2012

Fort Dodge Hazard Mitigation Plan

MIDAS Council of Governments

5/1/2012

Executive Summary

Purpose

A hazard mitigation plan is a community-driven, living document that cities use to reduce their vulnerability to hazards. The City of Fort Dodge determined that the implementation of a hazard mitigation plan would be useful in reducing or eliminating risks due to natural and manmade hazards such as Thunderstorms and Lightning, Windstorms, River Flooding, Flash Flooding, Tornadoes, Infrastructure Failure, Severe Winter Storms, Transportation Incidents, Hazardous Material Incidents, Hailstorms, Landslides, Grass and Wild Land Fires, Terrorism, Radiological Events, Extreme Heat Events, Human Disease, Dam/Levee Failure, Sink Holes and Drought. By planning for such hazards, the City is taking an important step in protecting its residents, businesses and other important property.

The following plan, named the Fort Dodge Hazard Mitigation Plan serves as a tool to help decision-makers facilitate mitigation activities and resources. The plan will also enable the City of Fort Dodge to apply for certain Federal Disaster Assistance Funds, specifically the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program, Pre-Disaster Program and the Flood Mitigation Assistance Program.

The Fort Dodge Hazard Mitigation Plan begins in chapter one by giving some background information on the City of Fort Dodge. The second chapter explains the planning process used in the development of the plan, which is demonstrated through the risk assessment, exposure assessment and loss estimates discussed in chapters three through five. Chapter six describes each mitigation strategy developed by the hazard mitigation committee, and serves as a useful resource for the City when reviewing hazard mitigation goals and objectives. Finally, chapter seven explains the plan implementation, review and updates.

The plan was made available for public review 30 days prior to submittal to HSEMD FEMA. The City Council and Fort Dodge Community School District have adopted the hazard mitigation plan and will readopt the plan if deemed necessary after the plan is granted approval by HSEMD FEMA. The Fort Dodge City Council will be responsible for adopting, monitoring, evaluating and updating this plan.

Chapter 1 - Introduction

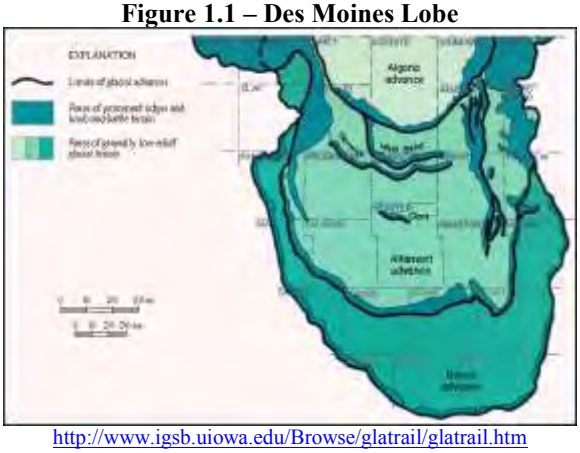
Community Description

The City of Fort Dodge is located in north-central Webster County, and is approximately 90 miles northwest of the Iowa capitol, Des Moines. The City connects to the region via two main highways; U.S. Highway 20, located approximately 2 miles south of the city boundaries, and U.S. Highway 169, which runs through the western edge of the city.

Geography

The various landforms in Iowa derive from glacial, wind, river and marine environments of the past. (Iowa DNR, 2012). The City of Fort Dodge is located in the landform known as the Des Moines Lobe (Figure 1.1), which was formed by historic glaciers. A flat to gently rolling landscape resulted where the advance and retreat of glaciers were rapid, while areas of ridges formed at the limits of such advances. A glacial limit was formed on lands located west of Fort Dodge, near the City of Clare.

Figure 1.1 – Des Moines Lobe



http://www.igsb.uiowa.edu/Browse/glatrail/glatrail.htm

Climate

The temperatures in Fort Dodge vary greatly from season-to-season. Table 1.1 displays the average high and low temperatures for Fort Dodge during 1981-2010, as well as the average precipitation and snowfall of each month. The coldest temperatures and highest amount of snowfall occurs during the winter months of December through February. The warmest temperatures take place during the summer months of June through August.

Table 1.1 – Monthly Averages

1981- 2010	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average High	27.0	31.7	44.9	60.5	71.4	80.9	84.3	81.5	74.9	61.7	44.8	29.8	57.8
Average Low	8.7	13.0	24.7	36.5	48.4	58.7	63.0	60.4	50.9	38.7	26.0	12.9	36.8
Average Precipitation	0.84	0.93	2.09	3.68	4.69	5.50	4.71	4.31	3.02	2.37	1.80	1.22	35.17
Average Snowfall	8.1	8.2	6.2	2.1	0.0	0.0	0.0	0.0	0.0	0.3	3.8	9.2	37.8

http://www.nws.noaa.gov/climate/

Rivers and Watershed

The City of Fort Dodge is in the Middle Des Moines Watershed. The Middle Des Moines Watershed covers parts of 11 counties, with most of the area located in Pocahontas, Webster and Boone Counties. Seventy-five percent of the watershed is row crop, 6.7% is pasture, 8.8% is woodland, natural area, or wetland, 1.2% is water and 8.6% is developed or urban areas. Prior to the installation of subsurface

drainage, the region had abundant wetlands, many of which were interconnected prairie potholes. Now a large portion of this region is artificially drained to support the row crop agriculture. Approximately 96% of the watershed is privately owned and 4% is publically owned (NRCS, 2008).

Soldier Creek, Lizard Creek and Gypsum Creek all run through the City of Fort Dodge and drain into the Des Moines River, which cuts through the City and eventually drains into the Mississippi River at the southeast corner of the State.

Vegetation

Fort Dodge is situated at the southern-most extent of the Prairie Pothole Region. This area once consisted of tree-lined rivers and a prairie landscape dotted with many small wetlands or sloughs. While the state has worked to preserve the vegetation in all areas, the landscape of Iowa has undergone drastic change since its first settlers (Iowa Association of Naturalists, 2001). The remaining wetlands have plant communities that are dynamic and continually changing due to wet and dry cycles (USGS, 2006). Very few prairies exist in the Fort Dodge area, with the majority of vegetation consising of row crop. The river beds are still lined with trees and there are groves of trees that consist of oak, hickory, hazel, elm, walnut, butternut and cottonwood.

History

Fort Dodge began as a military post that was named after Henry Dodge, a U.S. Senator from Wisconsin. In May of 1850 the men of Company E of the Sixth United States Infantry set out overland from Muscatine, IA to erect a fort at the junction of the Des Moines River and Lizard Creek (Gue, 1903).

The troops arrived at the site in mid-summer and pitched their tents on ground overlooking the river valley. The site had many advantages to offer including good water, plentiful timber, the existence of coal, and stone for building. From the beginning the officers foresaw the growth of a city and laid out the principal fort buildings in a line, which could someday form a city street (The Fort Museum, 2012).

By November of 1850, 12 buildings had been completed and the troops were able to move inside for the winter. Originally christened Fort Clarke, the spring of 1851 found 21 major buildings completed and a name change to Fort Dodge (The Fort Museum, 2012).

Spring of 1853 brought orders for Fort Dodge to be abandoned. The troops were sent north to establish Fort Ridgely, Minnesota and to deal with mounting problems with the Sioux. William Williams, the post Sutler or civilian storekeeper, purchased the military reservation and buildings, and in March of 1854, platted the town of Fort Dodge. A bronze plaque in downtown Fort Dodge marks the site of the original fort (The Fort Museum, 2012).

The town of Fort Dodge was officially founded in 1869. In 1872, the gypsum production in Iowa started when the Fort Dodge Plaster Mills was formed to mine, grind and prepare gypsum for commercial use. The company constructed the first gypsum mill west of the Mississippi River at the head of what is now Gypsum Creek (Gue, 1903).

Population and Demographics

According to the 2010 U.S. Census, the population of Fort Dodge is 25,206. As shown in Table 1.2, the population continued to increase in Fort Dodge until 1980. Since this time the population continued to decrease; however, a slight increase in population took place from 2000 to 2010.

Table 1.2 – Population of Fort Dodge

Year	Population	Percent Change
2010	25,206	0.3%
2000	25,136	-3.0%
1990	25,894	-13.6%
1980	29,423	-6.3%
1970	31,263	9.2%
1960	28,399	11.6%
1950	25,115	8.8%
1940	22,904	4.4%
1930	21,895	11.6%
1920	19,347	19.7%
1910	15,543	21.8%
1900	12,162	59.9%
1890	4,871	26.4%
1880	3,586	13.7%
1870	3,095	78.3%
1860	672	-

www.iowadatacenter.org

Table 1.3 shows the age of the Fort Dodge population in 2010. The median age of residents is 36.8. Approximately 16% of the population is 65 and older, while about 20% is 16 or younger.

Table 1.3 – Age of Population

Age	Number	Percent
Under 5 years	1,544	6.1%
5 to 9 years	1,489	5.9%
10 to 14 years	1,518	6.0%
15 to 19 years	2,071	8.2%
20 to 24 years	2,212	8.8%
25 to 29 years	1,834	7.3%
30 to 34 years	1,466	5.8%
35 to 39 years	1,264	5.0%
40 to 44 years	1,339	5.3%
45 to 49 years	1,623	6.4%
50 to 54 years	1,722	6.8%
55 to 59 years	1,660	6.6%
60 to 64 years	1,379	5.5%
65 to 69 years	1,005	4.0%
70 to 74 years	808	3.2%
75 to 79 years	786	3.1%
80 to 84 years	725	2.9%
85 years and over	761	3.0%
Median age (years)	36.8	(X)

http://www.census.gov/

Table 1.4 displays the Race and Hispanic or Latino background of Fort Dodge residents. Approximately 5% of residents are of Hispanic origin.

Table 1.4 - Race and Ethnicity

Race and Ethnicity	Number	Percent
Hispanic or Latino	1,270	5.0%
White alone	787	3.1%
Black or African American alone	23	0.1%
American Indian and Alaska Native alone	18	0.1%
Asian alone	5	0.0%
Native Hawaiian and Other Pacific Islander alone	2	0.0%
Some Other Race alone	330	1.3%
Two or More Races	105	0.4%
Not Hispanic or Latino	23,936	95.0%
White alone	21,835	86.6%
Black or African American alone	1,353	5.4%
American Indian and Alaska Native alone	71	0.3%
Asian alone	207	0.8%
Native Hawaiian and Other Pacific Islander alone	3	0.0%
Some Other Race alone	19	0.1%
Two or More Races	448	1.8%

http://www.census.gov/

Economy

Table 1.5 shows the structure of the labor force in the City of Fort Dodge. The table was developed by the Iowa Workforce Development through responses to a survey from the Fort Dodge and Webster County Laborshed area. The largest concentration of workers are employed in the education industry.

According to the Iowa Workforce Development, the year-to-date unemployment rate for 2011 was 7.4% for the civilian labor force in the City of Fort Dodge. This means that on average, approximately 940 residents were unemployed in Fort Dodge in 2011 (Iowa Workforce Development, 2012). This compares to the State unemployment rate at 6.0% and the nation at 8.9% (United States Department of Labor, 2012).

Table 1.5 - Employment Industries, 2011

Industry	% of Laborshed	# of Employed
Education	24.3%	19,336
Health Care & social Services	15.5%	12,333
Manufacturing	10.9%	8,673
Wholesale & Retail Trade	10.9%	8,673
Publication Administration & Government	8.2%	6,525
Finance, Insurance & Real Estate	6.7%	5,331
Personal Services	6.7%	5,331
Transportation, Communication & Utilities	6.4%	5,093
Agriculture	3.7%	2,944
Professional Services	3.7%	2,944
Construction	3.0%	2,387
Entertainment & Recreation	0.0%	0

www.wcfddevelopment.com

Table 1.6, shows household incomes for the City of Fort Dodge in 2010. This table is based on the American Community Survey (ACS) 3-year estimates. The median household income is equal to $36,403.

Table 1.6 – 2010 Estimated Household Income

Household Income in 2010	Number	Estimated Margine of Error	Percent	Estimated Margine of Error
Less than $10,000	963	+/-285	9.0%	+/-2.5
$10,000 to $14,999	713	+/-251	6.7%	+/-2.3
$15,000 to $24,999	1,981	+/-439	18.5%	+/-4.1
$25,000 to $34,999	1,513	+/-393	14.1%	+/-3.5
$35,000 to $49,999	1,821	+/-355	17.0%	+/-3.3
$50,000 to $74,999	1,709	+/-311	16.0%	+/-2.9
$75,000 to $99,999	729	+/-222	6.8%	+/-2.0
$100,000 to $149,999	1,033	+/-236	9.7%	+/-2.2
$150,000 to $199,999	174	+/-117	1.6%	+/-1.1
$200,000 or more	61	+/-46	0.6%	+/-0.4
Median household income	$36,403	+/-$2,942	(X)	(X)

http://www.census.gov/

Housing

Table 1.7 shows the status and type of housing that exists in the City of Fort Dodge. Of the 11,215 units, 8.4% of are vacant. 48.8% of those vacant units consist of rental units (U.S. Census, 2010).

Table 1.7 – Housing Status

TENURE	Number	Percent
Occupied housing units	10,275	100.0%
Owner occupied	6,728	65.5%
Owned with a mortgage or loan	4,115	40.0%
Owned free and clear	2,613	25.4%
Renter occupied	3,547	34.5%
VACANCY STATUS		
Vacant housing units	940	100.0%
For rent	444	47.2%
Rented, not occupied	15	1.6%
For sale only	207	22.0%
Sold, not occupied	27	2.9%
For seasonal, recreational, or occasional use	41	4.4%
For migratory workers	0	0.0%
Other vacant	206	21.9%

http://www.census.gov/

Public Services and Facilities

Public Works

The City of Fort Dodge has a Public Works Department that maintains the City's infrastructure, including water mains, fire hydrants, sanitary and storm sewers, streets and their signage, alleys, traffic signs traffic signals and other similar networks. Each of the utilities and services that are directly and indirectly related to the Public Works Department are discussed below.

> **Water and Sewer Utilities:** The Fort Dodge Water Utility Division has 11 employees and is responsible for maintaining the infrastructure for all drinking water, sanitary and storm sewer systems (City of Fort Dodge, 2012).

Drinking Water – The Fort Dodge Water Supply comes from the Mississippian and Cambrian Jordan Sandston Aquifers. The water is treated via the John Pray Water Treatment Plant.
Sanitary Sewer – The sanitary sewer system connects to each household and treats all waste at the wastewater treatment plant, located on Avenue B.
Storm Sewer – The storm sewer lines run throughout the City to catch the rainfall runoff and carry it directly into nearby streams and rivers. Keeping the storm sewer maintained reduces flash flooding and improves water quality. A storm water utility fee has been put in place for residents and businesses of Fort Dodge to assist the City in implementing various programs for improving the storm sewer and stormwater quality.

Electric: Electricity is provided by MidAmerican Energy Company; however, the City's Electrical Division is responsible for the maintenance and repair of streetlights, the traffic signal system and electrical wiring in City buildings (City of Fort Dodge, 2012).

Natural Gas: MidAmerican Energy distributes natural gas to residents and businesses within the City of Fort Dodge and maintains the gas lines associated with such services.

Sanitation: The Sanitation Division of the Public Works is responsible for the collection and disposal of garbage, recycling, yard waste, brush and leaves; each of which is picked up weekly for all single and duplex family dwellings (City of Fort Dodge, 2012).

Maintenance: The Maintenance Division has 3 employees and is responsible for preventative maintenance on City-owned vehicles and equipment (City of Fort Dodge, 2012).

Streets: The Street Division has 13 employees and is responsible for all street maintenance including street sweeping, street patching, snow and ice removal, dust control and pothole repair (City of Fort Dodge, 2012).

Traffic Safety: The Traffic Safety Department for the City of Fort Dodge maintains over 12,000 street and traffic signs. They are also responsible for painting all lane lines, lane indication markings, school crossings and railroad crossings on over 160 miles of city streets. In addition, Traffic Safety paints the parking lot lines in City parking lots (City of Fort Dodge, 2012).

Communications

Telecommunications:
Phone and Internet Service providers for the City of Fort Dodge include DISH Network Corporation; Evertek, Inc.; Frontier Communications of Iowa; Hughes Networking Systems, LLC; Mediacom; U.S. Cellular; Verizon Wireless; WildBlue Communication, Inc.; and Woolstock Mutual Telephone.

Public Safety

Law Enforcement: The Fort Dodge Police Department's main headquarters are located at 702 1st Avenue South, in Fort Dodge. The department is served by thirty-nine (39) sworn personnel and three (3) civilians. The department also co-sponsors a Reserve Unit with the Webster County Sheriff's Department, which currently has thirteen (13) Reserve Officers.

Fire Protection: Fort Dodge Fire and Rescue is located at 1515 Central Avenue, in Fort Dodge. The department employs thirty-one (31) full-time career Firefighters including one (1) Chief, three (3) Assistant Chiefs, three (3) Captains and three (3) Lieutenants, with the remainder as Firefighters. The department will be restructuring the department beginning on July 1, 2012; with one (1) Chief, one (1) Assistant Chief of Operations and one (1) Fire Marshal working eight-hour shifts weekdays. The three (3) Captains, three (3) Lieutenants and twenty-four (24) Firefighters will work on three (3), twenty-four-hour shifts with ten (10) members.

Region V Hazardous Materials Response Commission & LEPC: The Region V HAZMAT Commission, in agreement with the Fort Dodge Fire Department, provides Hazardous Material Response to all citizens in a nine-County region. The commission is housed in Fort Dodge at 1515 Central Avenue and provides immediate response to chemical emergencies, hazardous materials planning and training for first responders.

Government Structure

The City's government takes structure through the City Council, which is the municipal body formed to discuss and determine decisions relating to city funds, proposed ordinances, proposed projects and other initiatives that may require an approved agreement with the City. The Council consists of the Mayor, four (4) Council Members representing each Ward for two-year terms, and three (3) Council Members elected "at large" for four-year terms. The City Council holds their regular meetings on the 2nd and 4th Monday of each month.

Critical Facilities

A list of critical facilities was compiled by the hazard mitigation committee. See Appendix D.

Hazard Mitigation Regulatory Framework

A number of plans and ordinances are used to provide clear guidance on requirements and laws established within the City of Fort Dodge. The City has a Code Enforcement Division to ensure that all building, mechanical, and plumbing improvements are completed in accordance with adopted codes (City of Fort Dodge, 2012). The following plans and/or ordinances may reflect hazard mitigation actions discussed in this plan:

Fort Dodge Comprehensive Plan – "Envision 2030"
Fort Dodge Zoning Ordinance
Fort Dodge Code of Ordinances

- Building
- Electrical
- Fire
- Water and Sewers – 13.24
- Snow and Ice Removal – 12.40
- Water Overflow on Sidewalks – 12.44
- Maintenance of Trees and Shrubs – 12.56
- Drainage of Stagnant Water – 8.12
- Diseased Trees and Dead Wood – 8.28
- Yard Waste – 8.32

Existing Hazard Mitigation Programs

The following list gives a quick overview of mitigation actions or programs that the City currently implements:

- NFIP Participant, which the City will continue compliance with.
- Public Service Announcements on various hazards
- Fire Department Service
- Police Protection
- Region V HAZMAT Team
- Snow Fences
- Snow Removal
- Warning Sirens
- Emergency Management Services
- Public Facility Maintenance and Improvements
  - Water
  - Sanitary and Storm Sewer
  - Streets
  - Electrical
- Establishment of shelters
- Public Health Clinics

Chapter 2 - The Planning Process

Introduction

The planning process, which is laid out in the following paragraphs, was used to develop the Fort Dodge Hazard Mitigation Plan. The process ensures that all necessary components of hazard mitigation are addressed in an organized manner.

Organization

Mid-Iowa Development Association (MIDAS) Council of Governments contacted the City of Fort Dodge to discuss the formation of a hazard mitigation committee. Before the first hazard mitigation meeting was held, a list of potentially interested members of the community was provided by Fort Dodge City Staff to MIDAS Council of Governments. Each individual was given an invitation to participate in the introductory meeting. This included members of the city, employees of the city, emergency personnel, emergency management, the local school district, care facilities, and local businesses.

The Fort Dodge Hazard Mitigation Committee was made up of a comprehensive gathering of members of the community. Below is the list of the people who, at any one time, were present in the plan development practice, the team lead for this effort was David Fierke, Fort Dodge City Manager.

Name		Representation
Al	Dorothy	City of Fort Dodge
Ashton	Newman	Fort Dodge Community Schools
Barbara	Michaels	Red Cross
Beth	Bahnson	Elderbridge
Bob	Livermore	U.S. Water
Cheryl	O'Hern	Frontier Communications
Chris	Darling	Fort Dodge Community Schools
Dan	Flattery	State Farm
David	Fierke	City of Fort Dodge
David	Ostheimer	MidAmerican Energy Company
David	Luers	Fire/Airport
Dawn	Larson	City of Fort Dodge
Denise	Strohbehn	Valero Renewable
Donna	Bice	City of Fort Dodge
Jennifer	Ellis	Webster County Public Health
Jodie	Janke	Friendship Haven
John	Horrell	Water Plant
Kari	Krueger	Trinity Medical Center
Kevin	Doty	FD Police Department
Kevin	Richardson	USG
Kim	Courter	Boehringer-Ingelheim
Marcy	Harms	Fort Dodge Community Schools
Mel	Smith	Friendship Haven
Reggie	Archer	Nestle - Purina
Scott	Meinders	City of Fort Dodge
Stephanie	Sheetz	City of Fort Dodge
Steve	Teske	Fort Dodge Fire Department
Tim	Carmody	Fort Dodge Police
Tom	Anderson	ICCC
Wes	Sperr	Citizen

MIDAS Council of Governments worked with the hazard mitigation committee to develop and write the hazard mitigation plan by using the following planning process:

The Planning Process

1. Developed Hazard Mitigation Committee
    A. Organized a committee to develop the hazard mitigation plan
    B. Organizations invited to participate in the plan development were provided by the City. MIDAS sent out invitations and documented participation and public participation efforts. Organizations invited include:
        a. Local representatives
        b. Community leaders
        c. Business leaders
        d. Educators
        e. General public
        f. Neighboring community leaders
        g. Hospital/healthcare professionals
2. Compiled the Community Profile to include:
    A. Population identification
    B. Past population trend
    C. Housing and residential development
    D. Commercial/industrial development trends
    E. Critical facility identification
        a. Name
        b. Location
    F. Regulatory Framework
        a. Existing Plans
        b. Existing Ordinances
    G. Existing Mitigation Programs
        a. NFIP Participation
        b. Other programs/strategies
3. Hazard Analysis/Risk Assessment – the committee selected hazards based on the 2010 Iowa Hazard Mitigation Plan. All natural hazards identified in the state hazard mitigation plan were also considered.
    A. Hazard identification
        a. Flash Flood
        b. Tornadoes
        c. Windstorms
        d. Extreme Heat
        e. Hailstorms
        f. Grass or Wild Land Fire
        g. Sink Holes
        h. River Flooding
        i. Severe Winter Storms
        j. Drought
        k. Earthquakes
        l. Landslide
        m. Expansive Soils
        n. Thunderstorm & Lightning
        o. Dam Failure
        p. Levee Failure
        q. Human Disease
        r. Hazardous Materials
            1. Fixed hazardous materials
            2. Pipeline transportation
        s. Transportation Incident

t. Infrastructure Failure
    1. Communication Failure
    2. Energy Failure
    3. Structural Failure
    4. Structural Fire
u. Terrorism
v. Radiological
    1. Fixed Radiological Incident
    2. Transportation Radiological Incident
w. Animal/Plant/Crop Disease

B. Hazard profile – risk assessment – MIDAS conducted research and prepare assessment tables for selected hazards. Committee provided supplemental community specific information.
    a. Hazard definition (profile)
    b. Hazard description (profile)
    c. Historical occurrence (risk assessment)
    d. Probability (risk assessment)
    e. Vulnerability (risk assessment)
    f. Severity of impact (risk assessment)
    g. Speed of onset (risk assessment)

C. Identified exposed buildings located in hazard areas
    a. Identification of critical facilities
    b. Critical facilities map(s)
    c. Identification of special flood hazard area
    d. Identification of repetitive loss structures

4. Development of the Mitigation Strategies – MIDAS provided information regarding a wide-range of possible mitigation strategies. The committee identified current mitigation activities, evaluated mitigation strategies, and selected those strategies to be recommended to the appropriate governing body. The following process was followed:
    A. Development and identification of local hazard mitigation goals and objectives that focus on reducing the risks from identified hazards
    B. Development and identification of specific hazard mitigation measures. This includes the development and identification of a comprehensive range of specific mitigation actions and projects that would reduce the effects of each hazard. Also include feasibility, prioritization and potential/probable funding sources
    C. Development of a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.
    D. Implementation of hazard mitigation measures. Identification of completed or current hazard mitigation measures.
5. Public Participation/Comment Period and Public Education
    A. Prior to the beginning of the planning process, the public was invited to participate
    B. The general public was notified of Planning Committee meetings and invited to attend or provide throughout the planning process.
    C. Surrounding communities were notified and invited to participate on the planning committee and to provide input throughout the planning process. The agenda of planning committee meetings were forwarded to surrounding community city officials with a request that they be posted in conspicuous places. All published public announcements were placed in citywide publications.
    D. Upon completion of the Draft Plan, one public participation opportunity was made available prior to consideration of adoption of the plan. In addition, the draft plan was made available for at least a 30 day-review period
        a. To be in a conspicuous space such as City Hall, Public Library, Local Schools, etc.
        b. To be announced in a publication with citywide circulation
6. Plan Adoption – Prior to HSEMD FEMA Approval (To be completed after committee blessing)

A. The hazard mitigation plan received approval from the City of Fort Dodge and the Fort Dodge School District. A 30-day review period was held, followed by a public hearing (published in the local newspaper) to discuss the hazard mitigation plan.
B. After the public hearing the City of Fort Dodge and Fort Dodge School District made a formal adoption of the hazard mitigation plan

7. Plan Maintenance and Review Continuation
    A. Plan monitoring, evaluation and updates
        a. The Plan should be reviewed annually to determine program effectiveness; or
        b. At a minimum, the Plan shall be reviewed and update within 5 years of the date of FEMA approval
    B. Plan Implementation through Existing Programs
        a. As deemed appropriate by Community Government, this Plan shall be incorporated into existing or proposed development of Comprehensive Plans, Land-Use Plans and the appropriate programs that accompany such
    C. Continuation of Public Involvement. Process will be established to ensure opportunities for continued public participation
        a. As part of annual review
        b. When the Plan is reviewed prior to its 5 year anniversary

Referenced Plans

Plans that were referred to in the process of the planning process are listed below. While no specific material was included in the plan, these plans were used as a guide for development of this plan:

- Iowa State Hazard Mitigation Plan
- Carroll County Hazard Mitigation Plan
- City of Tripoli Hazard Mitigation Plan
- City of Cylinder Hazard Mitigation Plan
- Black Hawk County Hazard Mitigation Plan
- Belmond Hazard Mitigation Plan

Public Involvement

Prior to establishing a hazard mitigation committee, the Fort Dodge City Council discussed the development of a hazard mitigation plan at their regular meeting, which is open to the public. Upon determining that the City would like to develop a plan, an initial list of potential committee members was generated by City Staff. All hazard mitigation committee meetings were open to the public. Notice of such meetings was sent to attendees and those potential committee members identified by the City Staff. Prior to adopting the plan a public hearing was held at the Fort Dodge City Council Meeting. A draft of the plan was made available at the Municipal Building for public review and notice of the public hearing was publicized according to Iowa Administrative Code Chapter 331.305. No public comments or objections were received; therefore, the City adopted the plan.

Hazard Identification

The hazards that were identified were based on those identified in the Iowa State Plan and other hazard mitigation plans. The list was taken before the committee, and hazards were stricken from the list if they did not pertain to the City of Fort Dodge. After the hazard risk assessment, additional hazards were taken off the list upon further discussion about their potential affect on Fort Dodge. The remaining hazards were left in the plan and mitigation actions were developed to mitigate those hazards.

Hazard Risk Assessment

Each hazard's risk assessment was completed using the criteria displayed in tables 2.1-2.4. Each hazard was rated by five different factors: Historical Occurrence, Probability, Vulnerability, Severity of Impact, and Speed of Onset.

Table 2.1 – Historical Occurrence

Number of times that a hazard has occurred in the City in the past.

Rating	Number of Historical Occurrences
1	Less than 4 occurrences
2	4 to 7 occurrences
3	8 to 12 occurrences
4	More than 12 occurrences

Table 2.2 – Probability

Likelihood of the hazard occurrence, sometimes without regard to hazard history.

Rating	Frequency of occurrence
1	Less than 10% probability in any given year
2	Between 10% and 30 % probability in any given year
3	Between 40% and 99 % probability in any given year
4	Near 100% chance in the next year

Table 2.3 – Vulnerability

Measure of the percentage of people and property that would be impacted by the hazard event.

Rating	Percentage of people and property affected
1	Less than 25%
2	26% - 50%
3	51% - 75%
4	More than 75%

Table 2.4 – Severity of Impact

Assessment of the severity in terms of fatalities, injuries, personal property and economic losses.

Rating	Characteristics
1	Few if any injuries or illness. Minor quality of life lost with little or no property damage. Brief interruption of essential facilities & services for less than 4 hours.
2	Minor injuries and illness. Minor or short-term property damage which does not threaten structural stability. Shutdown of essential facilities and services for 4 to 24 hours.
3	Serious injury and illness. Major or long-term property damage which threaten structural stability. Shutdown of essential facilities and services for 24 to 72 hours.
4	Multiple deaths. Property destroyed or damaged beyond repair. Complete shutdown of essential facilities and services for 3 days or more.

Table 2.5 – Speed of Onset

Potential amount of warning time available before the hazard occurs.

Rating	Probable amount of warning time
1	More than 24 hours warning time.
2	12 to 24 hours warning time.
3	5 to 12 hours warning time.
4	Minimal or no warning time

An example of a hazard on the worksheet that the committee used to rate each hazard is displayed in Table 2.6:

Table 2.6 – Risk Assessment

Hazard	Historical Occurrence	Probability	Vulnerability	Maximum Threat	Severity of Impact	Speed of Onset	Total Score
Thunderstorm and Lightning	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	

After the hazard mitigation committee went through and rated each category, the score was totaled. The committee then reviewed the results and discussed any further changes to the scores. The risk assessment totals were used to determine which hazards are important for the City to address.

Goals Setting

The committee decided to create very general goals that would address all of the hazards. The two goals that the committee came up with were:

Protect the lives, safety and property of all residents, businesses and other entities of Fort Dodge from potential hazards

Implement hazard mitigation actions to prevent or reduce the affects of potential hazard.

These goals embody the comprehensive approach that the committee took in the development and creation of the plan, and they also fit the objectives and mitigation actions that the committee developed.

Possible Mitigation Actions

The following is the entire list of hazard mitigation actions that were generated by the hazard mitigation committee:

- Educate the public on weather radios
- Educate the public on CodeRED/Inspiron
- Identify areas and develop list of potential targets for terrorism
- Build public awareness on HAZMAT reporting
- Inform the public of road closures
- Inform the public of road clearance requirements during snow events
- Encourage participation in the Iowa Floodplain and Storm Water Management Association
- Educate the public on the Nixle program

- Educate the public on fire hazards
- Build public awareness on human disease
- Educate the public on the existing Medication Disposal Program (Hy-Vee)
- Update road signs to meet the Federal Highway Administration's (FHWA's) retroreflectivity requirements
- Televise sanitary and storm sewer systems to identify necessary repairs
- Implement sanitary sewer and storm water management projects to reduce flash flooding
- Run sanitary sewer evaluation study
- Establish tornado safe rooms where found feasible
- Stabilize tributaries
- Purchase and install backup energy for the City Lift Stations
- Identify areas where the landslide potential is high and address such issues
- Reconstruct the lift station to reduce damages from flooding
- Purchase and install backup energy for the City Water Plant & Wells
- Implement roadway and bridge projects to improve traffic flow and safety
- Acquire property in the floodplain
- Purchase and install additional backup energy for Friendship Haven
- Bury Powerlines
- Make improvements to hydro-electric dam to drop impoundment levels
- Establish additional snow fences
- Develop and implement an ordinance for storm water management
- Prosecute illegal drug actions
- Appoint a fire marshal
- Strive to meet the National Fire Protection Agency's (NFPA) Safety Codes and Standards
- Update and enforce floodplain ordinance
- Develop a program to assist in the distribution of fire protection devices
- Establish a HAZMAT disposal program
- Continue public health clinics
- Review and assess mutual aid agreements with surrounding fire departments
- Ensure emergency responders have adequate equipment and training
- Update all emergency radios for the 2013 narrowband mandate

Action Plan

To develop the hazard mitigation action plan, the committee reviewed and discussed a list of hazard mitigation actions. The mitigation actions were then analyzed using the STAPLEE process. Throughout the entire planning process, any mitigation actions were open to be edited, changed or eliminated from consideration. Please refer to the action plan section on page 52 to see the final list of hazard mitigation actions.

Chapter 3 - Hazard Risk Assessment

The Hazard Risk Assessment was completed to gain an understanding of how each hazard currently impacts or could potentially impact the City. The risk assessment was completed by the hazard mitigation committee, which included Fort Dodge Community School District Staff; and was based on the historic data provided in Appendix C and the committee's common knowledge of hazard events that have, or could occur within the City. The Fort Dodge Community School District accepts the risk assessment for the City of Fort Dodge and the ratings established in the following tables. The tables provide information on each hazard including the definition generated from Iowa Homeland Security and Emergency Management Division, 2010; description of potential impacts to the City; location of potential impacts; historical occurrence; probably of occurrence; vulnerability of the City; severity of impacts and speed of onset. An overview of the results is listed at the end of this chapter.

Hazard	**Thunderstorms and Lightning**	
Definition	Thunderstorms are the atmospheric imbalance and turbulence that may result in thunder; heavy rains, which may cause flash flooding; strong winds, reaching or exceeding 58 mph; tornadoes; or hail, at least 1.00 inch in diameter. Thunderstorms can occur singly, in clusters, or in lines. (Iowa Homeland Security and Emergency Management Division, 2010).	
Location	Thunderstorms generally affect an entire area or region; therefore, if a thunderstorm event were to occur, the entire city of Fort Dodge would be exposed to the event. For a map of the City of Fort Dodge, see Appendix F.	
Historical Occurrence	The National Climatic Data Cent (NCDC) historical data (Appendix C) shows 88 events relating to thunderstorms having occurred in the City of Fort Dodge and its surrounding area of Webster County since 1959. A great percentage of these storms most likely impacted the City of Fort Dodge. Based on this data and the fact that thunderstorms are a common occurrence in the Midwest, the hazard mitigation committee determined that more than 12 occurrences of thunderstorm and lightning have taken place in Fort Dodge.	**Rating** 4
Probability	Thunderstorms are one of the most common natural hazards throughout the world. In the United States, approximately 100,000 thunderstorms occur each year. The central area of the United States is home to some of the most severe thunderstorms in the world. About 85 percent of Iowa thunderstorms occur between April and September, with most storms occurring during the month of June. With more than 88 events over a 53 year span, there is nearly a 100% chance that a thunderstorm and lightning event will occur in the next year.	4
Vulnerability	Because thunderstorms and lighting are a regional event, the committee determined that more than 75% of the population of Fort Dodge is exposed to thunderstorms & lightning, which makes them susceptible to damages due to thunderstorms and lightning. Winds, hail and heavy rains have the potential to cause extensive damage throughout the City.	4
Severity of Impact	Thunderstorms and lightning impact the City of Fort Dodge due to high winds, heavy rains and lightning strikes. While each of these characteristics has the potential to cause damage to the City of Fort Dodge, there are generally only very minor injuries, property damage or service interruptions due to thunderstorms.	2
Speed of Onset	The committee determined that while residents have an idea of when a storm may impact the community, the damages produced by the storm are often unpredictable. The committee felt that the warning time for thunderstorms is minimal.	4
Total Score		**18**

Hazard	Windstorms
Definition	Windstorms are extreme winds associated with severe winter storms, severe thunderstorms, downbursts, and very strong pressure gradients (Iowa Homeland Security and Emergency Management Division, 2010). Windstorms produce wind speeds in excess of 50 mph, and/or produce (extensive) property damage, injuries, and/or death. These events can range from a few hundred feet in extent up to several tens of miles wide and several hundred miles long. **Measurements** One of the first scales to estimate wind speeds and the effects was created by Britain's Admiral Sir Francis Beaufort (1774-1857). He developed the scale in 1805 to help sailors estimate the winds via visual observations. The scale starts with 0 and goes to a force of 12. The Beaufort scale is still used today to estimate wind strengths. (Iowa Homeland Security and Emergency Management Division, 2010)

Force	Wind Speed (mph)	WMO Classification	Appearance of Wind Effects on Land
0	0-1	Calm	Calm, smoke rises vertically
1	1-3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4-7	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	13-18	Moderate Breeze	Dust, leaves, and loose paper lifted, small tree branches move
5	19-24	Fresh Breeze	Small trees in leaf begin to sway
6	25-31	Strong Breeze	Larger tree branches moving, whistling in wires
7	32-38	Near Gale	Whole trees moving, resistance felt walking against wind
8	39-46	Gale	Whole trees in motion, resistance felt walking against wind
9	47-54	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	55-63	Storm	Seldom experience on land, trees broken or uprooted, "considerable structural damage"
11	64-72	Violent Storm	Very rarely experienced, accompanied by wide-spread damage
12	73-83	Hurricane	--

The Beaufort Wind Scale (1/28/09)
http://www.zetnet.co.uk/sigs/weather/Met_Codes/beaufort.htm
http://www.spc.noaa.gov/faq/tornado/beaufort.html

Location	Windstorms would generally impact the entire area of Fort Dodge. For a map of the City see Appendix F.	
Historical Occurrence	According to NCDC (Appendix C), 43 wind events/windstorms have been recorded in Webster County since 1993; these windstorms may or may not have impacted the City of Fort Dodge; however, windstorms may accompany other storms such as thunderstorms or winter storms. The hazard mitigation committee determined that windstorms, like thunderstorms, have occurred in the City more than 12 times in the past.	**Rating** 4

Probability	Iowa lies on the eastern edge of the Great Plains where winds blow strong and steady, particularly in the winter and spring. The relative flatness of the terrain means that most areas of the state are well exposed to the wind. In addition, most of the state consists of cropland with few trees to reduce wind speeds near the ground. Because windstorms are such a common occurrence, having occurred more than 43 times since 1993, the hazard mitigation committee determined that it is very likely for a windstorm to occur in the next year.	4
Vulnerability	Windstorms are a regional event that would impact the entire community, according to the Fort Dodge Hazard Mitigation Committee; however, when windstorms occur it is common knowledge to take shelter to reduce the physical effects on people due to flying debris, falling trees/power lines, etc.	4
Severity of Impact	Windstorms have the potential to cause injuries and death; they can also cause property damage in the form of falling trees on cars or buildings, blowing roofs and shingles, and downed power lines causing an interruption in services. While Fort Dodge has experienced such impacts, the hazard mitigation committee determined that the severity in terms of fatalities, injuries, property loss, and economic is minor due to the ability to seek shelter.	2
Speed of Onset	While the City has some warning regarding a rain or snow event, generally the conditions relating to wind may vary as the approaching storm develops; therefore, the hazard mitigation committee determined there is very minimal warning time for windstorms.	4
Total Score		**18**

Hazard	**Hailstorm**	
Definition	According to IHSEMD, Hailstorms are an outgrowth of a severe thunderstorm in which pellets or irregularly shaped lumps of ice greater than 1 inch in diameter fall with rain (Iowa Homeland Security and Emergency Management Division, 2010). Strong, rising currents of air within a storm carry water droplets to a height where freezing occurs. Ice particles grow in size until they are too heavy to be supported by the updraft, resulting in hail that can be smaller than a pea or as large as a softball. Any of these sizes can be very destructive to plants and crops.	
Location	Hailstorms have the potential to affect all areas of Fort Dodge. See Appendix F for a map of the City.	
Historical Occurrence	According to data collected from the NCDC (Appendix C), there have been a total of 65 hail storms that have occurred in the City of Fort Dodge since 1961; 44 of which directly impacted the City of Fort Dodge. Based on this information, the hazard mitigation committee determined that more than 12 hailstorms have taken place in the City.	**Rating** 4
Probability	Hailstorms that take place in Iowa occur most frequently in May; however, most crop damage due to hail occurs in July when crops are more susceptible to damage. Hail losses are greatest in the northwestern part of the state, due to the severity and frequency of such events. Based on this statement and the NCDC data showing 65 hail events since 1961, the committee determined that it is highly likely that a hailstorm could occur within the community.	4
Vulnerability	If directly exposed to a hailstorm, a person may be at risk of serious injuries. All facilities and buildings are exposed to hailstorms; therefore, the committee determined that more than 75% of the community is vulnerable to hailstorms.	4
Severity of Impact	Because people are able to seek shelter, the severity of hail storms is seen as a minor threat to Fort Dodge. The injuries and property damage are most commonly, very minor in a hail storm occurrence.	2
Speed of Onset	The City has very limited warning of hailstorm events. It can be difficult for meteorologists to predict if hail will accompany a thunderstorm event; therefore, the Hazard Mitigation Committee determined that the City has minimal warning time for hail.	4
Total Score		**18**

Hazard	Infrastructure Failure	
Definition	Infrastructure Failure encompasses multiple hazards. IHSEMD determined that Infrastructure Failure should include Communication Failure, Energy Failure, Structural Failure, and Structural Fire. Each of which are defined by IHSEMD, below: ▪ **Communication Failure**: Communication failure is the widespread breakdown or disruption of normal communication capabilities ▪ **Energy Failure**: An extended interruption of service either electric, petroleum or natural gas, which by an actual or impending acute shortage of usable energy could create a potential health problem. ▪ **Structural Failure**: The collapse (part or all) of any public or private structure including roads, bridges, towers, and buildings is considered a structural failure. ▪ **Structural Fire**: A structural fire is an uncontrolled fire in populated areas that threatens life and property.	
Location	The entire community would generally be impacted by a communication failure or energy failure, while structural failure and structural fire events are isolated events that may occur at any time in a stable or unstable structure that is exploited beyond its allowed or intended use.	
Historical Occurrence	Infrastructure failures that most commonly occur within the City of Fort Dodge include energy failure (more than 120 events from April 2010 to March 2011) and structural fire (more than 47 events in 2010). Based on information provided by the Fort Dodge Fire Department, each of the events has occurred more than 12 times in the City's past.	**Rating** 4
Probability	Based on historical data provided by the fire department, the hazard mitigation committee determined that the probability of an infrastructure failure occurring is highly likely due to the number of energy failures (more than 120 events from April 2010 to March 2011) and structural fires (more than 47 events in 2010s that commonly occur each year.	4
Vulnerability	The hazard mitigation committee determined that, on average, only 26-50% of people and property are affected by any one infrastructure failure event. Structural failure and structural fire are generally isolated events, while energy disruption and communications failure are generally temporary events that have little impact on the City in the long-run.	2
Severity of Impact	Infrastructure failure generally has a limited amount of impact on the community. While structural failure and structural fire may have more severe, physical impacts; on average, the City experiences only minor injuries; minor, short-term damages; and short-term interruption to public facilities during infrastructure events.	2
Speed of Onset	Infrastructure failure generally occurs without any warning.	4
Total Score		**16**

Hazard	Severe Winter Storms
Definition	Severe winter weather conditions that affect day-to-day activities can include blizzard conditions, heavy snow, blowing snow, freezing rain, heavy sleet, and extreme cold. Severe winter storms are common during the months of October through April. The various types of extreme winter weather can cause considerable damage. Heavy snows can result in immobilized transportation systems, downed trees and power lines, collapsed buildings, and loss of livestock and wildlife. Blizzard conditions are winter storms that last at least three hours with sustained wind speeds of 35 mph or more, reduced visibility of ¼ mile or less and whiteout conditions. Heavy snows of more than 6 inches in a 12-hour period or freezing rain greater than ¼ inch in accumulation can cause hazardous conditions in the community that have the potential to slow or stop the flow of vital supplies as well as disrupt emergency and medical services. 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. (Iowa Homeland Security and Emergency Management Division, 2010) Measurements (Wind Chill Index) The wind chill temperature index measures how cold people feel when outside. Wind chill is based on the rate of heat that is lost from exposure of skin to the wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature; therefore, making it feel much colder. If the temperature is at 0°F and the wind is blowing at 15 mph, the wind chill is -19°F. At this wind chill temperature, exposed skin can freeze in 30 minutes. Below is a revised wind chill table that was introduced by the National Weather Service on November 1, 2001. The new index was tested on human subjects and is based on heat loss from exposed skin. The old index, formulated in 1945 by Antarctic explorers, measured the cooling rate of water.

	Temperature (°F)																		
Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63	
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72	
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77	
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81	
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84	
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87	
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89	
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91	
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93	
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95	
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97	
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98	

Frostbite Time = 30 minutes 10 minutes 5 minutes

NWS Windchill Chart (1/28/09)

http://www.weather.gov/os/windchill/index.shtml

http://www.infoplease.com/ipa/A0001374.html

Location	Winter storms are generally a regional event that can impact several-to-all counties within Iowa. When a winter storm occurs, the entire City of Fort Dodge is impacted. For a map of the assessed structures that could potentially be impacted, see Appendix F.	
Historical Occurrence	Historical data provided by the NCDC is presented in Appendix C. This data shows that the City of Fort Dodge and Webster County have experienced an abundant amount of winter storms; therefore, the committee determined that winter storms have occurred more than 12 times in the City of Fort Dodge	**Rating** 4

Probability	Severe winter storms commonly occur throughout the state of Iowa. Seasonal snowfall averages 32 inches across Iowa and varies from around 40 inches in northeast Iowa to about 20 inches in the extreme southeast corner of the State. With the snow season extending from October to April, approximately 88 events have occurred in Webster County since 1993; therefore, the chance for a winter storm that may produce extreme cold temperatures along with large amounts snow, ice and wind, is very likely.	4
Vulnerability	Winter storms impact the entire City of Fort Dodge. The hazard mitigation committee determined that more than 75% of the people and property within the community would be affected.	4
Severity of Impact	The impact of severe winter storms can vary depending on the conditions. Severe winter storms are generally accompanied by strong winds, extremely cold temperatures, ice, or large amounts of snow; each of these characteristics has an effect on people and property of Fort Dodge. Because most residents are able to seek shelter during a winter storm event, the hazard mitigation committee determined that winter storms generally have a limited impact on the quality of life with low instances of injury, property damage or facility disruption.	2
Speed of Onset	Weather services can accurately predict when winter storms will occur and the conditions that may accompany the storm. Generally there is more than 24 hours of warning when a winter storm is on its way.	1
Total Score		**15**

Hazard	**Transportation Incident**	
Definition	Transportation incidents include transportation accidents involving any mode of transportation that directly threatens life,results in property damage, and/or adversely impacts a community's capabilities to provide emergency services (Iowa Homeland Security and Emergency Management Division, 2010).	
Location	Transportation events, including vehicular, air and railroad incidents have the potential to occur within the City of Fort Dodge. For a map of the transportation networks, see Appendix F.	
Historical Occurrence	The Hazard Mitigation committee determined that there has been more 12 transportation incidents within the City, ranging from vehicular, air and railroad incidents.	**Rating** 4
Probability	According to IDOT, there have been more than 1,800 crashes in Webster County between 2001 and 2010; therefore, the hazard mitigation committee determined that it is highly likely to have at least one transportation event in the next year.	4
Vulnerability	While transportation events are common within the community, they generally only affect the motor vehicles, rail cars and/or airplanes involved. Based on these impacts less than 10% of the people and property of Fort Dodge would be impacted by a transportation incident.	1
Severity of Impact	A transportation incident can occur in many forms. With three modes of transportation in the City of Fort Dodge, a transportation event may result in multiple deaths or injuries; however, based on the majority of transportation events that do occur, only minor injuries are experienced.	2
Speed of Onset	No prediction of a transportation incident can be made; therefore, there is no warning time of the event.	4
Total Score		**15**

Hazard	River Flooding	
Definition	River flooding results in the rising or overflowing of a tributary or body of water that covers adjacent land, not usually covered by water, when the volume of water in a stream exceeds the channel's capacity (Iowa Homeland Security and Emergency Management Division, 2010).	
Location	Fort Dodge has four major tributaries that exist within the community. These include the Des Moines River, Soldier Creek, Lizard Creek and Gypsum Creek. For a map of the tributaries, and the City's FEMA issued FIRMs see Appendix F.	
Historical Occurrence	Since 1993, there have been 64 flood events recorded in Webster County. Recent events that have had a major impact on the City include the flood events of 2010 and 2011, which had its greatest impacts along the Des Moines River.	**Rating** 4
Probability	The hazard mitigation committee concluded that, based on 64 flood events having occurred since 1993 and 12 flood events specifically impacting the City since 2007, the probability of future flooding is very high. The event is random and depends on the amount of rain that impacts the City directly and upstream.	4
Vulnerability	The vulnerable population to river flooding in Fort Dodge is typically limited to those that live in close proximity to the rivers and creeks, most commonly in the floodplain. Due to this condition, it was estimated that less than 10% of people and property would be affected by river flooding.	1
Severity of Impact	The most severe impacts of flooding are the economic damage that floodwaters can cause to homes and businesses. Based on past damages, the committee determined that flooding could result in major or long-term property damages. Major or long-term property damages are those which impact foundations, ruin drywall and all contents located within the flooded structure, and could potentially result in the development of mold. While these damages would be severe, they would only impact areas where river flooding occurs.	3
Speed of Onset	There is generally some kind of warning that flooding will occur. Therein, if there is a lot of rain upstream or within Fort Dodge, residents will get some warning or notice that flooding may occur.	2
Total Score		**14**

Hazard	Flash Flooding	
Definition	A flash flood is an event that 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 (Iowa Homeland Security and Emergency Management Division, 2010).	
Location	Flash flooding occurs in multiple areas of the Community. Major flash flooding, where all individuals of the City may experience such, occurs along South 25th Street, between 1st avenue south and 5th avenue south. For a map of the City see Appendix F.	
Historical Occurrence	Flash flooding generally occurs in Fort Dodge when large amounts of rain fall in a short period of time. The NCDC Historical Data in Appendix C shows that 38 flash flood events have occurred in Webster County, 31 of which occurred in the City of Fort Dodge. Based on this, the hazard mitigation committee determined that there has been more than 12 flash flood events in the City.	**Rating** 4
Probability	With 38 events having occurred since 1993, the hazard mitigation committee estimated that the probability of flash flooding in the City of Fort Dodge is between a 40% and 99% chance in the next year.	3
Vulnerability	The number of people that are impacted by flash flooding in Fort Dodge is generally limited to those who are traveling during or right after the rain event, those who live in low-lying areas or areas that are paved or slow draining and those buildings with older foundations. These impacted areas account for less than 25% of the people and property in Fort Dodge, according to the hazard mitigation committee.	1
Severity of Impact	The hazard mitigation committee determined that flash flooding in Fort Dodge generally results in a very low occurrence of injury or death; however, houses, roads, bridges and sanitary sewer facilities may experience major damages. Impacts to homes result in basement flooding, which can impact foundations, ruin drywall and all contents within the basement. Roads and bridges are impacted due to washouts of the structures; these generally don't result in substantial damages, as in the roads and bridges are usable after the event subsides. Flash flooding impacts sanitary sewer facilities due to infiltration. The system becomes inundated and is required to handle more water than it was designed to carry, causing sanitary sewer backups into structures and wear and tear on the system, which may shorten the lifespan of the system.	3
Speed of Onset	While flash flooding occurs quickly, residents of Fort Dodge generally have an idea of when the drainage system will back up due to an abundant amount of rain.	3
Total Score		**14**

Hazard	Hazardous Materials	
Definition	Hazardous material events encompass fixed hazardous materials, pipeline transportation and transportation of hazardous materials. ▪ **Fixed hazardous materials**: A fixed 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. ▪ **Pipeline transportation**: 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. An underground 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. ▪ **Transportation of hazardous materials**: A hazardous materials incident related to transportation is the accidental release of chemical substances or mixtures, which presents a danger to the public health or safety during the transport of such materials. A hazardous substance may cause damage to persons, property, or the environment when released. 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." Hazardous substances are categorized as toxic, corrosive, flammable, explosive or an irritant. Hazardous material incidents generally affect a localized area, and the use of planning and zoning can minimize the area of impact. (Iowa Homeland Security and Emergency Management Division, 2010)	
Location	Hazardous materials events can occur anywhere where such materials are handled, stored, processed or transported. No fixed hazardous material sites are known to be near the schools.	
Historical Occurrence	The hazard mitigation committee determined that more than 12 hazard material events have occurred within the City of Fort Dodge. For a list of the hazard materials spills/leaks, see Appendix C.	**Rating** 4
Probability	Based on the number of hazardous material events that have occurred (shown in Appendix C), the Fort Dodge hazard mitigation committee determined that it is very likely that a hazardous material event will occur in the next year.	4
Vulnerability	Areas of the community vulnerable to a HAZMAT event related to the fixed facilities are determined based on their proximity to the facilities and the type of material that may be released. Because different materials have different impacts and the size of the City, it was predicted that less than 25% of the community could potentially be affected by a HAZMAT event resulting from a fixed facility, pipeline or transportation event..	1
Severity of Impact	Depending on the type of material spilled, the extent of injuries and property damage may vary. The hazard mitigation committee determined that most events related to the fixed facilities in town would have few in any injuries, limited property damage and only a small interruption of facilities or services within the community of Fort Dodge	1
Speed of Onset	Because a hazardous material event occurs randomly, there is no warning time for when such an event will occur. If people are aware of the problem, they will fix it so the event does not have the potential to occur.	4
Total Score		**14**

Hazard	Grass & Wild Land Fires	
Definition	A grass or wild-land fire is an uncontrolled fire that threatens life and property in either a rural or a wooded area. Grass and wild-land fires can occur when conditions are favorable, such as during periods of drought when natural vegetation would be drier and subject to the combustibility (Iowa Homeland Security and Emergency Management Division, 2010).	
Location	Grass and Wild Land Fires are most likely to occur in grassy or wooded areas.	
Historical Occurrence	As displayed in the historical record of fire incidents in 2010, the fire department within the City of Fort Dodge has responded to 33 fires occurring in natural areas. While some of these incidents may have occurred outside of City limits, it was determined that more than 12 incidents have occurred within the City of Fort Dodge.	**Rating** 4
Probability	Based on the number of grass and wild land fires that have occurred in 2010 alone (33), the Fort Dodge hazard mitigation committee determined that it is very likely that a grass and wild land fire will occur in the next year.	4
Vulnerability	The fire department is equipped to sufficiently respond to grass and wild land fires; therefore, the committee determined that less than 25% of people and property would be impacted by a wild land fire.	1
Severity of Impact	Most impacts due to wild land fires exist in natural areas where structures are not present. The hazard mitigation committee determined that there are generally minimal damages and injuries that result from wild land fires.	1
Speed of Onset	Fires spread quickly, especially if under the right conditions. The hazard mitigation committee determined that there is no telling when a wild land fire may occur.	4
Total Score		**14**

Hazard	Terrorism	
Definition	Terrorism includes the use of multiple outlets to demonstrate unlawful force, violence, and/or threat against persons or property causing intentional harm for purposes of intimidation, coercion or ransom in violation of the criminal laws of the United States. These actions may cause massive destruction and/or extensive casualties (Iowa Homeland Security and Emergency Management Division, 2010). Additional forms of terrorism include Agro, biological, chemical, and conventional terrorism: Agro-Terrorism: An action causing intentional harm to an agricultural product or vandalism of an agricultural/animal related facility. Activities could include the following examples, animal rights activists who release mink or lab animals; disgruntled employees who intentionally contaminate bulk milk tanks or poison animals; ecoterrorists who destroy crops/ facilities; theft of agricultural products, machinery, or chemicals; or criminals who vandalize agricultural facilities. Biological Terrorism: Use of biological agents against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom. Chemical Terrorism: Use or threat of chemical agents against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom. Conventional Terrorism: Use of conventional weapons and explosives against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom.	
Location	Terrorism can occur anywhere within the community. The County maintains record of the potential targets and encourages each target to develop an emergency plan.	
Historical Occurrence	Terrorism events in the past have generally resulted in threats. The actual acts have been rare within the City of Fort Dodge.	**Rating** 1
Probability	Very few terrorism events have occurred within Fort Dodge, while many threats have taken place, the chance of a terrorist attack is rare. No specific historical data was located; therefore, the committee determined the likelihood of such event occurring is highly unlikely.	1
Vulnerability	Depending on the type of terrorism, the committee determined that worst-case scenario; more than 75% of the community could be impacted by a terrorist event.	4
Severity of Impact	The severity of impact could result in multiple injuries, shutdown of public facilities and multiple property damages. Such damages would occur in a worst-case scenario.	4
Speed of Onset	Terrorism events are unpredictable, therefore, there is no warning time before such event may occur.	4
Total Score		**14**

<table>
<tr><td>Hazard</td><td>Tornadoes</td><td></td></tr>
<tr><td>Definition</td><td>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 (Iowa Homeland Security and Emergency Management Division, 2010).

