York County
Multi-Jurisdictional Hazard Mitigation Plan

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JEO CONSULTING GROUP INC

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List of Acronyms

APA – American Planning Association
BCA – Benefit Cost Analysis
CARC – Nebraska Climate Assessment and Response Committee
CF – Critical Facility
CFR – Code of Federal Regulations
CIKR – Critical Infrastructure and Key Resources
CRS – Community Rating System
CTP - Cooperating Technical Partners Program
CWS – Chronic Wasting Disease
DHS – Department of Homeland Security
DMA2000 – Disaster Mitigation Act of 2000
EAS – Emergency Alert System
EHD – Epizootic Hemorrhagic Disease
ELAP – Emergency Assistance for Livestock, Honeybees, and Farm-Raised Fish Program
EMS – Emergency Medical Services
EOC – Emergency Operation Center
ERC – Emergency Response Committee
ESF – Emergency Support Functions
FBI – Federal Bureau of Investigation
FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Map
FMA – Flood Mitigation Assistance Program
GIS - Geographic Information Systems
GTFDR – Governor's Task Force for Disaster Recovery
HAZUS-MH – Hazards United States-Multi Hazard
HMA – Hazard Mitigation Assistance
HMGP – Hazard Mitigation Grant Program
HMP – Hazard Mitigation Plan
HSAS – Homeland Security Advisory System
HUD - Department of Housing and Urban Development
IFR – Interim Final Rule
JEO – JEO Consulting Group, Inc.
LFD – Livestock Forage Disaster Assistance Program
LIP – Livestock Indemnity Program
LPSNRD – Lower Platte South Natural Resource District
NCDC – National Climatic Data Center
NDA – Nebraska Department of Agriculture
NDEQ – Nebraska Department of Environmental Quality
NDMC – National Drought Mitigation Center
NDNR – Nebraska Department of Natural Resources
NEMA - Nebraska Emergency Management Agency
NFIP – National Flood Insurance Program
NFIRS – National Fire Incident Reporting System
NIPP – National Infrastructure Protection Plan
NRD – Natural Resource District
NTAS – National Terrorism Advisory System
NWS – National Weather Service
PHMSA – Pipeline Hazardous Materials and Safety Administration
PDM – Pre-Disaster Mitigation Program
PDSI - Palmer Drought Severity Index
RAC – Risk Assessment Committee
SBA – Small Business Administration
SFHA – Special Flood Hazard Area

SPIA - Sperry-Piltz Ice Accumulation Index
SSA – Sector Specific Agency
SURE – Supplemental Revenue Assistance Payments
TAP – Tree Assistance Program
TRI – Toxics Release Inventory Program
USDA – United States Department of Agriculture
USGS - United States Geological Survey
VS – Vesticular Stomatitis
WAOC – Water Availability and Outlook Committee
WUI – Wildland Urban Interface

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EXECUTIVE SUMMARY

In 2013 York County began the process of updating their hazard mitigation plan in compliance with the 5-year update requirement established by the Disaster Mitigation Act of 2000 (DMA 2000). This updated plan was prepared in order to reduce the participating communities' vulnerability to natural hazards and maintain the eligibility for the Federal Emergency Management Agency (FEMA) pre-disaster grant opportunities. This York County Hazard Mitigation Plan is a multi-jurisdictional plan which covers the following local jurisdictions.

Figure 1: Participating Jurisdictions

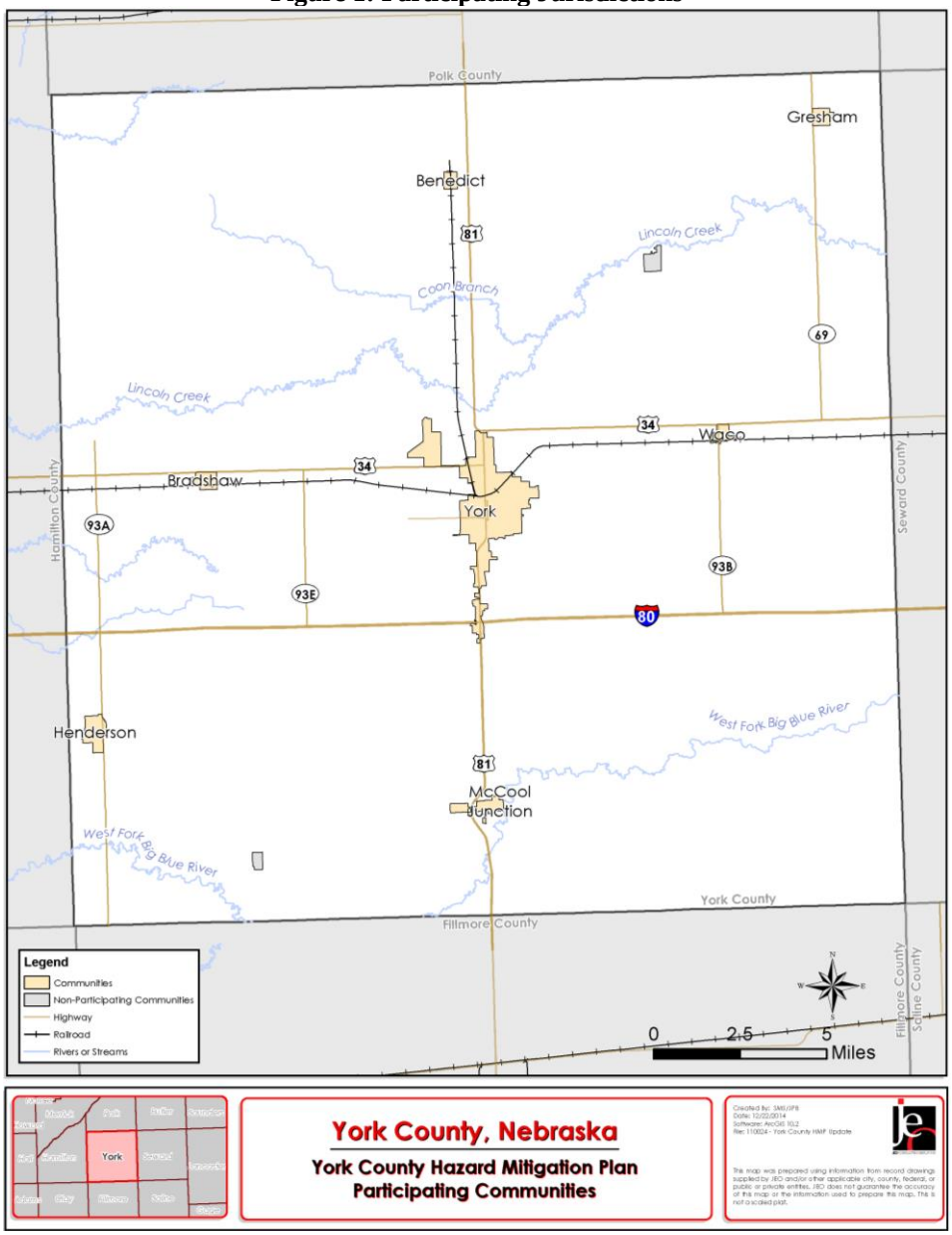

Table 1: Participating Jurisdictions

Direct Participants			
York County	City of Henderson	City of York	Village of Benedict
Village of Bradshaw	Village of Gresham	Village of McCool Junction	Village of Waco
Upper Big Blue NRD			

The purpose of this plan update is to identify hazards, assess the vulnerability of each participating jurisdiction to the various hazards, determine potential losses associated with the hazards, examine the capabilities in place and develop sound mitigation alternatives to reduce these vulnerabilities. This update builds upon the prior hazard mitigation plans developed by each county in 2010 by expanding upon the existing risk assessment, incorporating additional hazards as identified in the 2014 State of Nebraska Hazard Mitigation Plan, incorporating a capability assessment, and identifying a greater range of mitigation strategies and project types.

The potential for disaster losses and the probability of occurrence of natural and manmade hazards presents a significant concern for the communities participating in this plan update. The driving motivation behind the update of this hazard mitigation plans is to reduce vulnerability and the likelihood of impacts to the health, safety, and welfare of all citizens in the planning area. To achieve this end the planning team and participating jurisdictions reviewed, updated, and approved goals and objectives which will help guide the process of identifying both broad-based and community specific mitigation strategies and projects that will, if implemented, reduce their vulnerability and help build stronger, more resilient communities.

Through the update several changes were made to the previous 2010 York County Hazard Mitigation Plans and the planning process including: the inclusion of manmade hazards based on the threats addressed in the 2014 State of Nebraska Hazard Mitigation Plan, greater efforts to reach out to and include stakeholder groups, an expanded risk assessment for both the entire planning area as well as for each participating jurisdiction, and the inclusion of both generalized mitigation strategies. This update also works to unify the various planning mechanisms in place throughout the participating communities (i.e. Comprehensive Plans, Local Emergency Operation Plans, Zoning Ordinances, Building Codes, etc.) to ensure that the goals and objectives identified in those planning mechanisms are consistent with the strategies and projects include in this plan.

This plan identified specific goals and objectives based to help guide the planning process. These goals and objectives were adapted from the previous goals of Perkins, Chase, and Dundy Counties' plans. The goals and objectives are the same as these previous plans, with the addition of Goal Six. The planning team identified a need to promote resilience and sustainability, and as such has included it in this plan update. The goals and objectives for this plan update are as follows:

GOAL 1: PROTECT THE HEALTH AND SAFETY OF RESIDENTS

Objective 1.1: Reduce or prevent damage to property or prevent loss of life or serious injury (overall intent of the plan).

GOAL 2: REDUCE FUTURE LOSSES FROM HAZARD EVENTS

Objective 2.1: Provide protection for existing structures, future development, critical facilities, services, utilities, and trees to the extent possible.

Objective 2.2: Develop hazard specific plans, conduct studies or assessments, and retrofit jurisdiction to mitigate for hazards and minimize their impact.

Objective 2.3: Minimize and control the impact of hazard events through enacting or updating ordinances, permits, laws, or regulations.

GOAL 3: INCREASE PUBLIC AWARENESS AND EDUCATE ON THE VULNERABILITY TO HAZARDS

Objective 3.1: Develop and provide information to residents and businesses about the types of hazards they are exposed to, what the effects may be, where they occur, and what they can do to be better prepared.

GOAL 4: IMPROVE EMERGENCY MANAGEMENT CAPABILITIES

Objective 4.1: Develop or improve Emergency Response Plan and procedures and abilities.

Objective 4.2: Develop or improve Evacuation Plan and procedures.

Objective 4.3: Improve warning systems and ability to communicate to residents and businesses during and following a disaster or emergency.

GOAL 5: PURSUE MULTI-OBJECTIVE OPPORTUNITIES (WHENEVER POSSIBLE)

Objective 5.1: When possible, use existing resources, agencies, and programs to implement the projects.

Objective 5.2: When possible implement projects that achieve several goals.

GOAL 6: ENHANCE OVERALL RESILIENCE AND PROMOTE SUSTAINABILITY

Objective 6.1: Incorporate hazard mitigation and adaptation into updating other existing planning endeavors (e.g. comprehensive plans, zoning ordinance, subdivision regulation, etc.).

This plan is comprised of seven sections which are described below:

Section One – Introduction: This section introduces hazard mitigation planning, including an overview of the Disaster Mitigation Act of 2000, benefits of utilizing the multi-jurisdictional approach, and plan financing and preparation. This update also included a section on the hazard mitigation assistance program.

Section Two – Planning Process: This section outlines the hazard mitigation planning process used for development of the plan, including hazard identification, resource organization, risk assessment, structural inventory, mitigation strategy, and plan implementation and maintenance. The planning team, public involvement and participation, participating jurisdictions, as well as general plans, documents, and additional information used throughout the planning process are also listed in this section. This section of the plan was updated from previous versions to reflect the planning process for the current update. This involved including information regarding the public meetings for the plan update, the list of new planning team members, information about what occurred during public meetings, etc.

Section Three – Community Profile and Capability Assessment: This section provides an overall profile of the planning area including geography, climate, demographics, assets, and direct participant profiles, as well as local capabilities to ensure future implementation. The section of the plan was absent from the previous hazard mitigation plan. The previous plans had this information dispersed through the entire plan.

Section Four – Risk Assessment: This section contains the risk assessment for the planning area including hazard identification, hazard background, historical occurrences, vulnerability assessment, potential losses, and future development and vulnerability for all participants. For this plan update, a larger list of hazards was addressed. All information from the previous plan, such as hazard occurrences, critical facilities, population vulnerability, etc., were revisited and updated accordingly.

Section Five – Mitigation Strategy: This section discusses the establishment of goals and objectives for all participants. The goals and objectives provide the framework for identifying mitigation alternatives or 'action items', the on-the-ground activities to reduce the effects of natural hazards. All action items were evaluated by the participants using the FEMA recommended 'STAPLEE' process. The complete list by participant can be found at the end of this

section. This section of the plan was updated by reviewing previous goals and objectives and also reviewing and commenting on the mitigation actions listed in the previous mitigation plans.

Section Six – Plan Implementation and Maintenance: This section contains recommendations for plan implementation and maintenance, including the monitoring of hazards, establishment of a panel for the annual plan review, and an outline of the process for updating the plan in the future. For this plan update, this information was reviewed and updated accordingly. This plan update also included a discussion of unforeseen opportunities.

Section Seven – Participant Sections: Participant sections provide information specific to each individual plan participant, which was not covered in the 'Upfront Section'. The risk assessment includes a participant specific hazard identification summary and description of structural inventory and valuation. Also, maps specific to each participant can be found in their respective section. This plan update included a list of different participants. Further, the plan update included revising all previous participant sections to reflect changes in each jurisdictions community profile, hazardous occurrences, risk assessment, capability assessment, and mitigation actions.

SECTION ONE: INTRODUCTION

HAZARD MITIGATION PLANNING

Natural hazards, such as severe winter storms, tornados and high winds, severe thunderstorms, flooding, extreme heat, drought, earthquakes, landslides, and wildfires are a part of the world around us. Their occurrence is natural and inevitable, and there is little we can do to control their force and intensity. All jurisdictions participating in this planning process are vulnerable to a wide range of natural and man-made hazards that threaten the safety of residents, and have the potential to damage or destroy both public and private property, cause environmental degradation, or disrupt the local economy and overall quality of life.

Mitigation planning is described as having the potential to produce long-term and recurring benefits by breaking the repetitive cycle of disaster associated loss. A core assumption of hazard mitigation planning is that pre-disaster investments will significantly reduce the demand for post-disaster assistance by lessening the need for emergency response, repair, recovery, and reconstruction. Furthermore, mitigation practices will enable local residents, businesses, and industries to re-establish themselves in the wake of a disaster, getting the local economy back on track sooner and with minimal interruption.

FEMA definition of
Hazard Mitigation

"Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards"

The benefits of mitigation planning go beyond reducing hazard vulnerability. Measures such as the acquisition or regulation of land in known hazard areas can help achieve multiple local goals like preserving open space, improving water quality, maintaining environmental health, and enhancing recreational opportunities. Mitigation planning also offers the following benefits:

- Saving lives and property
- Saving money
- Speeding up recovery following disasters
- Reducing future vulnerability through wise development and post-disaster recovery and reconstruction
- Enhancing coordination within and across participating jurisdictions
- Expediting the receipt of pre-disaster and post-disaster grant funding
- Demonstrating a firm commitment to improving local health and safety

As a jurisdiction formulates a comprehensive approach to reduce the impacts of hazards, a key means to accomplish this task is through the development, adoption, and regular update of a hazard mitigation plan. A hazard mitigation plan establishes the vision, guiding principles, and specific actions designed to reduce current and future hazard vulnerabilities. The York County Multi-Jurisdictional Hazard Mitigation Plan is an effective tool to incorporate hazard mitigation principles and practices into the day-to-day activities of county and municipal governments as well as developing long-term objectives and strategies to reduce vulnerabilities and build stronger, more resilient communities. This plan offers specific actions designed to protect residents, as well as the built environment from those hazards that pose a significant risk. Identified mitigation actions go beyond recommendations for structural solutions to reduce existing vulnerability, such as elevation, retrofitting, and acquisition projects. Local policies on growth and development, incentives tied to natural resource protection, and public awareness and outreach activities are examples of other actions intended to reduce future vulnerability to identified hazards.

DISASTER MITIGATION ACT OF 2000

In an effort to reduce the nation's mounting natural disaster losses, the U.S. Congress passed the Disaster Mitigation Act of 2000 to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Section 322 of the DMA 2000 requires that state and local governments develop, adopt, and routinely update a hazard mitigation plan in order to remain eligible for pre- and post-disaster mitigation funding. These funds include the Hazard Mitigation Grant

Program (HMGP), Pre-Disaster Mitigation Program (PDM), and the Flood Mitigation Assistance Program (FMA). They are administered by FEMA under the Department of Homeland Security (DHS).

This plan was developed in accordance with current state and federal rules and regulations governing local hazard mitigation plans. The plan shall be monitored and updated on a routine basis to maintain compliance with the legislation – Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390) and by the Final Rule published in the Federal Register on November 30, 2007 (44 CFR §201.6).

HAZARD MITIGATION ASSISTANCE

On June 1, 2009, FEMA initiated the Hazard Mitigation Assistance (HMA) program integration, which aligned certain policies and timelines of the various mitigation programs. These HMA programs present a critical opportunity to minimize the risk to individuals and property from hazards while simultaneously reducing the reliance on federal disaster funds.

> ***Mitigation*** *is the cornerstone of emergency management. Mitigation focuses on breaking the cycle of disaster damage, reconstruction, and repeated damage. Mitigation lessens the impact disasters have on people's lives and property through damage prevention, appropriate development standards, and affordable flood insurance. Through measures such as avoiding building in damage-prone areas, stringent building codes, and floodplain management regulations, the impact on lives and communities is lessened.*
>
> *- FEMA Mitigation Directorate*

Each HMA program was authorized by separate legislative action, and as such, each program differs slightly in scope and intent.

- ***Hazard Mitigation Grant Program*****:** To qualify for post-disaster mitigation funds, local jurisdictions must have adopted a mitigation plan that is approved by FEMA. HMGP provides funds to states, territories, Indian tribal governments, local governments, and eligible private non-profits following a presidential disaster declaration. The DMA 2000 authorizes up to seven percent of HMGP funds available to a state after a disaster to be used for the development of state, tribal, and local mitigation plans.
- ***Flood Mitigation Assistance Program FMA:*** To qualify to receive grant funds to implement projects such as acquisition or elevation of flood-prone homes, local jurisdictions must prepare a mitigation plan. The plan must include specific elements and be prepared in conjunction with the process outlined in the National Flood Insurance Program's (NFIP) Community Rating System (CRS). The goal of FMA is to reduce or eliminate claims under the NFIP.
- ***Pre-Disaster Mitigation Grant Program*****:** To qualify for pre-disaster mitigation funds, local jurisdictions must adopt a mitigation plan that is approved by FEMA. PDM assists states, territories, Indian tribal governments, and local governments in implementing a sustained pre-disaster natural hazard mitigation program.
- ***NFIP Community Rating System:*** The CRS offers recognition to local governments that exceed minimum requirements of the National Flood Insurance Program (refer to *Section Four: Risk Assessment – Flooding*). Recognition comes in the form of discounts on flood insurance policies purchased by citizens. The CRS offers credit for mitigation plans that are prepared according to a multi-step process.

MULTI-JURISDICTIONAL APPROACH

According to FEMA, "A multi-jurisdictional hazard mitigation plan is a plan jointly prepared by more than one jurisdiction." The term 'jurisdiction' means 'local government'. Title 44 Part 201, Mitigation Planning in the CFR, defines a 'local government' as "any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments, regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, any rural community, unincorporated town or village, or other public entity". For the purposes of this plan, any 'taxing authority' was also included.

FEMA recommends the multi-jurisdictional approach under the DMA 2000 for the following reasons:

- It provides a comprehensive approach to the mitigation of hazards that affect multiple jurisdictions;
- It allows economies of scale by leveraging individual capabilities and sharing cost and resources;

- It avoids duplication of efforts; and
- It imposes an external discipline on the process.

Both FEMA and the Nebraska Emergency Management Agency (NEMA) recommend this multi-jurisdictional approach through a combination of counties and regional emergency management districts. York County utilized the multi-jurisdiction planning process recommended by FEMA in Local Mitigation Plan Review Guide (October 2011) and Local Mitigation Planning Handbook (March 2013) to develop this plan.

PLAN FINANCING AND PREPARATION

In regards to plan financing and preparation, the York County government was the "sub-applicant" which submitted a sub-application for FEMA assistance to the "Applicant". The "Applicant," in this case is the State of Nebraska. If HMA funding is awarded, the sub-applicant becomes the "sub-grantee" and is responsible for managing the sub-grant and complying with program requirements and other applicable federal, state, territorial, tribal, and local laws and regulations.

The York County Hazard Mitigation Plan (HMP) Update was financed through the HMGP program, project DR-4013-0040-NE. HMGP grants are allocated from FEMA to NEMA using a 'sliding scale' formula based on the percentage of funds spent on public and individual assistance programs for each presidentially-declared disaster. For states with a standard state mitigation plan, the formula provides 15 percent of the first $2 billion of estimated aggregate amounts of disaster assistance; 10 percent for the next portion of amounts between $2 billion and $10 billion; and 7.5 percent for the next portion of amounts between $10 billion and $35.333 billion.

York County applied for an HMGP planning grant on December 12, 2012 and received federal-cost share to provide 75 percent assistance for the completion of a 'multi-jurisdictional' hazard mitigation plan update. A multi-jurisdictional plan includes any 'taxing authority' such as cities, villages, counties, school districts, or other special districts. In total, 8 jurisdictions participated in the York County Multi-Jurisdictional Hazard Mitigation Plan.

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SECTION TWO: PLANNING PROCESS

SUMMARY OF CHANGES

The planning process followed for this plan update was similar to that followed for the prior hazard mitigation plan. However, some changes were incorporated in order to build upon the lessons learned from the prior planning effort:

- Multiple stakeholder groups were identified and invited to participate in updating the plan
- Additional efforts to engage the public through the use of JEO's Mitigation Planning Website, press releases, and public surveys
- The hazards considered were expanded to include all hazards addressed by the 2014 State of Nebraska Hazard Mitigation Plan

***Requirement §201.6(b)**: Planning process. An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:*

(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

***Requirement §201.6(c)(1)**: [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.*

PURPOSE

York County prepared this multi-jurisdictional hazard mitigation plan to guide hazard mitigation planning to better protect the people and property of the region from the effects of hazards. This plan demonstrates the communities' commitment to reducing risks from hazards and serves as a tool to help decision makers establish mitigation activities and resources. This plan was developed to make York County and participating jurisdictions eligible for federal pre-disaster funding programs and to accomplish the following objectives:

- Minimize the disruption to each jurisdiction following a disaster.
- Establish actions to reduce or eliminate future damages in order to efficiently recover from disasters.
- Investigate, review, and implement activities or actions to ensure disaster related hazards are addressed by the most efficient and appropriate solution.
- Educate citizens about potential hazards.
- Fulfill planning requirements for future hazard mitigation project grants as described by the DMA 2000.
- Facilitate development and implementation of hazard mitigation management activities to ensure a sustainable community.

HAZARD MITIGATION PLANNING PROCESS

The hazard mitigation planning process has four general steps, which include: organization of resources; assessment of risks; development of mitigation strategies; and, implementation and annual monitoring of the plan's progress. The mitigation planning process is rarely a linear process. It is not unusual that ideas developed during the initial assessment of risks may need revision later in the process, or that additional information may be identified while developing the mitigation plan or during the implementation of the plan that may result in new goals or additional risk assessment.

- Organization of Resources
    - Focus on the resources needed for a successful mitigation planning process. Essential steps include:
        - Organizing interested community members
        - Identifying technical expertise needed
- Assessment of Risks
    - Identify the characteristics and potential consequences of the hazard. Identify how much of the jurisdiction can be affected by specific hazards and the impacts they could have on local assets.
- Mitigation Plan Development

  - Determine priorities and identify possible solutions to avoid or minimize the undesired effects. The result is a hazard mitigation plan and strategy for implementation.
- Plan Implementation and Progress Monitoring
  - Bring the plan to life by implementing specific mitigation projects and changing day-to-day operations. It is critical that the plan remains relevant to succeed. Thus, it is important to conduct periodic evaluations and revisions, as needed.

PLAN UPDATE PROCESS

York County began the process of securing funding for their multi-jurisdictional hazard mitigation plan on December 12, 2012. JEO was contracted in November 2013 to guide and facilitate the planning process and assemble the multi-jurisdictional hazard mitigation plan. For the planning area, Gary Petersen led the development of the plan and served as the primary point-of-contact throughout the project. The project kick-off meeting with York County and JEO provided an overview of the work to be completed over the following three months: including the identification of and coordination with the planning team; determination of number and location of future public meetings; assessment of the attendance requirements; and, discussion of what types of information would need to be developed and collected to successfully complete the plan.

The first activity in the development process for the York County HMP update was coordination of efforts with local, state, and federal agencies and organizations. NDNR and NEMA became involved in the planning process. York County and JEO worked together to identify elected officials and key stakeholders to lead the planning effort.

RESOURCE ORGANIZATION

PLANNING TEAM

At the beginning of the planning process, the planning team, comprised of local participants and the consultant, was established to guide the planning process, review the plan, and serve as a liaison to plan participants throughout the planning area. A list of planning team members can be found in the following table. Additional technical support was provided to the planning team through staff from NEMA and the NDNR.

Table 2: Hazard Mitigation Planning Team

Name	Title	Jurisdiction
Gary Petersen	Emergency Manager	York County
Jeff Ball	Lead Engineering Technican	Upper Big Blue NRD
Bill Bamesberger	Board Commissioner	York County
Mitch Doht	Highway Superintendent/Planning and Zoning	York County
James Green	Water Operator	McCool Junction
Kevin Stuhr	Fire Chief	City of York
Kelly Brooke	Village Clerk	Village of Benedict
*Mitch Paine**	*Flood Mitigation Planning Coordinator*	*NDNR*
*Mary Baker**	*State Hazard Mitigation Officer*	*NEMA*
*Alessandra Jerolleman**	*Senior Planner*	*JEO Consulting Group, Inc.*
*Jeff Henson**	*Project Manager*	*JEO Consulting Group, Inc.*
*Phil Luebbert**	*Planner*	*JEO Consulting Group. Inc.*
*Lalit Jha**	*HMEP Department Manager*	*JEO Consulting Group, Inc.*

**External Contributors*

The planning team meetings were held on:

- April 22nd, 2014 at 4-H Building, 2400 N Nebraska Avenue, York Nebraska
- September 10th, 2014 at 4-H Building, 2400 N Nebraska Avenue, York Nebraska

PARTICIPANT INVOLVEMENT

Elected officials, key stakeholders, and residents within York County experience the area hazards first hand and play a key role in providing local information necessary to complete the plan. Participants played a key role in the identification of hazards; understanding the community's risk; providing a record of historical disaster occurrences and localized impacts; reviewing existing goals and objectives; approval of newly established goals and objectives; identification and prioritization of potential mitigation projects and strategies; and, the development of annual review procedures.

In order to be a participant in the development of this plan update, jurisdictions were required to have a minimum of one representative present at the "Hazard Identification" and "Mitigation Strategies" meetings. Many jurisdictions opted to have multiple community members present at both rounds of meetings. Sign-in sheets from all public meetings can be found in *Appendix B*. Jurisdictions were encouraged to invite stakeholder groups from within their communities to participate in the public meetings.

Jurisdictions that were unable to have a representative attend the scheduled public meetings, were able to have a personalized presentation at a specific public meeting to satisfy meeting the attendance requirement. These jurisdictions were instructed by a planning team member to place 'participation in the York County Hazard Mitigation Plan' on their meeting agenda, review the project summary materials, and take formal action to participate in the plan. This effort enabled jurisdictions which could not attend a scheduled public meeting to participate in the plan. Neighboring Jurisdictions were also invited to participate in the planning process.

The Hazard Identification meeting was held on:

- April 22nd, 2014 at 4-H Building, 2400 N Nebraska Avenue, York Nebraska

Table 3: Hazard Identification Meeting Attendees

Name	Title	Jurisdiction
April 22nd, 2014		
Gary Petersen	EMA Director	York County
Kevin Stuhr	Fire Chief	City of York
John Cook	Hazard Mitigation Specialist	NEMA
Mitch Paine	Flood Mitigation Planning Coordinator	NDNR
Bill Bamesberger	Commissioner	City of Henderson
Kelly Brooke	Village Clerk	Village of Benedict
James Green	Floodplain Administrator	Village of McCool Junction
Gerald Hinrichs	EMA Deputy	York County
Jeff Ball	Lead Engineering Technician	Upper Big Blue NRD
Jim Dunker	Emergency Management	Fillmore County
Kenneth Kinney	Board Member	Village of Waco
Pat Sheehan	Fire Chief	Village of Gresham
Sheldon Epp	Fire Lieutenant	City of Henderson
James Gordan	Mayor/Fire Captain	Village of Bradshaw
Mike Wall	City Council	City of Henderson

The intent of these meetings was to provide the public and jurisdictional representatives with an overview of the work to be completed over the next three months and discuss what types of information would need to be provided to complete the plan. Meeting worksheets were distributed to provide an opportunity to gather input on the identification of hazards, records of historical occurrences, establishment of goals and objectives, and potential mitigation alternatives from jurisdictional representatives (refer to *Appendix C*).

Table 4: Public Notification - 'Hazard Identification' Meetings

Action	Intent
Project Kick-Off Letter	Sent to participants to announce the purpose of the plan
Hazard Identification Letter	Sent to participants to discuss the agenda/dates/times/locations of the first round of public meetings
Planning Team Letter	Informed the planning team about their first meeting
Neighboring Jurisdictions Letter	Informed neighboring jurisdictions about the planning effort
Press Release	Sent to each local newspapers to describe the purpose of the plan
Follow-up Phone Call	Potential participants were called to remind them about the upcoming meetings
Follow-up Emails and Phone Calls	Participating jurisdictions were contacted to encourage them to finish the Hazard ID worksheets
Word-of-Mouth	Staff discussed the plan with jurisdictions throughout the planning process
Meeting notification poster	Poster was made and distributed by York County for dissemination

RISK ASSESSMENT

HAZARD IDENTIFICATION

York County is vulnerable to a wide array of natural and man-made hazards that threaten life and property. At the hazard identification meetings, the planning team decided to address the following hazards through the planning process. The decision to review these hazards was based on the 2014 State of Nebraska Hazard Mitigation Plan having included them in their most recent update. The hazards addressed in the update include:

- Severe Winter Storms (Severe Winter/Ice Storms and Extreme Cold)
- Tornados and High Winds (Tornados and Windstorms)
- Severe Thunderstorms (Thunderstorm and Lighting)
- Hailstorm
- Flooding (Riverine and Flash)
- Extreme Heat
- Drought
- Earthquakes
- Wildfires
- Levee Failure
- Dam Failure
- Agricultural Diseases
- Chemical and Radiological Hazards
- Terrorism
- Civil Disorder
- Urban Fire
- Landslides

All the hazards are further described in *Section Four: Risk Assessment*. The information included in the hazard profiles, as well as the extent of the risk assessment, are dependent upon the information available for analysis. Please refer to *Section Four: Risk Assessment* for details.

HAZARD RISK AND VULNERABILITY ASSESSMENT

The York County Hazard Mitigation Plan utilizes a hazard risk assessment methodology to assess the potential risk and vulnerability of the entire planning area and of each participating jurisdiction. The risk assessment methodology utilizes a combination of: public input and information provided by elected officials, key stakeholders, and residents throughout the planning area; publically available data on previous occurrences; and, other sources of information where available.

> ***Risk*** *is the potential loss associated with a hazard, defined in terms of probability, rate of recurrence, extent, severity, and end result.*
>
> ***Vulnerability*** *is the identification of what is capable of being affected as the result of a hazard.*

A more detailed hazard risk and vulnerability assessment information can be found in *Section Four: Risk Assessment*. This includes: the calculation of average annual damages; in-depth discussion of significant previous occurrences; and other hazard specific indicators of risk.

Information specific to each jurisdiction, including the results of their unique risk assessment can be found in their respective sections in *Section Seven: Participant Sections*.

CAPABILITY ASSESSMENT

The purpose of conducting a capability assessment is to evaluate a jurisdiction's ability to implement mitigation actions. The process assists with the determination of which actions are feasible or are likely to be implemented over time given the jurisdiction's planning and regulatory; administrative and technical; fiscal; and educational capability. In addition, it provides the opportunity to assess existing planning mechanisms, to identify any gaps or weaknesses within existing government activities that might result in increased community vulnerability, and to highlight positive actions already in place that should be continually supported.

The capability assessment was conducted through a survey *(see Appendix C)* that was sent out to the designated representative of each participating jurisdiction within York County following the Mitigation Strategies Meetings in September 2014. The survey questionnaire requested information on capability indicators such as: existing planning endeavors and mechanisms; local policies, programs and ordinances, personnel resources, and budgetary considerations that would strengthen or weaken the localities' ability to implement identified hazard mitigation actions. This assessment provides an overview of the capability of a jurisdiction and also identifies room for future improvements.

PLAN UPDATE

SET PLANNING GOALS AND OBJECTIVES

The planning team reviewed the goals and objectives stated in the 2010 York County HMP then revised these goals and objectives based on input collected at public meetings and from the participation of representatives and community members from the participating jurisdictions. Please refer to *Section Five: Mitigation Actions* for specific mitigation goals and objectives.

ESTABLISH MITIGATION STRATEGIES

The Mitigation Strategies meeting was held on:

- September 10th, 2014 at 4-H Building, 2400 N Nebraska Avenue, York Nebraska.

Table 5: Mitigation Strategy Meeting Attendees

September 10th, 2014		
Name	**Title**	**Jurisdiction**
Kenneth M. Kinney	Village Board Member	Village of Waco
Cheryl Kraft	Village Clerk	Village of Waco
Corbin A Tessman	City Council	City of Henderson
Mike Wall	City Council	City of Henderson
Kelly Brooke	Village Clerk	Village of Benedict
Tim Beckman	Water/Wastewater Operator	Village of Benedict

September 10th, 2014		
Name	**Title**	**Jurisdiction**
James Green	Floodplain Administrator	Village of McCool Junction
Gary Petersen	EMA Director	York County

The intent of this meeting was to provide an opportunity for the participating jurisdictions and the public to review a draft of the plan and collect any additional information necessary to finish the plan. Meeting worksheets were distributed to provide an opportunity for plan participants to evaluate and prioritize mitigation alternatives; review critical facilities and highly vulnerable areas and populations; and future development and growth trends (refer to *Appendix C*).

PUBLIC INVOLVEMENT AND OUTREACH

Below is a summary from the York County planning process, discussing how information was locally distributed to the public to facilitate their involvement in the updating of this plan.

At the beginning of the planning process the planning team worked to identify stakeholder groups that could serve as "hubs of communication" throughout the planning process. A wide range of stakeholder groups were contacted and encouraged to participate. Outreach included notification prior to all public meetings, phone call and email reminders of upcoming meetings, and invitations to complete surveys online designed specifically for groups and individuals to offer insights and suggestions for the planning process. Announcements regarding the public surveys were also distributed to York County. In addition to directly distributing this information to a variety of government departments, the following stakeholder groups and school districts were also invited to the planning process.

Table 6: Stakeholders Invited to Participate

Organization	
Henderson Health Care	York County Aging Services
Henderson Chamber of Commerce	York Area Senior Center
Henderson Senior Center	York General Health Care Services
McCool Junction Senior Diners	York General Hearthstone
York General West View Medical Building	York General Willow Brook

Table 7: School Districts Invited to Participate

School	**Name**	**Title**
York Public School District	Mike Lucas	Superintendent
McCool Junction Public School District	Curtis Cogswell	Superintendent
Heartland Community Schools	Brad Best	Superintendent
York College	Bob Gaver	Superintendent
St. Joseph School	Rochelle Geiger	Head Teacher
York High School	Mitch Bartholomew	Principle

Stakeholder groups were encouraged to disperse information to their membership to gain a better, more well-rounded, understanding of community concerns and needs. Presentations were also made to student groups encouraging their participation in the planning process. In addition to offering information and participating in the various planning meeting, stakeholder groups and school districts were also able to review a draft of the plan and offer comments prior to its finalization. Project updates were provided to stakeholder groups who participated in the planning process. Project updates were sent via email to everyone who attended either the "Hazard Identification" or "Mitigation Strategies" meetings. Neighboring Jurisdictions were invited as well. The following table indicates which neighboring communities were notified of the planning process. Letters were sent to county/city/village clerks at their respective jurisdictions and disseminated appropriately.

Table 8: List of Neighboring Jurisdictions Notified of the Planning Process

Community
Central Platte NRD
Lower Big Blue NRD
Butler County
Ulysses
Surprise
Clay County
Saronville
Sutton
Fillmore County
Exeter-Fairmont
Fairmont
Geneva
Grafton
Hampton
Hamilton County
Aurora
Giltner
Hampton
Hordville
Marquette
Phillips
Stockham
Polk County
Polk
Osceola
Stromsburg
Saline County
Friend
Seward County
Beaver Crossing
Cordova
Goehner
Milford
Pleasant Dale
Seward
Staplehurst
Utica
Concordia University
Crestview, Milford

PLAN APPROVAL AND ADOPTION

Based on FEMA requirements, this multi-jurisdictional hazard mitigation plan must be formally adopted by each participant through approval of a resolution. This approval will create 'individual ownership' of the plan by each participant. Formal adoption provides evidence of a participant's full commitment to implement the plan's goals and objectives and action items.

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

Once adopted, participants are responsible for implementing and updating the plan every five years. In addition, the plan will need to be reviewed and updated annually or when a hazard event occurs that affects the area or individual participants. Copies of resolutions approved by each participant are located in *Appendix A*.

GENERAL PLANS, DOCUMENTS, AND INFORMATION

General plans, documents, and information used throughout the development and update of the plan are listed in the following table:

Table 9: General Plans, Documents, and Information

DOCUMENTS	SOURCE
Disaster Mitigation Act of 2000 (DMA)	http://www.fema.gov/media-library/assets/documents/4596?id=1935
Final Rule (2007)	http://www.fema.gov
Local Multi-Hazard Mitigation Planning Guidance (Blue Book) (2008)	http://www.fema.gov
Local Mitigation Planning Handbook (2013)	http://www.fema.gov/media-library-data/20130726-1910-25045-9160/fema_local_mitigation_handbook.pdf
Hazard Mitigation Assistance Unified Guidance (2013)	http://www.fema.gov/hazard-mitigation-assistance
What is a Benefit: Guidance on Benefit-Cost Analysis on Hazard Mitigation Projects	http://www.fema.gov/benefit-cost-analysis
The Census of Agriculture (2012)	http://www.agcensus.usda.gov/
National Flood Insurance Program Community Status Book (2014)	http://www.fema.gov/cis/NE.html
Local Mitigation Plan Review Guide (2013)	http://www.fema.gov
PLANS/STUDIES	**SOURCE**
Nebraska Drought Mitigation and Response Plan (2000)	http://carc.nebraska.gov/docs/NebraskaDrought.pdf
Flood Insurance Study	http://www.fema.gov/floodplain-management/flood-insurance-study
State of Nebraska Hazard Mitigation Plan (2014)	http://www.nema.ne.gov/pdf/hazmitplan.pdf
Nebraska Geological Survey Landslide Study (2006)	http://snr.unl.edu/csd/surveyareas/geology.asp
Community Comprehensive Plans/Zoning and Subdivision regulations	From respective communities
DATA SOURCES/TECHNICAL RESOURCES	**SOURCE**
Federal Emergency Management Agency	http://www.fema.gov
United States Department of Commerce	http://www.commerce.gov/
National Oceanic Atmospheric Administration	http://www.noaa.gov/
National Environmental Satellite, Data, and Information Service	http://www.nesdis.noaa.gov/
National Climatic Data Center	http://www.ncdc.noaa.gov
Storm Prediction Center Statistics	http://www.spc.noaa.gov
United States Geological Survey	http://www.usgs.gov/
United States Department of Agriculture	http://www.usda.gov
United States Department of Agriculture – Risk Assessment Agency	http://www.rma.usda.gov
National Agricultural Statistics Service	http://www.nass.usda.gov/
High Plains Regional Climate Center	http://www.hprcc.unl.edu
United States Census Bureau	http://www.census.gov
National Flood Insurance Program	http://www.fema.gov http://dnrdata.dnr.ne.gov

National Flood Insurance Program Bureau and Statistical Agent	http://www.fema.gov/national-flood-insurance-program
FEMA Map Service Center	http://www.msc.fema.gov
National Drought Mitigation Center – Drought Monitor	http://drought.unl.edu/dm/monitor.html
National Drought Mitigation Center – Drought Impact Reporter	http://www.droughtreporter.unl.edu
National Historic Registry	http://www.nps.gov/nr
United States Small Business Administration	http://www.sba.gov
Nebraska Emergency Management Agency	http://www.nema.ne.gov
Nebraska Climate Assessment Response Committee	http://carc.agr.ne.gov
Nebraska Department of Natural Resources	http://www.dnr.ne.gov
Nebraska Department of Natural Resource – GIS	http://dnrdata.dnr.ne.gov
Nebraska Department of Natural Resources – Dam Inventory	http://dnrdata.dnr.ne.gov/Dams/Search.aspx?mode=county
Nebraska Department of Natural Resources – Soils Data	http://www.dnr.ne.gov/databank/soilsall.html
Natural Resources Conservation Service	www.ne.nrcs.usda.gov
Nebraska Forest Service	http://www.nfs.unl.edu/
DATA SOURCES/TECHNICAL RESOURCES	**SOURCE**
Nebraska Forest Service – Wildland Fire Protection Program	http://nfs.unl.edu/program-wildlandfireprotection.asp
Nebraska Association of Resources Districts	http://www.nrdnet.org
Nebraska Public Power District Service	http://sites.nppd.com
Nebraska Department of Revenue – Property Assessment Division	www.revenue.ne.gov/PAD
UNL – College of Agricultural Sciences and Natural Resources – Schools of Natural Resources	http://casnr.unl.edu
High Hazard Dam Inundation Area/Information	http://dnr.ne.gov/website

PLAN IMPLEMENTATION AND PROGRESS MONITORING

Hazard mitigation plans need to be a living document. To ensure this, the plan must be monitored, evaluated, and updated on a five-year or less cycle. This includes incorporating the mitigation plan into county and local comprehensive or capital improvement plans as they are developed. *Section 6* describes the system that participating jurisdictions in York County have established to monitor the plan; provides a description of how, when, and by whom the HMP process and mitigation actions will be evaluated; presents the criteria used to evaluate the plan; and explains how the plan will be maintained and updated

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SECTION THREE: COMMUNITY PROFILE & CAPABILITY ASSESSMENT

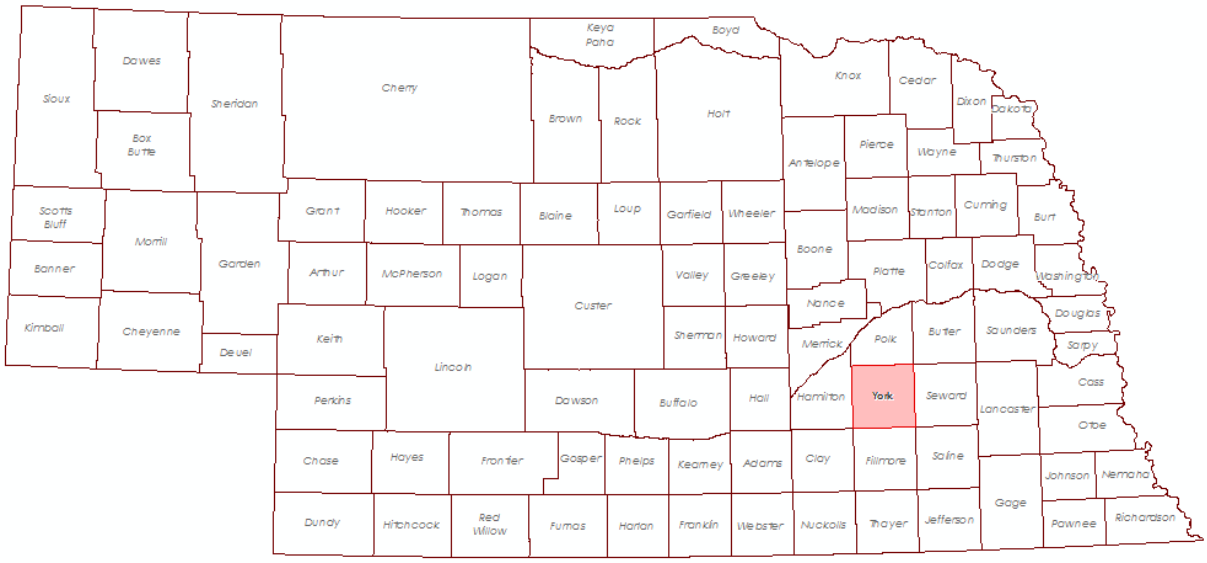
SUMMARY OF CHANGES

- An expanded analysis of demographic characteristics and their relevance to risk and vulnerability has been incorporated as part of this update.
- A capability assessment has been incorporated as part of this update.

PLANNING AREA GEOGRAPHIC SUMMARY

York County, located in southeastern Nebraska, includes eight incorporated communities. The County is split by 16 townships, each four miles by four miles, totaling 576 square miles. The County is located within the Upper Big Blue Natural Resources District (NRD). Upper Big Blue NRD's coverage of York County is discussed in this plan.

Figure 2: Location of York County



DEMOGRAPHICS AND ASSETS SUMMARY

Demographic and asset information can be used to determine differing levels of vulnerability by analyzing data on population and housing, structural inventories and valuations, critical facilities, and highly vulnerable areas and populations for each participating jurisdiction.

POPULATION AND HOUSING

Tables 10 to 13 below summarize various population and housing characteristics such as: population trends; population by age; housing occupancy and tenure; and age of structures. Table 10 highlights selected demographic characteristics including: housing units lacking complete plumbing facilities; mobile home housing units; and, population 65 and older with a disability.

Table 10 provides a summary of population changes from 1990 to 2010. As the table indicates, York County jurisdictions are experiencing a range of growth and decline. The percent change from 2000 to 2010 was then used to project the population for 2020. This is a relatively simple method to predict population change and it does not account for predominant age cohorts in the community, birth and death rates, or in and out migration which will

likely impact the rate of growth or decline.

As populations change, either growing or declining, the vulnerability of the community is impacted. If a community grows quickly it may lack resources to provide services for all members of the community in a reasonable timeframe, this could include issues like snow removal, emergency storm shelters, repairs to damaged infrastructure, or even tracking the location of vulnerable populations. Communities experiencing population decline may be more vulnerable to hazards due to: vacant and/or dilapidated structures; an inability to properly maintain critical facilities and/or infrastructure; and higher levels of unemployment and population living in poverty. It is important for communities to monitor their population changes and ensure that those issues be incorporated into hazard mitigation plans, as well as other planning mechanisms within the community.

Table 10: Population Trends 2000-2010

Jurisdiction	1990 Population	2000 Population	2010 Population	% Change	2020 Projected Population
Village of Benedict	230	278	234	-15.8%	197
Village of Bradshaw	330	336	273	-18.8%	222
Village of Gresham	253	270	223	-17.4%	184
City of Henderson	999	986	991	0.5%	996
Village of McCool Junction	372	385	409	6.2%	434
Village of Thayer	64	71	62	-12.7%	54
City of Henderson	211	256	236	-7.8%	218
City of York	7,940	8,081	7,766	-3.9%	7,463
York County	***14,428***	***14,598***	***13,665***	***-6.4%***	***12,792***

Source: United States Census Bureau – 1990, 2000, 2010

Overall, the planning area's population was 14,598 persons in 2000 and 13,665 persons in 2010. This is a decrease of 933 people, or 6.4 percent, in ten years. The Village of McCool Junction is the only community experiencing marked growth. Otherwise, the other seven communities are experiencing essentially stable or declining populations at rates as high as 18.8 percent. As these communities experience population decline, they become more vulnerable to the impacts from natural and manmade hazards.

Table 11: York County's Population by Age

Jurisdiction	< 9	10 - 19	20 - 34	35 - 54	55 - 64	65 - 84	> 85	Median	Total
Village of Benedict	33	33	37	71	27	33	0	40.2	**234**
	14.1%	14.1%	15.8%	30.3%	11.6%	14.1%	0%		**100%**
Village of Bradshaw	32	36	42	76	35	45	7	42.8	**273**
	11.7%	13.2%	15.4%	27.8%	12.8%	16.5%	2.6%		**100%**
Village of Gresham	36	32	31	70	21	29	4	41.5	**223**
	16.1%	14.4%	13.9%	31.4%	9.4%	13.0%	1.8%		**100%**
City of Henderson	113	102	123	190	142	242	79	52.8	**991**
	11.4%	10.3%	12.4%	19.2%	14.3%	24.4%	8.0%		**100%**

Jurisdiction	< 9	10 - 19	20 - 34	35 - 54	55 - 64	65 - 84	> 85	Median	Total
Village of McCool Junction	56	65	65	126	40	53	4	38.6	**409**
	13.7%	15.9%	15.9%	30.8%	9.8%	12.9%	1%		**100%**
Village of Thayer	11	1	7	24	12	7	0	50.8	**62**
	17.7%	1.6%	11.3%	38.7%	19.4%	11.3%	0%		**100%**
Village of Waco	28	28	33	67	39	37	4	46.7	**236**
	11.9%	11.9%	14.0%	28.4%	16.5%	15.7%	1.7%		**100%**
City of York	986	1,067	1,476	1,850	975	1,118	294	39.4	**7,766**
	12.7%	13.7%	19.0%	23.8%	12.6%	14.4%	3.8%		**100%**
York County	***1,650***	***1,781***	***2,362***	***3,560***	***1,823***	***2,058***	***431***	***42.2***	***13,665***
	12.1%	***13.0%***	***17.3%***	***26.0%***	***13.3%***	***15.1%***	***3.2%***		***100%***

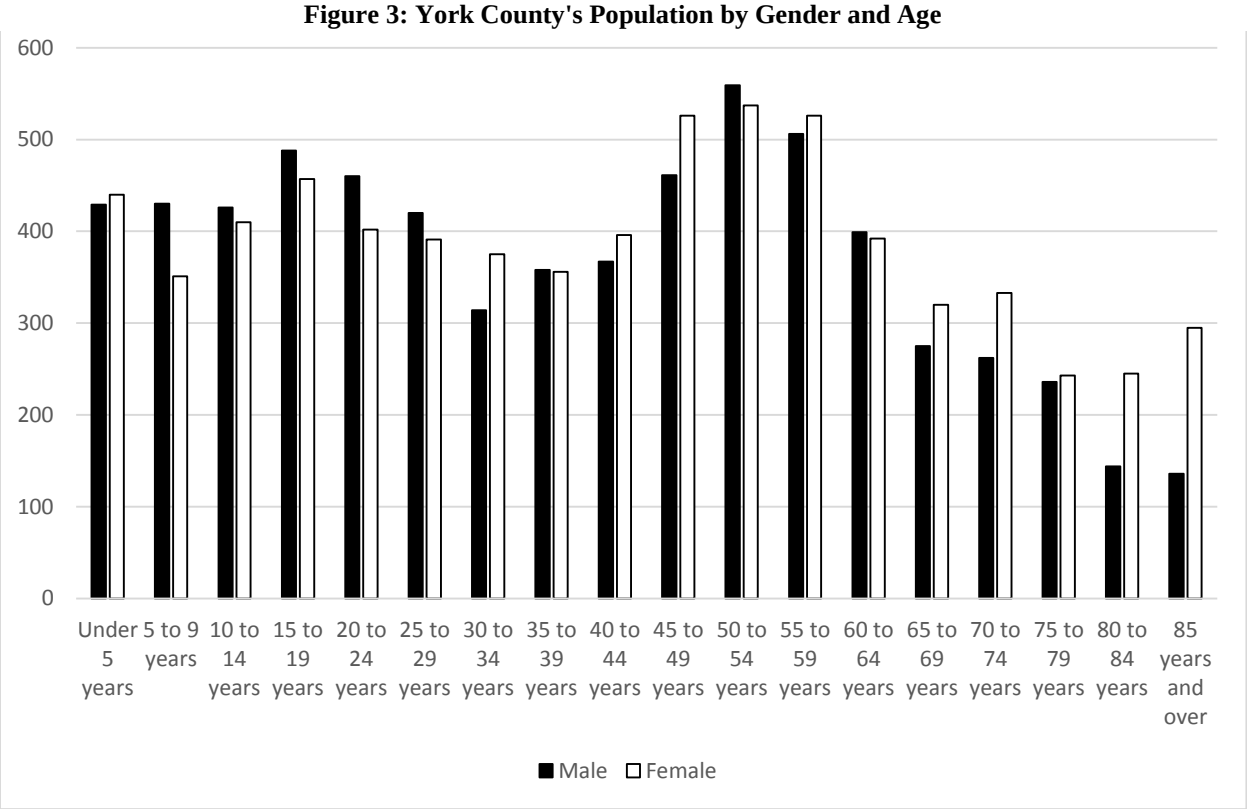
Source: United States Census Bureau – 2010

Table 11 shows that the largest age cohort of 35-54 represents 26.0 percent of the total population, or 3,560 persons. The smallest age cohort of 85 and older represents 3.2 percent of the total population, or 431 persons. Only Henderson (32.4%) and Bradshaw (19.1%) are above the planning area average of 18.3% of the population 65 and older.

The age cohorts that represent the highest levels of vulnerability, generally, are those of people under the age of 19 and over the age of 65. For the planning area, 25.1 percent of the population is under the age of 19. This group is vulnerable to a wide range of hazards including: severe winter storms, tornado, and extreme heat. Most individuals under the age of 19 are reliant on others for transportation. Events that require evacuation or relocation (such as moving to a tornado shelter) would require transportation that may or may not be immediately available, as they are dependent on others in the area. This demographic group is more likely to be clustered together especially during daytime hours when they are in school. An event like a tornado that impacts a school building during daytime hours could result in a much higher injury and/or fatality count than if this group was dispersed throughout the community. According to the American Association of Pediatrics, children of all ages are much more vulnerable to the effects of extreme heat (such as when exercising outside during school hours) due to a decreased ability to regulate their body temperature.

Individuals over the age of 65 constitute 18.3 percent of the planning area population. This demographic group also experiences higher risks related to a number of natural hazards that include: severe winter storms, tornados, severe thunderstorms, and extreme heat. A 2011 study conducted by the Center for Injury Research and Policy found that on average there are 11,500 injuries and 100 deaths annually related to snow removal. People, especially males, over the age of 55 are 4.25 times more likely to experience cardiac symptoms during snow removal. Community members over the over the age of 65 have a higher rate of decreased mobility directly impacting their ability to seek shelter during extreme weather events such as severe thunderstorms or tornados. Power outages during severe thunderstorms and severe winter storms may also result in prolonged power outages resulting in negative outcomes for community members dependent on medical equipment.

Figure 3: York County's Population by Gender and Age



Source: United States Census Bureau, 2010

Table 12: Housing Occupancy and Tenure

Jurisdiction	Total Housing Units					Occupied Housing Units			
	Occupied		Vacant			Owner		Renter	
	Number	Percent	Number	Percent		Number	Percent	Number	Percent
Village of Benedict	68	76.4	21	23.6		52	76.5	16	23.5
Village of Bradshaw	136	91.3	13	8.7		125	91.9	11	8.1
Village of Gresham	113	89.7	12	10.3		84	74.3	29	25.7
City of Henderson	451	90.9	45	9.1		369	81.8	82	18.2
Village of McCool Junction	142	85.5	24	14.5		114	80.3	28	19.7
Village of Thayer	28	100.0	0	0.0		21	75.0	7	25.0
City of Henderson	95	93.1	7	6.9		83	87.4	12	12.6
City of York	3,393	94.4	200	5.6		2,487	73.3	906	26.7
York County	***5,771***	***92.9***	***443***	***7.1***		***4,397***	***76.2***	***1,374***	***23.8***

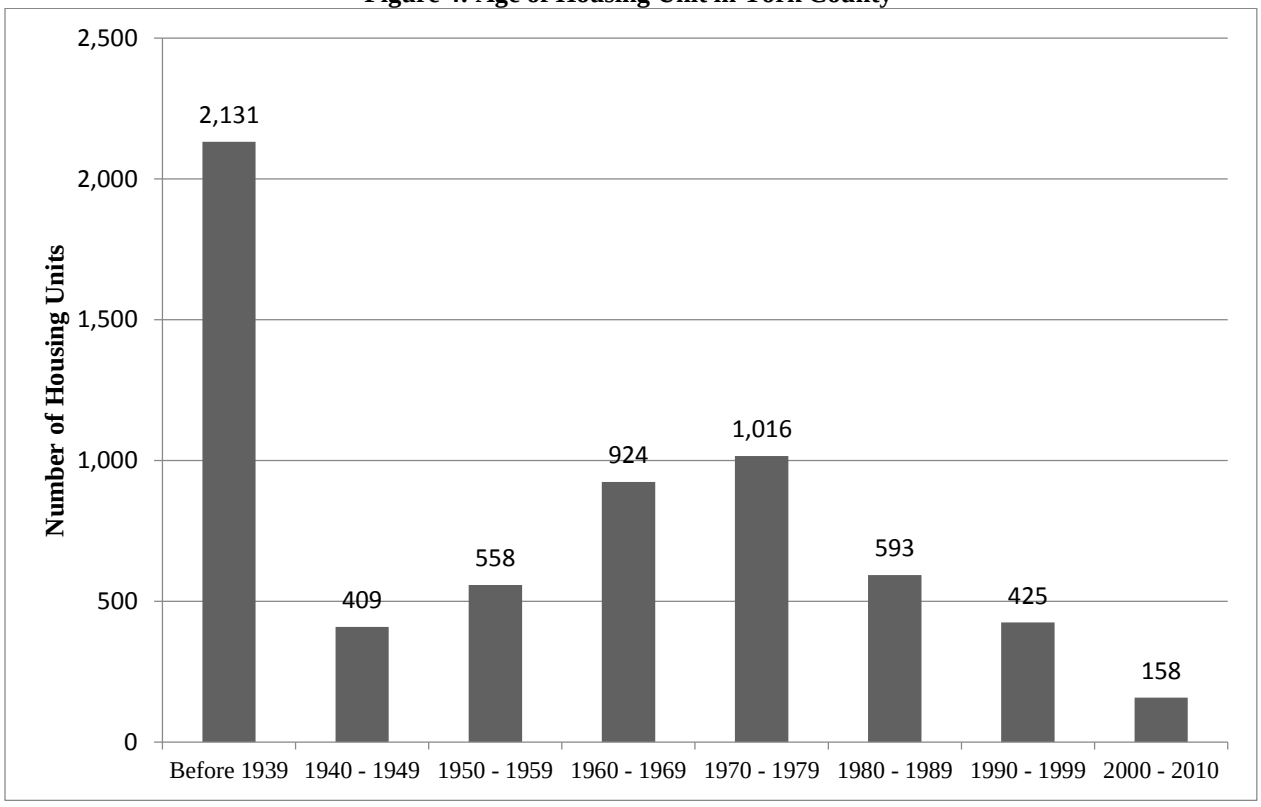
Source: United States Census Bureau, 2010

As seen in Table 12, there are 5,771 occupied housing units in the planning area. Of the total housing units in York County, approximately 34 percent were built prior to 1940. According to the Department of Housing and Urban Development (HUD), older homes are at greater risk of poor repair and dilapidation resulting in blighted or substandard properties. This is significant in assessing hazard vulnerability because these housing units may result in living quarters that are prone to higher damages during disaster events that include high winds, tornados, hail, severe thunderstorms, and severe winter storms.

Table 12 also shows that for the planning area, more than seven percent of housing units are vacant. Vacant housing units in a community add to vulnerability by creating structures that are poorly maintained and more likely to be derelict. During disaster events like tornados or high winds, these structures may fail and result in debris that can impact other structures as well as humans, resulting in higher damage totals and injuries or fatalities. Vacant housing units can also be a haven for criminal activity. This often results in deteriorating neighborhoods and communities. Benedict, McCool Junction, Gresham, Henderson, and Bradshaw all have vacancy rates higher than the county average.

Of the occupied housing units, nearly 25 percent are renter occupied. Renter occupied housing units often do not receive many of the updates and retrofits that are need to make them resilient to disaster impacts. Communities may consider enacting landlord outreach programs aimed at educating property owners about the threats in their area and what they can do to help reduce the vulnerability of the tenants living in their housing units. York, Gresham, Thayer, and Benedict have the highest percentage of housing stock occupied by renters.

Figure 4: Age of Housing Unit in York County



Source: U.S. Census Bureau, 2010 American Community Survey 5-year estimates

Table 13: Selected Demographic and Housing Characteristics, York County

Occupied housing units	5,771	100% of Total
Lacking complete plumbing facilities	10	0.2%
Lacking complete kitchen facilities	46	0.8%
No telephone service available	72	1.2%
Mobile Homes	331	5.3%
Housing Unit with No vehicles available	283	4.9%
Population 65+ (Disability)	2,489	18.2%

Sources: United States Census Bureau – 2006-2010 American Community Survey 5-year Estimate, 2010 Census Data

The selected housing characteristics in Table 13 include housing units that lack complete plumbing or kitchen facilities, have no telephone service, or are mobile homes. Approximately one percent of housing units lack access to landline telephone service. This does not necessarily indicate that there is not a phone in the housing unit, as cellular telephones are increasingly a primary form of telephone service. However, this lack of access to landline telephone service does represent a population at increased risk to disaster impacts. Reverse 911 systems are designed to contact households via landline services and as a result, some homes in hazard prone areas may not receive notification of potential impacts in time to take protective actions. Emergency managers should work to promote the registration of cell phone numbers with Reverse 911 systems.

Over five percent of housing units in the planning area are mobile homes. Mobile homes are at a higher risk of sustaining damages during high wind events, tornados, severe thunderstorms, and severe winter storms. Mobile homes that are either not anchored or are anchored incorrectly can be overturned by 60 mph winds. A thunderstorm is classified as severe when wind speeds exceed 58 mph, placing improperly anchored mobile homes at risk.

It is also worth noting that over 18 percent of the population of age 65 and older is living with a disability. This disability status may impact their ability to prepare for hazards, as well as impact their ability to receive warning information and respond appropriately.

NATIONAL HISTORIC REGISTRY

According to the National Register of Historic Places, Table 14 contains a summary list of the five historic sites located within the planning area. Detailed information of these historic sites is presented in the corresponding portions of *Section Seven: Participant Section*.

Table 14: National Historic Registry

Site Name	Date Listed	County	Location
W. S. Jeffery Farmstead	7/26/1982	York	Near the Village of Benedict
Bradshaw Town Hall	5/31/1984	York	Village of Bradshaw
Clem's Opera House	9/28/1988	York	Village of Gresham
York Public Library	12/4/1990	York	City of York
York Subways	6/29/1992	York	City of York

Source: Nebraska National Register

CRITICAL INFRASTRUCTURE/KEY RESOURCES

The DHS defines critical infrastructure as "assets, systems, and networks, whether physical or virtual, so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, national public health or safety, or any combination thereof".

According to FEMA, "A critical facility is a structure that, if flooded (or damaged), would present an immediate threat to life, public health, and safety." Examples of critical facilities include hospitals, emergency operations centers, schools, wells, and sanitary sewer lift stations, etc.

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster. Critical facilities were identified at the 'mitigation alternative' public meetings through the meeting worksheets (refer to *Appendix C*). Table 15 contains a summary of the 100 critical facilities for the entire planning area. To view jurisdiction-specific critical facility maps refer to *Section 7: Participant Sections*.

Table 15: Summary of Critical Facilities

Critical Facility (Infrastructure)	# Identified
Municipal Well	18
Water Tower	6
Lift Station	7
Wastewater Treatment	2
Airport	1
Church	12
City Hall/Village Office	6
Community/Family Center	7
County Government/Sheriff	1
County Highway Department	1
CVA Anhydrous Tanks	1
CVA Elevator Complex	1
Dry Chemical Storage	1
Fire Department/Hall	7
Health Services	1
Hospital	1
Maintenance Building	1
NPPD Operations Center	1
Nursing Home/Assisted Living	2
Police Department	2
Post Office	6
Public Works/Water Control	1
School	13
Theatre	1

STRUCTURAL INVENTORY

Structural inventory data for the year 2013 was provided by the County Assessor's office. This data included information on the total number of structures, their locations, and their value. This information was used for assessing risk to structures related to hazards with known geographic locations such as flooding.

However, the data provided for this update **does not** include the classification of parcels. As a result it is not possible to calculate potential losses by structure type at this time.

STRUCTURAL VALUATION SUMMARY

Table 16 displays the structural inventory and evaluation summaries for the municipalities and county in the planning area.

Table 16: Structural Valuation Summary

Jurisdiction	Total Structural Inventory (Residential, Commercial, Agricultural)	
	#	Value
Village of Benedict	152	$7,455,967

Village of Bradshaw	206	$15,177,151
City of Henderson	547	$45,601,483
Village of Gresham	177	$5,855,031
Village of McCool Junction	246	$15,190,093
Village of Thayer	59	$1,691,461
Village of Waco	156	$14,808,811
City of York	4,442	$423,292,880
York County		***$3,060,890,670***

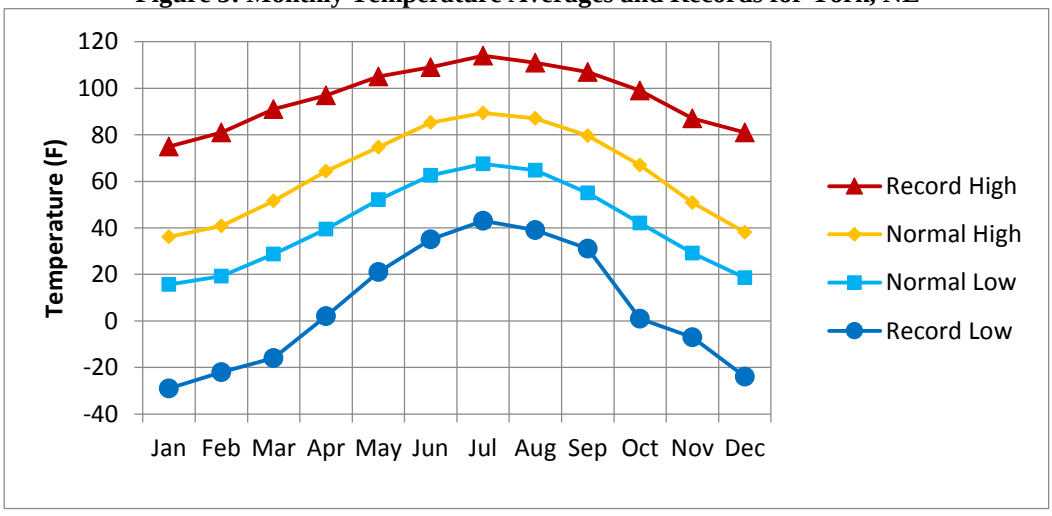
Source: York County Assessor Data

CLIMATE SUMMARY

Located on the Great Plains far from the moderating influence of mountains or large bodies of water, the planning area possesses a highly variable four-season humid continental climate: winters are cold, but relatively dry; summers are hot and humid. With little precipitation falling during winter, precipitation is concentrated in the warmer months, when thunderstorms frequently roll in. Snow tends to fall in light amounts, though blizzards are possible. Snow cover is not very reliable due to both the low precipitation and the frequent thaws during winter.

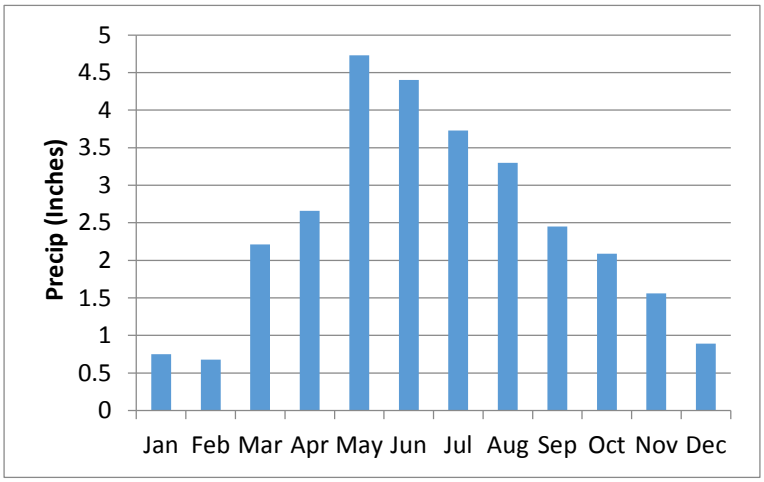
The monthly daily average temperature ranges from a mean minimum of 12 °F in January to a mean max of 87 °F in July. However, the planning area is subject both to episodes of bitter cold in winter and heat waves during summer. The planning area is in USDA Plant Hardiness Zones 5a, indicating an annual minimum temperature of around −20 °F. Temperature extremes have ranged from −27 °F in 1974 up to 110 °F in 1954. The monthly temperature averages and records and precipitation averages are shown in Figures 5 and 6. As the climate patterns of the jurisdictions and communities are very consistent across York County, climate patterns will not be discussed in each participant section.

Figure 5: Monthly Temperature Averages and Records for York, NE



Source: Midwestern Regional Climate Center

Figure 6: Monthly Normal Precipitation



Source: Midwestern Regional Climate Center

DISASTER HISTORY

FARM SERVICE AGENCY SMALL BUSINESS ADMINISTRATION DISASTERS

The U.S. Small Business Administration (SBA) was created in 1953 as an independent agency of the federal government to aid, counsel, assist, and protect the interests of small business concerns, to preserve free competitive enterprise, and maintain and strengthen the overall economy of our nation. A program of the SBA includes disaster assistance for those affected by major natural disasters. Table 17 summarizes the SBA Disasters involving the planning area.

