allowed for additional pumping capacity. The secondary wastewater lift station is to be found on the extreme east fringe of the city limits, just north of County Highway D22. In 2015/2016, the city began exploring options to upgrade the city's waste water treatment facility to remain compliant with their newly issued NYPDES permit.

Table E2 shows the primary utility providers for Independence.

TABLE E2: INDEPENDENCE UTILITY PROVIDERS						
Electric	**Natural Gas**	**Telephone/Internet**	**Cable**	**Water**	**Sewer**	**Sanitation**
Independence Light & Power	MidAmerican Energy	Independence Light & Power	Independence Light & Power Mediacom	City of Independence	City of Independence	Waste Management

HAZARDS & RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Independence evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Independence's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions including: Historical Occurrence, Probability, Magnitude or Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
= Final Hazard Assessment Score

Table E3 is the analysis scores for the City of Independence. As seen in Table E3, the top two hazards for the area are Flash Flood and Tornado/Windstorm.

	TABLE E3: IDENTIFIED HAZARDS FOR INDEPENDENCE					
Hazard Rank	**Hazard**	**Probability**	**Magnitude/Severity**	**Warning Time**	**Duration**	**Assessment Score**
1	Flash Flood	3	2	3	3	**2.7**
2	Tornado/Windstorm	2	2	4	3	**2.4**
3	Thunderstorm/Lightning/Hail	3	1	4	1	**2.35**
4	Grass/Wild Fire	2	2	4	1	**2.2**
5	HAZMAT Incident	2	1	4	2	**2**
5	Infrastructure Failure	2	1	4	2	**2**
5	Transportation Incident	2	1	4	2	**2**
8	River Flooding	2	2	1	3	**1.95**
9	Drought	2	1	1	4	**1.75**
9	Earthquake	1	2	4	1	**1.75**
9	Human Disease	1	1	4	4	**1.75**
9	Levee/Dam Failure	1	1	4	4	**1.75**
13	Extreme Heat	2	1	1	3	**1.65**
14	Radiological Incident	1	1	3	4	**1.6**
15	Severe Winter Storm	2	1	1	2	**1.55**
15	Terrorism	1	1	4	2	**1.55**
17	Animal/Plant/Crop Disease	1	2	1	3	**1.5**
18	Landslide	1	1	1	1	**1**
18	Sinkholes	1	1	1	1	**1**
18	Expansive Soils	1	1	1	1	**1**

Vulnerability – Identifying Assets (Critical Facilities) & Social Asset Populations

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Independence.

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area or risk areas (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to Buchanan County's overall historical occurrences of tornadoes, this hazard was added to the below assessment.

Table E4 lists the designated shelters for Independence. It should be noted that there are several other structures that could serve as suitable shelters in certain events. The list consists of those structures that meet the specific requirements of a fallout shelter as defined by the State of Iowa. The Emergency Management Coordinator is responsible for reviewing the fallout shelter compliance of the above named structures during the regular plan reviews.

While the mentioned shelter locations have been identified for use if deemed necessary, there may also be occasions, such as during a radiological or HAZMAT incident, where the situation dictates sheltering "in place". Therefore, any location could potentially become a makeshift shelter for purposes of disaster response.

TABLE E4: DESIGNATED SHELTERS IN INDEPENDENCE

Rivers Edge	St. Johns School Old Gym
Methodist Church	Presbyterian Church
Jr./Sr. High School	Episcopal Church
First Baptist Church	South Baptist Church
West Elementary School	Hope Wesleyan Church
Four Square Church	Lutheran Church
Rush Park Motel	St. John School New Gym
Super 8 Motel	Kidsville Pre School
Fair Grounds Public Building	Mental Health Institute
Library – basement	Heartland Acres (Event Center)
Living Waters	Falcon Civic Center
Country Inn & Suites	Senior Center
Starlight Theatre	

Source: Buchanan County EMA, City of Independence

TABLE E5: CRITICAL INFRASTRUCTURE

Waste Water Treatment Plant	Lift stations (2)
Water Towers (3)	Independence Light & Power
Water Pumping Stations and Wells (5)	Buchanan County Courthouse / Sherriff's Office
Rail River Crossing	Buchanan County Health Center (Hospital & Ambulances)
Highways 20 & 150	City Hall / Fire Dept.

Source: Planning Committee

Identifying the location of critical facilities and designated shelters in the planning process is important in order to assess their vulnerability to hazards, and their importance to the operation of a community and the economic sector. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. *Attachment 8* illustrates the location of identified critical facilities throughout the planning area. As shown on *Attachment 8,* there are numerous anhydrous storage facilities within the community. The city developed a list of the most critical infrastructure facilities in the city shown in Table E5.

The social vulnerability assessment identified how the hazards affect the population of Independence and it is assumed that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. For purposes of this plan this population shall include seniors age 65 and over, children age 18 and under, those individuals with disabilities, those residents in multi-family dwellings, in poverty, and non-speaking households. These persons may not be able to reach safety in the event of a hazard event or a multi-hazard event that can result from a tornado or high wind event.

Table E5 presents an overview of the at-risk population in the planning area. According to Table E5, 19.7% of residents are 64 years or older. 47% of the "householders living alone are aged 65 years or older.

Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young persons often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, there was 24% of the community's total population under the age of 18.

Another population considered to be more at risk than others are those in mobile homes. According to 2010-2014 American Community Survey estimates, the City of Independence has 110 mobile home units within the city limits. Based on the city's average household size (2.30), we can estimate that the number of people residing in mobile homes in the City of Independence is approximately 253.

TABLE E5: INDEPENDENCE'S "AT-RISK" POPULATION

Total City Population, 2010	5,966
Elderly (65 yrs and older), 2010	1,177
Youth (18 yrs and under), 2010	1,427
Householder Living Alone, 2010	813
Population Living in Poverty, 2000	398
Population in Mobile Homes (2010-2014), 110 Units	210
Population in Multi-Family Structures (2010-2014), 313 Units	662
Group Quarters Population, 2010	157
Total Persons with Disabilities, 2010-2014	679

Source: 2010 U.S. Census, 2010-2014 ACS (Est.) and Iowa Data Center

TABLE E6: FLOODPLAIN INFORMATION FOR INDEPENDENCE

Population in Hazard Area*	568
1-4 Family Structures in Hazard Area*	147
Other Structures in Hazard Area*	39
Buildings in 100-Year Floodplain**	279
Buildings in 500-Year Floodplain**	99

Source: FEMA, INRCOG & Buchanan County Assessor
**Per FEMA 6/4/2009 information*
***Per INRCOG, City & County GIS Information, and FEMA Q3 flood data supplied by IDNR, 500-year floodplain includes all the 100-year floodplain*

A public facility vulnerable to flooding is normally low, since these structures are not often constructed within the 100-year floodplain. None of the Independence Community School District facilities or buildings is within the floodplain. According to the information provided, bridges and roadways would be impacted by flooding. This disruption in the transportation infrastructure would create a longer time period to receive and provide services and supplies to an area if a road or railroad bridge was washed away due to flooding.

Flooding has the potential to put the entire population of the planning area at some level of risk, whether through the flooding of their homes, businesses, or places of employment, or the road, sewer, and water infrastructure that serve them daily. High floodwaters can devastate homeowners with property damage, property loss, and extensive, time-consuming cleanup. Secondary effects caused by flooding can add to the property damage. Power loss can leave citizens

without heat or air conditioning for extended periods of time. The transportation infrastructure of the community can be impacted by flooding events, which can endanger citizens attempting to travel or evacuate the area, as well as leave those remaining without goods and services.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (E7) lists assets that could be affected in the event of a hazard within the city.

This information was made available from the planning committee, Buchanan County Assessor's Office, INRCOG, and American Community Survey data. It should be noted however that these dollar amounts do not include gas and electric utility valuations. These results should be considered preliminary estimates, as a full accounting of assets has not been completed.

TABLE E7: ASSET INVENTORY - ESTIMATED POTENTIAL PROPERTY LOSSES FOR INDEPENDENCE

Type of Structure	Land Value ($)	Building/Dwelling Value ($)	Total Value ($)
Residential, Single Family	29,582,623	216,915,970	246,498,593
Multi Residential	49,950	266,670	316,620
Agricultural	2,596,681	11,460	2,608,141
Commercial	16,390,687	38,939,773	55,330,460
Industrial	2,733,710	12,914,090	15,647,800
Religious/Non-Profit	NA	20,000,000	20,000,000
Government	NA	100,000,000	100,000,000
Education	NA	75,000,000	75,000,000
Utilities	NA	100,000,000	100,000,000
Total	**$51.353.651**	**$564,047,963**	**$615,401,614**

Sources: Buchanan County Assessor, Planning Committee; INRCOG; American Community Survey; Notes: Government = City Hall, Fire Stations, Public Works Buildings, Community Buildings, Libraries; Utilities = Water and Waste Water facilities; Residential, Industrial, and Agricultural values based on 2015 data; Religious/Non-Profit, Government, Education, Commercial, and Utilities values based on 2012 data.

Repetitive Loss Properties/National Flood Insurance Program

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. As of 11/30/2014 the city had 21 repetitive loss properties, resulting in $621,925 in losses (see Table 3.30).

The city participates in the National Flood Insurance Program (NFIP). As of 8/31/2016, there were 138 NFIP policies in place, with $16,935,000 of insurance in force, within the city.

The city's FIRM maps were updated in June 2015. As part of this update, the city experienced an increase in the number of properties now in the floodplain. In addition to mapping the 1 percent and 0.2 percent floodplain the FIRMs also mapped the Floodways within the city. Using GIS spatial data from FIRM maps, in combination with property value data from the Buchanan Assessor's office, estimates of value in the floodway and floodplains were calculated. Table E8 shows the estimated value of land, buildings, and dwellings, within the city, in a floodplain. As shown on Maps 3K and 3L the floodplain is adjacent to the Wapsipinicon River which bisects the city.

TABLE E8: FLOODPLAIN DATA FOR INDEPENDENCE

	Number of Parcels	Land Value	Building Value	Dwelling Value	Total Value	Percent of City Affected
Floodway	230	$2,899,604	$1,260,300	$9,933,504	$14,093,408	4.31%
1% Annual Floodplain	487	$7,333,158	$7,530,920	$27,308,170	$42,172,248	12.90%
0.2% Annual Floodplain	376	$3,921,656	$4,341,585	$25,151,204	$33,414,445	10.22%
Total	**1,093**	**$14,154,418**	**$13,132,805**	**$62,392,878**	**$89,680,101**	**27.44%**

Source: Buchanan County Assessor's Office; Analysis conducted by INRCOG; Parcel values and FIRM maps as of 6/16/2015

This hazard mitigation plan attempts to reduce loss by identifying potential natural and manmade hazards. As a result of many natural and manmade hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs when necessary.

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase – especially development along Highway 150 and the Wapsipinicon

river basin. However, continued conformity with the State Building Codes and local land use ordinances and regulations - zoning, subdivision, floodplain management - will help to mitigate the effects hazards have on new and future development.

As the largest community, and county seat, the City of Independence has experienced greater growth rate than other communities in the county. Table E9 lists the number of building permits the City of Independence has issued between 2010 and 2014. According to the data, a total of 58 permits were issued for residential units and 28 commercial and industrial buildings. Combined, the improvements associated with these permits are valued at $37,730,610.

TABLE E9: BUILDING PERMITS ISSUED IN INDEPENDENCE (2010-2014)

Year	Single-Family	Multi-Family	Total Residential Improvements ($)	Commercial/ Industrial	Total Commercial/ Industrial Improvements ($)
2010	8	1	$1,541,958	1	$122,000
2011	11	0	1,979,950	7	1,522,624
2012	10	2	1,757,501	9	21,886,461
2013	10	2	2,383,000	4	1,517,000
2014	11	3	2,312,800	7	2,707,316
Totals	**50**	**8**	**$9,975,209**	**28**	**$27,755,401**

Source: City of Independence

Two areas with recent housing developments include an area the southern portion of the City west of 6th Ave Southwest (west of Walmart) and property adjacent to and northwest of 6th Ave SW and Bland Blvd. Commercial developments have focused along 20th Ave SW near the Independence Community School District's new high school.

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at their second committee meeting. The committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for the City of Independence are as follows:

1. Maintain emergency services during hazard events, or if this is not possible, return to pre-disaster service levels as soon as possible.
2. Maintain continuity of infrastructure.
3. Protect the health and welfare of the entire community by utilizing pre-disaster planning and constructing mitigation projects.
4. Identify possible action steps to be taken to decrease the risk of the communicable diseases.
5. Take steps to mitigate or minimize the impact of natural, technological, and/or man-made disasters.
6. Participate and incorporate the city's plan into a future Multi-Jurisdictional Plan.

Current Mitigation Actions

Prevention Mitigation Actions

The City has and maintains a local Zoning Ordinance, which was last updated/revised on October 9, 2006. Included within the Zoning Ordinance are the Flood Plain Regulations. The City of Independence has adopted and enforces buildings codes.

The City has a Code and Zoning Administrator with an office in City Hall. Enforcement of the various codes can reduce the number of household fire calls due to improper electrical and heating installations. In addition, adhering to requirements outlined in building codes reduces the likelihood of damage occurring due to high winds or heavy snow events.

In June of 1972 a study was conducted evaluating the flood situation along the Wapsipinicon River and Malone Creek flood plains in Independence. United States Corps of Engineers of the Rock Island District conducted the study. The title of the study was appropriately named "*Wapsipinicon River and Malone Creek Floodplain Information: Independence, IA."* It was prepared at the request of the City Council of Independence, through the Iowa Natural Resources Council. The report was based on rainfall, runoff, past flood information, and other technical data defining the occurrence and size of floods.

In November of 1976 a flood insurance study was completed for the City of Independence, Iowa by the United States Corps of Engineers, Rock Island District at the request of the Federal Insurance Administration, United States Department of Housing and Urban Development. The study area included all areas within, what was at the time, the corporate limits in the City of Independence. It too identified and studied the Wapsipinicon River and Malone Creek as the two major sources of flooding. This study was updated in October 1998 and most recently on July 16, 2008.

Following the flooding that occurred in Independence during May, 1999 the United States Geological Survey, in cooperation with the Iowa Department of Transportation and the Iowa Highway Research Board conducted a report analyzing the flood event. The report was named "*Floods of May 17 – 20, 1999, in the Volga and Wapsipinicon River Basins, Northeast Iowa: Open-File Report 00-237."*

The city's floodplain maps where recently updated. The New Flood Insurance Rating Maps (FIRM) panels encompassing the city became effective June 16, 2015. Overall, the remapping resulted in additional properties being added to the floodplain.

Table E10 displays the current planning and regulatory documents for the City.

TABLE E10: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR INDEPENDENCE

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Property Protection Mitigation Actions

The City participated in the 1993 Flood recovery program by using money made available through the Federal Emergency Management Administration (FEMA) and the Iowa Department of Economic Development (IDED). The funds were used to purchase several homes in the city along the Wapsipinicon River. The intent of buying out houses in the flood plain is to remove people from harm's way.

As a result of the 1999 Flood and a Federal Disaster Declaration the city participated in a Housing Buy Out program funded through FEMA, IDED, and the Iowa Emergency Management Division (IEMD). There were three phases of housing buyouts. The first two required matching funds to the IEMD. These funds were made available through money from the IDED that came available in 1993 Flood recovery effort. The final phase of the buyouts required local match. There were 83 structures that have expressed interest and were considered buyout candidates. Of these 83 structures, only three were commercial properties, all three of which were purchased and removed. To date, over 50 structures have been purchased and removed from the floodplain. Flood buyouts were also conducted in 2004.

Public Education and Awareness

Independence currently has in place E-911 Emergency Assistance – Code Red. Other communications used by city personnel include pagers, radios, and cellular phones. Radio, television, cellular telephones, landline telephones, newspapers, warning sirens, and NOAA Radio Service are available to the public at large.

In addition to warning sirens, there are also a wide variety of early warning messages provided through local radio and television stations as well as the cable Weather Channel. Furthermore, the National Oceanic and Atmospheric Administration (NOAA) Weather Radio provides an alternative media source for weather information. NOAA Weather Radio is a nationwide network of radio stations broadcasting continuous weather information direct from a nearby National Weather Service office. NOAA Weather Radio broadcasts National Weather Service warnings, watches, forecasts and other hazard information 24 hours a day.

Natural Resource Mitigation Actions

The 1968 flood resulted in flash flooding along Malone Creek, washing one foundation out and putting another house in the creek. Since that time trees have been cleared from Malone Creek and some bridge work has been done to quicken the departure of the water. The 1999 flood of record did not result in any substantial damage along the creek. Bank stabilization efforts have been successfully implemented along high-risk locations along the Wapsipinicon River.

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community. Under the auspices of the County Emergency Management office, Buchanan County has compiled a list of shelters within Independence. The list includes such information such as location, heating source, water source, overall capacity, sleeping capacity, and feeding capacity. The details of the list can be found in full in the "*Contingency Plan for Buchanan County*. Although the Emergency Management Director is accountable to the entire county, the location of the office is beneficial to the City of Independence.

Police Department

The Independence Police Department, Buchanan County Law Enforcement, and the Iowa State Patrol provide police protection to the City of Independence. The Independence Police Department currently has approximately 12 employees, ranging from administration to patrol officers, and one drug dog.

Fire Department

The City of Independence currently employs three (3) full time firemen. In addition the fire department has twenty-three (23) volunteer firemen. Equipment owned and operated by the local fire department includes three engines (includes a 1,105 ft. aerial), one tanker, one rescue truck, one grass rig, one generator, two water pumps, a field operations trailer, and two boats. The fire department has in place 28E agreements with surrounding communities to provide and receive assistance as needed on a mutual aid basis. The communities that the Independence Fire Department maintains 28E agreements include: Aurora, Brandon, Fairbank, Jesup, Hazelton, Mental Health Institute (MHI), Rowley, Stanley, Lamont, Quasqueton, Winthrop, and the Linn County Hazmat Team.

The department provides a variety of services to the community including the following: Fire Suppression, Confined Space Rescue, Ice and Water Rescue, Storm Watch Spotters, Hazardous Material Response, Multi-Hazard Response, Fire Safety Education Training, 28E Mutual Aid Agreements, Air Bottle Refilling, Fire Extinguish Service Pickup Station, Extrication Rescue, Carbon Monoxide Calls, Limited Inspection Duties, and River Readings.

The fire department ensures communication through several methods. Those methods include E-911 Service, radio communication, hotline communication, pagers, alarm systems, sirens, and cellular phones. To date the fire department is not GPS equipped.

Ambulance and EMS Services

Emergency rescue and ambulance service is provided by the hospital throughout and beyond the city limits. There are currently 14 personnel that provide service to the EMS department. The primary means of communication is by way of cell phones and two-way radios. The EMS Department maintains mutual aid agreements with all of the communities within Buchanan County, the Independence Police Department, County Sheriff's Department, and the Independence Fire Department.

Medical Services

Independence is served by one local hospital, Buchanan County Health Center, located at 1600 1st Street East. There are six other hospitals available in a 25-mile radius of the City of Independence.

HAZMAT

Depending on the characteristics of the substance released, a larger area may be in danger from explosion, absorption, injection, ingestion, or inhalation. Occupants of areas previously contaminated by a persistent material may also be harmed either directly or through consumption of contaminated food and water. Facilities are required to have an off-site consequence plan that addresses the population of the surrounding area. Responding personnel are required to be trained to HAZMAT Operations Level to respond to the scene, and those personnel that come into direct contact with the substances released are required to have HAZMAT Technician level training. The City has contracted with the Linn County Hazardous Materials team for assistance in the containment and cleanup of any hazardous material spill.

Warning Systems

In recent years, the County and the city began utilizing the state's ALERT IOWA notification system. Residents can sign up for email, text, and/or phone notifications in the event of a disaster or weather emergency. Other communications used by city personnel include pagers, radios, and cellular phones. Radio, television, cellular telephones, landline telephones, newspapers, warning sirens, and NOAA Radio Service are available to the public at large.

The City of Independence currently has six (6) sirens that cover the entire city. Each one of these sirens is equipped with a battery back up to ensure operation in the event of a power failure. The County Emergency Management Director or a designee thereof activates the sirens in the event of a tornado. In addition to the early warning sirens, there is an early warning gauge on the Wapsipinicon River near Tripoli.

In addition to warning sirens, there are also a wide variety of early warning messages provided through local radio and television stations as well as the cable Weather Channel. Furthermore, the National Oceanic and Atmospheric Administration (NOAA) Weather Radio provides an alternative media source for weather information. NOAA Weather Radio is a nationwide network of radio stations broadcasting continuous weather information direct from a nearby National Weather Service office. NOAA Weather Radio broadcasts National Weather Service warnings, watches, forecasts and other hazard information 24 hours a day.

Public Works & Streets

The City of Independence views proper snow and ice removal from roadways to be essential in mitigating negative effects of these events. Snow removal and ice prevention techniques are practiced by city and state employees on the corresponding local and state roadways within the city limits. The city currently employs nine (9) full- and part-time drivers for snow removal efforts.

Equipment used for snow and ice removal include four plow trucks, two heavy equipment snow blowers, and three four wheel drive pickups with blades. One driver is used for each piece of equipment. In the event that a driver cannot perform his or her duties, drivers are pulled from other city departments as necessary. In an ideal winter storm scenario it is estimated that all of the city roads can be adequately cleared within twelve hours.

Structural Projects Mitigation Actions

A tornado shelter was constructed at the RV Park in 2003-2004. The shelter was constructed to AIA standards. The business of Monsanto constructed a tornado safe room within their building for employee use.

In September 2011, the residents of Brandon, Rowley and Independence passed a bond vote with nearly 70% approval to construct a new $27.5 M Jr./Sr. High School Facility which, among the various improvements , included four locker rooms which also serve as a FEMA safe rooms (severe weather storm shelter).

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table E11) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly, or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was

TABLE E11: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The City will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities. In addition, private property owner expenses will be necessary to implement some activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).
- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table E12 is the City of Independence's Implementation Strategy.

TABLE E12: INDEPENDENCE FUTURE MITIGATION ACTIVITIES						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation**	**Timeline**	**Est. Cost**	**Associated Goal(s)**
Emergency Services						
High	Ensure First Responders, Police Department, Fire Department, Public Works and Street Department are properly Equipped, Staffed, and Trained to Provide Adequate Response to All Hazards	Earthquake, Flash Flood, Grass/Wild Fire, Landslide, River Flooding, Severe Winter Storm, Sinkholes, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/Dam Failure, Radiological Incident, Transportation Incident, Terrorism	City Council, Mayor, Fire Department, Ambulance Service, Police Department, Public Works	Active	Low	1,6
High	Maintain Light Plant Procedure of Keeping a List of Individuals with Special Needs so they Receive a Higher Priority Response to Power Outages	Extreme Heat, Flash Flood, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Infrastructure Failure	Boards & Commissions, Independence Light & Power, Fire Department, Ambulance Service, Police Department, Public Health	Active	Minimal	1,2,5,6
Natural Resource Protection						
High	Continue Good Working Practices of Wastewater Management During Flood Events	Flash Flood, Human Disease, River Flooding	City Council, Public Works	Active	Minimal	1,2,3,4,5,6
High	Develop, Implement, and Maintain a Storm Water Management Program	Flash Flood, River Flooding	City Council, Public Works	Active	Moderate	2,3,5
High	Continue to Test and Chlorinate Drinking Water	Human Disease	City Council, Public Works	Active	Low	2,4,5
High	Restrict Water Usage, as necessary, to Maintain Water Supply	Drought	City Council, Public Works	Active	Minimal	1,2,3,6
High	Strategically place Filter Strips and other Sedimentation and Erosion Control Measures in areas to reduce the amount of foreign materials entering water bodies	Flash Flood, River Flooding, Thunderstorm/Lightning/Hail, Severe Winter Storms	City Council, County Board of Supervisors	Active	Minimal	4,5
Medium	Develop and Maintain Tree-Trimming Program in Order to Reduce the Chances of Falling Branches on Infrastructure and Property	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Public Works, Independence Light & Power, Boards & Commissions, City Council	Active	Minimal	1,2,3,5,6
Medium	Continue to Enforce Subdivision Ordinance Requiring Water Detention Areas	Flash Flood, River Flooding	Boards & Commissions, City Council, Engineer, Building Department	Active	Minimal	2,3,5,6
Medium	Bank Stabilization Efforts on Areas Along Wapsipinicon River and Malone Creek	Flash Flood, River Flooding	City Council	Active	Minimal	5

Prevention						
High	Continue to Periodically Evaluate Outdoor Warning Siren System in Order to Identify Areas of Potential Improvement	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Buchanan County EMA, City Council, Fire Department	Active	Minimal to Low	1,5,6
High	Continue to Work to Safeguard against Potential Fire and Explosion Hazards Throughout the Community	Grass/Wild Fire, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	Fire Department, City Council	Active	Minimal	1,2,3,5,6
High	Maintain and Update as Needed, 28E Agreements with Surrounding Entities	Flash Flood, Grass/Wild Fire, Landslide, River Flooding, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	Fire Department, Police Department, City Council, Ambulance Service, Buchanan County EMA, Public Health	Active	Minimal	1,4,5,6
High	Continue to Provide Good Emergency Access to Water Throughout the Community (i.e., access to hydrants, river, wells, etc.)	Drought, Flash Flood, River Flooding, Infrastructure Failure	Public Works, Public Health, Buchanan County EMA, City Council	Active	Minimal	1,2,4,5,6
High	Systematically Review and Update, as needed, Hazard Reponses Policies and Procedures	Flash Flood, Grass/Wild Fire, Human Disease, River Flooding, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Radiological Incident, Transportation Incident, Terrorism	City Council, Fire Department, Police Department, Buchanan County EMA	Active	Minimal	1,2,3,4,5,6
High	Continue to Cooperate with Local Medical Facilities and Health Department to increase likelihood of detection and proper response to outbreaks	Animal/Plant/Crop Disease, Human Disease	Buchanan County EMA, Public Health, Boards & Commissions	Active	Minimal	1,2,4,6
High	Maintain Backup Communication Towers for Emergency Responders	All	Buchanan County EMA, County Board of Supervisors, City Council	Active	High	1,2,3,5,6
High	Identify Locations (nursing homes, schools, shelter locations) where it would be beneficial to have Backup Power Generation and Install	Flash Flood, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm	City Council, Buchanan County EMA, County Board of Supervisors, Public Health	Active	Moderate	1,3,4,6
High	Place Temporary Moratoriums on Boating during High Water and/or Flood Events	Flash flood, River Flooding	City Council, County Board of Supervisors, Buchanan County EMA, Fire Department	Active	Minimal	6
High	Identify and Evaluate Critical Facilities (i.e., wells, lift stations, WWPT, etc.) for Accessibility, Vulnerability, and Risk	All	City Council, Buchanan County EMA, County Board of Supervisors, Public Health	Active	Minimal	1,2,3
High	Consider Supplementing or Outright Donation of Smoke Detectors to Residents	Infrastructure Failure	Fire Department, Buchanan County EMA	Active	Low	5

High	Implement Burn Bans	Drought, Extreme Heat	Buchanan County EMA	Active	Low	-
High	Continue Communication Efforts with Railroad Company to ensure Annual Inspections and Repairs of Railroad Bridge(s), especially after flood events.	River Flooding	City Council	Active	Minimal	-
Medium	Continue to Maintain, Enforce, and Update Community Regulations, Ordinances, and Planning Documents as necessary (i.e., building codes, zoning ordinance, subdivision ordinance, floodplain management ordinance, comprehensive plan, minimum housing standards, etc.)	Earthquake, Flash Flood, River Flooding, Thunderstorm/Lightning/Hail, Tornado/Windstorm	City Council, Boards & Commissions, City Building Department, Fire Department	Active	Minimal	2,3,5,6
Medium	Continue Participation in the National Flood Insurance Program (NFIP)	Flash Flood, River Flooding	City Council, Boards & Commissions, City Building Department, Buchanan County EMA	Active	Minimal	1,2,3,4,5,6
Medium	Review Designated Snow Route Policies to Ensure Effectiveness and Maintain Proper Signage along Routes	Severe Winter Storms	City Council, Public Works	Active	Minimal	1,2
Medium	Ensure Proper and Up-to-Date Training of Floodplain Managers	Flash Flood, River Flooding	City Council, County Board of Supervisors	Active	Minimal	3,4
Medium-Low	Work with Telephone Companies to provide Redundant Service Lines and More Cellular Towers to Reduce Risk of Outages	All	Buchanan County EMA, County Board of Supervisors, City Council, Fire Department, Ambulance Service, Police Department	Active	Minimal	1,2,3,5,6
Public Awareness/Education						
High	Consider Supplementing the Purchase of NOAA Weather Radios for People in the Community	Flash Flood, Grass/Wild Fire, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm	Buchanan County EMA	Active	Minimal	1,5
Medium	Continue to Ensure Proper Signage is in place to Maintain Safe and Efficient Traffic Flow	Flash Flood, River Flooding, Severe Winter Storm, Infrastructure Failure	Public Works	Active	Minimal	1,2,5,6
Low	Educate the Public through: continued cooperation with local service organizations (American Red Cross, County EMA, etc.) to educate residents on how to prepare for and respond to various hazards; public awareness and education on City sponsored projects within identified flood hazard areas (fill for sidewalks trails); importance of personal Emergency/Disaster Plan; use of all forms of	Flash Flood, River Flooding, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure	Buchanan County EMA, City Council, Mayor, Fire Department, Ambulance Service, Police Department, Public Works, Public Health	Active	Minimal	1,2,3,4,5,6

	media					
Structural Projects						
High	Identify any Deficiencies in Storm Sewer System and Prioritize Potential Mitigation Projects	Human Disease, River Flooding	City Council, Public Works	Active	High	1,2,3,6
High	Elevation of Structures in Floodplain as an Alternative to Removal	Flash Flood, River Flooding	City Council, Floodplain Manager, Buchanan County EMA	Active	Minimal	1
Medium	Consider the Construction of Community Tornado Shelters and Safe Rooms at Identified Vulnerable Locations (Senior Center, Falcon Civic Center, Churches, Nursing Homes, Hospital, Mobile Home Parks, and Parks)	Thunderstorm/Lightning/Hail, Tornado/Windstorm	City Council, Mayor, Building Department, Boards & Commissions, Buchanan County EMA	Mid-Term	Moderate	3,5,6
Medium	Regularly Evaluate Transportation Systems to Identify and Correct any noted Deficiencies or Unsafe Areas, as well as Conduct Peak Studies (requested)	River Flooding, Severe Winter Storm	Public Works, City Council	Active	Minimal	1,2,5
Medium	Encourage Developers to Include Tornado Safe Rooms in New or Retrofit Construction Projects	Thunderstorm/Lightning/Hail, Tornado/Windstorm	City Council, Building Department	Short-Term	Minimal	5
Low	Continue Acquisition and Removal of Structures (all types) from the Floodplain	River Flooding	City Council, County Board of Supervisors	Active	Low	-
Low	Develop and Implement an Annual Inspection of Dam	River Flooding	City Council	Active	Minimal	5

APPENDIX F: CITY OF JESUP

COMMUNITY PROFILE

Location

The City of Jesup is located in the northeastern quadrant of the State of Iowa. More specifically, Jesup is located on the eastern edge of Buchanan County, directly west of Independence on County Road D22.

Development Trends

The City of Jesup is located in part of 17,780 acres of central Iowa territory that was purchased from the Sac and Fox Indians in 1842. The founding of Jesup was directly tied to the history of the Illinois Central Railroad. As the railroads spread across Iowa, the Dubuque and Pacific Railway was organized in 1853 to compete against three other rail lines. The rail was completed between Dubuque and Dyersville before going bankrupt. The Dubuque and Pacific Railway was then extended to Manchester and then several miles past Independence. After money difficulties stopped the construction of the railroad in the spring of 1860, a new town sprung up at the railhead.

The new community was platted by two trustees of the rail company and named for Morris K. Jesup of New York City. At the time Mr. Jesup was an officer of the rail company and later became president. It was Morris Jesup who financed the further construction of the railroad to Waterloo and Cedar Falls the following year.

For the brief period that Jesup served as the railhead, it was a shipping point for much freight and produce from the surrounding area. After the railroad pushed westward, Jesup remained as a convenient stop. Development had been spurred by the railroad, and several stores, a hotel, and a blacksmith shop opened up in town. Jesup developed in to an active town, and was incorporated on March 18, 1876.

As the City grew, the needs of the community became greater. The first water works plant and system was constructed in 1902. The town's 11 fire hydrants took the place of the "bucket brigade" and a two-wheeled fire cart. The first motorized piece of fire equipment was purchased in 1930. The present fire department was built in 1953.

The Jesup Public Library was started in 1914 in a building that was rented for $5 a month. The first public school in Jesup opened in 1865. It moved to various locations until it became part of a consolidated school district in 1916. During the community's history, six churches have been established, as well as 24 clubs and organizations. Jesup has grown from a village at the railhead to an active community of over 2,200 persons.

Demographics

Tables F1.1 and F1.2 highlight Jesup's demographics. Jesup's population experienced a 14% (308 additional residents) increase since 2000. The community's median age declined a half of a percentage between 2000 and 2010.

TABLE F1.1: JESUP'S DEMOGRAPHICS

Government Framework	Mayor – City Council
General Population, 2010 Census	
Total Population, 2010	2,520
Total Males, 2010	1,206
Total Females, 2010	1,314
Median Age, 2010	35.8
At-Risk Population, <18 Yrs, 2010	697
At-Risk Population, >64 Yrs, 2010	339
One Race-White, 2010	2,474
One Race-Black or African American, 2010	8
One Race – Asian, 2010	5
Two or More Races, 2010	32
Hispanic or Latino (of any race), 2010	36
Total Household Population, 2010	2,519
Total Population in Group Quarters,2010	1
Total Family Households, 2010	719
Total Family Households with Children under 18, 2010	348
Male Householder, no wife present, with children under 18, 2010	242
Female Householder, no husband present, with children under 18, 2010	60
Households with individuals 65yrs and over, 2010	247
Householder living alone, 2010	217
Average household size, 2010	2.57
Average family size, 2010	2.99
Housing Characteristics, 2010 Census	
Total Housing Units, 2010	1,015
Occupied Housing Units, 2010	982
Vacant Housing Units, 2010	33
Rental Vacancy Rate, 2010	2.1%
Owner-Occupied Housing Units, 2010	797
Population in Owner-Occupied Housing Units, 2010	2,116
Rental-Occupied Housing Units, 2010	185
Population in Rental-Occupied Housing Units, 2010	403

Natural Environment

The topography of Jesup is characterized as undulating. Much of the community is relatively flat, while other areas, primarily near established waterways, have greater slope. The highest point in the community is located in the northern reaches of the City and has an elevation of approximately 1,000 feet above mean sea level. The lowest elevation, which is approximately 960 feet above mean sea level, is found in the southeastern part of the community

The Wapsipinicon River is the largest, most influential water body to pass through Buchanan County. The Wapsipinicon River's flow is generally from northwest to southeast. The drainage area at the mouth of the river is approximately 2,540 square miles. At Independence, east of Jesup, the drainage area is estimated to be 1,048 square miles.

The headwaters of the Wapsipinicon River can be found in Mower County, Minnesota. However, the vast majority of the Wapsipinicon Watershed area is actually located in the State of Iowa, with only approximately 13 square miles is located in Minnesota. Upstream from Independence there are nearly 96 miles of stream, with an average basin width of about 13 miles.

The United States Environmental Protection Agency shows that the City of Jesup is located in the Middle Cedar Watershed. This watershed is but a segment of

the larger Cedar River Watershed, which eventually acts as a tributary the Iowa River. At the Waterloo River gauge, approximately 13.5 miles west of Jesup, it is estimated that the drainage area for the watershed is 5,146 square miles. Also measuring from this gauge, the distance from the mouth of the Cedar River is approximately 200 miles.

It should be noted however, that the impacts from either the Cedar River (7.8 southwest) or the Wapsipinicon River (4.4 miles northeast) to not directly impact the City of Jesup. The primary flood threat to the City of Jesup is derived from overland runoff in the form of flash flood events.
According to the Soil Survey of Buchanan County issued in 1982, the majority of soils in and near Jesup are of the Readlyn-Tripoli-Oran association. These soil series consist of somewhat poorly drained, moderately permeable soils on broad ridges and slightly convex side slopes in the uplands. These soils formed in 14 to 28 inches of loamy sediments and in the underlying glacial till. The native vegetation was prairie grasses and trees. Slopes on these soils range from 0 to 4 percent.

Transportation

Four county highways directly serve the City of Jesup; these are D20, D22, V62, and V65. Highway 20, immediately south of Jesup, provides a convenient east-west route to Waterloo and Dubuque. An interchange for Highway 20 is located south of Jesup where Highway 20 intersects County Road V65.

The nearest airport is located in Independence, approximately 13 miles east of Jesup. The airport itself does not offer any regular commercial service. Located approximately three miles southwest of downtown Independence, the airport is located just north of Highway 20.

The elevation of the runway is reported to be 978 feet above mean sea level. The runway is concrete and measures 5,500 feet in length and 100 feet in width. The airport maintains one white/green beacon and medium intensity runway edge lighting. There are 28 aircraft based at the airfield; the airport is reported to averages 7,000 annual operations per year.

TABLE F1.2: JESUP'S DEMOGRAPHICS

Economics Characteristics, 2010-2014 ACS (Est.)	
Population In Labor Force (16 yrs and over)	2,043
Persons in Civilian Labor Force	1,492
Persons Employed	1,350
Persons Unemployed	142
Persons in Armed Forces	0
Mean Travel Time to Work in Minutes (16 yrs & over)	21.3
Persons Employed in Management, Professional, or Related Occupations	372
Persons Employed in Service Occupations	145
Persons Employed in Sales and Office Occupations	383
Persons Employed in Natural Resources, Construction, and Maintenance Occupations	155
Persons Employed in Production, Transportation, or Material Moving Occupations	295
Median Household Income	$58,269
Median Family Income	$68,869
Per Capita Personal Income	$31,525
Social Characteristics, 2010-2014 ACS (Est.)	
School Enrollment (3 yrs and over)	710
Nursery School, Preschool	49
Kindergarten and Elementary School (grades K-8)	370
High School (grades 9-12)	153
College or Graduate School	138
Education Attainment: Population 25 Years and Over	1,726
Persons with Less than 9th Grade	23
Persons with 9th to 12th Grade, No Diploma	54
Persons with High School Degree or Equivalency	662
Persons with Some College, No Degree	382
Persons with Associate Degree	253
Persons with Bachelor's Degree	244
Persons with Graduate or Higher Degree	108

The nearest commercial airport is located in Waterloo. The Waterloo Municipal Airport has three operable runways. The longest is a paved runway extending 8400 feet. The elevation of the airport is approximately 873 above sea level.

Currently, there are five commercial airlines that have flights originating or passing through the airport. Service is available to and from several cities including Chicago, Minneapolis, and Saint Louis. In addition to its commercial flights, the airport is also host to the Iowa National Guard Air Wing, 194th Air Cavalry. This complex operates 25 helicopters and is involved in routine reconnaissance flights.

The Chicago, Central & Pacific Railroad Company also maintains a rail line that passes through the center of the community. This rail line is part of a line that runs from Dubuque to Sioux City and Council Bluffs. According to the Iowa DOT, the stretch through the City of Jesup carries 10 to 20 million annual gross tons per mile.

Community Services

The City of Jesup has a municipal water supply with water is taken from locally located wells. The City has a total elevated capacity of 500,000 gallons. Typical daily usage is about 170,000 gallons per day, with peak consumption around 220,000 gallons per day. Approximately 62 million gallons are used annually in the City. The water is treated with fluoride and chlorine at each well.

The current Waste Water Treatment Facility consists of a waste management primary treatment facility, located southeast of the city limits. The average load for the facility is estimated to be 430,000 gallons per day. The peak load for the facility is 3,420,000 gallons per day. The design capacity for the treatment facility is 2,250,000 gallons per day. Therefore, the capacity of the sewer treatment facility in the City is considered too far exceed current demand. However, this excess capacity could help spur future development in the community.

A list of the city's primary utility providers is shown in Table F2.

TABLE F2: JESUP PRIMARY UTILITY PROVIDERS

Electric	Natural Gas	Telephone/Internet	Cable TV	Water	Sewer	Sanitation
MidAmerican Energy	MidAmerican Energy	Famers Mutual Telephone Company	Famers Mutual Telephone Company	City of Jesup	City of Jesup	Corkery Waste Disposal

HAZARDS & RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Jesup evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Jesup's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions including: Historical Occurrence, Probability, Magnitude or Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
= Final Hazard Assessment Score

Table F3 is the analysis scores for the City of Jesup. As seen in Table F2, the top three hazards for Jesup are Extreme Heat, Thunderstorm/Lightning/Hail, and Tornado/Windstorm

	TABLE F3: IDENTIFIED HAZARDS FOR JESUP					
Hazard Rank	**Hazards**	**Probability**	**Magnitude/Severity**	**Warning Time**	**Duration**	**Assessment Score**
1	Extreme Heat	4	3	3	3	**3.45**
2	Thunderstorm/Lightning/Hail	4	3	2	2	**3.2**
3	Tornado/Windstorm	3	4	2	3	**3.15**
4	Severe Winter Storm	3	3	3	3	**3**
5	HAZMAT Incident	2	2	4	3	**2.4**
6	Drought	2	2	1	4	**2.05**
7	Flash Flood	2	1	4	2	**2**
7	Transportation Incident	2	1	4	2	**2**
9	Animal/Plant/Crop Disease	2	1	2	3	**1.8**
9	Radiological Incident	1	2	3	3	**1.8**
11	Expansive Soils	1	1	4	3	**1.65**
11	Human Disease	1	1	4	3	**1.65**
11	Infrastructure Failure	1	1	4	3	**1.65**
14	Levee/Dam Failure	1	1	4	2	**1.55**
15	Earthquake	1	1	4	1	**1.45**
15	Grass/Wild Fire	1	1	4	1	**1.45**
15	Landslide	1	1	4	1	**1.45**
15	River Flooding	1	1	4	1	**1.45**
15	Sinkholes	1	1	4	1	**1.45**
15	Terrorism	1	1	4	1	**1.45**

Vulnerability – Identifying Assets (Critical Facilities) & Social Asset Populations

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Jesup.

Identifying the location of critical facilities and designated shelters (see Table F3) in Jesup is important in order to assess their vulnerability to hazards since these facilities are important to the community's operations, quality of life, and are key components of the economic sector. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. *Attachment 8* illustrates the location of identified critical facilities throughout Jesup.

TABLE F4: SHELTERS IN JESUP

Jesup School	American Lutheran Church
St. Anthanasius School/Gym	American Lutheran Church Hall
	First Baptist Church
St. Anthanasius Church	Presbyterian Church
Methodist Church	Masonic Temple
Grace Lutheran Church	Jesup School Outside Classroom
American Legion Post	City Hall/Community Center

Source: Community

The social vulnerability assessment also identified how the hazards affect the population of Jesup and it is assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. Table F4 presents an overview of the at-risk population in Jesup according to available information retrieved from the 2010 U.S. Census, 2010-2014 American Community Survey estimates, and Iowa Data Center.

TABLE F5: "AT-RISK" POPULATION FOR JESUP

Total Community Population, 2010	2,520
Elderly (65 yrs and older), 2010	339
Youth (17 yrs and under), 2010	697
Householder Living Alone, 2010	217
Population Living in Poverty (2010-2014)	136
Population in Multi-Family Structures* (2010-2014), 95 units	244
Population in Mobile Homes (2010-2014), 50 units	129
Group Quarters Population, 2010	1
Persons with Disabilities (2010-2014)	328

*Source: U.S. Census, 2010, 2010-2014 ACS (Est.), and Iowa Data Center; *Excludes 1-unit attached and detached, and 2-units*

According to Table F4, 13.4% (339) of residents are 65 years or older. The average household size of renter-occupied units is 2.18 while the average household size for owner-occupied units is 2.65. The average household size, without regard to occupy status, is 2.57.

Persons under the age of 17 are also at higher risk during some disasters. This is mostly due to the fact that young persons often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, there was 27.6% of the city's total population under the age of 17.

Another population considered to be more at risk than others are those in mobile homes. According to 2010-2014 American Community Survey estimates, the City of Jesup had 50 mobile home units within the city limits. Using the available data, we can estimate that the number of people residing in mobile homes in

the City of Jesup is approximately 129. Additionally, there were 328 individuals with some sort of disability in the community, accounting for approximately 13% of the population.

Still other hazards have defined boundaries for areas they are likely to affect. The best example of a hazard with a defined boundary would be flooding. The City of Jesup has no identified floodplain within its city limits. Therefore there are also no structures located in an identified floodplain in the City of Jesup.

The City of Jesup is home to the Jesup Community School District. The school district has hundreds of students in their facility during regular school hours. The number of persons at the schools facilities can greatly increase during day and evening school activities. The Jesup Community School District participated in this hazard mitigation plan. Additional information on the school district can be found in Appendix N.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (F6) lists assets that would be affected in the event affected the unincorporated area of the county. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Buchanan County Assessor's Office, INRCOG, and American Community Survey data. It should be noted however that these dollar amounts do not include gas and electric utility valuations. These results should be considered preliminary estimates, as a full accounting of assets has not been completed.

TABLE F6: ASSET INVENTORY - ESTIMATED POTENTIAL PROPERTY LOSSES FOR JESUP				
Type of Structure	**Number of Structures**	**Land Value ($)**	**Building/Dwelling Value ($)**	**Total Value ($)**
Residential, Single Family	1,146	11,052,388	97,791,845	108,844,233
Multi Residential	17	311,970	1,533,590	1,845,560
Agricultural	2	43,840	29,680	73,520
Commercial	127	2,088,942	10,266,185	12,355,127
Industrial	9	585,100	5,310,300	5,895,400
Religious/Non-Profit	0	0	0	0
Government	2	0	2,500,000	2,500,000
Education	3	0	1500000	1,500,000
Utilities	4	0	2,500,000	2,500,000
Total	**1,310**	**$14,082,240**	**$121,431,600**	**$135,513,840**

Sources: Buchanan County Assessor, Planning Committee; INRCOG; American Community Survey
Notes: Government = City Hall, Fire Stations, Public Works Buildings, Community Buildings, Libraries; Utilities = Water and Waste Water facilities; Residential, Industrial, and Agricultural values based on 2015 data; Religious/Non-Profit, Government, Education, and Utilities values based on 2012 data.

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development.

Repetitive Loss Properties/National Flood Insurance

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. According to FEMA data (as of 11/30/2014), the City of Jesup does participate in the National Flood Insurance Program and does not have any repetitive loss properties.

The city's FIRM maps were updated on July 16, 2008. Using GIS spatial data from FIRM maps, in combination with property value data from the Buchanan Assessor's office, estimates of value in the floodplain were calculated. Table F7 shows the estimated value of land, buildings, and dwellings, within the city, in a floodplain. As shown on the city's floodplain and floodplain scenario maps, Maps 3M and 3N, very little of the city's developed area is within a floodplain. Unlike many communities in the county, the city does not stand along a river.

TABLE F7: FLOODPLAIN DATA FOR JESUP						
	Number of Parcels	**Land Value**	**Building Value**	**Dwelling Value**	**Total Value**	**Percent of City Affected**
1% Annual Floodplain	16	$665,140	$334,330	$369,290	$1,368,760	1.05%
0.2% Annual Floodplain	-	-	-	-	-	-
Source: Buchanan County Assessor's Office; Analysis conducted by INRCOG; Parcel values and FIRM maps as of 6/6/2016						

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at their second committee meeting. The committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for the City of Jesup are as follows:

1. Prevent avoidable disasters.
2. Take steps to mitigate the probable negative consequences that may occur as a result of natural, technological, and/or man-made disasters.
3. Identify potential funding sources needed to accomplish identified mitigation projects.
4. Protect the health and welfare of the entire community by sufficiently maintaining all first responder organizations.
5. Return to pre-disaster or improved conditions as soon as possible after a disaster occurs.

Current Mitigation Actions

Prevention Mitigation Actions

The city has a comprehensive plan that addresses future planning; as well as, a zoning ordinance for land development. There is a building code for structure protection. And the city is trying to develop a long-term capital projects plan that will address storm water management.

TABLE F8: JESUP PLANNING DOCUMENTS AND REGULATIONS

Hazard Mitigation Plan	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes	Yes	Yes	Yes	Yes	Yes			

Property Protection Mitigation Actions

There is a very small area of the community that is vulnerable to significant flooding. The only identified flood hazard areas are in recently annexed portions of the community. There are a minimal number of structures located in these areas. Due to the minimal threat of flooding in the city, the community has not participated in a flood recovery program or housing buyout program to date. However, real estate disclosures are required per state code.

Public Education and Awareness Mitigation Actions

Jesup currently has in place E-911 Emergency Assistance. Other communications used by City personnel include pagers, radios, and cellular phones. Radio, television, cellular telephones, landline telephones, newspapers, warning sirens, and NOAA Radio Service are available to the public at large. The city recently purchased and installed a new repeater at the Police Department. The facility has the capability to dispatch locally if necessary.

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community.

Fire Department

The City of Jesup currently maintains a staff of 33 volunteer firefighters. The fire department has in place 28E agreements with surrounding communities to provide and receive assistance as needed on a mutual aid basis. The communities that the Jesup Fire Department maintains 28E agreements include: Black

Hawk County, Buchanan County, Oelwein, Walker, and the Linn County HAZMAT Team.

Equipment owned and operated by the local fire department includes: two pumpers (one 1,250-GPM rural pumper and one 1,000-GPM city pumper), one tanker (3,000 gallon tank with 500-GMP pump), two grass units, and a rescue unit with jaws-of-life, airs bags, SCBA, two large capacity trailer backup generators, and a generator with lights.

The fire department ensures communication through several methods. Those methods include E-911 Service, Radio Communication, Pagers, Alarm Systems, Sirens, and Cellular Phones. To date the fire department is not GPS equipped.

Medical Services

The nearest hospital, Buchanan County Health Center, is located in Independence, approximately 13 miles east of Jesup. There are six other hospitals available in a 25-mile radius of the City of Jesup. They are located in Waterloo, Oelwein, Cedar Falls, Vinton, and Sumner. In addition to hospitals, there is a clinic operated by Covenant Medical Center in the City of Jesup.

The Jesup Ambulance Service provides emergency rescue and ambulance service. There are currently 26 personnel that provide service to the EMS department. Of those current members there are: eleven EMT-I, seven EMT-B, three EMT-D, and three First Responders and two assistants. The ambulance service is currently running as an "I" transporting service with hopes of some year going to a full paramedic service.

Police

The Jesup Police Department, Buchanan County Law Enforcement, and the Iowa State Patrol provide police protection to the City of Jesup. The Jesup Police Department currently employs three officers. Equipment includes two squad cars and one Jeep.

Warning Systems

The City of Jesup currently operates an early warning siren with battery back up to warn the community of oncoming danger. This siren is equipped with remote operation. The City tests the siren on the first Saturday of each month. There are also three other sirens in town that are mechanically operated, and not equipped with remote operation. The City also participates in the ALERT IOWA program which offers email, text, and/or phone alerts in the event of an emergency or severe weather.

<u>Natural Resource Protection Mitigation Actions</u>

South Street has been reconstructed to eliminate open ditches and replace them with enclosed storm water catch basins and culvert systems to mitigate erosion alongside of roadway and an increase in roadway safety with a third lane addition.

<u>Structural Projects Mitigation Actions</u>

Building a new city hall/community center with a safe room located in the basement.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table F9) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

TABLE F9: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly, or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).
- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table F10 below is the City of Jesup's Implementation Strategy.

TABLE F10: FUTURE HAZARD MITIGATION ACTIVITIES- JESUP						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Primary Agency Responsible for Implementation**	**Timeline**	**Cost**	**Funding Source**
Prevention						
H	Establish designated routes for the transport of hazardous materials and explosive material	Transportation Incident - HAZMAT, Explosion	City Council, Police Department	Short-Term	Min	Local
M	Continue to enforce tree inspection and trimming program	ALL	Public Works Department, City Council, Local Telephone and Electrical Utility Providers, citizens	On-Going	Min	Local
M	Consider more stringent building code requirements	ALL	City Council	On-Going	Min	Local
M	Continue to enforce a snow ordinance and emergency snow routes	Severe Winter Storms, Transportation Incident	City Council, Police Department	On-Going	Min	Local
M	Continue regular building inspections	ALL	City	On-Going	Min	Local
M	Continue participation in the National Flood Insurance Program	River Flood, Flash Flood	City Council	On-Going	Min	Local
M	Identify and remove dangerous buildings throughout the community	ALL	City Council, property owners	On-Going	Min-Mod	Local
M	Enforce Iowa One Call provision	Transportation Incident – Energy, Communication Failure	City	On-Going	Min	Local
M	Implement burning bans when severe drought occurs	Drought, Grass or Wildland Fire	Fire Department, Police Department	On-Going	Min	Local
M	Restrict water usage, as necessary	ALL	City Council, Public Works Department, Police Department	On-Going	Min	Local
M	Ensure that proper signage is in place to facilitate a controlled flow of traffic	Transportation Incident	Streets Department, Buchanan County, Iowa DOT	On-Going	Min	Local
M	Spray for mosquitoes in the community	Disease (Human & Animal)	City Council, Contracted Sprayer	On-Going	Min	Local
Property Protection						
H	Require back flow valves in all new construction	Flash Flood	City Council, City Department, home owners, developers	Short-Term	Min	Private
H	Require back flow valves in all new construction	Flash Flood	City Council, City Department, home owners, developers	Short-Term	Min	Private
M	Regularly inspect natural gas connections	Explosion, Transportation	Citizens, Public Works Department,	On-Going	Min	Local

		Incident – Energy & Pipeline	MidAmerican Energy			
M	Secure vulnerable critical sites throughout the community	ALL	City Council, Public Works Department, Police Department, Streets Department	On-Going	Min-Mod	Local
Public Education & Awareness						
M	Educate the public on proper steps to take before, during, and after a hazard event to protect their property and their health	ALL	Fire Department, Buchanan County EMA, Police Department, Ambulance Service, American Red Cross, City, Public Health Department, Schools	On-Going	Min	Local
M	Develop a "Tornado Safe Room" awareness program	Tornadoes, Windstorms	Buchanan County EMA	On-Going	Min	Local
M	Purchase upgrades to existing early warning sirens	ALL	City Council, Public Works Department, Fire Department	Long-Term	Min - Low	Local, State
M	Develop a NOAA Weather Radio awareness program, including purchasing radios for community	ALL	Buchanan County EMA, City Council	On-Going	Min	Local
M	Educate the public on how to appropriately dispose of hazardous and household waste	Watershed Healthy & Contamination	City, County Solid Waste Commission, School, Businesses	On-Going	Min	Local
M	Encourage vaccinations	Disease (Human & Animal)	Buchanan County Health Department, local hospitals and clinics	On-Going	Min	Local
Natural Resource Protection						
M	Implement a Storm Water Management program	River Flood, Flash Flood, Watershed Health & Contamination	City Council, Public Works Department	Mid-Term	Min	Local
M	Implement and encourage erosion and sedimentation control measures	Groundwater Contamination, Flash Flood	City, Iowa DNR, County Conservation, School, Citizens	On-Going	Min	Local
M	Continue to treat and monitor water supply	Groundwater Contamination, Disease	Public Works Department	On-Going	Min	Local
Emergency Services						
H	Make a major update with new equipment to our emergency notification siren system	ALL	City, Fire Department	Short-Term	Low	Local, State, Federal
H	Encourage local utility to install surge protectors and lightning arrestors on major electric lines	Transportation Incident - Energy, Tornadoes, Windstorms, Severe Winter Storms, Thunderstorm & Lightning	City Council, property owners, Utility Provider	Short-Term	Min	Local

H	Continue to recruit and train volunteer storm spotters	Tornadoes, Windstorms, Thunderstorm & Lightning	Fire Department, Police Department	On-Going	Min	Local
H	Purchase potable water pumps	Flash Flood, River Flood	City Council, Public Works Department, Fire Department, Streets Department	On-Going	Min	Local, State
M	Continue to provide adequate training to Fire Department, Police Department, Street Department to respond to hazard events	ALL	Fire Department, Police Department, Streets Department	On-Going	Min-Low	Local
M	Maintain existing and purchase additional equipment for Street Department, Fire Department, and Police Department to respond to hazard events	ALL	Fire Department, City Council, Police Department, Street Maintenance	On-Going	Min-Mod	Local, State
M	Regularly review and amend fire, medical, and hazardous material response standard operating procedures	ALL	Fire Department, Buchanan County EMA, Police Department, Ambulance Service	On-Going	Min	Local
M	Develop a list of structures to be used as gathering sites in the event of an emergency situation	ALL	Buchanan County EMA, City, American Red Cross	On-Going	Min	Local
M	Work with local utility to develop a program to bury existing lines	Transportation Incident - Energy, Tornadoes, Windstorms, Hailstorms, Severe Winter Storms, Thunderstorm & Lightning	City Council, MidAmerican Energy Company	Long-Term	Min	Local
M	Continue to purchase and install surge protector equipment on critical municipally-owned electronic equipment	ALL	City Council, City Departments	On-Going	Min-Low	Local
M	Continue to backup critical city data	ALL	City Council, City Departments	On-Going	Min	Local
M	Designate local 'heating and cooling sites'	Severe Winter Storms, Extreme Heat	City Council, Buchanan County EMA, American Red Cross, private facilities	On-Going	Min	Local
M	Continue contract for Linn County HAZMAT team response	Fixed HAZMAT Incident, Transportation Incident – HAZMAT	City Council, Fire Department, Ambulance Service, Sheriff's Office, Linn County HAZMAT Team, Buchanan County EMA	On-Going	Min	Local
M	Work with local businesses and County EMA to ensure Tier II reports are being filed	Fixed HAZMAT Incident	Buchanan County EMA, Fire Department, Iowa DNR	On-Going	Min	Local
M	Purchase new generator to provide emergency power at New City Hall Bldg.	ALL	City Council, Public Works Department, Fire Department, Police Department	On-Going	Mod	Local, State, Federal
M	Fire hydrant location analysis and correction	ALL	Fire Department, City Council, Public	Mid-Term	Min-Mod	Local

			Works Department			
L	Maintain list of potential translators to be called upon in case of an emergency	ALL	Police Department, Fire Department, City	On-Going	Min	Local
Structural Projects						
M	Continue improvements to the storm water system	Flash Flood, River Flood	City Council, Public Works Department	Long-Term	Mod-High	Local, State
M	Construct dikes, levees, and/or dams in and around community	Flash Flood, River Flood	City Council, Public Works Department	Long-Term	Mod-High	Local, State
M	Continue to improve water distribution system	Structure Fire, Grass or Wildland Fire, Explosion	City Council, Public Works Department	On-Going	Mod-High	Local, State

APPENDIX G: CITY OF LAMONT

COMMUNITY PROFILE

Location

The City of Lamont is located in northeast Buchanan County in the northeast quadrant of Iowa, *see Attachment 1: Location of the City map*.

Development Trends

The first non-native settlers to settle at the present site of Lamont arrived in 1853. Seymour Whitney was the first to begin construction of a log cabin, followed shortly thereafter by Mark Whitney and the Reverend J.B. Ward and their families. Within a short period of time a number of settlers had arrived in the area and began to stake claim to different tracts of land throughout the countryside. This large migration to the area was hastened largely as a result of an act of Congress, which occurred in 1855 and resulted in the reduction of the price of land to 75 cents per acre.

In 1883 the people decided that Ward's Corners was no longer an appropriate name for the community. It was at this time that the current name of Lamont was given to the community. Soon thereafter it was announced that a railroad would be built and would run from Dubuque, Iowa to St. Paul, Minnesota. The people of Lamont worked successfully to secure a depot location, an act that would eventually spur much growth in the community. The town was officially incorporated in 1894.

During the 20th Century many changes occurred in Lamont that are relevant to hazard mitigation efforts. In 1908 the first official Lamont Fire Department was established. Municipal wells were drilled in order to provide water to the community, primarily for personal and business uses, but also for fire suppression. In 1925 Lamont purchased and installed its first electric fire whistle. This whistle was replaced with a new siren in 1947. The community's first railroad crossing signals were installed at a railroad crossing near what was, at the time, a lumberyard.

Lamont experienced a number of disasters over this time period as well. According to recorded history, Lamont has frequently experienced fire and flooding events. Also mentioned were instances of tornados, blizzards, and explosions. The railroad, which at one time had meant so much to the development of Lamont, eventually ceased their operations in the area, as they have done in many cases throughout the state.

Of local significance, but outside the city limits of Lamont was the creation of Iowa's first state park; Backbone State Park. Prior to being named a state park, the area had historically been referred to as the Devil's Backbone region. Assuming the name would not be politically acceptable, when named a state park in 1919, the name was changed to Backbone State Park. Lamont was then given the designation as "The Official Gateway to Backbone State Park." Over the years, Lamont has benefited from the tourists attracted to the park. *(Information for the History of Lamont was garnered from "History of Lamont, Iowa, Bicentennial Edition, 1853-1976.")*

Demographics

Tables G1.1 and G1.2 highlight Lamont's demographics. Lamont's population decreased 8.3% since 2000, falling to 461 from 503 residents. However, the community's median age stayed the same.

Natural Environment

The majority of Lamont lies at an elevation of between 1010 and 1160 feet, *see Attachment 2: Topographic Map of the City*. The Lamont Creek cuts into the community and flows into the Maquoketa River. The Lamont Creek and Maquoketa River largely defines the topography of Lamont. The community lies in a low-lying basin and is primarily flat, which contributes to its flooding problems.

Information from the United States Environmental Protection Agency shows that the City of Lamont is located in the extreme northwest area of the Maquoketa Watershed. Lamont is located just south of the South Fork Maquoketa River, and about four miles west of the main stream of the Maquoketa River. Tributaries to the river run through the City of Lamont, namely Lamont Creek.

TABLE G1.1: LAMONT'S DEMOGRAPHICS

Government Framework	Mayor – City Council
General Population, 2010 Census	
Total Population, 2010	461
Total Males, 2010	235
Total Females, 2010	226
Median Age, 2010	37.7
At-Risk Population, <18 Yrs, 2010	133
At-Risk Population, >64 Yrs, 2010	63
One Race-White, 2010	453
One Race-Black or African American, 2010	1
One Race – American Indian and Alaska Native, 2010	2
One Race – Asian, 2010	2
Two or More Races, 2010	3
Hispanic or Latino (of any race), 2010	2
Total Household Population, 2010	461
Total Population in Group Quarters,2010	0
Total Family Households, 2010	121
Total Family Households with Children under 18, 2010	57
Male Householder, no wife present, with children under 18, 2010	38
Female Householder, no husband present, with children under 18, 2010	15
Households with individuals 65yrs and over, 2010	53
Householder living alone, 2010	64
Average household size, 2010	2.39
Average family size, 2010	3.06
Housing Characteristics, 2010 Census	
Total Housing Units, 2010	212
Occupied Housing Units, 2010	193
Vacant Housing Units, 2010	19
Rental Vacancy Rate, 2010	7.9%
Owner-Occupied Housing Units, 2010	158
Population in Owner-Occupied Housing Units, 2010	379
Rental-Occupied Housing Units, 2010	35
Population in Rental-Occupied Housing Units, 2010	82

There are a number of water systems that have a substantial effect on the defined planning area. The predominant water system located within the Lamont City limits is Lamont Creek. Lamont Creek enters the city limits near the northwest corner of town and flows, in an east-southeasterly direction, before exiting the city limits in the middle of the eastern city limit border.

There is also an unnamed waterway that acts as a tributary to Lamont Creek just southeast of the corner of East Street and Oak Street. A good example of these waterways can be illustrated by referring to *Attachment # 3*, the Floodplain Map for the City of Lamont.

When the railroad was still operational in the city, excavation activities along the railroad and parallel waterway has caused another area of occasional surface water. This area, which extends predominantly through the location of the abandoned railroad property, south and parallel to Albert Street, has been known to contribute to flash flooding in the community, as it acts as a waterway which drains rainfall runoff from west of the city limits. Originally this runoff was, for the most part, routed north to Lamont Creek before the creek entered city limits.

Outside of the city limits, to the north and east of Lamont is the South Fork Maquoketa River. All of the aforementioned water bodies eventually contribute to this river. The South Fork Maquoketa River then travels east-northeast before combining with the main channel of the Maquoketa River in Backbone State Park. Just beyond the location where these two rivers meet is Backbone Lake.

TABLE G1.2: LAMONT'S DEMOGRAPHICS

Economics Characteristics, 2010-2014 ACS (Est.)	
Population In Labor Force (16 yrs. and over)	286
Persons in Civilian Labor Force	198
Persons Employed	189
Persons Unemployed	9
Persons in Armed Forces	0
Mean Travel Time to Work in Minutes (16 yrs. & over)	27.8
Persons Employed in Management, Professional, or Related Occupations	29
Persons Employed in Service Occupations	28
Persons Employed in Sales and Office Occupations	49
Persons Employed in Natural Resources, Construction, and Maintenance Occupations	21
Persons Employed in Production, Transportation, or Material Moving Occupations	62
Median Household Income	$44,107
Median Family Income	$58,750
Per Capita Personal Income	$22,042
Social Characteristics, 2010-2014 ACS (Est.)	
School Enrollment (3 yrs. and over)	73
Nursery School, Preschool	3
Kindergarten and Elementary School (grades K-8)	47
High School (grades 9-12)	13
College or Graduate School	10
Education Attainment: Population 25 Years and Over	265
Persons with Less than 9th Grade	2
Persons with 9th to 12th Grade, No Diploma	23
Persons with High School Degree or Equivalency	160
Persons with Some College, No Degree	47
Persons with Associate Degree	17
Persons with Bachelor's Degree	14
Persons with Graduate or Higher Degree	2

Transportation

One state highway travels through the City of Lamont; State Highway 187, a north-south route travels along the western edge of Lamont, connecting the city to Highway 20 to the south and Highway 3 to the north. There are also a number of county highways in close proximity to the community.

County Highway C64 is an east-west route that travels east-southeast to the City of Dundee, in Delaware County. C64 also travels west connecting Lamont to County Highway W45. To the north of Lamont, approximately ¾ of a mile is County Highway C57, which runs east to Backbone State Park. In addition to these common routes there are several unpaved county roads that travel in every direction from Lamont.

Originally, a railroad town, the tracks that once traveled from Lamont to the northwest has since been abandoned. The nearest railroad still in operation is the Illinois Central Railroad; an east-west line located approximately 7.8 miles south of the city limits. The community is situated just under nine miles north of the major four-lane route, State Highway 20. The closest commercial airports are located in Waterloo, Cedar Rapids, and Dubuque.

Community Services

The City of Lamont operates a municipal water system. The system is comprised of primarily six and eight inch water mains that serve the majority of the community. There are approximately 239 water connections. Furthermore, there are 41 known sand points and wells, while 11 properties within the community have no city water service. All eleven of these properties who do not receive City water service are believed to have wells.

Water for the community is derived as a result of the operation of two municipal wells both located near the water tower, east of the fire station. The water tower has a 30,000-gallon capacity. Average daily consumption in Lamont is reported to be 38,600 gallons per day. Therefore, the tower is capable of storing less than a one day supply of water. The peak consumption for the City of Lamont is approximately 50,000 gallons per day; an amount which far exceeds the elevated storage capability of the water tower.

The municipal wells, which were alluded to earlier, produce approximately 250 gallons of water per minute. One well produces in the area of 150 gallons per minute, while the other well produces about 100 gallons per minute. The water system is available throughout the community, although six property owners have opted to utilize private wells instead of City service.

The wastewater treatment facility and collection system, otherwise known as the sanitary sewer system, in owned and operated by the City of Lamont. The sewer treatment facility is comprised of two settling ponds east of town, south of Lamont Creek. The plant has a design capacity of 100,000 gallons per day, an average load of 48,000 gallons per day, and an identified peak load of 100,000 gallons per day.

Sewer service is available throughout the community and it is estimated that there are 244 operational hookups. There are six properties within the city limits that have no municipal sewer service. Two of these properties are serviced by private septic tank systems, one property has no sewer facilities, and three properties are properties used for livestock and therefore require no sewer service at this time.

In 2015 the city implemented a new storm-water ordinance, to raise funds for flood mitigation projects.

Table G2 shows the primary utility providers for the City of Lamont.

TABLE G2: LAMONT UTILITY PROVIDERS

Electric	Natural Gas	Telephone/Internet	Cable	Water	Sewer	Sanitation
Alliant Energy	Black Hills Energy	Windstream	-	City of Lamont	City of Lamont	City of Lamont

HAZARDS & RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Lamont evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Lamont's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions including: Historical Occurrence, Probability, Magnitude or Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
= Final Hazard Assessment Score

Table G3 is the analysis scores for the City of Lamont. As seen in Table G3, the top two hazards for Lamont are Flash Flood and Tornado/Windstorm.

	TABLE G3: IDENTIFIED HAZARDS FOR LAMONT					
Hazard Rank	**Hazards**	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**Assessment Score**
1	Flash Flood	4	4	4	3	**3.9**
2	Tornado/Windstorm	4	3	4	1	**3.4**
3	Transportation Incident	4	2	4	2	**3.2**
4	Severe Winter Storm	4	2	1	2	**2.75**
4	HAZMAT Incident	3	2	4	2	**2.75**
4	Thunderstorm/Lightning/Hail	4	1	3	2	**2.75**
7	Infrastructure Failure	2	2	4	4	**2.5**
8	Radiological Incident	1	3	4	4	**2.35**
9	Grass/Wild Fire	2	2	4	1	**2.2**
10	Drought	2	2	1	4	**2.05**
11	Sinkholes	1	1	4	4	**1.75**
12	Extreme Heat	2	1	1	3	**1.65**
13	Earthquake	1	1	4	1	**1.45**
14	River Flooding	1	2	1	2	**1.4**
15	Animal/Plant/Crop Disease	1	1	1	4	**1.3**
15	Expansive Soils	1	1	1	4	**1.3**
15	Human Disease	1	1	1	4	**1.3**
18	Landslide	1	1	1	1	**1**
18	Levee/Dam Failure	1	1	1	1	**1**
18	Terrorism	1	1	1	1	**1**

Vulnerability – Identifying Assets (Critical Facilities) & Social Asset Populations

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Lamont.

TABLE G4: SHELTERS IN LAMONT	
American Legion Hall	Methodist Church
Lamont Scout House	Baptist Church
Lamont Kids Center	Lamont Library
Lamont Community Room/Fire Station	Masonic Temple
Viafield Basement	Alibi
Source: Community	

Identifying the location of critical facilities and designated shelters (see Table G4) in Lamont is important in order to assess their vulnerability to hazards since these facilities are important to the community's operations, quality of life, and are key components of the economic sector. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. *Attachment 8* illustrates the location of identified critical facilities throughout Lamont.

TABLE G5: "AT-RISK" POPULATION FOR LAMONT	
Total Community Population, 2010	461
Elderly (65 yrs and older), 2010	63
Youth (17 yrs and under), 2010	133
Householder Living Alone, 2010	64
Population Living in Poverty (2010-2014)	32
Population in Multi-Family Structures* (2010-2014), 2 units	4
Population in Mobile Homes (2010-2014), 4 units	6
Group Quarters Population, 2010	0
Persons with Disabilities (2010-2014)	76
Source: U.S. Census, 2010, 2010-2014 ACS (Est.) and Iowa Data Center **Excludes 1-unit attached and detached, and 2-units*	

The social vulnerability assessment also identified how the hazards affect the population of Lamont and it is assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. Table G5 presents an overview of the at-risk population in Lamont according to available information retrieved from the 2010 U.S. Census, 2010-2014 American Community Survey estimates, and Iowa Data Center.

According to Table G5, 13.6% of residents are 65 years or older. There are 28of those residents are living alone. In 2010, the average household size of owner-occupied units is 2.40, while the average household size for renter-occupied units is 2.34.

Persons under the age of 17 are also at higher risk during some disasters. This is mostly due to the fact that young persons often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, there was 28.8% of the city's total population under the age of 18.

Another population considered to be more at risk than others are those in mobile homes. According to available data, the City of Lamont has 4 mobile home units within the city limits. Using the available data, we can estimate that the number of people residing in mobile homes in the City of Lamont is approximately

6.

In the City of Lamont there are seventeen homes, four manufactured homes, and two commercial building in the 100-year floodplain. Refer to the attached *Attachment 6: Flood Hazard Map of the City* for a view of the structures located in the 100-year flood plain. Areas at risk for flash flooding include low-lying areas, scattered throughout community, specifically the areas of the city in the 100-year floodplain noted above. The existing streets that have been identified are as follows: Pearl Street, Church Street, Jackson Street, Prospect Street, Washington Street, Concord Street, Pine Street, Monroe Street, Washburn Avenue, and Henderson Street. Not identified on the FIRM are areas surrounding the man made drainage basin south, and parallel to Albert Street. This area, including areas along Main Street has and likely will again experience some type of flooding if mitigating efforts are not made to change the situation.