The table below further describes the scale and the amount of damage that can result from tornado events:

<table>
<tr><td>Scale</td><td>Wind Speed</td><td>Potential Damage</td></tr>
<tr><td>EF0</td><td>65-85 mph</td><td>Light Damage.
Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
Confirmed tornadoes with no reported damage (i.e. those that remain in open fields) are always rated EF0.</td></tr>
<tr><td>EF1</td><td>86-110 mph</td><td>Moderate Damage.
Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.</td></tr>
<tr><td>EF2</td><td>111-135 mph</td><td>Considerable Damage.
Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.</td></tr>
<tr><td>EF3</td><td>136-165 mph</td><td>Severe damage.
Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.</td></tr>
<tr><td>EF4</td><td>166-200 mph</td><td>Devastating damage.
Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.</td></tr>
<tr><td>EF5</td><td>201+ mph</td><td>Total destruction.
Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100m; steel reinforced concrete structure badly damaged; high-rise buildings have significant structural deformation; incredible phenomena will occur.
So far there have been two EF5 tornadoes recorded since the Enhanced Fujita Scale was introduced on February 1, 2007. The most recent one occurring in Parkersburg, Iowa on May 25, 2008 which leveled ½ the city.</td></tr>
</table>
http://www.spc.noaa.gov (1/28/09)</td><td></td></tr>
<tr><td>Location</td><td>A tornado is a random event and could potentially impact the entire community. A map of the assessed structures in Fort Dodge is located in Appendix F.</td><td></td></tr>
<tr><td>Historical Occurrence</td><td>According to the NCDC historical data shown in Appendix C, multiple tornado events have occurred in Webster County; however, only one event was recalled specifically impacting the City of Fort Dodge. With this available information, the committee determined that there have been less than 4 occurrences within City limits.</td><td>Rating
1</td></tr>
<tr><td>Probability</td><td>There are, on average, about 46 tornadoes per year in the state of Iowa. Tornado events occur randomly and have the potential to affect any community within the State. Because tornadoes act in such a random manner, the Fort Dodge hazard mitigation committee determined that there is an extremely low chance that a tornado would occur within their community in the next year.</td><td>1</td></tr>
<tr><td>Vulnerability</td><td>The entire population of Fort Dodge is vulnerable to tornadoes. Both personal safety and structural stability would be a great concern. The hazard mitigation committee determined that if a tornado did strike the community, 50-75% of the community would be impacted.</td><td>3</td></tr>
</table>

Severity of Impact	Injuries, property damage and the interruption of services are each common results of the direct impact of tornadoes. The severity of impact depends on the intensity of the tornado, the area struck, and the preparedness of the people and officials. The Fort Dodge Hazard Mitigation Committee determined that serious injury, major property damage and interruption in services would occur during a tornado event.	4
Speed of Onset	Very little warning is given when a tornado occurs, especially for the area where a tornado watch transitions into a tornado warning.	4
Total Score		**13**

Hazard	**Expansive Soils**	
Definition	Soils and soft rock that tend to swell or shrink excessively due to changes in moisture content are commonly known as expansive soils (Iowa Homeland Security and Emergency Management Division, 2010).	
Location	The City of Fort Dodge is located near the Des Moines River, where soft, clay soils exist. Expansive soils may be located anywhere within the community. It is not known if expansive soils exist near any of the present schools; however, schools may be exposed to impacts from expansive soils, such as infrastructure failure due to broken water mains. This would only cause a slight interruption in water service, which may cause schools to be shut down for a day.	
Historical Occurrence	The hazard mitigation committee determined that expansive soils are a common event within the City of Fort Dodge. Soils ruin streets, basements and other structures due to constant movement from change in temperature, moisture and other environmental impacts.	**Rating** 4
Probability	While there is no specific data as to the number of historical events occurring; the committee can identify spaces within the City where expansive soils impact streets, basements, water mains and other structures and infrastructure; therefore, the committee estimated that it is highly likely for such events to continue within the City.	4
Vulnerability	Because expansive soils impacts streets, water mains and other public infrastructure it was estimated that between 50-75% of the people and property in Fort Dodge are impacted.	3
Severity of Impact	Few if any injuries result from expansive soils; however, property damage may occur. Because the impacts are not extensive, the committee determined that the severity rating was a 1.	1
Speed of Onset	Expansive soils slowly swell due to change in temperature, moisture and other environmental impacts; therefore, the committee determined that there is generally more than 24 hours warning time when this event occurs.	1
Total Score		**13**

Hazard	Radiological	
Definition	Radiological events encompass the following consolidated hazards: Fixed radiological incident and transportation radiological incident ▪ **Fixed Radiological Incident**: An incident resulting in a release of radiological material at a fixed facility to include power plants, hospitals, laboratories and the like is a fixed radiological incident. ▪ **Transportation Radiological Incident**: Radiological incidents related to transportation are described as an incident resulting in a release of radioactive material during transportation. Transportation of radioactive materials through Iowa over the interstate highway system is considered a radiological hazard.	
Location	Radiological events related to transportation are not likely to occur within the community; however, fixed radiological incidents may occur where radiological materials are present. The only sites identified by the Hazard Mitigation Committee were the railroads, which may carry radiological substances, and Trinity Regional Medical Center, which provides radiological services. Both are identified in the Maps in Appendix F.	
Historical Occurrence	Radiological events have not occurred within the City of Fort Dodge, according to the Fort Dodge Hazard Mitigation Committee.	**Rating** 1
Probability	Because of the strict rules and requirements for storage and use of radiological materials and no known incidents having occurred in the past (according to the hazard mitigation committee), the committee determined that the likelihood of a radiological event is low.	1
Vulnerability	The committee determined that if a radiological event were to occur, approximately 50-75% of the community would be impacted.	3
Severity of Impact	The hazard mitigation committee determined that impacts due to radiological events have the potential to result in major injuries, property damage and interruption of public facilities.	3
Speed of Onset	A radiological event would occur with no warning.	4
Total Score		**12**

Hazard	Extreme Heat	
Definition	Conditions for extreme heat are defined by summertime weather that is substantially hotter and/or more humid than average for a location at that time of year. This includes temperatures (including heat index) in excess of 100 degrees Fahrenheit or at least three (3) successive days of 90+ degrees Fahrenheit. Extreme heat can impose stress on humans and animals. Heatstroke, sunstroke, cramps, exhaustion, and fatigue are possible with prolonged exposure or physical activity due to the body's inability to dissipate the heat. Urban areas are particularly at risk because of air stagnation and large quantities of heat absorbing materials such as streets and buildings. Extreme heat can also result in distortion and failure of structures and surfaces such as roadways and railroad tracks. (Iowa Homeland Security and Emergency Management Division, 2010)	
Location	Extreme heat generally occurs in a regional manner. If an extreme heat conditions were to take place in Fort Dodge, the entire community would feel the event. For a map of the City of Fort Dodge see Appendix F.	
Historical Occurrence	Extreme heat commonly occurs in the State of Iowa during the summer months. July and August bring about the hottest conditions for the region, with prolonged periods of heat that impact the entire state. While the most severe events occur less-often, it is common to have at least one significant heat event each summer. As shown on the NCDC report in Appendix C; two extreme heat events have been recorded for having occurred in Webster County and the State of Iowa. Based on the NCDC report and the hazard mitigation committee's recollection of extreme heat, it was estimated that they may have occurred two to four times within the City of Fort Dodge.	**Rating** 2
Probability	The hazard mitigation committee estimated that there is nearly a 100% chance that an extreme heat event may occur in Fort Dodge, as there are at least three (3) successive days of 90+ degree weather that occurs each summer within the City.	4
Vulnerability	When extreme heat conditions occur, it generally comes in a heat wave that impacts an entire region; however, those who are prepared with functioning air conditioners are less vulnerable than those without. Based on the number of people in Fort Dodge who have functioning air conditioners, the hazard mitigation committee determined that between 25-50% of the people and property are impacted in Fort Dodge.	2
Severity of Impact	Impacts due to extreme heat include health impacts, such as heat stroke or heat exhaustion and structural impacts, such as the buckling of roads. Based on these impacts, the committee determined that serious injuries and damages would occur.	3
Speed of Onset	The National Weather Service can predict when higher temperatures will occur, days in advance.	1
Total Score		**12**

NOAA's National Weather Service Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	126	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of heat Disorders with Prolonged Exposure or Strenuous Activity

Caution Extreme Caution Danger Extreme Danger

Heat Index (1/28/09)

http://www.weather.gov/om/heat/index.shtml

Hazard	Landslide	
Definition	Landslides occur when susceptible rock, earth, or debris moves down a slope under the force of gravity and water. Landslides may be very small or very large, and can move at slow to very high speeds (Iowa Homeland Security and Emergency Management Division, 2010).	
Location	Landslides occur in areas where substantial slopes and unstable soils are present. To view a topological map of the City of Fort Dodge, see Appendix F.	
Historical Occurrence	Landslide events within the City of Fort Dodge are common in park areas and along some property lines where slopes are steep. The hazard mitigation committee determined that approximately 4 to 7 landslide events have occurred within the City.	**Rating** 2
Probability	While some properties may be located on steep ridges, the probability that a landslide event will occur is very unlikely, as very few are known by the committee to have occurred in the past.	1
Vulnerability	Landslides are isolated events that impact less than 25% of the community.	1
Severity of Impact	The hazard mitigation committee determined that most issues with landslides occur in park areas; however, some properties and structures are at risk. If a landslide were to take a house, the impacts to that house and the people in it would be severe.	3
Speed of Onset	Landslides are unpredictable events that can take place at any time.	4
Total Score		**11**

Hazard	Human Disease	
Definition	An incident related to human disease is defined as a medical, health, or sanitation threat to the general public (such as contamination, epidemics, plagues, and insect infestation) (Iowa Homeland Security and Emergency Management Division, 2010).	
Location	N/A	
Historical Occurrence	Historical instances of human disease such as contaminations, epidemics and plagues have rarely occurred within the City of Fort Dodge. The most recent threat was the H1N1 virus that impacted much of the nation.	**Rating** 1
Probability	Without regards to historical data, the hazard mitigation committee determined that it was very unlikely that human disease would spread throughout the Community. The committee estimated this because of the vaccinations and medical treatments currently available to residents.	1
Vulnerability	If a major event took place, more than 75% of the community would be impacted.	4
Severity of Impact	Impacts would be minimal to property; however, multiple residents could be impacted whether it be family friends or other acquaintances.	3
Speed of Onset	As soon as a contamination, epidemic or plague is suspected, residents are warned to take cover; therefore, there is more than 24 hours of warning.	1
Total Score		**10**

Hazard	Dam/Levee Failure	
Definition	Dam failure is the uncontrolled release of impounded water resulting in downstream flooding, which can affect life and property (Iowa Homeland Security and Emergency Management Division, 2010). The failure of a levee can be attributed to the loss of structural integrity of a wall, dike, berms, or elevated soil by erosion, piping, saturation, or under seepage causing water to inundate normally dry areas (Iowa Homeland Security and Emergency Management Division, 2010). These two hazards were combined because there is only one levee identified by the hazard mitigation committee being located in Fort Dodge. This levee is a part of the Hydro-Electric Dam, and would not be necessary without the dam's existence.	
Location	Two low head dams and one levee are located within the City of Fort Dodge; to see a map of their locations see Appendix F. Each of the dams are Mill Dams, which were at one time used to generate electricity.	
Historical Occurrence	No dam failures have occurred within the City of Fort Dodge; however, there was potential for breach of the levee in 2007.	**Rating** 1
Probability	The likelihood of either dam failing is low, both due to the historical incidence of such and because the dams have negligible storage (Young, 2010). The gates do not function on the Hydro-Electric dam; however, the structural stability of the dam is good as of a 2008 inspection (Shea, 2009). Due to the low functionality of the gates at the Hydro-Electrict Dam, the levee is required to hold a higher capacity of water during high waters; however, the likelihood of this failing is low. Since the incident in 2007, steps in reducing the likelihood of failure were taken.	1
Vulnerability	Less than 25% of the community would be impacted if a dam or levee would fail. Both Dams are considered low hazard dams (National Dam Inventory, 2010). Low hazard dams are those in which the failure of such would result in lmited damages such as loss of the dam, livestock, farm, outbuilding, agricultural lands and lesser used roads, and where loss of human life is considered unlikely (Iowa DNR, 2012).	1
Severity of Impact	Upon failure of one of the dams or levee, the hazard mitigation committee determined that minimal impacts to people and property would be experienced. As mentioned, the failure of a low hazard dam would result in limited damages. The damages due to the levee failing would be similar.	1
Speed of Onset	A dam/levee failure would be an accidental incident that residents would have minimal warning of.	4
Total Score		**8**

Hazard	Sink Holes	
Definition	The loss of surface elevation due to the removal of subsurface support defines a sinkhole. The primary cause of most subsidence are human activities: Underground mining of coal, groundwater or petroleum withdrawal, and drainage of organic soils (Iowa Homeland Security and Emergency Management Division, 2010).	
Location	Sink holes occur in areas where there are soft soils with high moisture, or depressions below the service. Sink holes within the City of Fort Dodge most commonly occur in areas where water mains were dug.	
Historical Occurrence	The hazard mitigation determined that sink holes have occurred less than four times within the community.	**Rating** 1
Probability	Based on the number o sink holes that have occurred in the past, which is minimal, the committee determined that it is very unlikely for a sink hole to occur in the next year.	1

Vulnerability	Because the sinkholes that have occurred within the City have been small in extent, the hazard mitigation committee estimated that less than 25% of the community would be impacted.	1
Severity of Impact	Areas where sinkholes occur are generally small; therefore, the impacts are minimal.	1
Speed of Onset	A sinkhole is unpredictable; therefore, no warning time is available.	4
Total Score		**8**

Hazard	Drought	
Definition	Drought is defined as a period of prolonged lack of precipitation for weeks at a time producing severe dry conditions. There are four 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	
Location	Drought is a regional event and would impact the entire community.	
Historical Occurrence	The NCDC report in Appendix C, displays 3 drought events occurring within Webster County. Because these events are the only recorded and no additional droughts were recollected by the hazard mitigation committee, it was determined that less than four events have occurred within the City of Fort Dodge.	**Rating** 1
Probability	Of the 3 instances that have occurred in the last 10 years, according to NCDC, only one of them had financial impacts on the County. Since no impacts were recorded, the mitigation committee did not regard such events as having occurred; therefore, the hazard mitigation committee estimated that the chance of a drought is unlikely to occur in the next year.	1
Vulnerability	Because the City has an abundant amount of water resources, the committee estimated that such event would impact less than 25% of the population.	1
Severity of Impact	It was estimated that a drought event would result in limited-to-no injuries, property damage, or disruption of facilities.	1
Speed of Onset	A drought is a gradual event; more than 24 hours of warning time would be provided.	1
Total Score		**5**

The Committee determined that the hazards listed below did not apply to the City of Fort Dodge. The reason for the committee's exclusion is explained within each hazard:

Earthquakes: 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. It is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. The committee determined that this hazard was inapplicable because the nearest fault line exists outside of the state.

Animal/Plant/Crop Disease: IHSEMD defines Animal/Plant/Crop Disease as an outbreak of disease that can be transmitted from animal to animal or plant to plant. The hazard mitigation committee felt that such outbreak is more of a rural concern that would not have great impacts upon plants and animals existing within the City.

Upon establishing risk ratings based on historical occurrence, probability, vulnerability, severity of impact and speed of onset; the committee was also asked to give each hazard a "risk priority". The risk priority is a weighted average model that is used to compute an overall score for each identified risk. It gives the committee some personal input into the assessment and provides a most-to-least critical rank order of the risks. High priority hazard scores were multiplied by 1.667 to increase their ranking; medium priorities were multiplied by 1.33 and low priorities scores were left "as is".

An overall ranking of each hazard is displaying in the following table. Notice that the top three hazards include thunderstorms and lightning, windstorms and river flooding; while the lowest were dam/levee failure, sink holes and drought.

Hazard	Historical	Probability	Vulnerability	Severity	Speed	Risk Priority	Total	Weight

	Occurrence				**of Onset**	H - High M - Medium L - Low		L = (R*1) M = (R*1.33) H = (R*1.667)
Animal/Plant/Crop Disease	TAKE OUT							
Thunderstorms and Lightning	4	4	4	2	4	M	18	23
Windstorm	4	4	4	2	4	M	18	23
River Flooding	4	4	1	3	2	H	14	23
Tornadoes	1	1	3	4	4	H	13	22
Infrastructure Failure	4	4	2	2	4	M	16	21
Severe Winter Storms	4	4	4	2	1	M	15	20
Transportation Incident	4	4	1	2	4	M	15	20
Flash Flood	4	3	1	3	3	M	14	18
Hazardous Materials	4	4	1	1	4	M	14	18
Hailstorms	4	4	4	2	4	L	18	18
Landslide	2	1	1	3	4	M	11	14
Grass and Wild Land Fires	4	4	1	1	4	L	14	14
Terrorism	1	1	4	4	4	L	14	14
Expansive Soils	4	4	3	1	1	L	13	13
Radiological	1	1	3	3	4	L	12	12
Extreme Heat	2	4	2	3	1	L	12	12
Earthquakes	TAKE OUT							
Human Disease	1	1	4	3	1	L	10	10
Dam/Levee Failure	1	1	1	1	4	L	8	8
Sink Holes	1	1	1	1	4	L	8	8
Drought	1	1	1	1	1	L	5	5

Chapter 4 – Vulnerability Assessment

According to FEMA a "Vulnerability Assessment provides the extent of injury and damages that may result from a hazard event of a given intensity in a given area". Also, "vulnerability is susceptibility to physical injury, harm, damage or economic loss" (FEMA, 2006). To determine the extent of the community that susceptible to damages from each hazard, we begin by estimating the exposure of each element, which according to FEMA "is the people, property, systems, or functions that could be lost to a hazard". FEMA goes on to say that "exposure includes what lies in the area the hazard could affect" (FEMA, 2006). The City of Fort Dodge is exposed to a wide range of hazards, including: Thunderstorms and Lightning, Windstorms, River Flooding, Tornadoes, Infrastructure Failure, Severe Winter Storms, Transportation Incident, Flash Flooding, Hazardous Materials, Hailstorms, Landslide, Grass and Wild Land Fires, Terrorism, Expansive Soils, Radiological, Extreme Heat, Human Disease, Dam/Levee Failure, Sink Holes and Drought. Upon determining the extent of exposure (or hazard area) the susceptible damages are determined, from there the loss estimates are calculated in Chapter 5. The specified exposure area of each hazard is listed in the following sections.

4.1 Exposure Assessment for Thunderstorms and Lightning, Windstorms, Infrastructure Failure, Severe Winter Storms, Hailstorms, Extreme Heat, Radiological, Terrorism, Drought, Tornadoes, Transportation Incident, Hazardous Materials, Expansive Soils, Human Disease, and Sink Holes:

As mentioned, the city's exposure to each hazard was determined based on the area of the city that has the potential to feel the effects from the hazard. Those hazards that could potentially impact the entire City include Thunderstorms and Lightning, Windstorms, Severe Winter Storms, Hailstorms, Extreme Heat, Terrorism, Drought and Human Disease. Those hazards that could potentially impact any one random site within Fort Dodge include Infrastructure Failure, Radiological, Tornadoes, Transportation Incident, Hazardous Materials, Expansive Soils and Sink Holes. With this, all of the above-listed hazards have the potential to impact any area of the City, which means 100% of the structures and people are exposed to the hazards, or located in the hazard area. The table below depicts this exposure.

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	**# in Hazard Area**	**% in Hazard Area**	**$ in City**	**$ in Hazard area**	**% in Hazard area**	**# in City**	**# in Hazard area**	**% in Hazard area**
Residential	8,415	8,415	100%	$579,031,610	$579,031,610	100%	25,206	25,206	100%
Commercial	1,167	1,167	100%	$190,013,834	$190,013,834	100%			
Agricultural	13	13	100%	$105,437	$105,437	100%			
Industrial	115	115	100%	$33,799,956	$33,799,956	100%			

There are some hazards that have a more defined area of exposure. For Fort Dodge, these hazards include River Flooding, Flash Flooding, Landslide, Grass and Wild Land Fires and Dam/Levee Failure.

4.1.1 Vulnerability Assessment for Thunderstorms and Lightning

As determined above, 100% of the City area is exposed to thunderstorms and lightning. Because thunderstorms and lighting are a regional event, the committee determined that more than 75% of the population of Fort Dodge is susceptible to impacts or damages due to thunderstorms and lightning; however, this vulnerability is dependent on the extent of the storm and accompanying events that may occur.

Hazard events that may accompany a thunderstorm and lightning event include river flooding, flash flooding, hailstorms, windstorms and infrastructure failure; for specific impacts of such events see their Vulnerability Assessments, discussed in the following sections. Under a worst-case scenario each of the accompanying events may cause damages and injuries; however, a typical thunderstorm and lightning event in Fort Dodge generally only causes downed limbs, power outages and heavy rain that may impair

individuals' ability to see. All residents would be required to take shelter, otherwise injuries; even death could occur if struck by lightning or directly exposed to flash flooding, wind and/or hail.

4.1.2 Vulnerability Assessment for Windstorms

Windstorms are a regional event that the entire City is exposed to; however, unless accompanying another event such as severe winter storms, thunderstorms and lighting, hailstorms or tornadoes; impacts are low and rare. The Fort Dodge hazard mitigation committee determined that less than 25% of the people and property are impacted by a windstorm, alone. Impacts generally result in downed limbs, infrastructure failure in the form of power outages or structural failure, and difficulty driving, especially for large trucks. Structural failure generally only occurs in dilapidated/condemned buildings; also it is common for out buildings such as dilapidating barns, corncribs or other sheds to fail from such events. Very few deaths would occur; however, injuries could occur if persons fail to find shelter.

4.1.3 Vulnerability Assessment for Infrastructure Failure

Infrastructure Failure encompasses multiple hazards including communication failure, energy failure, structural failure and structural fire. Each event has a different area and extent of impacts, which is explained below.

Communication Failure: Communication failure is the widespread breakdown or disruption of normal communication capabilities. They could be caused by electrical outages, tower failures due to thunderstorms and lightning, winter storms, windstorms, hailstorms, transportation incidents, tornadoes, infrastructure failure or terrorism. Impacts could include economic impacts such as the failure to communicate with the staff or public regarding safety or emergency matters. Due to the rarity of this event and alternate forms of communication available to the City, its impacts are generally not extreme.

Energy Failure: Is an extended interruption of service either electric, petroleum or natural gas, which by an actual or impending acute shortage of usable energy. Energy shortages are rare in Fort Dodge; however, outages are common. Outages are often caused by impacts to above-ground power lines from thunderstorms and lightning, winter storms, windstorms, hailstorms, transportation incidents, tornadoes and infrastructure failure. Energy failure typically does not cause property damage outside of the damaged electrical line; however, economic and human impacts can occur.

Economic impacts occur in various forms. Manufacturing industries experience loss of productivity due to their inability to produce their goods and products, unless backup energy is available. Facilities such as grocery stores, which store large amounts of products that are required to stay cold experience wasted products that are not suitable to sell.

Residents of the City may experience hardships due to electrical outages, which are most threatening during extreme heat or winter conditions. During such time residents are not able to cook, store food, or run every-day appliances. Death and injuries due to power outages are very rare.

Structural Failure: The collapse (part or all) of any public or private structure including roads, bridges, towers, and buildings is considered a structural failure. Structural failures only impact the space surrounding the failure. Heavily traveled roads and bridges are regularly inspected for stability. Structural failure most commonly occurs in dilapidating structures. Accompanying events include windstorms, thunderstorms and lightning, severe winter storms and tornadoes. Structures that cannot withstand such events result in shambles. Person's inside could experience substantial injuries or death.

Structural Fire: A structural fire is an uncontrolled fire in populated areas that threatens life and property. Structural fires are very isolated events in the City of Fort Dodge; however, multiple structures could be impacted in dense areas of town. Damages to buildings may be substantial or minimal, depending on when the fire was controlled. Similar to structural failure, people inside a structure where a fire occurs could experience substantial injuries or death.

4.1.4 Vulnerability Assessment for Severe Winter Storms

As determined in the exposure assessment, 100% of Fort Dodge is exposed to severe winter storms. Winter storms generally cause frigid temperatures, the accumulation of snow or ice and high winds. Events that may accompany severe winter storms include windstorms, transportation incidents and infrastructure failure; for specific impacts of such events see their vulnerability assessment.

The hazard mitigation committee determined that more than 75% of the people and property within the city are affected by severe winter storms. This is mostly due to the reduced mobility from snow and ice. Infrastructure failure occurs through power outages from ice, which has the potential to impact the entire City. Structural failure is also an impact that can occur due to large amounts of heavy snow. These impacts generally occur in dilapidated/condemned buildings; however, there is potential for structural failure to occur with other more seemingly stable structures.

Person's exposed to severe winter storms are to be properly dressed to prevent frostbite or hypothermia. Residents of the City are ill-advised to be outdoors for long periods of time during a severe winter storm. If outdoors without proper attire persons may experience frostbite and/or hypothermia, which could result in death.

4.1.5 Vulnerability Assessment for Hailstorms

All facilities and buildings are exposed to hailstorms; however, hailstorms are not a regional event, so the severity of damages may vary through Fort Dodge. Accompanying events include thunderstorms and lightning, windstorms, infrastructure failure in the form of power outages and at times flash flooding.

The impacts of hailstorms depend on the size of hail. Large hail stones cause property damage in the form of dents and broken windows in vehicles, broken windows in homes and damages to rooftops. It can cause an interruption of public services due to power outages. Finally, persons must seek shelter from such events or injuries or death may occur.

4.1.6 Vulnerability Assessment for Extreme Heat

Extreme heat generally comes in a wave that impacts the entire region and occurs seasonally throughout the state. Drought may be an accompanying event, which may impact the crop yield. The results of such impacts hurt the local and regional economy because without a sufficient yield, there may be a shortage of crop for livestock, food and fuel/energy.

While a majority of residents have air conditioning, the committee estimated that more than 75% of the City would be impacted due to the fact that residents must ensure they are not exposed to the heat for a long period in time as it may cause heat exhaustion or heat stroke.

4.1.7 Vulnerability Assessment for Radiological

According to the Iowa Hazard Mitigation Plan, the transport of radiological materials is very rare in Webster County (if at all); however, the Fort Dodge Hazard Mitigation Committee determined that some materials are transported via rail, with the permission and notification of the railroad. No fixed sites for radiological events were identified in the State plan; however, the Fort Dodge Hazard Mitigation Committee determined that there may be some radiological substances at the Trinity Regional Medical Center.

Radiological accidents or attacks require rapid assessment and treatment of casualties. Radiological events take place in the form of exposure and/or contamination. Radiation exposure includes exposure to a large radiation source over a short period of time (acute) or longer period of time (chronic). Symptoms depend on the amount of exposure received.

Internal contamination needs to be assessed and treated in a clinical setting. A person who has inhaled and/or ingested radioactive material is also likely to be externally contaminated.

Persons are not likely to exhibit any symptoms if they are externally contaminated but have not been exposed to a high energy radiation source. In most cases external skin contamination is not life

threatening and can be removed with soap and water. Radioactive material on the surface of a person is not likely to cause an exposure hazard to healthcare providers, unless highly radioactive; but a contamination hazard does exist.

A combination of the above type events is also possible. While a high energy radiation source poses a health risk to individuals, a person who has been exposed to radiation (but not contamination) does not in turn pose a risk to others. At an incident scene, hazardous materials (HAZMAT) personnel will make an initial radiological assessment and will issue specific safety precautions to include the use of appropriate Protective Personal Equipment (PPE). First responders, fire fighters or HAZMAT should perform an initial assessment for the presence of radioactive material. If contamination is suspected or verified, then assume any victims are externally (and probably internally) contaminated. A "Hot Zone" and adjacent "Control Zone" should be set up to limit access to the contaminated area. Responders working in the Hot Zone should limit their time in this area to what is necessary to assist victims. The Incident Commander should position EMS outside.

*All information above was obtained from the **Radiological Event Reference Guide** (Virginia Department of Health, 2004)*

4.1.8 Vulnerability Assessment for Terrorism

Depending on the type of terrorism, the committee determined that worst-case scenario; more than 75% of the community could be impacted by a terrorist event. Identifying potential targets is a goal that the City looks to implement. Without such identification, there is no way to predict where and when a terrorist event would occur, also no way to determine the impact/magnitude of such event. Risks to people, property and the economy vary depending on the methods used. Bombs, guns, explosives, biological weapons, chemical weapons, radiological and nuclear weapons, and cyber terrorism are the most common resources used for terrorism. Injuries, economic and property loss would be experienced by any of the above.

4.1.9 Vulnerability Assessment for Drought

Extreme heat generally comes in a wave that impacts the entire region and occurs seasonally throughout the state. Drought impacts the local and regional economy because without a sufficient yield, there may be a shortage of crop for livestock, food and fuel/energy. Water may become a concern, when the event extends over a large period of time; however, water shortage was not seen as a major concern for the City.

4.1.10 Vulnerability Assessment for Tornadoes

The entire population of Fort Dodge is exposed to tornadoes. Tornado events often accompany thunderstorms and lightning, hailstorms and windstorms. The impacts depend on the extent of the tornado and also the area struck. For a tornado that strikes an area of high density, there would be larger amount of damages overall. The extent of damages is discussed in the Fujita Scale. Impacts are listed on the following page:

The Fujita Scale			
F-Scale Number	**Intensity Phrase**	**Wind Speed**	**Type of Damage Done**
F0	Gale tornado	40-72 mph	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
F1	Moderate tornado	73-112 mph	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
F2	Significant tornado	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe tornado	158-206 mph	Roof and some walls torn off well constructed houses; trains overturned; most trees uprooted
F4	Devastating tornado	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible tornado	261-318 mph	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-enforced concrete structures badly damaged.
F6	Inconceivable tornado	319-379 mph	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies

Source: http://www.tornadoproject.com/fscale/fscale.htm

4.1.11 Vulnerability Assessment for Transportation Incident

A transportation incident can occur in many forms resulting from failure or impact of motor vehicles, rail cars and/or airplanes. The City of Fort Dodge contains each of these modes of transportation; their location is identified in the Transportation Map located in Appendix F.

Transportation events generally result in substantial injuries, death and property damage. Property damage usually results in the form of damages to the mode of transport and/or structure that was involved. Injuries and property damage depend on the extent of the event and its cause. The impacts are generally isolated and less than 25% of the people and property of Fort Dodge would be impacted.

4.1.12 Vulnerability Assessment for Hazardous Materials

Areas of the city vulnerable to a HAZMAT event related to the fixed facilities are determined based on their proximity to the facilities and the type of material that may be released; however, hazardous substances that are transported via vehicle, rail and air could impact any one area of the city.

While hazardous substances may be present throughout the City, different materials have different impacts. Based on the number of minor incidents that have occurred, it was predicted by the hazard mitigation committee that less than 25% of the City could potentially be affected by a HAZMAT event resulting from a fixed facility, pipeline or transportation event.

A hazardous substance may cause damage to persons, property, or the environment when released. 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." And each year over 1,000 new synthetic chemicals are introduced and transported across the country via semi truck and train. Hazardous substances are categorized as toxic, corrosive, flammable, explosive or as an irritant.

Anyone who is located in proximity to a fixed facility is vulnerable to hazardous material spills. The highest vulnerability to hazardous materials comes from being located within or near a hazardous facility. The use of zoning can reduce potential impacts.

Accompanying events to HAZMAT events include transportation incidents. Hazardous material incidents related to transportation generally affect a localized area, where the spill or leak occurred. The release of such materials may be due to old or inadequate transport equipment, a traffic accident with a vehicle transporting hazardous material(s), or human error relating to filling/emptying hazardous materials from transport equipment.

Persons directly exposed to HAZMAT events could face breathing problems and/or physical burns. If the event is major a person would not survive the incident.

4.1.13 Vulnerability Assessment for Expansive Soils

Expansive soils most commonly result in damaged streets and infrastructure, basements and other structures due to constant movement from change in temperature, moisture and other environmental impacts. Accompanying events include severe winter storms, flash flooding, thunderstorm and lightning, river flooding and sink holes. Infrastructure failure may result from expansive soils when harm to streets and water mains are experienced. Impacts usually result in a slight interruption in water services to the area where the water main was broken.

4.1.14 Vulnerability Assessment for Human Disease

The most common events related to human disease that have taken place in recent years include the H1N1 virus. The flu and pneumonia are also two common viruses that impact residents of the City. Webster County Public Health constantly strives to provide shots and other preventable measures for such viruses. Other transferable diseases are generally transferred through direct interaction, which lessens the vulnerability of the City to such diseases.

4.1.15 Vulnerability Assessment for Sink Holes

Similar to Expansive Soils, Sink Holes may result in infrastructure failure. Impacts to roads and water mains are the most common

4.2 Exposure Assessment for River Flooding

Exposed Structures

The area exposed to river flooding was determined by using the 2007 spatial data distributed by FEMA in 2008. The Flood Inundation Map is displayed in Appendix F. The area labeled "Flood Inundation Area" was established by FEMA using Base Flood Elevations, existing Flood Insurance Rate Maps, and other technical GIS data (Federal Emergency Management Agency, Department of Homeland Security, 2008). Based on this data, it was estimated that 221 residential structures, 64 commercial structures, 0 industrial structures and 3 agriculture structures were located in the "hazard zone". Additional flood maps, including the preliminary flood hazard maps (FEMA & IDNR, 2011) and FIRMETTES (FEMA, 1976) can be viewed in Appendix F.

Exposed Persons
The "Number of People" exposed to river flooding was based on the number of residential, commercial, industrial and agriculture structures estimated to be located in the "hazard zone". It was estimated that each commercial, industrial and agriculture structure had one owner. And there are approximately 2.21 people per dwelling (household) in Fort Dodge, according to the 2010 U.S. Census. Therefore it was estimated that there were 488 residents, 64 commercial persons, 0 industrial persons and 3 agricultural person exposed to flash flooding; making a total of 995 potentially exposed persons.

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	**# in Hazard Area**	**% in Hazard Area**	**$ in City**	**$ in Hazard area**	**% in Hazard area**	**# in City**	**# in Hazard area**	**% in Hazard area**
Residential	8,415	221	3%	$579,031,610	$14,418,863	2%	25,206	995	4%
Commercial	1,167	64	5%	$190,013,834	$14,025,824	7%			
Agricultural	13	3	23%	$105,437	$43,860	42%			
Industrial	115	0	0%	$33,799,956	$0	0%			

4.2.1 Vulnerability Assessment for River Flooding
According to the hazard mitigation committee the vulnerable population to river flooding is typically limited to those that live in close proximity to the rivers and creeks. It is evident from the exposure assessment that this would be the case.

Impacts from river flooding typically take form in property damage to structures. Being located in the floodplain may lower property values and put residents at risk for injuries. Accompanying hazard events that may result in river flooding include thunderstorms and lightning, hailstorms, windstorm, flash flooding and severe winter storms; see their vulnerability assessment for additional impacts.

The City actively participates in the National Flood Insurance Program. There are two repetitive loss properties in Webster County, one in the unincorporated area along the Des Moines River and one within the City of Fort Dodge.

4.3 Exposure Assessment for Flash Flooding

Exposed Structures
The hazard mitigation committee estimated that less than 25% of the community would be impacted by flash flooding. Based on this and the 2007 flood impacted areas, which shows localized areas of flash flooding due to storm or sanitary sewer backup (City of Fort Dodge, GIS Department, 2007), a map was developed of the potential flash flooding areas. Based on the Flash Flooding map, displayed in Appendix F, it was estimated that 363 dwellings, 115 commercial structures, 5 industrial structures and 0 agriculture structures were located in potential areas of flash flooding.

Exposed Persons
The "Number of People" exposed to flash flooding was based on the number of residential, commercial, industrial and agriculture structures estimated to be located in the "hazard zone". It was estimated that each commercial, industrial and agriculture structure had one owner. And there are approximately 2.21 people per dwelling (household) in Fort Dodge, according to the 2010 U.S. Census. Therefore it was estimated that there were 802 residents, 115 commercial persons, 5 industrial persons and 0 agricultural persons exposed to flash flooding; making a total of 922 potentially exposed persons.

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	**# in Hazard Area**	**% in Hazard Area**	**$ in City**	**$ in Hazard area**	**% in Hazard area**	**# in City**	**# in Hazard area**	**% in Hazard area**
Residential	8,415	363	4%	$579,031,610	$20,380,840	4%	25,206	922	4%
Commercial	1,167	115	10%	$190,013,834	$28,294,413	15%			
Agricultural	13	0	0%	$105,437	$0	0%			
Industrial	115	5	4%	$33,799,956	$1,233,610	4%			

4.3.1 Vulnerability Assessment for Flash Flooding

According to the hazard mitigation committee the vulnerable population to flash flooding is typically limited to those that live in areas with poor drainage. It is evident that a majority of areas exposed to flash flooding are in the commercial areas. This may be due to the inability to transport storm water outside of these areas quick enough.

Impacts from flash flooding typically take form in property damage to structures. Accompanying hazard events that may result in flash flooding include thunderstorms and lightning, hailstorms, windstorms river flooding and severe winter storms; see their vulnerability assessment for additional impacts.

4.4 Exposure Assessment for Landslides

Exposed Structures

The hazard mitigation committee estimated that less than 25% of the community would be impacted by landslides. It was estimated, based on the topographical map (shown in Appendix F) that approximately 1% of structures of the community are exposed to landslides within the City. Based on this percent, it was estimated that 84 dwellings, 12 commercial structures, 1 industrial structures and 0 agriculture structures were located in the "hazard zone".

Exposed Persons

The "Number of People" exposed to landslides was based on the number of residential, commercial, industrial and agriculture structures estimated to be at risk. It was estimated that each commercial, industrial and agriculture structure had one owner. And there are approximately 2.21 people per dwelling (household) in Fort Dodge, according to the 2010 U.S. Census. Therefore it was estimated that there were 186 residents, 12 commercial persons, 1 industrial persons and 0 agricultural persons exposed to flash flooding; making a total of 597 potentially exposed persons.

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	**# in Hazard Area**	**% in Hazard Area**	**$ in City**	**$ in Hazard area**	**% in Hazard area**	**# in City**	**# in Hazard area**	**% in Hazard area**
Residential	8,415	84	1%	$579,031,610	$5,790,316	1%	25,206	199	1%
Commercial	1,167	12	1%	$190,013,834	$1,900,138	1%			
Agricultural	13	0	1%	$105,437	$1,054	1%			
Industrial	115	1	1%	$33,799,956	$338,000	1%			

4.4.1 Vulnerability Assessment for Landslides

Landslides generally result in damages that are isolated to one site or property. Factors that assist in landslides are slope, fractured rocks and water. A steep slope, with unstable, soft soils would be likely to give way to a landslide; therefore accompanying events may include thunderstorms and lightning, flash flooding, river flooding, and severe winter storms; which all place moisture into the ground.

Impacts from a landslide are direct. They would impact any structures located on the unstable soil, or any structures that are located below the unstable soil. Impacts would cause substantial damage, ruining entire homes, the persons inside would not survive such incident if substantial.

4.5 Exposure Assessment for Grass and Wild Land Fires

Exposed Structures
The hazard mitigation committee estimated that less than 25% of the community would be impacted by grass and wild land fires. To determine the most susceptible areas to grass and wild land fires within the City of Fort Dodge, large areas of grassland, woodlands, and/or agriculture land, including the perimeter of the City, were identified using ArcGIS. Once this area was identified a 100 meter buffer was placed around the area to signify the "hazard zone", or the property that could potentially be impacted by a grass or wild land land fire. The resulting map is shown in Appendix F and is titled "Grass and Wild Land Fires – Exposed Areas". Based on this map, it was estimated that 1,707 dwellings, 342 commercial structures, 80 industrial structures and 13 agriculture structures were located in the "hazard zone" for grass and wild land fires.

Exposed Persons
The "Number of People" exposed to grass and wild land fires was based on the number of residential, commercial, industrial and agriculture structures estimated to be located in the "hazard zone". It was estimated that each commercial, industrial and agriculture structure had one owner. And there are approximately 2.21 people per dwelling (household) in Fort Dodge, according to the 2010 U.S. Census. Therefore it was estimates that there were 3772 residents exposed, 342 commercial persons exposed, 13 industrial persons exposed and115 agricultural persons exposed; making a total of 4,207 potentially exposed persons.

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	**# in Hazard Area**	**% in Hazard Area**	**$ in City**	**$ in Hazard area**	**% in Hazard area**	**# in City**	**# in Hazard area**	**% in Hazard area**
Residential	8,415	1,707	20%	$579,031,610	$165,825,455	29%	25,206	4,207	17%
Commercial	1,167	342	29%	$190,013,834	$52,782,345	28%			
Agricultural	13	13	100%	$105,437	$105,437	100%			
Industrial	115	80	70%	$33,799,956	$20,682,656	61%			

4.5.1 Vulnerability Assessment for Grass and Wild Land Fires
According to the Hazard Mitigation Committee, less than 25% of the residents and structures would be impacted by wildfires. The exposure area shows that grass and wild land fires would most likely occur in areas where grass or agriculture lands exist, which accounts for less than 25% of the land in Fort Dodge. The actual structures and persons impacted would be minimal, as most grass and wild land fires are sustained by the fire department. Multiple structures could be impacted. Persons within vicinity to the fire could be impacted with smoke inhalation, burns if directly exposed or even death. Accompanying events include drought.

4.6 Exposure Assessment for Dam/Levee Failure

Exposed Structures
The area exposed to dam/levee failure was determined by estimating a buffer zone around the dams & levee within the estimated flood inundation area used in the River Flooding Exposure Assessment (See map titled Fort Dodge Dam Failure Hazard Area in Appendix F). The area that lies within the buffer zone established an estimate for the number of structures existing in the "hazard area". Using this hazard area it was estimated that 81 residential structures, 7 commercial structures, 0 industrial structures and 0 agriculture structures were located in the "hazard zone".

Exposed Persons
The "Number of People" exposed to dam/levee failure was based on the number of residential, commercial, industrial and agriculture structures estimated to be located in the "hazard zone". It was estimated that each commercial, industrial and agriculture structure had one owner. And there are approximately 2.21 people per dwelling (household) in Fort Dodge, according to the 2010 U.S. Census. Therefore it was estimates that there were 179 residents exposed and 7 commercial persons exposed; making a total of 186 potentially exposed persons.

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	**# in Hazard Area**	**% in Hazard Area**	**$ in City**	**$ in Hazard area**	**% in Hazard area**	**# in City**	**# in Hazard area**	**% in Hazard area**
Residential	8,415	81	1%	$579,031,610	$3,197,200	1%	25,206	186	1%
Commercial	1,167	7	1%	$190,013,834	$245,760	0%			
Agricultural	13	0	0%	$105,437	$0	0%			
Industrial	115	0	0%	$33,799,956	$0	0%			

4.61 Vulnerability Assessment for Dam/Levee Failure
According to the hazard mitigation committee the vulnerable population to dam/levee failure is typically limited to those that live in close proximity to the dams & levee within the City.

Impacts from dam/levee failure would typically take form in property damage to structures. Being located in the floodplain near the dams may put residents and structures in the nearby vicinity at risk for. Resulting impacts would be property damage, injuries and even death. Accompanying hazard events may include river flooding, thunderstorms and lightning, flash flooding and severe winter storms; see their vulnerability assessment for additional impacts.

**A list of critical facilities that may be exposed to one or more of the hazards that are being addressed in the plan are listed in Appendix D. The location of each critical facility is represented on the maps displayed in Appendix F.

Chapter 5 - Loss Estimates

The following loss estimates were calculated using the assessed structural values determined by the Webster County Assessor for the City of Fort Dodge. Structural values include residential, commercial, industrial and agricultural values.