Table 17: Farm Service Agency Small Business Administration Disasters

Declared	Disaster Number	Description and Documents	Primary Counties	Contiguous Counties
9/27/2006	NE-00008	High Temperatures, High Winds, Excessive Heat, Hail, Tornados, Ongoing Drought	York	--
1/7/2007	NE-00011	Severe Winter Storms	York	--
6/20/2008	NE-00020	Severe Storms, Tornados, Flooding	--	York
6/20/2008	NE-00021	Severe Storms, Tornados, Flooding	York	--
9/20/2008	NE-00024	Excessive Rain, Flooding, Flash Flooding, High Winds, Hail, Lightning, Tornados	--	York
8/8/2012	NE-00050	Drought	York	--
8/14/2012	NE-00051	Drought	--	York
12/10/2013	NE-00053	Drought	York	--
5/30/2014	NE-00057	Severe Storms and Tornado	--	York
6/17/2014	NE-00060	Severe Storms, Tornados, Straight-line Winds, Flooding	York	--

Source: United States Small Business Administration.

PRESIDENTIAL DISASTER DECLARATIONS

The presidential disaster declarations involving the planning area up until June 2014 are summarized in Table 18. Declarations prior to 1962 that are available on the FEMA website do not list designated counties.

Table 18: Presidential Disaster Declarations in the Last Decade

Disaster Declaration Number	Declaration Date	Disaster Type	Total Individual Assistance	Public Assistance Counties	Total Public Assistance Grants
DR-1517	5/25/2004	Severe Storms, Tornados, Flooding	$829,908	Multiple (York)	$13,351,657
DR-1590	6/23/2005	Severe Storms, Flooding	$0.00	Multiple (York)	$1,688,473
DR-1674	1/7/2007	Severe Winter Storms	$0.00	Multiple (York)	$124,357,843
DR-1770	6/20/2008	Severe Storms, Tornados, Flooding	$1,560,229	Multiple (York)	$36,258,650
DR-1878	2/25/2010	Severe Winter Storms, Snowstorm	$0.00	Multiple (York)	$6,577,021
DR-1902	4/21/2010	Severe Storms, Ice Jams, Flooding	$0.00	Multiple (York)	$3,112,391
DR-4014	8/21/2011	Severe Storms, Tornados, Straight-line Winds, Flooding	$0.00	Multiple (York)	$3,373,463
DR-4179	6/17/2014	Severe Storms, Tornados, Straight-line Winds, Flooding	$0.00	Multiple (York)	$9,335,555

Source: Federal Emergency Management Agency

CAPABILITY ASSESSMENT

The capability assessment for York County plays a significant role in the overall planning process and lays part of the foundation for developing effective and implementable hazard mitigation strategies. Through a capability assessment, the planning team can identify each jurisdiction's current capabilities to reduce disaster losses now or in the future. This process also assists with the determination of goals, objectives, and actions which are likely to be implemented given the jurisdiction's planning and regulatory capacity, levels of administrative and technical support, available fiscal resources, and ongoing educational and outreach programs. This section provides an overall look at the capability of York County.

LOCAL CAPABILITY ASSESSMENT FINDINGS

To conduct the local capability assessment, a survey was completed by the county representative regarding their existing plans, staff capability, fiscal power, and outreach endeavors. Table 19 provides the results of this survey.

Table 19: York County Capability Assessment Findings

Survey Components/Subcomponents		Comments
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Hazard Mitigation Plan	Yes
	Economic Development Plan	Yes
	Emergency Operations Plan	Yes
	Natural Resources Protection Plan	No
	Open Space Preservation Plan	No
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes

Survey Components/Subcomponents		Comments
	Building Codes	Yes
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Hazard Mitigation Planning Commission	Yes
	Floodplain Administration	Yes
	Emergency Manager	Yes
	GIS Coordinator	Yes
	Chief Building Official	No
	Civil Engineering	No
	Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grants Manager	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Project Funding	Yes
	Community Development Block Grant	No
	Authority to Levy Taxes for Specific Purposes	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	No
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	No
	StormReady Certification	Yes
	Firewise Communities Certification	No
	Public-private partnership initiatives addressing disaster-related issues	Yes
	Other (if any)	

REGIONAL (NATURAL RESOURCES DISTRICTS) CAPABILITY

Nebraska's system of watershed natural resources management is unique in the United States. Unlike the countywide districts found in most states, Nebraska's NRDs are based on river basin boundaries, enabling them to approach natural resources management on a watershed basis. While NRDs share a common set of responsibilities, each district sets its own priorities and develops its own programs to bet serve local needs. In general, NRDs are charged under state law with 12 areas of responsibility:

- Erosion prevention and control
- Prevention of damages from flood water and sediment
- Flood prevention and control
- Soil conservation
- Water supply for any beneficial uses
- Development, management, utilization, and conservation of groundwater and surface water
- Pollution control
- Solid waste disposal and drainage
- Drainage improvement and channel rectification
- Development and management of fish and wildlife habitat
- Development and management of recreational and park facilities

- Forestry and range management

The County is located within the Upper Big Blue Natural Resources District.

STATE CAPABILITY

Nebraska Emergency Management Agency

NEMA is a small agency with less than 40 full and part-time employees and is a part of the Military Department in the State of Nebraska. NEMA is responsible for emergency management, which is usually divided into four phases: preparedness, response, recovery, and mitigation.

The main objective in NEMA's preparedness process is to develop plans and procedures to help facilitate any response that may need to occur during a hazard event. Assisting communities in developing county or city/village planning documents, preparing state level planning documents, assist communities with exercises for existing plans and procedures, conduct trainings for communities officials, assist emergency management related groups (Citizen Emergency Response Teams, Citizen Corp, Medical Reserve Corp, Fire Corp, and other interest groups) and provide technical resources and expertise throughout the state.

NEMA's role related to mitigation includes (but is not limited to) developing the state hazard mitigation plan. The state hazard mitigation plan frames the discussion that will be conducted at the local level related to relevant hazards and needs across the state. The sate hazard mitigation officer and other mitigation staff members play an active role in assisting in the development of local hazard mitigation plans. Representatives from the state hazard mitigation program serve as a technical guide to local planning teams and regularly participate in local mitigation planning meetings. The state hazard mitigation program also oversees the Hazard Mitigation Grant Program (HMGP) and works with the Governor's taskforce to prioritize projects requesting funding assistance through the HMGP.

NEMA's role during a response is to assist communities in responding to hazard events when the need for assistance exceeds the local capabilities and resources. This includes facilitating and tracking grants, coordinating local needs, providing state assistance through activation of Emergency Operation Centers (EOC), Mass Critical Shelters, Emergency Alert Systems (EAS) and providing technical, logistical, and administrative resources and expertise before, during, and after incidents. The main purpose of the recovery phase is to perform actions that allow the return of normal living, or better conditions, which may include vital life saving measures. The secondary role of the recovery phase is grant administration and tracking, project monitoring, damage assessment, collaborating with communities on effective recovery options and opportunities, serving as liaison between federal level entities and local representatives, and serving as a technical resource throughout the recovery process.

For more information regarding the plans and NEMA's responsibilities as well as their ongoing projects, please go to http://www.nema.ne.gov.

Nebraska Department of Natural Resources

The NDNR is committed to providing Nebraska's citizens and leaders with the data and analyses they need to make appropriate natural resource decisions for the benefit of all Nebraskans both now and in the future. The state agency is responsible in the area of surface water, groundwater, floodplain management, dam safety, natural resource planning, integrated water management, storage of natural resources and related data, and administration of state funds.

NDNR plays a significant role in protecting and conserving water resources through the oversight of surface and groundwater status and integrated water management. The NDNR is also responsible for a non-structural program of floodplain management, coordination and assistance with the National Flood Insurance Program as well as the Flood Mitigation Assistance Program, reviewing and approving engineering plans for new dams, rehabilitating old dams, and high hazard dam emergency preparedness plans. NDNR was very active throughout the hazard planning process and provided extensive resources and technical support for hazard risk and vulnerability analysis such as flood and dam failure.

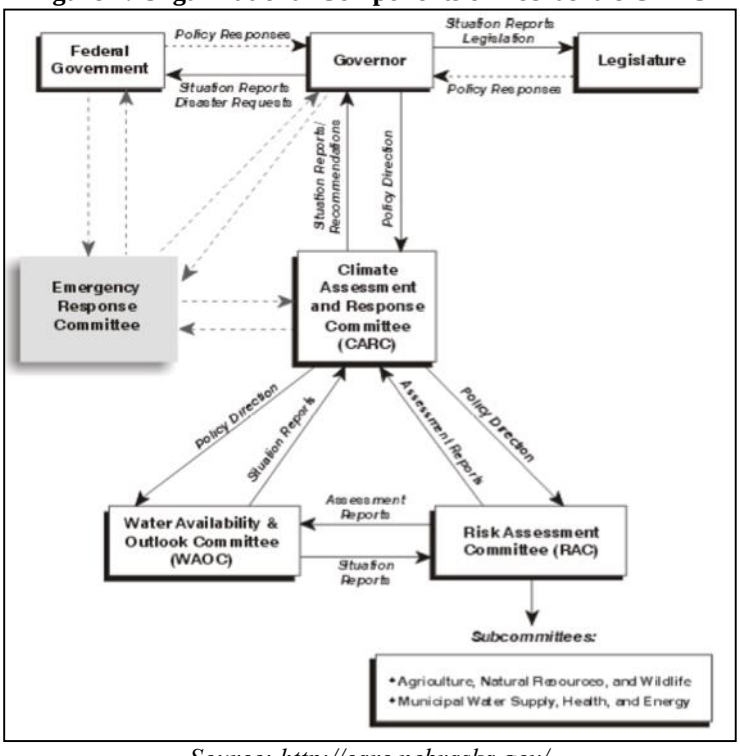
For more information regarding NDNR's responsibilities as well as their ongoing projects, please go to http://dnr.ne.gov/.

Nebraska's Climate Assessment and Response Committee (CARC)
Nebraska's CARC was established by the Nebraska Legislature in 1991 and serves as the major drought planning and response committee in state. The committee's duties are:

1. To provide timely and systematic data collection, analysis, and dissemination of information about drought and other severe climate occurrences to the Governor and to other interested persons.
2. To provide the Governor and other interested persons with information and advice relevant to requests for federal disaster declarations and to the use of funds and other types of assistance available to the state because of such declarations.
3. To establish criteria for startup and shutdown of various assessment and response activities by state and federal agencies during drought and other climate-related emergencies.
4. To provide an organizational structure that assures information flow and defines the duties and responsibilities of all agencies during times of drought and climate-related emergencies.
5. To maintain a current inventory of state and federal agency responsibilities in assessing and responding to drought and other climate-related emergencies.
6. To provide a mechanism for the improvement of methods of assessing impacts of drought on agriculture and industry.
7. To provide such other coordination and communication among federal and state agencies as is deemed appropriate by such committee.
8. To perform such other climate-related assessment and response functions as are desired by the Governor.

CARC also coordinated with other state and federal agencies to develop a State Drought Mitigation and Response Plan. The committee serves as a steering role for the state's drought plan and other climate-related activities. As shown in Figure 7, the other principal committees associated with CARC are the Water Availability and Outlook Committee (WAOC) and the Risk Assessment Committee (RAC). To avoid any overlap of duties, originally considered as a formal arm of CARC, Emergency Response Committee (ERC) was revised in June 2000 and its role was folded into the NEMA organization and separated from the official CARC structure.

Figure 7: Organizational Components of Nebraska's CARC



Source: http://carc.nebraska.gov/

Other Key Agencies
Other agencies that play an active role in hazard mitigation planning and contribute to the overall planning process at the state level are shown in Table 20. Members from these agencies were designated as the Governors' Task Force for Disaster Recover (GTFDR) and served as the Planning Team responsible for coordinating the development of the 2014 State Hazard Mitigation Plan.

Table 20: Other Key Agencies in the State of Nebraska

Agency	Official Website Link
Nebraska Department of Agriculture	http://www.nda.nebraska.gov/
Nebraska State Patrol	https://statepatrol.nebraska.gov/
Nebraska Department of Economic Development	http://www.neded.org/
Nebraska Department of Environmental Quality	http://www.deq.state.ne.us/
Nebraska Game and Parks Commission	http://outdoornebraska.ne.gov/
Nebraska Historical Society	http://www.nebraskahistory.org/
Nebraska Department of Administrative Services	http://das.nebraska.gov/
Nebraska Department of Revenue	http://www.revenue.ne.gov/
Nebraska Department of Health and Human Services	http://dhhs.ne.gov
Nebraska Forest Service	http://nfs.unl.edu/
Nebraska Public Health Laboratory – UNMC	http://www.unmc.edu/pathology/
University of Nebraska – School of Natural Resources	http://snr.unl.edu/

The Silver Jackets program is also worth mentioning for their extensive role in providing a formal and consistent strategy for an interagency approach to planning and implementing measures to reduce the risks associated with flooding and other natural hazards. It brings together multiple state, federal, and sometimes tribal and local agencies to learn from one another and apply their knowledge to reduce risk. Please go to http://www.nfrmp.us/state/ for details.

FEDERAL ASSISTANCE
The federal government and its sub-agencies have provided a variety of assistance for state and local governments in hazard mitigation planning and emergency response. Table 21 lists the major federal agencies and summarizes their major types of assistance. For more information regarding funding opportunities, please refer to Table 16 and *Appendix E: Hazard Mitigation Project Funding Guidebook*.

Table 21: Major Federal Agencies Providing Assistance

Agency	Type of Assistance	Official Website Link
Department of Homeland Security/Federal Emergency Management Agency	Administrative, Political, Funding, Educational, and Technical	http://www.fema.gov/
National Oceanic and Atmospheric Administration	Educational and Technical	http://www.noaa.gov
U.S. Department of Agriculture	Funding, Educational, and Technical	http://www.usda.gov
U.S. Geological Survey	Educational and Technical	http://www.usgs.gov
U.S. Environmental Protection Agency	Educational and Technical	http://www.epa.gov
U.S. Department of Housing and Urban Development	Administrative, Educational, and Technical	http://portal.hud.gov
U.S. Small Business Administration	Funding	http://www.sba.gov
U.S. Department of Transportation	Funding, Educational, and Technical	http://www.dot.gov/
U.S. Department of Health and Human Services	Funding, Educational, and Technical	http://www.hhs.gov

FUNDING OPPORTUNITIES AND ASSISTANCE
Appendix E offers suggestions related to funding opportunities for communities that could be explored in regards to project implementation. The Funding Guide (*Appendix E*) identifies local, state, and federal level funding opportunities.

SECTION FOUR: RISK ASSESSMENT

SUMMARY OF CHANGES

This plan follows the risk assessment process that was used in the prior hazard mitigation plan. However, some changes were incorporated in order to build upon the lessons learned from the prior planning effort:

- The hazards considered were expanded to include all hazards addressed by the 2014 State of Nebraska Hazard Mitigation Plan
- Additional risk assessment components were incorporated as the available data allowed

HAZARD IDENTIFICATION

For the purpose of this plan update, all of the hazards included in the 2014 State of Nebraska HMP were initially considered including: severe winter storms, tornados and high winds, severe thunderstorms, flooding, extreme heat, drought, earthquakes, wildfires, landslides, expansive soils, sink holes, urban fire, civil disorder, terrorism, transportation incidents, fixed site hazards, agricultural diseases (animal and crop disease), dam failure, and levee failure. All were identified as separate potential hazard events as they often pose different threats and potential losses. However, a full risk assessment was only conducted for those hazards that have a higher probability of occurring with the potential for greater impacts.

REGIONAL RISK ASSESSMENT

The methodology utilized for the regional risk assessment varies by hazard, depending upon the information available. It consists of the following components: historical occurrences; estimated probability of future occurrences; the calculation of average annual damages for those hazards where sufficient data was available; the identification of assets located within high risk areas such as the floodplain, for those hazards which can be spatially defined; and measures of extent. The specific methodology utilized for each hazard is defined in the specific hazard sections.

The data source utilized for individual hazards varies based on the best and most appropriate source of information. The NCDC was utilized for many of the natural hazards, but it should be noted that the NCDC is not an all-inclusive, or exhaustive, source for historical weather data. Often data records for short-term local hazard events are more detailed and readily accessible than data for long-term regional events.

The following table provides an overview of the data contained in the hazard profiles. This table is intended to be a quick reference for people using the plan and does not contain source information; source information and full discussion of individual hazards are included in this section.

***Requirement §201.6(c)(2)**: Risk assessment. The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.*

***Requirement §201.6(c)(2)(i)**: [The risk assessment shall include a] description of the type … of all natural hazards that can affect the jurisdiction.*

***Requirement §201.6(c)(2)(i)**: [The risk assessment shall include a] description of the … location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.*

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

***Requirement §201.6(c)(2)(ii)**: [The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged floods.*

***Requirement §201.6(c)(2)(ii)(A)**: The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area.*

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

- *Historical Occurrence*
  - This is reported as the number of events recorded during a defined time period. A variety of sources were utilized for this measure, however, for any one hazard, a single 'best' source is identified and used as basis for analysis.
- *Probability*
  - For this plan probability is established based on the historic record for each event. The number of reported events divided by the number of years of record yields a probability of annual occurrence. It should be noted that this predictive method is limited in that it does not consider changes in environment, changes in climate, or efforts undertake to reduce the potential of future occurrence. When changes related to occurrence have the potential to affect deviations from the historic record, those changes will be discussed as part of the hazard profile.
- *Extent*
  - Extent is a measure of strength or magnitude of the hazard. Extent can be described in a combination of ways depending on the hazard. Standard measures for extent will be utilized when possible.
  - A variety of sources were utilized for this measure. The individual data sources utilized will be identified in the hazard profile.

Table 22: Regional Risk Assessment

Regional Risk Assessment			
Hazard	**Previous Occurrence Events/Years**	**Approximate Annual Probability**	**Likely Extent**
Severe Winter Storms	54/17	100%	.25 - .5" ice 20 - 40°F below zero (wind chills) 4 – 8" snow 25 – 40 mph winds
Severe Thunderstorms	52/17	100%	≥1" rainfall
Hail	139/17	100%	H1 – H5
Tornados	14/17	82%	EF0
High Winds	14/17	82%	8 BWF
Extreme Heat	46/1	100%	>90°
Drought	31/216*	14%	D3
Grass/Wildfires	223/12	100%	<100 acres
Flooding	14/17	82%	4.9% of County in SFHA; 13% of structures
Agricultural Disease	7/1	100%	Minor economic impacts
Levee Failure	0	1%	Levees not present in or near York County
Earthquakes	0	1%	<4.0
Dam Failure	0	1%	Localized/No residents threatened
Land Slides	0	1%	Localized
Urban Fire	269/5	100%	Single structure fire
Chemical and Radiological Hazards	12/33	36%	91 LGA
Terrorism	0	1%	Undefined
Civil Disorder	0	1%	Undefined

*Due to the nature of drought probability will be calculated as number of total months in drought divided by number of total month during the period of record.

COMMUNITY BASED RISK ASSESSMENT

Participating jurisdictions completed a risk assessment for their community/jurisdiction. The local planning teams were asked to prioritize hazards based on local occurrences and impacts. Participants were encouraged to consider: historic events; probability of future events; specific vulnerable populations; properties that may be at higher levels of risk related to hazards; potential impacts to critical facilities and critical services; and potential economic losses. The information developed during the community based risk assessment is presented in *Section Seven: Participant Sections.*

AVERAGE ANNUAL DAMAGES AND FREQUENCY

FEMA ***Requirement §201.6(c)(2)(ii) (B)*** suggests that when the appropriate data is available, hazard mitigation plans should also provide an estimate of potential dollar losses for structures in vulnerable areas. This risk assessment methodology includes an overview of assets at risk and provides historic average annual dollar losses for all hazards for which historic event data is available. Additional loss estimates are provided separately for those hazards for which sufficient data is available. These estimates can be found within the relevant hazard profiles.

Average annual losses from historical occurrences can be calculated for those hazards for which there is a robust historic record and for which monetary damages are recorded. There are three main pieces of data that are used throughout this formula.

- **Total Damages in Dollars:** This is the total dollar amount of all property damages and crop damages as recorded in federal, state, and local data sources. The limitation to these data sources is that dollar figures often do not include all damages from every event, but rather only officially recorded damages from reported events.
- **Total Years of Record:** This is the span of years there is data available for recorded events. Vetted and cleaned up NCDC data is available for 1996 to 2013. Although some data is available back to 1950, this plan update utilizes only the more current and more accurate data available. Wildfire data is available from the NFS from 2000 to 2012. Crop loss data from RMA is available from 2000 to 2013.
- **Number of Hazard Events:** This shows how often an event occurs. The frequency of a hazard event will affect how the city responses. A thunderstorm may not cause much damage each time, but multiple storms can have an incremental effort on housing and utilities. In contrast, a rare tornado can have a widespread effect on a city.

An example of the 'Annual Damage Estimate' is found below:

$$\textbf{Average Damage per Year } (\$) = \frac{Total\ Damages\ in\ Dollars\ (\$)}{Total\ Years\ Recorded\ (\#)}$$

$$\textbf{Annual Frequency } (\#) = \frac{Total\ \ Hazard\ Events\ Recorded\ (\#)}{Total\ Years\ of\ Record\ (\#)}$$

The table below provides an overview of losses calculated for the entire York County planning area; loss calculations utilizing NCDC data includes county-based and zonal events. It should be noted NCDC data is not all inclusive and it provides very limited information on crop losses. In order to provide a more accurate picture of the crop losses associated with all the hazards within the planning area, crop loss information provided by RMA of the USDA was utilized for this update of the plan. The collected data was from 2000 to 2013. Due to the data limitations, only hazards with available data are included in the following loss estimation table.

Table 23: Hazard Loss Estimation

Hazard Type	Total Property Loss[1]	Annual Property Loss[1]	Total Crop Loss[2]	Annual Crop Loss [2]
Severe Winter Storms	$1,380,000	$81,176	$0	$0
Severe Thunderstorms	$1,731,000	$66,882	$850,000	$65,384
Hail Events	$4,312,000	$57,353	$18,438,000	$823,076
Tornados	$6,100,000	$358,823	$1,000,000	$76,923
High Winds	$19,080	$1,122	$135,548	$10,426
Extreme Heat	$0	$0	$2,079,779	$159,983
Drought	$0	$0	$35,000,000	$3,500,000
Grass/Wildfires	$59,245	$4,937[3]	$95,650	$7,357
Flooding	$2,790,000	$164,117	$6,450,000	$496,153
Plant Disease	N/A	N/A	$8,821	$678
Chemical Hazards	$40,378[4]	$1,223[4]	$0	$0

1 Indicates the data is from NCDC (January 1996 to December 2013); 2 Indicates data is from USDA RMA (2000 to 2013); 3 Indicates Data is from NFS (2000 to 2012);4 Indicates the data is from PHMSA (1980-2013)

SEVERE WINTER STORMS (SEVERE WINTER STORMS AND EXTREME COLD)

HAZARD PROFILE

Severe winter storms are an annual occurrence in Nebraska. Winter storms can bring extreme cold temperatures, freezing rain, and heavy or drifting snow, creating blizzards. Blizzards are particularly dangerous due to drifting snow and the potential for rapidly occurring whiteout conditions which greatly inhibits vehicular traffic. Generally, winter storms occur between the months of November and March, but may occur as early as October and as late as April. Heavy snow is usually the most defining element of a winter storm. Large snow events can cripple an entire jurisdiction by hindering transportation, knocking down tree limbs and utility lines, and causing structural damage to buildings.

Along with snow events, winter storms also have the potential to deposit significant amounts of ice. Ice buildup on tree limbs and power lines can cause them to collapse. This is most likely to occur when ice falls in the form of rain that freezes upon contact, usually occurring in the presence of wind. Ice can also lead to many problems on the roads as it makes them slick, causing automobile accidents, and making vehicle travel difficult.

The Sperry-Piltz Ice Accumulation Index (SPIA) was developed by the National Weather Service to predict the accumulation of ice and resulting damages. The SPIA looks at total precipitation, wind, and temperatures to predict the intensity of ice storms. Figure 8 shows the SPIA index.

Figure 8: SPIA Index

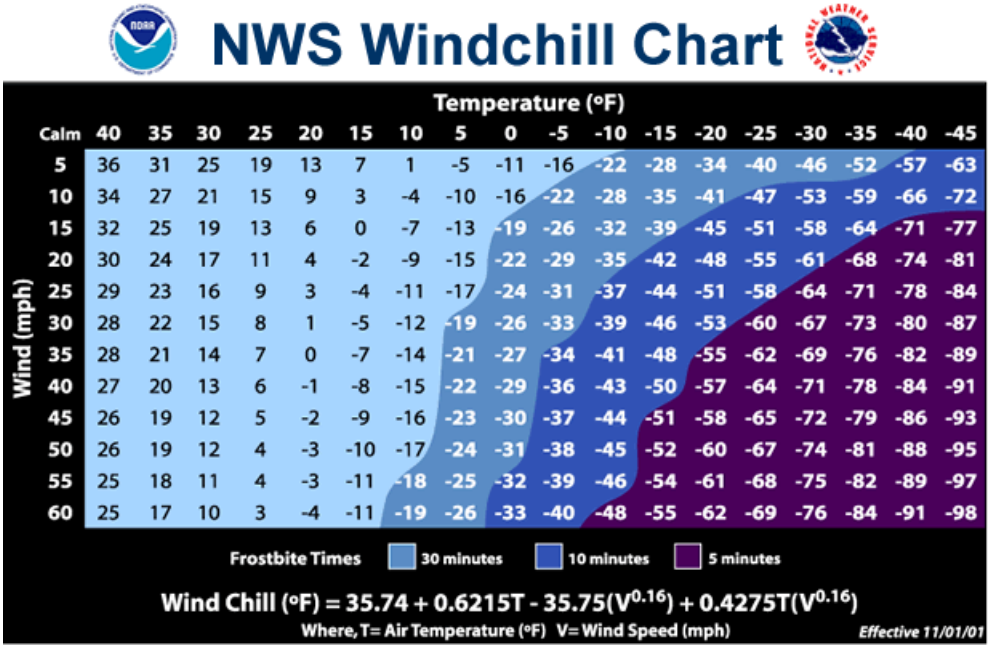
The Sperry-Piltz Ice Accumulation Index, or "SPIA Index" – Copyright, February, 2009

ICE DAMAGE INDEX	* AVERAGE NWS ICE AMOUNT (in inches) *Revised-October, 2011	WIND (mph)	DAMAGE AND IMPACT DESCRIPTIONS
0	< 0.25	< 15	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	0.10 – 0.25	15 - 25	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
	0.25 – 0.50	> 15	
2	0.10 – 0.25	25 - 35	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
	0.25 – 0.50	15 - 25	
	0.50 – 0.75	< 15	
3	0.10 – 0.25	> = 35	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
	0.25 – 0.50	25 - 35	
	0.50 – 0.75	15 - 25	
	0.75 – 1.00	< 15	
4	0.25 – 0.50	> = 35	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
	0.50 – 0.75	25 - 35	
	0.75 – 1.00	15 - 25	
	1.00 – 1.50	< 15	
5	0.50 – 0.75	> = 35	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.75 – 1.00	> = 25	
	1.00 – 1.50	> = 15	
	> 1.50	Any	

(Categories of damage are based upon combinations of precipitation totals, temperatures and wind speeds/directions.)

The Wind-chill Index was developed by the National Weather Service to determine the decrease in air temperature felt by the body on exposed skin due to wind. The wind-chill is always lower than the air temperature and can quicken the effects of hypothermia or frostbite as it gets lower. Figure 9 shows the wind chill index used by the National Weather Service.

Figure 9: NOAA Wind-Chill Chart



Source: NOAA

Along with snow and ice storm events, extreme cold can be dangerous to the well-being of people and animals. What constitutes extreme cold varies from region to region but is generally accepted as being temperatures that vary significantly from the average low temperature. For York County, the coldest months of the year are January, February, March, November and December. The average low for these months is all below freezing (average low for the five months 20.7°F). The average high temperatures for the months of January, February, and December are near 36.6°F. Record lows for the region have reached -29°F in January, -26°F in December, and -22°F in February. Whenever temperatures drop decidedly below normal and as wind speeds increase, people are at greater risk of hypothermia and frostbite. When exposure lasts long enough, it can cause death.

HISTORICAL OCCURRENCES

Due to the regional scale of severe winter storms, the NCDC reports events as they occur in each county. While a single event can affect two or more counties at a time, the NCDC reports them as separate events. NCDC cites 54 separate events, within York County from January 1996 to August 2013. One event resulted in the death of four people in an auto accident. These recorded events caused a total of $1,380,000 in property damages. These events from NCDC and reported by each community were listed in each participant section in *Section Seven: Participant Sections*.

EXTENT

Based on the historical record it is reasonable to expect annual ice accumulations of up to 0.5 inches and an annual snow event with accumulations of 4 to 8 inches of snow. Often times winter storms will include sustained winds of 25-40 mph and gusts of 60 mph.

PROBABILITY

For this plan, occurrence of severe winter storms between the years of 1996 and 2013 were examined, during that time 54 events were reported by the NCDC. Given that record, severe winter storms are expected to occur annually.

AVERAGE ANNUAL DAMAGES AND FREQUENCY

The 'annual damage estimate formula' estimates potential losses for the planning area per year based upon historical data:

Average Annual Damages ($81,176) = *Total Damages in Dollars ($1,380,000)* / *Total Number of Years in Record (17)*

Annual Frequency of Hazard Event (3.2 per year) = *Total Events Recorded (54)* / *Total Number of Years in Record (17)*

The average annual damage estimate was determined based upon the average damage per year since 1996 and number of historical occurrences. The primary risks for severe winter storms are exposure, driving, and post-event behaviors. The most common types of private damages occur from downed trees falling on private property and from power outages causing frozen food to thaw. This does not include loss of displacement, functional downtime, economic loss, injury, or death. It should be noted that the total crop damages were included in the event details to express the magnitude of the event, but were not calculated into the average damage per event estimate.

VULNERABILITY ASSESSMENT

Severe winter storms occur on a regional scale, and can equally affect the entire planning area. All building stock are at risk of being damaged or affected by a severe winter storm. Critical facilities and infrastructure including emergency response and recovery operations, warning and communication systems, wells and water treatment, and many other services vital for returning the jurisdiction's functions to normal, are at risk during severe winter storm events due to potential power outages and other damages.

The collection of snow and ice on power lines or electrical equipment can cause equipment damage, downed power lines, and a loss of electricity. Snow and ice accumulations on transportation routes can lead to obstruction of traffic flow and hinder emergency response. Severe winter storms can also cause significant damage to trees, with branches downing electrical lines, blocking roadways, building and property damage.

Severe winter storms regularly result in damages to power lines and telephone lines, as well as other infrastructure related to threat communication (i.e. radio and television antennas). This potential for decreased message dissemination combined with potential power outages results in higher levels of vulnerability for a number of groups within the community including: the elderly, individuals and families living below the poverty line, those isolated from social interactions, groups with limited mobility, and residents that are new to the area/region. Elderly citizens are at higher risk of being isolated during severe winter storms as a result of decreased mobility as well as a diminished ability to remove accumulations of snow and ice from vehicles and driveways. A 2011 study conducted by the Center for Injury Research and Policy found that on average there are 11,500 injuries and 100 deaths annually related to snow removal. People, especially males, over the age of 55 are 4.25 times more likely to experience cardiac symptoms during snow removal.

Individuals and families below the poverty line and those isolated from social interactions may lack resources or access to resources that could mitigate the impacts of severe winter storms such as sufficient food supplies when snowed in or even alternative heating sources during prolonged power outages. Severe winter storms often result in closed or impassable roadways. This increases the vulnerability among segments of the population that already have decreased mobility, making it important that they have a social network that can check on them and ensure that they have access to heat and food. Finally, people who are new to the area may not know what to expect from a severe winter storm and what actions are appropriate in preparing for the event. Threat communication is imperative for informing and educating this portion of the population.

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. Communities can incorporate "living snow fences" into community designs. "Living snow fences" are strategically placed trees and shrubs that act as a wind and snow block, reducing snow drifts and decreasing amounts of snow that would otherwise blow across flat areas. Communities can also bury power lines to reduce the chance of power outages resulting from severe winter storms and ice storms. New public buildings can be designed with redundant power supplies to ensure continuity of government services. Building codes can be enhanced to prohibit flat roofs and to increase facility strengths to withstand greater snow loads. Stakeholder groups in the area play a significant role in assisting and protecting vulnerable populations during and following severe winter storms.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that Severe Winter Storms are a high probability hazard that often causes significant property damage across the planning area. Severe Winter Storms are the hazard of greatest concern to the Planning Team and can adversely impact various segments of the population.

MITIGATION ALTERNATIVES

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of severe winter storms. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*.

- Improve buildings codes to eliminate flat roofs in areas that expect heavy snow loads
- Retrofit buildings and infrastructure to withstand snow loads
- Increase weather monitoring procedures
- Incorporate text messaging into severe weather messaging programs
- Incorporate cable TV interruption warning systems
- Establish road closure policies and procedures necessary to protect the public
- Develop continuity plans for critical community services (public and private)
- Establish a Tree Board to assist in the development of a tree management program
- Participate or continue participating in Tree City USA; establish a tree maintenance ordinance
- Establish redundancies for necessary municipal services (i.e. water, gas, electric, transportation)
- Develop a database of "vulnerable populations"
- Work with community groups serving "vulnerable populations" such as Meals on Wheels programs to help monitor vulnerable groups
- Establish public education programs to increase awareness of the dangers posed by severe winter storms and ways the public can mitigation the potential impacts

SEVERE THUNDERSTORMS (THUNDERSTORM AND LIGHTING)

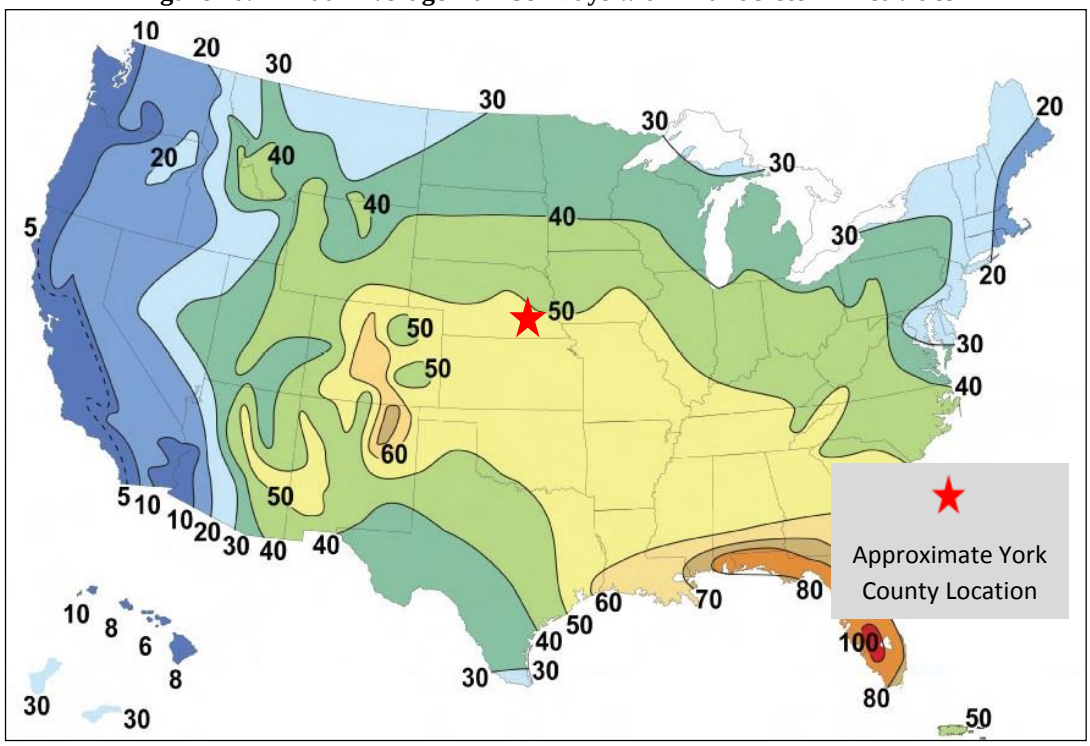
HAZARD PROFILE

Severe thunderstorms are common and unpredictable annual events throughout the central and southern United States. Thunderstorms differ from many other hazards in that they are generally large in magnitude, have a long duration, and travel across large areas and through multiple jurisdictions within a single region. Additionally, thunderstorms often occur in series, with one area having the potential to be hit multiple times in one day.

Severe thunderstorms in York County usually occur in the evening during the spring and summer months. These often massive storms can include heavy rain, hail, lightning, high wind, and can produce tornados with little or no advanced warning. Furthermore, heavy rains can cause flooding, lightning can cause wildfires, and high winds can down trees, cause power outages, and destroy property with their shear force.

Economically, thunderstorms are generally beneficial in that they provide moisture necessary to support Nebraska's largest industry, agriculture. The majority of thunderstorms do not cause damage, but when they escalate to the point of becoming severe, the potential for damages include crop losses from wind and hail, property losses due to building and automobile damages due to hail, wind, or flash flooding, and death or injury to humans and animals from lightning, drowning, or getting struck by falling or flying debris. Figure 10 displays the average number of days with thunder across the country each year, with Nebraska experiencing between 40 to 50 days from north to south across the state.

Figure 10: Annual Average Number Days with Thunderstorm Activities



Source: http://www.nws.noaa.gov/om/severeweather/index.shtml

Thunderstorms can develop in less than 30 minutes, and can grow to an elevation of eight miles into the atmosphere. There are an estimated 100,000 thunderstorms in the United States each year, of which 10% are severe. Lightning, by definition, is present in all thunderstorms and can be harmful to humans and animals, cause fires to buildings and agricultural lands, and cause electrical outages in municipal electrical systems. Between 1977 and 2006, an average of 62 people were killed each year by lightning in the United States. In Nebraska eight fatalities were attributed to lightning between 1990 and 2003; although none were reported in the planning area. Lightning can strike up to 10 miles from the portion of the storm depositing precipitation. There are three primary types of lightning: intra-cloud, inter-cloud, and cloud to ground. While intra and inter-cloud lightning are more common, it is when lightning comes

in contact with the ground that society is potentially impacted. Lightning generally occurs when warm air is mixed with colder air masses resulting in atmospheric disturbances necessary for polarizing the atmosphere. There is no scale for measuring lightning. Damaging hailstorms are also common in severe thunderstorms. Hail measuring just three-quarters of an inch can approach speeds of 100 mph. Hail causes nearly $1 billion in damage to property and crops annually.

HISTORICAL OCCURRENCES

The NCDC reports events as they occur in *each* community. A single severe thunderstorm event can affect multiple communities at a time; the NCDC reports these large scale, multi-community events as separate events. The result is a single thunderstorm event covering the entire region could be reported by the NCDC as several events. NCDC cites 52 separate events within York County from January 1996 to August 2013. No injuries or deaths were reported. These recorded events caused a total of $1,731,000 in property damages and $850,000 in crop damages. The jurisdiction specific events from NCDC and reported by each community were listed in each participant section in *Section Seven: Participant Sections*.

MAGNITUDE

Magnitude for severe thunderstorms is best defined by examining the individual components which occur as a part of storms: rain, hail, and high winds. For this plan, hail and high winds are presented individually; refer to applicable hazard profiles for relevant data. It is reasonable to expect severe thunderstorm events to produce precipitation totals greater than on inch annually.

PROBABILITY

For this plan, occurrence of severe thunderstorms between the years of 1996 and 2013 were examined. During that time, 52 distinct events were recorded by the NCDC. Given the available information there is a 100 percent probability of severe thunderstorms annually.

AVERAGE ANNUAL DAMAGES AND FREQUENCY

Severe thunderstorms occur on an irregular basis with varying magnitudes and can cause a wide range of damage. The damage can range from a few downed tree limbs to wide spread tree loss, hail damage, and significant property damage. The 'annual damage estimate formula' estimates potential losses for the planning area per event based upon historical data:

Average Annual Damages ($101,823) = $\frac{\textit{Total Damages in Dollars ($1,731,000)}}{\textit{Total Number of Years in Record (17)}}$

Annual Frequency of Hazard Event (3 per year) = $\frac{\textit{Total Events Recorded (52)}}{\textit{Total Number of Years in Record (17)}}$

The average damage per event estimate was determined based upon the average damage per year since 1996 and the number of historical occurrences. This does not include loss of displacement, functional downtime, economic loss, injury, or loss of life. It should be noted that the total crop damages were included in the event details to express the magnitude of the event, but were not calculated into the average annual damages.

VULNERABILITY ASSESSMENT

All building stock and infrastructure including critical facilities, vehicles, power lines, trees, and utilities are at risk of being damaged or affected by severe thunderstorms. According to climate data, May and June have the greatest amounts of rainfall. This coincides with severe thunderstorms and increased tornado activity during these months.

Severe thunderstorms can cause property damage or loss, downed power lines, loss of electricity, obstruction to traffic flow, significant damage to trees, and pose a threat to human life. The electrical infrastructure is highly vulnerable to damages from lightning strikes and downed tree branches. Roadways are vulnerable to wash outs and surface damages from flash floods. Building stock and personal property are vulnerable to damages from large hail stones. Severe thunderstorms can also cause significant damage to crops, levees, and dams throughout the rural areas of the planning area.

Vulnerable populations related to severe thunderstorms include the elderly, those living in mobile homes, and those caught outside during storm events. During severe thunderstorms, it is not uncommon for residents/towns to lose power for a temporary or prolonged period of time. These power outages may prove deadly for elderly citizens that are reliant upon machines to remain alive. The elderly are generally less mobile than many other members or the community, making them more vulnerable to a wide range of threats. Mobile homes that are not anchored or are improperly anchored are also at high risk during thunderstorms because they can be turned over by a wind of 60 to 70 mph. Severe thunderstorms are defined by winds in excess of 58 mph.

Lightning is commonly considered the most dangerous and most frequently encountered weather hazard. The most vulnerable groups related to lightning strikes are people located outside during storm events. Vulnerable areas to consider include public parks, campgrounds, swimming pools, and schools with playgrounds.

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. Building codes can be enhanced so that they require or recommend the use of hail resistant material, tie-downs and ground anchors for mobile homes, and architectural designs that reduce or limit potential for wind-born debris. Existing structures can also incorporate hail resistant products such as concrete roof tiles and siding. Critical facilities should install and utilize surge protectors to ensure the continuity of vital services. Power lines can be buried to decrease the chance of prolonged power outages and safe rooms can be constructed near vulnerable populations (schools, daycares, mobile home parks, etc.) to increase safety for residents in those areas. Communities can also establish Tree Boards and tree ordinances to ensure urban canopies are safe and healthy, reducing the potential impacts of severe thunderstorms.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that thunderstorms are a high probability hazard, but do not cause as much property damage as tornados. While NCDC does collect damages from thunderstorms it is likely that some damages may be missed or minor damages go unreported. This is a hazard of significant concern and can adversely impact various segments of the population.

MITIGATION ALTERNATIVES

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of severe thunderstorms. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*.

- Install and maintain surge protection for critical facilities
- Incentive programs to encourage the use of hail resistant roofing materials for new and existing structures
- Bury overhead power lines
- Establish a Tree Board to assist in the development of a tree management program
- Continue to participate, or become a participant, in Tree City USA; establish a tree maintenance ordinance
- Establish redundancies for necessary municipal services (i.e. water, gas, electric, transportation)
- Establish data recovery program and backup program for municipal employees
- Establish community severe weather warning protocols
- Incorporate text messaging into severe weather messaging programs
- Incorporate cable TV interruption warning systems
- Purchase and issue weather radios to critical facilities and vulnerable populations
- Establish mutual aid agreements with neighboring communities and privately owned businesses
- Develop business continuity plans for critical community services (public and private)
- Establish public education programs to increase awareness of the dangers posed by severe thunderstorms and ways the public can mitigate the potential impacts

HAIL

HAZARD PROFILE

Hail is usually associated with severe thunderstorms. This association makes hail just as unpredictable as a severe thunderstorm. Hail events in thunderstorms differ from many other hazards in that they are generally large in magnitude, have a long duration, and travel large areas and through multiple jurisdictions within a single region. Additionally, hail events in thunderstorms often occur in series, with one area having the potential to be hit multiple times in one day.

Severe thunderstorms in York County usually occur in the evening during the spring and summer months. These often massive storms can include heavy rain, hail, lightning, high wind, and can produce tornados with little or no advanced warning. Furthermore, hail can destroy property and crops with their shear force as some hail stones can fall at 100 mph.

When thunderstorms do produce hail there is potential for crop losses, property losses due to building and automobile damages, and personal injury from people not seeking shelter during these events. The potential for damages increases as the size of the hail increases.

The TORRO scale is used throughout the United Kingdom to classify hailstones and provides some detail related to the potential impacts from hail. Table 24 outlines the TORRO Hailstone Scale.

Table 24: TORRO Hailstone Scale

TORRO Classification / Intensity	Typical Hail Diameter	Typical Damage Impacts
H0: Hard Hail	5 mm; Pea size	No damage
H1: Potentially Damaging	5 -15 mm (marble)	Slight general damage to plants and crops
H2: Significant	10 -20 mm (grape)	Significant damage to fruit, crops, and vegetation
H3: Severe	20 -30 mm (Walnut)	Severe damage to fruit and crops, damage to glass and plastic structures
H4: Severe	30 -40 mm (Squash Ball)	Widespread damage to glass, vehicle bodywork damaged
H5: Destructive	40 – 50 mm (Golf ball)	Wholesale destruction of glass, damage to tiled roofs; significant risk or injury
H6: Destructive	50 – 60 mm (chicken egg)	Grounded aircrafts damaged, brick walls pitted; significant risk of
H7: Destructive	60 – 75 mm (Tennis ball)	Severe roof damage; risk of serious injuries
H8: Destructive	75 – 90 mm (Large orange)	Severe damage to structures, vehicles, airplanes; risk of serious injuries
H9: Super Hail	90 – 100 mm (Grapefruit)	Extensive structural damage; risk of severe or even fatal injuries to persons outdoors
H10: Super Hail	>100 mm (Melon)	Extensive structural damage; risk or severe or even fatal injuries to persons outdoors

HISTORICAL OCCURRENCES

The NCDC reports events as they occur in *each* community. A single hail event can affect multiple communities at a time; the NCDC reports these large scale, multi-community events as separate events. The result is a single hail event covering the entire region could be reported by the NCDC as several events. NCDC cites 139 separate events, but many are likely the same event from different locations (given the fact that there are several on the same day) within York County from January 1996 to August 2014. No injuries, or deaths were reported. However, NCDC data reports $4,312,000 in property damages and $18,438,000 in crop damages. The jurisdiction specific events from NCDC and reported by each community were listed in each participant section in *Section Seven: Participant Sections*.

EXTENT

Of the 139 events reported, 129 reported hail of 45mm (1.75 inches) or less. Eight events reported hailstones 50 to 70mm (2-2.75 inches). Two events were reported with hailstones greater than 70mm.

PROBABILITY

For this plan occurrence of hail events between the years of 1996 to 2013 were examined. Given the available information there is a 100 percent probability of hail occurring annually.

AVERAGE ANNUAL DAMAGES AND FREQUENCY

The 'annual damage estimate formula' estimates potential losses for the planning area per event based upon historical data:

Average Annual Damages ($253,647) = $\frac{\textit{Total Damages in Dollars (4,312,000)}}{\textit{Total Number of Years in Record (17)}}$

Annual Frequency of Hazard Event (8.2 per year) = $\frac{\textit{Total Events Recorded (139)}}{\textit{Total Number of Years in Record (17)}}$

Refer to Table 23 for summaries of property and crop losses. Hail is second only to tornados for total property loss in York County. Hail is also responsible for the second greatest loss of crops in the planning area (drought reports the highest crop losses).

VULNERABILITY ASSESSMENT

All building stock and infrastructure including critical facilities, vehicles, power lines, trees, and utilities are at risk of being damaged or affected by hail. Hail is another component of severe thunderstorms that can seriously impact residents of mobile homes. Nebraska is one of the three states that receive the highest number of hail events annually. Hail can damage vehicles, roofs, and landscaping, as well as cause injury and occasionally death.

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. Building codes can be enhanced so that they require or recommend the use of hail resistant material, tie-downs and ground anchors for mobile homes, and architectural designs that reduce or limit potential for wind-born debris. Existing structures can also incorporate hail resistant products such as concrete roof tiles and siding. Critical facilities should install and utilize surge protectors to ensure the continuity of vital services. Power lines can be buried to decrease the chance of prolonged power outages and safe rooms can be constructed near vulnerable populations (schools, daycares, mobile home parks, etc.) to increase safety for residents in those areas. Communities can also establish Tree Boards and tree ordinances to ensure urban canopies are safe and healthy, reducing the potential impacts of severe thunderstorms.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that hail events are a high probability hazard, and causes significant damages to both property and crops. While NCDC does collect damages from hail events it is likely that some damages may be missed or minor damages go unreported.

MITIGATION ALTERNATIVES

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of hail events. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*.

- Structural bracing, shutters, laminate glass in window panes, and hail-resistant roof coverings, or flashing in building design to minimize damage
- Incentive programs to encourage the use of hail resistant roofing materials for new and existing structures
- Improving roof sheathing to prevent hail penetration
- Installing hail resistant roofing and siding
- Establish community severe weather warning protocols
- Incorporate text messaging into severe weather messaging programs
- Incorporate cable TV interruption warning systems

- Purchase and issue weather radios to critical facilities and vulnerable populations
- Establish mutual aid agreements with neighboring communities and privately owned businesses
- Develop business continuity plans for critical community services (public and private)
- Establish public education programs to increase awareness of the dangers posed by hail and ways the public can mitigate the potential impacts

TORNADOS

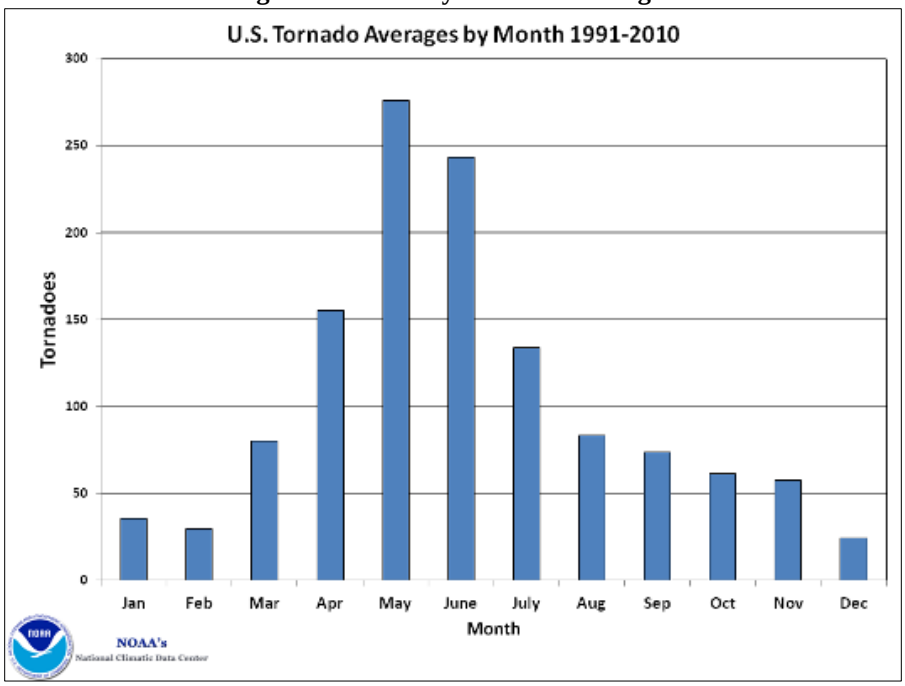
HAZARD PROFILE

A tornado is typically associated with a super cell thunderstorm. In order for rotations to be classified as tornados, three characteristics must be met:

- There must be a micro scale rotating area of wind, ranging in size from a few feet to a few miles wide;
- The rotating wind, or vortex, must be attached to a convective cloud base and must be in contact with the ground; and
- The spinning vortex of air must have caused enough damage to be classified by the Fujita Scale as a tornado.

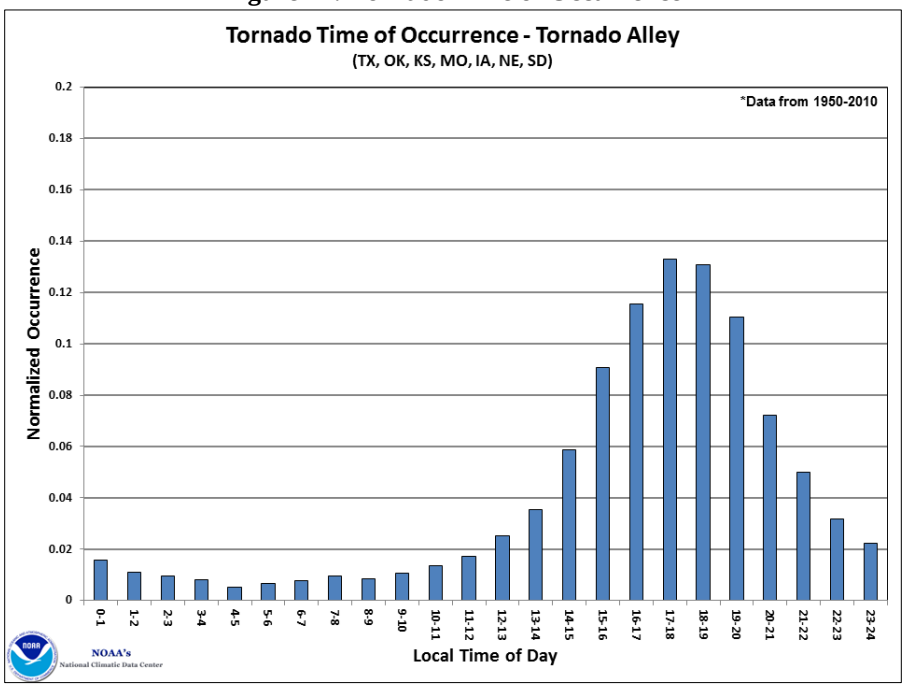
Once tornados are formed, they can be extremely violent and destructive. They have been recorded all over the world, but are most prevalent in the American Midwest and South, in an area known as "Tornado Alley." Approximately 1,000 tornados are reported annually in the contiguous United States (NOAA 2012). Tornados can travel distances over 100 miles and reach over 11 miles above ground. Tornados usually stay on the ground no more than 20 minutes. Nationally, the tornado season typically occurs between March and April. On average, 80 percent of tornados occur between noon and midnight. In Nebraska 77% of all tornados occur in the months of May, June, and July.

Figure 11: Monthly Tornado Averages



Source: National Oceanic and Atmospheric Administration

Figure 12: Tornado Time of Occurrence

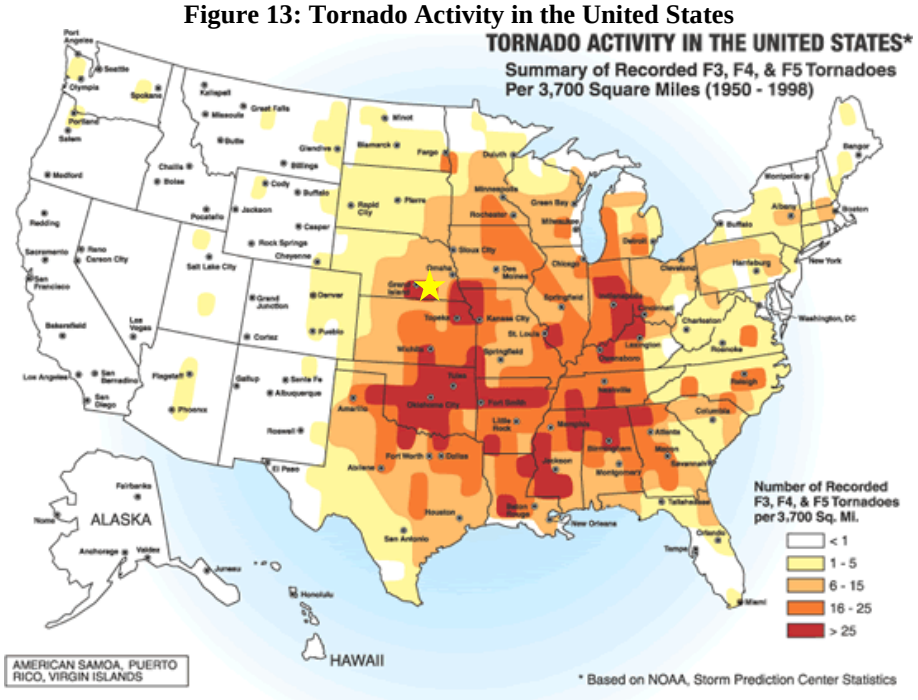


Source: National Oceanic and Atmospheric Administration

Nebraska is ranked fifth in the nation for tornado frequency with an annual average of 45 tornados between 1953 and 2004 (NOAA 2011). The annual average number of tornados for Nebraska from 1991 and 2011 has increased slightly to 57 (NOAA 2013). Figure 13 shows the tornado activity in the United States as a summary of recorded F3, F4, and F5 tornados per 3,700 square miles from 1950 to 1998.

Figure 13: Tornado Activity in the United States

★ Approximate York County



Source: United States Department of Commerce, National Oceanic Atmospheric Administration, Storm Prediction Center Statistics

After a tornado passes through an area, an official rating category is determined, which provides a common benchmark that allows comparisons to be made between different tornados. The magnitudes of tornados are measured by intensity on the Enhanced Fujita Scale. The Enhanced Fujita Scale does not measure tornados by their size or width, but rather the amount of damage caused to human-built structures and trees. The Enhanced Fujita Scale replaced the Fujita Scale in 2007. The enhanced scale classifies EF0-EF5 damage as determined by engineers and meteorologists across 28 different types of damage indicators, including different types of building and tree damage. In order to establish a rating, engineers and meteorologists examine the damage, analyze the ground-swirl patterns, review damage imagery, collect media reports, and sometimes utilize photogrammetry and videogrammetry. Based on the most severe damage to any well-built frame house, or any comparable damage as determined by an engineer, an EF-Scale number is assigned to the tornado. Table 25 summarizes the Enhanced Fujita Scale and damage indicators. According to a recent report from the National Institute of Science and Technology on the Joplin Tornado, tornados rated EF3 or lower account for around 96% of all tornado damages.

Table 25: Enhanced Fujita Scale

Storm Category	3 Second Gust (mph)	Damage Level	Damage Description
EF0	65-85 mph	Gale	Some damages to chimneys; breaks branches off trees; pushes over shallow- rooted trees; damages to sign boards.
EF1	86-110 mph	Weak	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 might be destroyed.
EF2	111-135 mph	Strong	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
EF3	136-165 mph	Severe	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.

Storm Category	3 Second Gust (mph)	Damage Level	Damage Description
EF4	166-200 mph	Devastating	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
EF5	200+ mph	Incredible	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
EF No rating	--	Inconceivable	Should a tornado with the maximum wind speed in excess of F5 occur, the extent and types of damage may not be conceived. A number of missiles such as iceboxes, water heaters, storage tanks, automobiles, etc. will create serious secondary damage on structures.

Source: National Oceanic and Atmospheric Administration; Federal Emergency Management Agency

Table 26: Enhanced F Scale Damage Indicators

Number	Damage Indicator
1	Small barns, farm outbuildings
2	One- or two-family residences
3	Single-wide mobile home (MHSW)
4	Double-wide mobile home
5	Apartment, condominium, townhouse (3 stories or less)
6	Motel
7	Masonry apartment or motel
8	Small retail building (fast food)
9	Small professional (doctor office, branch bank)
10	Strip mall
11	Large shopping mall
12	Large, isolated ("big box") retail building
13	Automobile showroom
14	Automotive service building
15	School - 1-story elementary (interior or exterior halls)
16	School - junior or senior high school
17	Low-rise (1-4 story) building
18	Mid-rise (5-20 story) building
19	High-rise (over 20 stories)
20	Institutional building (hospital, government or university)
21	Metal building system
22	Service station canopy
23	Warehouse (tilt-up walls or heavy timber)
24	Transmission line tower
25	Free-standing tower
26	Free standing pole (light, flag, luminary)
27	Tree – hardwood
28	Tree – softwood

Source: National Oceanic and Atmospheric Administration; Federal Emergency Management Agency

HISTORICAL OCCURRENCES

The NCDC reports events as they occur in *each* community. NCDC cites 14 separate events within York County from January 1996 to August 2013. The reported events had no recorded deaths or injuries. These recorded events caused a total of $6,100,000 in property damages and $1,000,000 in crop damages. The jurisdiction specific events from NCDC and reported by each community were listed in each participant section in *Section Seven: Participant Sections*.

EXTENT

Of the 14 reported events, 10 were recorded as F/EF0, three were reported as F/EF1, and one event in 2013 was reported as an EF2.

PROBABILITY

For this plan occurrence of tornados between the years of 1996 and 2013 were examined, during that time 14 distinct events were recorded by the NCDC. Given that record tornados have an annual probability of 82 percent.

AVERAGE ANNUAL DAMAGES AND FREQUENCY

The average damage per event estimate was determined based upon the average damage per event since 1996 and number of historical occurrences. This does not include losses from displacement, functional downtime, economic loss, injury, or loss of life. It should be noted that the total crop damages were included in the event details to express the magnitude of the event, but were not calculated into the average damage per event estimate as crop damages would likely not affect the area.

The 'annual damage estimate formula' estimates potential losses for the planning area per event based upon historical data:

Average Annual Damages ($358,823) = $\frac{\textit{Total Damages in Dollars (\$6,100,000)}}{\textit{Total Number of Years in Record (17)}}$

Annual Frequency of Hazard Event (.82 per year) = $\frac{\textit{Total Events Recorded (14)}}{\textit{Total Number of Years in Record (17)}}$

Refer to Table 23 for a summary of total property and crop losses due to this hazard. Tornados are responsible for the highest recorded property loss totals for all hazards included in this plan.

VULNERABILITY ASSESSMENT

Tornados and high winds occur with irregularity, and can equally affect the entire planning area. All building stock and above ground infrastructure, including critical facilities, are at risk of being damaged or affected by tornados and high winds. Tornados and high winds can cause structure loss, downed power lines, loss of electricity, obstruction to traffic flow, and significant damage to trees and center-pivot irrigation systems. A catastrophic event could lead to major economic loss for the jurisdiction. High wind speeds and flying debris can pose a significant threat to human life.

Tornados can impact a wide range of people and properties. People living in mobile homes are particularly susceptible to the effects of tornados. Mobile homes that are not anchored or are not anchored properly can be blown over by winds as fast as 60 to 70 mph. A 2007 study conducted by Dr. W. Ashley at Northern Illinois University found that between 1985 and 2005, 44 percent of all tornado related fatalities occurred in mobile homes while between 20 and 30 percent occurred in permanent homes. Tornado related deaths in mobile homes have increased over the timeframe investigated from 37 percent of all fatalities between 1986 and 1990 to nearly 57 percent of all fatalities from 2001 to 2005. The timing of tornados also impacts the vulnerability of people living in mobile homes. The 2007 study found that while only 25.8 percent of tornados occur between sunset and sunrise, they account for 42.5 percent of tornado fatalities. This is a result of a number of factors including decreased ability to identify tornados in the dark, decreased ability to communicate tornado threats due to a high rate of people sleeping during the night, and a higher number of people in the housing units (i.e. mobile home) during the nighttime.

Other factors that may increase vulnerability to the threat posed by tornados include age, poverty levels, and home rentals. The 2007 study found that the middle aged (those over 40 years of age) and elderly are more vulnerable to

tornados. This may be a result of decreased mobility, higher rate of auditory complications, or lack of resources need to mitigate potential tornado related impacts.

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. Considerations for future developments should include developing tornado safe rooms in/near mobile home parks. The 2003 Tornado Shelters Act authorizes communities to use Community Development Block Grant (CDBG) funds for construction of tornado-safe shelters in manufactured home parks with 20 or more housing units consisting predominately of low- and moderate-income residents.

There are some changes that communities can make to partially mitigate against tornados and strong winds. Building codes for new structures can be strengthened, requiring increased rebar in foundations, enhanced nailing patterns for wall sheathing, and the use of Simpson Strong Ties and Straps. Building codes can also be strengthened to require the use of anchors and tie-downs on mobile homes. Additionally, individuals can choose to build to an optional Code Plus Standard, such as Fortified for Safer Living. Safe rooms can be installed in new structures as well as made to adapt to existing structures. In-ground safe rooms can be installed in existing structures for as little as $4,000. The installation of public safe rooms in areas around vulnerable populations, such as mobile home parks, can increase safety of residents in those areas.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that tornados do not occur as frequently as some of the more highly ranked hazards, but can have significant impacts when they do occur. Historically, there have been high property damages.

MITIGATION ALTERNATIVES

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of tornado and strong winds. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*.

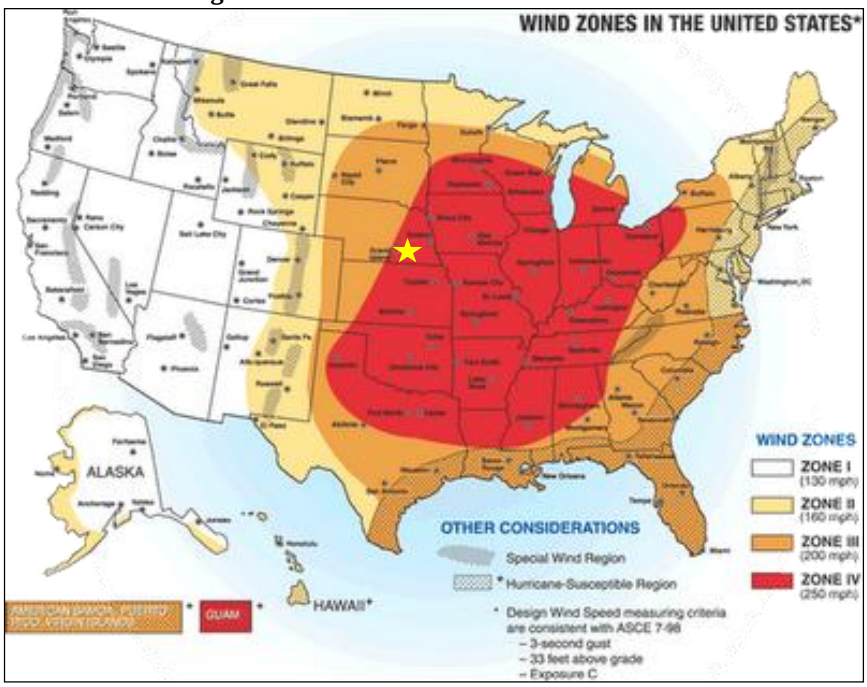
- Enhance building codes to incorporate wind –resistant building techniques
- Bury overhead power lines
- Establish redundancies for necessary municipal services (i.e. water, gas, electric, transportation)
- Establish data recovery program and backup program for municipal employees
- Establish a Tree Board to assist in the development of a tree management program
- Participate, or continue participating, in Tree City USA; establish a tree maintenance ordinance
- Encourage the construction of safe rooms
- Require tornado safe rooms in newly constructed municipal buildings
- Work with trailer and mobile home parks to develop tornado safe rooms
- Ensure schools are equipped with sufficient safe space for their maximum student capacity
- Develop maps of "vulnerable populations" and safe rooms located near those groups
- Ensure outdoor warning sirens are functional and located adequately to warn the public of potential tornadic events
- Incorporate text messaging into severe weather messaging programs
- Incorporate cable TV interruption warning systems
- Establish mutual aid agreements with neighboring communities and privately owned businesses
- Develop business continuity plans for critical community services (public and private)
- Establish public education programs to increase awareness of the dangers posed by severe tornados and strong winds and ways the public can mitigation the potential impacts

HIGH WINDS

HAZARD PROFILE

High winds typically accompany severe thunderstorms and severe winter storms and can cause significant property and crop damage, downed power lines, loss of electricity, obstruction to traffic flow, and significant damage to trees and center-pivot irrigation systems. All building stock and above ground infrastructure, including critical facilities, are at risk of being damaged or affected by high winds. High wind speeds and flying debris can pose a significant threat to human life. Figure 14 shows the wind zones in the United States.

Figure 14: Wind Zones in the United States



Source: Federal Emergency Management Agency

The National Weather Service (NWS) defines High Winds as sustained wind speeds of 40 mph or greater lasting for 1 hour or longer, or winds of 58 mph or greater for any duration. The NWS issues High Wind Advisories when there are sustained winds of 25 – 39 miles per hour and/or gusts to 57 mph. The Beaufort Wind Scale can be used to classify wind strength. Table 27 outlines the scale, providing wind speed ranking, range of wind speeds per ranking, and a brief description of conditions for each ranking.

Table 27: Beaufort Wind Force Rankings

Beaufort Wind Force Ranking	Range of Wind Speeds	Conditions
0	<1 mph	Smoke rises vertically
1	1 – 3 mph	Direction shown by smoke but not wind vanes
2	4 – 7 mph	Wind felt on face; leaves rustle; wind vanes move
3	8 – 12 mph	Leaves and small twigs in constant motion
4	13 – 18 mph	Raises dust and loose paper; small branches move
5	19 – 24 mph	Small trees in leaf begin to move
6	25 – 31 mph	Large branches in motion; umbrellas used with difficulty
7	32 – 38 mph	Whole trees in motion; inconvenience felt when walking against the wind
8	39 – 46 mph	Breaks twigs off tree; generally impedes progress
9	47 – 54 mph	Slight structural damage; chimneypots and slates removed
10	55 – 63 mph	Trees uprooted; considerable structural damages; improperly or mobiles homes

Beaufort Wind Force Ranking	Range of Wind Speeds	Conditions
		with no anchors turned over
11	64 – 72 mph	Widespread damages; very rarely experienced
12 – 17	72 - >200 mph	Hurricane; devastation

Source: National Weather Service

HISTORICAL OCCURRENCES

Due to the regional scale of high wind events, the NCDC reports events as they occur in each county. The NCDC cites 14 separate events, within York County from January 1996 to August 2013. These recorded events caused $19,080 property damages and $135,548 in crop damages. The jurisdiction specific events from NCDC and reported by each community were listed in each participant section in *Section Seven: Participant Sections*.

EXTENT

Of the 14 high wind events, several were ranked an 8 according to the Beaufort Wind Force scale (approximately 40-45 mph wind the most frequently recorded event was winds of approximately 43 mph. There were multiple events (2) which recorded wind speeds in excess of 60 mph.