TABLE G6: LAMONT'S FLOODPLAIN PROPERTIES & POPULATION

Population in Hazard Area*	22
1-4 Family Structures in Hazard Area*	14
Other Structures in Hazard Area*	25
Buildings in Floodplain**	75
Buildings within City Limits**	520

Source: Source: FEMA, INRCOG & Buchanan County Assessor
**Per FEMA 6/4/2009 information*
***Per INRCOG, City & County GIS Information, and FEMA Q3 flood data supplied by IDNR, 500-year floodplain includes all the 100-year floodplain*

According to available information shown in Table G6, there are still approximately 22 people living within the floodplain. There are 14 1-4 family structures and 25 other structures (10 commercial properties and 5 public) within the hazard area. Based on available flood insurance data, there is approximately $983,100 of property within the 100-year floodplain.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (G7) lists assets that would be affected in the event affected the unincorporated area of the county. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Buchanan County Assessor's Office, INRCOG, and American Community Survey data. It should be noted however that these dollar amounts do not include gas and electric utility valuations. These results should be considered preliminary estimates, as a full accounting of assets has not been completed.

TABLE G7: ASSET INVENTORY - ESTIMATED POTENTIAL PROPERTY LOSSES FOR LAMONT				
Type of Structure	**Number of Structures**	**Land Value ($)**	**Building/Dwelling Value ($)**	**Total Value ($)**
Residential, Single Family	222	1,314,517	9,187,122	10,501,639
Multi Residential	3	22,400	108,350	130,750
Agricultural	3	0	12,520	12,520
Commercial	44	198,430	1,191,590	1,390,020
Industrial	0	0	0	0
Religious/Non-Profit	0	0	0	0
Government	1	0	750,000	750,000
Education	0	0	0	0
Utilities	2	0	2,500,000	2,500,000
Total	**275**	**$1,535,347**	**$13,749,582**	**$15,284,929**

Sources: Buchanan County Assessor, Planning Committee; INRCOG
Notes: Government = City Hall, Fire Stations, Public Works Buildings, Community Buildings, Libraries; Utilities = Water and Waste Water facilities; Residential, Industrial, and Agricultural values based on 2015 data; Religious/Non-Profit, Government, Education, and Utilities values based on 2012 data.

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development.

National Flood Insurance Policy/Repetitive Loss Properties

The city's FIRM maps were updated on July 16, 2008. Using GIS spatial data from FIRM maps, in combination with property value data from the Buchanan Assessor's office, estimates of value in the floodplain were calculated. Table G8 shows the estimated value of land, buildings, and dwellings, within the city, in a floodplain. As is shown on the city's floodplain and floodplain scenario maps (Maps 3O and 3P) several properties adjacent to Lamont Creek and South Creek are within the 100-year floodplain.

TABLE G8: FLOODPLAIN DATA FOR LAMONT						
	Number of Parcels	**Land Value**	**Building Value**	**Dwelling Value**	**Total Value**	**Percent of City Affected**
1% Annual Floodplain	117	$529,935	$198,200	$1,987,440	$2,715,575	21.88%
0.2% Annual Floodplain	-	-	-	-	-	-
Source: Buchanan County Assessor's Office; Analysis conducted by INRCOG; Parcel values and FIRM maps as of 6/6/2016						

As of 8/31/2016, there were 10 NFIP policies, with $1,361,300 of insurance in force, in place throughout the city.

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. According to FEMA data (as of 11/30/2014), there is one repetitive loss building within the city. However, this property does not have insurance and has not had insurance funds paid out.

This HMP attempts to reduce loss by identifying potential natural and manmade hazards. As a result of many natural and manmade hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs.

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at their second committee meeting. The committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for the City of Lamont are as follows:

1. Minimize the number of injuries and/or loss of life associated with all identified hazards.
2. Reduce or eliminate property damage due to the occurrence of disasters.
3. Identify ways to improve response operations.
4. Return the community to either pre-disaster or improved conditions in a timely manner in the wake of a disaster.
5. Develop strategies to reduce the community's overall risk to negative effects of natural, technological, and man-made disasters.
6. Maintain multi-jurisdiction hazard mitigation plan.
7. Increase community awareness and preparedness.

Current Mitigation Actions

Prevention Mitigation Actions

Table G9 displays the current planning and regulatory documents for the City of Lamont.

TABLE G9: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR LAMONT

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes – 2012	No	No	Yes	No	Yes	Yes	Yes	Yes

Property Protection Mitigation Actions

The City of Lamont, in 2011, received FEMA grant monies to flood-proof their lift stations and construct an additional lagoon cell to increase capability during heavy rainfall and flooding events. In addition, they have a backup generator on the lift stations, conduct sump pump inspections, and have a hydraulic pump that pumps 750-gallons per minutes. Lamont also has three sump pumps to loan for emergencies.

More recently, the City of Lamont sought the services of Crawford Engineering and Surveying, Inc. of Independence to study the flood problem that exists next to the drainage ditch, which was created by the railroad. The study determined that the area became more problematic when water the flow of water west of the community was diverted as a result of a tiling project on nearby farmland. The water, which originally would flow north to Lamont Creek, before it entered the city limits of Lamont, was subsequently diverted into this drainage ditch. Unfortunately, the ditch was not constructed to handle the amount of water it has recently had to consume. The study concluded that in order to alleviate this type of flood event in Lamont, efforts should be made to redirect the water to its natural flow. This would largely decrease the probability and severity of the problem in that portion of Lamont. In March of 2009, through a joint project, IDOT and Buchanan County channeled water back to Lamont Creek to resolve this issue.

In 2014 the city implemented a new storm water utility fee to provide a funding source for flood mitigation and water quality initiatives.

In 2015, the city was awarded $300,000 in Community Development Block Grant (CDBG) funds from the Iowa Economic Development Authority (IEDA) to design and implement flood mitigation and water quality improvements. The city contracted with engineering firm MSA-PS for preliminary and final design. With construction expected to take place in 2017 or 2018, the project will include: stabilization and increasing the water capacity of Lamont and South Creek (tributary to Lamont Creek); increasing culvert capacity at Monroe Street, Madison Street, and Henderson Street; improved drainage along Henderson Street; and other various flood mitigation efforts.

Public Education and Awareness Mitigation Actions

Recently, in conjunction with Buchanan County , city has begun participating in the state's ALERT IOWA program which allows residents to sign up to be alerted of potential disasters via telephone, email, or text message.

In addition to the ALERT IOWA program, residents have access to radio, television, cellular telephones, Internet access, landline telephones, newspapers, the warning siren, and NOAA Radio Service. Common radio and television stations referenced for local weather updates include KWWL (television, Waterloo-Dubuque-Cedar Rapids-Iowa City), KOEL (radio, Oelwein), KMCH (radio, Manchester), and KOUR (radio, Independence). All official city notices are published in the local newspaper; the Lamont Leader.

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management

Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community.

Fire Department

Fire protection is provided for Lamont with a force of 17 volunteer firefighters. The total coverage area for the department is approximately 45 square miles. Services provided in this area include: fire suppression, fire inspection, emergency medical services, emergency extraction, emergency rescue, mutual aid, and helicopter landing zone support.

Firefighters in Lamont are contacted primarily in one of two ways. Each firefighter is equipped with a pager for quick notification. The siren is used to inform local firefighters of a fire event. Other communication devices that can be utilized include cell phones, land-line phones, and radios. However, the siren is difficult to hear throughout the entire community and cell phones rarely work properly in Lamont due to the community's low elevation.

TABLE G10: LAMONT FIRE DEPARTMENT VEHICLE INVENTORY

Vehicle	Make	Year of Production	Mileage	Capacity (gallons)
Pumper	Freightliner	2008	4,365	150
Tanker	Freightliner	2003	2,838	1,250
EMS Unit	Lifeline Type II	1992	46,316	Not Applicable
Off-Road "Brush Buggy"	Chevy	1994	13,450	250

Linn County Hazmat Team, based out of Cedar Rapids, supplies Hazardous Materials (HAZMAT) Response. This service is provided in accordance with a contract entered into by the City of Lamont and the Hazmat Team.

The fire department building in Lamont is relatively new. Constructed 2000, the department is directly behind, and actually shares a building with City Hall. The new building is approximately 4,000 square feet in area, which is more space than the department had in the previous building. The old fire department building is now utilized as the city shed where municipal maintenance vehicles and equipment is stored.

The City of Lamont maintains written 28E mutual aid agreements with every fire department in Buchanan County via a county agreement. Furthermore, because of Lamont's location in the northeast corner of the county, they also provide and receive mutual aid from departments in Fayette, Clayton, and Delaware Counties. These out of county mutual aid department include the following: Dundee, Strawberry Point, Masonville, and Arlington. Of the departments in Buchanan County, those in closest proximity to Lamont include Aurora, Stanley, and Winthrop.

The fire department ensures communication through several methods. Those methods include Enhanced 911 Service, Radio Communication, Pagers, Warning Siren, and Cellular Phones. Most of the communications are implemented through the Buchanan County L.E.C. This center is based in Independence. To date the Lamont Fire Department is not equipped with Global Positioning System (GPS) technology.

Lamont's fire department also provides a battery-up program to provided batteries, new smoke detectors, and CO detectors to residents.

Public Works

The City of Lamont has personnel and equipment for snow and ice removal. The equipment includes: 2000 Sterling Dump Truck, 1997 Dodge Pickup Truck, and 2004 New Holland Tractor.

The City also has an emergency hookup to Central Iowa Rural Water in case of power failure, well contamination, well mechanical failure, or fire.

Medical Services

First responder services within the Lamont city limits is provided by the fire department personnel. If ambulance service is necessary in the community it is generally dispatched from the nearby community of Strawberry Point, approximately eight miles northeast of Lamont. If further support is needed, ambulances from medical facilities in Oelwein, Manchester, and Independence can also be dispatched.

Although there are no hospitals or clinics located within the City of Lamont, there are a number of hospitals within several miles of the community. These facilities, in order of their approximate distance from Lamont, are as follows: Strawberry Point Medical Center in Strawberry Point, Regional Medical Center (11.7 miles) in Manchester, Mercy Hospital (14.5 miles) in Oelwein, Peoples Memorial Hospital (15.3 miles) in Independence.

Police

Lamont contracts for police service with the Buchanan County Sheriff's Department.

HAZMAT

Linn County Hazmat Team, based out of Cedar Rapids, supplies hazardous Materials (HAZMAT) Response. This service is provided in accordance with a contract entered into by the City of Lamont and the Hazmat Team.

Warning Systems

There is one outdoor siren in the community. The City installed the siren in the late 1970's and the siren provides inadequate warning to the community. The Hazard Mitigation Planning Committee estimates that to adequately cover the city either a larger siren or an additional siren is necessary.

NOAA Weather Radio broadcasts are also available in the community. NOAA Radio's provide up to the minute weather related alerts. Other locations residents may find warnings and watches are television, Internet, and radio (KWAY broadcasts out of Independence). The City of Lamont also participates in the states ALERT Iowa program, under which residents can sign up for email, text, and/or phone alert notifications in the event of an emergency or severe weather.

US Cellular erected a cell tower near town, which now provides reliable service for backup phone service and mobile communications during emergencies.

Natural Resource Protection Mitigation Actions

The City of Lamont has been conducting building to building inspections to identify private wells that are still connected to city water system. The City is also inspecting property to remove sump pumps, down spouts, etc. are not connected to the city's sewer system to prevent sewer backup in the event of a flood.

The City budgets funds ($3,500) for hazardous tree removal on terraces and parks.

In the late 1930, under the auspices of the WPA (Works Progress Administration), a project that included the straightening and channeling of Lamont Creek was undertaken to reduce the effects of flood events. Other floodplain improvement initiated to protect property in Lamont included the replacement of bridges in order to increase their flow capacity during high water events and the raising of the streets, which run parallel to the creek.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

TABLE G11: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table G11) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly, or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).
- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table G12 below is the City of Lamont's Implementation Strategy.

TABLE G12: FUTURE HAZARD MITIGATION ACTIVITIES- LAMONT

Priority	Mitigation Action/Program/Project	Associated Hazard(s)	Agencies Responsible for Implementation	Timeline	Est. Cost	Associated Goal(s)
Prevention						
High	Backup generator(s) for city shop, warning siren, and wells and larger generator to run entire fire station.	Earthquake, Flash Flood, Grass/Wild Fire, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Infrastructure Failure, Transportation Incident, Terrorism	City Council	Short-Term	Low	1,2,4
High	Continued participation in the Battery-Up Program; provide batteries, new smoke detectors, and CO detectors to residents	Grass/Wild Fire, Thunderstorm/Lightning/Hail	Fire Department	Active	Minimal	1,2,7
High	Continue to identify and remedy sewer system inflow and infiltration problems – enforce sump pump ordinance, grout sewer lines, identify and close abandoned service lines	Flash Flood, Thunderstorm/Lightning/Hail	City Council	Active	Moderate	2,4
Property Protection						
High	Continue participation in NFIP.	Flash Flood	City Council	Active	Low	2,4
High	Enlarge drainage culverts under Monroe/Madison Street	Flash Flood, Thunderstorm/Lightning/Hail	City Council	Active	Moderate	2,4
High	Stabilize and increase capacity of Lamont and South Creek	River Flood, Flash Flood	City Council	Active	Moderate	2,4
Natural Resource Protection						
High	Clear ditches, streams, and waterways	Flash Flood, Thunderstorm/Lightning/Hail	City Council	Active	High	1,2,4
Medium	Develop and implement well-head protection plan, eliminate and cap private and abandoned wells	HAZMAT Incident, Infrastructure Failure, Terrorism	City Council	Mid-Term	Minimal	1
Public Education & Awareness						
High	Continue to encourage enrollment in Code Red emergency notification system	Flash Flood, Grass/Wild Fire, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT	City Council	Active	Minimal	1,2,4,7

		Incident, Radiological Incident				
Emergency Services						
High	Keep updated designated shelter list	Earthquake, Extreme Heat, Flash Flood, Gras/Wild Fire, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	City Administration	Active	Minimal	1
High	Recruit and train fire fighters, first responders, emergency personnel (storm watch, dispatch)	Earthquake, Extreme Heat, Flash Flood, Grass/Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Sinkholes, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	City Council, Fire Department	Active	Minimal	1,2,7
High	Maintain bunker gear, personal protective gear, equipment, communications radio, etc.	Earthquake, Extreme Heat, Flash Flood, Grass/Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Sinkholes, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	City Council, Fire Department	Active	Low	1,2,4
Medium	Back-up generator for designated shelter sites	Earthquake, Extreme Heat, Flash Flood, Grass/Wild Fire, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	City Council, City Administration	Mid-Term	Low	1
Medium	Update existing siren system – more powerful siren or several sirens in at least three locations/sites	Grass/Wild Fire, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Terrorism	City Council	Short-Term	Low	1,2
Medium	Replace ambulance rescue unit	All	City Council	Mid-Term	Minimal	1
Low	Identify private homes with backup generators for shelter sites	Extreme Heat, Flash Flood, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Transportation Incident, Terrorism	City Council	Short-Term	Minimal	1,7
Structural Projects						
Medium	Tornado safe room at fire station/community room	Tornado/Windstorm	City Council	Mid-Term	Moderate	1

APPENDIX H: CITY OF QUASQUETON

COMMUNITY PROFILE

Location

The City of Quasqueton is located south of Highway 20 and the City of Independence and Winthrop in Buchanan County. The community highest elevation is 883 feet and covers 1.13 square miles of land and 0.03 square miles of water.

Development Trends

Quasqueton, the oldest town in Buchanan County, was first settled in 1842. The name was originally Quasqueton named by the Indians that lived on the west side of the river. It means "swift running water". At this point on the river is where several Indian trails converged to ford the river. A flourmill was built by William Bennett in 1842 and this was located were today's dam is built. The first dam was a wooden dam. The first Post Office was established in 1842 with William Richards as the first Postmaster. The county made the smaller dam below the milldam when the old Iron Bridge was torn down. The dam is made up of old piling and rocks from the old bridge.

Demographics

Tables H1.1 and H1.2 highlight Quasqueton's demographics. Quasqueton's population declined 3.5% from 2000 to 2010, falling from 574 to 554. However, the median age increased 2.1% to 40.4 years by 2010 from 38.3 years in 2000.

Natural Environment

The community of Quasqueton has the Wapsipinicon River running through the middle of it.

TABLE H1.1:QUASQUETON'S DEMOGRAPHICS

Government Framework	Mayor – City Council
General Population, 2010 Census	
Total Population, 2010	554
Total Males, 2010	287
Total Females, 2010	267
Median Age, 2010	40.4
At-Risk Population, <18 Yrs., 2010	116
At-Risk Population, >64 Yrs., 2010	72
One Race-White, 2010	538
One Race-Black or African American, 2010	5
One Race – American Indian and Alaska Native, 2010	0
One Race – Asian, 2010	1
Two or More Races, 2010	9
Hispanic or Latino (of any race), 2010	4
Total Household Population, 2010	554
Total Population in Group Quarters,2010	0
Total Family Households, 2010	162
Total Family Households with Children under 18, 2010	54
Male Householder, no wife present, with children under 18, 2010	6
Female Householder, no husband present, with children under 18, 2010	12
Households with individuals 65yrs and over, 2010	55
Householder living alone, 2010	53
Average household size, 2010	2.39
Average family size, 2010	2.80
Housing Characteristics, 2010 Census	
Total Housing Units, 2010	269
Occupied Housing Units, 2010	232
Vacant Housing Units, 2010	37
Rental Vacancy Rate, 2010	30.4%
Owner-Occupied Housing Units, 2010	184
Population in Owner-Occupied Housing Units, 2010	436
Rental-Occupied Housing Units, 2010	48
Population in Rental-Occupied Housing Units, 2010	118

Transportation

There are a variety of transportation types available in and around the City of Quasqueton. The largest and most visible transportation route is US Highway 20, an east west four-lane highway that passes approximately five miles to the north of the community. Quasqueton is connected to surrounding communities by County Road W35 and East Linn Street/280th Street, County Road W40, and Quasqueton Diagonal Blvd.

The three nearest Commercial Service Airports to the City of Quasqueton are located in Waterloo, Cedar Rapids, and Dubuque. Three smaller airports that do not offer commercial airline service are located in the nearby communities of Independence, Manchester, and Oelwein.

Community Services

Quasqueton provides a municipal water distribution system. This system is comprised of three wells, a water tower, and all distribution lines within the community. A municipal sewer system consists of two lagoons south of town near the Wapsipinicon River.

Table H2 displays the primary utility providers for the city.

TABLE H2: QUASQUETON UTILITY PROVIDERS

Electric	Natural Gas	Telephone/ Internet	Cable	Water	Sewer	Sanitation
Alliant	Alliant	E.B. Phone	E.B. Phone Direct TV Dish Network	Central Iowa Water Association	City of Quasqueton	Yes

TABLE H1.2: QUASQUETON'S DEMOGRAPHICS

Economics Characteristics, 2010-2014 ACS (Est.)	
Population In Labor Force (16 yrs. And over)	396
Persons in Civilian Labor Force	243
Persons Employed	229
Persons Unemployed	14
Persons in Armed Forces	0
Mean Travel Time to Work in Minutes (16 yrs. & over)	25.0
Persons Employed in Management, Professional, or Related Occupations	40
Persons Employed in Service Occupations	32
Persons Employed in Sales and Office Occupations	68
Persons Employed in Natural Resources, Construction, and Maintenance Occupations	29
Persons Employed in Production, Transportation, or Material Moving Occupations	60
Median Household Income	$37,321
Median Family Income	$51,563
Per Capita Personal Income	$25,188
Families below Poverty Level	1.4%
Individuals below Poverty Level	8.6%
Social Characteristics, 2010-2014 ACS (Est.)	
School Enrollment (3 yrs. And over)	65
Nursery School, Preschool	6
Kindergarten and Elementary School (grades K-8)	32
High School (grades 9-12)	12
College or Graduate School	15
Education Attainment: Population 25 Years and Over	360
Persons with Less than 9th Grade	4
Persons with 9th to 12th Grade, No Diploma	18
Persons with High School Degree or Equivalency	208
Persons with Some College, No Degree	67
Persons with Associate Degree	28
Persons with Bachelor's Degree	32
Persons with Graduate or Higher Degree	3
Persons with a Disability (5 yrs. And over)	70

HAZARDS & RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Quasqueton evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Quasqueton's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions including: Historical Occurrence, Probability, Magnitude or Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
= Final Hazard Assessment Score

Table H3 is the analysis scores for the City of Quasqueton. As seen in Table H3, the top three hazards for Quasqueton are Flash Flood, Grass/Wild Fire, and Thunderstorm/Lightening/Hail.

TABLE H3: IDENTIFIED HAZARDS FOR QUASQUETON						
Hazard Rank	**Hazards**	**Probability**	**Magnitude/Severity**	**Warning Time**	**Duration**	**Assessment Score**
1	Flash Flood	4	4	2	3	**3.60**
1	Grass/Wild Fire	4	3	4	3	**3.60**
3	Thunderstorm/Lightning/Hail	4	2	2	1	**2.80**
4	Severe Winter Storm	2	3	3	3	**2.55**
5	River Flooding	3	2	1	3	**2.40**
6	Drought	2	2	1	4	**2.05**
7	Extreme Heat	2	2	1	3	**1.95**
8	Human Disease	1	3	1	4	**1.90**
9	Sinkholes	1	1	4	4	**1.75**
10	Landslide	1	1	4	3	**1.65**
10	HAZMAT Incident	1	1	4	3	**1.65**
10	Infrastructure Failure	1	1	4	3	**1.65**
10	Levee/Dam Failure	1	1	4	3	**1.65**
10	Radiological Incident	1	1	4	3	**1.65**
15	Earthquake	1	1	4	1	**1.45**
15	Transportation Incident	1	1	4	1	**1.45**
17	Animal/Plant/Crop Disease	1	1	1	4	**1.30**
17	Expansive Soils	1	1	1	4	**1.30**
17	Tornado/Windstorm	1	1	3	1	**1.30**
20	Terrorism	1	1	1	1	**1.00**

Vulnerability – Identifying Assets (Critical Facilities) & Social Asset Populations

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Quasqueton.

TABLE H4: SHELTERS IN QUASQUETON

City Hall	Fire Station
Church	Old School
Shower House	

Source: Community

Identifying the location of critical facilities and designated shelters (see Table H4) in Quasqueton is important in order to assess their vulnerability to hazards since these facilities are important to the community's operations, quality of life, and are key components of the economic sector. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. *Attachment 8* illustrates the location of identified critical facilities throughout Quasqueton.

TABLE H5: "AT-RISK" POPULATION FOR QUASQUETON

Total Community Population, 2010	554
Elderly (65 yrs and older), 2010	72
Youth (17 yrs and under), 2010	116
Householder Living Alone, 2010	53
Population Living in Poverty, 2010-2014	39
Population in Multi-Family Structures (2010-2014),* 10 units	10
Population in Mobile Homes (2010-2014), 26 units	56
Group Quarters Population	0
Persons with Disabilities (2010-2014)	70

*Source: 2010 U.S. Census, 2010-2014 ACS (Est.) and Iowa Data Center *Excludes 1-unit attached and detached, and 2-units*

The social vulnerability assessment also identified how the hazards affect the population of Quasqueton and it is assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. Table H5 presents an overview of the at-risk population in Quasqueton according to available information retrieved from the 2010 U.S. Census, 2010-2014 American Community Survey estimates, and Iowa Data Center.

According to Table H5, 13% of residents are 65 years or older. There are 53 of those residents living alone. The average household size of renter-occupied units is 2.46, while the average household size for owner-occupied units is 2.37. The average household size, regardless of occupy, is 2.39.

Persons under the age of 17 are also at higher risk during some disasters. This is mostly due to the fact that young persons often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, there was 21% of the city's total population under the age of 18.

Another population considered to be more at risk than others are those in mobile homes. According to available data, the City of Quasqueton has 26 mobile home units within the city limits. This number comprised 9.6% of the housing units in the city and an estimated 56 residents.

The City of Quasqueton is affected by flooding from the Wapsipinicon River. *Attachment 3: Flood Map of the City* and *Attachment 4: Flood Scenario Map of the City* shows the 100-year floodplain for Quasqueton and the potential impact a flooding event would have on the community. As shown on the maps, the City's lagoons and Veterans Memorial Park are located in the 100-year floodplain.

According to available information shown in Table H6, there are still approximately 12 people living within the floodplain. There are two 1-4 family structures and two other structures within the hazard area.

TABLE H6: QUASQUETON'S FLOODPLAIN INFORMATION

Population in Hazard Area*	12
1-4 Family Structures in Hazard Area*	2
Other Structures in Hazard Area*	2
Buildings in Floodplain**	95
Buildings within city limits**	623

Source: FEMA, INRCOG & Buchanan County Assessor
**Per FEMA 6/4/2009 information*
***Per INRCOG, City & County GIS Information, and FEMA Q3 flood data supplied by IDNR, 500-year floodplain includes all the 100-year floodplain*

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (H7) lists assets that would be affected in the event affected the unincorporated area of the county. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Buchanan County Assessor's Office, INRCOG, and American Community Survey data. It should be noted however that these dollar amounts do not include gas and electric utility valuations. These results should be considered preliminary estimates, as a full accounting of assets has not been completed.

TABLE H7: ASSET INVENTORY - ESTIMATED POTENTIAL PROPERTY LOSSES FOR QUASQUETON				
Type of Structure	**Est. # of Structures**	**Land Value ($)**	**Building/Dwelling Value ($)**	**Total Value ($)**
Residential, Single Family	270	1,856,651	16,560,118	18,416,769
Multi Residential	6	78,300	375,810	454,110
Agricultural	6	84,690	35,990	120,680
Commercial	51	203,344	5,240,709	5,444,053
Industrial	1	16,930	175,420	192,350
Religious/Non-Profit	1		250,000	250,000
Government	1	0	500,000	500,000
Education	0	0	0	0
Utilities	2	0	1,000,000	1,000,000
Total	**338**	**$2,239,915**	**$24,138,047**	**$26,377,962**
Sources: Buchanan County Assessor, Planning Committee; INRCOG; American Community Survey *Notes: Government = City Hall, Fire Stations, Public Works Buildings, Community Buildings, Libraries; Utilities = Water and Waste Water facilities; Residential, Industrial, and Agricultural values based on 2015 data; Religious/Non-Profit, Government, Education, Commercial, and Utilities values based on 2012 data.*				

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development.

National Flood Insurance Program/Repetitive Loss Properties

The City of Quasqueton participates in the National Flood Insurance Program (NFIP). As of 08/31/2016, the city has five NFIP policies with $540,600 worth of coverage in place.

The city's FIRM maps were updated on July 16, 2008. Using GIS spatial data from FIRM maps, in combination with property value data from the Buchanan Assessor's office, estimates of value in the floodplain were calculated. Table H8 shows the estimated value of land, buildings, and dwellings, within the city, in a floodplain. As is shown on the city's floodplain maps (Maps 3Q and 3R) the north/south flowing Wapsipinicon River is responsible for the floodplain properties within the city.

TABLE H8: FLOODPLAIN DATA FOR QUASQUETON						
	Number of Parcels	**Land Value**	**Building Value**	**Dwelling Value**	**Total Value**	**Percent of City Affected**
1% Annual Floodplain	112	$682,415	$342,080	$3,133,045	$4,157,540	19.89%
0.2% Annual Floodplain	-	-	-	-	-	-
Source: Buchanan County Assessor's Office; Analysis conducted by INRCOG; Parcel values and FIRM maps as of 6/6/2016						

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. According to FEMA data (as of 11/30/2014), the City of Quasqueton has one repetitive loss property. The one property has a repetitive loss payment total of $25,370.82

This HMP attempts to reduce loss by identifying potential natural and manmade hazards. As a result of many natural and manmade hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs.

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at their second committee meeting. The committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for the City of Quasqueton are as follows:

1. Minimize the number of injuries and/or loss of life associated with all identified hazards.
2. Reduce or eliminate property damage due to the occurrence of disasters.
3. Identify ways to improve response operations.
4. Return the community to either pre-disaster or improved conditions in a timely manner in the wake of a disaster.
5. Develop strategies to reduce the community's overall risk to negative effects of natural, technological, and man-made disasters.
6. Maintain multi-jurisdiction hazard mitigation plan.
7. Increase community awareness and preparedness.

Current Mitigation Actions

Prevention Mitigation Actions

Table H9 provides a compilation of the current planning and regulatory documents in place for Quasqueton.

TABLE H9: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR QUASQUETON

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes – 2012	No	Yes	Yes	Yes	No	Yes	No	Yes

Property Protection Mitigation Actions

Due to the city's location along the Wapsipinicon River, there are areas that are affected by flooding. One house was elevated five years ago and one house was bought out and removed.

Public Education and Awareness Mitigation Actions

Quasqueton encourages its residents to sign up for the Code Red emergency notification system to be alerted of pending storms. The public are also educated on how to respond to storms through publications, such as website, Winthrop News, Independence's newspapers, KWWL in Waterloo, KGAN in Cedar Rapids, KCRG in Cedar Rapids, and various radio stations.

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community.

Fire Department

The City of Quasqueton Fire Department currently has a staff of 20 volunteer firemen. The department's coverage area is 25 square miles. Services provided include: fire suppression, fire inspection, emergency medical services, emergency extraction, emergency rescue, mutual aid, and helicopter landing zone support. The fire department has in place 28E agreements with surrounding communities to provide and receive assistance as needed on a mutual aid basis.

Firefighters in Quasqueton are contacted primarily in one of two ways. Each firefighter is equipped with a pager for quick notification. The siren is used to inform local firefighters of a fire event. Other communication devices that can be utilized include cell phones, land-line phones and radios. To date the fire department is not GPS equipped.

HAZMAT

The Linn County Hazmat Team, based out of Cedar Rapids, supplies Hazardous Materials (HAZMAT) Response to Quasqueton. This service is provided in accordance with a contract entered into by the City of Quasqueton and the Hazmat Team.

Medical Services

The closest medical facility is Buchanan County Health Center in Independence. Regional facilities include: Regional Medical Center in Manchester, Covenant Medical Center in Waterloo, Saint Luke's Hospital in Cedar Rapids, Allen Memorial Hospital in Waterloo, and Mercy Medical Center in Cedar Rapids.

Police

Buchanan County Sheriff's Department provides police service to the community of Quasqueton.

Public Works

Quasqueton uses city personnel for snow and ice removal in a timely manner during and after a storm. The city has the following equipment: 1995 Sterling Dump Truck, 1997 Chevrolet Pickup Truck, and a 2001 John Deere with loader.

Warning Systems

In the event of a tornado the City of Quasqueton has an early warning siren to warn the public of an oncoming storm. The siren wash updated in 2004. NOAA Weather Radio broadcasts are also available in the community. NOAA Radio's provide up-to-the-minute weather related alerts. The community also participates in the states ALERT Iowa program, under which residents can sign up for email, text, and/or phone alert notifications in the event of an emergency or severe weather.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table H10) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly,

TABLE H10: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).
- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table H11 below is the City of Quasqueton's Implementation Strategy.

TABLE H11: FUTURE HAZARD MITIGATION ACTIVITIES-QUASQUETON						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation**	**Timeline**	**Est. Cost**	**Associated Goal(s)**
Prevention						
Medium	Continue to Maintain, Enforce, and Update Community Regulations, Ordinances, and Planning Documents as necessary (i.e., zoning ordinance, floodplain management ordinance, comprehensive plan, etc.)	Flash, Grass/Wild Fire, Human Disease, Landslide, River Flooding	Mayor, City Council, Buchanan County EMA	Active	Minimal	4,5,6
Medium	Systematically Review and Update, as needed, Hazard Reponses Policies and Procedures	Extreme Heat, Flash Flood, Grass/Wild Fire, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Transportation Incident	Buchanan County EMA, Fire Department	Active	Minimal	1,2,3,5
Medium	Implement Burn Bans	Grass/Wild Fire	Fire Department, Buchanan County EMA	Active	Minimal	2,7
Medium	Develop and Maintain Tree-Trimming Program in Order to Reduce the Chances of Falling Branches on Infrastructure and Property	Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident	Mayor, City Council, Public Works	Active	Minimal	1
Public Education & Awareness						
Medium	Educate the Public through: continued cooperation with local service organizations (American Red Cross, County EMA, etc.) to educate residents on how to prepare for and respond to a various hazards; public awareness and education on City sponsored projects within identified flood hazard areas (fill for sidewalks trails); importance of personal Emergency/Disaster Plan; use of all forms of media	Flash Flood, Grass/Wild Fire, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Transportation Incident, Terrorism	City Council and partner organizations	Mid-Term	Minimal	1,2
Property Protection						
Medium	Identify and Evaluate Critical Facilities (i.e., wells, lift stations, WWPT, etc.) for Accessibility, Vulnerability, and Risk	Severe Winter Storm, Tornado/Windstorm, Infrastructure Failure, Terrorism	Mayor	Active	Minimal	3
Natural Resource Protection						
Medium	Strategically place Filter Strips and other Sedimentation and Erosion Control Measures in areas to reduce the amount of foreign materials entering water bodies	Flash Flood, Grass/Wild Fire, Human Disease, Landslide, River Flooding	Public Works	Mid-Term	Low	2
Low	Bank Stabilization Efforts on Areas Along Wapsipinicon River	Flash Flood, Grass/Wild Fire, Human Disease, Landslide, River Flooding	Mayor, Public Works	Long-Term	Low	2,4
Emergency Services						

High	Place Temporary Moratoriums on Boating during High Water and/or Flood Events	Flash Flood, Grass/Wild Fire, Human Disease, Landslide, River Flooding	Fire Department, Buchanan County EMA	Short-Term	Minimal	1
Medium	Continue Good Working Practices of Wastewater Management During Flood Events	Flash Flood, Grass/Wild Fire, Human Disease, Landslide, River Flooding	Public Works	Active	Low	2
Medium	Continue to Ensure Proper Signage is in place to Maintain Safe and Efficient Traffic Flow	Severe Winter Storm, Tornado/Windstorm, Transportation Incident	Public Works	Active	Minimal	3
Medium	Continue to Work to Safeguard against Potential Fire and Explosion Hazards Throughout the Community	Terrorism	Fire Department	Short-Term	Low	1,2,7
Medium	Maintain and Update as Needed, 28E Agreements with Surrounding Entities	ALL	Mayor	Active	Low	6
Medium	Continue to Provide Good Emergency Access to Water Throughout the Community (i.e., access to hydrants, river, wells, etc.)	Flash Flood, River Flooding, Severe Winter Storm, Tornado/Windstorm, HAZMAT Incident, Transportation Incident, Terrorism	Public Works	Active	Minimal	6
Medium	Ensure First Responders, Sheriff Department, Fire Department, Public Works and Street Department are properly Equipped, Staffed, and Trained to Provide Adequate Response to All Hazards	Flash Flood, River Flooding, Severe Winter Storm, Tornado/Windstorm, HAZMAT Incident, Transportation Incident, Terrorism	Fire Department, Buchanan County EMA	Active	Minimal	1,5,7
Medium	Maintain Backup Communication Towers for Emergency Responders	Flash Flood, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Terrorism	Buchanan County EMA, Fire Department	Long-Term	Low	3,7
Medium	Work with Telephone Companies to provide Redundant Service Lines and More Cellular Towers to Reduce Risk of Outages	Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Terrorism	City Council, Mayor	Long-Term	Moderate	3,7
Medium	Review Designated Snow Route Policies to Ensure Effectiveness and Maintain Proper Signage along Routes	Severe Winter Storm	Public Works	Active	Minimal	3,7
Medium	Continue to Periodically Evaluate Outdoor Warning Siren System in Order to Identify Areas of Potential Improvement	Severe Winter Storm, Sinkholes, Thunderstorm/Lightning/Hail, Tornado/Windstorm	Fire Department	Short-Term	Low	1
Medium	Consider Supplementing or Outright Donation of Smoke Detectors to Residents	Grass/Wild Fire	City Council, Fire Department	Short-Term	Minimal	1
Low	Consider Supplementing the Purchase of NOAA Weather Radios for People in the Community	River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm	City Council, Fire Department	Mid-Term	Low	1,3,7
Structural Projects						
Medium	Consider the Construction of Community Tornado Shelters and Safe Rooms at Identified Vulnerable Locations (Churches, Mobile Home Parks, and Parks)	Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm	City Council	Mid-Term	High	1,5

APPENDIX I: CITY OF ROWLEY

COMMUNITY PROFILE

Location

The City of Rowley is a small community, located in south central Buchanan County. It is located approximately seven miles south of U.S. Highway 20 and five miles north of the Benton County line. Rowley is on County Road D-47, two miles east of Highway 150. The county seat, Independence, is only a nine-mile drive north of Rowley. Five of Iowa's major cities are within easy driving distance: Waterloo/Cedar Falls - 35 minutes, Cedar Rapids - 40 minutes, Iowa City - 60 minutes, and Dubuque - 60 minutes. Easy access to these metropolitan areas provides many cultural, recreational, and shopping opportunities for the citizens of Rowley. The city has a total area of 0.4 square miles, all of which is land.

Development Trends

Rowley was founded in 1873 as a community prepared to provide its citizens with basic needs. During the first half of the twentieth century, Rowley had it all: a railroad, grocery stores, a lumber yard, a hotel, a hardware store, implement dealers, service stations, a creamery, a bank, a public school, a dentist, and churches. Changing times have affected all small Iowa communities, and Rowley is no exception. Many businesses closed or migrated to larger markets after the railroad removed its tracks through town. Yet the basic reason for Rowley's existence providing basic needs remains at the heart of Rowley. People in Rowley know and care about each other. Need help, help is there. The city's heartbeat continues and can be found in the following: a post office, a meat locker, an elevator, and a volunteer fire department.

In September 1996, a one room school house was moved to and restored near the elementary school. 1,200 people attended the dedication.

TABLE I1.1: ROWLEY'S DEMOGRAPHICS

Government Framework	Mayor – City Council
General Population, 2010 Census	
Total Population, 2010	264
Total Males, 2010	131
Total Females, 2010	133
Median Age, 2010	41.8
At-Risk Population, <18 Yrs, 2010	59
At-Risk Population, >64 Yrs, 2010	28
One Race-White, 2010	264
One Race-Black or African American, 2010	0
One Race – American Indian and Alaska Native, 2010	1
Two or More Races, 2010	0
Hispanic or Latino (of any race), 2010	0
Total Household Population, 2010	264
Total Population in Group Quarters,2010	0
Total Family Households, 2010	82
Total Family Households with Children under 18, 2010	28
Male Householder, no wife present, with children under 18, 2010	2
Female Householder, no husband present, with children under 18, 2010	3
Households with individuals 65yrs and over, 2010	21
Householder living alone, 2010	22
Average household size, 2010	2.44
Average family size, 2010	2.82
Housing Characteristics, 2010 Census	
Total Housing Units, 2010	116
Occupied Housing Units, 2010	108
Vacant Housing Units, 2010	8
Rental Vacancy Rate, 2010	0
Owner-Occupied Housing Units, 2010	91
Population in Owner-Occupied Housing Units, 2010	228
Rental-Occupied Housing Units, 2010	17
Population in Rental-Occupied Housing Units, 2010	36

The closest communities are Quasqueton, Independence, and Walker (Linn County) *[Economic Development Commission Buchanan County].*

Demographics

Tables I1.1 and I1.2 highlights Rowley's demographics. The community of Rowley experienced a decline in population between 2000 and 2010, by approximately 8.9% or 26 residents. The community's median age increased 2% during this time.

Natural Environment

The community of Rowley has an elevation of 975 feet. There are no bodies of water in or near Rowley. The community is relatively flat with a few rolling hills.

Transportation

There are a variety of transportation types available in and around the City of Rowley. The largest and most visible transportation route is US Highway 20, an east west four-lane highway that passes approximately ten miles to the north of the community.

Rowley is connected to surrounding communities by County Road D47 and Lucas Avenue.

The three nearest Commercial Service Airports to the City of Rowley are located in Waterloo, Cedar Rapids, and Dubuque. Three smaller airports that do not offer commercial airline service are located in the nearby communities of Independence, Manchester, and Oelwein**.**

Community Services

Rowley's water is supplied by Central Iowa Water Association to homes and for fire protection. Potable water exists from the Silurian-Devonian aquifer, with well depths ranging from 180 feet to 400 feet. Due to a wide array of sharing arrangements, it is unknown precisely how many wells exist within the city limits. There are five flush hydrants placed around town. The central water system provides adequate water pressure even when electricity is out. There is also a water tower with a tower

TABLE I1.2: ROWLEY'S DEMOGRAPHICS	
Economics Characteristics, 2010-2014 ACS (Est.)	
Population In Labor Force (16 yrs and over)	187
Persons in Civilian Labor Force	133
Persons Employed	130
Persons Unemployed	3
Persons in Armed Forces	0
Mean Travel Time to Work in Minutes (16 yrs & over)	23.9
Persons Employed in Management, Professional, or Related Occupations	36
Persons Employed in Service Occupations	13
Persons Employed in Sales and Office Occupations	26
Persons Employed in Natural Resources, Construction, and Maintenance Occupations	19
Persons Employed in Production, Transportation, or Material Moving Occupations	36
Median Household Income	$55,556
Median Family Income	$57,500
Per Capita Personal Income	$24,157
Social Characteristics, 2010-2014 ACS (Est.)	
School Enrollment (3 yrs and over)	54
Nursery School, Preschool	7
Kindergarten and Elementary School (grades K-8)	28
High School (grades 9-12)	15
College or Graduate School	4
Education Attainment: Population 25 Years and Over	165
Persons with Less than 9th Grade	0
Persons with 9th to 12th Grade, No Diploma	5
Persons with High School Degree or Equivalency	78
Persons with Some College, No Degree	40
Persons with Associate Degree	26
Persons with Bachelor's Degree	14
Persons with Graduate or Higher Degree	11

on top for narrow band radio attached.

Nearly all of the community was served by the city's sewage treatment system. The average load was 20,000 gallons per day, while peak load was 60,000 gallons per day. The system's design capacity is 173,445 gallons per day. The original sewer system was installed in 1963. In the early 1980s, the system was upgraded with the installation of two more cells and a second lift station. Both lift station pumps were rebuilt in 1993.

Table I2 shows the primary utility providers in the city.

TABLE I2: ROWLEY UTILITY PROVIDERS

Electric	Natural Gas	Telephone/Internet	Cable	Water	Sewer	Sanitation
Alliant Energy	Alliant Energy	Windstream IndyTel	Independence Light & Power	Central Iowa Water Association	City of Rowley	Waste Management

HAZARDS & RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Rowley evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Rowley's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions including: Historical Occurrence, Probability, Magnitude or Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x. 30) + (Warning Time x .15) + (Duration x .10)
= Final Hazard Assessment Score

Table I3 is the analysis scores for the City of Rowley. As seen in Table I3, the top two hazards for Rowley are Drought and Severe Winter Storm.

TABLE I3: IDENTIFIED HAZARDS FOR ROWLEY						
Hazard Rank	**Hazards**	**Probability**	**Magnitude/Severity**	**Warning Time**	**Duration**	Assessment Score
1	Drought	2	4	3	4	2.95
2	Severe Winter Storm	3	2	1	3	2.4
3	Animal/Plant/Crop Disease	2	2	3	3	2.25
4	Expansive Soils	2	2	4	1	2.2
4	Extreme Heat	2	2	2	4	2.2
6	Flash Flood	3	1	1	2	2
7	Thunderstorm/Lightning/Hail	2	2	2	1	1.9
8	Grass/Wild Fire	2	2	1	2	1.85
9	Sinkholes	2	1	2	2	1.7
9	HAZMAT Incident	2	1	2	2	1.7
11	Earthquake	1	1	4	1	1.45
12	Human Disease	1	1	2	2	1.25
12	River Flooding	1	1	2	2	1.25
12	Infrastructure Failure	1	1	2	2	1.25
15	Landslide	1	1	2	1	1.15
15	Tornado/Windstorm	1	1	2	1	1.15
15	Transportation Incident	1	1	2	1	1.15
15	Terrorism	1	1	2	1	1.15
19	Levee/Dam Failure	1	1	1	1	1
19	Radiological Incident	1	1	1	1	1

Vulnerability – Identifying Assets (Critical Facilities) & Social Asset Populations

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Rowley.

TABLE I4: SHELTERS IN ROWLEY

United Methodist Church	Presbyterian Church of Rowley
Fire Station	Community Center

Source: Community

Identifying the location of critical facilities and designated shelters (see Table I4) in Rowley is important in order to assess their vulnerability to hazards since these facilities are important to the community's operations, quality of life, and are key components of the economic sector. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. *Attachment 8* illustrates the location of identified critical facilities throughout Rowley.

The social vulnerability assessment also identified how the hazards affect the population of Rowley and it is assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. Table I5 presents an overview of the at-risk population in Rowley according to available information retrieved from the 2010 U.S. Census, 2010-2014 American Community Survey estimates, and Iowa Data Center.

According to Table I5, 10.6% of residents are 65 years or older, with 6 of those residents living alone. The average household size of renter-occupied units is 2.12, while the average household size for owner-occupied units is 2.51.

TABLE I5: "AT-RISK" POPULATION FOR ROWLEY

Total Community Population, 2010	264
Elderly (65 yrs and older), 2010	28
Youth (17 yrs and under), 2010	59
Householder Living Alone, 2010	22
Population Living in Poverty, 2010-2014	14
Population in Multi-Family Structures*(2010-2014), 0 units	0
Population in Mobile Homes (2000),4 units	10
Group Quarters Population	0
Persons with Disabilities (2010-2014)	20

Source: U.S. Census, 2010, 2010-2014 ACS (Est.), and Iowa Data Center
**Excludes 1-unit attached and detached, and 2-units*

Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young persons often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, there was 22.3% of the city's total population under the age of 18.

Another population considered to be more at risk than others are those in mobile homes. According to 2010-2014 American Community Survey estimates, the City of Rowley had 4 mobile home units within the city limits. Using the available data, we can estimate that the number of people residing in mobile homes in the City of Rowley is approximately 10.

There are no rivers, streams, or other bodies of water in or near the City of Rowley; therefore river flooding does not affect any properties. Occasionally during heavy rain events streets and open ditches may have water standing.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (I6) lists assets that would be affected in the event affected the unincorporated area of the county. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Buchanan County Assessor's Office, INRCOG, and American Community Survey data. It should be noted however that these dollar amounts do not include gas and electric utility valuations. These results should be considered preliminary estimates, as a full accounting of assets has not been completed.

TABLE I6: ASSET INVENTORY - ESTIMATED POTENTIAL PROPERTY LOSSES FOR ROWLEY

Type of Structure	Est. # of Structures	Land Value ($)	Building/Dwelling Value ($)	Total Value ($)
Residential, Single Family	119	714,570	7,929,118	8,643,688
Multi Residential	1	6,630	97,850	104,480
Agricultural	5	230,350	23,290	253,640
Commercial	20	135,830	1,962,560	2,098,390
Religious/Non-Profit	2	0	500,000	500,000
Government	1	0	750,000	750,000
Education	0	0	0	0
Utilities	1	0	1,000,000	1,000,000
Total	**149**	**$1,087,380**	**$12,262,818**	**$13,350,198**

Sources: Buchanan County Assessor, Planning Committee; INRCOG; American Community Survey
Notes: Government = City Hall, Fire Stations, Public Works Buildings, Community Buildings, Libraries; Utilities = Water and Waste Water facilities; Residential, Commercial, and Agricultural values based on 2015 data; Religious/Non-Profit, Government, Education, and Utilities values based on 2012 data.

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future

development.

National Flood Insurance Program/Repetitive Loss Properties

The City of Rowley does not participate in the National Flood Insurance Program. As shown on the city's floodplain maps (Maps 3S and 3T) no portion of the city is within a floodplain. The city's FIRM maps were updated in July 16, 2008.

TABLE I7: FLOODPLAIN DATA FOR ROWLEY

	Number of Parcels	Land Value	Building Value	Dwelling Value	Total Value	Percent of City Affected
1% Annual Floodplain	0	$0	$0	$0	$0	0.0%
0.2% Annual Floodplain	0	$0	$0	$0	$0	0.0%

Source: Buchanan County Assessor's Office; Analysis conducted by INRCOG; Parcel values and FIRM maps as of 6/6/2016

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. According to FEMA data (as of 11/30/2014), the City of Rowley does not have any repetitive loss properties.

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at their second committee meeting. The committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for the City of Rowley are as follows:

1. Prevent avoidable disasters.
2. Take steps to mitigate the probable negative consequences that may occur as a result of natural, technological, and/or man-made disasters.
3. Identify potential funding sources needed to accomplish identified mitigation projects.
4. Protect the health and welfare of the entire community by sufficiently maintaining all first responder organizations.
5. Return to pre-disaster or improved conditions as soon as possible after a disaster occurs.

Current Mitigation Actions

Prevention Mitigation Actions

Table I8 displays the city's current planning and regulatory documents.

TABLE I8: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR ROWLEY

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes – 2012	Yes	No	Yes – Restricted Residence	No	No	No	No	No

Property Protection Mitigation Actions

The City of Rowley has not done or is currently not doing any property protection activities.

Public Education and Awareness Mitigation Actions

Rowley encourages its residents to sign up for the Code Red emergency notification system to be alerted of pending storms. The public are also educated on how to respond to storms through publications, such as fliers, the County's website, Independence's newspapers, KWWL in Waterloo, KGAN in Cedar Rapids, KCRG in Cedar Rapids, and various radio stations.

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community.

Fire Department

The City of Rowley has a volunteer fire department with 13 firefighters and 6 first responders available to the community. The department's coverage area is 25 square miles. The fire department has in place 28E agreements with surrounding communities to provide and receive assistance as needed on a mutual aid basis. The fire department ensures communication through several methods. Those methods include E-911 Service, Radio Communication, Pagers, Alarm Systems, Sirens, and Cellular Phones. To date the fire department is not GPS equipped.

HAZMAT

The Linn County Hazmat Team, based out of Cedar Rapids, supplies Hazardous Materials (HAZMAT) Response to Quasqueton. This service is provided in accordance with a contract entered into by the City of Rowley and the Hazmat Team.

Medical Services

The closest medical facility is Buchanan County Health Center in Independence. Regional facilities include: Regional Medical Center in Manchester, Covenant Medical Center in Waterloo, Saint Luke's Hospital in Cedar Rapids, Allen Memorial Hospital in Waterloo, and Mercy Medical Center in Cedar Rapids.

Police

Buchanan County Sheriff's Department provides police service to the community of Rowley.

Warning Systems

In the event of a tornado the City of Rowley has an early warning siren to warn the public of an oncoming storm. NOAA Weather Radio broadcasts are also available in the community. NOAA Radio's provide up-to-the-minute weather related alerts. The community also participates in Buchanan County's Code Red emergency notification system.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the city's efforts to mitigate hazards when possible and to respond to hazards in a timely and While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table I9) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

TABLE I9: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly, or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city

will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).
- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table I10 below is the City of Rowley's Implementation Strategy.

TABLE I10: FUTURE MITIGATION ACTIVITIES - ROWLEY						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation**	**Timeline**	**Est. Cost**	**Associated Goal(s)**
Prevention						
Medium	Review designated snow route policy and signage	HAZMAT Incident	City Council	Active	Minimal	1
Medium	Work on adopting building codes	All	City Council	Short-Term	Low	4
Medium	Enforce county guidelines on burning	Grass/Wild Fire	Fire Department	Mid-Term	Moderate	1
Low	Establish a tree trimming program	Severe Winter Storm	City Council	Short-Term	Low	1
Public Education & Awareness						
Medium	Informational letter to citizens	Human Disease	City Council	Short-Term	Low	4
Medium	Establish good neighbor programs	Animal/Plant/Crop Disease	City Council	Mid-Term	Low	1
Medium	Continue to promote use of Iowa One Call	Thunderstorm/Lightning/Hail	City Council	Long-Term	Low	4
Property Protection						
Medium	Review security at critical facilities in the city	Severe Winter Storm	City Council	Mid-Term	Moderate	4
Natural Resource Protection						
Medium	Continue to follow monitoring requirements set forth by the Iowa DNR	Radiological Incident	City Council	Mid-Term	High	5
Low	Encourage the use of buffer strips	River Flooding, Flash Flooding	City Council	Active		4
Emergency Services						
High	Maintain existing and purchase new firefighting equipment as need	All	Fire Department, City Council	Mid-Term	Moderate	2,3
High	Keep sirens updated	Tornado/Windstorm	Fire Department	Active	Moderate	2
High	Maintain fire and rescue services	All	Fire Department	Mid-Term	Low	1
High	Identify potential funding sources to accomplish mitigation projects	All	City Council	Long-Term	Minimal	3
Medium	Training Fire Department, First Responders to adequately respond to all hazard events	Tornado/Windstorm	Fire Department	Active	Moderate	2
Medium	Test warning sirens for community notification of pending storms	Tornado/Windstorm	Fire Department	Active	Minimal	2

Medium	Maintain lists of special needs of citizens so they receive high priority during storms	Severe Winter Storm	Fire Department	Short-Term	Minimal	2
Medium	Maintain existing agreement with surrounding communities for mutual aid assistance	Tornado/Windstorm	Fire Department	Short-Term	Low	2,4
Low	Implement Hazard Mitigation Plan	All	Mayor	Mid-Term	Moderate	5
Low	Maintain weather spotter training	Tornado/Windstorm	Fire Department	Short-Term	Low	2
Structural Projects						
High	Maintaining safe playground equipment	Infrastructure Failure	City Council	Long-Term	Low	1

APPENDIX J: CITY OF STANLEY

COMMUNITY PROFILE

Location

The City of Stanley is located along the northern border of Buchanan County, with a small portion of the city in Fayette County. County Road W33 runs north south. The City of Stanley has a total area of 0.2 square miles, all of which is land.

Natural Environment

The West Branch of Buffalo Creek runs along the western portion of the community, with a tributary running down the eastern half of the community. The community is relatively flat with rolling hills.

Transportation

County Road W-33 provides primary access to Stanley.

Community Services

Stanley provides a central sewer collection system, with lagoons located on the western side of the community.

Table J1 shows the primary utility providers for Stanley.

TABLE J1: STANLEY UTILITY PROVIDERS

Electric	Natural Gas	Telephone/Internet	Cable	Water	Sewer	Sanitation
Alliant Energy	Alliant Energy	East Buchanan	-	Private Wells	City of Stanley	Waste Management

Demographics

Tables J2.1 and J1.2 highlights Stanley's demographics. The community of Stanley experienced a decline, of 2.3%, in population between 2000 and 2010. The community's median age increased almost one percent, from 33.5 to 34.3 years.

TABLE J2.1: STANLEY'S DEMOGRAPHICS	
Government Framework	Mayor – City Council
General Population, 2010 Census	
Total Population, 2010 (Buchanan and Fayette County)	125
Total Males, 2010	58
Total Females, 2010	67
Median Age, 2010	34.3
At-Risk Population, <18 Yrs, 2010	43
At-Risk Population, >64 Yrs, 2010	21
One Race-White, 2010	113
One Race-Black or African American, 2010	1
One Race – American Indian and Alaska Native, 2010	2
Two or More Races, 2010	9
Hispanic or Latino (of any race), 2010	2
Total Household Population, 2010	125
Total Population in Group Quarters,2010	0
Total Family Households, 2010	34
Total Family Households with Children under 18, 2010	16
Male Householder, no wife present, with children under 18, 2010	1
Female Householder, no husband present, with children under 18, 2010	3
Households with individuals 65yrs and over, 2010	15
Householder living alone, 2010	7
Average household size, 2010	2.91
Average family size, 2010	3.29
Housing Characteristics, 2010 Census	
Total Housing Units, 2010	49
Occupied Housing Units, 2010	43
Vacant Housing Units, 2010	6
Rental Vacancy Rate, 2010	16.7%
Owner-Occupied Housing Units, 2010	38
Population in Owner-Occupied Housing Units, 2010	106
Rental-Occupied Housing Units, 2010	5
Population in Rental-Occupied Housing Units, 2010	19

TABLE J2.2: STANLEY'S DEMOGRAPHICS	
Economics Characteristics, 2010-2014 ACS (Est.)	
Population In Labor Force (16 yrs and over)	78
Persons in Civilian Labor Force	49
Persons Employed	46
Persons Unemployed	3
Persons in Armed Forces	1
Mean Travel Time to Work in Minutes (16 yrs & over)	16.7
Persons Employed in Management, Professional, or Related Occupations	9
Persons Employed in Service Occupations	4
Persons Employed in Sales and Office Occupations	14
Persons Employed in Natural Resources, Construction, and Maintenance Occupations	7
Persons Employed in Production, Transportation, or Material Moving Occupations	12
Median Household Income	$45,000
Median Family Income	$48,125
Per Capita Personal Income	$21,703
Families below Poverty Level	7.4%
Individuals below Poverty Level	5.2%
Social Characteristics, 2010-2014 ACS (Est.)	
School Enrollment (3 yrs and over)	23
Nursery School, Preschool	9
Kindergarten and Elementary School (grades K-8)	7
High School (grades 9-12)	3
College or Graduate School	4
Education Attainment: Population 25 Years and Over	69
Persons with Less than 9th Grade	2
Persons with 9th to 12th Grade, No Diploma	4
Persons with High School Degree or Equivalency	40
Persons with Some College, No Degree	11
Persons with Associate Degree	7
Persons with Bachelor's Degree	5
Persons with Graduate or Higher Degree	0
Persons with a Disability (5 yrs and over)	8

HAZARDS & RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Stanley evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Stanley's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions including: Historical Occurrence, Probability, Magnitude or Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
= Final Hazard Assessment Score

Table J3 is the analysis scores for the City of Stanley. As seen in Table J3, the top three hazards for Stanley are Infrastructure Failure, Terrorism, and Transportation Incident.

	TABLE J3: IDENTIFIED HAZARDS FOR STANLEY					
Hazard Rank	**Hazards**	**Probability**	**Magnitude/Severity**	**Warning Time**	**Duration**	**Assessment Score**
1	Infrastructure Failure	4	4	4	4	**4**
1	Terrorism	4	4	4	4	**4**
3	Transportation Incident	4	3	4	4	**3.7**
4	Grass/Wild Fire	4	3	4	2	**3.5**
5	Human Disease	4	3	2	4	**3.4**
6	Flash Flood	4	3	3	2	**3.35**
7	Tornado/Windstorm	3	3	4	3	**3.15**
8	Thunderstorm/Lightning/Hail	3	3	4	2	**3.05**
9	Severe Winter Storm	3	2	3	3	**2.7**
10	Radiological Incident	1	3	4	4	**2.35**
11	River Flooding	2	2	4	2	**2.3**
12	HAZMAT Incident	1	3	4	3	**2.25**
12	Drought	2	2	1	4	**2.05**
14	Extreme Heat	2	2	1	4	**2.05**
15	Earthquake	1	1	4	4	**1.75**
16	Animal/Plant/Crop Disease	1	2	1	4	**1.6**
17	Sinkholes	1	1	3	1	**1.3**
18	Expansive Soils	1	1	1	2	**1.1**
19	Landslide	1	1	1	1	**1**
19	Levee/Dam Failure	1	1	1	1	**1**

Vulnerability – Identifying Assets (Critical Facilities) & Social Asset Populations

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Stanley.

TABLE J4: SHELTERS IN STANLEY	
Fire Station	Union Church
Source: Community	

TABLE J5: "AT-RISK" POPULATION FOR STANLEY	
Total Community Population, 2010	125
Elderly (65 yrs and older), 2010	21
Youth (17 yrs and under), 2010	43
Householder Living Alone, 2010	7
Population Living in Poverty (2010-2014)	5
Population in Multi-Family Structures*(2010-2014) 0 Units	0
Population in Mobile Homes (2010-2014) 0 units	0
Group Quarters Population, 2010	0
Persons with Disabilities (2010-2014)	8
Source: U.S. Census, 2010, 2010-2014 ACS (Est.) and Iowa Data Center **Excludes 1-unit attached and detached, and 2-units*	

Identifying the location of critical facilities and designated shelters (see Table J4) in Stanley is important in order to assess their vulnerability to hazards since these facilities are important to the community's operations, quality of life, and are key components of the economic sector. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. *Attachment 8* illustrates the location of identified critical facilities throughout Stanley.

The social vulnerability assessment also identified how the hazards affect the population of Stanley and it is assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. Table J5 presents an overview of the at-risk population in Stanley according to available information retrieved from the 2010 U.S. Census, 2010-2014 American Community Survey estimates, and Iowa Data Center.

According to Table J5, 16.8% of residents are 65 years or older, of which four are living alone. The average household size of renter-occupied units is 3.80, while the average household size for owner-occupied units is 2.79.

Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young persons often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, there was 34.4% of the city's total population under the age of 18.

As shown on *Attachment 3: Flood Map of the City* and *Attachment 4: Flood Scenario Map of the City,* on portion of the developed area of Stanley is located in the 100-year floodplain.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (J6) lists assets that would be affected in the event affected the unincorporated area of the county. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Buchanan County Assessors and Auditors offices and City Clerk. It should be noted however that these dollar amounts do not include gas and electric utility valuations. These results should be considered preliminary, as a full accounting of assets has not been completed.

TABLE J6: ASSET INVENTORY - ESTIMATED POTENTIAL PROPERTY LOSSES FOR STANLEY

Type of Structure	Est. # of Structures	Land Value ($)	Building/Dwelling Value ($)	Total Value ($)
Residential, Single Family	47	169,740	1,525,590	1,695,330
Agricultural	0	113,040	0	113,040
Commercial	7	78,912	265,680	344,592
Religious/Non-Profit	1	NA	NA	NA
Government	2	NA	1,000,000	1,000,000
Education	0	0	0	0
Utilities	2	NA	1,750,000	1,750,000
Total	**59**	**$361,692**	**$4,541,270**	**$4,902,962**

Sources: Buchanan County Assessor, Planning Committee; INRCOG; American Community Survey
Notes: Government = City Hall, Fire Stations, Public Works Buildings, Community Buildings, Libraries; Utilities = Water and Waste Water facilities; Residential, Commercial, and Agricultural values based on 2015 data; Religious/Non-Profit, Government, Education, and Utilities values based on 2012 data.

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development.

National Flood Insurance Program/Repetitive Loss Properties

The City of Stanley does not participate in the National Flood Insurance Program (NFIP) and has a floodplain ordinance in place. The city's FIRM maps were updated in July 2008. Maps of the city's floodplain are included as Maps 3U and 3V. As the maps show, the areas susceptible to flooding are in the southwest quadrant and eastern half of the community.

Using GIS spatial data from FIRM maps, in combination with property value data from the Buchanan Assessor's office, estimates of value in the floodplain were calculated. Table J7 shows the estimated value of land, buildings, and dwellings, within the city, in a floodplain.

TABLE J7: FLOODPLAIN DATA FOR STANLEY

	Number of Parcels	Land Value	Building Value	Dwelling Value	Total Value	Percent of City Affected
1% Annual Floodplain	12	$147,100	$32,850	$53,740*	$233,690	10.85%
0.2% Annual Floodplain	-	-	-	-	-	-

*Source: Buchanan County Assessor's Office; Analysis conducted by INRCOG; Parcel values and FIRM maps as of 6/6/2016; *One dwelling – part of the dwelling's parcel is within the floodplain, but not dwelling itself.*

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. According to FEMA data (as of 11/30/2014), the City of Stanley does not have any repetitive loss properties.

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at their second committee meeting. The committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for the City of Stanley are as follows:

1. Prevent avoidable disasters.
2. Take steps to mitigate the probable negative consequences that may occur as a result of natural, technological, and/or man-made disasters.
3. Identify potential funding sources needed to accomplish identified mitigation projects.
4. Protect the health and welfare of the entire community by sufficiently maintaining all first responder organizations.
5. Return to pre-disaster or improved conditions as soon as possible after a disaster occurs.

6. Maintain the Multi-Jurisdictional format for future plan updates.

Current Mitigation Actions

Prevention Mitigation Actions

Table J8 displays the planning and regulatory documents for the city.

TABLE J8: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR STANLEY

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes – 2012	No	IBC	No	No	Yes	No	No	No

Property Protection Mitigation Actions

The City recently installed a 350,000-galllon fire pond, equipped with electric pumps, a backup generator and a fire hydrant. Since the past MJ-HMP (2012) the city has removed five abandoned structures.

Public Education and Awareness Mitigation Actions

The City encourages residents to sign up for the ALERT IOWA emergency notification system. The city also makes sure residents are aware of the floodplain ordinance and developing in the floodplain.

Structural Project Mitigation Actions

Stanley updated their sewer system with grouting of lines and addition of a second force main. In recent years, a storm water drainage line was constructed on East Elm Street and a culvert placed under County Road W33 (L Avenue).

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community.

Fire Department

The City of Stanley's volunteer fire department. The department's coverage area is 32 square miles. The department has been updating their equipment for the past several years. Equipment owned and operated by the local fire department includes a 1,500-gallon pumper, 2,500-gallon 6x6 tanker, 3,000-gallon CAFS

pumper, 600-gallon brush pumper, and 1 mile worth of 6-inch hose to connect to the 350,000-gallon fire pond. Additional protective gear and SCBA was purchased, along with a new base station radio, pagers, and an office fax/printer for improved communications. More recently, the fire department acquired portable pumps and generator for contingency use. The fire department has in place 28E agreements with surrounding communities to provide and receive assistance as needed on a mutual aid basis.

Medical Services

The hospital, Mercy Hospital of Franciscan Sisters, nearest to Stanley is located in Oelwein, approximately five miles from the community. The next closest hospital is Buchanan County Health Center in Independence, 13 miles away. Residents also travel to Palmer Lutheran Health Center in West Union, 21 miles away. Ambulance service is also provided out of the cities of Oelwein and Strawberry Point. EMS is provided by the Fire Department.

Police

Buchanan County Law Enforcement and the Iowa State Patrol provide police protection to the City of Stanley.

Warning Systems

The City of Stanley has a project in process to replace the city's warning siren. NOAA Weather Radio broadcasts are also available in the community. NOAA Radio's provide up-to-the-minute weather related alerts. The community also participates in the state's ALERT IOWA program where residents can sign up for email, text, and/or phone alert notifications in the event of a disaster or severe weather.

TABLE J9: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond

to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table J9) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly, or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).

- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table J10 below is the City of Stanley's Implementation Strategy.

TABLE J10: FUTURE MITIGATION ACTIVITIES - STANLEY						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation**	**Timeline**	**Est. Cost**	**Associated Goal(s)**
Prevention						
High	Abate abandoned dilapidated residential properties	Earthquake, Expansive Soils, Tornado/Windstorm	Mayor, City Council	Active	Low	1,2
High	Community Security Plan	Animal/Plant/Crop Disease, Earthquake, Human Disease, Radiological Incident, Transportation Incident, Terrorism	Mayor	Active	Minimal	1,2,5
Public Education & Awareness						
High	Improve early warning with sirens (with page function) and use of 'Code Red'	Earthquake, Flash Flood, Tornado/Windstorm, Infrastructure Failure, Radiological Incident, Transportation Incident, Terrorism	Mayor, City Council	Active	Low	1,2
Low	Increase public awareness and education of hazards	All	City Council	Mid-Term	Minimal	1,2
Emergency Services						
High	Install backup generator for fire station/emergency shelter	Human Disease, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Radiological Incident, Transportation Incident, Terrorism	Mayor, Fire Department	Active	Low	1,2,3,4
High	Identify funding sources to assist in response operations and capability upgrades	All	Mayor, Treasurer	Active	Minimal	3
High	Return the community to either pre-disaster or improved conditions in a timely manner in the wake of a disaster	All	City Council, Mayor	?	?	5
High	Continually reassess and re-evaluate the HMP and mitigation activities	All	Mayor	Active	Minimal	2,4,6
High	Complete fire water system	Grass/Wild Fire, Infrastructure Failure	Mayor, Fire Department	Active	Low	1,3,4
High	Replace fire station and include safe room	All	Fire Department, Mayor	Mid-Term	Moderate	1,3,4
High	Replace 1st out fire engine	Grass/Wild Fire, HAZMAT Incident, Transportation Incident	Mayor, Fire Department	Short-Term	Moderate	1,2,3,4
Medium	Reconvene the planning committee on an annual basis to review the HMP to check for compliance with plan goals and track progress	All	Mayor, City Council	Mid-Term	Minimal	6
Medium	Develop emergency shelter plan	All	Mayor	Active	Minimal	2,3,5
Structural Projects						

Medium	Plan for elimination of water by constructing new storm sewer	Flash Flood, River Flooding, Thunderstorm/Lightning/Hail	Mayor, City Council	Mid-Term	Moderate	1,2,3
Medium	Continue street upgrade to concrete	Infrastructure Failure	Mayor, City Council	Mid-Term	High	1,2,3
Medium	Utility interconnected for Community Backup Generator	Earthquake, Flash Flood, Landslide, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Infrastructure Failure, Transportation Incident, Terrorism	Mayor, City Council	Short-Term	Moderate	1,2,3

APPENDIX K: CITY OF WINTHROP

COMMUNITY PROFILE

Location

The City of Winthrop is located in the northeastern quadrant of the State of Iowa. More specifically Winthrop is situated in east central Buchanan County, approximately eight miles east of the county seat, located in the City of Independence.

Natural Environment

The topography of Winthrop is very similar to most communities in the area. Winthrop is a relatively flat community with very little relief. The terrain is somewhat influenced by the cities relative location to Buffalo Creek, which flows north to south just east of the city. Another small creek is present just west of the community; therefore the city itself is located on the high ground. Within the city limits there is also a natural drainage area that is generally located from the intersection of the railroad tracks and 1st Street, then extending southwest towards the elevator and eventually to the west of the sewage treatment facility.

The predominant surface water system in the planning area is Buffalo Creek. The creek is not located within city limits, but rather approximately 1500 feet to the east. Another small-unnamed creek flows from north to south just west of the city limits. This creek is generally a dry run creek except during rainfall events. Information from the United States Environmental Protection Agency shows that the City of Winthrop is located on the eastern edge of the Upper Wapsipinicon Watershed area. The Upper Wapsipinicon Watershed begins in southern Minnesota and ends near the City of Anamosa. The watershed covers area in all or part of 12 counties. Just to the east of the city is the Maquoketa Watershed.

Deciduous timber is common along much of the area surrounding Buffalo Creek. There are also a number of established soft and hardwood trees interspersed throughout the

TABLE K1.1: WINTHROP'S DEMOGRAPHICS

Government Framework	Mayor – City Council
General Population, 2010 Census	
Total Population, 2010	850
Total Males, 2010	425
Total Females, 2010	425
Median Age, 2010	38.5
At-Risk Population, <18 Yrs, 2010	234
At-Risk Population, >64 Yrs, 2010	136
One Race-White, 2010	839
One Race-Black or African American, 2010	0
One Race – American Indian and Alaska Native, 2010	1
One Race – Asian, 2010	2
Two or More Races, 2010	7
Hispanic or Latino (of any race), 2010	3
Total Household Population, 2010	850
Total Population in Group Quarters,2010	0
Total Family Households, 2010	228
Total Family Households with Children under 18, 2010	102
Male Householder, no wife present, with children under 18, 2010	73
Female Householder, no husband present, with children under 18, 2010	31
Households with individuals 65yrs and over, 2010	104
Householder living alone, 2010	100
Average household size, 2010	2.46
Average family size, 2010	3.00
Housing Characteristics, 2010 Census	
Total Housing Units, 2010	357
Occupied Housing Units, 2010	346
Vacant Housing Units, 2010	11
Rental Vacancy Rate, 2010	4.3%
Owner-Occupied Housing Units, 2010	280
Population in Owner-Occupied Housing Units, 2010	711
Rental-Occupied Housing Units, 2010	66
Population in Rental-Occupied Housing Units, 2010	139

residential and public areas in the city. Various grasses and shrubs that are native to the area can also be found intermittently throughout the community. The community is surrounded in large part by row crops that are common to the area, such as corn and soybeans.

Demographics

Tables K1.1 and K1.2 highlights Winthrop's demographics.

The community saw a 10% increase in population from 2000 to 2010. Along with this overall increase in population, the median age increased 0.7%, from 37.8 years to 38.5 years.

Transportation

There are a variety of transportation types available in and around the City of Winthrop. The largest and most visible transportation route is US Highway 20, an east west four-lane highway that passes just south of the community, but does not actually border the city's limits.

Prior to the current four-lane highway being constructed, U.S. Highway 20 ran through Winthrop on what is now IA Highway 939. IA 939 runs parallel to the larger highway and connects Winthrop to Masonville to the east and Independence to the west. Other highways of consequence in the area include County Highway W45, which travels north out of Winthrop to Aurora and IA Highway 282 that begins approximately ¾ of a mile west of town and extends south to Quasqueton.

In addition to highway transportation, the Canadian National Railway Company also maintains a rail line that passes through the center of the community. This rail line is part of a line that runs from Dubuque to Sioux City and beyond.

TABLE K1.2: WINTHROP'S DEMOGRAPHICS	
Economics Characteristics, 2010-2014 ACS (Est.)	
Population In Labor Force (16 yrs and over)	713
Persons in Civilian Labor Force	530
Persons Employed	508
Persons Unemployed	22
Persons in Armed Forces	0
Mean Travel Time to Work in Minutes (16 yrs & over)	21.4
Persons Employed in Management, Professional, or Related Occupations	144
Persons Employed in Service Occupations	102
Persons Employed in Sales and Office Occupations	98
Persons Employed in Natural Resources, Construction, and Maintenance Occupations	63
Persons Employed in Production, Transportation, or Material Moving Occupations	101
Median Household Income	$53,583
Median Family Income	$60,625
Per Capita Personal Income	$24,971
Social Characteristics, 2010-2014 ACS (Est.)	
School Enrollment (3 yrs and over)	254
Nursery School, Preschool	20
Kindergarten and Elementary School (grades K-8)	156
High School (grades 9-12)	53
College or Graduate School	25
Education Attainment: Population 25 Years and Over	632
Persons with Less than 9th Grade	6
Persons with 9th to 12th Grade, No Diploma	32
Persons with High School Degree or Equivalency	266
Persons with Some College, No Degree	122
Persons with Associate Degree	94
Persons with Bachelor's Degree	101
Persons with Graduate or Higher Degree	11

The three nearest Commercial Service Airports to the City of Winthrop are located in Waterloo, Cedar Rapids, and Dubuque. Three smaller airports that do not offer commercial airline service are located in the nearby communities of Independence, Manchester, and Oelwein**.**

Community Services

The City of Winthrop maintains a municipal water distribution system. This system is comprised of three wells, a water tower, and all distribution lines within the community.