Below are some general statistics of Fort Dodge. Assessed structural values were determined using Webster County Parcel Data. All of the information listed in the loss estimates was based on the following numbers:

Total Acres = 10,400 (U.S. Census, 2010)
Sum of assessed residential structures = $579,031,610
Sum of assessed commercial structures = $190,013,834
Sum of assessed agricultural structures = $105,437
Sum of assessed industrial structures = $33,799,956
Total assessed structures = $802,950,837

Loss Estimate Methodology

To calculate the loss estimates of some of the hazards, the Risk Analysis results were used to estimate the percentage of damages that may occur. By applying the Risk Analysis results, the "Vulnerability" category was used to determine the percentage of people and property that would be affected by each hazard. This was only used for hazard events that don't occur at any one specific location, such as windstorms, flash flooding, etc. These events are so broad that they generally affect the entire City of Fort Dodge. The following are the vulnerability results for each hazard as determined by the hazard mitigation committee:

Thunderstorms and Lightning: 76%+
Windstorms: 76%+
River Flooding: <25%
Tornadoes: 51-75%
Infrastructure Failure: 26-50%
Severe Winter Storms: 76%+
Transportation Incident: <25%
Flash Flooding: <25%
Hazardous Materials: <25%
Hailstorms: 76%+
Landslide: <25%
Grass and Wild Land Fires: <25%
Terrorism: 76%+
Expansive Soils: 51-75%
Radiological: 51-75%
Extreme Heat: 26-50%
Human Disease: 76%+
Dam/Levee Failure: <25%
Sink Holes: <25%
Drought: <25%

The next step was to calculate the extent of damages that each property might have due to each of the hazards above. Again, the Risk Analysis results were consulted to determine the percentage of the assessed value that could potentially be damaged. The "Severity of Impact" category was applied to assess the severity of the hazards in terms of fatalities, injuries, property losses, and economic losses. The following are the Severity of Impact results for the storm events:

Thunderstorms and Lightning: 2
Windstorms: 2
River Flooding: 3
Tornadoes: 4
Infrastructure Failure: 2
Severe Winter Storms: 2
Transportation Incident: 2
Flash Flooding: 3
Hazardous Materials: 1
Hailstorms: 2
Landslide: 3
Grass and Wild Land Fires: 1
Terrorism: 4
Expansive Soils: 1
Radiological: 3
Extreme Heat: 3
Human Disease: 3
Dam/Levee Failure: 1
Sink Holes: 1
Drought: 1

Severity of Impact: Assessment of the severity in terms of fatalities, injuries, property losses, and economic losses	
Score	**Description**
1 point =	Few if any injuries or illness, minor quality of life lost with little or no property damage. Brief interruption of essential facilities or services for less than four hours
2 points =	Minor injuries or illness, limited impact on quality of life and some property damage which does not threaten structural stability, slight interruption in essential services.
3 points =	More serious injuries or illness, minor or short term property damage which does not threaten structural stability, shutdown of essential services for 24 hours or more
4 points =	Serious injury or illness, major or long term property damage which threatens structural stability, shutdown or essential services and facilities for 24-72 hours.
5 points =	Multiple deaths, property destroyed or damaged beyond repair, complete shutdown of essential facilities and services for 3 days or more.

Given all of the factors above and the damages that might take place in each hazard, the following loss estimate percentages were calculated based on the area of exposure. A more detailed explanation of the percentages is included under each specific storm event loss estimate calculation that follows. Those hazards without a specific loss estimate are listed on page 47.

Thunderstorms and Lightning: .013%
Windstorms: 2%
River Flooding: 90%
Tornadoes: 51%
Severe Winter Storms: .24%
Flash Flooding: .007%
Hailstorms: .01%
Grass and Wild Land Fires: .05%
Dam/Levee Failure: 50%

These percentages represent the loss estimates for the above listed hazards. All other hazards were analyzed. Their loss estimates are explained below.

Thunderstorm and Lightning Loss Estimate Calculation

Thunderstorms are a common occurrence in the City of Fort Dodge. The Fort Dodge Hazard Mitigation Committee determined that more than 75% of the community experiences impacts due to a thunderstorm and lightning event. With this, the committee also estimated that storms generally cause limited property damage and only a brief interruption in essential services.

Historical data from the NCDC in Appendix C shows that the highest amount of property damage experienced within the City of Fort Dodge due to Thunderstorms equaled $100,000. This accounts for approximately .013% of property damages in the City of Fort Dodge; therefore, based on worst case scenario it was estimated that approximately .0013% of the City would be impacted by Thunderstorms and Lightning within the City. The results of this estimate are displayed below.

Estimated residential structural damage due to Thunderstorm and Lightning (.013%) = $75,274
Estimated commercial structural damage due to Thunderstorm and Lightning (.013%) = $24702
Estimated agricultural structural damage due to Thunderstorm and Lightning (.013%) = $14
Estimated industrial structural damage due to Thunderstorm and Lightning (.013%) = $4,394
Total estimated structural damages of Thunderstorm and Lightning = $104,384

Windstorm Loss Estimate Calculation

According to the hazard risk analysis results, the hazard mitigation committee estimated that windstorms impact more than 75% of people and property in Fort Dodge. They also estimated that such events may cause minor injuries, some property damage and a slight interruption in essential services.

The NCDC historical data indicates that thunderstorm winds and high winds that have been recorded for Webster County maximum amount of property damage that occurred was equal to $17,300,000, which would account for approximately 2% of Fort Dodge's structures.

Estimated residential structural damage due to Windstorms (2%) = $14,475,790
Estimated commercial structural damage due to Windstorms (2%) = $4,750,346
Estimated agricultural structural damage due to Windstorms (2%) = $2,636
Estimated industrial structural damage due to Windstorms (2%) = $844,999
Total estimated structural damages of Windstorms = **$20,073,771**

River Flooding Loss Estimate Calculation (see attached spatial extent map in Appendix F)

The hazard mitigation committee estimated that less than 25% of the community was vulnerable to river flooding. The main impacts due to river flooding relate to property damage and an interruption in sanitary sewer services. As mentioned in Chapter 4, the Flood Inundation Area was used to identify areas where river flooding may cause structural damages. It is anticipated that 90% of this area would be impacted by a flood, which is used in the loss estimates, displayed below.

Sum of assessed residential structures in special flood hazard zone in Fort Dodge = $14,418,863
Sum of assessed commercial structures in special flood hazard zone in Fort Dodge = $14,025,824
Sum of assessed agricultural structures in special flood hazard zone in Fort Dodge = $43,860
Sum of assessed industrial structures special flood hazard zone in Fort Dodge = $0

Estimated residential structural damage due to River Flooding (90%) = $12,967,977
Estimated commercial structural damage due to River Flooding (90%) = $1,262,342
Estimated agricultural structural damage due to River Flooding (90%) = $39,474
Estimated industrial structural damage due to River Flooding (90%) = $0
Total estimated structural damages of River Flooding (90%) = **$25,639,692**

Tornado Loss Estimate Calculation

The hazard mitigation committee determined that 51-75% of the community would be impacted by a tornado and that serious injuries, long term property damage and an interruption of services would occur. The entire area of the City of Fort Dodge is about 10,400 acres.

As recorded by the NCDC, only one tornado event has occurred in the City of Fort Dodge; however, 20 events have occurred in Webster County. The maximum amount of property damage recorded in one event in Webster County equaled $2,500,000, which accounts for about 30% of Fort Dodge's structural value. Because this event occurred outside of Fort Dodge, it is estimated that a higher amount of property damage would be incurred within the City because it is the most densely populated area in the County. Therefore, it's estimated based on the hazard mitigation committee's estimate that anywhere between 51-75% of the County would be impacted, that 51% of Fort Dodges' structures would be damaged in the event of a tornado. The estimate of such losses is shown below.

Estimated residential structural damages due to Tornado (51%) = $295,306,121
Estimated commercial structural damages due to Tornado (51%) = $96,907,055
Estimated agricultural structural damages due to Tornado (51%) = $53,773
Estimated industrial structural damages due to Tornado (51%) = $17,237,978
Total estimated structural damages of Tornado = $409,504,927

Severe Winter Storms Loss Estimate Calculation

Severe winter storm conditions such as heavy, blowing snow, sleet, wind, ice and/or extreme cold temperatures have the potential to impact the entire community of Fort Dodge. While the entire community may feel the effects of these conditions, there is generally a limited amount of injuries, some property damage and only a slight interruption of essential services. Based on historical data from the NCDC, the maximum amount of structural damages incurred in one event equaled $2,000,000. Based on this amount, approximately .25% of the structures in Fort Dodge would experience damage due to winter storms. Therefore, the calculation for .25% of all structures in Fort Dodge is expressed below.

Estimated residential structural damage due to Severe Winter Storms (.24%) = $1,447,579
Estimated commercial structural damage due to Severe Winter Storms (.24%) = $475,035

Estimated agricultural structural damage due to Severe Winter Storms (.24%) = $264
Estimated industrial structural damage due to Severe Winter Storms (.24%) = $84,500
Total loss estimate of Severe Winter Storms = **$2,007,377**

Flash Flooding Loss Estimate Calculation

The hazard mitigation committee estimated that less than 25% of the community was vulnerable to flash flooding. The main impacts due to flash flooding relate to property damage and a backup or interruption in storm and sanitary sewer services. The flash flooding loss estimates were developed based on the 2007 Flood Impacted Areas shown in Appendix F. Because most flooding impacts basements and foundations, it was estimated that each structure within the flood hazard zone would incur about 5% of its structural value in damages. This was based on the idea that a basement remodel may increase a homes' value by 10%; therefore, damages might decrease a homes' value by about half of that.

Sum of assessed residential structures in flash flood hazard zone in Fort Dodge = $20,380,840
Sum of assessed commercial structures in flash flood hazard zone in Fort Dodge = $28,294,413
Sum of assessed agricultural structures in flash flood hazard zone in Fort Dodge = $0
Sum of assessed industrial structures in flash flood hazard zone in Fort Dodge = $1,233,610

Estimated residential structural damage due to Flash Flooding (5%) = $1,019,042
Estimated commercial structural damage due to Flash Flooding (5%) = $1,414,721
Estimated agricultural structural damage due to Flash Flooding (5%) = $0
Estimated industrial structural damage due to Flash Flooding (5%) = $61,680
Total estimated structural damages of Flash Flooding = **$2,495,443**

Hailstorm Loss Estimate Calculation

The hazard mitigation committee determined that hailstorms generally impact more than 75% of the community and result in minor injuries with some property damage and a slight interruption of services. The extent of damages varies depending on the size and intensity of the hail. Damages are generally not constant throughout the entire town; therefore, instead of determining a percentage of the assessed values of the residential, commercial and agricultural structures, it was decided to take the maximum damages of all of the hailstorm events recorded in Fort Dodge by the NCDC, which equaled $50,000 in 2004, which accounts for .01% of structures in Fort Dodge.

Estimated residential structural damage due to Severe Winter Storms (.01%) = $57,903
Estimated commercial structural damage due to Severe Winter Storms (.01%) = $19,001
Estimated agricultural structural damage due to Severe Winter Storms (.01%) = $11
Estimated industrial structural damage due to Severe Winter Storms (.01%) = $3,380
Total estimated structural damages of Severe Winter Storms = $80,295

Grass and Wild Land Fires

The hazard mitigation committee estimated that less than 25% of the community was vulnerable to grass and wild land fires, because these would most commonly occur near woodlands, grasslands, agriculture lands other open spaces within the City. As mentioned in Chapter a hazard area has been identified for the City of Fort Dodge where grass and wild land fires may occur. The exposure and loss estimates were based on this hazard area; such estimates are displayed below.

Sum of assessed residential structures in vicinity to open space in Fort Dodge = $ 165,825,455
Sum of assessed commercial structures in vicinity to open space in Fort Dodge = $52,782,345
Sum of assessed agricultural structures in vicinity to open space in Fort Dodge = $105,437
Sum of assessed industrial structures in vicinity to open space in Fort Dodge = $20,682,656

Estimated residential structural damage due to Grass and Wild Land Fires (.05%) = $82,913
Estimated commercial damage due to Grass and Wild Land Fires (.05%) = $26,391
Estimated agricultural damage due to Grass and Wild Land Fires (.05%) = $53
Estimated industrial damage due to Grass and Wild Land Fires (.05%) = $10,341

Total estimated structural damages of Grass and Wild Land Fires (.05%) = **$119.698**

Dam/Lvee Failure

The hazard mitigation committee estimated that less than 25% of the community was vulnerable to dam/levee failure, because impacts would most commonly occur near the dams and levee, within the special flood hazard zone. As mentioned in Chapter an exposed area where a dam/levee failure could impact structures has been identified for the City of Fort Dodge. Because it is anticipated that only one dam and/or levee would fail at a time, the impacted area is estimated to be 50% of the exposed areas. The exposure and loss estimates are displayed below.

Sum of assessed residential structures in vicinity to a dam/levee in Fort Dodge = $3,197,200
Sum of assessed commercial structures in vicinity to a dam/levee in Fort Dodge = $245,760
Sum of assessed agricultural structures in vicinity to a dam/levee in Fort Dodge = $0
Sum of assessed industrial structures in vicinity to a dam/levee in Fort Dodge = $0

Estimated residential structural damage due to Dam/Levee Failure (50%) = $1,598,600
Estimated commercial structural damage due to Dam/Levee Failure (50%) = $122,880
Estimated agricultural structural damage due to Dam/Levee Failure (50%) = $0
Estimated industrial structural damage due to Dam/Levee Failure (50%) = $0
Total estimated structural damages of Dam/Levee Failure (50%) = **$1,721,480**

The following hazards loss estimates were not quantified due to the fact that many of them either don't directly cause structural/property damage, or the estimate varied on multiple factors.

Terrorism: The impacts of terrorism are very dependent on the type of terrorism that occurs. Some acts are isolated to a specific building, while other acts may impact the entire community.

Radiological: A radiological event, similar to terrorism may vary in range of impacts.
Infrastructure Failure: Energy disruption and communications failure would generally not impact structures; while structural failure and structural fire are generally isolated events that only impact one structure at a time.

Transportation Incident: The impacts from a transportation incident are generally very isolated. Most impacts are to drivers and vehicles.

Extreme Heat: Generally, structural damage does not occur during an extreme heat event.

Human Disease: This hazard impacts the health and welfare of people. There would be no structural impacts due to human disease.

Drought: There are typically no structural impacts due to drought.

Expansive Soils: Effects from expansive soils vary depending on the structure impacted. Impacts to streets generally effect one isolated area, while impacts to water mains may impact the entire community.

Sink Holes: These generally impact only isolated areas, such as streets within the City.

Mitigation Strategies and Priorities

The Research, Review, and Prioritization Process

After the hazard risk assessment was completed, the hazard mitigation committee sat down and brainstormed mitigation actions that might reduce or eliminate the loss of property and life due to hazards. These actions, along with the goals and objectives approved by the committee, are listed below:

Goal 1: *Protect the lives, safety and property of all residents, businesses and other entities of Fort Dodge from potential hazards*

Objective 1.1: Ensure all residents, businesses and other entities of Fort Dodge are aware of potential hazards and their responsibilities prior to such events

Mitigation Actions

1.1.1. Educate the public on weather radios
1.1.2. Educate the public on CodeRED/Inspiron
1.1.3. Identify areas and develop list of potential targets for terrorism
1.1.4. Build public awareness on HAZMAT reporting
1.1.5. Inform the public of road closures
1.1.6. Inform the public of road clearance requirements during snow events
1.1.7. Encourage participation in the Iowa Floodplain and Storm Water Management Association
1.1.8. Educate the public on the Nixle program
1.1.9. Educate the public on fire hazards
1.1.10. Build public awareness on human disease
1.1.11. Educate the public on the existing Medication Disposal Program (Hy-Vee)

Objective 1.2: Implement hazard mitigation projects to protect the lives, safety and property of all residents, businesses and other entities in Fort Dodge

Mitigation Actions

1.2.1. Update road signs to meet the Federal Highway Administration's (FHWA's) retroreflectivity requirements
1.2.2. Televise sanitary and storm sewer systems to identify necessary repairs
1.2.3. Implement sanitary sewer and storm water management projects to reduce flash flooding
1.2.4. Run sanitary sewer evaluation study
1.2.5. Establish tornado safe rooms where found feasible
1.2.6. Stabilize tributaries
1.2.7. Purchase and install backup energy for the City Lift Stations
1.2.8. Identify areas where the landslide potential is high and address such issues
1.2.9. Reconstruct the lift station to reduce damages from flooding
1.2.10. Purchase and install backup energy for the City Water Plant & Wells
1.2.11. Implement roadway and bridge projects to improve traffic flow and safety
1.2.12. Acquire property in the floodplain
1.2.13. Purchase and install additional backup energy for Friendship Haven
1.2.14. Bury Powerlines
1.2.15. Make improvements to hydro-electric dam to drop impoundment levels
1.2.16. Establish additional snow fences

Goal 2: *Implement hazard mitigation actions to prevent or reduce the affects of potential hazards*

Objective 2.1: Develop and enforce policies that will prevent and/or reduce the affects of potential hazards

Mitigation Actions

2.1.1. Develop and implement an ordinance for storm water management
2.1.2. Prosecute illegal drug actions
2.1.3. Appoint a fire marshal

2.1.4. Strive to meet the National Fire Protection Agency's (NFPA) Safety Codes and Standards

2.1.5. Update and enforce floodplain ordinance

Objective 2.2: Establish programs to assist residents, businesses and other entities with preventing and/or reducing the impact of hazards

Mitigation Actions

2.2.1. Develop a program to assist in the distribution of fire protection devices

2.2.2. Establish a HAZMAT disposal program

2.2.3. Continue public health clinics

2.2.4. Review and assess mutual aid agreements with surrounding fire departments

Objective 2.3: Ensure all emergency responders are adequately equipped to prevent and reduce the affects of potential hazards

Mitigation Actions

2.3.1 Ensure emergency responders have adequate equipment and training

2.3.2 Update all emergency radios for the 2013 narrowband mandate

Upon listing out potential actions, listed above; the committee completed the STAPLEE Analysis, which reviewed Social, Technical, Administrative, Political, Legislative, Economic and Environmental assets of each action. The STAPLEE results served as a guide for implementation of each action. It prioritized those actions that were feasible based on the following questions:

Social – Is the mitigation action socially acceptable? Will the action adversely affect any one segment of the population? What are the social costs of the action? What are the social benefits of the action?

Technical – Is the proposed action technically feasible and does it provide the appropriate level of protection? Will the action create more problems than it solves/ What are the technical costs and benefits of the action?

Administrative - Does the community have the capability (staff, expertise, funding) to implement the action? Can the community provide the necessary maintenance? Can the action be accomplished in a timely manner? What are the administrative costs and benefits of the action?

Political – Is the mitigation action politically acceptable? What are the political costs and benefits of the action?

Legal – Does the community have the authority to implement the proposed action? Is the action likely to be challenged by stakeholders who may be negatively affected? What are the legal costs and benefits of the action?

Economic – Do the costs of the action seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the local economy to implement and maintain the action? What are the economic costs and benefits of the action?

Environmental – How will the action affect the natural environment? Will the action comply with local, State, and Federal environmental regulations? What are the environmental costs of the action? What are the environmental benefits of the action?

The STAPLEE analysis was scored using a simple scoring system. For each category, and each question, if the action would be considered favorable it would be given a plus one (1), if negative or less favorable

a minus one (-1), and a zero (0) for a neutral or not applicable rating. The scores were then tallied after answering all of the questions for each of the mitigation actions.

Upon completion of the STAPLEE analysis, the Fort Hazard Mitigation Committee was presented with the results to use as a basis to determine the prioritization of each hazard mitigation action. While the committee understood that the STAPLEE analysis is an approach to help prioritize each hazard mitigation action, they determined that many of the actions held a different prioritization to them than was exemplified in the STAPLEE results. The committee reviewed the STAPLEE results, evaluated all of the hazard mitigation actions and decided how long they thought each project might realistically be started. Based on this, the committee determined which projects were significant priorities for Fort dodge depending on how urgent they determined each action was to complete, not necessarily contingent upon what the STAPLEE suggested.

Therefore, based on what the committee found feasible, the actions were prioritized as follows: Priority I projects were projects that the committee determined would be started within 1 year of the plan being adopted by the City. Priority II projects were actions that would be started within 2-4 years of the plan being adopted by the City. Priority III projects were actions that would be started within 5 or more years of the plan being adopted by the City. The list of the hazard mitigation actions along with their final priority, as determined by the hazard mitigation committee is shown below:

Project	STAPLEE Results	Prioritization
Prosecute illegal drug actions	19	I
Educate the public on weather radios	18	I
Educate the public on CodeRED/Inspiron	18	I
Ensure emergency responders have adequate equipment and training	15	I
Identify potential targets for terrorism	14	I
Build public education on Medication Disposal Program	14	I
Build public awareness on HAZMAT reporting	13	I
Review and assess mutual aid agreements with surrounding fire departments	12	I
Update road signs to meet the Federal Highway Administration's (FHWA's) retroreflectivity requirements	11	I
Televise sanitary and storm sewer systems to identify necessary repairs	11	I
Implement sanitary sewer and storm water management projects to reduce flash flooding	11	I
Continue public health clinics	11	I
Run sanitary sewer evaluation study	10	I
Develop a program to assist in the distribution of fire protection devices	10	I
Appoint a fire marshal	10	I
Purchase and install backup energy for the City Lift Stations	9	I

Update all emergency radios for the 2013 narrowband mandate	8	I
Strive to meet the National Fire Protection Agency's (NFPA's) Safety Codes and Standards	8	I
Inform the public of road closures	8	I
Inform the public of road clearance requirements during snow events	8	I
Educate the public on the Nixle program	8	I
Educate the public on fire hazards	8	I
Build public awareness on human disease	8	I
Purchase and install backup energy for the City Water Plant & City Wells	7	I
Implement roadway and bridge projects to improve traffic flow and safety	7	I
Purchase and install additional backup energy for Friendship Haven	6	I
Bury Powerlines	5	I
Establish additional snow fences	2	I
Update and Enforce Floodplain Ordinance	13	II
Establish a Household HAZMAT disposal program	13	II
Establish tornado safe room for Senior High	10	II
Establish tornado safe room in the Fire Substation	10	II
Establish tornado safe room for Downtown	10	II
Develop and implement an ordinance for storm water management	9	II
Stabilize Tributaries	9	II
Reconstruct the lift station to reduce damages from flooding	8	II
Encourage participation in the Iowa Floodplain and Storm Water Management Association	8	II
Establish tornado safe room for Dodger Stadium	10	III
Establish tornado safe room for Harlan Rogers Sports Complex	10	III
Identify areas where the landslide potential is high and address such issues	9	III
Acquire property in the floodplain	7	III
Make improvements to hydro-electric dam to drop impoundment levels	-2	III

Chapter 6 - Action Plan

Mitigation Strategies

Each hazard mitigation strategy is discussed in detail on the following pages. Information on each strategy includes the following information:

Description: Explains the Action
Hazards Addressed: A list of hazards the Action will mitigation
Priority: When the action will be started; can be a I, II or III:

- Priority I: Mitigation actions that will be started in 1 year
- Priority II: Mitigation actions that will be started in 2-4 years
- Priority II: Mitigation actions that will be started in 5+ years

Actions were prioritized based on the committee's readiness to implement each action. Prioritization took no regards to the risk assessment or STAPLEE, as the committee did not feel as though these were good indication of the readiness of the community. A large contingency upon preparedness was the cost of the project or the availability of funds. Projects that were either low in cost or had funds readily available or allocated to implement were given higher priority than those projects that did not have funds allocated to implement.
Responsible Party: Department(s) responsible for implementing the Action (E.G. Fire Department)
Estimated Cost: Estimated cost of the Action (Some actions may vary in cost, may state ranges if necessary)
Potential Funding Source: Where will the funding come from? (E.G. Grants, City Budget, Loans, etc.)
Target Completion Date: When will the action be completed? (E.G. 2 years from start date, ongoing, etc.)
Mitigation Measure Category:

Prevention Actions

Prevention actions are intended to address future development. These actions ensure that future development does not increase hazard losses and guide future development away from hazards, while maintaining other community goals, such as economic development and quality of life.

Communities can achieve significant progress toward hazard resistance through prevention actions. Prevention actions are particularly effective in areas that have not been developed or where capital investment has not been substantial.

Examples:

- Zoning codes, such as an overlay zone that limits development in a floodplain
- Open space preservation and development of parks and recreational areas in hazard prone areas
- Land development regulations, such as requiring large lot sizes to ensure a minimum amount of impervious surface area
- Storm water management regulations that call for retention/detention basins and clearing of ditches
- Dune and beach maintenance and regulations that prohibit any development activity beyond the dunes
- Capital Improvement Planning that prevents extension of public infrastructure into hazard areas
- Building or fire codes that require certain types of roofing or sprinkler systems

Property Protection Actions

Property protection actions modify existing buildings or their surroundings to reduce risk. These actions directly protect people and property at risk.

Protecting a building does not necessarily affect the building's appearance and is therefore a popular mitigation action for historic and cultural sites.

Examples:

- Acquisition – public procurement and management of lands that are vulnerable to damage from hazards
- Relocation – permanent evacuation of hazard-prone areas through movement of existing hazard-prone structures to safer areas
- Retrofitting – modifying structures to reduce damage by future hazard events
- Flood-proofing – modifying a flood-prone structure to reduce future flood damage by preventing water from entering the structure or by designing the structure so that water can flow through it harmlessly

Public Education and Awareness Mitigation Actions

Public education and awareness actions inform and remind the public about hazards and the actions they can take to avoid potential damage and injury. These actions are directed toward property owners, potential property owners, business owners, and visitors to the community.

Examples:

- Providing hazard maps and other hazard information to homeowners
- Developing a Web site that makes hazard information publicly available
- Developing and implementing outreach programs that provide hazard and mitigation information to the public
- Asking business owners to provide mitigation information ton employees
- Mailing or delivering notices about hazards to residents and property owners in specific, hazard-prone areas
- Preparing displays about hazards and mitigation in widely used facilities, such as libraries, public buildings, and malls
- Printing information about hazard mitigation in newspapers or airing announcements and interviews on radio and television stations
- Providing information to property owners using a videotape or a printed booklet
- Making presentations at neighborhood meetings
- Adopting a real estate disclosure requirement so that potential property owners are informed of the risk before purchase
- Designing and delivering educational programs for school age children or adults

Natural Resources Protection Actions

Natural resources protection actions reduce the intensity of hazard effects and improve the quality of the environment and wildlife habitats. They are usually implemented by parks, recreation, or conservation agencies or organizations

Examples:

- Erosion and sediment control programs
- Wetlands protection programs
- Expanding public open space
- Environmental restoration or freshwater and sediment diversion programs

Emergency Services Protection Actions

Emergency services protect people before, during, and after a hazard event. Most counties/parishes and many cities have emergency management offices to coordinate warnings about, response to, and recovery from a disaster. Actions taken to ensure the continuity of emergency services are considered mitigation actions.

Examples:

- Protection of warning system capability
- Protection or hardening of critical facilities, such as fire stations and hospitals
- Protection of infrastructure, such as roads that are needed for emergency response

Structural Mitigation Actions
Actions in this category directly protect people at risk. They are called "structural" because they involve construction of manmade structures or devices to control hazards.

Examples:

- Reservoirs to store drinking water
- Levees, floodwalls, and seawalls to reduce the likelihood of flooding
- Diversion of stormwater away from developed areas
- Channel modifications to move stormwater away from development more quickly

Prosecute illegal drug actions	
Description	Illegal drugs can be dangerous for all individuals involved, especially when used or produced in the form of methamphetamine (meth). Anyone who comes in contact with meth is at risk due to the toxic nature of the ingredients, which leaves behind hazardous waste. When ingredients are combined, they can ignite, causing explosions, fires and the release of toxic fumes. By prosecuting individuals participating in the illegal action of producing or using meth, the Hazard Mitigation Committee is seeking to protect the lives, safety and property of citizens in Fort Dodge by preventing hazardous material events, explosions and structural fires that could potentially result from meth or other drug production.
Hazards Addressed	Hazardous Materials & Infrastructure Failure (i.e. Structural Fire)
Priority	I
Responsible Dept./Party	Law Enforcement, Fire Department, County Attorney
Estimated Cost	Cost based on Staff Hours
Potential Funding Source	Law Enforcement general fund, offender fines, State and Federal programs.
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	Ongoing

Educate the public on weather radios	
Description	Weather radios broadcast alerts for many different types of hazards such as natural hazards, technological hazards, AMBER alerts and terrorist attacks (National Weather Service, 2008). Educating the public on weather radios is a minor step toward ensuring that citizens are warned of hazards that could affect them. Citizens will be encouraged to purchase weather radios via fliers, newsletters, utility bills, local television stations, newspapers, radio announcements or other conceivable sources. Different from CodeRED/Inspiron or Nixle, weather radios are a nation-wide tool that broadcasts continuous weather information from the nearest National Weather Service.
Hazards Addressed	Thunderstorms and Lightning, Windstorm, River Flooding, Flash Flooding, Tornadoes, Infrastructure Failure, Severe Winter Storms, Transportation Incident, Hazardous Materials, Hailstorms, Landslide, Grass and Wild Land Fires, Terrorism, Radiological, Extreme Heat, Dam/Levee Failure, Sink Holes and Drought
Priority	I
Responsible Dept./Party	Emergency Management
Estimated Cost	Minimal to no costs for education
Potential Funding Source	N/A
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Educate the public on CodeRED/Inspiron	
Description	CodeRED/Inspiron is a community notification system that alerts citizens of emergency situations or critical community alerts (CodeRED, 2011). Educating the public on CodeRED/Inspiron is a minor step toward ensuring that citizens are warned of hazards that could affect them. Citizens will be encouraged to enroll in CodeRED/Inspiron via fliers, newsletters, utility bills, local television stations, radio announcements or other plausible sources. Different from weather radios or Nixle, CodeRED/Inspiron, is a County-wide program that sends pre-recorded emergency telephone notification/information messages to targeted areas
Hazards Addressed	Thunderstorms and Lightning, Windstorm, River Flooding, Flash Flooding, Tornadoes, Infrastructure Failure, Severe Winter Storms, Transportation Incident, Hazardous Materials, Hailstorms, Landslide, Grass and Wild Land Fires, Terrorism, Radiological, Extreme Heat, Dam/Levee Failure, Sink Holes and Drought.
Priority	I
Responsible Dept./Party	Emergency Management, Telecommunications Board
Estimated Cost	Minimal to no costs for education –$21,000 per year for the Code Red Program
Potential Funding Source	911 surcharge, or grants.
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Ensure emergency responders have adequate equipment and training	
Description	Adequate training and equipment is crucial for emergency responders to complete the task at hand. The City of Fort Dodge will seek to provide the training and equipment necessary to keep the fire department, police department, emergency medical service and other emergency response groups prepared for potential hazards.
Hazards Addressed	Thunderstorms and Lightning, Windstorm, River Flooding, Flash Flooding, Tornadoes, Infrastructure Failure, Severe Winter Storms, Transportation Incident, Hazardous Materials, Hailstorms, Landslide, Grass and Wild Land Fires, Terrorism, Radiological, Extreme Heat, Human Disease, Dam/Levee Failure, Sink Holes, and Drought.
Priority	I
Responsible Dept./Party	City Council, City Manager, each appropriate department
Estimated Cost	Varies depending on equipment
Potential Funding Source	General fund, grants, fees for services
Mitigation Measure Category	Emergency Services Protection Actions
Target Completion Date	Ongoing

Develop an updated list of areas that may be potential targets for terrorism	
Description	Potential targets for terrorism have been identified for Webster County in the past; however, to ensure that all potential targets within the City of Fort Dodge are prepared, the Hazard Mitigation Committee suggests that a new assessment of potential targets be implemented.
Hazards Addressed	Terrorism
Priority	I
Responsible Dept./Party	Emergency Management, Law Enforcement, Schools, Hospitals
Estimated Cost	Staff time
Potential Funding Source	Emergency Management Funds, EMPG Grants.
Mitigation Measure Category	Public Education and Awareness Mitigation Actions & Emergency Protection Actions
Target Completion Date	6 months after start date

Build public education on Medication Disposal Program (Hy-Vee)	
Description	Medicines play an important role in treating certain conditions and diseases, but they must be taken with care. Unused portions of these medicines must be disposed of properly to avoid harm to wildlife, pets, and people (SmaRxt Disposal, 2012). A Medication Disposal Program is currently in place through Hy-Vee Pharmacy. Ensuring that the public is aware of this program will ensure that medications are properly disposed of.
Hazards Addressed	Health
Priority	I
Responsible Dept./Party	HyVee, Police Department, County Health Department, Sheriff Department
Estimated Cost	Minimal to no cost
Potential Funding Source	N/A
Mitigation Measure Category	Natural Resources Protection Actions
Target Completion Date	Ongoing

Establish a household HAZMAT waste disposal program	
Description	The Fort Dodge Hazard Mitigation Committee determined that it would be helpful to establish a household waste collection service for household chemicals generated by Fort Dodge residents. This service would allow residents to safely dispose of hazardous materials in a sustainable way.
Hazards Addressed	Hazardous Materials
Priority	II
Responsible Dept./Party	Landfill, County DNR, County Health, Public Works
Estimated Cost	$10,000 - $30,000 for one day collection program (United States Environmental Protection Agency, 1993)
Potential Funding Source	EPA, user fees.
Mitigation Measure Category	Natural Resources Protection Actions
Target Completion Date	Ongoing program, in effect 5 years from start date

Develop and implement an ordinance for stormwater management	
Description	Establishing an ordinance for stormwater management will help ensure that Fort Dodge's stormwater practices are consistent with their stormwater quality and quantity needs/goals. Such ordinance will establish guidelines that will assist the community in reducing and improving the quality of stormwater discharges. This action will assist in erosion and sediment control and help ensure that the stormwater system is not required to work over its capacity.
Hazards Addressed	Flash Flooding
Priority	II
Responsible Dept./Party	City Council, Engineering and Planning
Estimated Cost	Staff time
Potential Funding Source	General fund
Mitigation Measure Category	Natural Resources Protection Actions, Property Protection Actions & Prevention Actions
Target Completion Date	2 years from start date

Build public awareness on hazardous material reporting	
Description	Ensuring the public is aware of who to call during a hazardous material (HAZMAT) event can reduce the negative impacts of such event. By promptly reporting a HAZMAT event, responders are able to more efficiently contain and treat the material spilled in a timely manner.
Hazards Addressed	Hazardous Materials
Priority	I
Responsible Dept./Party	Region V HAZMAT, County Health, DNR
Estimated Cost	Minimal to no cost
Potential Funding Source	N/A
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Review and assess mutual aid agreements with surrounding fire departments	
Description	Mutual aid agreements are very important for the City of Fort Dodge and surrounding communities. To ensure that all areas of the county are covered, it would be beneficial to review those mutual aid agreements
Hazards Addressed	Infrastructure Failure (Structural Fire) & Grass and Wild Land Fires
Priority	I
Responsible Dept./Party	Fire Department
Estimated Cost	Minimal to no cost
Potential Funding Source	County fire funds
Mitigation Measure Category	Emergency Services Protection Actions
Target Completion Date	A year upon start date.

Update road signs to meet the Federal Highway Administration's (FHWA's) retroreflectivity requirements	
Description	The Manual on uniform Traffic Control Devices (MUTCD) requires signs to be either illuminated or made with retroreflective sheeting materials. Agencies must maintain such signs to a set of minimum levels. Providing retroreflective delineation and signing is important as a means of reducing nighttime crash rates. Signs that have sufficient retroreflectivity are especially beneficial to older road users.
Hazards Addressed	Transportation Incident
Priority	I
Responsible Dept./Party	911, Public Works and Engineering Departments
Estimated Cost	$1,000,000
Potential Funding Source	City funds, grants
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	Ongoing

Televise sanitary and storm sewer systems to identify necessary repairs	
Description	Assessing issues with the sanitary and storm sewer systems is the first step in addressing concerns such as sewage backup or flash flooding. By televising the sanitary and storm sewer systems, engineers will be able to evaluate the effectiveness of maintenance procedures and gain insightful information regarding the physical deterioration of storm and sanitary sewer lines. This will provide engineers with potential solutions to sanitary and storm sewer concerns.
Hazards Addressed	Flash Flooding
Priority	I
Responsible Dept./Party	Public Works and Engineering
Estimated Cost	$1,000,000
Potential Funding Source	City funds, SRF loans and grants
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing (additional problems evolve)

Implement sanitary sewer and storm sewer projects to reduce/eliminate backflow and flash flooding	
Description	Sanitary and storm sewer projects will help to reduce or eliminate backup and flash flooding that has impacted, or has the potential to impact homes, businesses and infrastructure within the City of Fort Dodge. Projects will be targeted in areas such as Crossroads Mall, Downtown, Mason Drive, Crestview Heights, Elkhorn Creek, Oleson Park and other areas where backup and flash flood relief is seen as necessary.
Hazards Addressed	Flash Flooding
Priority	I
Responsible Dept./Party	Engineering Department
Estimated Cost	Varies depending on project ($100,000,000 overall)
Potential Funding Source	City funds, SRF loans, grants and state funds.
Mitigation Measure Category	Structural Mitigation Actions & Property Protection Actions
Target Completion Date	Ongoing

Continue public health clinics	
Description	Public Health Clinics are important for the health and welfare of the community. Continuing to hold such clinics ensures that residents, who may not otherwise seek medical care, are examined. Public clinics help ensure that potentially contagious health issues may be detected in advance.
Hazards Addressed	Human Disease
Priority	I
Responsible Dept./Party	County Health Department, Trinity, Community Health & Fire Department
Estimated Cost	$300,000
Potential Funding Source	Federal and State funds, grants, insurance funds.
Mitigation Measure Category	Prevention Actions & Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Run sanitary sewer evaluation study	
Description	Similar to televising the sanitary sewer, a sanitary sewer evaluation study is the first step in addressing concerns such as sewage backup or flash flooding. By running a study of the sanitary sewer system, engineers will be able to evaluate the structural integrity as well as capacity and maintenance issues that may negatively impact the system's performance. This will provide engineers with potential solutions to sanitary and storm sewer concerns.
Hazards Addressed	Flash Flooding
Priority	I
Responsible Dept./Party	Engineering Department
Estimated Cost	$3,000,000
Potential Funding Source	City funds, SRF loans, grants
Mitigation Measure Category	Structural Mitigation Actions & Property Protection Actions
Target Completion Date	2014

Establish public tornado safe rooms where found feasible	
Description	The hazard mitigation committee determined that tornado safe rooms should be developed for the Senior High; Dodger Stadium; in the Fire Substation near Iowa Central Community College, Fort Museum, Friendship Haven and Hospital; Harlan Rogers Sports Complex ; and/or near the future Rec Center & Downtown Area. While a feasibility study would need to be done for each of these sites, constructing tornado safe rooms near public gatherings is a priority for the Fort Dodge Hazard Mitigation Committee.
Hazards Addressed	Tornadoes
Priority	(1) – II; (2) – III; (3) – II; (4) – III; (5) – II
Responsible Dept./Party	City, schools, rec center, fire department, ICCC, etc.
Estimated Cost	$90 - $490 per square foot (Orr & Davis, 2011)
Potential Funding Source	Fundraisers, schools, rec center, fire department, grants, ICCC, etc.
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	2 years within start date

Develop a program to assist in the distribution of fire protection devices	
Description	Developing a program to provide fire protection devices (smoke detectors) to households would help to ensure that all properties have the necessary fire protection devices in place. Adequate warning and protection from fires can decrease the number of injuries and fatalities, and assist in protecting properties from damages due to fires.
Hazards Addressed	Structural Fire
Priority	I
Responsible Dept./Party	Fire Department
Estimated Cost	$10,000
Potential Funding Source	Grants
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	1 year from start date

Appoint a fire marshal	
Description	A fire marshal would be a member of the fire department that would ensure that strategies are implemented to prevent losses due to accidental fires. Having a fire marshal would benefit the City of Fort Dodge in terms of fire code enforcement, inspection, fire investigation, and many other fire-related initiatives.
Hazards Addressed	Structural Fire & Grass and Wild Land Fires
Priority	I
Responsible Dept./Party	Fire Department
Estimated Cost	$100,000/yr
Potential Funding Source	General fund, user fees
Mitigation Measure Category	Emergency Services Protection Actions
Target Completion Date	1 year from start date

Stabilize Tributaries	
Description	Some tributaries, mainly relating to the Des Moines River and branching creeks, have developed issues with degradation, bank erosion, straightening and encroachment. Each of these issues causes sedimentation, which is especially a concern for owners of property along such tributaries. By stabilizing the tributaries, the City will be taking steps towards protecting land owners and reducing the impacts of flooding where sedimentation has occurred.
Hazards Addressed	River Flooding
Priority	II
Responsible Dept./Party	Engineering and DNR
Estimated Cost	$3,000,000
Potential Funding Source	City funds, assessments, grant
Mitigation Measure Category	Property Protection Actions & Natural Resources Protection Actions
Target Completion Date	Ongoing

Purchase and install backup energy for the City Lift Stations	
Description	Power outages create the potential for system distress and sanitary sewer overflows in the wastewater collection and treatment system. By purchasing and installing backup energy for the lift stations, the City will prevent sanitary sewer overflows and the potential for such materials to make their way into nearby waters.
Hazards Addressed	Infrastructure Failure (Energy Disruption)
Priority	I
Responsible Dept./Party	Engineering Department, Public Works
Estimated Cost	$2,000,000
Potential Funding Source	City funds, grants and loans
Mitigation Measure Category	Natural Resources Protection Actions & Structural Mitigation Actions
Target Completion Date	Ongoing (Get a date on this?)

Identify areas where the landslide potential is high and address such issues	
Description	Steep slopes are present throughout the City of Fort Dodge. Examining and securing the slope stability of such areas could reduce the likelihood of landslide events within the community.
Hazards Addressed	Landslides
Priority	III
Responsible Dept./Party	Engineering Department
Estimated Cost	$5,000,000
Potential Funding Source	City funds, grants, property owners/assessments.
Mitigation Measure Category	Structural Mitigation Actions & Property Protection Actions
Target Completion Date	Ongoing

Update all emergency radios for the 2013 narrowband mandate	
Description	In an effort to promote more efficient use of spectrum, the Federal Communications Commission (FCC) is mandating that all land mobile radio (LMR) systems migrate to narrowband 12.5 kHz efficiency technology by January 1, 2013. Because licenses will no longer be renewed for LMR system's that beyond this date, the City staff and personnel must update all land mobile radio systems.
Hazards Addressed	Thunderstorms and Lightning, Windstorm, River Flooding, Flash Flooding, Tornadoes, Infrastructure Failure, Severe Winter Storms, Transportation Incident, Hazardous Materials, Hailstorms, Landslide, Grass and Wild Land Fires, Terrorism, Radiological, Extreme Heat, Human Disease, Dam/Levee Failure, Sink Holes and Drought.
Priority	I
Responsible Dept./Party	Police Department, Fire Department, Public Works
Estimated Cost	$800/vehicle – $500/portable – $6,000/base (Fort Dodge Fire Department, 2012)
Potential Funding Source	Grants, department funds
Mitigation Measure Category	Emergency Services Protection Actions
Target Completion Date	2013

Strive to meet the National Fire Protection Agency's (NFPA's) Safety Codes and Standards	
Description	The NFPA standards and codes are accepted as the professional standard for the Fort Dodge Fire Department. By complying with as many NFPA standards as possible, the department is showing their dedication to fire prevention and protection.
Hazards Addressed	Infrastructure Failure (Structural Fire) & Grass and Wild Land Fires
Priority	I
Responsible Dept./Party	Fire Department
Estimated Cost	$1,000,000/yr for staff
Potential Funding Source	General funds, grants, user fees
Mitigation Measure Category	Prevention Actions &Emergency Services Protection Actions
Target Completion Date	Ongoing

Reconstruct/relocate lift stations outside flood-prone areas to reduce damages from flooding	
Description	Lift stations located in the flood-prone areas are required to carry higher capacities during high waters, causing higher than normal flows, which could cause such systems to fail. Locating lift stations outside of flood-prone areas and constructing them to handle higher capacities will eliminate backflow and the bypass of waste into waterways.
Hazards Addressed	River Flooding & Flash Flooding
Priority	II
Responsible Dept./Party	Engineering Department
Estimated Cost	$4,000,000
Potential Funding Source	City funds, grants, loans
Mitigation Measure Category	Property Protection Actions & Natural Resources Protection Actions
Target Completion Date	2 years from start date

Inform the public of road closures	
Description	Road closures are done during the repair of roadways, sanitary sewer, storm sewer, water and other utilities. Ensuring citizens and visitors are aware of road closures is a minor step toward preventing transportation incidents. Citizens can be informed via signs, fliers, newsletters, utility bills, local television stations, radio announcements or other reasonable sources.
Hazards Addressed	Transportation Incident
Priority	I
Responsible Dept./Party	Public Works, Engineering, Fire Department, Fire Department
Estimated Cost	Staff time (minimal costs)
Potential Funding Source	City funds
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Inform the public of road clearance requirements during snow events	
Description	Snow routes are designated so roads can adequately be cleared during and after winter storms. Ensuring residents are informed of road clearance requirements can ease the snow removal process for plows and reduce the number of transportation incidents that occur within Fort Dodge during the winter season. Citizens can be informed of snow routes via signs, fliers, newsletters, utility bills, local television stations, radio announcements or other sources.
Hazards Addressed	Severe Winter Storms and Transportation Incident
Priority	I
Responsible Dept./Party	Public Works Department
Estimated Cost	Minimal to no cost (staff time)
Potential Funding Source	City funds
Mitigation Measure Category	Prevention Actions & Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Encourage participation in the Iowa Floodplain and Storm Water Management Association (IFSMA)	
Description	IFSMA was formed to build public awareness and disseminate general and technical information about storm water management and hazard mitigation. Memberships are available at the individual, agency and student levels. Encouraging participation in IFSMA will assist the City in building an understanding of potential flood risks. Citizens and entities can be informed of IFSMA membership via fliers, newsletters, utility bills, local television stations, radio announcements or other sources.
Hazards Addressed	River Flooding & Flash Flooding
Priority	II
Responsible Dept./Party	City Council, Engineering, Planning, Building Depts.
Estimated Cost	Membership fees and staff time
Potential Funding Source	City funds
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Educate the public on the Nixle program	
Description	Nixle is a notification program that provides the City of Fort Dodge with news and information via SMS, mobile applications, email and web. Educating the public on Nixle is a minor step toward ensuring that citizens are warned of hazards that could affect them. Citizens will be encouraged to enroll in Nixle via fliers, newsletters, utility bills, local television stations, social media sites, radio announcements or other plausible sources. Different from CodeRED/Inspiron & weather radios Nixle is a City-wide notification system that sends mobile messages and emails on crime alerts, missing person notifications, traffic advisories and other warnings.
Hazards Addressed	Thunderstorms and Lightning, Windstorm, River Flooding, Flash Flooding, Tornadoes, Infrastructure Failure, Severe Winter Storms, Transportation Incident, Hazardous Materials, Hailstorms, Landslide, Grass and Wild Land Fires, Terrorism, Radiological, Extreme Heat, Human Disease, Dam/Levee Failure, Sink Holes and Drought.
Priority	I
Responsible Dept./Party	Engineering, Social Media Committee
Estimated Cost	No costs
Potential Funding Source	N/A
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Educate the public on fire hazards	
Description	Ensuring the public is aware and prepared for fire events can help to prevent or reduce the impacts of such hazards. Citizens and entities can be educated on fire hazards via fliers, training, newsletters, utility bills, local television stations, radio announcements or other sources.
Hazards Addressed	Infrastructure Failure (Structural Fire) & Grass and Wild Land Fires
Priority	I
Responsible Dept./Party	Fire Department
Estimated Cost	$30,000
Potential Funding Source	Fire budget, donations
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Build public awareness on human disease	
Description	Human disease can develop from a variety of sources. Building awareness of the causes and treatment of human disease can reduce the chances for disease to spread.
Hazards Addressed	Human Disease
Priority	I
Responsible Dept./Party	Public Health
Estimated Cost	Minimal to no
Potential Funding Source	N/A
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Purchase and install backup energy for the City Water Plant & City Wells	
Description	Installing backup energy for the City Water Plant & Wells will eliminate the disruption of water distribution services due to energy failure. This can be useful during other events that could cause energy disruption.
Hazards Addressed	Infrastructure Failure (Energy Disruption), Severe Winter Storms, Thunderstorm and Lightning, Windstorms, Tornadoes and Hailstorms
Priority	I
Responsible Dept./Party	Engineering and Water Treatment Plant
Estimated Cost	$3,000,000
Potential Funding Source	City funds, utility funds, grants, loans
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	2013

Implement roadway and bridge projects to improve traffic flow and safety	
Description	Various projects shall be implemented to ensure safety of driver in Fort Dodge. Such projects, including the Cross-town Connector Improvements Project, East Region Storm Sewer Phases 1-3, Veterans Bridge Reconstruction, 1st Avenue North Reconstruction, Highland Park Bridge Reconstruction, Menards Signals Project and others; will work to improve congested areas, ensure bridge safety and traffic safety in general. This will also be beneficial for emergency vehicles using our roadways.
Hazards Addressed	Transportation Incident
Priority	I
Responsible Dept./Party	Engineering Department
Estimated Cost	$100,000,000 (Depending on projects)
Potential Funding Source	City funds, grants, assessment
Mitigation Measure Category	Prevention Actions, Emergency Services Protection Actions
Target Completion Date	Ongoing

Update and enforce floodplain ordinance	
Description	Adopting and enforcing floodplain ordinances is important element in regulating development in the floodplain. Ordinances assist in making flood insurance available to home and business owners and promote safety of residents, businesses and structures.
Hazards Addressed	River Flooding
Priority	II
Responsible Dept./Party	Planning and Building
Estimated Cost	Staff time/consultant costs
Potential Funding Source	City funds
Mitigation Measure Category	Property Protection Actions
Target Completion Date	Update a year from start, enforce ongoing

Acquire property in the floodplain	
Description	Acquiring property located in the floodplain will provide an independent and long-term solution to the problem of river flooding by permanently removing structures located in flood-prone areas.
Hazards Addressed	River Flooding
Priority	III
Responsible Dept./Party	Planning
Estimated Cost	Varies in property acquisition
Potential Funding Source	Grants
Mitigation Measure Category	Property Protection Actions
Target Completion Date	Ongoing (as needed)

Purchase and install additional backup energy for Friendship Haven	
Description	Friendship Haven is a critical facility for the City of Fort Dodge that provides care for multiple elderly patients. With the elderly residents who reside at this facility, it is necessary to ensure that adequate backup energy is available for the entity during energy disruptions.
Hazards Addressed	Infrastructure Failure (Energy Disruption), Severe Winter Storms, Thunderstorm and Lightning, Windstorms, Tornadoes and Hailstorms
Priority	I
Responsible Dept./Party	Friendship Haven
Estimated Cost	$5,000 - $25,000
Potential Funding Source	Friendship Haven, grants, loans.
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	2015

Bury Powerlines	
Description	Burying powerlines will reduce the number energy disruptions Fort Dodge experiences. Powerlines that lie underground are protected from outside elements such as windstorms, severe winter storms, thunderstorms and lightning, hailstorms, tornadoes and other events.
Hazards Addressed	Infrastructure Failure (Energy Disruption), Severe Winter Storms, Thunderstorm and Lightning, Windstorms, Tornadoes and Hailstorms
Priority	I
Responsible Dept./Party	Engineering, Planning and MidAmerican
Estimated Cost	$10,000,000
Potential Funding Source	City funds, electric utility assessments, loans,
Mitigation Measure Category	Prevention Actions and Structural Mitigation Actions
Target Completion Date	Ongoing

Establish additional snow fences	
Description	Snow fences can reduce maintenance costs and protect lives by providing a solution to blowing snow. Making roads much safer, snow fences reduce unwanted snowdrifts, which may cause a loss of vehicle control, reduce sight distance on curves and at intersections, impair motorist visibility, promote ice formation, bury informational signs and render safety barriers ineffective (Tabler & Associates, 1991).
Hazards Addressed	Severe Winter Storms
Priority	I
Responsible Dept./Party	Public Works
Estimated Cost	Staff time $5,000-$10,000 initial cost for poles/rolls of fencing, maintain $1,000/yr
Potential Funding Source	City funds
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	Ongoing for maintenance

Make improvements to hydro-electric dam to drop impoundment levels	
Description	Improvements to the dam could include reducing the height, removing the gates or entirely removing the dam. By taking these actions, there is less chance that the City will experience a dam or levee failure.
Hazards Addressed	Dam/Levee Failure
Priority	III
Responsible Dept./Party	Engineering Department
Estimated Cost	$9,000,000 depending on final plans
Potential Funding Source	City funds, loans, grants
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	5 years from start project

Upon City Council review it was suggested that the Salvation Army be contacted regarding a backup energy project. The following action was then added to the plan:

Purchase and install additional backup energy for the Salvation Army	
Description	The Salvation Army is a critical facility for the City of Fort Dodge that provides resources such as food, clothing, shelter and other support for individuals in need of assistance. It is necessary to ensure that adequate backup energy is available for the facility during energy disruptions as this is a significant shelter available during disasters within the City of Fort Dodge.
Hazards Addressed	Infrastructure Failure (Energy Disruption), Severe Winter Storms, Thunderstorm and Lightning, Windstorms, Tornadoes and Hailstorms
Priority	I
Responsible Dept./Party	Salvation Army
Estimated Cost	$5,000 - $25,000
Potential Funding Source	Grants, Donations
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	1 year after start date

The following table is a comprehensive list of the Fort Dodge Hazard Mitigation Actions:

Hazard Mitigation Action Plan Overview				
Mitigation Strategies	**Start Date - Time Frame**			**Responsible Parties**
	0-1 year	2-4 years	5+ years	
Goal 1: Protect the lives, safety and property of all residents, businesses and other entities of Fort Dodge from potential hazards				
Objective 1.1: Ensure all residents, businesses and other entities of Fort Dodge are aware of potential hazards and their responsibilities prior to such events				
1.1.1. Educate the public on weather radios				Emergency Management
1.1.2. Educate the public on CodeRED/Inspiron				Emergency Management, Telecommunications Board
1.1.3. Identify areas and develop list of potential targets for terrorism				Emergency Management, Law Enforcement, Schools, Hospitals
1.1.4. Build public awareness on HAZMAT reporting				Region V HAZMAT, County Health, DNR
1.1.5. Inform the public of road closures				Public Works, Engineering, Fire Department, Fire Department
1.1.6. Inform the public of road clearance requirements during snow events				Public Works Department
1.1.7. Encourage participation in the Iowa Floodplain and Storm Water Management Association				City Council, Engineering, Planning, Building Depts.
1.1.8. Educate the public on the Nixle program				Engineering, Social Media Committee
1.1.9. Educate the public on fire hazards				Fire budget, donations
1.1.10. Build public awareness on human disease				Public Health
1.1.11. Educate the public on the existing Medication Disposal Program (Hy-Vee)				HyVee, Police Department, County Health Department, Sheriff Department
Objective 1.2: Implement hazard mitigation projects to protect the lives, safety and property of all residents, businesses and other entities in Fort Dodge				
1.2.1. Update road signs to meet the Federal Highway Administration's (FHWA's) retroreflectivity requirements				911, Public Works and Engineering Departments
1.2.2. Televise sanitary and storm sewer systems to identify necessary repairs				Public Works and Engineering
1.2.3. Implement sanitary sewer and storm water management projects to reduce flash flooding				Engineering Department
1.2.4. Run sanitary sewer evaluation study				Engineering Department
1.2.5. Establish tornado safe rooms where found feasible				City, schools, rec center, fire department, grants, ICCC, etc.
1.2.6. Stabilize tributaries				Engineering and DNR
1.2.7. Purchase and install backup energy for the City Lift Stations				Engineering Department, Public Works

Mitigation Strategies	Start Date - Time Frame			Responsible Parties
	0-1 year	2-4 years	5+ years	
1.2.8. Identify areas where the landslide potential is high and address such issues				Engineering Department
1.2.9. Reconstruct the lift station to reduce damages from flooding				Engineering Department
1.2.10. Purchase and install backup energy for the City Water Plant & City Wells				Engineering and Water Treatment Plant
1.2.11. Implement roadway and bridge projects to improve traffic flow and safety				Engineering Department
1.2.12. Acquire property in the floodplain				Planning
1.2.13. Purchase and install additional backup energy for Friendship Haven				Friendship Haven
1.2.14. Purchase and install additional backup energy for the Salvation Army				Salvation Army
1.2.15. Bury Powerlines				Engineering, Planning and MidAmerican
1.2.16. Make improvements to hydro-electric dam to drop impoundment levels				Engineering Department
Objective 2.1: Develop and enforce policies that will prevent and/or reduce the affects of potential hazards				
2.1.1. Develop and implement an ordinance for storm water management				City Council, Engineering and Planning
2.1.2. Prosecute illegal drug actions				Law Enforcement, Fire Department, County Attorney
2.1.3. Appoint a fire marshal				Fire Department
2.1.4. Strive to meet the National Fire Protection Agency's (NFPA) Safety Codes and Standards				Fire Department
2.1.5. Update and enforce floodplain ordinance				Planning and Building
Objective 2.2: Establish programs to assist residents, businesses and other entities with preventing and/or reducing the impact of hazards				
2.2.1. Develop a program to assist in the distribution of fire protection devices				Fire Department
2.2.2. Establish a HAZMAT disposal program				Landfill, County DNR, County Health, Public Works
2.2.3. Continue public health clinics				County Health Department, Trinity, Community Health & Fire Department
2.2.4. Review and assess mutual aid agreements with surrounding fire departments				Fire Department
Objective 2.3: Ensure all emergency responders are adequately equipped to prevent and reduce the affects of potential hazards				
2.3.1. Ensure emergency responders have adequate equipment and training				City Council, City Manager, each appropriate department
2.3.2. Update all emergency radios for the 2013 narrowband mandate				Police Department, Fire Department, Public Works

Chapter 7 -Plan Maintenance and Adoption

This chapter provides an overview of the overall strategy for plan maintenance and outlines the method and schedule for monitoring, updating, and evaluating the plan. The chapter also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

Monitoring, Evaluating, and Updating Plan

Hazard Mitigation Planning Committee

With the adoption of this plan, the Fort Dodge City Council will monitor, evaluate and update the plan. They will monitor the plan approximately every 1 to 2 months, evaluate the plan once a year for potential changes and update the plan with five years. The Fort Dodge City Manager will be in charge of making it a priority to update the Fort Dodge Hazard Mitigation Plan within the five year deadline. If the City of Fort Dodge does decide to update the plan, the City Manager will be responsible to initiate the update. If there is not an update within four years of the plan being adopted, then the process will begin to update the plan. The City Manager will coordinate the meeting time and place and will notify the other members of the committee. If a new committee needs to be formed, it should be compromised of representatives of the city government, businesses, citizens, emergency staff, school board, etc. The following is a list of actions that different departments in the City of Fort Dodge will be responsible for when updating the plan:

- Meet annually to monitor and evaluate the implementation of the hazard mitigation plan
- Act as a forum for hazard mitigation issues
- Disseminate hazard mitigation ideas and activities to all members of the committee
- Pursue the implementation of hazard mitigation actions that are included in this plan
- Monitor any sources of possible funding to help the community implement the plan's recommended actions
- Monitor and assist in implementation and update of this plan
- Inform and gather input from the public

The primary duty of the Fort Dodge Hazard Mitigation Committee, in relation to maintaining and updating this plan, is to see that the plan is successfully carried out and report to the City Council, and make information available to the public, on the status of the plan and the progress of hazard mitigation actions.