PROBABILITY

For this plan, occurrence of tornados between the years of 1996 and 2013 were examined, during that time 14 distinct events were recorded by the NCDC. Given that record there is an 82 percent chance of high wind events occurring in a given year.

AVERAGE ANNUAL DAMAGES AND FREQUENCY

The 'annual damage estimate formula' estimates potential losses for the planning area per event based upon historical data:

Average Annual Damages ($1,122) = $\frac{\textit{Total Damages in Dollars ($19,080)}}{\textit{Total Number of Years in Record (17)}}$

Annual Frequency of Hazard Event (0.82 per year) = $\frac{\textit{Total Events Recorded (14)}}{\textit{Total Number of Years in Record (17)}}$

Refer to Table 23 for a summary of property and crop losses due to this hazard.

VULNERABILITY ASSESSMENT

High winds occur with irregularity, and can equally affect the entire planning area. All building stock and above ground infrastructure, including critical facilities, are at risk of being damaged or affected by high winds. High winds can cause structure loss, downed power lines, loss of electricity, obstruction to traffic flow, and significant damage to trees and center-pivot irrigation systems. A catastrophic event could lead to major economic loss for the jurisdiction. High wind speeds and flying debris can pose a significant threat to human life.

Other factors that may increase vulnerability to the threat posed by tornados include age, poverty levels, and home rentals. The 2007 study cited as part of the Tornado Vulnerability Assessment found that the middle aged (those over 40 years of age) and elderly are more vulnerable to tornados. This may be a result of decreased mobility, higher rate of auditory complications, or lack of resources need to mitigate potential tornado related impacts.

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. There are some changes that communities can make to partially mitigate against strong winds. Building codes for new structures can be strengthened, requiring increased rebar in foundations, enhanced nailing patterns for wall sheathing, and the use of Simpson Strong Ties and Straps. Building codes can also be strengthened to require the use of anchors and tie-downs on mobile homes. Additionally, individuals can choose to build to an optional Code Plus Standard, such as Fortified for Safer Living. Safe rooms can be installed in new structures as well as made to adapt to existing

structures. In-ground safe rooms can be installed in existing structures for as little as $4,000. The installation of public safe rooms in areas around vulnerable populations, such as mobile home parks, can increase safety of residents in those areas.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that high winds do not occur as frequently as some of the more highly ranked hazards, but can have significant impacts when they do occur. Historically, there have been minor property damages and no injuries, but the potential for high property damage and injuries do exist.

MITIGATION ALTERNATIVES

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of tornado and strong winds. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*.

- Enhance building codes to incorporate wind –resistant building techniques
- Bury overhead power lines
- Establish redundancies for necessary municipal services (i.e. water, gas, electric, transportation)
- Establish data recovery program and backup program for municipal employees
- Establish a Tree Board to assist in the development of a tree management program
- Participate, or continue participating, in Tree City USA; establish a tree maintenance ordinance
- Encourage the construction of safe rooms
- Require tornado safe rooms in newly constructed municipal buildings
- Work with trailer and mobile home parks to develop tornado safe rooms
- Ensure schools are equipped with sufficient safe space for their maximum student capacity
- Develop maps of "vulnerable populations" and safe rooms located near those groups
- Ensure outdoor warning sirens are functional and located adequately to warn the public of potential tornadic events
- Incorporate text messaging into severe weather messaging programs
- Incorporate cable TV interruption warning systems
- Establish mutual aid agreements with neighboring communities and privately owned businesses
- Develop business continuity plans for critical community services (public and private)
- Establish public education programs to increase awareness of the dangers posed by severe tornados and strong winds and ways the public can mitigation the potential impacts

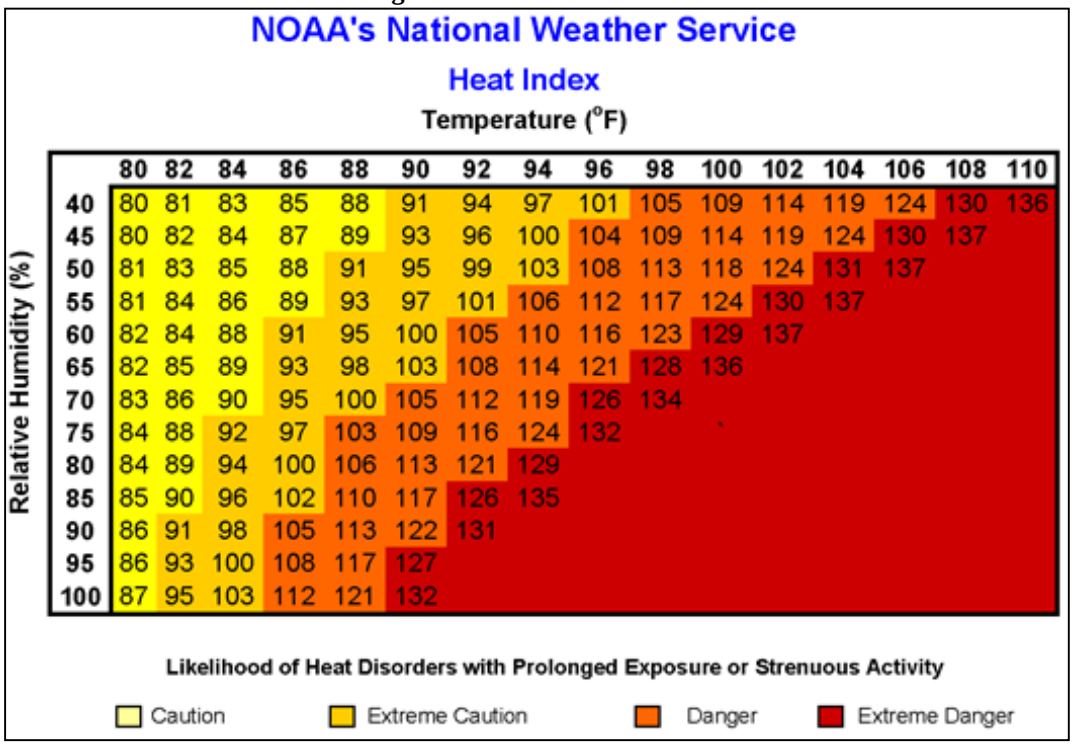
EXTREME HEAT

HAZARD PROFILE

Extreme heat is often associated with periods of drought, but can also be characterized by long periods of high temperatures in combination with high humidity. During these periods, the human body has difficulties cooling through the normal method of the evaporation of perspiration. Health risks arise when a person is overexposed to heat. Extreme heat can also cause people to overuse air conditioners, which can lead to power failures. For the planning area, the months with the highest temperatures are May, June, July, August, and September. The National Weather Service is responsible for issuing excessive heat outlooks, excessive heat watches, and excessive heat warnings. Excessive heat outlooks are issued when potential exists for an excessive heat event in the next 3 to 7 days. Excessive heat outlooks can be utilized by public utility staffs, emergency managers, and public health officials to plan for extreme heat events. Excessive heat watches are issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. An excessive heat watch should provide local officials and residents in the area enough time to take appropriate actions to mitigate the effects of extreme heat. Finally, excessive heat warnings are issued when an excessive heat event is expected in the next 36 hours. Excessive heat warnings are issued when an extreme heat event is occurring, is imminent, or has a very high probability of occurring.

Another factor to consider in extreme heat situations is the humidity level relative to the temperature. As is indicated in Figure 15, as the Relative Humidity increases, the temperature needed to cause a dangerous situation decreases. For example, for 100 percent Relative Humidity, dangerous levels of heat begin at 86°F where as a Relative Humidity of 50 percent, require 94°F. The combination of Relative Humidity and Temperature result in a Heat Index: 100 percent Relative Humidity + 86°F = 112° Heat Index.

Figure 15: NOAA Heat Index



HISTORICAL OCCURRENCES

While there are no events with death, injuries, or losses reported by the NCDC, the High Plains Regional Climate Center reports approximately 46 days annually where temperatures are greater than 90°*F* in the planning area. Extreme heat and drought during the summer of 2012 was substantial, but did not warrant a presidential disaster declaration within Nebraska. The full effects of this event are still being assessed, and any future update should include details about its true extent. The jurisdiction specific events from NCDC and reported by each community were listed in each participant section in *Section Seven: Participant Sections*.

EXTENT
Extreme heat for this plan is defined as temperatures equal or greater than 90°F.

PROBABILITY
Temperatures equal to or greater than 90°F are expected to occur multiple times on a given year.

AVERAGE ANNUAL DAMAGES AND FREQUENCY
The direct and indirect effects of extreme heat are difficult to quantify. There is no way to place a value on the loss of human life. Potential losses such as power outages could affect businesses, homes, and critical facilities. High demand and intense use of air conditioning can overload the electrical systems and cause damages to infrastructure.

Due to the limited reports of historical occurrences with recorded damages, it is not feasible to utilize the 'annual damage estimate formula' to estimate potential losses for the planning area.

According to the FEMA publication "*What is a Benefit: Guidance on Benefit-Cost Analysis of Hazard Mitigation Project (June 2009)*", if an extreme heat event occurred within the planning area, the table below assumes the event could potentially cause a loss of electricity for ten percent of the population at a cost of $126 per person per day. In rural areas, the percent of the population affected and duration may increase during extreme events. The assumed damages do not take into account physical damages to utility equipment and infrastructure.

Table 28: Loss of Electricity - Assumed Damage by Jurisdiction

Jurisdiction	2010 Population	Population Affected (Assumed @ 10 per cent)	Electric Loss of Use Assumed Damage per Day
Village of Benedict	234	23	2,898
Village of Bradshaw	273	27	3,402
Village of Gresham	223	22	2,772
Village of McCool Junction	409	41	5,166
Village of Thayer	62	6	756
Village of Waco	236	24	3,024
City of Henderson	991	99	12,474
City of York	7,766	777	97,902
York County	13,665	1367	172,242

According to RMA data, York County suffered losses of $2,079,779 from 2000 to 2013 resulting from extreme heat events. This results in an average loss of $148,555 annually.

VULNERABILITY ASSESSMENT
The months of July and August are when most extreme heat events occur. These months also have lower amount of precipitation, thus increasing the possibility for a drought event. Periods of high temperatures can make people vulnerable to heatstroke, heat cramps, heat exhaustion, and pose a threat to human life. The populations that are at most risk are young children, elderly, and those working and living in non-air-conditioned environments. Building stock, such as critical facilities, are not at risk; however periods of extreme heat place a significant demand on utilities, such as water and electricity, which can cause a failure in the system. Power loss could occur with the high demand on energy, making an extreme heat event even more dangerous.

The agricultural economy, especially livestock, is highly vulnerable and at great risk during periods of extreme heat. Heat stress in feedlot cattle can cause reduced performance, and in the most severe cases, death of the animals, resulting in millions of dollars in losses to the cattle industry.

Population groups with higher levels of vulnerability to extreme heat include the elderly (65 years and older), residents of nursing homes or care facilities, poor urban elderly, children, those isolated from social interactions, and low-income groups. Elderly people have a lower tolerance for extreme temperatures and can feel the effects more rapidly. Young children under the age of 5 are highly susceptible to the effects of extreme heat. They have a smaller body mass to surface ratio making them more vulnerable to heat-related morbidity and mortality. Children also become dehydrated more quickly than adults, making for greater concern. Low-income people and families may lack resources that mitigate the impacts of extreme heat such as air conditioning.

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. Communities will always have some level of vulnerability related to extreme heat events. Any future development and future residents in the county will be vulnerable to the affects and losses sustained from extreme heat, especially the agricultural economy. The total losses that could occur in the future would increase as the population of the town increases. Education of the population is the best way to mitigate for extreme heat. There are few large scale "hard" projects that can be undertaken, but explaining policies and best practices can go a long way in dealing with this hazard. It is especially advisable to educate the most vulnerable populations such as the elderly and children.

Communities can incorporate some strategies to reduce the impacts of extreme heat including: cool roofing materials, planting trees and vegetation, incorporating green roofs into urban design, and using cool pavements. Cool roof products are made of highly reflective and emissive materials that can remain approximately 50 - 60°f cooler than traditional roofing materials during peak summer heat. Trees, shrubs, grass, and ground covers help cool urban environments by providing shade as well as increasing evapotranspiration resulting in cooler temperatures. A green roof is a vegetative layer grown on a rooftop that helps to remove heat from the air through evapotranspiration. Cool pavements are designed to reduce solar energy absorption as well as reduce thermal emittance.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that extreme heat has had limited damages and injuries, but has a disproportionate impact on vulnerable populations. While the RMA does collect crop damages from extreme heat events it is likely that some damages unreported. The impacts of this hazard are difficult to quantify, but still sufficient to be a significant concern.

MITIGATION ALTERNATIVES

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of extreme heat. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document, *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards.*

- Reduce Urban Heat Island Effect (i.e., using cool roofing products that reflect sunlight and heat away from buildings)
- Increase Awareness of Extreme Heat Risk and Safety (i.e., educating citizens regarding the dangers of extreme heat and the steps they can take to protect themselves)
- Assist Vulnerable Populations (i.e., creating a database to track those individuals at high risk such as the elderly)
- Identify Existing Community Shelters/Centers

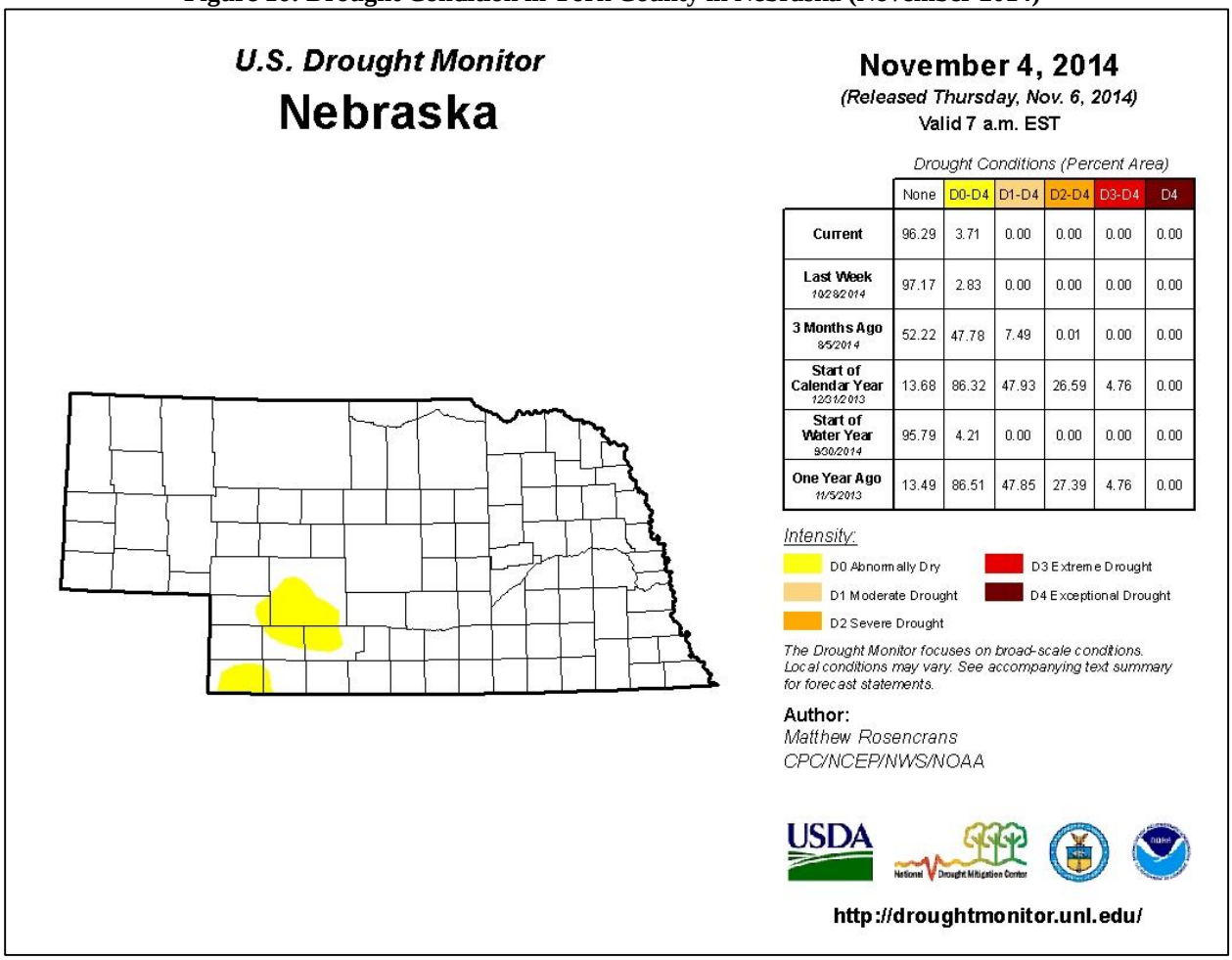
DROUGHT

HAZARD PROFILE

Drought is generally defined as a natural hazard that results from substantial period with lack of precipitation. Although many erroneously consider it a rare and random event, drought is actually a normal, recurrent feature of climate. It occurs in virtually all climatic zones, but its characteristics vary significantly from one region to another. A drought often coexists with periods of extreme heat, which together can cause significant social stress, economic losses, and environmental degradation.

According to the NDMC, "drought is a normal, recurrent feature of climate, although many erroneously consider it a rare and random event. It occurs in virtually all climate zones, but its characteristics vary significantly from one region to another."

Figure 16: Drought Condition in York County in Nebraska (November 2014)



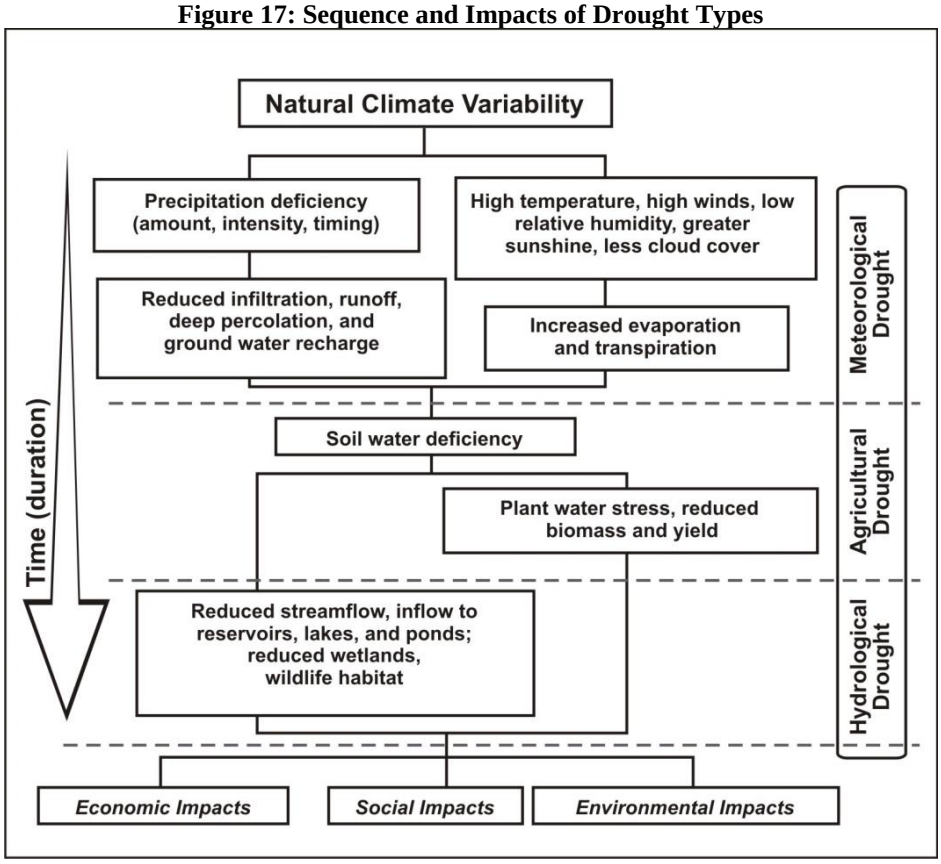
Source: National Drought Mitigation Center, Drought Monitor

The detection and early warning signs of drought conditions and assessment of impacts is more difficult to identify than that of quick- onset natural hazards (e.g., flood and storm) that results in more visible impacts. According to the National Drought Mitigation Center (NDMC), droughts are classified into four major types:

- ***METROLOGICAL DROUGHT*** – is defined based on the degree of dryness and the duration of the dry period. Metrological drought is often the first type of drought to be identified and should be defined regionally as precipitation rates and frequencies ("norms") vary.

- ***AGRICULTURAL DROUGHT*** – occurs when there is deficient moisture that hinders planting germination, leading to low plant population per hectare and a reduction of final yield. Agricultural drought is closely linked with metrological and hydrological drought, as agricultural water supplies are contingent upon the two sectors.
- ***HYDROLOGIC DROUGHT*** – occurs when water available in aquifers, lakes, and reservoirs falls below the statistical average. This situation can arise even when the area of interest receives average precipitation. This is due to the reserves diminishing from increased water usage, usually from agricultural use or high levels of evapotranspiration, resulting from prolonged high temperatures. Hydrological drought often is identified later than metrological and agricultural drought. Impacts from hydrological drought may manifest themselves in decreased hydropower production and loss of water based recreation.
- ***SOCIOECONOMIC DROUGHT***– occurs when the demand for an economic good exceeds supply due to a weather- related shortfall in water supply. The supply of many economic goods include, but are not limited to, water, forage, food grains, fish, and hydroelectric power.

Figure 17: Sequence and Impacts of Drought Types



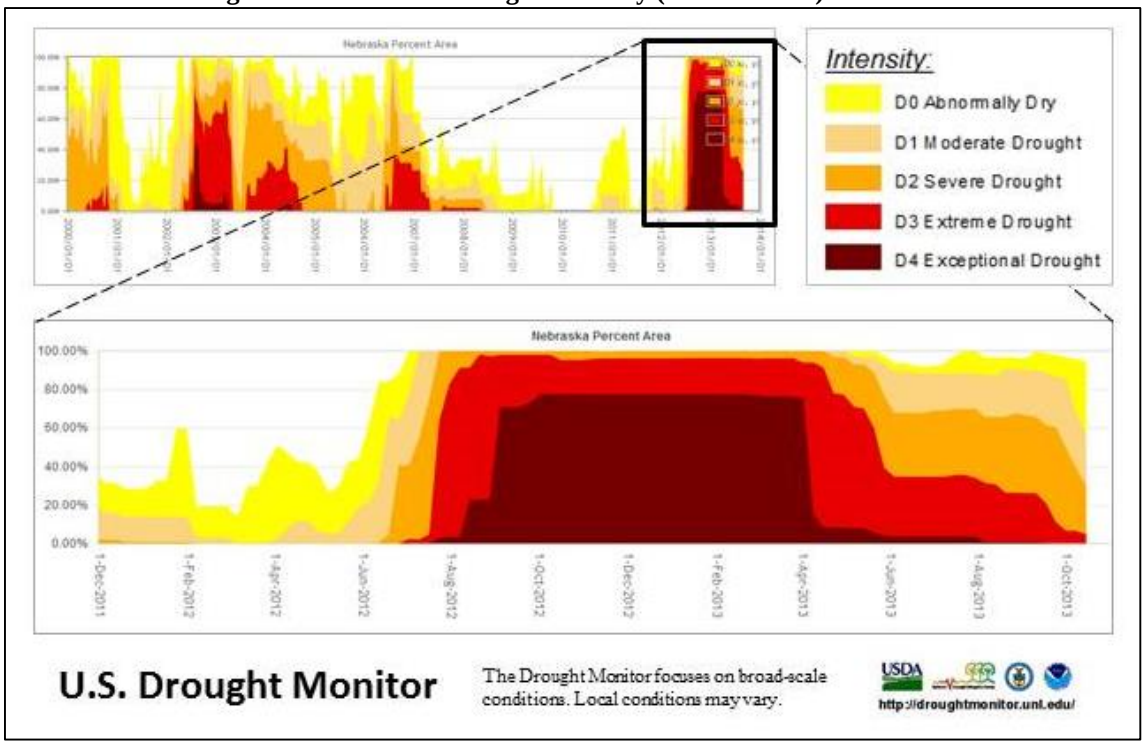
Source: National Drought Mitigation Center, University of Nebraska-Lincoln

HISTORICAL OCCURRENCES

The NDMC reported 31 months of D3 drought for the planning area from January 1996 to December 2013, including 11 continuous monthly events from July 2012 to May 2013. NCDC reported crop losses totaling $35 million in the planning area due to drought from January 1996 to December 2013.

This extreme heat and drought event that started in the summer of 2012 was substantial, but did not warrant a presidential disaster declaration within Nebraska. Figure 18 summarizes the historical drought conditions for Nebraska by intensity and percent area since 2000. According to the data acquired from NDMC, the whole state of Nebraska was in severe drought conditions from the middle of July 2012 to the end of May 2013, and over 70 percent of the state was in exceptional drought conditions for over eight months. Numerous cities implemented mandatory water restrictions and some encouraged voluntarily water conservation during the period of drought. The full effects of this event are still to be assessed, and any future update should include details about its true extent.

Figure 18: Historical Drought Intensity (Percent Area) Nebraska

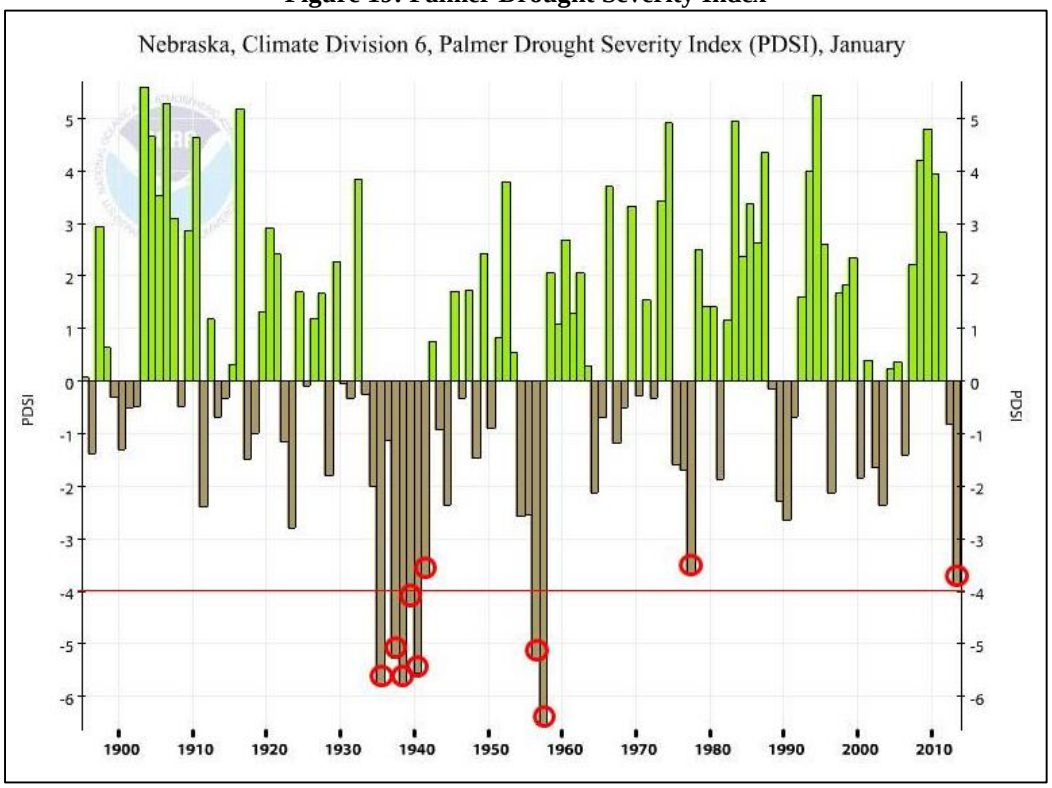


Source: National Drought Mitigation Center, University of Nebraska-Lincoln

No other specific historical occurrences were recorded by residents, city officials, or found in other resources for the Planning Area.

Due to drought's unique nature and characteristics, it has yet to be decided which is the best way to predict and monitor drought. Among the several indices, the Palmer Drought Severity Index (PDSI) has been widely used by various governments in the U.S. including USDA that uses it in determining when to grant emergency drought assistance. Figure 19 is the Palmer Drought Severity Index (PDSI), with data from the National Climatic Data Center (NCDC). The graph illustrates historical PDSI for Division 6 - East Central Nebraska, which includes the planning area, between the years of 1895 and 2010. The negative Y axis represents a drought, for which '-2' indicates a moderate drought, '-3' a severe drought, and '-4' an extreme drought. Table 29 describes the Palmer classifications. Major drought events include the Dust Bowl in the 1930s and the recent 2012 drought.

Figure 19: Palmer Drought Severity Index



Source: National Oceanic Atmospheric Administration, High Plains Regional Climate Center

Table 29: Palmer Classifications

Numerical Value	Description	Numerical Value	Description
4.0 or more	Extremely wet	-0.5 to -0.99	Incipient dry spell
3.0 to 3.99	Very wet	-1.0 to -1.99	Mild drought
2.0 to 2.99	Moderately wet	-2.0 to -2.99	Moderate drought
1.0 to 1.99	Slightly wet	-3.0 to -3.99	Severe drought
0.5 to 0.99	Incipient wet spell	-4.0 or less	Extreme drought
0.49 to -0.49	Near normal	--	--

Source: National Oceanic Atmospheric Administration National Weather Service, Climate Prediction Center

EXTENT

Using the over 100 year record of the PDSI to establish the likely magnitude of drought, it is most likely that mild droughts will occur. According to the NDMC mild drought is defined as "short-term dryness slowing plantings and the growth of crops or pastures."

PROBABILITY

The US Drought Monitor recorded drought conditions for 31 of 216 months. Given this historic record there is a 14 percent chance of drought in a given month.

AVERAGE ANNUAL DAMAGES AND FREQUENCY

Due to the variable nature of the event, regional implications, duration, potential number of sectors affected, the ability to endure the drought, and limited reports of historical occurrences with recorded damages, it is not feasible to utilize the 'annual damage estimate formula' to estimate potential losses for the planning area. However, the Drought Impact

Report may provide insight into the drought impacts in the planning area. Table 30 demonstrates the previous impacts in York County for the last decade.

Table 30: Reported Drought Impacts (January 2003 - October 2014)

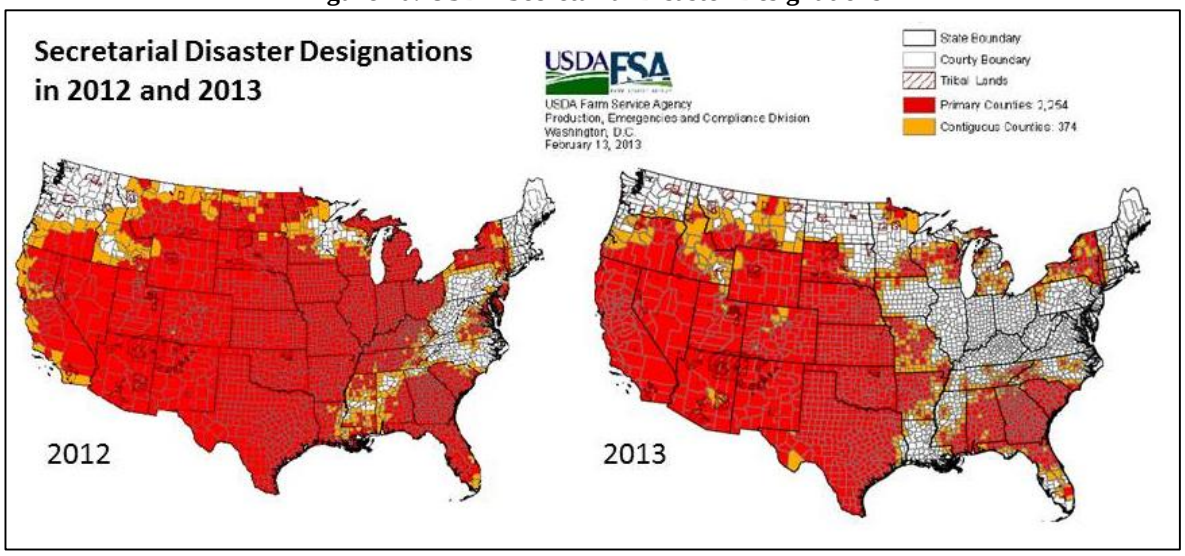
County	Agricultural	Business & Industry	Energy	Fire	Plant & Wildlife	Relief, Response, & Restrictions	Society & Public Health	Tourism & Recreation	Water Supply & Quality
York	143	37	7	8	25	55	38	3	33

Source: National Drought Mitigation Center – Drought Impact Reporter

VULNERABILITY ASSESSMENT

The severe drought in 2012 significantly affected the agricultural sector of the state. Although the full impacts are yet to be studied, the USDA reported a total of $139,957,809 to Nebraska from 2008 to 2011 for all five disaster programs: Supplemental Revenue Assistance Payments (SURE), Livestock Forage Disaster Assistance Program (LFD), Emergency Assistance for Livestock, Honeybees, and Farm-Raised Fish Program (ELAP), Livestock Indemnity Program (LIP), and Tree Assistance Program (TAP). Figure 20 shows the drought disaster designations by USDA in 2012 and 2013 and the whole state of Nebraska is in the red zone, indicating that Nebraska, including our planning area, has a high probability of a drought disaster in the time period shown.

Figure 20: USDA Secretarial Disaster Designations



Source: U.S. Department of Agriculture

As identified in Nebraska's Drought Mitigation and Response Plan, drought is a common feature of the Nebraska landscape and often causes significant economic, environmental, and social impacts. Although agriculture is the major sector affected, impacts on rural and municipal water supplies, fish and wildlife, tourism, recreation, water quality, soil erosion, the incidence of wildfires, electricity demand, and other sectors are also significant. Also, the indirect impacts of drought on personal and business incomes, tax revenues, unemployment, and other areas are also important. In general, drought produces a complex web of impacts that ripple through many sectors of the economy. This is largely due to the dependence of so many sectors on water for producing goods and providing services. It is impossible to predict all the potential impacts, but the common impacts of drought have been compiled by the NDMC and are illustrated in Table 31.

Table 31: Classification of Drought-Related Impacts

Problem Sectors	Impacts
Economic	• Loss from crop production ▫ Annual and perennial crop losses; damage to crop quality ▫ Reduced productivity of cropland (wind erosion, etc.) ▫ Insect infestation ▫ Plant disease ▫ Wildlife damage to crops • Loss from dairy and livestock production ▫ Reduced productivity of range land ▫ Forced reduction of foundation stock ▫ Closure/limitation of public lands to grazing ▫ High cost/unavailability of water for livestock ▫ High cost/unavailability of feed for livestock ▫ High livestock mortality rates ▫ Increased predation ▫ Range fires • Loss from timber production ▫ Forest fires ▫ Tree disease ▫ Insect infestation ▫ Impaired productivity of forest land • Loss from fishery production ▫ Damage to fish habitat ▫ Loss of young fish due to decreased flows • Loss of national economic growth, retardation of economic development • Income loss for farmers and others directly affected • Loss of farmers through bankruptcy • Loss to recreational and tourism industry • Loss to manufacturers and sellers of recreational equipment • Increased energy demand and reduced supply because of drought-related power curtailments • Costs to energy industry and consumers associated with substituting more expensive fuels (oil) for hydroelectric power • Loss to industries directly dependent on agricultural production (e.g., machinery and • Decline in food production/disrupted food supply ▫ Increase in food prices ▫ Increased importation of food (higher costs) • Disruption of water supplies • Unemployment from drought-related production declines • Strain on financial institutions (foreclosures, greater credit risk s, capital shortfalls, etc.) • Revenue losses to federal, state, and local governments (from reduced tax base) • Deterred capital investment, expansion • Dislocation of businesses • Revenues to water supply firms • Loss from impaired navigability of streams, rivers, and canals • Cost of water transport or transfer • Cost of new or supplemental water resource development
Environmental	• Damage to animal species ▫ Reduction and degradation of fish and wildlife habitat ▫ Lack of feed and drinking water ▫ Disease ▫ Increased vulnerability to predation (e.g., from species concentration n ear water) • Loss of biodiversity • Wind and water erosion of soils • Reservoir and lake drawdown

Problem Sectors	Impacts
	• Damage to plant species • Water quality effects (e.g., salt concentration, increased water temperatures, pH, dissolved oxygen) • Air quality effects (dust, pollutants) • Visual landscape quality (dust, vegetative cover, etc.) • Increased fire hazard • Estuarine impacts; changes in salinity levels, reduced flushing
Social	• Increased groundwater depletion (mining), land subsidence • Loss of wetlands • Loss of cultural sites • Insect infestation • Food shortages (decreased nutritional level, malnutrition, famine) • Loss of human life (e.g., food shortages, heat) • Public safety from forest and range fires • Conflicts between water users, public policy conflicts • Increased anxiety • Loss of aesthetic values • Health-related low flow problems (e.g., diminished sewage flows, increased pollutant concentrations, etc.) • Recognition of institutional constraints on water use • Inequity in the distribution of drought impacts/relief • Decreased quality of life in rural areas • Increased poverty • Reduced quality of life, changes in lifestyle • Social unrest, civil strife • Population migration (rural to urban areas) • Reevaluation of social values • Increased data/information needs, coordination of dissemination activities • Loss of confidence in government officials • Recreational impacts

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. According to the Climate Prediction Center at the National Weather Service, drought in the near future is going to persist or intensify in Central and Western Nebraska, but Eastern Nebraska, where our planning area is located, does not expect drought conditions in the next three months. Besides climate variability that results in drought conditions, communities can be vulnerable and increase their drought risks with unwise land use decisions, urban development, and population growth etc.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that drought is a medium probability hazard that does not cause significant property damage, but can impact individuals and agricultural interests adversely. Due to the way NCDC reports on drought events it is difficult to quantify the impacts. For that reason we used the Drought Impact Reporter to examine the damages from drought.

MITIGATION ALTERNATIVES

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of drought. Some of these strategies are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document, Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards. Additional information regarding drought mitigation and drought planning can be found in the National Drought Mitigation Center's *Drought-Ready Communities: A Guide to Community Drought*

Preparedness. Once the full extent of damages from the Drought of 2012 is known, this information should be incorporated into the update to this plan in 5 years.

- Assess Drought Vulnerability (identify factors that affect drought severity for local jurisdictions)
- Establish a Drought Monitoring Board and drought reporting procedures
- Establish monitoring procedures for municipal water supply and distribution systems
- Develop drought specific plans (this may include water conservation plans, drought preparedness plans, and wellhead protection plans)
- Establish municipal water conservation programs
- Establish agricultural policies (agricultural irrigation standards, grazing policies, etc.)
- Enhanced residential landscape standards (xeriscaping, irrigation systems requirements, etc.)
- Enhanced building codes to require low-flow fixtures in new construction
- Incentives to retrofit structures with low-flow fixtures
- Incorporate permeable surfaces into municipal designs
- Investigate alternative water supply options
- Participate in the Tree City USA program
- Encourage agricultural businesses to purchase crop insurance as appropriate
- Drought education programs (residential and agricultural)

GRASS/WILDFIRES

HAZARD PROFILE

Wildfires, also known as brushfires, forest fires, or wildland fires, are any uncontrolled fire that occurs in the countryside or wildland. Wildland areas may include, but are not limited to, grasslands, forests, woodlands, agricultural fields, and other vegetated areas. Wildfires differ from other fires by their extensive size, the speed at which they can spread out from the original source, their ability to change direction unexpectedly, and to jump gaps, such as roads, rivers, and fire breaks. While some wildfires burn in remote forested regions, others can cause extensive destruction of homes and other property located in the wildland-urban interface, the zone of transition between developed areas and undeveloped wilderness.

Wildfires are a growing hazard in most regions of the United States, posing a threat to life and property, particularly where native ecosystems meet urban developed areas. Although fire is a natural and often beneficial process, fire suppression can lead to more severe fires due to the buildup of vegetation, which creates more fuel and increases the intensity and devastation of future fires.

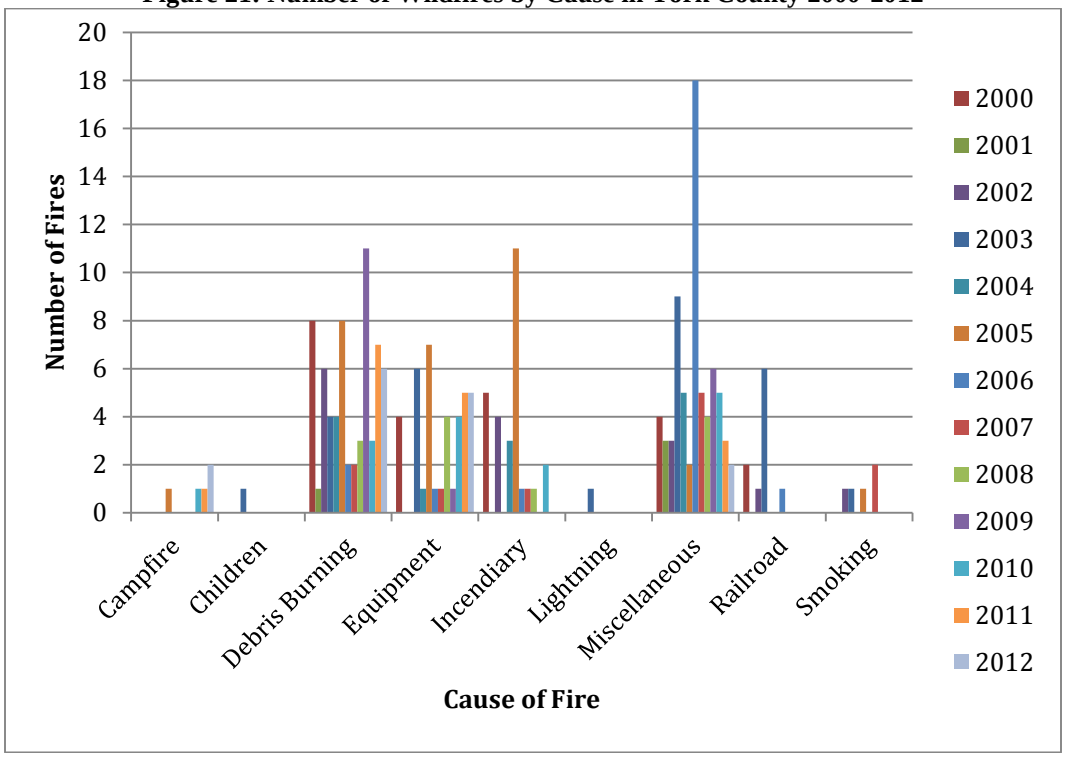
Lightning starts approximately 10,000 forest fires each year, yet four out of every five forest fires are started by humans.

Wildfires are characterized in terms of their physical properties including topography, weather, and fuels. Wildfire behavior is often complex and variably dependent on factors such as fuel type, moisture content in the fuel, humidity, wind speed, topography, geographic location, ambient temperature, the effect of weather on the fire, and the cause of ignition. Fuel is the only physical property humans can control and is the target of most mitigation efforts. The National Weather Service (NWS) monitors the risk factors including high temperature, high wind speed, fuel moisture (greenness of vegetation), low humidity, small cloud cover in the state on a daily basis.

In recent decades, as the population of the United States has decentralized and residents have moved farther away from the center of villages and cities, the area known as the wildland urban interface (WUI) has developed significantly, in both terms of population and building stock. The WUI is defined as the zone of transition between developed areas and undeveloped wilderness, where structures and other human development meet wildland. The expansion of the WUI increases the likelihood that wildfires will threaten people and homes, making it the focus of the majority of wildfire mitigation efforts.

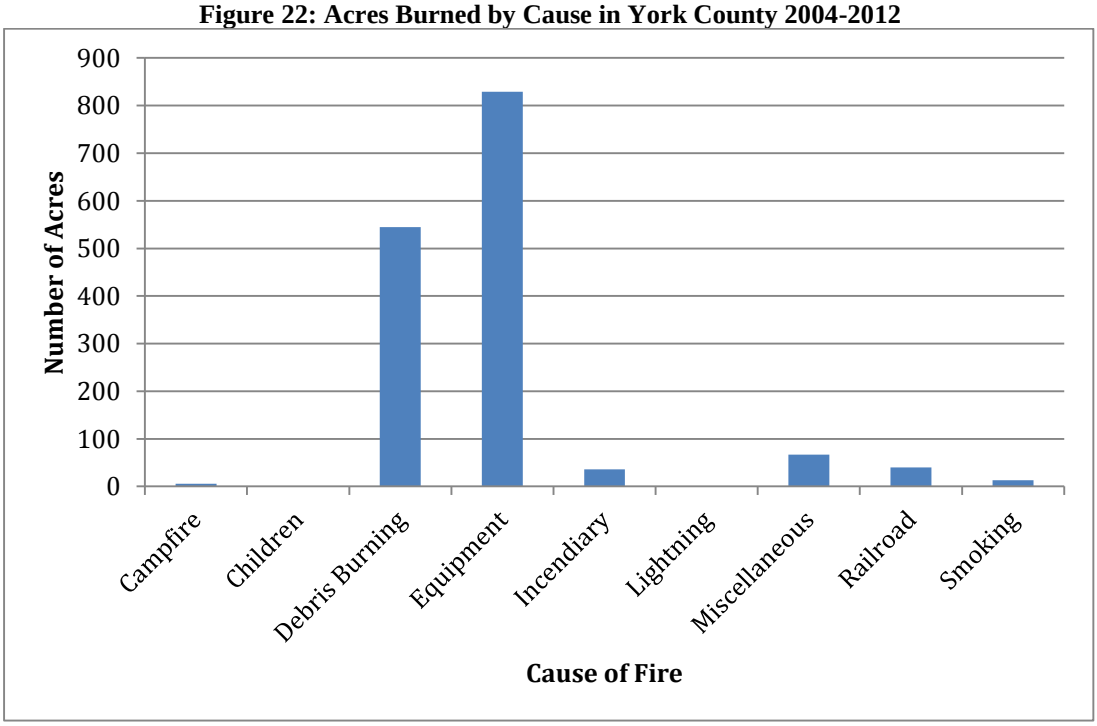
Annually throughout the United States wildfires on average consume 4.3 million acres, with the federal government spending approximately $1 billion per year on fire suppression. Based on the Nebraska Forest Service's 'Wildfire by Cause' report, the most common causes of wildfires include lightning, debris burning, equipment use, and arson. Figure 21 shows the number of wildfires by cause in York County between 2000 and 2012 and Figure 22 illustrates the acres burned by cause in York County for the same time period.

Figure 21: Number of Wildfires by Cause in York County 2000-2012



Source: Nebraska Forest Service

Figure 22: Acres Burned by Cause in York County 2004-2012

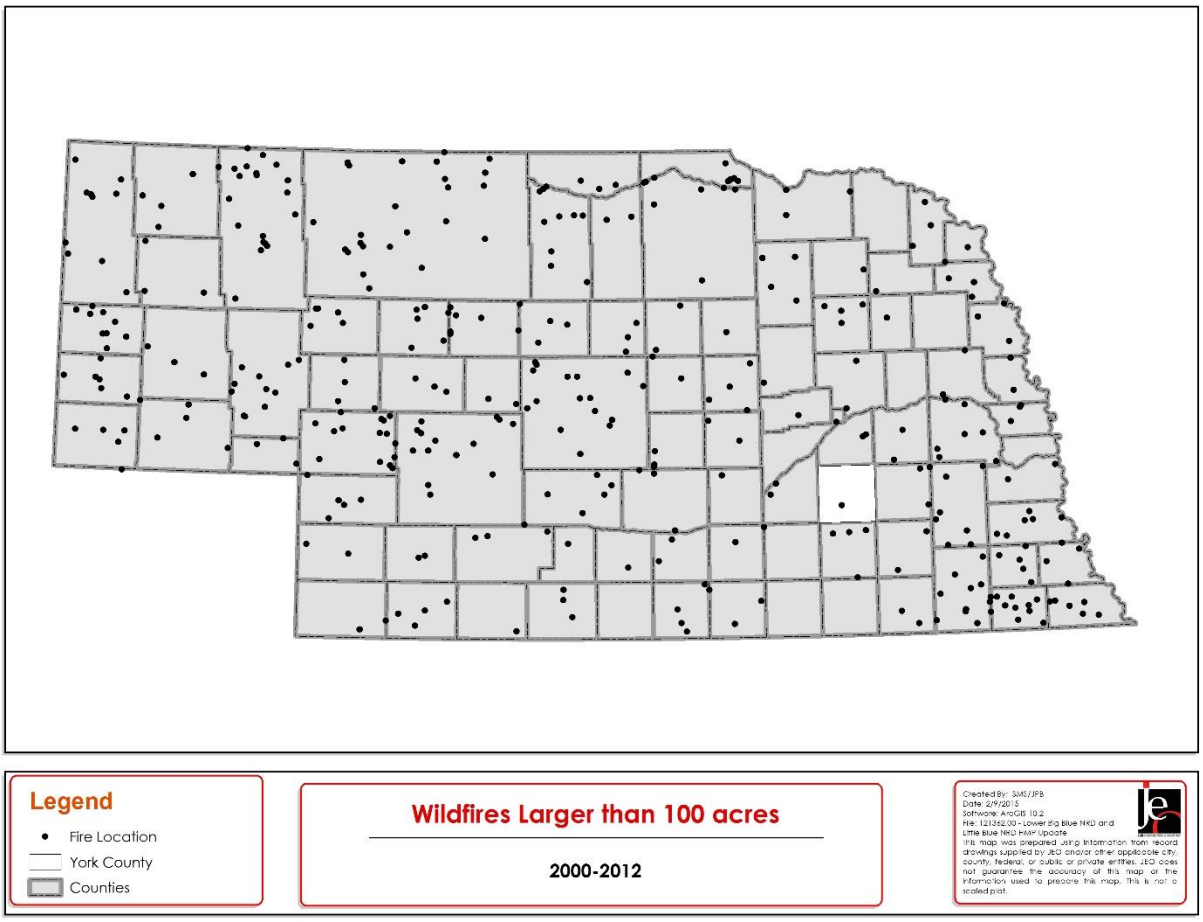


Source: Nebraska Forest Service

HISTORICAL OCCURRENCES

According to the Nebraska Forest Service, there were 223 recorded wildfires within York County from 2000 to 2012. The reported events burned 458 rangeland acres, 7 forest acres, and 526 acres of cropland. The reported fire events caused $59,245 in crop damages and $95,650 in structural damages. Figure 23 displays wildfires greater than 100 acres in Nebraska from 2000-2012.

Figure 23: Wildfires Greater Than 100 Acres in Nebraska 2000-2012



EXTENT

Of the reported 223 total events, 200 reported 10 acres or fewer impacted. Seven fires reported 21 to 50 acres burned, one fire burned 80 acres, and one fire burned 100 acres.

PROBABILITY

Wildfires are likely to occur on an annual basis (100 percent probability). Annually occurring events are likely to consume 50 acres or less. In a given year, there is a chance that large fires (over 50 acres) will occur.

AVERAGE ANNUAL DAMAGES AND FREQUENCY

Average Annual Damages ($7,357) = $\frac{\text{Total Damages in Dollars ($95,650)}}{\text{Total Number of Years in Record (13)}}$

Annual Frequency of Hazard Event (17 per year) = $\frac{\text{Total Events Recorded (223)}}{\text{Total Number of Years in Record (13)}}$

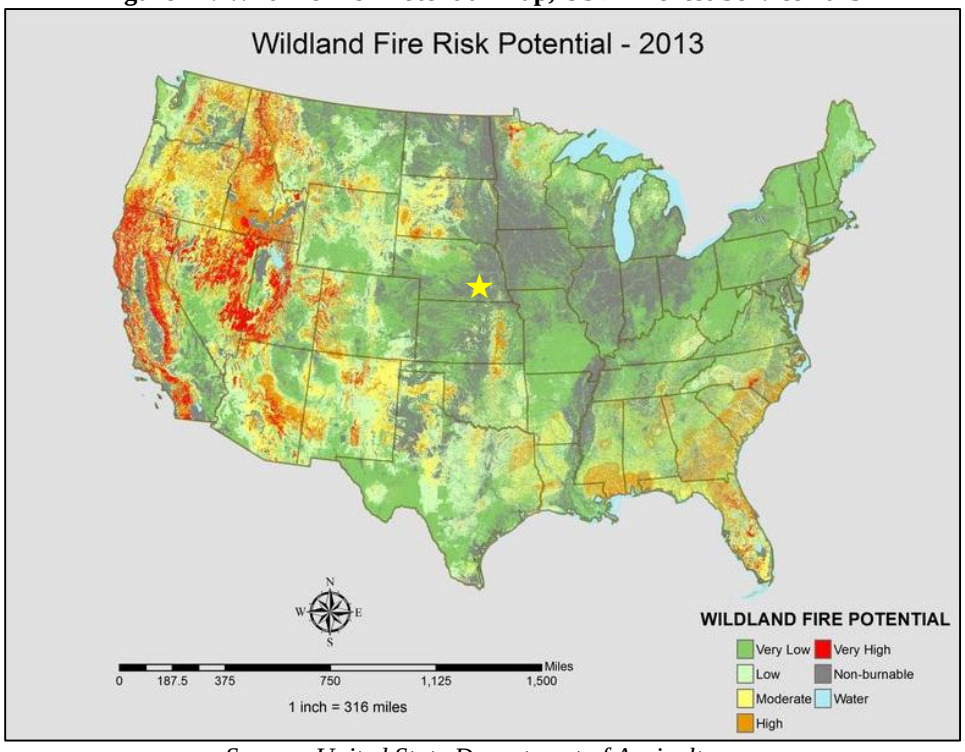
VULNERABILITY ASSESSMENT

According to FEMA, periods of drought and dry conditions throughout the year greatly increase the potential for wildland fires and contribute to extreme wildfires. During a severe drought, large wildfires are common with windy days and steep slopes, which can cause wildfires to spread rapidly and become out of control in a very short time period.

Wildfires can cause extensive damage, both to property and human life. The damages caused by wildfires extend past the loss of building stock, recreation areas, timber, forage, wildlife habitat, and scenic views. In addition, the secondary effects of wildfires, including erosion, landslides, introduction of invasive species, and changes in water quality, all increase due to the exposure of bare ground and loss of vegetative cover following a wildfire, are often more disastrous than the fire itself.

Wildfire poses a threat to a range of demographic groups. Wildfire and urban wildfire could result in major evacuations of residents in impacted and threatened areas. Groups and individuals lacking reliable transportation could be trapped in dangerous locations. Lack of transportation is common among the elderly, low-income individuals, and families especially in urban areas. Homes and residents located in the Wildland/Urban Interface are also very vulnerable to wildfire and urban fires. The shift of homes and businesses into or near Wildland areas has resulted in an increase in structural fire losses related to wildfires.

Figure 24: Wildfire Risk Potential Map, USDA Forest Service 2013



Source: United State Department of Agriculture

FUTURE DEVELOPMENT AND VULNERABILITY

Overall, the planning area is experiencing population decline. However, there is a range of growth and decline among participating jurisdictions. There are many strategies that can be undertaken to protect both existing and future assets. Any future development will be as vulnerable to losses from wildfires as is existing development, in particular development into the WUI.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that wildfire is not a significant threat to this region. Despite the high frequency of the wildfire hazard, it is likely to have minimal impacts.

MITIGATION ALTERNATIVES

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of wildfire. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*.

- Map and Assess Vulnerability to Wildfire
- Incorporate Wildfire Mitigation in Comprehensive Planning (i.e., identify areas of risk per assessment of vulnerability)
- Reduce Risk Through Land Use Planning (i.e., implement landscaping ordinances)
- Develop a Wildland-Urban interface Code
- Require or Encourage Fire-Resistant Construction (i.e., encourage the use of non-combustible materials)
- Retrofit At-Risk Structures with Ignition-Resistant Materials (i.e., installing wall components that conform to ignition-resistant construction standards)
- Create Defensible Space Around Structures and Infrastructure
- Conduct Maintenance to Reduce Risk (i.e., perform arson prevention cleanup activities)
- Implement a Fuels Management Program (i.e., Nebraska Forest Service – Forest Fuels Reduction Program)
- Participate in Firewise Program
- Increase Wildfire Risk Awareness (i.e., informing the public about proper evacuation procedures)
- Educate Property Owners about Wildfire Mitigation Techniques
- Wildland Fire Fighting Training for Fire Departments

FLOODING

HAZARD BACKGROUND

Flood events are the most damaging and costly hazards in the United States, and account for 90 percent of all presidential disaster declarations. Flooding can occur on a local level, sometimes affecting only a few streets, but can also extend throughout an entire district, affecting whole drainage basins and impacting property in multiple states. The principal type of flood most common to Nebraska, due to geographic location and topography, is riverine floods.

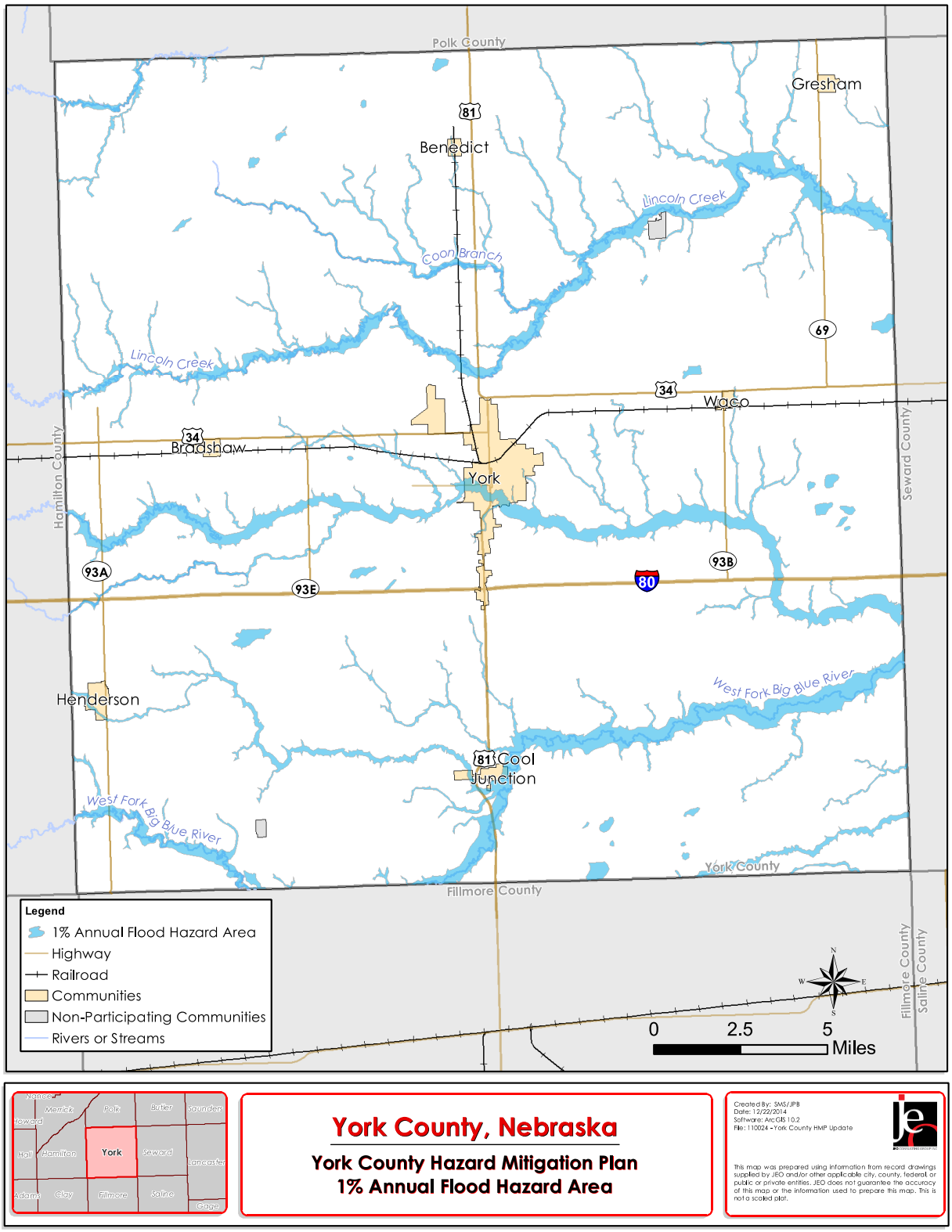
Riverine floods, slower in nature, occur when water from sustained rainfall or rapid snow melt overflows a waterway once the volume of water exceeds the capacity of the waterway. Flash floods, faster in nature, result from convective precipitation usually due to intense thunderstorms or sudden release from an upstream impoundment created behind a dam, landslide, or levee. Flash floods are distinguished from a regular flood by a timescale less than six hours. Flooding from excessive rainfall in Nebraska usually occurs between late spring and early fall.

Flooding is most commonly caused by excessive rainfall or snowmelt, but unexpected drainage obstructions such as landslides, ice, or debris can cause slow flooding upstream of the obstruction. Ice jams can cause flooding when a warm snap breaks up river ice, which flows downstream, and piles up against bridges or other waterway obstructions, causing a temporary dam in the waterway with water backing up behind it. When an ice jam breaks, all of the backed-up water is suddenly released, causing a rush of water downstream which can rapidly exceed the capacity of waterways and cause severe flash flooding. Ice jams are common throughout Nebraska during the transition between winter and spring.

Flash floods are rapid flooding of geomorphic low-lying areas, when the ground becomes saturated with water that has fallen too quickly to be absorbed. They are usually caused by heavy rains associated with a severe thunderstorm. Flash floods can also occur after the collapse of an ice jam, or a man-made structure, such as a dam or levee. Flash floods most often occur in normally dry areas that have recently received precipitation. Flash floods are extremely dangerous because of their sudden nature.

As shown in Figure 25, York County is traversed from west to east by tributaries of the Big Blue River system including Lincoln Creek and the West Fork of the Big Blue River. As a result, five of the participating communities in York County have a 1% annual chance flood hazard area delineated.

Figure 25: York County 1% Annual Chance Flood Hazard Area



HISTORICAL OCCURRENCES

The NCDC counted a total of 14 flood events within York County from January 1996 to August 2013. Of the reported events, no injuries or deaths were reported. These recorded events caused a total of $2,610,000 in property damages and $6,450,000 in crop damages. The jurisdiction specific events reported by each community were listed in each participant section in *Section Seven: Participant Sections*.

EXTENT

Using HAZUS-MH data from the 2010 York County HMP, approximately 4.9 percent of the county is located in the SFHA. Approximately 13 percent of structures are located within the SFHA.

PROBABILITY

For this plan, occurrence of flooding between the years of 1996 and 2013 were examined. During those 17 years, 14 flooding events were recorded by the NCDC. Given this record, there is an 82 percent chance that flooding will occur in a given year.

NATIONAL FLOOD INSURANCE PROGRAM

The National Flood Insurance Program (NFIP) was established in 1968 to reduce flood losses and disaster relief costs by guiding future development away from flood hazard areas where feasible; by requiring flood resistant design and construction practices; and by transferring the costs of flood losses to the residents of floodplains through flood insurance premiums.

In return for availability of federally backed flood insurance, jurisdictions applying to join the NFIP must agree to adopt and enforce minimum flood loss reduction standards to regulate proposed development in special flood hazard areas as defined by the Federal Emergency Management Agency's (FEMA) flood maps. One of the strengths of the program has been keeping people away from flooding rather than keeping the flooding away from people - through historically expensive flood control projects.

Currently, Nebraska has 13,300 NFIP policies in force representing $1.3 billion worth of coverage. Tables 32 and 33 summarize NFIP participation and active policies for York County.

Table 32: York County NFIP Status - November 2014

Jurisdiction	Eligible-Regular Program	Date Current Map	Sanction	Suspension	Rescinded	Participation in NFIP
Village of Benedict	12/1/2001	12/1/2001				Yes
Village of Bradshaw						No
City of Henderson	9/4/1986	9/4/1986				Yes
Village of Gresham	9/4/1987	9/4/1987				Yes
Village of McCool Junction	11/08/74	09/04/87				Yes
Village of Thayer						No
Village of Waco	8/31/2011				3/31/1977	Yes
City of York	9/29/1978	9/29/1978				Yes
York County	9/1/1986	9/1/1986				Yes

Source: Nebraska Department of Natural Resources, National Flood Insurance Program

Table 33: York County NFIP Policies – January 2015

Jurisdiction	Policies In-Force	Total Premium (Dollars)	Total Coverage (Dollars)
Village of Benedict	1	942	81,700
Village of Bradshaw	N/P	N/A	N/A
City of Henderson	0	0	0
Village of Gresham	7	4,437	37,000
Village of Thayer	N/P	N/A	N/A
Village of Waco	N/P	N/A	N/A
City of Henderson	N/P	N/A	N/A
City of York	48	27,338	3,935,100
York County	25	18,176	2,779,500
Total York County	***81***	***50,849***	***7,633,300***

Source: Nebraska Department of Natural Resources, National Flood Insurance Program

Legend
N/A: Not Applicable
N/P: Not Participate

This plan highly recommends and strongly encourages each plan participant to remain in good standing and continue involvement with the NFIP. Compliance with the NFIP should remain a top priority for each participant, regardless of whether or not a flooding hazard area map has been delineated for the jurisdiction. Jurisdictions are encouraged to initiate activities above the minimum participation requirements, which are described in the Community Rating System Coordinator's Manual (FIA-15/2013).

Another innovative program is FEMA's Cooperating Technical Partners Programs (CTP). The main objective of CTP is to increase local involvement in the flood mapping process. With over 20,000 jurisdictions in the NFIP, the CTP encourages collaboration with NFIP jurisdictions and regional and state agencies who wish to become more active participants in the FEMA flood hazard mapping program.

In order to qualify for Hazard Mitigation Assistance, plan participants must have a good standing in NFIP, if the project is located in a Flood Hazard Risk Area. Contact the Nebraska Department of Natural Resources for any questions regarding NFIP.

NFIP REPETITIVE LOSS STRUCTURES

The Nebraska Department of Natural Resources (NDNR) was contacted to determine if any existing buildings, infrastructure, or critical facilities are classified as NFIP Repetitive Loss Structures. According to the NDNR, the planning area does not have a NFIP Repetitive Loss Structures (as of January 2014).

AVERAGE ANNUAL DAMAGES AND FREQUENCY

Potential losses associated with a flood event vary greatly depending on the severity of the event. Properties in or near low lying areas as well as areas where drainage is inadequate could experience localized flooding. Potential losses could include water damage, disruption in transportation, or health issues due to insects and stagnant water.

The 'annual damage estimate formula' estimates potential losses for the planning area per event based upon historical data:

Average Annual Damages ($153,529) = $\frac{\textit{Total Damages in Dollars ($2,610,000)}}{\textit{Total Number of Years in Record (17)}}$

Annual Frequency of Hazard Event (.82 per year) = $\frac{\textit{Total Events Recorded (14)}}{\textit{Total Number of Years in Record (17)}}$

The average damage estimate was determined based upon the average damage per event since 1996 and historical occurrences. This does not include loss of displacement, functional downtime, economic loss, injury, or loss of life. It should be noted that the total crop damages were included in the event details to express the magnitude of the event, but were not calculated into the average damage per event estimate as crop damages would unlikely affect the area.

VULNERABILITY ASSESSMENT

A 2008 study examining social vulnerability as it relates to flood events found that low-income and minority populations are disproportionately vulnerable to flood events. These groups may lack resources that are needed to mitigate potential flood events as well as resources that are necessary for evacuation and response. In addition low-income residents are more likely to live in areas vulnerable to the threat of flooding, but lack the resources necessary to purchase flood insurance. The study did find that flash floods are more often responsible for injuries and fatalities than prolonged flood events. Other groups that may be more vulnerable to floods, specifically flash floods, include the elderly, those outdoors during rain events, and those in low-lying areas. Elderly residents may suffer from a decrease or complete lack of mobility and as a result, be caught in flood-prone areas. Residents in campgrounds or public parks may be more vulnerable to flooding events as many of these areas exist in natural floodplains and can experience rapid rise in water levels resulting in injury or death.

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. Land-use regulations should be used to limit development in floodplains and other flood prone areas as well as protecting natural flood mitigation features. Buyout programs can be used to eliminate properties located in floodplains, especially properties that have experienced repetitive losses. Communities may also consider incorporating "Green Infrastructure" to address flooding concerns, examples of this would include using permeable surfaces for parking areas, using rainwater retention swales, developing rain gardens, developing green roofs, and establishing greenways. Building codes can be enhanced to require tie-down straps for propane tanks while existing structures can be retrofitted to withstand potential flood events elevating structures and utilities.

The state of Nebraska has adopted floodplain regulations that are more restrictive than the NFIP minimum standards. Nebraska's minimum standards for floodplain management require that all new construction and substantial improvements of residential structures shall have the lowest floor (including basements) elevated to or above one foot above the base flood elevation. The national standard is that new or substantially improved structures shall have the lowest flood elevated to or above the base flood elevation. The more stringent requirements for the state of Nebraska will help reduce flood impacts and damages by requiring a one foot "freeboard" to allow for known flood hazards. This standard will also result in lower premiums for those participating in the NFIP program following the passage of the Biggert Waters Act of 2012.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that flooding is a high probability hazard that can have moderate impacts. Although this hazard is ranked lower than most other natural hazards, it would appear to pose a greater threat than a hazard such as wildfire.

MITIGATION ALTERNATIVES

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of flooding. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*.