The three wells are all drilled to an equal depth of approximately 170 feet. One well is considered the primary well and can pump approximately 250 gallons per minute. The two backup wells are capable of pumping 75 and 125 gallons per minute. The water tower, located in north central portion of the community, near the corner of Hamilton Street and 3rd Street, has a 100,000-gallon capacity.

The system has approximately 370 hookups, including residential, commercial, and industrial uses. The service area of the system is primarily the incorporated area of the City of Winthrop with only a couple exceptions.

The wastewater treatment facility and collection system, otherwise known as the sanitary sewer system, is owned and operated by the City of Winthrop. The sewer treatment facility is an aerated lagoon located in the southwestern quadrant of the city.

There are approximately 358 hookups to the system. Also, there is one lift station, located at the treatment facility. In addition to the municipal waste treatment facility, there are also two septic tanks known to exist within city limits.

Table K2 shows the primary utility providers for Winthrop.

TABLE K2: WINTHROP UTILITY PROVIDERS

Electric	Natural Gas	Telephone/Internet	Cable	Water	Sewer	Sanitation
Alliant Energy East Central R.E.C.	Alliant Energy	E.B. Telephone Coop	E.B. Telephone Coop	City of Winthrop	City of Winthrop Private septic	Waste Management

HAZARDS & RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Winthrop evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Winthrop's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions including: Historical Occurrence, Probability, Magnitude or Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
= Final Hazard Assessment Score

Table K3 is the analysis scores for the City of Winthrop. As seen in Table K3, the top three hazards for Winthrop are HAZMAT Incident, Infrastructure Failure, and Transportation Incident.

TABLE K3: IDENTIFIED HAZARDS FOR WINTHROP						
Hazard Rank	**Winthrop**	**Probability**	**Magnitude/Severity**	**Warning Time**	**Duration**	**Assessment Score**
1	HAZMAT Incident	4	4	4	4	**4.00**
1	Infrastructure Failure	4	4	4	4	**4.00**
1	Transportation Incident	4	4	4	4	**4.00**
4	Tornado/Windstorm	4	4	4	1	**3.70**
5	Severe Winter Storm	4	4	1	3	**3.45**
6	Thunderstorm/Lightning/Hail	4	3	4	1	**3.40**
7	Flash Flood	4	2	4	1	**3.10**
8	Animal/Plant/Crop Disease	4	2	1	4	**2.95**
9	Terrorism	2	3	4	4	**2.80**
10	Radiological Incident	1	4	4	4	**2.65**
11	Expansive Soils	4	1	1	1	**2.35**
12	Drought	3	1	1	4	**2.20**
13	River Flooding	2	1	3	1	**1.75**
14	Extreme Heat	2	1	1	3	**1.65**
15	Earthquake	1	1	4	1	**1.45**
15	Grass/Wild Fire	1	1	4	1	**1.45**
17	Human Disease	1	1	1	4	**1.30**
18	Landslide	1	1	1	1	**1.00**
18	Sinkholes	1	1	1	1	**1.00**
18	Levee/Dam Failure	1	1	1	1	**1.00**

Vulnerability – Identifying Assets (Critical Facilities) & Social Asset Populations

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment.

TABLE K4: SHELTERS IN WINTHROP	
East Buchanan School	Fellowship Meeting Hall
Fire Station	St. Patrick's Church
St. Patrick's Meeting Hall	City Hall
Kid's Corner 1 Room	
Source: Community	

Identifying the location of critical facilities and designated shelters (see Table K4) in Winthrop is important in order to assess their vulnerability to hazards since these facilities are important to the community's operations, quality of life, and are key components of the economic sector. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. *Attachment 8* illustrates the location of identified critical facilities throughout Winthrop. Table K5 lists critical facilities that would be necessary to maintain function of the city in an event of a disaster.

TABLE K5: CRITICAL FACILITIES	
City Hall	Fire Station
Water Plant	Sewer Plant
Source: Community	

The social vulnerability assessment also identified how the hazards affect the population of Winthrop and it is assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. Table K6 presents an overview of the at-risk population in Winthrop according to available information retrieved from the available 2010 U.S. Census, 2010-2014 American Community Survey estimates, and Iowa Data Center.

According to Table K5, 10.6% of residents are 65 years or older. The average household size of renter-occupied units is 2.11, while the average household size for owner-occupied units is 2.54. The average household size regardless of occupy status is 2.46 person.

Persons under the age of 17 are also at higher risk during some disasters. This is mostly due to the fact that young persons often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, there was 22.3% of the city's total population under the age of 18. Another population considered to be more at risk than others are those in mobile homes. According to 2010-2014 American Community Survey estimates, the City of Winthrop had 14 mobile home units within the city limits. Using the available data, we can estimate that the number of people residing in mobile homes is 27.

TABLE K6: "AT-RISK" POPULATION FOR WINTHROP	
Total Community Population, 2010	264
Elderly (65 yrs and older), 2010	28
Youth (17 yrs and under), 2010	59
Householder Living Alone, 2010	22
Population Living in Poverty, 2010-2014	104
Population in Multi-Family Structures*(2010-2014), 21 units	44
Population in Mobile Homes (2010-2014), 14 units	27
Group Quarters Population, 2010	0
Persons with Disabilities (2010-2014)	95
Source: U.S. Census, 2010, 2010-2014 ACS (Est.) and Iowa Data Center **Excludes 1-unit attached and detached, and 2-units*	

City of Winthrop is located on the eastern edge of the Upper Wapsipinicon Watershed area. The Upper Wapsipinicon Watershed begins in southern Minnesota and ends near the City of Anamosa. The watershed covers area in all or part of 12 counties. Just to the east of the City is the Maquoketa Watershed.

Attachment 3: Flood Map of the City and *Attachment 4: Flood Scenario Map of the City* shows the 100-year floodplain for Winthrop and the potential impact a flooding event would have on the community.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (K7) lists assets that would be affected in the event affected the unincorporated area of the county. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Buchanan County Assessors and Auditors offices and City Clerk. It should be noted however that these dollar amounts do not include gas and electric utility valuations. These results should be considered preliminary, as a full accounting of assets has not been completed.

TABLE K7: ASSET INVENTORY - ESTIMATED POTENTIAL PROPERTY LOSSES FOR WINTHROP

Type of Structure	Number of Structures	Land Value ($)	Building/Dwelling Value ($)	Total Value ($)
Residential, Single Family	326	2,575,525	28,701,036	31,276,561
Multi Residential	3	32,390	161,720	194,110
Agricultural	11	414,730	23,000	437,730
Commercial	51	638,403	4,037,802	4,676,205
Industrial	0	NA	0	0
Religious/Non-Profit	1	NA	255,000	255,000
Government	1	NA	750,000	750,000
Education	2	NA	2500000	2,500,000
Utilities	3	NA	4,500,000	4,500,000
Total	**398**	**$3,661,048**	**$40,928,558**	**$44,589,606**

Sources: Buchanan County Assessor, Planning Committee; INRCOG
Notes: Government = City Hall, Fire Stations, Public Works Buildings, Community Buildings, Libraries; Utilities = Water and Waste Water facilities; Residential, Industrial, and Agricultural values based on 2015 data; Religious/Non-Profit, Government, Education, and Utilities values based on 2012 data.

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware

of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development.

National Flood Insurance Program/Repetitive Loss Properties

The City of Winthrop does not participate in the National Flood Insurance Program. As can be seen on the city's floodplain maps (Map 3W and 3X) only a small portion of the city, in the southwest corner, is within the 100-year floodplain.

The city's FIRM maps were update in July 2008. Table K8 shows the floodplain values within the city.

TABLE K8: FLOODPLAIN DATA FOR WINTHROP

	Number of Parcels	Land Value	Building Value	Dwelling Value	Total Value	Percent of City Affected
1% Annual Floodplain	14	$389,170	$1,819,200	$302,800	$2,511,170	6.44%
0.2% Annual Floodplain	-	-	-	-	-	-

Source: Buchanan County Assessor's Office; Analysis conducted by INRCOG; Parcel values and FIRM maps as of 6/6/2016

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. According to FEMA data (as of 11/30/2014), the City of Winthrop has no repetitive loss properties.

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at their second committee meeting. The committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for the City of Winthrop are as follows:

1. Minimize to the greatest possible extent the number of injuries and/or loss of life associated with all identified hazards.
2. Reduce or eliminate property damage due to the occurrence of disasters.
3. Identify ways that response operations, in the event of a disaster, can be improved.
4. Return the community to either pre-disaster or improved conditions in a timely manner in the wake of a disaster.
5. Develop strategies that can be used to reduce the community's overall risk to the negative effects of natural, technological, and man-made disasters.
6. Reconvene the planning committee on an annual basis to review the plan document, check for compliance with the plan goals, and track progress in achieving the mitigation strategies.
7. Maintain the Multi-Jurisdictional format for future plan updates.
8. Identify potential funding sources needed to accomplish identified mitigation projects.

Current Mitigation Actions

Prevention Mitigation Actions

The City has a building code that requires building permits for structural foundation safety. There is a capital improvement program to install storm sewer along with new street construction. The City budgets yearly for sanitary sewer clean out and as needed storm sewer intake clean out. Discuss at annual budget meetings way of incorporating capital street projects into mitigating flash flood runoff.

Table K9 displays the planning and regulatory documents for the city.

TABLE K9: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR WINTHROP								
Previous HMP	**Comprehensive Plan**	**Building Code**	**Zoning Ordinance**	**Subdivision Regulations**	**Floodplain Management Ordinance**	**Tree-Trimming Ordinance**	**Storm Water Ordinance**	**Snow Removal Ordinance**
Yes – 2012	Yes	Yes	Yes	Yes	No	Yes	No	Yes

Property Protection Mitigation Actions

One fire department initiative included giving smoke alarms to homeowners in the community. Furthermore, they have even taken it upon themselves to occasionally change batteries in the smoke alarms. Hurricane shutters required at city owned buildings, Kids Corner, and safe room.

Public Education and Awareness Mitigation Actions

Provide building permit forms with number for Iowa One Call, and a brochure on required state electrical permits. Hold annual training for city personnel on procedural prodigal for storms and disaster events.

In addition to the siren alert in the community there are also a wide variety of early warning messages provided through local radio and television stations as well as the cable Weather Channel. The City of Winthrop has made available to its residents Enhanced 911 Emergency Assistance. This 911 service is operated through the Buchanan County L.E.C. located in Independence.

The city has also begun participating in the state's ALERT IOWA program which allows residents to sign up to be alerted of potential disasters via telephone, email, or text message.

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community.

Fire Department

The City of Winthrop currently has 17 volunteer firefighters. Training certifications for department personnel includes: 17 Fire Fighters I, four confined spaces, seventeen HAZMAT Operations, one HAZMAT Technician, two EMT-P, and three EMT-B. The total coverage area includes the City of Winthrop, Byron & Middlefield Townships, and the SW ½ of Fremont Township. Services provided in this area include: fire suppression, public safety education, emergency medical services, emergency extrication, emergency rescue, hazardous materials response, spill response, mutual aid, and helicopter landing zone support.

Firefighters in Winthrop are contacted primarily by pager and text notification. Every volunteer firefighter is equipped with a pager for quick notification

purposes. Most firefighters are also equipped with handheld radios. All trucks are equipped with radios also. In recent years, the city's fire department building was updated.

Linn County HAZMAT Response team, out of Cedar Rapids, Iowa, supplies hazardous Materials (HAZMAT) Response. This service is provided in accordance with a contract entered into by the City of Winthrop and the Hazmat Team.

The City of Winthrop substantially remodeled and expanded their fire station in 2013. The department has and maintains 1,750 feet of hose for firefighting purposes. There are six nozzles available for these hoses. The department also has several vehicles in its inventory, including: one 1980 and one 2005 pumper (1,250-gallons, 1250-GMP), one 2006 grass unit (250-gallons), and one 2006 tanker (1,800-gallons).

The City of Winthrop maintains written 28E mutual aid agreements with every fire department in Buchanan County. Of the departments in Buchanan County, those in closest proximity to Winthrop include Quasqueton, Independence, Lamont, and Aurora.

The fire department ensures communication through several methods. Those methods include Enhanced 911 Service, Radio Communication, Pagers, Warning Siren, and Cellular Phones. Most of the communications are implemented through the Buchanan County L.E.C. This center is based in Independence. To date the Winthrop Fire Department is not equipped with Global Positioning System (GPS) technology.

Medical Services

The City of Winthrop is fortunate to have the Regional Medical Center located within city limits. The clinic is considered a full service clinic, which offers a variety of services to the community including medical assessments, radiology services (i.e. x-ray), heart stress test monitoring, etc. Furthermore, a nurse practitioner is in the clinic several days/week.

Although there are no hospitals located within the City of Winthrop, there are a number within several miles of the community. These facilities, in order of their approximate distance from Winthrop are: Buchanan County Health Center in Independence, RMC Memorial Hospital in Manchester, Mercy Hospital of Franciscan Sisters in Oelwein, and Covenant Medical Center in Waterloo.

The City of Winthrop does not own or operate an ambulance (I-Service/Non-Transport). Rather, ambulance service is provided by area hospitals.

Winthrop has an active First Responder group. Currently there are five first responders in the community. They act quickly when called upon to provide necessary medical services until proper transport can arrive. The First Responder group works in conjunction with the fire department to provide these services and shares equipment. Some specialized equipment used by the first responders includes a defibrillator, oxygen equipment, splints, backboards, and a suction machine.

Police
Buchanan County Sheriff's Department provides police service to the community of Winthrop.

Warning Systems
The city installed two warning sirens in 2012. The sirens are powered by electricity and do not have a battery backup. The city anticipates replacing one of the sirens in 2017. Back-up generators are available at the water plant and sewer plant, along with a red light on exterior of building noting system failure/sewer plant.

The City also participates in the state's ALERT IOWA program where residents can sign up for email, text, and/or phone alert notifications in the event of a disaster or severe weather.

Natural Resource Protection Mitigation Actions
Notify directly residents who are compiling vegetation in city streets about hazards of washing into the storm sewer system. Discuss with residents about composting on their properties, to avoid the need for having to dispose of the items.

Structural Projects Mitigation Actions
In recent years, a safe room was constructed for the children at Kids Corner (daycare).

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority
The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table K10) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future

mitigation activity.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly, or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
- Low: Cost estimate for

TABLE K10: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).

- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table K11 below is the City of Winthrop's Implementation Strategy.

TABLE K11: FUTURE MITIGATION ACTIVITIES - WINTHROP						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation**	**Timeline**	**Est. Cost**	**Associated Goal(s)**
Prevention						
High	Enforce sump-pump ordinance	Flash Flood, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Transportation Incident	City Council	Short-Term	Low	2,5,7
Medium	Develop a Capital Improvement Program for storm water management	Flash Flood, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail	City Council	Mid-Term	High	2,6
Medium	Maintain tree trimming protocol	Animal/Plant/Crop Disease, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Transportation Incident	City Council	Active	Minimal	1,2,6
Low	Update building codes for wind resistance	Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm	City Council	Short-Term	Minimal	2,5,6,7
Public Education & Awareness						
High	Encourage all residents to sign up for ALERT IOWA notification service	All	Buchanan County EMA	Active	Minimal	1,2,5
Medium	Utilize city website to notify residents of potential / current hazards	All	City Clerk	Active	Minimal	1,2,5
Medium	Utilize water bill notification system for residents	Drought, Expansive Soils	City Clerk	Active	Minimal	1,2,5
Medium	Encourage residents to purchase NOAA Radios	Extreme Heat, Flash Flood, Grass/Wild Fire, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm	Fire Department	Active	Minimal	1,2,5
Natural Resource Protection						
Medium	Improve drainage by dredging drainage ditch	Flash Flood, River Flooding, Thunderstorm/Lightning/Hail	Public Works	Active	Minimal	1,2,4
Medium	Consider development of a storm water management program	Flash Flood, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail	City Engineer	Mid-Term	High	2,6
Medium	Develop GIS mapping of city infrastructure	Expansive Soils, Infrastructure Failure	Public Works	Active	Low	2,3
Emergency Services						
High	Acquire tornado sirens with automatic detonation from law center	Thunderstorm/Lightning/Hail, Tornado/Windstorm, Radiological Incident, Transportation Incident, Terrorism	Fire Department	Active	Low	1,2,3
High	Acquire automatic dial-up system for failure at water and sewer plant	Flash Flood, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Infrastructure Failure, Terrorism	City Council	Short-Term	Low	2
High	Continue education of emergency personnel	Extreme Heat, Grass/Wild Fire, Human Disease, Severe Winter Storm, Thunderstorm/Lightning/Hail, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	Fire Department	Active	Low	1,2,3,4,5

High	Identify possible funding sources for projects and programs	All	City Council	Active	Low	6,7
High	Develop list of structures to be used in gathering during emergencies	Drought, Extreme Heat, Flash Flood, Grass/Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Radiological Incident, Transportation Incident, Terrorism	Fire Department	Short-Term	Low	1,3
High	Purchase thermal imager	Expansive Soils, Extreme Heat, Grass/Wild Fire, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Radiological Incident, Transportation Incident, Terrorism	Fire Department	Short-Term	Low	1,2
High	Acquire backup generators for critical facilities and services	All	City Council	Medium-Term	Medium	1,2,3
Medium	Maintain and, as needed, purchase emergency response vehicles and equipment	All	City Council	Long-Term	Medium	1,2,3
Low	Maintain list of potential translators in case of emergency	All	Fire Department	Active	Low	1,2
Structural Projects						
High	Construct community tornado safe room	Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Radiological Incident, Transportation Incident, Terrorism	City Council	Short-Term	High	1
High	Participate in buyouts of flood prone properties	Flash Flood, River Flooding, Infrastructure Failure	City Council	Long-Term	High	2,4
Medium	Upgrade water lines to 6-inches	Grass/Wild Fire, Extreme Heat, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	Public Works	Long-Term	High	2,4
Medium	Update Waste Water Treatment plant	Human Disease, Infrastructure Failure, River Flooding, Flash Flooding	Public Works	Medium-Term	High	2,4
Low	Install a concrete floodplain spillway	Flash Flood, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail	City Council	Long-Term	High	1,2,4
Low	Install higher water flow culverts across floodplain	Flash Flood, River Flooding, Severe Winter Storm, Thunderstorm/Lightning/Hail	City Council	Short-Term	Low	1,2,4

APPENDIX L: INDEPENDENCE COMMUNITY SCHOOL DISTRICT

DISTRICT PROFILE

Independence Community School District (ICSD) provides education to approximately 1,400 students. The District includes the communities of Independence, Rowley, and Brandon. The District has four education facilities: Senior High School, Junior High School, West and East Elementary, and an Early Childhood Center.

The ICSD main campus is located at 1207 1st St. The main campus consists of 4 buildings, (Early Childhood Center, East Elementary, West Elementary, and The Administration Office). In addition to the traditional educational system, the school district is also part of the Buchanan County Success Center, which is an alternative high school serving the communities of Independence, East Buchanan, and Jesup.

There are 800 students and 125 staff at the main campus (Junior and Senior High School, East Elementary, West Elementary, and Early Childhood Center). The Jr. /Sr. High School has an estimated 665 students and 87 staff. The bus garage has 17 staff, and the Success center has 27 students and four staff.

TABLE L1: HISTORIC ICSD ENROLLMENT

School Year	Certified Enrollment
2010-2011	1,369
2011-2012	1,382
2012-2013	1,381
2013-2014	1,391
2014-2015	1,405

Source: Iowa Department of Education

Natural Environment

The topography of Independence is characterized as undulating. Much of the community is relatively flat, while other areas, primarily along established waterways, and has areas of extreme slope. The highest point in the community is located in the northeastern reaches of the city and has an elevation of approximately 980 feet above mean sea level. The lowest elevation, which is approximately 902.3 feet above mean sea level, is found along the Wapsipinicon River in the southeastern part of the community

The Wapsipinicon River is the most prevalent water body to pass through the City of Independence. It is also the largest, most influential water body to pass through Buchanan County. The Wapsipinicon River's flow is generally from northwest to southeast. The drainage area at the mouth of the river is approximately 2,540 square miles. At Independence, the drainage area is estimated to be 1,048 square miles.

TABLE L2: ICSD SCHOOL FACILITIES

School	Address	Grades
Main Office	1207 W 1st St. W Independence	Administrative Office
Early Childhood Center	1011 1st St. W Independence	Pre-Kindergarten
East Elementary	1103 1st St. W Independence	K-2
West Elementary	1301 1st St W Independence	Grades 3-6
Junior/Senior High	700 20th Ave. SW Independence	7-12
Buchanan County Success Center	2349 Jamestown Ave. Independence	

.Community Services

Table L3 shows the primary utility providers for the city of Independence

TABLE L3: INDEPENDENCE UTILITY PROVIDERS						
Electric	**Natural Gas**	**Telephone/Internet**	**Cable**	**Water**	**Sewer**	**Sanitation**
Independence Light & Power	MidAmerican Energy	Independence Light & Power	Independence Light & Power Mediacom	City of Independence	City of Independence	Waste Management

HAZARD RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the committee evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. The school district's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the school district. This analysis provides an all-hazard approach when evaluating the hazards that affect the school district and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructure, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas human caused or technological events tend to change over time with advancement in technology and methods of operation.

The Committee assessed the defined hazards relevant to potential impact on the school district. Using the scoring criteria previously defined (Tables 19-22) the school district assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
=Final Hazard Assessment Score

Table L4 displays the school district's hazard scores. The top three hazards for the ICSD are Flash Flood, River Flooding, and Thunderstorm/Lightning/Hail.

TABLE L4: HAZARD RISK ASSESSMENT FOR INDEPENDENCE SCHOOL DISTRICT

Hazard Rank	Hazard	Probability	Magnitude/Severity	Warning Time	Duration	Final Score
1	Flash Flood	2	2	2	3	**2.1**
2	River Flooding	2	2	1	4	**2.05**
3	Thunderstorm/Lightning/Hail	2	1	4	1	**1.9**
4	Tornado/Windstorm	1	2	4	1	**1.75**
5	Severe Winter Storm	2	1	2	2	**1.7**
6	Grass/Wild Fire	1	1	4	3	**1.65**
7	Human Disease	1	2	1	4	**1.6**
8	Terrorism	1	1	4	2	**1.55**
9	Levee/Dam Failure	1	1	2	4	**1.45**
10	Infrastructure Failure	1	1	3	2	**1.4**
11	Radiological Incident	1	1	2	3	**1.35**
11	Transportation Incident	1	1	2	3	**1.35**
13	Animal/Plant/Crop Disease	1	1	1	4	**1.3**
13	Drought	1	1	1	4	**1.3**
13	Expansive Soils	1	1	1	4	**1.3**
13	Extreme Heat	1	1	1	4	**1.3**
13	Landslide	1	1	1	4	**1.3**
18	HAZMAT Incident	1	1	1	3	**1.2**
19	Earthquake	1	1	1	1	**1**
19	Sinkholes	1	1	1	1	**1**

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The ICSD representatives on the Hazard Mitigation Planning Committee identified the following hazard mitigation plan goals. The Committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. By identifying these goals the Committee was able to develop mitigation action steps that with a particular objective in mind. The hazard mitigation plan goals are identified are as follows.

1. Maintain emergency services during hazard events, or if this is not possible, return to pre-disaster service levels as soon as possible.
2. Maintain continuity of infrastructure.
3. Protect the health and welfare of the entire community by utilizing pre-disaster planning and constructing mitigation projects.
4. Identify possible action steps to be taken to decrease the risk of the communicable diseases.
5. Take steps to mitigate or minimize the impact of natural, technological, and/or man-made disasters.
6. Participate and incorporate the city's plan into a future Multi-Jurisdictional Plan.

Current Mitigation Activities

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community. The Superintendent of Schools is the Emergency Management Coordinator and is currently working with the Buchanan County Emergency Management office (Rick Wulfekuhle) to devise a comprehensive plan of response to any and all possible emergency scenarios.

Police Department

The Independence Police Department, Buchanan County Law Enforcement, and the Iowa State Patrol provide police protection to the City of Independence. The Independence Police Department currently has approximately 12 employees, ranging from administration to patrol officers, and one drug dog. There have been meetings between the ICSD administrative team and local law enforcement and emergency management persons to review the school's response to various hazards.

Fire Department

The City of Independence currently employs three (3) full time firemen. In addition the fire department has twenty-three (23) volunteer firemen. Equipment owned and operated by the local fire department includes three engines (includes a 1,105 ft. aerial), one tanker, one rescue truck, one grass rig, one generator, two water pumps, a field operations trailer, and two boats. The fire department has in place 28E agreements with surrounding communities to provide and receive assistance as needed on a mutual aid basis.

Medical Services

Independence is served by one local hospital, Buchanan County Health Center, located at 1600 1st Street East. There are six other hospitals available in a 25-mile radius of the City of Independence.

Ambulance and EMS Services

Emergency rescue and ambulance service is provided by the hospital throughout and beyond the city limits. There are currently 14 personnel that provide service to the EMS department. The primary means of communication is by way of cell phones and two-way radios. The EMS Department maintains mutual aid agreements with all of the communities within Buchanan County, the Independence Police Department, County Sheriff's Department, and the Independence Fire Department.

Warning Systems

The ICSD has identified evacuation locations, (such as in the event of a chemical release the school district residents can be evacuated to either Jesup or East Buchanan schools.) This information has been communicated to the entire school community via flip charts displayed in every room in every school building.

The City of Independence currently has six (6) sirens that cover the entire city. Each one of these sirens is equipped with a battery back up to ensure operation in the event of a power failure. The County Emergency Management Director or a designee thereof activates the sirens in the event of a tornado.

Property Protection

The district has updated all school building entries to restrict access. The High School is in the process of purchasing and installing cameras. There are upcoming professional develop training sessions planned for all school staff.

Future Activities & Implementation Strategy / Action Plan

Priority

School representatives analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table L5) and determine each element's ranking (High - H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

TABLE L5: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly, or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The School District will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.

- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).

- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.

- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Independence Community School District Future Mitigation Activities and Implementation Strategy are in Table L6.

TABLE L6: INDEPENDENCE COMMUNITY SCHOOL DISTRICT FUTURE MITIGATION ACTIVITIES & IMPLEMENTATION STRATEGY						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Primary Agency Responsible for Implementation**	**Timeline**	**Estimated Cost ($)**	**Associated Goal(s)**
High	Educate the Public through: continued cooperation with local service organizations (American Red Cross, County EMA, etc.) to educate residents on how to prepare for and respond to a various hazards; public awareness and education on City sponsored projects within identified flood hazard areas (fill for sidewalks trails); importance of personal Emergency/Disaster Plan; use of all forms of media	Extreme Heat, Grass/Wild Fire, Human Disease, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Transportation Incident, Terrorism	School District	Active	Minimal	1,3,5
High	Ensure First Responders, Police Department, Fire Department, Public Works and Street Department are properly Equipped, Staffed, and Trained to Provide Adequate Response to All Hazards	Extreme Heat, Grass/Wild Fire, Human Disease, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Transportation Incident, Terrorism	School District	Active	Minimal	1,3,5
High	Identify Locations (all school facilities, shelter locations) where it would be beneficial to have Backup Power Generation	Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Terrorism	School District	As needed, generators in place	Minimal	1,3,5
High	Continue to Work to Safeguard against Potential Fire and Explosion Hazards Throughout the Community	Grass/Wild Fire, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Terrorism	School District	Active	Minimal	1,3,5
High	Systematically Review and Update, as needed, Hazard Reponses Policies and Procedures	Extreme Heat, Grass/Wild Fire, Human Disease, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Transportation Incident, Terrorism	School District	Active	Minimal	1,3,4,5
High	Identify and Evaluate Critical Facilities (i.e., wells, lift stations, WWPT, etc.) for Accessibility, Vulnerability, and Risk	Extreme Heat, Grass/Wild Fire, Human Disease, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Transportation Incident, Terrorism	School District	Active	Minimal	1,3,5
High	Continue to Cooperate with Local Medical Facilities and Health Department to increase likelihood of detection and proper response to outbreaks	Human Disease	School District	Active	Minimal	4

High	Develop and Maintain a List of Interpreters in order to Enhance Communication Barriers within the community	Extreme Heat, Grass/Wild Fire, Human Disease, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Transportation Incident, Terrorism	School District	Active	Minimal	1,5
Medium	Maintain Air Conditioning in Schools	Extreme Heat	School District	Active	Moderate	2
Medium	Develop and Maintain Tree-Trimming Program in Order to Reduce the Chances of Falling Branches on Infrastructure and Property	Thunderstorm/Lightning/Hail, Tornado/Windstorm, Infrastructure Failure	Building & Grounds Director	Active	Minimal	1,3,5

APPENDIX M: EAST BUCHANAN COMMUNITY SCHOOL DISTRICT

DISTRICT PROFILE

East Buchanan Community School District (EBCSD) provides education to approximately 620 students in grade PK-12th. The District serves the communities of Aurora, Quasqueton, and Winthrop. The city of Winthrop has a population of 767, Quasqueton's population is 597, and Aurora has a population of 194. Each of these communities participated in the development of this plan. Additional information on the communities can be found in their respective appendixes.

The EBCSD campus is located at 414 5th St. N in the northwest portion of the City of Winthrop.

TABLE M1: HISTORIC EBSD ENROLLMENT

School Year	Enrollment
2010-2011	579
2011-2012	620
2012-2013	624
2013-2014	625
2014-2015	624

Source: Iowa Department of Education

History/Development Trends

The East Buchanan Community School District was formed as a result of a vote which took place on December 3, 1959. This vote involved nine school districts (Aurora Independent, Buffalo Township, Byron Township, Jefferson Township, Middlefield Township, Quasqueton Consolidated, Richardson Township, Union Township and Winthrop Consolidated), six rural areas and three communities.

When East Buchanan first became one school district, the three school buildings in Aurora, Quasqueton and Winthrop were used to hold the enrollment of 982 students. K-6 was housed in Aurora, K-8 in Quasqueton and K-12 in Winthrop. As enrollment has changed so have the school's facilities.

In the fall of 2003, the EBCSD became a one-site district with all PK-12th students housed in the central facility in Winthrop. The elementary school is housed in the south part of the building, the middles school in the middle (3rd floor), and the high school on the north part. The district intends to add improvements to the facility including a safe room, gymnasium, industrial tech facility, fine arts stage, and greenhouse. The school districts professional staff consists of one superintendent/elementary principal, one middle/high school principal, one part-time School Improvement Facilitator, one Technology Director, one Guidance Counselor, 45 teachers, and 42 support staff.

Transportation

The bus lot is located at the main campus in Winthrop. Barn shelters are available for 6 buses. The EBCSD fleet includes 10 buses for 6 routes and 6 vans for 2 van routes. Transportation staff includes a Transportation Director/Mechanic (shared with West Delaware School District), 6 bus drivers (4 full-time and 2 part-time), and 2 part-time van drivers. Within the district, 80 percent of students are eligible for district transportation, but only 48 percent utilize the service.

Natural Environment

The topography of the City of Winthrop is very similar to most communities in the area. Winthrop is a relatively flat community with very little relief. The terrain is somewhat influenced by the cities relative location to Buffalo Creek, which flows north to south just east of the city. Another small creek is present just west of the community; therefore the city itself is located on the high ground. Additional information on the city can be found in Appendix K.

Community Services

The City of Winthrop is served by the following utility providers:

TABLE M2: EBCSD (WINTHROP) UTILITY PROVIDERS

Electric	Natural Gas	Telephone/Internet	Cable	Water	Sewer	Sanitation
Alliant Energy East Central R.E.C.	Alliant Energy	E.B. Telephone Coop	E.B. Telephone Coop	City of Winthrop	City of Winthrop Private septic	Waste Management

HAZARD RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the committee evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. The school district's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the school district. This analysis provides an all-hazard approach when evaluating the hazards that affect the school district and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructure, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas human caused or technological events tend to change over time with advancement in technology and methods of operation.

The Committee assessed the defined hazards relevant to potential impact on the school district. Using the scoring criteria previously defined (Tables 19-22) the school district assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
=Final Hazard Assessment Score

Table M3 displays the school district's hazard scores. The top three hazards for the EBCSD are Severe Winter Storm, Thunderstorm/Lightning/Hail, and Tornado/Windstorm.

TABLE M3: HAZARD RISK ASSESSMENT FOR EAST BUCHANAN SCHOOL DISTRICT						
Hazard Rank	**Hazard**	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**Final Score**
1	Severe Winter Storm	4	1	1	3	**2.55**
1	Thunderstorm/Lightning/Hail	4	1	1	3	**2.55**
1	Tornado/Windstorm	4	1	1	3	**2.55**
4	Human Disease	3	2	1	4	**2.5**
5	Extreme Heat	3	2	1	3	**2.4**
5	HAZMAT Incident	2	2	4	3	**2.4**
7	Transportation Incident	2	2	4	2	**2.3**
8	Terrorism	2	2	4	1	**2.2**
9	Flash Flood	1	2	4	3	**1.95**
10	Drought	2	1	1	4	**1.75**
10	Earthquake	1	2	4	1	**1.75**
12	Landslide	1	1	4	3	**1.65**
12	River Flooding	1	1	4	3	**1.65**
12	Sinkholes	1	1	4	3	**1.65**
15	Animal/Plant/Crop Disease	1	2	1	4	**1.6**
16	Radiological Incident	1	1	4	2	**1.55**
17	Expansive Soils	1	1	4	1	**1.45**
17	Grass/Wild Fire	1	1	4	1	**1.45**
17	Infrastructure Failure	1	1	4	1	**1.45**
20	Levee/Dam Failure	1	1	1	4	**1.3**

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

East Buchanan representatives on the Hazard Mitigation Planning Committee identified the following hazard mitigation plan goals. The school district set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. By identifying these goals the Committee was able to develop mitigation action steps that with a particular objective in mind. The hazard mitigation plan goals are identified are as follows.

1. Maintain staff and student safety during hazard events, including lockdowns and weather.
2. Maintain continuity of infrastructure.
3. Protect the health and welfare of staff and students by utilizing pre-disaster planning and constructing mitigation projects.
4. Identify possible action steps to be taken to decrease the risk of the communicable diseases.
5. Take steps to mitigate or minimize the impact of natural, technological, and/or man-made disasters.
6. Participate and incorporate the school district's plan into a future Multi-Jurisdictional Plan.

Current Mitigation Activities

The EBCSD has identified evacuation locations and procedures for various hazards including tornado, fire, bomb threat, and intruders. A communication plan is in place for various emergencies and events. Staff receive ALICE intruder training. Students receive bus evacuation training and drivers receive bus emergency training. Fire and tornado drills are held four times each year (twice in fall, twice in spring).

There have been meetings between the EBCSD administrative team and local law enforcement and emergency management persons to review the school's response to various hazards. The district restricts access into the building through the elementary and high offices during the day. The district has 10 security cameras throughout the school building and expects to add more annually.

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management

Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community.

Fire Department

EBCS facilities are served by the City of Winthrop Fire Department which currently has 17 volunteer firefighters. Services provided in this area include: fire suppression, public safety education, emergency medical services, emergency extrication, emergency rescue, hazardous materials response, spill response, mutual aid, and helicopter landing zone support.

Medical Services

The City of Winthrop is fortunate to have the Regional Medical Center located within city limits. The clinic is considered a full service clinic, which offers a variety of services to the community including medical assessments, radiology services (i.e. x-ray), heart stress test monitoring, etc. Furthermore, a nurse practitioner is in the clinic several days/week.

Although there are no hospitals located within the City of Winthrop, there are a number within several miles of the community. These facilities, in order of their approximate distance from Winthrop are: Buchanan County Health Center in Independence, RMC Memorial Hospital in Manchester, Mercy Hospital of Franciscan Sisters in Oelwein, and Covenant Medical Center in Waterloo.

Winthrop has an active First Responder group. Currently there are five first responders in the community. They act quickly when called upon to provide necessary medical services until proper transport can arrive. The First Responder group works in conjunction with the fire department to provide these services and shares equipment. Some specialized equipment used by the first responders includes a defibrillator, oxygen equipment, splints, backboards, and a suction machine. The City of Winthrop does not own or operate an ambulance (I-Service/Non-Transport). Rather, ambulance service is provided by area hospitals.

Police

Buchanan County Sheriff's Department provides police service to the community of Winthrop.

Warning Systems

Notifications of school closing, late arrival or early dismissal due to inclement weather are provided to the public through a variety of local radio stations as well as KWWL Channel 7, KCRG Channel 9, and KGAN Channel 2.

Future Activities & Implementation Strategy / Action Plan

Priority

School representatives analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table M4) and determine each element's ranking (High - H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

TABLE M4: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly, or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The School District will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.

- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).

- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.

- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

The East Buchanan Community School District Future Mitigation Activities and Implementation Strategy is below in Table M5.

TABLE M5: EAST BUCHANAN COMMUNITY SCHOOL DISTRICT FUTURE MITIGATION ACTIVITIES & IMPLEMENTATION STRATEGY

Priority	Mitigation Action/Program/Project	Associated Hazard(s)	Agencies Responsible for Implementation	Timeline	Estimated Cost ($)	Associated Goal(s)
High	Consider the construction of community tornado shelters and safe rooms	Thunderstorm/Lightning/Hail, Tornado/Windstorm	School Administration & Board	Mid-Term	High	3,5
High	Continue to Cooperate with Local Medical Facilities and Health Department to increase likelihood of detection and proper response to outbreaks	Human Disease	School Administration & Board, EMS	Active	Minimal	1,4

Medium	Educate the Public through: continued cooperation with local service organizations (American Red Cross, County EMA, etc.) to educate residents on how to prepare for and respond to various hazards; public awareness and education; importance of personal Emergency/Disaster Plan; use of all forms of media	Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Infrastructure Failure	Buchanan County EMA, Fire Department, EMS	Active	Minimal	3,5
Medium	Ensure First Responders, Police Department, Fire Department, to Provide Adequate Response to All Hazards	Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Infrastructure Failure	Fire Department, EMS, Sheriff Office	Active	Minimal	3,6
Medium	Identify Locations where it would be beneficial to have Backup Power Generation	Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Infrastructure Failure, Terrorism	School Administration & Board	Mid-Term	Low	3
Medium	Maintain and Update, as Needed, 28E Agreements with Surrounding Entities	Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Infrastructure Failure, Terrorism	School Administration & Board, City Council, Mayor	Active	Minimal	6
Medium	Systematically Review and Update, as Needed, Hazard Response Policies and Procedures	Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Terrorism	School Administration & Board, Fire Department, Buchanan County EMA, EMS	Active	Low	1,2,4
Medium	Regularly Evaluate Transportation Systems to Identify and Correct any noted Deficiencies or Unsafe Areas, as well as Conduct Peak Studies	Infrastructure Failure, Transportation Incident	School Administration & Board	Mid-Term	Low	1,2,3
Medium	Identify and Evaluate Critical Facilities for Accessibility, Vulnerability, and Risk	Infrastructure Failure, Terrorism	School Administration & Board, Sheriff Office	Mid-Term	Low	2,5
Medium	Place Air Conditioning in Schools	Extreme Heat	School Administration & Board	Long-Term	Moderate	3
Medium	Management of asbestos within the school building	Human Disease	School Administration & Board	Active	Moderate	3
Medium	Remove all asbestos from school building	Human Disease	School Administration & Board	Long-Term	High	3

APPENDIX N: JESUP COMMUNITY SCHOOL DISTRICT

DISTRICT PROFILE

Jesup Community School District (JCSD) is composed of approximately 1,000 students, from preschool through 12th grade, and 170 staff members. JCSD has a centralized campus serving preschool through 12th grade. Jesup operates three "rural" schools serving approximately 120 students in the area Amish communities. These one-room schools are located in Fairbank, Perry, and Fox townships. These schools came under Jesup's control in 1966 when the Iowa Department of Education consolidated school systems. Students in the rural schools are divided into lower and upper elementary classes. After 8th grade, students attend school at the Central Campus.

Table N1 shows a list and location of JCSD facilities. Table N2 displays the Certified Enrollment counts for JCSD over the past five years. The JCSD boundary map is shown as Figure N1

TABLE N1: JCSD LOCATIONS

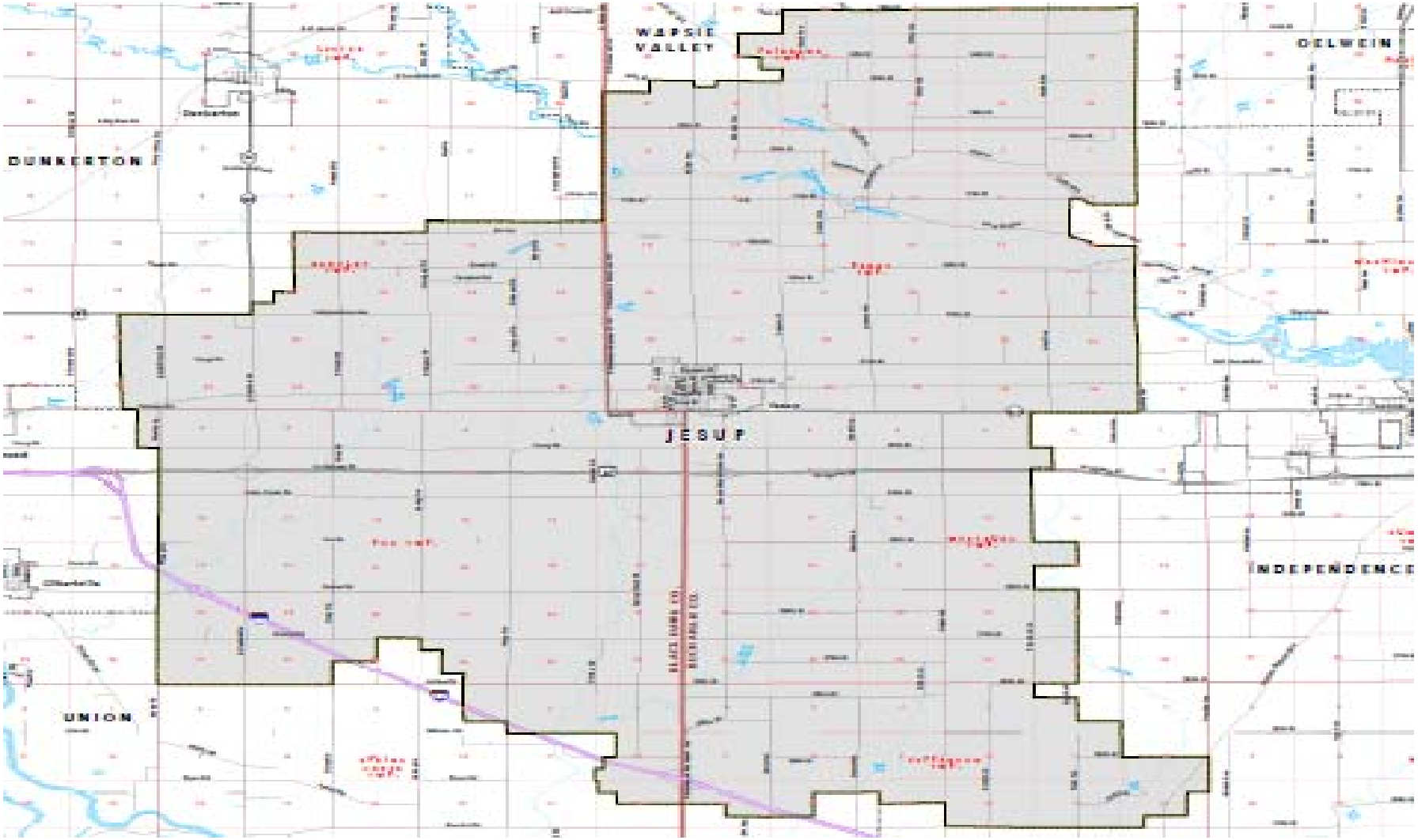
School Name	Location	School Grades
Central Campus	531 Prospect St. Jesup, IA 50648	Preschool – K12
Triumph Elementary	1348 145th St. Fairbank, IA 50641	Primary
Prairie Grove Rural School	1501 150th St. Hazleton, IA 50641	Primary
Perry #1 Rural School	1726 Fairbank-Amish Blvd. Independence, IA 50644	Primary

TABLE N2: HISTORIC JCSD ENROLLMENT

School Year	Certified Enrollment
2010-2011	875
2011-2012	894
2012-2013	901
2013-2014	882
2014-2015	880

Source: Iowa Department of Education

Figure N1: Boundary Map of JCSD



Source: Iowa Department of Education

HAZARD RISK ASSESSMENT

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the committee evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. The school district's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the school district. This analysis provides an all-hazard approach when evaluating the hazards that affect the school district and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructure, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas human caused or technological events tend to change over time with advancement in technology and methods of operation.

The Committee assessed the defined hazards relevant to potential impact on the school district. Using the scoring criteria previously defined (Tables 19-22) the school district assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10)
=Final Hazard Assessment Score

Table N3 displays the school district's hazard scores. The top three hazards for the JCSD are Severe Winter Storm, Thunderstorm/Lightning/Hail., and Tornado/Windstorm.

TABLE N3: HAZARD RISK ASSESSMENT FOR JESUP COMMUNITY SCHOOL DISTRICT						
Hazard Rank	**Hazard**	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**Final Score**
1	Severe Winter Storm	4	1	3	3	**2.85**
1	Thunderstorm/Lightning/Hail	4	1	3	3	**2.85**
3	Tornado/Windstorm	3	2	3	3	**2.7**
4	Human Disease	3	2	1	4	**2.5**
5	Flash Flood	2	2	4	3	**2.4**
6	Transportation Incident	2	2	4	2	**2.3**
6	Terrorism	2	2	4	2	**2.3**
8	Extreme Heat	3	1	1	3	**2.1**
9	HAZMAT Incident	2	2	1	3	**1.95**
10	Drought	2	1	1	4	**1.75**
10	Earthquake	1	2	4	1	**1.75**
12	Landslide	1	1	4	3	**1.65**
12	Sinkholes	1	1	4	3	**1.65**
14	Animal/Plant/Crop Disease	1	2	1	4	**1.6**
15	Radiological Incident	1	1	4	2	**1.55**
16	River Flooding	1	1	3	3	**1.5**
17	Expansive Soils	1	1	4	1	**1.45**
17	Grass/Wild Fire	1	1	4	1	**1.45**
17	Infrastructure Failure	1	1	4	1	**1.45**
17	Levee/Dam Failure	1	1	4	1	**1.45**

Vulnerability – Identifying Assets & Property Losses

Critical Facilities

All the school's buildings and campus areas are considered critical facilities because of their student population. A list of the schools education facilities is shown in Table N1. In the event of a hazard that requires seeking shelter, the school facilities themselves are utilized for sheltering in place. In the event the school must be evacuated due to a hazard or threat relocation points have been established near each school so that teachers and students know where to gather in the case of an evacuation.

Social Asset Populations

The nature of a school's student population creates a large population of "at-risk" individuals. Younger residents are often not aware of the proper actions to take in the event of a disaster. In addition, very young children can be more susceptible to disasters simply due to their age. As mentioned in District Profile, there are over 1,000 students and 170 staff in the district. The district actively takes steps to reduce the threat to their student population, as described below in the "Current Activities" section. When school is in session, hundreds of people are in the various school buildings daily. This includes people from other communities.

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

The committee developed broad-based goals that address a multitude of hazard risks and mitigation activities. By identifying these goals the Committee was able to develop mitigation action steps that with a particular objective in mind. The hazard mitigation plan goals are identified are as follows.

1. Maintain emergency services during hazard events, or if this is not possible, return to pre-disaster service levels as soon as possible.
2. Protect the health and welfare of the school community by utilizing pre-disaster planning and constructing mitigation projects.
3. Take steps to mitigate or minimize the impact of natural, technological, and/or human-made disasters.
4. Identify possible action steps to be taken to decrease the risk of the communicable diseases.
5. Take measures to minimize the occurrence of injuries, loss of life, and damages that may occur as a result of hazards.
6. Return to similar or improved pre-event conditions as quickly as possible following a disaster event.

Current Activities

Alerts/Notifications

The school has a notification system in place to alert persons when school or a school-activity must be dismissed or cancelled. JCSD posts notifications n their website (www.jesup.k12.ia.us) and sends notifications of local TV stations KGAN 2, KWWL-7, and KCRG-9. Persons can also sign up to receive these notifications via phone call, text message, or email.

As laid out in school board policy, each classroom and office must have a plan for helping those in need of assistance to safety during an emergency.

Emergency Services Mitigation Actions

Buchanan County Emergency Management Agency

The Buchanan County Emergency Management Agency is based out of the Buchanan County Courthouse in Independence. The Emergency Management Director works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community.

Fire Department

JCSD is served by the City of Jesup Fire Department, which currently has a staff of 33 volunteer firefighters. The fire department has in place 28E agreements with surrounding communities to provide and receive assistance as needed on a mutual aid basis. The communities that the Jesup Fire Department maintains 28E agreements include: Black Hawk County, Buchanan County, Oelwein, Walker, and the Linn County HAZMAT Team.

Medical Services

The nearest hospital, Buchanan County Health Center, is located in Independence, approximately 13 miles east of Jesup. There are six other hospitals available in a 25-mile radius of the City of Jesup. They are located in Waterloo, Oelwein, Cedar Falls, Vinton, and Sumner. In addition to hospitals, there is a clinic operated by Covenant Medical Center in the City of Jesup.

The Jesup Ambulance Service provides emergency rescue and ambulance service. There are currently 26 personnel that provide service to the EMS department. Of those current members there are: eleven EMT-I, seven EMT-B, three EMT-D, and three First Responders and two assistants.

Police

The Jesup Police Department, Buchanan County Law Enforcement, and the Iowa State Patrol provide police protection to the City of Jesup. The Jesup Police Department currently employs three officers. Equipment includes two squad cars and one Jeep.

See Appendix F, City of Jesup appendix, for additional information on the City of Jesup's emergency services.

Future Activities & Implementation Strategy / Action Plan

Priority

School representatives analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table N4) and determine each element's ranking (High - H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

TABLE N4: STAPLEE ELEMENTS

S – Social	• Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations, • Actions do not cause relocation of lower income people, • Actions are compatible with the community's social and cultural values.
T- Technical	• Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	• Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	• Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	• It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	• Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E - Environmental	• Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, • Are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Timeline

The Committee identified the time period each of the proposed mitigation activities will occur. Activities that occur regularly (either daily, weekly, monthly, or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The School District will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- Minimal: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.

- Low: Cost estimate for project range from $10,001 - $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).

- Moderate : Cost estimate for project range from $100,000 - $299,999 based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.

- High : Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

The East Buchanan Community School District Future Mitigation Activities and Implementation Strategy is below in Table N5.

TABLE N5: JESUP COMMUNITY SCHOOL DISTRICT FUTURE MITIGATION ACTIVITIES & IMPLEMENTATION STRATEGY					
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation**	**Timeline**	**Estimated Cost ($)**
High	Construct a school/community safe room and tornado shelter	Thunderstorm/Lightning/Hail, Tornado/Windstorm	School Administration & Board	Long-Term	High
High	Educate the Student Population/Public through: continued cooperation with local service organizations (American Red Cross, County EMA, etc.) to educate residents on how to prepare for and respond to a various hazards	All	School Administration, School Board, Partner agencies	Active	Minimal
High	Continue cooperation and agreements with local emergency response organizations (Medical, Fire, Police, EMA, HAZMAT, etc.)	All	School Administration & Board	Active	Minimal
High	Purchase generator for backup power source for central office in order to provide emergency communication and operations in the event of extended power outage	All	School Administration & Board	Short-Term	Medium
High	Continue to review opportunities for and implement hazard mitigation projects as identified	All	School Administration & Board	Active	Medium

ATTACHMENT 1: MAPS

1: Location Maps

1	Buchanan County

2: Geography Maps

a	Topography
b	Sinkholes

3: Flood Plain and Flood Scenario Maps

a/b	Buchanan County
c/d	Aurora
e/f	Brandon
g/h	Fairbank
i/j	Hazleton
k/l	Independence
m/n	Jesup
o/p	Lamont
q/r	Quasqueton
s/t	Rowley
u/v	Stanley
w/x	Winthrop

4: Historic Tornado and Scenario Maps

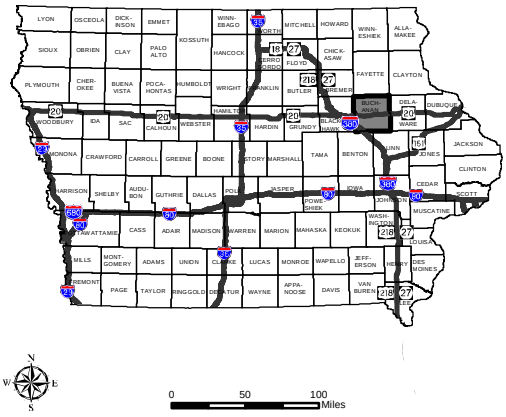
a	Buchanan County - Historic
b/c	Aurora
d/e	Brandon
f/g	Fairbank
h/i	Hazleton
j/k	Independence
l/m	Jesup
n/o	Lamont
p/q	Quasqueton
r/s	Rowley
r/u	Stanley
v/w	Winthrop

5: Critical Site Maps

a	Buchanan County
b	Aurora
c	Brandon
d	Fairbank
e	Hazleton
f	Independence
g	Jesup
h	Lamont
i	Quasqueton
j	Rowley
k	Stanley
l	Winthrop

BUCHANAN COUNTY, IOWA

State of Iowa



LEGEND

COUNTY BOUNDARY

Incorporated Areas

Populated Place

Major Roads

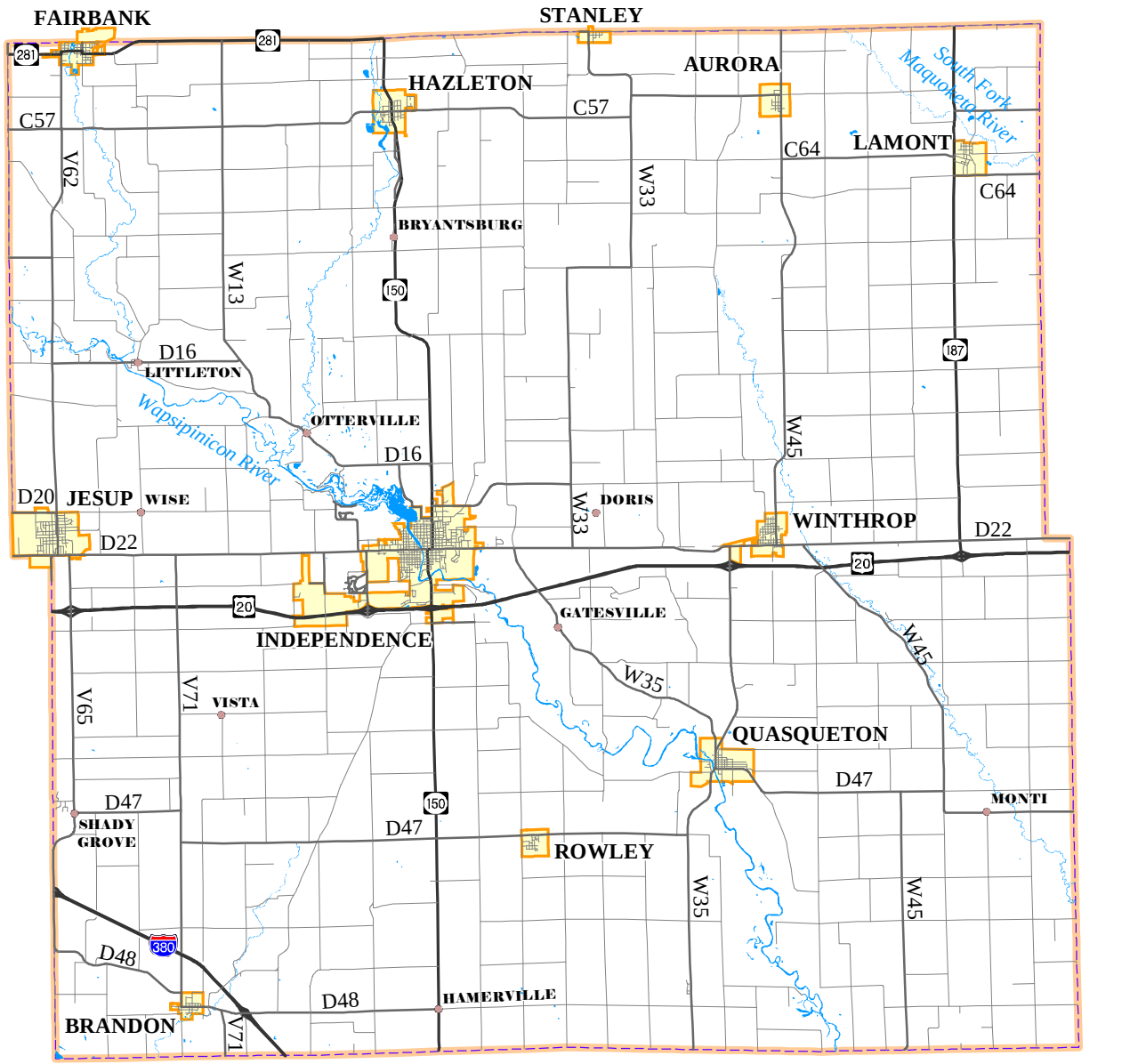
County Roads

Roads

Rivers

0 1 2 3 4

Miles



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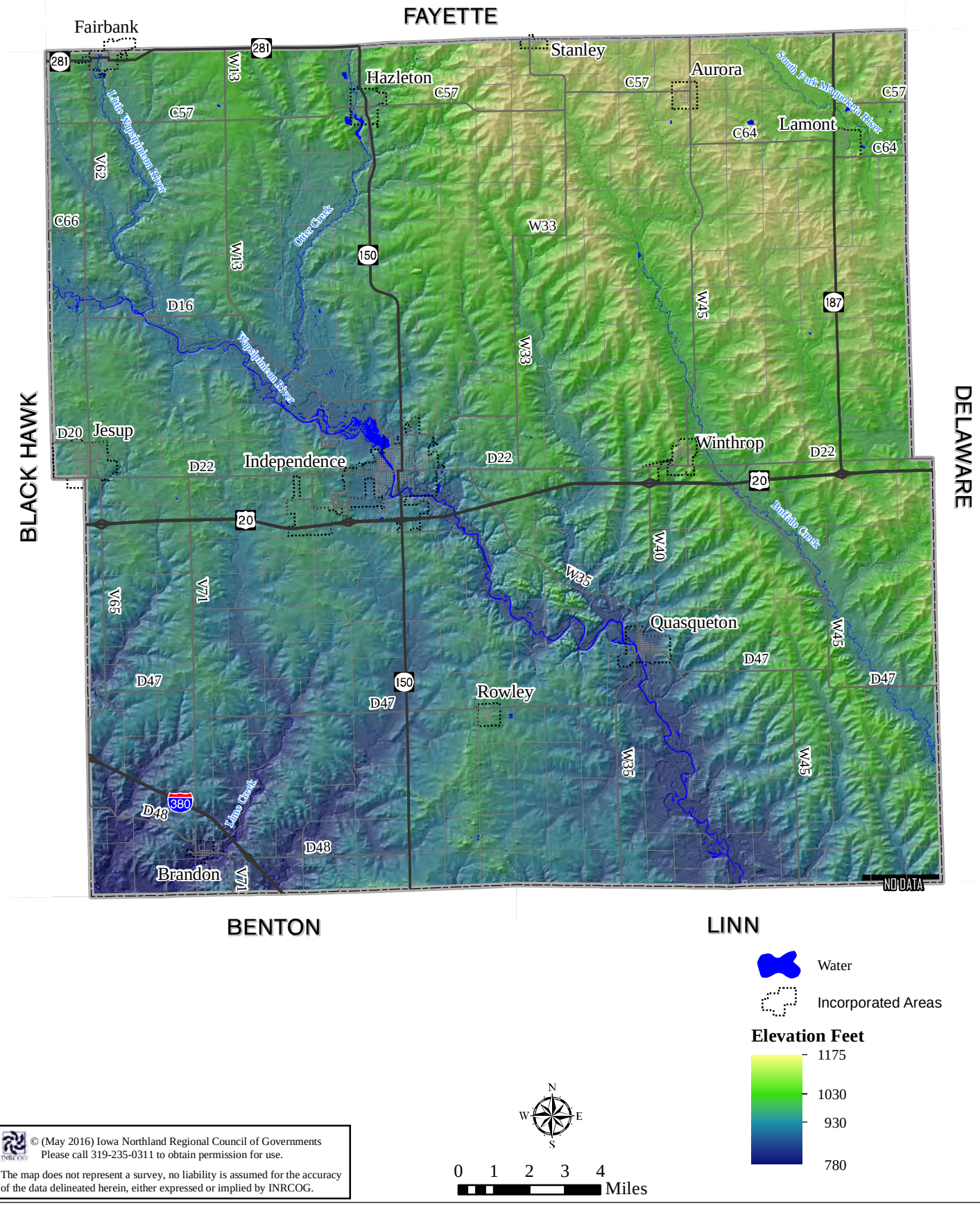
Buchanan County, Iowa Topographic Map



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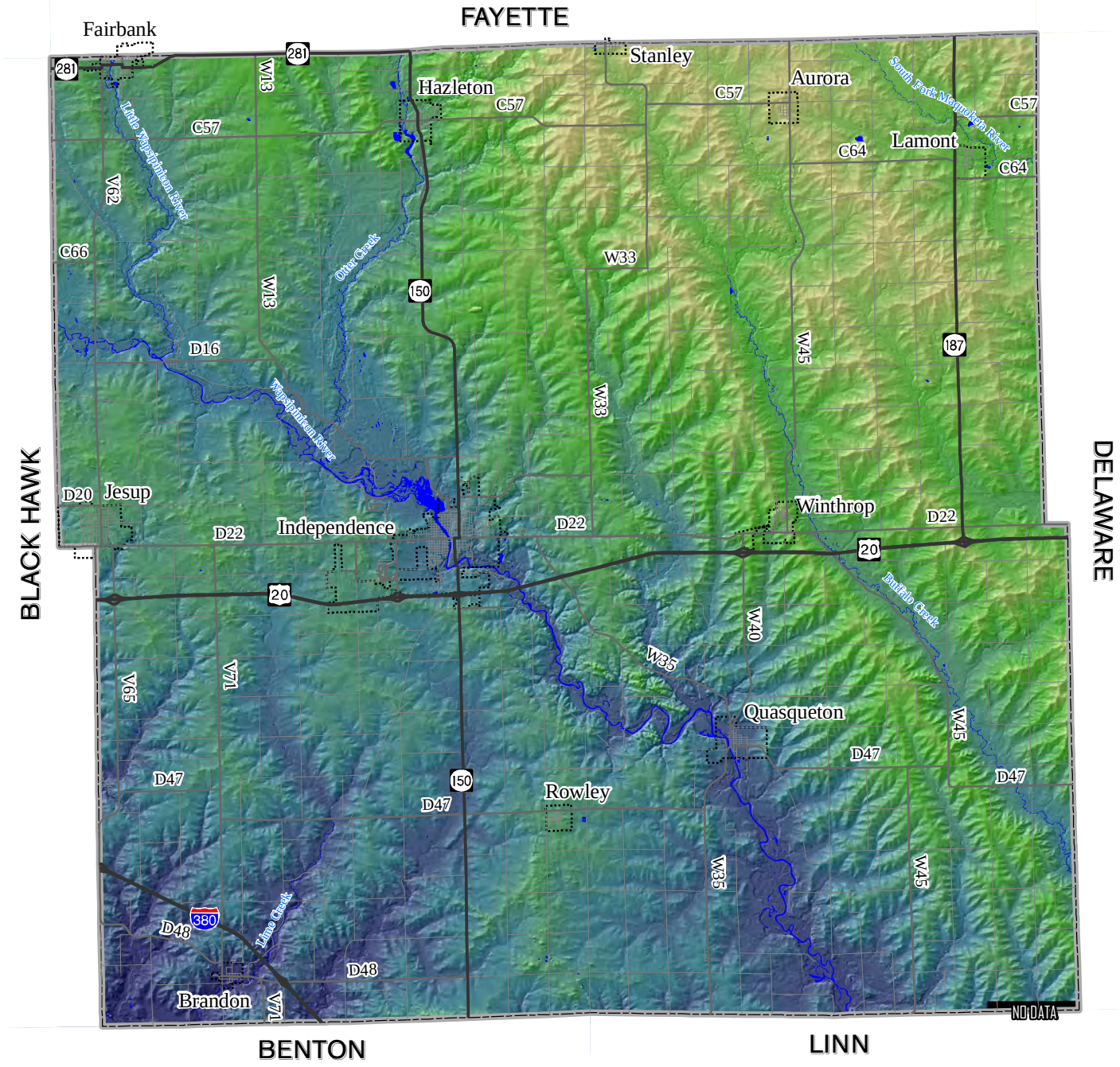
Buchanan County, Iowa Sinkhole Map



Sinkhole Data Source
Sinkhole Geographic Information Systems(GIS) data was obtained from the Iowa Department of Natural Resources in cooperation with the Iowa Geologic Survey. The date of publication for this data is: January 23rd 2009 The title of the data is: Current and Historic Sinkhole and Depression locations in Iowa This edition was published on: July, 21 2014

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The map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.

There are currently no sinkholes within Buchanan County.

N W E S

0 1 2 3 4 Miles

Sinkhole

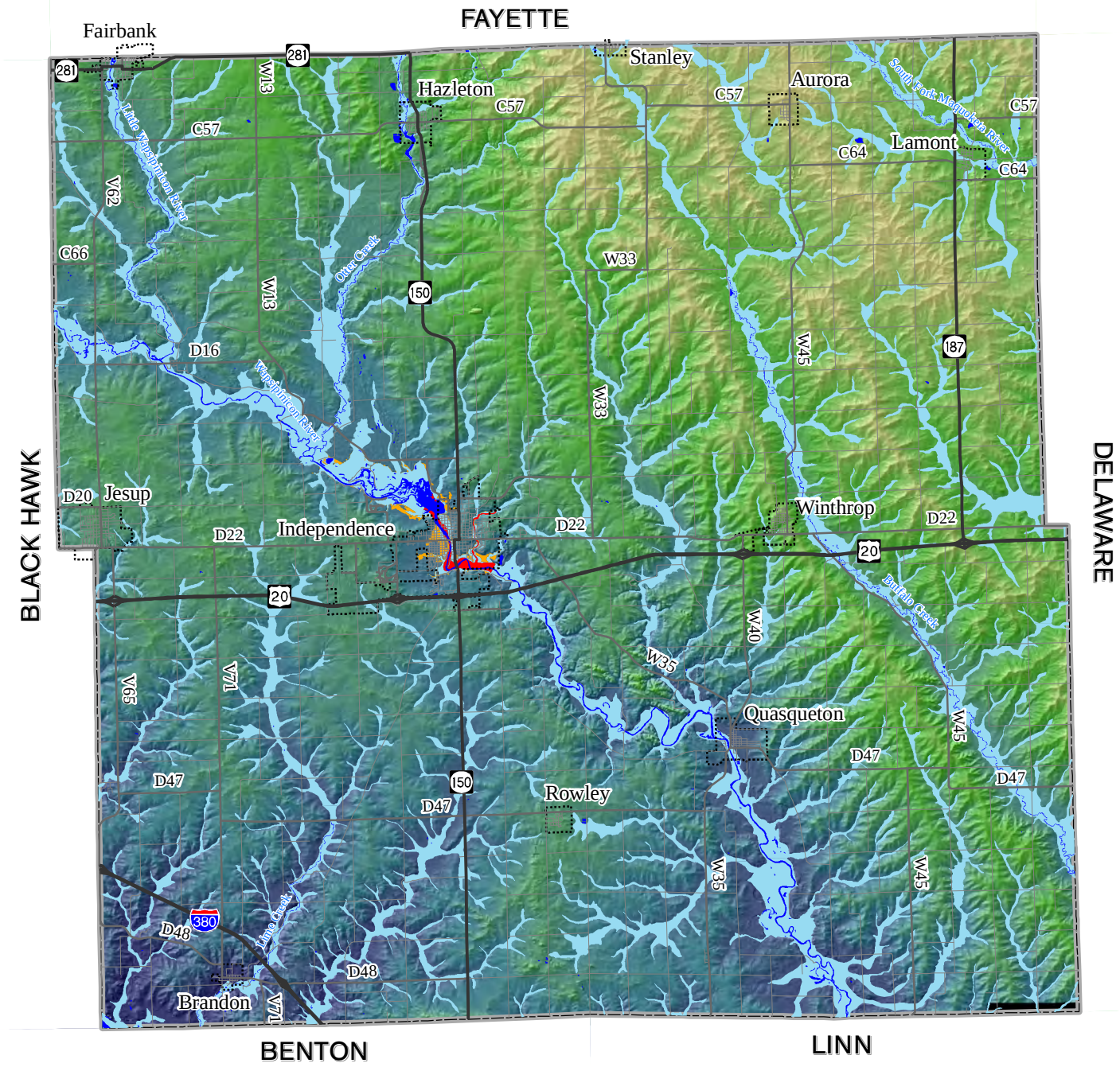
Water

Incorporated Areas

Elevation Feet

1175
1030
930
780

Buchanan County, Iowa
Flood Plain Map



DISCLAIMER

This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.

For actual determination if a location is within the floodplain please contact your local floodplain administrator.

Water

Incorporated Areas

Flood Zone

Floodway (Independence Only)

1.0% Annual Chance of Flooding

0.2% Annual Chance of Flooding (Independence Area Only)

Elevation Feet

1175

1030

930

780

0 1 2 3 4 Miles

N W E S

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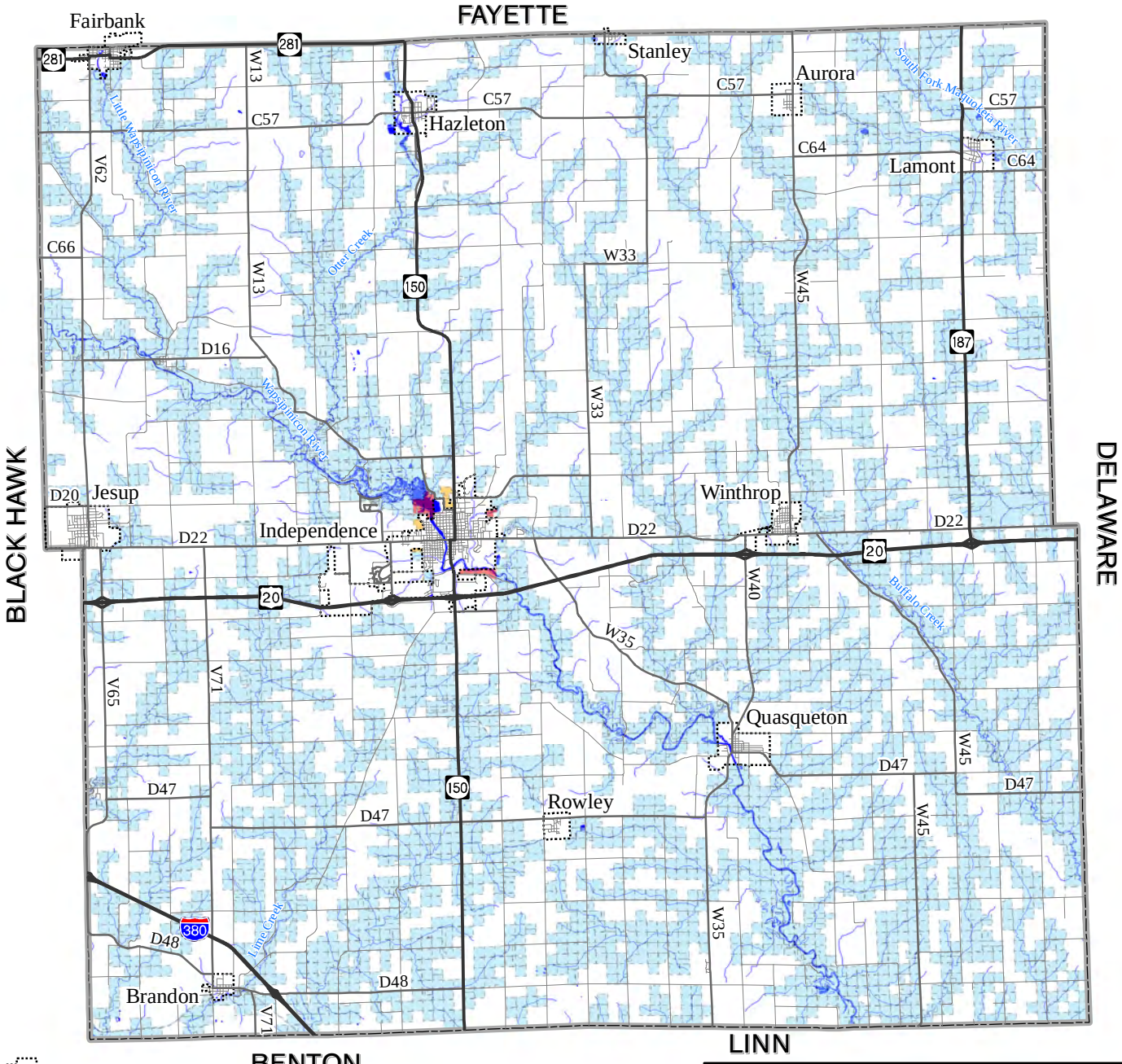
Buchanan County, Iowa
Flood Scenario Map (Unincorporated Areas Only)



Incorporated Areas

Water

Flood Scenario

Parcels Affected by a Floodway and 1.0% Ann. Chance of Flooding (Independence Only)

Parcels Affected by a 1.0% Annual Chance of Flooding

Parcels Affected by a 0.2% Annual Chance of Flooding (Independence Only)

Damage Estimates

Number of Parcels Impacted in the Floodway & 1.0% Annual Chance Floodplain (Independence) -	31
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain -	5,754
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain (Independence)-	17
Number of Parcels Not Affected by Flood Scenario -	8,047

DISCLAIMER

The digital flood layer used to calculate this scenario was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.