The plan will be updated within five years if it is found during the evaluation process that the plan has become outdated. If the plan is not updated within five years, then it will be updated and resubmitted to HSEMD FEMA for approval. The Fort Dodge City Council will be responsible for initiating and approving the hazard mitigation plan update process.

Procedures and Techniques for Future Reviews and Updates

Task A. Evaluate the effectiveness of the Planning Process

1. Reconvene the planning team
2. Review your planning process and items to discuss:
    a. Building the planning team
    b. Engaging the public
    c. Data gathering and analysis
    d. Coordinating with other agencies

Task B. Evaluate the effectiveness of your actions

1. What were the results of the implementation action? Did the results achieve the goals/objectives outlined in the plan? Did the actions have the intended results?

2. Were the actions cost-effective? Did, or would, the project result in the reduction of potential losses?
3. Document actions that were slow to start, or not implemented.

Task C. Determine why actions worked or did not work. Possible reasons are, but are not limited too:
1. Lack of available resources
2. The political, or popular, support for, or against, the action
3. The availability of outside funding
4. The workloads of the responsible parties
5. The actual time necessary to implement the actions

Incorporation into Existing Planning Mechanisms

Where possible, the City of Fort Dodge will use existing plans and/or programs to implement hazard mitigation actions. Based on the evaluation of the plan by the Fort Dodge Hazard Mitigation Committee, the City of Fort Dodge will continue to plan and implement programs to reduce the loss of life and property from hazards that affect the community. The mitigation actions in the plan could be incorporated with the following examples of other planning mechanisms:

- Fort Dodge City Code of Ordinances
- City of Fort Dodge Zoning Ordinances
- Fort Dodge Comprehensive Plan
- Other plans that could be developed in the future, such as water conservation plans, stormwater management plans, and parks and recreation plans.

Continued Public Involvement

The update process provides an opportunity to publicize success stories from the plan's implementation and seek additional public comment. A public hearing(s) to receive public comment on the plan maintenance and updating will be held during the time that the plan is going through the update process. When the Fort Dodge Hazard Mitigation Committee reconvenes for the update, it will coordinate with all the members participating in the planning process, including those who joined the Fort Dodge Hazard Mitigation Committee after the initial effort, to update and revise the plan. Public notice will be posted and public participation will be invited, at a minimum, through available posting sources and press releases to local media outlets.

Appendix A: References

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Additional Resources:
http://www.nws.noaa.gov/
http://www.fema.gov
http://www.zetnet.co.uk/sigs/weather/Met_Codes/beaufort.htm
http://www.spc.noaa.gov/faq/tornado/beaufort.html
http://www.infoplease.com/ipa/A0001374.html
http://www.weather.gov/os/windchill/index.shtml
http://www.weather.gov/om/heat/index.shtml
http://en.wikipedia.org/wiki/Heat_Index
http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms

http://www.iowadnr.gov/spills/data.html
http://www.yubacity.net/documents/News-Events/Multi-Hazard-Mitigation/MultiHazardSection42Vulnerability.pdf
http://www.ewashtenaw.org/government/departments/planning_environment/planning/hazard_html#washtenaw
http://www.co.durham.nc.us/departments/emgt/Documents/HMP/Durham_County_Mitigation_Plan_Body_21MAY2007.pdf
http://www.wildfire-environmental.com
http://www.roanokeva.gov/85256A8D0062AF37/CurrentBaseLink/N255LSKB047DLANEN
http://www.naturalhazards.org/hazards/thunderstorm/index.html
http://www.fema.gov/pdf/areyouready/natural_hazards_1.pdf
www.rcabrisk.org/docman/doc_download/25-june-09-institution
http://www.crh.noaa.gov/images/dvn/downloads/Clim_IA_01.pdf
http://www.erh.noaa.gov/er/cae/svrwx/hail.htm
http://www.noaawatch.gov/themes/heat.php
www.health.ri.gov/seasonal/summer/keepcool.ppt
http://www.iowa-pipeline.com/Index.html
http://scorecard.org/env-releases/water/iwi-county.tcl?fips_county_code=54075#summary
http://www.extension.iastate.edu/Publications/IAN701.pdf
http://firehydrant.org/info/faqs_ask3.html

Appendix B: Glossary of Hazard Mitigation Terms

Acceleration: The rate of change of velocity with respect to time. Acceleration due to gravity at the earth's surface is 9.8 meters per second squared (9.8 m2). That means that every second that something falls toward the surface of earth its velocity increases by 9.8 meters per second.

Anchoring: Special connections made to ensure that a building will not float off, blow off or be pushed off its foundation during a flood or storm.

Asset: Any manmade or natural feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.

Base Flood: Flood that has a 1 percent probability of being equaled or exceeded in any given year. Also known as the 100-year flood.

Base Flood Elevation (BFE): Elevation of the base flood in relation to a specified datum, such as the National Geodetic Vertical Datum of 1929. The Base Flood Elevation is used as the standard for the National Flood Insurance Program.

Basement: Any floor level below grade.

Bedrock: The solid rock that underlies loose material, such as soil, sand, clay, or gravel.

Building: A structure that is walled and roofed, principally above ground and permanently affixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.

Community Rating System (CRS): A National Flood Insurance Program (NFIP) that provides incentives for NFIP communities to complete activities that reduce flood hazard risk. When the community completes specified activities, the insurance premiums of policyholders in these communities are reduced.

Computer-Aided Design and Drafting (CADD): A computerized system enabling quick and accurate electronic 2-D and 3-D drawings, topographic mapping, site plans, and profile/cross-section drawings.

Consequences: The damages, injuries, and loss of life, property, environment, and business that can be quantified by some unit of measure, often in economic or financial terms.

Contour: A line of equal ground elevation on a topographic (contour) map.

Critical Facility: Facilities that are critical to the health and welfare of the population and that are especially important during and following hazard events. Critical facilities include shelters, police and fire stations, schools, childcare centers, senior citizen centers, hospitals, disability centers, vehicle and equipment storage facilities, emergency operations centers, and city hall. The term also includes buildings or locations that, if damaged, would create secondary disasters, such as hazardous materials facilities, vulnerable facilities, day care centers, nursing homes, and housing likely to contain occupants who are not very mobile. Other critical city infrastructure such as telephone exchanges and water treatment plants are referred to as lifelines. See Lifelines.

Crosswalk: The crosswalk is a tool for jurisdictions to use in developing hazard mitigation plans, providing guidance concerning the requirements and recommendations to ensure the plans are in compliance with Section 322 of the Disaster Mitigation Act of 2000. The latest crosswalk should always accompany each plan when submitted to the State and FEMA Region offices. It is then used by the State and FEMA Region plan reviewers in the plan review process of evaluating the plans from local or multi-jurisdiction entities to record comments on whether the plans satisfactorily meet or do not meet the required criteria for approval by FEMA.

Dam Breach Inundation Area: The area flooded by a dam failure or programmed release.

Debris: The scattered remains of assets broken or destroyed in a hazard event. Debris caused by a wind or water hazard event can cause additional damage to other assets.

Development: Any man-made change to real estate.

Department of Homeland Security (DHS): commonly known in the United States as "Homeland Security", is a Cabinet department of the U.S. federal government with the responsibility of protecting the territory of the U.S. from terrorist attacks and responding to natural disasters. The Department of Homeland Security works in the civilian sphere to protect the United States within, at, and outside its borders. Its goal is to prepare for, prevent, and respond to domestic emergencies, particularly terrorism. On March 1, 2003, DHS absorbed the now defunct United States Immigration and Naturalization Service and assumed its duties. In doing so, it divided the enforcement and services functions into two separate and new agencies – U.S. Immigration and Customs Enforcement and U.S. Citizenship and Immigration Services. The creation of DHS constitutes the biggest reorganization of U.S. government in American history and the most substantial reorganization of federal government agencies since the National Security Act of 1947, which placed the different military departments under a secretary of defense and created the National Security Council and Central Intelligence Agency. DHS also constitutes the most diverse merger of federal functions and responsibilities, incorporating 22 government agencies into a single organization.

Digitize: To convert electronically points, lines, and area boundaries shown on maps into x, y coordinates (e.g., latitude and longitude, universal transverse mercator (UTM), or table coordinates) for use in computer applications

Duration: How long a hazard event lasts.

Earthquake: A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of earth's tectonic plates.

Emergency: Any hurricane, tornado, storm, flood, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, drought, fire, explosion, or other catastrophe in any part of the United States which requires federal emergency assistance to supplement State and local efforts to save lives and protect property, public health and safety, or to avert or lessen the threat of a disaster. Defined in Title V of Public Law 93-288, Section 102(1).

Emergency Operations Center (EOC): A facility that houses communications equipment that is used to coordinate the response to a disaster or emergency.

Emergency Operations Plan (EOP): Sets forth actions to be taken by State or local governments for response to emergencies or major disasters.

Emergency Response Plan: A document that contains information on the actions that may be taken by a governmental jurisdiction to protect people and property before, during, and after a disaster.

Extent: The size of an area affected by a hazard or hazard event.

Fault: A fracture in the continuity of a rock formation caused by a shifting or dislodging of the earth's crust, in which adjacent surfaces are differentially displaced parallel to the plane of fracture.

Federal Emergency Management Agency (FEMA): An agency of the United States government that helps anticipate, prepare for, and respond to disasters and major civil emergencies. FEMA's main function is to coordinate federal disaster relief activities for natural hazards and terrorist attacks. It coordinates disaster preparedness programs with state and local authorities with nonprofit organizations

setup for response. FEMA was created in 1979 by executive order and in 2003, became part of the Department of Homeland Security.

FIPS: Stands for Federal Information Processing Standards. Under the Information Technology Management Reform Act (Public Law 104-106), the Secretary of Commerce approves standards and guidelines that are developed by the National Institute of Standards and Technology (NIST) for Federal computer systems. These standards and guidelines are issued by NIST as Federal Information Processing Standards (FIPS) for use government-wide. NIST develops FIPS when there are compelling Federal government requirements such as for security and interoperability and there are no acceptable industry standards or solutions.

Fire Potential Index (FPI): Developed by United States Geological Survey (USGS) and United States Forest Service (USFS) to assess and map fire hazard potential over broad areas. Based on such geographic information, national policy makers and on-the-ground fire managers established priorities for prevention activities in the defined area to reduce the risk of managed and wildfire ignition and spread. Prediction of fire hazard shortens the time between fire ignition and initial attack by enabling fire managers to pre-allocate and stage suppression forces to high fire risk areas.

Flash Flood: A flood event occurring with little or no warning where water levels rise at an extremely fast rate.

Flood: A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.

Flood Depth: Height of the flood water surface above the ground surface.

Flood Elevation: Elevation of the water surface above an established datum, e.g. National Geodetic Vertical Datum of 1929, North American Vertical Datum of 1988, or Mean Sea Level.

Flood Hazard Area: The area shown to be inundated by a flood of a given magnitude on a map.

Flood Insurance Rate Map (FIRM): Map of a community, prepared by the Federal Emergency Management Agency, which shows both the special flood hazard areas and the risk premium zones applicable to the community.

Flood Insurance Study (FIS): A study that provides an examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations in a community or communities.

Flood Mitigation Assistance Program (FMA): A planning and project implementation grant program funded by the National Flood Insurance Program. Provides pre-disaster grants to State and local governments for both planning and implementation of mitigation strategies. Grant funds are made available from NFIP insurance premiums, and therefore are only available to communities participating in the NFIP.

Flood of Record: The highest known flood level for the area, as recorded in historical documents.

Floodplain: Any land area, including watercourse, susceptible to partial or complete inundation by water from any source.

Floodproofing: Protective measures added to or incorporated in a building to prevent or minimize flood damage. “Dry floodproofing” measures are designed to keep water from entering a building. “Wet floodproofing” measures minimize damage to a structure and its contents from water that is allowed into a building.

Floodway: The stream channel and that portion of the adjacent floodplain which must remain open to permit conveyance of the base flood. Floodwaters are generally the swiftest and deepest in the floodway. The floodway should remain clear of buildings and impediments to the flow of water.

Freeboard: A margin of safety added to a protection measure to account for waves, debris, miscalculations, lack of scientific data, floodplain fill, or upstream development.

Frequency: A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1 percent chance – its probability – of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.

Fujita Scale of Tornado Intensity: Rates tornadoes with numeric values from F0 to F5 based on tornado wind speed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs, while an F5 indicates severe damage sustained. This scale was updated in 2007 to the **Enhanced Fujita Scale**, with changes to the speeds and rating designations. The scale ratings are now referred to as EF0 through EF5.

Functional Downtime: The average time (in days) during which a function (business or service) is unable to provide its services due to a hazard event.

Geographic Area Impacted: The physical area in which the effects of the hazard are experienced.

Geographic Information System (GIS): A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.

Ground Motion: The vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter, but soft soils can further amplify ground motions.

Hazard: A source of potential danger or adverse condition. An event or physical condition that has the potential to cause fatalities, injuries, property and infrastructure damage, agriculture loss, damage to the environment, interruption of business, or other types of harm or loss. Hazards, as defined in this study, will include naturally occurring events such as floods, dam failures, levee failures, tornadoes, high winds, hailstorms, lightning, severe winter storms, extreme heat, drought, expansive soils, urban fires, wildfires that strike populated areas, and earthquakes. A natural event is a hazard when it has the potential to harm people or property. For purposes of this study, hazardous materials events are also included.

Hazard Event: A specific occurrence of a particular type of hazard.

Hazard Identification: The process of defining and describing a hazard, including its physical characteristics, magnitude and severity, probability and frequency, causative factors, and locations or areas affected.

Hazard Mitigation: Sustained actions taken to reduce or eliminate long-term risk to human life and property from natural and technological hazards and their effects. Note that this emphasis on long-term risk distinguishes mitigation from actions geared primarily to emergency preparedness and short-term recovery.

Hazard Mitigation Grant Program (HMGP): Authorized under Section 404 of the Stafford Act; a FEMA disaster assistance grant program that funds mitigation projects in conformance with post-disaster

mitigation plans required under Section 409 of the Stafford Act. The program is available only after a Presidential disaster declaration.

Hazard Mitigation Plan: The plan resulting from a systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards present in society that includes he actions needed to minimize future vulnerability to hazards. Section 409 of the Stafford Act requires the identification and evaluation of mitigation opportunities, and that all repairs be made to applicable codes and standards, as condition for receiving Federal disaster assistance. Enacted to encourage identification and mitigation of hazards at all levels of government.

Hazard Profile: A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent. In most cases, a community can most easily use these descriptors when they are recorded and displayed as maps.

HAZUS-MH (Hazards U.S. – Multi-Hazards): A GIS-based nationally standardized estimation tool developed by FEMA for losses from the hazard events of earthquake, hurricane winds and flooding. Other hazards, such as, tornadoes, are being considered to be added.

Hydrology: The science of dealing with the waters of the earth. A flood discharge is developed by a hydrologic study.

Infrastructure: The public services of a community that have a direct impact on the quality of life. Infrastructure includes communication technology such as phone lines or Internet access, vital services such as public water supplies and sewer treatment facilities, and includes an area's transportation system such as airports, heliports; highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depots, and waterways, canals, locks, and regional dams.

Insurance Service Office, Inc. (ISO): An insurance organization that administers several programs that rate a community's hazard mitigation activities.

Iowa Homeland Security and Emergency Management Division (HSEMD): The Iowa Homeland Security and Emergency Management Division (HSEMD) plans for and responds to both natural and human-caused disasters. The Division helps to coordinate activities before, during and after emergencies through partnerships with local, state, federal and private agencies. The Division's main objectives are to preserve life and reduce the impact of disasters.

Intensity: A measure of the effects of a hazard event at a particular place.

Landslide: Downward movement of a slope and materials under the force of gravity.

Lifelines: Transportation and utility systems that are essential to the function of a region and to the well being of its inhabitants. Transportation systems include highways, air, rail, and waterways, ports, and harbors. Utility systems include electric power, gas and liquid fuels, telecommunications, water, and wastewater.

Liquefaction: The phenomenon that occurs when ground shaking causes loose soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength.

Lowest Floor: Under the NFIP, the lowest floor of the lowest enclosed area (including basement) of a structure.

Magnitude: A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard.

Mitigation: Sustained action taken to reduce or eliminate the long-term risk to human life and property from natural and technological hazards and their effects. Note that this emphasis on long-term risk distinguishes mitigation from actions geared primarily to emergency preparedness and short-term recovery (Burby, 1998).

National Flood Insurance Program (NFIP): A federal program created by Congress in 1968 that provides the availability of flood insurance to communities in exchange for the adoption and enforcement of a minimum floodplain management ordinance specified in 44 CFR §60.3. The ordinance regulates new and substantially damaged or improved development in identified flood hazard areas.

National Geodetic Vertical Datum of 1929 (NGVD): Datum established in 1929 and used in the NFIP as a basis for measuring flood, ground, and structural elevations, previously referred to as Sea Level Datum or Mean Sea Level. The Base Flood
Elevations shown on most of the Flood Insurance Rate Maps issued by the Federal Emergency Management Agency are referenced to NGVD.

National Weather Services (NWS): Prepares and issues flood, severe weather, and coastal storm warnings and can provide technical assistance to Federal and state entities in preparing weather and flood warning plans.

Planimetric: Describes maps that indicate only man-made features like buildings.

Planning: The act or process of making or carrying out plans; the establishment of goals, policies and procedures for a social or economic unit.

Planning for Post-Disaster Reconstruction: The process of planning (preferably prior to an actual disaster) those steps the community will take to implement long-term reconstruction with one of the primary goals being to reduce or minimize its vulnerability to future disasters. These measures can include a wide variety of land-use planning tools, such as acquisition, design review, zoning, and subdivision review procedures. It can also involve coordination with other types of plans and agencies but is distinct from planning for emergency operations, such as restoration of utility services and basic infrastructure.

Preparedness: Activities to ensure that people are ready for a disaster and respond to it effectively. Preparedness requires figuring out what will be done if essential services break down, developing a plan for contingencies, and practicing the plan.

Probability: A statistical measure of the likelihood that a hazard event will occur.

Project Impact: A program that encourages business, government agencies and the public to work together to build disaster-resistant communities.

Reconstruction: The long-term process of rebuilding the community's destroyed or damaged buildings, public facilities, or other structures.

Recovery: The process of restoring normal public or utility services following a disaster, perhaps starting during but extending beyond the emergency period to that point when the vast majority of such services, including electricity, water, communications, and public transportation have resumed normal operations. Recovery activities necessary to rebuild after a disaster include rebuilding homes, businesses and public facilities, clearing debris, repairing roads and bridges, and restoring water, sewer and other essential services. Short-term recovery does not include the reconstruction of the built environment, although reconstruction may commence during this period.

Recurrence Interval: The time between hazard events of similar size in a given location. It is based on the probability that the given event will be equaled or exceeded in any given year.

Repetitive Loss Property: A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least $1000 each have been paid within any 10-year period since 1978. While Repetitive Loss Properties constitute only 2% of insured properties, they account for 40% of flood damage claims against the NFIP.

Replacement Value: The cost of rebuilding a structure. This is usually expressed in terms of cost per square foot, and reflects the present-day cost of labor and materials to construct a building of a particular size, type and quality.

Retrofitting: Modifications to a building or other structure to reduce its susceptibility to damage by a hazard.

Richter Scale: A numerical scale of earthquake magnitude devised by seismologist C.F. Richter in 1935.

Risk: The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

Risk Assessment: A process or method for evaluating risk associated with a specific hazard and defined in terms of probability and frequency of occurrence, magnitude and severity, exposure and consequences. Also defined as: "The process of measuring the potential loss of life, personal property, housing, public facilities, equipment, and infrastructure; lost jobs, business earnings, and lost revenues, as well as indirect losses caused by interruption of business and production; and the public cost of planning, preparedness, mitigation, response, and recovery. (Burby, 1998).

Riverine: Of or produced by a river.

Scale: A proportion used in determining a dimensional relationship; the ratio of the distance between two points on a map and the actual distance between the two points on the earth's surface.

Scarp: A steep slope.

Scour: Removal of soil or fill material by the flow of flood waters. The term is frequently used to describe storm-induced, localized conical erosion around pilings and other foundation supports where the obstruction of flow increases turbulence.

Seismicity: Describes the likelihood of an area being subject to earthquakes.

Special Flood Hazard Area (SFHA): An area within a floodplain having a 1 percent or greater chance of flood occurrence in any given year (100-year floodplain); represented on Flood Insurance Rate Maps by darkly shaded areas with zone designations that include the letter A or V.

Stafford Act: The Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-107 was signed into law November 23, 1988 and amended the Disaster Relief Act of 1974, PL 93-288. The Stafford Act is the statutory authority for most Federal disaster response activities, especially as they pertain to FEMA and its programs.

State Hazard Mitigation Team: Composed of key State agency representatives, the team evaluates hazards, identifies strategies, coordinates resources, and implements measures that will reduce the vulnerability of people and property to damage from hazards. The Oklahoma State Hazard Mitigation Team is convened by the Oklahoma Department of Emergency Management (ODEM), and includes the State departments of Agriculture, Climatological Survey, Commerce, Environmental Quality, Health, Human Services, Insurance, Transportation, Wildlife Conservation, Conservation Commission,

Corporation Commission, Historical Society, Insurance Commission, Water Resources Board, Association of County Commissioners (AACCO), Oklahoma Municipal League (OML), Department of Housing and Urban Development (HUD), and the U.S. Army Corps of Engineers (USACE).

State Hazard Mitigation Officer (SHMO): The representative of state government who is the primary point of contact with FEMA, other state and Federal agencies, and local units of government in the planning and implementation of pre- and post-disaster mitigation activities.

Stormwater Management: Efforts to reduce the impact of stormwater or snowmelt runoff on flooding and water quality.

Stormwater Detention: The storing of stormwater runoff for release at a restricted rate after the storm subsides, or the flood crest passes.

Substantial Damage: Damage of any origin sustained by a structure in a Special Flood Hazard Area whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage.

Surface Faulting: The differential movement of two sides of a fracture – in other words, the location where the ground breaks apart. The length, width, and displacement of the ground characterize surface faults.

Tectonic Plate: Torsionally rigid, thin segments of the earth's lithosphere that may be assumed to move horizontally and adjoin other plates. It is the friction between plate boundaries that cause seismic activity.

Topographic: Characterizes maps that show natural features and indicate the physical shape of the land using contour lines. These maps may also include man-made features.

Tornado: A violently rotating column of air extending from a thunderstorm to the ground.

Vulnerability: Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power – if an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct ones.

Vulnerability Assessment: The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard events on the existing and future built environment.

Wildfire: An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

Zone: A geographical area shown on a Flood Insurance Rate Map (FIRM) that reflects the severity or type of flooding in the area.

Appendix C: Historical Data

Key								
	Mag = Magnitude		Dth = deaths		PrD = Property Damage			
	CrD = (4) crop damage		Inj = Injuries					
Location	**Date**	**Time**	**Type**	**Mag**	**Dth**	**Inj**	**PrD**	**CrD**
Webster County	1/11/1993	9:00 AM	Snow And Heavy Snow	N/A	0	0	$50,000	$0
Webster County	1/20/1993	4:30 AM	Ice Storm	N/A	0	0	$50,000	$0
Webster County	2/8/1993	12:00 AM	Freezing Rain	N/A	0	0	$1,000	$0
Webster County	2/10/1993	12:00 AM	Freezing Rain	N/A	1	0	$50,000	$0
Webster County	2/20/1993	12:00 AM	Heavy Snow	N/A	0	0	$50,000	$0
Northwest Iowa	9/15/1993	2:00 AM	Frost	N/A	0	0	$0	$50,000,000
Webster County	9/27/1993	5:00 AM	Frost	N/A	0	0	$0	$500,000
Northern Iowa	10/2/1993	2:00 AM	Frost	N/A	0	0	$0	$500,000
Webster County	11/24/1993	9:00 AM	Freezing Rain	N/A	0	0	$5,000	$0
Webster County	12/1/1993	5:00 AM	Freezing Rain	N/A	0	0	$5,000	$0
Webster County	1/2/1994	6:00 AM	Snow/heavy Snow	N/A	0	0	$500,000	$0
All of Iowa	1/14/1994	3:00 AM	Extreme Cold	N/A	1	0	$500,000	$0
All of Iowa	1/17/1994	6:00 AM	Extreme Cold	N/A	0	0	$500,000	$0
Webster County	1/26/1994	12:00 AM	Freezing Rain/sleet	N/A	0	0	$50,000	$0
Webster County	1/26/1994	12:00 AM	Snow And Heavy Snow	N/A	0	0	$50,000	$0
Northwest Iowa	2/22/1994	10:00 AM	Heavy Snow	N/A	0	0	$500,000	$0
All of Iowa	2/24/1994	12:00 AM	Ground Blizzard	N/A	0	0	$50,000	$0
Webster County	12/7/1994	6:00 AM	Heavy Snow	N/A	0	0	$500,000	$0
Webster County	1/26/1995	12:00 AM	Freezing Rain	N/A	0	0	$100,000	$0
All of Iowa	2/10/1995	12:00 AM	Extreme Wind Chill	N/A	0	0	$50,000	$0
Northern Iowa	3/6/1995	9:00 AM	Heavy Snow	N/A	0	0	$25,000	$0
Webster County	4/10/1995	6:00 AM	Freezing Rain	N/A	0	0	$50,000	$0

Webster County	5/1/1995	-	Cold And Wet Conditions	N/A	0	0	$0	$66,000,000
Much of Iowa	9/21/1995	12:00 AM	Freeze	N/A	0	0	$0	$2,000,000,000
Much of Iowa	11/27/1995	5:00 AM	Snow	N/A	0	0	$50,000	$0
Webster County	12/8/1995	10:00 AM	Blizzard	N/A	0	0	$50,000	$0
Webster County	12/8/1995	12:00 AM	Extreme Wind Chill	N/A	0	0	$0	$0
Webster County	12/8/1995	2:00 AM	Snow	N/A	0	0	$20,000	$0
Webster County	1/18/1996	9:00 AM	Blizzard	N/A	1	0	$0	$0
Webster County	1/18/1996	2:00 AM	Extreme Windchill	N/A	0	0	$0	$0
Webster County	1/26/1996	12:00 PM	Blizzard	N/A	0	0	$50,000	$0
Webster County	1/26/1996	12:00 AM	Heavy Snow	N/A	2	0	$600,000	$0
Webster County	1/28/1996	8:00 PM	Blizzard	N/A	0	0	$50,000	$0
Webster County	2/1/1996	4:00 PM	Extreme Windchill	N/A	0	0	$0	$0
Webster County	2/15/1996	8:00 AM	Heavy Snow	N/A	0	0	$10,000	$0
Webster County	3/24/1996	10:00 PM	Blizzard	N/A	0	0	$0	$0
Webster County	5/1/1996	12:00 AM	Unseasonable Cold	N/A	0	0	$0	$5,100,000
Webster County	9/14/1996	2:00 AM	Early Frost	N/A	0	0	$0	$42,000,000
Webster County	11/14/1996	4:00 PM	Ice Storm	N/A	0	0	$150,000	$0
Webster County	12/23/1996	6:00 PM	Extreme Cold	N/A	0	0	$0	$0
Webster County	12/25/1996	12:00 PM	Heavy Snow	N/A	0	0	$0	$0
Webster County	1/9/1997	6:30 PM	Blizzard	N/A	0	0	$75,000	$0
Webster County	1/9/1997	9:00 PM	Extreme Windchill	N/A	0	0	$0	$0
Webster County	1/15/1997	9:00 PM	Extreme Windchill	N/A	0	0	$750,000	$0
Webster County	2/3/1997	2:00 PM	Heavy Snow	N/A	0	0	$500,000	$0
Webster County	5/13/1997	12:00 AM	Frost/freeze	N/A	0	0	$1,000,000	$100,000
Webster County	12/21/1997	2:00 PM	Ice Storm	N/A	0	0	$88,000	$0
Webster County	1/4/1998	6:30 AM	Ice Storm	N/A	0	0	$1,000,000	$0
Webster County	1/20/1998	6:00 PM	Heavy Snow	N/A	0	0	$230,000	$0
Webster County	3/7/1998	9:00 PM	Heavy Snow	N/A	1	0	$2,000,000	$0

Webster County	3/17/1998	2:00 AM	Ice Storm	N/A	0	0	$300,000	$0
Webster County	12/30/1998	9:00 AM	Heavy Snow	N/A	0	0	$0	$0
Webster County	1/1/1999	3:00 PM	Winter Storm	N/A	2	0	$440,000	$0
Webster County	1/17/1999	11:00 PM	Blizzard	N/A	0	0	$70,000	$0
Webster County	2/11/1999	9:00 AM	Ice Storm	N/A	0	0	$230,000	$0
Webster County	3/8/1999	12:00 AM	Winter Storm	N/A	0	0	$450,000	$0
Webster County	9/21/1999	1:00 AM	Extreme Cold	N/A	0	0	$0	$15,000,000
Webster County	2/17/2000	11:00 PM	Winter Storm	N/A	0	0	$280,000	$0
Webster County	12/10/2000	9:00 PM	Winter Storm	N/A	0	0	$1,300,000	$0
Webster County	12/16/2000	8:00 AM	Blizzard	N/A	0	0	$1,000,000	$0
Webster County	12/18/2000	9:00 AM	Blizzard	N/A	0	0	$925,000	$0
Webster County	12/21/2000	12:00 PM	Blizzard	N/A	0	0	$540,000	$0
Webster County	3/1/2002	5:00 PM	Heavy Snow	N/A	0	0	$80,000	$0
Webster County	3/8/2002	4:00 PM	Ice Storm	N/A	0	0	$375,000	$0
Webster County	1/28/2003	5:00 AM	Freezing Rain	N/A	0	0	$0	$0
Webster County	2/14/2003	11:00 AM	Winter Storm	N/A	0	0	$170,000	$0
Webster County	3/4/2003	10:00 AM	Heavy Snow	N/A	0	0	$20,000	$0
Webster County	4/4/2003	8:00 AM	Ice Storm	N/A	0	0	$100,000	$0
Webster County	4/6/2003	3:00 PM	Winter Storm	N/A	0	0	$95,000	$0
Webster County	12/2/2003	8:00 PM	Heavy Snow	N/A	0	0	$0	$0
Webster County	2/2/2004	4:00 AM	Heavy Snow	N/A	0	0	$0	$0
Webster County	1/4/2005	5:00 PM	Heavy Snow	N/A	0	0	$510,000	$0
Webster County	3/21/2006	4:00 AM	Heavy Snow	N/A	0	0	$50,000	$0
Webster County	1/20/2007	11:00 PM	Heavy Snow	N/A	0	0	$0	$0
Webster County	2/24/2007	3:00 AM	Winter Storm	N/A	0	0	$250,000	$0
Webster County	3/1/2007	4:00 AM	Blizzard	N/A	0	0	$100,000	$0
Webster County	2/4/2008	5:00 AM	Ice Storm	N/A	0	0	$5,000	$0
Webster County	3/27/2008	5:00 AM	Heavy Snow	N/A	0	0	$0	$0

Webster County	12/8/2008	2:00 PM	Winter Storm	N/A	0	0	$10,000	$0
Webster County	4/5/2009	5:00 AM	Winter Storm	N/A	0	0	$0	$0
Webster County	10/10/2009	2:00 AM	Frost/freeze	N/A	0	0	$0	$3,000,000
Webster County	12/8/2009	2:00 AM	Heavy Snow	N/A	0	0	$10,000	$0
Webster County	12/9/2009	1:00 AM	Blizzard	N/A	0	0	$50,000	$0
Webster County	########	4:00 PM	Ice Storm	N/A	0	0	$500,000	$0
Webster County	########	6:00 PM	Winter Storm	N/A	0	0	$50,000	$0
Webster County	1/6/2010	1:00 PM	Winter Storm	N/A	0	0	$25,000	$0
Webster County	1/20/2010	6:00 AM	Ice Storm	N/A	0	0	$100,000	$0
Webster County	1/25/2010	9:00 AM	Blizzard	N/A	0	0	$75,000	$0
TOTALS	**-**	**-**	**Winter Conditions**	**-**	**8**	**0**	**$17,819,000**	**$2,182,200,000**
Webster County	8/1/2003	12:00 AM	Drought	N/A	0	0	$645,200,000	$0
Webster County	8/1/2001	12:00 AM	Drought	N/A	0	0	$0	$578,900,000
All of Iowa	8/1/1995	-	Drought	N/A	0	0	$0	$500,000,000
TOTALS	**-**	**-**	**Drought**	**-**	**0**	**0**	**$645,200,000**	**$1,078,900,000**
Webster County	8/5/2001	10:00 AM	Excessive Heat	N/A	1	0	$0	$0
All of Iowa	7/12/1995	12:00 PM	Heat Wave	N/A	3	0	$3,800,000	$0
TOTALS	**-**	**-**	**Extreme Heat**	**-**	**4**	**0**	**$3,800,000**	**$0**
Webster County	8/14/1993	12:00 AM	Urban Flood	N/A	0	0	$5,000	$5,000
Webster County	6/6/1994	12:00 AM	Urban Flooding	N/A	0	0	$5,000	$5,000
Webster County	6/12/1994	12:00 AM	Urban Flooding	N/A	0	0	$50,000	$5,000
Webster County	5/22/1995	12:00 AM	Urban Flooding	N/A	0	0	$25,000	$0
Webster County	6/1/1995	-	Excessive Wetness	N/A	0	0	$0	$142,000,000
Webster County	6/25/2005	5:00 AM	Flash Flood	N/A	0	0	$100,000	$10,000
Webster County	6/25/2005	10:30 PM	Flash Flood	N/A	0	0	$75,000	$5,000
Fort Dodge	4/6/1998	6:00 PM	Urban/sml Stream Fld	N/A	0	0	$150,000	$0
Fort Dodge	6/23/1998	10:00 PM	Flash Flood	N/A	0	0	$75,000	$10,000
Fort Dodge	6/29/1998	12:00 PM	Urban/sml Stream Fld	N/A	0	0	$50,000	$10,000
Fort Dodge	5/23/2	2:00	Flash Flood	N/A	0	0	$5,000	$0

	004	AM						
Fort Dodge	8/9/2006	4:00 AM	Flash Flood	N/A	0	0	$20,000	$0
Fort Dodge	3/14/2007	3:00 AM	Flash Flood	N/A	0	0	$500,000	$0
Fort Dodge	3/14/2007	9:00 AM	Flash Flood	N/A	0	0	$50,000	$0
Fort Dodge	8/4/2007	10:55 PM	Flash Flood	N/A	0	0	$15,000	$0
Fort Dodge Airport	8/20/2007	2:35 AM	Flash Flood	N/A	0	0	$5,000	$0
Fort Dodge	8/20/2007	12:39 AM	Flash Flood	N/A	0	0	$25,000	$10,000
Fort Dodge Airport	8/21/2007	9:20 PM	Flash Flood	N/A	0	0	$75,000	$10,000
Fort Dodge	6/4/2008	10:19 PM	Flash Flood	N/A	0	0	$25,000	$0
Fort Dodge	6/4/2008	9:25 PM	Flash Flood	N/A	0	0	$50,000	$0
Fort Dodge	6/7/2008	6:53 PM	Flash Flood	N/A	0	0	$100,000	$0
Fort Dodge	6/7/2008	7:19 PM	Flash Flood	N/A	0	0	$100,000	$0
Fort Dodge	6/7/2008	8:05 PM	Flash Flood	N/A	0	0	$50,000	$0
Fort Dodge Airport	6/7/2008	6:22 PM	Heavy Rain	N/A	0	0	$0	$0
Fort Dodge	6/11/2008	8:57 PM	Flash Flood	N/A	0	0	$50,000	$0
Fort Dodge Airport	3/12/2010	7:25 PM	Flash Flood	N/A	0	0	$200,000	$0
Fort Dodge	3/12/2010	11:44 PM	Flash Flood	N/A	0	0	$200,000	$0
Fort Dodge Airport	3/13/2010	1:57 PM	Flash Flood	N/A	0	0	$100,000	$0
Fort Dodge	6/12/2010	12:00 PM	Heavy Rain	N/A	0	0	$0	$20,000,000
Fort Dodge	6/26/2010	6:35 AM	Heavy Rain	N/A	0	0	$0	$0
Fort Dodge	6/26/2010	10:00 PM	Heavy Rain	N/A	0	0	$100,000	$0
Fort Dodge Airport	6/27/2010	2:34 AM	Flash Flood	N/A	0	0	$500,000	$0
Fort Dodge	7/18/2010	12:00 AM	Heavy Rain	N/A	0	0	$0	$0
Fort Dodge	7/22/2010	3:45 AM	Flash Flood	N/A	0	0	$250,000	$0
Fort Dodge	7/22/2010	4:00 AM	Flash Flood	N/A	0	0	$250,000	$0
Fort Dodge	7/22/2010	7:00 AM	Flash Flood	N/A	0	0	$25,000	$0
Fort Dodge	7/22/2010	1:14 AM	Heavy Rain	N/A	0	0	$0	$0
Fort Dodge Airport	7/23/2010	4:30 AM	Flash Flood	N/A	0	0	$25,000	$0
TOTALS	**-**	**-**	**Flash Flooding**	**-**	**0**	**0**	**$3,255,000**	**$162,070,00**

								0
Webster County	3/2/1993	12:00 AM	Flooding	N/A	0	0	$50,000	$0
Webster County	3/22/1993	6:00 AM	Major Flood	N/A	0	0	$50,000,000	$0
Webster County	4/1/1993	-	Major Flood	N/A	0	0	$50,000,000	$0
Webster County	4/20/1993	6:00 AM	Major Flood	N/A	0	0	$5,000,000	$0
Webster County	5/7/1993	12:00 AM	Flood	N/A	0	0	$5,000,000	$5,000,000
Webster County	8/16/1993	6:00 AM	Flood	N/A	0	0	$5,000,000	$5,000,000
Webster County	8/29/1993	3:00 AM	Flood	N/A	0	0	$5,000,000	$5,000,000
All of Iowa	9/1/1993	-	Flood	N/A	0	0	$500,000	$500,000
Webster County	9/14/1993	6:00 AM	Flood	N/A	0	0	$500,000	$500,000
Much of Iowa	2/19/1994	6:00 AM	Flooding	N/A	0	0	$500,000	$0
Much of Iowa	3/3/1994	12:00 AM	Flooding	N/A	0	0	$500,000	$0
Webster County	6/13/1994	4:00 AM	Flooding	N/A	0	0	$500,000	$500,000
Webster County	6/22/1994	12:00 AM	Flooding	N/A	0	0	$500,000	$500,000
Northern Iowa	7/15/1994	3:00 AM	Flooding	N/A	0	0	$50,000	$500,000
Webster County	4/26/1995	12:00 AM	Flooding	N/A	0	0	$25,000	$0
Webster County	5/27/1995	12:00 AM	Flooding	N/A	0	0	$100,000	$10,000
Webster County	6/6/1995	12:00 AM	Flood	N/A	0	0	$50,000	$100,000
Webster County	6/17/1996	3:00 AM	Flood	N/A	0	0	$500,000	$1,000,000
Webster County	2/18/1997	6:00 PM	Flood	N/A	0	0	$750,000	$0
Webster County	3/19/1997	12:00 PM	Flood	N/A	0	0	$50,000	$0
Webster County	4/1/1997	12:00 AM	Flood	N/A	0	0	$150,000	$0
Webster County	6/21/1997	3:00 PM	Flood	N/A	0	0	$60,000	$100,000
Webster County	4/7/1998	12:00 PM	Flood	N/A	0	0	$150,000	$0
Webster County	4/16/1998	6:00 PM	Flood	N/A	0	0	$30,000	$0
Webster County	6/18/1998	2:00 AM	Flood	N/A	0	0	$8,700,000	$460,000
Webster County	6/24/1998	3:00 AM	Flood	N/A	0	0	$1,200,000	$320,000
Webster County	6/28/1998	6:00 AM	Flood	N/A	0	0	$900,000	$240,000
Webster	4/6/19	6:00	Flood	N/A	0	0	$210,000	$0

County	99	PM						
Webster County	4/22/1999	6:00 AM	Flood	N/A	0	0	$370,000	$0
Webster County	5/16/1999	9:00 PM	Flood	N/A	0	0	$7,600,000	$875,000
Webster County	5/21/1999	3:00 PM	Flood	N/A	0	0	$1,400,000	$280,000
Webster County	6/9/1999	6:00 AM	Flood	N/A	0	0	$1,800,000	$2,700,000
Webster County	6/27/1999	6:00 AM	Flood	N/A	0	0	$45,000	$45,000
Webster County	3/23/2001	6:00 PM	Flood	N/A	0	0	$383,000	$0
Webster County	4/1/2001	12:00 AM	Flood	N/A	0	0	$65,000	$0
Webster County	4/7/2001	9:00 PM	Flood	N/A	0	0	$4,700,000	$0
Webster County	5/1/2001	12:00 AM	Flood	N/A	0	0	$2,000,000	$0
Webster County	5/21/2001	6:00 PM	Flood	N/A	0	0	$420,000	$0
Webster County	6/12/2001	3:00 PM	Flood	N/A	0	0	$825,000	$1,700,000
Webster County	5/11/2002	6:00 AM	Flood	N/A	0	0	$120,000	$0
Webster County	5/4/2003	12:00 PM	Flood	N/A	0	0	$200,000	$0
Webster County	5/9/2003	6:00 AM	Flood	N/A	0	0	$155,000	$0
Webster County	6/27/2003	6:00 AM	Flood	N/A	0	0	$75,000	$150,000
Webster County	7/5/2003	12:00 PM	Flood	N/A	0	0	$350,000	$550,000
Webster County	5/22/2004	6:00 PM	Flood	N/A	0	0	$5,100,000	$15,200,000
Webster County	5/13/2005	2:00 AM	Flood	N/A	0	0	$960,000	$0
Webster County	6/12/2005	3:00 AM	Flood	N/A	0	0	$150,000	$60,000
Webster County	6/25/2005	6:00 AM	Flood	N/A	0	0	$175,000	$25,000
Webster County	6/26/2005	12:00 AM	Flood	N/A	0	0	$2,000,000	$1,400,000
Webster County	6/26/2005	5:00 AM	Flood	N/A	1	0	$400,000	$65,000
Webster County	7/26/2005	9:00 PM	Flood	N/A	0	0	$210,000	$630,000
Webster County	4/1/2006	12:00 AM	Flood	N/A	0	0	$5,000	$0
Fort Dodge	3/14/2007	2:45 PM	Flood	N/A	0	0	$50,000	$0
Fort Dodge Airport	4/25/2007	2:00 PM	Flood	N/A	0	0	$250,000	$0
Fort Dodge	8/20/2007	12:45 AM	Flood	N/A	0	0	$50,000	$50,000
Fort Dodge	8/21/2	11:15	Flood	N/A	0	0	$50,000	$50,000