- Limit or restrict development in flood-prone areas
- Preserve natural open spaces in floodplains
- Incorporate permeable surfaces and other "green infrastructure" components into municipal designs; Establish a "green infrastructure" program
- Enhanced building codes (i.e. require tie-downs for propane tanks and other gas and chemical storage containers; require water detention swales and retention ponds for new construction)
- Revise and update floodplain maps
- Manage the Floodplain Beyond Minimum Requirements (i.e. adopting a "no-rise" in base elevation clause for the flood damage prevention ordinance)
- Participate in the National Flood Insurance Program (NFIP)
- Encourage property owners in areas protected by dams and levees to purchase flood insurance
- Participate in the NFIP's Community Rating System
- Remove existing structures from flood-prone areas
- Elevate or retrofit structures and utilities
- Incorporate ice jam prevention techniques into mitigation strategies and projects
- Develop incentives for structural floodproofing
- Consider erosion control and bank stabilization programs for critical facilities
- Retain natural vegetative beds in stormwater channels
- Incorporate flood mitigation programs into comprehensive plans
- Construct flood control measures
- Evaluate and update municipal storm water systems
- Develop flood response plans for the community (incorporating information about pet and agricultural animal considerations)
- Establish education programs to educate the public about the risks of flooding and ways to protect their families and property

AGRICULTURAL DISEASE (ANIMAL & PLANT DISEASE)

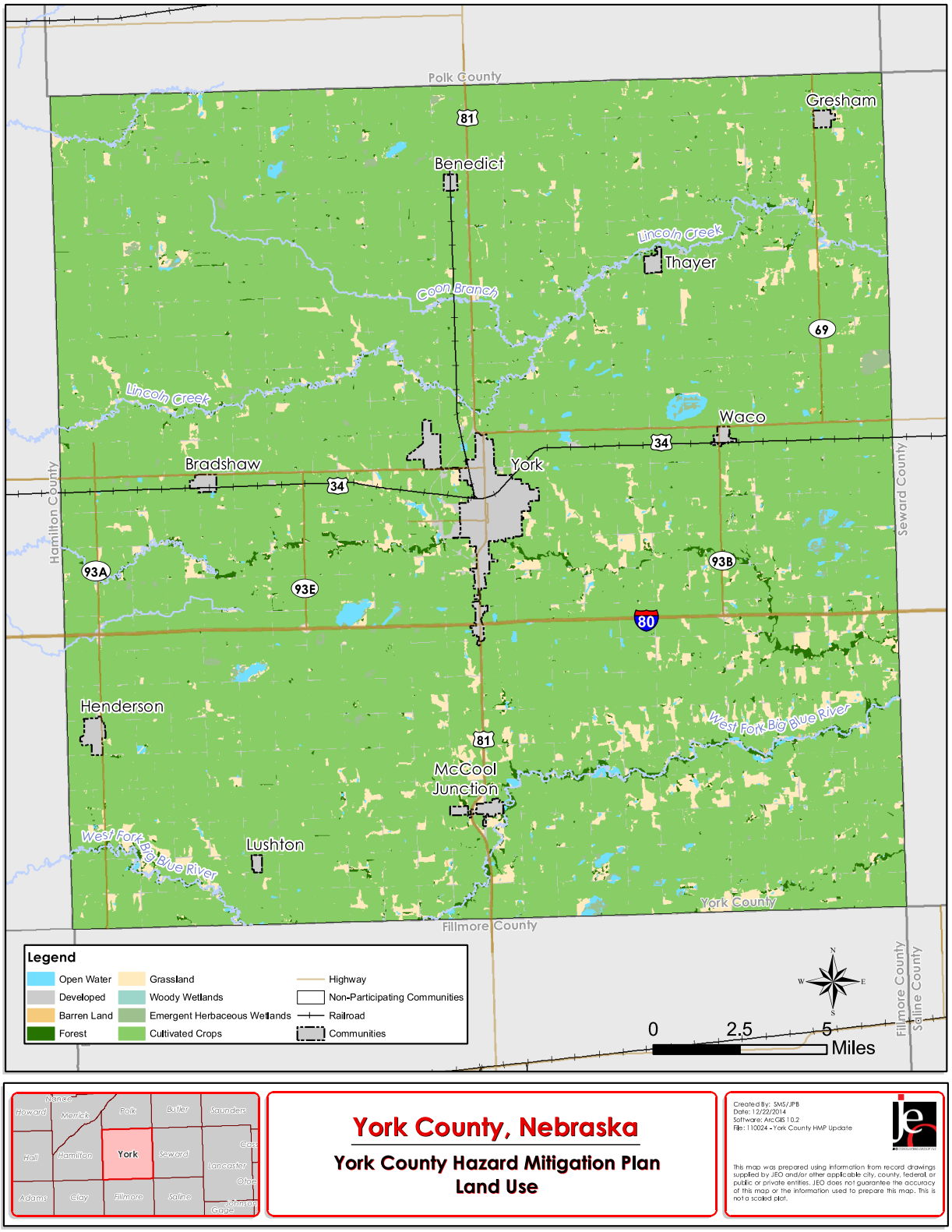
HAZARD PROFILE

Agricultural disease is any biological disease or infection that can reduce the quality or quantity of either livestock or vegetative crops. This section looks at both animal disease and plant disease as both make up a significant portion of Nebraska's, and the planning area's, economy.

The State of Nebraska has one of the country's largest economy's that is vested in both livestock and crop sales. According to the Department of Agriculture, in 2005, agriculture cash receipts totaled $11.4 billion dollars with $7.5 billion being livestock and $3.9 billion being in vegetative crops. In the state, one in three jobs are in the agriculture industry. Nebraska also totaled $2.8 billion in revenue due to agriculture exports with $498 million in livestock exports and $2.3 billion in vegetative exports.

Figure 26 shows a map of land use data for York County.

Figure 26: York County Land Use



Given the planning area's agricultural economy, the majority of the planning area would be drastically impacted by any disease affecting crops or livestock.

HISTORICAL OCCURRENCES

According to the 2014 State of Nebraska Hazard Mitigation Plan and the Department of Agriculture Disease, the following four diseases were reported as having occurred throughout the 93 counties in Nebraska impacting livestock.

- **Chronic Wasting Disease (CWS)** – This disease was first reported in mule deer, white-tailed deer, black-tailed deer, and elk populations in the state's panhandle region beginning in 1998. Symptoms of the disease include weight loss, as well as incessant drinking and urination. An infected animal often stands listlessly, head down and ears drooping, with saliva dripping from its mouth. Between the years of 1997 and 2006 the Nebraska Game and Parks Commission confirmed 117 positive tests of CWS statewide. The livestock within the state have had no confirmed cases of the disease.

- **Vesicular Stomatitis (VS)** - In 2005 Nebraska had three horses test positive for VS. VS primarily affects cattle, horses, and swine, causing blisters on lips, tongues, and coronary bands. The blisters enlarge and break, leaving raw tissue that is so painful the animals refuse to eat or drink, and they become lame. Severe weight loss usually follows. In a herd affected by VS, nearly 90% of the animals may show clinical signs and nearly all develop antibodies. The disease is spread through direct contact between animals as well as through biting insects. If not properly handled, VS can be spread to humans and cause acute influenza like symptoms for four to seven days. There have been no new confirmed reports of VS in Nebraska since 2005.

- **Epizootic Hemorrhagic Disease (EHD)** - Commonly known as "blue tongue," is an acute, infectious, often fatal viral disease of some wild ruminants. It is characterized by extensive hemorrhaging, has been responsible for significant epizootics in deer in the northern United States and southern Canada. There have been ongoing confirmed reports of periodic outbreaks over the last fifty years in the state's deer population since the disease was first identified in 1955. All documented outbreaks of EHD have occurred during the late summer or early fall. Deer in the state's panhandle appear to be the most at risk when compared to other areas of the state. There have been no reports of EHD among the state's livestock; only wild game has been affected. The economic impact from such outbreaks could negatively impact businesses and communities that are reliant upon hunting for the majority of their sales or income.

- **Bovine Tuberculosis** - In the later stages of the disease it is easier to see the clinical symptoms of Bovine Tuberculosis. According to the USDA, symptoms include: emaciation, lethargy, weakness, anorexia, low-grade fever, and pneumonia with a chronic, moist cough. Enlarged lymph nodes may also be present. The disease gets into cattle herds by infected cattle, cervids, swine, and humans. Bovine Tuberculosis can be spread through the respiration of bacteria aerosols, contaminated feed or watering sites, or by drinking milk that is unpasteurized from infected animals. There is a high risk of contamination in enclosed areas such as barns that have poor ventilation. Bovine Tuberculosis primarily affects cattle but can be passed easily to any warm-blooded animal. In certain, but rare, conditions the disease can effect humans. In June of 2009, two beef cows in Rock County tested positive for the disease. In response to the findings, Nebraska Department of Agriculture staff coordinated with federal animal disease officials to properly respond. The NDA with the help of federal officials tested 21,764 head of cattle in association with the investigation. As the NDA traced cattle movement into and out of the affected herd, 61 herds of cattle were quarantined in 20 of Nebraska's 93 counties. By April 7, 2010 all but three of those herds were released from quarantine. The herd that was initially affected was also released from quarantine and endured tests that are part of the USDA federal test and remove strategy.

Between 1/1/2009 and 12/31/2009, 582 cases of the above described diseases were reported to the State of Nebraska from various counties.

In regards to diseases involving animals, the Nebraska Department of Agriculture provides reports on diseases occurring in York County. The following table includes those diseases and numbers of occurrences within the planning area between January 1, 2014 and December 31, 2014.

Table 34: Animal Diseases Recorded by Nebraska Department of Agriculture

Disease	Population	Number Impacted
Anaplasmosis	Bovine	1
Blue Tongue	Bovine	2
Paratuberculosis	Bovine	120
Rabies	Bovine	21
Porcine Epidemic Diarrhea	Porcine	1
Porcine Reproductive and Respiratory Syndrome	Porcine	2

Source: Nebraska Department of Agriculture

However, the above listed diseases are not the only ones that could impact animals. Diseases and rates of disease among "free range game" is lacking due to lack of laboratory testing, reporting, and field study. In future iterations of this plan, the planning team will work with partners to gather additional information.

For crops, according to the Nebraska Department of Agriculture, the primary crops grown throughout the state include alfalfa, corn, sorghum, soybeans, and wheat. The following table provides the value and acres planed of the top crops in the state.

Table 35: Crop Diseases Recorded by Nebraska Department of Agriculture

Crop	Acres Planted	Value	U.S. Ranking in Sale
Alfalfa	2,563,515	$388,557,000	8th
Corn	9,192,656	$9,369,600,000	3rd
Sorghum	236,607	$38,690,000	4th
Soybeans	3,834,855	$2,971,658,000	7th
Wheat	1,964,302	$440,438,000	9th

Source: Nebraska Department of Agriculture

The above list does not account for all crops in the region as there are others such as Sugar Beets, Dry Beans, Sunflowers, and Chickpeas. However, the crops in Table 36 make up the bulk of the crop portion of Nebraska's agricultural product. There are many diseases that can impact crops that vary from year to year. The Department of Agriculture provides information on some of the most common, being:

Table 36: Common Crop Diseases in Nebraska by Crop Types

Crop	Diseases	
Corn	• Anthracnose • Bacterial Stalk Rot • Common Rust • Fusarium Stalk Rot • Fusarium Root Rot • Gray Leaf Spot • Maize Chlorotic Mottle Virus	• Southern Rust • Stewart's Wilt • Common Smut • Goss's Wilt • Head Smut • Physoderma

Crop	Diseases	
Soybeans	• Anthracnose • Bacterial Blight • Bean Pod Mottle • Brown Spot • Brown Stem Rot • Charcoal Rot • Frogeye Leaf Spot • Phytophthora Root and Stem Rot • Pod and Stem Blight	• Purple Seed Stain • Rhizoctonia Root Rot • Sclerotinia Stem Rot • Soybean Mosaic Virus • Soybean Rust • Stem Canker • Sudden Death Syndrome
Wheat	• Barley Yellow Dwarf • Black Chaff • Crown and Root Rot • Fusarium Head Blight	• Leaf Rust • Tan Spot • Wheat Soil-borne Mosaic • Wheat Streak Mosaic
Sorghum	• Ergot • Sooty Stripe • Zonate Leaf Spot	

Source: Nebraska Department of Agriculture

In addition to the viral and bacterial disease that could impact crops, pests can also result in crop loss or quality of crop. Those pests are:

- Grasshoppers,
- Western Bean Cutworm,
- European Corn Borer,
- Corn Rootworm,
- Corn Nematodes, Bean Weevil,
- Mexican Bean Beatle,
- Soybean Aphids, and
- Rootworm Beatles

Consistent with the 2014 State of Nebraska HMP, the USDA does not release data related to this hazard. Crop disease and loss data is kept as classified data.

EXTENT

Most animal disease occurrence will be limited in scope (fewer than five animals infected). There is the potential that large outbreaks will occur (more than 20 animals). Due to crop event data being kept and considered classified it is not possible to provide a likely extent statement.

PROBABILITY

Animal and plant diseases are expected to occur annually. Most events will be limited in their extent but larger events are possible. Due to the limited historic record available for this hazard, it is not possible to calculate probability for large scale events.

AVERAGE ANNUAL DAMAGES AND FREQUENCY

Due to the lack of sufficient data, nature of damages, and limited reports of historical occurrences with recorded damages, it is not feasible to utilize the 'annual damage estimate formula' to estimate potential losses for the planning area.

VULNERABILITY ASSESSMENT

The historical occurrence of animal disease is overall low. Usually animal disease impacts a relatively small number of livestock. As for plant disease, it is difficult to track the historical occurrence of plant disease for the planning area. In most growing seasons there are some occurrences of plant disease but few result in significant impacts (economic or otherwise).

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. As development continues in the State of Nebraska and York County, most development is estimated to be urban development within municipal boundaries and little development in the land designated for agriculture use. However, any development in agriculture is subject to animal or plant diseases that could cause dramatic economic impacts.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Agricultural disease has the potential to cause significant economic impacts, but these impacts are not likely for the planning area. Every growing season may have some occurrences of agricultural disease, but these impacts are likely to be minor.

MITIGATION ALTERNATIVES

Hazard mitigation options for agricultural diseases focus primarily on education and outreach.

LEVEE FAILURE

HAZARD PROFILE

According to FEMA on their website:

"The United States has thousands of miles of levee systems. These manmade structures are most commonly earthen embankments designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water to provide some level of protection from flooding. Some levee systems date back as far as 150 years. Some levee systems were built for agricultural purposes. Those levee systems designed to protect urban areas have typically been built to higher standards. Levee systems are designed to provide a specific level of flood protection. No levee system provides full protection from all flooding events to the people and structures located behind it. Thus, some level of flood risk exists in these levee-impacted areas."

Levee failure can occur several ways. A breach of a levee is when part of the levee breaks away, leaving a large opening for floodwaters to flow through. A levee breach can be gradual by surface or subsurface erosion, or it can be sudden. A sudden breach of a levee often occurs when there are soil pores in the levee that allow water to flow through causing an upward pressure greater than the downward pressure from the weight of the soil of the levee. This under seepage can then resurface on the backside of the levee and can quickly erode a hole to cause a breach. Sometimes the levee actually sinks into a liquefied subsurface below.

Another way a levee failure can often occur is when the levee overtops the crest of the levee. This happens when the flood waters simply exceed the lowest crest elevation of the levee. An overtopping can lead to significant erosion of the backside of the levee and can result to a breach and thus a levee failure.

HISTORICAL OCCURRENCES

There have been no recorded instances of levee failure in York County.

EXTENT

Given the absence of federal levees in the planning area, any levee failure would be localized to agricultural areas.

PROBABILITY

Levee failure is not likely to occur in the planning area.

AVERAGE ANNUAL DAMAGES AND FREQUENCY

Due to the lack of sufficient data, limited resources, nature of damages, and limited reports of historical occurrences with recorded damages, it is not feasible to utilize the 'annual damage estimate formula' to estimate potential losses for the planning area.

VULNERABILITY ASSESSMENT

According to the USACE's National Levee Database, there are no federally owned levees in or near enough York County to impact the planning area. It is possible there are privately owned levees in the planning area. Any vulnerabilities resulting from privately owned levees would be to agricultural lands.

FUTURE DEVELOPMENT AND VULNERABILITY

Future development is not likely to be impacted by levees. Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that the potential impacts of a levee failure are low for the planning area. Levee failure is not likely for the planning area.

MITIGATION ALTERNATIVES

Land-use regulations should prohibit development within floodplains and areas currently protected by existing levees and dams. Levee failure should not be a significant threat to future development and losses should be insignificant. Communities should encourage structures currently protected by levees to purchase flood insurance from the NFIP

whether they are technically located in the floodplain or not.

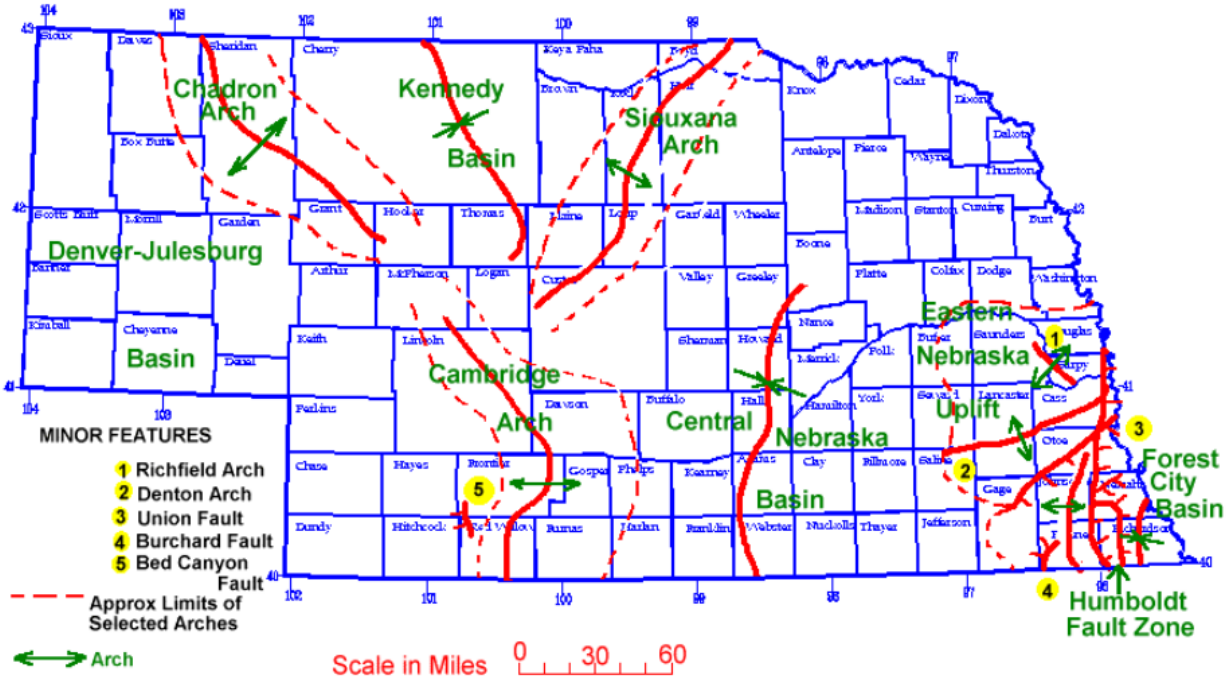
Hazard mitigation options for levee failure include most of the wide-range of actions described previously for flooding, as well as additional actions related to warning and evacuation.

EARTHQUAKES

HAZARD PROFILE

An earthquake is the result of a sudden release of energy in the Earth's tectonic plates that creates seismic waves. The seismic activity of an area refers to the frequency, type, and size of earthquakes experienced over a period of time. Although rather uncommon, earthquakes do occur in Nebraska, and are usually small, generally not felt, and cause little to no damage. Earthquakes are measured by magnitude and intensity. Magnitude is measured by the Richter Scale, a base-10 logarithmic scale, which uses seismographs around the world to measure the amount of energy released by an earthquake. Intensity is measured by the Modified Mercalli Intensity Scale, which determines the intensity of an earthquake by comparing actual damage against damage patterns of earthquakes with known intensities. Figure 27 shows the fault lines in Nebraska and Tables 37 and 38 summarize the Richter Scale and Modified Mercalli Scale.

Figure 27: Fault Lines in Nebraska



Source: Nebraska Department of Natural Resources

Table 37: Richter Scale

Richter Magnitudes	Earthquake Effects
Less than 3.5	Generally not felt, but recorded.
3.5 – 5.4	Often felt, but rarely causes damage.
Under 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1 – 6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0 – 7.9	Major earthquake. Can cause serious damage over larger areas.
8 or greater	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

Source: Federal Emergency Management Agency

Table 38: Modified Mercalli Intensity Scale

Scale	Intensity	Description of Effects	Corresponding Richter Scale Magnitude
I	Instrumental	Detected only on seismographs	
II	Feeble	Some people feel it	< 4.2
III	Slight	Felt by people resting, like a truck rumbling by	
IV	Moderate	Felt by people walking	
V	Slightly Strong	Sleepers awake; church bells ring	< 4.8
VI	Strong	Trees sway; suspended objects swing, objects fall off shelves	< 5.4
VII	Very Strong	Mild Alarm; walls crack; plaster falls	< 6.1
VIII	Destructive	Moving cars uncontrollable; masonry fractures, poorly constructed buildings damaged	
IX	Ruinous	Some houses collapse; ground cracks; pipes break open	< 6.9
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread	< 7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards	< 8.1
XII	Catastrophic	Total destruction; trees fall; ground rises and falls in waves	> 8.1

Source: Federal Emergency Management Agency

HISTORICAL OCCURRENCES

There have been no recorded earthquakes within York County. York County is not located on or near a fault line, as seen in Figure 27. Figure 28 displays the seismic hazard map for the State of Nebraska.

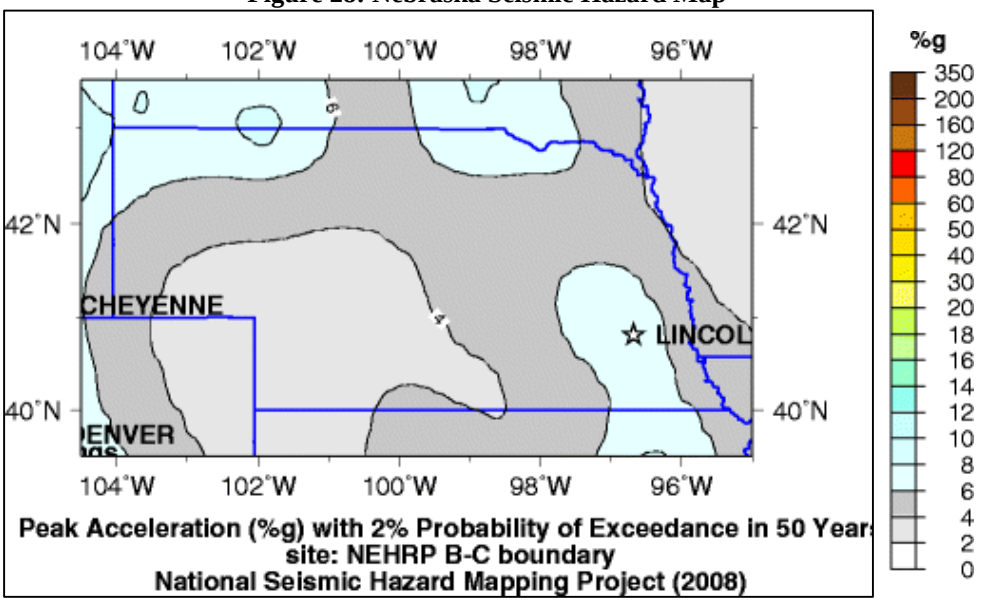
EXTENT

Earthquakes occurring in York County and Nebraska in general are expected to be 4.0 or less as measured by the Richter Scale.

PROBABILITY

With no reported events in York County dating back to 1916, there is a very low probability of occurrence (1 percent in a given year).

Figure 28: Nebraska Seismic Hazard Map



Source: United States Geological Survey

AVERAGE ANNUAL DAMAGES AND FREQUENCY

Due to the lack of sufficient earthquake data, limited resources, extremely low earthquake risk for the area, and limited reports of historical occurrences with recorded damages, it is not feasible to utilize the 'annual damage estimate formula' to estimate potential losses for the planning area.

VULNERABILITY ASSESSMENT

Low income individuals are particularly vulnerable to the threat of earthquake. Often, low income individuals and families live in lower cost homes (older homes, mobile homes) that are less able to withstand disaster. Older homes and mobile homes may not have been constructed using the most advanced building codes or have received updates and retrofits that would have increased their stability and ability to withstand seismic events. Damages resulting from the 1994 Northridge earthquake in California were disproportionately focused on low and moderate income rental housing units that were older and thus more vulnerable to seismic damages.

Elderly citizens are also vulnerable to the threat posed by earthquakes. Senior citizens living on a fixed income may lack the disposable income necessary to upgrade their homes to withstand seismic events. In addition, senior citizens may lack the mobility required to implement low cost mitigation measures. A 2006 Census Bureau report found that almost 20 percent of the U.S. Population age 65 and older report some level of disability.

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. It is possible to reduce earthquake vulnerability through the use of building codes and retrofitting of existing construction. However, losses are likely to remain negligible due to the low risk within the planning area. Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that earthquakes are a low probability hazard with minimal impacts to the planning area.

MITIGATION ALTERNATIVES

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of earthquakes. Some of these strategies, such as the use of warning systems, are already in

place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards.*

- Adopt and enforce seismic building codes
- Incorporate Seismic Safety into all Local Plans (i.e., create a Seismic Safety Committee)
- Conduct Inspections of Building Safety (i.e., identify seismic risk)
- Protect Critical Facilities and Infrastructure (i.e., installing shut off valves; bracing equipment; and reviewing all bridge construction plans)
- Implement Structural Mitigation Techniques (i.e. membranes on windows to prevent glass shattering, steel bracing on chimneys; etc.)
- Increase Earthquake Risk Awareness (i.e. outreach to businesses, schools, and individuals)
- Conduct outreach to building inspectors, engineers and architects.

DAM FAILURE

HAZARD PROFILE

According to the Nebraska Administrative Code, Title 458, Chapter 1, Part 001.09, dams are " any artificial barrier, including appurtenant works, with the ability to impound water, wastewater, or liquid-borne materials and which is:

(a) is twenty-five feet or more in height from the natural bed of the stream or watercourse measured at the downstream toe of the barrier, or from the lowest elevation of the outside limit of the barrier if it is not across a stream channel or watercourse, to the maximum storage elevation or
(b) has an impounding capacity at maximum storage elevation of fifty acre- feet or more, except that any barrier described in this subsection which is not in excess of six feet in height or which has an impounding capacity at maximum storage elevation of not greater than fifteen acre-feet shall be exempt, unless such barrier, due to its location or other physical characteristics, is classified as a high hazard potential dam. Dam does not include:

(1) an obstruction in a canal used to raise or lower water;
(2) a fill or structure for highway or railroad use, but if such structure serves, either primarily or secondarily, additional purposes commonly associated with dams it shall be subject to review by the department;
(3) canals, including the diversion structure, and levees; or
(4) water storage or evaporation ponds regulated by the United States Nuclear Regulatory Commission."

The Department of Natural Resources uses a classification system for dams throughout the State including those areas participating this this plan. The classification system includes three classes such as Small, Intermediate, and Large, which are defined as:

Table 39: Dam Failure Classification System

Size	Effective Height (feet) x Effective Storage (acre-feet)	Effective Height
Small	≤ 3,000 acre-feet2	and ≤ 35 feet
Intermediate	> 3,000 acre-feet2 to < 30,000 acre-feet2	or > 35 feet
Large	≥ 30,000 acre-feet2	Regardless of Height

Source: Nebraska Department of Natural Resources

The effective height of a dam is defined as the difference in elevation in feet between the natural bed of the stream or watercourse measured at the downstream toe (or from the lowest elevation of the outside limit of the barrier if it is not across stream) to the auxiliary spillway crest. The effective storage is defined as the total storage volume in acre-feet in the reservoir below the elevation of the crest of the auxiliary spillway. If the dam does not have an auxiliary spillway, the effective height and effective storage should be measured at the top of dam elevation.

Dam failure, as a hazard, is described as a structural failure of a water impounding structure. Structural failure can occur during extreme conditions, which include but are not limited to:

- Reservoir inflows in excess of design flows
- Flood pools higher than previously attained
- Unexpected drop in pool level
- Pool near maximum level and rising
- Excessive rainfall or snowmelt
- Large discharge through spillway
- Erosion, landslide, seepage, settlement, and cracks in the dam or area
- Earthquakes

NDNR regulates dam safety and has classified dams by the potential hazard each poses to human life and economic loss. The following are classifications and descriptions for each hazard class:

- **Minimal Hazard Potential** - failure of the dam would likely result in no economic loss beyond the cost of the structure itself and losses principally limited to the owner's property.
- **Low Hazard Potential** - failure of the dam would result in no probable loss of human life and in low economic loss. Failure may damage storage buildings, agricultural land, and county roads.
- **Significant Hazard Potential** - failure or misoperation of the dam would result in no probable loss of human life but could result in major economic loss, environmental damage, or disruption of lifeline facilities. Failure may result in shallow flooding of homes and commercial buildings or damage to main highways, minor railroads, or important public utilities.
- **High Hazard Potential** - failure or misoperation of the dam resulting in loss of human life is probable. Failure may cause serious damage to homes, industrial or commercial buildings, four-lane highways, or major railroads. Failure may cause shallow flooding of hospitals, nursing homes, or schools.

According to the NDNR database and the USACE's National Dam Inventory, no high hazard dams are located in York County but there is one significant hazard dam (See Figure 29 and Table 40).

Table 40: Significant Hazard Dams in York County

NIDID	Dam Name	County	Year Completed	Last Inspected
NE 00068	Groundwater Recharge 2-10-3	York	1990	7/2/2010

Source: Nebraska Department of Natural Resources

Dams that are classified with high hazard potential require the creation of an Emergency Action Plan (EAP). The EAP defines responsibilities and provides procedures designed to identify unusual and unlikely conditions that may endanger the structural integrity of the dam within sufficient time to take mitigating actions and to notify the appropriate emergency management officials of possible, impending, or actual failure of the dam. The EAP may also be used to provide notification when flood releases will create major flooding. An emergency situation can occur at any time; however, emergencies are more likely to happen when extreme conditions are present. The EAP includes information regarding the efficiency of emergency response entities so that proper action can be taken to prevent the loss of life and property. Local emergency response entities generally included in an EAP include but are not limited to 911 Dispatch, County Sheriffs, Local Fire Departments, Emergency Management Agency Director, County Highway Department, and the National Weather Service. The following table lists those dams classified as "High Hazard Potential."

In addition, all dams are inspected on a regular basis and after area flash flood events. If problems are found during an inspection, the proper course of action is taken to ensure the structural integrity of the dam is preserved.

Overall, the majority of structures throughout York County would not be affected by an inundation occurring as a result of a dam failure, either in or outside the planning area. More detailed information is available through the Nebraska Department of Natural Resources.

HISTORICAL OCCURRENCES

No instances of dam failure have been recorded within York County.

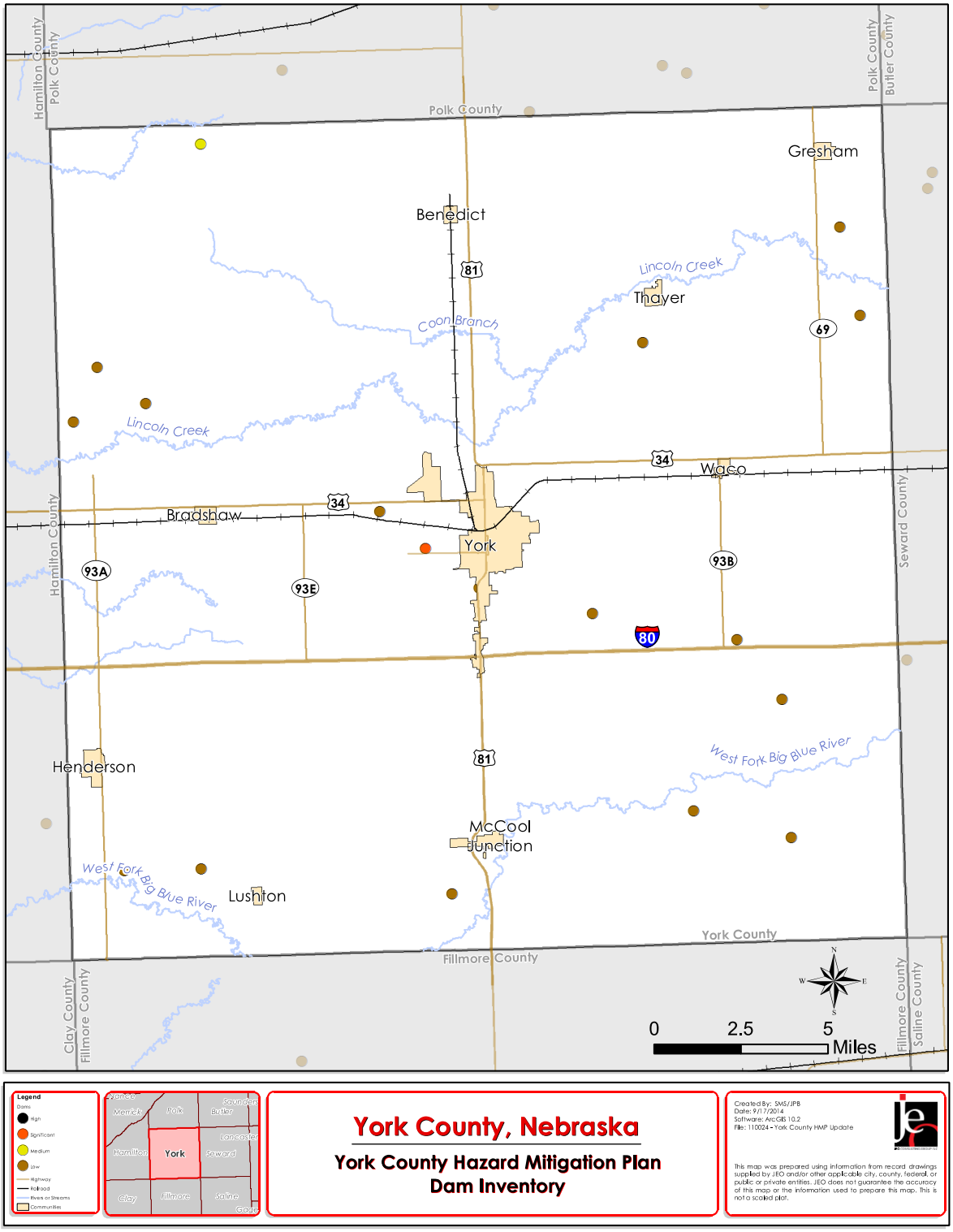
EXTENT

Failure of a dam in York County would be localized to the lands immediately around the dam.

PROBABILITY

There is no historic record of dam failure within York County. Dam failure is not likely to occur (1 percent annual probability).

Figure 29: York County Dam Inventory



Source: Nebraska Department of Natural Resources

AVERAGE ANNUAL DAMAGES AND FREQUENCY

Due to lack of data and the sensitive nature of this hazard potential losses are not being calculated for this threat. Community members in the planning area that wish to quantify the threat of dam failure should contact the York County Department of Emergency Management, or Nebraska Department of Natural Resources to view EAPs and breach inundation area maps.

VULNERABILITY ASSESSMENT

A minor dam failure also has the potential to cause loss of life for those working on or near the structures and property damage. When dams fail suddenly their contents are released at a high rate of speed, this has the potential to cause injuries, loss of life, or property damage.

Table 41: Distance from Dam

Incorporated Class	Population	Located Within or Within Given Distance of Jurisdictional Limits, of City, or of Village
Metropolitan	≥ 300,000	3 Miles
Primary	> 100,000 up to 300,000	3 Miles
First	> 5,000 up to 100,000	2 Miles
Second	> 800 up to 5,000	1 Mile
Village	100 up to 800	1 Mile

Source: Nebraska Department of Natural Resources

FUTURE DEVELOPMENT AND VULNERABILITY

According to the *Classification of Dams (2013)* developed and updated by NDNR, "the potential for future development must be taken into consideration when determining the hazard potential class for a dam. Any dam located in close proximity to a city or village as detailed in Table 41 must be designed to meet the requirements for a high hazard potential structure. The design requirements can be adjusted if development in the downstream breach inundation area is sufficiently curtailed due to zoning restrictions, easements, deed restrictions, or other methods of restriction acceptable to the Department."

Land-use regulations should prohibit development within floodplains and areas currently protected by existing levees and dams. Dam failure should not be a significant threat to future development and losses should be insignificant. Communities should encourage structures currently protected by levees to purchase flood insurance from the NFIP whether they are technically located in the floodplain or not.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that within York County, dam failure is a low probability hazard with limited impacts.

MITIGATION ALTERNATIVES

Hazard mitigation options for dam failure include most of the wide-range of actions described previously for flooding, as well as additional actions related to warning and evacuation.

LAND SLIDES

HAZARD PROFILE

According to the United State Geological Survey (U.S.G.S) a landslide can include but is not limited to rock falls, deep failure slopes, and shallow debris flows. According to the Landslide Hazards Program, landslides occur primarily because the force of gravity acts on steep slopes. However, landslides can occur due to the following factors:

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

Landslides also occur when the ground becomes saturated after heavy rains or snow falls causing debris flow or mud flow. These flows can cause a wave of mud and debris that can knock down trees, damage houses, creating "dams" that cause localized flooding. According to the University of Nebraska, "landslides have occurred throughout Nebraska, they are more common in the eastern and northeastern parts of the state."

According to Professor Duane Eversoll from the University of Nebraska at Lincoln, "the three elements needed for a landslide to occur are geological formations susceptible to landslide, a slope and precipitation". According to the book "Nebraska Landslides", glaciers covered the eastern portion of the state approximately 2 million years ago creating a terrain with slopes. Over time, these slopes have been covered with sediment deposits and other porous ground materials that are susceptible to saturation from precipitation that causes landslides.

HISTORICAL OCCURRENCES

According to the 2014 State of Nebraska HMP, there has been one landslide in York County that resulted in no deaths, injuries, or losses.

EXTENT

Given the lack of information or detail related to the only historic occurrence in the planning area it is difficult to discuss probable magnitude related to this hazard. Any future landslide events will likely result in localized damages to lands. Earth slumps are the most common type of landslide in Nebraska.

PROBABILITY

While the 2014 State of Nebraska HMP reports landslide occurrences it does not provide a time period for the reported data, therefore it is not possible to calculate probability. Local reports from participating jurisdictions indicate a low probability for future occurrences (1 percent probability).

AVERAGE ANNUAL DAMAGES AND FREQUENCY

Due to lack of data potential losses are not being calculated for this threat.

VULNERABILITY ASSESSMENT

Damages that could occur and the extent of landslides can vary depending on location, geological slope of the vulnerable area, and amount of precipitation.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that landslide is a low probability hazard with limited impacts.

FUTURE DEVELOPMENT AND VULNERABILITY

Although the physical cause of many landslides cannot be removed, geologic investigations, good engineering practices, and effective enforcement of land-use management regulations can reduce landslide hazards.

USGS scientists continue to produce landslide susceptibility maps for many areas in the United States. In every state,

USGS scientists monitor stream flow, noting changes in sediment load carried by rivers and streams that may result from landslides. Hydrologists with expertise in debris and mud flows are studying these hazards in volcanic regions.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

MITIGATION ALTERNATIVES

Hazard mitigation options for landslides include monitoring soils for signs of landslides, land use planning to ensure that buildings and critical facilities are away from areas of greater risk, and education and outreach.

URBAN FIRE

HAZARD PROFILE

Urban fires are classified as "uncontrolled burning in a residence or building from natural, human or technical causes". These fires have a potential to spread to adjoining structures. Often times, all that is needed to cause an uncontrolled urban fire is a heat source to spark a fire, flammable materials that act as a fuel source, and oxygen. Local city and county fire departments are tasked with the response and control of urban fires.

Within the State of Nebraska, and York County specifically, urban fires can occur throughout the region, at any fire prone structure.

HISTORICAL OCCURRENCES

Local fire departments are encouraged to report annual calls to the Nebraska Fire Marshal's Office. While this is encouraged it is not required. Table 42 shows the number and nature of calls responded to by fire departments that were reported to the Nebraska Fire Marshal's Office.

Table 42: Fire Department Calls in York County 2008 - 2012

Fire Department	Fire	Over Pressure Rupture	Rescue/ EMS	Haz. Mat.	Service Calls	Good Intent Calls	False Alarms	Severe Weather	Special Incidents
* Benedict Volunteer Fire Department	0	0	0	0	0	0	0	0	0
* Bradshaw Volunteer Fire Department	4	0	0	0	0	0	1	0	0
* Gresham Volunteer Fire Department	8	0	49	0	1	0	0	1	0
* Henderson Volunteer Fire Department	0	0	1	0	0	1	0	0	0
* McCool Junction Volunteer Fire Department	0	0	0	0	0	0	0	0	0
Waco Volunteer Fire Department	54	0	1	1	1	2	7	0	0
York Volunteer Fire Department	203	6	4,886	33	46	41	179	11	8
York County	**264**	**6**	**4,937**	**34**	**48**	**44**	**187**	**12**	**8**

Source: State of Nebraska Fire Marshall's Office
**Department absent from 2010 Annual Report*

EXTENT

Most urban fires will be limited in scope to single structure fires.

PROBABILITY

There is a 100 percent probability that urban fires will occur in a given year.

AVERAGE ANNUAL DAMAGES AND FREQUENCY

Due to lack of data potential losses are not being calculated for this threat.

VULNERABILITY ASSESSMENT

Fire death rates are based on all deaths in which exposure to fire, fire products, or explosion was the underlying cause of death or was a contributing factor in the chain of events leading to death."

According to the U.S. Fire Administration, "older adults (age 65 or older) were at higher risk from dying in a fire than the rest of the population. The very young (age 4 or younger) were also at higher risk of fire death and injury when compared to older children. Males, African-Americans, and American Indians/Alaska Natives also had a considerably higher risk of death from fire than did the population as a whole."

Because of the nature of urban fires, any structure identified in the planning are could possibly be damaged or destroyed by a fire for one of any number of reasons ranging from faulty or outdated electrical infrastructure, lightning strikes to accidents such as stoves being left on. As already stated, the threat of urban fires in populated areas is not only confined to the structure that initially caught on fire but to those surrounding the burning structure.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that urban fire is a high probability hazard which is most likely to result in single structure fires or minimal impacts. Larger impacts may occur in denser communities in the planning area.

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. The impact to people and property in urbanized areas from urban fire can be significant. Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

MITIGATION ALTERNATIVES

The use of building codes, community education, and Fire Wise building practices will reduce some of the damages that could occur or reduce the risk that neighboring structures catch fire as easily.

CHEMICAL AND RADIOLOGICAL HAZARDS (FIXED SITE AND TRANSPORTATION)

HAZARD PROFILE

The following description for hazardous materials is provided by the Federal Emergency Management Agency (FEMA):

Chemicals are found everywhere. They purify drinking water, are used in agriculture and industrial production, fuel our vehicles and machines, and simplify household chores. But chemicals also can be hazardous to humans or the environment if used or released improperly. Hazards can occur during production, storage, transportation, use, or disposal. The community is at risk if a chemical is used unsafely or released in harmful amounts.

Hazardous materials in various forms can cause fatalities, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. Many products containing hazardous chemicals are used and stored in homes routinely. These products are also shipped daily on the nation's highways, railroads, waterways, and pipelines.

Chemical manufacturers are one source of hazardous materials, but there are many others, including service stations, hospitals, and hazardous materials waste sites.

Varying quantities of hazardous materials are manufactured, used, or stored at an estimated 4.5 million facilities in the United States--from major industrial plants to local dry cleaning establishments or gardening supply stores.

Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. These substances are most often released as a result of transportation accidents or because of chemical accidents in plants.

Hazardous material incidents are technological (meaning non-natural hazards created or influenced by humans) events that involve large-scale releases of chemical, biological or radiological materials. Hazardous materials incidents general involve releases at fixed-site facilities that manufacture, store, process or otherwise handle hazardous materials or along transportation routes such as major highways, railways, navigable waterways and pipelines.

The U.S. Environmental Protection Agency requires industries to report information on toxic chemical releases and water management activities, through the Toxics Release Inventory (TRI) Program. In the previous decade TRI reporting requirements were lessened; thereby limiting available data on chemical releases and disposal. The federal government in recent years reinstated stricter reporting requirements for industrial and federal facilities that release toxic substances with potential to threaten human health and the environment. Those requirements went into effect in April of 2009 and data from these reports is now available.

Fixed-site are those that involve chemical manufacturing sites and stationary storage facilities. Table 43 identifies the nine classes of hazardous material according to the 2012 Emergency Response Guidebook.

Table 43: Classes of Hazardous Material

Class	Type of Material	Divisions
1	Explosives	Division 1.1 – Explosives with a mass explosion hazard Division 1.2 – Explosives with a projection hazard Division 1.3 – Explosives predominantly a fire hazard Division 1.4 – Explosives with no significant blast hazard Division 1.5 – Very insensitive explosives with a mass explosion hazard Division 1.6 – Extremely insensitive articles
2	Gases	Division 2.1 – Flammable gases Division 2.2 – Non-flammable, non-toxic gases Division 2.3 – Toxic gases
3	Flammable Liquids (and Combustible Liquids)	

Class	Type of Material	Divisions
4	Flammable solids; Spontaneously combustible materials	Division 4.1 – Flammable solids Division 4.2 – Spontaneously combustible materials Division 4.3 – Water-reactive substances/Dangerous when wet materials
5	Oxidizing substances and Organic peroxides	Division 5.1 – Oxidizing substances Division 5.2 – Organic peroxides
6	Toxic substances and infections substances	Division 6.1 – Toxic Substances Division 6.2 – Infectious substances
7	Radioactive Materials	
8	Corrosive Materials	
9	Miscellaneous hazardous materials/Products, Substances, or Organisms	

Table 44: Locations of Facilities with Hazardous Materials in York County

Facility	Address	Community
Abengoa Bioenergy Company LLC	1414 Road O	York
Air Products and Chemicals Inc	1412 Road O	York
Aurora Co-op Elevator Company	951 Oak St.	Henderson
Aurora Co-op Elevator Compnay	Jct Road 3 and N Gilbert	Lushton
Aurora Co-op Fuel Depot	1320 Road L	York
AT&T Communications	Road L	York
Blue Beacon of York Truck Wash	4500 S Lincoln Ave	York
Central Valley Ag	1112 Highway 34	York
Central Valley Ag	312 Crownover	Benedict
Central Valley Ag	202 Midland Ave	Waco
Central Valley Ag	2317 Highway 69	Gresham
Central Valley Ag	1403 Road 14	York
Central Valley Ag	601 Road 22	Bradshaw
Central Valley Ag	1312 Road C	Bradshaw
Central Valley Ag	Road 9	York
Central Valley Ag	507 Road H	York
DuPont Pioneer	1410 Highway 34	York
Farmers Cooperative	104 N 6th	McCool Junction
Henderson Community Co-op Association	1101 14th St	Henderson
Henderson Community Co-op Association	S Gilbert	Lushton
Henderson Community Co-op Association	5 Henderson North Rd.	Henderson
McCool Air Service	311 Road P	McCool Junction
Monsanto Company	1506 Highway 69	Waco
NPPD McCool Substation	214 Road L	McCool Junction
NPPD York Operations Center	907 W 25th St.	York
Plains Equipment Group	3221 N Lincoln Ave.	York
United Farmers Co-op	305 Cedar St	Thayer
UTC Aerospace Systems	2800 N Division Ave.	York
Wilbur-Ellis Company	1309 Road 9	York
Windstream Communications	409 E 6th St.	York
York Cold Storage Co	402 Commerce St.	York
York Cold Storage Co	215 E 13th St.	York

Source: Nebraska Department of Environmental Quality (NDEQ)

HISTORICAL OCCURRENCES

According to the PHMSA, there were 12 hazardous materials incidents (fixed site and transportation) incidents in York County from 1980-2013. These incidents resulted in 1096 LGA released. The total damages from these twelve incidents is $40,378. The largest incident was near Bradshaw in the year 1994. A rollover accident caused 750 LGA of anhydrous ammonia to be released in the air.

There are no reports of radiological incidents within York County.

EXTENT

Reviewing past events, it is reasonable to expect chemical releases to result in the release of 91 LGA per event.

PROBABILITY

With 12 events reported in 33 years, there is a 36 percent chance of chemical releases occurring in a given year.

AVERAGE ANNUAL DAMAGES AND FREQUENCY

According to the PHMSA, damages resultant from hazardous materials incidents total $40,378 from 1980 to 2013 within York County.

Average Annual Damages ($1,223) = $\frac{\textit{Total Damages in Dollars ($40,378)}}{\textit{Total Number of Years in Record (33)}}$

Annual Frequency of Hazard Event (0.36per year) = $\frac{\textit{Total Events Recorded (12)}}{\textit{Total Number of Years in Record (33)}}$

VULNERABILITY ASSESSMENT

Individuals in close proximity to an incident could see minor to moderate health impacts depending upon the extent of the incident. The warning time for these incidents range from less than 24 hours to more than one week.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that this is a low probability hazard with limited impacts.

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. The impacts to people and property from chemical/radiological transportation incidents are potentially severe. Most chemical/radiological transportation incidents occur on a weekday during times when day care centers and schools are likely to be in session. Other vulnerable facilities and groups include hospitals, nursing homes, and housing units with low mobility individuals and families. Vulnerable populations will live along major transportation routes or near chemical/radiological fixed site locations.

Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

MITIGATION ALTERNATIVES

Mitigation alternatives for this hazard include training; outreach and education; and planning to ensure that critical facilities are placed in lower risk areas when possible.

TERRORISM

HAZARD PROFILE

According to the FBI, there is no single, universally accepted, definition of terrorism. Terrorism is defined in the Code of Federal Regulations as "the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives" (28 C.F.R. Section 0.85).

The FBI categorizes terrorism as either domestic or international, depending on the origin, base, and objectives of the terrorist organization. For the purpose of this report, the following FBI definitions will be used:

- Domestic terrorism is the unlawful use, or threatened use, of force or violence by a group or individual based and operating entirely within the United States or Puerto Rico without foreign direction committed against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof in furtherance of political or social objectives.
- International terrorism involves violent acts or acts dangerous to human life that are a violation of the criminal laws of the United States or any state, or that would be a criminal violation if committed within the jurisdiction of the United States or any state. These acts appear to be intended to intimidate or coerce a civilian population, influence the policy of a government by intimidation or coercion, or affect the conduct of a government by assassination or kidnapping. International terrorist acts occur outside the United States or transcend national boundaries in terms of the means by which they are accomplished, the persons they appear intended to coerce or intimidate, or the locale in which their perpetrators operate or seek asylum.

There are different types of terrorism depending on the target of attack, which are:

- Political Terrorism
- Bio-Terrorism
- Cyber-Terrorism
- Eco-Terrorism
- Nuclear-Terrorism
- Narco-terrorism

Terrorist activities are classified based on motivation behind the event such as ideology (i.e. religious fundamentalism, national separatist movements, and social revolutionary movements). However, terrorism can be random with no ties to ideological reasoning.

The FBI also provides clear definitions of a terrorist incident and prevention:

- A terrorist *incident* is a violent act or an act dangerous to human life, in violation of the criminal laws of the United States, or of any state, to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.
- Terrorism *prevention* is a documented instance in which a violent act by a known or suspected terrorist group or individual with the means and a proven propensity for violence is successfully interdicted through investigative activity.

Primarily, threat assessment, mitigation and response to terrorism are federal and state directives and work primarily with local law enforcement. The Office of Infrastructure Protection within the Federal Department of Homeland Security is a component within the National Programs and Protection Directorate.

The Office of Infrastructure Protection leads the coordinated national program to reduce and mitigate risk within 18 national critical infrastructure and key resources (CIKR) sectors from acts of terrorism and natural disasters and to strengthen sectors' ability to respond and quickly recover from an attack or other emergency. This is done through the National Infrastructure Protection Plan (NIPP).

Under the NIPP, a Sector-Specific Agency (SSA) is the federal agency assigned to lead a collaborative process for infrastructure protection for each of the 18 sectors. The NIPP's comprehensive framework allows the Office of Infrastructure Protection to provide the cross-sector coordination and collaboration needed to set national priorities, goals, and requirements for effective allocation of resources. More importantly, the NIPP framework integrates a broad range of public and private CIKR protection activities.

The Sector-Specific Agencies provide guidance about the NIPP framework to state, tribal, territorial and local homeland security agencies and personnel. They coordinate NIPP implementation within the sector, which involves developing and sustaining partnerships and information-sharing processes, as well as assisting with contingency planning and incident management.

The Office of Infrastructure Protection has Sector-Specific Agency responsibility for six of the 18 CIKR sectors. Those six are:

- Chemical
- Commercial Facilities
- Critical Manufacturing
- Dams
- Emergency Services
- Nuclear Reactors, Materials and Waste

Sector-Specific Agency responsibility for the other 12 CIKR sectors is held by other Department of Homeland Security components and other federal agencies. Those 12 are:

- Agriculture and Food – Department of Agriculture; Food and Drug Administration
- Banking and Finance – Department of the Treasury
- Communications – Department of Homeland Security
- Defense Industrial Base – Department of Defense
- Energy – Department of Energy
- Government Facilities – Department of Homeland Security
- Information Technology – Department of Homeland Security
- National Monuments and Icons – Department of the Interior
- Postal and Shipping – Transportation Security Administration
- Healthcare and Public Health – Department of Health and Human Services
- Transportation Systems – Transportation Security Administration; U.S. Coast Guard
- Water – Environmental Protection Agency

The NIPP requires that each Sector-Specific Agency prepare a Sector-Specific Plan, review it annually, and update it as appropriate.

The Department of Homeland Security and its affiliated agencies are responsible for disseminating any information regarding terrorist activities in the country. The system in place is the National Terrorism Advisory System (NTAS). NTAS replaced the Homeland Security Advisory System (HSAS) which was the color coded system put in place after the September 11th attacks by Presidential Directive 5 and 8 in March of 2002. NTAS replaced HSAS in 2011.

NTAS is based on a system of analyzing threat levels and providing either an imminent threat alert or an elevated threat alert. An ***Imminent Threat Alert*** warns of a credible, specific and impending terrorist threat against the United States. An ***Elevated Threat Alert*** warns of a credible terrorist threat against the United States. The Department of Homeland Security, in conjunction with other federal agencies, will decide whether a threat alert of one kind or the other should be issued should credible information be available. Each alert provides a statement summarizing the potential threat and what, if anything should be done to ensure public safety.

The NTAS Alerts will be based on the nature of the threat: in some cases, alerts will be sent directly to law enforcement or affected areas of the private sector, while in others, alerts will be issued more broadly to the American people through both official and media channels. An individual threat alert is issued for a specific time period and then automatically expires. It may be extended if new information becomes available or the threat evolves. The ***sunset***

provision contains a specific date when the alert expires as there will not be a constant NTAS Alert or blanket warning that there is an overarching threat. If threat information changes for an alert, the Secretary of Homeland Security may announce an updated NTAS Alert. All changes, including the announcement that cancels an NTAS Alert, will be distributed the same way as the original alert.

LOCATION
Due to the often times unforeseen nature of terrorist events, all critical facilities in York County are at risk and vulnerable to terrorism.

HISTORICAL OCCURRENCES
There have been no occurrences of terrorism in York County.

EXTENT
Given the lack of historical occurrences and no way to effectively measure events it is not possible at this time to define extent relative to this hazard.

PROBABILITY
While it is possible that terrorist activities could occur in the planning area, it is not likely (1 percent annual probability).

AVERAGE ANNUAL DAMAGES AND FREQUENCY
Due to lack of data, and the very wide range of potential impacts, potential losses are not being calculated for this threat.

VULNERABILITY ASSESSMENT
The unpredictable nature of terrorism is such that impacts can range from very isolated occurrences of property damage with limited injuries to large scale events with catastrophic impacts to lives and property.

RISK ASSESSMENT SUMMARY
Overall, the risk and vulnerability assessment shows that Terrorism is a low probability hazard. However, impacts have the potential to be severe.

FUTURE DEVELOPMENT AND VULNERABILITY
Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

MITIGATION ALTERNATIVES
Mitigation alternatives for terrorism include: training and exercises; education and outreach; vehicular barriers and other building protection measures; and, general awareness raising programs such as "See Something, Say Something."

CIVIL DISORDER

HAZARD PROFILE

Civil disorder, also known as civil unrest or civil strife, is a broad term that is typically used by law enforcement to describe one or more forms of unrest caused by a group of people. Civil disturbance is typically a symptom of, and a form of protest against major socio-political problems; the severity of the action coincides with public expression(s) of displeasure. Examples of civil disorder include, but are not necessarily limited to: illegal parades; sit-ins and other forms of obstructions; riots; sabotage; and other forms of crime. It is intended to be a demonstration to the public and the government, but can escalate into general chaos.

LOCATION

Instances of civil disorder can occur anywhere at any time throughout the United States and more specifically throughout York County. According to history, the most likely location of occurrence is at governmental offices and other gathering sites for large crowds such as sports arenas.

HISTORICAL OCCURRENCES

Although there is a rich history of civil disturbance throughout U.S. history, there is no record of civil disorder in the planning area.

EXTENT

Given the lack of historical occurrences and no way to effectively measure events, it is not possible at this time to define extent relative to this hazard.

PROBABILITY

While it is possible that civil disorder could occur in the planning area, it is not likely (1 percent annual probability).

AVERAGE ANNUAL DAMAGES AND FREQUENCY

Due to the lack of data potential losses are not being calculated for this threat.

VULNERABILITY ASSESSMENT

Civil disorder can lead to injuries and property damages. However, police are trained to prevent escalation and most instances of civil disorder remain minor with minimal impacts.

RISK ASSESSMENT SUMMARY

Overall, the risk and vulnerability assessment shows that civil disturbance is a low probability hazard with limited impacts.

FUTURE DEVELOPMENT AND VULNERABILITY

There are many strategies that can be undertaken to protect both existing and future assets. The impact to people and property from civil disorder is low as most protests are peaceful and generally dissipated by police without event. However, increases in population can proportionally increase the risk of major conflicts between police and protestors during instances of civil disorder. Future development and vulnerability will be addressed in each jurisdiction's participant sections. Please refer to *Section 7: York County Participant Sections* for additional information.

MITIGATION ALTERNATIVES

Mitigation alternatives include training and education, as well as the use of vehicular barriers and other mechanisms to protect critical facilities.

SECTION FIVE: MITIGATION STRATEGY

SUMMARY OF CHANGES

The development of the mitigation strategy for this plan update includes the addition of several mitigation actions, revisions to the STAPLEE process, and the incorporation of mitigation actions for the additional hazards addressed in the update.

INTRODUCTION

The primary focus of the mitigation strategy is to establish goals, objectives, and action items, which will identify actions and projects to reduce effects of hazards on existing infrastructure and property in a cost effective and technically feasible fashion. The development of goals and objectives was completed through the 'mitigation alternative' meeting. The second meeting was held on September 10, 2014, after the development of the initial draft based upon information received at the time.

Meeting participants reviewed the goals from the 2010 HMP and discussed recommended additions and modifications. The intent of each goal and set of objectives is to develop strategies to account for risks associated with hazards and identify ways to reduce or eliminate those risks. Each goal and set of objectives is followed by 'mitigation alternatives,' or actions.

A preliminary list of goals and objectives were provided to the team at the 'hazard identification' meeting. Each participant was directed to review each goal and objective and comment on how to make improvements or suggest how to make each more specific to the needs of their community. Each participating jurisdiction decided to utilize the same goals and objectives.

DEVELOPMENT OF GOALS

The 'mitigation alternative' meeting was open to public input to promote involvement, which includes members of participating jurisdictions as well as outside communities. Refer to *Section 2: Planning Process* in the beginning of this plan for more discussion on public participation. The meeting was held after portions of the initial draft of the plan were completed and after some of the findings had been discussed. A sign in sheet of the parties that attended the meeting is shown in *Appendix B*. During the meeting, parties attending contributed their thoughts and were guided to finalize the goals and objectives.

Below is the final list of goals and objectives as determined by the public and the Planning Team. These goals and objectives provide specific direction to guide participants in reducing future hazard related losses. The goals and objectives were numbered to assist in the development and organization of mitigation alternatives 'action items', as discussed in *Section 6: Participant Sections*.

GOAL 1: PROTECT THE HEALTH AND SAFETY OF RESIDENTS

Objective 1.1: Reduce or prevent damage to property or prevent loss of life or serious injury (overall intent of the plan).

GOAL 2: REDUCE FUTURE LOSSES FROM HAZARD EVENTS

Objective 2.1: Provide protection for existing structures, future development, critical facilities, services, utilities, and trees to the greatest extent possible.

Objective 2.2: Develop hazard specific plans, conduct studies or assessments, and retrofit jurisdiction to mitigate for hazards and minimize their impact.

Objective 2.3: Minimize and control the impact of hazard events through enacting or updating ordinances, permits, laws, or regulations.

GOAL 3: INCREASE PUBLIC AWARENESS AND EDUCATE ON THE VULNERABILITY TO HAZARDS

Objective 3.1: Develop and provide information to residents and businesses about the types of hazards they are exposed to, what the effects may be, where they occur, and what they can do to be better prepared.

GOAL 4: IMPROVE EMERGENCY MANAGEMENT CAPABILITIES

Objective 4.1: Develop or improve Emergency Response Plan and procedures and abilities.

Objective 4.2: Develop or improve Evacuation Plan and procedures.

Objective 4.3: Improve warning systems and ability to communicate to residents and businesses during and following a disaster or emergency.

GOAL 5: PURSUE MULTI-OBJECTIVE OPPORTUNITIES (WHENEVER POSSIBLE)

Objective 5.1: When possible, use existing resources, agencies, and programs to implement the projects.

Objective 5.2: When possible, implement projects that achieve several goals.

GOAL 6: ENHANCE OVERALL RESILIENCE AND PROMOTE SUSTAINABILITY.

Objective 6.1: Incorporate hazard mitigation and adaptation into updating other existing planning endeavors (e.g. comprehensive plans, zoning ordinance, subdivision regulation, etc.).

MITIGATION ALTERNATIVES (ACTION ITEMS)

After the establishment of each participant's goals and objectives, mitigation alternatives were prioritized. The alternatives considered included: the mitigation actions in the previous plan; additional mitigation actions discussed during the planning process; and recommendations from JEO for additional mitigation actions. In addition, JEO provided each participant a preliminary list of mitigation alternatives to be used as a starting point. Each participant was asked to individually prioritize the list of potential mitigation alternatives utilizing the STAPLEE process. The prioritized list of alternatives helped participants determine which actions will best assist their respective jurisdiction in alleviating damages in the event of a disaster. The listed priority does not necessarily indicate which actions will be implemented first, but will serve as a guide in determining the order at which each action should be implemented.

These projects are the heart of a hazard mitigation plan. The group was instructed that each alternative must be directly related to the goals and objectives. Alternatives must be specific activities that are concise and can be implemented individually. Each goal, objective, and corresponding 'action item' is arranged by a numbering system.

Mitigation alternatives were evaluated using FEMA's STAPLEE process, as this process addresses all the major factors when weighing the costs to the benefits of implementing one action over another. Important factors when ranking the alternatives include the prohibitive costs, the communities' resource capabilities, the communities' desire and concerns, and feasibility. STAPLEE criteria were used to evaluate the potential benefits of each participants' listing of mitigation actions.

STAPLEE evaluation includes consideration of the social, technical, administrative, political, legal, economic, and environmental benefits of the mitigation actions. STAPLEE criteria taken from FEMA's *Multi-Hazard Mitigation Planning Guidance* (July 2008) are summarized below.

S – Social: Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community's social and cultural values.

T – Technical: Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.

A – Administrative: Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.

P – Political: Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support of the action.

L – Legal: It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.

E – Economical: Budget constraints can significantly deter the implementation of mitigations actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost-benefit review, and possible to fund.

E – Environmental: Sustainable mitigation actions that do not have an adverse effect on the environment, that comply with Federal, State, and local environmental regulations, and that are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

Participants received a worksheet to assist them in scoring the priority of each alternative. Most participants took additional worksheets back to their communities. The key personnel and members attending the public meeting were asked to provide a designation of +, -, or O for each STAPLEE criteria which was used to come up with a cumulative priority ranking that maximizes the benefits of each alternative. This cumulative priority ranking was created by assigning a value of 1 each +, -1 to each -, and 0 to each O. The cumulative ranking was then created by adding the numbers under each STAPLEE criteria.

The projects with the greatest benefits and lower relative costs as determined by the STAPLEE criteria were to have a "high" priority with a cumulative priority ranking of 3 to 7, while alternatives with low benefits and relatively high costs were determined to have a "low" priority with a cumulative priority ranking of -7 to -3. The alternatives with a cumulative priority ranking of -2 to 2 were determined to have a "medium" priority. The STAPLEE worksheet can be found in *Appendix C*.

A final list of mitigation alternatives for York County was established. The list includes information regarding: the action to be taken, the hazard the action will mitigate, description of the action, responsible party, priority, cost estimate, potential funding sources, and timeline. This information was established through input from participants and determination by the consultant. The action items are organized by the corresponding goal and objective.

It is important to note that not all of the mitigation actions identified may ultimately be included in the community's plan due to limited capabilities, prohibitive costs, low benefit/cost ratio, or other concerns. Even though there are cost estimates, priority scores, and responsible agencies identified, planning participants have not necessarily committed to undertaking any of the activities. This information will serve as a guide for the participants to assist in hazard mitigation for the future. Additionally, some jurisdictions may identify additional mitigation actions not identified by the county.

The following are specific actions listed by participants of the York County plan intended to be utilized in the implementation of mitigation alternatives. Each action is described by the following:

- Description – general summary of the action item.
- Analysis – brief summary of what the action item will accomplish.
- Goal/Objective – which goal and objective the action item falls under.
- Hazard(s) Addressed – which hazard the mitigation action aims to address.
- Potential funding – a list of any potential funding mechanism used to fund the action.
- Timeline – a general timeline as established by planning participants and the planning team.
- Priority – based upon the STAPLEE process a general description of the importance and workability in which an action may be implemented (high/medium/low). Priority may vary between each community, mostly dependent on funding capabilities and the size of the local tax base.
- Lead agency – listing of agencies that may lead the implementation of the action item.

Implementation of the actions will vary between individual plan participants based upon the availability of existing information (such as drainage studies), funding opportunities and limitations, and administrative capabilities of smaller communities. The information listed in Table 45 is a compilation of the mitigation alternatives organized

based on each goal and objective to be met. Establishment of a cost-benefit analysis is out of the scope of this plan and could potentially be completed prior to submittal of a project grant application or as part of a 5-year update. However, local jurisdictions considered the benefits versus the costs when prioritizing mitigation actions through the STAPLEE process. Mitigation alternatives for each participating jurisdiction can be found in *Section 7: Participant Section.*

Table 45: York County Action Items

ACTION 1.1.1	**Obtaining Missing Data For Future Updates**
Analysis	Obtain necessary data to improve vulnerability assessments when updating the plan.
Goal/Objective	Goal 1/Objective 1.1
Hazard(s) Address	All hazards
Benefits	Improving the overall quality and information found in the plan.
Estimated Cost	N/A
Potential Funding	HMGP
Timeline	Five years
Priority	High
Lead Agency	Local Governments
Status	This action was listed in the previous mitigation plan.

ACTION 2.1.1	**Backup Generators**
Analysis	Provide a portable or stationary source of backup power to redundant power supplies, county wells, lift stations, and other critical facilities and shelters.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduce the danger to human life/health by keeping utilities operating. Reduce the economic downtime associated with utility loss.
Estimated Cost	$15,000-$30,000 per generator
Potential Funding	HMGP
Timeline	Ongoing
Priority	High
Lead Agency	Local Governments, York County Emergency Management
Status	This action was listed in the previous mitigation plan.

ACTION 2.1.2	**Electrical System Looped Distribution / Redundancies**
Analysis	Provide looped distribution service and other redundancies in the electrical system as a backup power supply in the event the primary system is destroyed or fails.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados and high winds, severe winter storms, severe thunderstorms
Benefits	More reliable and resistant power distribution system.
Estimated Cost	$40,000 per mile
Potential Funding	HMGP, PDM, Public Power Districts
Timeline	Three to Five years
Priority	Low
Lead Agency	Local Governments, Local Public Power District
Status	This action was listed in the previous mitigation plan.

ACTION 2.1.3	Hazardous Tree Removal Program
Analysis	Identify and remove hazards limbs and/or trees.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$20,000
Potential Funding	HMGP, US Forest Service
Timeline	Ongoing
Priority	Medium
Lead Agency	Local Governments
Status	This action was listed in the previous mitigation plan.

ACTION 2.1.4	New Municipal Well
Analysis	Communities can evaluate the need to install a new well to provide a safe backup water supply for the community, replace existing wells affected by drought, and additional water for fire protection.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Drought
Benefits	Provide adequate water sources to mitigate potential damages or expenses due to drought.
Estimated Cost	$350,000 to $450,000
Potential Funding	Community Development Block Grant (CDBG), State Revolving Fund (SRF)
Timeline	Three to Six Months
Priority	High
Lead Agency	Local Governments
Status	This action was listed in the previous mitigation plan.

ACTION 2.1.5	Power, Service, Electrical, and Water Distribution Lines
Analysis	Communities can work with their local Public Power District or Electricity Department to identify vulnerable transmission and distribution lines and plan to bury lines underground, upgrade, or retrofit existing structures to be less vulnerable to storm events. Electrical utilities shall be required to use underground construction methods where possible for future installation of power lines.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms, Flooding
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$50,000 to $70,000 (per mile for electrical)
Potential Funding	HMGP, PDM, Public Power Districts, Upper Big Blue Natural Resources District
Timeline	Ongoing as funding is available
Priority	Low
Lead Agency	Local Public Power District/ Local Electric Dept., Local Governments, Upper Big Blue Natural Resources District

ACTION 2.1.5	**Power, Service, Electrical, and Water Distribution Lines**
Status	This action was listed in the previous mitigation plan.

ACTION 2.1.6	**Safe Rooms**
Analysis	Assess, design and construct fully supplied safe rooms in highly vulnerable urban and rural areas such as mobile home parks, campgrounds, schools, and other such areas throughout the planning area. Assess the adequacy of current public buildings to be used as safe rooms. Construct safe rooms in areas of greatest need, either as new construction or retrofitting.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms
Benefits	Reduce the risk of death or injury in areas vulnerable to tornados, severe thunderstorms and other hazards.
Estimated Cost	$200-$300/sf stand alone; $150-200/sf addition/retrofit
Potential Funding	PDM, HMPG
Timeline	Ongoing
Priority	Medium
Lead Agency	Local Governments, York County Emergency Management
Status	This action was listed in the previous mitigation plan.