For actual determination if a location is within the floodplain please contact your local floodplain administrator.

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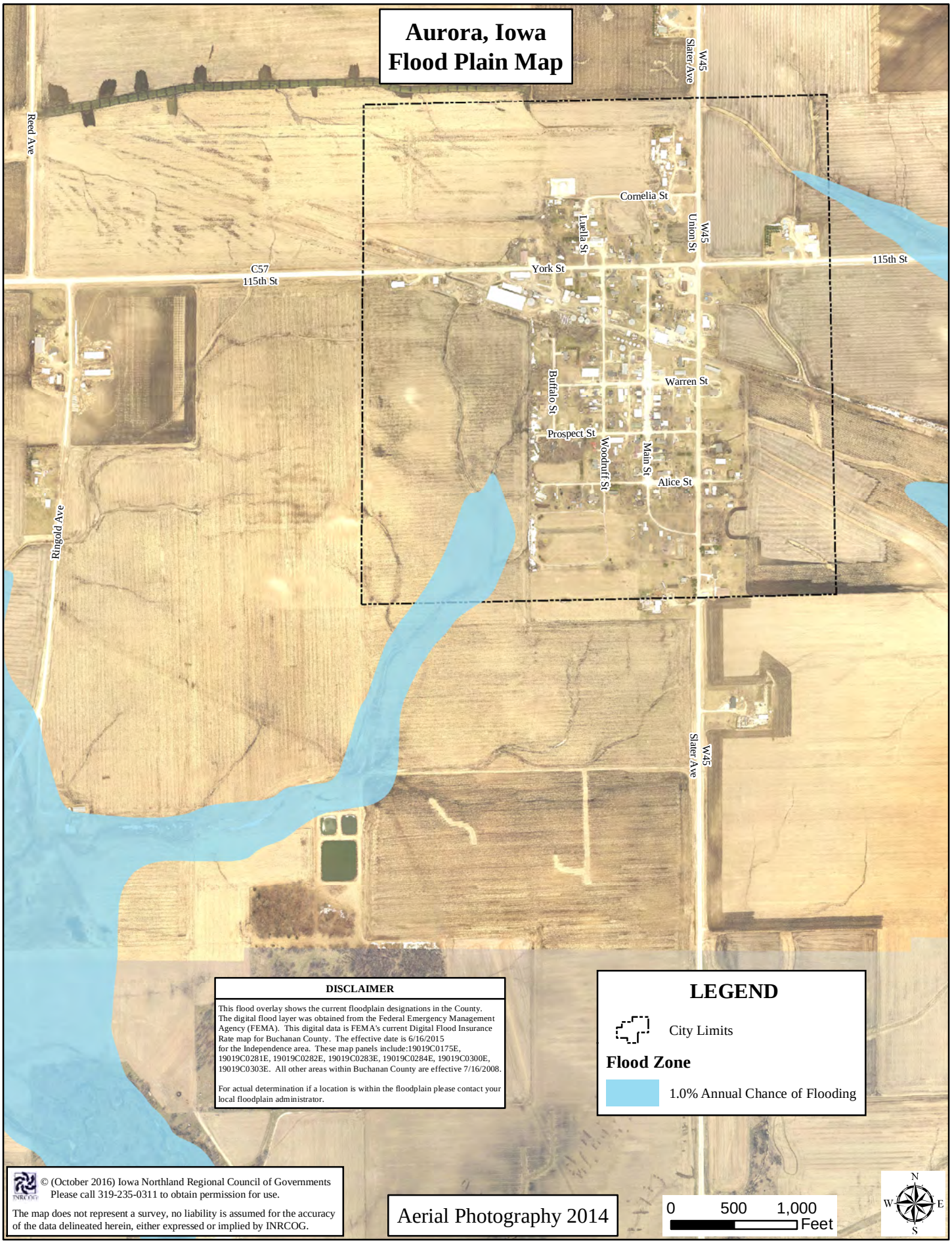
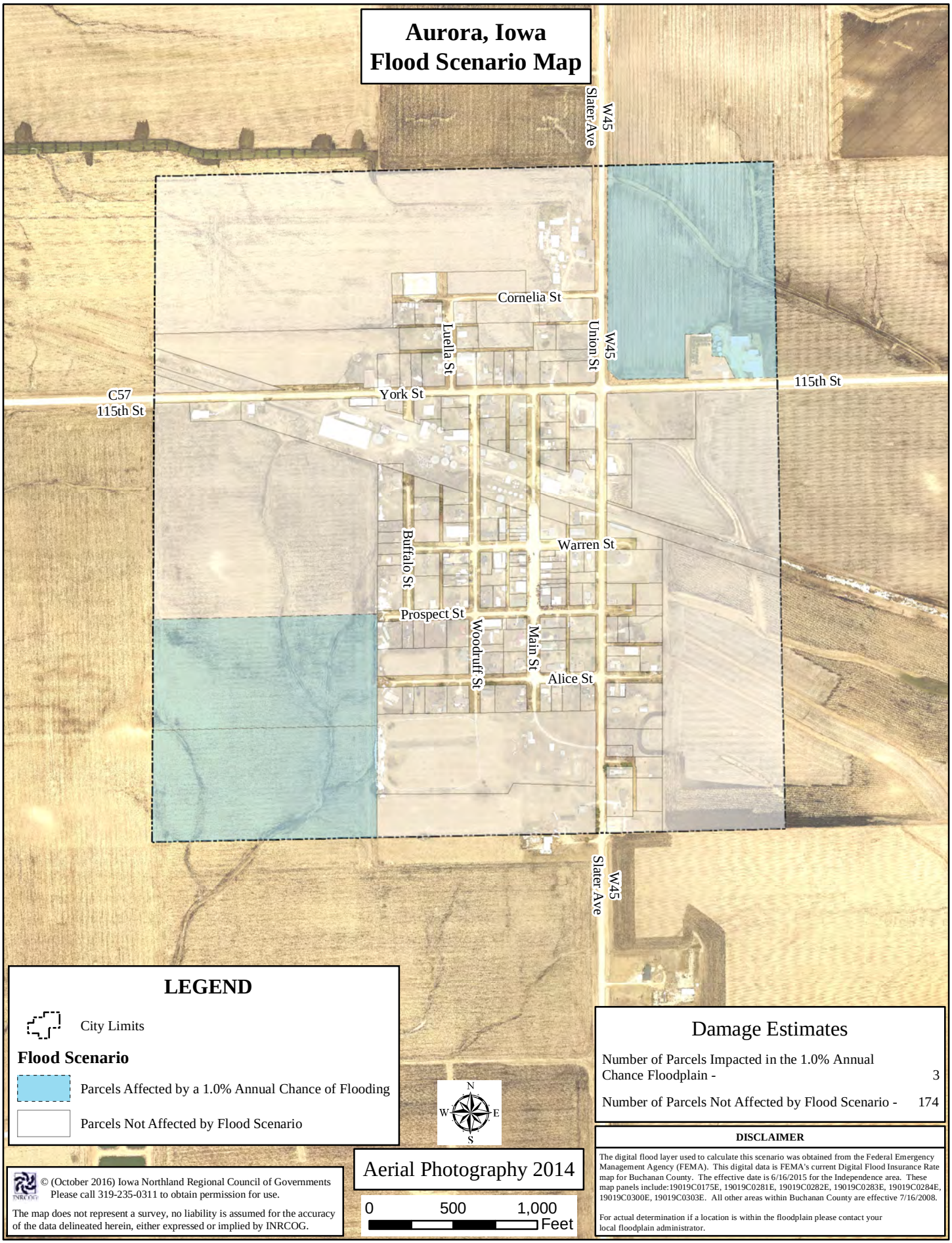
The map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.

N W E S

0 1 2 3 4 Miles


Aurora, Iowa
Flood Plain Map
Reed Ave
Slater Ave
W45
Cornelia St
Luella St
Union St
C57
115th St
York St
115th St
Buffalo St
Warren St
Prospect St
Woodruff St
Main St
Alice St
Ringold Ave
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
LEGEND
City Limits
Flood Zone
1.0% Annual Chance of Flooding
© (October 2016) Iowa Northland Regional Council of Governments
Please call 319-235-0311 to obtain permission for use.
The map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.
Aerial Photography 2014
0 500 1,000
Feet
N
W
E
S


Aurora, Iowa
Flood Scenario Map
Slater Ave
W45
Cornelia St
Luella St
Union St
W45
115th St
C57
115th St
York St
Buffalo St
Warren St
Prospect St
Woodruff St
Main St
Alice St
Slater Ave
W45
LEGEND
City Limits
Flood Scenario
Parcels Affected by a 1.0% Annual Chance of Flooding
Parcels Not Affected by Flood Scenario
N
W
E
S
Aerial Photography 2014
0
500
1,000
Feet
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 3
Number of Parcels Not Affected by Flood Scenario - 174
DISCLAIMER
The digital flood layer used to calculate this scenario was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
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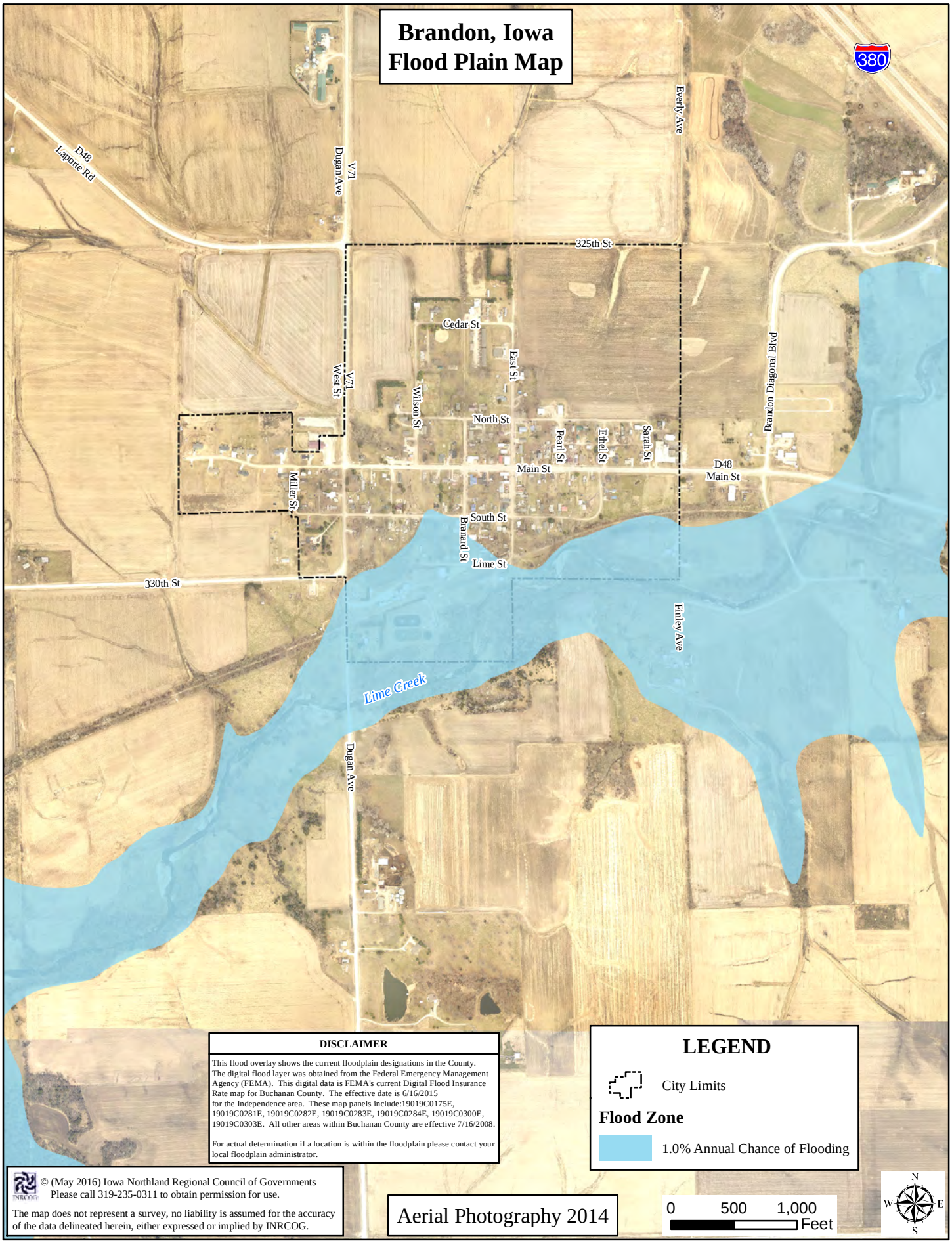
Brandon, Iowa
Flood Plain Map
380
Everly Ave
D48
Laporte Rd
Dugan Ave
V71
325th St
Cedar St
East St
West St
V71
Wilson St
North St
Pearl St
Ethel St
Sarah St
Brandon Diagonal Blvd
Main St
D48
Main St
Miller St
South St
Branard St
Lime St
330th St
Finley Ave
Lime Creek
Dugan Ave
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
LEGEND
City Limits
Flood Zone
1.0% Annual Chance of Flooding
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Please call 319-235-0311 to obtain permission for use.
The map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.
Aerial Photography 2014
0 500 1,000
Feet
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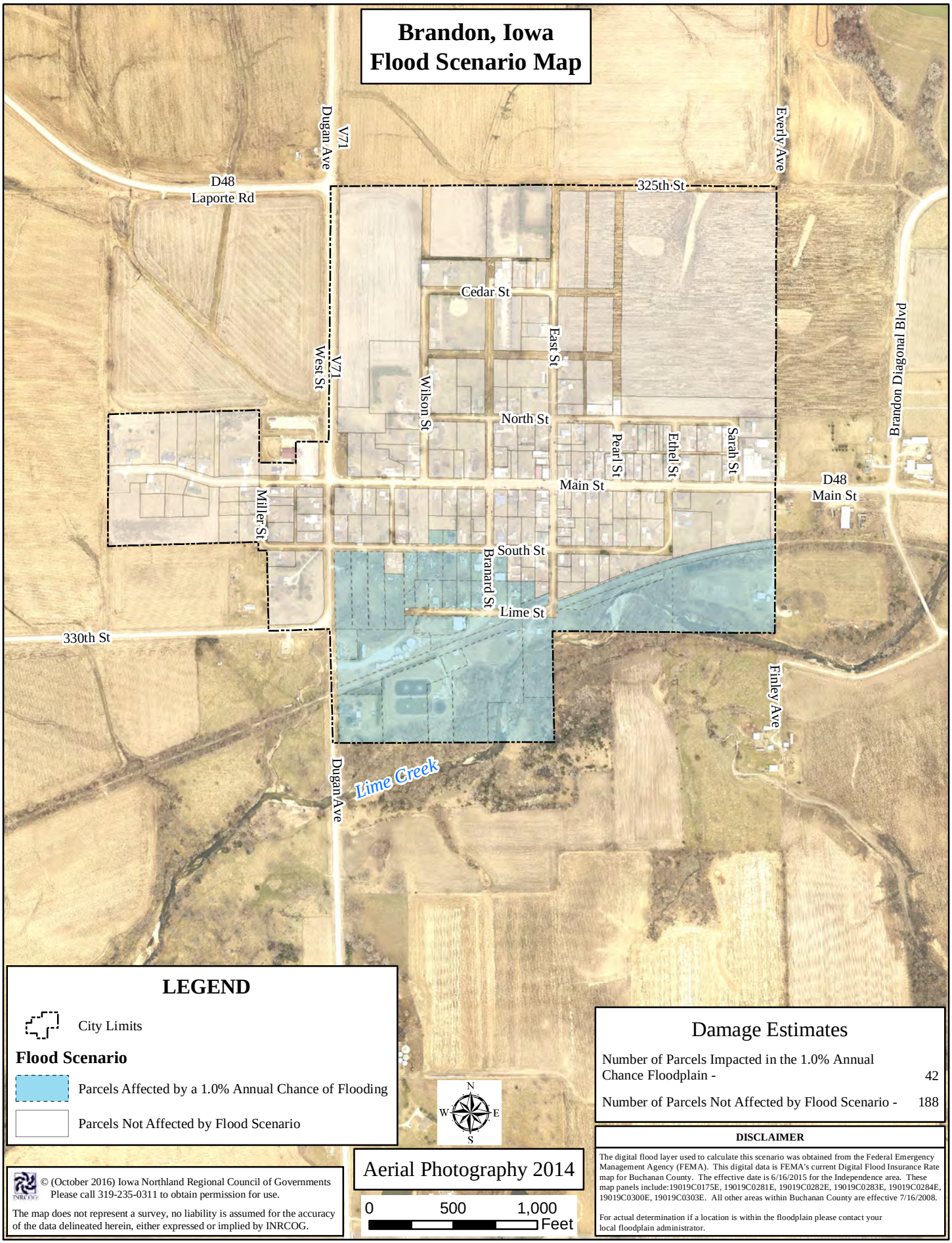
W
E
S


Brandon, Iowa
Flood Scenario Map
Dugan Ave
V71
D48
Laporte Rd
325th St
Everly Ave
Cedar St
East St
West St
V71
Wilson St
North St
Brandon Diagonal Blvd
Pearl St
Ethel St
Sarah St
Main St
D48
Main St
Miller St
South St
Branard St
Lime St
330th St
Finley Ave
Dugan Ave
Lime Creek
LEGEND
City Limits
Flood Scenario
Parcels Affected by a 1.0% Annual Chance of Flooding
Parcels Not Affected by Flood Scenario
N
W
E
S
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 42
Number of Parcels Not Affected by Flood Scenario - 188
DISCLAIMER
The digital flood layer used to calculate this scenario was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
Aerial Photography 2014
0 500 1,000
Feet
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The map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.

Fairbank, Iowa Flood Plain Map



DISCLAIMER

This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008. Fayette County flood data is effective 8/16/2011.

For actual determination if a location is within the floodplain please contact your local floodplain administrator.

LEGEND

City Limits

County Boundary

Flood Zone

Area Not Included in FEMA Flood Study

1.0% Annual Chance of Flooding

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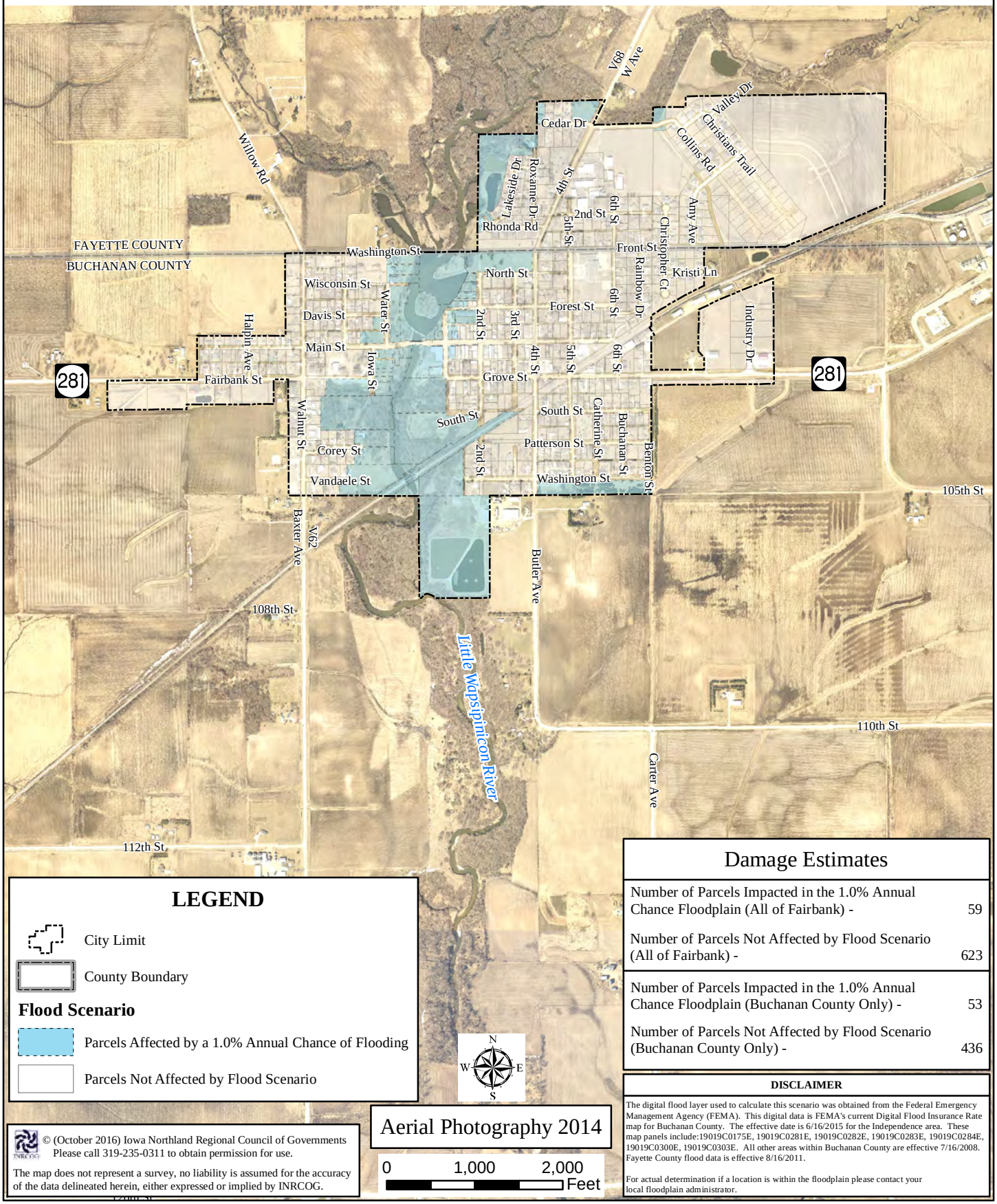
Aerial Photography 2014

0 500 1,000 Feet

N W E S

Fairbank, Iowa Scenario Map



LEGEND

- City Limit
- County Boundary

Flood Scenario

- Parcels Affected by a 1.0% Annual Chance of Flooding
- Parcels Not Affected by Flood Scenario

Damage Estimates

Number of Parcels Impacted in the 1.0% Annual Chance Floodplain (All of Fairbank) -	59
Number of Parcels Not Affected by Flood Scenario (All of Fairbank) -	623
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain (Buchanan County Only) -	53
Number of Parcels Not Affected by Flood Scenario (Buchanan County Only) -	436

DISCLAIMER

The digital flood layer used to calculate this scenario was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008. Fayette County flood data is effective 8/16/2011.

For actual determination if a location is within the floodplain please contact your local floodplain administrator.

N W E S

Aerial Photography 2014

0 1,000 2,000 Feet

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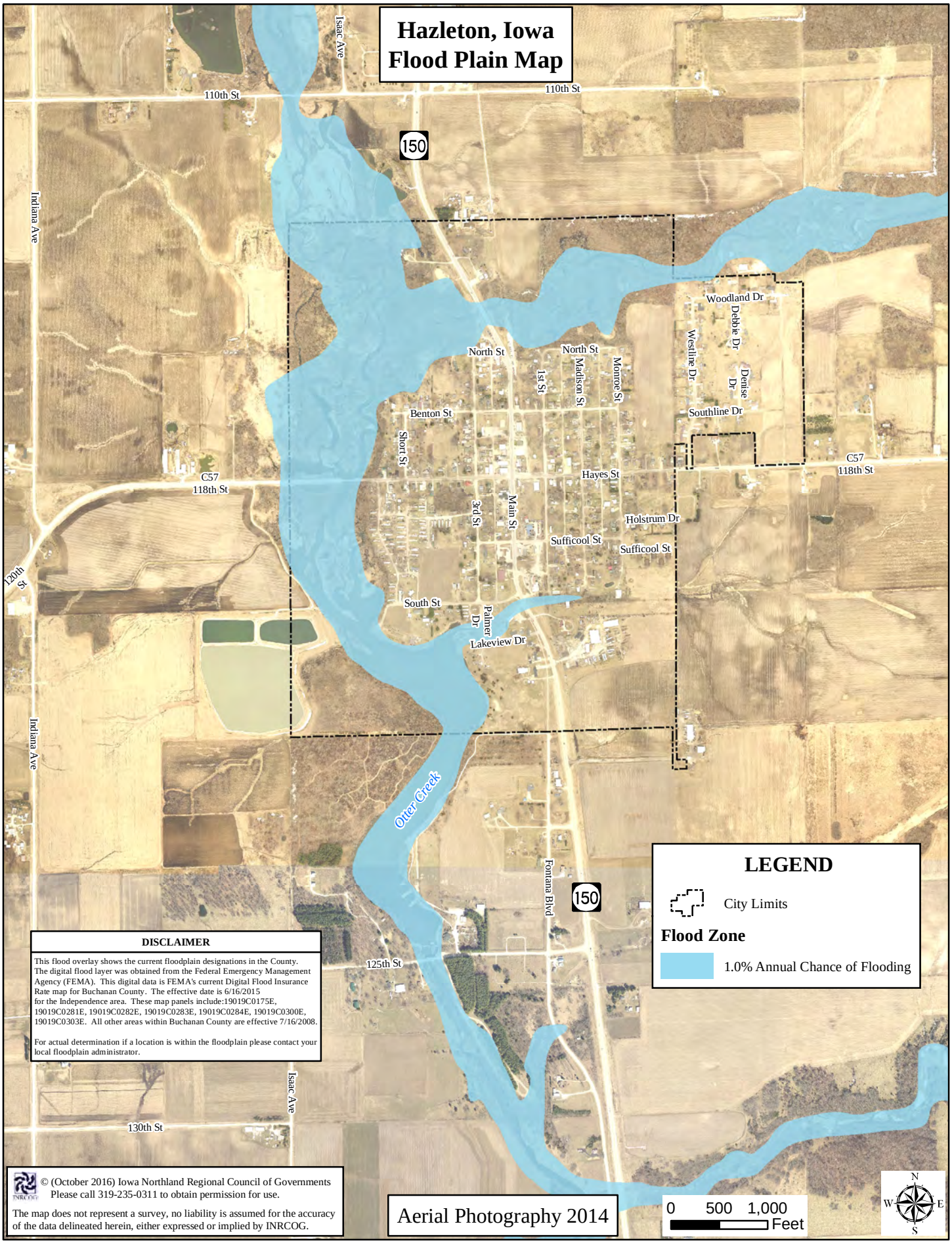
Hazleton, Iowa
Flood Plain Map
Isaac Ave
110th St
110th St
150
Indiana Ave
Woodland Dr
Debbie Dr
Westline Dr
Denise Dr
North St
North St
1st St
Madison St
Monroe St
Benton St
Southline Dr
Short St
C57
118th St
C57
118th St
Hayes St
3rd St
Main St
Holstrum Dr
Sufficool St
Sufficool St
120th St
South St
Palmer Dr
Lakeview Dr
Otter Creek
Indiana Ave
Fontana Blvd
150
125th St
Isaac Ave
130th St
LEGEND
City Limits
Flood Zone
1.0% Annual Chance of Flooding
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
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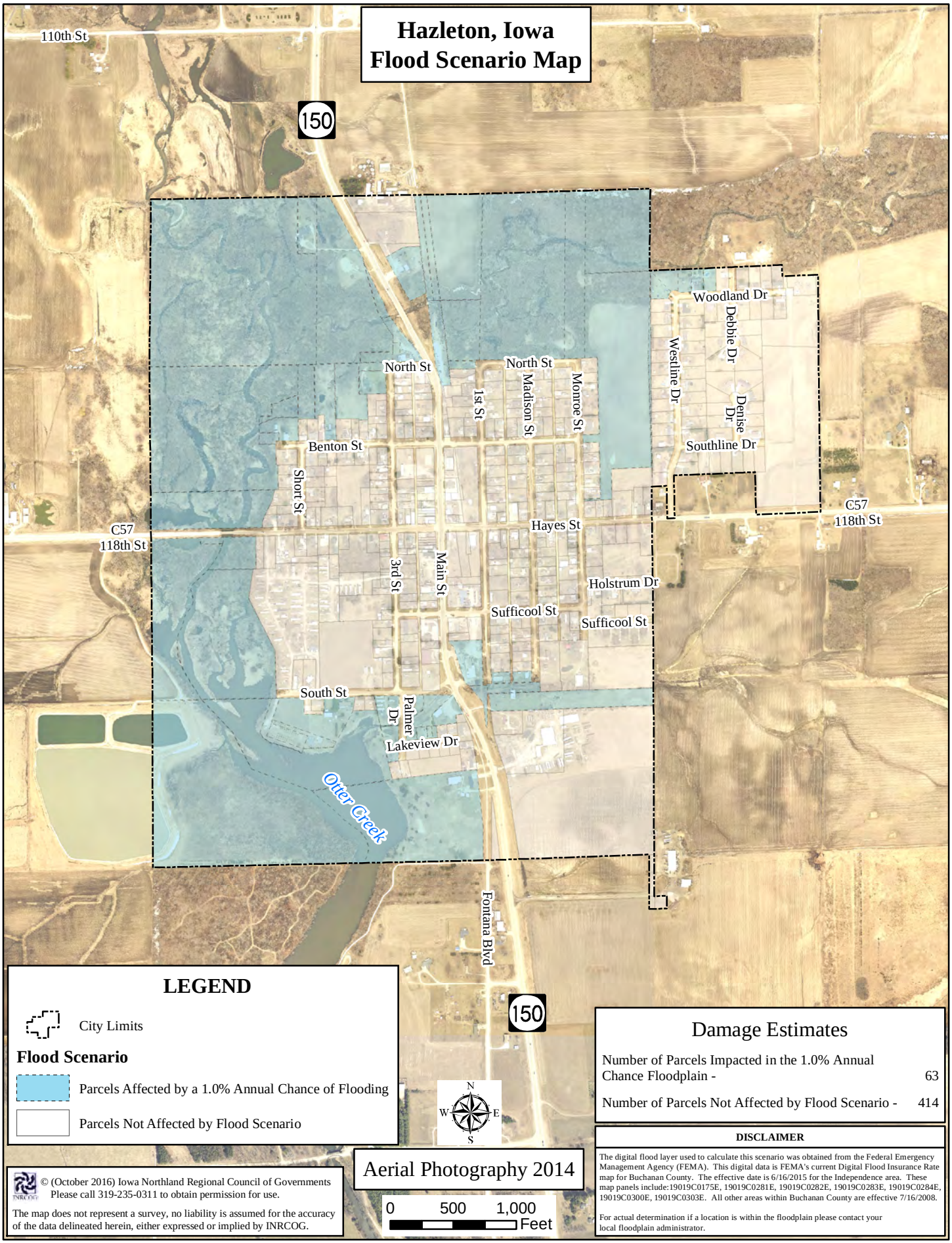
The map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.
Aerial Photography 2014
0 500 1,000
Feet
N
W
E
S



Damage Estimates

Number of Parcels Impacted in the 1.0% Annual Chance Floodplain -	63
Number of Parcels Not Affected by Flood Scenario -	414

DISCLAIMER

The digital flood layer used to calculate this scenario was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.

For actual determination if a location is within the floodplain please contact your local floodplain administrator.

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Independence, Iowa
Flood Plain Map

LEGEND

City Limits

Flood Zone

- Floodway
- 1.0% Annual Chance of Flooding
- 0.2% Annual Chance of Flooding

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DISCLAIMER

This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.

For actual determination if a location is within the floodplain please contact your local floodplain administrator.

0 0.25 0.5 Miles

N W E S

Independence, Iowa
Flood Scenario Map

LEGEND

City Limits

Flood Scenario

- Parcels Affected by a Floodway and 1.0% Ann. Chance of Flooding
- Parcels Affected by a 1.0% Annual Chance of Flooding
- Parcels Affected by a 0.2% Annual Chance of Flooding
- Parcels Not Affected by Flood Scenario

Damage Estimates

Number of Parcels Impacted in the Floodway & 1.0% Annual Chance Floodplain -	230
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain -	487
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain -	376
Number of Parcels Not Affected by Flood Scenario -	2,053

Aerial Photography 2014

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DISCLAIMER

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For actual determination if a location is within the floodplain please contact your local floodplain administrator.

0 0.25 0.5 Miles

N W E S


Jesup, Iowa
Flood Plain Map
Black Hawk-Buchanan Ave
Baxter Ave
V62
D20
Osage Rd
D20
North St
North St
210th St
Dorhmann St
Duroe St
Prospect St
Prospect St
10th St
Church Cir
Church St
Main St
7th St
6th St
5th St
4th St
Hopkins St
3rd St
1st St
Christopher Circle
Ainsworth St
Ainsworth St
9th St
Hawley St
E Corp Line St
215th St
8th St
3rd St
Young St
Young St
Douglas St
9th St
10th St
5th St
Stevens St
Main St
Purdy St
Purdy St
Ann St
Tegeler St
12th St
Hawkeye Rd
1st St
2nd St
3rd St
4th St
5th St
6th St
Ann St
8th St
9th St
10th St
7th St
James St
BUCHANAN COUNTY
BLACK HAWK COUNTY
D22
Old IA 939
South St
D22
220th St
3rd St
Killarney Dr
Kerry Ln
Fionia Ln
Cork Dr
Limerick Dr
Black Hawk-Buchanan Ave
V62
Benson-Shady Grove Ave
V65
Wooster Rd
230th St
BLACK HAWK COUNTY
BUCHANAN COUNTY
Carroll Ave
LEGEND
City Limits
County Boundary
Flood Zone
1.0% Annual Chance of Flooding
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008. Black Hawk County flood data is effective 7/18/2011.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
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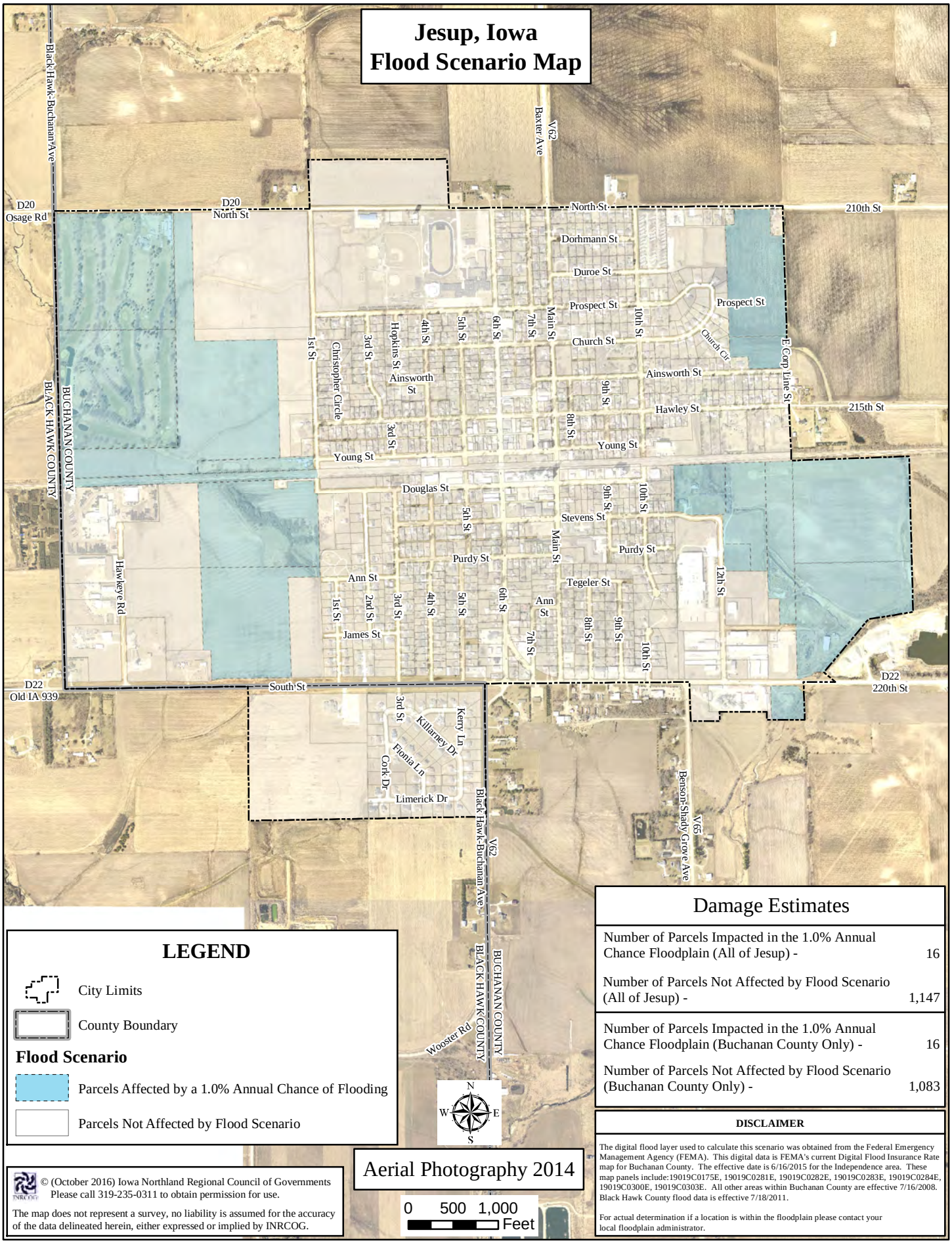
The map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.
Aerial Photography 2014
0 500 1,000
Feet
N
W
E
S


Jesup, Iowa
Flood Scenario Map
Black Hawk-Buchanan Ave
D20
Osage Rd
D20
North St
Baxter Ave
V62
North St
210th St
Dorhmann St
Duroe St
Prospect St
Prospect St
10th St
Church Cir
Church St
Main St
7th St
6th St
5th St
4th St
Hopkins St
3rd St
1st St
Christopher Circle
Ainsworth St
Ainsworth St
9th St
E Corp Line St
Hawley St
215th St
8th St
3rd St
Young St
Young St
BUCHANAN COUNTY
BLACK HAWK COUNTY
Douglas St
9th St
10th St
5th St
Stevens St
Main St
Purdy St
Purdy St
12th St
Hawkeye Rd
Ann St
Tegeler St
1st St
2nd St
3rd St
4th St
5th St
6th St
Ann St
8th St
9th St
10th St
7th St
James St
D22
Old IA 939
South St
D22
220th St
3rd St
Killarney Dr
Kerry Ln
Fionia Ln
Cork Dr
Limerick Dr
Black Hawk-Buchanan Ave
V62
Benson-Shady Grove Ave
V65
BUCHANAN COUNTY
BLACK HAWK COUNTY
Wooster Rd
N
W
E
S
LEGEND
City Limits
County Boundary
Flood Scenario
Parcels Affected by a 1.0% Annual Chance of Flooding
Parcels Not Affected by Flood Scenario
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain (All of Jesup) - 16
Number of Parcels Not Affected by Flood Scenario (All of Jesup) - 1,147
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain (Buchanan County Only) - 16
Number of Parcels Not Affected by Flood Scenario (Buchanan County Only) - 1,083
DISCLAIMER
The digital flood layer used to calculate this scenario was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008. Black Hawk County flood data is effective 7/18/2011.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
Aerial Photography 2014
0 500 1,000
Feet
© (October 2016) Iowa Northland Regional Council of Governments
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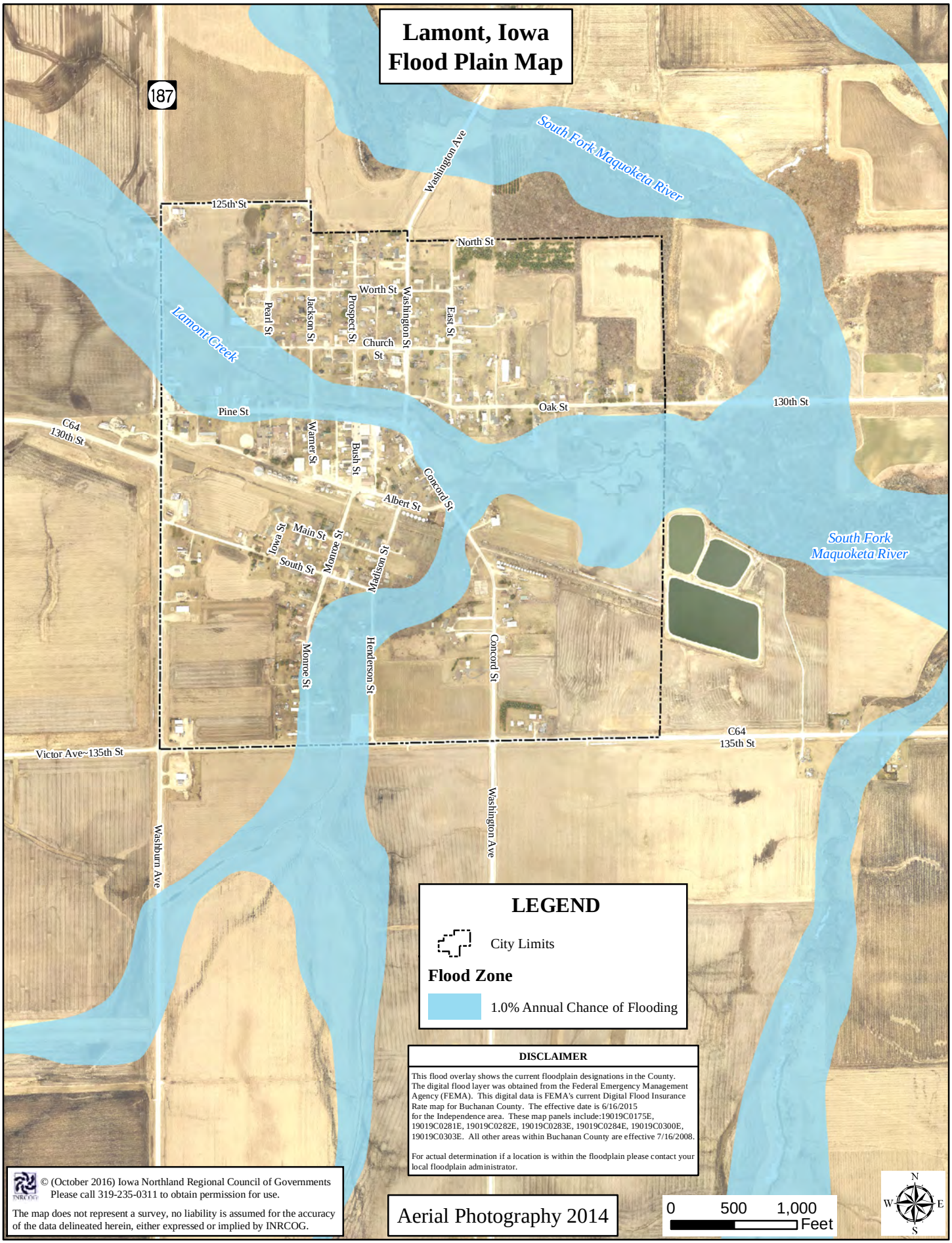
The map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.


Lamont, Iowa
Flood Plain Map
187
South Fork Maquoketa River
Washington Ave
125th St
North St
Worth St
Pearl St
Jackson St
Prospect St
Washington St
East St
Church St
Lamont Creek
Pine St
Oak St
130th St
C64
130th St
Warner St
Bush St
Concord St
Albert St
Iowa St
Main St
Monroe St
South St
Madison St
South Fork Maquoketa River
Monroe St
Henderson St
Concord St
C64
135th St
Victor Ave~135th St
Washburn Ave
Washington Ave
LEGEND
City Limits
Flood Zone
1.0% Annual Chance of Flooding
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
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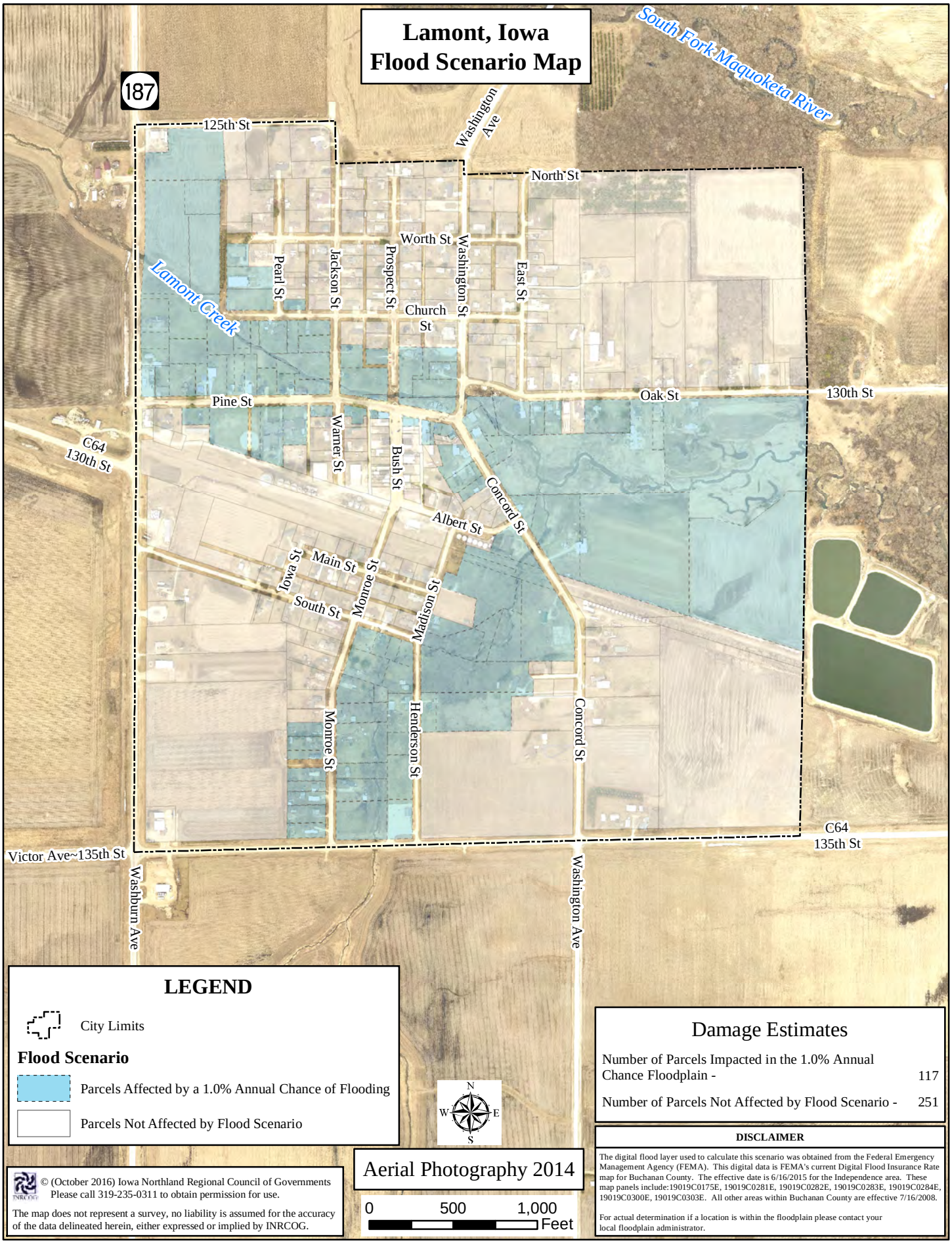
The map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.
Aerial Photography 2014
0 500 1,000
Feet
N
W
E
S


Lamont, Iowa
Flood Scenario Map
South Fork Maquoketa River
187
125th St
Washington Ave
North St
Worth St
Pearl St
Jackson St
Prospect St
Washington St
East St
Lamont Creek
Church St
Pine St
Oak St
130th St
C64
130th St
Warner St
Bush St
Concord St
Albert St
Iowa St
Main St
Monroe St
Madison St
South St
Monroe St
Henderson St
Concord St
C64
135th St
Victor Ave~135th St
Washburn Ave
Washington Ave
LEGEND
City Limits
Flood Scenario
Parcels Affected by a 1.0% Annual Chance of Flooding
Parcels Not Affected by Flood Scenario
N
W
E
S
Aerial Photography 2014
0 500 1,000 Feet
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 117
Number of Parcels Not Affected by Flood Scenario - 251
DISCLAIMER
The digital flood layer used to calculate this scenario was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
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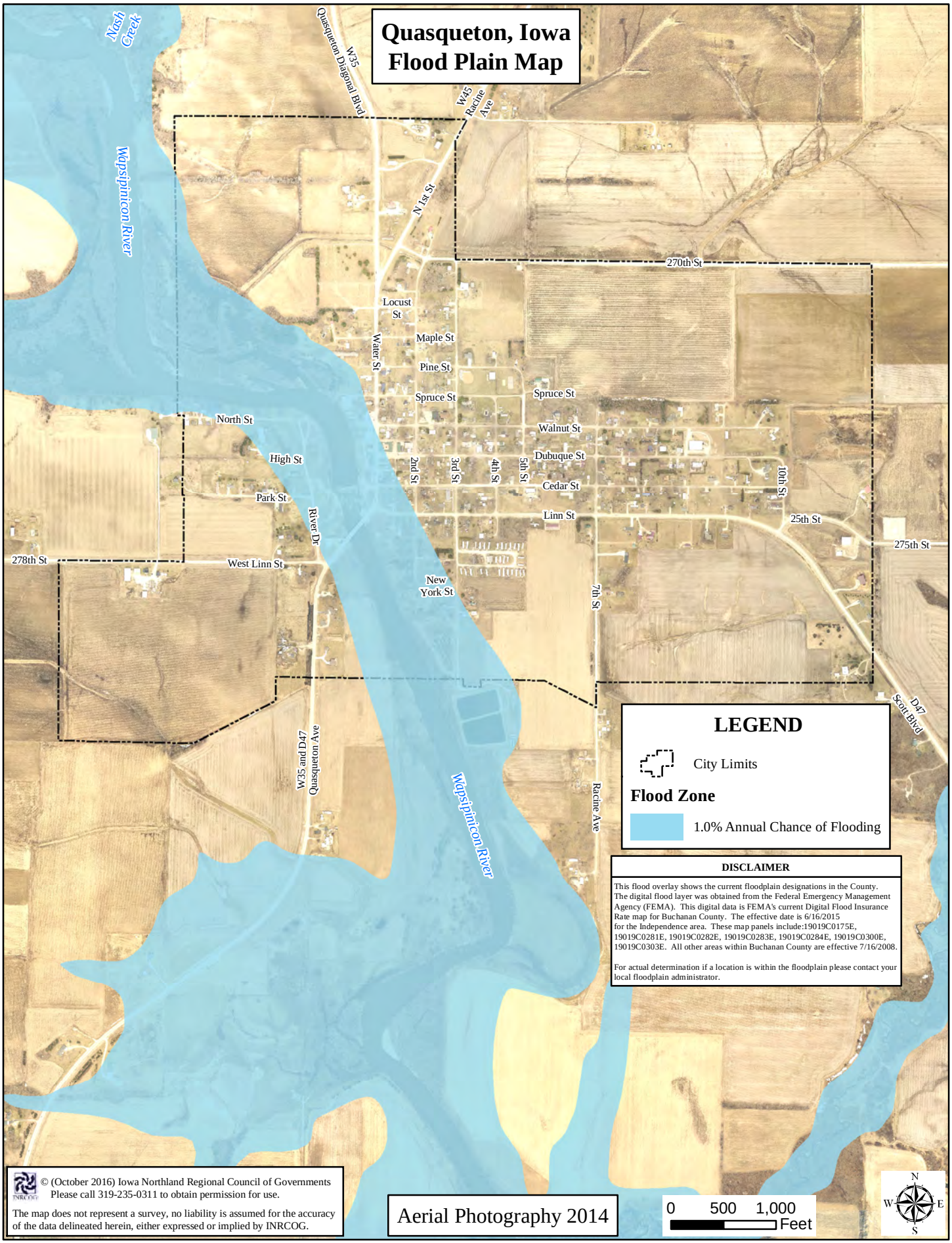
Quasqueton, Iowa
Flood Plain Map
Nash Creek
Wapsipinicon River
Quasqueton Diagonal Blvd
W35
W45
Racine Ave
N 1st St
270th St
Locust St
Maple St
Water St
Pine St
Spruce St
Spruce St
North St
Walnut St
High St
Dubuque St
2nd St
3rd St
4th St
5th St
Cedar St
10th St
Park St
River Dr
Linn St
25th St
275th St
278th St
West Linn St
New York St
7th St
W35 and D47
Quasqueton Ave
Wapsipinicon River
Racine Ave
D47
Scout Blvd
LEGEND
City Limits
Flood Zone
1.0% Annual Chance of Flooding
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
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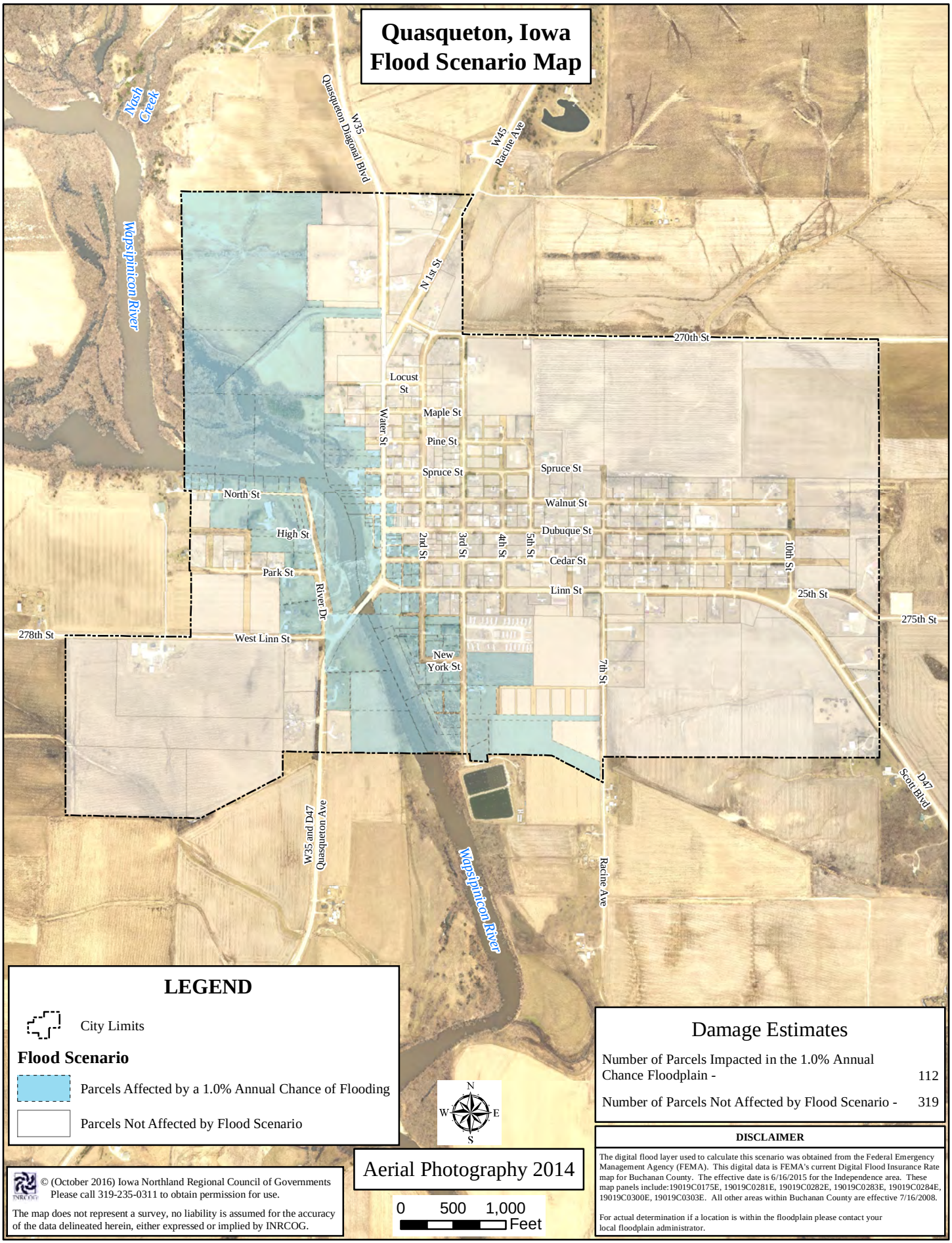
Aerial Photography 2014
0 500 1,000
Feet
N
W
E
S


Quasqueton, Iowa
Flood Scenario Map
Nash Creek
Wapsipinicon River
Quasqueton Diagonal Blvd
W35
W45
Racine Ave
N 1st St
270th St
Locust St
Maple St
Pine St
Spruce St
Water St
North St
High St
Park St
River Dr
West Linn St
278th St
2nd St
3rd St
4th St
5th St
Dubuque St
Walnut St
Cedar St
Linn St
10th St
25th St
275th St
New York St
7th St
Scott Blvd
D47
W35 and D47
Quasqueton Ave
Wapsipinicon River
Racine Ave
LEGEND
City Limits
Flood Scenario
Parcels Affected by a 1.0% Annual Chance of Flooding
Parcels Not Affected by Flood Scenario
N
W
E
S
Aerial Photography 2014
0 500 1,000
Feet
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 112
Number of Parcels Not Affected by Flood Scenario - 319
DISCLAIMER
The digital flood layer used to calculate this scenario was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
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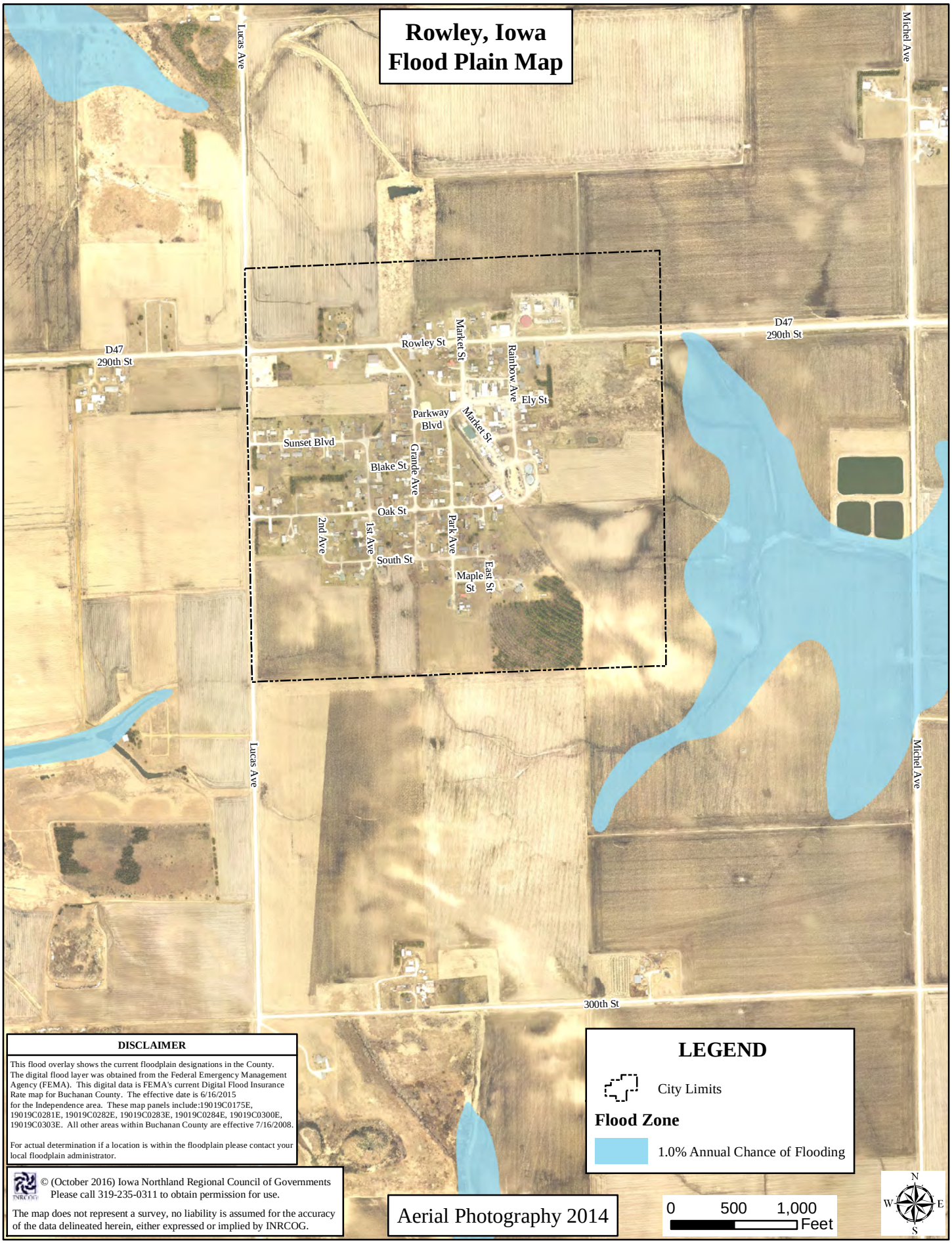
Rowley, Iowa
Flood Plain Map
Lucas Ave
Michel Ave
D47
290th St
Rowley St
Market St
Rainbow Ave
Ely St
Parkway
Blvd
Sunset Blvd
Blake St
Grande Ave
Oak St
2nd Ave
1st Ave
Park Ave
South St
Maple St
East St
300th St
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
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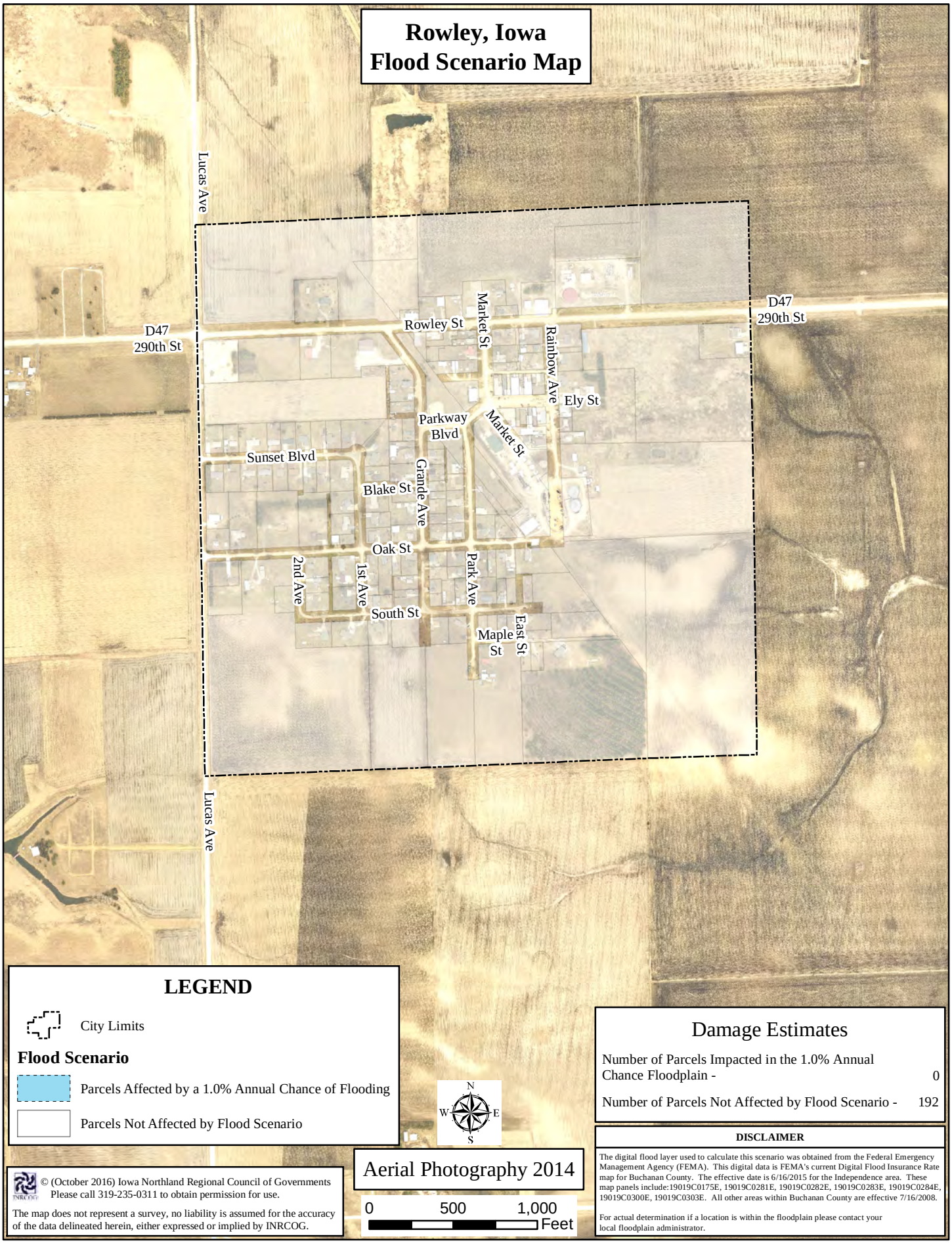
The map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.
Aerial Photography 2014
LEGEND
City Limits
Flood Zone
1.0% Annual Chance of Flooding
0 500 1,000
Feet
N
W
E
S


Rowley, Iowa
Flood Scenario Map
Lucas Ave
D47
290th St
Rowley St
Market St
Rainbow Ave
Ely St
Parkway
Blvd
Sunset Blvd
Blake St
Grande Ave
Oak St
2nd Ave
1st Ave
Park Ave
South St
Maple
St
East St
LEGEND
City Limits
Flood Scenario
Parcels Affected by a 1.0% Annual Chance of Flooding
Parcels Not Affected by Flood Scenario
N
W
E
S
Aerial Photography 2014
0
500
1,000
Feet
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 0
Number of Parcels Not Affected by Flood Scenario - 192
DISCLAIMER
The digital flood layer used to calculate this scenario was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
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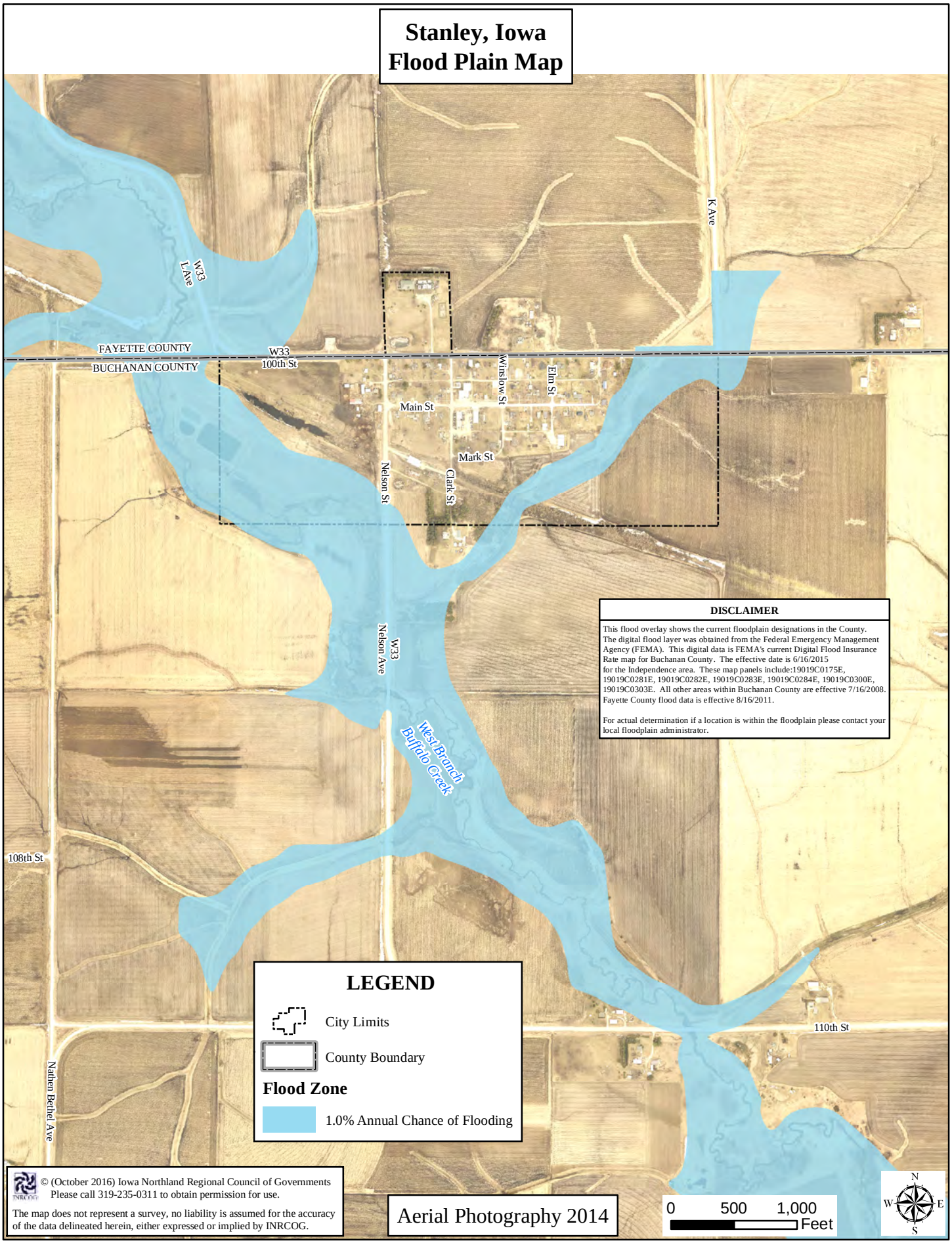
Stanley, Iowa
Flood Plain Map
K Ave
W33
L Ave
FAYETTE COUNTY
BUCHANAN COUNTY
W33
100th St
Winslow St
Elm St
Main St
Mark St
Nelson St
Clark St
W33
Nelson Ave
West Branch
Buffalo Creek
108th St
110th St
Nathen Bethel Ave
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008. Fayette County flood data is effective 8/16/2011.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
LEGEND
City Limits
County Boundary
Flood Zone
1.0% Annual Chance of Flooding
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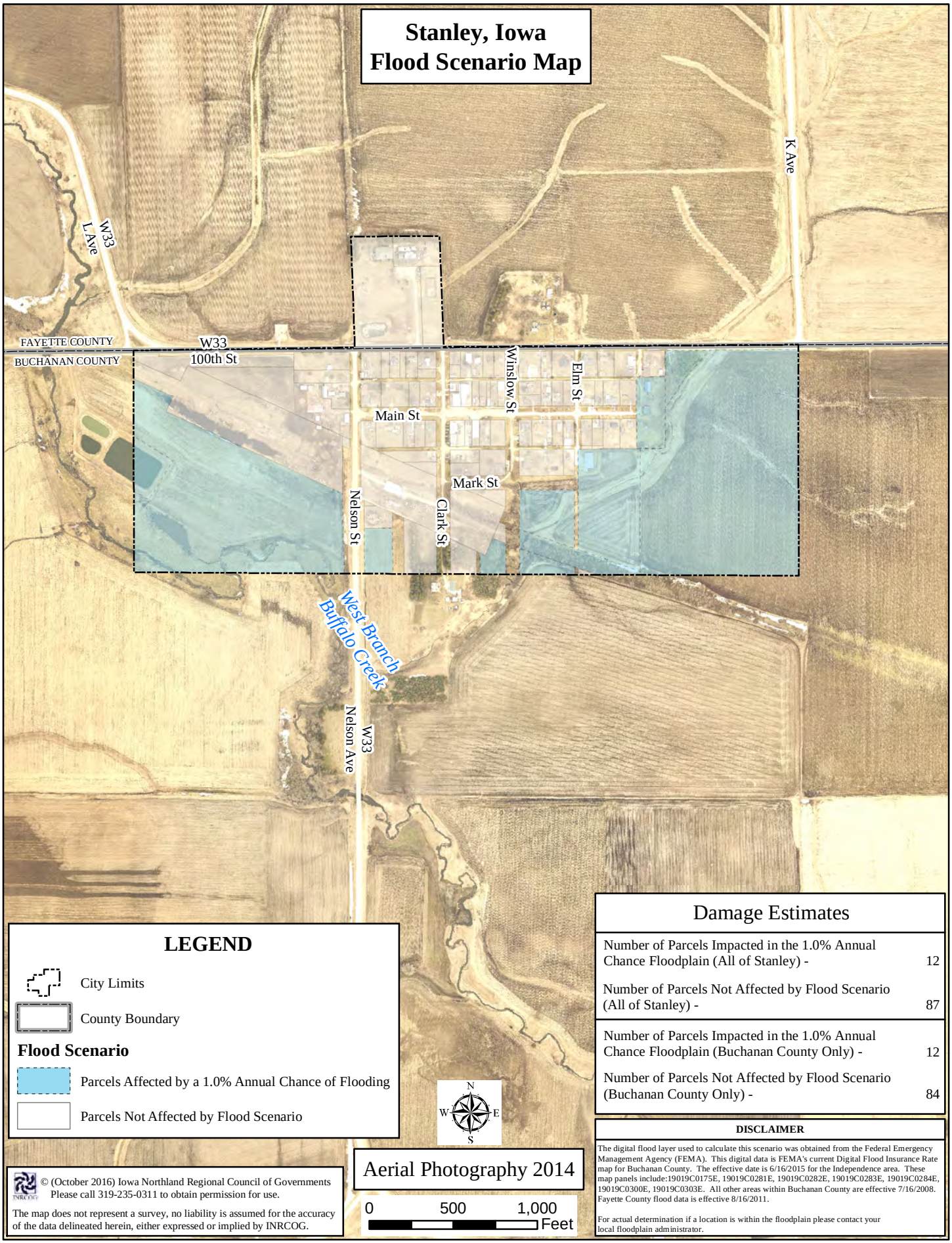
Please call 319-235-0311 to obtain permission for use.
The map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.
Aerial Photography 2014
0 500 1,000
Feet
N
W
E
S



LEGEND

- City Limits
- County Boundary

Flood Scenario

- Parcels Affected by a 1.0% Annual Chance of Flooding
- Parcels Not Affected by Flood Scenario

Damage Estimates

Number of Parcels Impacted in the 1.0% Annual Chance Floodplain (All of Stanley) -	12
Number of Parcels Not Affected by Flood Scenario (All of Stanley) -	87
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain (Buchanan County Only) -	12
Number of Parcels Not Affected by Flood Scenario (Buchanan County Only) -	84

DISCLAIMER

The digital flood layer used to calculate this scenario was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008. Fayette County flood data is effective 8/16/2011.