	007	PM						
Fort Dodge	3/12/2008	11:45 PM	Flood	N/A	0	0	$50,000	$0
Fort Dodge	6/8/2008	12:55 AM	Flood	N/A	0	0	$500,000	$500,000
Fort Dodge	2/10/2009	10:18 PM	Flood	N/A	0	0	$0	$0
Fort Dodge	3/11/2010	9:53 AM	Flood	N/A	0	0	$200,000	$0
Fort Dodge	6/26/2010	1:22 AM	Flood	N/A	0	0	$250,000	$2,000,000
Fort Dodge	7/1/2010	12:00 AM	Flood	N/A	0	0	$50,000	$200,000
Fort Dodge	7/22/2010	8:40 AM	Flood	N/A	0	0	$50,000	$100,000
Fort Dodge	7/23/2010	5:56 AM	Flood	N/A	0	0	$25,000	$0
TOTALS	**-**	**-**	**River Flooding**	**-**	**1**	**0**	**$167,008,000**	**$46,310,000**
Webster County	6/5/1961	12:00 AM	Hail	1.50 in.	0	0	$0	$0
Webster County	5/7/1962	12:00 AM	Hail	3.00 in.	0	0	$0	$0
Webster County	6/27/1965	12:00 AM	Hail	1.50 in.	0	0	$0	$0
Webster County	10/14/1966	12:00 AM	Hail	1.75 in.	0	0	$0	$0
Webster County	7/26/1969	12:00 AM	Hail	1.75 in.	0	0	$0	$0
Webster County	7/26/1969	12:00 AM	Hail	3.00 in.	0	0	$0	$0
Webster County	9/21/1973	8:15 AM	Hail	1.75 in.	0	0	$0	$0
Webster County	6/18/1974	12:00 AM	Hail	1.00 in.	0	0	$0	$0
Webster County	6/18/1974	12:00 AM	Hail	1.75 in.	0	0	$0	$0
Webster County	6/22/1974	1:00 AM	Hail	1.75 in.	0	0	$0	$0
Webster County	7/25/1974	12:00 AM	Hail	1.75 in.	0	0	$0	$0
Webster County	7/6/1977	12:00 AM	Hail	1.75 in.	0	0	$0	$0
Webster County	3/29/1979	12:00 AM	Hail	1.75 in.	0	0	$0	$0
Webster County	6/13/1980	12:00 AM	Hail	1.75 in.	0	0	$0	$0
Webster County	9/5/1983	12:00 AM	Hail	1.75 in.	0	0	$0	$0
Webster County	9/14/1987	12:00 AM	Hail	1.00 in.	0	0	$0	$0
Webster County	9/14/1987	12:00 AM	Hail	1.50 in.	0	0	$0	$0
Webster County	5/8/1988	3:30 AM	Hail	1.75 in.	0	0	$0	$0
Webster	8/26/1	5:25	Hail	1.00	0	0	$0	$0

County	990	AM		in.				
Webster County	5/28/1991	2:20 AM	Hail	1.75 in.	0	0	$0	$0
Webster County	5/28/1991	2:53 AM	Hail	1.75 in.	0	0	$0	$0
Fort Dodge	6/18/1998	9:15 AM	Hail	0.75 in.	0	0	$0	$2,000
Fort Dodge	5/16/1999	10:10 AM	Hail	1.75 in.	0	0	$20,000	$0
Fort Dodge	5/16/1999	10:11 AM	Hail	1.75 in.	0	0	$20,000	$0
Fort Dodge	5/16/1999	10:16 AM	Hail	1.75 in.	0	0	$20,000	$0
Fort Dodge	5/16/1999	10:02 AM	Hail	0.75 in.	0	0	$2,000	$0
Fort Dodge	5/16/1999	10:05 AM	Hail	1.00 in.	0	0	$5,000	$0
Fort Dodge	6/17/2002	9:08 PM	Hail	0.75 in.	0	0	$0	$5,000
Fort Dodge	6/20/2002	9:59 PM	Hail	1.00 in.	0	0	$10,000	$5,000
Fort Dodge	6/20/2002	10:05 PM	Hail	1.00 in.	0	0	$10,000	$5,000
Fort Dodge	6/20/2002	10:16 PM	Hail	1.00 in.	0	0	$10,000	$5,000
Fort Dodge	6/20/2002	9:57 PM	Hail	0.88 in.	0	0	$3,000	$5,000
Fort Dodge	6/20/2002	8:32 PM	Hail	1.00 in.	0	0	$5,000	$5,000
Fort Dodge	5/30/2003	2:57 AM	Hail	0.88 in.	0	0	$1,000	$5,000
Fort Dodge	3/24/2004	1:55 AM	Hail	0.75 in.	0	0	$0	$0
Fort Dodge	5/8/2004	5:25 AM	Hail	1.00 in.	0	0	$5,000	$2,000
Fort Dodge	6/11/2004	6:02 PM	Hail	0.75 in.	0	0	$0	$0
Fort Dodge	6/11/2004	6:12 PM	Hail	0.88 in.	0	0	$2,000	$0
Fort Dodge	6/11/2004	6:09 PM	Hail	1.75 in.	0	0	$50,000	$0
Fort Dodge	6/11/2004	5:54 PM	Hail	1.00 in.	0	0	$5,000	$0
Fort Dodge	6/11/2004	6:00 PM	Hail	1.00 in.	0	0	$5,000	$0
Fort Dodge	6/11/2004	6:11 PM	Hail	1.00 in.	0	0	$5,000	$0
Fort Dodge	6/11/2004	6:11 PM	Hail	0.88 in.	0	0	$5,000	$3,000
Fort Dodge	6/11/2004	6:05 PM	Hail	1.25 in.	0	0	$10,000	$5,000
Fort Dodge	6/11/2004	6:07 PM	Hail	1.25 in.	0	0	$10,000	$5,000
Fort Dodge	6/11/2004	5:53 PM	Hail	0.88 in.	0	0	$1,000	$5,000
Fort Dodge	6/11/2	5:49	Hail	1.00	0	0	$2,000	$5,000

	004	PM		in.				
Fort Dodge	6/11/2004	5:51 PM	Hail	1.00 in.	0	0	$2,000	$5,000
Fort Dodge	6/11/2004	5:52 PM	Hail	1.00 in.	0	0	$2,000	$5,000
Fort Dodge	6/11/2004	5:55 PM	Hail	1.00 in.	0	0	$2,000	$5,000
Fort Dodge	3/6/2005	8:30 PM	Hail	1.00 in.	0	0	$5,000	$0
Fort Dodge	5/8/2006	8:40 PM	Hail	0.75 in.	0	0	$0	$2,000
Fort Dodge	5/8/2006	7:50 PM	Hail	1.00 in.	0	0	$3,000	$5,000
Fort Dodge Airport	2/23/2007	3:30 PM	Hail	0.75 in.	0	0	$0	$0
Fort Dodge Airport	4/2/2007	8:06 PM	Hail	1.00 in.	0	0	$3,000	$0
Fort Dodge Airport	4/2/2007	8:13 PM	Hail	1.00 in.	0	0	$3,000	$0
Fort Dodge	6/7/2008	6:52 PM	Hail	0.88 in.	0	0	$3,000	$5,000
Fort Dodge Airport	7/17/2008	6:25 PM	Hail	0.75 in.	0	0	$0	$10,000
Fort Dodge	7/17/2008	6:26 PM	Hail	0.75 in.	0	0	$0	$10,000
Fort Dodge	7/17/2008	6:27 PM	Hail	1.00 in.	0	0	$3,000	$10,000
Fort Dodge	7/27/2008	2:18 PM	Hail	0.88 in.	0	0	$1,000	$10,000
Fort Dodge Airport	4/29/2010	6:53 PM	Hail	0.75 in.	0	0	$0	$0
Fort Dodge Airport	4/29/2010	6:38 PM	Hail	1.25 in.	0	0	$5,000	$0
Fort Dodge	6/18/2010	11:57 AM	Hail	1.00 in.	0	0	$3,000	$5,000
Fort Dodge	9/5/2010	6:00 PM	Hail	0.88 in.	0	0	$0	$5,000
TOTALS	**-**	**-**	**Hailstorms**	**-**	**0**	**0**	**$241,000**	**$139,000**
Webster County	3/9/1993	12:00 AM	High Winds	0 kts.	0	0	$500,000	$0
Webster County	4/19/1993	11:00 AM	High Winds	0 kts.	0	0	$50,000	$0
All of Iowa	4/14/1994	12:00 AM	High Winds	0 kts.	0	0	$500,000	$0
Most of Iowa	4/26/1994	9:00 AM	High Winds	0 kts.	0	3	$5,000,000	$0
Webster County	11/17/1994	5:00 AM	High Winds	0 kts.	0	0	$150,000	$0
Webster County	11/18/1994	2:30 AM	High Winds	0 kts.	0	0	$200,000	$0
All of Iowa	2/10/1995	-	High Winds	0 kts.	0	0	$100,000	$0
Webster County	4/3/1995	12:00 AM	High Winds	0 kts.	0	0	$125,000	$0
Webster County	4/18/1995	7:00 AM	High Winds	0 kts.	0	0	$500,000	$0

Much of Iowa	10/23/1995	12:00 AM	High Winds	0 kts.	0	0	$100,000	$0
Webster County	1/17/1996	9:00 PM	High Wind	55 kts.	0	0	$250,000	$0
Webster County	2/10/1996	12:00 PM	High Wind	56 kts.	0	0	$350,000	$0
Webster County	3/24/1996	5:00 PM	High Wind	54 kts.	0	0	$300,000	$0
Webster County	4/25/1996	9:30 AM	High Wind	59 kts.	0	0	$750,000	$0
Webster County	10/29/1996	11:00 AM	High Wind	57 kts.	0	0	$500,000	$100,000
Webster County	4/6/1997	9:00 AM	High Wind	55 kts.	0	0	$1,800,000	$0
Webster County	5/5/1997	12:30 PM	High Wind	52 kts.	0	1	$75,000	$0
Webster County	10/13/1997	2:00 AM	High Wind	70 kts.	0	0	$297,000	$0
Webster County	4/12/1998	8:00 AM	High Wind	54 kts.	0	0	$2,600,000	$0
Webster County	11/10/1998	2:00 AM	High Wind	61 kts.	1	0	$17,300,000	$260,000
Webster County	3/17/1999	12:00 PM	High Wind	50 kts.	0	0	$890,000	$0
Webster County	5/10/1999	5:00 PM	High Wind	61 kts.	0	1	$640,000	$0
Webster County	4/7/2001	4:00 AM	High Wind	72 kts.	0	4	$3,200,000	$0
Webster County	3/9/2002	6:00 AM	High Wind	54 kts.	0	0	$2,600,000	$0
Webster County	5/11/2002	10:30 AM	High Wind	51 kts.	0	0	$1,400,000	$0
Webster County	2/11/2003	1:15 PM	High Wind	65 kts.	0	0	$257,000	$0
Webster County	5/30/2003	2:00 PM	High Wind	50 kts.	1	0	$700,000	$0
Webster County	11/12/2003	9:00 AM	High Wind	55 kts.	0	2	$2,600,000	$0
Webster County	4/18/2004	3:10 PM	High Wind	57 kts.	0	0	$3,600,000	$0
Webster County	4/27/2004	12:30 PM	High Wind	56 kts.	0	0	$3,500,000	$0
Webster County	12/12/2004	10:00 AM	High Wind	56 kts.	0	0	$1,400,000	$0
Webster County	1/22/2005	12:15 AM	High Wind	56 kts.	0	0	$440,000	$0
Webster County	5/8/2005	3:30 PM	High Wind	57 kts.	0	0	$105,000	$0
Webster County	11/12/2005	6:00 PM	High Wind	57 kts.	0	0	$2,000,000	$0
Webster County	11/15/2005	7:00 PM	High Wind	50 kts.	0	0	$510,000	$0
Webster County	1/24/2006	9:30 AM	High Wind	60 kts.	0	2	$550,000	$0
Webster County	4/15/2006	3:30 PM	High Wind	52 kts.	0	0	$1,100,000	$0

Webster County	5/6/2007	4:30 AM	High Wind	56 kts.	0	0	$25,000	$0
Webster County	########	9:30 AM	High Wind	52 kts.	0	0	$25,000	$25,000
Webster County	2/9/2009	6:00 PM	High Wind	50 kts.	0	0	$30,000	$0
Webster County	5/10/2010	8:00 PM	High Wind	62 kts.	0	0	$30,000	$0
Webster County	6/10/2010	12:00 PM	High Wind	56 kts.	0	0	$25,000	$0
Webster County	10/27/2010	9:00 AM	High Wind	50 kts.	0	0	$40,000	$0
TOTALS	**-**	**-**	**Windstorms**	**-**	**2**	**13**	**$57,114,000**	**$385,000**
Webster County	8/21/1959	7:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	4/16/1960	12:00 AM	Tstm Wind	65 kts.	0	0	$0	$0
Webster County	9/2/1961	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	5/22/1962	12:00 AM	Tstm Wind	80 kts.	0	0	$0	$0
Webster County	7/22/1964	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	5/5/1965	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	7/6/1968	12:00 AM	Tstm Wind	65 kts.	0	0	$0	$0
Webster County	7/3/1969	12:00 AM	Tstm Wind	60 kts.	0	0	$0	$0
Webster County	7/26/1969	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	7/26/1969	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	7/26/1969	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	7/14/1970	12:00 AM	Tstm Wind	70 kts.	0	0	$0	$0
Webster County	6/6/1971	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	6/29/1971	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	6/18/1974	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	6/22/1974	1:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	8/24/1975	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	5/4/1977	12:00 AM	Tstm Wind	51 kts.	0	0	$0	$0
Webster County	7/6/1977	12:00 AM	Tstm Wind	70 kts.	0	0	$0	$0
Webster County	8/15/1977	12:00 AM	Tstm Wind	50 kts.	0	0	$0	$0
Webster County	9/8/1977	12:00 AM	Tstm Wind	52 kts.	0	0	$0	$0

Webster County	4/17/1978	12:00 AM	Tstm Wind	52 kts.	0	0	$0	$0
Webster County	6/28/1978	12:00 AM	Tstm Wind	50 kts.	0	0	$0	$0
Webster County	9/13/1978	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	6/19/1979	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	5/29/1980	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	6/7/1980	1:53 AM	Tstm Wind	52 kts.	0	0	$0	$0
Webster County	6/23/1981	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	9/12/1982	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	4/12/1983	10:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	7/1/1983	3:45 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	4/26/1984	12:00 AM	Tstm Wind	0 kts.	0	0	$0	$0
Webster County	5/8/1986	12:00 AM	Tstm Wind	52 kts.	0	0	$0	$0
Webster County	5/9/1986	12:00 AM	Tstm Wind	52 kts.	0	0	$0	$0
Webster County	7/28/1986	12:00 AM	Tstm Wind	52 kts.	0	0	$0	$0
Webster County	7/28/1986	12:00 AM	Tstm Wind	52 kts.	0	0	$0	$0
Webster County	7/28/1986	12:00 AM	Tstm Wind	52 kts.	0	0	$0	$0
Webster County	7/28/1986	12:00 AM	Tstm Wind	52 kts.	0	0	$0	$0
Webster County	9/26/1986	12:00 AM	Tstm Wind	50 kts.	0	0	$0	$0
Webster County	3/24/1988	12:00 AM	Tstm Wind	60 kts.	0	0	$0	$0
Webster County	5/23/1989	12:00 AM	Tstm Wind	51 kts.	0	0	$0	$0
Webster County	8/5/1989	6:50 AM	Tstm Wind	61 kts.	0	0	$0	$0
Webster County	8/5/1989	7:05 AM	Tstm Wind	50 kts.	0	0	$0	$0
Webster County	6/19/1990	5:14 AM	Tstm Wind	53 kts.	0	0	$0	$0
Webster County	6/19/1990	5:33 AM	Tstm Wind	50 kts.	0	0	$0	$0
Webster County	6/19/1990	6:10 AM	Tstm Wind	50 kts.	0	0	$0	$0
Webster County	7/15/1992	12:00 AM	Tstm Wind	50 kts.	0	0	$0	$0
Webster County	7/15/1992	12:00 AM	Tstm Wind	61 kts.	0	0	$0	$0
Fort Dodge	6/5/1994	3:04 AM	Thunderstorm Winds	50 kts.	0	0	$5,000	$0

Fort Dodge Airport	10/6/1994	12:00 AM	Thunderstorm Winds	50 kts.	0	0	$5,000	$50
Fort Dodge	5/24/1996	5:30 AM	Tstm Wind	65 kts.	0	0	$100,000	$0
Fort Dodge	6/20/1997	4:12 AM	Tstm Wind	55 kts.	0	0	$10,000	$0
Fort Dodge	5/15/1998	2:29 PM	Tstm Wind	63 kts.	0	0	$15,000	$0
Fort Dodge	6/23/1998	9:52 PM	Tstm Wind	65 kts.	0	0	$20,000	$1,000
Fort Dodge	7/15/1998	1:09 AM	Tstm Wind	50 kts.	0	0	$2,000	$0
Fort Dodge	7/15/1998	1:30 AM	Tstm Wind	52 kts.	0	0	$10,000	$2,000
Fort Dodge	6/13/2000	4:19 PM	Tstm Wind	52 kts.	0	0	$1,000	$0
Fort Dodge	6/13/2000	4:21 PM	Tstm Wind	56 kts.	0	0	$25,000	$0
Fort Dodge	7/2/2000	4:30 PM	Tstm Wind	52 kts.	0	0	$3,000	$0
Fort Dodge Airport	6/10/2002	11:55 PM	Tstm Wind	62 kts.	0	0	$5,000	$0
Fort Dodge	6/10/2002	11:58 PM	Tstm Wind	56 kts.	0	0	$10,000	$0
Fort Dodge	8/16/2002	5:05 PM	Tstm Wind	52 kts.	0	0	$10,000	$0
Fort Dodge	8/17/2002	2:30 AM	Tstm Wind	57 kts.	0	0	$20,000	$5,000
Fort Dodge	6/16/2004	1:20 PM	Tstm Wind	52 kts.	0	0	$2,000	$0
Fort Dodge	6/8/2005	4:43 AM	Tstm Wind	53 kts.	0	0	$5,000	$0
Fort Dodge	6/20/2005	5:30 PM	Tstm Wind	57 kts.	0	0	$10,000	$0
Fort Dodge	6/20/2005	5:36 PM	Tstm Wind	50 kts.	0	0	$2,000	$0
Fort Dodge	6/20/2005	5:37 PM	Tstm Wind	52 kts.	0	0	$2,000	$0
Fort Dodge	6/20/2005	5:38 PM	Tstm Wind	50 kts.	0	0	$2,000	$0
Fort Dodge	6/20/2005	5:40 PM	Tstm Wind	50 kts.	0	0	$2,000	$0
Fort Dodge	6/20/2005	5:45 PM	Tstm Wind	57 kts.	0	0	$3,000	$0
Fort Dodge	6/29/2005	7:20 PM	Tstm Wind	50 kts.	0	0	$1,000	$0
Fort Dodge	6/29/2005	7:34 PM	Tstm Wind	52 kts.	0	0	$3,000	$0
Fort Dodge	7/25/2005	6:07 PM	Tstm Wind	52 kts.	0	0	$2,000	$1,000
Fort Dodge	9/8/2005	10:30 AM	Tstm Wind	52 kts.	0	0	$5,000	$0
Fort Dodge	7/3/2006	4:27 PM	Tstm Wind	53 kts.	0	0	$5,000	$0
Fort Dodge	9/29/2006	6:15 PM	Tstm Wind	50 kts.	0	0	$10,000	$0

Fort Dodge	7/18/2007	3:45 PM	Thunderstorm Wind	52 kts.	0	0	$15,000	$0
Fort Dodge Airport	7/26/2007	8:07 PM	Thunderstorm Wind	50 kts.	0	0	$3,000	$0
Fort Dodge	6/26/2008	8:07 AM	Thunderstorm Wind	52 kts.	0	0	$3,000	$0
Fort Dodge	7/17/2008	6:20 PM	Thunderstorm Wind	52 kts.	0	0	$2,000	$0
Fort Dodge	7/27/2008	2:12 PM	Thunderstorm Wind	56 kts.	0	0	$10,000	$0
Fort Dodge	7/27/2008	2:28 PM	Thunderstorm Wind	57 kts.	0	0	$15,000	$0
Fort Dodge	7/27/2008	2:17 PM	Thunderstorm Wind	50 kts.	0	0	$2,000	$0
Fort Dodge	6/18/2009	7:05 AM	Thunderstorm Wind	52 kts.	0	0	$3,000	$0
Fort Dodge	6/23/2009	1:15 PM	Thunderstorm Wind	52 kts.	0	0	$2,000	$0
Fort Dodge	8/3/2009	12:05 AM	Thunderstorm Wind	57 kts.	0	0	$50,000	$0
Fort Dodge Airport	8/8/2010	8:22 PM	Thunderstorm Wind	52 kts.	0	0	$0	$0
TOTALS	**-**	**-**	**Thunderstorm Winds**	**-**	**4**	**0**	**$400,000**	**$9,050**
Fort Dodge	5/9/1995	2:47 AM	Lightning	N/A	0	0	$150,000	$0
Fort Dodge	7/26/1999	3:00 AM	Lightning	N/A	0	0	$3,000	$0
TOTALS	**-**	**-**	**Lightning**	**-**	**0**	**0**	**$153,000**	**$0**
Webster County	6/7/1953	12:00 AM	Tornado	F2	0	0	$0	$0
Webster County	6/7/1953	12:00 AM	Tornado	F2	0	0	$0	$0
Webster County	5/29/1957	12:00 AM	Tornado	F	0	0	$0	$0
Webster County	6/16/1960	6:00 AM	Tornado	F2	0	0	$25,000	$0
Webster County	8/29/1964	12:00 AM	Tornado	F2	0	0	$25,000	$0
Webster County	4/30/1967	12:00 AM	Tornado	F2	0	0	$0	$0
Webster County	6/8/1967	12:00 AM	Tornado	F4	0	0	$0	$0
Webster County	6/8/1967	12:00 AM	Tornado	F2	0	5	$250,000	$0
Webster County	9/21/1973	8:25 AM	Tornado	F3	0	0	$25,000	$0
Webster County	6/18/1974	12:00 AM	Tornado	F1	0	1	$25,000	$0
Webster County	5/4/1977	12:00 AM	Tornado	F2	0	4	$2,500,000	$0
Webster County	5/4/1977	12:00 AM	Tornado	F4	0	14	$250,000	$0
Webster County	5/29/1980	12:00 AM	Tornado	F1	0	0	$25,000	$0
Webster	5/17/1	12:00	Tornado	F1	0	0	$25,000	$0

County	982	AM						
Webster County	5/17/1982	12:00 AM	Tornado	F1	0	0	$25,000	$0
Webster County	9/28/1986	12:00 AM	Tornado	F0	0	0	$0	$0
Webster County	8/22/1988	2:40 AM	Tornado	F1	0	0	$250,000	$0
Webster County	4/22/1989	10:20 AM	Tornado	F0	0	0	$0	$0
Webster County	7/25/1990	12:00 AM	Tornado	F0	0	0	$0	$0
Webster County	5/27/1995	12:00 AM	Tornado	F1	0	0	$40,000	$500
Fort Dodge	3/30/2005	12:25 PM	Tornado	F0	0	0	$0	$0
Fort Dodge	6/22/2010	9:56 PM	Funnel Cloud	N/A	0	0	$0	$0
TOTALS	**-**	**-**	**Tornadoes**	**-**	**0**	**24**	**$3,465,000**	**$500**

*Data provided by: National Climatic Data Center, 2011 http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms

Reported Date	Responsible Party	Mode	Type	Material Name	Amount	Unit
1/2/2010 05:15	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	300	lbs
1/4/2011 17:31	Union Pacific Railroad	Railroad	Petroleum	Motor oil	30	gal
1/4/2012 12:00	Poet Biorefining	Handling And Storage	Animal/Vegetable Product	Corn mash	13000	gal
1/7/2004 08:20	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	305	lbs
1/7/2004 08:24	Velocity Trucking	Handling And Storage	Acids/Bases	Sulfuric Acid	1	gal
1/10/2006 07:50	Vera Sun	Handling And Storage	Organic Chemical	Denatured ethanol	322	gal
1/14/2007 02:15	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs
1/14/2010 07:59	Star Energy	Handling And Storage	Petroleum	Diesel Fuel	15	gal
1/15/2004 10:49	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	3161	gal
1/15/2009 08:18	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	700	lbs
1/18/2005 17:50	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
1/19/2006 12:10	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
1/19/2006 23:02	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Nitrogen oxide (NO)	10	lbs

1/19/2009 20:30	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	1742	lbs
1/20/2009 09:26	Allieger,Larry	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 12:50	Unknown	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 12:51	Unknown	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 12:52	Unknown	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 12:53	Unknown	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 12:54	Unknown	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 12:55	Unknown	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 12:56	Unknown	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 14:07	Envirotech	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 14:08	Envirotech	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 10:05	Unknown	Manure	Manure	ammone	1	unk
1/20/2009 08:10	Price,Al	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 08:12	Price,Al	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 09:39	Wilson,Roger	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/20/2009 07:38	Brown, Winick, Graves, atty	Manure	Manure	Manure	151	lbs
1/23/2006 09:59	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs
1/24/2006 14:55	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
1/25/2011 13:43	Northern Natural Gas	Transportation	Petroleum	Transmission fluid	2	qt
1/27/2007 12:40	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	0	Unknown
1/27/2012 01:37	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	1	Unknown
1/29/2009 09:16	Unknown	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/29/2009 09:17	Unknown	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/29/2009 09:18	Unknown	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/29/2009 09:19	Unknown	Manure	Ammonia/Ag-related	Ammonia	1	unk
1/30/2006 11:41	Vera Sun	Handling And Storage	Other Chemical	high BOD water	500	gal

1/30/2008 16:46	Poet Biorefining	Other	Acids/Bases	diluted sodium hydroxide - pH 11.0	500	gal
1/30/2009 11:32	Wayne Transports, Inc.	Handling And Storage	Petroleum	Gasoline	20	gal
1/31/2007 16:11	Koch Nitrogen Company	Handling And Storage	Acids/Bases	Low pH water with Nitric Acid & Ammonia Nitrate	2500	gal
2/2/2000 22:31	Americold Logistics	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	1	lbs
2/2/2003 10:15	Larsen,Ronnie	Transportation	Organic Chemical	Antifreeze	1	unk
			Petroleum	Engine oil	5	qt
2/2/2008 10:30	Gene Moeller Oil Company	Handling And Storage	Petroleum	Gasoline	40	gal
2/4/2011 03:39	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (NH3)	1	Unknown
2/6/2007 17:06	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	1500	lbs
2/6/1997 12:45	TRANSPORTATION CO.,MIDLAND	Motor Carrier	Acids/Bases	CHLORINE GAS; NO RELEASE		Unknown
2/10/2004 13:32	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	200	lbs
2/10/2004 23:55	Koch Nitrogen Company	Handling And Storage	Fertilizer Pesticide	CO2 condensate	200	gal
2/10/2009 05:00	W & H Cooperative Oil Co.	Handling And Storage	Petroleum	wintermaster diesel	50	gal
2/11/2004 15:37	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	1750	lbs
			Inorganic Chemical	NO x	100	lbs
2/11/2004 14:30	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	MDEA	150	gal
2/11/2008 11:31	Graham Tire	Handling And Storage	Petroleum	Used Oil	150	gal
2/12/2001 16:37	Gene Moeller Oil Company	Handling And Storage	Petroleum	Gasohol	520	gal
2/12/2011 14:41	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	1	Unknown
2/14/2011 15:52	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	296	lbs
2/14/1995 11:05	LEASING,RUAL	Handling Storage Process	Petroleum	Diesel Fuel		Unknown
2/15/2010 12:06	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	329	lbs

2/18/2004 01:45	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	230	lbs
2/18/2007 11:12	Koch Nitrogen Company	Other	Ammonia (anhydrous)	Anhydrous ammonia	86	lbs
2/20/2006 17:58	Vera Sun	Handling And Storage	Organic Chemical	biogases	1	unk
2/21/2004 16:10	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	2400	lbs
2/23/2007 08:48	W-H Coop Oil Co.	Handling And Storage	Petroleum	diesel	10	gal
2/27/2007 14:10	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
2/28/2012 10:05	Boehringer Ingelheim Vetmedica	Handling And Storage	Organic Chemical	Propylene Glycol	100	gal
3/1/2005 22:14	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	1	unk
3/2/2009 02:30	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	300	lbs
3/3/2000 15:40	Unknown	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	1500	lbs
3/5/2007 13:36	Farmland Industries/Koch Nitrogen	Handling And Storage	Inorganic Chemical	NO x	61	lbs
3/6/2000 08:00	L & D Cleaners	Handling And Storage	Inorganic Chemical	Perchloroethylene	5	gal
3/8/2001 11:42	Lakeville Motor Express	Transportation	Petroleum	Diesel Fuel	200	gal
3/8/2004 23:18	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
3/8/2006 07:13	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
3/8/2008 12:50	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	500	lbs
3/10/2004 14:55	MidAmerican Energy	Transformer	Transformer oil/PCB	Transformer Oil	1	gal
3/10/2006 05:12	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	101	lbs
3/10/2011 14:15	Pro Cooperative	Transportation	Fertilizer Pesticide	32% liquid fertilizer	2000	gal
3/14/2007 18:27	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs
3/14/2008 14:02	MidAmerican Energy	Pipeline	Propane/LPG/Natural Gas	Natural gas	1	unk
3/15/1995 15:45	DODGE LABS,FT.	Handling Storage Process	Acids/Bases	10 % ETHYLENE GLYCOL FROM CHILL H2O SYS		Unknown
3/16/2005 13:05	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
3/18/2005 07:09	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	1	unk

3/18/1998 00:31	INDUSTRIES,FARML AND	Handling Storage Process	Ammonia (anhydrous)	Anhydrous ammonia		Unknown
3/20/2002 19:09	Kenny Hair	Transportation	Petroleum	Diesel Fuel	100	gal
3/21/2011 14:55	Webster County	Handling And Storage	Inorganic Chemical	Lead	1	Unknown
3/22/2011 13:10	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	100	lbs
3/23/2007 15:21	Georgia Pacific Gypsum	Handling And Storage	Fertilizer/Pesticide	Ammonium phosphate	2000	gal
3/24/2005 12:11	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs
3/25/1997 09:25	COOP AND TWIN LAKES ENERGY,NEW	Motor Carrier	Petroleum	Diesel Fuel		Unknown
3/26/2002 18:24	Fort Dodge Foods	Handling And Storage	Acids/Bases	Vinegar	698	gal
3/26/2007 17:00	Star Energy, LLC	Handling And Storage	Petroleum	Diesel Fuel	35	gal
3/28/1995 07:01	INDUSTRIES,FARML AND	Handling Storage Process	Ammonia (anhydrous)	Anhydrous ammonia		Unknown
3/29/2001 16:13	Praxair, Inc.	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	4000	lbs
3/31/2000 11:10	W & H Cooperative Oil Co.	Handling And Storage	Petroleum	#2 Diesel Fuel	300	gal
4/1/2007 13:30	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
4/1/2007 18:00	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	600	lbs
4/2/2007 17:50	Frontier Ethanol	Handling And Storage	Organic Chemical	Fermentation slurry	200	gal
4/3/2006 15:50	Happel Excavating	Handling And Storage	Animal/Vegetable Product	Animal fat	250	gal
4/3/2010 04:04	Farmer's Co-op	Unknown	Ammonia (anhydrous)	Anhydrous Ammonia	1	Unknown
4/3/2011 23:01	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Anhydrous Ammonia - industrial use	10	lbs
4/4/2005 17:54	New Cooperative	Handling And Storage	Fertilizer/Pesticide	Treflan Herbicide	30	gal
4/4/2006 11:35	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
4/4/1995 11:30	COOP,UNITED	Motor Carrier	Acids/Bases	CLARITY AND ATRAZINE		Unknown
4/5/2006 11:00	Koch Nitrogen Company	Other	Ammonia (anhydrous)	MDEA	400	gal
4/7/2006 01:08	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs

4/7/2007 17:28	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs
4/8/2006 04:22	Unknown	RR Incident	Other Chemical	none	0	gal
4/9/2006 21:34	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs
4/10/2002 14:17	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	400	lbs
4/11/2002 01:45	Scott Sievers Trucking Inc.	Transportation	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	1	lbs
4/11/2008 17:51	Poet Biorefining	Handling And Storage	Animal/Vegetable Product	Corn mash	800	gal
4/12/1996 07:40	CENTRAL RAILROAD,CHICAGO	Railroad	Petroleum	Diesel Fuel		Unknown
4/15/2002 11:50	Unknown	Transportation	Petroleum	Transmission oil	1	gal
4/15/2008 07:49	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	18000	lbs
4/15/2009 22:58	Poet Biorefining	Handling And Storage	Acids/Bases	Sulfuric Acid	400	gal
4/15/2011 19:17	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	237	lbs
4/16/2002 09:25	Unknown	Handling And Storage	Petroleum	Hydraulic Oil	1	pt
4/18/2004 08:10	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs
4/18/2006 15:55	Vera Sun	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	6	lbs
4/18/1996 13:15	POWERS,WILLIAM	Handling Storage Process	Acids/Bases	TANK MIX 8 GAL. TREFLAN IN 350 WATER		Unknown
4/18/1998 17:55	LEITH,JOYCE	Handling Storage Process	Acids/Bases	SULFURIC OR MURATIC ACID		Unknown
4/19/2004 09:20	Koch Nitrogen Company	Handling And Storage	Acids/Bases	Sulfuric Acid	600	lbs
4/19/2005 11:50	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	MDEA	1	unk
4/19/2005 08:02	Nestle Purina Pet Care	Transportation	Petroleum	engine oil and antifreeze	1	unk
4/19/2010 11:43	Neese Inc.	Transportation	Fertilizer Pesticide	ag lime	50	gal
4/20/2002 19:49	Union Pacific Railroad	Transportation	Petroleum	Hydraulic Oil	25	gal
4/20/2011 21:50	Koch Nitrogen Company	Other	Inorganic Chemical	Anhydrous Ammonia - industrial use	1	Unknown
4/20/1997 01:04	INDUSTRIES,FARMLAND	Motor Carrier	Ammonia (anhydrous)	Anhydrous ammonia		Unknown
4/21/2000 15:15	Koch Nitrogen Company	Handling And Storage	Fertilizer Pesticide	32% UAN	500	ton

4/22/2002 10:00	New Cooperative	Handling And Storage	Animal/Vegetable Product	Animal fat	1400	gal
4/22/2011 16:35	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Anhydrous Ammonia - industrial use	100	lbs
4/22/1995 10:30	CARBONIC,LIQUID	Handling Storage Process	Ammonia (anhydrous)	Anhydrous ammonia		Unknown
4/23/2008 08:17	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	218	lbs
4/23/2008 09:03	New Cooperative	Transportation	Fertilizer Pesticide	Surpass	37	gal
4/24/2000 11:35	New Cooperative	Transportation	Fertilizer Pesticide	28% nitrogen fertilizer	1700	gal
4/26/2001 12:15	Van Diest Supply Co.	Transportation	Fertilizer Pesticide	32% nitrogen fertilizer	800	gal
4/26/2006 13:01	Fort Dodge - Water Treatment Plant	Handling And Storage	Inorganic Chemical	Mercury	1	unk
4/27/2007 08:01	New Cooperative	Handling And Storage	Animal/Vegetable Product	Animal fat	200	gal
4/28/2003 10:02	New Cooperative	Transportation	Fertilizer Pesticide	28% nitrogen fertilizer	100	gal
			Petroleum	Diesel Fuel	1	gal
4/29/1998 20:11	COOP,FARMERS	Motor Carrier	Acids/Bases	10-34-0 FERTILIZER		Unknown
4/30/2009 13:41	Valero (formerly Vera Sun)	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	29	lbs
5/2/2009 04:14	Anderson Erickson Dairy	Transportation	Petroleum	Diesel Fuel	300	gal
5/2/2009 04:15	Anderson Erickson Dairy	Transportation	Petroleum	Diesel Fuel	300	gal
5/7/2002 14:35	Farmland Industries/Koch Nitrogen	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	200	lbs
5/7/2007 11:25	Frontier Ethanol	Handling And Storage	Acids/Bases	Sulfuric Acid	5	gal
5/8/2007 11:40	Fort Dodge Animal Health	Pipeline	Organic Chemical	Propylene Glycol	1000	gal
				sodium molybnate	100	Unknown
5/8/1996 13:10	PETCARE,FRISKIES (now Nestle Purina)	Handling Storage Process	Acids/Bases	DETERGENT(TIDE) & WATER		Unknown
5/11/2003 15:45	Greg Campbel Site #1	Manure	Manure	Manure	1	unk
5/12/1995 11:45	STATES GYPSUM,UNITED	Handling Storage Process	Petroleum	#2 Diesel Fuel		Unknown
5/13/2006 16:02	Lambert,Chad	Transportation	Fertilizer Pesticide	Treflan Tank Mix	400	gal
5/14/2004 01:25	Solar Transport	Handling And Storage	Petroleum	Gasohol	100	gal
5/16/2001 10:29	MidAmerican Energy	Transformer	Acids/Bases	Transformer oil PCB	25	gal

5/16/2003 10:40	Farmland Industries/Koch Nitrogen	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
5/16/2010 02:36	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous Ammonia	657	lbs
5/17/1995 07:55	MERIEUX,RHONE	Motor Carrier	Acids/Bases	DIESEL FUEL #2		Unknown
5/17/1997 12:36	Unknown	Motor Carrier	Acids/Bases	TRI 4		Unknown
5/20/2009 21:19	FC Coop	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	200	lbs
5/21/2010 11:20	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	6406	lbs
5/23/2005 01:36	Koch Nitrogen Company	Handling And Storage	Fertilizer Pesticide	Ammonia nitrogen	1	unk
5/23/2005 15:09	Farmland Industries/Koch Nitrogen	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
5/26/2003 08:23	Sparboe Farms	Handling And Storage	Propane/LPG/Natural Gas	Propane	150	gal
5/26/2006 16:31	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	200	lbs
5/28/2009 21:54	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	400	lbs
5/29/2001 12:32	Prairie Energy REC	Transformer	Transformer oil/PCB	PCBs	2	gal
6/2/2005 18:04	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
6/2/2006 13:22	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	500	lbs
6/2/1997 17:14	COOPERATIVE,NEW	Motor Carrier	Acids/Bases	MARKSMAN HERBISIDE		Unknown
6/3/2006 22:05	New Cooperative	Handling And Storage	Animal/Vegetable Product	Animal fat	200	gal
6/5/2010 14:30	Nestle Purina Pet Care	Other	Petroleum	Hydraulic Oil	30	gal
6/5/1998 15:30	INDUSTRIES,FARMLAND	Handling Storage Process	Ammonia (anhydrous)	Anhydrous ammonia		Unknown
6/6/2010 06:51	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	510	lbs
6/7/2006 09:01	Vera Sun	Handling And Storage	Fertilizer Pesticide	Cinch light	0	Unknown
6/11/2004 10:23	New Cooperative	Handling And Storage	Fertilizer Pesticide	28% nitrogen fertilizer	1000	gal
6/12/2004 12:17	MidAmerican Energy	Transformer	Transformer oil/PCB	Transformer Oil	7	gal
6/12/2006 21:25	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
6/12/1997 14:22	ENERGY,MIDAMERICAN	Transformer	Transformer oil/PCB	Transformer Oil		Unknown

6/12/1998 11:38	AMERICAN ENERGY,MID	Transformer	Transformer oil/PCB	Transformer Oil		Unknown
6/13/2007 16:20	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	30	lbs
6/13/2011 09:41	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	43	lbs
6/14/2000 06:05	MidAmerican Env Services	Transformer	Petroleum	Mineral oil	1	Unknown
6/14/2004 15:12	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
6/14/2006 11:52	Vera Sun	Handling And Storage	Petroleum	ethanol	250	gal
6/15/2006 10:58	Frontier Ethanol	Handling And Storage	Animal/Vegetable Product	sillage	1000	gal
6/15/2009 14:03	Star Energy	Handling And Storage	Propane/LPG/Natural Gas	Liquid Propane	700	gal
6/16/2003 17:49	Koch Nitrogen Company	Other	Ammonia/Ag-related	Ammonia	1400	lbs
6/18/2010 08:25	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	250	lbs
6/19/2002 17:25	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	1000	gal
6/19/2004 05:50	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	gal
6/19/2009 02:30	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	3260	lbs
6/20/2001 11:30	Webster County - Weed Commissioner	Handling And Storage	Fertilizer Pesticide	2,4-D	5	gal
6/20/2001 11:27	Unknown	Unknown	Petroleum	Motor oil	1	qt
6/21/2011 08:07	Nestle Purina Pet Care	Handling And Storage	Acids/Bases	Waste Water Treatment Sludge (industrial)	1	Unknown
6/21/1996 15:45	COUNTY REC,WRIGHT	Transformer	Transformer oil/PCB	Transformer Oil		Unknown
6/21/1997 13:00	COUNTY RURAL COOPERATIVE,WRIGHT	Transformer	Transformer oil/PCB	Transformer Oil		Unknown
6/21/1997 14:35	AMERICAN ENERGY,MID	Transformer	Transformer oil/PCB	Transformer Oil		Unknown
6/22/2004 03:27	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
6/23/2005 16:30	Koch Nitrogen Company	Handling And Storage	Fertilizer Pesticide	Ammonia nitrogen	1200	lbs
6/23/2005 11:14	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	200	lbs
6/24/2005 11:38	Zigler Caterpillar	Handling And Storage	Petroleum	Hydraulic Fluid	50	gal
6/24/2009 12:21	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	200	lbs
6/24/1998 08:10	COUNTY REC,WRIGHT	Transformer	Transformer oil/PCB	Transformer Oil		Unknown

6/25/2010 09:24	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	1	Unknown
6/26/2006 11:22	Vera Sun	Handling And Storage	Fertilizer Pesticide	Cinch light	20	gal
6/27/2006 12:45	US Army Reserve	Handling And Storage	Petroleum	Diesel Fuel	25	gal
6/27/2011 16:30	MidAmerican Energy	Transformer	Transformer oil/PCB	Transformer Oil (Non PCB)	50	gal
6/28/2007 13:55	Koch Nitrogen Company	Handling And Storage	Other Chemical	Caustic Soda	5	gal
6/29/2006 12:43	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
7/2/2003 14:11	Koch Nitrogen Company	Other	Ammonia/Ag-related	Ammonia	0	lbs
			Other Chemical	Nox	0	lbs
7/5/2000 10:50	Union Pacific Railroad	Transportation	Petroleum	Diesel Fuel	2000	gal
7/6/2009 13:03	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	3500	lbs
7/6/2009 16:23	Star Energy, LLC	Handling And Storage	Petroleum	Diesel Fuel	30	gal
7/6/1998 10:08	AMERICAN ENERGY,MID	Transformer	Transformer oil/PCB	Transformer Oil		Unknown
7/7/2000 14:25	MidAmerican Env Services	Transportation	Petroleum	Hydraulic Oil	1	gal
7/9/2007 06:02	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	250	lbs
7/9/2009 08:11	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	250	lbs
7/10/2007 10:20	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	NOX (nitrogen oxide)	100	lbs
7/11/2007 12:43	Koch Nitrogen Company	Other	Other Chemical	Nox	1	unk
7/12/2005 06:45	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia vapor	1	unk
7/13/2007 11:09	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	sodium aluminate	5	gal
7/14/1995 11:25	Unknown	Handling Storage Process	Acids/Bases	ETHOANOL		Unknown
7/16/2002 22:22	MidAmerican Energy	Transformer	Acids/Bases	Transformer oil PCB	2	gal
7/16/2011 12:19	Krause Gentle Corporation	Handling And Storage	Petroleum	Gasoline	5	gal
7/17/2000 16:38	Martin Marietta Aggregates	Handling And Storage	Petroleum	#2 Diesel Fuel	40	gal
7/17/2003 13:20	Koch Nitrogen Company	Handling And Storage	Fertilizer Pesticide	Urea Ammonium Nitrate	1000	Unknown
7/17/2004 11:53	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs

7/18/2010 23:36	Fort Dodge Ice & Cold Storage	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	1	Unknown
7/18/1996 15:29	ENERGY,MIDAMERICAN	Transformer	Transformer oil/PCB	Transformer Oil		Unknown
7/19/2011 09:31	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	164	lbs
7/21/2008 16:09	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	NO x	400	lbs
7/22/2003 17:50	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	6468	lbs
7/22/2003 22:05	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	900	lbs
7/22/2004 15:40	Koch Nitrogen Company	Handling And Storage	Fertilizer Pesticide	UAN	200	gal
7/22/1995 14:34	DODGE PARKS & RECREATION,FT.	Handling Storage Process	Chlorine	Chlorine		Unknown
7/23/2000 12:08	MidAmerican Env Services	Transformer	Acids/Bases	Transformer oil PCB	2	gal
7/23/2004 19:50	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
7/23/2006 09:46	Koch Nitrogen Company	Pipeline	Ammonia/Ag-related	Ammonia	2680	lbs
7/23/1996 16:00	ENERGY,MIDAMERICAN	Transformer	Transformer oil/PCB	Transformer Oil		Unknown
7/24/2005 06:03	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
7/24/1996 11:00	FARMS,ROMAR	Handling Storage Process	Manure	Hog manure		Unknown
7/24/1996 15:02	PACIFIC GYPSUM,GEORGIA	Motor Carrier	Acids/Bases	DILOFLO GW (ENZYME)		Unknown
7/25/2004 16:20	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
7/26/2004 09:18	Praxair, Inc.	Handling And Storage	Ammonia/Ag-related	Ammonia	1	unk
7/26/2005 08:54	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	315	lbs
7/27/2005 10:42	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	250	lbs
7/28/2003 14:54	Koch Nitrogen Company	Other	Ammonia/Ag-related	Ammonia	0	lbs
7/28/2003 03:50	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	1200	lbs
7/28/2011 15:01	Unknown	Handling And Storage	Chlorine	Chlorine gas	1	Unknown
7/29/2002 17:01	Head Start of Fort Dodge, Sacred Heart School	Handling And Storage	Other Chemical	Formaldehyde	1	gal
7/30/2003 01:55	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	3500	lbs
7/30/2007 13:28	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	210	lbs

7/31/2003 12:14	Prairie Energy Cooperative	Transformer	Transformer oil/PCB	Transformer Oil	2	gal
8/1/2003 17:25	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	16000	lbs
8/1/2006 11:49	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
8/5/2003 17:30	Farmers Cooperative (FC)	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	1	unk
8/5/2008 15:30	Poet Biorefining	Handling And Storage	Acids/Bases	Sodium hydroxide	500	gal
8/6/2003 08:44	Farmland Industries/Koch Nitrogen	Handling And Storage	Ammonia/Ag-related	Ammonia	2000	lbs
			Other Chemical	Nox	10	lbs
8/6/2003 18:40	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
			Other Chemical	Nox	10	lbs
8/6/2007 12:00	Vera Sun	Handling And Storage	Animal/Vegetable Product	Wet cake residue following fermentation	1	unk
8/7/2003 19:21	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
8/7/2007 14:30	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	320	lbs
8/8/2007 01:53	Koch Nitrogen Company	Other	Ammonia/Ag-related	Ammonia	100	lbs
8/8/2007 09:04	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs
8/10/2009 15:24	Prairie Energy REC	Handling And Storage	Petroleum	Hydraulic Oil	2	gal
8/13/2002 19:16	Star Energy, LLC	Handling And Storage	Petroleum	Kerosene	1	gal
8/13/2004 13:02	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
8/13/2008 09:21	M & M Transport LLC	Transportation	Petroleum	Diesel Fuel	75	gal
8/16/2000 16:15	Unknown	Transformer	Transformer oil/PCB	Transformer mineral oil	1	gal
8/17/2010 10:00	Valero (formerly Vera Sun)	Transformer	Transformer oil/PCB	Transformer Oil (Non PCB)	250	gal
8/19/2009 21:21	Solar Transport	Handling And Storage	Petroleum	Diesel Fuel	1	gal
8/22/2011 12:11	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	26	lbs
8/23/2000 05:45	Fort Dodge Ice & Cold Storage	Handling And Storage	Ammonia/Ag-related	Ammonia	2	gal
8/23/2001 15:25	Farmland Industries/Koch Nitrogen	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs

8/25/2006 08:09	New Cooperative	Theft	Ammonia (anhydrous)	Anhydrous ammonia	2000	gal
8/26/2003 20:20	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	6000	lbs
8/27/2003 14:28	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	9000	lbs
			Other Chemical	Nox	20	lbs
8/27/2003 00:25	Koch Nitrogen Company	Other	Ammonia/Ag-related	Ammonia	6000	lbs
			Other Chemical	Nox	10	lbs
8/27/2003 04:57	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs
8/27/1996 18:42	CENTRAL AND PACIFIC,CHICAGO	Railroad	Petroleum	Diesel Fuel		Unknown
8/29/2007 13:32	New Cooperative	Handling And Storage	Animal/Vegetable Product	Animal fat	100	gal
8/30/2003 16:25	Johnson,Dave	Dumping	Petroleum	Gasoline	5	gal
8/31/2006 08:19	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs
9/5/1995 08:40	INDUSTRIES,FARML AND	Handling Storage Process	Ammonia (anhydrous)	Anhydrous ammonia		Unknown
9/6/1995 10:05	INDUSTRIES,FARML AND	Handling Storage Process	Ammonia (anhydrous)	Anhydrous ammonia		Unknown
9/9/2009 10:32	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	1000	lbs
9/10/2002 11:30	Midland Power Cooperative	Transformer	Transformer oil/PCB	Transformer Oil	13	gal
9/11/2009 09:32	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	NOX (nitrogen oxide)	1	Unknown
9/15/2005 07:15	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	NH3N	1	unk
9/16/1997 11:30	INDUSTRIES,FARML AND	Handling Storage Process	Ammonia (anhydrous)	Anhydrous ammonia		Unknown
9/19/2003 09:30	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	1	unk
9/19/2003 13:02	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
9/19/2004 12:14	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
9/19/2005 16:47	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
9/20/2006 16:05	Frontier Ethanol	Handling And Storage	Animal/Vegetable Product	wash water	5000	gal
9/20/1996 13:40	ENERGY,MIDAMERICAN	Transformer	Transformer oil/PCB	Transformer Oil		Unknown
9/21/2000 11:30	Unknown	Transportation	Petroleum	Hydraulic Oil	1	gal

9/22/2003 22:55	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs
9/23/2004 14:29	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	MDEA	150	gal
9/23/1997 13:15	LAWN CARE,ABC	Handling Storage Process	Acids/Bases	FERTILIZER (LIQUID)		Unknown
9/23/1998 11:00	Unknown,Unknown	Handling Storage Process	unknown	Unknown		Unknown
9/24/2010 13:09	Magellan Midstream Parnters, LP (formerly Williams	Handling And Storage	Petroleum	Fuel Oil	75	gal
9/27/2008 07:03	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	200	lbs
9/28/2010 05:30	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (NH3)	1	lbs
9/28/1995 10:15	LIGHT & POWER,IOWA-ILLINOIS	Transformer	Transformer oil/PCB	Transformer Oil		Unknown
9/29/1998 15:10	AMERICAN ENERGY,MID	Transformer	Transformer oil/PCB	Transformer Oil		Unknown
10/2/2003 16:20	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Methyldiethanolamine	50	gal
10/2/2004 19:17	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
10/2/1997 16:40	PACIFIC,GEORGIA	Motor Carrier	Petroleum	Diesel Fuel		Unknown
10/3/2005 14:40	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
10/4/2003 12:10	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
10/5/2003 17:30	NCIRSWA Landfill	Handling And Storage	Petroleum	Ground tires	1	unk
10/5/2004 13:53	MidAmerican Energy	Transformer	Transformer oil/PCB	Transformer oil - PCB	1	pt
10/6/2003 19:55	Farmland Industries/Koch Nitrogen	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
10/6/2010 08:22	Van Diest Supply Co.	Transportation	Fertilizer/Pesticide	Fertilizer - NPK (nn-pp-kk)	20	ton
			Petroleum	Diesel Fuel	10	gal
10/6/1997 08:25	APPLE LINES,NEW	Motor Carrier	Petroleum	Diesel Fuel		Unknown
10/6/1997 14:00	INDUSTRIES,FARML AND	Handling Storage Process	Ammonia/Ag-related	Ammonia vapor		Unknown
10/8/2001 23:03	Febold,Alan	Transportation	Petroleum	Diesel Fuel	40	gal
10/8/2003 12:46	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
10/8/2003 16:00	Koch Nitrogen Company	Handling And Storage	Other Chemical	Nox	10	lbs