ACTION 2.1.7	**Stabilize/Anchor Fertilizer, Fuel, and Propane Tanks**
Analysis	Anchor fuel tanks to prevent movement. If left unanchored, tanks could present a major threat to property and safety in tornado or high wind event.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Address	Tornados, High Winds
Benefits	Limits the chance of fuel/chemical spills. Reduces chance that propane tanks and other items become missiles during tornado events.
Estimated Cost	$1,000 plus
Potential Funding	PDM, HMGP
Timeline	Ongoing
Priority	Medium
Lead Agency	York County and Local Governments, Residents and Fuel Suppliers
Status	This action was listed in the previous mitigation plan.

ACTION 2.1.8	**Stormwater System and Drainage Improvements**
Analysis	Larger communities generally utilize underground stormwater systems comprising of pipes and inlets to convey runoff. Undersized systems can contribute to localized flooding. Stormwater system improvements may include pipe upsizing and additional inlets. Smaller communities may utilize stormwater systems comprising of ditches, culverts, or drainage ponds to convey runoff. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Bridges typically serve as flow restrictions along streams and rivers. Cleanout and reshaping of channel segments at bridge crossing can increase conveyance, reducing the potential for flooding. Replacement or modification of bridges and other flow restrictions may be necessary to provide greater

ACTION 2.1.8	Stormwater System and Drainage Improvements
	capacity, maintain or improve structural integrity during flood events, and eliminate flooding threats and damages. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Benefits	These improvements can serve to more effectively convey runoff within cities and towns, preventing interior localized flooding. May also reduce the risk of illness/ disease by eliminating standing water.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000 to $100,000+
Potential Funding	HMGP, CDBG, Upper Big Blue Natural Resources District, York County & Local Governments
Timeline	Five Years
Priority	Medium
Lead Agency	Local Governments
Status	This action was listed in the previous mitigation plan.

ACTION 2.1.9	Stream Bank Stabilization / Grade Control Structures/ Channel Improvements
Analysis	Stream bank/ bed degradation can occur along many rivers and creeks. Stabilization improvements including rock rip rap, vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Grade control structures including sheet-pile weirs, rock weirs, ponds, road dams, etc. can be implemented and improved to maintain the channel bed. Channel stabilization can protect structures, increase conveyance and provide flooding benefits. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Flooding
Benefits	Protects structures near banks from flooding and shifting by reducing risk of flow disruption. Low maintenance solution to reduce the risk of recurring maintenance from banks falling in and increase conveyance.
Estimated Cost	$50,000 to $100,000+
Potential Funding	USACE, PDM, HMGP, Upper Big Blue Natural Resources District, York County & Local Governments
Timeline	Three to Five years
Priority	Medium
Lead Agency	Local Governments, Upper Big Blue Natural Resources Districts
Status	This action was listed in the previous mitigation plan.

ACTION 2.1.10	Windbreaks / Living Snow Fence
Analysis	Installation of windbreaks to increase water storage capacity in soil.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Drought
Benefits	Help hold moisture in times of drought to support ranching economy, helpful for water storage in the district. Prevents snow from collecting on rural

ACTION 2.1.10	Windbreaks / Living Snow Fence
	roadways, increases accessibility to residences.
Estimated Cost	$2,000+
Potential Funding	Natural Resources District Cost Share
Timeline	Five years
Priority	Low
Lead Agency	Upper Big Blue Natural Resources District, York County
Status	This action was listed in the previous mitigation plan.

ACTION 2.1.11	Install Vehicular Barriers
Analysis	Install vehicular barriers to protect critical facilities and key infrastructure where possible.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Transportation Incidents
Benefits	Installing vehicular barriers may mitigate the impact of transportation accidents on critical facilities and key infrastructure.
Estimated Cost	Varies
Potential Funding	HMGP
Timeline	Two to Five years
Priority	Medium
Lead Agency	York County Emergency Management, Local Governments
Status	This is a new action.

ACTION 2.2.1	Drainage Study/ Stormwater Master Plan
Analysis	Preliminary drainage studies and assessments can be conducted to identify and prioritize design improvements to address site specific localized flooding/drainage issues to reduce and/or alleviate flooding. Stormwater master plans can be developed to help identify stormwater problem areas and potential drainage improvements.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	Flooding
Benefits	Proactive steps to identify all potential problems/issues can lead to effectively addressing improvements and prioritizing the projects to improve conditions. These improvements can serve to more effectively convey runoff within jurisdictions, preventing interior localized flooding resulting in damages. This ensures that the most beneficial projects are done first and could possibly eliminate the need for others.
Estimated Cost	$10,000 to $100,000+
Potential Funding	CDBG, Upper Big Blue Natural Resources District, York County & Local Governments
Timeline	One to Three years
Priority	Medium
Lead Agency	Local Governments, Upper Big Blue Natural Resources District, York County
Status	This action was listed in the previous mitigation plan.

ACTION 2.2.2	Flood-Prone Property Acquisition
Analysis	Voluntary acquisition and demolition of properties prone to flooding will reduce the general threat of flooding for communities. Additionally, this can provide flood insurance benefits to those communities within the NFIP. Communities must be in good standing with NFIP in order to be eligible for HMGP.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	Flooding
Benefits	A onetime cost to remove/relocate vulnerable properties will prevent future recurring repair costs.
Estimated Cost	Varies; Dependent upon market value of the structure
Potential Funding	HMGP, PDM, CDBG, USACE, FMA, SRL, RLC
Timeline	One to two years
Priority	Low
Lead Agency	Local Governments, Upper Big Blue Natural Resources District, York County
Status	This action was listed in the previous mitigation plan.

ACTION 2.2.3	Drought Monitoring Plan and Procedures
Analysis	Develop and implement a plan/ program to monitor the effects of drought.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	Drought
Benefits	Communities can be proactive and well prepared to act as the affects of drought become an issue. Through monitoring systems, communities can mitigate potential damages or costs from the results of a drought event.
Estimated Cost	N/A
Potential Funding	HMGP, PDM
Timeline	Five years
Priority	Medium
Lead Agency	Local Governments, Upper Big Blue Natural Resources District
Status	This action was listed in the previous mitigation plan.

ACTION 2.2.4	Dam Engineering Analysis / Improvements and Reinforcement
Analysis	Conduct a preliminary engineering analysis for dam repairs and reinforcement. Dams serve to provide flood protection to businesses and residents during large storm events. Improvements to existing dams will increase flood protection. The Emergency Action Plan, Dam Breech Analysis, and/ or inspection/ safety equipment training may need to be updated along with improvements.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	Flooding
Benefits	Dams serve to provide flood protection to businesses and residents during large storm events. Improvements to existing dams will increase flood protection.
Estimated Cost	$500,000+
Potential Funding	USACE, HMGP, PDM
Timeline	Five years
Priority	Low

ACTION 2.2.4	**Dam Engineering Analysis / Improvements and Reinforcement**
Lead Agency	Local Governments, Upper Big Blue Natural Resources District
Status	This action was listed in the previous mitigation plan.

ACTION 2.2.5	**Groundwater/Irrigation/Water Conservation Management Plan**
Analysis	Develop and implement a plan/ best management practices to conserve water use and reduce total use (high water use to low water use) and consumption of groundwater resources by citizens and irrigators of agricultural land during elongated periods of drought. Identify water saving irrigation projects or improvements such as sprinklers or soil moisture monitoring. Potential restrictions on water could include limitations on lawn watering, car washing, farm irrigation restrictions, or water sold to outside sources. Implement BMPs through water conservation practices such as changes in irrigation management, education on no-till agriculture and modified crop selection, and use of xeriscaping in communities.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	Drought
Benefits	Conserving water during periods in which the demand increases along with best management practices will reduce the total consumption of groundwater resources and ensure an adequate water supply during drought periods and reduces the risk of depleting the water supply. This protects the residents and the local agricultural economy.
Estimated Cost	$10,000+
Potential Funding	HMGP, PDM, Upper Big Blue Natural Resources District, NDEQ, York County & Local Government
Timeline	Ongoing
Priority	Medium
Lead Agency	Local Governments, Upper Big Blue Natural Resources District
Status	This action was listed in the previous mitigation plan.

ACTION 2.2.6	**Source Water Contingency Plan**
Analysis	Villages and cities can evaluate and locate new sources of groundwater to ensure adequate supplies to support the existing community and any additional growth which may occur. Also, identify and develop water sources for fire protection.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	Drought, Wildfire
Benefits	Provide adequate water sources to mitigate potential damages or expenses due to drought or wildfire.
Estimated Cost	$5,000+
Potential Funding	CDBG, SRF, NDEQ
Timeline	Five years
Priority	High
Lead Agency	Local Governments
Status	This action was listed in the previous mitigation plan.

ACTION 2.2.7	Community Continuity Plan
Analysis	Develop continuity plans for critical community services.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	All Hazards
Benefits	Developing the plans will improve the resilience probability of these services during hazardous events.
Estimated Cost	$500-$1,000
Potential Funding	PDM, HMPG, Local Funds
Timeline	Two to Five years
Priority	Medium
Lead Agency	York County Emergency Management
Status	Not Yet Started. This is a new action.

ACTION 2.2.8	Vulnerable Population Support Database
Analysis	Work with stakeholders to develop a database of vulnerable populations and the organizations which support them.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	All Hazards
Benefits	Developing and maintaining this database will allow communities to better serve vulnerable populations in the face of hazards.
Estimated Cost	Varies
Potential Funding	HMGP, PDM
Timeline	Two to Five years
Priority	Medium
Lead Agency	Health Services
Status	Not Yet Started. This is a new action.

ACTION 2.2.9	Business Continuity Plans
Analysis	Educate local businesses on the value of continuity planning.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	All hazards
Benefits	Educating local businesses on this may increase the number of business that develop continuity plans.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	Two to Five years
Priority	Medium
Lead Agency	York County Emergency Management
Status	Not Yet Started. This is a new action.

ACTION 2.3.1	Floodplain Regulation Enforcement and Updates
Analysis	Continue to enforce local floodplain regulations for structures located in the 1-percent floodplain. Strict enforcement of the type of development and elevations of structures should be considered through issuance of building permits by any community or county. Continue education of building inspectors or Certified Floodplain Managers.
Goal/Objective	Goal 2/Objective 2.3

ACTION 2.3.1	Floodplain Regulation Enforcement and Updates
Hazard(s) Addressed	Flooding
Benefits	Ensures that no new structures built will be vulnerable to flooding. Reducing damages and health risks associated with flooding.
Estimated Cost	$4,000+
Potential Funding	HMGP, CDBG
Timeline	Ongoing
Priority	High
Lead Agency	Local Governments, NDNR
Status	This action was listed in the previous mitigation plan.

ACTION 2.3.2	Maintain Good Standing with National Flood Insurance Program (NFIP)
Analysis	Maintain good standing with National Flood Insurance Program (NFIP) including floodplain management practices/ requirements and regulation enforcements and updates.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Enable property owners to purchase insurance protection against flood losses. Good standing enables participants to apply for PDM and HMGP cost-share.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	Ongoing
Priority	High
Lead Agency	Local Governments, NDNR
Status	This action was listed in the previous mitigation plan.

ACTION 2.3.3	Participate in the National Flood Insurance Program (NFIP)
Analysis	Participate in the National Flood Insurance Program (NFIP).
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Enable property owners to purchase insurance protection against flood losses. Good standing enables participants to apply for PDM and HMGP cost-share.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	Ongoing
Priority	High
Lead Agency	Local Governments, NDNR
Status	This action was listed in the previous mitigation plan.

ACTION 2.3.4	Tree City USA
Analysis	Work to become a Tree City USA through the National Arbor Day Foundation in order to receive direction, technical assistance, and public education on how to establish a hazardous tree identification and removal program in order to limited potential tree damage and damages caused by trees in a community when a storm event occurs. The four main requirements include: 1) Establish a tree board; 2) Enact a tree care ordinance; 3) Establish a forestry care program; 4) Enact an Arbor Day observance and proclamation.

ACTION 2.3.4	Tree City USA
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	Better maintained trees and hazard tree removal will eliminate damages to power lines and personal property during hazards events. Participation in Tree City USA will support community actions to mitigation damages from trees.
Estimated Cost	$1,000+
Potential Funding	Arbor Day Foundation, US Forest Service
Timeline	Ongoing
Priority	Medium
Lead Agency	Local Governments
Status	This action was listed in the previous mitigation plan.

ACTION 2.3.5	Floodplain Management
Analysis	Continue or improve floodplain management practices such as adoption and enforcement of floodplain management requirements (regulation of construction in SFHAs), floodplain identification and mapping (local requests for map updates), description of community assistance and monitoring activities, explanation for failure to participate in the NFIP, Community Rating System (CRS), and participation in FEMA's Cooperating Technical Partners Program (CTP) to increase local involvement in the flood mapping process.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Reduced vulnerability to people and property from flooding events.
Estimated Cost	N/A
Potential Funding	HMGP, PDM,SRL
Timeline	Ongoing
Priority	High
Lead Agency	Local Governments, NDNR
Status	This action was listed in the previous mitigation plan.

ACTION 2.3.6	Firewise Community
Analysis	Work to become a Firewise Community/USA participant through the Nebraska Forest Service and US Forest Service in order to educate homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire. The Firewise Communities approach emphasizes community responsibility for planning in the design of a safe community as well as effective emergency response, and individual responsibility for safer home construction and design, landscaping, and maintenance.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Wildfire
Benefits	The national Firewise Communities program is intended to serve as a resource for agencies, tribes, organizations, fire departments, and communities across the U.S. to reduce loss of lives, property, and resources to wildland fire by building and maintaining communities in a way that is compatible with our natural surroundings.

ACTION 2.3.6	**Firewise Community**
Estimated Cost	$20,000
Potential Funding	Nebraska Forest Service, US Forest Service
Timeline	Ongoing
Priority	Medium
Lead Agency	Local Governments
Status	This action was listed in the previous mitigation plan.

ACTION 2.3.7	**Promote Higher Code**
Analysis	Promote the use of higher codes and standards, such as the Fortified for Safer Living Standard, in order to provide greater protection for any new construction or building retrofits.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	All hazards
Benefits	Future development will be less prone to damages from hazards.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	Ongoing
Priority	High
Lead Agency	Local Governments
Status	This is a new action.

ACTION 2.3.8	**Hail Resistant Roofing**
Analysis	Encourage the use of hail resistant roofing for any new construction.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	All hazards
Benefits	Limits the damage to property from hail events.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	Two to Five years
Priority	Low
Lead Agency	Local Governments
Status	Not Yet Started. This is a new action.

ACTION 2.3.9	**Preserve Natural Floodplain**
Analysis	Preserve natural and beneficial functions of floodplain land through measures such as: retaining natural vegetation, restoring streambeds; and preserving open space in the floodplain.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Address	Flooding, Dam Failure, Levee Failure
Benefits	Withholding development in natural floodplains may minimize the impact of flooding events in the community.
Estimated Cost	Varies
Potential Funding	FMA; local funds; corporate partnerships; local foundations; park funds
Timeline	Two to Five years

ACTION 2.3.9	**Preserve Natural Floodplain**
Priority	High
Lead Agency	Local Governments
Status	This is a new action.

ACTION 2.3.10	**Adopt a No Adverse Impact**
Analysis	Adopt a no adverse impact approach to floodplain management
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Address	Flooding, Dam Failure, Levee Failure
Benefits	The approach may help minimize the impact of flooding to the community.
Estimated Cost	Varies
Potential Funding	FMA; local funds; corporate partnerships; local foundations; park funds
Timeline	Two to Five years
Priority	Low
Lead Agency	Local Governments
Status	This is a new action.

ACTION 2.3.11	**Low Impact Development**
Analysis	Utilize low impact development practices and green infrastructure to reduce flood risk.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Address	Flooding, Dam Failure, Levee Failure
Benefits	The approach may help minimize the impact of flooding to the community.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	Two to Five years
Priority	Low
Lead Agency	Local Governments
Status	This is a new action.

ACTION 2.3.12	**Facilities for Vulnerable Populations**
Analysis	Ensure that all critical facilities, businesses, and residents located near major transportation corridors and near fixed site chemical facilities are aware of how to safely shelter in place in the event of a chemical incident.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	All hazards
Benefits	Educating the public on sheltering in place may improve the ability and safety of the community to do so in the case of a hazardous event.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	Two to Five years
Priority	High
Lead Agency	Emergency Management, Local Governments, Planning and Zoning
Status	This is a new action.

ACTION 3.1.1	Public Awareness / Education
Analysis	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing education equipment such as overhead projectors and laptops.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Public awareness reduces the risk of property loss and damage, injury and death. It increases knowledge on emergency procedures, facilities, conservation, and is key to preparedness.
Estimated Cost	$0-$5,000+
Potential Funding	HMGP, PDM,
Timeline	Ongoing
Priority	Low
Lead Agency	Emergency Management Director
Status	In Progress. This action was listed in the previous mitigation plan.

ACTION 3.1.2	Mitigation Education
Analysis	Educate the public and business owners regarding rain gardens, green roofs, and other minor mitigation measures.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Educating the public on these options may increase the number of mitigation actions taken by the public and business owners.
Estimated Cost	Varies
Potential Funding	Local Funds
Timeline	Two to Five years
Priority	Low
Lead Agency	Emergency Management Director. Local Governments
Status	This is a new action.

ACTION 3.1.3	Sheltering in Place Outreach
Analysis	Ensure that all critical facilities, businesses, and residents located near major transportation corridors and near fixed site chemical facilities are aware of how to safely shelter in place in the event of a chemical incident.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	Radiological and Chemical Incidents (Transportation / Fixed Site)
Benefits	Educating the public on sheltering in place may improve the ability and safety of the community to do so in the case of a hazardous event.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	Two to Five years
Priority	High
Lead Agency	Emergency Management, Local Governments
Status	This is a new action.

ACTION 3.1.4	**Promote First Aid**
Analysis	Promote first aid training for all residents.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Community residents with knowledge of first aid can assist in responding to accidents and disasters.
Estimated Cost	$500+
Potential Funding	Local funds; corporate donations; community foundations; and volunteer time
Timeline	Ongoing
Priority	Medium
Lead Agency	Health Services
Status	Not started. This is a new action.

ACTION 4.1.1	**Civil Service Improvements**
Analysis	Improve emergency rescue and response equipment and facilities by providing additional, or updating existing emergency response equipment. This could include fire equipment, ATVs, water tanks/truck, snow removal equipment, pumps, etc. This would also include developing backup systems for emergency vehicles, identifying and training additional personnel for emergency response, or continuing educational opportunities for current personnel.
Goal/Objective	Goal 4/Objective 4.2
Hazard(s) Addressed	All Hazards
Benefits	Having appropriate and up to date equipment along with adequately trained and numbered personnel increases safety and reduces the risk of damage.
Estimated Cost	$5,000 to $400,000 per vehicle, varies depending on what equipment is needed
Potential Funding	PDM, NEMA, Governing County and Local Governing Agency
Timeline	Ongoing
Priority	Medium
Lead Agency	Governing County and Local Governing Agency
Status	This action was listed in the previous mitigation plan.

ACTION 4.1.2	**Improve Snow / Ice Removal Program / Snow Fence**
Analysis	Revise and improve the snow and ice removal program for streets. Revisions should address situations such as plowing snow, ice removal, parking during snow and ice removal, and removal of associated storm debris. This would include updating the emergency routes, acquiring equipment that is needed, paving routes, and ordinances as necessary. Consider purchase of snow fence at critical areas and installation of living snow fence.
Goal/Objective	Goal 4/Objective 4.1
Hazard(s) Addressed	Severe Winter Storms
Benefits	Having an effective snow/ice removal program will improve capabilities to rescue stranded residents and increase the capacity in which snow can be removed after a severe winter storm.
Estimated Cost	$20,000+
Potential Funding	PDM

ACTION 4.1.2	Improve Snow / Ice Removal Program / Snow Fence
Timeline	Ongoing
Priority	Medium
Lead Agency	Local Governments
Status	This action was listed in the previous mitigation plan.

ACTION 4.3.1	Alert / Warning Sirens
Analysis	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking and remote activation.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather; promoting awareness and ensures people take shelter when needed.
Estimated Cost	$15,000+
Potential Funding	HMGP, PDM, Natural Resource District, County & Local Governing Agency
Timeline	Three to Five years
Priority	Medium
Lead Agency	County E911, Emergency Management, Local Governments
Status	This action was listed in the previous mitigation plan.

ACTION 4.3.2	Emergency Communications
Analysis	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish inner-operable communications.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Coordination and clear and efficient communications between agencies increases the capabilities to protect and rescue, increases safety, and reduces the risk of mistakes due to miscommunications.
Estimated Cost	$10,000+
Potential Funding	Homeland Security, Natural Resource District, County & Local Governing Agency
Timeline	Three years
Priority	Medium
Lead Agency	Local Governments, Emergency Management
Status	This action was listed in the previous mitigation plan.

ACTION 4.3.3	Warning Systems
Analysis	Improve city cable TV interrupt warning system and implement telephone interrupt system such as Reverse 911.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduces the risk of death/injury associated with severe weather; promoting awareness and ensures people take shelter when needed.
Estimated Cost	$10,000+
Potential Funding	HMGP, PDM, Natural Resource District, County & Local Governing Agency

ACTION 4.3.3	Warning Systems
Timeline	Two to Four years
Priority	High
Lead Agency	Local Governments
Status	This action was listed in the previous mitigation plan.

ACTION 4.3.4	Weather Radios
Analysis	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather conditions by communication.
Estimated Cost	$50 per radio
Potential Funding	HMGP, PDM, Natural Resource District, County & Local Governing Agency
Timeline	Ongoing
Priority	Medium
Lead Agency	Local Governments
Status	This action was listed in the previous mitigation plan.

COMPLETED MITIGATION ACTIONS

Previously completed mitigation actions are identified per community in their specific participant sections.

IMPORTANCE OF NATIONAL FLOOD INSURANCE PROGRAM

The National Flood Insurance Program (NFIP) was established in 1968 to reduce flood losses and disaster relief costs by guiding future development away from flood hazard areas where practicable; by requiring flood resistant design and construction practices; and by transferring the costs of flood losses to the residents of floodplains through flood insurance premiums.

In return for availability of federally backed flood insurance, communities applying to join the NFIP must agree to adopt and enforce minimum flood loss reduction standards to regulate proposed development in special flood hazard areas as defined by the Federal Emergency Management Agency's (FEMA) flood maps. One of the strengths of this program has been keeping people away from flooding rather than keeping the flooding away from people through historically expensive flood control projects.

The NFIP has approximately 4.4 million policies in force, representing over $370 billion worth of coverage, in 19,884 participating communities nationwide. Ninety-five percent of flood insurance policies are written by private companies and sold by more than 110,000 insurance agents and brokers participating in the NFIP's Write Your Own (WYO) program. Since 1969, over $12.1 billion in claims have been paid.

Currently, Nebraska has 13,300 policies in force representing $1.3 billion worth of coverage.

The Community Rating System (CRS) is a new program of the NFIP. It was created as an incentive mechanism aimed at recognizing and encouraging exemplary community floodplain management that exceeds minimum NFIP standards. Flood insurance premium rates are adjusted to reflect reduced risk resulting from community activities that meet the three goals of the CRS: reducing flood losses; facilitating accurate insurance rating; and promoting the awareness of flood insurance.

The NFIP has been successful in requiring new buildings to be protected from damage by the 100-year flood. The CRS provides an incentive for communities to do more than regulate construction of new buildings to the minimum national standards. Under the CRS, flood insurance premium rates are adjusted to reflect community activities

designed to reduce flood damage to existing buildings, to manage development in areas not mapped by the NFIP, to protect new buildings beyond minimum NFIP protection level, to help insurance agents obtain flood data, and to help people obtain flood insurance.

Currently, policyholders in CRS participating communities can receive discounts from their policy premiums ranging from 5 percent to 45 percent.

Each jurisdiction's participation in NFIP is listed in Section *4: Risk Assessment*. This plan recommends and encourages each participating community to remain in good standing with this program and continue to be involved as a participant with NFIP. Compliance with the NFIP should remain a top priority for each participating community regardless of whether a flood map will be delineated for the community.

SECTION SIX: PLAN IMPLEMENTATION AND MAINTENANCE

MONITORING, EVALUATION, AND UPDATING THE PLAN

Participants of the York County plan will be responsible for monitoring (annually), evaluating, and updating of the plan. Hazard mitigation projects will be prioritized by each participant's governing body with support and suggestions from the public and business owners. Unless otherwise specified by each participant's governing body, the City or Village Administrator/Manager will be responsible for implementation of the recommended projects. The party responsible for the various implementation actions will report on the status of all projects and will include which implementation processes worked well, any difficulties they encountered, how coordination efforts are proceeding, and which strategies could be revised.

To assist with the monitoring of the plan as each recommended project is completed, a detailed timeline of how that project was completed will be written and attached to the plan in a format selected by the governing body. Items to be included will be: timelines, agencies involved, area(s) benefited, total funding (if complete), etc.

At the discretion of each governing body, a local task force may be used to review the original draft of the mitigation plan and to recommend changes.

Revision and updating of the plan will occur at least every five years and is recommended to occur more often, especially after the occurrence of significant events, however updates are at the discretion of each governing body. The governing body shall start meeting to discuss mitigation updates at least six months prior to the deadline for completing the plan review. The persons overseeing the evaluation process will review the goals and objectives of the previous plan and evaluate them to see that they are still pertinent and current. Among other questions, they may want to ask themselves:

- Do the goals and objectives address current and expected conditions?
- If any of the recommended projects have been completed, did they have the desired impact on the goal for which they were identified? If not, what was the reason it was not successful (lack of funds/resources, lack of political/popular support, underestimation of the amount of time needed, etc.)?
- Have the nature, magnitude, and/or type of risks changed?
- Are there implementation problems?
- Are current resources appropriate to implement the plan?
- Were the outcomes as expected?
- Did the plan partners participate as originally planned?
- Are there other agencies that should be included in the revision process? Worksheets attached in *Appendix D* may also be used to assist in plan updates.

In addition, the governing body will be responsible for ensuring that the Hazard Mitigation Plan goals and objectives are incorporated into applicable revisions of each participant's comprehensive plan and any new planning projects undertaken by the participant. The Hazard Mitigation Plan should also take into account any changes in the comprehensive plan, and incorporate the information accordingly in its next update.

INCORPORATION INTO EXISTING PLANNING MECHANISMS

Due to a lack of existing planning mechanisms for most communities, especially smaller villages, the Hazard Mitigation Plan may be incorporated into each participant's comprehensive development plan. This would ensure that the mitigation component of the comprehensive plan would be consistently revisited and reviewed. However, care must be taken so that this mitigation portion is reviewed and updated every five years, as the evaluation and updating of the comprehensive plan is currently done on a 10-year basis.

CONTINUED PUBLIC INVOLVEMENT

To ensure continued Hazard Mitigation Plan support and suggestions from the public and business owners, public involvement should remain a top priority for each plan participant. Public meetings involving discussion of mitigation updates should be published and posted in the following locations with a minimum of two weeks' notice:

- Public spaces around City/Village
- City/Village hall
- Web sites
- Local newspapers
- Regionally-distributed newspaper

UNFORESEEN OPPORTUNITIES

If any major new, innovative mitigation strategies arise and could impact the planning area or elements of this plan and which are determined to be of importance, a plan amendment may be proposed and considered separate from the annual review and other proposed plan amendments. York County should compile a list of proposed amendments received annually and prepare a report providing applicable information for each proposal, and recommend action based on the proposed amendments.

SECTION SEVEN: YORK COUNTY PARTICIPANT SECTIONS

PURPOSE OF PARTICIPANT SECTIONS

Participant sections contain information specific to jurisdictions that have participated in the York County planning effort. Information from individual communities was collected at public meetings and used to establish the plan. Participant sections include background information such as history and development, location, geography, climate, demographics, and listing of jurisdiction specific documents used to establish the plan. In addition maps specific only to single jurisdictions are included such as: structural inventory, emergency siren ranges, critical facilities, highly vulnerable areas/populations, and 1% floodplain boundaries.

Please note that depending upon which hazards are present, or what information was available at the time of the planning period, that not all participating jurisdictions will have the same information. For example, a number of jurisdictions do not have a 1% flood hazard area or have not had a Flood Insurance Rate Map delineated therefore the map may not be included.

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PARTICIPANT SECTION FOR YORK COUNTY

York County

Multi-Jurisdictional Hazard Mitigation Plan

April 2015

HISTORY AND DEVELOPMENT OF YORK COUNTY

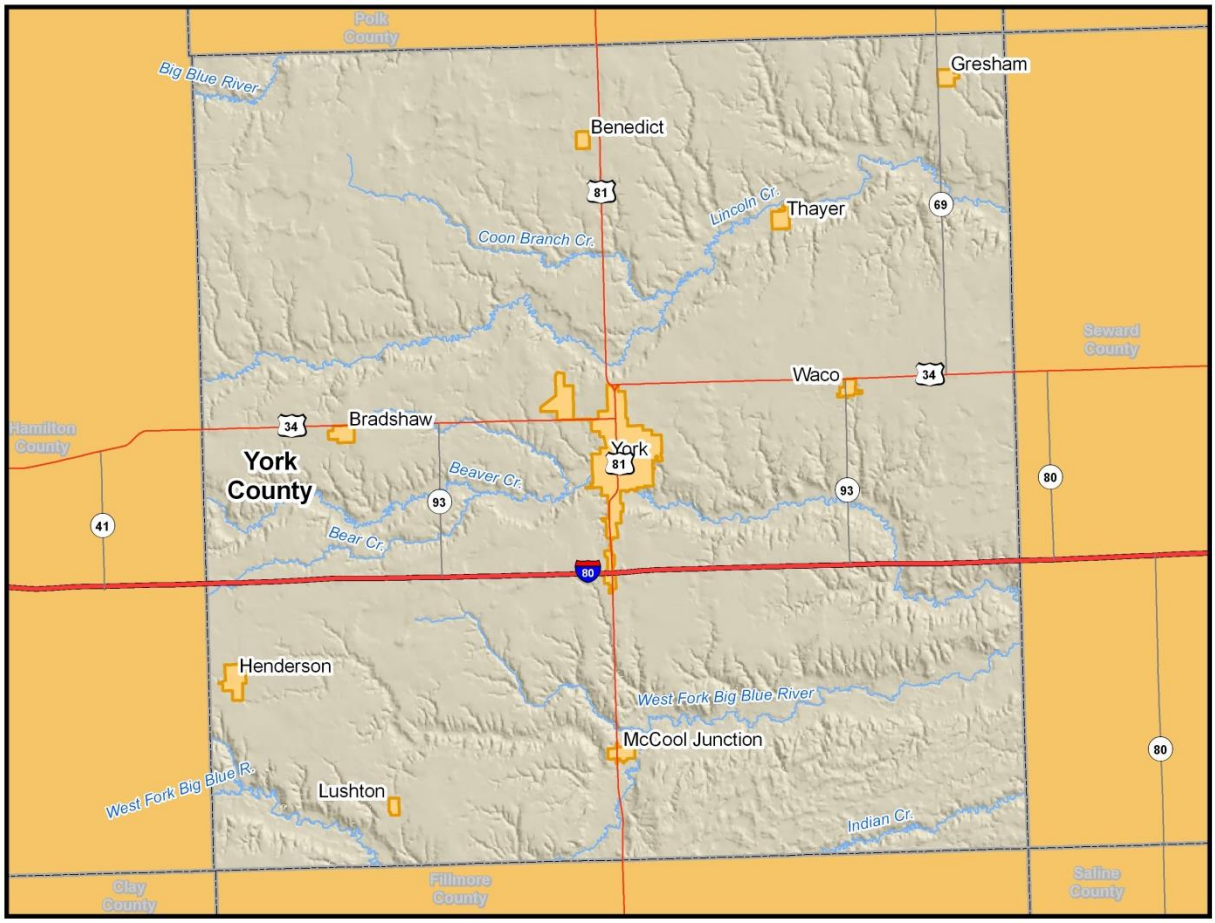
York County was formed in 1855 and named for the city York in England or York County in Pennsylvania.

LOCATION AND GEOGRAPHY

York County is one of the 93 counties in the State of Nebraska. It is located in the east central region of the state. The communities in York County include Benedict, Bradshaw, Gresham, Henderson, Lushton, McCool Junction, Thayer, Waco, and York. The City of York is the county seat. York County covers an area of 576 square miles and has an average elevation of 1,636 feet above sea level.

York County contains two primary topographic regions according to the Conservation and Survey Division of the University of Nebraska- Lincoln. These include 'plains' across the large majority of the county and smaller areas of 'valleys' throughout the county. Plains are general categorized as flat lying land that lies above the valley. The materials of the plains are sandstone or stream deposited silt, clay, sand and gravel overlain by wind deposited silt. Valleys are classified as flat-lying land along the major streams. The materials of the valleys are stream-deposited silt, clay, sand and gravel. York County lies primarily in the Big Blue River Watershed.

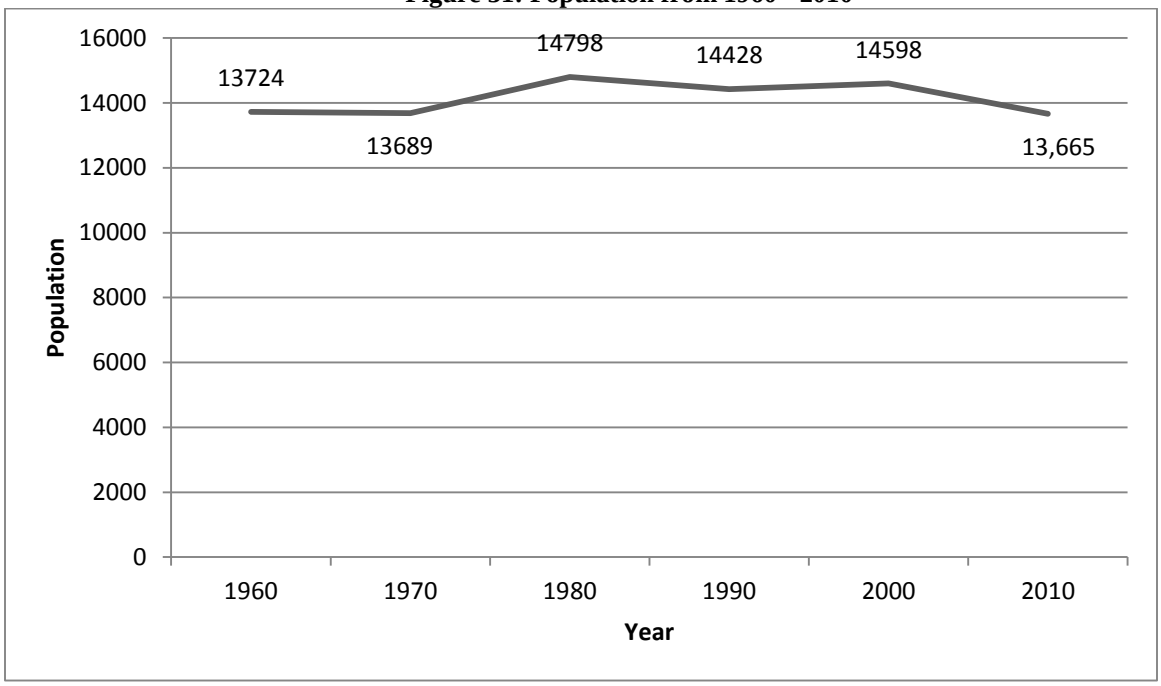
Figure 30: Topographic Map



YORK COUNTY DEMOGRAPHICS

Below Figure 31 displays the historical population trend for York County from 1960 to 2010. York County is currently experiencing a decline in population. Communities with a declining population may also have a higher level of unoccupied housing that is not being maintained. A decreasing population can also represent decreasing tax revenue for the community which could make implementation of mitigation actions more challenging.

Figure 31: Population from 1960 - 2010



The following table shows the population change for York County from 1990 to 2010 and provides an estimated 2020 population based on the 2000 – 2010 population trends. If the population trend from 2000-2010 continues, York County can expect a population of 12,792 people in 2020.

Table 46: Population Trends and Projections

	1990	2000	2010	% Changed 2000 - 2010	2020 Projected Population
York County	14,428	14,598	13,665	-6.4%	12,792

The following table illustrates the age distribution and median age for York County as compared to the state of Nebraska and surrounding counties. The populations of children under five years old and adults older than sixty-five are more vulnerable to certain hazards.

Table 47: Population by Age, Regional Comparison

	Nebraska	York County	Butler County	Clay County	Fillmore County	Hamilton County	Merrick County	Polk County	Saline County	Seward County
< 5 yrs.	7.2%	6.4%	5.9%	6.2%	5.6%	5.8%	6.0%	6.0%	7.1%	6.1%
5 - 64 yrs.	79.3%	75.4%	75%	75.9 %	72.1%	22.2%	76.0%	74.2 %	78.3 %	78.7 %
> 65 yrs.	13.5%	18.2%	19.1 %	17.9 %	22.3%	16.4%	18.0%	19.8 %	14.6 %	15.2 %
Median Age	36.2	40.1	44.3	43.2	46.3	42.3	42.5	45.3	36.4	38.0

HOUSING AND ECONOMICS

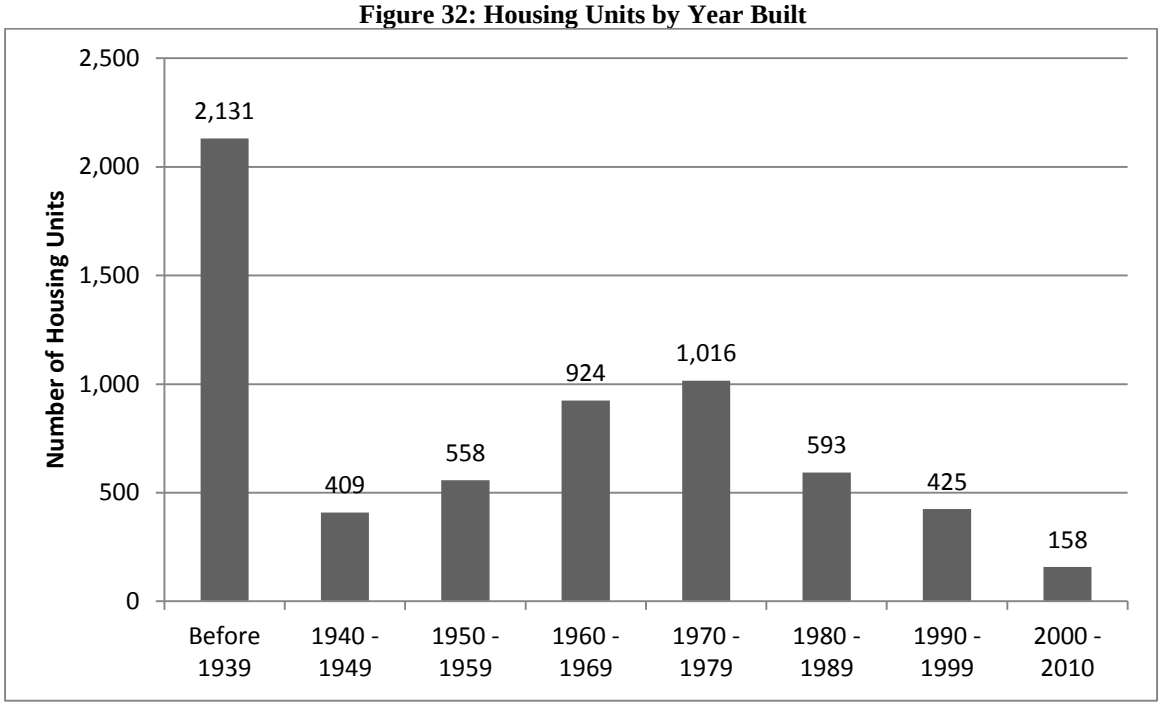
Table 48 shows how the median household income, per capita income, home value and rent for the county compare with that of the state of Nebraska. These economic indicators may influence a community's level of resiliency after hazard events.

Figure 32 indicates that approximately a third of the homes in York County were built prior to 1940. The State of Nebraska adopted its first statewide building code in 1987. Older homes built prior to the building code may be more vulnerable to hazards.

Table 48: Housing and Economics

	Nebraska	York County
Median Household Income	$49,342	$47,689
Per Capita Income	$25,229	$25,412
Median Home Value	$123,900	$92,300
Median Rent	$648	$527

Figure 32: Housing Units by Year Built



According to the U.S. Census there are a total of 5,771 housing units in York County. Of those 5,771 units more than 7 percent (443 total units) are reported as vacant. Of the reported housing units 4,426 are located inside of the villages and cities of York County, leaving 1,345 or 23.3 percent of housing units in rural, unincorporated areas of the county.

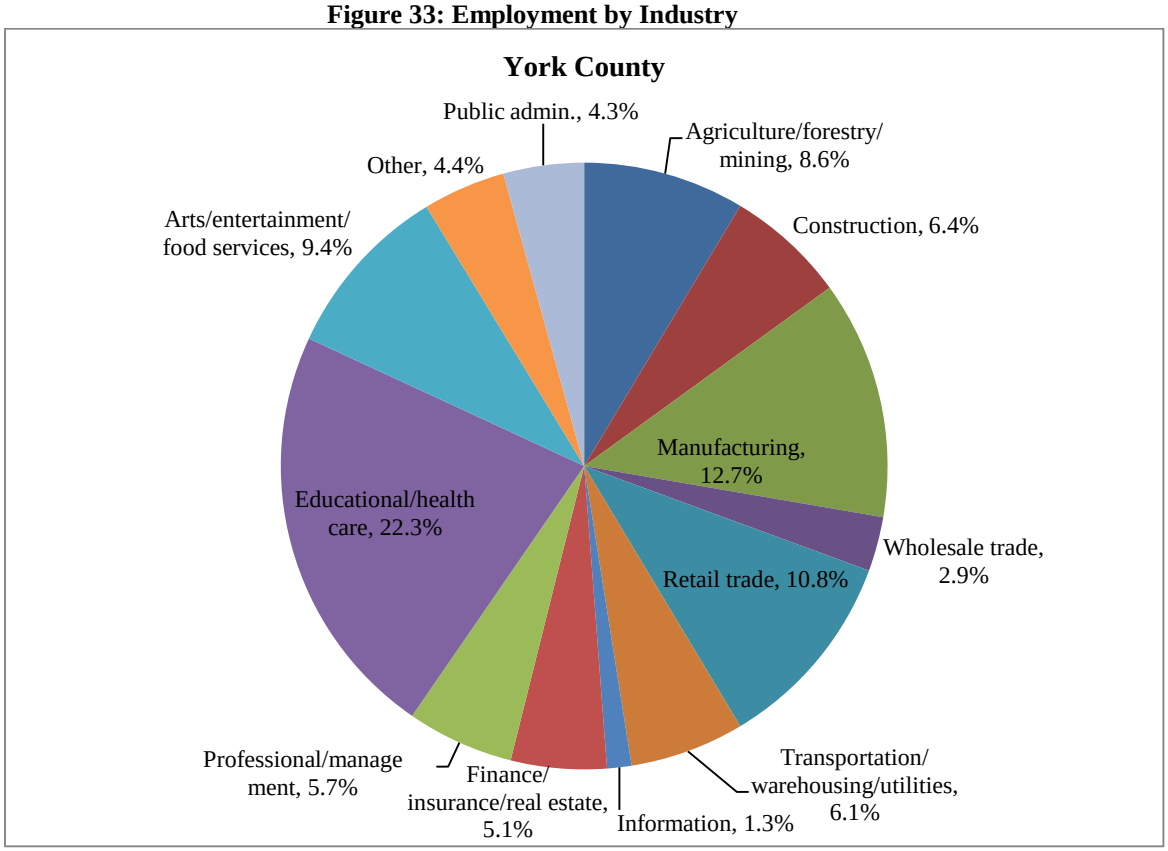
Table 49: Housing Units

Jurisdiction	Total Housing Units					Occupied Housing Units			
	Occupied		Vacant			Owner		Renter	
	Number	Percent	Number	Percent		Number	Percent	Number	Percent
York County	5,771	92.9%	443	7.1%		4,397	76.2%	1,374	23.8%

MAJOR EMPLOYERS

Major employers in York County include: Champion Homebuilders, Pioneer, Mycogen, and Monsanto. Figure YKC.4 shows the employment industries in York County.

Figure 33: Employment by Industry



AGRICULTURE

Agriculture is important to the economic fabric of York County and Nebraska. York County's 541 farms cover 339,591 acres of land, which accounts for 92 percent of the surface land in the county. Crop and livestock production are the visible parts of the agricultural economy, but many related businesses contribute as well by producing, processing and marketing farm and food products. These businesses generate income, employment and economic activity throughout the region.

Table 50: Agricultural Inventory

Agricultural Assets	Inventory
Number of farms	541
Land in farms	339,591
Estimated market value of land & buildings (per farm)	$3,534,628
Crop lands	313,071
Cattle Inventory	45,226
Grain corn bushels	37,406,032
Silage corn tons	30,989

Source: USDA Census of Agriculture, 2012

STRUCTURAL INVENTORY AND VALUATION

A structural inventory was completed for the corporate limits of each incorporated community in York County though a window survey using GIS during the development of the 2010 hazard mitigation plan. For the purposes of this plan, a structural inventory for the unincorporated areas of the County was not required; efforts were made to utilize county GIS data to perform a comprehensive structural inventory for all areas of the county. At this time county GIS data is not sufficient to support this effort. The data set provided did not discriminate between land values and structural values making it impossible to accurately determine not only the overall value of structures but even an accurate account of how many structures exist within the entire planning area. In future updates GIS data should be revisited to determine structure count and valuations. To provide some level of detail related to county wide assets the following table shows taxable values by property type as provided by the Nebraska State Assessor's office.

Table 51: Real Estate Valuations by Sector

Structure Type	2013 Tax Valuation
Commercial/Industrial/Mineral Real	$233,996,438
Agricultural Improvements & Farm sites	$43,911,886
Residential Real	$517,802,033
Public/Quasi Public	$1,207,980
Railroad Real	$35,004,721
TOTAL STRUCTURES	**$831,923,058**

FUTURE DEVELOPMENT TRENDS

Any future development will take place within the County as communities grow. See the participant sections of the communities for their own future development trends. A planned new housing development north of York High School was identified by the local planning team.

RISK ASSESSMENT

Table 52 is a Risk Assessment identified specifically for York County. Refer to *Section 4: Risk Assessment* for a detailed explanation as to what this methodology is and why certain hazards did not pose a significant enough threat and were eliminated from detailed discussion. The five hazards of most concern to York County are: tornados, severe thunderstorms, severe winter storms, hail, and high winds. These hazards are discussed further in the subsections below. Additional hazards are discussed if previous occurrences or current circumstances lead the Planning Team to determine the hazards are a significant threat to the community.

Table 52: Community Based Risk Assessment

HAZARD TYPE	PREVIOUS OCCURRENCE? Yes/No	Specific Concerns Identified
Severe Winter Storm*	Yes	Damages to property and crops; power outages; damages to critical facilities
Tornado*	Yes	Increased vulnerability to older housing units and mobile homes; significant damages to property; potential loss of life
High Winds*	Yes	Increased vulnerability to older housing units and mobile homes; damages to property
Hail*	Yes	Significant damage to property and crops
Severe Thunderstorm*	Yes	Potential damages to property and crops; secondary hazards such as flooding and wildfires

HAZARD TYPE	PREVIOUS OCCURRENCE? Yes/No	Specific Concerns Identified
Flooding	Yes	Potential damages to properties; many structures in the floodplain
Extreme Heat	Yes	24.6% of population at higher level of vulnerability; Ag losses; Secondary hazards such as wildfires
Drought	Yes	Economic impacts; Land degradation; Secondary hazards such as wildfires
Earthquake	No	None
Wildfire	Yes	Potential loss of life, properties, and crops; Economic impacts
Landslide	No	None
Dam Failure	No	Loss of life and property damages due to high hazard dam failure
Levee Failure	No	None
Agricultural Disease	Yes	Economic concerns; Ag is major sector for the county
Earthquakes	No	None
Landslides	No	None
Urban Fire	Yes	Spread of fire due to age and density of structures; lack of sprinkler systems in critical facilities
Chemical and Radiological Hazards	Yes	Proximity to major transportation routes may increase vulnerability; economic impact
Terrorism	No	None
Civil Disorder	No	None

** One of the five hazards of most concern to the community*

HISTORICAL OCCURRENCES

The events recorded by NCDC are broken down to two types: county-based and zone-based events. The county-based records are events that affect the jurisdictions within the county while the zone-based records are those affecting the zone that include the county as part of the affected zone. Please refer to specific villages or cities within the county for the previous county-based severe weather events retrieved from NCDC. For zone-based events, there are 99 recorded events from 1996 to 2013.

Tornados

The county planning team identified tornados as the greatest concern for the county. The NCDC recorded 14 tornados from January 1996 to December 2013, which caused $6,100,000 in property damages and $1,000,000 in crop damages. On May 11, 2014 York County and neighboring Seward, Fillmore, Webster, and Clay Counties experienced a tornado outbreak with as many as nine tornados being confirmed. In York County there were considerable damages to crop irrigation systems (pivots) as well as damages to agricultural buildings and structures, and power poles. The local planning team estimates there was approximately $10 million in damages from the May tornado.

Severe Thunderstorm

The county planning team identified severe thunderstorms as a significant concern for the county. Severe thunderstorms are a regular part of the climate across York County. NCDC data records 52 events with a total of $1,731,000 in property damages and $850,000 in crop damages. A summary of the events with recorded damages can be found in the community sections where they occurred.

The local planning team indicated that critical facilities have backup generators. Critical facilities are also equipped with weather radios, but the signal is not always reliable.

Severe Winter Storm

The county planning team identified severe winter storms as a significant concern for the county. Severe winter storms are a regular part of the climate across York County. There are designated snow routes throughout York County, and snow removal resources are sufficient for county winter weather events.

According to the NCDC there were 54 severe winter storms in York County from 1996 through January 2013. These events resulted in $1,380,000 in property damage. The most significant winter storm event occurred in November of 2010 when widespread drizzle resulted in icy roads across the region. This event resulted in the death of four people in an auto accident; the driver of the vehicle lost control and crossed the median, colliding with an oncoming semi-truck.

Hail Events

The county planning team identified hailstorms as a significant concern for York County. NCDC data reports 139 events with a total of $4,312,000 in property damages and $18,438,000 in monetary losses recorded to crops. A summary of the events with recorded damages can be found in the participant sections. Hail in the unincorporated areas of the county is most likely to impact the agricultural areas of the county. There are more than 313,071 acres devoted to crops (mainly corn, soybeans, and sorghum). Hail storms can have devastating impacts on crops, causing up to a 100 percent loss.

High Winds

The county planning team identified high winds as a significant concern for the county According to NCDC data, there have been 14 storm events which included strong winds (50 kts./58 mph) resulting in $19,080 in property damages. Winds of this magnitude, according to the Beaufort Wind Force Ranking, can cause trees to uproot, considerable structure damage, and over turning of improperly anchored mobile homes.

Agricultural Disease

Although the hazard is not within the five greatest concerns, the county planning team identified that animal disease as a concern for the county. With the role of agriculture within the county, animal and plant disease may lead to significant losses for the farmers and agricultural industries across the county. According to the Nebraska Department of Agriculture there was one incident of Bluetongue, two incidents of Paratuberculosis, and three incidents of Porcine Reproductive and Respiratory disease in 2013 as well as one reported incident of Bluetongue in 2014.

Table 53: Agricultural Inventory - Live Stock

YORK COUNTY AGRICULTURAL INVENTORY	
Number Of Cattle Ranches	157
Cattle Inventory	45,226
Approximate Value*	$97,235,900

Source: USDA 2012 Agricultural Census
**Per head price based on the Samuel Roberts Nobel Foundation, 2014*

In York County, 92 percent of agricultural lands are devoted to crop farming. According to the USDA the approximate price of corn per bushel in February of 2014 is $4.29. The total value of crops in York County is approximately $160,471,877.

Table 54: Agricultural Inventory - Crops

YORK COUNTY AGRICULTURAL INVENTORY	
Number of Crop Farms	456
Crop Lands	313,071
Corn by Bushel	37,406,032
Approximate Value*	$160,471,877

Source: USDA 2012 Agricultural Census
**Per bushel price based on the USDA, 2014*

Drought

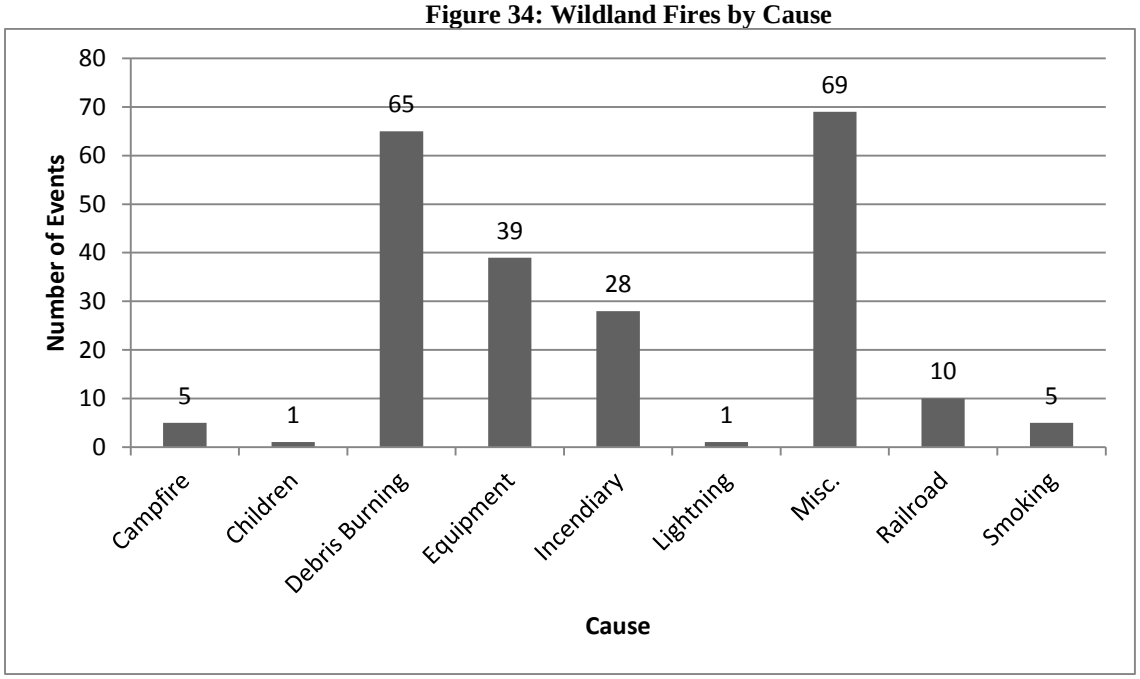
The local planning team determined that drought was not one of the five greatest hazards for the county. Drought is generally a regional event, with impacts from a single drought event impacting multiple communities, counties, and even states. For the community, 8 percent of the workforce relies on agricultural based income and the local economy could be significantly affected during severe droughts. Drought impacts are not as visual as impacts of other natural hazards and are hard to quantify.

Due to the regional nature of drought and lack of available information, drought will not be fully profiled in individual community sections that follow.

Grass/Wildfire

The county planning team did not identify grass/ wildfires as a significant concern for York County. However, according to the Nebraska Forestry Department there were 223 reported fires by the fire departments in: Benedict, Bradshaw, Gresham, Henderson, McCool Junction, Waco, and York between 2000 and 2012. These fires resulted in a total of 991 acres being burned (458 acres of rangeland, 7 acres of forest lands, and 526 acres of crop lands). The fires also resulted in more than $59,245 in damages to crops and $95,650 in damages to structures. Of the reported fires the most frequent cause was miscellaneous (31 percent), followed by debris burning (29 percent).

Figure 34: Wildland Fires by Cause



CAPABILITY ASSESSMENT

Thus far the planning process has identified the major hazards for the communities and described and quantified the vulnerability of the community to these risks by acquiring updated information from FEMA, local jurisdiction, and other sources. The following step shall be assessing what loss prevention or preparedness mechanisms are already in place, which is referred to as capability assessment. Combining the risk assessment with the local capability assessment results in a stronger mechanism in understanding locality's "net vulnerability" and to what extent they could be able to implement the goals, objectives, and actions.

County Governance

5 member Board of Commissioners:

- Oversee county funds & business
- Manage all roads & right-of-ways
- Maintain planning documents (One & Six Year Road Program, Comprehensive Development Plan, Zoning Regs.)
- Levy and collect taxes
- Provide suitable county buildings

Departments /Commissions /Offices

- Assessor
- Attorney
- Clerk
- Corrections
- Court (County/District)
- Election Commission
- Emergency Management
- Highway Superintendent
- Noxious Weeds
- Register of Deeds
- Sheriff
- Surveyor
- Treasurer

Table 55: Capabilities Assessment

Survey Components/Subcomponents		Comments
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Hazard Mitigation Plan	Yes
	Economic Development Plan	Yes
	Emergency Operational Plan	Yes
	National Resources Protection Plan	No
	Open Space Preservation plan	No
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Yes
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Hazard Mitigation Planning Commission	Yes
	Floodplain Administration	Yes
	Emergency Manager	Yes
	GIS Coordinator	Yes, County Treasurer
	Chief Building Official	No
	Civil Engineering	No
	Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	Yes, EMA
	Other (if any)	Yes
Fiscal Capability	Capital Improvement Project Funding	No
	Community Development Block Grant	No
	Authority to Levy Taxes for Specific Purposes	No
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	No
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Local Emergency Planning Committee (LEPC)

Survey Components/Subcomponents		Comments
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes, EMA
	Natural Disaster or Safety related school programs	No
	StormReady Certification	Yes
	Firewise Communities Certification	No
	Public-private partnership initiatives addressing disaster-related issues	Yes
	Other (if any)	

Plan Integration

The county updated and adopted their comprehensive plan in 2014. The comprehensive plan recognizes the need to encourage developments in either existing corporate areas or where emergency services are currently available. York County has placed a priority on the conservation of agricultural lands throughout the county. Other data and needs identified in the hazard mitigation plan have not been incorporated into the comprehensive plan.

MITIGATION ACTIONS

The following actions have been completed or are no longer needed:

ACTION 2.2.2	**Flood-Prone Property Acquisition**
Analysis	Voluntary acquisition and demolition of properties prone to flooding will reduce the general threat of flooding for communities. Additionally, this can provide flood insurance benefits to those communities within the NFIP. Communities must be in good standing with NFIP in order to be eligible for HMGP.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	Flooding
Status	No longer needed. This action was listed in the previous mitigation plan, however, York County has determined this action is not relevant and will remove this action from this plan update. NDNR reported zero repetitive loss properties for York County.

The following actions are new, ongoing, or have not been completed:

ACTION 1.1.1	**Obtaining Missing Data For Future Updates**
Analysis	Obtain necessary data to improve vulnerability assessments when updating the plan. Improved GIS data is identified as a need by the county.
Goal/Objective	Goal 1/Objective 1.1
Hazard(s) Address	All hazards
Benefits	Improving the overall quality and information found in the plan.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	5 years
Priority	Medium
Lead Agency	Emergency Manager, Local Clerks
Status	Not Yet Started

ACTION 2.1.1	**Backup Generators**
Analysis	Provide a portable or stationary source of backup power to redundant power supplies, county wells, lift stations, and other critical facilities and shelters.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduce the danger to human life/health by keeping utilities operating. Reduce the economic downtime associated with utility loss.
Estimated Cost	$15,000-$30,000 per generator
Potential Funding	County Funds, Grants
Timeline	2 Years
Priority	Medium
Lead Agency	Roads Department
Status	County shops and Roads Department shops were identified as needing backup generators.

ACTION 2.1.3	**Hazardous Tree Removal Program**
Analysis	Identify and remove hazards limbs and/or trees.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$20,000
Potential Funding	HMGP, US Forest Service, County Funds
Timeline	Ongoing
Priority	Low
Lead Agency	Roads Department
Status	This is an ongoing effort. Hazardous trees will be removed as they are identified.

ACTION 2.1.6	**Safe Rooms**
Analysis	Assess, design and construct fully supplied safe rooms in highly vulnerable urban and rural areas such as mobile home parks, campgrounds, schools, and other such areas throughout the planning area. Assess the adequacy of current public buildings to be used as safe rooms. Construct safe rooms in areas of greatest need, either as new construction or retrofitting.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms
Benefits	Reduce the risk of death or injury in areas vulnerable to tornados, severe thunderstorms and other hazards.
Estimated Cost	$200-$300/sf stand alone; $150-200/sf addition/retrofit
Potential Funding	PDM, HMPG, County funds
Timeline	3 Years
Priority	High
Lead Agency	Emergency Management, Roads Department
Status	Not Yet Started

ACTION 2.1.7	**Stabilize/Anchor Fertilizer, Fuel, and Propane Tanks**
Analysis	Anchor fuel tanks to prevent movement. If left unanchored, tanks could present a major threat to property and safety in tornado or high wind event.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Address	Tornados, High Winds
Benefits	Limits the chance of fuel/chemical spills. Reduces chance that propane tanks and other items become missiles during tornado events.
Estimated Cost	$1,000 plus
Potential Funding	PDM, HMGP, Property owners
Timeline	5 Years
Priority	Low
Lead Agency	York County, Residents and Fuel Suppliers, Emergency Management
Status	Not Yet Started

ACTION 2.1.8	**Stormwater System and Drainage Improvements**
Analysis	Larger communities generally utilize underground stormwater systems comprising of pipes and inlets to convey runoff. Undersized systems can contribute to localized flooding. Stormwater system improvements may include pipe upsizing and additional inlets. Smaller communities may utilize stormwater systems comprising of ditches, culverts, or drainage ponds to convey runoff. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Bridges typically serve as flow restrictions along streams and rivers. Cleanout and reshaping of channel segments at bridge crossing can increase conveyance, reducing the potential for flooding. Replacement or modification of bridges and other flow restrictions may be necessary to provide greater capacity, maintain or improve structural integrity during flood events, and eliminate flooding threats and damages. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Benefits	These improvements can serve to more effectively convey runoff within cities and towns, preventing interior localized flooding. May also reduce the risk of illness/ disease by eliminating standing water.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000 to $100,000+
Potential Funding	HMGP, CDBG, Upper Big Blue NRD, York County & Local budgets
Timeline	3 Years
Priority	Medium
Lead Agency	Roads Department, Upper Big Blue NRD
Status	This a part of the community's regular maintenance program. Major projects are evaluated as they are identified.

ACTION 2.1.9	**Stream Bank Stabilization / Grade Control Structures/ Channel Improvements**
Analysis	Stream bank/ bed degradation can occur along many rivers and creeks. Stabilization improvements including rock rip rap, vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Grade control structures including sheet-pile weirs, rock weirs, ponds, road dams, etc. can be implemented and improved to maintain the channel bed. Channel stabilization can protect structures, increase conveyance and provide flooding benefits. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Flooding
Benefits	Protects structures near banks from flooding and shifting by reducing risk of flow disruption. Low maintenance solution to reduce the risk of recurring maintenance from banks falling in and increase conveyance.
Estimated Cost	$50,000 to $100,000+

ACTION 2.1.9	**Stream Bank Stabilization / Grade Control Structures/ Channel Improvements**
Potential Funding	USACE, PDM, HMGP, Upper Big Blue NRD, York County & Local Governments
Timeline	3 - 5 years
Priority	Medium
Lead Agency	Upper Big Blue NRD, Roads Department
Status	Not Yet Started

ACTION 2.2.1	**Drainage Study/ Stormwater Master Plan**
Analysis	Preliminary drainage studies and assessments can be conducted to identify and prioritize design improvements to address site specific localized flooding/drainage issues to reduce and/or alleviate flooding. Stormwater master plans can be developed to help identify stormwater problem areas and potential drainage improvements.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	Flooding
Benefits	Proactive steps to identify all potential problems/issues can lead to effectively addressing improvements and prioritizing the projects to improve conditions. These improvements can serve to more effectively convey runoff within jurisdictions, preventing interior localized flooding resulting in damages. This ensures that the most beneficial projects are done first and could possibly eliminate the need for others.
Estimated Cost	$10,000 to $100,000+
Potential Funding	CDBG, Upper Big Blue NRD, York County & Local budgets
Timeline	5 Years
Priority	Medium
Lead Agency	Upper Big Blue NRD
Status	Not Yet Started

ACTION 2.3.2	**Maintain Good Standing with National Flood Insurance Program (NFIP)**
Analysis	Maintain good standing with National Flood Insurance Program (NFIP) including floodplain management practices/ requirements and regulation enforcements and updates.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Enable property owners to purchase insurance protection against flood losses. Good standing enables participants to apply for PDM and HMGP cost-share.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	Ongoing
Priority	High
Lead Agency	NDNR
Status	This is an ongoing action.

ACTION 3.1.1	**Public Awareness / Education**
Analysis	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing education equipment such as overhead projectors and laptops.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Public awareness reduces the risk of property loss and damage, injury and death. It increases knowledge on emergency procedures, facilities, conservation, and is key to preparedness.
Estimated Cost	$0-$5,000+
Potential Funding	County funds
Timeline	1 Year
Priority	High
Lead Agency	Emergency Management
Status	In Progress. County is developing news articles, public displays, and spotter training.

ACTION 4.3.1	**Alert / Warning Sirens**
Analysis	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking and remote activation.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather; promoting awareness and ensures people take shelter when needed.
Estimated Cost	$15,000+
Potential Funding	HMGP, PDM, Natural Resource District, County & Local Governing Agency
Timeline	3 - 5 years
Priority	Medium
Lead Agency	County E911, Emergency Management
Status	No current warning system was identified as needing repair.

ACTION 4.3.2	**Emergency Communications**
Analysis	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish inner-operable communications. Check radio towers for possible upgrades to improve signal.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Coordination and clear and efficient communications between agencies increases the capabilities to protect and rescue, increases safety, and reduces the risk of mistakes due to miscommunications.
Estimated Cost	$10,000+
Potential Funding	County funds, Grants

ACTION 4.3.2	**Emergency Communications**
Timeline	1 Year
Priority	Medium
Lead Agency	Emergency Management
Status	LEOP was updated in 2014.

ACTION 4.3.4	**Weather Radios**
Analysis	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather conditions by communication.
Estimated Cost	$50 per radio
Potential Funding	Grants
Timeline	2 Years
Priority	Medium
Lead Agency	Emergency Management
Status	Not Yet Started

ACTION 2.1.10	**Windbreaks / Living Snow Fence**
Analysis	Installation of windbreaks to increase water storage capacity in soil.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Drought
Benefits	Help hold moisture in times of drought to support ranching economy, helpful for water storage in the district. Prevents snow from collecting on rural roadways, increases accessibility to residences.
Estimated Cost	$2,000+
Potential Funding	County funds, Grants
Timeline	10 years
Priority	Low
Lead Agency	Roads Department
Status	Not Yet Started

ACTION 4.1.1	**Civil Service Improvements**
Analysis	Improve emergency rescue and response equipment and facilities by providing additional, or updating existing emergency response equipment. This could include fire equipment, ATVs, water tanks/truck, snow removal equipment, pumps, etc. This would also include developing backup systems for emergency vehicles, identifying and training additional personnel for emergency response, or continuing educational opportunities for current personnel.
Goal/Objective	Goal 4/Objective 4.2
Hazard(s) Addressed	All Hazards
Benefits	Having appropriate and up to date equipment along with adequately trained and numbered personnel increases safety and reduces the risk of damage.

ACTION 4.1.1	**Civil Service Improvements**
Estimated Cost	$5,000 to $400,000 per vehicle, varies depending on what equipment is needed
Potential Funding	County funds, Grants
Timeline	5 Years
Priority	Low
Lead Agency	Emergency management
Status	Snow removal equipment and ATV identified as anticipated improvements.

ACTION 4.1.2	**Improve Snow / Ice Removal Program**
Analysis	Revise and improve the snow and ice removal program for streets. Revisions should address situations such as plowing snow, ice removal, parking during snow and ice removal, and removal of associated storm debris. This would include updating the emergency routes, acquiring equipment that is needed, paving routes, and ordinances as necessary.
Goal/Objective	Goal 4/Objective 4.1
Hazard(s) Addressed	Severe Winter Storms
Benefits	Having an effective snow/ice removal program will improve capabilities to rescue stranded residents and increase the capacity in which snow can be removed after a severe winter storm.
Estimated Cost	$20,000+
Potential Funding	County funds, Grants
Timeline	5 Years
Priority	Low
Lead Agency	Roads Department
Status	Not Yet Started

PARTICIPANT SECTION FOR THE CITY OF HENDERSON

York County

Multi-Jurisdictional Hazard Mitigation Plan

April 2015

HISTORY AND DEVELOPMENT OF HENDERSON

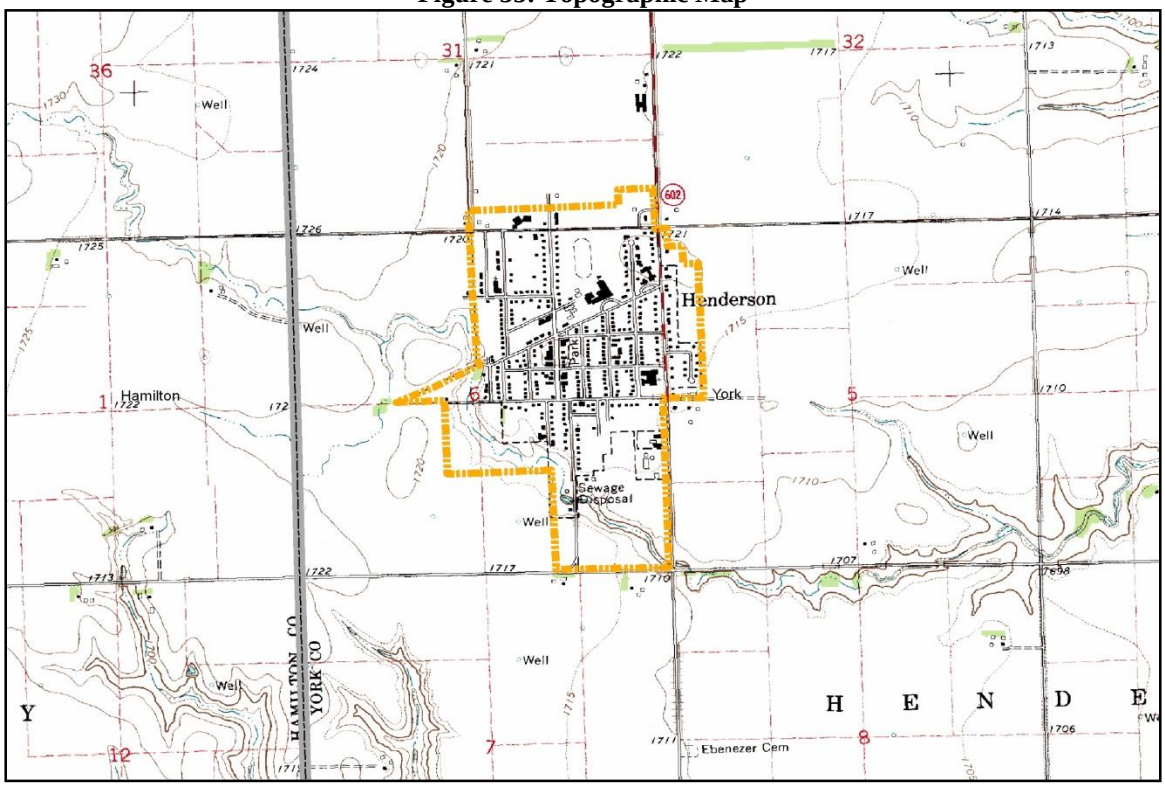
Henderson, just inside the west county line, is approximately 60 miles west of Lincoln and 30 miles east of Grand Island. The town was named for David Henderson who, along with his son John and friends Randolph Fairbank and Daniel George, settled along the west fork of the Big Blue River on July 2, 1866. This was several miles south of present-day Henderson. In 1874, the first of 35 German Mennonite families from Prussia arrived and settled in the Henderson area. While this event is not noted in the 1882 History of Nebraska, it was perhaps the most significant single event to occur, since their descendants make up the majority of the population of present-day Henderson.