For actual determination if a location is within the floodplain please contact your local floodplain administrator.

Aerial Photography 2014

0 500 1,000 Feet

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Winthrop, Iowa
Flood Plain Map
210th St
Roberts Ave
Slater Ave
W45
Kennedy St
5th St
4th St
3rd St
2nd St
1st St
Hamilton St
Jackson St
6th St
Far East St
Monroe St
7th St
Madison St
North St
Adams St
Jefferson St
Washington St
8th St
7th St
6th St
5th St
4th St
3rd St
2nd St
1st St
Easy St
D22 and W45
220th St
220th St
D22
D22
220th St
Truman St
2nd St
Easy St
Ryan Ave
Racine Ave
W40
20
Ryan Ave
LEGEND
City Limits
Flood Zone
1.0% Annual Chance of Flooding
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
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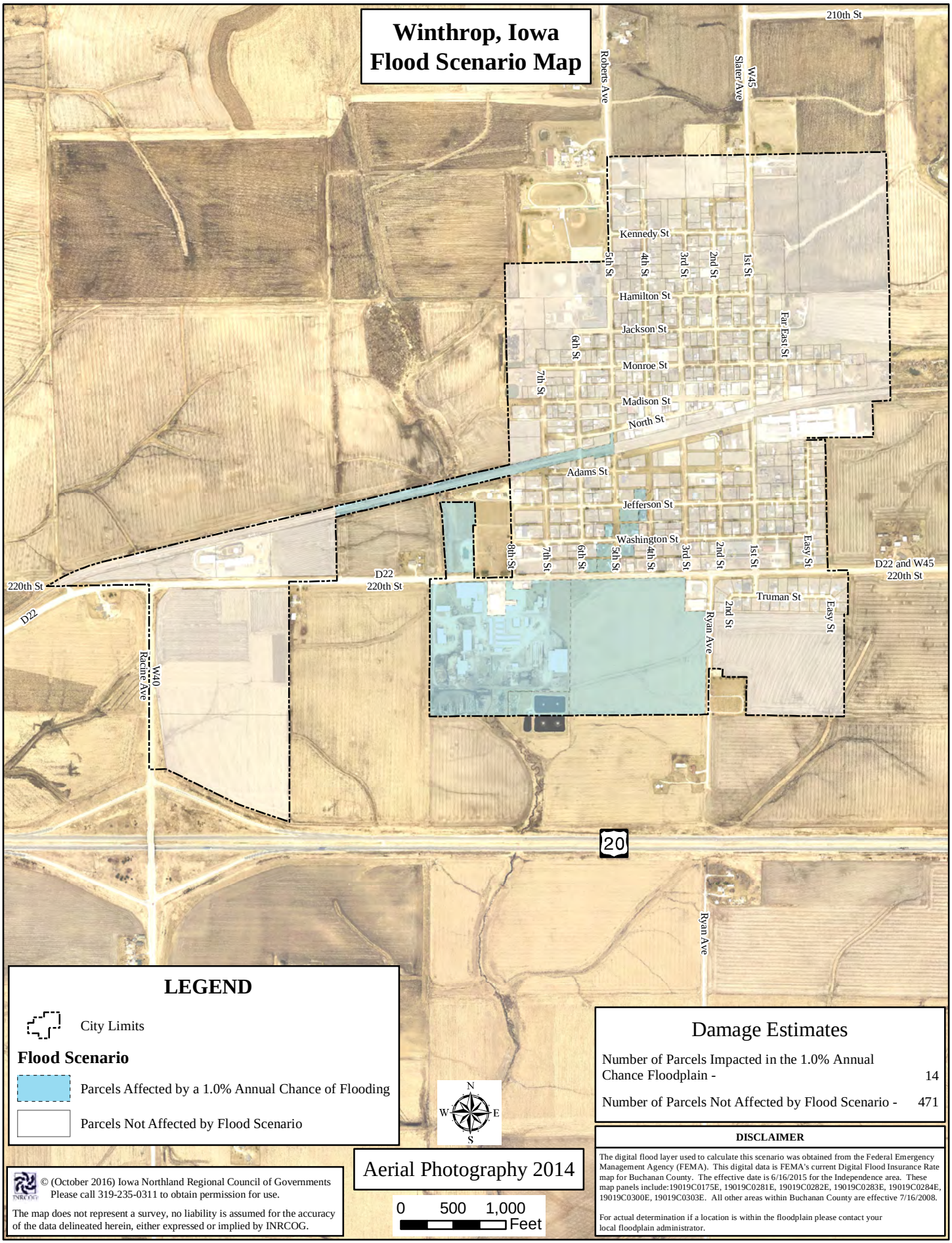
Aerial Photography 2014
0 500 1,000
Feet
N
W
E
S


Winthrop, Iowa
Flood Scenario Map
210th St
Roberts Ave
Slater Ave
W45
Kennedy St
5th St
4th St
3rd St
2nd St
1st St
Hamilton St
Jackson St
6th St
Far East St
Monroe St
7th St
Madison St
North St
Adams St
Jefferson St
Washington St
8th St
7th St
6th St
5th St
4th St
3rd St
2nd St
1st St
Easy St
D22 and W45
220th St
220th St
D22
D22
220th St
Truman St
2nd St
Easy St
Ryan Ave
Racine Ave
W40
20
Ryan Ave
LEGEND
City Limits
Flood Scenario
Parcels Affected by a 1.0% Annual Chance of Flooding
Parcels Not Affected by Flood Scenario
N
W
E
S
Aerial Photography 2014
0 500 1,000
Feet
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 14
Number of Parcels Not Affected by Flood Scenario - 471
DISCLAIMER
The digital flood layer used to calculate this scenario was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Buchanan County. The effective date is 6/16/2015 for the Independence area. These map panels include:19019C0175E, 19019C0281E, 19019C0282E, 19019C0283E, 19019C0284E, 19019C0300E, 19019C0303E. All other areas within Buchanan County are effective 7/16/2008.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
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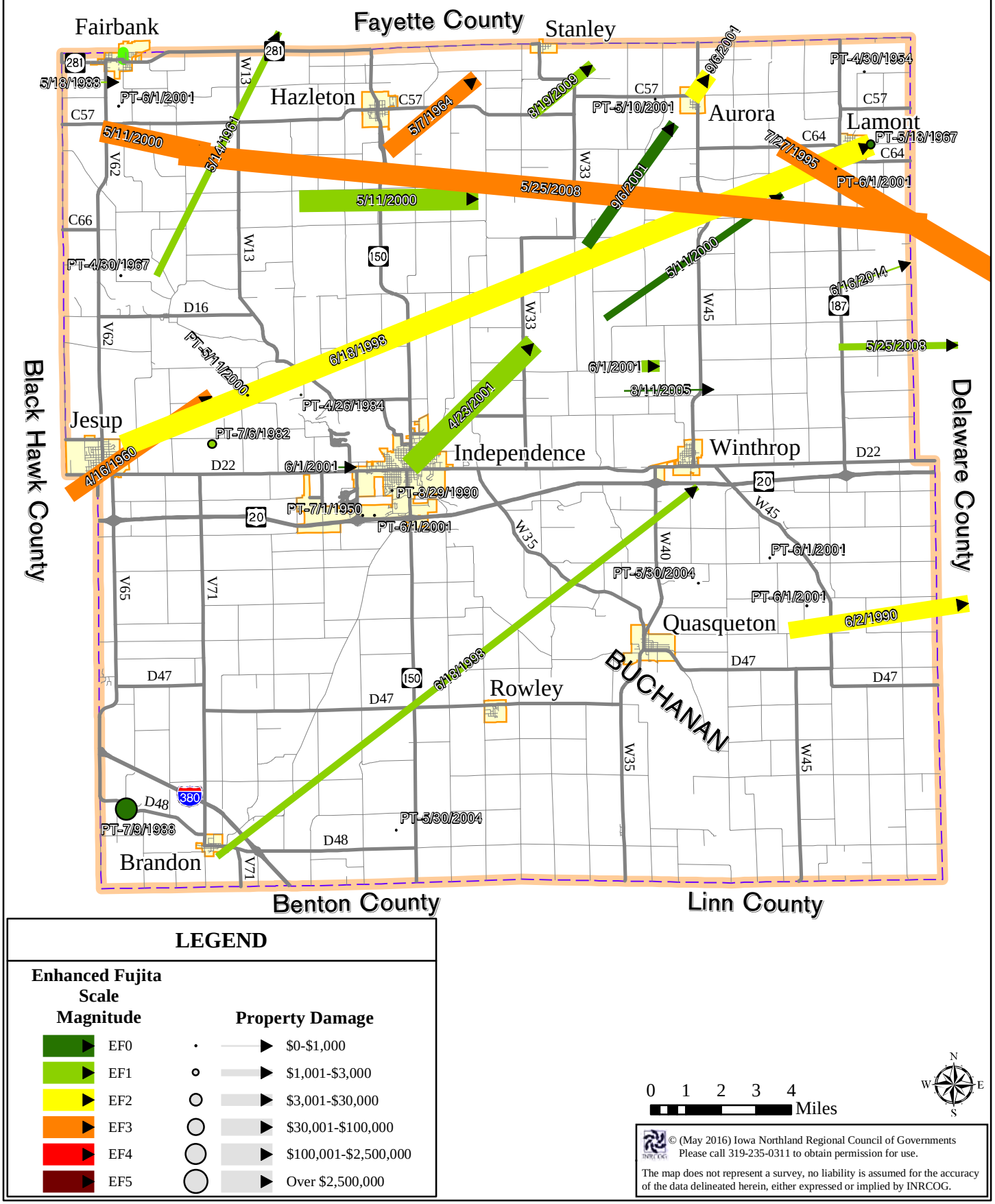
Buchanan County, Iowa Historic Tornado Map



LEGEND

Enhanced Fujita Scale Magnitude	Property Damage
EF0	$0-$1,000
EF1	$1,001-$3,000
EF2	$3,001-$30,000
EF3	$30,001-$100,000
EF4	$100,001-$2,500,000
EF5	Over $2,500,000

0 1 2 3 4 Miles

N W E S

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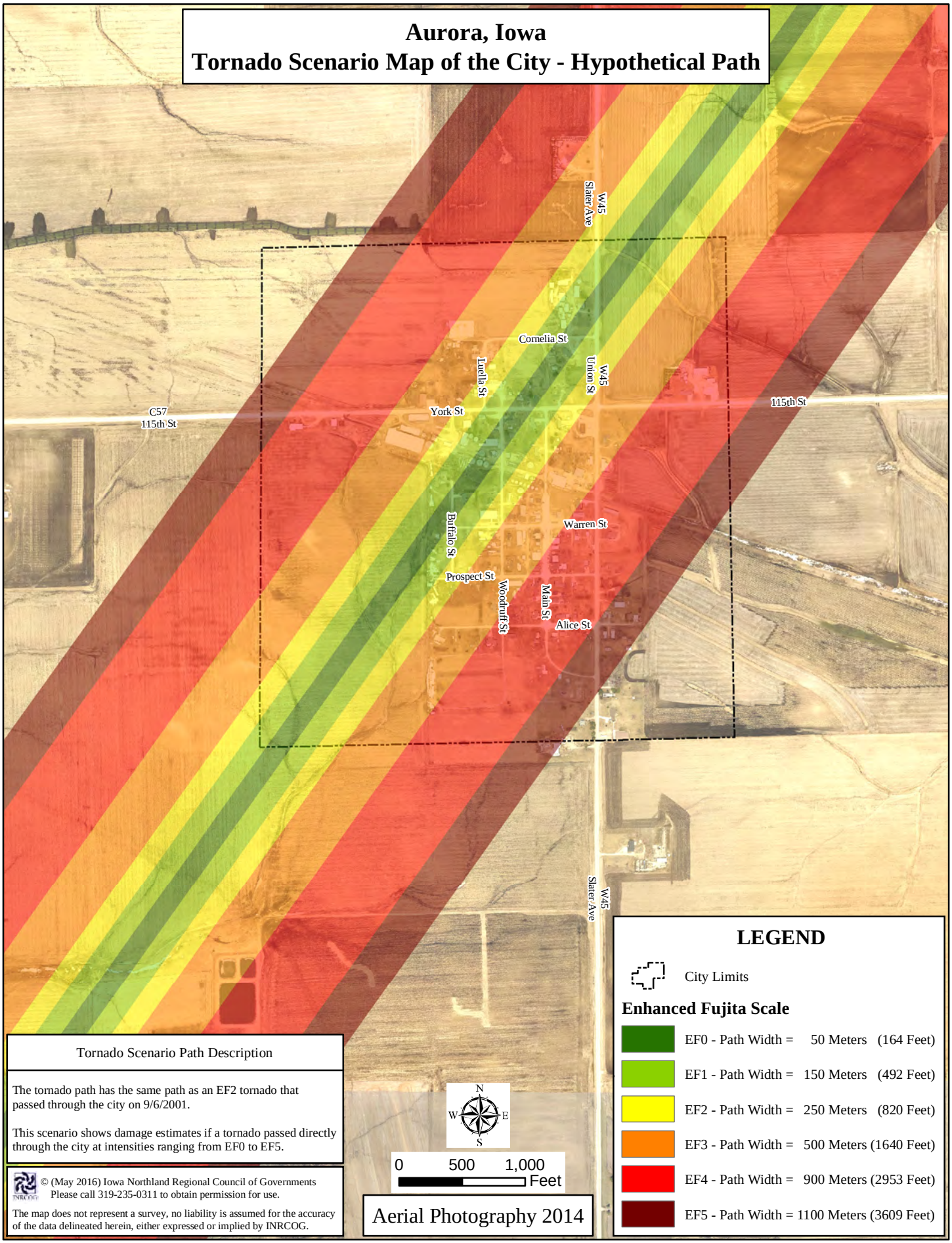

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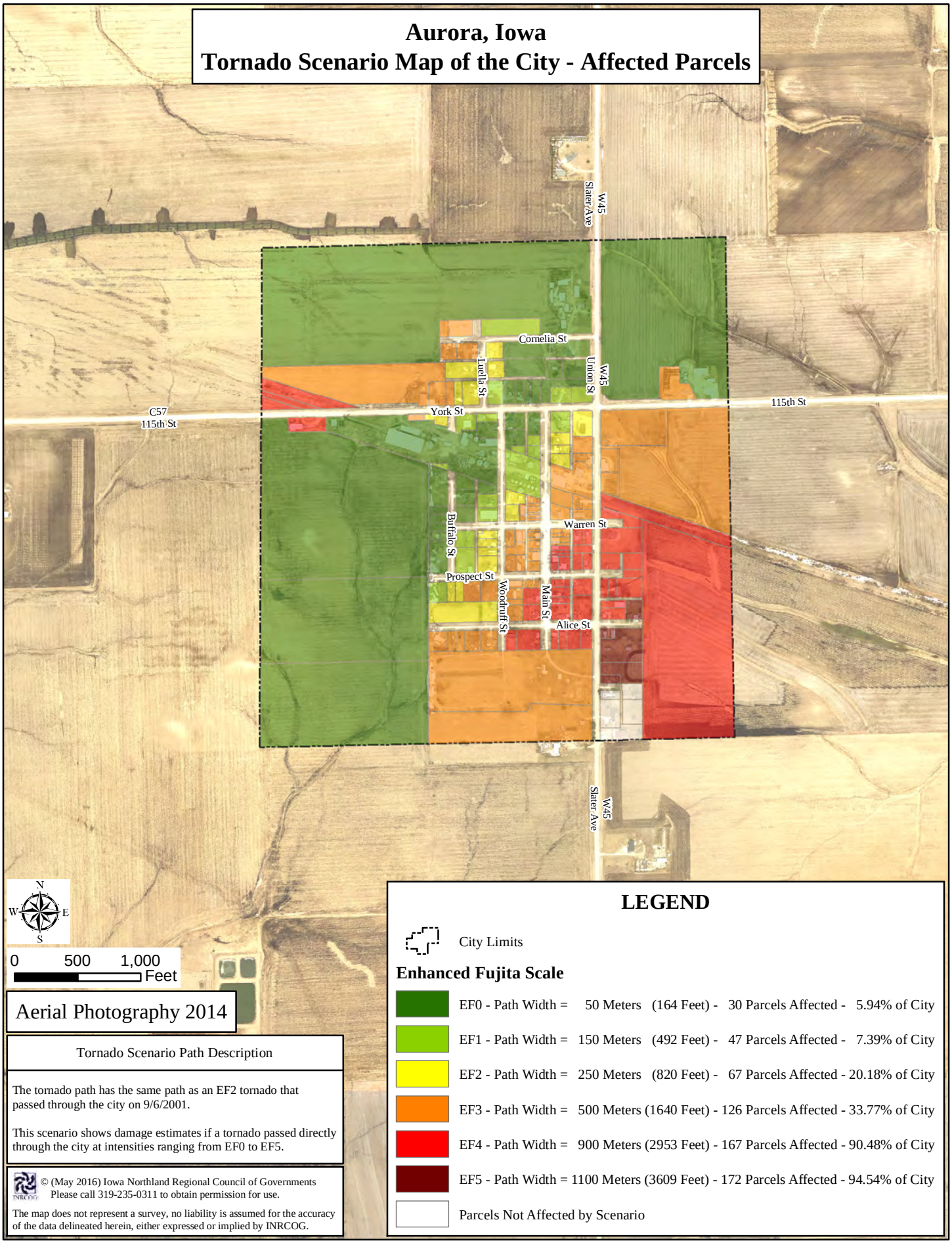
Aurora, Iowa
Tornado Scenario Map of the City - Affected Parcels



Aerial Photography 2014

LEGEND

City Limits

Enhanced Fujita Scale

- EF0 - Path Width = 50 Meters (164 Feet) - 30 Parcels Affected - 5.94% of City
- EF1 - Path Width = 150 Meters (492 Feet) - 47 Parcels Affected - 7.39% of City
- EF2 - Path Width = 250 Meters (820 Feet) - 67 Parcels Affected - 20.18% of City
- EF3 - Path Width = 500 Meters (1640 Feet) - 126 Parcels Affected - 33.77% of City
- EF4 - Path Width = 900 Meters (2953 Feet) - 167 Parcels Affected - 90.48% of City
- EF5 - Path Width = 1100 Meters (3609 Feet) - 172 Parcels Affected - 94.54% of City

Parcels Not Affected by Scenario

Tornado Scenario Path Description

The tornado path has the same path as an EF2 tornado that passed through the city on 9/6/2001.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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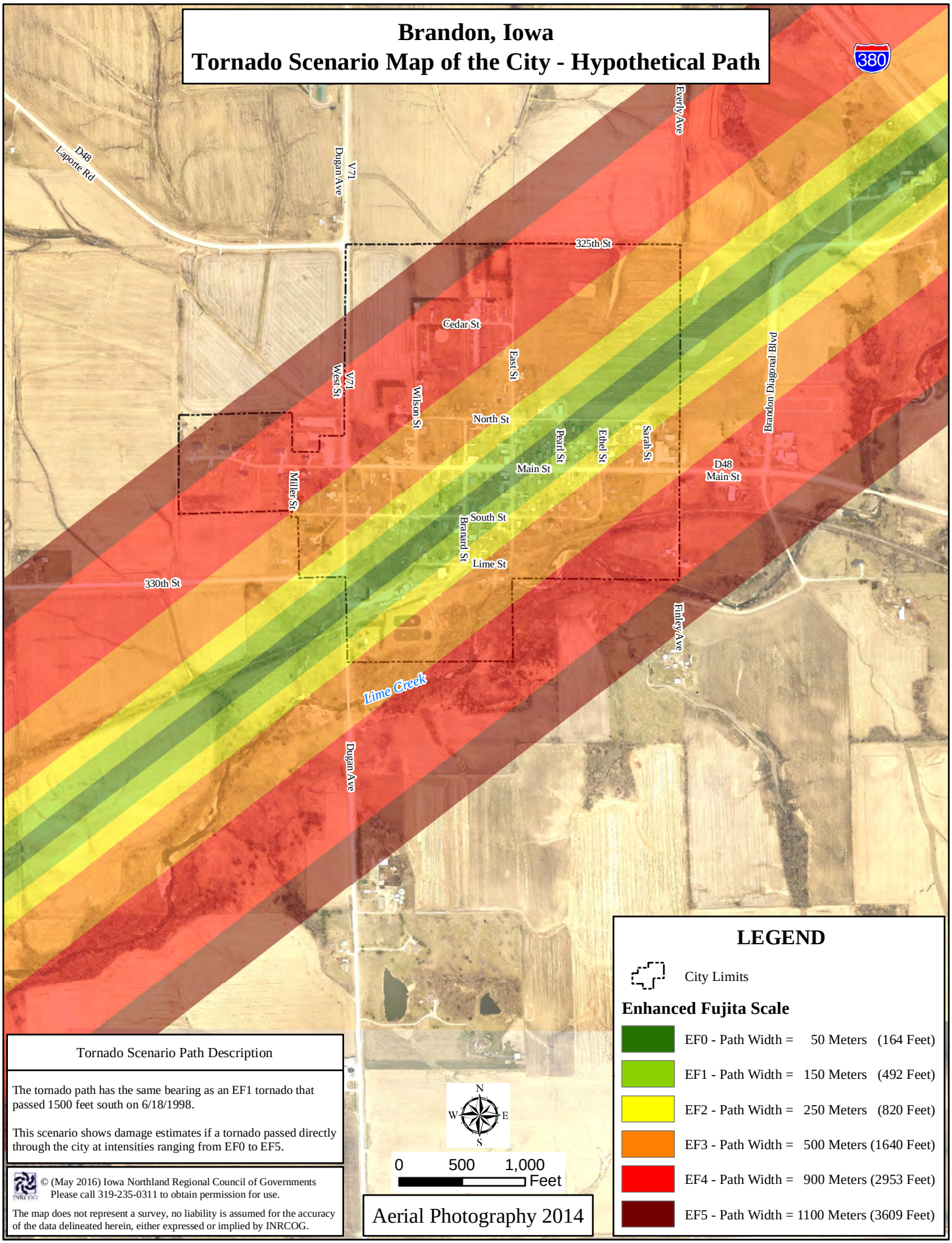

Tornado Scenario Path Description

The tornado path has the same bearing as an EF1 tornado that passed 1500 feet south on 6/18/1998.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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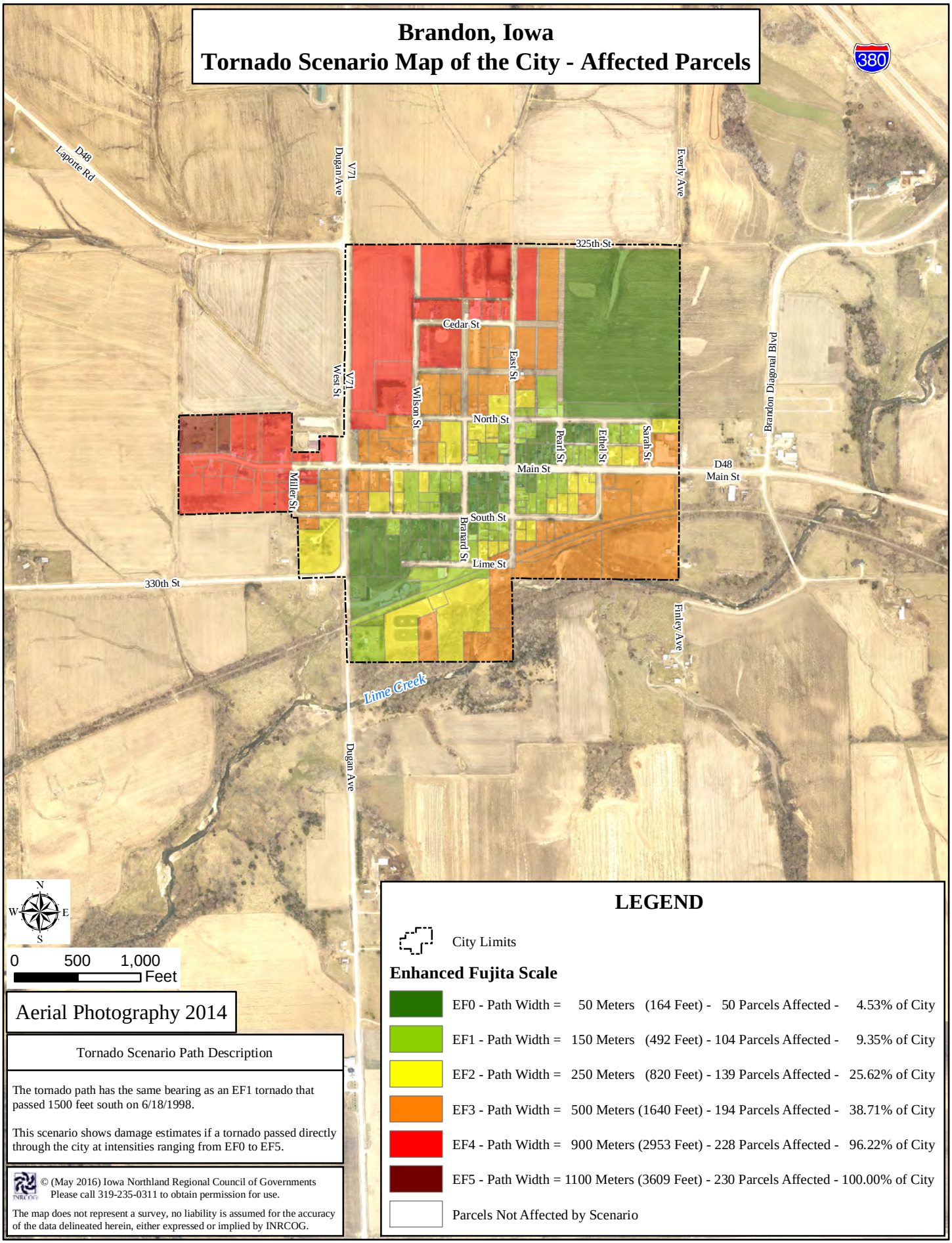
The map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.

Brandon, Iowa
Tornado Scenario Map of the City - Affected Parcels



Aerial Photography 2014

Tornado Scenario Path Description

The tornado path has the same bearing as an EF1 tornado that passed 1500 feet south on 6/18/1998.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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LEGEND

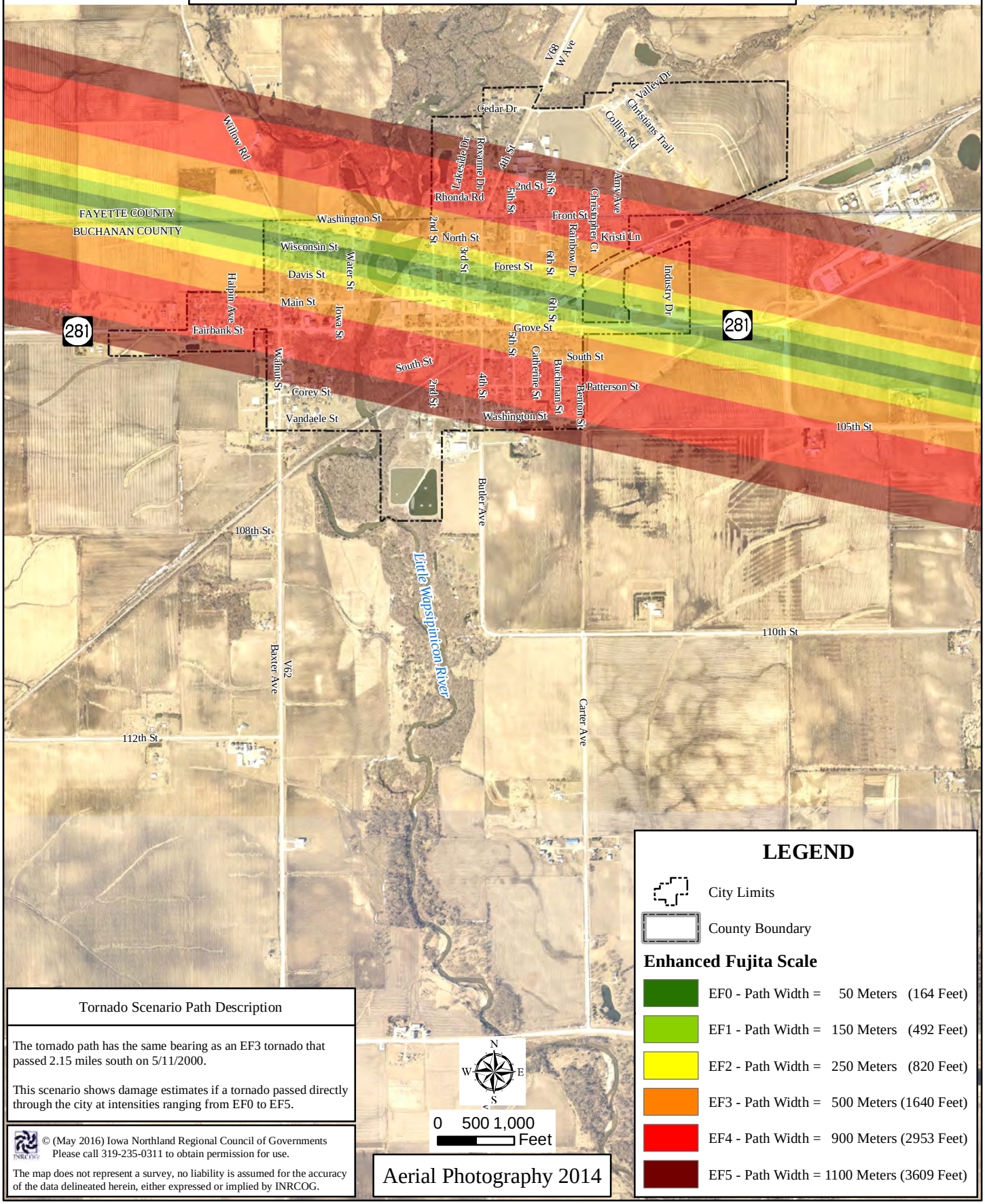
City Limits

Enhanced Fujita Scale

EF0 - Path Width =	50 Meters	(164 Feet) -	50 Parcels Affected -	4.53% of City
EF1 - Path Width =	150 Meters	(492 Feet) -	104 Parcels Affected -	9.35% of City
EF2 - Path Width =	250 Meters	(820 Feet) -	139 Parcels Affected -	25.62% of City
EF3 - Path Width =	500 Meters	(1640 Feet) -	194 Parcels Affected -	38.71% of City
EF4 - Path Width =	900 Meters	(2953 Feet) -	228 Parcels Affected -	96.22% of City
EF5 - Path Width =	1100 Meters	(3609 Feet) -	230 Parcels Affected -	100.00% of City

Parcels Not Affected by Scenario

Fairbank, Iowa
Tornado Scenario Map of the City - Hypothetical Path



LEGEND

City Limits

County Boundary

Enhanced Fujita Scale

- EF0 - Path Width = 50 Meters (164 Feet)
- EF1 - Path Width = 150 Meters (492 Feet)
- EF2 - Path Width = 250 Meters (820 Feet)
- EF3 - Path Width = 500 Meters (1640 Feet)
- EF4 - Path Width = 900 Meters (2953 Feet)
- EF5 - Path Width = 1100 Meters (3609 Feet)

Tornado Scenario Path Description

The tornado path has the same bearing as an EF3 tornado that passed 2.15 miles south on 5/11/2000.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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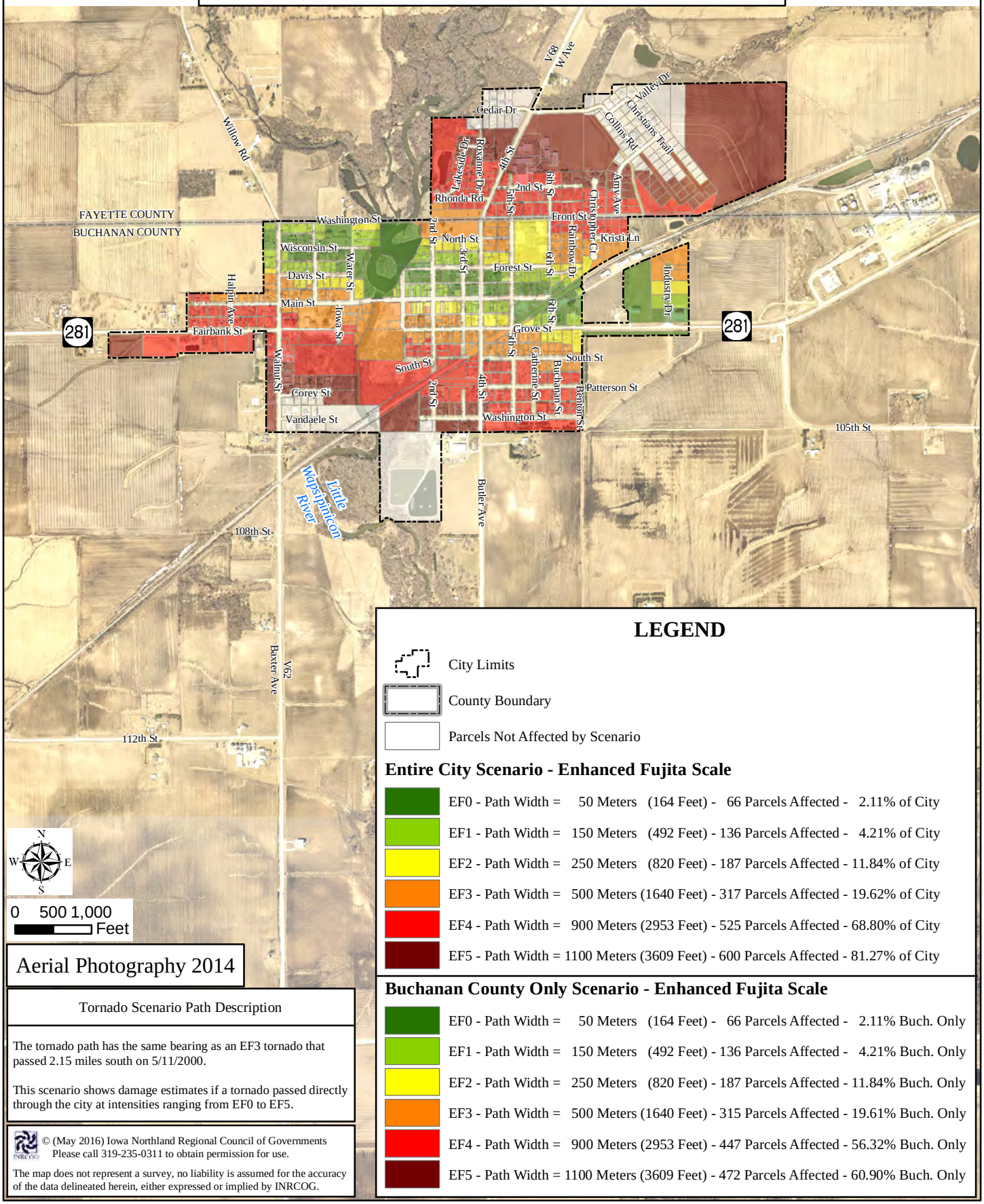
Aerial Photography 2014

Fairbank, Iowa
Tornado Scenario Map of the City - Affected Parcels



Aerial Photography 2014

LEGEND

City Limits

County Boundary

Parcels Not Affected by Scenario

Entire City Scenario - Enhanced Fujita Scale

EF0 - Path Width = 50 Meters (164 Feet) - 66 Parcels Affected - 2.11% of City

EF1 - Path Width = 150 Meters (492 Feet) - 136 Parcels Affected - 4.21% of City

EF2 - Path Width = 250 Meters (820 Feet) - 187 Parcels Affected - 11.84% of City

EF3 - Path Width = 500 Meters (1640 Feet) - 317 Parcels Affected - 19.62% of City

EF4 - Path Width = 900 Meters (2953 Feet) - 525 Parcels Affected - 68.80% of City

EF5 - Path Width = 1100 Meters (3609 Feet) - 600 Parcels Affected - 81.27% of City

Buchanan County Only Scenario - Enhanced Fujita Scale

EF0 - Path Width = 50 Meters (164 Feet) - 66 Parcels Affected - 2.11% Buch. Only

EF1 - Path Width = 150 Meters (492 Feet) - 136 Parcels Affected - 4.21% Buch. Only

EF2 - Path Width = 250 Meters (820 Feet) - 187 Parcels Affected - 11.84% Buch. Only

EF3 - Path Width = 500 Meters (1640 Feet) - 315 Parcels Affected - 19.61% Buch. Only

EF4 - Path Width = 900 Meters (2953 Feet) - 447 Parcels Affected - 56.32% Buch. Only

EF5 - Path Width = 1100 Meters (3609 Feet) - 472 Parcels Affected - 60.90% Buch. Only

Tornado Scenario Path Description

The tornado path has the same bearing as an EF3 tornado that passed 2.15 miles south on 5/11/2000.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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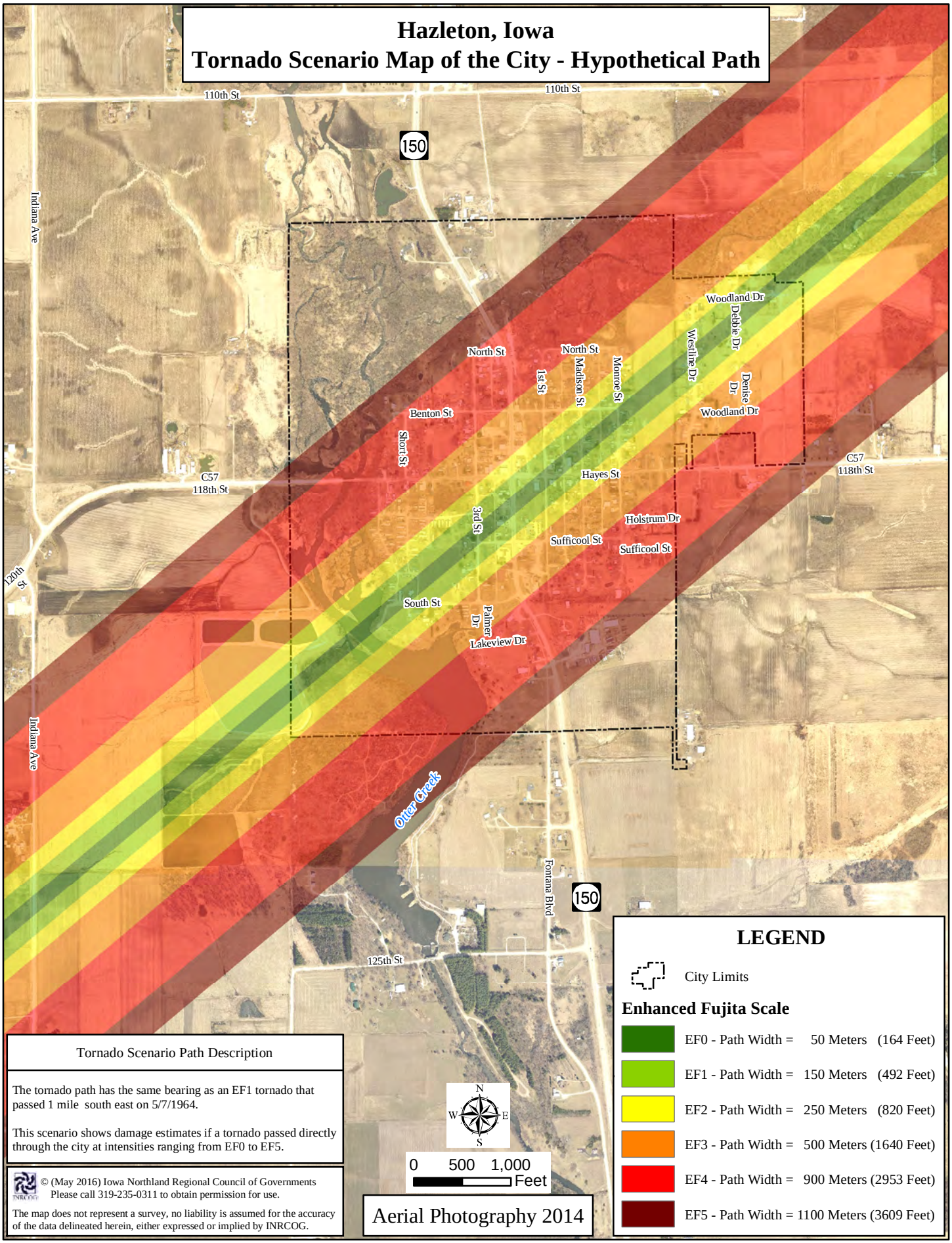

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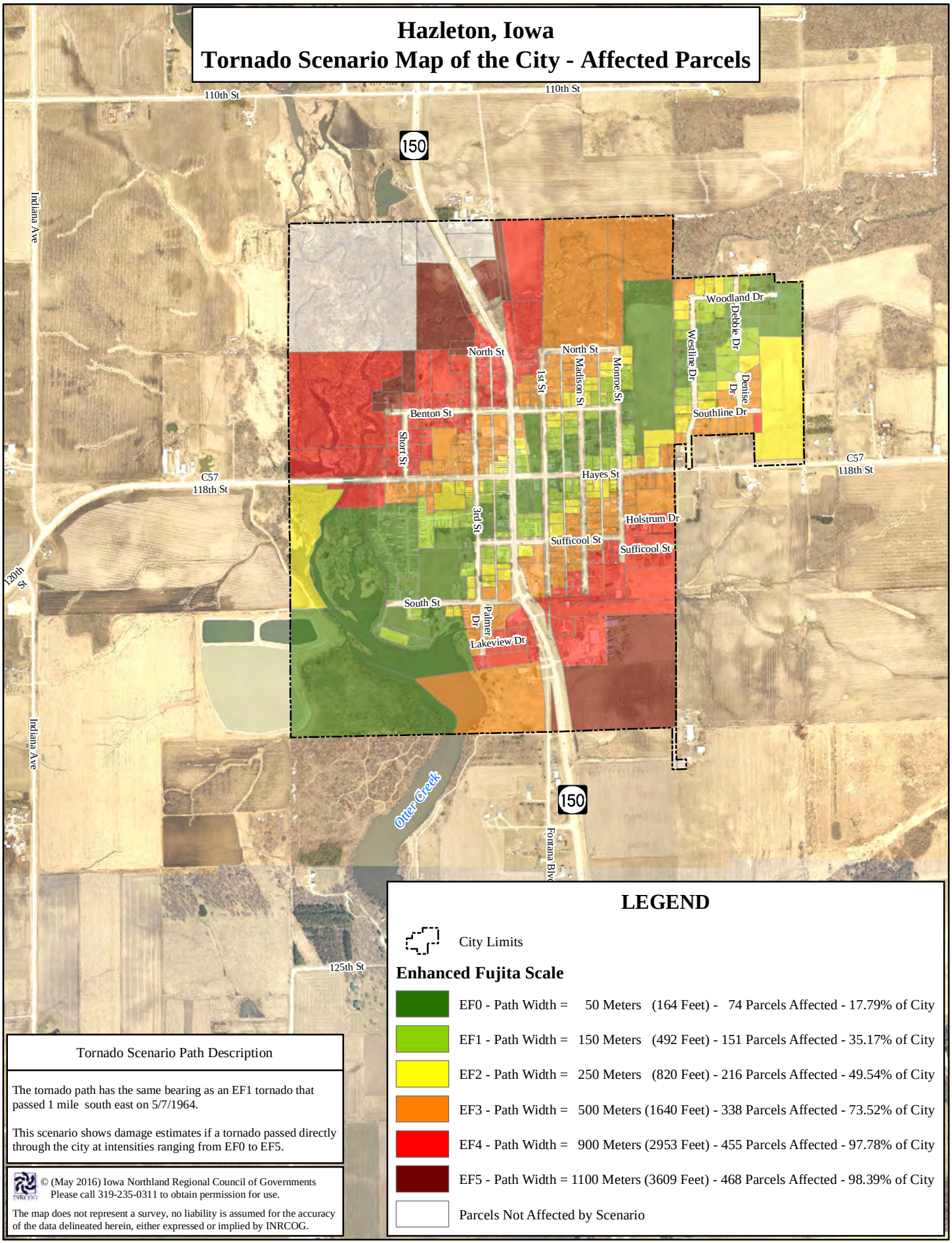
Hazleton, Iowa
Tornado Scenario Map of the City - Affected Parcels



LEGEND

City Limits

Enhanced Fujita Scale

- EF0 - Path Width = 50 Meters (164 Feet) - 74 Parcels Affected - 17.79% of City
- EF1 - Path Width = 150 Meters (492 Feet) - 151 Parcels Affected - 35.17% of City
- EF2 - Path Width = 250 Meters (820 Feet) - 216 Parcels Affected - 49.54% of City
- EF3 - Path Width = 500 Meters (1640 Feet) - 338 Parcels Affected - 73.52% of City
- EF4 - Path Width = 900 Meters (2953 Feet) - 455 Parcels Affected - 97.78% of City
- EF5 - Path Width = 1100 Meters (3609 Feet) - 468 Parcels Affected - 98.39% of City
- Parcels Not Affected by Scenario

Tornado Scenario Path Description

The tornado path has the same bearing as an EF1 tornado that passed 1 mile south east on 5/7/1964.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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Independence, Iowa
Tornado Scenario Map of the City - Hypothetical Path

LEGEND

City Limits

Enhanced Fujita Scale

- EF0 - Path Width = 50 Meters (164 Feet)
- EF1 - Path Width = 150 Meters (492 Feet)
- EF2 - Path Width = 250 Meters (820 Feet)
- EF3 - Path Width = 500 Meters (1640 Feet)
- EF4 - Path Width = 900 Meters (2953 Feet)
- EF5 - Path Width = 1100 Meters (3609 Feet)

Tornado Scenario Path Description

The tornado path has the same path as an EF1 tornado that passed through part of the city on 4/23/2001.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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Aerial Photography 2014

0 0.25 0.5 Miles

N W E S

Independence, Iowa
Tornado Scenario Map of the City - Affected Parcels

LEGEND

City Limits

Enhanced Fujita Scale

- EF0 - Path Width = 50 Meters (164 Feet) - 193 Parcels Affected - 1.51% of City
- EF1 - Path Width = 150 Meters (492 Feet) - 382 Parcels Affected - 2.80% of City
- EF2 - Path Width = 250 Meters (820 Feet) - 564 Parcels Affected - 8.07% of City
- EF3 - Path Width = 500 Meters (1640 Feet) - 975 Parcels Affected - 14.26% of City
- EF4 - Path Width = 900 Meters (2953 Feet) - 1591 Parcels Affected - 46.23% of City
- EF5 - Path Width = 1100 Meters (3609 Feet) - 1855 Parcels Affected - 53.18% of City
- Parcels Not Affected by Scenario

Tornado Scenario Path Description

The tornado path has the same path as an EF1 tornado that passed through part of the city on 4/23/2001.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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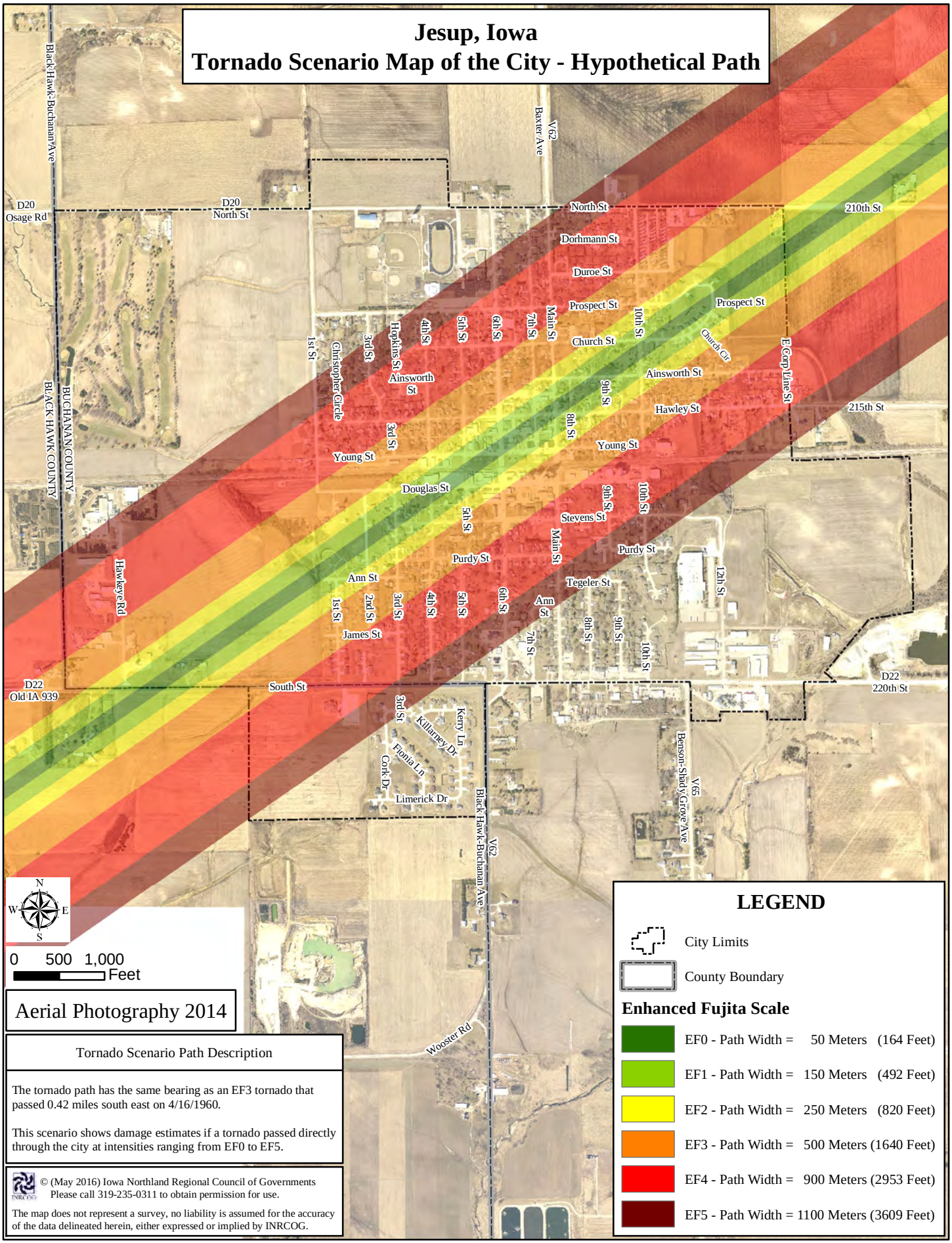
Aerial Photography 2014

0 0.25 0.5 Miles

N W E S

Jesup, Iowa
Tornado Scenario Map of the City - Hypothetical Path



Aerial Photography 2014

Tornado Scenario Path Description

The tornado path has the same bearing as an EF3 tornado that passed 0.42 miles south east on 4/16/1960.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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LEGEND

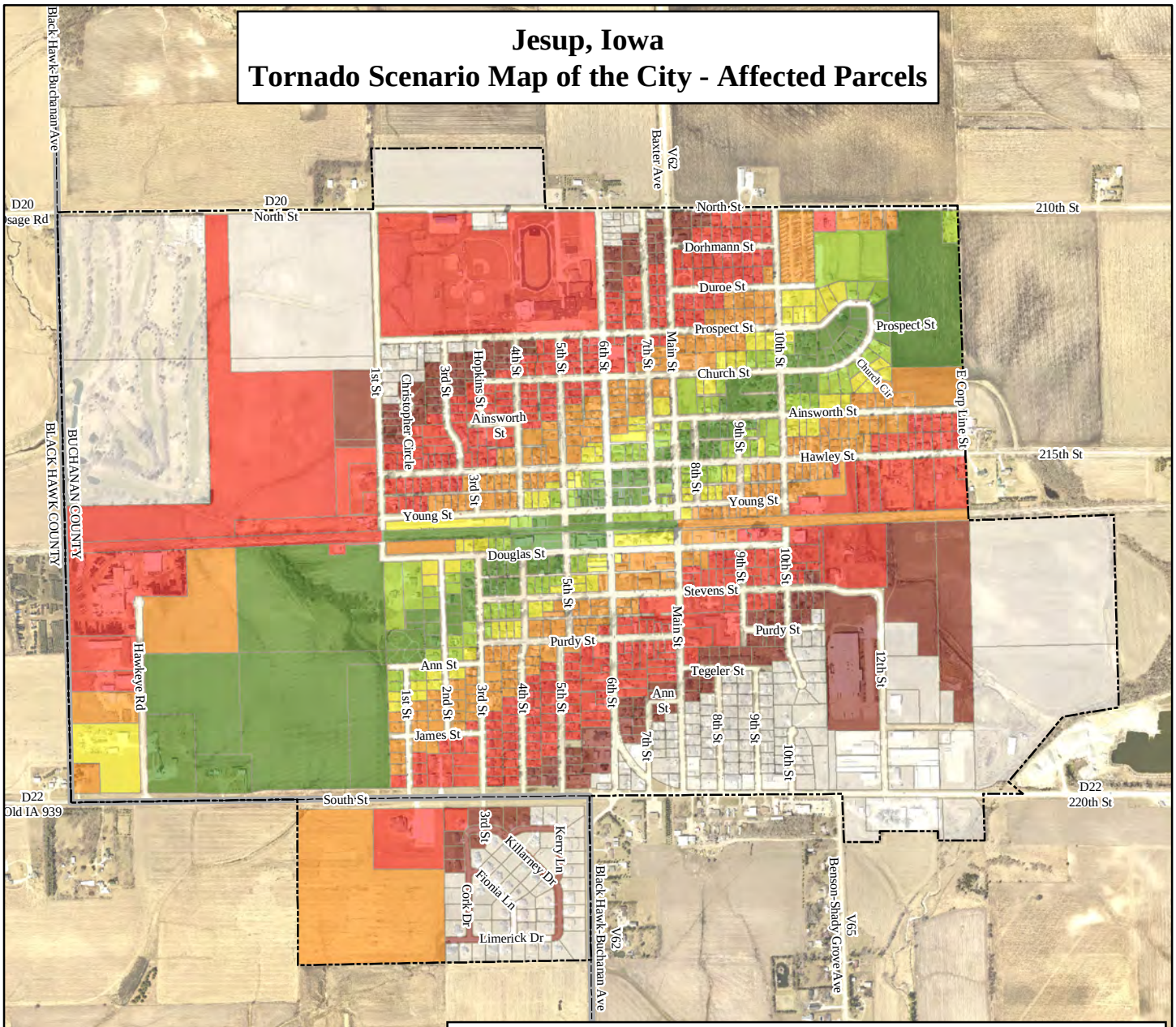
City Limits

County Boundary

Enhanced Fujita Scale

- EF0 - Path Width = 50 Meters (164 Feet)
- EF1 - Path Width = 150 Meters (492 Feet)
- EF2 - Path Width = 250 Meters (820 Feet)
- EF3 - Path Width = 500 Meters (1640 Feet)
- EF4 - Path Width = 900 Meters (2953 Feet)
- EF5 - Path Width = 1100 Meters (3609 Feet)

Jesup, Iowa
Tornado Scenario Map of the City - Affected Parcels



LEGEND

City Limits

County Boundary

Parcels Not Affected by Scenario

Entire City Scenario - Enhanced Fujita Scale

EF0 - Path Width =	50 Meters	(164 Feet) -	97 Parcels Affected -	1.32% of City
EF1 - Path Width =	150 Meters	(492 Feet) -	192 Parcels Affected -	3.12% of City
EF2 - Path Width =	250 Meters	(820 Feet) -	275 Parcels Affected -	9.58% of City
EF3 - Path Width =	500 Meters	(1640 Feet) -	503 Parcels Affected -	17.78% of City
EF4 - Path Width =	900 Meters	(2953 Feet) -	845 Parcels Affected -	65.99% of City
EF5 - Path Width =	1100 Meters	(3609 Feet) -	970 Parcels Affected -	79.15% of City

Buchanan County Only Scenario - Enhanced Fujita Scale

EF0 - Path Width =	50 Meters	(164 Feet) -	97 Parcels Affected -	1.32% Buch. Only
EF1 - Path Width =	150 Meters	(492 Feet) -	192 Parcels Affected -	3.12% Buch. Only
EF2 - Path Width =	250 Meters	(820 Feet) -	275 Parcels Affected -	9.58% Buch. Only
EF3 - Path Width =	500 Meters	(1640 Feet) -	502 Parcels Affected -	17.78% Buch. Only
EF4 - Path Width =	900 Meters	(2953 Feet) -	842 Parcels Affected -	64.34% Buch. Only
EF5 - Path Width =	1100 Meters	(3609 Feet) -	957 Parcels Affected -	76.36% Buch. Only

N W E S

0 500 1,000 Feet

Aerial Photography 2014

Tornado Scenario Path Description

The tornado path has the same bearing as an EF3 tornado that passed 0.42 miles south east on 4/16/1960.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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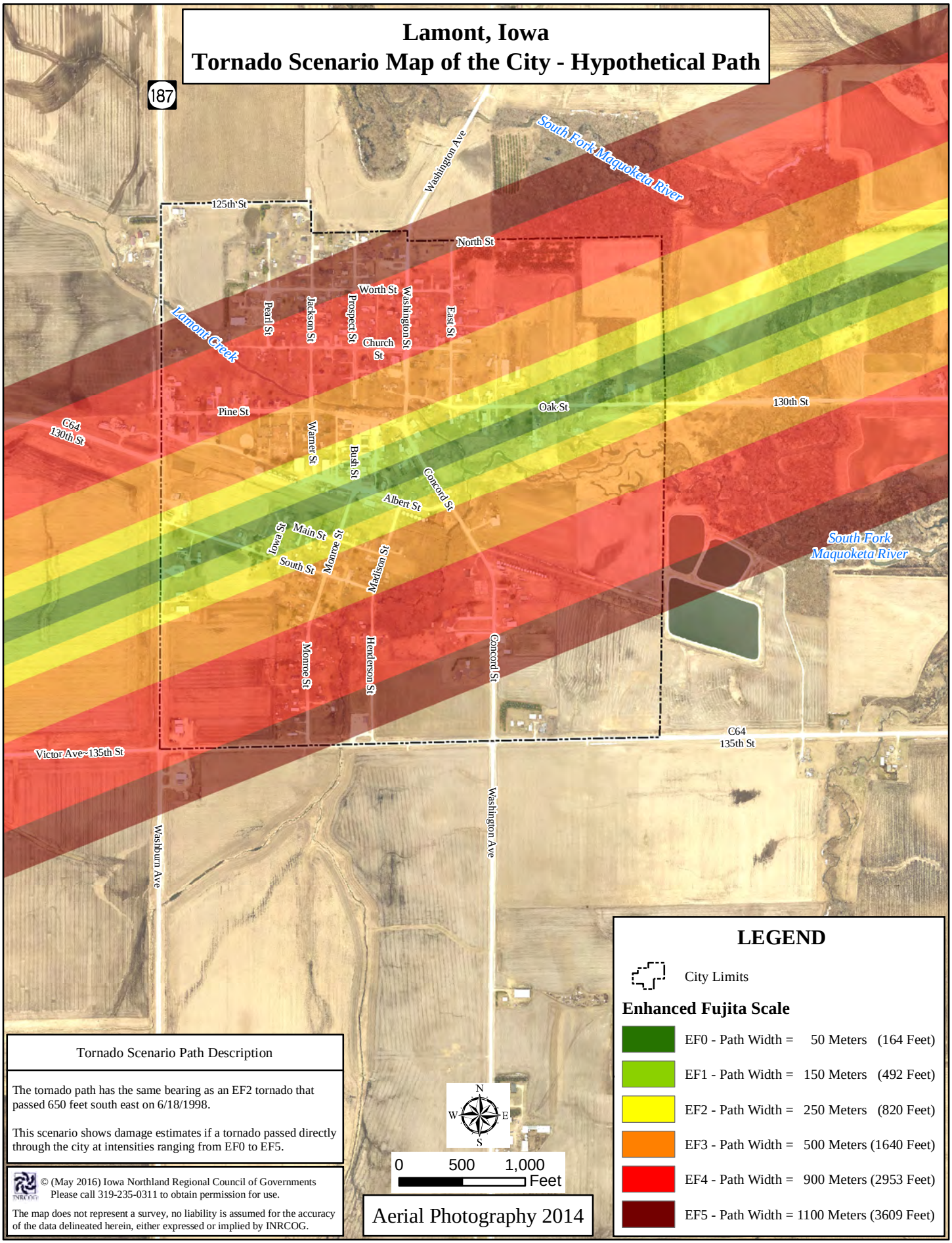

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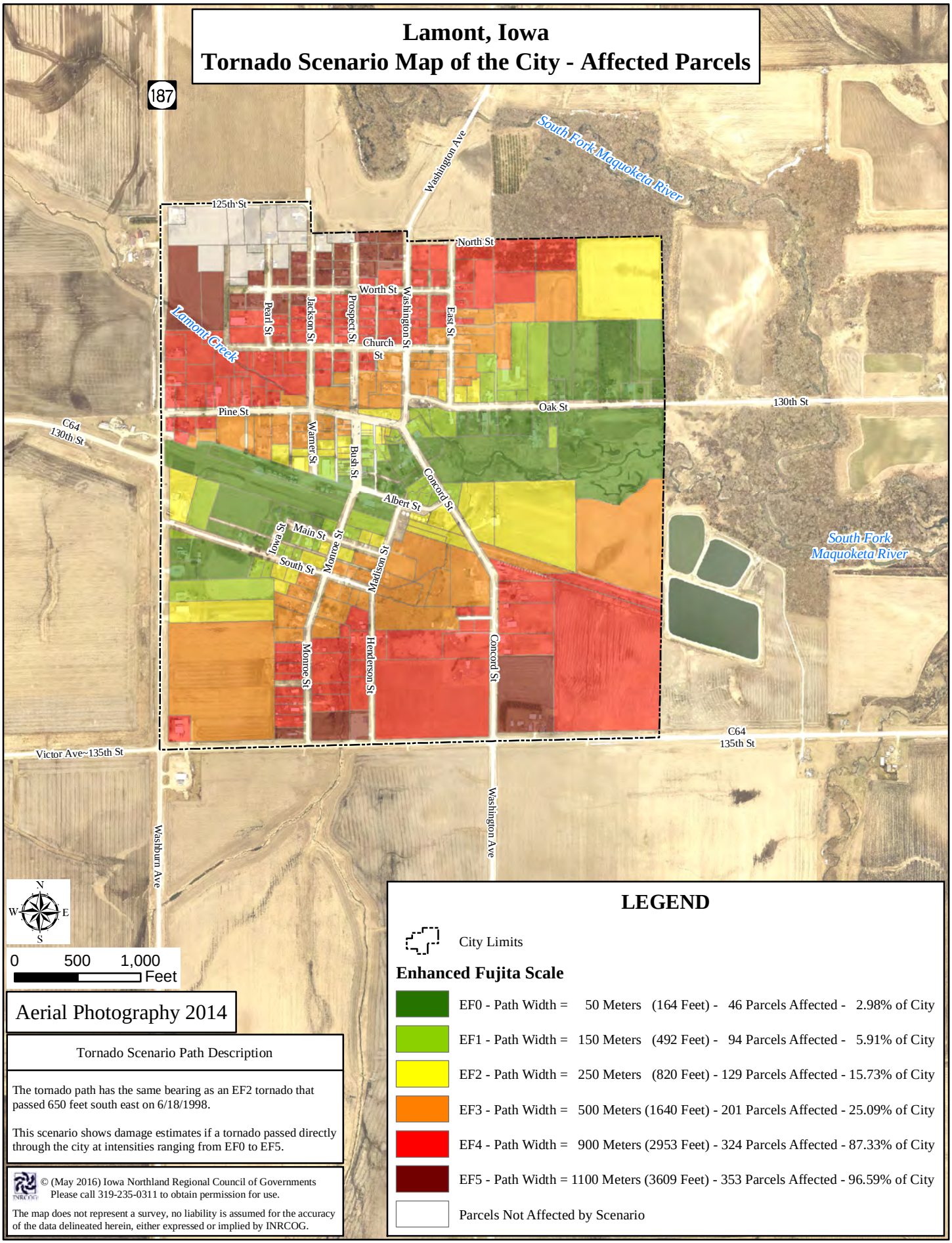
Lamont, Iowa
Tornado Scenario Map of the City - Affected Parcels
187
Washington Ave
South Fork Maquoketa River
125th St
North St
Worth St
Pearl St
Jackson St
Prospect St
Washington St
East St
Church St
Lamont Creek
Pine St
Oak St
130th St
C64
130th St
Warner St
Bush St
Concord St
Albert St
Iowa St
Main St
Monroe St
South St
Madison St
Monroe St
Henderson St
Concord St
South Fork
Maquoketa River
C64
135th St
Victor Ave~135th St
Washburn Ave
Washington Ave
N
W
E
S
0 500 1,000
Feet
Aerial Photography 2014
Tornado Scenario Path Description
The tornado path has the same bearing as an EF2 tornado that passed 650 feet south east on 6/18/1998.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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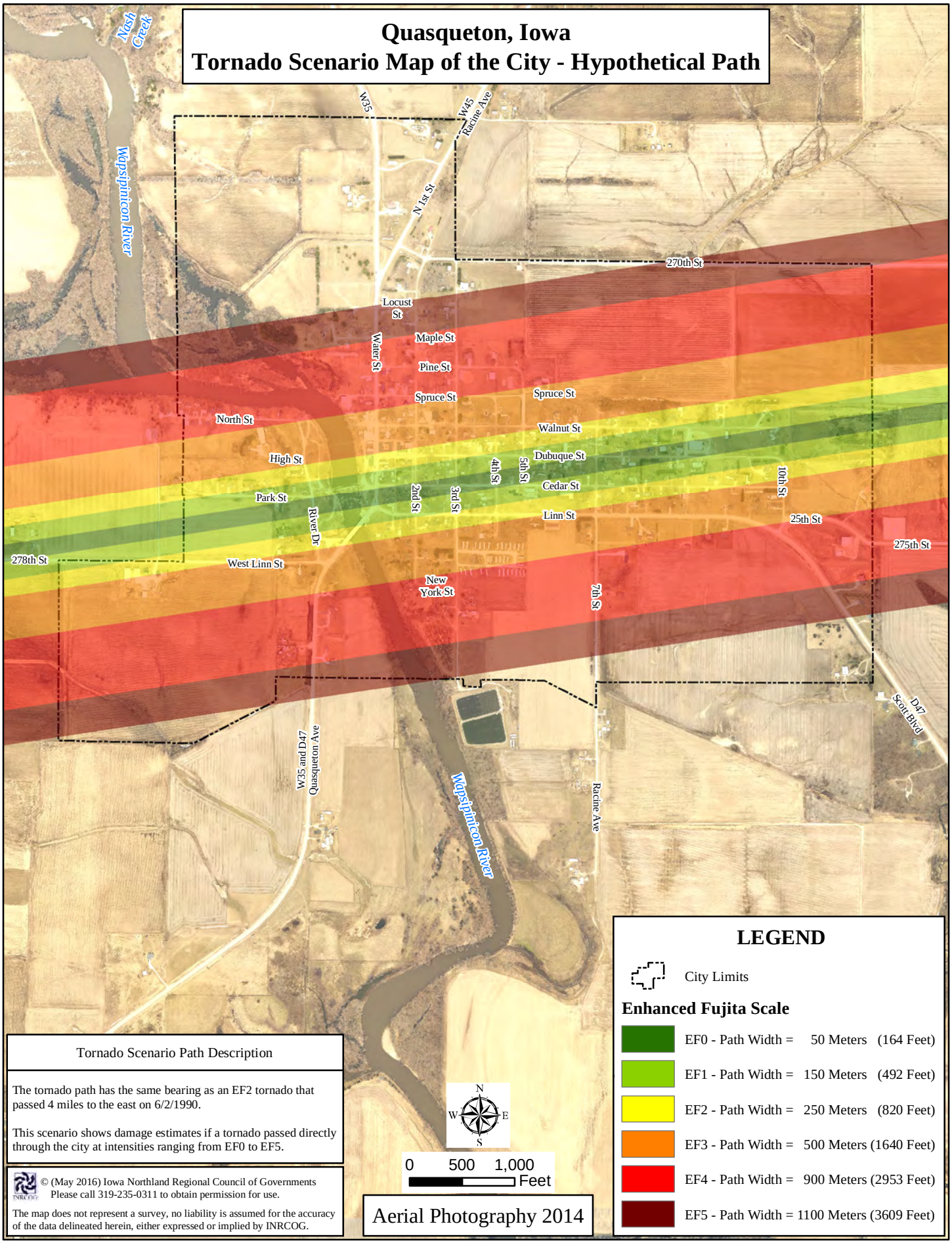
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet) - 46 Parcels Affected - 2.98% of City
EF1 - Path Width = 150 Meters (492 Feet) - 94 Parcels Affected - 5.91% of City
EF2 - Path Width = 250 Meters (820 Feet) - 129 Parcels Affected - 15.73% of City
EF3 - Path Width = 500 Meters (1640 Feet) - 201 Parcels Affected - 25.09% of City
EF4 - Path Width = 900 Meters (2953 Feet) - 324 Parcels Affected - 87.33% of City
EF5 - Path Width = 1100 Meters (3609 Feet) - 353 Parcels Affected - 96.59% of City
Parcels Not Affected by Scenario



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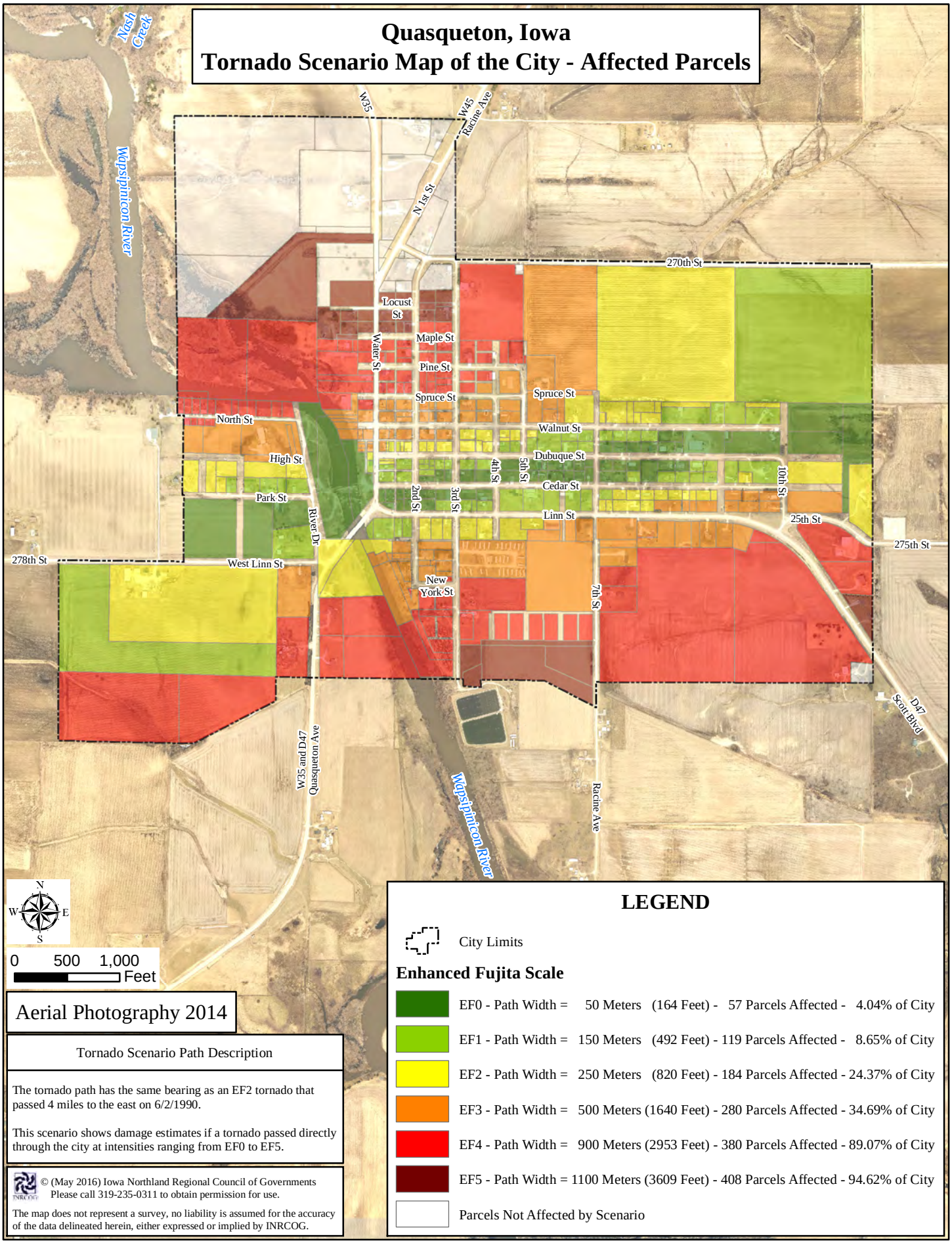