10/10/2010 11:49	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	1	Unknown
10/13/2005 16:21	Gundmonson Services	Handling And Storage	Organic Chemical	Joint compound	150	gal
10/13/2006 08:51	Pro Cooperative	Transportation	Petroleum	Diesel Fuel	5	gal
10/15/2003 12:35	Koch Nitrogen Company	Handling And Storage	Acids/Bases	Molybdate salts, 20-30% solution w water	400	gal
10/16/2001 14:30	New Cooperative	Transportation	Petroleum	Hydraulic Oil	15	gal
10/16/2009 12:47	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	400	lbs
10/16/2009 15:47	Poet Biorefining	Handling And Storage	Acids/Bases	Sulfuric acid	10	gal
10/17/2002 10:50	Fort Dodge Betterment	RR Incident	Petroleum	Diesel Fuel	100	gal
10/17/2003 16:00	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	process water containing ammonia and copper	50	gal
10/18/2011 01:01	Poet Biorefining	Handling And Storage	Acids/Bases	Sodium hydroxide	100	gal
10/19/2003 17:10	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	100	lbs
			Other Chemical	Nox	10	lbs
10/19/2003 11:04	Ron Ely Junk Yard	Handling And Storage	Inorganic Chemical	Tires	1	unk
10/19/2011 12:45	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	82	lbs
10/20/2004 09:12	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	NO x	100	lbs
10/21/2007 23:17	Koch Nitrogen Company	Handling And Storage	Petroleum	Gear oil	100	gal
10/21/2010 13:27	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	1500	lbs
10/21/2010 05:45	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	1026	lbs
10/21/1998 10:10	ENERGY,MID-AMERICAN	Handling Storage Process	Transformer oil/PCB	Transformer Oil		Unknown
10/22/2007 08:43	Poet Biorefining	Handling And Storage	Animal/Vegetable Product	thin stillage	20	gal
10/22/1998 19:20	TRUCK, UNKNOWN OWNER,PICKUP	Motor Carrier	Petroleum	Gasoline		Unknown
10/23/2009 15:31	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	1900	lbs

10/23/2010 13:58	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	100	lbs
10/24/2002 11:00	Fort Dodge Correctional Facility	Transportation	Petroleum	Hydraulic Oil	6	gal
10/24/2003 13:00	Koch Nitrogen Company	Handling And Storage	Acids/Bases	Sulfuric acid	5	gal
10/25/2004 10:05	Koch Nitrogen Company	Handling And Storage	Fertilizer Pesticide	UAN	2500	gal
10/27/2009 12:33	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	450	lbs
10/31/2007 09:56	New Cooperative	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	1400	gal
10/31/2007 10:34	Poet Biorefining	Handling And Storage	Petroleum	Denatured Alcohol	275	gal
11/1/2005 11:14	Midland Power Cooperative	Transformer	Transformer oil/PCB	Transformer oil - PCB	400	gal
11/1/2006 11:27	Midland Power Cooperative	Transformer	Transformer oil/PCB	Non PCB transformer oil	214	gal
11/1/2008 07:39	DRT Biosolids	Transportation	Animal/Vegetable Product	Biosolids (ww sludge)	3200	gal
11/1/2011 10:47	Farnham,Trent	Handling And Storage	Fertilizer/Pesticide	Anhydrous Ammonia - Ag related	1	Unknown
11/2/2005 19:30	Berkland Farms	Transportation	Petroleum	Diesel Fuel	110	gal
11/4/2004 10:50	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	200	lbs
11/4/2004 12:04	W-H Coop Oil Co.	Handling And Storage	Petroleum	Diesel Fuel	5	gal
11/4/1998 13:49	TRANSPORT,SOLAR	Handling Storage Process	Petroleum	jet fuel		Unknown
11/5/2011 09:45	Western Cooperative Transport Association	Handling And Storage	Petroleum	Diesel Fuel	75	gal
11/7/2007 11:19	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	2000	lbs
11/7/2007 17:36	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	NO x	200	lbs
11/9/2002 03:40	Farmers Cooperative (FC)	Transportation	Ammonia (anhydrous)	Anhydrous ammonia	650	gal
11/9/2005 12:29	Samuelson,John	Manure	Manure	Liquid hog manure	5	gal
11/10/2000 15:13	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Nitrogen oxide (NO)	400	lbs
11/10/2010 14:20	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	890	lbs
11/12/2002 15:13	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	1000	lbs
11/12/2010 13:05	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	10	lbs

11/13/2007 16:17	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	276	lbs
11/15/2004 08:15	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	100	lbs
11/17/1998 09:00	INDUSTIES,FARMLAND	Handling Storage Process	Ammonia/Ag-related	Ammonia		Unknown
11/18/2008 15:35	Georgia Pacific Gypsum	Transformer	Transformer oil/PCB	Transformer Oil - Non PCB Oil	50	gal
11/19/2003 04:30	Koch Nitrogen Company	Handling And Storage	Other Chemical	Nox	10	lbs
11/20/2003 23:03	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	methyl-di-ethanolamine	200	gal
11/20/2008 14:55	Georgia Pacific Gypsum	Other	Petroleum	Hydraulic Oil	20	gal
11/22/2003 01:27	Northern Natural Gas	Pipeline	Propane/LPG/Natural Gas	Natural gas	100000	cf
11/26/2007 14:36	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	400	lbs
11/26/2007 13:38	Pipeline Services of Iowa	Handling And Storage	Petroleum	Diesel Fuel	3	qt
11/27/1995 11:38	MATTRESS COMPANY,SEALY	Motor Carrier	Petroleum	Diesel Fuel		Unknown
11/28/2007 12:18	Pipeline Services of Iowa	Handling And Storage	Petroleum	Hydraulic Oil	1	qt
11/28/2007 15:26	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	200	lbs
11/29/2001 15:13	MidAmerican Energy	Transportation	Petroleum	Diesel Fuel	2	gal
11/29/2007 16:41	Poet Biorefining	Handling And Storage	Animal/Vegetable Product	Corn mash	300	gal
12/2/2003 10:40	Koch Nitrogen Company	Handling And Storage	Fertilizer Pesticide	UAN	15	gal
12/3/2002 13:30	Canadian National RR	RR Incident	Organic Chemical	Sodium Nitrate	1	unk
				Sodium nitrite	1	unk
				Sodium Silicate	400	gal
				Sodium Tetra Borate	1	unk
12/3/2003 15:21	Koch Nitrogen Company	Handling And Storage	Fertilizer/Pesticide	Ammonia (anhydrous) - Agricultural	100	lbs
			Other Chemical	Nox	10	lbs
12/4/2003 19:00	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	73	lbs
			Other Chemical	Nox	15	lbs
12/4/2005 19:00	Koch Nitrogen Company	Handling And Storage	Fertilizer Pesticide	Ammonia nitrogen	90	lbs
12/9/2008 16:04	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	350	lbs

12/9/2010 21:01	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Anhydrous Ammonia - industrial use	1	Unknown
12/10/2001 11:57	Unknown	Transformer	Petroleum	Mineral oil	1	gal
12/10/2004 08:22	US Fedaral Aviation Administration					
12/11/2003 09:20	Koch Nitrogen Company	Handling And Storage	Fertilizer Pesticide	UAN	10	gal
12/11/2006 13:52	New Cooperative	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	1000	gal
12/11/1995 08:45	MAE CANDIES,FANNY	Motor Carrier	Petroleum	Diesel Fuel		Unknown
12/12/2011 00:40	Koch Nitrogen Company	Handling And Storage	Inorganic Chemical	Ammonia (anhydrous) - Industrial	1	Unknown
12/13/1997 18:11	INDUSTRIES,FARML AND	Handling Storage Process	Ammonia (anhydrous)	Anhydrous ammonia		Unknown
12/14/2001 11:35	Magellan Midstream Parnters, LP (formerly Williams	Handling And Storage	Petroleum	Gasoline	1049	gal
12/15/2003 16:19	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	1000	lbs
12/17/2010 21:00	Koch Nitrogen Company	Handling And Storage	Organic Chemical	Cooling water	350	gal
12/18/2007 14:04	Prairie Energy Coop.	Handling And Storage	Petroleum	Hydraulic Oil	1	gal
12/18/2008 23:05	Koch Nitrogen Company	Handling And Storage	Ammonia (anhydrous)	Anhydrous ammonia	200	lbs
12/19/2006 09:40	Koch Nitrogen Company	Handling And Storage	Other Chemical	Nox	10	lbs
12/20/2001 12:36	MidAmerican Energy	Transportation	Petroleum	Hydraulic Oil	2	gal
12/21/2000 13:10	Prairie Energy REC	Transformer	Acids/Bases	Transformer oil PCB	1	unk
12/22/2005 11:04	Koch Nitrogen Company	Handling And Storage	Ammonia/Ag-related	Ammonia	6965	lbs
			Inorganic Chemical	NO x	370	lbs
12/29/2011 17:00	KVLZ Trucking	Transportation	Petroleum	Diesel Fuel	50	gal
12/31/2011 11:30	Solar Transport	Handling And Storage	Petroleum	Diesel Fuel	50	gal
12/31/2011 17:40	Valero (formerly Vera Sun)	Railroad	Petroleum	Diesel Fuel	445	gal

*Data provided by: Iowa Department of Natural Resources, November 2010 http://www.iowadnr.gov/spills/data.html

*Data provided by: Fort Dodge Fire Department, July 2011

Appendix D: Critical Facilities

Critical Facilities - Fort Dodge					
Name	**Address**	**City**	**State**	**Zip**	**Phone Number *(515)***
City/County Facilities					
Fort Dodge City Hall	819 1st Avenue	Fort Dodge	IA	50501	573-7144
Fort Dodge Correctional Facility	1550 L Street	Fort Dodge	IA	50501	574-4700
Fort Dodge Fire Department	1515 Central Avenue	Fort Dodge	IA	50501	573-2871/576-1031
Fort Dodge Police Department	702 1st Avenue South	Fort Dodge	IA	50501	
Webster County Communications Center	702 1st Avenue South	Fort Dodge	IA	50501	
Webster County Courthouse	701 Central Avenue	Fort Dodge	IA	50501	573-2323
Webster County Jail	702 1st Avenue South	Fort Dodge	IA	50501	573-1462
Webster County Law Enforcement Center	702 1st Avenue South	Fort Dodge	IA	50501	573-1462
Lift Stations					
Ag Park Lift Station	2000 Hayes Avenue	Fort Dodge	IA	50501	
East Lawn Lift Station	212 South 32nd Street	Fort Dodge	IA	50501	
H Street Lift Station	200 H Street	Fort Dodge	IA	50501	
Hawkeye Lift Station	101 2nd Street Northwest	Fort Dodge	IA	50501	
Holiday Lift Station	2001 Highway 169 South	Fort Dodge	IA	50501	
I Street Lift Station	200 I Street	Fort Dodge	IA	50501	
J Street Lift Station	200 J Street	Fort Dodge	IA	50501	
Main Lift Station	1538 Avenue B	Fort Dodge	IA	50501	
North Gate Lift Station	2711 20th Avenue North	Fort Dodge	IA	50501	
Oak Forest Lift Station	1741 North 11th Street	Fort Dodge	IA	50501	
Riverside Lift Station	135 East Riverside Drive	Fort Dodge	IA	50501	
Wells					
Well 8	120 North 1st Street	Fort Dodge	IA	50501	
Well 18	705 Meriweather Drive	Fort Dodge	IA	50501	
Well 17	4 12th Street Northwest	Fort Dodge	IA	50501	
Well 16	711 North 1st Street	Fort Dodge	IA	50501	
Well 15	104 North 1st Street	Fort Dodge	IA	50501	
Well 14	151 East Riverside Drive	Fort Dodge	IA	50501	
Well 12	150 North 1st Street	Fort Dodge	IA	50501	
Water Towers					
32nd Street Tower	689 South 32nd Street	Fort Dodge	IA	50501	
Airport Tower	1639 Nelson Avenue	Fort Dodge	IA	50501	
Avenue O Tower	389 Avenue O	Fort Dodge	IA	50501	
Water Plant Reservoir	600 Phinney Park Drive	Fort Dodge	IA	50501	
Water Treatment Plant	600 Phinney Park Drive	Fort Dodge	IA	50501	
Other Public Works					
Fort Dodge Central Maintenance Facility	3001 8th Avenue South	Fort Dodge	IA	50501	

John W. Pray Water Treatment Plant	600 Phinney Park Drive	Fort Dodge	IA	50501	
Waste Water Treatment Facility	1801 Avenue B	Fort Dodge	IA	50501	
Shelters					
Beacon of Hope Men's Shelter	1021 1st Avenue North	Fort Dodge	IA	50501	955-3366
Epworth United Methodist Church	2025 11th Avenue South	Fort Dodge	IA	50501	573-4415
First Baptist Church	28 North 10th Street	Fort Dodge	IA	50501	573-3517
First Church of the Nazarene	1250 North 24th Street	Fort Dodge	IA	50501	576-5925
First Covenant Church	201 Avenue H	Fort Dodge	IA	50501	955-3121
First Presbyterian Church	111 5th Avenue North	Fort Dodge	IA	50501	576-2091
First United Methodist Church	127 N 10th Street	Fort Dodge	IA	50501	576-7586
Fort Dodge Public Schools	104 South 17th Street	Fort Dodge	IA	50501	576-1161
Good Shepherd Lutheran Church	1436 21st Avenue North	Fort Dodge	IA	50501	573-3174
Iowa Central Community College	330 Avenue M	Fort Dodge	IA	50501	576-0099 Ext. 2223
New Covenant Christian Church	3318 5th Avenue South	Fort Dodge	IA	50501	955-6222
Northfield Church of Christ	2933 North 15th Street	Fort Dodge	IA	50501	576-2096
Paula J. Baber Hospice Home	2630 9th Avenue South	Fort Dodge	IA	50501	574-8500
Prince of Peace Lutheran Church	1023 South 27th Street	Fort Dodge	IA	50501	573-8618
St. Mark's Episcopal church	1007 1st Avenue South	Fort Dodge	IA	50501	576-2019
YWCA Shelter	826 1st Avenue North	Fort Dodge	IA	50501	573-3931
Webster County Fairgrounds	22770 Old Hwy 169	Fort Dodge	IA	50501	955-3764
School Facilities					
Butler Elementary School	945 South 18th Street	Fort Dodge	IA	50501	574-5882
Community Christian School	3058 10th Avenue North	Fort Dodge	IA	50501	573-3011
Cooper Elementary School	2420 14th Avenue North	Fort Dodge	IA	50501	574-5602
Duncombe Elementary School	615 North 16th Street	Fort Dodge	IA	50501	574-5623
Fair Oaks Middle School	416 South 10th Street	Fort Dodge	IA	50501	574-5691
Feelhaver Elementary School	1300 14th Avenue North	Fort Dodge	IA	50501	574-5680
Fort Dodge Schools Administrative Building/Gordon	104 South 17th Street	Fort Dodge	IA	50501	576-1161
Fort Dodge Schools Bus Garage		Fort Dodge	IA	50501	
Fort Dodge Senior High School	819 North 25th Street	Fort Dodge	IA	50501	574-5747
Fort Dodge Middle School		Fort Dodge	IA	50501	574-5613
Iowa Central Community College	One Triton Circle	Fort Dodge	IA	50501	576-0099
Phillips Middle School	1015 5th Avenue North	Fort Dodge	IA	50501	574-5711
Riverside Elementary School	733 F Street	Fort Dodge	IA	50501	955-8817
St. Edmond Catholic Schools	2220 4th Avenue North	Fort Dodge	IA	50501	955-6077
St. Paul Lutheran School	1217 4th Avenue South	Fort Dodge	IA	50501	955-7208
Grocery/Food Stores & Water Distribution					

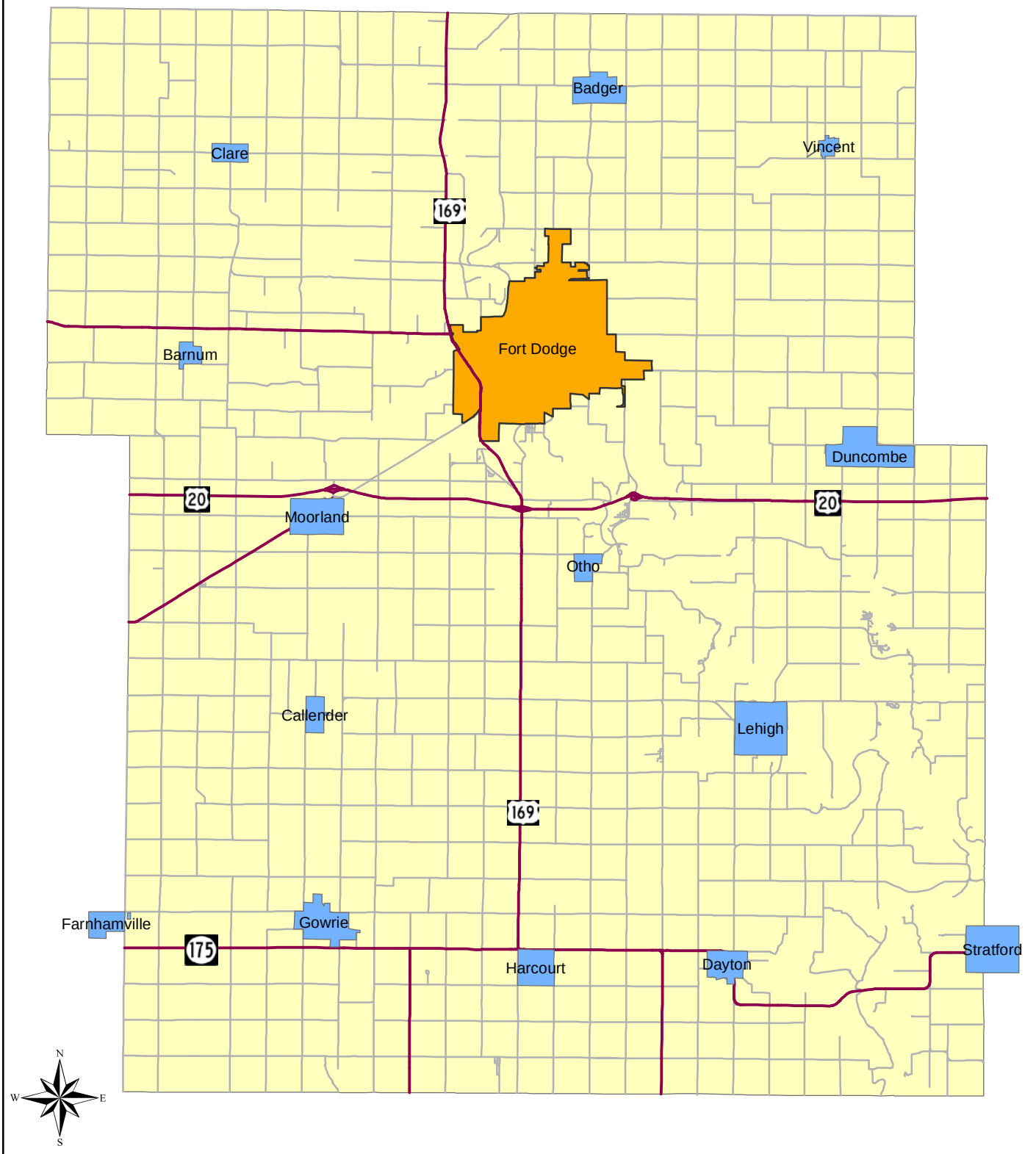
Aldi's Food Store	2736 1st Avenue South	Fort Dodge	IA	50501	
Culligan Water Conditioning	2920 North 15th Street	Fort Dodge	IA	50501	576-7157
Fareway	1231 1st Avenue South	Fort Dodge	IA	50501	576-0341
Hy-Vee Store	115 South 29th Street	Fort Dodge	IA	50501	573-4105
Northern Lights Foodservice	2949 8th Avenue South	Fort Dodge	IA	50501	576-0751
Pelham's Water Conditioning	2319 5th Avenue South	Fort Dodge	IA	50501	576-6481
Pepsi Beverages Co.	202 Kenyon Road West	Fort Dodge	IA	50501	955-8584
Target	2910 1st Avenue South	Fort Dodge	IA	50501	573-7950
Wal-Mart	2026 1st Avenue South	Fort Dodge	IA	50501	576-7400
Mass Distribution					
Crossroads Mall	217 South 25th Street	Fort Dodge	IA	50501	955-2819
Pharmacies					
Clinic Pharmacy	804 Kenyon Road	Fort Dodge	IA	50501	
Daniel Pharmacy	1114 Central Avenue	Fort Dodge	IA	50501	573-3431
Disco Drug Medical Arts Building	1428 2nd Avenue North	Fort Dodge	IA	50501	955-5430
Hy-Vee - Pharmacy	115 S 29th Street, Suite A	Fort Dodge	IA	50501	576-5320
Hy-Vee Drugstore	214 S 25th Street	Fort Dodge	IA	50501	576-3633
Professional Pharmacy	800 Kenyon Road	Fort Dodge	IA	50501	576-5119
Shaklee Distributor	721 B Street	Fort Dodge	IA	50501	955-4040
Target - Pharmacy	2910 1st Avenue South	Fort Dodge	IA	50501	573-7202
Walgreens	2503 5th Avenue South	Fort Dodge	IA	50501	576-7113
Wal-Mart - Pharmacy	3036 1st Avenue South	Fort Dodge	IA	50501	576-7405
Transportation/Towing					
Con-Way Freight	115 South 32nd Street	Fort Dodge	IA	50501	955-6419
Custom Auto & Towing	116 South 21st Street	Fort Dodge	IA	50501	955-3838
DART Bus	530 1st Avenue South	Fort Dodge	IA	50501	573-8145
Decker Truck Line	4000 5th Avenue South	Fort Dodge	IA	50501	576-4141
Fort Dodge Regional Airport	1639 Nelson Avenue	Fort Dodge	IA	50501	573-3881
Keim TS, Inc.	1314 South 32nd Street	Fort Dodge	IA	50501	955-5523
Mid-Iowa Towing	1914 Kountry Lane	Fort Dodge	IA	50501	955-1700
Oberg Freight Company	22153 Old Highway 169	Fort Dodge	IA	50501	955-6818
Ponderosa Towing	1615 Avenue O	Fort Dodge	IA	50501	573-3205
Smithway Motor Xpress Corporation	2031 Quail Avenue	Fort Dodge	IA	50501	576-7418
YRC	2354 170th Street	Fort Dodge	IA	50501	576-2223
Major Fuel Suppliers					
Doolittle Oil Company, Inc.	2029 Quail Avenue	Fort Dodge	IA	50501	573-4221

Gene Moeller Oil Co.	203 South 21st Street	Fort Dodge	IA	50501	549-3551
Relief Agencies					
American Red Cross	22 North 16th Street	Fort Dodge	IA	50501	576-1911
Catholic Social Services	1321 2nd Avenue South	Fort Dodge	IA	50501	576-4156
Children & Families of Iowa	1728 Central Avenue	Fort Dodge	IA	50501	573-2193
Community Health Center	126 N 10th Street	Fort Dodge	IA	50501	573-4107
Department of Human Services	330 1st Avenue North	Fort Dodge	IA	50501	955-5858
DSAOC Shelter	-	Fort Dodge	IA	50501	955-2273
Fort Dodge Housing Agency	700 South 17th Street	Fort Dodge	IA	50501	573-7751
Goodwill	2735 5th Avenue South	Fort Dodge	IA	50501	955-4688
Highland Park Center	821 South 15th Street	Fort Dodge	IA	50501	576-6500
Lord's Cupboard	127 North 10th Street	Fort Dodge	IA	50501	576-7586
RSVP	118 North 12th Street	Fort Dodge	IA	50501	573-3477
Salvation Army	126 North 7th Street	Fort Dodge	IA	50501	576-1281
Trinity Regional Medical Center	802 Kenyon Road	Fort Dodge	IA	50501	574-6519
Upper Des Moines Opportunity	900 Central Avenue	Fort Dodge	IA	50501	576-7744
Volunteer Center/United Way	803 Central Avenue	Fort Dodge	IA	50501	573-3179
Webster County Relief/Webster County Public	330 1st Avenue North	Fort Dodge	IA	50501	573-7851
YWCA Shelter	826 1st Avenue North	Fort Dodge	IA	50501	573-3931
Assisted Living & Nursing Homes					
Bickford Assisted Living	1536 20th Avenue North	Fort Dodge	IA	50501	573-3300
CareAGE of Fort Dodge	728 14th Avenue North	Fort Dodge	IA	50501	576-7226
Fort Dodge Villa Care Center	2721 10th Avenue North	Fort Dodge	IA	50501	576-7525
Friendship Haven	420 Kenyon Road	Fort Dodge	IA	50501	593-2121
Marian Home	2400 6th Avenue North	Fort Dodge	IA	50501	576-1138
Northwood's Living	1470 21st Avenue North	Fort Dodge	IA	50501	573-8243
Villa Cottages Assisted Living	925 Martin Luther King Drive	Fort Dodge	IA	50501	576-6525
Communications					
Bemrich Data - Communications	110 South 21st Street	Fort Dodge	IA	50501	955-3257
Cellular Connect	3037 1st Avenue South	Fort Dodge	IA	50501	576-4883
Electronic Engineering Company	2411 5th Avenue South	Fort Dodge	IA	50501	576-2411
First Source Cellular	924 Central Avenue	Fort Dodge	IA	50501	269-3293
Frontier Communications	600 1st Avenue South	Fort Dodge	IA	50501	955-1114
Fusion Technologies of Iowa	1009 North 9th Street	Fort Dodge	IA	50501	576-1889
Hawkeye Wireless	P.O. Box 58	Fort Dodge	IA	50501	955-7774
Mediacom	1225 2nd Avenue South	Fort Dodge	IA	50501	955-6100
Phone Card Connection	1108 Central Avenue	Fort Dodge	IA	50501	955-3689

US Cellular	Crossroads Mall - 217 S 25th St	Fort Dodge	IA	50501	571-5000
Z Wireless	18 North 12th Street	Fort Dodge	IA	50501	955-4780
Hospitals (Local & Surrounding)					
Trinity Regional Medical Center	802 Kenyon Road	Fort Dodge	IA	50501	574-6519
Trinity Regional Medical Center - Dialysis Center	821 South 25th Street	Fort Dodge	IA	50501	574-6200
Hamilton Hospital	2350 Hospital Drive	Webster City	IA	50595	832-9400
Humboldt County Memorial Hospital	1000 15th Street North	Humboldt	IA	50548	332-2811
Wright Medical Center	1316 South Main Street	Clarion	IA	50525	532-2811
Pocahontas Community Hospital	606 Northwest 7th Street	Pocahontas	IA	50574	335-3501
Greene County Medical Center	1000 West Lincolnway Street	Jefferson	IA	50129	386-2114
Loring Hospital	211 Highland Avenue	Sac City	IA	50583	662-7105
Stewart Memorial Hospital	1301 West Main Street	Lake City	IA	51449	464-3171

Appendix F: Hazard Maps

City of Fort Dodge

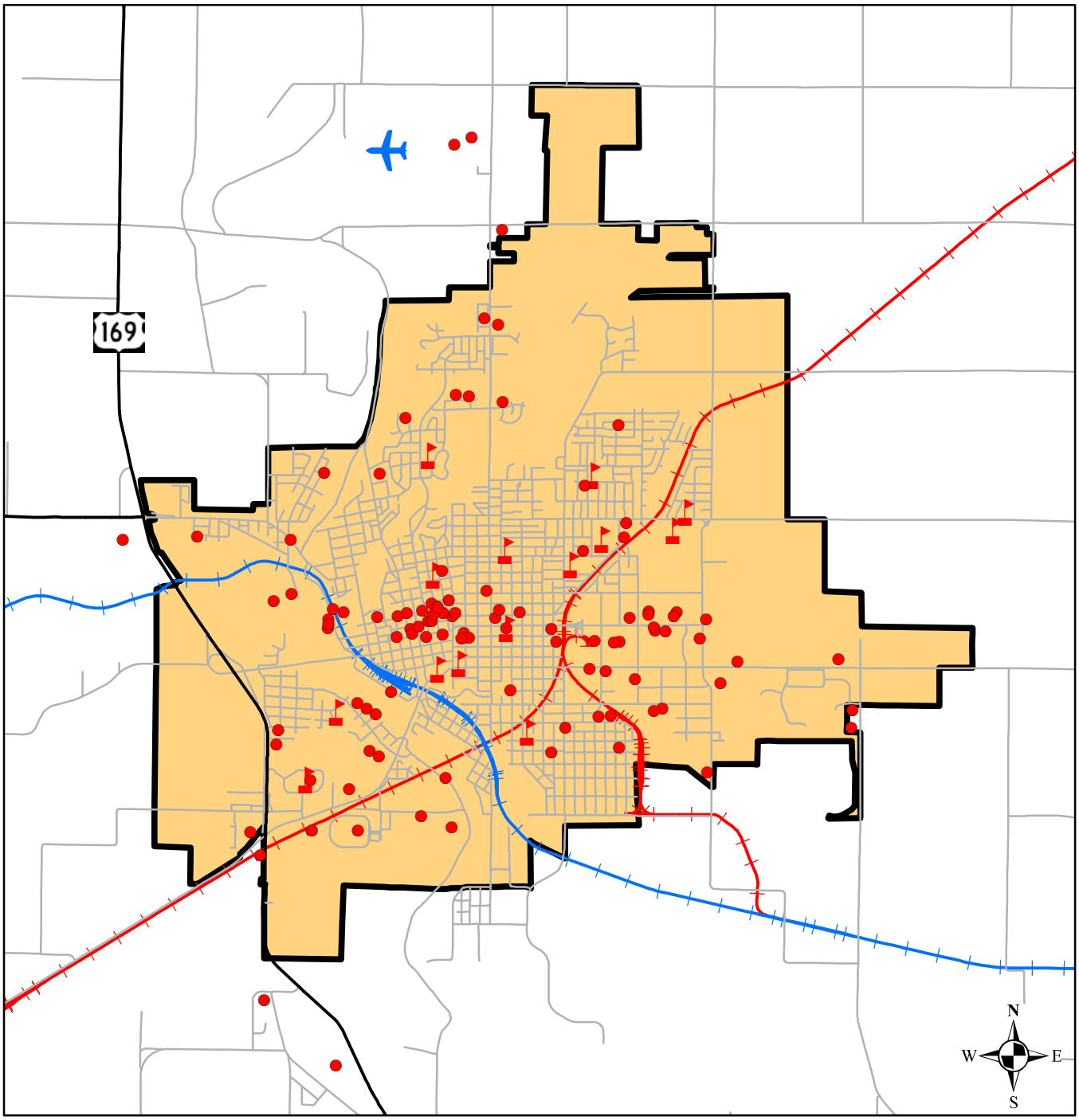


Incorporated Cities
Roads
Primary Roads
Webster County
City of Fort Dodge

Map Created By: MIDAS Council of Governments, 2012
Data Sources, NRGIS Library, 2010 & IDOT, 2010

0 2 4 8 Miles

Fort Dodge Transportation & Critical Facilities



1 0.5 0 1 Miles

Map Created By: MIDAS Council of Governments, 2012
Data Sources, NRGIS Library, 2010 & IDOT, 2010

Legend

Critical Facilities

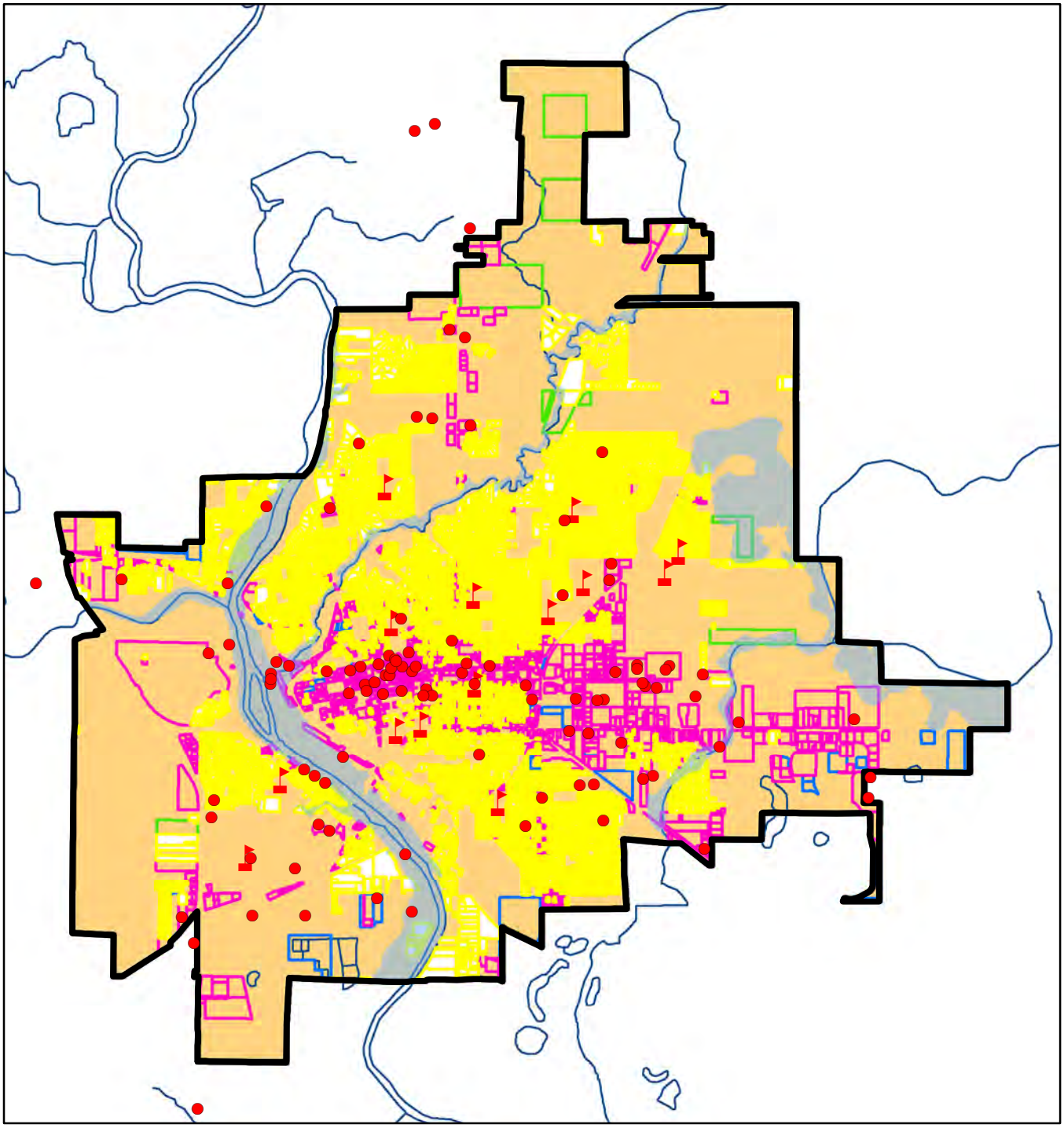
- All Types
- School Buildings
- Fort Dodge Regional Airport

- Primary Roads
- Roads
- City Boundary

Primary Rail Operators

- Chicago, Central & Pacific
- Iowa Northern Railway
- Union Pacific

Fort Dodge Flood Inundation Map



0.8 0.4 0 0.8 Miles

Map Created By: MIDAS Council of Governments, 2012
Data Sources: NRGIS Library, 2010; FEMA, 2007 & IDOT, 2010

Legend

Critical Facilities

- All Types
- Schools
- City Boundary

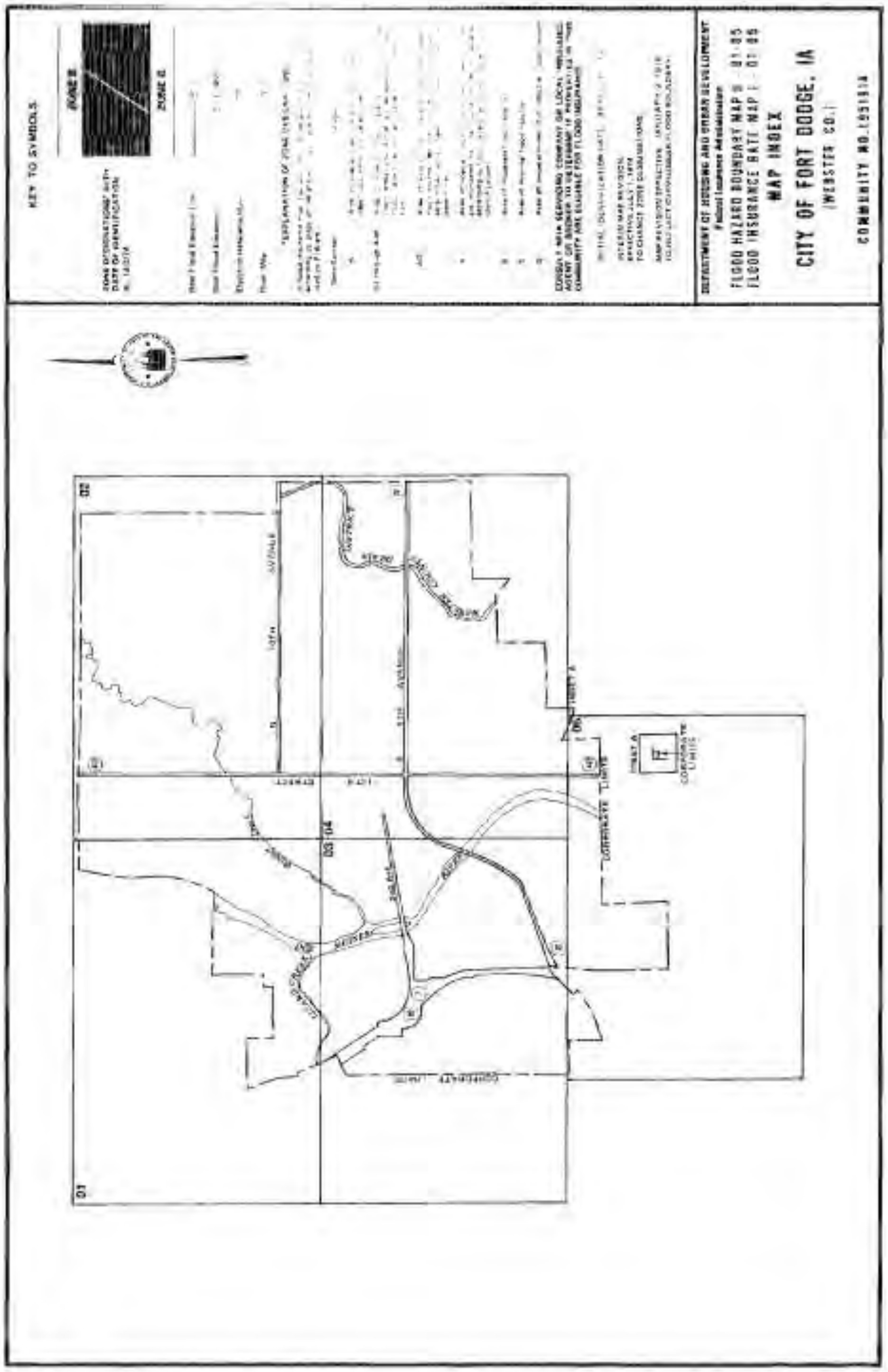
- Flood Inundation Area
- Rivers
- City Boundary

Parcels with a Structure

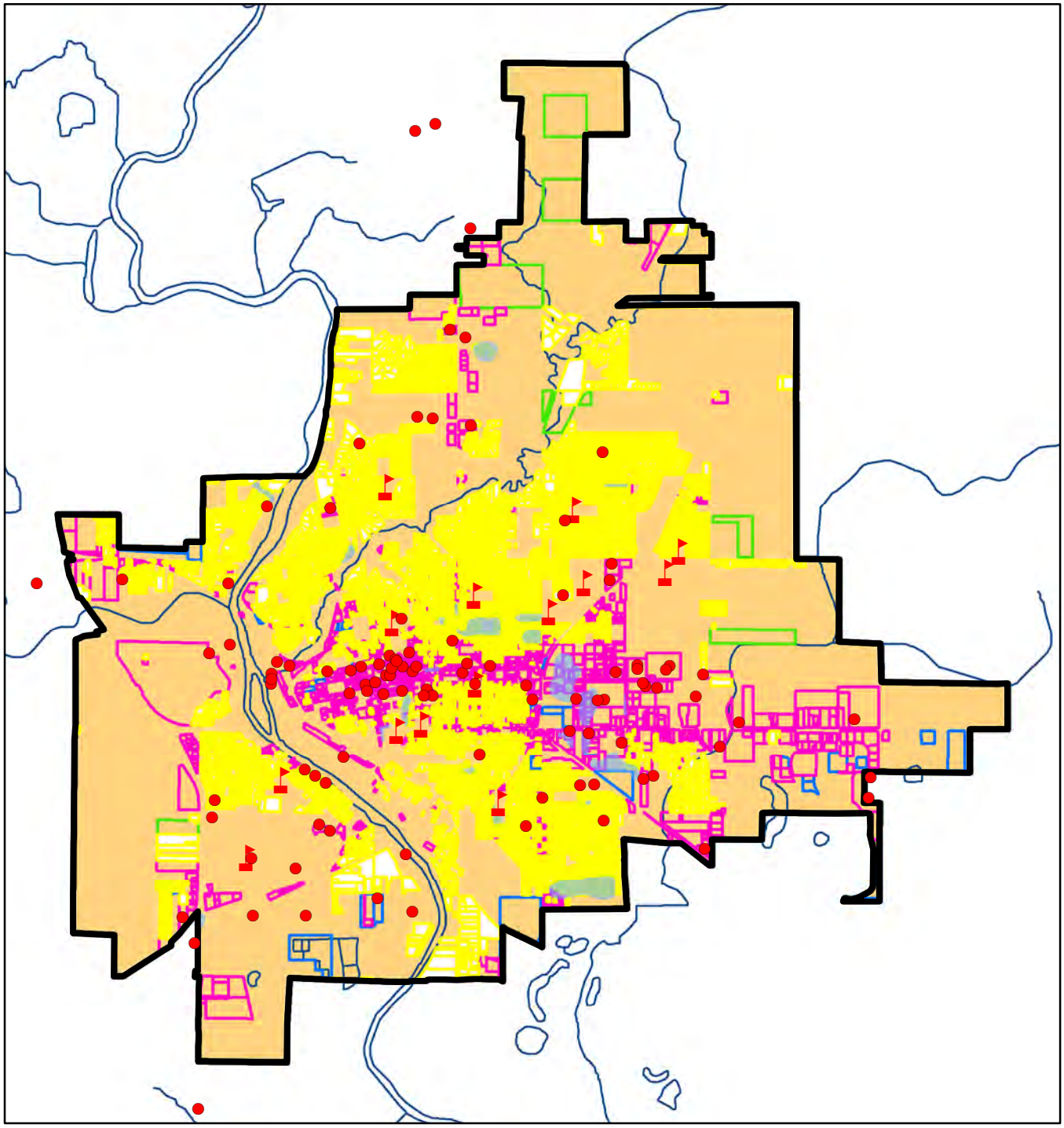
- Residential
- Commercial
- Industrial
- Agriculture

N
W E
S

FEMA Preliminary Flood Hazard Data
issued 08/10/2011


KEY TO SYMBOLS
MAP INDEX
CITY OF FORT DODGE, IA

Fort Dodge Flash Flood Hazards Map



1 0.5 0 1 Miles

Map Created By: MIDAS Council of Governments, 2012
Sources: NRGIS Library, 2010; City of Fort Dodge, 2007 & IDOT, 2010

Legend

Critical Facilities

- All Types
- Schools
- City Boundary

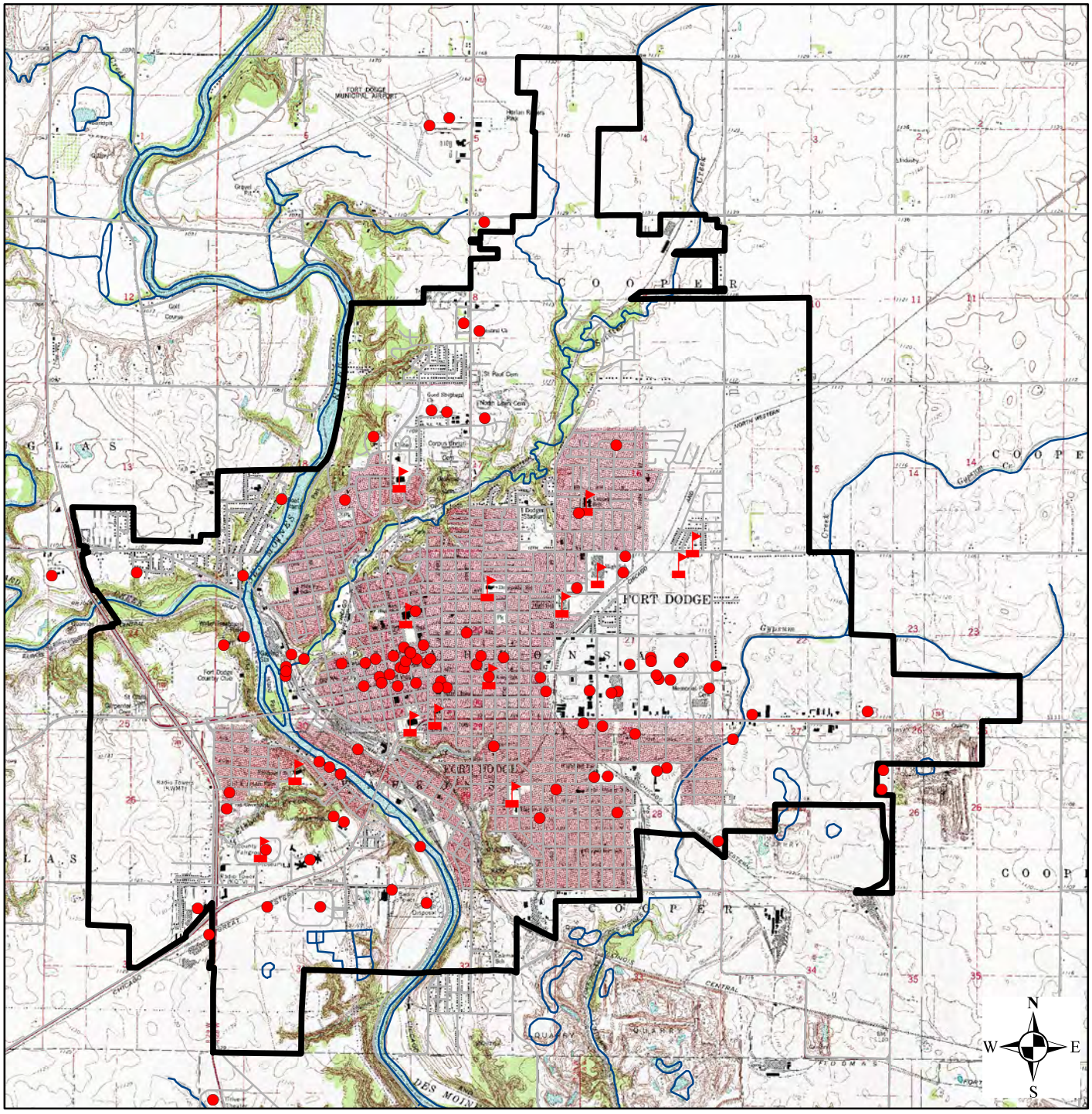
- 2007 Flood Impacted Areas
- Rivers
- City Boundary

Parcels with a Structure

- Residential
- Commercial
- Industrial
- Agriculture

N
W E
S

Fort Dodge USGS Topological Map

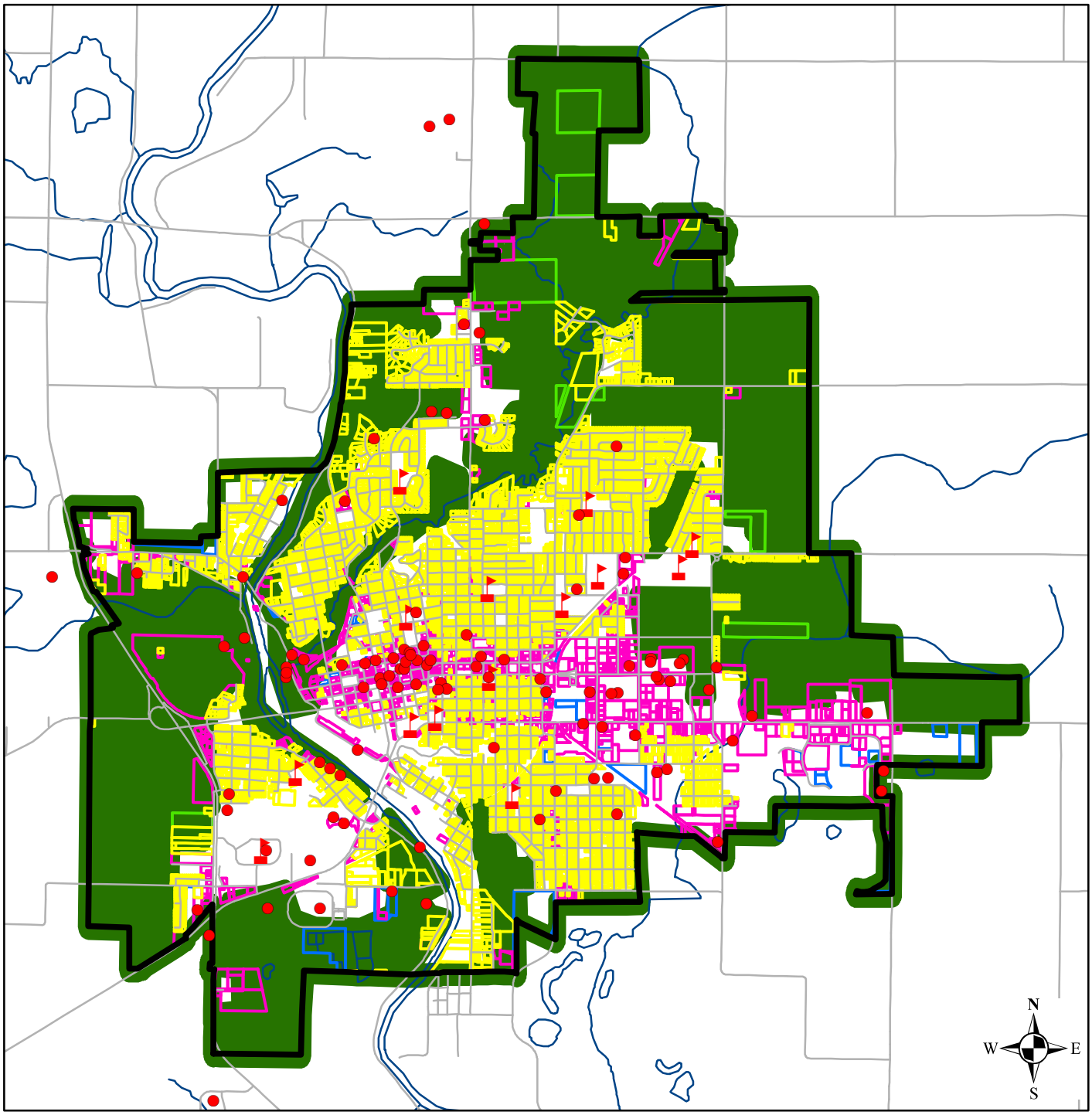


1 0.5 0 1 Miles

Map Created By: MIDAS Council of Governments, 2012
Data Sources, NRGIS Library, 2010 & IDOT, 2010