LOCATION AND GEOGRAPHY

Henderson is a second class city located in the south west portion of York County. The City of Henderson covers an area of 352 acres and has an elevation of 1,720 feet above sea level.

The community of Henderson lies in an area of plains. The land use surrounding the community is mainly agricultural crops with some ranching. Flat lying land above the valley with materials of sandstone or stream deposited silt, clay, sand and gravel overlain by wind deposited silt is prevalent. The community lies approximately four miles northeast of a tributary of the West Fork of the Big Blue River. The watershed flows generally from the northwest to the southeast. A current floodplain has been delineated for Henderson and river flooding is of concern.

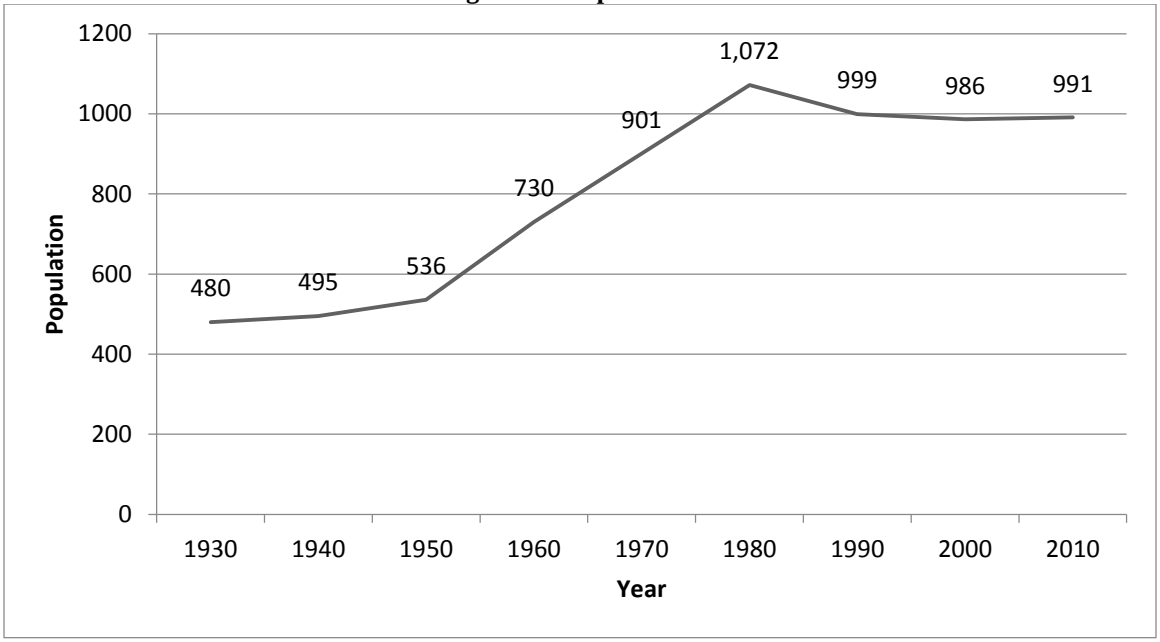
Figure 35: Topographic Map



HENDERSON DEMOGRAPHICS

Below, Figure 36 displays the historical population trend for Henderson from 1930 to 2010. Henderson experienced significant population growth from 1950 to 1980. Henderson has maintained a stable population since 1990.

Figure 36: Population 1930-2010



The following table illustrates the age distribution and median age for York County in comparison to the City of Henderson. Henderson has a significantly larger percentage of their population over 65 years old, compared to the county average. The very young and elderly populations are more vulnerable to certain hazards than others. This population with increased vulnerability represents 38.5 percent of the community.

Table 56: Population by Age

	York County	Henderson
< 5 yrs.	6.4%	6.1%
5 - 64 yrs.	75.4%	61.5%
> 65 yrs.	18.2%	32.4%
Median Age	40.1	52.8

HOUSING AND ECONOMICS

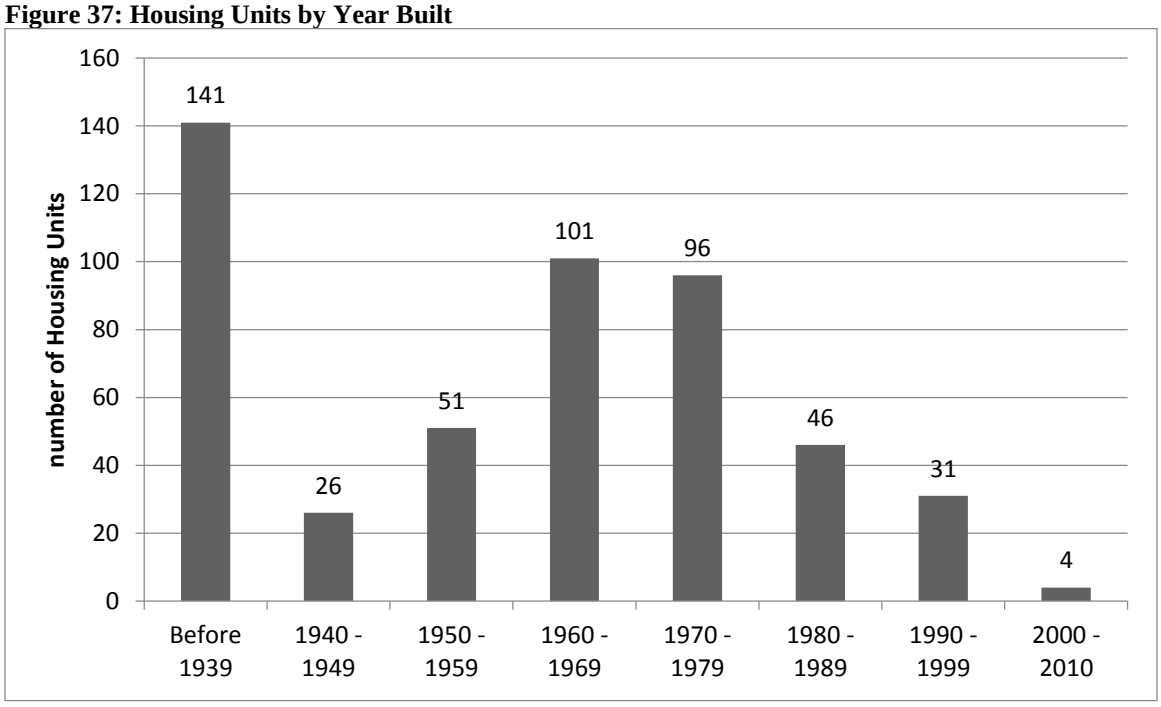
Table 57 displays the median household income, per capita income, home value, and rent for the county as a whole compared with the City of Henderson. In nearly all of these metrics, Henderson is slightly lower than the state and county averages. This may be due to the large percentage of the population older than 65, as they are less likely to be working. Metrics such as those shown in Table 57 can influence the level of resilience for a community after a hazard event.

Table 57: Housing and Economics

	Nebraska	York County	Henderson
Median Household Income	$49,342	$47,689	$40,060
Per Capita Income	$25,229	$25,412	$22,078
Median Home Value	$123,900	$92,300	$77,400
Median Rent	$648	$527	$621

Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

Figure 37: Housing Units by Year Built



Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

According to the U.S. Census there are a total of 496 housing units in Henderson. Of those 496 units more than 9 percent (45 total units) are estimated as vacant. Vacant housing units are more likely to be improperly maintained and thus more vulnerable to hazards.

Table 58: Housing Units

Jurisdiction	Total Housing Units					Occupied Housing Units			
	Occupied		Vacant			Owner		Renter	
	Number	Percent	Number	Percent		Number	Percent	Number	Percent
York County	5,771	92.9%	443	7.1%		4,397	76.2%	1,374	23.8%
Henderson	451	90.9%	45	9.1%		369	81.8%	82	18.2%

Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

MAJOR EMPLOYERS

Major employers in Henderson include Henderson Health Care and Assisted Living Complex, and Heartland Community School. Many people from other communities commute to work at the hospital. It is estimated by the local planning team that less than 10% of Henderson residents commute outside the community for work.

STRUCTURAL INVENTORY AND VALUATION

A structural inventory was completed for the corporate limits of Henderson though a window survey using GIS for the 2010 hazard mitigation plan, the inventory was updated utilizing building permits issued between 2010 and 2014. The values of these structure types were determined from the 2013 Property Type Values as provided by the Nebraska Department of Revenue Property Assessment Division.

Results from the structural inventory completed for the city of Henderson are found in Table 59 below. Information displayed in this table includes the number of structures, approximate value per structure, and total value of each structure type.

Table 59: Structural Inventory and Valuation Summary

Total Structures		Structure Valuation	
Structure Type	Number of Structures	Total Value	Value per Structure
Commercial/Industrial	62	$6,577,454	$106,088
Out Building	24	$134,059	$5,585
Residential	442	$37,853,887	$85,642
Public/Quasi Public	19	$1,036,083	$54,530
TOTAL STRUCTURES	**547**	$45,601,483	-

**Values are rounded to the nearest dollar.*

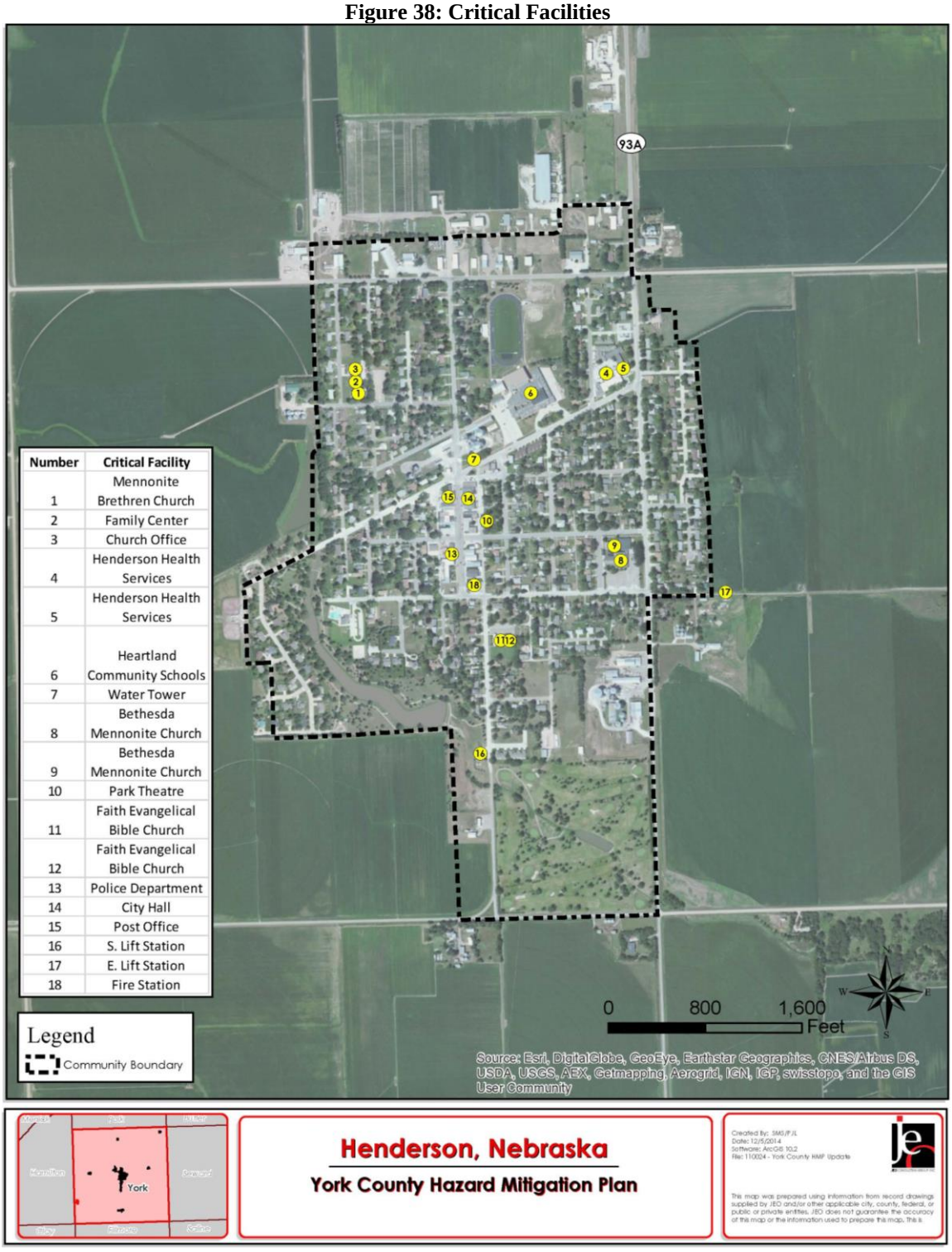
FUTURE DEVELOPMENT TRENDS

The local planning team indicated that a new subdivision was just completed. All houses were built to the current building code to reduce its vulnerability to hazards. As additional development occurs in the future, it should be done in a way to minimize its vulnerability to hazards.

CRITICAL FACILITIES

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster. Critical facilities were identified during the original planning process and updated by the local planning team as a part of the plan update. The following Figure is a summary of the critical facilities for the City of Henderson.

Figure 38: Critical Facilities



Number	Critical Facility
1	Mennonite Brethren Church
2	Family Center
3	Church Office
4	Henderson Health Services
5	Henderson Health Services
6	Heartland Community Schools
7	Water Tower
8	Bethesda Mennonite Church
9	Bethesda Mennonite Church
10	Park Theatre
11	Faith Evangelical Bible Church
12	Faith Evangelical Bible Church
13	Police Department
14	City Hall
15	Post Office
16	S. Lift Station
17	E. Lift Station
18	Fire Station

RISK ASSESSMENT

Table 60 is a Risk Assessment identified specifically for the community. Refer to *Section 4: Risk Assessment* for a detailed explanation as to what this methodology is and why certain hazards did not pose a significant enough threat and were eliminated from detailed discussion.

According to the local planning team, the five hazards of greatest concern to the City of Henderson are severe winter storms, hail, tornados, high winds, and severe thunderstorms. These five hazards are discussed further in the subsections below. Additional hazards are discussed if previous occurrences or current circumstances lead the Planning Team to determine the hazards are a significant threat to the community.

Table 60: Community Based Risk Assessment

HAZARD TYPE	PREVIOUS OCCURRENCE? Yes/No	Specific Concerns Identified
Severe Winter Storm*	Yes	Potential power outages and damages to critical facilities
Tornado*	Yes	Significant damages and loss of life
High Winds*	Yes	Potential damages to property and critical facilities
Hail*	Yes	Potential damages to property and crops
Severe Thunderstorm*	Yes	Potential damages and prolonged power outages
Flooding	Yes	Potential damages to properties; 15 structures located in the floodplain
Extreme Heat	Yes	23.5% of population at higher level of vulnerability; Ag losses; Secondary hazards such as wildfires
Drought	Yes	Economic impacts; Land degradation; Secondary hazards such as wildfires
Earthquake	No	None
Wildfire	Yes	Potential loss of life and properties; Economic impacts
Dam Failure	No	None
Levee Failure	No	None
Agricultural Disease	No	Economic concerns; Ag is major economic sector for the county
Earthquakes	No	None
Landslides	No	None
Urban Fire	Yes	Spread of fires due to age and density of structures
Chemical and Radiological Hazards	No	Potential property losses due to chemical spills
Terrorism	No	None
Civil Disorder	No	None

**Identified as one of the five hazards of most concern to the community*

HISTORICAL OCCURRENCES

The NCDC counted a total of 27 hazard events in the city of Henderson and there were no recorded deaths or injuries, but $3,980,500 in damages to property and $3,030,000 in crop damages.

Severe Winter Storms

The local planning team identified severe winter storms as the greatest concern for the community. NCDC data records severe winter storms as "zonal" events meaning there is not a specific record of what communities are impacted or at least what the level impacts were per community. However, the local planning team identified severe winter storms as a regular part of the climate. Winter storms have the potential to result in roadway closures and power outages.

Hail Events

The local planning team identified hailstorms as a significant concern for Henderson. NCDC data records 13 events with a total of $260,000 in property damages and $2,350,000 in crop losses. A summary of the events with recorded damages can be seen in Table 61. Municipal facilities are insured for hail.

Table 61: Historic Hail Events

Date	Extent	Property Damage	Crop Damage
6/11/1997	1.25 inch	$75,000	$1,500,000
5/29/1998	1.5 inch	$10,000	$250,000
6/22/2003	.88 inch	$25,000	$150,000
6/22/2007	1.75 inch	$20,000	$350,000
7/9/2008	1.0 inch	$5,000	$100,000
5/29/2013	1.75 inch	$5,000	-
Total	**-**	**$260,000**	**$2,350,000**

Source: NCDC

Tornados

The local planning team identified tornados as a significant concern for the community. According to the NCDC data, there has been one tornado in the City of Henderson. June 20, 2011 saw the outbreak of multiple tornados across central Nebraska. The EF2 reported in York County and near Henderson was the longest tornado tracked on this given day. The $3.5 million in damages is a regional estimate and not specific to the City of Henderson. The City Shop (tornado warning system) has mobile backup power generation.

Table 62: Historic Tornado Events

Date	Extent	Property Damage	Crop Damage
6/20/2011	EF2	$3,500,000	$500,000

High Winds

The local planning team identified high winds as a significant concern for the community. According to NCDC data, there have been four storm events which included strong winds (50 kts/58 mph.). Winds of this magnitude, according to the Beaufort Wind Force Ranking, can cause trees to uproot, considerable structure damage, and over turning of improperly anchored mobile homes.

Severe Thunderstorms

Severe thunderstorms are a regular part of the climate for York County and Henderson. The local planning team identified severe thunderstorms as a significant concern for the city. The NCDC recorded 9 events which resulted in $200,500 in property damages and $160,000 in crop damages. A summary of storms recording losses can be seen in Table 63.

Table 63: Historic Thunderstorm Events

Date	Extent	Property Damage	Crop Damage
5/16/1996	60 kts./69 mph	$500	-
5/17/1997	-	$10,000	-
6/20/1997	60 kts./69 mph	$60,000	$160,000
5/22/2002	50 kts. EG/58 mph	$30,000	-
6/10/2002	62 kts. EG/69 mph	$100,000	-
Total	**-**	**$200,500**	**$160,000**

Source: NCDC

Critical municipal records are protected with surge protectors on electronic devices. The hospital and communications critical facilities have back up power generators.

Grass/wildfires

The local planning team did not identify grass/wildfire as a significant concern for the city. However, according to the Nebraska Forest Service, there were 21 reported fires by the Henderson Fire Department from 2000 to 2012 which consumed a total of 91 rangeland acres and 131 crop land acres. The fires resulted in more than $14,050 in damages to crops.

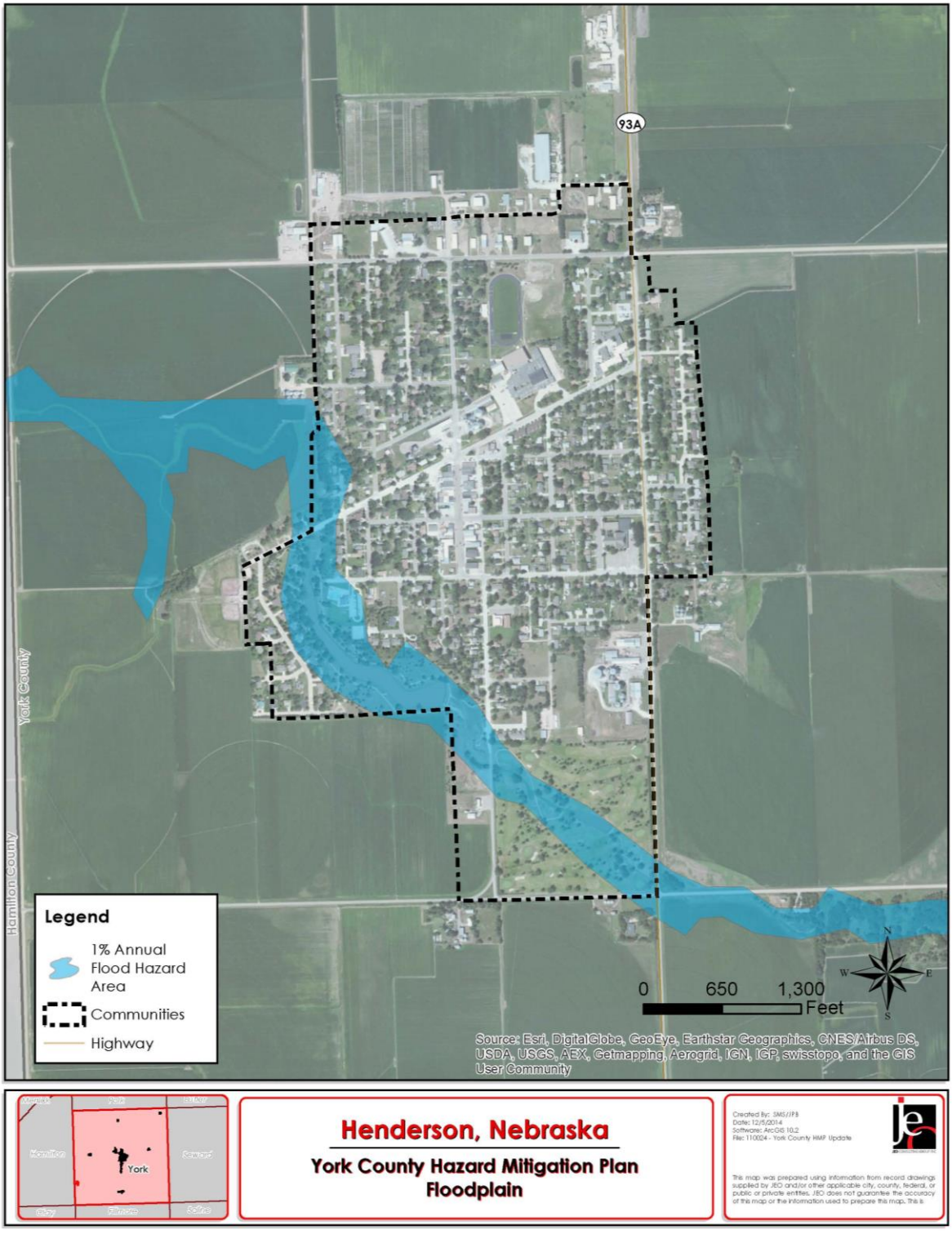
Flooding

There have been two reported flash flood event for Henderson. These flooding events resulted in $40,000 worth of damages to property and crops. The local planning team did not identify flooding as one of the five greatest concerns for the City of Henderson, however, there is potential for significant damages due to flooding.

Table 64: Historic Flood Events

Date	Extent	Property Damage	Crop Damage
7/9/2008	3 – 5 inches of rain fell in three hours, flooding county roads near Henderson	$10,000	$20,000
8/26/2009	2 – 4 inches of rain fell in eight hours, flooding county roads and damaging culverts	$10,000	-
Total	**-**	**$20,000**	**$20,000**

Table 65: Floodplain Map



For the purposes of calculating potential losses, it was estimated that all structures within the flooding hazard area would sustain 20 percent building damage at a flood depth of two feet. This information is from the Flood Building Loss Estimation Table provided by the FEMA Benefit-Cost Analysis Full Data Module, with the evaluation based on the average for one to two story buildings with basements. Using this estimated flood event, the potential building damages in Henderson would be $254,793.

Below, Table 66 summarizes the potential damages to structures in the corporate limits within Henderson's 1-percent annual flood risk area. (Refer to the *Structural Inventory and Valuation* section for an explanation as to how valuation was determined).

Table 66: Structural Inventory in 1% Annual Flood Area

Structures in 100-year Flood Boundary		Structure Valuation		
Structure Type	Number of Structures	Average Value	Total Value	Approximate Damage Value
Commercial/Industrial	1	$106,088	$106,088	$21,218
Out Building	0	$5,585	-	-
Residential	13	$85,642	$1,113,346	$222,669
Public/Quasi Public	1	$54,530	$54,530	$10,906
TOTAL STRUCTURES	**15**	-	**$1,273,964**	**$254,793**

**Values are rounded to the nearest dollar.*

CAPABILITY ASSESSMENT

Thus far the planning process has identified the major hazards for the communities and described and quantified the vulnerability of the community to these risks by acquiring updated information from FEMA, the local jurisdiction, and other sources. The following step shall be assessing what loss prevention or preparedness mechanisms are already in place which is referred to as capability assessment. Combining the risk assessment with the local capability assessment results in a better understanding of the locality's "net vulnerability" and to what extent they could be able to implement the goals, objectives, and actions.

City Governance

A community's governance indicates the number of entities that may be available to help implement hazard mitigation actions. The City of Henderson is governed by a Mayor and City Council. The city also has the following boards or departments:

- Sewer/water
- Streets
- Parks
- Zoning

Table 67: Capabilities Assessment

Survey Components/Subcomponents		***Comments***
Planning & Regulatory Capability	Comprehensive Plan	***Yes, 2010***
	Capital Improvements Plan	***Yes, 2010***
	Hazard Mitigation Plan	***Yes, 2010***
	Economic Development Plan	***Yes, 2010***
	Emergency Operational Plan	***Yes (County), 2009***
	National Resources Protection Plan	***Yes***
	Open Space Preservation plan	***No***
	Floodplain Management Plan	***Yes***

	Storm Water Management Plan	***Under Development***
	Zoning Ordinance	***Yes, 2010***
	Subdivision Regulation/Ordinance	***Yes, 2010***
	Floodplain Ordinance	***Yes, 2010***
	Building Codes	***Yes***
	National Flood Insurance Program	***Yes***
	Community Rating System	***No***
	Other (if any)	
Administrative & Technical Capability	Planning Commission	***5 member board***
	Hazard Mitigation Planning Commission	***Yes, City Council***
	Floodplain Administration	***Yes, Chief of Police***
	Emergency Manager	***County***
	GIS Coordinator	***County***
	Chief Building Official	***Yes, Chief of Police***
	Civil Engineering	***Contract as Needed***
	Staff Who Can Assess Community's Vulnerability to Hazards	***Multiple***
	Grant Manager	***No***
	Other (if any)	
Fiscal Capability	Capital Improvement Project Funding	***Yes***
	Community Development Block Grant	***No***
	Authority to Levy Taxes for Specific Purposes	***Yes***
	Gas/Electric Service Fees	***No***
	Storm Water Service Fees	***No***
	Water/Sewer Service Fees	***Yes***
	Development Impact Fees	***No***
	General Obligation Revenue or Special Tax Bonds	***Yes***
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	***No***
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	***County, NRD, Fire Department***
	Natural Disaster or Safety related school programs	***No***
	StormReady Certification	***No***
	Firewise Communities Certification	***No***
	Public-private partnership initiatives addressing disaster-related issues	***No***
	Other (if any)	

Plan Integration

When the community updated the local comprehensive plan in 2010 they did not incorporate the existing hazard mitigation plan into that document. Future growth areas and zoning does support development outside of the SFHA area.

MITIGATION ACTIONS

The following mitigation actions have been completed or are no longer needed:

ACTION 1.1.1	**Obtaining Missing Data For Future Updates**
Analysis	Obtain necessary data to improve vulnerability assessments when updating the plan.
Goal/Objective	Goal 1/Objective 1.1
Hazard(s) Address	All hazards
Status	No longer needed. No data has been identified as missing. This action will be evaluated in future mitigation plans as needed.

The following mitigation actions are new, ongoing, or have not been completed:

ACTION 2.1.1	**Backup Generators**
Analysis	Provide a portable or stationary source of backup power to redundant power supplies, county wells, lift stations, and other critical facilities and shelters.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduce the danger to human life/health by keeping utilities operating. Reduce the economic downtime associated with utility loss.
Estimated Cost	$15,000-$30,000 per generator
Potential Funding	HMGP
Timeline	2 Years
Priority	Medium
Lead Agency	City Council, York County Emergency Management, Utility Supervisor
Status	Generators are expected to be installed at municipal well in the summer of 2015.

ACTION 2.1.6	**Safe Rooms**
Analysis	Assess, design and construct fully supplied safe rooms in highly vulnerable urban and rural areas such as mobile home parks, campgrounds, schools, and other such areas throughout the planning area. Assess the adequacy of current public buildings to be used as safe rooms. Construct safe rooms in areas of greatest need, either as new construction or retrofitting.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms
Benefits	Reduce the risk of death or injury in areas vulnerable to tornados, severe thunderstorms and other hazards.
Estimated Cost	$200-$300/sf stand alone; $150-200/sf addition/retrofit
Potential Funding	PDM, HMPG, Tax Revenue
Timeline	5 Years
Priority	Low
Lead Agency	City Council, York County Emergency Management

ACTION 2.1.6	**Safe Rooms**
Status	Safe rooms are currently located at the Henderson State Bank and Hospital. The ball field has been identified as an area of town needing a safe room.

ACTION 2.1.7	**Stabilize/Anchor Fertilizer, Fuel, and Propane Tanks**
Analysis	Anchor fuel tanks to prevent movement. If left unanchored, tanks could present a major threat to property and safety in tornado or high wind event.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Address	Tornados, High Winds
Benefits	Limits the chance of fuel/chemical spills. Reduces chance that propane tanks and other items become missiles during tornado events.
Estimated Cost	$1,000 plus
Potential Funding	PDM, HMGP, fuel suppliers
Timeline	5 Years
Priority	Low
Lead Agency	Residents and fuel suppliers of the City of Henderson
Status	Not Yet Started. Current zoning codes do not address anchoring of outdoor tanks.

ACTION 2.1.8	**Stormwater System and Drainage Improvements**
Analysis	Stormwater system improvements may include pipe upsizing and additional inlets. Smaller communities may utilize stormwater systems comprising of ditches, culverts, or drainage ponds to convey runoff. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Bridges typically serve as flow restrictions along streams and rivers. Cleanout and reshaping of channel segments at bridge crossing can increase conveyance, reducing the potential for flooding. Replacement or modification of bridges and other flow restrictions may be necessary to provide greater capacity, maintain or improve structural integrity during flood events, and eliminate flooding threats and damages. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Benefits	These improvements can serve to more effectively convey runoff within cities and towns, preventing interior localized flooding. May also reduce the risk of illness/ disease by eliminating standing water.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000 to $100,000+
Potential Funding	HMGP, CDBG, Upper Big Blue NRD, York County & City of Henderson
Timeline	5 Years
Priority	Medium
Lead Agency	Utility Supervisor
Status	This action is part of the City's regular maintenance program. Main, Elm, Oak, and Ash Streets are identified as needing drainage improvements. Main Street improvements are scheduled for the summer of 2015.

ACTION 2.2.1	**Drainage Study/ Stormwater Master Plan**
Analysis	Preliminary drainage studies and assessments can be conducted to identify and prioritize design improvements to address site specific localized flooding/drainage issues to reduce and/or alleviate flooding. Stormwater master plans can be developed to help identify stormwater problem areas and potential drainage improvements.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	Flooding
Benefits	Proactive steps to identify all potential problems/issues can lead to effectively addressing improvements and prioritizing the projects to improve conditions. These improvements can serve to more effectively convey runoff within jurisdictions, preventing interior localized flooding resulting in damages. This ensures that the most beneficial projects are done first and could possibly eliminate the need for others.
Estimated Cost	$10,000 to $100,000+
Potential Funding	CDBG, Upper Big Blue NRD, York County & City of Henderson
Timeline	5 to 10 Years
Priority	Low
Lead Agency	Utility Supervisor, Upper Big Blue NRD
Status	Not Yet Started.

ACTION 2.2.2	**Flood-Prone Property Acquisition**
Analysis	Voluntary acquisition and demolition of properties prone to flooding will reduce the general threat of flooding for communities. Additionally, this can provide flood insurance benefits to those communities within the NFIP. Communities must be in good standing with NFIP in order to be eligible for HMGP.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	Flooding
Benefits	A onetime cost to remove/relocate vulnerable properties will prevent future recurring repair costs.
Estimated Cost	Varies; Dependent upon market value of the structure
Potential Funding	HMGP, PDM, CDBG, USACE, FMA, SRL, RLC
Timeline	Five Years
Priority	Low
Lead Agency	Clerk, Upper Big Blue NRD
Status	Not Yet Started

ACTION 2.3.1	**Floodplain Regulation Enforcement and Updates**
Analysis	Continue to enforce local floodplain regulations for structures located in the 1-percent floodplain. Strict enforcement of the type of development and elevations of structures should be considered through issuance of building permits by any community or county. Continue education of building inspectors or Certified Floodplain Managers.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Ensures that no new structures built will be vulnerable to flooding. Reducing damages and health risks associated with flooding.

ACTION 2.3.1	**Floodplain Regulation Enforcement and Updates**
Estimated Cost	$4,000+
Potential Funding	HMGP, CDBG
Timeline	Ongoing
Priority	Medium
Lead Agency	Floodplain Manager, NDNR
Status	This action is an ongoing action.

ACTION 2.3.2	**Maintain Good Standing with National Flood Insurance Program (NFIP)**
Analysis	Maintain good standing with National Flood Insurance Program (NFIP) including floodplain management practices/ requirements and regulation enforcements and updates.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Enable property owners to purchase insurance protection against flood losses. Good standing enables participants to apply for PDM and HMGP cost-share.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	Ongoing
Priority	Low
Lead Agency	Floodplain Manager, NDNR
Status	This action is an ongoing action.

ACTION 2.3.4	**Tree City USA**
Analysis	Work to become a Tree City USA through the National Arbor Day Foundation in order to receive direction, technical assistance, and public education on how to establish a hazardous tree identification and removal program in order to limited potential tree damage and damages caused by trees in a community when a storm event occurs. The four main requirements include: 1) Establish a tree board; 2) Enact a tree care ordinance; 3) Establish a forestry care program; 4) Enact an Arbor Day observance and proclamation.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	Better maintained trees and hazardous tree removal will eliminate damages to power lines and personal property during hazard events. Participation in Tree City USA will support community actions to mitigation damages from trees.
Estimated Cost	$1,000+
Potential Funding	Arbor Day Foundation, US Forest Service
Timeline	5 Years
Priority	Low
Lead Agency	Clerk, City Council
Status	Not Yet Started.

ACTION 3.1.1	**Public Awareness / Education**
Analysis	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing education equipment such as overhead projectors and laptops.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Public awareness reduces the risk of property loss and damage, injury and death. It increases knowledge on emergency procedures, facilities, conservation, and is key to preparedness.
Estimated Cost	$0-$5,000+
Potential Funding	HMGP, PDM,
Timeline	Ongoing
Priority	Low
Lead Agency	Emergency Management
Status	In Progress. The City currently engages citizens regarding water conservation during drought conditions. The City of Henderson is working with York County Emergency Management to create education materials.

ACTION 4.3.4	**Weather Radios**
Analysis	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather conditions by communication.
Estimated Cost	$50 per radio
Potential Funding	HMGP, PDM, Natural Resource District, York County & City of Henderson
Timeline	1 Year
Priority	Medium
Lead Agency	Clerk, Utility Supervisor, Emergency Management
Status	In progress. City is planning on purchasing weather radios in the summer of 2015.

ACTION 2.1.5	**Power, Service, Electrical, and Water Distribution Lines**
Analysis	Communities can work with their local Public Power District or Electricity Department to identify vulnerable transmission and distribution lines and plan to bury lines underground, upgrade, or retrofit existing structures to be less vulnerable to storm events. Electrical utilities shall be required to use underground construction methods where possible for future installation of power lines. Rural Water Districts can work with their County or NRD to identify vulnerable distribution lines near river crossings or creek beds and plan to place lines underground to reduce vulnerability from storm events and erosion.

ACTION 2.1.5	**Power, Service, Electrical, and Water Distribution Lines**
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms, Flooding
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$50,000 to $70,000 (per mile for electrical)
Potential Funding	HMGP, PDM, Perennial Public Power District, Rural Water Districts, City of Henderson
Timeline	5 Years
Priority	Medium
Lead Agency	Perennial Public Power District, Utility Supervisor, Upper Big Blue NRD
Status	Not Yet Started.

ACTION 2.1.9	**Stream Bank Stabilization / Grade Control Structures/ Channel Improvements**
Analysis	Stream bank/ bed degradation can occur along many rivers and creeks. Stabilization improvements including rock rip rap, vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Grade control structures including sheet-pile weirs, rock weirs, ponds, road dams, etc. can be implemented and improved to maintain the channel bed. Channel stabilization can protect structures, increase conveyance and provide flooding benefits. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Flooding
Benefits	Protects structures near banks from flooding and shifting by reducing risk of flow disruption. Low maintenance solution to reduce the risk of recurring maintenance from banks falling in and increase conveyance.
Estimated Cost	$50,000 to $100,000+
Potential Funding	USACE, PDM, HMGP, Upper Big Blue NRD, York County & City of Henderson
Timeline	Ongoing
Priority	Medium
Lead Agency	Utility Supervisor, Upper Big Blue NRD
Status	This action is determined to be a part of the City's regular maintenance program. Large projects will be evaluated as they are identified.

ACTION 2.1.3	**Hazardous Tree Removal Program**
Analysis	Identify and remove hazards limbs and/or trees.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$20,000
Potential Funding	HMGP, US Forest Service, Perennial Public Power, City of Henderson
Timeline	5 Years
Priority	Medium
Lead Agency	Utility Supervisor, Perennial Public Power
Status	Not Yet Started

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PARTICIPANT SECTION FOR THE CITY OF YORK

York County

Multi-Jurisdictional Hazard Mitigation Plan

April 2015

HISTORY AND DEVELOPMENT OF YORK

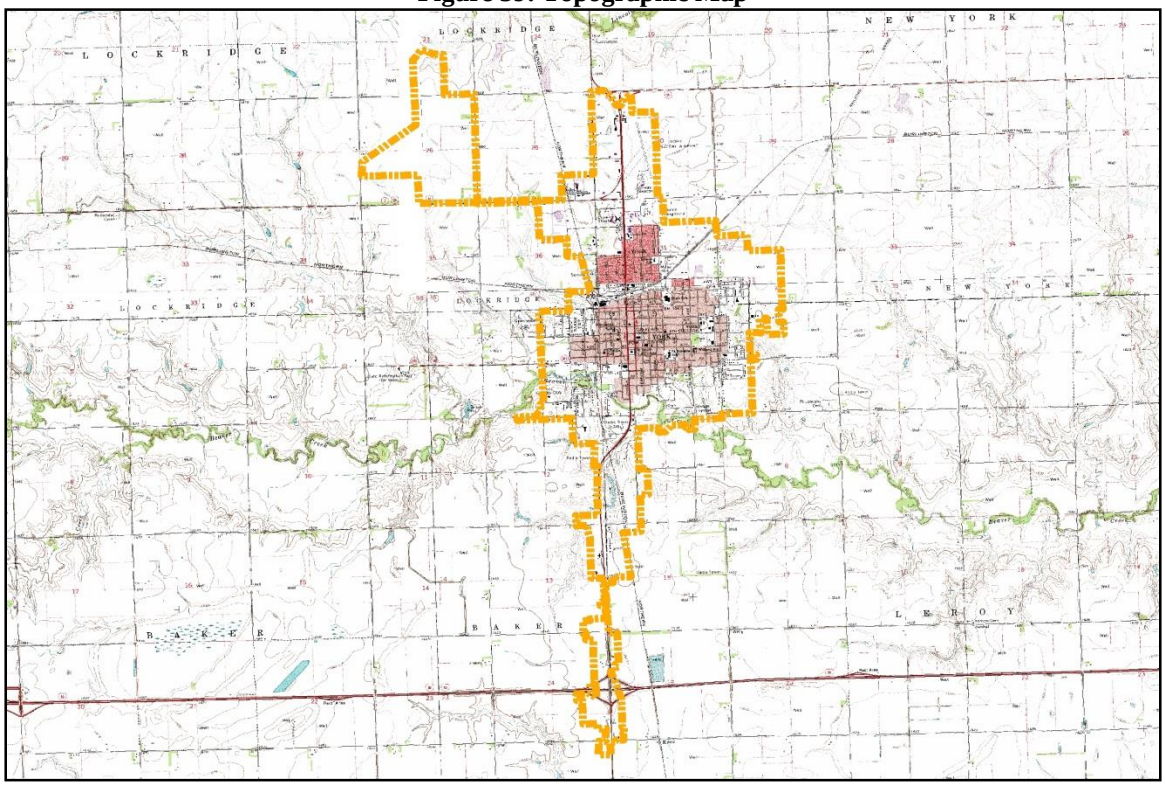
Pre-emption claims were recorded by Margaret Andrews, Isaiah White, A. M. and E. C. Ghost, in 1868. With settlement in full swing (and in anticipation of impending organization), these lands were all transferred to D. N. Smith in 1869. In June he had a 262-acre town site surveyed, then sold it to Messrs. Brook, Forbes, and Dennison, who in turn sold to the South Platte Land Company. The plat was registered on October 18, 1869. The name "York" comes from England. A notation, found below an English Coat-of-Arms, reads, "House of York, the capital of Yorkshire, England, after which American settlers of English ancestry have named three counties and their county seats. One is in Maine, another in Pennsylvania, and the third is York, York County, Nebraska."

LOCATION AND GEOGRAPHY

York is a first class city located in the central portion of York County. The City of York covers an area of 5.64 square miles and has an elevation of 1,609 feet above sea level. York is 47 miles northwest of Lincoln.

The community of York lies in an area of plains. The land use surrounding the community is mainly agricultural crops with some ranching. Flat lying land above the valley with materials of sandstone or stream deposited silt, clay, sand and gravel overlain by wind deposited silt is prevalent. Beaver Creek runs through the south portion of town with a tributary of the Creek approximately two miles west and Lincoln Creek one mile north of the community. The watershed flows generally from the northwest to the southeast. A current floodplain has been delineated for York and river flooding is of concern.

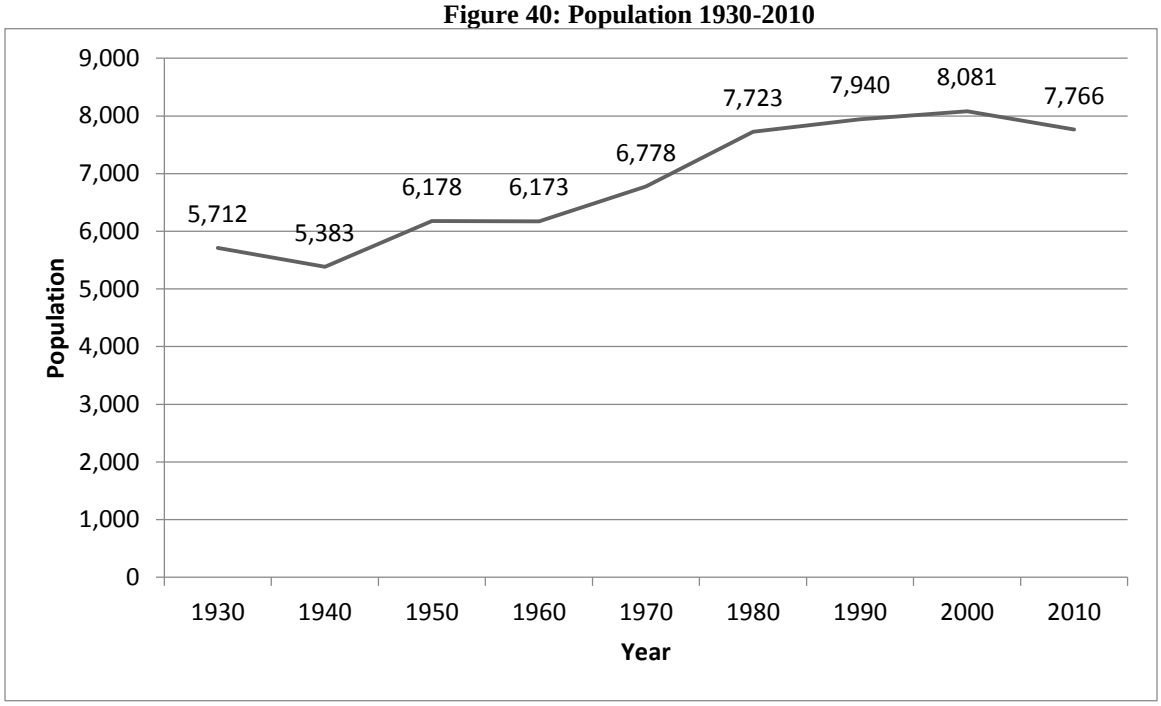
Figure 39: Topographic Map



YORK DEMOGRAPHICS

Below, Figure 40 displays the historical population trend for York from 1930 to 2010. The City of York has steadily increased its population from 1930 to 2000. From 2000 to 2010, York experienced a 3.9% decline in population. Population growth and decline affect tax revenues which may influence a community's ability to implement mitigation actions.

Figure 40: Population 1930-2010



The following table illustrates the age distribution and median age for York County in comparison to the city of York. The age distribution of the City of York compares to York County. The City of York has a slightly younger median age than the county average. The population under five years old and older than 65 years old are more vulnerable to certain hazards than others. These residents with increased vulnerabilities represent 25.1 percent of the City of York's population.

Table 68: Population by Age

	York County	York
< 5 yrs.	6.4%	6.9%
5 - 64 yrs.	75.4%	74.9%
> 65 yrs.	18.2%	18.2%
Median Age	40.1	39.4

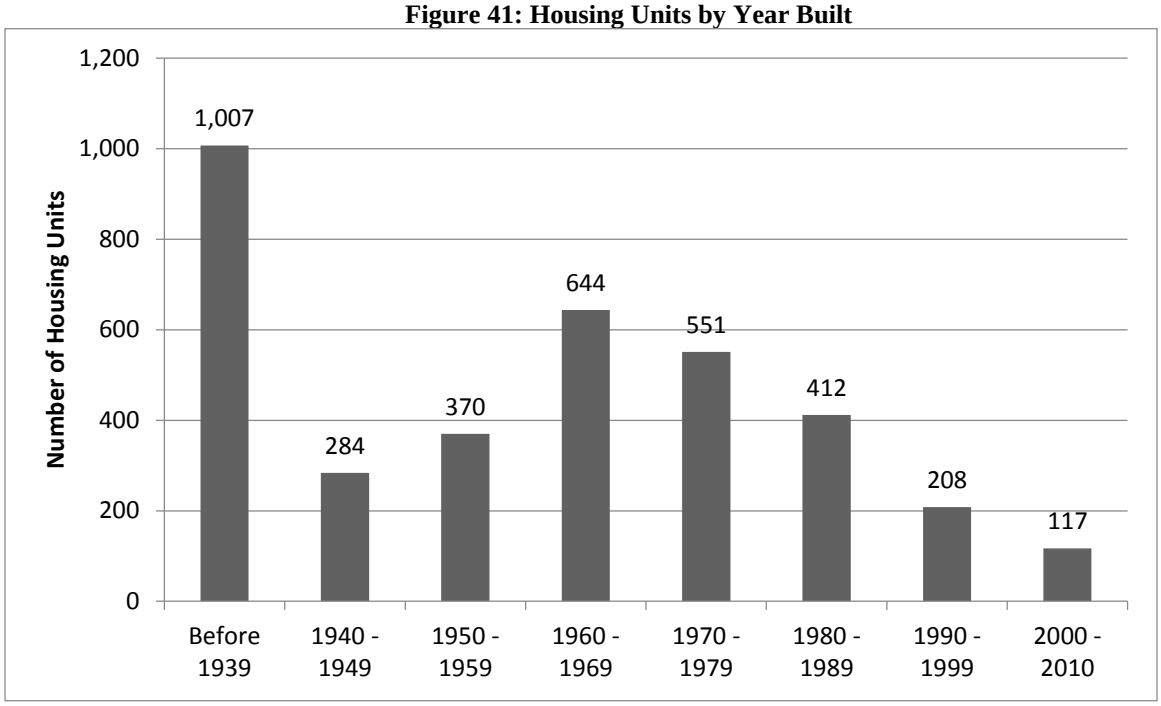
HOUSING AND ECONOMICS

Table 69 shows how the median household income, per capita income, home value and rent for the county and state compare with the City of York. The City of York has a slightly lower median household income and per capita income. These indicators can influence a community's level of resilient following a hazard.

Table 69: Housing and Economics

	Nebraska	York County	York
Median Household Income	$49,342	$47,689	$44,344
Per Capita Income	$25,229	$25,412	$24,658
Median Home Value	$123,900	$92,300	$93,900
Median Rent	$648	$527	$514

Figure 41: Housing Units by Year Built



According to the U.S. Census there are a total of 3,593 housing units in York. Of those 3,593 units more than 5 percent (200 total units) are reported as vacant. Vacant housing may be less likely to be properly maintained and could be more vulnerable to hazards.

Table 70: Housing Units

Jurisdiction	Total Housing Units					Occupied Housing Units			
	Occupied		Vacant			Owner		Renter	
	Number	Percent	Number	Percent		Number	Percent	Number	Percent
York County	5,771	92.9%	443	7.1%		4,397	76.2%	1,374	23.8%
York	3,393	94.4%	200	5.6%		2,487	73.3%	906	26.7%

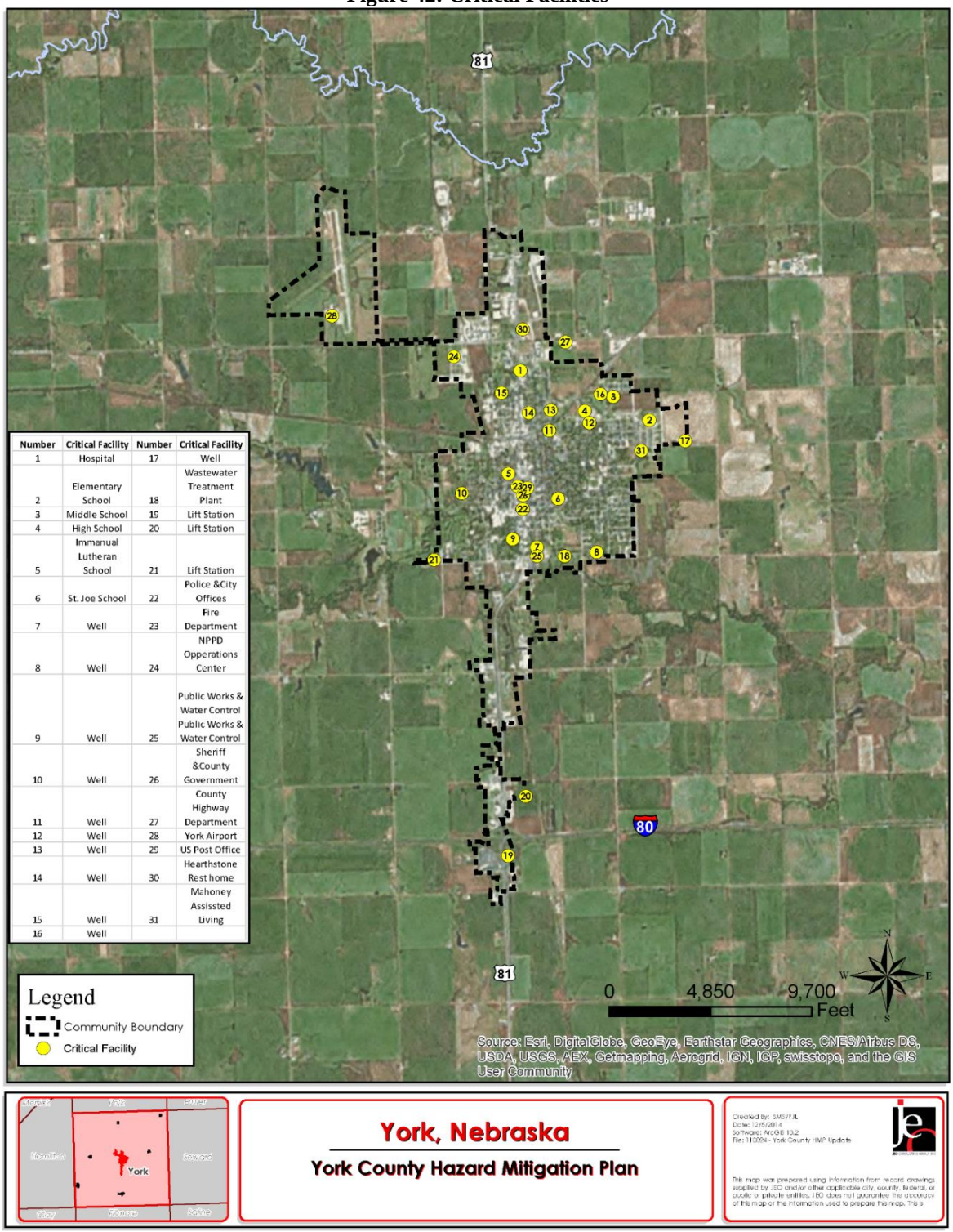
MAJOR EMPLOYERS

Major employers in the community are Nebraska Public Power District, York Public Schools, and UTC (Hamilton Sundstrand). This is relevant to hazard mitigation as damages to major employers would have a significant impact on the community.

CRITICAL FACILITIES

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster. Critical facilities were identified during the original planning process and updated by the local planning team as a part of the plan update. The following Figure is a summary of the critical facilities for the City of York.

Figure 42: Critical Facilities



Number	Critical Facility	Number	Critical Facility
1	Hospital	17	Well
2	Elementary School	18	Wastewater Treatment Plant
3	Middle School	19	Lift Station
4	High School	20	Lift Station
5	Immanual Lutheran School	21	Lift Station
6	St. Joe School	22	Police &City Offices
7	Well	23	Fire Department
8	Well	24	NPPD Opperations Center
9	Well	25	Public Works & Water Control Public Works & Water Control
10	Well	26	Sheriff &County Government
11	Well	27	County Highway Department
12	Well	28	York Airport
13	Well	29	US Post Office
14	Well	30	Hearthstone Rest home
15	Well	31	Mahoney Assissted Living
16	Well		

STRUCTURAL INVENTORY AND VALUATION

A structural inventory was completed for the corporate limits of York using GIS for the 2010 hazard mitigation plan. The values of these structure types were determined from the 2013 Property Type Values as provided by the Nebraska Department of Revenue Property Assessment Division.

Results from the structural inventory completed for the City of York are found in Table 71 below. Information displayed in this table includes the number of structures, value per structure, and total value of each structure type.

Table 71: Structural Inventory and Valuation Summary

Total Structures		Structure Valuation	
Structure Type	Number of Structures	Total Value	Value per Structure
Commercial/Industrial	342	$159,253,327	$465,653
Out Building	26	$151,578	$5,830
Residential	4,034	$260,017,820	$64,457
Public/Quasi Public	40	$3,870,155	$96,754
TOTAL STRUCTURES	**4,442**	**$423,292,880**	-

**Values are rounded to the nearest dollar.*

FUTURE DEVELOPMENT TRENDS

York expects plenty of economic activity in the near future. There are plans for housing developments as well as new businesses for the City of York. As additional development occurs, it should be done in a way to minimize its vulnerability to hazards.

RISK ASSESSMENT

Table 72 is a Risk Assessment identified specifically for the community. Refer to *Section 4: Risk Assessment* for a detailed explanation as to what this methodology is and why certain hazards did not pose a significant enough threat and were eliminated from detailed discussion.

According to the local planning team, the five hazards of greatest concern to the City of York are tornados, hail, high winds, severe thunderstorms, and severe winter storms. These five hazards are discussed further in the subsection below. Additional hazards are discussed if previous occurrences or current circumstances lead the Planning Team to determine the hazards are a significant threat to the community.

Table 72: Community Based Risk Assessment

HAZARD TYPE	PREVIOUS OCCURRENCE? Yes/No	Specific Concerns Identified
Severe Winter Storm*	Yes	Potential power outages and damages to critical facilities
Tornado*	No	Significant damages and loss of life
High Winds*	Yes	Potential damages to property and critical facilities
Hail*	Yes	Potential damages to property and crops
Severe Thunderstorm*	Yes	Potential damages and prolonged power outages
Flooding	Yes	Potential damages to properties; 282 structures located in the floodplain
Extreme Heat	Yes	25.1% of population at higher level of vulnerability; Ag losses; Secondary hazards such as wildfires
Drought	Yes	Economic impacts; Land degradation; Secondary hazards such as wildfires
Earthquake	No	None
Wildfire	Yes	Potential loss of life and properties; Economic impacts
Dam Failure	No	None
Levee Failure	No	None
Agricultural Disease	No	Economic concerns; Ag is major economic sector for the county
Earthquakes	No	None
Landslides	No	None
Urban Fire	Yes	Spread of fires due to age and density of structures
Chemical and Radiological Hazards	Yes	Proximity to transportation routes; hazardous chemical storage facilities located near critical facilities and vulnerable populations
Terrorism	No	None
Civil Disorder	No	None

HISTORICAL OCCURRENCES

The NCDC counted a total of 51 hazard events in the city of York and there were no recorded deaths or injuries, but $3,697,000 in damages to property and $4,535,000 in crop damages.

Tornados

The local planning team identified tornados as the greatest concern for the community. According to the NCDC data, there have been zero reported tornados in the City of York. However, there is the potential for significant damages if a tornadic event would occur. In 2014, there was an EF2 tornado in the nearby area that resulted in significant damages to property and crops. The City of York also has a number of mobile homes that are more vulnerable to this hazard (2.3 percent of all occupied housing units).

Hail Events

The local planning team identified hailstorms as a significant concern for York. NCDC data records 28 events with a total of $2,685,000 in property damages and $3,935,000 in crop losses. The local planning team identified that critical facilities have been damaged by hail in the past. A summary of the events with recorded damages can be seen in Table 73.

Table 73: Historic Hail Events

Date	Extent	Property Damage	Crop Damage
5/22/1996	1.75 inch	-	$10,000
6/9/1999	1.0 inch	$10,000	$500,000
6/13/2001	1.75 inch	$10,000	$200,000
6/12/2002	3.5 inch	$100,000	$1,000,000
5/22/2004	2.5 inch	$25,000	-
6/12/2004	1.25 inch	$10,000	$200,000
4/18/2005	1.75 inch	$1,000,000	-
5/10/2005	1.75 inch	$25,000	-
6/4/2005	1.75	$250,000	$250,000
5/14/2007	1.5 inch	$30,000	$175,000
5/29/2008	1.0 inch	$5,000	$100,000
6/17/2008	1.0 inch	$10,000	$100,000
6/22/2009	1.75 inch	$60,000	$150,000
5/21/2011	3.0 inch	$1,125,000	$750,000
5/1/2012	1.5 inch	$25,000	$500,000
Total	-	**$2,685,000**	**$3,935,000**

Source: NCDC

High Winds

The local planning team identified high winds as a significant concern for the community. According to the NCDC data, there have been eight storm events which included strong winds (50 kts./58 mph). Winds of this magnitude, according to the Beaufort Wind Force Ranking, can cause trees to uproot, considerable structure damage, and over turning of improperly anchored mobile homes.

Severe Thunderstorms

Severe thunderstorms are a regular part of the climate for York County and York. The local planning team identified severe thunderstorms as a significant concern for the city. The NCDC recorded 14 events which resulted in $862,000 in property damages and $600,000 in crop damages. The local planning team mentioned that there have been several severe thunderstorms since 2008, however they were not recorded by the NCDC. A summary of storms with recorded losses can be seen in Table 74. The local planning team indicated that critical facilities have back up power generators, as well as weather radios.

Table 74: Historic Thunderstorms

Date	Extent	Property Damage	Crop Damage
6/12/1996	60kts./70 mph	$20,000	$100,000
5/15/1998	70kts./80 mph	$500,000	$100,000
8/17/1999	65 kts./75 mph	$25,000	$100,000
5/29/2000	50 kts. EG/58 mph	$75,000	$150,000
6/27/2003	56 kts. EG/64 mph	$100,000	-
4/18/2005	1.0 inch hail, tornado/funnel cloud	$100,000	-
8/1/2006	52 ktd. EG/60 mph	$10,000	$50,000
9/18/2007	2 inches of rain in 90 minutes, Roadway flooding (Lincoln Ave.), 0.5 inch hail	$10,000	-
6/17/2008	53 kts. MG/61 mph	$10,000	-
7/15/2008	52 kts. EG/60 mph	$10,000	$100,000
Total	-	**$862,000**	**$600,000**

Source: NCDC

Severe Winter Storms

The local planning team identified severe winter storms as a significant concern for the community. This is consistent with risk perception for the entire planning area. NCDC data records severe winter storms as "zonal" events meaning there is not a specific record of what communities are impacted or at least what the level impacts were per community.

The local planning team indicated there was a major severe winter storm in 2009 that resulted in significant snowfall and ice accumulation. Given the frequency of severe winter storms, snow removal resources have been determined as sufficient for local events.

Flooding

There was one reported flash flood event for York that resulted in $100,000 in property damages. Table 75 shows the extent of this event. Flooding was not one of the five hazards of most concern to the city, however the city is vulnerable to this hazard. The local planning team indicated that there are a number of areas around the community that have poor drainage, especially within the floodplain.

Table 75: Historic Flooding Events

Date	Extent	Property Damage	Crop Damage
4/18/2005	1.0 inch hail, tornado/funnel cloud, roadway flooding	$100,000	-

The structural inventory developed during the 2010 hazard mitigation plan was used to calculate exposure relative to the threat of flooding. Development in the floodplain has been limited within the City of York over the past several years resulting in few new structures being erected in flood prone areas. For the 2010 hazard mitigation plan FEMA's HAZUS software was utilized to identify the number of structures within the floodplain. In 2010 the structures within the one percent annual flood area were valued at $17,337,324; in 2013 these properties have a value of $20,215,151.

All HAZUS identified structures are included in the 100-year flood event summarized below. In a 100-year flood event, damages to structures within the flooding hazard area could approach the total replacement value of $20,215,151. This does not include loss of displacement, functional downtime, economic loss, injury, or loss of life.

For the purposes of calculating potential losses, it was estimated that all structures within the flooding hazard area would sustain 20 percent building damage at a flood depth of two feet. This information is from the Flood Building Loss Estimation Table provided by the FEMA Benefit-Cost Analysis Full Data Module, with the evaluation based on the average for one to two story buildings with basements. Using this estimated flood event, the potential building damages in York would be $4,043,030.

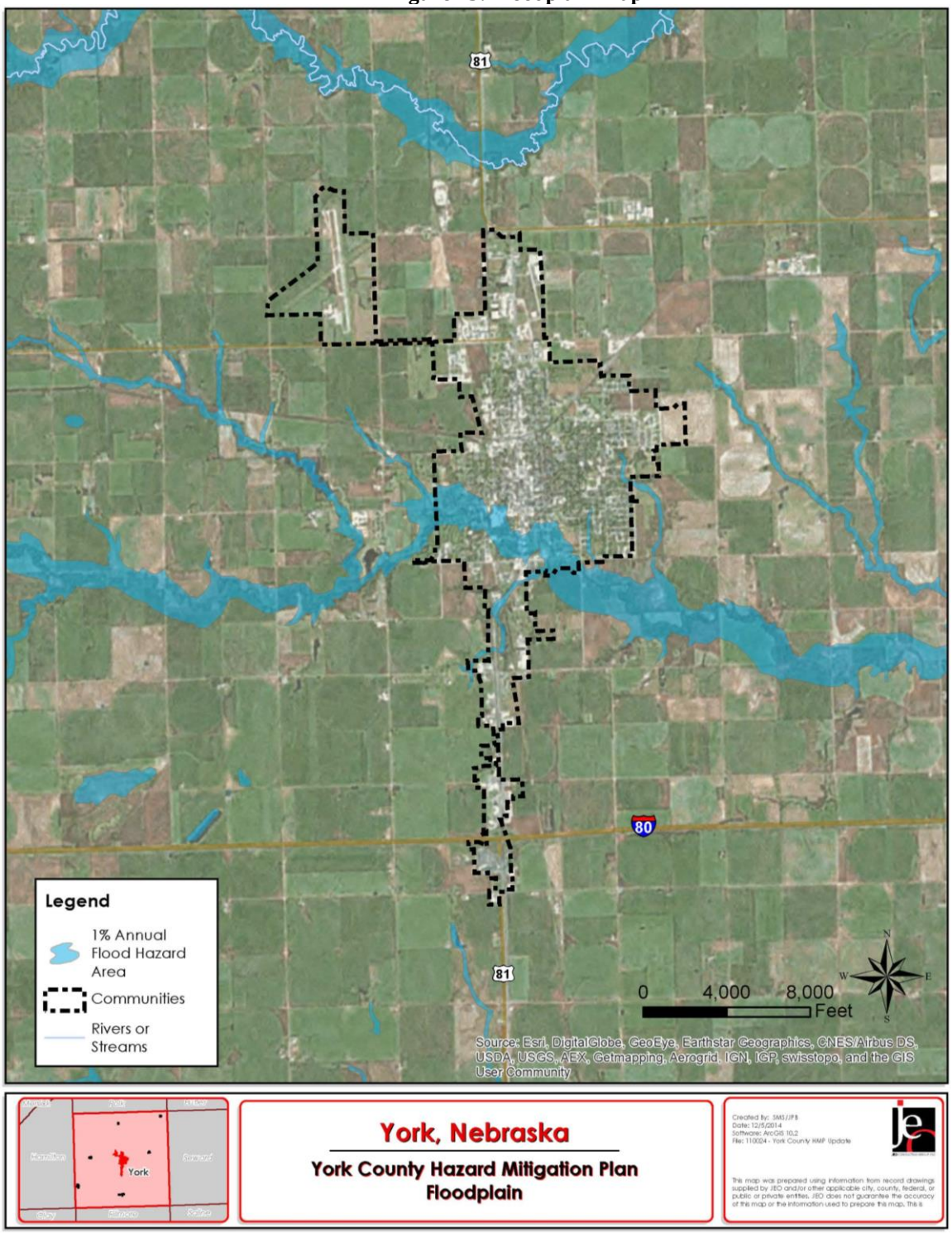
Below, Table 76 summarizes the potential damages to structures in the corporate limits within York's 1-percent annual flood risk area.

Table 76: Structural Inventory in 1% Annual Flood Risk Area

Structures in 100-year Flood Boundary		Structure Valuation		
Structure Type	Number of Structures	Average Value	Total Value	Approximate Damage Value
Commercial/Industrial	5	$465,653	$2,328,265	$465,653
Out Building	0	$5,830	-	-
Residential	276	$64,457	$17,790,132	$3,558,026
Public/Quasi Public	1	$96,754	$96,754	$19,351
TOTAL STRUCTURES	**282**	**-**	**$20,215,151**	**$4,043,030**

**Values are rounded to the nearest dollar.*

Figure 43: Floodplain Map



Grass/wildfires

The local planning team did not identify grass/wildfires as a significant concern for the city. However, according to the Nebraska Forestry Department, there were 93 reported fires by the York Fire Department from 2000 to 2012 which consumed a total of 77 rangeland acres and 165 crop land acres. The fires resulted in more than $19,400 in damages to crops and $5,250 in damages to structures.

Urban Fire

The local planning team did not identify urban fire as a significant concern for the city. However, given the age of the building structures and density of housing units within the corporate limits the planning team felt it was possible for fire to spread quickly between structures. Like all structures the critical facilities are as vulnerable to the threat of urban fire as other structures. Newer structures or those that have been remodeled have sprinkler systems per fire code.

The City of York does have a fire and rescue department with approximately 30 active volunteers and 12 paid staff. From 2008 to 2012 there were 203 fires and 4,886 rescue/EMS calls reported by the York Fire Department according the Nebraska State Fire Marshal's Office. In addition the York Fire Department reported providing aid to a neighboring fire department five times during this time period. The York Fire Department has a fire prevention education program.

Chemical and Radiological Hazards

The local planning team did not list chemical and radiological hazards within the five greatest hazards facing the city. However, there are several hazardous chemical storage facilities and there have been previous spills. According to the PHMSA incident reports there have been seven spills in York reported from 1980 to 2013. These spills resulted in $33,675 in losses. The most significant event occurred in 2008 when 150 LGA of hydrochloric acid solution was released at a truck stop while being transported through York.

Table 77: Chemical Incidents

Date	Extent	Release During Transport/Loading/Storage	Crop Damage
8/17/1995	75 LGA of Fuel Oil released	Unloading	$75
1/2/1997	10 LGA of Compound Cleaning Liquids released	Transport by truck	$3,000
8/16/2001	25 LGA of Paint/Paint Lacquer Enamel Stain Shellac released	Transport by truck	$2,200
6/23/2004	20 LGA of Combustible Liquid NOS released	Transport by truck	$3,400
10/26/2008	150 LGA Hydrochloric Acid Solution released	Transport by truck	$25,000
Total	**280 LGA**	**-**	**$33,675**

The following sites are reported as part of the Tier II reporting requirements for 2013 and were accessed through the Nebraska Department of Environmental Quality.