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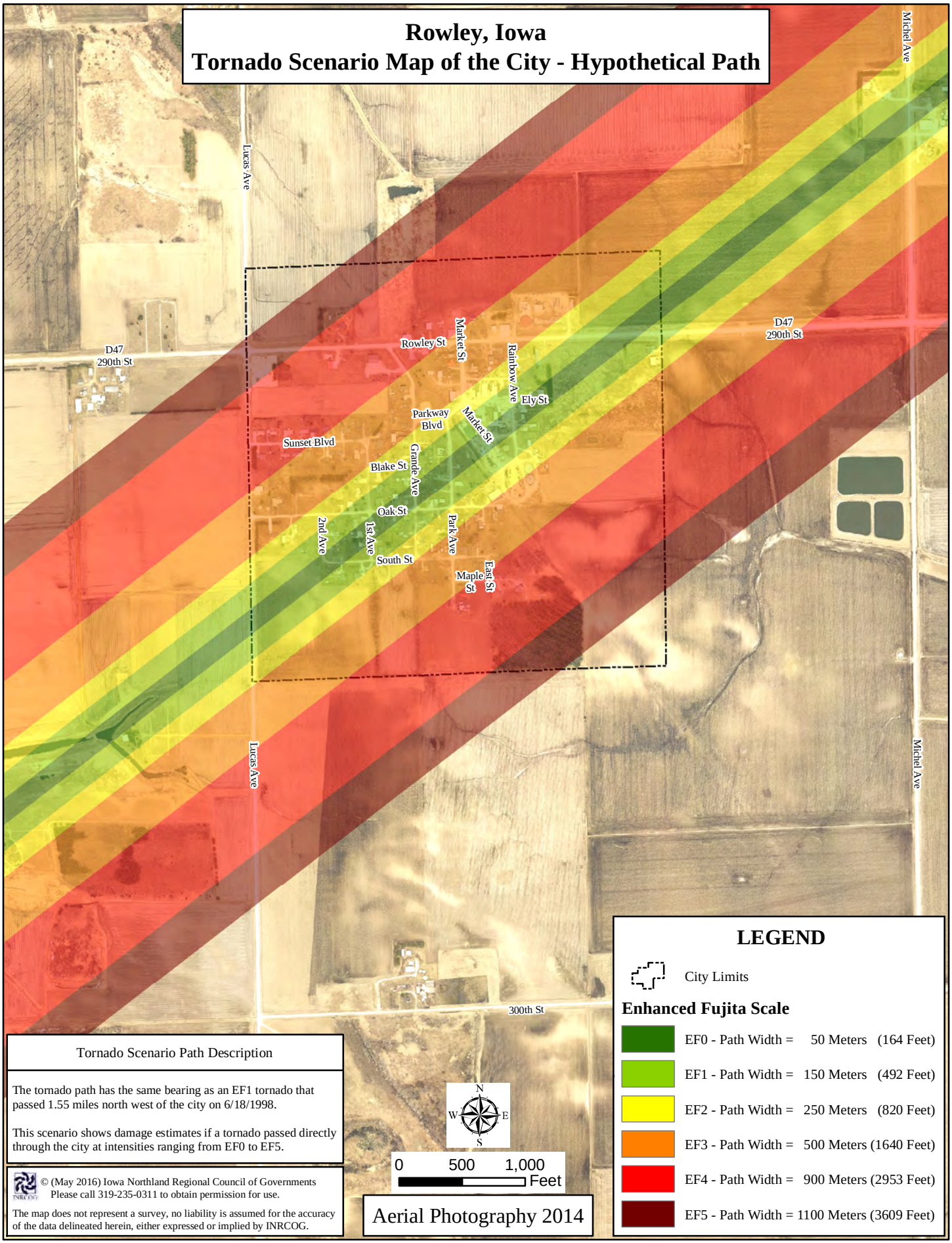

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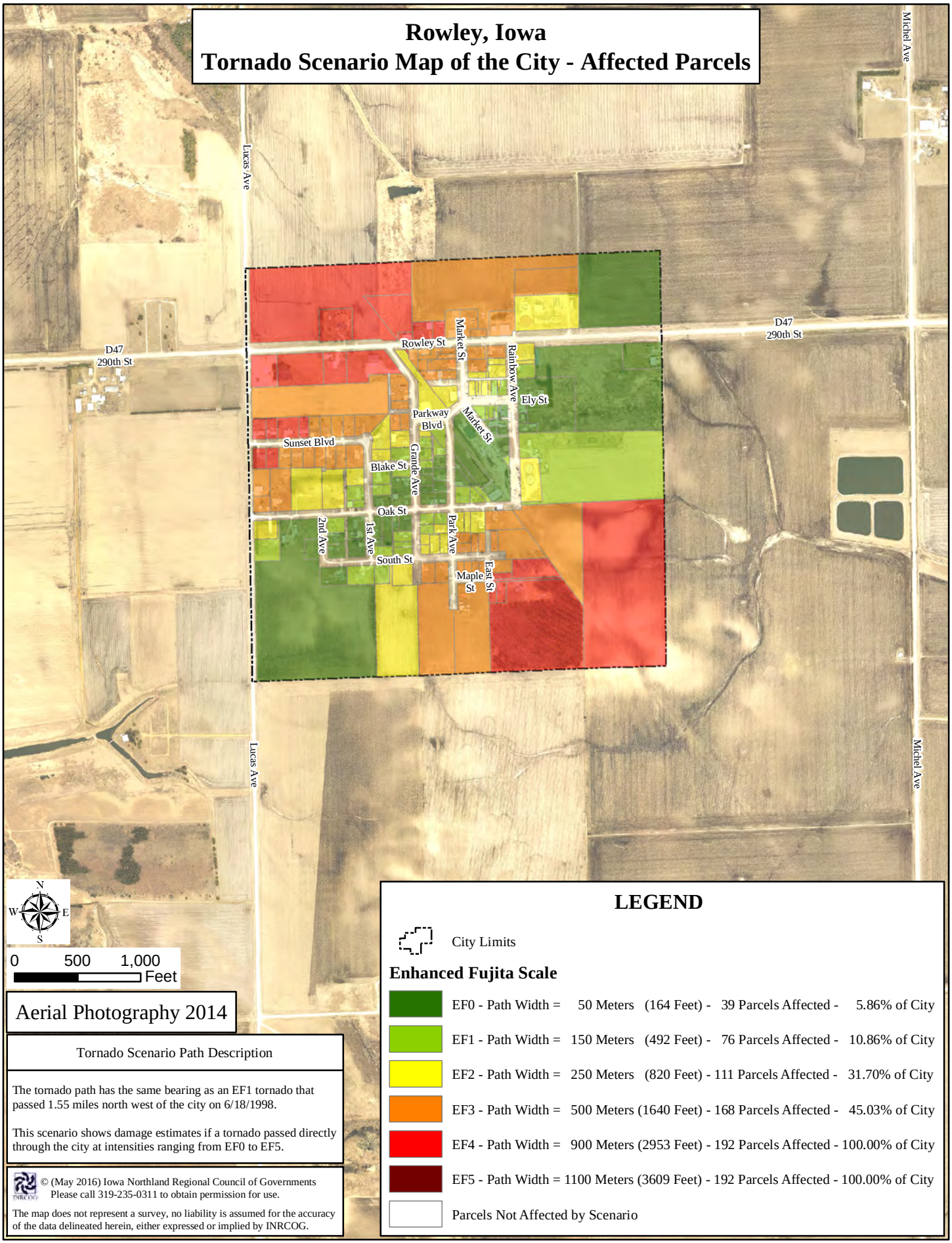
Rowley, Iowa
Tornado Scenario Map of the City - Affected Parcels



Aerial Photography 2014

Tornado Scenario Path Description

The tornado path has the same bearing as an EF1 tornado that passed 1.55 miles north west of the city on 6/18/1998.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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LEGEND

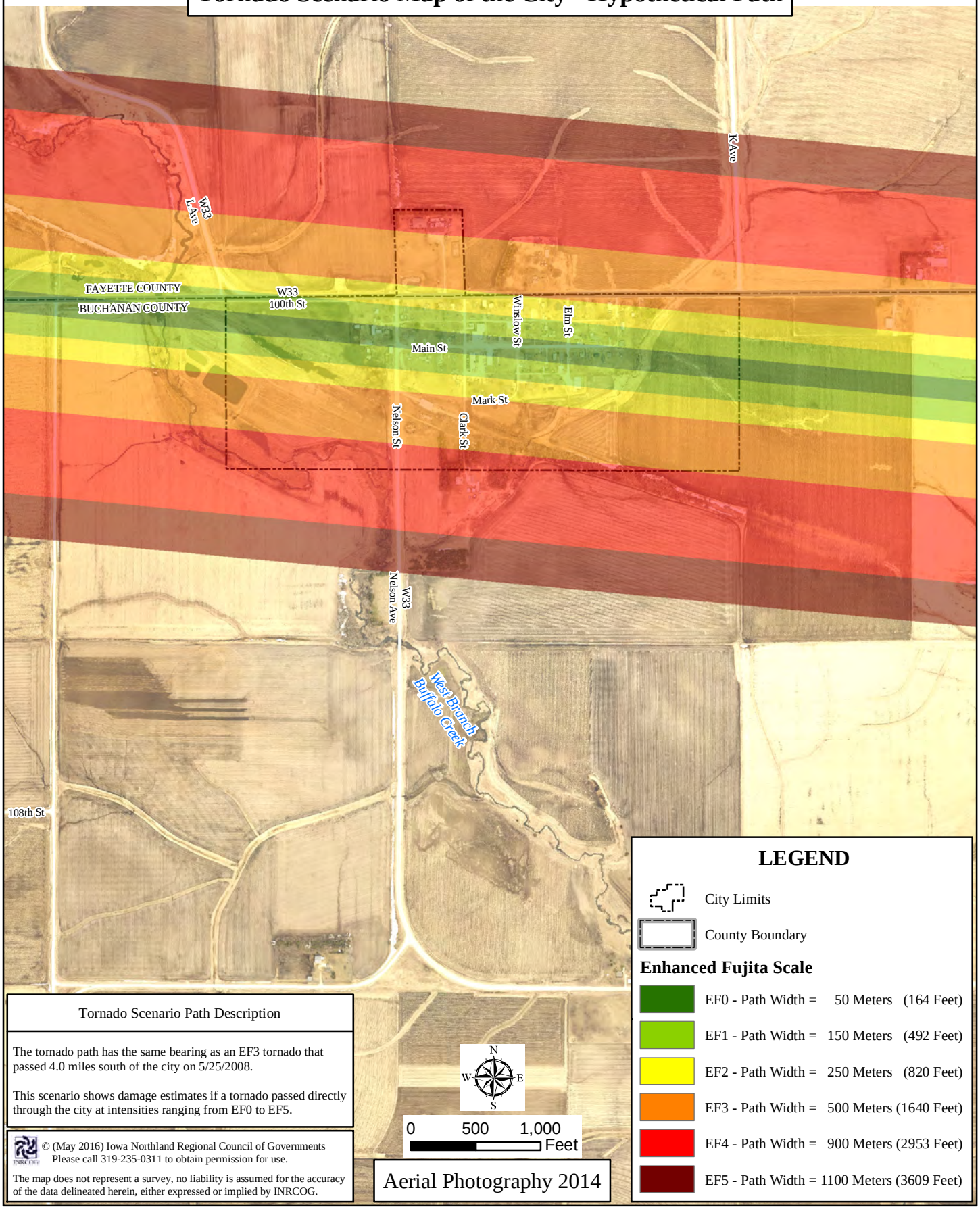
City Limits

Enhanced Fujita Scale

EF0 - Path Width =	50 Meters	(164 Feet) -	39 Parcels Affected -	5.86% of City
EF1 - Path Width =	150 Meters	(492 Feet) -	76 Parcels Affected -	10.86% of City
EF2 - Path Width =	250 Meters	(820 Feet) -	111 Parcels Affected -	31.70% of City
EF3 - Path Width =	500 Meters	(1640 Feet) -	168 Parcels Affected -	45.03% of City
EF4 - Path Width =	900 Meters	(2953 Feet) -	192 Parcels Affected -	100.00% of City
EF5 - Path Width =	1100 Meters	(3609 Feet) -	192 Parcels Affected -	100.00% of City

Parcels Not Affected by Scenario

Stanley, Iowa
Tornado Scenario Map of the City - Hypothetical Path



LEGEND

City Limits

County Boundary

Enhanced Fujita Scale

- EF0 - Path Width = 50 Meters (164 Feet)
- EF1 - Path Width = 150 Meters (492 Feet)
- EF2 - Path Width = 250 Meters (820 Feet)
- EF3 - Path Width = 500 Meters (1640 Feet)
- EF4 - Path Width = 900 Meters (2953 Feet)
- EF5 - Path Width = 1100 Meters (3609 Feet)

Tornado Scenario Path Description

The tornado path has the same bearing as an EF3 tornado that passed 4.0 miles south of the city on 5/25/2008.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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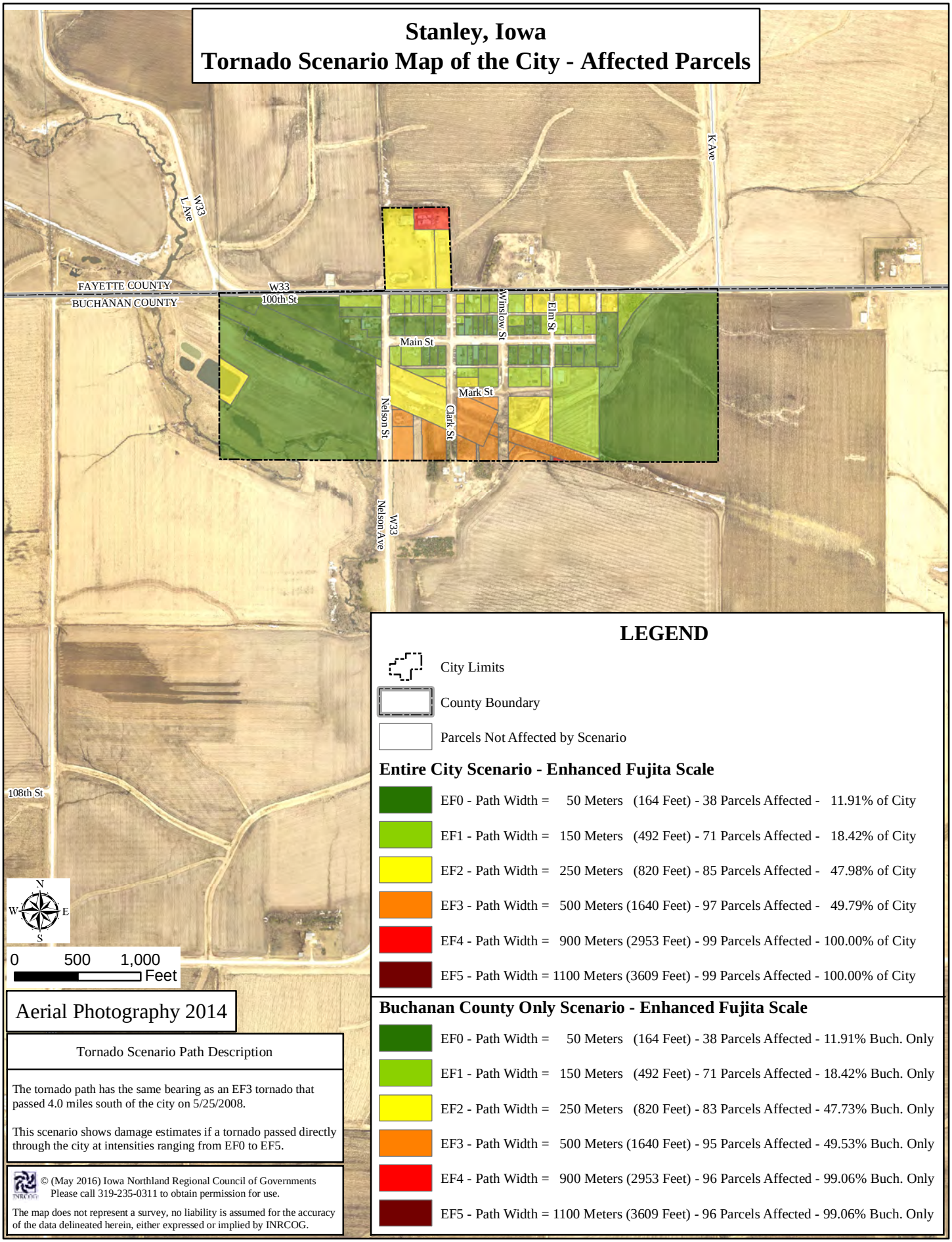
Aerial Photography 2014

Stanley, Iowa
Tornado Scenario Map of the City - Affected Parcels



LEGEND

City Limits

County Boundary

Parcels Not Affected by Scenario

Entire City Scenario - Enhanced Fujita Scale

EF0 - Path Width = 50 Meters (164 Feet) - 38 Parcels Affected - 11.91% of City

EF1 - Path Width = 150 Meters (492 Feet) - 71 Parcels Affected - 18.42% of City

EF2 - Path Width = 250 Meters (820 Feet) - 85 Parcels Affected - 47.98% of City

EF3 - Path Width = 500 Meters (1640 Feet) - 97 Parcels Affected - 49.79% of City

EF4 - Path Width = 900 Meters (2953 Feet) - 99 Parcels Affected - 100.00% of City

EF5 - Path Width = 1100 Meters (3609 Feet) - 99 Parcels Affected - 100.00% of City

Buchanan County Only Scenario - Enhanced Fujita Scale

EF0 - Path Width = 50 Meters (164 Feet) - 38 Parcels Affected - 11.91% Buch. Only

EF1 - Path Width = 150 Meters (492 Feet) - 71 Parcels Affected - 18.42% Buch. Only

EF2 - Path Width = 250 Meters (820 Feet) - 83 Parcels Affected - 47.73% Buch. Only

EF3 - Path Width = 500 Meters (1640 Feet) - 95 Parcels Affected - 49.53% Buch. Only

EF4 - Path Width = 900 Meters (2953 Feet) - 96 Parcels Affected - 99.06% Buch. Only

EF5 - Path Width = 1100 Meters (3609 Feet) - 96 Parcels Affected - 99.06% Buch. Only

Aerial Photography 2014

Tornado Scenario Path Description

The tornado path has the same bearing as an EF3 tornado that passed 4.0 miles south of the city on 5/25/2008.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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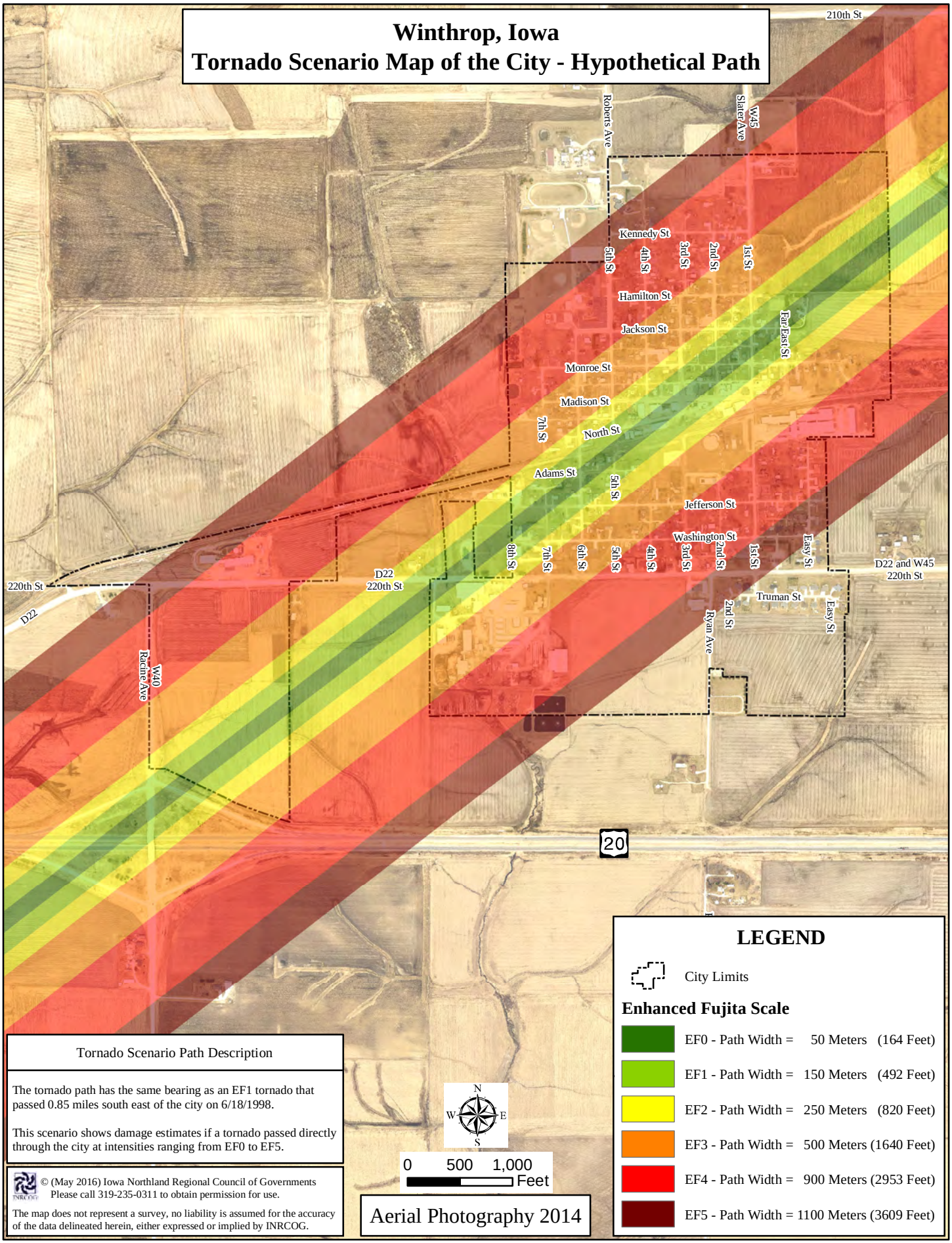

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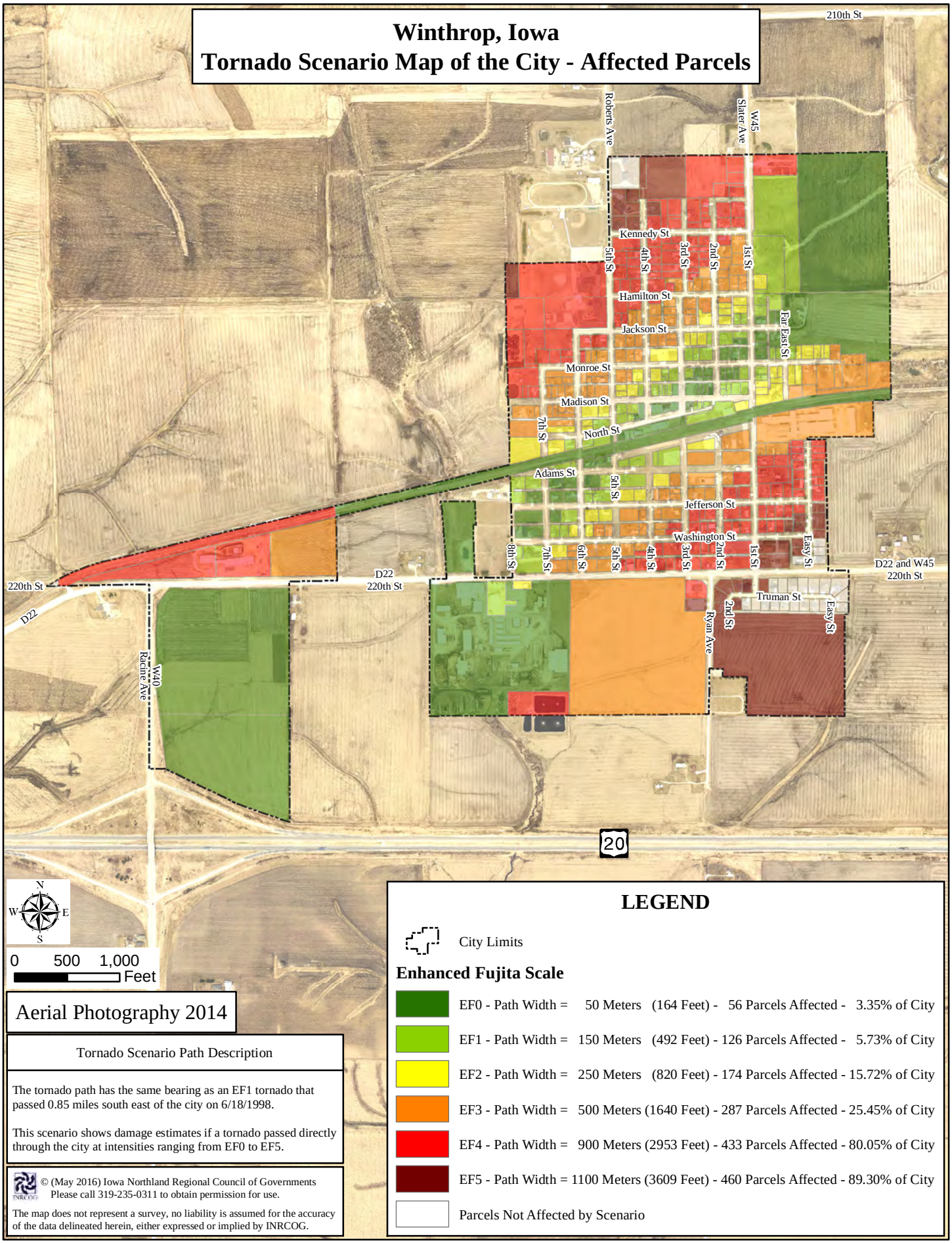
Winthrop, Iowa
Tornado Scenario Map of the City - Affected Parcels



LEGEND

City Limits

Enhanced Fujita Scale

- EF0 - Path Width = 50 Meters (164 Feet) - 56 Parcels Affected - 3.35% of City
- EF1 - Path Width = 150 Meters (492 Feet) - 126 Parcels Affected - 5.73% of City
- EF2 - Path Width = 250 Meters (820 Feet) - 174 Parcels Affected - 15.72% of City
- EF3 - Path Width = 500 Meters (1640 Feet) - 287 Parcels Affected - 25.45% of City
- EF4 - Path Width = 900 Meters (2953 Feet) - 433 Parcels Affected - 80.05% of City
- EF5 - Path Width = 1100 Meters (3609 Feet) - 460 Parcels Affected - 89.30% of City

Parcels Not Affected by Scenario

Aerial Photography 2014

Tornado Scenario Path Description

The tornado path has the same bearing as an EF1 tornado that passed 0.85 miles south east of the city on 6/18/1998.

This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.

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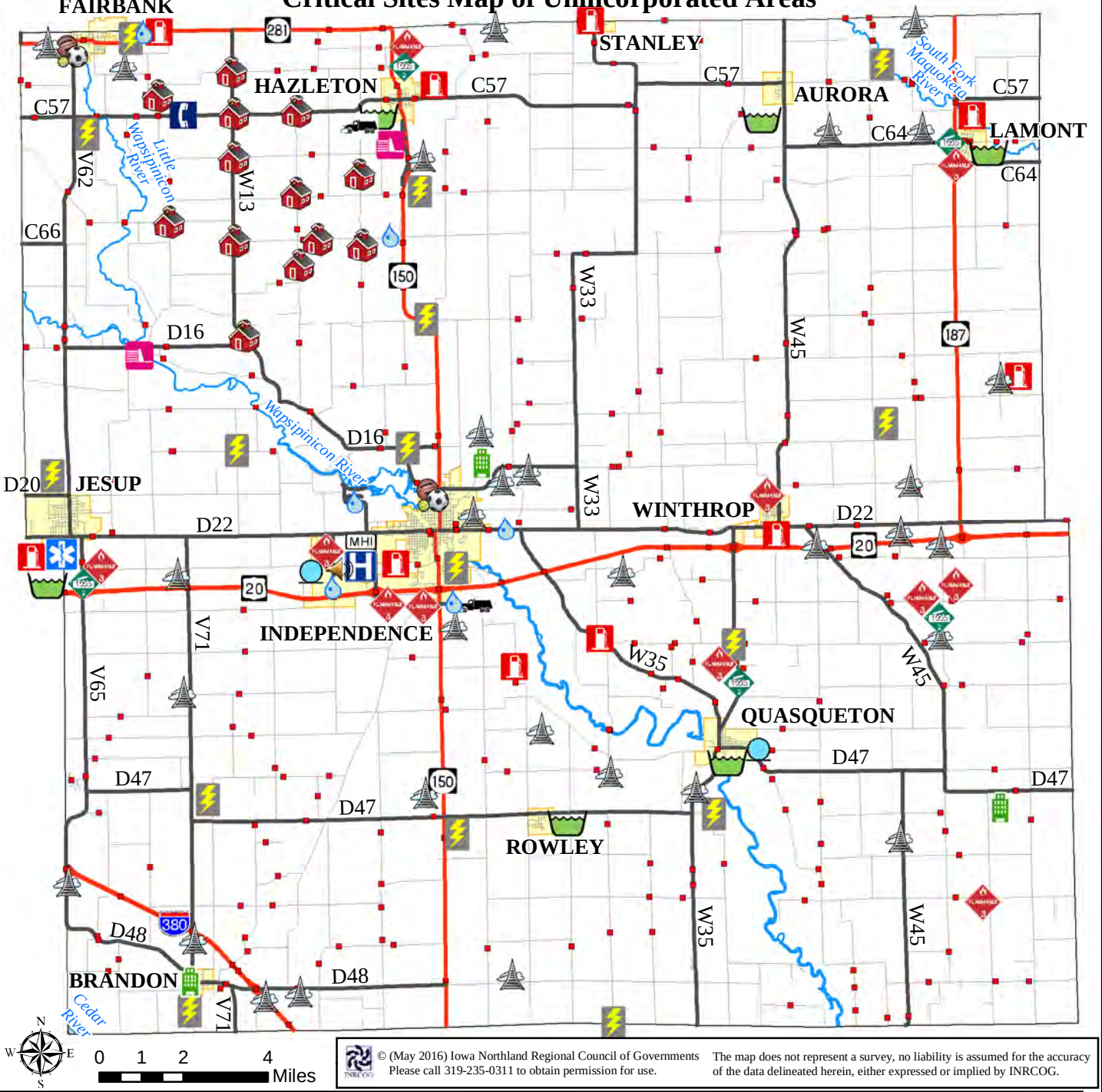
Buchanan County, Iowa
Critical Sites Map of Unincorporated Areas



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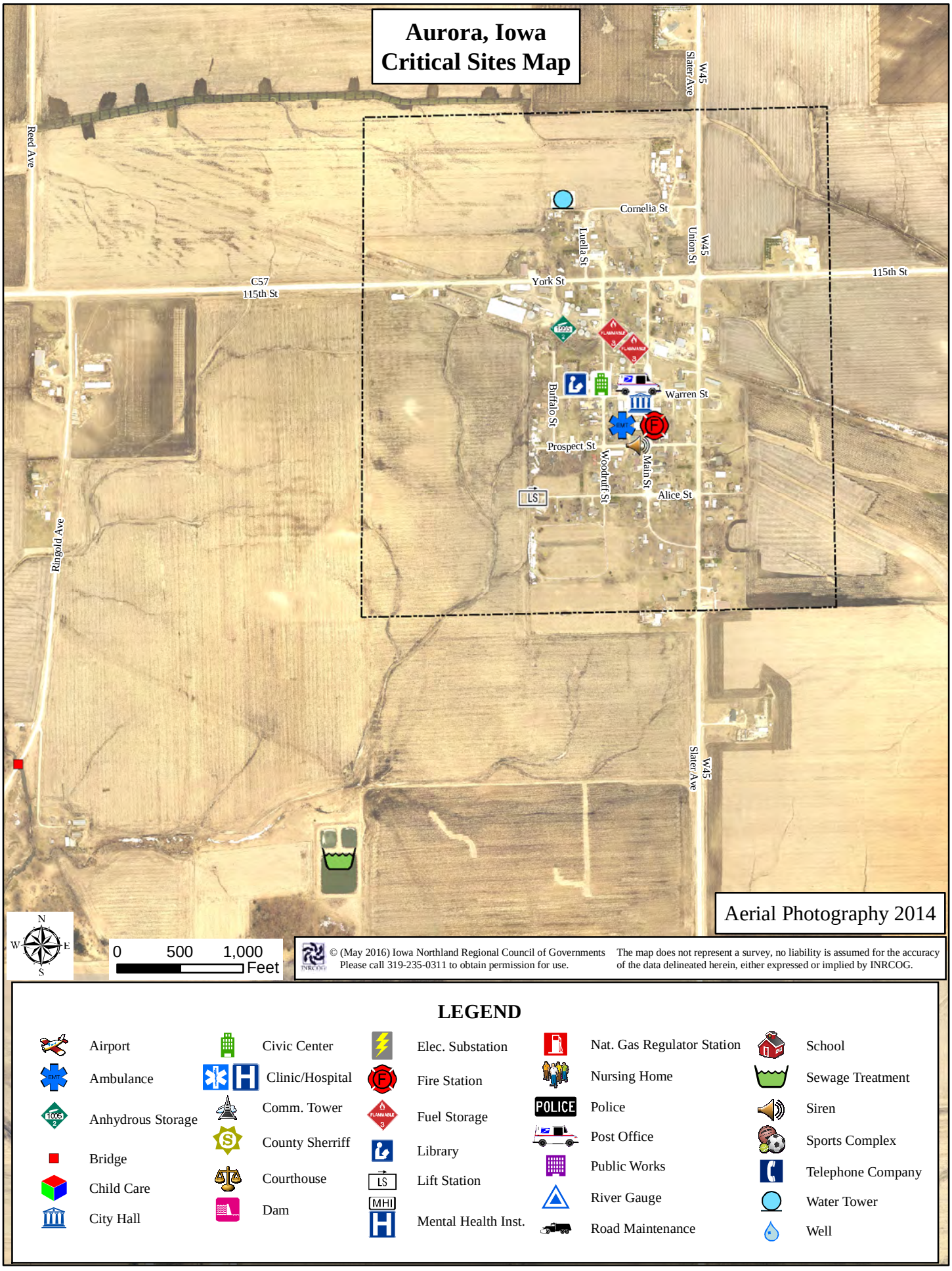
LEGEND

- Airport
- Ambulance
- Anhydrous Storage
- Bridge
- Child Care
- City Hall
- Civic Center
- Clinic/Hospital
- Comm. Tower
- County Sherriff
- Courthouse
- Dam
- Elec. Substation
- Fire Station
- Fuel Storage
- Library
- Lift Station
- Mental Health Inst.
- Nat. Gas Regulator Station
- Nursing Home
- Police
- Post Office
- Public Works
- River Gauge
- Road Maintenance
- School
- Sewage Treatment
- Siren
- Sports Complex
- Telephone Company
- Water Tower
- Well


Aurora, Iowa
Critical Sites Map
Slater Ave
W45
Reed Ave
Cornelia St
Luella St
Union St
115th St
C57
115th St
York St
Buffalo St
Warren St
Prospect St
Woodruff St
Main St
Alice St
Ringold Ave
N
W
E
S
0 500 1,000 Feet
Aerial Photography 2014
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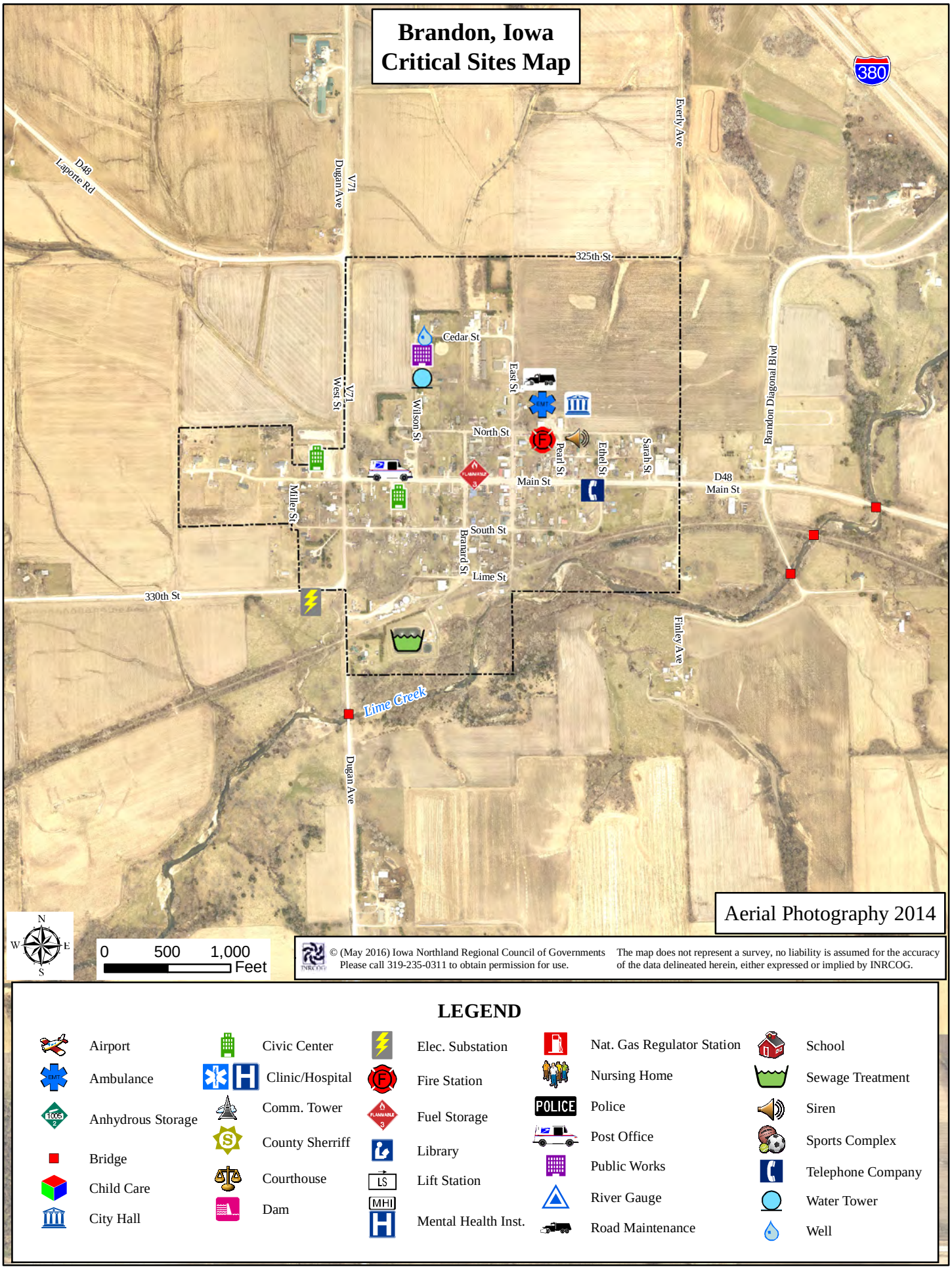
LEGEND
Airport
Ambulance
Anhydrous Storage
Bridge
Child Care
City Hall
Civic Center
Clinic/Hospital
Comm. Tower
County Sherriff
Courthouse
Dam
Elec. Substation
Fire Station
Fuel Storage
Library
Lift Station
Mental Health Inst.
Nat. Gas Regulator Station
Nursing Home
Police
Post Office
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well



LEGEND

- Airport
- Ambulance
- Anhydrous Storage
- Bridge
- Child Care
- City Hall
- Civic Center
- Clinic/Hospital
- Comm. Tower
- County Sherriff
- Courthouse
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- Fuel Storage
- Library
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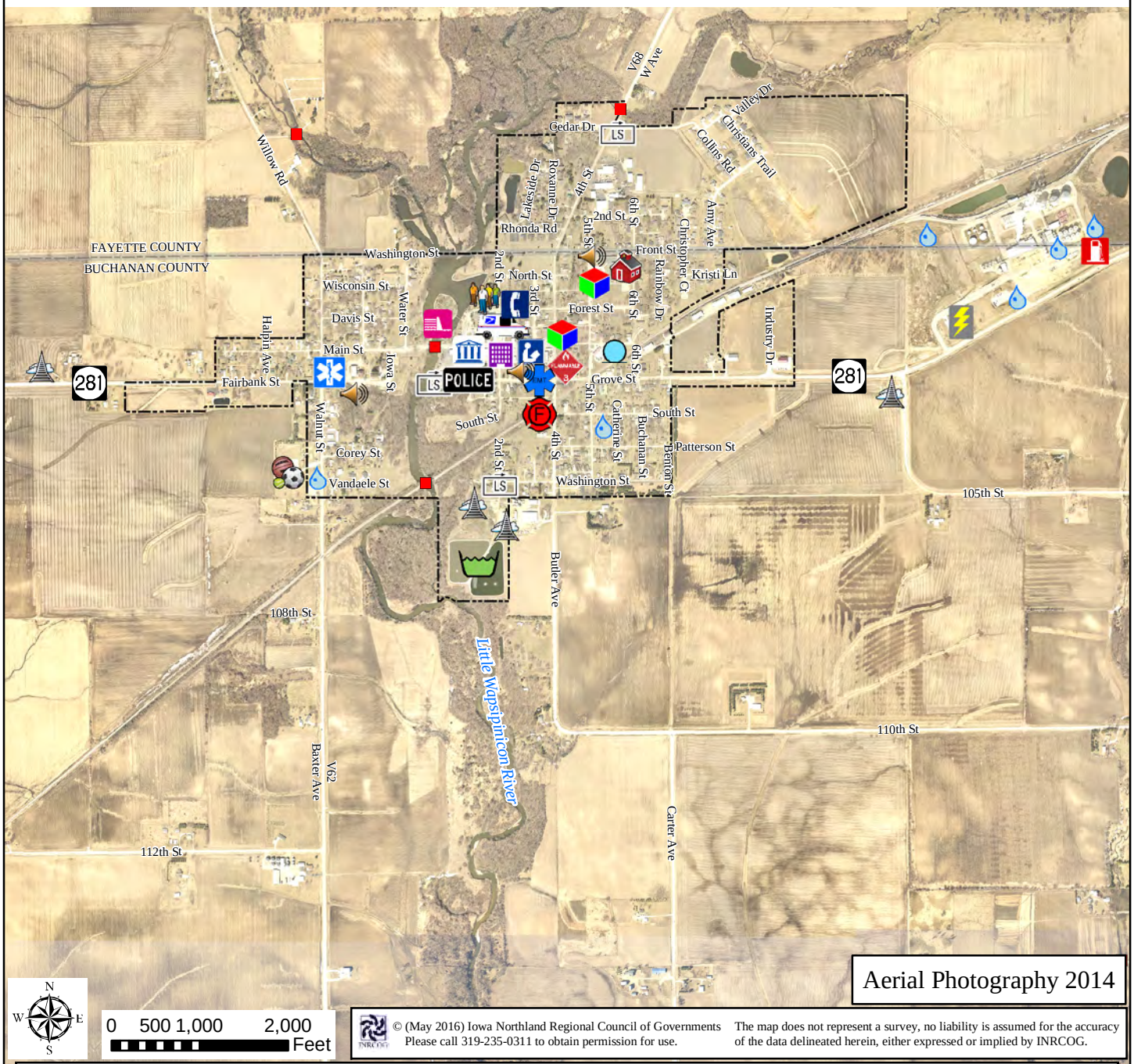
- Mental Health Inst.
- Nat. Gas Regulator Station
- Nursing Home
- Police
- Post Office
- Public Works
- River Gauge
- Road Maintenance
- School
- Sewage Treatment
- Siren
- Sports Complex
- Telephone Company
- Water Tower
- Well

Fairbank, Iowa
Critical Sites Map



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LEGEND

- Airport
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- Bridge
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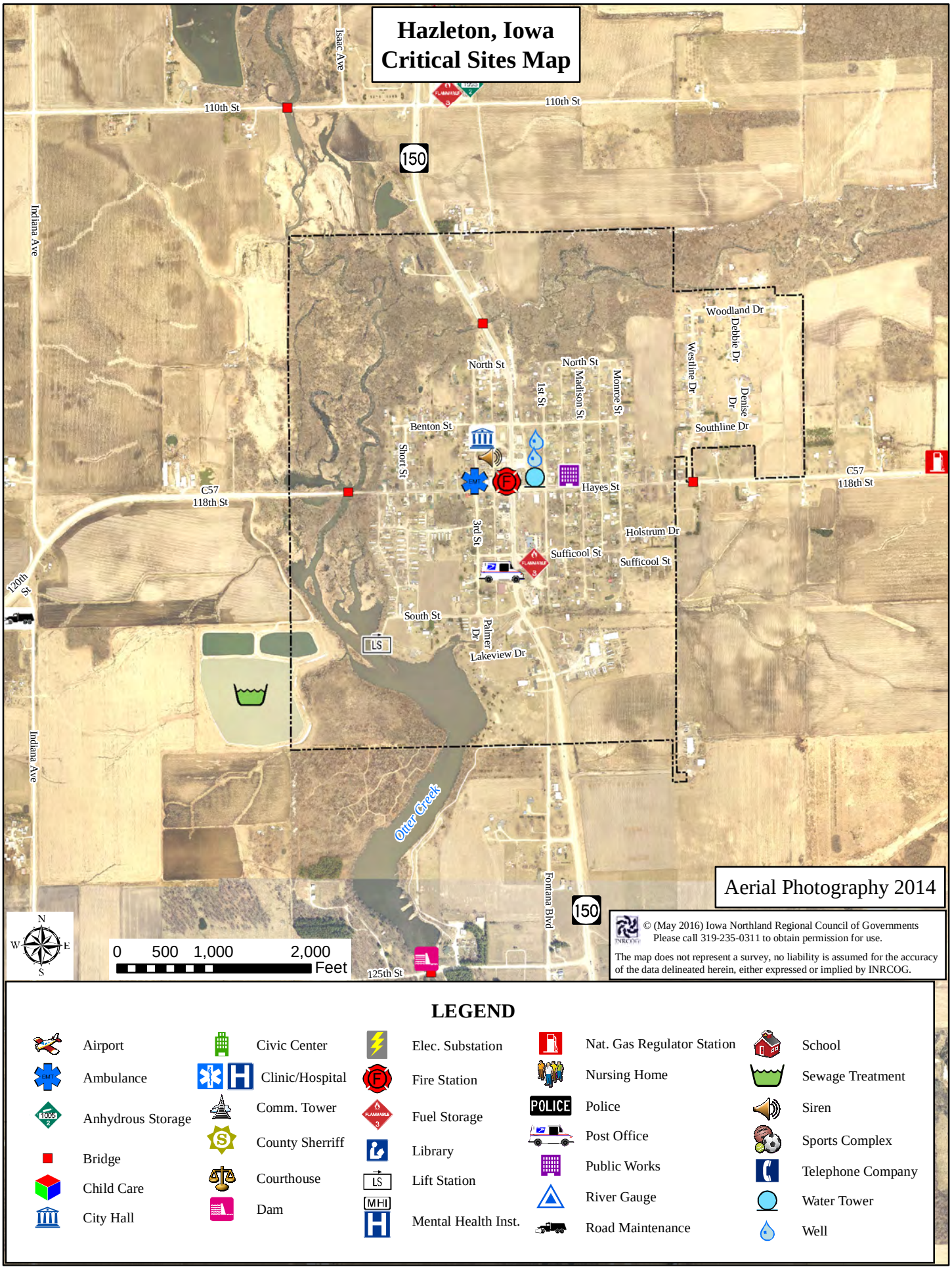
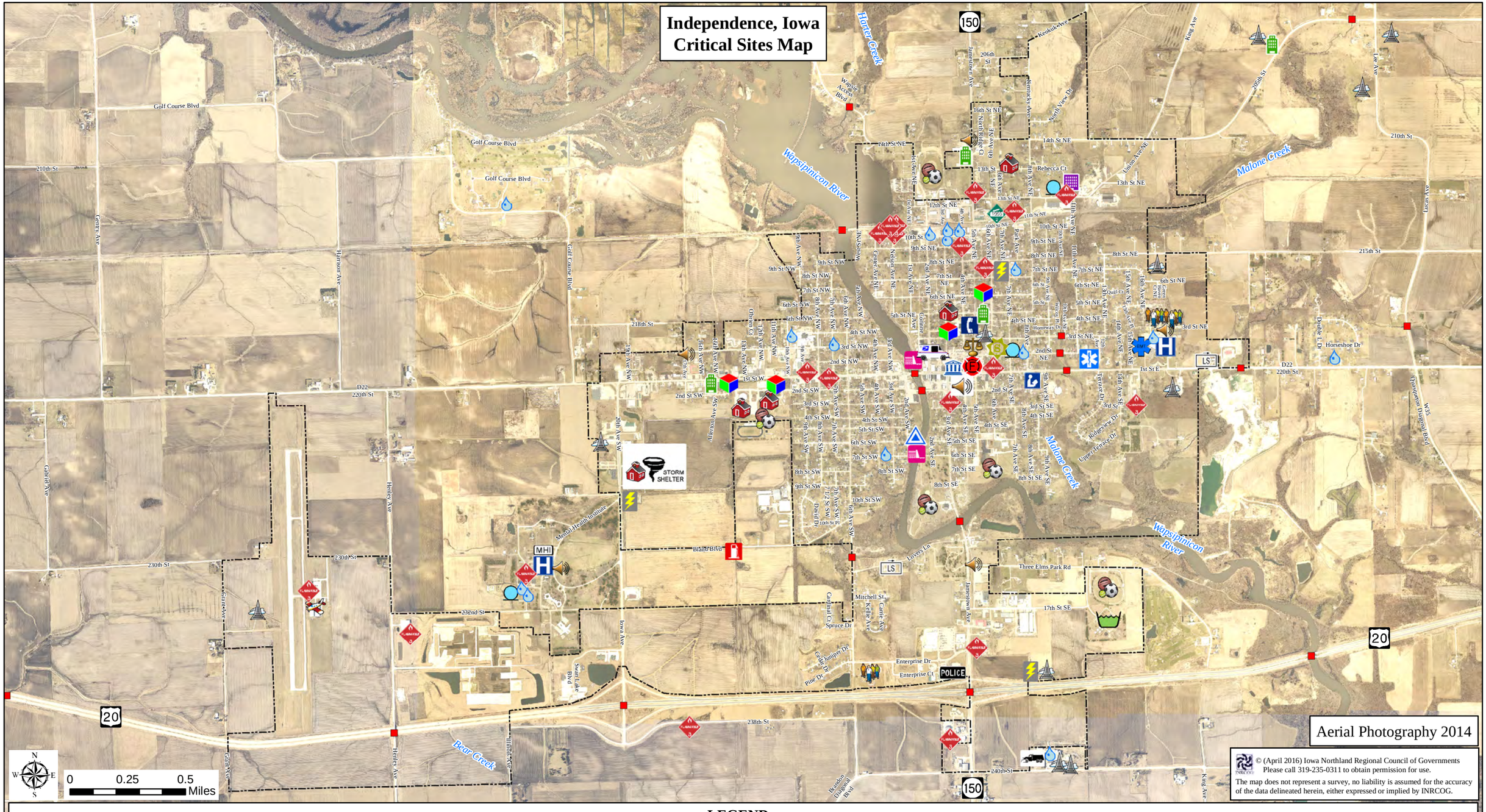
- City Hall
- Civic Center
- Clinic/Hospital
- Comm. Tower
- County Sherriff
- Courthouse
- Dam
- Elec. Substation
- Fire Station
- Fuel Storage
- Library
- Lift Station
- Mental Health Inst.
- Nat. Gas Regulator Station
- Nursing Home
- Police
- Post Office
- Public Works
- River Gauge
- Road Maintenance
- School
- Sewage Treatment
- Siren
- Sports Complex
- Telephone Company
- Water Tower
- Well



LEGEND

- Airport
- Ambulance
- Anhydrous Storage
- Bridge
- Child Care
- City Hall
- Civic Center
- Clinic/Hospital
- Comm. Tower
- County Sherriff
- Courthouse
- Dam
- Elec. Substation
- Fire Station
- Fuel Storage
- Library
- Lift Station
- Mental Health Inst.
- Nat. Gas Regulator Station
- Nursing Home
- Police
- Post Office
- Public Works
- River Gauge
- Road Maintenance
- School
- Sewage Treatment
- Siren
- Sports Complex
- Telephone Company
- Water Tower
- Well

Independence, Iowa
Critical Sites Map



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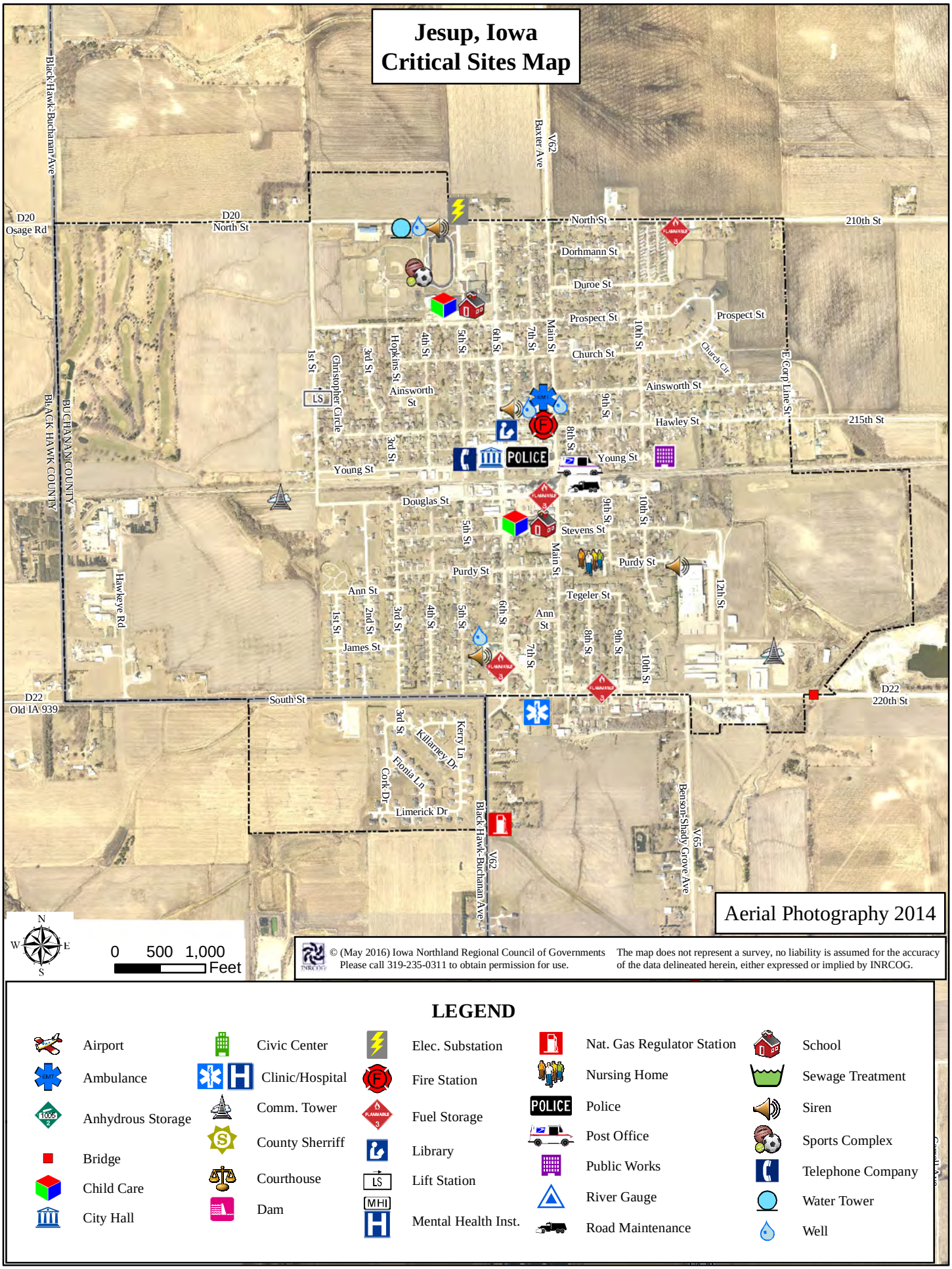
LEGEND

- Airport
- Ambulance
- Anhydrous Storage
- Bridge
- Child Care
- City Hall
- Civic Center
- Clinic/Hospital
- Comm. Tower
- County Sherriff
- Courthouse
- Dam
- Elec. Substation
- Fire Station
- Fuel Storage
- Library
- Lift Station
- Mental Health Inst.
- Nat. Gas Regulator Station
- Nursing Home
- Police
- Post Office
- Public Works
- River Gauge
- Road Maintenance
- School
- Sewage Treatment
- Siren
- Sports Complex
- Storm Shelter
- Telephone Company
- Water Tower
- Well


Jesup, Iowa
Critical Sites Map
Black Hawk-Buchanan Ave
D20
Osage Rd
D20
North St
Baxter Ave
V62
North St
210th St
Dorhmann St
Duroe St
Prospect St
Prospect St
Church St
Church Cir
E Corp Line St
Ainsworth St
Ainsworth St
Hawley St
215th St
Young St
Young St
Douglas St
Stevens St
Purdy St
Purdy St
Tegeler St
Ann St
Ann St
James St
South St
D22
Old IA 939
D22
220th St
Killarney Dr
Kerry Ln
Fionia Ln
Cork Dr
Limerick Dr
Black Hawk-Buchanan Ave
V62
Benson-Shady Grove Ave
V65
Hawkeye Rd
1st St
2nd St
3rd St
4th St
5th St
6th St
7th St
8th St
9th St
10th St
12th St
Main St
Hopkins St
Christopher Circle
LS
POLICE
BUCHANAN COUNTY
BLACK HAWK COUNTY
N
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Feet
Aerial Photography 2014
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LEGEND
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City Hall
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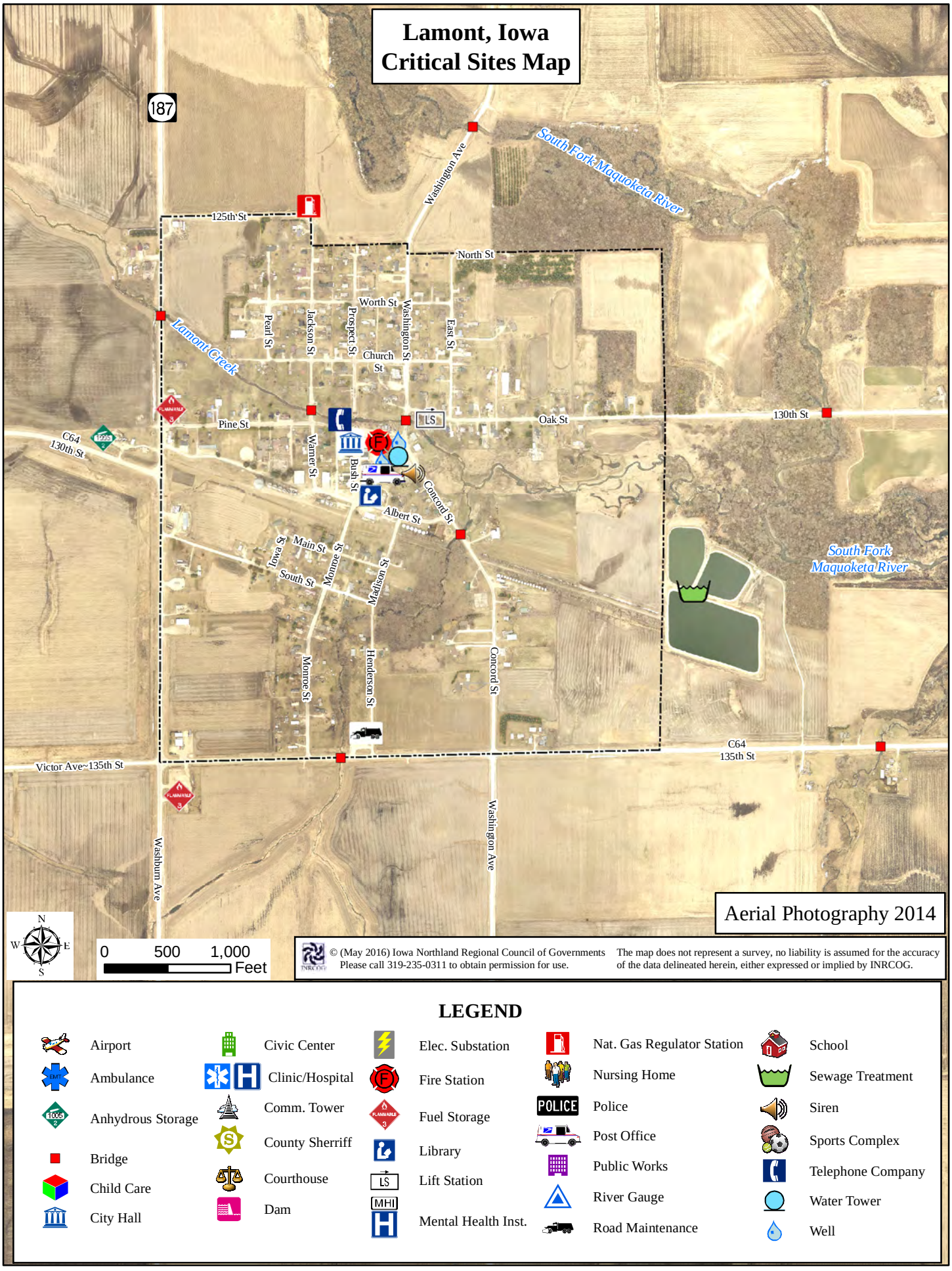
Comm. Tower
County Sherriff
Courthouse
Dam
Elec. Substation
Fire Station
Fuel Storage
Library
Lift Station
Mental Health Inst.
Nat. Gas Regulator Station
Nursing Home
Police
Post Office
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well


Lamont, Iowa
Critical Sites Map
187
South Fork Maquoketa River
Washington Ave
125th St
North St
Worth St
Pearl St
Jackson St
Prospect St
Washington St
East St
Church St
Lamont Creek
Pine St
C64
130th St
Warner St
Bush St
Concord St
Albert St
Oak St
130th St
Iowa St
Main St
Monroe St
South St
Madison St
Henderson St
Monroe St
Concord St
South Fork
Maquoketa River
C64
135th St
Victor Ave~135th St
Washburn Ave
Washington Ave
Aerial Photography 2014
N
W
E
S
0 500 1,000
Feet
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LEGEND
Airport
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City Hall
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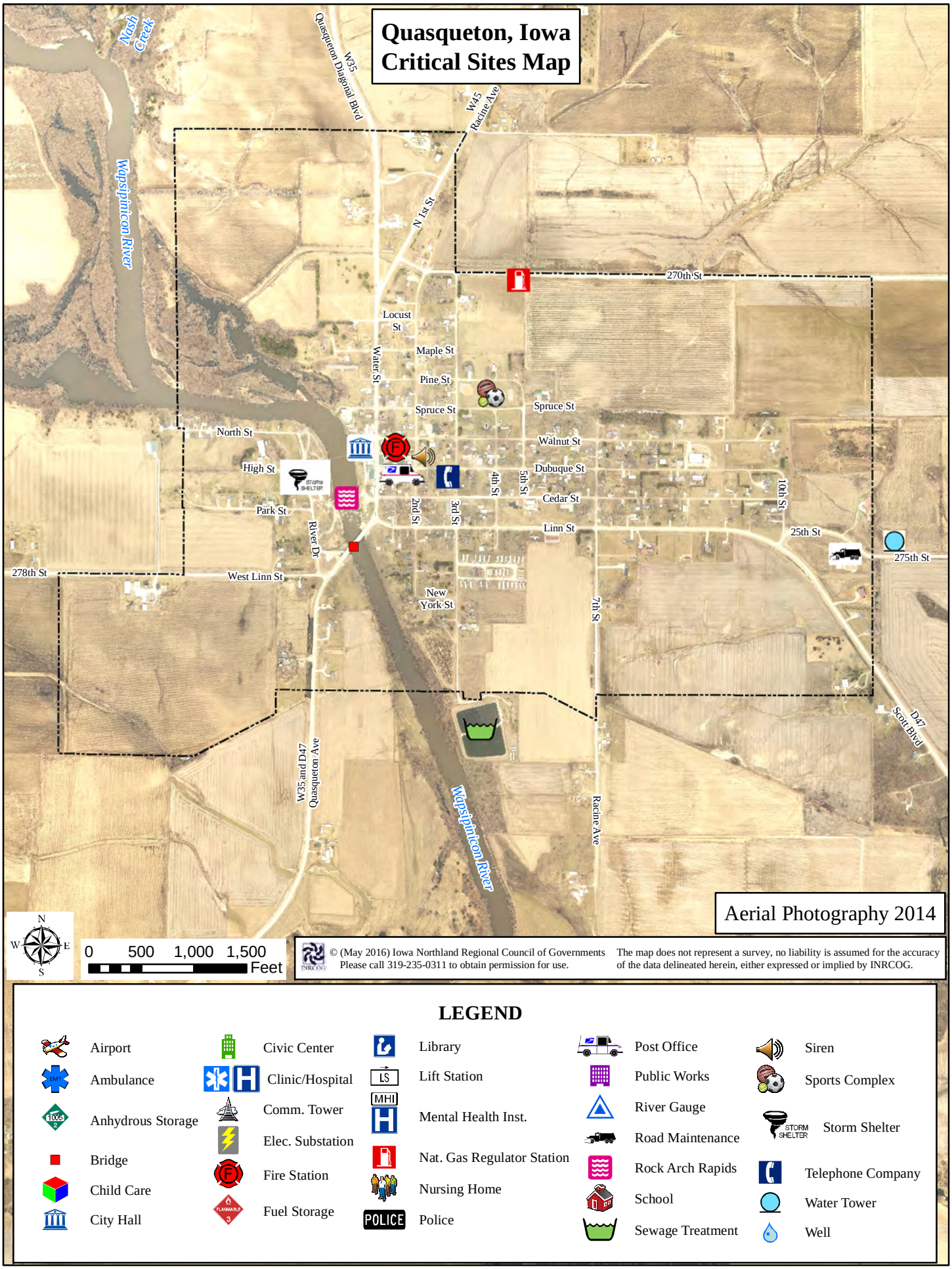
Clinic/Hospital
Comm. Tower
County Sherriff
Courthouse
Dam
Elec. Substation
Fire Station
Fuel Storage
Library
Lift Station
Mental Health Inst.
Nat. Gas Regulator Station
Nursing Home
Police
Post Office
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well


Quasqueton, Iowa
Critical Sites Map
Nash Creek
Quasqueton Diagonal Blvd
W35
W45
Racine Ave
Wapsipinicon River
N 1st St
270th St
Locust St
Maple St
Water St
Pine St
Spruce St
Spruce St
North St
Walnut St
High St
Dubuque St
4th St
5th St
10th St
Cedar St
2nd St
3rd St
Park St
River Dr
Linn St
25th St
275th St
278th St
West Linn St
New York St
7th St
W35 and D47
Quasqueton Ave
Wapsipinicon River
Racine Ave
D47
Scott Blvd
Aerial Photography 2014
N
W
E
S
0 500 1,000 1,500
Feet
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LEGEND
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Child Care
City Hall
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Clinic/Hospital
Comm. Tower
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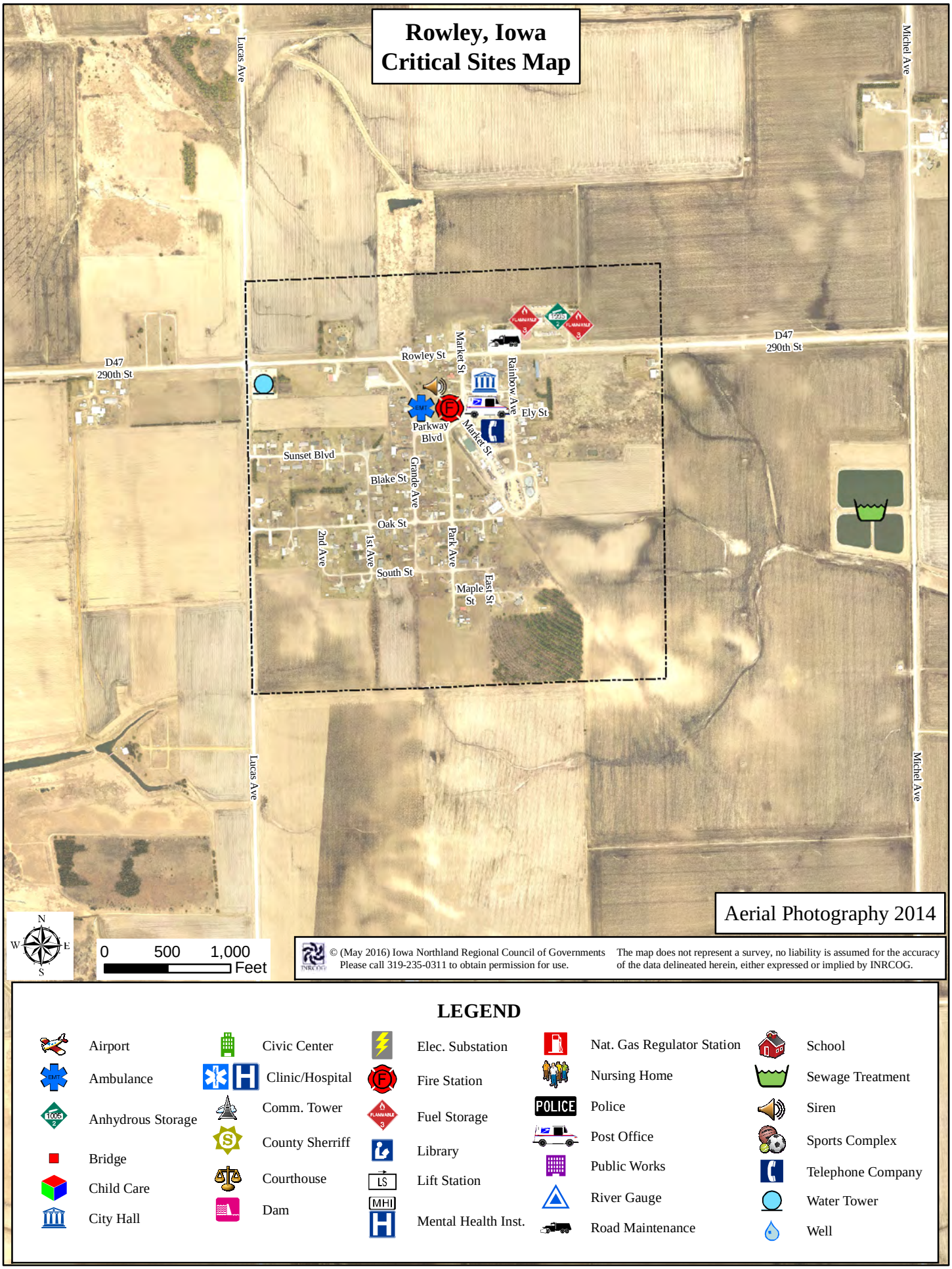
Fire Station
Fuel Storage
Library
Lift Station
Mental Health Inst.
Nat. Gas Regulator Station
Nursing Home
Police
Post Office
Public Works
River Gauge
Road Maintenance
Rock Arch Rapids
School
Sewage Treatment
Siren
Sports Complex
Storm Shelter
Telephone Company
Water Tower
Well


Rowley, Iowa
Critical Sites Map
Lucas Ave
Michel Ave
D47
290th St
Rowley St
Market St
Rainbow Ave
Ely St
Parkway
Blvd
Sunset Blvd
Blake St
Grande Ave
Oak St
2nd Ave
1st Ave
Park Ave
South St
Maple St
East St
Aerial Photography 2014
N
W
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Feet
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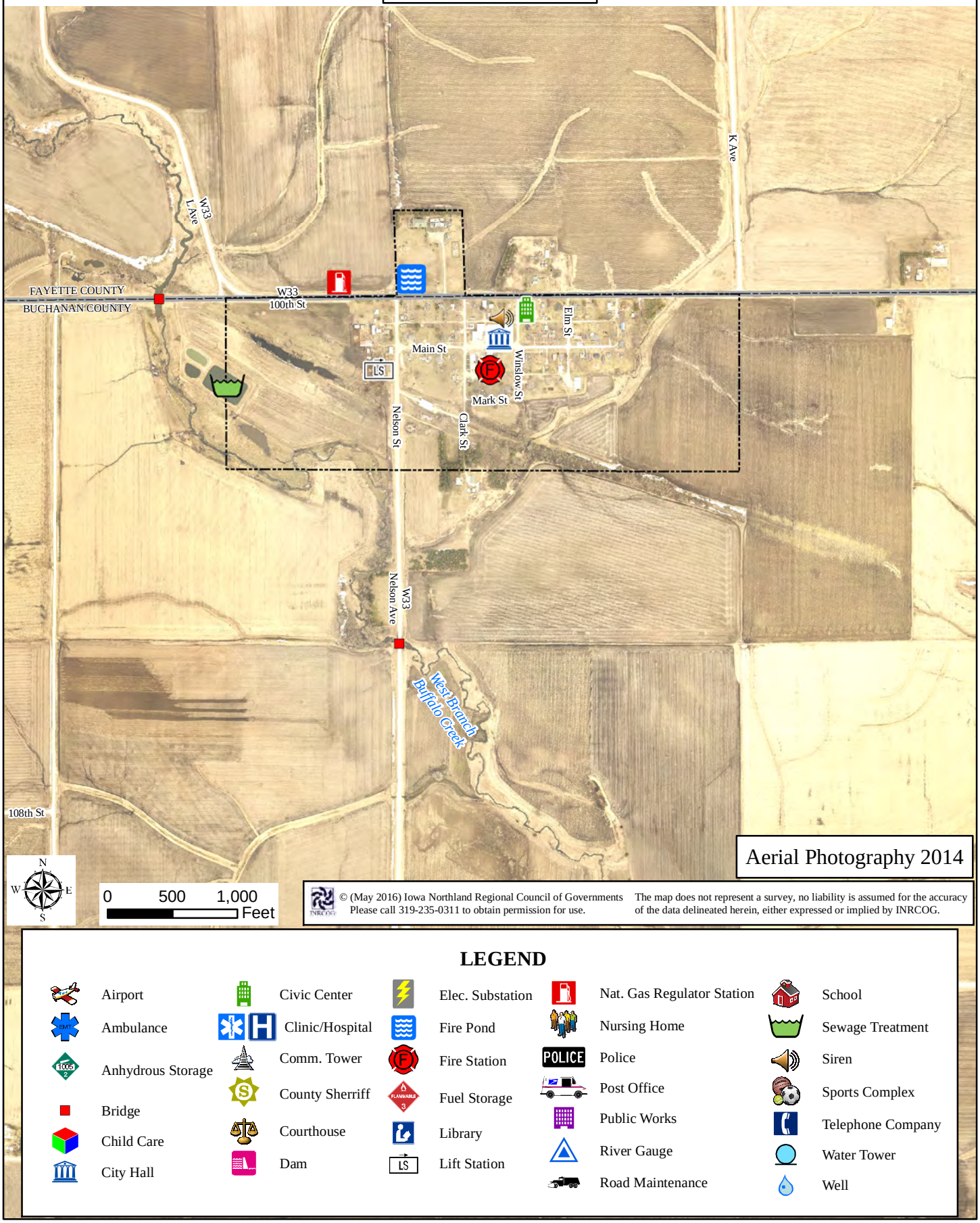
Courthouse
Dam
Elec. Substation
Fire Station
Fuel Storage
Library
Lift Station
Mental Health Inst.
Nat. Gas Regulator Station
Nursing Home
POLICE
Police
Post Office
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well

Stanley, Iowa Critical Sites Map



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LEGEND

- Airport
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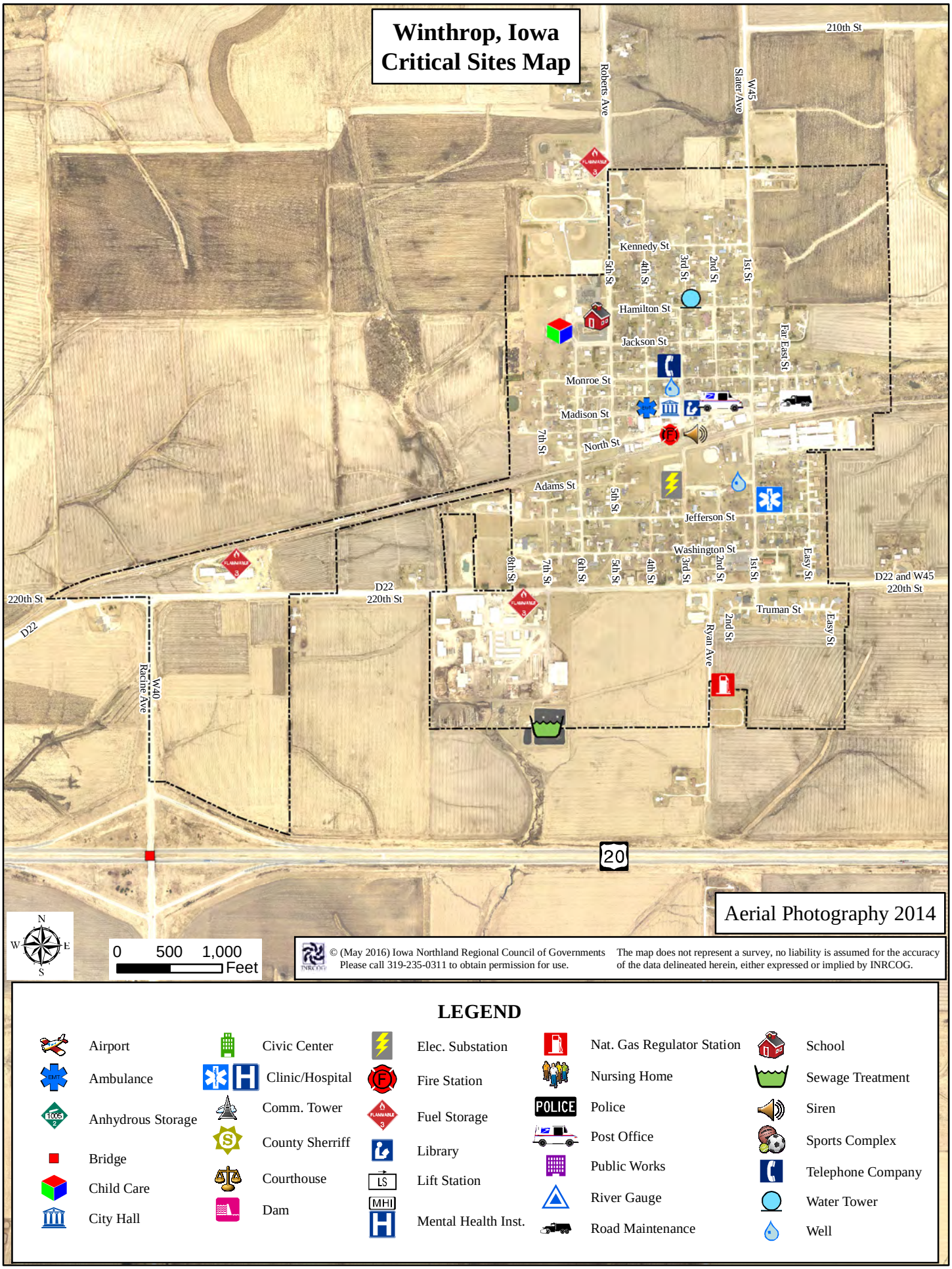
- Civic Center
- Clinic/Hospital
- Comm. Tower
- County Sherriff
- Courthouse
- Dam
- Elec. Substation
- Fire Pond
- Fire Station
- Fuel Storage
- Library
- Lift Station
- Nat. Gas Regulator Station
- Nursing Home
- Police
- Post Office
- Public Works
- River Gauge
- Road Maintenance
- School
- Sewage Treatment
- Siren
- Sports Complex
- Telephone Company
- Water Tower
- Well


Winthrop, Iowa
Critical Sites Map
210th St
Roberts Ave
Slater Ave
W45
Kennedy St
5th St
4th St
3rd St
2nd St
1st St
Hamilton St
Jackson St
Far East St
Monroe St
Madison St
7th St
North St
Adams St
5th St
Jefferson St
Washington St
8th St
7th St
6th St
5th St
4th St
3rd St
2nd St
1st St
Easy St
D22 and W45
220th St
220th St
D22
D22
220th St
Truman St
2nd St
Easy St
Ryan Ave
W40
Racine Ave
20
N
W
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Feet
Aerial Photography 2014
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Clinic/Hospital
Comm. Tower
County Sherriff
Courthouse
Dam
Elec. Substation
Fire Station
Fuel Storage
Library
Lift Station
Mental Health Inst.
Nat. Gas Regulator Station
Nursing Home
Police
Post Office
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well

ATTACHMENT 2: PLAN ADOPTION RESOLUTIONS

JURISDICTION	DATE OF PLAN ADOPTION
Buchanan County	December 12, 2016
City of Aurora	April 11, 2017
City of Brandon	
City of Fairbank	April 24, 2017
City of Hazleton	February 15, 2017
City of Independence	February 27, 2017
City of Jesup	March 7, 2017
City of Lamont	March 8, 2017
City of Quasqueton	
City of Rowley	
City of Stanley	
City of Winthrop	March 3, 2017
Independence Community School District	April 18, 2017
East Buchanan Community School District	
Jesup Community School District	

Buchanan County

RESOLUTION 16-72

A RESOLUTION OF THE BOARD OF SUPERVISORS, OF BUCHANAN COUNTY, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUCHANAN COUNTY.