Critical Facilities | Schools | Roads | Rivers

Fort Dodge Grass & Wild Land Fires Hazard Areas



1 0.5 0 1 Miles

Map Created By: MIDAS Council of Governments, 2012
Data Sources, NRGIS Library, 2010 & IDOT, 2010

Legend

Critical Facilities

- All Types
- Schools

Roads

Rivers

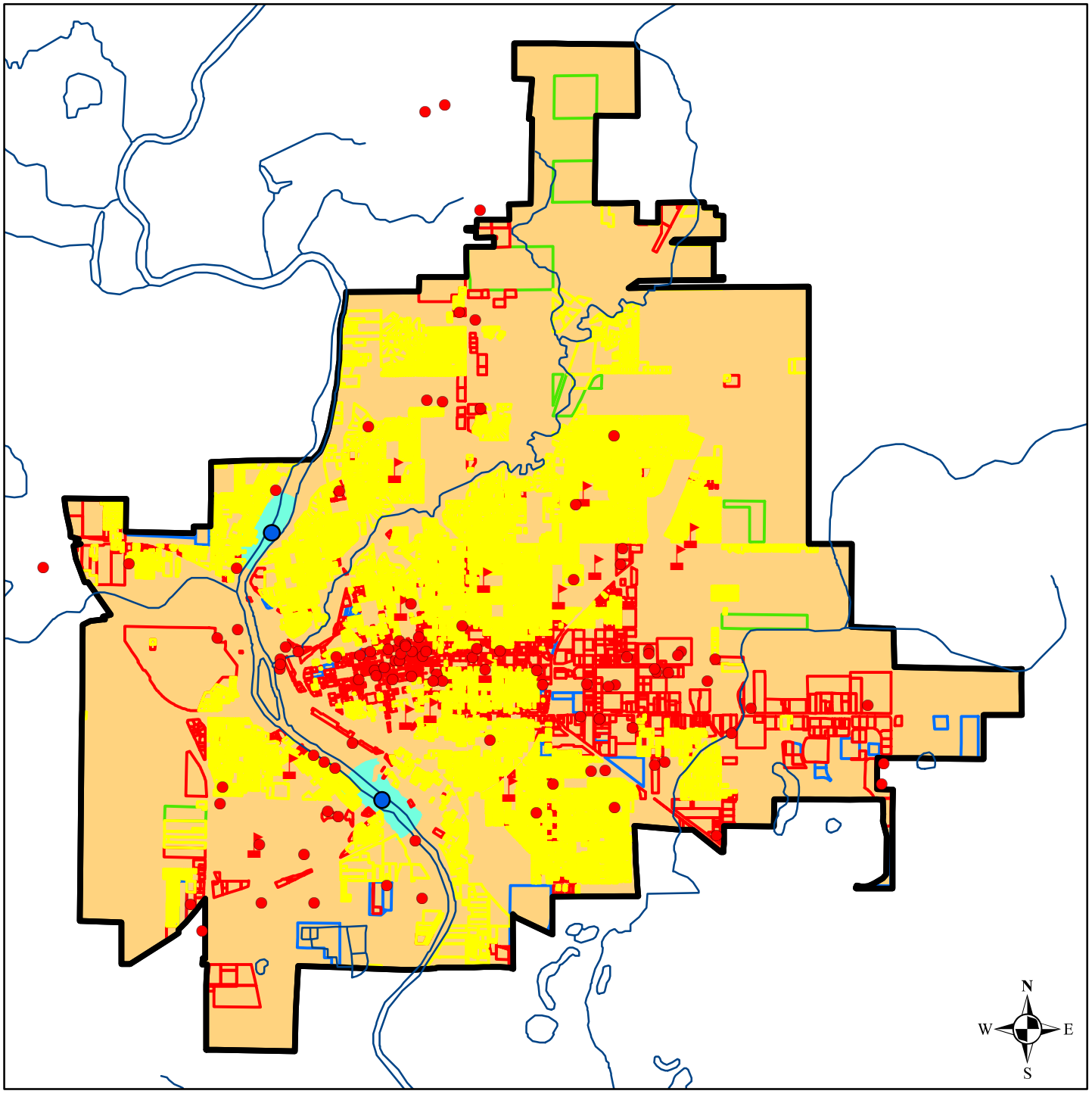
Grass, Agriculture and Wooded Areas*

Parcels with Buildings

- Residential
- Commercial
- Industrial
- Agriculture

*Grass, Agriculture and Wooded Areas include a 100 meter buffer

Fort Dodge Dam Failure Hazard Area



1 0.5 0 1 Miles

Map Created By: MIDAS Council of Governments, 2012
Data Sources: NRGIS Library, 2010; NID, 2010 & IDOT, 2010

Legend

Critical Facilities

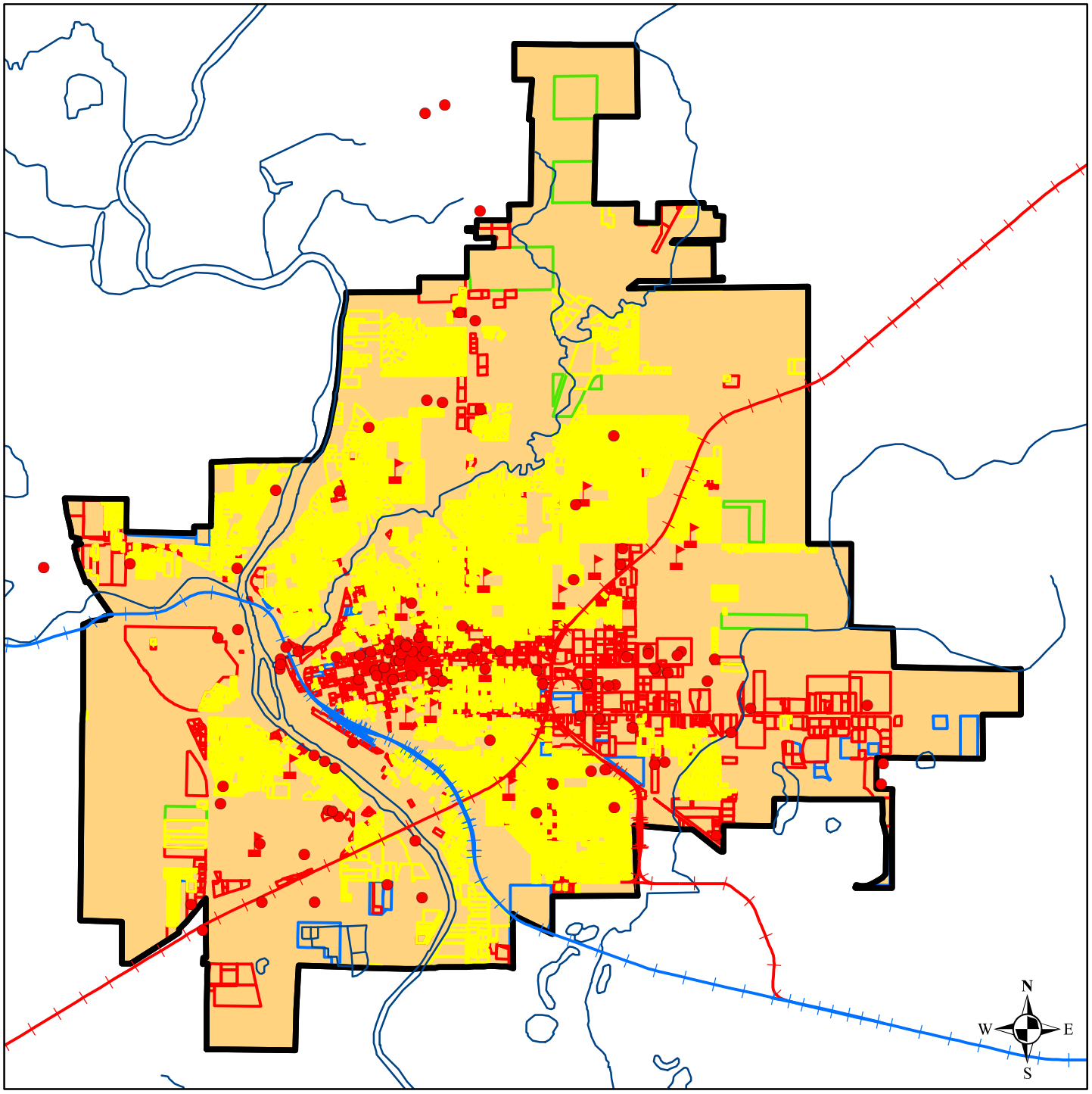
- All Types
- Schools

- Dams
- Rivers
- Dam Impacted Areas
- City Boundary

Parcels with Buildings

- Residential
- Commercial
- Industrial
- Agriculture

Fort Dodge Radiological Sites



1 0.5 0 1 Miles

Map Created By: MIDAS Council of Governments, 2012
Data Sources: NRGIS Library, 2010 & IDOT, 2010

Legend

Critical Facilities
- All Types
- Schools
- City Boundary
- Rivers

Radiological Sites
- Fixed Sites
- Chicago, Central & Pacific
- Iowa Northern Railway
- Union Pacific

Parcels with Buildings
- Residential
- Commercial
- Industrial
- Agriculture

Appendix G: STAPLEE Analysis

Fort Dodge Evaluation of Alternative Mitigation Actions Using STAPLEE

STAPLEE Criteria	S		T			A			P			L			E				E					
	(Social)		(Technical)			(Administrative)			(Polictical)			(Legal)			(Economic)				(Environmental)					
Considerations for Mitigation Actions → ↓	*Community Acceptance*	*Effect on Segment of Population*	*Technical Feasibility*	*Long-term Solution*	*Secondary Impacts*	*Staffing*	*Funding Allocated*	*Maintenance/ Operations*	*Political Support*	*Local Champion*	*Public Support*	*State Authority*	*Existing Local Authority*	*Potential Legal Challenge*	*Benefit of Action*	*Cost of Action*	*Contributes to Economic Goals*	*Outside Funding Required*	*Effect on Land/ Water*	*Effect on Endangered Species*	*Effect on HAZMAT/Waste Sites*	*Consistent with Community Environmental Goals*	*Consistent with Federal Laws*	*Totals*
Prosecute illegal drug actions	1	1	1	1	1	1	1	1	1	1	1	1	1	-1	1	-1	1	1	1	1	1	1	1	19
Educate the public on weather radios	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	18
Educate the public on CodeRED	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	18
Ensure emergency responders have adequate equipment and training	1	1	1	1	1	1	0	1	1	1	1	1	1	-1	1	-1	1	-1	1	0	1	1	1	15
Identify potential targets for terrorism	1	1	1	1	1	1	-1	1	1	1	1	1	1	0	0	1	1	1	0	0	0	0	0	14
Build public education on Medication Disposal Program	1	1	1	1	1	1	-1	1	1	1	1	1	1	0	0	1	1	1	0	0	0	0	0	14
Establish a Household HAZMAT disposal program	1	1	1	1	1	0	-1	0	1	0	1	1	1	-1	1	-1	1	0	1	1	1	1	1	13
Develop and implement an ordinance for storm water management	0	1	1	0	1	1	0	1	1	1	1	1	1	-1	1	-1	1	0	1	0	0	1	1	13
Build public awareness on HAZMAT reporting	1	1	1	0	1	1	-1	0	1	1	1	0	0	0	1	-1	1	0	1	1	1	1	1	13
Review and assess mutual aid agreements with surrounding fire departments	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	-1	1	0	0	0	0	0	0	12

STAPLEE Criteria	S		T			A			P			L			E				E					
	(Social)		(Technical)			(Administrative)			(Polictical)			(Legal)			(Economic)				(Environmental)					
Considerations for Mitigation Actions → ↓	*Community Acceptance*	*Effect on Segment of Population*	*Technical Feasibility*	*Long-term Solution*	*Secondary Impacts*	*Staffing*	*Funding Allocated*	*Maintenance/ Operations*	*Political Support*	*Local Champion*	*Public Support*	*State Authority*	*Existing Local Authority*	*Potential Legal Challenge*	*Benefit of Action*	*Cost of Action*	*Contributes to Economic Goals*	*Outside Funding Required*	*Effect on Land/ Water*	*Effect on Endangered Species*	*Effect on HAZMAT/Waste Sites*	*Consistent with Community Environmental Goals*	*Consistent with Federal Laws*	*Totals*
Update road signs to meet the Federal Highway Administration's (FHWA's) retroreflectivity requirements	1	1	1	1	1	1	0	1	1	0	1	1	1	1	0	-1	0	0	0	0	0	0	0	11
Televise sanitary and storm sewer systems to identify necessary repairs	1	1	1	1	1	-1	-1	1	1	1	1	0	1	-1	1	-1	1	-1	0	1	1	1	1	11
Implement sanitary sewer and storm water management projects to reduce flash flooding	1	1	1	1	1	-1	0	1	1	1	1	1	1	-1	1	-1	1	-1	1	0	-1	1	1	11
Continue public health clinics	1	1	1	0	1	1	0	1	1	1	1	1	1	0	1	-1	1	-1	0	0	0	0	0	11
Run sanitary sewer evaluation study	1	1	1	0	0	-1	1	0	1	1	1	0	1	1	1	-1	1	1	0	0	0	0	0	10
Establish tornado safe rooms where found feasible	1	1	1	1	1	-1	-1	1	1	1	1	1	1	1	1	-1	1	-1	0	0	0	0	0	10
Develop a program to assist in the distribution of fire protection devices	1	1	1	1	1	1	-1	1	1	1	1	0	1	0	1	-1	1	-1	0	0	0	0	0	10
Appoint a fire marshal	1	1	1	1	1	-1	-1	1	1	1	1	1	1	1	1	-1	1	-1	0	0	0	0	0	10
Stabilize Tributaries	1	1	1	1	1	-1	-1	1	1	1	1	0	0	-1	1	-1	0	-1	1	1	0	1	1	9
Purchase and install backup energy for the City Lift Stations	1	1	1	1	1	-1	-1	-1	1	1	1	-1	1	1	1	-1	1	-1	-1	1	1	1	1	9
Identify areas where the landslide potential is high and address such issues	1	1	0	0	1	-1	-1	0	1	1	1	0	1	0	1	-1	1	0	1	0	0	1	1	9

STAPLEE Criteria	S		T			A			P			L			E				E					
	(Social)		(Technical)			(Administrative)			(Polictical)			(Legal)			(Economic)				(Environmental)					
Considerations for Mitigation Actions → ↓	*Community Acceptance*	*Effect on Segment of Population*	*Technical Feasibility*	*Long-term Solution*	*Secondary Impacts*	*Staffing*	*Funding Allocated*	*Maintenance/ Operations*	*Political Support*	*Local Champion*	*Public Support*	*State Authority*	*Existing Local Authority*	*Potential Legal Challenge*	*Benefit of Action*	*Cost of Action*	*Contributes to Economic Goals*	*Outside Funding Required*	*Effect on Land/ Water*	*Effect on Endangered Species*	*Effect on HAZMAT/Waste Sites*	*Consistent with Community Environmental Goals*	*Consistent with Federal Laws*	*Totals*
Update and Enforce Floodplain Ordinance	1	1	1	1	1	-1	0	1	1	1	1	0	0	-1	1	-1	1	-1	1	0	0	1	0	9
Update all emergency radios for the 2013 narrowband mandate	1	1	1	1	1	1	-1	1	1	1	0	0	1	-1	1	-1	0	-1	0	0	0	0	1	8
Strive to meet the National Fire Protection Agency's (NFPA's) Safety Codes and Standards	1	1	1	1	1	-1	-1	1	1	1	1	0	1	1	1	-1	1	-1	-1	0	0	0	0	8
Reconstruct the lift station to reduce damages from flooding	1	1	1	1	1	-1	-1	-1	1	1	1	0	1	-1	1	-1	1	-1	1	1	-1	1	1	8
Inform the public of road closures	1	1	1	0	1	1	-1	0	1	1	1	0	0	0	1	-1	1	0	0	0	0	0	0	8
Inform the public of road clearance requirements during snow events	1	1	1	0	1	1	-1	0	1	1	1	0	0	0	1	-1	1	0	0	0	0	0	0	8
Encourage participation in the Iowa Floodplain and Storm Water Management Association	1	1	1	0	1	1	0	1	1	-1	1	0	0	0	0	-1	0	1	0	0	0	0	1	8
Educate the public on the Nixle program	1	1	1	0	1	1	-1	0	1	1	1	0	0	0	1	-1	1	0	0	0	0	0	0	8
Educate the public on fire hazards	1	1	1	0	1	1	-1	0	1	1	1	0	0	0	1	-1	1	0	0	0	0	0	0	8
Build public awareness on human disease	1	1	1	0	1	1	-1	0	1	1	1	0	0	0	1	-1	1	0	0	0	0	0	0	8

STAPLEE Criteria	S		T			A			P			L			E				E				
	(Social)		(Technical)			(Administrative)			(Polictical)			(Legal)			(Economic)				(Environmental)					
Considerations for Mitigation Actions → ↓	*Community Acceptance*	*Effect on Segment of Population*	*Technical Feasibility*	*Long-term Solution*	*Secondary Impacts*	*Staffing*	*Funding Allocated*	*Maintenance/ Operations*	*Political Support*	*Local Champion*	*Public Support*	*State Authority*	*Existing Local Authority*	*Potential Legal Challenge*	*Benefit of Action*	*Cost of Action*	*Contributes to Economic Goals*	*Outside Funding Required*	*Effect on Land/ Water*	*Effect on Endangered Species*	*Effect on HAZMAT/Waste Sites*	*Consistent with Community Environmental Goals*	*Consistent with Federal Laws*	*Totals*
Purchase and install backup energy for the City Water Plant	1	1	1	1	1	-1	-1	-1	1	1	1	-1	1	1	1	-1	1	-1	-1	1	0	0	1	7
Implement roadway and bridge projects to improve traffic flow and safety	1	1	1	1	1	0	-1	1	0	1	1	0	1	-1	1	-1	1	-1	0	0	0	0	0	7
Acquire property in the floodplain	0	1	1	1	1	-1	0	0	0	0	1	1	1	-1	1	-1	0	-1	1	1	-1	1	1	7
Purchase and install additional backup energy for Friendship Haven	1	1	1	1	1	-1	-1	-1	1	1	1	-1	1	1	1	-1	1	-1	0	0	0	0	0	6
Bury Powerlines	1	1	1	1	1	-1	-1	-1	0	1	1	1	1	-1	1	-1	1	-1	0	0	0	0	0	5
Establish additional snow fences	0	1	1	-1	0	1	1	1	0	0	0	0	-1	-1	1	-1	0	0	0	0	0	0	0	2
Make improvements to levee to drop impoundment levels	0	0	1	1	1	-1	-1	0	0	0	0	-1	1	-1	0	-1	0	-1	0	0	0	0	0	-2
Make improvements to hydro-electric dam to drop impoundment levels	0	0	1	1	1	-1	-1	0	0	0	0	-1	1	-1	0	-1	0	-1	0	0	0	0	0	-2

Appendix H: Resolutions Adopting Plan

RESOLUTION NO. 12-04-061

A RESOLUTION TO ACCEPT THE FORT DODGE, IA HAZARD MITIGATION PLAN

WHEREAS, the Fort Dodge Hazard Mitigation Plan was developed through FEMA's Hazard Mitigation Program. It will serve as a tool to help decision makers facilitate mitigation activities and resources; and

WHEREAS, Midas Council of Governments and a planning committee, which consisted of individuals from multiple sectors endeavored in (8) meetings to discuss hazards, assess risks and develop mitigation strategies in an effort to develop a written plan to identify natural and manmade hazards that might impact the City of Fort Dodge, as feasible actions or strategies that may reduce those potential impacts; and

WHEREAS, this planning committee, completed a document entitled, "Fort Dodge, IA Hazard Mitigation Plan and presented the goals, philosophies, and contents to the City Council on April 9th; and

WHEREAS, the City Council desires to accept this hazard mitigation plan it is taking an important step in protecting its residents, businesses and other property; and

NOW THEREFORE BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF FORT DODGE, IOWA, that the Fort Dodge, IA hazard mitigation plan is accepted by the City Council and shall provide guidance for the future mitigation activities and resources.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF FORT DODGE, IOWA, THIS 23rd DAY OF APRIL, 2012.

Ayes: Patterson, Flattery, Wilson, Fritz, Alstott, Taylor and Hill

Nays: None

Other: None

City of Fort Dodge, Iowa

Matt Bemrich, Mayor

Attest:

Jeff Nemmers, City Clerk

RESOLUTION 2012-5

RESOLUTION TO ADOPT THE SINGLE JURISDICTION
HAZARD MITIGATION PLAN FOR THE CITY OF FORT DODGE, IOWA

WHEREAS, a Single Jurisdiction Hazard Mitigation Plan has been developed for the City of Fort Dodge, Iowa, and

WHEREAS, this plan will be the guidance regarding future mitigation actions; and,

WHEREAS, the plan has been reviewed by the Fort Dodge Hazard Mitigation Committee, Fort Dodge City Council, and the members of the Board of Education of the Fort Dodge Community School District,

NOW, THEREFORE, BE IT RESOLVED TO ADOPT THE RESOLUTION AS:

Moved by Forsythe, seconded by Merz, that the Fort Dodge Community School District hereby adopts the Single Jurisdiction Hazard Mitigation Plan for the City of Fort Dodge, Iowa.

On a roll call vote, the following voting:

AYES: Forsythe, Merz, Peterson, Rogers, Wagner, and Cochrane

NAYS: None

ABSENT: Kent

Motion carried.

This resolution passed and approved this 14th day of May, 2012.

Stuart J. Cochrane
President, Board of Directors
Fort Dodge Community School District

ATTEST:

John W. Christensen, Jr.
Secretary, Board of Directors
Fort Dodge Community School District

Appendix I: Committee Meeting Agendas

FORT DODGE HAZARD MITIGATION MEETING #1

February 3, 2011
12:00 PM
Fort Dodge Council Chambers

Agenda

- Give background on hazard mitigation planning
    - What is a Hazard Mitigation Plan?
    - Why have a plan?
    - Planning Process
- Go through list of hazards and discuss what effects they have on Fort Dodge
- Identify any potential hazards that are not included in the list

FORT DODGE HAZARD MITIGATION COMMITTEE MEETING #2

March 16, 2011
12:00 – 2:00 p.m.
Fort Dodge Council Chambers

Agenda

- Finish discussing hazards that may impact the City of Fort Dodge
    - Remaining hazards:
        - Animal/Plant/Crop Disease
        - Dam Failure
        - Drought
        - Earthquakes
        - Expansive Soils
        - Extreme Heat
        - Grass and Wild Land Fires
        - Hazardous Materials
        - Human Disease
        - Infrastructure Failure
        - Landslide
        - Levee Failure
        - Radiological
        - Sink Holes
        - Terrorism
        - Transportation Incident
- Run a risk analysis of the hazards that occur in Fort Dodge
    - Score each hazard based on historical occurrence, probability, vulnerability, severity of impact, and speed of onset.

- Determine next meeting date and time

FORT DODGE HAZARD MITIGATION COMMITTEE MEETING #3

April 13, 2011
12:00 – 2:00 p.m.
Fort Dodge Council Chambers

Agenda

- Look over the risk assessment results
  - Make any changes to results
- Discuss Critical Facilities for the City of Fort Dodge
  - Critical Facilities are defined as the following by FEMA:
    - Facilities/infrastructure that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, and hospitals.
  - Other types of Critical Facilities might include:
    - City halls, fire stations, emergency operation centers, schools, hospitals, day cares, public works facilities including lift stations, water treatment plants, waste water treatment plants; and any other emergency shelters that are currently established.
- Discuss possible mitigation strategies
  - Use Hazard Mitigation Actions Packet as a guide
- Determine next meeting date and time

FORT DODGE HAZARD MITIGATION COMMITTEE MEETING #4

May 18, 2011

12:00 – 2:00 p.m.

Fort Dodge Council Chambers

Agenda

- Discuss additional Critical Facilities for the City of Fort Dodge
- Discuss additional mitigation strategies
    - Use Hazard Mitigation Actions Packet as a guide
- Run a STAPLEE (Social, Technical, Administrative, Political, Legal, Economic and Environmental) Analysis of mitigation actions
- Determine next meeting date and time

FORT DODGE HAZARD MITIGATION COMMITTEE MEETING #5

June 15, 2011
12:00 – 2:00 p.m.
Fort Dodge Council Chambers

Agenda

- Soft match
- Review our final list of Critical Facilities
- Finish the STAPLEE (Social, Technical, Administrative, Political, Legal, Economic and Environmental) Analysis of the remaining mitigation actions
- Discuss final hazard mitigation planning steps

FORT DODGE HAZARD MITIGATION COMMITTEE MEETING #6

July 13, 2011
12:00 – 2:00 p.m.
Fort Dodge Council Chambers

Agenda

- Discuss Soft Match
- Finish the STAPLEE Analysis
- Discuss final hazard mitigation planning steps

FORT DODGE HAZARD MITIGATION COMMITTEE MEETING #7

February 1, 2012
12:00 – 2:00 p.m.
Fort Dodge Council Chambers

Agenda

- Complete prioritization and implementation of Hazard Mitigation Actions

FORT DODGE HAZARD MITIGATION COMMITTEE MEETING #8

March 14, 2012
12:00 – 2:00 p.m.
Fort Dodge Council Chambers

Agenda

- Review Hazard Mitigation Plan
- Discuss final steps for approval

Appendix J: Committee Meeting Minutes

Fort Dodge Hazard Mitigation Meeting Minutes #1

2/3/2011 - Fort Dodge City Council Chambers

Meeting Attended by: Al Dorothy, Ashton Newman, Cheryl O'Hern, Chris Darling, David Fierke, Dawn Larson, Jennifer Ellis, Kari Krueger, Kevin Richardson, Kim Courter, Marcy Harms, Mel Smith, Reggie Archer, Scott Meinders, Steve Teske, Tim Carmody, Tom Anderson, Wes Sperr

Meeting Started: 12:00 p.m.

Gave background on hazard mitigation planning

- What is a Hazard Mitigation Plan?
- Why have a plan?
- Planning Process

Reviewed list of hazards and discussed what effects they have on Fort Dodge (got through first 7 hazards):

Tornadoes:

- Causes damage to windows, roofs, water damage.
- Trinity trauma center serves region, so if struck, could cause issues
- FD Fire serves as hazard response team when called
- 1977
- 2 tornadoes within 6 minutes of each other input
- 18 casualties
- Took out some businesses

Flash Flooding:

- Major occurrences in 2007, 2008, 2010
- Sewer system cannot keep up
- Sanitary sewer gets flooded and backs up in basement
- Shut down streets by mall
- Impacted businesses within mall
- Storm & Sanitary sewer backup causes home damage
- City has some damage information from 2008
- City has map of problem areas

River Flooding

- Waste Water Plant & Avenue B, inundated in 2008
- Boat Club flooded out
- Floods sunkissed meadow (shut down)
- Lift station fills with river water
- Soldier creek washes out bridges
- Snell Crawford floods
- Izaak Walton floods on nearby road

Winter Storms

- Causes over time to clear the streets
- Downed trees, ice, wind, etc. can cause power loss
    - Major power losses in 91/92 3-10 days without power
    - Impacts Emergency Services Response
    - East side is prone to power loss
    - Downtown also has issues with power loss
    - When loss of power, no traffic signals
    - LHopital has backup power for up to 3 days
    - If power outage for more than 3 hours, the nursing home has isues
    - Water plant, wells and sewer station don't have backup generator

    - Private sector experiences major loss due to no production
        - Purina experiences major economic loss if out for 45 min
    - Can't pump gas at gas stations
    - Tornado sirens both have backup
    - If generator in LEC goes out, then communication services down for fire/police
    - Railroad switches don't work
    - Schools have a generator
    - Sump pumps stop working
    - Webster County Law Enforcement has backup generator

Windstorms

- Downed limbs and power lines cause power outages and closed streets
- Property damage to roofs and shingles; especially to businesses

Hailstorms

- Property damage to cars and roofs

Thunderstorm & Lightning

- Transformers go causing energy disruptions
- Lightning often strikes Chimney of Phillips school (rebuilt 2 times)
- Transformer by Cooper goes

Established next meeting date for March 16, 2011 at 12:00 in City Hall

Meeting Adjourned at 1:00 p.m.

Fort Dodge Hazard Mitigation Meeting Minutes #2

3/16/2011 - Fort Dodge City Council Chambers

Meeting Attended by: Al Dorothy, Barbara Michaels, Cheryl O'Hern, Chris Darling, Dan Flattery, David Ostheimer, Dawn Larson, Denise Strohbehn, Jennifer Ellis, Jodie Janke, Kari Krueger, Kevin Doty, Kevin Richardson, Kim Courter, Reggie Archer, Scott Meinders, Steve Teske.

Meeting Started: 12:00 p.m.

- Finish discussing hazards that may impact the City of Fort Dodge

Remaining hazards:

Animal/Plant/Crop Disease – take out, because a more rural impact

Dam Failure

- Two dams: 1 on the north side of town, near the Hydro-Electric Park and 1 near Kenyon Road
- Issues can occur due to ice jams
- According to the City Engineer, these are not flood controlling dams. Water goes over them often.
- Would not have a great impact on the City of Fort Dodge

Drought

- City has an adequate amount of water supply; therefore, no impacts would/have been experienced
- 1977 committee members recall a drought occurring. No great impacts
- Could reduce water usage or enforce burn bans

Earthquake

- No occurrences; however, if major one were to occur, it could devastate the City

Expansive Soils

- Common occurrence in town
- Often impacts streets, most areas excluding Central Avenue
- Can impact basements and building foundations
- Can impact water mains and other utilities

Extreme Heat

- Have opened up school buildings and mall for shelter during extreme heat
- 60% of the public schools do not have air
- Will cancel school in the event
- Transformer failure is common
- Impacts to humans – Heat stroke, exhaustion, dehydration, etc.
- If an interruption of power were to occur backup power would be critical

Grass & Wildland Fires

- Not a major event within the City, but the FD does deal with such events

HAZMAT

- Any industry within town does deal with such events
- Gas Stations are also critical areas
- 90% of events can be handled by HAZMAT (Teske)
- Spill events are on record by the HAZMAT Commission

Human Disease

- H1N1 – ½ of Webster County was vaccinated
- While no significant events recalled, there is the potential

Infrastructure

- Communications
    - Communications are critical to law enforcement
    - 911 facilities new
- Electricity

    - Sirens are battery operated
    - Water Utilities – Sanitary Sewer Lift Stations – No generator backup
    - Traffic Signals – No backup
- Structural Failure
    - Have seen it in the past
    - 15th Street
    - Boston Center
    - Old Dodger
    - Carl King Bridge shut down following MN bridge failure
    - Wood Bridge on S 19th Street (10 ton)
- Structural Fire
    - There are always a number of fires each year
    - Almost always limited to one building
    - Can't keep damage from happending, but can keep fire from spreading

Landslide

- Occurs in some parks throughout town
- Also some areas where structures could be impacted; however, no impacts have occurred to the City's knowledge
- Could impact properties overlooking rivers/Creeks
    - Soldier Creek
    - Mason Drive

Levee Failure

- Only levee is located by Hydro-Electric Park
- Extended from dam
- If this were to breach, few impacts

Radiological

- Radiological materials are sometimes transported via rail
- Do not have to inform City, but sometimes they do anyways
- Hospital
- With cancer center, more potential
- Medical supply store/warehouse

Sinkholes

- A lot of white powder has been found, but not biological

Terrorism

- Many threats of terrorism, but no actual occurrences
- Potential for animal activist riot – boehringer
- School districts have experienced threats (FD Police and Fire Department respond)
- Entities that work with/for the Department of Homeland Security could be a target

Transportation

- Airport
- Railroads
- Roadways
- School buses
- Common areas: 15th St & 5th Ave South and 25th St & 5th Ave South

Ran a risk analysis of the hazards that occur in Fort Dodge

- Scored each hazard based on historical occurrence, probability, vulnerability, severity of impact, and speed of onset. Also determined the risk priority of each:

Hazard	Historical Occurrence	Probability	Vulnerability	Severity	Speed of Onset	Risk Priority H - High M - Medium L - Low	Total	Weight L = (rate * 1) M = (rate * 1.33) H = (rate * 1.667)
Animal/Plant/Crop Disease	TAKE OUT							
Thunderstorms and Lightning	4	4	4	2	4	M	18	23
Windstorm	4	4	4	2	4	M	18	23
River Flooding	4	4	1	3	2	H	14	23
Tornadoes	1	1	3	4	4	H	13	22
Severe Winter Storms	4	4	4	2	1	M	15	20
Transportation Incident	4	4	1	2	4	M	15	20
Flash Flood	4	3	1	3	3	M	14	18
Hazardous Materials	4	4	1	1	4	M	14	18
Hailstorms	4	4	4	2	4	L	18	18
Infrastructure Failure	4	4	1	2	4	L	15	15
Landslide	2	1	1	3	4	M	11	14
Grass and Wild Land Fires	4	4	1	1	4	L	14	14
Earthquakes	1	1	4	4	4	L	14	14
Expansive Soils	4	4	3	1	1	L	13	13
Terrorism	1	1	2	4	4	L	12	12
Radiological	1	1	3	3	4	L	12	12
Extreme Heat	2	4	1	2	1	L	10	10
Human Disease	1	1	4	3	1	L	10	10
Dam Failure	1	1	1	1	4	L	8	8
Sink Holes	1	1	1	1	4	L	8	8
Drought	1	1	1	1	1	L	5	5
Levee Failure	1	1	1	1	1	L	5	5

Established next meeting date for April 13, 2011 at 12:00 in City Hall

Meeting Adjourned at 2:00 p.m.

Fort Dodge Hazard Mitigation Meeting Minutes #3

4/13/2011 - Fort Dodge City Council Chambers

Meeting Attended by: Kim Courter, Denise Strohbehn, Beth Bahnson, Ashton Newman, Kari Krueger, Tony Jorgensen, Jodie Janke, Barbara Michaels, Dan Flattery, Reggie Archer, Donna Bice, Kevin Richardson, David Ostheimer, Steve Teske, Stephanie Sheetz, Scott Meinders and David Fierke.

Meeting began at 12:00pm

- Reviewed the risk assessment results. Made changes to Infrastructure Failure, Earthquakes, Terrorism and Extreme Heat:

Hazard	Historical Occurrence	Probability	Vulnerability	Severity	Speed of Onset	Risk Priority H - High M - Medium L - Low	Total	Weight L = (rate * 1) M = (rate * 1.33) H = (rate * 1.667)
Animal/Plant/Crop Disease	TAKE OUT							
Thunderstorms and Lightning	4	4	4	2	4	M	18	23
Windstorm	4	4	4	2	4	M	18	23
River Flooding	4	4	1	3	2	H	14	23
Tornadoes	1	1	3	4	4	H	13	22
Infrastructure Failure	4	4	2	2	4	M	16	21
Severe Winter Storms	4	4	4	2	1	M	15	20
Transportation Incident	4	4	1	2	4	M	15	20
Flash Flood	4	3	1	3	3	M	14	18
Hazardous Materials	4	4	1	1	4	M	14	18
Hailstorms	4	4	4	2	4	L	18	18
Landslide	2	1	1	3	4	M	11	14
Grass and Wild Land Fires	4	4	1	1	4	L	14	14
Terrorism	1	1	4	4	4	L	14	14
Expansive Soils	4	4	3	1	1	L	13	13
Radiological	1	1	3	3	4	L	12	12
Extreme Heat	2	4	2	3	1	L	12	12
Earthquakes	1	1	2	2	4	L	10	10
Human Disease	1	1	4	3	1	L	10	10
Dam Failure	1	1	1	1	4	L	8	8
Sink Holes	1	1	1	1	4	L	8	8
Drought	1	1	1	1	1	L	5	5
Levee Failure	1	1	1	1	1	L	5	5

- Began a preliminary list of critical facilities
    - Trinity Medical
    - Schools
    - Telecommunications Center
    - Law Enforcement/Sheriff
    - Jail
    - Wells
    - Lift Stations
    - Airport
    - Public Works
    - City Hall
    - County courthouse
    - Prison
    - Pharmacies
    - Fuel Providers
    - Public Health
- Began a preliminary list of possible mitigation actions
    - **Thunderstorms and Lightning**
        - Bury power lines
            - Bury Power Lines on Kenyon Road from Tower Drive to Kenyon Road BridgeBury Power Lines on 5th Ave. S. from 29th St. to 32nd St.
            - Bury Power Lines on 1st Ave. S from Veterans Bridge to 29th St., on 25th St. from 5th Ave. S. to 1st Ave. S., on 29th St. from 5th Ave. S. to 1st Ave. S.
            - Bury Power Lines on 15th Street from 5th Ave. s. to City Limits
            - Bury Power Lines on 5th Ave. S. from 32nd St. to 42nd St.
        - Educate public on CodeRED/Inspiron
        - Educate public on weather radios
    - **Windstorm**
    - **River Flooding/Flash Flooding:**
        - Reconstruct lift station
            - Main Lift Station Reconstruction – TBD
        - Ensure Flood Relief of Drainage District #1
        - Acquire property in the floodplain
            - Mason Drive Storm Sewer – 2016
        - Implement storm water management projects to reduce flooding/flash flooding
            - East Region Storm Sewer Phase 4
            - East Region Storm Sewer Phase 1 & 2
            - East Region Storm Sewer Phase 3
            - Crestview Heights Storm Sewer Project
            - Elkhorn Creek Drainage Basin Improvements
            - Oleson Park Area Detention Re-Establishment
            - Rehabilitate/improve Downtown Storm Sewer trunk line
        - Develop an ordinance for storm water management
            - Plan to Publish new ordinance September 29, 2011
        - Stabilize Tributaries
        - Sanitary Sewer Evaluation Study (SSES)
            - To locate ways to alleviate sewer backups
        - Sanitary Sewer Evaluation Study (SSES) Phase II

        - Install Backup power to lift stations to prevent basement backups
        - Encourage participation in the Iowa Floodplain and Stormwater Management Association (IFSMA)
        - Update and enforce floodplain ordinance
    - **Tornadoes**
        - Enforce City Policy to anchor manufactured homes
        - Establish Tornado Safe Room at the new middle school
        - Establish Tornado Safe Room at Harlan Rogers Park
        - Establish Tornado Safe Room at Iowa Central Community College & Fort Museum
        - Establish Tornado Safe Room by Dodger Stadium
    - **Infrastructure Failure** (Includes communication failure, energy failure, structural failure and structural fire)
        - Install back-up generators for water plant
        - Install back-up generators for wells
        - Water Plant Electrical Upgrades
        - Update radios to 2013 frequency
        - Appoint a fire marshal
        - Educate the public on fire hazards
        - Ensure the community is up to National Fire Protection Agency (NFPA) Safety Codes & Standards
        - Develop a program to assist in the distribution of fire protection devices such as fire alarms, fire extinguishers, etc.
        - Prosecute illegal drug actions
        - Expand generator capacity for Friendship Haven
    - Established next meeting date for May 18th at 12:00-2:00pm in the Council Chambers

Meeting adjourned at 2:00pm

Fort Dodge Hazard Mitigation Meeting Minutes #4
5/18/2011 – Fort Dodge City Council Chambers

Meeting Attended by: Kari Krueger, Wes Sperr, Bob Livermore, Kim Courter, Brenda Martin, Tom Anderson, Tony Jorgensen, Kevin Doty, Steve Teske, Marcy Harms, Donna Bice, Jodie Janke, Dawn Larson, David Luers, Scott Meinders and John Horrell.

Meeting began at 12:00pm

- Reviewed and added to Critical Facilities
  - Schools
    - Butler elementary
    - Community Christian school
    - Cooper Elementary
    - Duncombe Elementary
    - Fair Oaks Middle School
    - Feelhave Elementary
    - Fort Dodge Schools Administration
    - Fort Dodge Schools Bus Garage
    - Fort dodge Senior High
    - Hillcrest elementary
    - Iowa Central Community College
    - Phillips Middle School
    - Riverside Elementary St. Ed's
    - St. Paul's
  - City Facilities & Utilities
    - City Hall
    - Courthouse
    - PD
    - FD
    - Courthouse
    - Jail
    - County Sheriff
    - Public Works
    - Wells
    - Lift Stations
    - Water Towers
  - Shelters (getting list from United Way)
  - Grocery Stores (getting list from United Way)
  - Pharmacies
  - Transportation
  - Nursing Homes
  - Hospitals
  - Communications
  - Relief Agencies (getting list from United Way)
  - Fuel Suppliers

- Added to Hazard Mitigation Actions
  - **Severe Winter Storms**
    - Establish additional snow fences
    - Educate the public on road clearing during snow events
    - Educate public on Nixle program
  - **Transportation Incident** (air, highway, railway and waterway incident)
    - Implement roadway and bridge projects to improve traffic flow & safety
      - Cross-town Connector Improvements Project
      - Veterans Bridge Reconstruction

                - Cross-town viaduct
                - Highland Park Bridge Reconstruction
                - Evaluate 4-lane roadways for 3-lane possiblilty
                - Menards Signals Project
            - Inform public of road closures
            - Use the City's new signage software to update road signs, to meet new standards
    - **Hazardous Materials** (spills or leaks)
        - Educate public on reporting HAZMAT spills and leaks
        - Establish a program for Fort Dodge residents to dispose of household HAZMAT material waste
    - **Hailstorms**
        - Establish Shelters
    - **Landslide**
        - Identify areas where the landslide potential is high and address such issues
            - Crawford Park Bank Stabilization
            - Loomis Park Bank Stabilization
    - **Grass and Wild Land Fires**
        - Ensure all emergency responders are properly equipped and trained to respond
        - Review and assess mutual agreements with surrounding departments
    - **Terrorism**
        - Ensure emergency responders have adequate training to respond to such events
        - Identify potentially targeted areas
            - Ensure these areas have necessary hardware or software for protection
    - **Radiological**
        - Ensure the HAZMAT team has the necessary means to respond to radiological events (combine with ensure all emergency responders are properly equipped and trained)
    - Decided to take out Earthquakes, highly unlikely that this would occur
    - **Extreme Heat**
        - Provide public space with air conditioning
    - **Human Disease**
        - Educate the public on specific actions to take
        - Continue public clinics
    - **Dam Failure**
        - Reduce height, remove gates, or entirely remove dams
    - **Sink Holes**
        - Televise water mains to ensure breakage does not occur
    - **Drought**
        - Replace undersized and problematic water mains
        - Maintain water towers
    - **Levee Failure**
        - Reduce height, remove gates or entirely remove

- Began STAPLEE

STAPLEE Criteria	S (Social)		T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)				E (Environmental)				
Considerations for Mitigation Actions	*Community Acceptance*	*Effect on Segment of Population*	*Technical Feasibility*	*Long-term Solution*	*Secondary Impacts*	*Staffing*	*Funding Allocated*	*Maintenance/ Operations*	*Political Support*	*Local Champion*	*Public Support*	*State Authority*	*Existing Local Authority*	*Potential Legal Challenge*	*Benefit of Action*	*Cost of Action*	*Contributes to Economic Goals*	*Outside Funding Required*	*Effect on Land/ Water*	*Effect on Endangered Species*	*Effect on HAZMAT/Waste Sites*	*Consistent with Community Environmental Goals*	*Consistent with Federal Environmental Laws*
Bury Powerlines	Y	Y	Y	Y	Y	N	N	N	M	Y	Y	Y	Y	Y	Y	Y	Y	Y	N/A	N/A	N/A	N/A	N/A
Educate public on CodeRED/Inspiron	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	N	N/A	N/A	N/A	N/A	N/A
Educate public on weather radios	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	N	N/A	N/A	N/A	N/A	N/A
Implement storm water management projects to reduce flooding/flash flooding	Y	Y	Y	Y	Y	N	M	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N/A	N	Y	Y
Reconstruct lift station to reduce damage from flooding	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	M	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
Acquire property in the floodplain	M	Y	Y	Y	Y	N	N/A	M	M	M	Y	Y	Y	Y	Y	Y	M	Y	Y	Y	N	Y	Y
Develop an ordinance for storm water management	M	Y	Y	M	Y	Y	N/A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N/A	Y	M	M	Y	Y

Meeting ended at 2:00pm

Fort Dodge Hazard Mitigation Meeting Minutes #5
6/15/2011 – Fort Dodge City Council Chambers

Meeting Attended by: Steve Teske, David Luers, Donna Bice, John Horrell, Stephanie Sheetz, David Ostheimer, Ashton Newman, Tony Jorgensen, Kevin Richardson, Jodie Janke, Kevin Doty, David Fierke and Scott Meinders

Meeting began at 12:00pm

- Reviewed final Critical Facilities list with no changes
- Committee established final goals and objectives that were developed by MIDAS based on the actions developed in previous meetings:

Goal 1: *Protect the lives, safety and property of all residents, businesses and other entities of Fort Dodge from potential hazards*

Objective 1.1: Ensure all residents, businesses and other entities of Fort Dodge are aware of potential hazards and their responsibilities prior to such events

Mitigation Actions

1.1.1. Educate the public on weather radios
1.1.2. Educate the public on CodeRED/Inspiron
1.1.3. Identify areas and develop list of potential targets for terrorism
1.1.4. Build public awareness on HAZMAT reporting
1.1.5. Inform the public of road closures
1.1.6. Inform the public of road clearance requirements during snow events
1.1.7. Encourage participation in the Iowa Floodplain and Storm Water Management Association
1.1.8. Educate the public on the Nixle program
1.1.9. Educate the public on fire hazards
1.1.10. Build public awareness on human disease
1.1.11. Educate the public on the existing Medication Disposal Program (Hy-Vee)

Objective 1.2: Implement hazard mitigation projects to protect the lives, safety and property of all residents, businesses and other entities in Fort Dodge

Mitigation Actions

1.2.1. Update road signs to meet the Federal Highway Administration's (FHWA's) retroreflectivity requirements
1.2.2. Televise sanitary and storm sewer systems to identify necessary repairs
1.2.3. Implement sanitary sewer and storm water management projects to reduce flash flooding
1.2.4. Run sanitary sewer evaluation study
1.2.5. Establish tornado safe rooms where found feasible
1.2.6. Stabilize tributaries
1.2.7. Purchase and install backup energy for the City Lift Stations
1.2.8. Identify areas where the landslide potential is high and address such issues
1.2.9. Reconstruct the lift station to reduce damages from flooding
1.2.10. Purchase and install backup energy for the City Water Plant & Wells
1.2.11. Implement roadway and bridge projects to improve traffic flow and safety
1.2.12. Acquire property in the floodplain
1.2.13. Purchase and install additional backup energy for Friendship Haven

1.2.14. Bury Powerlines
1.2.15. Make improvements to hydro-electric dam to drop impoundment levels
1.2.16. Establish additional snow fences

Goal 2: *Implement hazard mitigation actions to prevent or reduce the affects of potential hazards*
Objective 2.1: Develop and enforce policies that will prevent and/or reduce the affects of potential hazards

Mitigation Actions

2.1.1. Develop and implement an ordinance for storm water management
2.1.2. Prosecute illegal drug actions
2.1.3. Appoint a fire marshal
2.1.4. Strive to meet the National Fire Protection Agency's (NFPA) Safety Codes and Standards
2.1.5. Update and enforce floodplain ordinance

Objective 2.2: Establish programs to assist residents, businesses and other entities with preventing and/or reducing the impact of hazards

Mitigation Actions

2.2.1. Develop a program to assist in the distribution of fire protection devices
2.2.2. Establish a HAZMAT disposal program
2.2.3. Continue public health clinics
2.2.4. Review and assess mutual aid agreements with surrounding fire departments

Objective 2.3: Ensure all emergency responders are adequately equipped to prevent and reduce the affects of potential hazards

Mitigation Actions

2.3.1 Ensure emergency responders have adequate equipment and training
2.3.2 Update all emergency radios for the 2013 narrowband mandate

Committee made the following changes to their actions:

- Took out the following actions:
  - Ensure Flood Relief of Drainage District #1 (too broad of action)
  - Enforce City Policy to anchor manufactured homes (already enforced, not a big issue)
  - Establish Shelters (already done)
  - Provide public space with air conditioning (already done through establishing shelters)
  -
- Changed the following actions
- COMBINED A & B INTO TELEVISE SANITARY AND STORM SEWER SYSTEMS TO IDENTIFY NECESSARY REPAIRS
  a. Sanitary Sewer Evaluation Study (SSES)
     i. To locate ways to alleviate sewer backups
  b. Sanitary Sewer Evaluation Study (SSES) Phase II
- COMBINED A, B, C & D INTO "ESTABLISH TORNADO SAFE ROOMS WHERE FOUND FEASIBLE"
  a. Establish Tornado Safe Room at the new middle school
  b. Establish Tornado Safe Room at Harlan Rogers Park
  c. Establish Tornado Safe Room at Iowa Central Community College & Fort Museum

d. Establish Tornado Safe Room by Dodger Stadium

- COMBINED A & B INTO PURCHASE AND INSTALL BACKUP ENERGY FOR CITY WATER PLANT & WELLS
  a. Install back-up generators for water plant
  b. Install back-up generators for wells
- COMBINED A & B INTO "MAKE IMPROVEMENTS TO HYDRO-ELECTRIC DAM TO DROP IMPOUNDMENT LEVELS"
  a. Reduce height, remove gates or entirely remove levees
  b. Reduce height, remove gates or entirely remove dams
- Took out levee failure as threat, very few impacts would be generated and is a result of the dams
- Added "educate the public on the existing medical disposal program"

- Continued STAPLEE & discussed actions

STAPLEE Criteria	S (Social)		T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)				E (Environmental)				
Considerations for Mitigation Actions	*Community Acceptance*	*Effect on Segment of Population*	*Technical Feasibility*	*Long-term Solution*	*Secondary Impacts*	*Staffing*	*Funding Allocated*	*Maintenance/ Operations*	*Political Support*	*Local Champion*	*Public Support*	*State Authority*	*Existing Local Authority*	*Potential Legal Challenge*	*Benefit of Action*	*Cost of Action*	*Contributes to Economic Goals*	*Outside Funding Required*	*Effect on Land/ Water*	*Effect on Endangered Species*	*Effect on HAZMAT/Waste Sites*	*Consistent with Community Environmental Goals*	*Consistent with Federal Environmental Laws*
Implement flood relief for Drainage District #1	Took Out																						
Stabilize Tributaries	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	M	M	Y	Y	Y	M	Y	Y	Y	N/A	Y	Y
Purchase and install Backup Energy (City Lift Stations)	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y
Purchase and install Backup Energy (City Water Plant)	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	N	Y	N	Y	Y	Y	Y	N	Y	N/A	N/A	Y
Purchase and install Backup Energy (City Wells)	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	N	Y	N	Y	Y	Y	Y	N	Y	N/A	N/A	Y
Purchase and install Backup Energy (Friendship Haven)	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	N	Y	N	Y	Y	Y	Y	N/A	N/A	N/A	N/A	N/A
Run Sanitary Sewer Evaluation Study	Y	Y	Y	N/A	N/A	N	Y	N/A	Y	Y	Y	N/A	Y	N	Y	Y	Y	N	N/A	N/A	N/A	N/A	N/A
Encourage participation in the Iowa Floodplain and Storm Water Management Association	Y	Y	Y	M	Y	Y	N/A	Y	Y	N	Y	N/A	N/A	N/A	M	Y	N/A	N	M	M	M	M	Y
Establish Tornado Safe Rooms	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N/A	N/A	N/A	N/A	N/A
Update radios to 2013 frequency	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N/A	N/A	Y	Y	Y	Y	N/A	Y	N/A	N/A	N/A	N/A	Y
Appoint a fire marshal	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N/A	N/A	N/A	N/A	N/A
Educate/inform the public on fire hazards	Y	Y	Y	M	Y	Y	N	M	Y	Y	Y	N/A	N/A	N/A	Y	Y	Y	M	N/A	N/A	N/A	N/A	N/A

STAPLEE Criteria	S (Social)		T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)				E (Environmental)				
Considerations for Mitigation Actions	*Community Acceptance*	*Effect on Segment of Population*	*Technical Feasibility*	*Long-term Solution*	*Secondary Impacts*	*Staffing*	*Funding Allocated*	*Maintenance/ Operations*	*Political Support*	*Local Champion*	*Public Support*	*State Authority*	*Existing Local Authority*	*Potential Legal Challenge*	*Benefit of Action*	*Cost of Action*	*Contributes to Economic Goals*	*Outside Funding Required*	*Effect on Land/ Water*	*Effect on Endangered Species*	*Effect on HAZMAT/Waste Sites*	*Consistent with Community Environmental Goals*	*Consistent with Federal Environmental Laws*
Educate/inform the public on road clearance during snow events	Y	Y	Y	M	Y	Y	N	M	Y	Y	Y	N/A	N/A	N/A	Y	Y	Y	M	N/A	N/A	N/A	N/A	N/A
Educate/inform the public on the Nixle program	Y	Y	Y	M	Y	Y	N	M	Y	Y	Y	N/A	N/A	N/A	Y	Y	Y	M	N/A	N/A	N/A	N/A	N/A
Educate/inform the public on reporting HAZMAT events	Y	Y	Y	M	Y	Y	N	M	Y	Y	Y	N/A	N/A	N/A	Y	Y	Y	M	Y	Y	Y	Y	Y
Educate/inform the public on human disease	Y	Y	Y	M	Y	Y	N	M	Y	Y	Y	N/A	N/A	N/A	Y	Y	Y	M	N/A	N/A	N/A	N/A	N/A
Educate/inform the public on road closures	Y	Y	Y	M	Y	Y	N	M	Y	Y	Y	N/A	N/A	N/A	Y	Y	Y	M	N/A	N/A	N/A	N/A	N/A
Continue to strive to meet National Fire Protection Agency (NFPA) Safety Codes & Standards	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N/A	Y	N	Y	Y	Y	Y	N	N/A	N/A	N/A	N/A

- Determined next meeting date for July 13th at 12:00 pm

Meeting ended at 2:00pm

Fort Dodge Hazard Mitigation Meeting Minutes #6

7/13/2011 - Fort Dodge City Council Chambers

Meeting Attended by: Reggie Archer, Chris Darling, Kevin Doty, Jodie Jaske, Tom Anderson, Kevin Richardson, Barbara Michael, David Ostheimer and Scott Meinders.