Table 78: Chemical Storage Fixed Sites

Facility	Address	Hazardous
Abengoa Bioenergy Company LLC	1414 Road O	Yes
Aurora Co-op Fuel Depot	1320 Road L	Yes
AT&T Communications 5060	Road L	Yes
Blue Beacon of York Truck Wash	4500 S Lincoln Ave.	Yes
DuPont Pioneer	1410 HWY 34	Yes
EPCO Carbon Dioxide Products	1412 Road O	Yes
NPPD York Operation Center	907 W 25th Street	Yes
Plains Equipment Group	3221 N Lincoln Ave	Yes
United Farmers Co-op	1112 HWY 34	Yes
United Farmers Co-op	1403 Road 14	Yes
United Farmers Co-op Anhydrous	Road 9	Yes
United Farmers Co-op Anhydrous	Road H	Yes
UTC Aerospace Systems	2800 N Division Ave.	Yes
Wilbur-Ellis Company	1309 Road 9	Yes
Windstream Communications	409 E 6th Street	Yes
York Cold Storage Co.	402 Commerce Street	Yes
York Cold Storage Co.	215 E 13th Street	Yes
Crop Production Services Inc.	2700 N Division Ave.	No
Kory Building Products	521 W 26th Street	No
Petro York	4700 S Lincoln Ave	No
Road Dept. York Yard	121 W South 21st Street	No
Shaffer Trucking	558 W 12th Street	No
United Farmers Co-op	1504 n Platte Ave	No
York Municipal Airport	1112 HWY 34	No
York Rail Cement Terminal	826 W 26th	No
York Ready Mix Plant	423 W 3rd Street	No

CAPABILITY ASSESSMENT

Thus far the planning process has identified the major hazards for the communities and described and quantified the vulnerability of the community to these risks by acquiring updated information from FEMA, local jurisdiction, and other sources. The following step shall be assessing what loss prevention or preparedness mechanisms are already in place, which is referred to as capability assessment. Combining the risk assessment with the local capability assessment results in a stronger mechanism in understanding locality's "net vulnerability" and to what extent they could be able to implement the goals, objectives, and actions.

City Governance

A community's governance indicates the number of entities that may be available to help implement hazard migration actions. The City of York is governed by a mayor and eight member city council. The city also has the following boards or departments:

- Parks
- Trees Committee
- Roads
- City Maintenance
- City Utilities

Table 79: Capabilities Assessment

Survey Components/Subcomponents		*Comments*
Planning & Regulatory Capability	Comprehensive Plan	***Yes, 2016***
	Capital Improvements Plan	***Yes***
	Hazard Mitigation Plan	***Yes, 2010***
	Economic Development Plan	***Yes, Annually***
	Emergency Operational Plan	***Yes (County)***
	National Resources Protection Plan	***Yes***
	Open Space Preservation plan	***No***
	Floodplain Management Plan	***Under development***
	Storm Water Management Plan	***Under Development***
	Zoning Ordinance	***Yes***
	Subdivision Regulation/Ordinance	***Yes***
	Floodplain Ordinance	***Yes***
	Building Codes	***Yes***
	National Flood Insurance Program	***Yes***
	Community Rating System	***No***
	Other (if any)	
Administrative & Technical Capability	Planning Commission	***5 member board***
	Hazard Mitigation Planning Commission	***Yes***
	Floodplain Administration	***Yes, Director of Public Works***
	Emergency Manager	***County***
	GIS Coordinator	***Public Works***
	Chief Building Official	***Director of Public Works***
	Civil Engineering	***Public Works***
	Staff Who Can Assess Community's Vulnerability to Hazards	***Multiple***
	Grant Manager	***City Administrator***
	Other (if any)	
Fiscal Capability	Capital Improvement Project Funding	***Yes***
	Community Development Block Grant	***Yes***
	Authority to Levy Taxes for Specific Purposes	***Yes***
	Gas/Electric Service Fees	***No***
	Storm Water Service Fees	***No***
	Water/Sewer Service Fees	***Yes***
	Development Impact Fees	***No***
	General Obligation Revenue or Special Tax Bonds	***Yes***
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	***Yes, LEPC***
	Ongoing public education or information program (e.g., responsible water use, fire safety,	***City (clerk, public works, zoning, etc.), County, NRD, Fire Department***

Survey Components/Subcomponents		*Comments*
	household preparedness, environmental education)	
	Natural Disaster or Safety related school programs	***No***
	StormReady Certification	***No***
	Firewise Communities Certification	***No***
	Public-private partnership initiatives addressing disaster-related issues	***No***
	Other (if any)	

PLAN INTEGRATION

The current comprehensive plan did not incorporate the hazard mitigation plan, the community expects to update the comprehensive plan 2016. This future update should include information from the hazard mitigation plan to ensure consistency between the two documents. Future growth areas and zoning does support development outside of the SFHA area.

MITIGATION ACTIONS

The following mitigation actions have been completed or are no longer needed:

ACTION 2.1.1	**Backup Generators**
Analysis	Provide a portable or stationary source of backup power to redundant power supplies, wells, lift stations, and other critical facilities and shelters.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduce the danger to human life/health by keeping utilities operating. Reduce the economic downtime associated with utility loss.
Estimated Cost	$15,000-$30,000 per generator
Potential Funding	HMGP
Timeline	Completed
Priority	High
Lead Agency	Emergency Management, Public Works
Status	This action has been completed. No other facilities have been identified as needing backup generation at this time.

ACTION 2.1.4	**New Municipal Well**
Analysis	Communities can evaluate the need to install a new well to provide a safe backup water supply for the community, replace existing wells affected by drought, and additional water for fire protection.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Drought
Benefits	Provide adequate water sources to mitigate potential damages or expenses due to drought.
Estimated Cost	$350,000 to $450,000
Potential Funding	Community Development Block Grant (CDBG), State Revolving Fund (SRF)
Timeline	Completed
Priority	High
Lead Agency	Public Works

ACTION 2.1.4	**New Municipal Well**
Status	This action has been completed. Local planning team identified the city as having ample well capacity at this time.

ACTION 4.3.4	**Weather Radios**
Analysis	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather conditions by communication.
Estimated Cost	$50 per radio
Potential Funding	HMGP, PDM, Natural Resource District, County & City of York
Timeline	Completed
Priority	Medium
Lead Agency	Emergency Management
Status	This action has been completed. Sufficient number of weather radios are present in critical facilities at this time.

ACTION 2.3.4	**Tree City USA**
Analysis	Work to become a Tree City USA through the National Arbor Day Foundation in order to receive direction, technical assistance, and public education on how to establish a hazardous tree identification and removal program in order to limited potential tree damage and damages caused by trees in a community when a storm event occurs. The four main requirements include: 1) Establish a tree board; 2) Enact a tree care ordinance; 3) Establish a forestry care program; 4) Enact an Arbor Day observance and proclamation.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	Better maintained trees and hazard tree removal will eliminate damages to power lines and personal property during hazards events. Participation in Tree City USA will support community actions to mitigation damages from trees.
Estimated Cost	$1,000+
Potential Funding	Arbor Day Foundation, US Forest Service
Timeline	Completed
Priority	Low
Lead Agency	Public Works
Status	This action has been completed. Program is funded by the city budget.

ACTION 4.3.2	**Emergency Communications**
Analysis	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish inner-operable communications.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Coordination and clear and efficient communications between agencies increases the capabilities to protect and rescue, increases safety, and reduces the risk of mistakes due to miscommunications.

ACTION 4.3.2	Emergency Communications
Estimated Cost	$10,000+
Potential Funding	Homeland Security, Natural Resource District, County & City of York
Timeline	Completed
Priority	Low
Lead Agency	York County Emergency Management
Status	This action has been completed. LEOP was updated in 2014.

The following mitigation actions are new, ongoing, or have not been completed:

ACTION 1.1.1	Obtaining Missing Data For Future Updates
Analysis	Obtain necessary data to improve vulnerability assessments when updating the plan/improve GIS data available for future risk assessments.
Goal/Objective	Goal 1/Objective 1.1
Hazard(s) Address	All hazards
Benefits	Improving the overall quality and information found in the plan.
Estimated Cost	N/A
Potential Funding	HMGP, City budget
Timeline	5 years
Priority	Medium
Lead Agency	Police Department, Fire Department, Emergency Management
Status	Not Yet Started.

ACTION 2.1.6	Safe Rooms
Analysis	Assess, design and construct fully supplied safe rooms in highly vulnerable urban and rural areas such as mobile home parks, campgrounds, schools, and other such areas throughout the planning area. Assess the adequacy of current public buildings to be used as safe rooms. Construct safe rooms in areas of greatest need, either as new construction or retrofitting.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms
Benefits	Reduce the risk of death or injury in areas vulnerable to tornados, severe thunderstorms and other hazards.
Estimated Cost	$200-$300/sf stand alone; $150-200/sf addition/retrofit
Potential Funding	PDM, HMPG
Timeline	5 Years
Priority	Low
Lead Agency	Public Works, Emergency Management
Status	Not Yet Started. Trailer parks have been identified as areas in need of safe rooms.

ACTION 2.1.8	Stormwater System and Drainage Improvements
Analysis	Larger communities generally utilize underground stormwater systems comprising of pipes and inlets to convey runoff. Undersized systems can contribute to localized flooding. Stormwater system improvements may include pipe upsizing and additional inlets. Smaller communities may utilize stormwater systems comprising of ditches, culverts, or drainage ponds to convey runoff. Drainage improvements may include ditch upsizing, ditch

ACTION 2.1.8	Stormwater System and Drainage Improvements
	cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Bridges typically serve as flow restrictions along streams and rivers. Cleanout and reshaping of channel segments at bridge crossing can increase conveyance, reducing the potential for flooding. Replacement or modification of bridges and other flow restrictions may be necessary to provide greater capacity, maintain or improve structural integrity during flood events, and eliminate flooding threats and damages. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Benefits	These improvements can serve to more effectively convey runoff within cities and towns, preventing interior localized flooding. May also reduce the risk of illness/ disease by eliminating standing water.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000 to $100,000+
Potential Funding	HMGP, CDBG, Natural Resource District, County & City of York
Timeline	5 Years
Priority	Low
Lead Agency	Public Works
Status	Not Yet Started. Areas in the floodplain have been identified as needing drainage improvements. Improvements needed include added stormwater system capacity.

ACTION 2.1.9	Stream Bank Stabilization / Grade Control Structures/ Channel Improvements
Analysis	Stream bank/ bed degradation can occur along many rivers and creeks. Stabilization improvements including rock rip rap, vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Grade control structures including sheet-pile weirs, rock weirs, ponds, road dams, etc. can be implemented and improved to maintain the channel bed. Channel stabilization can protect structures, increase conveyance and provide flooding benefits. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Flooding
Benefits	Protects structures near banks from flooding and shifting by reducing risk of flow disruption. Low maintenance solution to reduce the risk of recurring maintenance from banks falling in and increase conveyance.
Estimated Cost	$50,000 to $100,000+
Potential Funding	USACE, PDM, HMGP, Upper Big Blue NRD, County & City of York
Timeline	5 years
Priority	Medium
Lead Agency	Public Works, Upper Big Blue NRD

ACTION 2.1.9	**Stream Bank Stabilization / Grade Control Structures/ Channel Improvements**
Status	Not Yet Started. Areas along Beaver Creek have been identified as needing repairs and/or stabilization.

ACTION 2.3.1	**Floodplain Regulation Enforcement and Updates**
Analysis	Continue to enforce local floodplain regulations for structures located in the 1-percent floodplain. Strict enforcement of the type of development and elevations of structures should be considered through issuance of building permits by any community or county. Continue education of building inspectors or Certified Floodplain Managers.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Ensures that no new structures built will be vulnerable to flooding. Reducing damages and health risks associated with flooding.
Estimated Cost	$4,000+
Potential Funding	HMGP, CDBG
Timeline	Ongoing
Priority	High
Lead Agency	City Administrator, NDNR
Status	This is an ongoing action.

ACTION 2.1.10	**Windbreaks / Living Snow Fence**
Analysis	Installation of windbreaks to increase water storage capacity in soil.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Drought
Benefits	Help hold moisture in times of drought to support ranching economy, helpful for water storage in the district. Prevents snow from collecting on rural roadways, increases accessibility to residences.
Estimated Cost	$2,000+
Potential Funding	Upper Big Blue Cost Share
Timeline	Five years
Priority	Low, unlikely to occur
Lead Agency	Upper Big Blue NRD, land owners
Status	Not Yet Started

ACTION 2.3.2	**Maintain Good Standing with National Flood Insurance Program (NFIP)**
Analysis	Maintain good standing with National Flood Insurance Program (NFIP) including floodplain management practices/ requirements and regulation enforcements and updates.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Enable property owners to purchase insurance protection against flood losses. Good standing enables participants to apply for PDM and HMGP cost-share.
Estimated Cost	N/A
Potential Funding	N/A
Timeline	Ongoing
Priority	Medium

ACTION 2.3.2	**Maintain Good Standing with National Flood Insurance Program (NFIP)**
Lead Agency	Public Works, Floodplain Administrator, NDNR
Status	This is an ongoing action.

ACTION 4.1.1	**Civil Service Improvements**
Analysis	Improve emergency rescue and response equipment and facilities by providing additional, or updating existing emergency response equipment. This could include fire equipment, ATVs, water tanks/truck, snow removal equipment, pumps, etc. This would also include developing backup systems for emergency vehicles, identifying and training additional personnel for emergency response, or continuing educational opportunities for current personnel.
Goal/Objective	Goal 4/Objective 4.2
Hazard(s) Addressed	All Hazards
Benefits	Having appropriate and up to date equipment along with adequately trained and numbered personnel increases safety and reduces the risk of damage.
Estimated Cost	$5,000 to $400,000 per vehicle, varies depending on what equipment is needed
Potential Funding	PDM, NEMA, York County and City budget
Timeline	Ongoing
Priority	Medium
Lead Agency	Public Works
Status	In progress. Many improvements are part of regular maintenance program. Large purchases will be evaluated as identified. Snow removal equipment is aging, in need of replacement in the near future.

ACTION 4.1.2	**Improve Snow / Ice Removal Program / Snow Fence**
Analysis	Revise and improve the snow and ice removal program for streets. Revisions should address situations such as plowing snow, ice removal, parking during snow and ice removal, and removal of associated storm debris. This would include updating the emergency routes, acquiring equipment that is needed, paving routes, and ordinances as necessary. Consider purchase of snow fence at critical areas and installation of living snow fence.
Goal/Objective	Goal 4/Objective 4.1
Hazard(s) Addressed	Severe Winter Storms
Benefits	Having an effective snow/ice removal program will improve capabilities to rescue stranded residents and increase the capacity in which snow can be removed after a severe winter storm.
Estimated Cost	$20,000+
Potential Funding	PDM
Timeline	Ongoing
Priority	Medium
Lead Agency	Public Works
Status	This is an ongoing action. Improvements are implemented as they are identified.

ACTION 3.1.1	**Public Awareness / Education**
Analysis	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing education equipment such as overhead projectors and laptops.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Public awareness reduces the risk of property loss and damage, injury and death. It increases knowledge on emergency procedures, facilities, conservation, and is key to preparedness.
Estimated Cost	$0-$5,000+
Potential Funding	HMGP, PDM, City budget
Timeline	Ongoing
Priority	Medium
Lead Agency	Public Works, City Administrator
Status	This is an ongoing action. Local efforts include: newspaper advertisements, Facebook, city website, and radio announcements.

ACTION 2.1.2	**Electrical System Looped Distribution / Redundancies**
Analysis	Provide looped distribution service and other redundancies in the electrical system as a backup power supply in the event the primary system is destroyed or fails.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados and high winds, severe winter storms, severe thunderstorms
Benefits	More reliable and resistant power distribution system.
Estimated Cost	$40,000 per mile
Potential Funding	HMGP, PDM, Nebraska Public Power District
Timeline	5 Years
Priority	Medium
Lead Agency	Public Works, Nebraska Public Power District
Status	Not Yet Started

ACTION 2.1.3	**Hazardous Tree Removal Program**
Analysis	Identify and remove hazards limbs and/or trees.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$20,000
Potential Funding	HMGP, US Forest Service, Nebraska Public Power District
Timeline	Ongoing
Priority	Medium
Lead Agency	Nebraska Public Power District

ACTION 2.1.3	**Hazardous Tree Removal Program**
Status	This is part of their regular maintenance program. Hazardous trees are removed as they are identified.

ACTION 2.1.5	**Power, Service, Electrical, and Water Distribution Lines**
Analysis	Communities can work with their local Public Power District or Electricity Department to identify vulnerable transmission and distribution lines and plan to bury lines underground, upgrade, or retrofit existing structures to be less vulnerable to storm events. Electrical utilities shall be required to use underground construction methods where possible for future installation of power lines.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms, Flooding
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$50,000 to $70,000 (per mile for electrical)
Potential Funding	HMGP, PDM, Nebraska Public Power District, Upper Big Blue NRD, user fees, connection fees, assessments.
Timeline	5 Years
Priority	Medium
Lead Agency	Nebraska Public Power District, Public Works, Upper Big Blue NRD
Status	Not Yet Started

ACTION 2.1.7	**Stabilize/Anchor Fertilizer, Fuel, and Propane Tanks**
Analysis	Anchor fuel tanks to prevent movement. If left unanchored, tanks could present a major threat to property and safety in tornado or high wind event.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Address	Tornados, High Winds
Benefits	Limits the chance of fuel/chemical spills. Reduces chance that propane tanks and other items become missiles during tornado events.
Estimated Cost	$1,000 plus
Potential Funding	PDM, HMGP, City of York, and Fuel Suppliers
Timeline	5 Years
Priority	Low
Lead Agency	Public Works, Residents and Fuel Suppliers
Status	Not Yet Started

ACTION 2.2.2	**Flood-Prone Property Acquisition**
Analysis	Voluntary acquisition and demolition of properties prone to flooding will reduce the general threat of flooding for communities. Additionally, this can provide flood insurance benefits to those communities within the NFIP. Communities must be in good standing with NFIP in order to be eligible for HMGP.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	Flooding
Benefits	A onetime cost to remove/relocate vulnerable properties will prevent future recurring repair costs.

ACTION 2.2.2	**Flood-Prone Property Acquisition**
Estimated Cost	Varies; Dependent upon market value of the structure
Potential Funding	HMGP, PDM, CDBG, USACE, FMA, SRL, RLC, City of York
Timeline	5 Years
Priority	Low
Lead Agency	Public Works, Upper Big Blue NRD
Status	Not Yet Started. There have been properties that have been identified for purchase within flood-prone areas.

ACTION 2.2.1	**Drainage Study/ Stormwater Master Plan**
Analysis	Preliminary drainage studies and assessments can be conducted to identify and prioritize design improvements to address site specific localized flooding/drainage issues to reduce and/or alleviate flooding. Stormwater master plans can be developed to help identify stormwater problem areas and potential drainage improvements.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	Flooding
Benefits	Proactive steps to identify all potential problems/issues can lead to effectively addressing improvements and prioritizing the projects to improve conditions. These improvements can serve to more effectively convey runoff within jurisdictions, preventing interior localized flooding resulting in damages. This ensures that the most beneficial projects are done first and could possibly eliminate the need for others.
Estimated Cost	$10,000 to $100,000+
Potential Funding	CDBG, Upper Big Blue NRD, County & City of York
Timeline	5 Years
Priority	Medium
Lead Agency	Public Works, Upper Big Blue NRD
Status	Not Yet Started

ACTION 4.3.1	**Alert / Warning Sirens**
Analysis	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking and remote activation.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather; promoting awareness and ensures people take shelter when needed.
Estimated Cost	$15,000+
Potential Funding	HMGP, PDM, Upper Big Blue NRD, County, City of York
Timeline	5 Years
Priority	Medium
Lead Agency	Emergency Management, Fire Department
Status	Not Yet Started

ACTION 4.3.3	**Warning Systems**
Analysis	Improve city cable TV interrupt warning system and implement telephone interrupt system such as Reverse 911.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduces the risk of death/injury associated with severe weather; promoting awareness and ensures people take shelter when needed.
Estimated Cost	$10,000+
Potential Funding	HMGP, PDM, Upper Big Blue NRD, County & City of York
Timeline	5 Years
Priority	Low
Lead Agency	Police Department
Status	Not Yet Started

PARTICIPANT SECTION FOR THE VILLAGE OF BENEDICT

York County

Multi-Jurisdictional Hazard Mitigation Plan

April 2015

HISTORY AND DEVELOPMENT OF BENEDICT

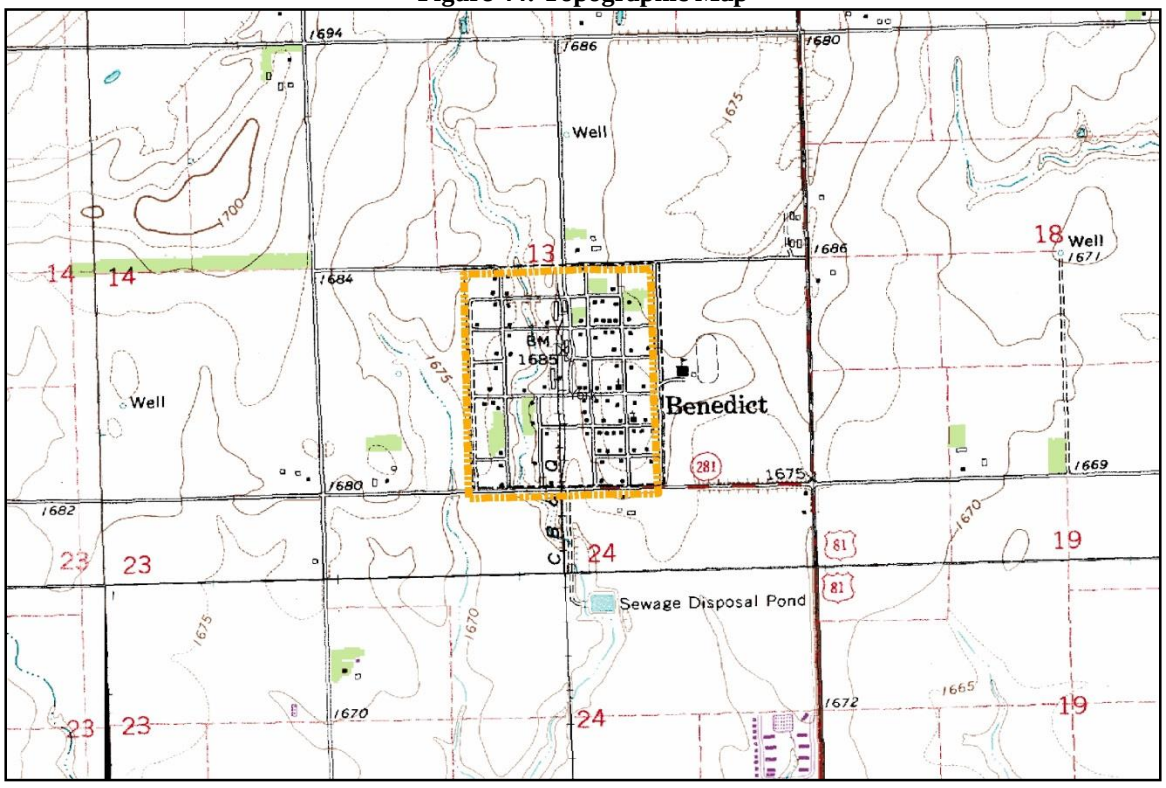
The pioneers described this place as, "an endless wild prairie, a sea of unbroken sod, and a vast treeless plain." Few realized the potential wealth that lay beneath the sod as they turned the grassland of northern York County into fields of grain. Many who came were Civil War veterans, others were from eastern states, Germany, England, Scotland, Ireland, and Sweden. Those who survived the 1870s were rewarded by improved conditions in the 1880s. Before a town was even dreamed of, churches, county schools, three post offices, two cemeteries, and a public road system were established in Morton and Thayer Township. In 1886 bonds were approved to aid the Kansas City & Omaha Railroad in bringing train service to the area. That spring, as the grade was being prepared between York and Stromsburg, a town was platted in Section 13. Located 10 miles north of York, it was named for the president of the railroad, E.C. Benedict.

LOCATION AND GEOGRAPHY

Benedict is a village located in the north central portion of York County. The Village of Benedict covers an area of 122 acres and has an elevation of 1,685 feet above sea level. Benedict is 49 miles northwest of Lincoln.

The community of Benedict lies in an area of plains. The land use surrounding the community is mainly agricultural crops with some ranching. Flat lying land above the valley with materials of sandstone or stream deposited silt, clay, sand and gravel overlain by wind deposited silt is prevalent. The community lies approximately three miles north of Coon Branch Creek. The watershed flows generally from the northwest to the southeast. A current floodplain has been delineated for Benedict and river flooding is of concern.

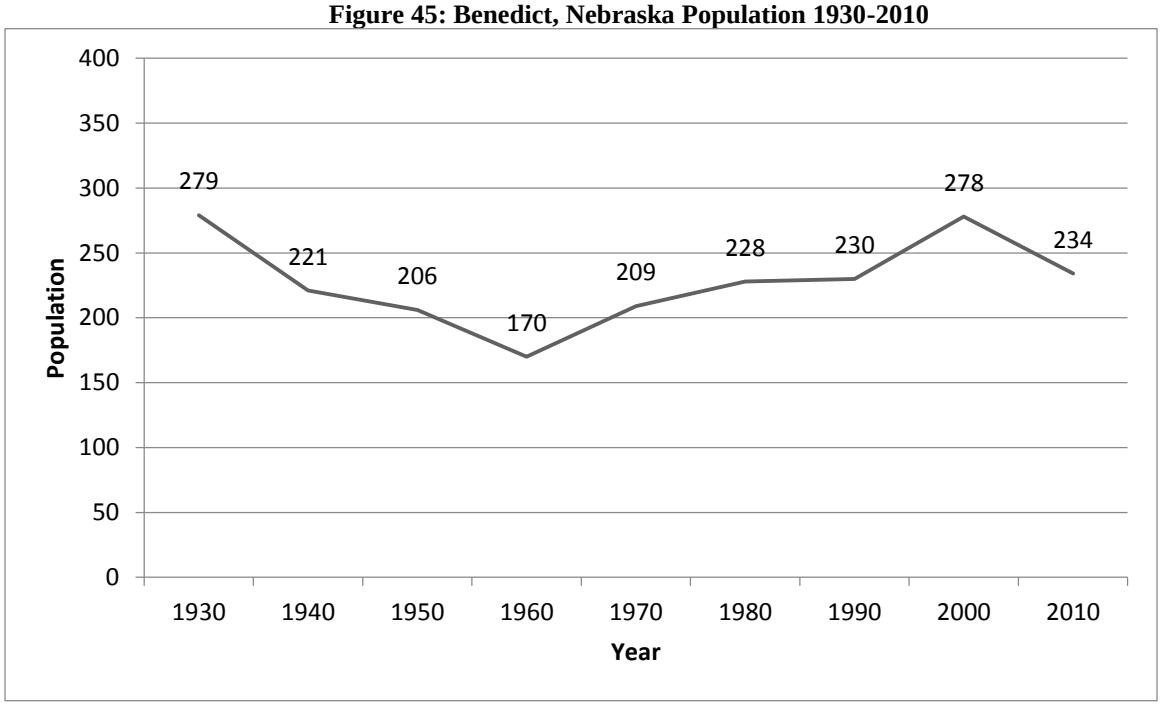
Figure 44: Topographic Map



BENEDICT DEMOGRAPHICS

Below, Figure 45 displays the historical population trend for Benedict from 1930 to 2010. Benedict has experienced large fluctuations in population over the past 80 years. The village saw a large population decrease from 1930 to 1960; before experiencing a large increase in population from 1960 to 2000. More recently, the village's population decreased from 2000 to 2010. Communities with a declining population may also have a higher level of unoccupied housing that is not being maintained. A decreasing population can represent decreasing tax revenue for the community which could make implementation of mitigation actions more challenging.

Figure 45: Benedict, Nebraska Population 1930-2010



The following table illustrates the age distribution and median age for York County in comparison to the Village of Benedict. The percentage of the population under five is significantly higher than the county average. The population over 65 years old is significantly lower than the county average. These two factors are relevant as the very young and elderly populations are more vulnerable during certain hazards than others.

Table 80: Population by Age

	York County	Benedict
< 5 yrs.	6.4%	9.4%
5 - 64 yrs.	75.4%	76.5%
> 65 yrs.	18.2%	14.1%
Median Age	40.1	40.2

HOUSING AND ECONOMICS

In Table 81, median household income, per capita income, home value and rent for the state and county are compared with the Village of Benedict. Overall, Benedict's averages for these economic indicators are lower than the state and county averages. The one exception is that of median rent. The median rent reported by the American Community Survey estimates is significantly higher than the state and county averages. This indicator is estimated by using previous census data and may not accurately reflect the true conditions in the community. Economic indicators such as these many influence a community' level of resiliency after hazard events.

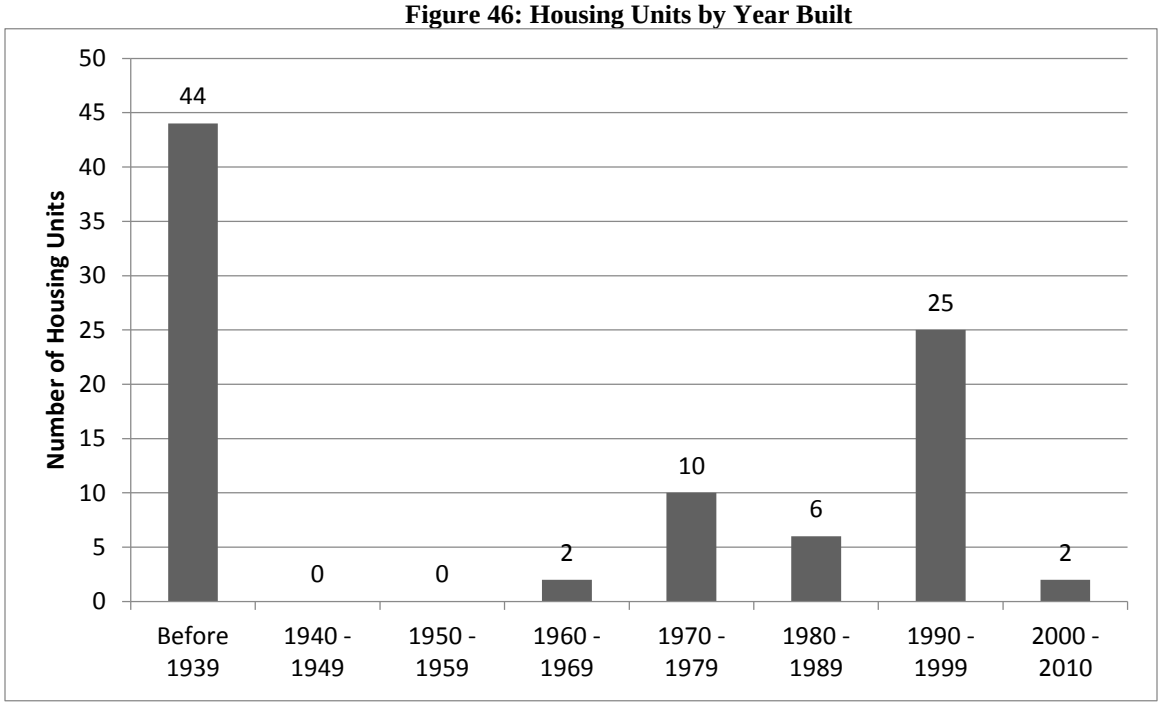
Table 81: Housing and Economics

	Nebraska	York County	Benedict
Median Household Income	$49,342	$47,689	$40,357
Per Capita Income	$25,229	$25,412	$18,935
Median Home Value	$123,900	$92,300	$58,700
Median Rent	$648	$527	$811

Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

Figure 46 indicates that nearly half of homes within Benedict were built before 1940. The State of Nebraska adopted its first statewide building code in 1987. Older homes built prior to the statewide building code may be more vulnerable to hazards. According to the U.S. Census there are a total of 68 housing units in Benedict. Of those 68 units more than 12 percent (10 total units) are reported as vacant. Vacant housing may be less likely to be properly maintained and could be more vulnerable to hazards.

Figure 46: Housing Units by Year Built



Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

Table 82: Housing Units

Jurisdiction	Total Housing Units					Occupied Housing Units			
	Occupied		Vacant			Owner		Renter	
	Number	Percent	Number	Percent		Number	Percent	Number	Percent
York County	5,771	92.9%	443	7.1%		4,397	76.2%	1,374	23.8%
Benedict	68	87.2%	10	12.8%		52	76.5%	16	23.5%

Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

MAJOR EMPLOYERS

A major employer in Benedict, identified by the local planning team, is Central Valley Ag. Damages to major employers can have a significant impact on the community. Many residents also commute to Lincoln. This is relevant to hazard mitigation, as transportation costs can absorb a significant portion of resident's budgets, influencing the community's level of resiliency after a hazard event.

CRITICAL FACILITIES

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster. Critical facilities were identified during the original planning process and updated by the local planning team as a part of the plan update. Figure 47 is a summary of the critical facilities for the Village of Benedict. There are no critical facilities located within the floodplain.

Figure 47: Critical Facilities

STRUCTURAL INVENTORY AND VALUATION

A structural inventory was completed for the corporate limits of Benedict though a window survey using GIS for the 2010 hazard mitigation plan, the inventory was updated utilizing building permits issued between 2010 and 2014. The values of these structure types were determined from the 2013 Property Type Values as provided by the Nebraska Department of Revenue Property Assessment Division.

Results from the structural inventory completed for the Village of Benedict are found in Table 83 below. Information displayed in this table includes the number of structures, value per structure, and total value of each structure type.

Table 83: Structural Inventory and Valuation Summary

Total Structures		Structure Valuation	
Structure Type	Number of Structures	Total Value	Value per Structure
Commercial/Industrial	24	$2,662,547	$110,939
Out Building	20	$101,526	$5,076
Residential	98	$4,613,150	$47,072
Public/Quasi Public	10	$78,744	$7,874
TOTAL STRUCTURES	**152**	**$7,455,967**	-

**Values are rounded to the nearest dollar.*

RISK ASSESSMENT

Table 84 shows the Risk Assessment for the Village of Benedict. Refer to *Section 4: Risk Assessment* for a detailed explanation as to what this methodology is and why certain hazards did not pose a significant enough threat and were eliminated from detailed discussion.

According to the local planning team, the five hazards of greatest concern to the Village of Benedict are tornados, high winds, severe winter storms, and severe thunderstorms, and extreme heat. These five hazards are discussed further in the subsections below. Additional hazards are discussed if previous occurrences or current circumstances lead the Planning Team to determine the hazards are a significant threat to the community.

Table 84: Community Based Risk Assessment

Hazard Type	Previous Occurrence? Yes/No	Specific Concerns Identified
Severe Winter Storm*	Yes	Potential power outages and damages to critical facilities
Tornado*	Yes	Significant damages and loss of life
High Winds*	Yes	Potential damages to property and critical facilities
Hail	Yes	Potential damages to property and crops
Severe Thunderstorm*	Yes	Potential damages and prolonged power outages
Flooding	No	Eight structures located in the floodplain
Extreme Heat*	Yes	23.5% of population at higher level of vulnerability; Ag losses; Secondary hazards such as wildfires
Drought	Yes	Economic impacts; Land degradation; Secondary hazards such as wildfires
Earthquake	No	None
Wildfire	Yes	Potential loss of life and properties; Economic impacts
Dam Failure	No	None
Levee Failure	No	None
Agricultural Disease	No	Economic concerns; Agriculture is major economic sector for the county
Earthquakes	No	None
Landslides	No	None

Hazard Type	Previous Occurrence? Yes/No	Specific Concerns Identified
Urban Fire	Yes	Age and density of housing
Chemical and Radiological Hazards	No	Major transportation route of Highway 81
Terrorism	No	None
Civil Disorder	No	None

*****Top five hazards of most concern

HISTORICAL OCCURRENCES

The NCDC counted a total of 23 hazard events in the Village of Benedict and there were no recorded deaths or injuries, but $462,000 in damages to property and $1,600,000 in crop damages.

Tornados

The local planning team identified tornados as the top concern for the community. According to the NCDC data, there were two tornados (both F0) in Benedict since 1998. These tornadic events resulted in $285,000 in property damages and $100,000 in crop damages. The village does have a safe room located at the fire department.

Table 85: Historic Tornado Events

Date	Extent	Property Damage	Crop Damage
5/15/1998	F0	$250,000	$100,000
5/22/2004	F0	$35,000	-
Total	-	**$285,000**	**$100,000**

Source: NCDC

Hail Events

The local planning team identified hailstorms as a significant concern for Benedict. NCDC data records 14 events with a total of $125,000 in property damages and $1,250,000 in crop losses. A summary of the events with recorded damages can be seen in Table 86. Benedict municipal facilities are insured for hail.

Table 86: Historic Hail Events

Date	Extent	Property Damage	Crop Damage
6/4/2005	1.75 inch	$100,000	$500,000
7/5/2008	1.75 inch	$25,000	$750,000
Total	-	**$125,000**	**$1,250,000**

Source: NCDC

Severe Thunderstorms

Severe thunderstorms are a regular part of the climate for York County and Benedict. The local planning team identified severe thunderstorms as a significant concern for the village. The NCDC recorded 7 events which resulted in $52,000 in property damages and $250,000 in crop damages. A summary of storms recording losses can be seen in Table 87.

Table 87: Historic Thunderstorm Events

Date	Extent	Property Damage	Crop Damage
5/29/2004	52 kts. EG	$25,000	-
5/23/2008	52 kts. EG	$2,000	-
8/4/2009	67 kts. EG	-	$250,000
7/5/2011	61 kts. EG	$25,000	-
Total	-	**$52,000**	**$250,000**

Source: NCDC

Power outages may occur during severe thunderstorms. The Fire Department and Well have generators in case of power outages. The Community Center has been identified as a facility in need of a generator. The Benedict Volunteer Fire Department has and maintains weather radios.

Severe Winter Storms

The local planning team identified severe winter storms as a significant concern for the community. NCDC data records severe winter storms as "zonal" events meaning there is not a specific record of what communities are impacted or at least what the level impacts were per community.

Local sources indicate there was a severe winter storm in 2010 that resulted in a power outage for about three days. During the 2010 winter storm, roads were impassable as local snow removal equipment was not sufficient for such a large winter storm event. Local sources also indicated that the water tower freezes annually; damaging the tower.

High winds

The local planning team identified high winds as a significant concern to the Village of Benedict. Since 1998, seven storm events in Benedict have included strong winds (50 kts.). Winds of this magnitude, according to the Beaufort Wind Force Ranking, can cause trees to uproot, considerable structure damage, and over turning of improperly anchored mobile homes. Past high wind events have affected the water tower; tearing off insulation.

Extreme Heat

The local planning team identified that extreme heat was a significant concern for the village. Extreme heat is a part of the regular climate in the Village of Benedict and the rest of York County. Extreme heat can lead to power outages, heat related injuries, and secondary hazards such as wildfires. Young children and elderly residents are especially vulnerable to this hazard. This group with increased vulnerability represents 23.5 percent of the population.

Flooding

There were no reported flood events for Benedict. Even though there is no recent reported occurrence of flooding within Benedict, the hazard is a concern. There are a total of eight structures, with a value of $334,580 within the 100-year floodplain.

For the purposes of calculating potential losses, it was estimated that all structures within the flooding hazard area would sustain 20 percent building damage at a flood depth of two feet. This information is from the Flood Building Loss Estimation Table provided by the FEMA Benefit-Cost Analysis Full Data Module, with the evaluation based on the average for one to two story buildings with basements. Using this estimated flood event, the potential building damages in Benedict would be $66,915.

Below, Table 88 summarizes the potential damages to structures in the corporate limits within Benedict's 1-percent annual flood risk area.

Table 88: Structural Inventory in 1% Annual Flood Area

Structures in 100-year Flood Boundary		Structure Valuation		
Structure Type	Number of Structures	Average Value	Total Value	Approximate Damage Value
Commercial/Industrial	0	$110,939	$0	$0
Out Building	1	$5,076	$5,076	$1,015
Residential	7	$47,072	$329,504	$65,900
Public/Quasi Public	0	$7,874	$0	$0
TOTAL STRUCTURES	**8**	**-**	**$334,580**	**$66,915**

**Values are rounded to the nearest dollar.*

Grass/wildfires

The local planning team identified that grass/wildfire is not one of the five greatest concerns for the village. However, according to the Nebraska Forestry Department there were 18 reported fires by the Benedict Fire Department from 2000 to 2012 which consumed a total of 2.75 rangeland acres and 105.5 crop land acres. The fires resulted in more than $80,000 in damages to crops and structures. The most significant fire took place in 2000 when approximately 20 acres of crop lands were burned and a combine was damaged.

Urban Fire

The planning team identified that urban fire is not a significant concern for the village. The team estimated that urban fires would not occur frequently in the future based on their historic record. Given the age of the building structures and density of housing units within the corporate limits the planning team felt it was possible for fire to spread quickly between structures. The critical facilities are as vulnerable to the threat of urban fire as other structures. Critical facilities are not equipped with sprinkler systems.

The Village of Benedict does have an all-volunteer fire and rescue department with approximately 20 active volunteers. The village also has mutual aid agreements with neighboring fire departments. From 2008 to 2012 there were zero fires reported by the Benedict Volunteer Fire Department according the Nebraska State Fire Marshal's Office. The local water supply was determined to be sufficient for firefighting by the planning team. The Benedict Volunteer Fire Department utilizes fire prevention education during community events.

CAPABILITY ASSESSMENT

Thus far the planning process has identified the major hazards for the communities and described and quantified the vulnerability of the community to these risks by acquiring updated information from FEMA, the local jurisdiction, and other sources. The following step shall be assessing what loss prevention or preparedness mechanisms are already in place which is referred to as capability assessment. Combining the risk assessment with the local capability assessment results in a better understanding of the locality's "net vulnerability" and to what extent they could be able to implement the goals, objectives, and actions.

Village Governance

A community's governance indicates the number of entities that may be available to help implement hazard mitigation actions. The village of Benedict is governed by a four member village board. The village also has the following boards or offices:

- Street Committee
- Village Maintenance
- Board of Health
- Planning Commission
- Water Committee

Table 89: Capability Assessment

Survey Components/Subcomponents		*Comments*
Planning & Regulatory Capability	Comprehensive Plan	***Yes, 2002***
	Capital Improvements Plan	***No***
	Hazard Mitigation Plan	***Yes, 2010***
	Economic Development Plan	***No***
	Emergency Operational Plan	***Yes (County)***
	National Resources Protection Plan	***No***
	Open Space Preservation plan	***No***
	Floodplain Management Plan	***Yes***
	Storm Water Management Plan	***No***
	Zoning Ordinance	***Yes***
	Subdivision Regulation/Ordinance	***No***
	Floodplain Ordinance	***Yes***
	Building Codes	***No***
	National Flood Insurance Program	***Yes***
	Community Rating System	***No***
	Other (if any)	
Administrative & Technical Capability	Planning Commission	***Yes, 6 Members***
	Hazard Mitigation Planning Commission	***Yes***
	Floodplain Administration	***Yes, Clerk***
	Emergency Manager	***Yes, County***
	GIS Coordinator	***Yes, County***
	Chief Building Official	***No***
	Civil Engineering	***No***
	Staff Who Can Assess Community's Vulnerability to Hazards	***Board Members, Volunteer Fire Department, Municipal Employees***
	Grant Manager	***No***
	Other (if any)	
Fiscal Capability	Capital Improvement Project Funding	***Yes***
	Community Development Block Grant	***Yes, street and water projects***
	Authority to Levy Taxes for Specific Purposes	***Yes***
	Gas/Electric Service Fees	***No***
	Storm Water Service Fees	***No***
	Water/Sewer Service Fees	***Yes***
	Development Impact Fees	***No***
	General Obligation Revenue or Special Tax Bonds	***Yes***
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	***Yes, Volunteer Fire Department***
	Ongoing public education or information program (e.g., responsible water use, fire safety,	***County, NRD***

Survey Components/Subcomponents		*Comments*
	household preparedness, environmental education)	
	Natural Disaster or Safety related school programs	***No***
	StormReady Certification	***No***
	Firewise Communities Certification	***No***
	Public-private partnership initiatives addressing disaster-related issues	***No***
	Other (if any)	

PLAN INTEGRATION

The current comprehensive plan has not been updated to reflect the information contained in the hazard mitigation plan. Land use practices prioritize conservation of agricultural lands and continued development within existing corporate limits. Zoning codes and regulations encourage development outside of the SFHA.

MITIGATION ACTIONS

The following mitigation actions have been completed or are no longer needed:

ACTION 2.1.6	**Safe Rooms**
Analysis	Assess, design and construct fully supplied safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, schools, and other such areas throughout the planning area. Assess the adequacy of current public buildings to be used as safe rooms. Construct safe rooms in areas of greatest need, either as new construction or retrofitting.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms
Benefits	Reduce the risk of death or injury in areas vulnerable to tornados, severe thunderstorms and other hazards.
Estimated Cost	$200-$300/sf stand alone; $150-200/sf addition/retrofit
Potential Funding	Village of Benedict, HMPG
Timeline	Ongoing
Priority	Medium
Lead Agency	Emergency Management
Status	Completed. Fire Department has installed new safe rooms since the last hazard mitigation plan. The church is also open during storms.

ACTION 2.1.8	**Stormwater System and Drainage Improvements**
Analysis	Smaller communities may utilize stormwater systems comprising of ditches, culverts, or drainage ponds to convey runoff. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Bridges typically serve as flow restrictions along streams and rivers. Cleanout and reshaping of channel segments at bridge crossing can increase conveyance, reducing the potential for flooding. Replacement or modification of bridges and other flow restrictions may be necessary to provide greater capacity, maintain or improve structural integrity during flood events, and eliminate flooding threats and damages. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Benefits	These improvements can serve to more effectively convey runoff within cities and towns, preventing interior localized flooding. May also reduce the risk of illness/ disease by eliminating standing water.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000 to $100,000+
Potential Funding	HMGP, CDBG, Natural Resource District, County & Village of Benedict
Timeline	5 Years
Priority	Medium
Lead Agency	Maintenance Superintendent

ACTION 2.1.8	**Stormwater System and Drainage Improvements**
Status	Completed. The Village upsized culverts south of town (Logan Street) which has eliminated localized flooding. This action will be reevaluated if additional improvements are needed in the future.

ACTION 2.2.1	**Drainage Study/ Stormwater Master Plan**
Analysis	Preliminary drainage studies and assessments can be conducted to identify and prioritize design improvements to address site specific localized flooding/drainage issues to reduce and/or alleviate flooding. Stormwater master plans can be developed to help identify stormwater problem areas and potential drainage improvements.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	Flooding
Status	This action was determined as no longer needed by the local planning team as stormwater conveyance is sufficient.

ACTION 2.2.2	**Flood-Prone Property Acquisition**
Analysis	Voluntary acquisition and demolition of properties prone to flooding will reduce the general threat of flooding for communities. Additionally, this can provide flood insurance benefits to those communities within the NFIP. Communities must be in good standing with NFIP in order to be eligible for HMGP.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	Flooding
Status	This action was determined as no longer needed by the local planning team as no flood prone properties have been identified.

ACTION 4.3.4	**Weather Radios**
Analysis	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather conditions by communication.
Estimated Cost	$50 per radio
Potential Funding	HMGP, PDM, Natural Resource District, County & Local Governing Agency
Timeline	Ongoing
Priority	Medium
Lead Agency	Emergency Management
Status	Completed. This action was completed since the last hazard mitigation plan.

The following mitigation actions are new, ongoing, or have not been completed:

ACTION 2.1.1	**Backup Generators**
Analysis	Provide a portable or stationary source of backup power to redundant power supplies, county wells, lift stations, and other critical facilities and shelters.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduce the danger to human life/health by keeping utilities operating. Reduce the economic downtime associated with utility loss.
Estimated Cost	$15,000-$30,000 per generator
Potential Funding	HMA, Village of Benedict
Timeline	1 Year
Priority	High
Lead Agency	Fire Chief, Emergency Management
Status	In progress. Fire Department installed a generator in newly constructed station. The community center has been identified as needing a generator.

ACTION 2.1.2	**Electrical System Looped Distribution / Redundancies**
Analysis	Provide looped distribution service and other redundancies in the electrical system as a backup power supply in the event the primary system is destroyed or fails.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados and high winds, severe winter storms, severe thunderstorms
Benefits	More reliable and resistant power distribution system.
Estimated Cost	$40,000 per mile
Potential Funding	HMGP, PDM, Public Power District
Timeline	10 Years
Priority	Low
Lead Agency	Village Board, Public Power District
Status	Not Yet Started.

ACTION 2.1.3	**Hazardous Tree Removal Program**
Analysis	Identify and remove hazards limbs and/or trees.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$20,000
Potential Funding	HMGP, US Forest Service, Public Power District, Village of Benedict
Timeline	Ongoing
Priority	Low
Lead Agency	Maintenance Superintendent
Status	This is a part of the regular maintenance program. Hazardous trees are removed as they are identified.

ACTION 2.1.7	**Stabilize/Anchor Fertilizer, Fuel, and Propane Tanks**
Analysis	Anchor fuel tanks to prevent movement. If left unanchored, tanks could present a major threat to property and safety in tornado or high wind event.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Address	Tornados, High Winds
Benefits	Limits the chance of fuel/chemical spills. Reduces chance that propane tanks and other items become missiles during tornado events.
Estimated Cost	$1,000+
Potential Funding	PDM, HMGP
Timeline	5 Years
Priority	Low
Lead Agency	York County and Village Board, Residents and Fuel Suppliers
Status	Not Yet Started.

ACTION 2.3.1	**Floodplain Regulation Enforcement and Updates**
Analysis	Continue to enforce local floodplain regulations for structures located in the 1-percent floodplain. Strict enforcement of the type of development and elevations of structures should be considered through issuance of building permits by any community or county. Continue education of building inspectors or Certified Floodplain Managers.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Ensures that no new structures built will be vulnerable to flooding. Reducing damages and health risks associated with flooding.
Estimated Cost	$4,000+
Potential Funding	HMGP, CDBG, Village of Benedict
Timeline	Ongoing
Priority	Low
Lead Agency	Floodplain Manager, NDNR
Status	This is an ongoing action. Updates to floodplain regulations are not needed at this time.

ACTION 3.1.1	**Public Awareness / Education**
Analysis	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing education equipment such as overhead projectors and laptops.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Public awareness reduces the risk of property loss and damage, injury and death. It increases knowledge on emergency procedures, facilities, conservation, and is key to preparedness.
Estimated Cost	$0-$5,000+
Potential Funding	HMGP, PDM, Village of Benedict
Timeline	Ongoing

ACTION 3.1.1	**Public Awareness / Education**
Priority	Low
Lead Agency	York Emergency Management, NRD, Fire Department
Status	Fire Department regularly engages in outreach efforts and develops educational materials.

ACTION 4.3.2	**Emergency Communications**
Analysis	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish inner-operable communications.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Coordination and clear and efficient communications between agencies increases the capabilities to protect and rescue, increases safety, and reduces the risk of mistakes due to miscommunications.
Estimated Cost	$10,000+
Potential Funding	Homeland Security, Natural Resource District, County & Local Governing Agency
Timeline	3 Years
Priority	High
Lead Agency	York County Emergency Management, Fire Department, Clerk
Status	In progress. LEOP was last updated in 2014.

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PARTICIPANT SECTION FOR THE VILLAGE OF BRADSHAW

York County

Multi-Jurisdictional Hazard Mitigation Plan

April 2015

HISTORY AND DEVELOPMENT OF BRADSHAW

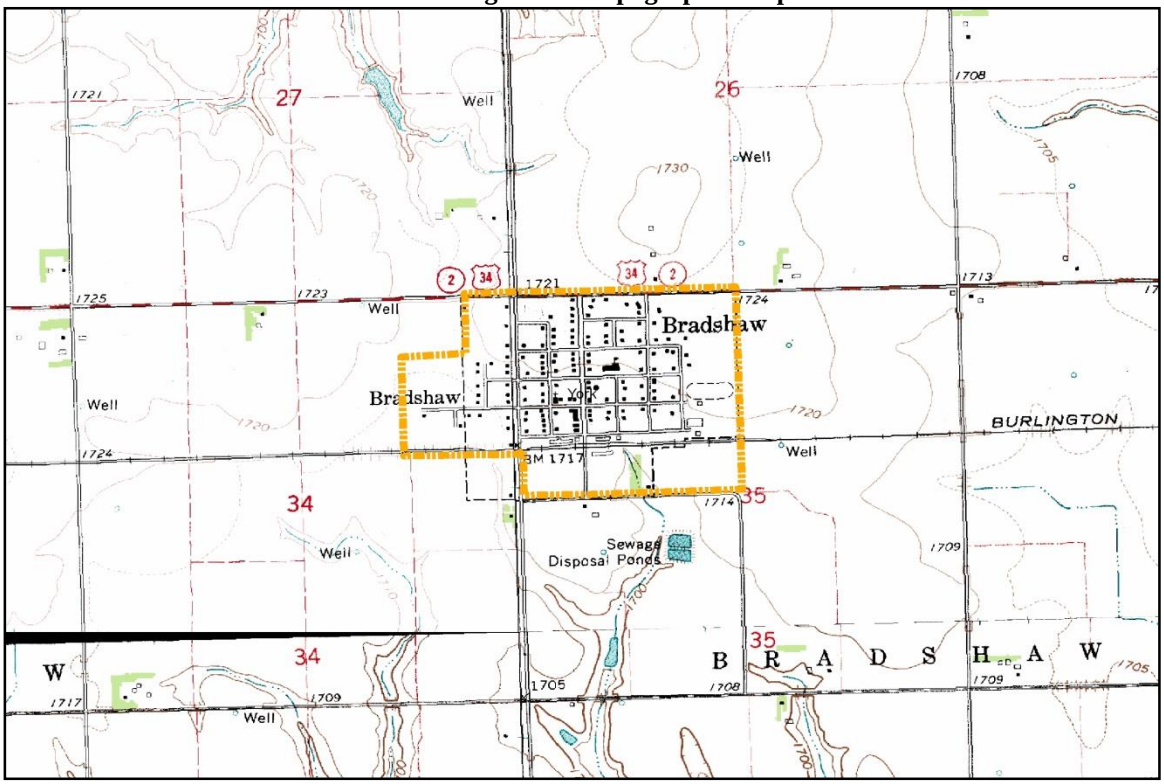
It was less than ten years after prairie schooners began making their way across the area in 1870, until a town was platted by the Burlington & Missouri River Railroad in 1879. During that time a post office was established at "Aikin Mills" in 1870. Moved in 1873, it became "Plainfield." The name became "Lenox" in 1879, only to be renamed "Bradshaw" for Mary Bradshaw Richards, wife of the owned the land on July 8, 1880.

LOCATION AND GEOGRAPHY

Bradshaw is a village located in the west central portion of York County. The Village of Bradshaw covers an area of 211 acres and has an elevation of 1,718 feet above sea level. Bradshaw is 55 miles northwest of Lincoln.

The community of Bradshaw lies in an area of plains. The land use surrounding the community is mainly agricultural crops with some ranching. Flat lying land above the valley with materials of sandstone or stream deposited silt, clay, sand and gravel overlain by wind deposited silt is prevalent. The community lies approximately one mile southwest of a tributary of Beaver Creek. The watershed flows generally from the northwest to the southeast. River flooding is not of significant concern.

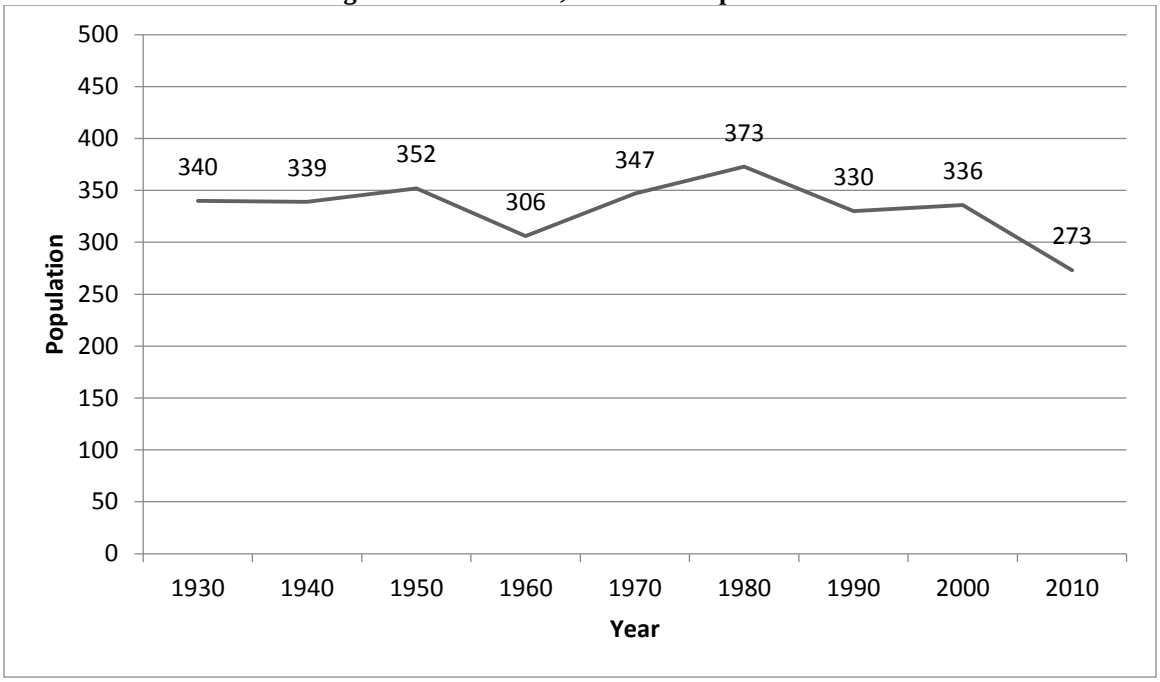
Figure 48: Topographic Map



BRADSHAW DEMOGRAPHICS

Below, Figure 49 displays the historical population trend for Bradshaw from 1930 to 2010. Bradshaw has experienced a stable population from 1930-2000. However, Bradshaw saw a significant decline in population from 2000-2010. This is notable for hazard mitigation because communities with a declining population may also have a higher level of unoccupied housing that is not being maintained. A decreasing population can represent decreasing tax revenue for the community which could make implementation of mitigation actions more challenging.

Figure 49: Bradshaw, Nebraska Population 1930-2010



The following table illustrates the age distribution and median age for York County in comparison to the village of Bradshaw. The percentage of the population under five years old in Bradshaw is significantly less than the county average. The median age is notably higher than the county average. This is relevant to hazard mitigation as the very young and elderly populations are more vulnerable during certain hazards than others.

Table 90: Population by Age

	York County	Bradshaw
< 5 yrs.	6.4%	4.0%
5 - 64 yrs.	75.4%	77.0%
> 65 yrs.	18.2%	19.0%
Median Age	40.1	42.8

HOUSING AND ECONOMICS

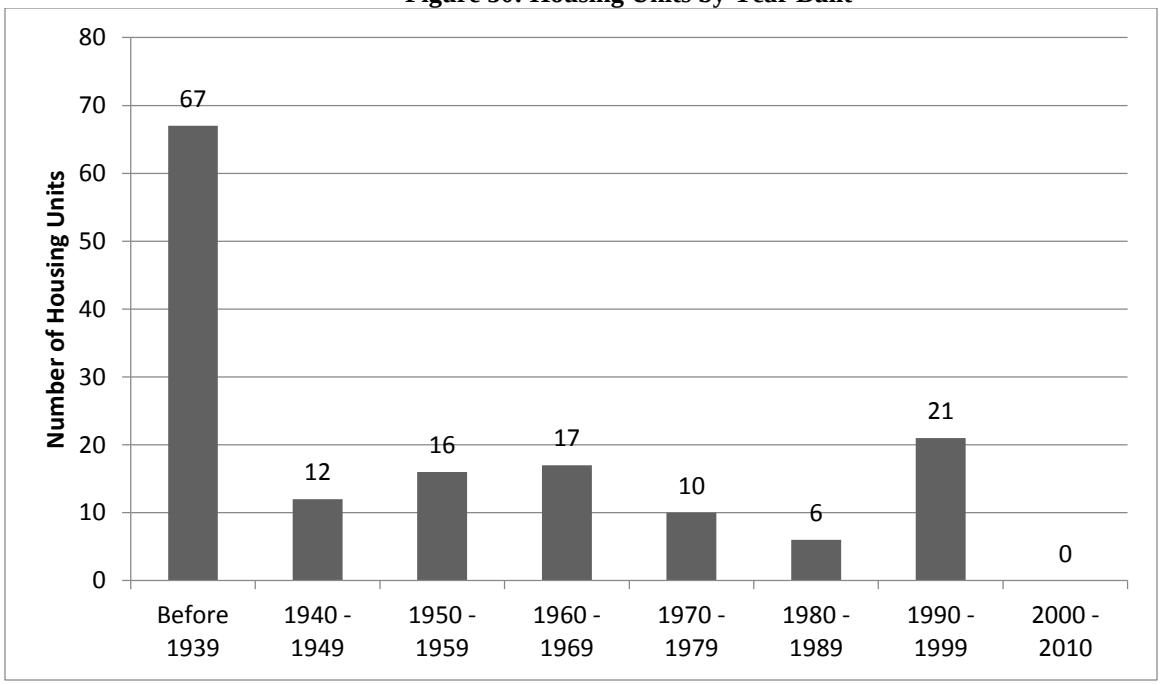
Median household income, per capita income, home value for the county as a whole compare with the Village of Bradshaw. Median rent is significantly less in Bradshaw, than in York County and the State of Nebraska. Economic indicators such as these may influence a community's level of resiliency after hazard events.

Table 91: Housing and Economics

	Nebraska	York County	Bradshaw
Median Household Income	$49,342	$47,689	$47,368
Per Capita Income	$25,229	$25,412	$23,464
Median Home Value	$123,900	$92,300	$63,600
Median Rent	$648	$527	$488

Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

Figure 50: Housing Units by Year Built



Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

Figure 50 indicates that nearly 45% of the housing in Bradshaw was built prior to 1940. The State of Nebraska adopted its first statewide building code in 1987. Older homes built prior to the statewide building code may be more vulnerable to hazards. Table 92 shows 8.7% of Bradshaw's housing units are vacant, slightly higher than the county average. Bradshaw has a significantly higher percentage of owner occupied homes than the county average.

Table 92: Housing Units

Jurisdiction	Total Housing Units					Occupied Housing Units			
	Occupied		Vacant			Owner		Renter	
	Number	Percent	Number	Percent		Number	Percent	Number	Percent
York County	5,771	92.9%	443	7.1%		4,397	76.2%	1,374	23.8%
Bradshaw	136	91.3%	13	8.7%		125	91.9%	11	8.1%

Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

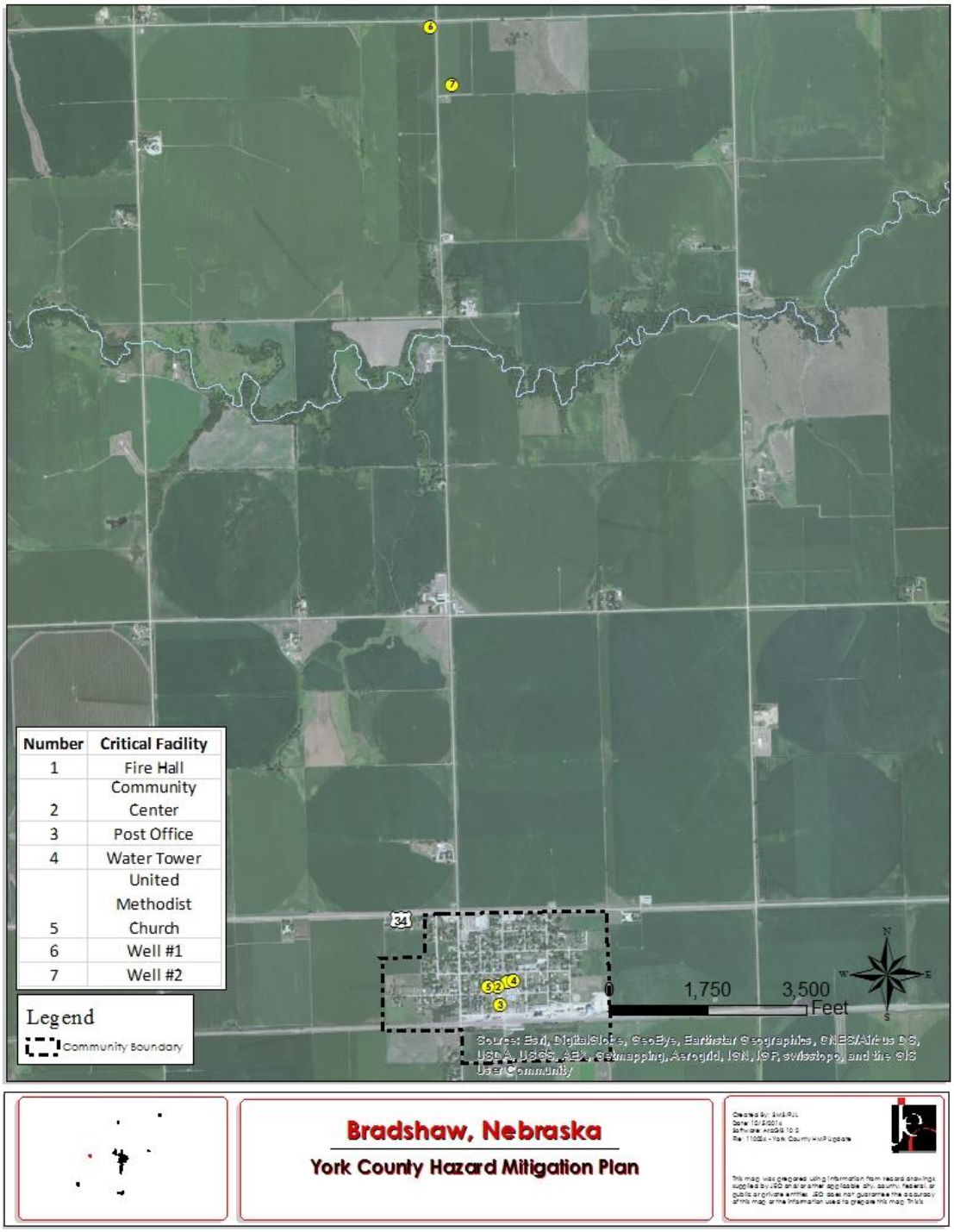
MAJOR EMPLOYERS

The major employers within the Village of Bradshaw include Klute, Inc., and Progressive Ag Partners. A large percentage of residents commute to other communities for employment. This is relevant to hazard mitigation as damages to major employers would have a significant impact on the community. In communities with a large percentage of the population that commutes to work, transportation costs can absorb a significant portion of residents' budgets, influencing the community's level of resiliency after a hazard event.

CRITICAL FACILITIES

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster. Critical facilities were identified during the original planning process and updated by the local planning team as a part of the plan update. The following Figure is a summary of the critical facilities for Bradshaw.

Figure 51: Critical Facilities



STRUCTURAL INVENTORY AND VALUATION

A structural inventory was completed for the corporate limits of Bradshaw though a window survey using GIS for the 2010 hazard mitigation plan. The inventory was updated utilizing building permits issued between 2010 and 2014. The values of these structure types were determined from the 2013 Property Type Values as provided by the Nebraska Department of Revenue Property Assessment Division.

Results from the structural inventory completed for the Village of Bradshaw are found in Table 93 below. Information displayed in this table includes the number of structures, value per structure, and total value of each structure type. Refer to *Section 2: Planning Process* for a detailed discussion of how the value of each structure type was calculated.

Table 93: Structural Inventory and Valuation Summary

Total Structures		Structure Valuation	
Structure Type	Number of Structures	Total Value	Value per Structure
Commercial/Industrial	33	$4,843,593	$146,775
Out Building	25	$125,000	$5000
Residential	137	$6,035,564	$44,055
Public/Quasi Public	11	$119,087	$10,826
TOTAL STRUCTURES	**206**	**$11,123,244**	-

**Values are rounded to the nearest dollar.*

FUTURE DEVELOPMENT TRENDS

No new housing developments or businesses are expected in the near future.

RISK ASSESSMENT

Table 94 is a Risk Assessment identified specifically for the community. Refer to *Section 4: Risk Assessment* for a detailed explanation as to what this methodology is and why certain hazards did not pose a significant enough threat and were eliminated from detailed discussion.

According to the local planning team, the top five hazards in the Village of Bradshaw are tornados, severe winter storms, hail, high winds, and severe thunderstorms. These five hazards are discussed further in the subsections below. Additional hazards are discussed if previous occurrences or current circumstances lead the Planning Team to determine the hazards are a significant threat to the community.

Table 94: Community Based Risk Assessment

Hazard Type	Previous Occurrence? Yes/No	Specific Concerns Identified
Severe Winter Storm*	Yes	Potential power outages and damages to critical facilities
Tornado*	Yes	Significant damages and loss of life
High Winds*	Yes	Potential damages to property and critical facilities
Hail*	Yes	Potential damages to property and crops
Severe Thunderstorm*	Yes	Potential damages and prolonged power outages
Flooding	No	None
Extreme Heat	Yes	23% of population at higher level of vulnerability; Agricultural losses; Secondary hazards such as wildfires
Drought	Yes	Economic impacts; Land degradation; Secondary hazards such as wildfires
Earthquake	No	None
Wildfire	Yes	Potential loss of life and properties; Economic impacts
Dam Failure	No	None
Levee Failure	No	None

Hazard Type	Previous Occurrence? Yes/No	Specific Concerns Identified
Agricultural Disease	No	Economic concerns; Ag is major economic sector for the county
Earthquakes	No	None
Landslides	No	None
Urban Fire	Yes	Spread of fires due to age and density of structures
Chemical and Radiological Hazards	No	Major transportation route of Highway 34
Terrorism	No	None
Civil Disorder	No	None

**Identified as one of the five hazards of most concern to the community*

HISTORICAL OCCURRENCES

The NCDC counted a total of 29 hazard events in the Village of Bradshaw and there were no recorded deaths or injuries, but $170,000 in damages to property and $2,850,000 in crop damages.