WHEREAS, the Board of Supervisors of Buchanan County, Iowa has authorized the development of a Multi-Jurisdictional Hazard Mitigation Plan for Buchanan County; and

WHERAS, Buchanan County, Iowa has received funding through the Hazard Mitigation Grant Program; and

WHEREAS, the Multi-Jurisdictional Hazard Mitigation Planning Committee of Buchanan County has participated in the formulation of said Plan; and has recommended the adoption of said Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS, a Public Hearing has been held in the County Courthouse for the purpose of obtaining citizen input on the Multi-Jurisdictional Hazard Mitigation Plan; and

NOW THEREFORE BE IT RESOLVED THAT the Board of Supervisors of Buchanan County, Iowa herewith adopts the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comment and future FEMA and IHSEMD recommendations.

Passed and adopted this 12th day of December, 2016

Donald B. Shonka
Donald Shonka, Chairman
Board of Supervisors
Buchanan County, Iowa

ATTEST:

Cindy Gosse
Cindy Gosse, County Auditor

City of Aurora

CITY OF AURORA
P.O. BOX 117
AURORA, IOWA 50607-0117

RESOLUTION #22-281

A RESOLUTION OF THE CITY COUNCIL OF AURORA, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUCHANAN COUNTY

WHEREAS, the City Council of the City of Aurora, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Buchanan County; and,

WHEREAS, Buchanan County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, The Buchanan County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and

WHEREAS, the City of Aurora, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Buchanan County Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS, a Public Hearing has been held in the City Council Chambers for the purpose of obtaining citizen input on said Plan; and

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Aurora, Iowa herewith adopts the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizens comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 11th day of April 2017.

David Young / Mayor

ATTEST:

Diana S. Gates / City Clerk

City of Brandon

City of Fairbank

RESOLUTION 2017-11

A RESOLUTION OF THE CITY COUNCIL OF FAIRBANK, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUCHANAN COUNTY.

WHEREAS, the City Council of the City of Fairbank, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Buchanan County; and,

WHEREAS, Buchanan County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Fairbank participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Buchanan County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Fairbank, Iowa herewith adopts the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 24th day of April, 2017.

~~Bill Cowell, Mayor~~
Ronald J. Woods, Mayor Pro-tem

ATTEST:

Marlene Strempke, City Clerk

City of Hazleton

RESOLUTION 17-03

A RESOLUTION OF THE CITY COUNCIL OF HAZLETON, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUCHANAN COUNTY.

WHEREAS, the City Council of the City of Hazleton, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Buchanan County; and,

WHEREAS, Buchanan County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Hazleton, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Buchanan County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Hazleton, Iowa herewith adopts the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 15th day of February 2017.

Gerald VandeVorde, Mayor

ATTEST:

Lisa Baych, City Clerk

City of Independence

RESOLUTION 16-72

A RESOLUTION OF THE BOARD OF SUPERVISORS, OF BUCHANAN COUNTY, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUCHANAN COUNTY.

WHEREAS, the Board of Supervisors of Buchanan County, Iowa has authorized the development of a Multi-Jurisdictional Hazard Mitigation Plan for Buchanan County; and

WHERAS, Buchanan County, Iowa has received funding through the Hazard Mitigation Grant Program; and

WHEREAS, the Multi-Jurisdictional Hazard Mitigation Planning Committee of Buchanan County has participated in the formulation of said Plan; and has recommended the adoption of said Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS, a Public Hearing has been held in the County Courthouse for the purpose of obtaining citizen input on the Multi-Jurisdictional Hazard Mitigation Plan; and

NOW THEREFORE BE IT RESOLVED THAT the Board of Supervisors of Buchanan County, Iowa herewith adopts the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comment and future FEMA and IHSEMD recommendations.

Passed and adopted this 12th day of December, 2016

Donald B. Shonka

Donald Shonka, Chairman
Board of Supervisors
Buchanan County, Iowa

ATTEST:

Cindy Gosse

Cindy Gosse, County Auditor

City of Jesup

RESOLUTION NO. 2017-49

RESOLUTION OF THE CITY COUNCIL OF JESUP, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUCHANAN COUNTY.

WHEREAS, the City Council of the City of Jesup, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Buchanan County; and,

WHEREAS, Buchanan County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Jesup participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Buchanan County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Jesup, Iowa herewith adopts the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 7th day of March, 2017.

Larry Thompson
Mayor

ATTEST:

Koley Mead, CMC, CFO
City Clerk

CITY OF JESUP
Seal
BUCHANAN COUNTY, IOWA

City of Lamont

RESOLUTION 17-05

A RESOLUTION OF THE CITY COUNCIL OF LAMONT, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUCHANAN COUNTY.

WHEREAS, the City Council of the City of Lamont, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Buchanan County; and,

WHEREAS, Buchanan County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Lamont, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Buchanan County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Lamont, Iowa herewith adopts the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 8th day of March 2017.

Eleanor McGraw- Riley, Mayor

ATTEST:

Paula J. Harvey, City Clerk

City of Quasqueton

RESOLUTION # 17-03

A RESOLUTION OF THE CITY COUNCIL OF QUASQUETON, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUCHANAN COUNTY.

WHEREAS, the City Council of the City of Quasqueton, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Buchanan County; and,

WHEREAS, Buchanan County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Quasqueton, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Buchanan County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Quasqueton, Iowa herewith adopts the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 13th day of _February 2017.

Chad Staton, Mayor

ATTEST:

Anita Arnold, City Clerk

City of Rowley

City of Stanley

City of Winthrop

RESOLUTION # 17-04

A RESOLUTION OF THE CITY COUNCIL OF WINTHROP, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUCHANAN COUNTY.

WHEREAS, the City Council of the City of Winthrop, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Buchanan County; and,

WHEREAS, Buchanan County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Winthrop, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Buchanan County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Winthrop, Iowa herewith adopts the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 3rd day of March 2017.

Mayor

ATTEST:

City Clerk

Independence Community School District

A RESOLUTION OF THE INDEPENDENCE COMMUNITY SCHOOL DISTRICT BOARD OF DIRECTORS FOR INDEPENDENCE, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUCHANAN COUNTY.

WHEREAS, the Community School District of Independence, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Buchanan County; and,

WHEREAS, Buchanan County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the Independence Community School District participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Buchanan County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the Community School District's Administrative Office for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the Board of Directors of the Independence, Iowa Community School District hereby adopts the Buchanan County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 18th day of April 2017.

School Board/President

ATTEST:

Board Secretary

ATTACHMENT 3: STATUS OF 2012 HAZARD MITIGATION PLAN

BUCHANAN COUNTY – STATUS OF 2012 HAZARD MITIGATION ACTIVITIES	
Mitigation Action	**Committee Determination/Comments**
Adopt and enforce a building code	Active, partially completed; Building codes adopted and enforced; tower ordinance pending/turbines ordinance still pending
Modify zoning ordinance to require underground wiring for new housing	Active
Review and update the County Multi-Hazard Plan as necessary	Active, completed; 100% community participation rate
Maintain, update, and enforce County Zoning Ordinance and Floodplain Ordinance	Active; Continued effort in place, going through staff changes
Enforce County guidelines for burning	Active, complete; Burn notification ordinance in place
Promote and supplement buffer initiative	Active, in progress; floodplain ordinance and new mapping
Flood proof structures in the 100-year floodplain	City of Independence and Lamont only?
Acquisition and enhancement of flood protection lands	Active; pursued as available
Acquisition and removal of structures from the floodplain as funds become available	In progress
Provide education on hazardous materials to industries and the public, including storage and disposal of household hazardous chemicals	Regional LEPC (VI)
Continue to work with ISU Extension to provide pesticide applicator training	Continuing with ISU Extension
Continue Reduce/Reduction education	Continuing through ISU Extension
Improve public awareness of flood risk, flood insurance, and floodplain construction regulations	Continuing per Zoning Department
Continue community education and distribution of community preparedness kits	Providing community education/training as requested; no longer providing preparedness kits
Continue to provide the public with information regarding all hazards and how to prevent, respond, and recover if a hazard was to occur	Providing community education/training as requested
Continue fire safety education	Provided primarily by fire dept.
Work with ISU Extension Office to provide fire extinguishers to residents	Continuing; added smoke alarms and weather radio distribution; partnering with Community Services and BCARC
Educate farmers on early detection of animal diseases	In progress; as needed
Educate the public on reporting suspicious activities	Continuing through law enforcement

Educate the public on the location of pipelines within the county	In progress; EMA does with Iowa Pipeline Association
Continue Code Red System	Active, in progress; converting to Alert Iowa System
Develop a NOAA Weather Radio awareness program	Do now with presentations; need on mass & social media
Develop a Tornado Safe Room awareness program	Active; Independence school system now has
Continue programs to teach CPR/First Aid	Active; continue training programs
Expand easement programs on agricultural land along river and streams	Active; Zoning and Board of Supervisors
Protection of wetland and other natural areas existing along waterways	Active; Zoning and Board of Supervisors
Follow watershed monitoring requirements set forth by the Iowa Department of Natural Resources	Active; Zoning and EMA
Backup generator is needed at public health facility	Not completed: establish funding (have mutual aid with EMA now)
Back up IT switches and servers as needed	Active; serve on IT committee
Continue to provide necessary training to the Hazardous Materials Team on an annual basis	Active; contract with Linn Co. Haz-Mat
Continue and/or expand training for the HEAT Team	Reestablish tech. trained team
Continue contract with Linn County HAZMAT Team	Active; contract maintained
Maintain, and upgrade when necessary, emergency response equipment	All response entities
Implement physical staff gages up river and down river in Fairbank, Crane Creek, Quasqueton, Littleton, and Otterville	Partially completed; Fairbank, Crane, Quasqueton done; Littleton, Otterville needed
Continue to work with certified floodplain manager regarding floodplain issues	Active; coordinated between EMA and Zoning Dept.
Continue support of the Buchanan County Disaster Recovery Coalition	Active
Continue participation in the Iowa Mutual Aid Compact	Active; EMA commission
Maintain existing Mutual Aid Agreements with surrounding communities and counties for emergency assistance during a hazard or disaster	Active; EMA commission
Continue to provide necessary training and equipment to the Sheriff's Department as needed	Active, as needed
Continue to review and update Airport Emergency Plan as needed	Active, reviewed as needed
Conduct air traffic exercise to train emergency personnel	Active
Continue to provide education, training, and drills/exercises for emergency response personnel to handle all types of hazards	Active; schools and public utilities
Expand storm spotter training program	Active; maintain

Continue to update emergency generator list and incorporate it into appropriate plans	Active
Encourage local utilities to install surge protectors on major electric lines	Code established
Continue to upgrade radio communications equipment as needed	Completed, active; 911 coordinator has been established
Continue to work with Iowa Rural Water Association to hook-up cities and rural households to the water supply	Active
Expand promotion of and recruitment of volunteer firefighters	Active
Continue to install additional dry hydrants as funds become available	Funds have dried up
Continue to review and update incident Command procedures as needed	Active
Provide personnel with training for the Community Emergency Response Team (CERT) as needed	As funds available
Install Global Positioning Systems in all emergency vehicles	Active; starting in law enforcement
Update equipment with GIS/GPS technology	Active; part time position established (with 911)
Purchase cellular phones with E911 systems	Completed
Continue education and training of health officials and emergency response personnel regarding communication, early detection, and emergency response to human and animal diseases	Active
Create a written Disease Response Plan	Completed, active; ESF 8 (Emergency Support Function)

CITY OF AURORA – STATUS OF 2012 HAZARD MITIGATION ACTIVITIES	
Mitigation Action	**Committee Determination/Comments**
Enforce tree inspection and trimming program	Active; trees are trimmed annually, as needed. Tree inspection and inventory done in 2014 by Northeast Iowa RC&D
Adopt and enforce building code requirements	Active; Ordinance in place
Adopt and enforce a snow ordinance	Active; Ordinance in place
Maintain, enforce, and update Zoning and Floodplain Ordinances, as needed	Active; Ordinance in place
Move anhydrous and fuel storage to safer locations on the outskirts of town	Active, not complete; Long-term project
Enforce county guidelines for burning	Active
Establish restricted routes for the transport of hazardous materials and explosive material	No current ordinance
Develop a plan for rationing water within the community	No current ordinance
Update and install improved signage as it becomes necessary	Active; Signs and poles purchased as needed
Control pet populations that inhabit local residences	No ordinance at this time
Create an annual fire inspection program for commercial and industrial properties	Active
Ensure all members of the public, including pets, have had all required immunizations	On-going
Spray for mosquitoes in the community	Active, as needed; Park sprayed before July 4th celebration; not normally a problem
Maintain access to gas detectors	Active; Available from Buchanan County EMA
Increase security measures taken to protect and secure city's critical facilities	Critical files stored in city office building. Fire dept. has keyless entry, keyboard locks
Improve public awareness of proper steps to be taken in a hazard event	Active; implemented as needed
Develop a "Tornado Safe Room" awareness program	Active, not completed; limited funding
Install additional outdoor early warning sirens, and provide battery backup for the existing siren	Active; limited funding, researching grant availability
Develop a NOAA Weather Radio awareness program	Active; Responsibility of Buchanan County EMA
Inform – and encourage – the public of the benefits of planting shade trees near dwellings	Active; Information supplied by utility company Black Hills Energy
Educate the community about the dangers of groundwater contamination	Active, information provided as needed
Provide education on hazardous materials to industries and the public, including household chemicals	On-going
Consider development of a storm water management program	On-going; may need to do dye testing of residences
Provide a local household hazardous waste site	Available through Buchanan County Landfill
Develop a wellhead protection program	On-going

Encourage the use of buffer strips	On-going; most rural properties contain buffer strips
Follow monitoring requirements set forth by the Iowa Department of Natural Resources	On-going; monitoring done by Central Iowa Rural Water Assoc.
Update Emergency Response Plan	On-going; Fire Dept. currently working on
Develop a Continuity of Operations Plan	Long-Term
Continue to provide adequate training to Fire Department, Law Enforcement, and Ambulance personnel	On-going; Fire Dept. and 1st Responders; law enforcement thru Buchanan County
Maintain existing and purchase additional street maintenance, fire, police, and ambulance equipment as needed	On-going; Fire Dept. purchased upgraded ambulance and grass truck in 2014-15
Regularly review and amend fire, medical, and hazardous material response standard operating procedures	Active, as needed
Maintain existing agreements with surrounding communities for mutual aid emergency assistance	Active, Ordinance in place
Develop a list of structures to be used as gathering sites in the event of an emergency situation	On-going
Encourage local utility to install surge protectors on major electric lines	Active; implemented by utility providers
Consider us of Incident Command procedures	On-going
Expand weather spotting training	Active; Fire Department responsible
Work with local utility to develop a program to bury existing lines	Active; Responsibility of utility company, long-term project
Ensure natural gas connections are regularly inspected	On-going by Black Hills Energy
Backup electronic data at city hall and emergency response locations	On-going
Establish local 'heating and cooling sites' for at risk populations, such as the elderly and/or disabled	On-going; could use Aurora Comet Center
Continue working relationship with the Linn County HAZMAT team	On-going
Ensure hazardous materials are reported (Tier II reports) in accordance with applicable laws	On-going
Ensure proper training of Floodplain Manager(s)	On-going
Develop a plan for sandbagging in the community	On-going; supplies available through Fire Dept.
Maintain access to Geiger counters for first responders	Long-term; Fire Dept.
Install Global Positioning Systems in all emergency vehicles	Long-term
Acquire more water pumps	Long-term; limited funding
Upgrade radio communications equipment as needed	On-going; Fire Dept. purchased new radios in 2014
Purchase new generators to provide emergency power in times of need	Long-term; limited funding
Construct rigid barriers around sites that store explosive materials	Long-term
Continue improvements to the storm water system	Long-term; limited funding

CITY OF BRANDON – STATUS OF 2012 HAZARD MITIGATION ACTIVITIES	
Mitigation Action	**Committee Determination/Comments**
Continue implementation and enforcement of planning, zoning, building codes, and capital improvement program	Active; Working to get nuisance properties taken care of; ongoing enforcement issues
Continue participation in the National Flood Insurance Program	Completed, active; membership maintained
Discourage development in the floodplain areas	Yes, floodplain ordinance in place
Relocate the fire department	No completed, active; looking at three potential locations to move to
Review and improve security at critical facilities in the city	Active; Fence placed around sewer plant, public buildings locked
Encourage real estate disclosure	Not implementing at this time; dropped in 2017 plan update
Inform public on flood zone locations	Completed, Active; Maps available at City Hall and County Courthouse
Improve public awareness of all hazard risks – what to do before, during and after an event	Active; Fliers put up and placards on all buildings; FD personnel is trained
Encourage residents to have disaster supply kits on hand to use in the event of a disaster event	Not completed
Promote NOAA weather radio use	Yes, via county
Encourage residents purchase and use smoke detectors	Active; FD passed out smoke detectors and offered to install
Establish Good Neighbor programs	Active; Have neighborhood watch program
Maintenance of watershed management behind fire department – reseeded to control flood waters	Completed, active
Rerouting flood water by digging out or dredging creek bed	Not completed
Improve warning system	Yes – new siren recently acquired
Continue 28E agreements for fire department and first responders	Completed, agreements maintained
Maintain generator to lessen the loss of power at well	Yes, recently purchased new
Maintain generator for fire department	Completed, active
Purchase a first responders vehicles	Active
Stay in contact with representatives from Palo	Active
Continue to provide adequate emergency/disaster response training	Made available to all fire dept. personnel
Develop local emergency operations plan	Active; plan in place

Maintain list of special needs residents	Active; Fire Dept. has list
Develop community shelters for use as cooling, heating, and storm sites	Active, completed; BACC bldg. is designated as such – has a back-up generator to be installed. Fire Dept. and Methodist Church can also serve when needed
Purchase backup gas or diesel powered electric generators for primary shelters	Completed
Develop plans to address utility outages and emergencies	Active City public work employee has contacts
Update siren warning systems	Completed; Siren is relatively new
Purchase new firefighter PPE, air packs (SCBA-self-contained breathing apparatus), vehicle extrication equipment, and fire trucks	Completed; active; purchased replacement PPE for 8-10 fire personnel; acquired utility rescue van/truck
Continue to provide upgraded equipment and up-to-date training so the fire department is capable of appropriate and effective response	Active, monthly
Support EMS training	Active, training maintained
Continue HAZMAT agreements and support regional HAZMAT teams	Active, agreements maintained
Maintain culvert on Cedar Street	Completed, active; Kept clean and clear
Maintain Methodist Church safe room	Completed, active
Continue sewer system rehabilitation	Active; In process of updating
Install new fire hydrants	Active; partially completed; Installed East/Lime Streets; waiting to install Main/Pearl Streets
Conduct necessary sanitary sewer improvements	Routinely reviewed; implemented as needed
Establish storm shelters for mobile home parks	Not completed
Establish recreational area storm shelters	Completed, BACC Bldg.
Continue implementation and enforcement of planning, zoning, building codes, and capital improvement program	Active; w current focus on getting nuisance properties into compliance, have some ongoing enforcement issues

CITY OF FAIRBANK – STATUS OF 2012 HAZARD MITIGATION ACTIVITIES	
Mitigation Action	**Committee Determination/Comments**
Work towards adoption of a Building Code	Not completed; still talking about it
Continue participation in the National Flood Insurance Program	Completed, active; Continue to participate
Maintain, enforce, and update Zoning and Floodplain Ordinances as needed	Completed, active; Have ordinances in place; update as needed
Make necessary updates to and enforce city guidelines for burning, as well as enforcing the county-wide guidelines for burning	Completed and ongoing
Create an annual fire inspection program for commercial and industrial properties	Not completed; financial constraints
Continue to enforce tree inspection and trimming program	Active; Inspections ongoing
Continue to enforcement of snow ordinance	Active; Ordinance in place and enforced
Develop a plan for rationing water use with the community	Not completed; under consideration for the future
Flood proof structures in the floodplain	Most structures in floodplain removed; talks about remainder continue
Increase security measures taken to protect and secure city critical facilities	Completed; security measures implemented
Install back-flow valves at residences	Not complete; Funding not available
Keep working on river channel	Active; silt removal continues as needed
Continue to follow monitoring requirements set forth by the Iowa Department of Natural Resources	Not applicable - Do required testing
Develop a wellhead protection program	Partially Completed, active; Approximately 50% completed; continue developing it
Consider development of a storm water management program	Not complete; ongoing
Encourage the use of buffer strips	Active
Increase community awareness of all hazards through use of newsletters, utility billings, city website, etc.	Active; Do mailings, utility bill messages and web site postings
Educate the public on what to do before, during, and after all hazard events	Active
Provide hazardous materials education for industry and community, including household chemical education	Active
Provide an annual local household hazardous waste drop off site	Active; Make residents aware of Buchanan County site
Continue to promote use of Iowa One Call	Completed, active; Require residents to call before building permit is issued and encourage calls before planting

Develop a 'tornado safe room' awareness program	Active, not complete
Continue to promote use of Buchanan County's Code Red System	Completed; dropped in 2017 plan update, County now uses ALERT IOWA program
Maintain county plan for mass vaccinations	Active; Promote use of County Program
Encourage all residents, and pets, to have up-to-date immunizations	Active; Enforce pet ordinance requiring vaccination
Develop a NOAA Weather Radio awareness program	Active, with county
Encourage residents to plant shade trees near dwellings	Active, partner with utility companies
Maintain fire and rescue services	Active; update equipment as needed
Return to normal as soon as possible	Implemented when a hazard
Mitigate potential hazards and disasters	Active; Continue to check for potential hazards and correct
Identify possible funding sources for projects and programs	Active, as needed; Apply for grants and outside sources when possible
Continue HAZMAT Training	Active; training as needed
Upgrade radio communication equipment	Completed; All equipment recently updated; reserving funds for future requirements
Keep sirens updated	Active, completed
Maintain multi-jurisdictional hazard mitigation plan through regular evaluations and updates	Active, participated in 2017 plan update
Continue to put electric lines underground	Active, partially completed; All new construction is underground; replacement is underground when possible.
Have access to senior housing for checks	Active; Local manager has access to all senior housing
Centralize equipment and materials	Completed, active; All equipment at two city buildings
Ensure proper training of Floodplain Manager	Active, training maintained
Develop a plan for sandbagging in the community	Active, as needed; When needed volunteers show up; city has materials available
Continue to provide necessary training to fire department, law enforcement, and ambulance crews	Active, completed; All necessary training is provided
Maintain existing and purchase new firefighting equipment as needed	Active, completed; Have replaced major equipment in last few years and maintain reserve funds for equipment replacement
Maintain existing 28E agreements with surrounding communities for mutual aid assistance	Active, completed; Agreement in effect with surrounding towns, townships and county
Encourage local utility to install surge protectors on major electric lines	Active; responsibility of utility companies

Continue working with the Linn County HAZMAT response group	Active; Fire department continues training
Ensure hazardous materials are reported (Tier II reports) in accordance with applicable laws	Active; Reports are done as needed
Purchase new generators to provide emergency power in times of need	Completed; 100% complete; generators at City Hall, fire department, sewer and water plants
Backup electronic data at City Hall and emergency response locations	Completed; 100% data at City Hall is back up off-site
Establish local 'heating' and 'cooling' sites for at-risk populations	Completed; 100% City Hall and fire department buildings are available
Regularly review and amend fire, medical, and hazardous material response standard operating procedures	Active; Annual reviews
Install Global Positioning Systems (GPS) in all emergency vehicles	Not complete; funding not available
Maintain a list of available translators in the community	Active; responsibility of county
Consider the use of Incident Command procedures	Adopted and implemented as needed
Maintain weather spotter training	Completed; Annual training for new and existing personnel
Maintain access to Geiger counters for first responders	Completed, active; EMA houses Geiger counters
Update and install improved signage as it becomes necessary	Implemented as needed
Update Emergency Response Plan	Updated as needed
Develop a Continuity of Operations Plan	Not completed
Continue with improvements to the storm sewer system	Active; part of capital improvements; recently installed permeable pavers east of Island Park to reduce runoff and flash flooding
Construction rigid barriers around sites that store explosive material	Not needed; No sites currently in town; will implement if necessary
Replace inadequate bridges to increase weight capacity, structural issues, and maximize water flow	Not complete, not within city jurisdiction; bridge through town is responsibility of and on Iowa DOT state highway

CITY OF HAZLETON – STATUS OF 2012 HAZARD MITIGATION ACTIVITIES	
Mitigation Action	**Committee Determination/Comments**
Develop and maintain tree trimming program to reduce the chances of falling branches on infrastructure and property	Completed, active; trim trees as needed
Buyout of flood prone residential houses	Active; as needed, as funds are available
Maintain, Enforce, and Update City Ordinances (includes Zoning & Floodplain) and Building Codes	Active, as needed; currently have compliance officer
Adopt subdivision ordinance with requirement of underground wiring for new houses	Completed, active; Subdivision regulations in place, Chapter 166
Explore the adoption of a countywide building code with shared enforcement	The city currently does not have a countywide building code; The city has a code enforcement office that issues all building permits
Enforce burn bans	Active; As needed under direction of fire chief
Continue participation in NFIP	Active; NFIP maintained, floodplain ordinance in place
Public Awareness	Active; disseminate information through local media and city Facebook page
Implement a terrorism/crisis response plan	Not completed; lack of resources; Not probable at this time
Update communication radios	Active; as needed
Evaluate & update outdoor siren system for the east side of town	Not completed; Lack of funding
Maintain Public Works Equipment	Active; equipment serviced regularly
Keep HAZMAT manuals current and easily accessible	Active; ongoing
Maintain a well trained and equipped fire department and first responders for all potential hazards	Active; FD holds monthly trainings; Completed 2-3 Fire Pre Plans per year
Continue good working practices of wastewater management during flood events	Active
Continue donations of smoke detectors to community	Completed, active; 20 to 30 smoke detectors donated to Amish community annually during Fire Prevention Week
Continue to back-up city data and store offsite	The city has I-drive which backs up city data daily online and is stored on their cloud
Work with designated authorities to ensure dead animals as properly disposed of	Active; as needed
Continue to test local drinking water supply to monitor quality	Active, water tested daily; Public Works Department does continuing education
Restrict water usage necessary to maintain water supply	Implemented as needed
Develop an emergency evacuation and notification plan (including identifying detour and evacuation routes)	Active; The city is currently in compliance with the National Incident Management System (NIMS); Any emergency evacuation notification

	will be handled by the fire department
Eliminate and cap private and abandoned wells in city	Active, partially completed; city currently has two residents with private wells that are grandfathered in
Construct a larger Fire Department facility for equipment maintenance, handling, storage and training	Completed; new Fire Station construction completed in 2014
Replacement of Otter Creek Bridge	Completed, 2015
Update Sanitation Sewer System	Completed; slip-lined problem areas in 2014; Updated south lift station in 2014; backup generator installed in north lift station in 2015
Install additional Storm Sewer System	Not completed; lack of funding; Currently no plans to add
Community Safe Room	Completed; constructed inside new fire station 2014

CITY OF INDEPENDENCE – STATUS OF 2012 HAZARD MITIGATION ACTIVITIES	
Mitigation Action	**Committee Determination/Comments**
Educate the Public through: continued cooperation with local service organizations (American Red Cross, County EMA, etc.) to educate residents on how to prepare for and respond to a various hazards; public awareness and education on City sponsored projects within identified flood hazard areas (fill for sidewalks trails); importance of personal Emergency/Disaster Plan; use of all forms of media	Active, continuous – combination of EMA, Fire Department and city meetings
Continue to Periodically Evaluate Outdoor Warning Siren System in Order to Identify Areas of Potential Improvement	Completed, active; Test once-a-month
Continue to Maintain, Enforce, and Update Community Regulations, Ordinances, and Planning Documents as necessary (i.e., building codes, zoning ordinances, subdivision ordinance, floodplain management ordinance, comprehensive plan, minimum housing standards, etc.)	Active; In place, continuously active
Develop and Maintain Tree-Trimming Program in Order to Reduce the Chances of Falling Branches on Infrastructure and Property	Active; managed by City Street Department and Independence Light & Power (utility company)
Ensure First Responders, Police Department, Fire Department, Public Works and Street Department are properly Equipped, Staffed, and Trained to Provide Adequate Response to All Hazards	Active, repetitive – City Fire Chief is also City Safety Director who, in conjunction with the Safety Committee, is responsible for evaluating responses and training programs.
Consider the Construction of Community Tornado Shelters and Safe Rooms at Identified Vulnerable Locations (Senior Center, Falcon Civic Center, Churches, Nursing Homes, Hospital, Mobile Home Parks, and Parks)	Not completed – cost prohibitive at this point. Always discussed/considered when new construction is going on
Maintain Light Plant Procedure of Keeping a List of Individuals with Special Needs so they Receive a Higher Priority Response to Power Outages	Completed, active – completed on a monthly basis
Continue to Enforce Subdivision Ordinance Requiring Water Detention Areas	Subdivision ordinance in place, considered during subdivision planning phase
Continue to Work to Safeguard against Potential Fire and Explosion Hazards Throughout the Community	Active; Recently moved bulk fuel storage from location in northeast part of the city to a storage farm in a sparsely populated area
Maintain and Update as Needed, 28E Agreements with Surrounding Entities	Completed, active – have maintained 28E agreements with all Fire Departments in county
Continue to Provide Good Emergency Access to Water Throughout the Community (i.e., access to hydrants, river, wells, etc.)	In place, active – five wells spread throughout community and add hydrants as needed
Continue Participation in the National Flood Insurance Program (NFIP)	Completed, active – Maintained NFIP membership; FIRM Maps updated in July 2014
Continue Good Working Practices of Wastewater Management During Flood Events	In place, active – Waste Water Department maintains communication and reporting to DNR during flood events

Systematically Review and Update, as needed, Hazard Responses Policies and Procedures	Completed, active
Continue to Ensure Proper Signage is in place to Maintain Safe and Efficient Traffic Flow	Completed, active – signage in place and added as needed
Regularly Evaluate Transportation Systems to Identify and Correct any noted Deficiencies or Unsafe Areas, as well as Conduct Peak Studies (requested)	
Develop, Implement, and Maintain a Storm Water Management Program	
Continue to Test and Chlorinate Drinking Water	Completed, active
Continue to Cooperate with Local Medical Facilities and Health Department to increase likelihood of detection and proper response to outbreaks	Yes – coordinate with County Public Health and Emergency Management Coordinator; recently completed Table Top Exercise to improve response
Maintain Backup Communication Towers for Emergency Responders	Completed, active; backups in place
Restrict Water Usage, as necessary, to Maintain Water Supply	As needed – Need has not arose in past five years
Work with Telephone Companies to provide Redundant Service Lines and More Cellular Towers to Reduce Risk of Outages	
Develop and Maintain a List of Interpreters in order to Enhance Communication Barriers within the community	Active, through County EMA
Encourage Developers to Include Tornado Safe Rooms in New or Retrofit Construction Projects	In place
Consider Supplementing the Purchase of NOAA Weather Radios for People in the Community	Coordinate with EMA – requires grant dollars
Review Designated Snow Route Policies to Ensure Effectiveness and Maintain Proper Signage along Routes	
Place Lightning Arrestors on Power Lines	Responsibility of Independence Light & Power (utility company)
Identify Locations (nursing homes, schools, shelter locations) where it would be beneficial to have Backup Power Generation and install	Active, continuous – majority of facilities have in place
Identify any Deficiencies in Storm Sewer System and Prioritize Potential Mitigation Projects	Active, in place
Continue to Provide Surge Protection Devices on Any Identified Critical City-Owned Electronics	
Ensure Proper and Up-to-Date Training of Floodplain Managers	Active, in place
Elevation of Structures in Floodplain as an Alternative to Removal	Active – of buildings left in floodplain, many have been raised
Place Temporary Moratoriums on Boating during High Water and/or Flood Events	In place, implemented as needed
Strategically place Filter Strips and other Sedimentation and Erosion Control Measures in areas to reduce the amount of foreign materials entering water bodies	

Identify and Evaluate Critical Facilities (i.e., wells, lift stations, WWPT, etc.) for Accessibility, Vulnerability, and Risk	
Require all New Developments to Place Utilities Underground	Completed
Work Towards a Fire Insurance Rating of 4	Completed
Consider Supplementing or Outright Donation of Smoke Detectors to Residents	Active; Fire Department looks for/partners with various different organizations for funding and supplying
Continue Acquisition and Removal of Structures (all types) from the Floodplain	
Bank Stabilization Efforts on Areas along Wapsipinicon River and Malone Creek	Active, as needed
Dredge the Wapsipinicon River in order to provide more Flow Capacity	Not completed; Cost prohibitive & only short term fix
Dam Replacement	Not completed; Cost prohibitive
Maintain a Local Swimming Pool	New pool construction to start spring 2016, expected to open Spring 2017
Implement Burn Bans	Active, continuous – ordinance in place
Develop and Implement an Annual Inspection of Dam	
Continue Communication Efforts with Railroad Company to ensure Annual Inspections and Repairs of Railroad Bridge(s), especially after flood events	Communication maintained – Rail company regularly inspects bridges and other infrastructure

CITY OF LAMONT – STATUS OF 2012 HAZARD MITIGATION ACTIVITIES	
Mitigation Action	**Committee Determination/Comments**
Backup generator(s) for city shop, warning siren, ~~fire station~~ and wells	Partially completed, active; Purchased generator for community room and fire Dept. office
Continued participation in the Battery-Up Program; provide batteries, new smoke detectors, and CO detectors to residents	Active
Continue to identify and remedy sewer system inflow and infiltration problems – enforce sump pump ordinance, televise and grout sewer lines, identify and close abandoned service lines	Active; Televised all sewer mains, point repairs underway, adopted sewer main rehab fee to fund main repairs; House-to-house inspection to insure sump pumps not hooked to sewer main; identification of abandoned service lines active
Continue participation in NFIP	Active; maintained NFIP participation
Enlarge drainage culverts under Monroe/Madison Street	In process; received CDBG for storm water mitigation project, include culvert upsizing at Monroe and Madison, expected to be completed in 2017
Clear ditches, streams, and waterways	In process; part of CDBG storm water mitigation project, expected to be completed in 2017
Develop and implement well-head protection plan, eliminate and cap private and abandoned wells	Not completed
Continue to encourage enrollment in Code Red emergency notification system	Active; notices sent to residents annually
Back-up generator for designated shelter sites	Not completed; lack of funds
Keep updated designated shelter list	Active
Recruit and train fire fighters, first responders, emergency personnel (storm watch, dispatch)	Active
Maintain bunker gear, personal protective gear, equipment, communications radio, etc.	Active
Purchase off-road, grass and brush fire vehicle, update and enlarge tank on tanker truck	Purchased new grass truck and Kawasaki Mule from DNR, enlarged tank on tanker truck from 1200 gal to 1800 gal
Identify private homes with backup generators for shelter sites	Not completed
Update existing siren system – more powerful siren or several sirens in at least three locations/sites	Actively pursuing; grant application submitted in 2015
Build lift station out of floodplain; build third cell at lagoons	Completed

CITY OF STANLEY – STATUS OF 2012 HAZARD MITIGATION ACTIVITIES	
Mitigation Action	**Committee Determination/Comments**
Abate abandoned dilapidated residential properties	Active, approx. 75% completed ; removed 5 of 7 identified buildings, city has acquired title to the other 2
Improve early warning with sirens (with page function) and use of 'Code Red'	Active, partially completed; Pole with speaker installed, need electric and install siren; City now utilizes the state's ALERT IOWA program, which replaced Code Red
Increase public awareness and education of hazards	Not completed
Upgrade to a heavier equipment for snow removal	Completed 2012; acquired Army surplus truck and 12' plow
Install backup generator for fire station and emergency shelter	Partially completed; acquired 10Kw GENSET generator for fire station, still – need transfer switch; Acquired 10Kw GENSET generator for shelter (church) with transfer switch & wire
Reconvene the planning committee on an annual basis to review the HMP to check for compliance with plan goals and track progress	Not completed; Plan updated in 2017
Identify funding sources to assist in response operations and capability upgrades	Active; identified Walmart and Alliance Pipeline grants and have utilized
Return the community to either pre-disaster or improved conditions in a timely manner in the wake of a disaster	Active; no need to be implemented yet
Continually reassess and re-evaluate the HMP and mitigation activities	Not completed; Plan updated in 2017
Develop emergency shelter plan	Active, 15% completed; need write plan, primary shelter at church in new 2015 with electric for genet hookup, have 6x cot sets, need Est 60 more, need food stock, need protective equipment
Complete fire water system	Active, 75%; acquired with AFG hose and appliances, need install pumps and fire hydrant at fire reservoir
Replace fire station and include safe room	Not completed
Plan for elimination of water by constructing new storm sewer	Active, 20%; installed drain tile on S. Elm St. and culvert under W33
Continue street upgrade to concrete	Active, 40%; concrete paved 1 block "business district" = 6 out of 15 blocks, need concrete 9 more block
Utility interconnected for Community Backup Generator	Partially completed; Have new 200kw GENSET generator, still need interconnect switch
Replace 1st out fire engine	City purchased DOA surplus 1999 Fire Engine, being refurbished/repaired as of October 2016
Community security plan	Not complete; 0%

CITY OF QUASQUETON – STATUS OF 2012 HAZARD MITIGATION ACTIVITIES	
Mitigation Action	**Committee Determination/Comments**
Restrict Water Usage, as necessary, to Maintain Water Supply	Active; has not been necessary to implement
Encourage Developers to Include Tornado Safe Rooms in New or Retrofit Construction Projects	Active; No formal policy in place, still encouraged
Continue to Maintain, Enforce, and Update Community Regulations, Ordinances, and Planning Documents as necessary (i.e., zoning ordinance, floodplain management ordinance, comprehensive plan, etc.)	Active; city policies and regulations reviewed through course of regular council business
Systematically Review and Update, as needed, Hazard Responses Policies and Procedures	Active, as needed
Continue Participation in the National Flood Insurance Program (NFIP)	Completed, active; city continues to participate in NFIP and has floodplain ordinance in place
Implement Burn Bans	Active, completed; Done through Buchanan County and Fire Dept.
Develop and Implement an Annual Inspection of Dam	No longer required; Dam mitigated by covering with stones to form rapids
Develop and Maintain Tree-Trimming Program in Order to Reduce the Chances of Falling Branches on Infrastructure and Property	Active, seasonal and as needed
Educate the Public through: continued cooperation with local service organizations (American Red Cross, County EMA, etc.) to educate residents on how to prepare for and respond to a various hazards; public awareness and education on City sponsored projects within identified flood hazard areas (fill for sidewalks trails); importance of personal Emergency/Disaster Plan; use of all forms of media	Active; Have developed a city Facebook page and online calendar to provide information to residents
Identify and Evaluate Critical Facilities (i.e., wells, lift stations, WWPT, etc.) for Accessibility, Vulnerability, and Risk	Completed, active; identified Water tower, lift station, lagoon, fire station, city hall
Elevation of Structures in Floodplain as an Alternative to Removal	Active; completed when possible
Strategically place Filter Strips and other Sedimentation and Erosion Control Measures in areas to reduce the amount of foreign materials entering water bodies	Completed, active; Rock barriers and vegetation in place
Bank Stabilization Efforts on Areas Along Wapsipinicon River	Active, partially completed; rock barriers/stabilization work completed around dam, need to be continued and maintained
Develop, Implement, and Maintain a Storm Water Management Program	Partially completed; Formal storm water management plan not in place, regulated through city code
Dredge the Wapsipinicon River in order to provide more Flow Capacity	Not completed; lack of funding
Continue Good Working Practices of Wastewater Management During Flood Events	Completed, active; managed by city public works
Continue to Ensure Proper Signage is in place to Maintain Safe and Efficient Traffic Flow	Active; signage updated as needed
Regularly Evaluate Transportation Systems to Identify and Correct any noted Deficiencies or Unsafe Areas, as well as Conduct Peak Studies (requested)	Active; implemented as needed

Continue to Test and Chlorinate Drinking Water	City connected to Rural Water; responsibility of Central Iowa Water Association
Continue to Work to Safeguard against Potential Fire and Explosion Hazards Throughout the Community	Active, completed; County Zoning is responsible for
Maintain and Update as Needed, 28E Agreements with Surrounding Entities	Active; 28E agreements maintained
Continue to Provide Good Emergency Access to Water Throughout the Community (i.e. access to hydrants, river, wells, etc.)	Completed, active; City is member of Central Iowa Water Association (rural water); city has access to 300,000 gallon water tower owned by CIWA
Ensure First Responders, Sheriff Department, Fire Department, Public Works and Street Department are properly Equipped, Staffed, and Trained to Provide Adequate Response to All Hazards	Completed, active
Maintain Backup Communication Towers for Emergency Responders	Active; rely on County for backup
Work with Telephone Companies to provide Redundant Service Lines and More Cellular Towers to Reduce Risk of Outages	Active; towers and service lines responsibility of telephone companies
Develop and Maintain a List of Interpreters in order to Enhance Communication Barriers within the community	Not done at local level; county maintains
Consider Supplementing the Purchase of NOAA Weather Radios for People in the Community	Not completed
Review Designated Snow Route Policies to Ensure Effectiveness and Maintain Proper Signage along Routes	Ongoing, have done and we have an ordinance
Identify Locations (Fire Station) where it would be beneficial to have Backup Power Generation and Install	Completed, active
Continue to Provide Surge Protection Devices on Any Identified Critical City-Owned Electronics	Completed, active
Ensure Proper and Up-to-Date Training of Floodplain Managers	Not needed
Place Temporary Moratoriums on Boating during High Water and/or Flood Events	Not completed; city does not regulate – responsibility of state and federal agencies
Continue to Periodically Evaluate Outdoor Warning Siren System in Order to Identify Areas of Potential Improvement	Active; annual testing
Work Towards a Fire Insurance Rating of 4	Not completed
Consider Supplementing or Outright Donation of Smoke Detectors to Residents	Not completed
Continue Acquisition and Removal of Structures (all types) from the Floodplain	Active, not completed
Dam Replacement	Not completed, no longer needed; Dam was mitigated with rocks to create rapids
Identify and Deficiencies in Storm Sewer System and Prioritize Potential Mitigation Projects	Active; complete annual inspections and make update as needed.
Consider the Construction of Community Tornado Shelters and Safe Rooms at Identified Vulnerable Locations (Churches, Mobile Home Parks, and Parks)	Not completed; lack of funding
Continue maintenance on Dam	Not completed, no longer needed; Dam has been mitigated

CITY OF ROWLEY – STATUS OF 2012 HAZARD MITIGATION ACTIVITIES	
Mitigation Action	**Committee Determination/Comments**
Review designated snow route policy and signage	Active; reviewed when necessary
Establish a tree trimming program	Completed, program in place
Work on adopting building codes	Not completed
Enforce county guidelines on burning	Completed, active
Informational letter to citizens	Not completed
Establish good neighbor programs	Active
Continue to promote use of Iowa One Call	Active, residents advised when pulling permits
Review security at critical facilities in the city	Active, reviewed and updated as needed
Continue to follow monitoring requirements set forth by the Iowa DNR	Active
Encourage the use of buffer strips	Active
Training Fire Department, First Responders to adequately respond to all hazard events	Active, training maintained
Identify potential funding sources to accomplish mitigation projects	Funding sources identified via INRCOG; have not pursued funds for projects
Test warning sirens for community notification of pending storms	Active; weekly siren tests; promote new ALERT IOWA notification program
Implement Hazard Mitigation Plan	Active
Maintain lists of special needs of citizens so they receive high priority during storms	Not completed
Maintain weather spotter training	Active
Maintain existing agreement with surrounding communities for mutual aid assistance	Active, agreements maintained
Maintain existing and purchase new firefighting equipment as need	Active, as needed
Keep sirens updated	Active, regularly tested, will be updated when needed
Maintain fire and rescue services	Active, Fire Dept. maintained
Acquire a generator	Completed, recently acquired
Sign up for Code Red	Encouraging everyone – replaced by state's ALERT IOWA program
Maintaining safe playground equipment	Active, complete

CITY OF WINTHROP – STATUS OF 2012 HAZARD MITIGATION ACTIVITIES	
Mitigation Action	**Committee Determination/Comments**
Update building codes for wind resistance	Partially completed; building code sin place
Develop a Capital Improvement Program for storm water management	Active; storm water management improvements made as streets are updated
Establish tree trimming protocol	Active; completed annually and as needed
Enforce sump-pump ordinance	Partially completed; ordinance in place but not all sump-pumps disconnected from sewer drains
Encourage all residents to sign up for countywide 'code red' service	Alert Iowa; sign up at fire dept. dinner/open house
Utilize city website to notify residents of potential/current hazards	Active; notifications posted as needed
Utilize water bill notification system for residents	Active; as needed
Encourage residents to purchase NOAA Radios	Not completed; responsibility of county
Increase security measures taken to protect and secure critical facilities	Completed; Changed locks at sewer plant and fire dept. doors
Construct additional fire department bay to hold new fire truck	Completed in 2013
Improve drainage by dredging drainage ditch	Not completed
Consider development of a storm water management program	Not completed; grant submitted for
Develop GIS mapping of city infrastructure	Partially completed; Started in 2014, still working on some details
Acquire tornado sirens with automatic detonation from law center	Soon-to-be completed; City submitted grant in 2015 seeking funds to purchase a new warning siren, received notice in '16 that grant is expected to be funded
Acquire automatic dial-up system for failure at water and sewer plant	Not completed; to be installed when required upgrades are made to sewer plant
Continue education of emergency personnel	Active – all fire dept. personnel now Firefighter I
Identify possible funding sources for projects and programs	Completed, active; AFG grant
Maintain list of potential translators in case of emergency	Not completed, responsibility of County
Develop list of structures to be used in gathering during emergencies	Completed
Purchase thermal imager	Not completed, active; city looking at possible AF6 grant for
Construct community tornado safe room	Not completed
Install a concrete floodplain spillway	Not completed
Install higher water flow culverts across floodplain	Not completed
Upgrade water line to 6-inches	Not completed

OVERALL HMP UPDATE CHANGES

Each participating jurisdiction reviewed the County's 2012 MJ-HMP. Needed updates were identified by each jurisdiction, including: development, status of mitigation actions, and assessment of hazards. Relevant county and city data was also researched and updated regarding population and infrastructure totals and vulnerabilities. The table below displays a summary of updates by section.

Overall MJ-HMP Updates		
Section	**Update**	**Comments**
Section 1 – Introduction	Yes	• Updated planning process, participants and schedule • Updated identified hazards and assessment to reflect hazards and assessment criteria of State of Iowa's 2013 HMP
Section 2 – Composite Community Profile	Yes	• Updated Infrastructure information, including transportation and utilities • Updated Census and American Community Survey data • Updated housing, income, and economy data • Updated local jurisdictional information • Updated all tables and local information
Section 3 - Hazard Analysis & Risk Assessment (includes Vulnerability Assessment)	Yes	• Identified new list of hazards • Scored new hazard list with new scoring criteria for each jurisdiction • Updated composite assessment scores for Buchanan County and all jurisdictions • Updated disaster historical occurrences • Updated average assessment scores for Buchanan County and all jurisdictions • Redefined subcategories describing individual hazards • Updated and completed vulnerability assessments (identifying critical facilities and social assets) affected by flooding (river and flash) and tornados. • Updated the estimating potential property losses and repetitive loss properties with available data • Updated NFIP status • Updated vulnerability assessment, including shelters, values in floodplains, and "at-risk" population data
Section 4 – Mitigation Strategy	Yes	• Updated planning and regulatory documents • Updated public education and awareness mitigation actions • Updated emergency services mitigation actions • Updated to include new warning system in place • Reviewed, added and deleted mitigation activities analysis from the previous menu of potential strategies. • Identified agencies responsible for implementation of mitigation activities • Reorganized Mitigation Action Steps into subgroups

Section 5 - Plan Maintenance, Review, & Amendment	Yes	• Added process for implementing the HMP into other planning documents

Appendices/Attachments	Yes	• Updated all city appendices from 2012 plan
		  o Community Profiles, transportation, developments, and utility providers
		  o Demographic data
		  o New list of hazards and analysis criteria
		  o Vulnerability analysis of critical facilities, populations, and estimated property loss
		  o NFIP status and repetitive loss status, where applicable
		  o Current mitigation activities
		  o Reviewed, added and deleted mitigation activities analysis from the previous menu of potential strategies
		• Added appendices for: East Buchanan Community Schools and Jesup Community Schools; Independence Community Schools appendix updated from 2012 plan
		• Added tornado scenario maps
		• Updated historic tornado map
		• Updated city flood scenario and county floodplain maps
		• Added city floodplain maps
		• Updated city critical site maps
		• Updated county-wide critical site maps and divided into individual maps for each critical site
		• Added status update of previous hazard mitigation activities

ATTACHMENT 4: PLANNING COMMITTEE & PUBLIC INVOLVEMENT MATERIALS

Committee Meeting #1: August 27, 2015

- PUBLIC MEETING AGENDA-

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Meeting #1

Date: Thursday, August 27, 2015

Time: 6:30 PM

Place: Independence Public Library – Community Room
805 1st Street East, Independence, IA 50644

1. Welcome and Introductions
2. The planning process, scope of work, and schedule
3. Review and update Community Profiles
4. Review existing Mitigation Action Steps
5. Discuss evaluation standards for updating Action Steps
6. Adjourn

THIS IS A PUBLIC MEETING

MEMBERS OF THE COMMUNITY ARE INVITED TO ATTEND AND PARTICIPATE IN THIS MEETING

Buchanan County Multi-Jurisdictional HMP Planning Session #1 Minutes
Independence Public Library
Independence, Iowa
August 27, 2015

The Hazard Mitigation Kick-off Meeting was called to order by Brian Schoon of the Iowa Northland Regional Council of Governments (INRCOG) at 6:30 pm.

The following persons were in attendance: Rodger Sill, Stanley Mayor; Chris Hare, Winthrop Fire Chief; Gerald W. Dennie, Winthrop Mayor; Larry Locke, Buchanan County Emergency Management; Tai Burkhart, Buchanan County Public Health; Rick Wulfekuhle, Buchanan County EMA Coordinator; Al Roder, Independence City Manager; Jean Kivell, Aurora Mayor; Jeremy Paris, Aurora Fire Department; Michael Hundley, Aurora Fire Chief; Eleanor McGraw-Rile, Lamont Mayor; Joe Opperman, Lamont Public Works Director; Diane S. Anderson, Lamont City Clerk; Gerald L. VandeVorde, Hazleton Mayor; Justin Duffy, Hazleton Mayor Pro-Tem; Jean Peterson, Independence School District Superintendent; Clair Franzen, Buchanan County EMA; Daniel Fox, East Buchanan CSD Superintendent; Chad Garber, Wapsie Valley Schools Superintendent; Nathan Marting, Jesup CSD Superintendent; Allan Nelson, Starmont Community Schools Superintendent; Brian Schoon, INRCOG; and Sidney Noyce, INRCOG.

The following jurisdictions were represented at the meeting: Buchanan County, Aurora, Hazleton, Independence, Lamont, Stanley, Winthrop, East Buchanan School District, Independence School District, Jesup School District, Starmont School District, and Wapsie Valley School District.

After calling the meeting to order Brian Schoon provided an overview of the agenda for the evening, how the planning process will work, scope of work and plan, and the future dates, times, and locations of scheduled meetings.

Schoon also explained the definition of mitigation and how it relates to hazards in each city and the county. He commented the HMP's purpose is two-fold, which is to become and remain eligible for FEMA mitigation grant funding and more importantly to reduce negative impacts and each community's vulnerability to natural and man-made hazards.

He then reviewed the "What is a Hazard Mitigation Plan?" handout and information that will be needed for Community Profile updates, as well as the process and criteria for updating existing plan action steps. Jurisdictions were then given time to work amongst themselves to update action steps.

The meeting adjourned at 8:00 pm.

Respectfully Submitted,
Sidney Noyce
Community Planner

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Attendance Sign-In Sheet, Meeting 1

	Name (please print & sign)	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
12	Joe Opperman Joe Opper	Director of Public works Lamont	city of Lamont	Joeopperman1@gmail.com	non
13	Diane S. Anderson DS Anderson	City Clerk	City of Lamont	cityoflamont@windstream.net	Non
14	Gerald L. VandeVoode [signature]	MAYOR City of Hazleton	City of Hazleton	glv190xt@hotmail.com	NON
15	Justin Duffy Justin Duffy	Mayor Pro-Temp City of Hazleton	City of Hazleton		NON
16	Jean Peterson	Supt. Independence	Independence School District	jpeterson@independence.k12.ia.us	Non
17	Clair Franzen	EMA	Buchanan City	Cliffy@indytel.com	VOl
18	Daniel Fox	Superintendent East Buchanan CSD	East Buchanan CSD	dfox@east-buc.k12.ia.us	Non
19	Chad Garber	Wapsie Valley Schools, superintendent	Wapsie Valley Schools	cgarber@wapsievalleyschools.org	non
20	Nothan Marting	Jesup CSD Supt.	Jesup CSD	nmarting@jesup.k12.ia.us	NO
21	Allan Nelson [signature]	Starmont Comm. Schools Superintendent	Arlington	anelson@starmont.k12.ia.us	Non
22	Sidney Noyce [signature]	Planner	INRCOG	SNOYCE@INRCOG.ORG	

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Thursday, August 27th, 2015 at 6:30 PM – Independence Public Library
Meeting 1 - Attendance Sign-In Sheet

	Name (please print & sign)	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
1	Rodger Sill [signature]	Mayor & Fire Chief	City of Stanley	rodger@feldfire.com	Vol
2	Chris Hare [signature]	Fire Chief	City of Winthrop	thehares1996@netins.net	Vol
3	Gerald W. Dennie GERALD W. DENNIE	Mayor Winthrop	City of Winthrop	gwdennie@netins.net	Vol
4	Larry Locke Larry Locke	Buchanan County Emergency Management	County	KDØGFY@Hotmail.com	Vol
5	Tai Burkhart Tai Burkhart	Deputy Director Buchanan Co. Public Health	County	tburkhart@co.buchanan.ia.us	Non-Vol
6	Rick Wulfekuhle Richard A. Wulfekuhle	Coordinator Buch Co EMA	County	bcem@co.buchanan.ia.us	NON Vol.
7	Al Roder [signature]	City Manager	City of Independence	citymgr@indytel.com	non Vol.
8	Jean Kivell	Mayor-Aurora	City of Aurora	jean@east iowaplastics.com	Non
9	Jeremy Paris	Aurora Fire Dept		Jeremy John@gmail.com 1355	Vol
10	Michael Hundley	Aurora Fire Chief	Aurora Fire Dept.	Mhundley10@gmail.com	Non-Vol
11	Eleanor McGraw Riley	Lamont Mayor	City of Lamont		

PROOF OF PUBLICATION

State of Iowa
Buchanan County

I, Tracy Cummings, as the billing clerk of the Independence Bulletin Journal, a bi-weekly newspaper of general circulation, published at Independence, Buchanan County, Iowa; swear that the notice hereto attached was published in said newspaper 1 consecutive weeks, the first publication being on the — day of —, 2015, and the last publications being on the 22nd day of August, 2015.

Publication fee: 22.13

Tracy Cummings

Sworn to and subscribed in presence by the said Tracy Cummings, this day of August 22nd, 2015.

Notary Public

LORI SMITH
Commission Number 756363
My Commission Expires

Public Notice
BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION KICK-OFF PLANNING SESSION MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

This first meeting will review the purpose and benefits of a multi-jurisdictional hazard mitigation plan, project budget, planning process/scope of work, updating information from the existing plan, and the dates and locations of future meetings. The meeting will take place on Thursday, August 27, 2015 at 6:30 pm at the Independence Public Library – Community Room, 805 1st St E, Independence, IA 50644.

Published in the Bulletin Journal on August 22, 2015.

Affidavit of Publication

State of Iowa, Buchanan County, ss.

I, K.E. Adams, publisher of the *Citizen Herald*, a weekly newspaper published in Jesup, Iowa, do solemnly swear that the annexed copy of:

Buchanan Co. Pub. Bid

Was printed and published in said newspaper regularly once a week for 1 consecutive weeks commencing on the 26 day of Aug A.D. 2015, said coding on the 26 day of Aug A.D. 2015

I, K.E. Adams, do hereby state that I verify under penalty of perjury and pursuant to the laws of the State of Iowa that the preceding is true and correct as I verily believe.

Name: K E Adams

Date: 8/26/15

No. of lines: 27
Times rate: .574
Equals: $15.50

Second & Successive Weeks:

No. of Lines:
Times rate:
Equals:

Printer's Bill
Received of
the sum of
dollars, in full for publication of the annexed notice.

Public Notice
Buchanan County

BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION KICK-OFF PLANNING SESSION MEETING

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If you have any questions, please feel free to contact Sidney Royce at INRCOG, 319-295-0311.

STATE OF IOWA
Buchanan County

CERTIFICATION OF PUBLICATION

I, __Ann Wulfekuhle___, being duly sworn depose and say that I am _Layout Editor of the Lamont Leader, a weekly newspaper published at Lamont, Buchanan County, Iowa, and I further state that the annexed and subjoined notice was duly published in said paper, as often as once in each week for:

__1__ consecutive weeks, commencing on the 27th day of AUGUST,
2015 _, and ending on the 27th day of AUGUST, 2015

Signed Ann Wulfekuhle
Date September 4, 2015

Buchanan County
Multi-Jurisdictional Hazard
Mitigation Kick-off Planning Session
Meeting

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions

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If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311

AFFIDAVIT OF
PUBLICATION OF NOTICE

AFFIDAVIT OF PUBLICATION

State of Iowa, Buchanan County -- ss.

Mary Beth Smith, being duly sworn, deposes and says that she is the publisher of The Winthrop News, a newspaper printed and published weekly in Winthrop, in Buchanan County, State of Iowa, aforesaid; that a notice, of which attached is an exact copy of said newspaper, was published therein once each week for one (1) consecutive issues of said newspaper, the first publication of the same being in the issue of the 27th day of August, 2015, A.D., and the last on the 27th day of August, 2015, A.D.

Publication Fee: $33.75

I, Mary Beth Smith, do hereby state that I certify under penalty or perjury and pursuant to the laws of the State of Iowa that the preceding is true and correct as I verily believe.

Signed Mary Beth Smith
Mary Beth Smith, Publisher

Date: August 27, 2015

Filed....., 20.....

Clerk

TO: Independence Bulletin Journal
900 5th Ave NE
Independence, IA 50644 editor@bulletinjournal.com

The News/Buchanan County Review
PO Box 9
Winthrop, IA 50682 news@thewinthropnews.com

Jesup Citizen Herald
PO Box 545
Jesup, IA 50648 editor@jesupcitizenherald.com

Lamont Leader
621 Bush St
Lamont, Iowa 50650 lamontleader@iowatelecom.net

FROM: Sidney Noyce, INRCOG
229 East Park Avenue
Waterloo, Iowa 50703
(319) 235-0311

(Note: Please publish this press release in the next edition of your newspaper. Invoice INRCOG at the above address. Also please provide one publisher's affidavit to INRCOG along with the invoice. Thank you.)

BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION KICK-OFF PLANNING SESSION MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

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If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.

Committee Meeting #2: September 10, 2015

- PUBLIC MEETING AGENDA-

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Meeting #2

Date: Thursday, September 10, 2015

Time: 6:30 PM

Place: Independence Public Library – Community Room
805 1st Street East, Independence, IA 50644

1. Welcome and Introductions
2. Review Kick-Off Meeting Information
3. Review and update status of Mitigation Action Steps
4. Introduction to defined 2015 Hazards
5. Review definitions, hazard analysis and scoring
6. Adjourn

THIS IS A PUBLIC MEETING

MEMBERS OF THE COMMUNITY ARE INVITED TO ATTEND AND PARTICIPATE IN THIS MEETING

Buchanan County Multi-Jurisdictional HMP Planning Session #2 Minutes

Independence Public Library
Independence, Iowa
September 10, 2015

The second Hazard Mitigation Planning Session was called to order by Brian Schoon of the Iowa Northland Regional Council of Governments (INRCOG) at 6:30 pm.

The following persons were in attendance: Rodger Sill, Stanley Mayor; Tom Sill, Stanley; Chris Hare, Winthrop Fire Chief; Mary Ryan, Winthrop City Clerk; Gerald W. Dennie, Winthrop Mayor; Larry Locke, Buchanan County Emergency Management; Chad Staton, Quasqueton Mayor; Bill Cowell, Fairbank Mayor; Marlene Strempke, Fairbank City Clerk; Jean Kivell, Aurora Mayor; Michael Hundley, Aurora Fire Chief; Deborah Hundley, Aurora Captain; Nathan Marting, Jesup CSD Superintendent; Clair Franzen, Buchanan County EMA; Gerald VandeVorde, Hazleton Mayor; Justin L. Duffy, Hazleton Mayor Pro-Tem; Chris Hayzlett, Hazleton Citizen; Dave Bishop, Jesup Mayor; Joe Opperman, Lamont Public Works; Eleanor Riley, Lamont Mayor; Diane Anderson, Lamont City Clerk; Daniel Fox, East Buchanan CSD Superintendent; Brian Schoon, INRCOG; and Sidney Noyce, INRCOG.

The following jurisdictions were represented at the meeting: Buchanan County, Aurora, Fairbank, Hazleton, Jesup, Lamont, Quasqueton, Stanley, Winthrop, East Buchanan School District, and Jesup School District.

After calling the meeting to order, Schoon presented the previous meeting's minutes for approval. Rodger Sill, Stanley Mayor, made a motion to approve the minutes with a second by Gerald VandeVorde, Hazleton Mayor. The minutes were approved with a unanimous vote.

Sidney Noyce presented the Community Profile handout and reviewed the status of the last meeting's handouts.

Schoon then reviewed Hazard Assessment handout, as well as the process and criteria for scoring each hazard. Jurisdictions were then given time to work amongst themselves to update action steps.

The meeting adjourned at 7:45 pm.

Respectfully Submitted,
Sidney Noyce
Community Planner

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Thursday, September 10th, 2015 at 6:30 PM – Independence Public Library
Meeting 2 - Attendance Sign-In Sheet

	Name (please print & sign)	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
1	Rodger Ellis [signature]	Mayor	City of Stanley	neiowa@netis.net	Vol
2	Tom Bull	None	City of Stanley	—	Vol
3	Chris Hare	Fire Chief	City of Winthrop	thehares1996@netins.net	Vol
4	Mary Ryan	City Clerk	City of Winthrop	cityofwinthrop@live.com	Vol
5	[signature]	Mayor	City of Winthrop	" "	Vol
6	[signature]	Buchanan County EMA	EMA	KDØGFS@Hotmail.com	Vol
7	Cleo [signature]	Mayor	Quarry	statay@netins.net	Vol
8	Bill Cowell	Mayor	Fairbank	cowellb@ian-mixing.com	Vol
9	Marlene Strempke	City Clerk	Fairbank	mstrempke@fairbank-ia.org	Vol
10	Jean Kivell	Mayor	Aurora	jean@eastiowaplastics.com	Paid
11	Michael Hundley	Fire Chief	Aurora	Mhundley10@gmail.com	Paid

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Attendance Sign-In Sheet, Meeting 2

	Name (please print & sign)	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
12	Deborah Hundley	Captain	Aurora	deb.hundley@yahoo.com	Vol.
13	Nathan Marting	Superintendent	Jesup CSD	nmarting@jesup.k12.ia.us	V
14	Clair Franzen	Special Projects Officer	Buchanan Emg	Cliffy@indytel.com	✓
15	Gerald VandeVorde	Mayor	Hazleton	glv190xt@hotmail.com	V
16	Justin L. Duffy	Mayor Pro-Tem	Hazleton	JDuffy@pipestonesystem.com	✓
17	Chris Hayzlett	Citizen	Hazleton	chayzlett@gmail.com	✓
18	Dave Bishop	Mayor	Jesup	jesupmayor@jtt.net	—
19	Joe Opperman [signature]	Public Works	Lamont	joeopperman1@gmail.com	✓
20	Eleanor Riley [signature]	Mayor	Lamont	—	
21	Diane Anderson [signature]	City Clerk	Lamont	cityoflamont@windstream.net	V
22	Sidney Noyce [signature]	Planner	INRCOG		

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Attendance Sign-In Sheet, Meeting 2

	Name (please print & sign)	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
23	Dan Fox	Superintendent	East Buchanan CSD	dfox@east-buc.k12.ia.us	Non
24					
25					
26					
27					
28					
29					
30					
31					
32					

PROOF OF PUBLICATION

State of Iowa
Buchanan County

I, Tracy Cummings, as the billing clerk of the Independence Bulletin Journal, a bi-weekly newspaper of general circulation, published at Independence, Buchanan County, Iowa; swear that the notice hereto attached was published in said newspaper 1 consecutive weeks, the first publication being on the — day of —, 2015, and the last publications being on the 5th day of September, 2015.