Meeting began at 12:00pm

- Discussed Soft Match
  - Each person is to submit a letter stating whether they are getting paid to attend or not. Also, whether they will be seeking compensation.
- Finished the STAPLEE Analysis – final results:

STAPLEE Criteria	**S (Social)**		**T (Technical)**			**A (Administrative)**			**P (Political)**			**L (Legal)**			**E (Economic)**				**E (Environmental)**				
Considerations for Mitigation Actions	*Community Acceptance*	*Effect on Segment of Population*	*Technical Feasibility*	*Long-term Solution*	*Secondary Impacts*	*Staffing*	*Funding Allocated*	*Maintenance/ Operations*	*Political Support*	*Local Champion*	*Public Support*	*State Authority*	*Existing Local Authority*	*Potential Legal Challenge*	*Benefit of Action*	*Cost of Action*	*Contributes to Economic Goals*	*Outside Funding Required*	*Effect on Land/ Water*	*Effect on Endangered Species*	*Effect on HAZMAT/Waste Sites*	*Consistent with Community Environmental Goals*	*Consistent with Federal Environmental Laws*
Prosecute illegal drug actions	1	1	1	1	1	1	1	1	1	1	1	1	1	-1	1	-1	1	1	1	1	1	1	1
Educate the public on weather radios	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
Educate the public on CodeRED/Inspiron	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
Ensure emergency responders have adequate equipment and training	1	1	1	1	1	1	0	1	1	1	1	1	1	-1	1	-1	1	-1	1	0	1	1	1
Identify potential targets for terrorism	1	1	1	1	1	1	-1	1	1	1	1	1	1	0	0	1	1	1	0	0	0	0	0
Build public education on Medication Disposal Program	1	1	1	1	1	1	-1	1	1	1	1	1	1	0	0	1	1	1	0	0	0	0	0
Establish a Household HAZMAT disposal program	1	1	1	1	1	0	-1	0	1	0	1	1	1	-1	1	-1	1	0	1	1	1	1	1
Develop and implement an ordinance for storm water management	0	1	1	0	1	1	0	1	1	1	1	1	1	-1	1	-1	1	0	1	0	0	1	1
Build public awareness on HAZMAT reporting	1	1	1	0	1	1	-1	0	1	1	1	0	0	0	1	-1	1	0	1	1	1	1	1
Review and assess mutual aid agreements with surrounding fire departments	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	-1	1	0	0	0	0	0	0
Update road signs to meet the Federal Highway Administration's (FHWA's) retroreflectivity requirements	1	1	1	1	1	1	0	1	1	0	1	1	1	1	0	-1	0	0	0	0	0	0	0

STAPLEE Criteria	S (Social)		T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)				E (Environmental)				
Considerations for Mitigation Actions	*Community Acceptance*	*Effect on Segment of Population*	*Technical Feasibility*	*Long-term Solution*	*Secondary Impacts*	*Staffing*	*Funding Allocated*	*Maintenance/ Operations*	*Political Support*	*Local Champion*	*Public Support*	*State Authority*	*Existing Local Authority*	*Potential Legal Challenge*	*Benefit of Action*	*Cost of Action*	*Contributes to Economic Goals*	*Outside Funding Required*	*Effect on Land/ Water*	*Effect on Endangered Species*	*Effect on HAZMAT/Waste Sites*	*Consistent with Community Environmental Goals*	*Consistent with Federal Environmental Laws*
Televise sanitary and storm sewer systems to identify necessary repairs	1	1	1	1	1	-1	-1	1	1	1	1	0	1	-1	1	-1	1	-1	0	1	1	1	1
Implement sanitary sewer and storm water management projects to reduce flash flooding	1	1	1	1	1	-1	0	1	1	1	1	1	1	-1	1	-1	1	-1	1	0	-1	1	1
Continue public health clinics	1	1	1	0	1	1	0	1	1	1	1	1	1	0	1	-1	1	-1	0	0	0	0	0
Run sanitary sewer evaluation study	1	1	1	0	0	-1	1	0	1	1	1	0	1	1	1	-1	1	1	0	0	0	0	0
Establish tornado safe rooms where found feasible	1	1	1	1	1	-1	-1	1	1	1	1	1	1	1	1	-1	1	-1	0	0	0	0	0
Develop a program to assist in the distribution of fire protection devices	1	1	1	1	1	1	-1	1	1	1	1	0	1	0	1	-1	1	-1	0	0	0	0	0
Appoint a fire marshal	1	1	1	1	1	-1	-1	1	1	1	1	1	1	1	1	-1	1	-1	0	0	0	0	0
Stabilize Tributaries	1	1	1	1	1	-1	-1	1	1	1	1	0	0	-1	1	-1	0	-1	1	1	0	1	1
Purchase and install backup energy for the City Lift Stations	1	1	1	1	1	-1	-1	-1	1	1	1	-1	1	1	1	-1	1	-1	-1	1	1	1	1
Identify areas where the landslide potential is high and address such issues	1	1	0	0	1	-1	-1	0	1	1	1	0	1	0	1	-1	1	0	1	0	0	1	1
Update and Enforce Floodplain Ordinance	1	1	1	1	1	-1	0	1	1	1	1	0	0	-1	1	-1	1	-1	1	0	0	1	0
Update all emergency radios for the 2013 narrowband mandate	1	1	1	1	1	1	-1	1	1	1	0	0	1	-1	1	-1	0	-1	0	0	0	0	1
Strive to meet the National Fire Protection Agency's (NFPA's) Safety Codes and Standards	1	1	1	1	1	-1	-1	1	1	1	1	0	1	1	1	-1	1	-1	-1	0	0	0	0
Reconstruct the lift station to reduce damages from flooding	1	1	1	1	1	-1	-1	-1	1	1	1	0	1	-1	1	-1	1	-1	1	1	-1	1	1

STAPLEE Criteria	S (Social)		T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)				E (Environmental)				
Considerations for Mitigation Actions	*Community Acceptance*	*Effect on Segment of Population*	*Technical Feasibility*	*Long-term Solution*	*Secondary Impacts*	*Staffing*	*Funding Allocated*	*Maintenance/ Operations*	*Political Support*	*Local Champion*	*Public Support*	*State Authority*	*Existing Local Authority*	*Potential Legal Challenge*	*Benefit of Action*	*Cost of Action*	*Contributes to Economic Goals*	*Outside Funding Required*	*Effect on Land/ Water*	*Effect on Endangered Species*	*Effect on HAZMAT/Waste Sites*	*Consistent with Community Environmental Goals*	*Consistent with Federal Environmental Laws*
Inform the public of road closures	1	1	1	0	1	1	-1	0	1	1	1	0	0	0	1	-1	1	0	0	0	0	0	0
Inform the public of road clearance requirements during snow events	1	1	1	0	1	1	-1	0	1	1	1	0	0	0	1	-1	1	0	0	0	0	0	0
Encourage participation in the Iowa Floodplain and Storm Water Management Association	1	1	1	0	1	1	0	1	1	-1	1	0	0	0	0	-1	0	1	0	0	0	0	1
Educate the public on the Nixle program	1	1	1	0	1	1	-1	0	1	1	1	0	0	0	1	-1	1	0	0	0	0	0	0
Educate the public on fire hazards	1	1	1	0	1	1	-1	0	1	1	1	0	0	0	1	-1	1	0	0	0	0	0	0
Build public awareness on human disease	1	1	1	0	1	1	-1	0	1	1	1	0	0	0	1	-1	1	0	0	0	0	0	0
Purchase and install backup energy for the City Water Plant	1	1	1	1	1	-1	-1	-1	1	1	1	-1	1	1	1	-1	1	-1	-1	1	0	0	1
Implement roadway and bridge projects to improve traffic flow and safety	1	1	1	1	1	0	-1	1	0	1	1	0	1	-1	1	-1	1	-1	0	0	0	0	0
Acquire property in the floodplain	0	1	1	1	1	-1	0	0	0	0	1	1	1	-1	1	-1	0	-1	1	1	-1	1	1
Purchase and install additional backup energy for Friendship Haven	1	1	1	1	1	-1	-1	-1	1	1	1	-1	1	1	1	-1	1	-1	0	0	0	0	0
Bury Powerlines	1	1	1	1	1	-1	-1	-1	0	1	1	1	1	-1	1	-1	1	-1	0	0	0	0	0
Establish additional snow fences	0	1	1	-1	0	1	1	1	0	0	0	0	-1	-1	1	-1	0	0	0	0	0	0	0
Make improvements to levee to drop impoundment levels	0	0	1	1	1	-1	-1	0	0	0	0	-1	1	-1	0	-1	0	-1	0	0	0	0	0
Make improvements to hydro-electric dam to drop impoundment levels	0	0	1	1	1	-1	-1	0	0	0	0	-1	1	-1	0	-1	0	-1	0	0	0	0	0

- Discussed next steps (prioritization)

Meeting adjourned at 2:00pm

Fort Dodge Hazard Mitigation Meeting Minutes #7
2/1/2012 - Fort Dodge City Council Chambers

Meeting Attended by: Kevin Doty, David Luers, Ashton Newman, Donna Bice, Stephanie Sheetz, Steve Teske, Jodie Janke, Greg Koch, Scott Meinders, and David Osthiemer.

Meeting began at 12:00pm

- Completed the action plan, which included the prioritization and implementation of each action, the priority, responsible party, estimated cost, potential funding source and target completion date was determined by the Committee, if known, the unknowns are to be completed via MIDAS research:

Prosecute illegal drug actions	
Description	Illegal drugs can be dangerous for all individuals involved, especially when used or produced in the form of methamphetamine (meth). Anyone who comes in contact with meth is at risk due to the toxic nature of the ingredients, which leaves behind hazardous waste. When ingredients are combined, they can ignite, causing explosions, fires and the release of toxic fumes. By prosecuting individuals participating in the illegal action of producing or using meth, the Hazard Mitigation Committee is seeking to protect the lives, safety and property of citizens in Fort Dodge by preventing hazardous material events, explosions and structural fires that could potentially result from meth production.
Hazards Addressed	Hazardous Materials & Infrastructure Failure (i.e. Structural Fire)
Priority	I
Responsible Dept./Party	Law Enforcement, Fire Department, County Attorney
Estimated Cost	(Estimate hours typically spent?)
Potential Funding Source	Law Enforcement's general fund (budget), offender fines, state and federal programs.
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	Ongoing

Educate the public on weather radios	
Description	Weather radios broadcast alerts for many different types of hazards such as natural hazards, technological hazards, AMBER alerts and terrorist attacks (National Weather Service, 2008). Educating the public on weather radios is a minor step toward ensuring that citizens are warned of hazards that could affect them. Citizens will be encouraged to purchase weather radios via fliers, newsletters, utility bills, local television stations, newspapers, radio announcements or other conceivable sources.
Hazards Addressed	Thunderstorms and Lightning, Windstorm, River Flooding, Flash Flooding, Tornadoes, Infrastructure Failure, Severe Winter Storms, Transportation Incident, Hazardous Materials, Hailstorms, Landslide, Grass and Wild Land Fires, Terrorism, Radiological, Extreme Heat, Dam Failure, Sink Holes, Drought and Levee Failure.
Priority	I
Responsible Dept./Party	Emergency Management
Estimated Cost	No to minimal cost (through PSA's)
Potential Funding Source	N/A
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Educate the public on CodeRED (Talk to Tony)	
Description	CodeRED is a community notification system that alerts citizens of emergency situations or critical community alerts (CodeRED, 2011). Similar to weather radios, educating the public on CodeRED is a minor step toward ensuring that citizens are warned of hazards that could affect them. Citizens will be encouraged to enroll in CodeRED via fliers, newsletters, utility bills, local television stations, radio announcements or other plausible sources.
Hazards Addressed	Thunderstorms and Lightning, Windstorm, River Flooding, Flash Flooding, Tornadoes, Infrastructure Failure, Severe Winter Storms, Transportation Incident, Hazardous Materials, Hailstorms, Landslide, Grass and Wild Land Fires, Terrorism, Radiological, Extreme Heat, Dam Failure, Sink Holes, Drought and Levee Failure.
Priority	I
Responsible Dept./Party	Emergency Management
Estimated Cost	
Potential Funding Source	
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Ensure emergency responders have adequate equipment and training	
Description	Adequate training and equipment is crucial for emergency responders to complete the task at hand. The City of Fort Dodge will seek to provide the training and equipment necessary to keep the fire department, police department, emergency medical service and other emergency response groups prepared for potential hazards.
Hazards Addressed	Thunderstorms and Lightning, Windstorm, River Flooding, Flash Flooding, Tornadoes, Infrastructure Failure, Severe Winter Storms, Transportation Incident, Hazardous Materials, Hailstorms, Landslide, Grass and Wild Land Fires, Terrorism, Radiological, Extreme Heat, Human Disease, Dam Failure, Sink Holes, Drought and Levee Failure.
Priority	I
Responsible Dept./Party	City Council, City Manager, each appropriate department
Estimated Cost	Varies depending on equipment
Potential Funding Source	General fund, grants, fees for services
Mitigation Measure Category	Emergency Services Protection Actions
Target Completion Date	Ongoing

Develop an updated list of areas that may be potential targets for terrorism (Tony?)	
Description	Potential targets for terrorism have been identified for Webster County in the past; however, to ensure that all potential targets within the City of Fort Dodge are prepared, the Hazard Mitigation Committee suggested that a new assessment of potential targets be implemented.
Hazards Addressed	Terrorism
Priority	I
Responsible Dept./Party	Emergency Management, Law Enforcement, Schools, Hospitals, Red Cross
Estimated Cost	(Staff time)
Potential Funding Source	General fund, responsible agencies,
Mitigation Measure Category	Public Education and Awareness Mitigation Actions & Emergency Protection Actions
Target Completion Date	6 months after start date

Build public education on medication disposal program (Hy-Vee)	
Description	Twice a year program
Hazards Addressed	Health
Priority	I
Responsible Dept./Party	HyVee, Police Department, County Health Department, Sheriff Department
Estimated Cost	Minimal to no cost (PSA's)
Potential Funding Source	N/A
Mitigation Measure Category	Natural Resources Protection Actions
Target Completion Date	Ongoing

Establish a household HAZMAT waste disposal program	
Description	The Fort Dodge Hazard Mitigation Committee determined that it would be helpful to establish a household waste collection service for household chemicals generated by Fort Dodge residents. This service would allow residents to safely dispose of hazardous materials in a sustainable way.
Hazards Addressed	Hazardous Materials
Priority	II
Responsible Dept./Party	Landfill, County DNR, County Health, Public Works
Estimated Cost	
Potential Funding Source	EPA, user fees, (purchase fees?)
Mitigation Measure Category	Natural Resources Protection Actions
Target Completion Date	Ongoing program, in effect 5 years from start date

Develop and implement an ordinance for stormwater management	
Description	Establishing an ordinance for stormwater management will help ensure that Fort Dodge's stormwater practices are consistent with their stormwater quality and quantity needs/goals. Such ordinance will establish guidelines that will assist the community in reducing and improving the quality of stormwater discharges. This action will assist in erosion and sediment control and help ensure that the stormwater system is not required to work over its capacity.
Hazards Addressed	Flash Flooding
Priority	II
Responsible Dept./Party	City Council, Engineering and Planning
Estimated Cost	Staff time
Potential Funding Source	General fund
Mitigation Measure Category	Natural Resources Protection Actions, Property Protection Actions & Prevention Actions
Target Completion Date	2 years from start date

Build public awareness on hazardous material reporting	
Description	Ensuring the public is aware of who to call during a hazardous material (HAZMAT) event can reduce the negative impacts of such event. By promptly reporting a HAZMAT event, responders are able to more efficiently contain and treat the material spilled in a timely manner.
Hazards Addressed	Hazardous Materials
Priority	I
Responsible Dept./Party	Region V HAZMAT, County Health, DNR
Estimated Cost	Minimal to no cost
Potential Funding Source	N/A
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Review and assess mutual aid agreements with surrounding fire departments	
Description	Mutual aid agreements are very important for the City of Fort Dodge and surrounding communities. To ensure that all areas of the county are covered, it would be beneficial to review those mutual aid agreements
Hazards Addressed	Infrastructure Failure (Structural Fire) & Grass and Wild Land Fires
Priority	I
Responsible Dept./Party	Fire Department
Estimated Cost	Cost for programming (dispatch two departments)
Potential Funding Source	County fire funds
Mitigation Measure Category	Emergency Services Protection Actions
Target Completion Date	Within a year

Update road signs to meet the Federal Highway Administration's (FHWA's) retroreflectivity requirements	
Description	The Manual on uniform Traffic Control Devices (MUTCD) requires signs to be either illuminated or made with retroreflective sheeting materials. Agencies must maintain such signs to a set of minimum levels. Providing retroreflective delineation and signing is important as a means of reducing nighttime crash rates. Signs that have sufficient retroreflectivity are especially beneficial to older road users.
Hazards Addressed	Transportation Incident
Priority	I
Responsible Dept./Party	911, Public Works and Engineering Departments
Estimated Cost	$1,000,000
Potential Funding Source	City funds, grants
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	Ongoing

Televise sanitary and storm sewer systems to identify necessary repairs	
Description	Assessing issues with the sanitary and storm sewer systems is the first step in addressing concerns such as sewage backup or flash flooding. By televising the sanitary and storm sewer systems, engineers will be able to evaluate the effectiveness of maintenance procedures and gain insightful information regarding the physical deterioration of storm and sanitary sewer lines. This will provide engineers with potential solutions to sanitary and storm sewer concerns.
Hazards Addressed	Flash Flooding
Priority	I
Responsible Dept./Party	Public Works and Engineering
Estimated Cost	$1,000,000
Potential Funding Source	City funds, SRF loans and grants
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing (additional problems evolve)

Implement sanitary sewer and storm sewer projects to reduce/eliminate backflow and flash flooding	
Description	Sanitary and storm sewer projects will help to reduce or eliminate backup and flash flooding that has impacted, or has the potential to impact homes, businesses and infrastructure within the City of Fort Dodge. Projects will be targeted in areas such as Crossroads Mall, Downtown, Mason Drive, Crestview Heights, Elkhorn Creek, Oleson Park and other areas where backup and flash flood relief is seen as necessary.
Hazards Addressed	Flash Flooding
Priority	I
Responsible Dept./Party	Engineering Department
Estimated Cost	Varies depending on project ($100,000,000)
Potential Funding Source	City funds, SRF loans, grants and state funds.
Mitigation Measure Category	Structural Mitigation Actions & Property Protection Actions
Target Completion Date	Ongoing

Continue public health clinics	
Description	Public Health Clinics are important for the health and welfare of the community. Continuing to hold such clinics ensures that residents, who may not otherwise seek medical care, are examined. Public clinics help ensure that potentially contagious health issues may be detected in advance.
Hazards Addressed	Human Disease
Priority	I
Responsible Dept./Party	County Health Department, Trinity, Community Health & Fire Department
Estimated Cost	
Potential Funding Source	Grants, insurance funds.
Mitigation Measure Category	Prevention Actions & Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Run sanitary sewer evaluation study	
Description	Similar to televising the sanitary sewer, a sanitary sewer evaluation study is the first step in addressing concerns such as sewage backup or flash flooding. By running a study of the sanitary sewer system, engineers will be able to evaluate the structural integrity as well as capacity and maintenance issues that may negatively impact the system's performance. This will provide engineers with potential solutions to sanitary and storm sewer concerns.
Hazards Addressed	Flash Flooding
Priority	I
Responsible Dept./Party	Engineering Department
Estimated Cost	$3,000,000
Potential Funding Source	City funds, SRF loans, grants
Mitigation Measure Category	Structural Mitigation Actions & Property Protection Actions
Target Completion Date	2014

Establish tornado safe rooms where found feasible	
Description	The hazard mitigation committee determined that tornado safe rooms should be developed for the (1) Senior High; (2)Dodger Stadium; in the (3) Fire Substation near (4) Iowa Central Community College, Fort Museum, (5)Friendship Haven and Hospital; Harlan Rogers Sports Complex ; and/or near the future Rec Center & Downtown Area. While a feasibility study would need to be done for each of these sites, constructing tornado safe rooms near public gatherings is a priority for the Fort Dodge Hazard Mitigation Committee.
Hazards Addressed	Tornadoes
Priority	(1) – II; (2) – III; (3) – II; (4) – III; (5) – II
Responsible Dept./Party	City, schools, rec center, fire department, ICCC, etc.
Estimated Cost	
Potential Funding Source	Fundraisers, schools, rec center, fire department, grants, ICCC, etc.
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	2 years within start date

Develop a program to assist in the distribution of fire protection devices	
Description	Developing a program to provide fire protection devices (smoke detectors) to households would help to ensure that all properties have the necessary fire protection devices in place. Adequate warning and protection from fires can decrease the number of injuries and fatalities, and assist in protecting properties from damages due to fires.
Hazards Addressed	Structural Fire
Priority	I (have been locating grant)
Responsible Dept./Party	Fire Department
Estimated Cost	$10,000
Potential Funding Source	Grants
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	1 year from start date

Appoint a fire marshal	
Description	A fire marshal would be a member of the fire department that would ensure that strategies are implemented to prevent losses due to accidental fires. Having a fire marshal would benefit the City of Fort Dodge in terms of fire code enforcement, inspection, fire investigation, and many other fire-related initiatives.
Hazards Addressed	Structural Fire & Grass and Wild Land Fires
Priority	I
Responsible Dept./Party	Fire Department
Estimated Cost	$100,000/yr
Potential Funding Source	General fund, user fees
Mitigation Measure Category	Emergency Services Protection Actions
Target Completion Date	1 year from start date

Stabilize Tributaries	
Description	Some tributaries, mainly relating to the Des Moines River and branching creeks, have developed issues with degradation, bank erosion, straightening and encroachment. Each of these issues causes sedimentation, which is especially a concern for owners of property along such tributaries. By stabilizing the tributaries, the City will be taking steps towards protecting land owners and reducing the impacts of flooding where sedimentation has occurred.
Hazards Addressed	River Flooding
Priority	II
Responsible Dept./Party	Engineering and DNR
Estimated Cost	$3,000,000
Potential Funding Source	City funds, assessments, grant
Mitigation Measure Category	Property Protection Actions & Natural Resources Protection Actions
Target Completion Date	Ongoing

Purchase and install backup energy for the City Lift Stations (7-11) Talk to Scott	
Description	Power outages create the potential for system distress and sanitary sewer overflows in the wastewater collection and treatment system. By purchasing and installing backup energy for the lift stations, the City will prevent sanitary sewer overflows and the potential for such materials to make their way into nearby waters.
Hazards Addressed	Infrastructure Failure (Energy Disruption)
Priority	I
Responsible Dept./Party	Engineering Department, Public Works
Estimated Cost	
Potential Funding Source	City funds, grants and loans
Mitigation Measure Category	Natural Resources Protection Actions & Structural Mitigation Actions
Target Completion Date	Ongoing (Get a date on this?)

Identify areas where the landslide potential is high and address such issues	
Description	Steep slopes are present throughout the City of Fort Dodge. Examining and securing the slope stability of such areas could reduce the likelihood of landslide events within the community.
Hazards Addressed	Landslides
Priority	III
Responsible Dept./Party	Engineering Department.
Estimated Cost	$5,000,000

Potential Funding Source	City funds, grants, property owners/assessments.
Mitigation Measure Category	Structural Mitigation Actions & Property Protection Actions
Target Completion Date	Ongoing

Update all emergency radios for the 2013 narrowband mandate (Tim)	
Description	In an effort to promote more efficient use of spectrum, the Federal Communications Commission (FCC) is mandating that all land mobile radio (LMR) systems migrate to narrowband 12.5 kHz efficiency technology by January 1, 2013. Because licenses will no longer be renewed for LMR system's that beyond this date, the City staff and personnel must update all land mobile radio systems.
Hazards Addressed	Thunderstorms and Lightning, Windstorm, River Flooding, Flash Flooding, Tornadoes, Infrastructure Failure, Severe Winter Storms, Transportation Incident, Hazardous Materials, Hailstorms, Landslide, Grass and Wild Land Fires, Terrorism, Radiological, Extreme Heat, Human Disease, Dam Failure, Sink Holes, Drought and Levee Failure.
Priority	I
Responsible Dept./Party	Police Department, Fire Department, Public Works
Estimated Cost	$35,000 County & City Fire (800/vehicle – 500/portable – 6,000/base) PD $250,000 (Contact public works on their radios)
Potential Funding Source	Grants, department funds
Mitigation Measure Category	Emergency Services Protection Actions
Target Completion Date	2013

Strive to meet the National Fire Protection Agency's (NFPA's) Safety Codes and Standards	
Description	The NFPA standards and codes are accepted as the professional standard for the Fort Dodge Fire Department. By complying with as many NFPA standards as possible, the department is showing their dedication to fire prevention and protection.
Hazards Addressed	Infrastructure Failure (Structural Fire) & Grass and Wild Land Fires
Priority	I
Responsible Dept./Party	Fire Department
Estimated Cost	To MEET: would be $1,000,000/yr for staff
Potential Funding Source	General funds, grants, user fees
Mitigation Measure Category	Prevention Actions &Emergency Services Protection Actions
Target Completion Date	Ongoing

Reconstruct/relocate lift stations outside flood-prone areas to reduce damages from flooding (get # in flood-prone areas) check with Scott	
Description	Lift stations located in the flood-prone areas are required to carry higher capacities during high waters, causing higher than normal flows, which could cause such systems to fail. Locating lift stations outside of flood-prone areas and constructing them to handle higher capacities will eliminate backflow and the bypass of waste into waterways.
Hazards Addressed	River Flooding & Flash Flooding
Priority	II
Responsible Dept./Party	Engineering Department
Estimated Cost	$4,000,000
Potential Funding Source	City funds, grants, loans
Mitigation Measure Category	Property Protection Actions & Natural Resources Protection Actions
Target Completion Date	2 years from start date

Inform the public of road closures	
Description	Road closures are done during the repair of roadways, sanitary sewer, storm sewer, water and other utilities. Ensuring citizens and visitors are aware of road closures is a minor step toward preventing transportation incidents. Citizens can be informed via signs, fliers, newsletters, utility bills, local television stations, radio announcements or other reasonable sources.
Hazards Addressed	Transportation Incident
Priority	I
Responsible Dept./Party	Public Works, Engineering, Fire Department, Fire Department
Estimated Cost	Staff time (minimal costs)
Potential Funding Source	City funds
Mitigation Measure Category	
Target Completion Date	Ongoing

Inform the public of road clearance requirements during snow events	
Description	Snow routes are designated so roads can adequately be cleared during and after winter storms. Ensuring residents are informed of road clearance requirements can ease the snow removal process for plows and reduce the number of transportation incidents that occur within Fort Dodge during the winter season. Citizens can be informed of snow routes via signs, fliers, newsletters, utility bills, local television stations, radio announcements or other sources.
Hazards Addressed	Severe Winter Storms and Transportation Incident
Priority	I
Responsible Dept./Party	Public Works Department
Estimated Cost	Minimal to no cost (staff time)
Potential Funding Source	City funds
Mitigation Measure Category	Prevention Actions & Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Encourage participation in the Iowa Floodplain and Storm Water Management Association (IFSMA)	
Description	IFSMA was formed to build public awareness and disseminate general and technical information about storm water management and hazard mitigation. Memberships are available at the individual, agency and student levels. Encouraging participation in IFSMA will assist the City in building an understanding of potential flood risks. Citizens and entities can be informed of IFSMA membership via fliers, newsletters, utility bills, local television stations, radio announcements or other sources.
Hazards Addressed	River Flooding & Flash Flooding
Priority	II
Responsible Dept./Party	City Council, Engineering, Planning, Building Depts.
Estimated Cost	Membership fees and staff time
Potential Funding Source	City funds
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Educate the public on the Nixle program	
Description	Nixle is a notification program that provides the City of Fort Dodge with news and information via SMS, mobile applications, email and web. Similar to CodeRED, educating the public on Nixle is a minor step toward ensuring that citizens are warned of hazards that could affect them. Citizens will be encouraged to enroll in Nixle via fliers, newsletters, utility bills, local television stations, social media sites, radio announcements or other plausible sources.
Hazards Addressed	Thunderstorms and Lightning, Windstorm, River Flooding, Flash Flooding, Tornadoes, Infrastructure Failure, Severe Winter Storms, Transportation Incident, Hazardous Materials, Hailstorms, Landslide, Grass and Wild Land Fires, Terrorism, Radiological, Extreme Heat, Human Disease, Dam Failure, Sink Holes, Drought and Levee Failure.
Priority	I
Responsible Dept./Party	Engineering, Social Media Committee
Estimated Cost	No costs
Potential Funding Source	N/A
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Educate the public on fire hazards	
Description	Ensuring the public is aware and prepared for fire events can help to prevent or reduce the impacts of such hazards. Citizens and entities can be educated on fire hazards via fliers, training, newsletters, utility bills, local television stations, radio announcements or other sources.
Hazards Addressed	Infrastructure Failure (Structural Fire) & Grass and Wild Land Fires
Priority	I
Responsible Dept./Party	Fire Department
Estimated Cost	$30,000
Potential Funding Source	Fire budget, donations
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Build public awareness on human disease	
Description	Human disease can develop from a variety of sources. Building awareness of the causes and treatment of human disease can reduce the chances for disease to spread.
Hazards Addressed	Human Disease
Priority	I
Responsible Dept./Party	Public Health
Estimated Cost	Minimal to no (talk to public health)
Potential Funding Source	
Mitigation Measure Category	Public Education and Awareness Mitigation Actions
Target Completion Date	Ongoing

Purchase and install backup energy for the City Water Plant (talk to scott, does this include other portions – treatment plant/wells?) Includes wells… ask if includes $3m	
Description	Installing backup energy for the City Water Plant will eliminate the disruption of water distribution services due to energy failure. This can be useful during other events that could cause energy disruption.
Hazards Addressed	Infrastructure Failure (Energy Disruption), Severe Winter Storms, Thunderstorm and Lightning, Windstorms, Tornadoes and Hailstorms
Priority	I
Responsible Dept./Party	Engineering and Water Treatment Plant
Estimated Cost	$3,000,000?
Potential Funding Source	
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	2013?

Implement roadway and bridge projects to improve traffic flow and safety	
Description	Various projects shall be implemented to ensure safety of driver in Fort Dodge. Such projects, including the Cross-town Connector Improvements Project, East Region Storm Sewer Phases 1-3, Veterans Bridge Reconstruction, 1st Avenue North Reconstruction, Highland Park Bridge Reconstruction, Menards Signals Project and others; will work to improve congested areas, ensure bridge safety and traffic safety in general. This will also be beneficial for emergency vehicles using our roadways.
Hazards Addressed	Transportation Incident
Priority	I
Responsible Dept./Party	Engineering Dept
Estimated Cost	$100,000,000 (Depending on projects)
Potential Funding Source	City funds, grants, assessment
Mitigation Measure Category	Prevention Actions, Emergency Services Protection Actions
Target Completion Date	Ongoing

Update and enforce floodplain ordinance	
Description	
Hazards Addressed	River Flooding
Priority	II
Responsible Dept./Party	Planning and Building
Estimated Cost	Staff time/consultant costs
Potential Funding Source	City funds
Mitigation Measure Category	Property Protection Actions
Target Completion Date	Update a year from start, enforce ongoing

Acquire property in the floodplain	
Description	Acquiring property located in the floodplain will provide an independent and long-term solution to the problem of river flooding by permanently removing structures located in flood-prone areas.
Hazards Addressed	River Flooding
Priority	III
Responsible Dept./Party	Planning
Estimated Cost	Depends on what buying.
Potential Funding Source	Grants
Mitigation Measure Category	Property Protection Actions
Target Completion Date	Ongoing (as needed)

Purchase and install additional backup energy for Friendship Haven	
Description	Friendship Haven is a critical facility for the City of Fort Dodge that provides care for multiple elderly patients. With the elderly residents who reside at this facility, it is necessary to ensure that adequate backup energy is available for the entity during energy disruptions.
Hazards Addressed	Infrastructure Failure (Energy Disruption), Severe Winter Storms, Thunderstorm and Lightning, Windstorms, Tornadoes and Hailstorms
Priority	I
Responsible Dept./Party	Friendship Haven
Estimated Cost	Mel Smith
Potential Funding Source	
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	

Bury Powerlines	
Description	Burying powerlines will reduce the number energy disruptions Fort Dodge experiences. Powerlines that lie underground are protected from outside elements such as windstorms, severe winter storms, thunderstorms and lightning, hailstorms, tornadoes and other events.
Hazards Addressed	Infrastructure Failure (Energy Disruption), Severe Winter Storms, Thunderstorm and Lightning, Windstorms, Tornadoes and Hailstorms
Priority	I
Responsible Dept./Party	Engineering, Planning and Mid American
Estimated Cost	$10,000,000
Potential Funding Source	City funds, electric utility assessments, loans,
Mitigation Measure Category	Prevention Actions and Structural Mitigation Actions
Target Completion Date	Ongoing

Establish additional snow fences	
Description	Snow fences can reduce maintenance costs and protect lives by providing a solution to blowing snow. Making roads much safer, snow fences reduce unwanted snowdrifts, which may cause a loss of vehicle control, reduce sight distance on curves and at intersections, impair motorist visibility, promote ice formation, bury informational signs and render safety barriers ineffective (Tabler & Associates, 1991).
Hazards Addressed	Severe Winter Storms
Priority	I
Responsible Dept./Party	Public Works
Estimated Cost	Staff time $5,000-$10,000 initial cost for poles/rolls of fencing, maintain $1,000/yr
Potential Funding Source	City funds
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	Ongoing for maintenance

Make improvements to levee to drop impoundment levels (ask Scott/David)	
Description	Improvements to the levee could include reducing the height or entirely removing the levee. By taking these actions, there is less chance that the City will have a failure of the levee.
Hazards Addressed	Levee Failure
Priority	
Responsible Dept./Party	
Estimated Cost	
Potential Funding Source	
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	

Make improvements to hydro-electric dam to drop impoundment levels	
Description	Improvements to the dam could include reducing the height, removing the gates or entirely removing the levee. By taking these actions, there is less chance that the City will experience a dam failure.
Hazards Addressed	Dam Failure
Priority	III
Responsible Dept./Party	Engineering Department
Estimated Cost	$9,000,000 depending
Potential Funding Source	City funds, loans, grants
Mitigation Measure Category	Structural Mitigation Actions
Target Completion Date	5 years from start project

Meeting ended at 2:00pm

Fort Dodge Hazard Mitigation Meeting Minutes #8

3/14/2012 - Fort Dodge City Council Chambers

Meeting Attended by: Ashton Newman, David Ostheimer, David Luers, Steve Teske, Reggie Archer, John Horrell, Stacy Mooney, Donna Bice, Jodie Janke, Dawn Larson and Stephanie Sheetz.

Meeting began at 12:00pm

- Reviewed a draft of the Hazard Mitigation Plan
- Committee gave blessing to hold public hearing and move forward with council consideration

Meeting ended at 1:30 pm

Appendix K: Committee Meeting Sign Ins

Fort Dodge Hazard Mitigation Meeting #1
Fort Dodge City Hall
February 3, 2010

Name	Representing	Email Address	Telephone No.	Are you getting paid to attend this meeting? Yes	No	If Paid how much per hour?
Marcy Harms	FDCS	mharms@fort-dodge.k12.ia.us	(515) 574-5678	✓		
Chris Darling	FDCS	cdarling@fort-dodge.k12.ia.us	(515) 576-1444	✓		[redacted]
Ashton Newman	FDCS	anewman@fort-dodge.k12.ia.us	(515) 574-5668	✓		
Kari Krueger	TRMC	KruegeK@trhs.org	515 574 6519	✓		
KEVIN RICHARDSON	USG	Krichardson@usg.com	(515) 576-4151	✓		
Tom Anderson	ICCC	anderson-tc@iowacentral.net	(515) 574-1906	✓		[redacted]
Brenda Martin	ISU-CIRAS	bkmartin@iastate.edu	(515) 570-5282	✓		[redacted]
Jennifer Ellis	WCHD	jellis@webstercountyia.org	515.574.3804	✓		
TONY JORGENSEN	Emergency Manager	ema@webstercountyia.org	(515) 573-1403	✓		
Steve Teske	FD Fire Dept	fdffsteskietraps@hotmail.com	570-1112		✓	
*Cheryl O'Hern	Frontier Communications	Cheryl.O'hern@FTR.com	515 573-1249	✓		[redacted]
REGGIE ARCHER	NESTLE PURINA	REGGIE.ARCHER@PURINA.NESTLE.COM	(515) 574 5219	✓		[redacted]
AL DOROTHY	CITY OF FORT DODGE	adorothy@fortdodgeiowa.org	(515) 955-6139	✓	✓	

Fort Dodge Hazard Mitigation Meeting #1
Fort Dodge City Hall
February 3, 2010

Name	Representing	Email Address	Telephone No.	Are you getting paid to attend this meeting? Yes	No	If Paid how much per hour?
Scott Meinders	City of Fort Dodge	smeinders@fortdodgeiowa.org	(515) 576-3601	X	✓	
Dawn Larson	City of F.D.	dlarson@fortdodgeiowa.org	(515) 576-8191	X	✓	
David Fierke	City of Fort Dodge	dFierke@fortdodgeiowa.org	(515) 574-5382		✓	
Wes Sperr	Friendship Haven	wes.sperr@friendshiphaven.org	(515) 573-7079	X	✓	
MEL SMITH	" "	msmith@friendshiphaven.org	(515) 573-6010	X		
Kim Courter	Boehringer-Ingelheim	Kim.Courter@boehringer-ingelheim.com	(515) 302-2421		X	
Tim Carmody	Fort Dodge Police	tcarmody@fortdodgeiowa.org	(515) 573-1426		X	
			( )			
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Fort Dodge Hazard Mitigation Meeting #2
Fort Dodge City Hall
March 16, 2010

Name	Representing	Email Address	Telephone No.	Are you getting paid to attend this meeting? Yes	No	If Paid how much per hour?
Chris Darling	FD Schools		( )			
Reggie Archer	Nestle Purina		( )			
Kim Courter	Boehringer Ingelheim		( )		X	
Denise Strohbehn	Valero Renewble	Denise.Strohbehn@valero.com	(515) 955-5015			
Steve Teske	Ft. Dodge Fire		( ) 570-1112	X		
Kari Krueger	TRMC	kruegek@ihs.org	( ) 574-6519			
Jennifer Ellis	WCHD	jellis@webstercountyia.org	574-3806	X		
Dan Flattery	State Farm	dan.flattery.pcfs@statefarm	955-7117		X	
Buck Michaels	Red Cross	Michaelsb@frontiernet.net	(515) 576-1911	X		
Kevin J Doty	FD Police Dept	kdoty@fortdodgeiowa.org	(515) 573-1426	X		
Kevin Richardson	USG	krichardson@usg.com	(515) 576-4151	X		
Lodie Jorke	Friendship Haven	lodie.Jorke@friendshiphaven.org	573-6875	X		
David Ostheimer	MidAmerican Energy	djostheimer@midamerican.com	574-5012	X		

1 of 2

Fort Dodge Hazard Mitigation Meeting #2
Fort Dodge City Hall
March 16, 2010

Name	Representing	Email Address	Telephone No.	Are you getting paid to attend this meeting? Yes	No	If Paid how much per hour?
Al Dorothy	City of Fort Dodge	adorothy@fortdodge.iowa.org	(515) 955-6139		X	
Scott Menders	City of Fort Dodge	smenders@fortdodgeiowa.org	(515) 576-7601		X	
Dawn Parson	City of Fort Dodge		( )		X	
Cheryl O'Hern	Frontier	Cheryl.O'hern@FTR.com	(515) 573-1249	X		40
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			( )			

Fort Dodge Hazard Mitigation Meeting #3
Fort Dodge City Hall
April 13, 2011

Name	Representing	Email Address	Telephone No.
Kim Courter	Boehringer Ingelheim	Kcourter@	(515) 570 2034
Denise Stahlbehn	Valero Renewables	Denise.Stahlbehn@valero.com	(515) 955-5015
Beth Bahnson	Elderbridge	bbahnson@elderbridge.org	(515) 955-5245
Ashton Newman	Fort Dodge Comm. Schools	anewman@fort-dodge.k12.ia.us	(515) 302-1331
Kari Krueger	TRMC		( )574 6519
TONY SORGENSEN	EMA		( )
Ashia Lantz	Friendship Haven		( )
Barbara Michaels	Red Cross	Michaelsb@frontiernet.net	(515 576- 1911
Dan Flattery	State Farm Ins.		( ) 955- 7191
REGGIE ARCHER	NESTLE PURINA	REGGIE.ARCHER@PURINA.NESTLE.COM	( ) 570 3358
Brenda Martin	ISU - CIRAS	bkmartin@iastate.edu	( )570 -5282
Donna Bice	City of F.D. - Public Works	dbice@fortdodgeiowa.org	( ) 570.3494
KEVIN RICHARDSON	USG	krichardson@usg.com	( )

Fort Dodge Hazard Mitigation Meeting #3
Fort Dodge City Hall
April 13, 2011

Name	Representing	Email Address	Telephone No.
David Ostheimer	MEC	djostheimer@midamerican.com	(515) 574-5012
Steve Teske	FD. Fire Dept		( ) 570-1112
Stephanie Sheets	City: Planning		( )
Scott Meinders	City Engineering	smeinders@fortdodgeiowa.org	(515) 576-3601
David Fierke	City Manager		( )
			( )
			( )
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			( )
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			( )
			( )
			( )

Fort Dodge Hazard Mitigation Meeting #4
Fort Dodge City Hall
May 18, 2011

Name	Representing	Email Address	Telephone No.
Kari Krueger	TRMC	kruegek@ihs.org	( ) 515 574 6519
Wes Speers	Friendship Haven	wes.speers@friendshiphaven.org	( ) 515 573 6003
Bob Livermore	U.S. WATER	blivermore@uswatercorp.com	(712) 301-8380
Kim Courter	BIVI	kcourter@boehringer-ingelheim.com	(515) 302-2421
Brenda Martin	CIRAS/ISU/ICCC	bkmartin@iastate.edu	( ) 570-5282
Tom Anderson	ICCC	anderson-t@iowacentral.edu	( ) 574 1906
Tony Jorgensen	EMA	ema@webstercountyia.org	( ) 573-1403
Kevin Doty	FDPD	kdoty@fortdodgeiowa.org	( ) 573-1426
Steve Teske	FD Fire		( ) 570-1112
Marcy Harms	FDCA	mharms@fort-dodge.k12.ia.us	( ) 574-5678
Donna Bice	City Ft. Dodge	dbice@fortdodgeiowa.org	( ) 959-6139
Julie Janke	Friendship Haven	julie.janke@friendshiphaven.org	( ) 573-6875
Karen Karsen	City	klarsen@fortdodgeiowa.org	( ) 576-8191

Fort Dodge Hazard Mitigation Meeting #4
Fort Dodge City Hall
May 18, 2011

Name	Representing	Email Address	Telephone No.
DAVID LUERS	FIRE/AIRPORT	DLUERS@FORTDODGE.[illegible]	( ) -
Scott Meinders	Engineering Dept		( )
John Harrell	Water Plant	jharrell@fortdodgeiowa.org	(515) 576-1002
			( )
			( )
			( )
			( )
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			( )
			( )
			( )

Fort Dodge Hazard Mitigation Meeting #5
Fort Dodge City Hall
June 15, 2011

Name	Representing	Email Address	Telephone No.
Steve Teske	Ft. Dodge Fire Dept		( ) 570-1112
DAVID LUERS	FT DODGE FIREDEPT	DLUERS@FORTDODGEIOWA.ORG	( )
Donna Bice	City F.D - Public Works	dbice@fortdodgeiowa.org	( ) 955-6135
John Norrell	City of Ft D. - Water Plant	jhorrell@fortdodgeiowa.org	(515) 570-1002
Stephanie Sheets	City of Fort Dodge - Business Affairs	ssheets@fortdodgeiowa.org	( )
David Ostheimer	Mid American Energy	djostheimer@midamerican.com	(515) 574-5012
Ashton Newman	Fort Dodge Comm. Schools	anewman@fort-dodge.k12.ia.us	(515) 574-5608
TOM JORGENSEN	Emergency Mgt.	emc@webstercountyia.org	(515) 573-1403
KEVIN RICHARDSON	USG	krichardson@usg.com	( )
Jodie Janke	Friendship Haven	jodie.janke@friendshiphaven.org	( ) 515-573-6876
Karen Doty	Ft Dodge Police Dept	kdoty@fortdodgeiowa.org	(515) 573-1426
David Fierke	City of Fort Dodge		( ) 573-7144
Scott Mechler	City of FD		( )

Fort Dodge Hazard Mitigation Meeting #6
Fort Dodge City Hall
~~June~~ 13, 2011
July

Name	Representing	Email Address	Telephone No.
Reggie Archer	Nestle Purina		(515) 574-5219
Chris Darling	F.D. Schools		(515) 576-1449
Kevin Doty	Fort Dodge Police Dept		(515)-573-1426
[illegible]	Friendship Haven		(515) 571-5944
Tom Anderson	ICCC		(515) 574-1906
Kevin Richardson	USG		( )
Barbara Michael	FD. Housing		( )
David Osthelmer	MidAmerican Energy		(515) 574-5012
Scott Meinders	City of F.D.		( )
			( )
			( )
			( )
			( )

Town Craft

A center for ideas and strategies to strengthen small communities

2/1/12 - Fort Dodge Hazard Mitigation Meeting #7

Name	Representation
Keven Doty	Fort Dodge Police Dept.
DAVID LUERS	FORT DODGE FIRE/EMS
Ashton Newman	Fort Dodge Community School District
Donna Bice	City of Fort Dodge
Stephanie Sheetz	City of Fort Dodge, Business Affairs
Steve Teske	F.D. Fire
Jodie Jorke	Friendship Haven
Greg Lock	FD PW
Scott Melnders	Engineering Dept - City
DAVID OSTHEIMER	MIDAMERICAN ENERGY COMPANY

Fort Dodge Hazard Mitigation Meeting #8
Fort Dodge City Hall
March 14, 2012

Name	Representing	Email Address	Telephone No.
Ashton Newman	Fort Dodge School District		( )
DAVID OSTHEIMER	MID AMERICAN ENERGY		( )
DAVID LUERS	FORT DODGE FIRE		( )
Steve Teske	FD Fire		( )
REGGIE ARCHER	NESTLE PURINA		( )
* John Norell	City of Ft Rodge, Water Plant		( )
Stacy Mooney	Elderbridge		( )
Donna Bice	City of F. D. - PW		( )
Jodie Jake	Friendship Haven		( )
Dawn Pierson	City of F.D. - BAGG		( )
Stephanie Sheetz	City of Fort Dodge - BAGG		( )
			( )
			( )