Publication fee: 22.13

Tracy Cummings

Sworn to and subscribed in presence by the said Tracy Cummings, this day of September 5th, 2015.

Notary Public

LORI SMITH
Commission Number 756363
My Commission Expires

Public Notice
BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 2ND PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

This second meeting will review material discussed at the first meeting, determine goals, begin identifying potential mitigation activities, and discuss and assess potential hazards. The meeting will take place on Thursday, September 10, 2015 at 6:30 pm at the Independence Public Library – Community Room, 805 1st St E, Independence, IA 50644.

Published in the Bulletin Journal on September 5, 2015.

DATE: August 31, 2015

TO: Independence Bulletin Journal
900 5th Ave NE
Independence, IA 50644 editor@bulletinjournal.com

The News/Buchanan County Review
PO Box 9
Winthrop, IA 50682 news@thewinthropnews.com

Jesup Citizen Herald
PO Box 545
Jesup, IA 50648 editor@jesupcitizenherald.com

Lamont Leader
621 Bush St
Lamont, Iowa 50650 lamontleader@iowatelecom.net

FROM: Sidney Noyce, INRCOG
229 East Park Avenue
Waterloo, Iowa 50703
(319) 235-0311

(Note: Please publish this press release in the next edition of your newspaper. Invoice INRCOG at the above address. Also please provide one publisher's affidavit to INRCOG along with the invoice. Thank you.)

BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 2ND PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

This second meeting will review material discussed at the first meeting, determine goals, begin identifying potential mitigation activities, and discuss and assess potential hazards. The meeting will take place on Thursday, September 10, 2015 at 6:30 pm at the Independence Public Library – Community Room, 805 1st St E, Independence, IA 50644.

If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.

Affidavit of Publication

State of Iowa,
Buchanan County, ss.

I, K.E. Adams, publisher of the *Citizen Herald*, a weekly newspaper published in Jesup, Iowa, do solemnly swear that the annexed copy of:

Buchanan Co-
Hazard Mitigation

Notice was published in said newspaper regularly once a week for 1 consecutive weeks commencing on the 9 day of Sep A.D. 2015 and ending on the 9 day of Sep A.D. 2015.

I, K.E. Adams, do hereby state that I certify under penalty of perjury and pursuant to the laws of the State of Iowa that the preceding is true and correct as I verily believe.

Name: K Adams

Date: 9/9/15

No. of lines: 28

Times rate: .574

Equals: $16.07

Second & Successive Weeks:

No. of Lines: _____

Times rate: _____

Equals: _____

Printer's Bill _____

Received of _____

_____

the sum of _____

dollars, in full for publication of the annexed notice.

Page 6 Jesup Citizen Herald W

Public Notice
Buchanan County

BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 2ND PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

This second meeting will review material discussed at the first meeting, determine goals, begin identifying potential mitigation activities, and discuss and assess potential hazards. The meeting will take place on Thursday, September 10, 2015 at 6:30 pm at the Independence Public Library – Community Room, 805 1st St E, Independence, IA 50644.

If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.

AFFIDAVIT OF PUBLICATION

State of Iowa, Buchanan County -- ss.

Mary Beth Smith, being duly sworn, deposes and says that she is the publisher of The Winthrop News, a newspaper printed and published weekly in Winthrop, in Buchanan County, State of Iowa, aforesaid; that a notice, of which attached is an exact copy of said newspaper, was published therein once each week for one (1) consecutive issues of said newspaper, the first publication of the same being in the issue of the 10th day of September, 2015, A.D., and the last on the 10th day of September, 2015, A.D.

Publication Fee: $33.00

I, Mary Beth Smith, do hereby state that I certify under penalty or perjury and pursuant to the laws of the State of Iowa that the preceding is true and correct as I verily believe.

Signed Mary Beth Smith
Mary Beth Smith, Publisher

Date: September 10, 2015

AFFIDAVIT OF PUBLICATION OF NOTICE

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Filed....., 20.....

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Clerk

Committee Meeting #3: September 23, 2015

- PUBLIC MEETING AGENDA-

Buchanan County Multi-Jurisdictional
Hazard Mitigation Plan Meeting #3

Date: Wednesday, September 23, 2015

Time: 6:30 PM

Place: Independence Public Library
805 1st Street E
Independence, IA 50644

1. Welcome and Introductions
2. Review Previous Meetings Information
3. Finish Updating Hazards, Hazard Analysis, and Risk Assessment
4. Update/Identify Vulnerable Buildings and Populations
5. Review and Update Current and Future Mitigation Strategies
6. Review Community Profile information
7. Adjourn

THIS IS A PUBLIC MEETING

MEMBERS OF THE COMMUNITY ARE INVITED TO ATTEND AND PARTICIPATE IN THIS MEETING

Buchanan County Multi-Jurisdictional HMP Planning Session #3 Minutes
Independence Public Library
Independence, Iowa
September 23, 2015

The third Hazard Mitigation Planning Session was called to order by Sidney Noyce of the Iowa Northland Regional Council of Governments (INRCOG) at 6:30 pm.

The following persons were in attendance: Jean Peterson, Independence Community Schools Superintendent; Clair Franzen, EMA Special Projects Officer; Michael Hundley, Aurora Fire Chief; Deborah Hundley, Aurora Fire Captain; Danette Lujan, Brandon City Clerk; Marlene Strempke, Fairbank City Clerk; Chad Staton, Quasqueton Mayor; Don Shonka, Buchanan County Supervisor; Gerald VandeVorde, Hazleton Mayor; Justin L. Duffy, Hazleton Mayor Pro-Tem; Chris Hayzlett, Hazleton citizen; Rita Knutson, Rowley Mayor; Joe Opperman, Lamont Public Works Director; Eleanor Riley, Lamont Mayor; Diane Anderson, Lamont City Clerk; Rodger Sill, Stanley Mayor; Tom Sill, Stanley volunteer; Shawn Curtis, Winthrop Public Works; Mark Kress, Winthrop Council; Lee White, East Buchanan Schools teacher; Chris Hare, Winthrop Fire Chief; Melissa Hesner, Winthrop Council; Ann Myers, Winthrop Council; Gerald W Dennie, Winthrop Mayor; Mary Ryan, Winthrop City Clerk; Sidney Noyce, INRCOG.

The following jurisdictions were represented at the meeting: Buchanan County, Aurora, Brandon, Fairbank, Hazleton, Lamont, Quasqueton, Rowley, Stanley, Winthrop, East Buchanan School District, and Independence School District.

After calling the meeting to order, Noyce presented the previous meeting's minutes for approval. Gerald VandeVorde, Hazleton Mayor, made a motion to approve the minutes with a second by Chad Staton, Quasqueton Mayor. The minutes were approved with a unanimous vote.

Noyce presented the meeting's agenda. The jurisdictions were directed to review their previous action steps and provide updates as to associated hazards, estimated cost, timeline, and priority for each action step. Additionally, jurisdictions were asked to begin considering other action steps to include in the plan's update.

Jurisdictions were then given time to work amongst themselves to update action steps.

The meeting adjourned at 7:30 pm.

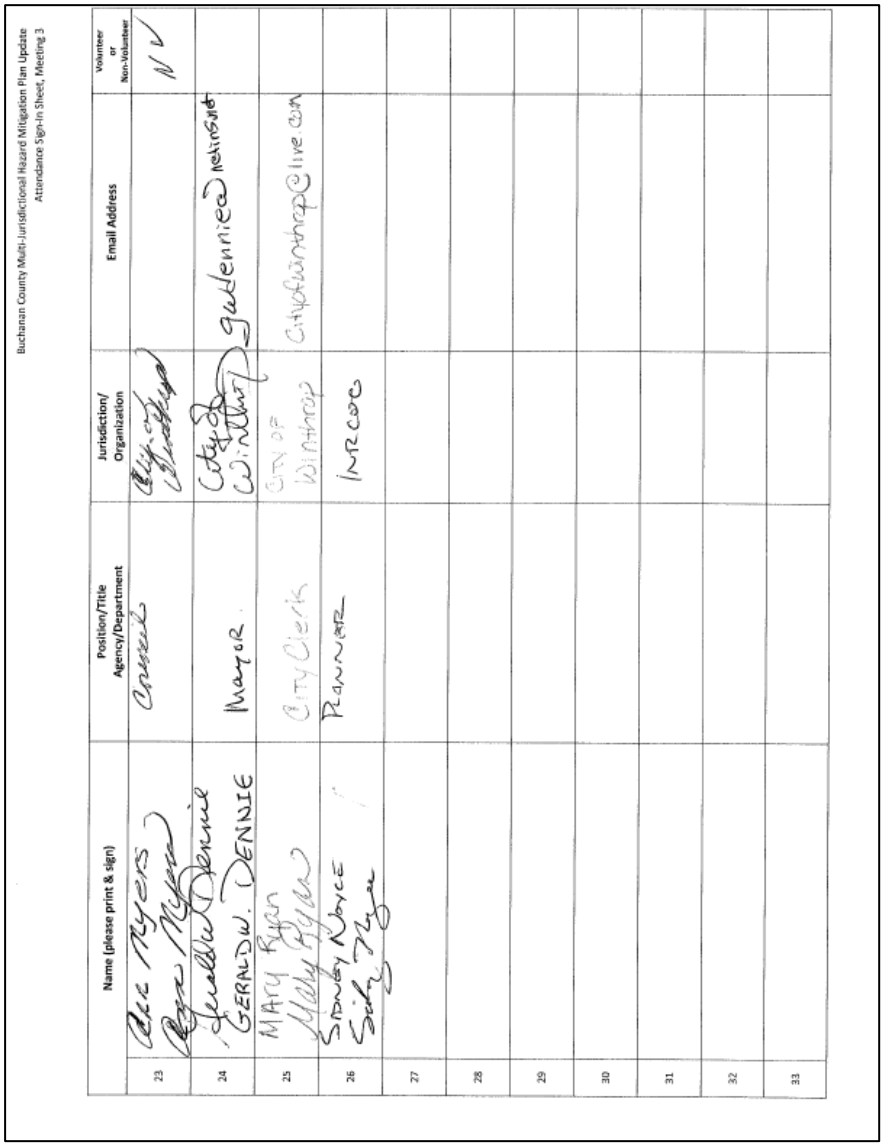
Respectfully Submitted,
Sidney Noyce
Community Planner

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Wednesday, September 23, 2015 at 6:30 PM – Independence Public Library
Meeting 3 - Attendance Sign-In Sheet

	Name (please print & sign)	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
1	Jean Peterson	Superintendent	Independence Comm. School	jpeterson@independence.k12.ia.us	Volunteer
2	Clair Franzen [signature]	Special Projects Officer	Buc. Fire A	clafty@mayfel.com	Vol
3	Michael Hundley	Aurora Fire Chief	Aurora fire	Mhundley10@gmail.com	Non Vol
4	Deborah Hundley	Aurora Fire Capt.	Aurora Fire	deb.hundley@yahoo.com	Vol
5	DANETTE LUJAN	BRANDON CITY CLERK	CITY OF BRANDON	cityofbrandon@iowatelecom.net	?
6	Marlene Strempke	Fairbank City Clerk	City of Fairbank	mstrempke@fairbank-ia.org	Vol
7	Chad Staton	Quasky Mayor	Quasky	stato@netins.net	non
8	Don Shanks	Buchanan County Supervisor	Buchanan County		✓
9	GERALD L. VANDE VERDE	MAYOR	HAZLETON	glv190xt@hotmail.com	N ✓
10	Justin L. Duffy	Mayor Pro Tem	Hazleton		N ✓
11	Chris Hoyzlett	Citizen	Hazleton	chayzlett@gmail.com	vol

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Attendance Sign-In Sheet, Meeting 3

	Name (please print & sign)	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
12	Rita Knutson	Mayor	City Rowley	rmknutson	non-vol
13	Joe Opperman [signature]	Director of Public works	City of Lamont		Vol.
14	Eleanor Riley [signature]	Mayor	City of Lamont		
15	Diane Anderson [signature]	City Clerk	City of Lamont		
16	Roger Sill [signature]	Mayor	City of Stanley		Vol
17	Tom Sill [signature]	Volunteer	City of Stanley		Vol
18	Shawn Curtis [signature]	Public Works	City of Winthrop		
19	Mark Kress [signature]	Council	City of Winthrop		
20	Lee White [signature]	Teacher	East Buchanan Schools		Vol
21	Chris Hare [signature]	Winthrop Fire Chief	City of Winthrop		Vol
22	Melissa Hesner [signature]	Council	City of Winthrop		N



Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Attendance Sign-In Sheet, Meeting 3

	Name (please print & sign)	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
23	Ace Myers Ryan Myers	Council	City of Winthrop		N ✓
24	Geraldw Dennie GERALD W. DENNIE	Mayor	City of Winthrop	gwdennie@netinsurf	
25	MARY RYAN Mary Ryan	City Clerk	City of Winthrop	cityofwinthrop@live.com	
26	SIDNEY NOYCE Sidney Noyce	Planner	INRCOG		
27					
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31					
32					
33					

DATE: September 15, 2015

TO: Independence Bulletin Journal
900 5th Ave NE
Independence, IA 50644 editor@bulletinjournal.com

The News/Buchanan County Review
PO Box 9
Winthrop, IA 50682 news@thewinthropnews.com

Jesup Citizen Herald
PO Box 545
Jesup, IA 50648 editor@jesupcitizenherald.com

Lamont Leader
621 Bush St
Lamont, Iowa 50650 lamontleader@iowatelecom.net

FROM: Sidney Noyce, INRCOG
229 East Park Avenue
Waterloo, Iowa 50703
(319) 235-0311

(Note: Please publish this press release in the next edition of your newspaper. Invoice INRCOG at the above address. Also please provide one publisher's affidavit to INRCOG along with the invoice. Thank you.)

BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 3rd PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

This third meeting will review material discussed at previous meetings, discuss and update potential hazards and their risk assessment, identify vulnerable buildings and populations, update community profiles, and review current and possible future mitigation strategies. The meeting will take place on Wednesday, September 23, 2015 at 6:30 pm at the Independence Public Library – Community Room, 805 1st St E, Independence, IA 50644.

If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.

PROOF OF PUBLICATION

State of Iowa
Buchanan County

I, Tracy Cummings, as the billing clerk of the Independence Bulletin Journal, a bi-weekly newspaper of general circulation, published at Independence, Buchanan County, Iowa; swear that the notice hereto attached was published in said newspaper 1 consecutive weeks, the first publication being on the — day of —, 2015, and the last publications being on the 19th day of September, 2015.

Publication fee: 33.36

Tracy Cummings

Sworn to and subscribed in presence by the said Tracy Cummings, this day of September 19th, 2015.

Notary Public

SMYTH
Commission Number 756363
My Commission Expires

Public Notice
BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 3rd PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

This third meeting will review material discussed at previous meetings, discuss and update potential hazards and their risk assessment, identify vulnerable buildings and populations, update community profiles, and review current and possible future mitigation strategies. The meeting will take place on Wednesday, September 23, 2015 at 6:30 pm at the Independence Public Library – Community Room, 805 1st St E, Independence, IA 50644.

If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.

Published in the Bulletin Journal on September 19, 2015.

Affidavit of Publication

State of Iowa,
Buchanan County, ss.

I, K.E. Adams, publisher of the *Citizen Herald*, a weekly newspaper published in Jesup, Iowa, do solemnly swear that the annexed copy of

Buchanan County Hazard Mitigation

Notice was published in said newspaper regularly once a week for 1 consecutive weeks commencing on the 23 day of Sept A.D. 2015 and ending on the 23 day of Sept A.D. 2015.

I, K.E. Adams, do hereby state that I certify under penalty of perjury and pursuant to the laws of the State of Iowa that the preceding is true and correct as I verily believe.

Name: [signature]

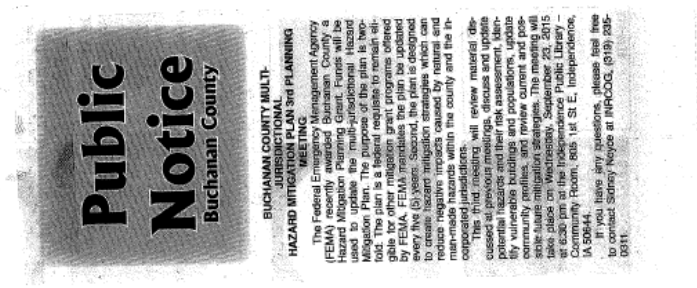
Date: 9/23/15

No. of lines: 30
Times rate: .574
Equals: $17.22

Second & Successive Weeks:

No. of Lines:
Times rate:
Equals:

Printer's Bill
Received of
the sum of
dollars, in full for publication of the annexed notice.



BUCHANAN COUNTY MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN 3rd PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

This third meeting will review material discussed at previous meetings, discuss and update potential hazards and their risk assessment, identify vulnerable buildings and populations, update community profiles, and review current and possible future mitigation strategies. The meeting will take place on Wednesday, September 23, 2015 at 6:30 pm at the Independence Public Library – Community Room, 805 1st St E, Independence, IA 50644.

If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.

AFFIDAVIT OF PUBLICATION

State of Iowa, Buchanan County -- ss.

Mary Beth Smith, being duly sworn, deposes and says that she is the publisher of The Winthrop News, a newspaper printed and published weekly in Winthrop, in Buchanan County, State of Iowa, aforesaid; that a notice, of which attached is an exact copy of said newspaper, was published therein once each week for one (1) consecutive issues of said newspaper, the first publication of the same being in the issue of the 24th day of September, 2015, A.D., and the last on the 24th day of September, 2015, A.D.

Publication Fee: $37.50

I, Mary Beth Smith, do hereby state that I certify under penalty or perjury and pursuant to the laws of the State of Iowa that the preceding is true and correct as I verily believe.

Signed Mary Beth Smith

Mary Beth Smith, Publisher

Date: September 24, 2015

AFFIDAVIT OF PUBLICATION OF NOTICE

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Filed....., 20.....

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Clerk

Committee Meeting #4: October 6, 2015

- PUBLIC MEETING AGENDA-

Buchanan County Multi-Jurisdictional
Hazard Mitigation Plan Meeting #4

Date: Tuesday, October 6, 2015

Time: 6:30 PM

Place: Independence Public Library
805 1st Street E
Independence, IA 50644

1. Welcome
2. Review Previous Meeting Information
3. Review Future Mitigation Action/Activities, Associated Goals, and Identification of Primary Responsible Party
4. Complete any Unfinished Business – Goals, Current Mitigation Activities, Profile Updates, etc.
5. Next Steps
6. Adjourn

THIS IS A PUBLIC MEETING

MEMBERS OF THE COMMUNITY ARE INVITED TO ATTEND AND PARTICIPATE IN THIS MEETING

Buchanan County Multi-Jurisdictional HMP Planning Session #4 Minutes
Independence Public Library
Independence, Iowa
October 6, 2015

The fourth Hazard Mitigation Planning Session was called to order by Sidney Noyce of the Iowa Northland Regional Council of Governments (INRCOG) at 6:30 pm.

The following persons were in attendance: Dan Fox, East Buchanan CSD Superintendent; Travis Schueller, East Buchanan Secondary Principal; Clair Franzen, Buchanan EMA Special Projects Officer; Danette Lujan, Brandon City Clerk; Robert Bearbower, Brandon Fire Department; Jean Kivell, Aurora Mayor; Bill Cowell, Fairbank Mayor; Marlene Strempke, Fairbank City Clerk; Justin Duffy, Hazleton Mayor Pro-Tem; Chris Hayzlett, Hazleton citizen; Doug Cook, Independence Fire Chief/Building Official; Rodger Sill, Stanley Mayor; Tom Sill, Stanley intern; Rita Knutson, Rowley Mayor; Diane Anderson, Lamont City Clerk; Rick Wulfekuhle, Buchanan EMA Coordinator; Mark Kress, Winthrop City Council; Shawn Curtis, Winthrop Public Works; Melissa Hesner, Winthrop City Council; Ann Myers, Winthrop City Council; Gerald Dennie, Winthrop Mayor; Mary Ryan, Winthrop City Clerk; Brian Schoon, INRCOG; Sidney Noyce, INRCOG.

The following jurisdictions were represented at the meeting: Buchanan County, Aurora, Brandon, Fairbank, Hazleton, Independence, Lamont, Rowley, Stanley, Winthrop, and East Buchanan School District.

After calling the meeting to order, Noyce presented the previous meeting's minutes for approval. Rita Knutson, Rowley Mayor, made a motion to approve the minutes with a second by Justin Duffy, Hazleton Mayor Pro-Tem. The minutes were approved with a unanimous vote.

Noyce presented the meeting's agenda. The jurisdictions were directed to review their goals from the current plan and provide updates as to associated goals and the primary agency responsible for implementation for each action step.

Jurisdictions were then given time to work amongst themselves to update action steps.

The meeting adjourned at 7:20 pm.

Respectfully Submitted,
Sidney Noyce
Community Planner

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Tuesday, October 6, 2015 at 6:30 PM – Independence Public Library
Meeting 4 - Attendance Sign-In Sheet

	Name	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
1	Dan Fox	Superintendent East Buchanan CSD	East Buchanan CSD	dfox@east-buc.k12.ia.us	NON
2	Travis Schneller	Secondary Principal	East Buchanan	tschneller@east-buc.k12.ia.us	NON
3	Clair Franzen	Special Projects offic	Buc EMA	clairfy@mytel.com	Vol
4	DANETTE LUSAN	CITY CLERK	CITY OF BRANDON	cityofbrandon@ionetelcom.net	NON
5	Jean Kivell	Mayor	City of Aurora	jean@eastiowaplastics.com	Non
6	Bill Cowell	Mayor	Fairbank	cowellb@ion-nierding.com	Volu
7	Marlene Stremke	[illegible]	Fairbank	mstrempke@fairbank.org	Vol
8	Justin Duffy	Mayor Pro-Tem	Hazleton	JDuffy@Apostenosystem.com	Non
9	Chris Hayzlett	Citizen	Hazleton	chayzlett@gmail.com	Vol.
10	Doug Cook	City of INDEPENDENCE FIRE CHIEF/BUILDING OFFICIAL	INDEPENDENCE	buildingdept@indytel.com	NON
11	Rodger Sill	Mayor	Sterling	rodger@foldfiber.com	Vol

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Attendance Sign-In Sheet, Meeting 4

	Name	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
12	Tom Sill	intern/volunteer	city of Stanley		Vol
13	Peter Knutson				
14	Duane S. Anderson	city clerk	City of Lamont		Vol
15	Rick Wulfekuhle	EMA Coordinator	Buchanan		
16	Mark Kruse	City Council	city of Winthrop		
17	Shawn Curtis	Public Works	City of Winthrop		
18	Melissa Hesner	City Council	City of Winthrop		
19	Ann Myers	City Council	City of Winthrop		
20	Gerald Dennie	Mayor of Winthrop	Winthrop		
21	Mary Ryan	City Clerk	Winthrop		
22	SIDNEY NOYCE	PLANNER	INRCOG		NV

DATE: September 25, 2015

TO: Independence Bulletin Journal
900 5th Ave NE
Independence, IA 50644 editor@bulletinjournal.com

The News/Buchanan County Review
PO Box 9
Winthrop, IA 50682 news@thewinthropnews.com

Jesup Citizen Herald
PO Box 545
Jesup, IA 50648 editor@jesupcitizenherald.com

Lamont Leader
621 Bush St
Lamont, Iowa 50650 lamontleader@iowatelecom.net

FROM: Sidney Noyce, INRCOG
229 East Park Avenue
Waterloo, Iowa 50703
(319) 235-0311

(Note: Please publish this press release in the next edition of your newspaper. Invoice INRCOG at the above address. Also please provide one publisher's affidavit to INRCOG along with the invoice. Thank you.)

BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 4th PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

The fourth meeting to update the plan will review previous meetings, identify and prioritize future mitigation actions, update mitigation goals and community profiles. The meeting will take place on Tuesday, October 6, 2015 at 6:30 pm at the Independence Public Library – Community Room, 805 1st St E, Independence, IA 50644.

If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.

PROOF OF PUBLICATION

State of Iowa
Buchanan County

I, Tracy Cummings, as the billing clerk of the Independence Bulletin Journal, a bi-weekly newspaper of general circulation, published at Independence, Buchanan County, Iowa; swear that the notice hereto attached was published in said newspaper 1 consecutive weeks, the first publication being on the ___ day of _____, 2015, and the last publications being on the 30th day of September, 2015.

Publication fee: 22 54

Tracy Cummings

Sworn to and subscribed in presence by the said Tracy Cummings, this day of September 30th, 2015.

Notary Public

Public Notice
BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 4th PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

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If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.

Published in the Bulletin Journal on September 30, 2015.

LORI SMITH
Commission Number 756363
My Commission Expires
12-21-19

Affidavit of Publication

State of Iowa, Buchanan County, ss.

I, K.E. Adams, publisher of the *Citizen Herald*, a weekly newspaper published in Jesup, Iowa, do solemnly swear that the annexed copy of:

Buchanan Co. Hazard Mitigation

Notice was published in said newspaper regularly once a week for 1 consecutive weeks commencing on the 30 day of Sept A.D. 20 15, and ending on the 30 day of Sept A.D. 20 15

I, K.E. Adams, do hereby state that I certify under penalty of perjury and pursuant to the laws of the State of Iowa that the preceding is true and correct as I verily believe.

Name: [signature]

Date: 9/30/15

No. of lines: 26

Times rate: .574

Equals: $14.92

Second & Successive Weeks:

No. of Lines:

Times rate:

Equals:

Printer's Bill

Received of

the sum of

dollars, in full for publication of the annexed notice.

Public Notice

Buchanan County

BUCHANAN COUNTY MULTI-JURISDICTIONAL - HAZARD MITIGATION PLAN 4th PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

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If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.

AFFIDAVIT OF PUBLICATION

State of Iowa, Buchanan County -- ss.

Mary Beth Smith, being duly sworn, deposes and says that she is the publisher of The Winthrop News, a newspaper printed and published weekly in Winthrop, in Buchanan County, State of Iowa, aforesaid; that a notice, of which attached is an exact copy of said newspaper, was published therein once each week for one (1) consecutive issues of said newspaper, the first publication of the same being in the issue of the 15th day of October, 2015, A.D., and the last on the 15th day of October, 2015, A.D.

Publication Fee: $39.38

I, Mary Beth Smith, do hereby state that I certify under penalty or perjury and pursuant to the laws of the State of Iowa that the preceding is true and correct as I verily believe.

Signed Mary Beth Smith

Mary Beth Smith, Publisher

Date: October 15, 2015

AFFIDAVIT OF PUBLICATION OF NOTICE

Filed....., 20.....

Clerk

DECEASED.
THE IOWA DISTRICT COURT
BUCHANAN COUNTY
Probate No. ESPR007013
NOTICE OF PROBATE OF WILL, OF APPOINTMENT OF EXECUTOR; AND NOTICE TO CREDITORS.
To All Person Interested in the Estate of Dale C. Weber, Deceased, who died on or about September 16, 2015:
You are hereby notified that on the 7th day of October, 2015, the last will and testament of Dale C. Weber, deceased, bearing date of the 18th day of August, 2014, was admitted to probate in the above named court and that Brenda J. Weber was appointed executor of the estate. Any action to set aside the will must be brought in the district court of said county within the later to occur of four months from the date of the second publication of this notice or one month from the date of mailing of this notice to all heirs of the decedent and devisees under the will whose identities are reasonably ascertainable, or thereafter be forever barred.
Notice is further given that all persons indebted to the estate are requested to make immediate payment to the undersigned, and creditors having claims against the estate shall file them with the clerk of the above named district court, as provided by law, duly authenticated, for allowance, duly authenticated, for allowance, duly authenticated, for allowance

Committee Meeting #5: October 21, 2015

Buchanan County Multi-Jurisdictional HMP Planning Session #5 Minutes
Independence Public Library
Independence, Iowa
October 6, 2015

The fifth Hazard Mitigation Planning Session was called to order by Sidney Noyce of the Iowa Northland Regional Council of Governments (INRCOG) at 6:30 pm.

The following persons were in attendance: Jean Peterson, Independence School District Superintendent; Clair Franzen, Buchanan EMA Special Projects Officer; Mary Ryan, Winthrop City Clerk; Gerald W. Dennie, Winthrop Mayor; Ann Myers, Winthrop City Council; Jae Redenbaugh, Brandon City Council; Mark Kress, Winthrop City Council; Shawn Curtis, Winthrop Public Works; Rita Knutson, Rowley Mayor; Jean Kivell, Aurora Mayor; Gerald VandeVorde, Hazleton Mayor; Justin Duffy, Hazleton Mayor Pro-tem; Diane S. Anderson, Lamont City Clerk; Eleanor Riley, Lamont Mayor; Joe Opperman, Lamont Public Works; Marlene Strempke, Fairbank City Clerk; Bill Cowell, Fairbank Mayor; Doug Cook, Independence Fire Chief/Building Official; David Bishop, Jesup Mayor; Sidney Noyce, INRCOG.

The following jurisdictions were represented at the meeting: Buchanan County, Aurora, Brandon, Fairbank, Hazleton, Independence, Jesup, Lamont, Rowley, Winthrop, and Independence School District.

After calling the meeting to order, Noyce presented the previous meeting's minutes for approval. Gerald Dennie, Winthrop Mayor, made a motion to approve the minutes with a second by Rita Knutson, Rowley Mayor. The minutes were approved with a unanimous vote.

Noyce presented the meeting's agenda. The jurisdictions were directed to review their work to-date from previous meetings and complete any outstanding items. Jurisdictions were then given time to work amongst themselves to update action steps.

The meeting adjourned at 7:10 pm.

Respectfully Submitted,
Sidney Noyce
Community Planner

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Wednesday, October 21, 2015 at 6:30 PM – Independence Public Library
Meeting 5 - Attendance Sign-In Sheet

	Name	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
1	Jean Peterson	Superintendent	Independence Community School District	j peterson@independence.k12.ia.us	
2	Clair Franzen	Special Projects Officer	Buchanan EMA	Cluffy@indytel.com	✓
3	Mary Ryan	City Clerk	City of Winthrop	CityofWinthrop@Live.com	✓
4	[illegible]	Mayor	City of Winthrop		✓
5	[illegible]	City Council	City of Winthrop		✓
6	Joe Redenbaugh	City Council	City of Brandon	Torino-73@Hotmail.com	✓
7	[illegible]	City Council	City of Winthrop		✓
8	[illegible]	Public Works	City of Winthrop		✓
9	Rita Knutsen	~~Rowley~~ Mayor	Rowley	rmknutson@indytel.com	
10	Jean Kinnell	Mayor	Aurora	jean@eastiowaplastics.com	Non-
11	Gerald VandeVorde	Mayor	Hazleton	glv190xt@hotmail.com 319-350-6710	NV

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Attendance Sign-In Sheet, Meeting 5

	Name	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
12	Justin Duffy	Mayor Pro tem	Hazleton		Non-
13	Dawn S. Anderson	City Clerk	Lamont		Volunteer
14	Eleanor Riley	Mayor	Lamont		
15	Joe Oppelman	Public works	Lamont		Vol.
16	Marlene Strempke	City Clerk	Fairbank		Vol
17	Bill Cowell	Mayor	Fairbank	cowellb@ian-nitriding.com	Vol
18	Doug Cook	FIRE CHIEF/ BUILDING OFFICIAL	INDEPENDENCE	buildingdept@indytel.com	NON
19	[illegible]	Mayor	Jesup		
20	Sidney Noice [illegible]	Planner	INRLOG		NV
21					
22					

DATE: October 9, 2015

TO: Independence Bulletin Journal
900 5th Ave NE
Independence, IA 50644 legals@bulletinjournal.com

The News/Buchanan County Review
PO Box 9
Winthrop, IA 50682 news@thewinthropnews.com

Jesup Citizen Herald
PO Box 545
Jesup, IA 50648 editor@jesupcitizenherald.com

Lamont Leader
621 Bush St
Lamont, Iowa 50650 lamontleader@iowatelecom.net

FROM: Sidney Noyce, INRCOG
229 East Park Avenue
Waterloo, Iowa 50703
(319) 235-0311

(Note: Please publish this press release in the next edition of your newspaper. Invoice INRCOG at the above address. Also please provide one publisher's affidavit to INRCOG along with the invoice. Thank you.)

BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 5th PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

The fifth meeting will review all items covered at previous meetings to complete outstanding plan items, including: hazard scoring, status of existing mitigation steps, identify and evaluate future mitigation actions, update mitigation goals and community profiles. The meeting will take place on Wednesday, October 21, 2015 at 6:30 pm at the Independence Public Library – Community Room, 805 1st St E, Independence, IA 50644.

If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.

PROOF OF PUBLICATION

State of Iowa
Buchanan County

I, Tracy Cummings, as the billing clerk of the Independence Bulletin Journal, a bi-weekly newspaper of general circulation, published at Independence, Buchanan County, Iowa; swear that the notice hereto attached was published in said newspaper 1 consecutive weeks, the first publication being on the ___ day of _____, 2015, and the last publications being on the 14th day of October, 2015.

Publication fee: 33.36

Tracy Cummings

Sworn to and subscribed in presence by the said Tracy Cummings, this day of October 14th, 2015.

Notary Public

Public Notice
BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 5th PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

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If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.

Published in the Bulletin Journal on October 14, 2015.

LORI SMITH
Commission Number 756363
My Commission Expires

Alex Ruehlow.

Public Notice

Buchanan County

BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 5th PLANNING MEETING

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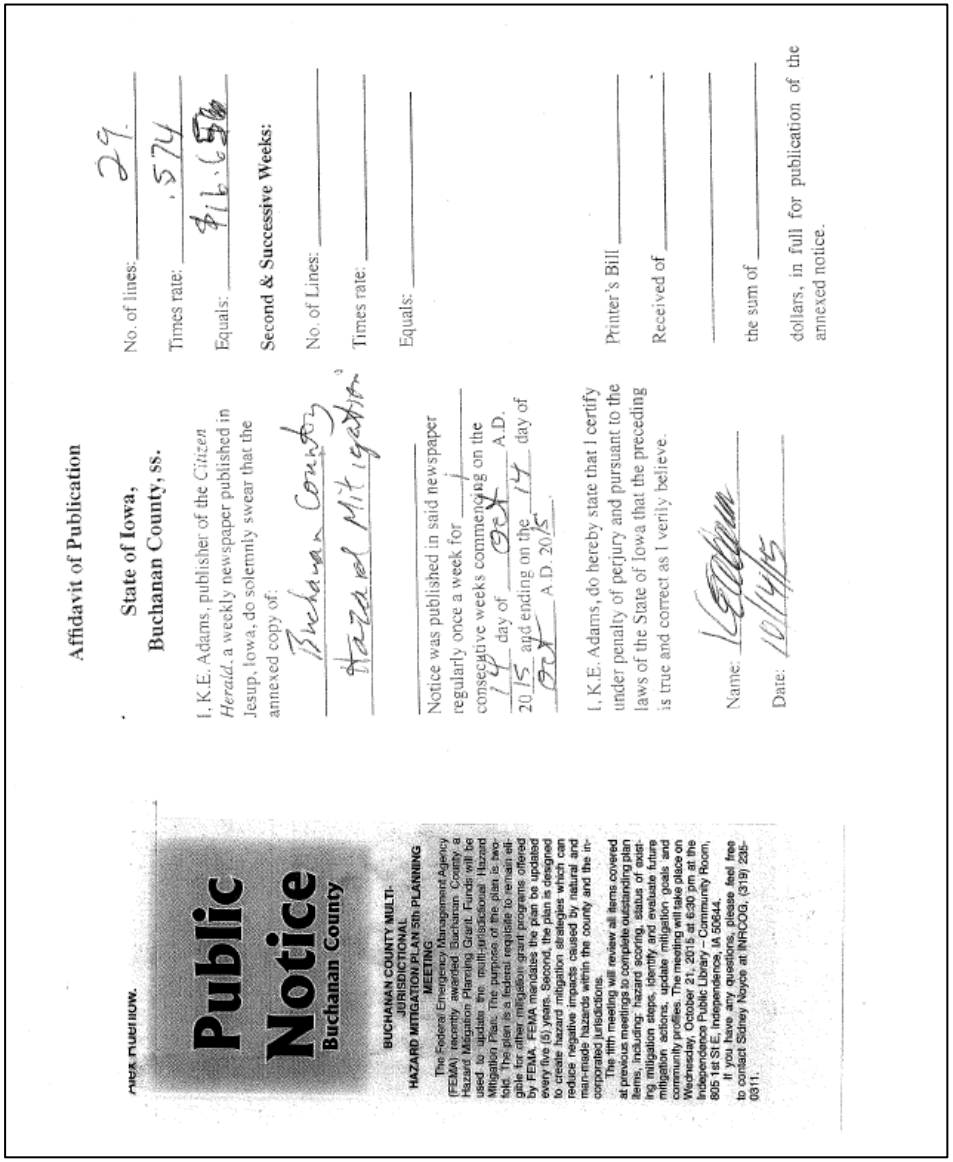
If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.



Affidavit of Publication

State of Iowa,
Buchanan County, ss.

I, K.E. Adams, publisher of the *Citizen Herald*, a weekly newspaper published in Jesup, Iowa, do solemnly swear that the annexed copy of:

Buchanan County Hazard Mitigation

Notice was published in said newspaper regularly once a week for 1 consecutive weeks commencing on the 14 day of Oct A.D. 2015 and ending on the 14 day of Oct A.D. 2015.

I, K.E. Adams, do hereby state that I certify under penalty of perjury and pursuant to the laws of the State of Iowa that the preceding is true and correct as I verily believe.

Name: K E Adams

Date: 10/14/15

No. of lines: 29

Times rate: .574

Equals: $16.656

Second & Successive Weeks:

No. of Lines: _____

Times rate: _____

Equals: _____

Printer's Bill _____

Received of _____

_____

the sum of _____

dollars, in full for publication of the annexed notice.

equivalent combination of education and work related experience in the county road department as an Operator II, III, or IV that provides the required knowledge, skills, and abilities necessary to perform the essential functions of the position.

The position is full-time non-exempt, non-bargaining unit with an hourly wage based on experience and qualifications.

Applications can be obtained through the Buchanan County Engineer's office, 1511 1st St. E., Independence, IA 50644 or website at www.buchanancountyiowa.org. Applications will be accepted through October 15, 2015 until 4:00 p.m. at the Engineer's office.

Buchanan County is an Equal Opportunity Employer (EOE). It is the policy of Buchanan County to comply with the Americans with Disabilities Act.

PUBLIC NOTICE

BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 4th PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

The fourth meeting to update the plan will review previous meetings, identify and prioritize future mitigation actions, update mitigation goals and community profiles. The meeting will take place on Tuesday, October6, 2015at 6:30 pm at the Independence Public Library – Community Room, 805 1st St E, Independence, IA 50644.

If you have any questions, please feel free to contact Sidney Noyce at INRCOG, (319) 235-0311.

AFFIDAVIT OF PUBLICATION

State of Iowa, Buchanan County -- ss.

Mary Beth Smith, being duly sworn, deposes and says that she is the publisher of The Winthrop News, a newspaper printed and published weekly in Winthrop, in Buchanan County, State of Iowa, aforesaid; that a notice, of which attached is an exact copy of said newspaper, was published therein once each week for one (1) consecutive issues of said newspaper, the first publication of the same being in the issue of the 1st day of October, 2015, A.D., and the last on the 1st day of October, 2015, A.D.

Publication Fee: $34.50

I, Mary Beth Smith, do hereby state that I certify under penalty or perjury and pursuant to the laws of the State of Iowa that the preceding is true and correct as I verily believe.

Signed Mary Beth Smith

Mary Beth Smith, Publisher

Date: October 1, 2015

AFFIDAVIT OF PUBLICATION OF NOTICE

Filed....., 20....

Committee Meeting #6: September 17, 2016

- PUBLIC MEETING AGENDA-

Buchanan County Multi-Jurisdictional
Hazard Mitigation Plan Meeting #6

Date: Monday, October 17, 2016

Time: 6:30 PM

Place: Independence Public Library
805 1st Street E
Independence, IA 50644

1. Welcome and Introductions
2. Review previous meeting information and timeline
3. Review and Update Community Profiles (plans, policies, developments, maps, etc.)
4. Provide update/changes to plan
5. Adjourn

THIS IS A PUBLIC MEETING

MEMBERS OF THE COMMUNITY ARE INVITED TO ATTEND AND PARTICIPATE IN THIS MEETING

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Monday, October 17, 2016 at 6:30 PM – Independence Public Library
Meeting 6 - Attendance Sign-In Sheet

	Name	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
1	Jacob Tjaden	Planner	INRCOG	—	NV
2	Rick Wulfekuhle	Buchanan EMA Coordinator		bcem@co.buchanan.ia.us	NV
3	Clair Franzen	Buchanan County EMA, Volunteer	County	cliffy@indytel.com	✓
4	Mary Ryan	City Clerk	Winthrop	cityofwinthrop@live.com	✓
5	Gerald Dennie	Mayor	Winthrop	gwdennie@netins.net	✓
6	Kandis Creskey	Asst. Chief	Jesup	KandisCre@hotmail.com	✓
7	Doug Cook	BUILDING OFFICIAL FIRE CHIEF	INDEPENDENCE	buildingdept@indytel.com	N/V
8	Brian Vanous	Fire chief	Quasky	brian@finalnoticerepo.com	✓
9	Chad Staton	Mayor	Quasky	staton@netins.net	✓
10	Dan Fox	Superintendent	East Buchanan CSD	dfox@east-buc.K-12.ia.us	✓
11	Rodger Sill	Mayor	Sterley	rodger@fieldfive.com	✓

Buchanan County Multi-Jurisdictional Hazard Mitigation Plan Update
Attendance Sign-In Sheet, Meeting 6

	Name	Position/Title Agency/Department	Jurisdiction/ Organization	Email Address	Volunteer or Non-Volunteer
12	David Young	Mayor	Aurora	dyoungonetins.net	✓
13	Justin Duffy	Mayor Pro temp	Hazleton	justin.duffy@pipestonesystem.com	✓
14	Chris Hayekett	Council	Hazleton	chayekett@gmail.com	N/V
15					
16					
17					
18					
19					
20					
21					
22					

DATE: September 21, 2016

TO: Independence Bulletin Journal
900 5th Ave NE
Independence, IA 50644 legals@bulletinjournal.com

The News/Buchanan County Review
PO Box 9
Winthrop, IA 50682 news@thewinthropnews.com

Jesup Citizen Herald
PO Box 545
Jesup, IA 50648 editor@jesupcitizenherald.com

Lamont Leader
621 Bush St
Lamont, Iowa 50650 lamontleader@iowatelecom.net

FROM: Jacob Tjaden, INRCOG
229 East Park Avenue
Waterloo, Iowa 50703
(319) 235-0311

(Note: Please publish this press release in the next edition of your newspaper. Invoice INRCOG at the above address. Also please provide one publisher's affidavit to INRCOG along with the invoice. Thank you.)

BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 5th PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

The sixth and final meeting will review and make final updates to the plan document including hazard scores, status of existing mitigation steps, future mitigation actions, mitigation goals and community profiles. The meeting will take place on Monday, October 17, 2016 at 6:30 pm at the Independence Public Library – Community Room, 805 1st St E, Independence, IA 50644.

If you have any questions, please feel free to contact Jacob Tjaden at INRCOG, (319) 235-0311.

PROOF OF PUBLICATION

State of Iowa
Buchanan County

I, Tracy Cummings, as the billing clerk of the Independence Bulletin Journal, a bi-weekly newspaper of general circulation, published at Independence, Buchanan County, Iowa; swear that the notice hereto attached was published in said newspaper 1 consecutive weeks, the first publication being on the — day of —, 2016, and the last publications being on the 28th day of September, 2016.

Publication fee: $21.43

Tracy Cummings

Sworn to and subscribed in presence by the said Tracy Cummings, this day of September 28, 2016.

Notary Public


Public Notice

BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 5th PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

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If you have any questions, please feel free to contact Jacob Tjaden at INRCOG, (319) 235-0311.

Published in the Bulletin Journal on September 28, 2016.

LORI SMITH
Commission Number 754361
My Commission Expires

STATE OF IOWA
Buchanan County

CERTIFICATION OF PUBLICATION

I, Angie Happel, being duly sworn on oath state that I am Acting Editor of the Lamont Leader, weekly newspaper published at Lamont, Buchanan County, Iowa, and I further state that the annexed and subjoined notice was duly published in said paper, as often as once in each week for:

1 consecutive weeks, commencing on the 29th day of September, 2016, and ending on the 29th day of September, 2016.

Signed Angie Happel

Date 10-3-16

BUCHANAN COUNTY
MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN 5th
PLANNING MEETING

The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

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AFFIDAVIT OF PUBLICATION
State of Iowa, Buchanan County -- ss.

Mary Beth Smith, being duly sworn, deposes and says that she is the Publisher of *THE (WINTHROP) NEWS*, a newspaper printed and published weekly in Winthrop, Buchanan County, State of Iowa, aforesaid; that a notice, of which attached is an exact copy of said newspaper, was published therein once each week for one (1) consecutive issue(s) of said newspaper, the first publication of the same being in the issue of the 29th day of September, 2016, A.D., and the last on the 29th day of September, 2016, A.D.

Publication Fee: $18.33

I, Mary Beth Smith, do hereby state that I certify under penalty or perjury and pursuant to the laws of the State of Iowa that the preceding is true and correct as I verily believe.

Signed: Mary Beth Smith
Mary Beth Smith, Publisher

Date: Sept. 29, 2016

County multi-juris - 41 sngl (7 pt)

AFFIDAVIT OF PUBLICATION OF NOTICE

Filed....., 20 .....

Clerk



L.B. GALLERY
Heavy Equipment Contractor
Excavation Work
Phone 935-3093 • Winthrop

BUY, SELL, OR TRADE in the CLASSIFIEDS

Public Notice
Antidegradation Alternatives Analysis for the City of Winthrop, Iowa
Notice Date:
September 22, 2016
Notice is hereby given that the City of Winthrop, Iowa has completed a draft antidegradation alternatives analysis for discharge of treated wastewater to an unnamed creek tributary to the Wapsipinicon River. The action being considered is construction of a covered aerated lagoon wastewater treatment facility to replace the City's existing aerated lagoon facility. The unnamed creek is protected for Class A2 primary contact recreational and B(WW-2) warm water beneficial uses.
Anyone wishing to comment on the proposed treatment alternative must do so in writing within 30 days of the date shown at the top of this notice. Comments may be submitted to the City Clerk by hand delivery, mail or email: City Clerk, 354 West Madison Street, PO Box 98, Winthrop, IA 50682, city@cityofwinthrop.com.
Copies of this notice, the draft antidegradation alternatives analysis and supporting information are on file and available for public inspection from 8:00 AM to 12:00 PM Monday through Friday at the above address. Copies of this information may be requested by contacting the City Clerk at 319-935-3317 or the above email address. The City will submit a summary of comments received and the City's responses to the Iowa Department of Natural Resources with the final alternatives analysis subject to IDNR review and approval.

Public Notice
OFFICIAL PUBLICATION
NOTICE IS ALSO HEREBY GIVEN in accordance with Chapter 49.4 of the Iowa Code that the commissioner's duly authorized agents shall examine and test the voting machines to be used at the General Election, November 8, 2016 beginning on Tuesday, October 11, 2016, at 9:00 a.m. at the courthouse. This certification, testing the voting machines for said election, is open to the public.
Cindy Gosse
Buchanan County Auditor
& Commissioner of Elections

Public Notice
BUCHANAN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 5th PLANNING MEETING
The Federal Emergency Management Agency (FEMA) recently awarded Buchanan County a Hazard Mitigation Planning Grant. Funds will be used to update the multi-jurisdictional Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by FEMA. FEMA mandates this plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.
The sixth and final meeting will review and make final updates to the plan document including hazard scores, status of existing mitigation steps, future mitigation actions, mitigation goals and community profiles. The meeting will take place on Monday, October 17, 2016 at 6:30 pm at the Independence Public Library – Community Room, 805 1st St E, Independence, IA 50644.
If you have any questions, please feel free to contact Jacob Tjaden at INRCOG, (319) 235-5311.

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FEMA Region VII
9221 Ward Parkway, Ste. 300
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FEMA

January 26, 2017

Mark Schouten, Director
Iowa Homeland Security & Emergency Management Division
7900 Hickman Road, Suite 500
Windsor Heights, IA 50324

Subject: Review of the Buchanan County, Iowa Hazard Mitigation Plan

Dear Mr. Schouten:

The purpose of this letter is to provide the status of the above referenced Local Hazard Mitigation Plan, pursuant to the requirements of 44 CFR Part 201 - Mitigation Planning and the Local Multi-Hazard Mitigation Planning Guidance. The Local Hazard Mitigation Plan Review Tool documents the Region's review and the plan compliance with all required elements of 44 CFR Part 201.6. The Plan Review Tool also identifies the jurisdictions participating in the planning process. FEMA's approval will be for a period of five years effective starting with the approval date indicated below.

Prior to the expiration of the plan the community will be required to review and revise their plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval in order to continue to be eligible for mitigation project grant funding.

Plan Name	Date Submitted	Date Approved	Date of Plan Adoption	Date of Plan Expiration	Review Status
Buchanan County	December 29, 2016	January 19, 2017	December 12, 2016	January 19, 2022	Approved

If you have any questions or concerns, please contact Joe Chandler, Planning Team Lead, at (816) 283-7071.

Sincerely,

KENNETH G SESSA

Digitally signed by KENNETH G SESSA
DN: c=US, o=U.S. Government, ou=Department of Homeland Security, ou=FEMA, ou=People, cn=KENNETH G SESSA, 0.9.2342.19200300.100.1.1=08030449627,FEMA
Date: 2017.01.26 15:31:20 -06'00'

Kenneth Sessa, Acting Director
Mitigation Division

www.fema.gov

HAZARD MITIGATION PLAN REVIEW TOOL — **FEMA Region VII**
Buchanan COUNTY, IOWA APPROVED — **1st Review**

Jurisdiction: Buchanan County; Cities of Aurora, Brandon, Fairbank, Hazleton, Independence, Jesup, Lamont, Quasqueton, Rowley, Stanley, Winthrop; East Buchanan Schools, Independence Schools, Jesup Schools	**Title of Plan:** 2017 Updated Multi-Jurisdictional Hazard Mitigation Plan for Buchanan County, Iowa	**Date of Plan:** December 2016
Local Point of Contact: Jacob Tjaden	**Address:** 229 E. Park Ave. Waterloo, IA 50703	
Title: Community Planner		
Agency: INRCOG		
Phone Number: 319-235-0311	**E-Mail:** jtjaden@inrcog.org	
Funding Source: FEMA, HLSEM, Local		
State Reviewer: Larry Giofreddi	**Title:** Project Officer	**Date:** December 28, 2016
FEMA Reviewer: Justin Sorg	**Title:** HM Community Planner	**Date:** January 19,2017
Date Received in FEMA Region VII	December 29, 2016	
Plan Not Approved		
Plan Approvable Pending Adoption		
Plan Approved	January 19, 2017	

Jurisdiction:	NFIP Status* Y	NP
Buchanan County (unincorporated)	X	
City of Aurora	X	
City of Brandon	X	
City of Fairbank	X	
City of Hazleton	X	
City of Independence	X	
City of Jesup	X	
City of Lamont	X	
City of Quasqueton	X	
City of Rowley		No SFHA
City of Stanley		X
City of Winthrop		X

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East Buchannan Community Schools	NA	
Independence Community Schools	NA	
Jesup Community Schools	NA	

* Notes: Y = Participating NP = Not Participating in NFIP S- Sanctioned R-Rescinded

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HAZARD MITIGATION PLAN REVIEW TOOL — FEMA Region VII
Buchanan COUNTY, IOWA — APPROVED — 1st Review

SECTION 1: REGULATION CHECKLIST

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Pages 1-9, Attachment 3	✓	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate developments as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Pages 6-9, Attachment 4	✓	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Pages 1-9	✓	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Page 7	✓	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Pages 9, 99-101	✓	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	Pages 6-9, 99-101	✓	

ELEMENT A: REQUIRED REVISIONS:
None.

Plan Strengths:

- Open and inclusive planning process.

Opportunities for Improvement:

- Future plan updates could be improved by including a discussion on how, if any, public feedback was incorporated into the plan.
- Table 1.1 (pg. 5 lists) Starmont Schools and Wapsie Valley Schools as HMP Planning Committee members, but these school districts are not participants in the plan.

HAZARD MITIGATION PLAN REVIEW TOOL — FEMA Region VII
Buchanan COUNTY, IOWA — APPROVED — 1st Review

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	Pages 22-76, Appendices A-N	✓	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	Pages 22-76, Appendices A-N	✓	
B3. Is there 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? (Requirement §201.6(c)(2)(ii))	Pages 22-76, Appendices A-N	✓	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	Pages 82-83 Appendices A-H, I-I	✓	

ELEMENT B: REQUIRED REVISIONS:
None.

Plans Strengths:

- Excellent use of charts and maps to display information. The critical sites maps are particularly useful to illustrate areas of greatest concern.
- Jurisdictional profiles are really well done and present a concise summary of each jurisdiction's capabilities and vulnerabilities.

Opportunities for Improvement:

- Hazard scoring methodology (pg. 25): There is some inherent conflict between the chosen scales of Magnitude/Severity and Duration as the Magnitude/Severity scale includes a measure of how long the hazard will impact the jurisdiction ("less than 24 hrs, more than a week, at least 1 week and more than 30 days"), which do not correspond to the Duration timeframes ("less than 6 hrs, less than 1 day, less than 1 week, more than 1 week").
- Future updates to the Drought risk assessment could be improved by consulting the US Drought Portal https://www.drought.gov/drought/ which is an excellent resource for quantifying impacts from drought and detailing magnitude.
- Extreme heat, pg. 38 states, "Those who have an elevated risk include the elderly, young children, chronic invalids, those on certain medication or drugs, persons who are over their recommended weight, alcoholics, and individuals who work outdoors or in confined spaces without air conditioning. Furthermore, class can figure into the vulnerability. Those individuals or families who cannot afford air conditioning or do not have access to air conditioning are also more susceptible to the effects of elevated temperatures. Unfortunately, it is unknown how many of Buchanan County's population would fall into this category." Demographic information is readily available on Census.gov and appears to be included on page 80 of the plan. Pgs. 18-20 of the plan reference economic status of the planning area and could be combined with demographic information to further analyzed and develop assumptions about potential population impacts due to extreme heat.
- HazMat Risk Assessment: Though not reviewed for requirements, the hazmat risk assessment could be improved by including data on the types/quantities of chemicals present or shipped through the county. Tier II reports or commodity flow surveys are good sources of this type of information.
- Pg. 53: The last paragraph on pg. 53 appears to have information missing.
- Pgs. 57-58, Stanley and Jesup are missing from the summary of river flooding hazard by community.
- Pg. 62 contains several references to Grundy County.
- Table 3.30 (pg. 84) describes the number, but not types of repetitive loss structures in the planning area. Future updates must include the types (*residential, commercial, institutional, etc.*) of RLPs.

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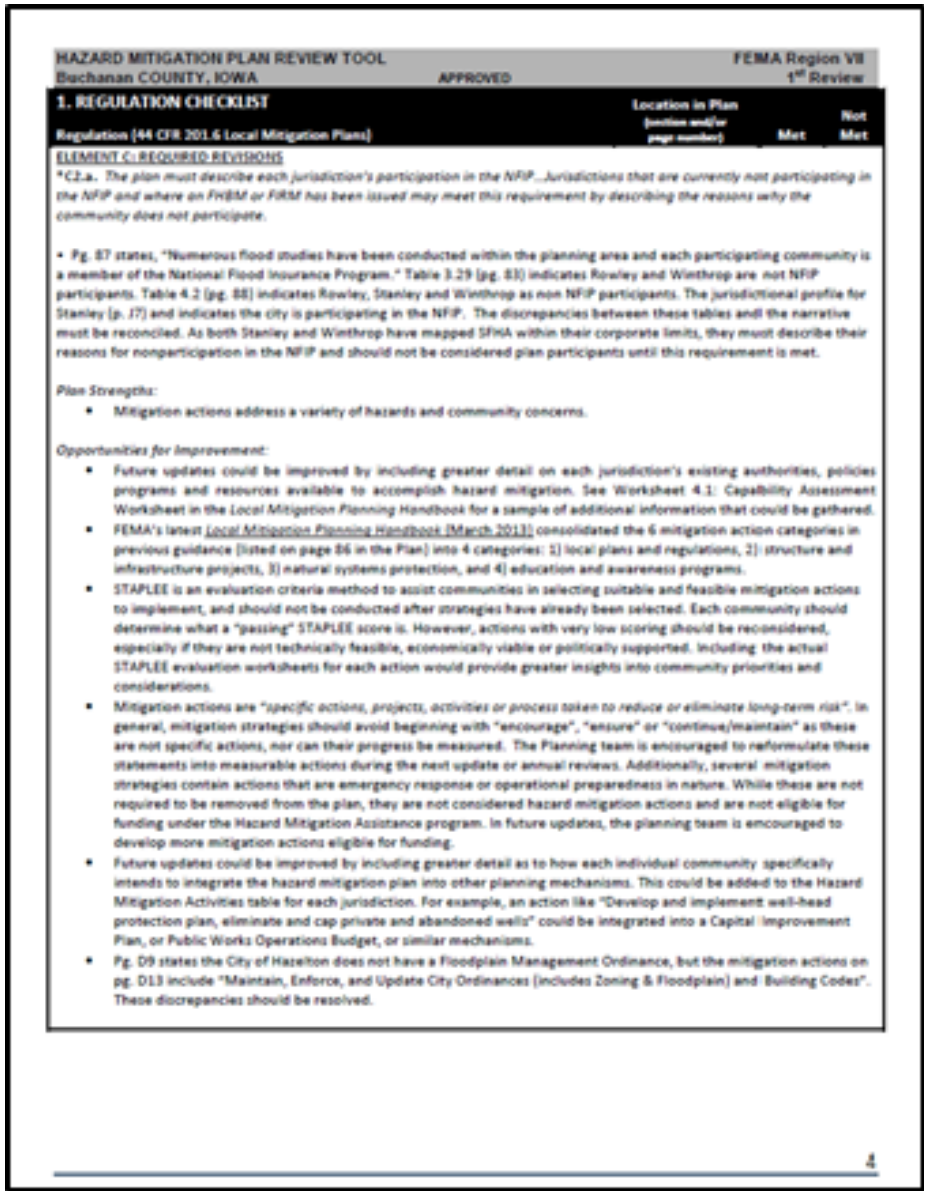

HAZARD MITIGATION PLAN REVIEW TOOL — FEMA Region VII
Buchanan COUNTY, IOWA — APPROVED — 1st Review

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met

ELEMENT C: REQUIRED REVISIONS

*C2.a. *The plan must describe each jurisdiction's participation in the NFIP. Jurisdictions that are currently not participating in the NFIP and where an FHBM or FIRM has been issued may meet this requirement by describing the reasons why the community does not participate.*

- Pg. 87 states, "Numerous flood studies have been conducted within the planning area and each participating community is a member of the National Flood Insurance Program." Table 3.29 (pg. 83) indicates Rowley and Winthrop are not NFIP participants. Table 4.2 (pg. 88) indicates Rowley, Stanley and Winthrop as non NFIP participants. The jurisdictional profile for Stanley (p. 37) and indicates the city is participating in the NFIP. The discrepancies between these tables and the narrative must be reconciled. As both Stanley and Winthrop have mapped SFHA within their corporate limits, they must describe their reasons for nonparticipation in the NFIP and should not be considered plan participants until this requirement is met.

Plan Strengths:

- Mitigation actions address a variety of hazards and community concerns.

Opportunities for Improvement:

- Future updates could be improved by including greater detail on each jurisdiction's existing authorities, policies programs and resources available to accomplish hazard mitigation. See Worksheet 4.1: Capability Assessment Worksheet in the *Local Mitigation Planning Handbook* for a sample of additional information that could be gathered.
- FEMA's latest *Local Mitigation Planning Handbook* (March 2013) consolidated the 6 mitigation action categories in previous guidance (listed on page 86 in the Plan) into 4 categories: 1) local plans and regulations, 2) structure and infrastructure projects, 3) natural systems protection, and 4) education and awareness programs.
- STAPLEE is an evaluation criteria method to assist communities in selecting suitable and feasible mitigation actions to implement, and should not be conducted after strategies have already been selected. Each community should determine what a "passing" STAPLEE score is. However, actions with very low scoring should be reconsidered, especially if they are not technically feasible, economically viable or politically supported. Including the actual STAPLEE evaluation worksheets for each action would provide greater insights into community priorities and considerations.
- Mitigation actions are "*specific actions, projects, activities or process taken to reduce or eliminate long-term risk*". In general, mitigation strategies should avoid beginning with "encourage", "ensure" or "continue/maintain" as these are not specific actions, nor can their progress be measured. The Planning team is encouraged to reformulate these statements into measurable actions during the next update or annual reviews. Additionally, several mitigation strategies contain actions that are emergency response or operational preparedness in nature. While these are not required to be removed from the plan, they are not considered hazard mitigation actions and are not eligible for funding under the Hazard Mitigation Assistance program. In future updates, the planning team is encouraged to develop more mitigation actions eligible for funding.
- Future updates could be improved by including greater detail as to how each individual community specifically intends to integrate the hazard mitigation plan into other planning mechanisms. This could be added to the Hazard Mitigation Activities table for each jurisdiction. For example, an action like "Develop and implement well-head protection plan, eliminate and cap private and abandoned wells" could be integrated into a Capital Improvement Plan, or Public Works Operations Budget, or similar mechanisms.
- Pg. D9 states the City of Hazelton does not have a Floodplain Management Ordinance, but the mitigation actions on pg. D13 include "Maintain, Enforce, and Update City Ordinances (includes Zoning & Floodplain) and Building Codes". These discrepancies should be resolved.

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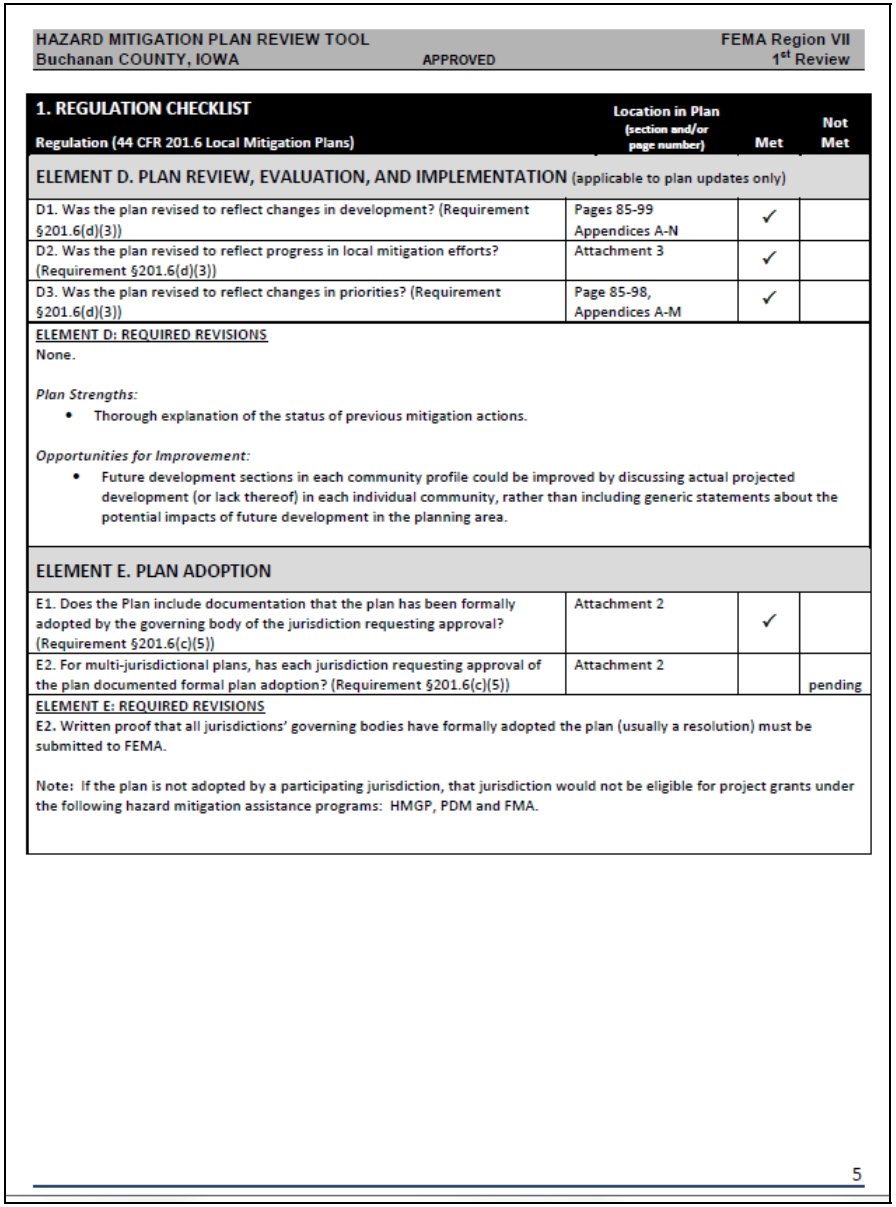

HAZARD MITIGATION PLAN REVIEW TOOL — FEMA Region VII
Buchanan COUNTY, IOWA — APPROVED — 1st Review

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Pages 85-99 Appendices A-N	✓	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Attachment 3	✓	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Page 85-98, Appendices A-M	✓	

ELEMENT D: REQUIRED REVISIONS

None.

Plan Strengths:

- Thorough explanation of the status of previous mitigation actions.

Opportunities for Improvement:

- Future development sections in each community profile could be improved by discussing actual projected development (or lack thereof) in each individual community, rather than including generic statements about the potential impacts of future development in the planning area.

ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	Attachment 2	✓	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	Attachment 2		pending

ELEMENT E: REQUIRED REVISIONS

E2. Written proof that all jurisdictions' governing bodies have formally adopted the plan (usually a resolution) must be submitted to FEMA.

Note: If the plan is not adopted by a participating jurisdiction, that jurisdiction would not be eligible for project grants under the following hazard mitigation assistance programs: HMGP, PDM and FMA.

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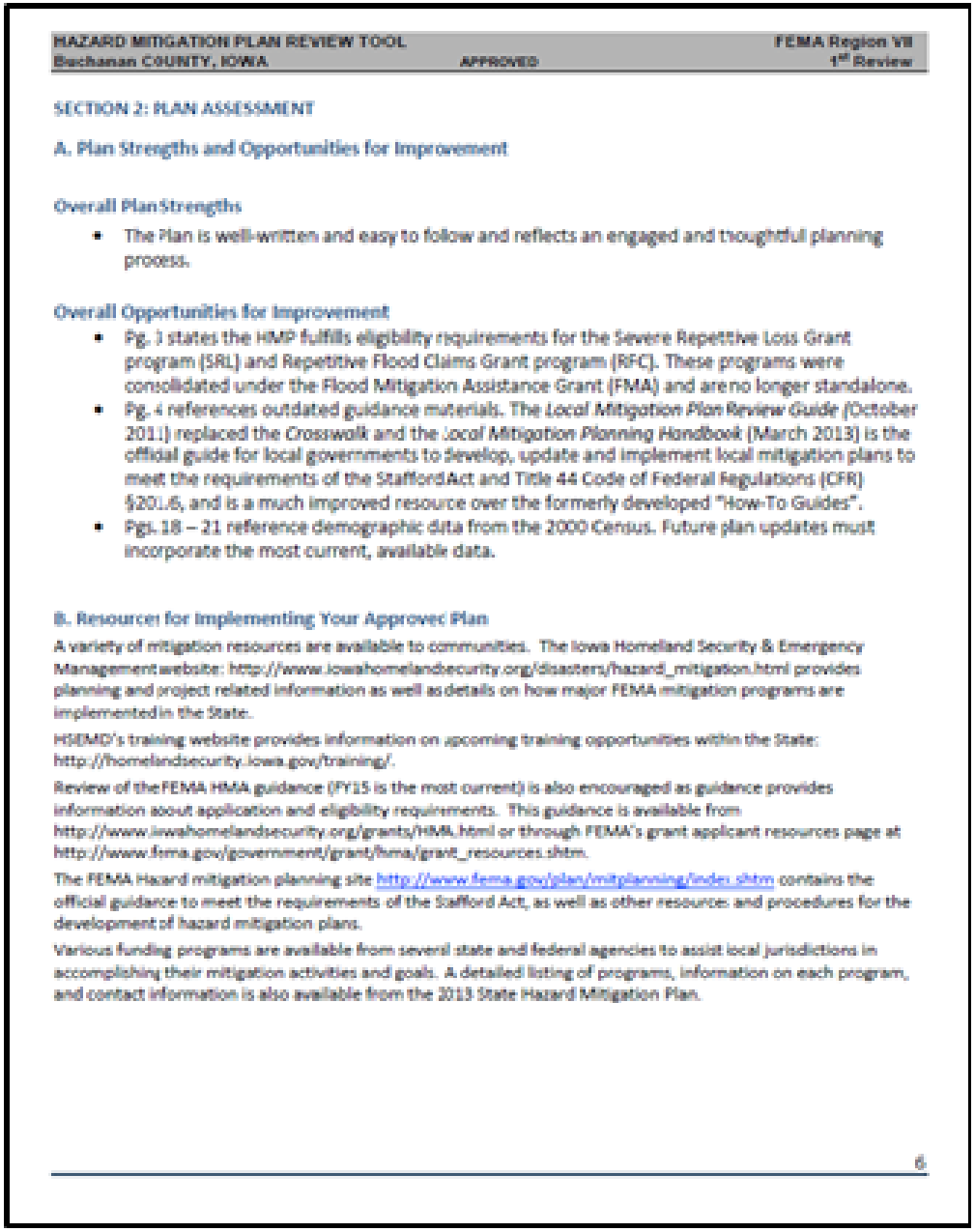

SECTION 2: PLAN ASSESSMENT

A. Plan Strengths and Opportunities for Improvement

Overall Plan Strengths

- The Plan is well-written and easy to follow and reflects an engaged and thoughtful planning process.

Overall Opportunities for Improvement

- Pg. 3 states the HMP fulfills eligibility requirements for the Severe Repetitive Loss Grant program (SRL) and Repetitive Flood Claims Grant program (RFC). These programs were consolidated under the Flood Mitigation Assistance Grant (FMA) and are no longer standalone.
- Pg. 4 references outdated guidance materials. The *Local Mitigation Plan Review Guide* (October 2011) replaced the *Crosswalk* and the *Local Mitigation Planning Handbook* (March 2013) is the official guide for local governments to develop, update and implement local mitigation plans to meet the requirements of the Stafford Act and Title 44 Code of Federal Regulations (CFR) §201.6, and is a much improved resource over the formerly developed "How-To Guides".
- Pgs. 18 – 21 reference demographic data from the 2000 Census. Future plan updates must incorporate the most current, available data.

B. Resources for Implementing Your Approved Plan

A variety of mitigation resources are available to communities. The Iowa Homeland Security & Emergency Management website: http://www.iowahomelandsecurity.org/disasters/hazard_mitigation.html provides planning and project related information as well as details on how major FEMA mitigation programs are implemented in the State.

HSEMD's training website provides information on upcoming training opportunities within the State: http://homelandsecurity.iowa.gov/training/.

Review of the FEMA HMA guidance (FY15 is the most current) is also encouraged as guidance provides information about application and eligibility requirements. This guidance is available from http://www.iowahomelandsecurity.org/grants/HMA.html or through FEMA's grant applicant resources page at http://www.fema.gov/government/grant/hma/grant_resources.shtm.

The FEMA Hazard mitigation planning site http://www.fema.gov/plan/mitplanning/index.shtm contains the official guidance to meet the requirements of the Stafford Act, as well as other resources and procedures for the development of hazard mitigation plans.

Various funding programs are available from several state and federal agencies to assist local jurisdictions in accomplishing their mitigation activities and goals. A detailed listing of programs, information on each program, and contact information is also available from the 2013 State Hazard Mitigation Plan.

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