Tornados

The local planning team identified tornados as the greatest concern for the community. According to the NCDC data, there were two tornados (F0/EF0) within the village. The tornado event that resulted in damages can be seen in the table below. The community does have a safe room located in the new Fire Station. It is a reinforced shelter rated to EF4, and holds approximately 40 people.

Table 95: Historic Tornado Events

Date	Extent	Property Damage	Crop Damage
6/22/2003	F0	$25,000	-

Source: NCDC

Severe Winter Storms

The local planning team identified severe winter storms as a significant concern for the community. This is consistent with the entire planning area. NCDC data records severe winter storms as "zonal" events meaning there is not a specific record of what communities are impacted or at least what the level impacts were per community. However, the local planning team identified severe winter storms as a part of the regular climate in York County and the Village of Bradshaw. A result of the frequency of severe winter storms, snow removal resources are determined to be sufficient for local events.

Hail Events

The local planning team identified hailstorms as a significant threat for Bradshaw. NCDC data records 18 events with a total of $120,000 in property damages and $2,850,000 in crop losses. A summary of the events with recorded damages can be seen in Table 96.

Critical facilities within the Village are fitted with hail resistant building materials. However there are still damages to critical facilities due to hail events. The community center required a new roof in 2014 due to hail damage. Municipal facilities are insured through the League Association of Risk Management.

Table 96: Historic Hail Events

Date	Extent	Property Damage	Crop Damage
5/11/1998	2.0 inch	$40,000	$250,000
5/23/1998	0.75 inch	$20,000	$100,000
9/3/2000	1.0 inch	$10,000	$250,000
9/15/2006	1.0 inch	$10,000	$50,000
6/11/2008	1.0 inch	$5,000	$100,000
7/9/2008	1.0 inch	$5,000	$100,000
5/12/2011	1.5 inch	$25,000	-
6/20/2011	1.25 inch	$5,000	$150,000
Total	-	**$120,000**	**$2,850,000**

Source: NCDC

High winds

The local planning team identified high winds as a significant concern for the community. According to the NCDC data, there were five storm events which included strong winds (50 kts./58 mph). Winds of this magnitude, according to the Beaufort Wind Force Ranking, can cause trees to uproot, considerable structure damage, and over turning of improperly anchored mobile homes. The community does have a safe room located in the new Fire Station.

Severe Thunderstorms

Severe thunderstorms are a regular part of the climate for York County and Bradshaw. The local planning team identified severe thunderstorms as a significant concern for the village. The NCDC recorded 5 events which resulted in $30,000 in property damages. A summary of storms recording losses can be seen in Table 97.

Critical municipal records are protected with surge protectors on electronic devices. Critical facilities that have been identified as needing generators are the community center, and church.

Table 97: Historic Thunderstorm Events

Date	Extent	Property Damage	Crop Damage
9/8/1997	55 kts.	$5,000	-
5/10/2005	61 kts.	$25,000	-
Total	-	**$30,000**	-

Source: NCDC

Grass/wildfires

The local planning team identified that grass/wildfire is not a significant concern for the village. However, the hazard is further discussed due to its previous occurrences. According to the Nebraska Forest Service there were 30 reported grass/wildfires by the Bradshaw Volunteer Fire Department from 2000 to 2012 which consumed a total of 76 rangeland acres and 36 crop land acres. The fires resulted in more than $12,000 in damages to crops and structures.

Urban Fire

The local planning team identified that urban fire is not a significant concern for the village. The Village does have an all-volunteer fire and rescue department with approximately 18 active volunteers. Bradshaw participates in the York County Mutual Aid District. From 2008 to 2012 there were four urban fires reported by the Bradshaw Volunteer Fire Department according the Nebraska State Fire Marshal's Office. The water supply is determined to be sufficient for firefighting by the local planning team.

Given the age of the building structures and density of housing units within the corporate limits the planning team felt it was possible for fire to spread quickly between structures. Critical facilities are as vulnerable to the threat of urban fire as other structures. The Fire Station has a sprinkler system installed. None of the other critical facilities have sprinkler systems.

CAPABILITY ASSESSMENT

Thus far the planning process has identified the major hazards for the communities and described and quantified the vulnerability of the community to these risks by acquiring updated information from FEMA, the local jurisdiction, and other sources. The following step shall be assessing what loss prevention or preparedness mechanisms are already in place which is referred to as capability assessment. Combining the risk assessment with the local capability assessment results in a better understanding of the locality's "net vulnerability" and to what extent they could be able to implement the goals, objectives, and actions.

Village Governance

A community's governance indicates the number of entities that may be available to help implement hazard mitigation actions. The Village of Bradshaw is governed by a five member village board, headed by a Board Chairman. The village has boards/committees/departments related to the following: parks, roads, economic development, village maintenance, utilities, and health.

Table 98: Capability Assessment

Survey Components/Subcomponents		*Comments*
Planning & Regulatory Capability	Comprehensive Plan	***Yes 2002***
	Capital Improvements Plan	***No***
	Hazard Mitigation Plan	***Yes, 2010***
	Economic Development Plan	***No***
	Emergency Operational Plan	***Yes (County)***
	National Resources Protection Plan	***No***
	Open Space Preservation plan	***No***
	Floodplain Management Plan	***No***
	Storm Water Management Plan	***No***
	Zoning Ordinance	***Yes 2002***
	Subdivision Regulation/Ordinance	***Yes 2002***
	Floodplain Ordinance	***No***
	Building Codes	***Yes 2002***
	National Flood Insurance Program	***No***
	Community Rating System	***No***
	Other (if any)	
Administrative & Technical Capability	Planning Commission	***5members***
	Hazard Mitigation Planning Commission	***2 members***
	Floodplain Administration	***No***
	Emergency Manager	***Yes (County)***
	GIS Coordinator	***No (County)***
	Chief Building Official	***No***
	Civil Engineering	***Yes (contract)***
	Staff Who Can Assess Community's Vulnerability to Hazards	***Multiple***

Survey Components/Subcomponents		*Comments*
	Grant Manager	***No***
	Other (if any)	
Fiscal Capability	Capital Improvement Project Funding	***No***
	Community Development Block Grant	***No***
	Authority to Levy Taxes for Specific Purposes	***Yes***
	Gas/Electric Service Fees	***No***
	Storm Water Service Fees	***No***
	Water/Sewer Service Fees	***No***
	Development Impact Fees	***No***
	General Obligation Revenue or Special Tax Bonds	***No***
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	***No***
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	***No***
	Natural Disaster or Safety related school programs	***No***
	StormReady Certification	***No***
	Firewise Communities Certification	***No***
	Public-private partnership initiatives addressing disaster-related issues	***No***
	Other (if any)	

PLAN INTEGRATION

The community has not updated the local comprehensive plan to reflect the information contained in the hazard mitigation plan.

MITIGATION ACTIONS

The following mitigation actions have been completed or are no longer needed:

ACTION 2.1.6	**Safe Rooms**
Analysis	Assess, design and construct fully supplied safe rooms in highly vulnerable urban and rural areas such as mobile home parks, campgrounds, schools, and other such areas throughout the planning area. Assess the adequacy of current public buildings to be used as safe rooms. Construct safe rooms in areas of greatest need, either as new construction or retrofitting.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms
Benefits	Reduce the risk of death or injury in areas vulnerable to tornados, severe thunderstorms and other hazards.
Estimated Cost	$200-$300/sf stand alone; $150-200/sf addition/retrofit
Potential Funding	Village of Bradshaw, NEMA, FEMA
Timeline	May 2015
Priority	Medium
Lead Agency	Village Board
Status	Safe room in Fire Station completed as of May 2015.

ACTION 2.1.7	**Stabilize/Anchor Fertilizer, Fuel, and Propane Tanks**
Analysis	Anchor fuel tanks to prevent movement. If left unanchored, tanks could present a major threat to property and safety in tornado or high wind event.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Address	Tornados, High Winds
Benefits	Limits the chance of fuel/chemical spills. Reduces chance that propane tanks and other items become missiles during tornado events.
Estimated Cost	$1,000 plus
Potential Funding	State, Co-op
Timeline	5 years
Priority	Medium
Lead Agency	Co-op
Status	Action completed. All known tanks have been anchored. Additional tanks will be anchored as identified.

ACTION 2.1.4	**New Municipal Well**
Analysis	Communities can evaluate the need to install a new well to provide a safe backup water supply for the community, replace existing wells affected by drought, and additional water for fire protection.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Drought
Benefits	Provide adequate water sources to mitigate potential damages or expenses due to drought.
Estimated Cost	$350,000 to $450,000
Potential Funding	Community Development Block Grant (CDBG), State Revolving Fund (SRF)
Timeline	Action completed

ACTION 2.1.4	**New Municipal Well**
Priority	Low
Lead Agency	Village Board
Status	Community has installed two new wells since the 2010 HMP.

ACTION 2.1.9	**Stream Bank Stabilization / Grade Control Structures/ Channel Improvements**
Analysis	Stream bank/ bed degradation can occur along many rivers and creeks. Stabilization improvements including rock rip rap, vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Grade control structures including sheet-pile weirs, rock weirs, ponds, road dams, etc. can be implemented and improved to maintain the channel bed. Channel stabilization can protect structures, increase conveyance and provide flooding benefits. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Flooding
Status	This action was determined by the local planning team to be no longer needed. This action will be evaluated in future hazard mitigation plans if there is a need identified.

ACTION 2.3.3	**Participate in the National Flood Insurance Program (NFIP)**
Analysis	Participate in the National Flood Insurance Program (NFIP).
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Status	This action was listed in the previous mitigation plan. However, the local planning team determined the action is no longer needed due to the low probability of flooding.

ACTION 2.2.2	**Flood-Prone Property Acquisition**
Analysis	Voluntary acquisition and demolition of properties prone to flooding will reduce the general threat of flooding for communities. Additionally, this can provide flood insurance benefits to those communities within the NFIP. Communities must be in good standing with NFIP in order to be eligible for HMGP.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	Flooding
Status	This action was listed in the previous mitigation plan. However, it was determined to be no longer needed by the local planning team due to the lack of flood prone properties.

ACTION 2.3.1	**Floodplain Regulation Enforcement and Updates**
Analysis	Continue to enforce local floodplain regulations for structures located in the 1-percent floodplain. Strict enforcement of the type of development and elevations of structures should be considered through issuance of building

ACTION 2.3.1	Floodplain Regulation Enforcement and Updates
	permits by any community or county. Continue education of building inspectors or Certified Floodplain Managers.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Status	Action determined as no longer needed by the local planning team. Community is not within the floodplain. Action will be reevaluated if the floodplain is found within the community.

The following hazard mitigation actions new, ongoing, or have not been completed:

ACTION 1.1.1	Obtaining Missing Data For Future Updates
Analysis	Obtain necessary data to improve vulnerability assessments when updating the plan.
Goal/Objective	Goal 1/Objective 1.1
Hazard(s) Address	All hazards
Benefits	Improving the overall quality and information found in the plan.
Estimated Cost	N/A
Potential Funding	HMGP, State of Nebraska
Timeline	5 Years
Priority	Medium
Lead Agency	Village Maintenance Department
Status	Not Yet Started. Data related to the village water system has been identified as missing by the local planning team.

ACTION 2.1.1	Backup Generators
Analysis	Provide a portable or stationary source of backup power to redundant power supplies, county wells, lift stations, and other critical facilities and shelters.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduce the danger to human life/health by keeping utilities operating. Reduce the economic downtime associated with utility loss.
Estimated Cost	$15,000-$30,000 per generator
Potential Funding	HMGP, State of Nebraska
Timeline	3 Years
Priority	High
Lead Agency	Village Board, Village Maintenance Department
Status	The community center, church, and lift station have been identified as needing backup generators. Generators have been installed in the two new wells since the 2010 HMP.

ACTION 2.1.5	Power, Service, Electrical, and Water Distribution Lines
Analysis	Communities can work with their local Public Power District or Electricity Department to identify vulnerable transmission and distribution lines and plan to bury lines underground, upgrade, or retrofit existing structures to be less vulnerable to storm events. Electrical utilities shall be required to use

ACTION 2.1.5	Power, Service, Electrical, and Water Distribution Lines
	underground construction methods where possible for future installation of power lines.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms, Flooding
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$50,000 to $70,000 (per mile for electrical)
Potential Funding	HMGP, Perennial Public Power District, Upper Big Blue NRD, Village.
Timeline	Ongoing as funding is available
Priority	Medium
Lead Agency	Perennial Public Power District, Village Board, Upper Big Blue NRD
Status	This action was listed in the previous mitigation plan. Not Yet Started.

ACTION 2.1.8	Stormwater System and Drainage Improvements
Analysis	Smaller communities may utilize stormwater systems comprising of ditches, culverts, or drainage ponds to convey runoff. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Bridges typically serve as flow restrictions along streams and rivers. Cleanout and reshaping of channel segments at bridge crossing can increase conveyance, reducing the potential for flooding. Replacement or modification of bridges and other flow restrictions may be necessary to provide greater capacity, maintain or improve structural integrity during flood events, and eliminate flooding threats and damages. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Benefits	These improvements can serve to more effectively convey runoff within cities and towns, preventing interior localized flooding. May also reduce the risk of illness/ disease by eliminating standing water.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000 to $100,000+
Potential Funding	Village Board
Timeline	5 Years
Priority	Low
Lead Agency	Village Board, Village Maintenance Department
Status	Not Yet Started. The local planning team identified a lack of areas needing drainage improvements. Future action will be determined by the identification of need areas.

ACTION 2.3.4	**Tree City USA**
Analysis	Work to become a Tree City USA through the National Arbor Day Foundation in order to receive direction, technical assistance, and public education on how to establish a hazardous tree identification and removal program in order to limited potential tree damage and damages caused by trees in a community when a storm event occurs. The four main requirements include: 1) Establish a tree board; 2) Enact a tree care ordinance; 3) Establish a forestry care program; 4) Enact an Arbor Day observance and proclamation.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	Better maintained trees and hazard tree removal will eliminate damages to power lines and personal property during hazards events. Participation in Tree City USA will support community actions to mitigation damages from trees.
Estimated Cost	$1,000+
Potential Funding	Arbor Day Foundation, US Forest Service
Timeline	5 Years
Priority	Low
Lead Agency	Village Board
Status	Not Yet Started.

ACTION 3.1.1	**Public Awareness / Education**
Analysis	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing education equipment such as overhead projectors and laptops.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Public awareness reduces the risk of property loss and damage, injury and death. It increases knowledge on emergency procedures, facilities, conservation, and is key to preparedness.
Estimated Cost	$0-$5,000+
Potential Funding	HMGP, State of Nebraska
Timeline	5 Years
Priority	Low
Lead Agency	Village Board, County Emergency Management Agency
Status	Not Yet Started

ACTION 2.1.2	**Electrical System Looped Distribution / Redundancies**
Analysis	Provide looped distribution service and other redundancies in the electrical system as a backup power supply in the event the primary system is destroyed or fails.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados and high winds, severe winter storms, severe thunderstorms
Benefits	More reliable and resistant power distribution system.
Estimated Cost	$40,000 per mile

ACTION 2.1.2	**Electrical System Looped Distribution / Redundancies**
Potential Funding	HMGP, PDM, Perennial Public Power District
Timeline	Ongoing as funding is available
Priority	Medium
Lead Agency	Village Board, Perennial Public Power District
Status	Not Yet Started

ACTION 2.1.3	**Hazardous Tree Removal Program**
Analysis	Identify and remove hazards limbs and/or trees.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$20,000
Potential Funding	Village of Bradshaw
Timeline	Ongoing
Priority	Medium
Lead Agency	Village Board, Village Maintenance Department
Status	This action is part of regular maintenance program. Hazardous trees are identified and removed on an annual basis.

ACTION 2.1.10	**Windbreaks / Living Snow Fence**
Analysis	Installation of windbreaks to increase water storage capacity in soil.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Drought
Benefits	Help hold moisture in times of drought to support ranching economy, helpful for water storage in the district. Prevents snow from collecting on rural roadways, increases accessibility to residences.
Estimated Cost	$2,000+
Potential Funding	Natural Resource Districts Cost Share, Village
Timeline	Five years
Priority	Low
Lead Agency	Village Board, Village Maintenance Department
Status	Not Yet Started. Road near mobile homes and West Fulton were identified as roadways that would benefit most from a snow fence.

ACTION 2.2.1	**Drainage Study/ Stormwater Master Plan**
Analysis	Preliminary drainage studies and assessments can be conducted to identify and prioritize design improvements to address site specific localized flooding/drainage issues to reduce and/or alleviate flooding. Stormwater master plans can be developed to help identify stormwater problem areas and potential drainage improvements.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	Flooding
Benefits	Proactive steps to identify all potential problems/issues can lead to effectively addressing improvements and prioritizing the projects to improve conditions. These improvements can serve to more effectively convey runoff within

	jurisdictions, preventing interior localized flooding resulting in damages. This ensures that the most beneficial projects are done first and could possibly eliminate the need for others.
Estimated Cost	$10,000 to $100,000+
Potential Funding	CDBG, Natural Resource District, County & Village
Timeline	5 Years
Priority	Low
Lead Agency	Utility Department
Status	Not Yet Started. Areas needing drainage improvements have not been identified at this time. Minor drainage improvements are included in local budgets and addressed as needed.

ACTION 4.1.1	**Civil Service Improvements**
Analysis	Improve emergency rescue and response equipment and facilities by providing additional, or updating existing emergency response equipment. This could include fire equipment, ATVs, water tanks/truck, snow removal equipment, pumps, etc. This would also include developing backup systems for emergency vehicles, identifying and training additional personnel for emergency response, or continuing educational opportunities for current personnel.
Goal/Objective	Goal 4/Objective 4.2
Hazard(s) Addressed	All Hazards
Benefits	Having appropriate and up to date equipment along with adequately trained and numbered personnel increases safety and reduces the risk of damage.
Estimated Cost	$5,000 to $400,000 per vehicle, varies depending on what equipment is needed
Potential Funding	PDM, NEMA, York County Emergency Management
Timeline	Ongoing, as funding is available and needs are identified.
Priority	Medium
Lead Agency	York County Emergency Management, Fire Department
Status	Not Yet Started. Training has been identified as an area of need.

ACTION 4.1.2	**Improve Snow / Ice Removal Program**
Analysis	Revise and improve the snow and ice removal program for streets. Revisions should address situations such as plowing snow, ice removal, parking during snow and ice removal, and removal of associated storm debris. This would include updating the emergency routes, acquiring equipment that is needed, paving routes, and ordinances as necessary. Consider purchase of snow fence at critical areas and installation of living snow fence.
Goal/Objective	Goal 4/Objective 4.1
Hazard(s) Addressed	Severe Winter Storms
Benefits	Having an effective snow/ice removal program will improve capabilities to rescue stranded residents and increase the capacity in which snow can be removed after a severe winter storm.
Estimated Cost	$20,000+
Potential Funding	Village
Timeline	Ongoing
Priority	Low

ACTION 4.1.2	Improve Snow / Ice Removal Program
Lead Agency	Utility Department
Status	This is part of the village's regular maintenance program. Large projects and purchases will be addressed as they are needed.

ACTION 4.3.1	Alert / Warning Sirens
Analysis	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking and remote activation.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather; promoting awareness and ensures people take shelter when needed.
Estimated Cost	$15,000+
Potential Funding	Village budget, FEMA, NEMA
Timeline	Ongoing
Priority	Medium
Lead Agency	Emergency Management
Status	Warning systems have been determined adequate for current needs. Warning system will be evaluated as needed.

ACTION 4.3.2	Emergency Communications
Analysis	Update LEOP and local action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish inner-operable communications.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Coordination and clear and efficient communications between agencies increases the capabilities to protect and rescue, increases safety, and reduces the risk of mistakes due to miscommunications.
Estimated Cost	$10,000+
Potential Funding	Homeland Security, Upper Big Blue NRD, and York County
Timeline	5 Years
Priority	Medium
Lead Agency	County Board, Emergency Management, Village Board
Status	Local action plan is regularly updated. The LEOP has been updated since the last HMP.

ACTION 4.3.3	Warning Systems
Analysis	Improve city cable TV interrupt warning system and implement telephone interrupt system such as Reverse 911.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduces the risk of death/injury associated with severe weather; promoting awareness and ensures people take shelter when needed.
Estimated Cost	$10,000+
Potential Funding	HMGP, and York County
Timeline	5 years

ACTION 4.3.3	**Warning Systems**
Priority	Medium
Lead Agency	Village Board
Status	Not Yet Started. Warning systems are updated as needs are identified. To date, necessary upgrades to warning systems have not been identified.

ACTION 4.3.4	**Weather Radios**
Analysis	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather conditions by communication.
Estimated Cost	$50 per radio
Potential Funding	HMGP, York County Emergency Management
Timeline	5 years
Priority	Medium
Lead Agency	Emergency Management
Status	Not Yet Started. Fire station currently has weather radios. Additional facilities needing weather radios have not been identified to date.

PARTICIPANT SECTION FOR THE VILLAGE OF GRESHAM

York County

Multi-Jurisdictional Hazard Mitigation Plan

April 2015

HISTORY AND DEVELOPMENT OF GRESHAM

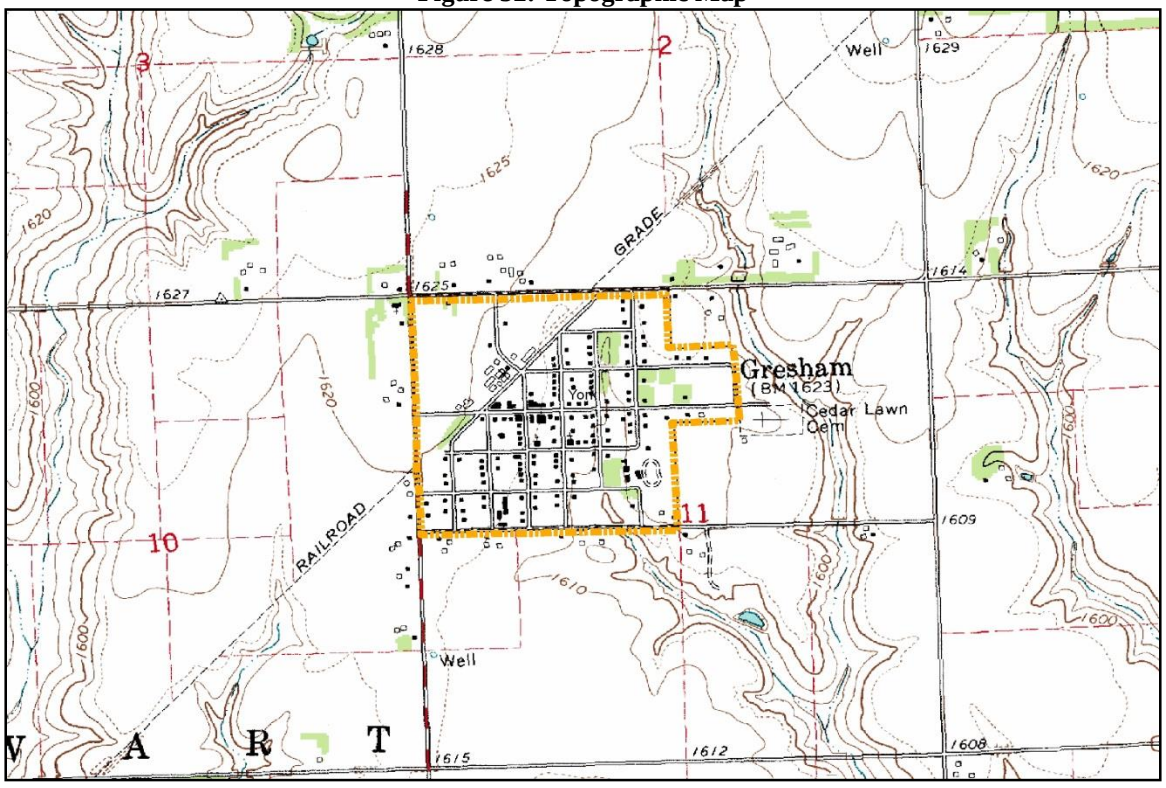
The village was founded in 1887 by the Pioneer Town Site Company in anticipation of the Fremont, Elkhorn & Missouri Valley Railroad being built through York County. The station was given the name "Poston" in honor of Judge George Post of the Fourth Judicial District of York. When that name was not approved by postal authorities, the name was changed to "Gresham" for Walter Quinton Gresham, secretary of state in President Grover Cleveland's cabinet. When the surveyors for the railroad came through the area in the winter of 1886-87, the line went directly through Ezra Felton's farm. Felton did not take kindly to the invasion and stood his ground with a shot gun in-hand, because as he said, "I was here first." Consequently, they were obliged to find an alternate route around the farm. In 1903 the FE&MVR merged into the Chicago & North Western, and in 1942 the line was abandoned and the rails removed, having by then brought prosperity to the cattle and grain industry of the area.

LOCATION AND GEOGRAPHY

Gresham is a village located in the north east corner of York County. The Village of Gresham covers an area of 173 acres and has an elevation of 1,623 feet above sea level. Gresham is 40 miles northwest of Lincoln.

The community of Gresham lies in an area of plains. The land use surrounding the community is mainly agricultural crops with some ranching. Flat lying land above the valley with materials of sandstone or stream deposited silt, clay, sand and gravel overlain by wind deposited silt is prevalent. The community lies approximately eight miles north of Lincoln Creek. The watershed flows generally from the northwest to the southeast. River flooding is not of significant concern.

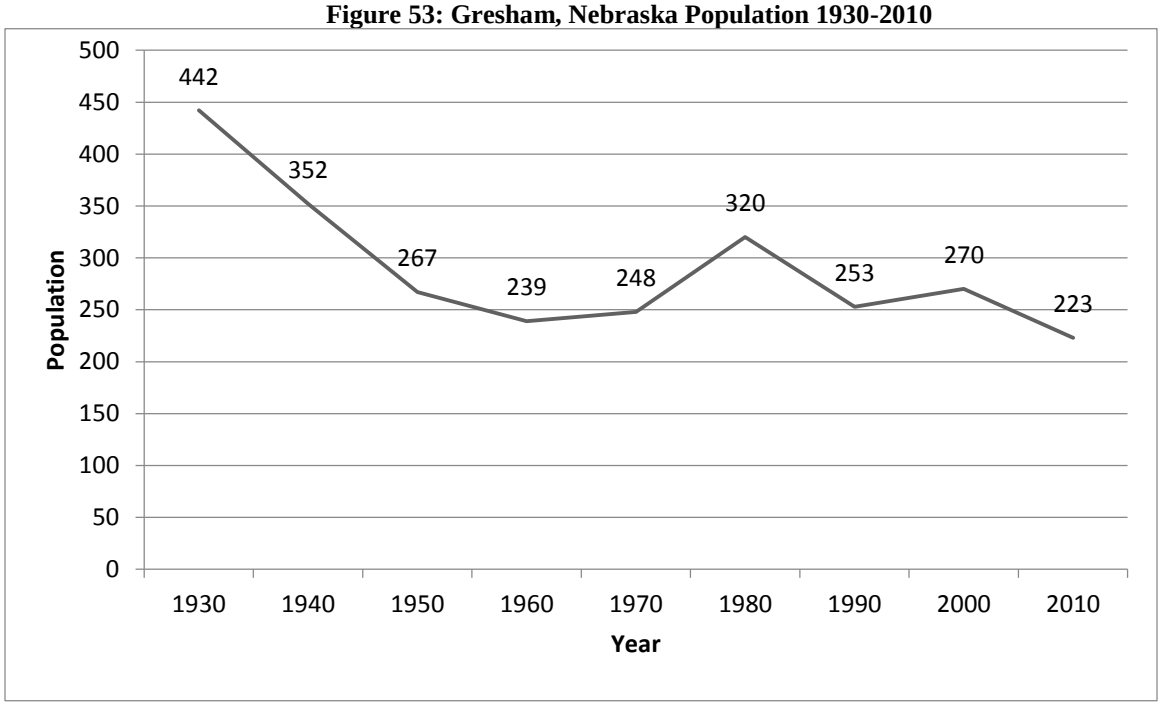
Figure 52: Topographic Map



GRESHAM DEMOGRAPHICS

Figure 53 displays the historical population trend for Gresham from 1930 to 2000. Gresham experienced a significant population decrease from 1930 to 1960; losing approximately 45 percent of their population. Gresham's decreasing population will affect tax revenues, which could influence the community's ability to implement mitigation actions.

Figure 53: Gresham, Nebraska Population 1930-2010



The following table illustrates the age distribution and median age for York County in comparison to the Village of Gresham. Gresham has a higher percentage of children under five years old than the county average. Gresham as a lower percentage of residents over sixty-five years old than the county average. Residents under five years old and residents older than sixty-five years old are more vulnerable to certain hazards than the rest of the population. This population with increased vulnerabilities represent 24.7 percent of the village's total population.

Table 99: Population by Age

	York County	Gresham
< 5 yrs.	6.4%	9.9%
5 - 64 yrs.	75.4%	75.3%
> 65 yrs.	18.2%	14.8%
Median Age	40.1	41.5

HOUSING AND ECONOMICS

Table GRH.2 shows how median household income, per capita income, home value and rent for the county compare with the Village of Gresham. According to the American Community Survey, the average income and home value in Gresham are significantly lower than the county and state averages. These economic indicators can influence a community's ability to implement mitigation actions, as well as influence the resiliency of a community after a hazard event.

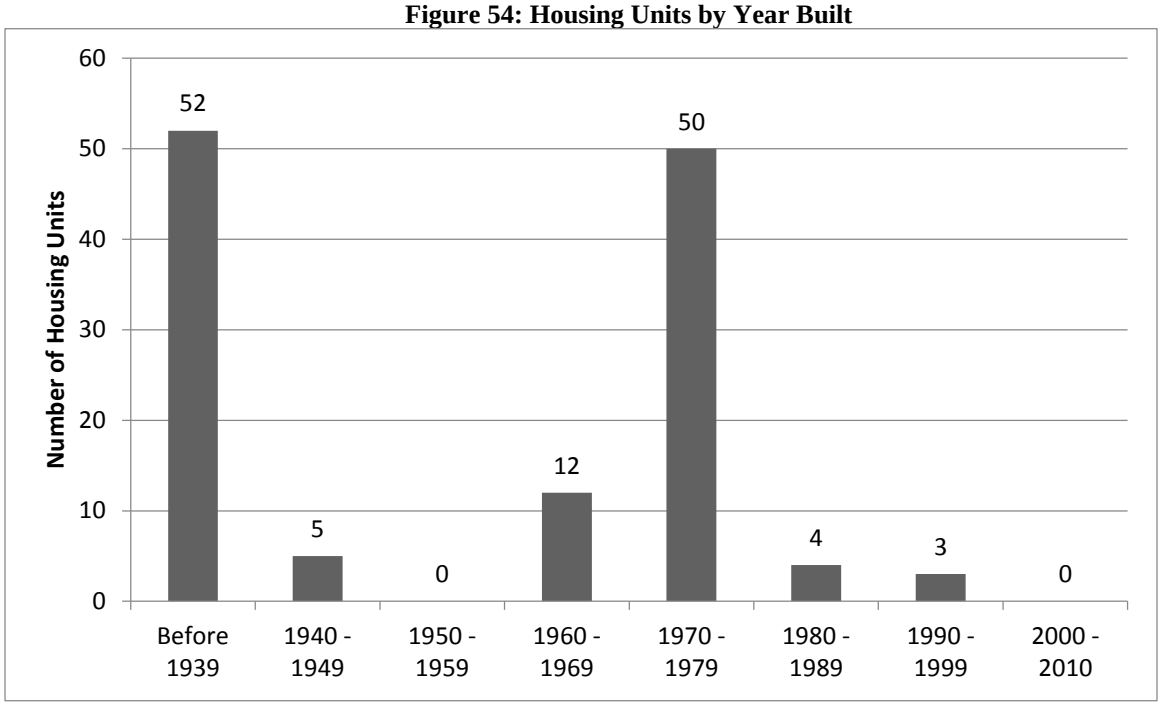
Table 100: Housing and Economics

	Nebraska	York County	Gresham
Median Household Income	$49,342	$47,689	$19,968
Per Capita Income	$25,229	$25,412	$15,819
Median Home Value	$123,900	$92,300	$25,700
Median Rent	$648	$527	$328

Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

According to American Community Survey estimates, approximately 41 percent of homes in Gresham were built prior to 1940. Older homes built before the state adopted building codes in 1987 may be more vulnerable to certain hazards.

Figure 54: Housing Units by Year Built



Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

According to the U.S. Census there are a total of 126 housing units in Gresham. Of those 126 units more than 10 percent (12 total units) are reported as vacant. As there are a number of vacancies, it is less likely that Gresham will construct new housing developments

Table 101: Housing Units

Jurisdiction	Total Housing Units					Occupied Housing Units			
	Occupied		Vacant			Owner		Renter	
	Number	Percent	Number	Percent		Number	Percent	Number	Percent
York County	5,771	92.9%	443	7.1%		4,397	76.2%	1,374	23.8%
Gresham	113	89.7%	12	10.3%		84	74.3%	29	25.7%

Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

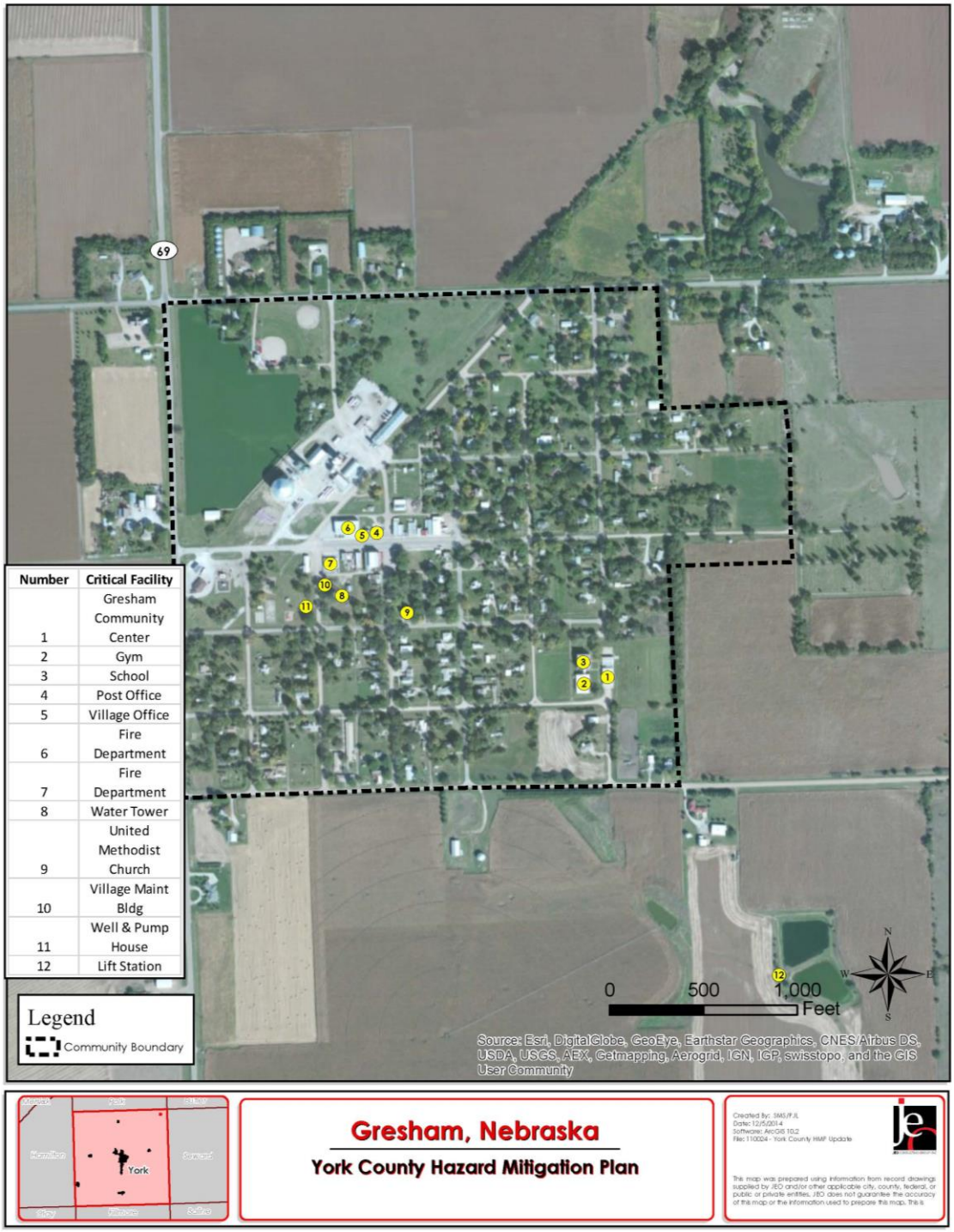
MAJOR EMPLOYERS

The local planning team identified that Central Valley Ag is a major employer in the community. A large percentage of residents also commute to other communities. This is relevant to hazard mitigation as damages to major employers would have a significant impact on the community. In communities with a large percentage of the population that commutes to work, transportation costs can absorb a significant portion of residents' budgets, influencing the community's level of resiliency after a hazard event.

CRITICAL FACILITIES

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster. Critical facilities were identified during the original planning process and updated by the local planning team as a part of the plan update. Figure 55 is a summary of the critical facilities for the Village of Gresham.

Figure 55: Critical Facilities



STRUCTURAL INVENTORY AND VALUATION

A structural inventory was completed for the corporate limits of Gresham though a window survey using GIS for the 2010 hazard mitigation plan, the inventory was updated utilizing building permits issued between 2010 and 2014. The values of these structure types were determined from the 2013 Property Type Values as provided by the Nebraska Department of Revenue Property Assessment Division.

Results from the structural inventory completed for the Village of Gresham are found in Table GRH.3 below. Information displayed in this table includes the number of structures, value per structure, and total value of each structure type.

Table 102: Structural Inventory and Valuation Summary

Total Structures		Structure Valuation	
Structure Type	Number of Structures	Total Value	Value per Structure
Commercial/Industrial	25	$929,973	$37,199
Out Building	16	$100,202	$6,263
Residential	124	$4,779,440	$38,543
Public/Quasi Public	12	$45,416	$3,785
TOTAL STRUCTURES	**177**	**$5,855,031**	-

**Values are rounded to the nearest dollar.*

FUTURE DEVELOPMENT TRENDS

No development is planned in the near future.

RISK ASSESSMENT

Table GRH.5 shows the risk assessment for the Village of Gresham. Refer to *Section 4: Risk Assessment* for a detailed explanation as to what this methodology is and why certain hazards did not pose a significant enough threat and were eliminated from detailed discussion.

According to the local planning team, the five hazards of greatest concern to the Village of Gresham are tornados, high winds, severe thunderstorms, hail, and severe winter storms. These five hazards are discussed further in the subsections below. Additional hazards are discussed if previous occurrences or current circumstances lead the Planning Team to determine the hazards are a significant threat to the community.

Table 103: Community Based Risk Assessment

Hazard Type	Previous Occurrence? Yes/No	Specific Concerns Identified
Severe Winter Storm*	Yes	Potential power outages and damages to critical facilities
Tornado*	No	Significant damages and loss of life
High Winds*	Yes	Potential damages to property
Hail*	Yes	Potential damages to property and crops
Severe Thunderstorm*	Yes	Potential damages and prolonged power outages
Flooding	Yes	None
Extreme Heat	Yes	24.7% of population at higher level of vulnerability; Secondary hazards such as wildfires
Drought	Yes	Economic impacts; Land degradation; Secondary hazards such as wildfires
Earthquake	No	None
Wildfire	Yes	Potential loss of life and properties; Economic impacts
Dam Failure	No	None
Levee Failure	No	None

Hazard Type	Previous Occurrence? Yes/No	Specific Concerns Identified
Agricultural Disease	No	Economic concerns; Ag is major economic sector for the county
Earthquakes	No	None
Landslides	No	None
Urban Fire	Yes	Spread of fires due to age and density of structures
Chemical and Radiological Hazards	No	None
Terrorism	No	None
Civil Disorder	No	None

**Identified as one of the five hazards of most concern to the community*

HISTORICAL OCCURRENCES

The NCDC counted a total of 20 hazard events in the Village of Gresham and there were no recorded deaths or injuries, but $450,000 in damages to property and $3,005,000 in crop damages.

Tornados

The local planning team identified tornados as the greatest concern for the community. According to NCDC data, there were zero tornados between 1996 and 2013. Although there are no previous occurrences, the potential for significant damages and loss of life caused tornados to be the greatest concern for the village. Gresham has three mobile homes; one of which has been vacant for over a decade. Mobile homes are more vulnerable to tornados and high winds.

High Winds

The local planning team identified high winds as a significant concern for the Village of Gresham. According to NCDC data, there were three storm events which included strong winds (50 kts./58 mph). Winds of this magnitude, according to the Beaufort Wind Force Ranking, can cause trees to uproot, considerable structure damage, and over turning of improperly anchored mobile homes.

Severe Thunderstorms

Severe thunderstorms are a regular part of the climate for York County and Gresham. The local planning team identified severe thunderstorms as a significant concern for the village. The NCDC recorded 3 events which resulted in $55,000 in property damages and $100,000 in crop damages. A summary of storms recording losses can be seen in Table 104. Critical municipal records are protected with surge protectors on electronic devices. Critical facilities have back-up generators.

Table 104: Historic Thunderstorm Events

Date	Extent	Property Damage	Crop Damage
5/26/2002	55 kts. EG	$20,000	$100,000
5/23/2006	56 kts. EG	$25,000	-
9/15/2006	50 kts. Eg	$10,000	-
Total	-	**$55,000**	**$100,000**

Source: NCDC

Hail Events

The local planning team identified hailstorms as a significant concern for Gresham. NCDC data records 15 events with a total of $380,000 in property damages and $2,875,000 in crop losses. A summary of the events with recorded damages can be seen in Table GRH.5. Municipal facilities are insured for hail events.

Table 105: Historic Hail Events

Date	Extent	Property Damage	Crop Damage
5/20/1998	.75 inch	$10,000	$25,000
6/29/1998	2.75 inch	$75,000	$200,000
6/13/2001	1.25 inch	$20,000	$100,000
6/12/2002	1.00 inch	$200,000	$1,000,000
6/15/2008	1.00 inch	$5,000	$50,000
7/5/2008	1.75 inch	$10,000	$500,000
7/9/2008	1.25 inch	$10,000	$250,000
5/21/2011	1.75 inch	$25,000	$250,000
5/1/2012	1.50 inch	$25,000	$500,000
Total	**-**	**$380,000**	**$2,875,000**

Source: NCDC

Severe Winter Storms

The local planning team identified severe winter storms as a significant concern for the community. This is consistent with risk perception for the entire planning area. NCDC data records severe winter storms as "zonal" events meaning there is not a specific record of what communities are impacted or at least what the level impacts were per community. Snow removal resources are deemed sufficient for local events given the frequency of winter storms in the planning area.

Grass/wildfires

The local planning team did not identify grass/wildfire as a significant concern for the village. However, there are a number of previous occurrences. According to the Nebraska Forest Service there were 18 reported fires by the Gresham Volunteer Fire Department from 2000 to 2012 which consumed a total of 25 rangeland acres and 30 crop land acres. The fires resulted in more than $2,500 in damages to crops and structures.

Urban Fire

The local planning team did not identify urban fire as a significant concern for the village. However, given the age of the building structures and density of housing units within the corporate limits the Planning Team felt it was possible for fire to spread quickly between structures. Like all structures, critical facilities are as vulnerable to the threat of urban fire as other structures. Sprinkler systems are not installed in critical facilities.

Gresham does have an all-volunteer fire and rescue department with approximately 17 active volunteers. There are mutual aid agreements with neighboring fire departments. From 2008 to 2012 there were eight fires and 49 rescue/EMS calls reported by the Gresham Volunteer Fire Department according the Nebraska State Fire Marshal's Office. The water supply is determined to be sufficient for firefighting.

CAPABILITY ASSESSMENT

Thus far the planning process has identified the major hazards for the communities and described and quantified the vulnerability of the community to these risks by acquiring updated information from FEMA, the local jurisdiction, and other sources. The following step shall be assessing what loss prevention or preparedness mechanisms are already

in place which is referred to as capability assessment. Combining the risk assessment with the local capability assessment results in a better understanding of the locality's "net vulnerability" and to what extent they could be able to implement the goals, objectives, and actions.

Village Governance

A community's governance indicates the number of entities that may be available to help implement hazard mitigation actions. The Village of Gresham is governed by a five member village board, headed by a chairperson. The village also has the following boards or departments:

- Streets and Alleys
- Water and Sewer
- Board of Health

The local planning team identified that the Village of Gresham has limited capabilities. Some mitigation actions may not be applicable or are unlikely to occur due to the village's limited capability.

Table 106: Capabilities Assessment

Survey Components/Subcomponents		*Comments*
Planning & Regulatory Capability	Comprehensive Plan	***Yes (1983)***
	Capital Improvements Plan	***No***
	Hazard Mitigation Plan	***Yes (2010/2015)***
	Economic Development Plan	***No***
	Emergency Operational Plan	***Yes***
	National Resources Protection Plan	***No***
	Open Space Preservation plan	***No***
	Floodplain Management Plan	***No***
	Storm Water Management Plan	***No***
	Zoning Ordinance	***Yes, (updated 2012)***
	Subdivision Regulation/Ordinance	***No***
	Floodplain Ordinance	***No***
	Building Codes	***Yes***
	National Flood Insurance Program	***No***
	Community Rating System	***No***
	Other (if any)	
Administrative & Technical Capability	Planning Commission	***Yes, (5 members)***
	Hazard Mitigation Planning Commission	***No***
	Floodplain Administration	***No***
	Emergency Manager	***Yes, (county)***
	GIS Coordinator	***No***
	Chief Building Official	***No***
	Civil Engineering	***Yes, (private firm)***
	Staff Who Can Assess Community's Vulnerability to Hazards	***No***
	Grant Manager	***No***
	Other (if any)	

Survey Components/Subcomponents		*Comments*
Fiscal Capability	Capital Improvement Project Funding	***Yes***
	Community Development Block Grant	***Yes***
	Authority to Levy Taxes for Specific Purposes	***Yes***
	Gas/Electric Service Fees	***No***
	Storm Water Service Fees	***No***
	Water/Sewer Service Fees	***Yes***
	Development Impact Fees	***No***
	General Obligation Revenue or Special Tax Bonds	***Yes, (none currently)***
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	***No***
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	***Yes, (quarterly newsletter)***
	Natural Disaster or Safety related school programs	***No***
	StormReady Certification	***No***
	Firewise Communities Certification	***No***
	Public-private partnership initiatives addressing disaster-related issues	***No***
	Other (if any)	

PLAN INTEGRATION

The community has not updated the local comprehensive plan to reflect the information contained in the hazard mitigation plan.

MITIGATION ACTIONS

The following mitigation actions have been completed or are no longer needed:

ACTION 1.1.1	**Obtaining Missing Data For Future Updates**
Analysis	Obtain necessary data to improve vulnerability assessments when updating the plan.
Goal/Objective	Goal 1/Objective 1.1
Hazard(s) Address	All hazards
Status	No longer needed. This action was listed in the previous mitigation plan, however, Gresham has decided this action is not relevant and will remove this action from this plan update.

ACTION 2.1.1	**Backup Generators**
Analysis	Provide a portable or stationary source of backup power to redundant power supplies, county wells, lift stations, and other critical facilities and shelters.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduce the danger to human life/health by keeping utilities operating. Reduce the economic downtime associated with utility loss.
Estimated Cost	$15,000-$30,000 per generator
Potential Funding	HMGP
Timeline	Completed
Priority	High
Lead Agency	Village Board, York County Emergency Management
Status	This action is completed. Backup generators were installed in wells and a lift station in 2013.

ACTION 2.1.4	**New Municipal Well**
Analysis	Communities can evaluate the need to install a new well to provide a safe backup water supply for the community, replace existing wells affected by drought, and additional water for fire protection.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Drought
Benefits	Provide adequate water sources to mitigate potential damages or expenses due to drought.
Estimated Cost	$350,000 to $450,000
Potential Funding	Community Development Block Grant (CDBG), State Revolving Fund (SRF), Village Board.
Timeline	Completed
Priority	High
Lead Agency	Village Board
Status	This action is completed in 2011.

ACTION 2.1.9	**Stream Bank Stabilization / Grade Control Structures/ Channel Improvements**
Analysis	Stream bank/ bed degradation can occur along many rivers and creeks. Stabilization improvements including rock rip rap, vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Grade control structures including sheet-pile weirs, rock weirs, ponds, road dams, etc. can be implemented and improved to maintain the channel bed. Channel stabilization can protect structures, increase conveyance and provide flooding benefits. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Flooding
Status	This action was determined to be no longer needed by the local planning team.

ACTION 2.3.3	**Participate in the National Flood Insurance Program (NFIP)**
Analysis	Participate in the National Flood Insurance Program (NFIP).
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Status	This action was determined to be no longer needed by the local planning team. No areas of the village are within the floodplain.

The following hazard mitigation actions are new, ongoing, or have not been completed:

ACTION 2.1.8	**Stormwater System and Drainage Improvements**
Analysis	Smaller communities may utilize stormwater systems comprising of ditches, culverts, or drainage ponds to convey runoff. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Bridges typically serve as flow restrictions along streams and rivers. Cleanout and reshaping of channel segments at bridge crossing can increase conveyance, reducing the potential for flooding. Replacement or modification of bridges and other flow restrictions may be necessary to provide greater capacity, maintain or improve structural integrity during flood events, and eliminate flooding threats and damages. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Benefits	These improvements can serve to more effectively convey runoff within cities and towns, preventing interior localized flooding. May also reduce the risk of illness/ disease by eliminating standing water.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000 to $100,000+
Potential Funding	HMGP, CDBG, Natural Resource District, County & Village Board
Timeline	5 Years
Priority	Low
Lead Agency	Village Board

ACTION 2.1.8	**Stormwater System and Drainage Improvements**
Status	Not Yet Started

ACTION 2.1.6	**Safe Rooms**
Analysis	Assess, design and construct fully supplied safe rooms in highly vulnerable urban and rural areas such as mobile home parks, campgrounds, schools, and other such areas throughout the planning area. Assess the adequacy of current public buildings to be used as safe rooms. Construct safe rooms in areas of greatest need, either as new construction or retrofitting.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms
Benefits	Reduce the risk of death or injury in areas vulnerable to tornados, severe thunderstorms and other hazards.
Estimated Cost	$200-$300/sf stand alone; $150-200/sf addition/retrofit
Potential Funding	PDM, HMPG
Timeline	10 Years
Priority	Unlikely to occur
Lead Agency	Village Board, York County Emergency Management
Status	There are currently no safe rooms within the community. However, with limited capabilities, this action is unlikely to occur.

ACTION 2.3.4	**Tree City USA**
Analysis	Work to become a Tree City USA through the National Arbor Day Foundation in order to receive direction, technical assistance, and public education on how to establish a hazardous tree identification and removal program in order to limited potential tree damage and damages caused by trees in a community when a storm event occurs. The four main requirements include: 1) Establish a tree board; 2) Enact a tree care ordinance; 3) Establish a forestry care program; 4) Enact an Arbor Day observance and proclamation.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	Better maintained trees and hazard tree removal will eliminate damages to power lines and personal property during hazards events. Participation in Tree City USA will support community actions to mitigation damages from trees.
Estimated Cost	$1,000+
Potential Funding	Arbor Day Foundation, US Forest Service
Timeline	5 Years
Priority	Low
Lead Agency	Village Board
Status	Not Yet Started

ACTION 3.1.1	**Public Awareness / Education**
Analysis	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc.

ACTION 3.1.1	**Public Awareness / Education**
	In addition, purchasing education equipment such as overhead projectors and laptops.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Public awareness reduces the risk of property loss and damage, injury and death. It increases knowledge on emergency procedures, facilities, conservation, and is key to preparedness.
Estimated Cost	$0-$5,000+
Potential Funding	HMGP, PDM
Timeline	Ongoing
Priority	Low
Lead Agency	York County Emergency Management, Village Board
Status	In Progress. The village uses the occasional article in their quarterly newsletter to raise awareness of hazards.

ACTION 4.3.4	**Weather Radios**
Analysis	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather conditions by communication.
Estimated Cost	$50 per radio
Potential Funding	HMGP, PDM, Upper Big Blue NRD, York County Emergency Management & Village Board
Timeline	5 Years
Priority	Low
Lead Agency	Village Board, Gresham Volunteer Fire Department
Status	Not Yet Started

PARTICIPANT SECTION FOR THE VILLAGE OF MCCOOL JUNCTION

York County

Multi-Jurisdictional Hazard Mitigation Plan

April 2015

HISTORY AND DEVELOPMENT OF MCCOOL JUNCTION

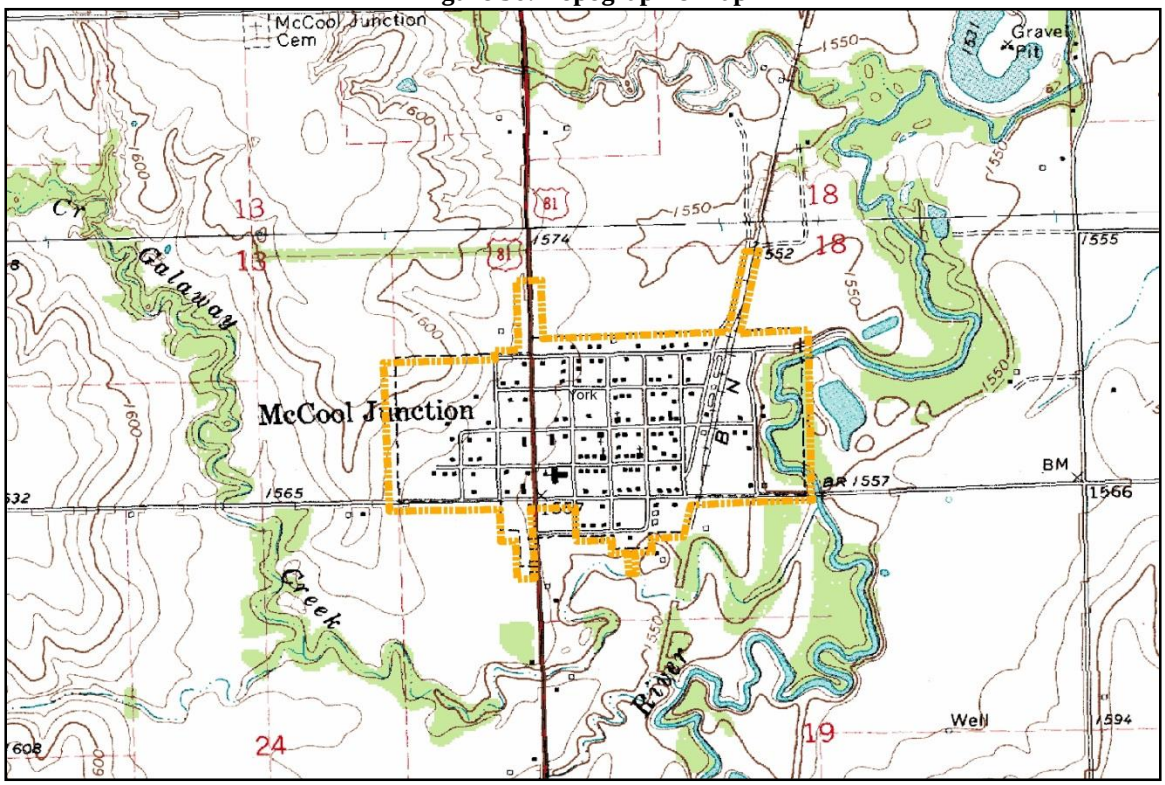
The first settlers came in October 1867 and filed homestead claims along the river. Lumber, nails, and other supplies were hauled from Nebraska City, the nearest source at that time. The first town platted was known as "Niota" and is in what is now the southern part of McCool Junction. The citizens of Niota were enthused about the coming of a railroad but were dismayed when the surveyors put the depot two blocks north of town. A new village was platted in late 1886 but, due to the severe winter weather, it was not registered until February in 1887. In that transaction, Niota lost not only its town site but also its name. Renamed for the promoter and general manager of the St. Joseph & Grand Island Railroad, Daniel McCool, the new village was registered as "McCool." By 1888 a second branch line of the SJ&GI, running east and west, had been built to a junction at the south edge of town. At that time "Junction" was added to the town's name.

LOCATION AND GEOGRAPHY

McCool Junction is a village located in the south central portion of York County. The Village of McCool Junction covers an area of 120 acres. McCool Junction is 47 miles west of Lincoln.

The community of McCool Junction lies in an area of plains. The land use surrounding the community is mainly agricultural crops. Flat lying land above the valley with materials of sandstone or stream deposited silt, clay, sand and gravel overlain by wind deposited silt is prevalent.

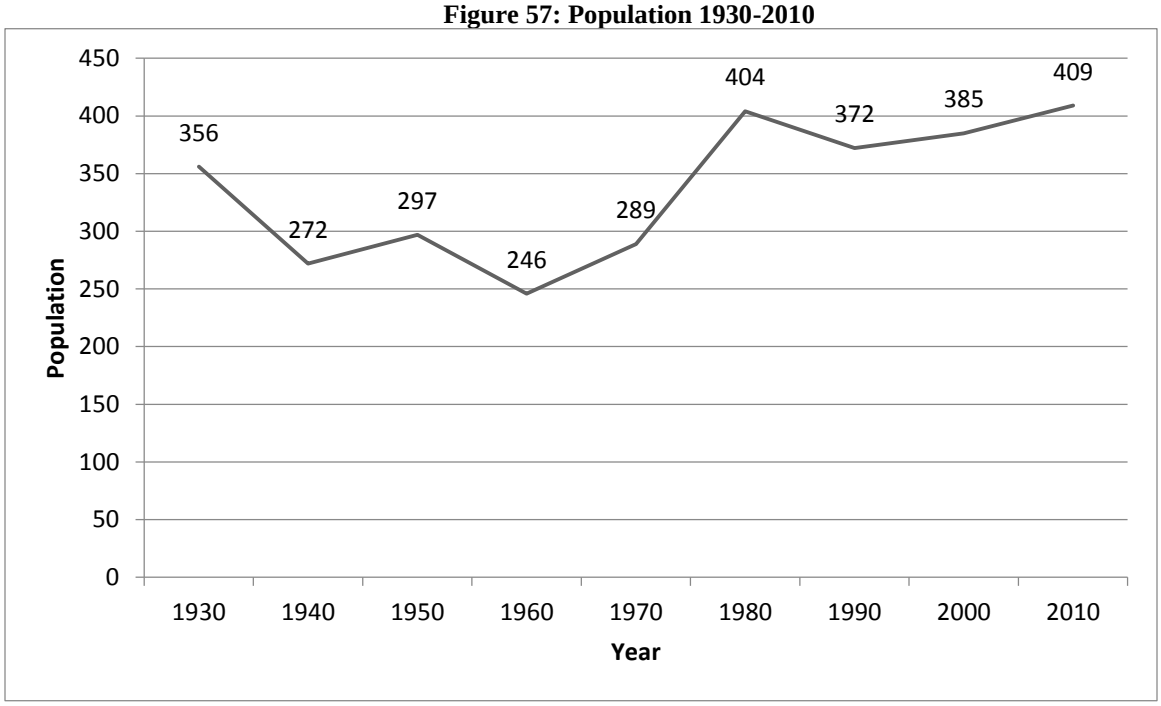
Figure 56: Topographic Map



MCCOOL JUNCTION DEMOGRAPHICS

Figure 57 displays the historical population trend for McCool Junction from 1930 to 2010. McCool Junction experienced a significant population increase from 1960 to 1980, as the population grew by nearly 40 percent in twenty years. Recently, the village's population has been steadily growing. McCool Junction is the only community within York County that is experiencing significant population growth. This is notable for hazard mitigation as an increasing population may represent increasing tax revenue, which could ease the implementation of mitigation actions.

Figure 57: Population 1930-2010



The following table illustrates the age distribution and median age for York County in comparison to the Village of McCool Junction. McCool Junction has a younger median age than the York County average. The median age may lead to sustained population growth as well as affect the number of vulnerable residents. McCool Junction has fewer residents over 65 years old than the York County average. The very young and elderly residents are more vulnerable to certain hazards than other residents. This vulnerable population is just over 20 percent of the total population in the Village.

Table 107: Population by Age

	York County	McCool Junction
< 5 yrs.	6.4%	6.6%
5 - 64 yrs.	75.4%	79.5%
> 65 yrs.	18.2%	13.9%
Median Age	40.1	38.6

HOUSING AND ECONOMICS

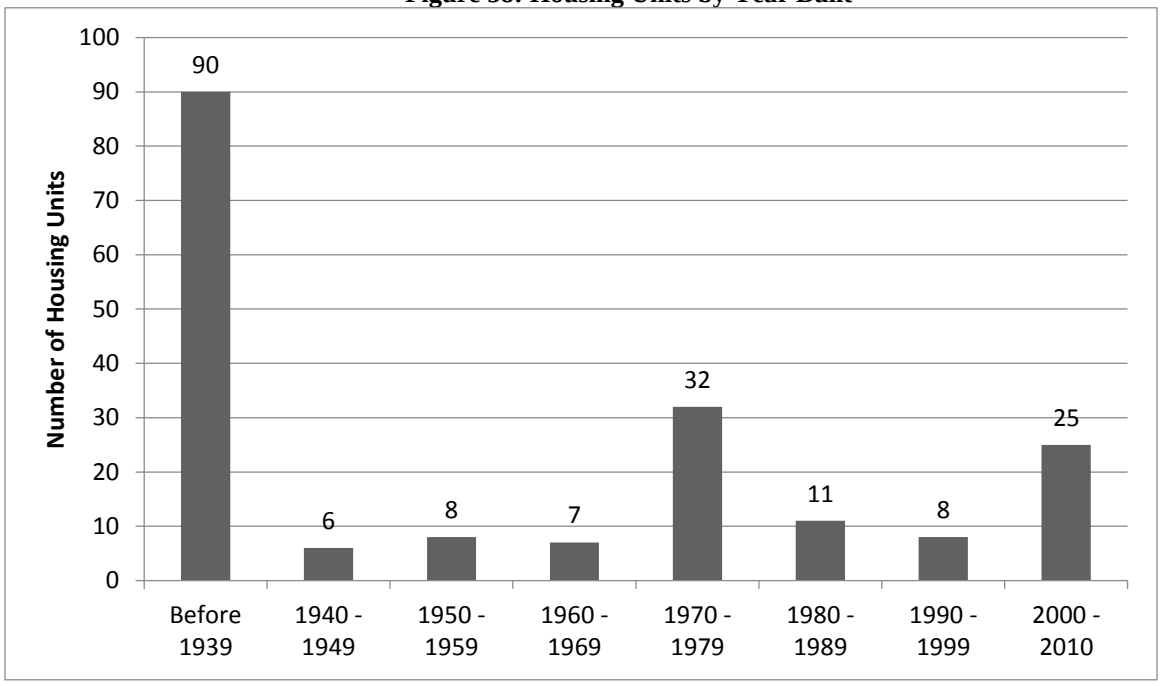
Table 108 displays the median household income, per capita income, home value, and rent for the county as a whole compared with the Village of McCool Junction. These metrics are very comparable to the county averages. McCool Junction's median household income is higher than York County's average, while the per capita income is slightly lower than the county average. These metrics can influence the level of resiliency for a community after a hazard.

Table 108: Housing and Economics

	Nebraska	York County	McCool Junction
Median Household Income	$49,342	$47,689	$52,083
Per Capita Income	$25,229	$25,412	$23,511
Median Home Value	$123,900	$92,300	$72,900
Median Rent	$648	$527	$533

Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

Figure 58: Housing Units by Year Built



Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

According to the U.S. Census and the local planning team, there are a total of 187 housing units in McCool Junction. Of those 187 units only 2.1 percent (4 total units) are reported as vacant.

Table 109: Housing Units

Jurisdiction	Total Housing Units					Occupied Housing Units			
	Occupied		Vacant			Owner		Renter	
	Number	Percent	Number	Percent		Number	Percent	Number	Percent
York County	5,771	92.9%	443	7.1%		4,397	76.2%	1,374	23.8%
McCool Junction	183	97.9%	4	2.1%		147	80.3%	36	19.7%

Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

MAJOR EMPLOYERS

Major employers in the area include: Farmers Co-Op, McCool Junction Public School, McCool Heating and Air, Brisk Construction, Dawson Electric, and Neville Construction. Many McCool Junction residents commute to York for work.

STRUCTURAL INVENTORY AND VALUATION

A structural inventory was completed for the corporate limits of McCool Junction though a window survey using GIS for the 2010 hazard mitigation plan, the inventory was updated utilizing building permits issued between 2010 and 2014. The values of these structure types were determined from the 2013 Property Type Values as provided by the Nebraska Department of Revenue Property Assessment Division.

Results from the structural inventory completed for the Village of McCool Junction are found in Table 110. Information displayed in this table includes the number of structures, value per structure, and total value of each structure type.

Table 110: Structural Inventory and Valuation Summary

Total Structures		Structure Valuation	
Structure Type	Number of Structures	Total Value	Value per Structure
Commercial/Industrial	41	$3,014,387	$73,521
Out Building	23	$148,549	$6,459
Residential	166	$11,972,612	$72,124
Public/Quasi Public	16	$54,545	$3,409
TOTAL STRUCTURES	**246**	**$15,190,093**	-

**Values are rounded to the nearest dollar.*

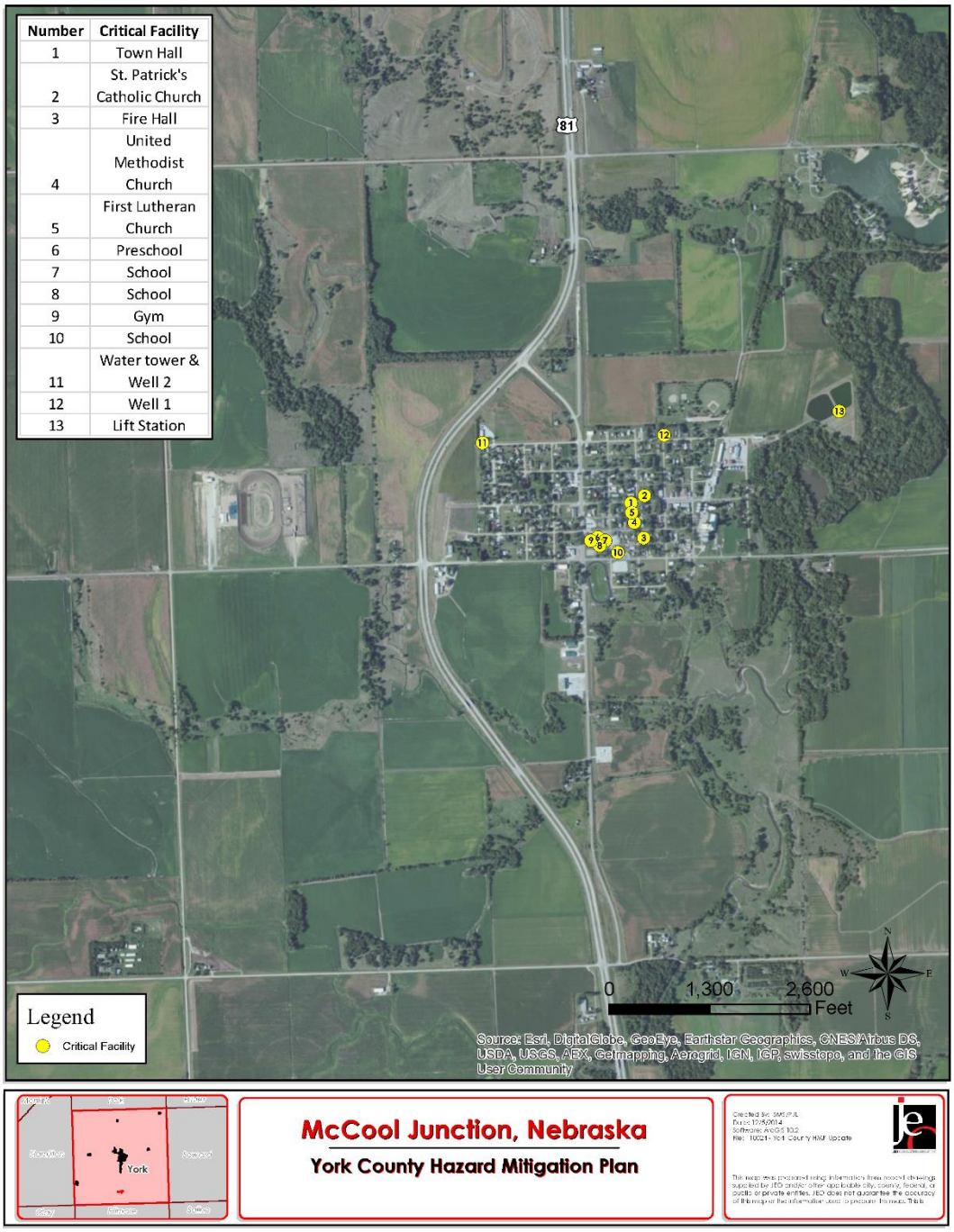
FUTURE DEVELOPMENT TRENDS

Steady residential growth is expected in the next five years. Spring Lake, north of McCool Junction accounts for some of the recent growth.

CRITICAL FACILITIES

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster. Critical facilities were identified during the original planning process and updated by the local planning team as a part of the plan update. The following Figure is a summary of the critical facilities for McCool Junction. The lift station is the one critical facility located within the floodplain.

Figure 59: Critical Facilities



RISK ASSESSMENT

Table 111 is a Risk Assessment identified specifically for the community. Refer to *Section 4: Risk Assessment* for a detailed explanation as to what this methodology is and why certain hazards did not pose a significant enough threat and were eliminated from detailed discussion.

The five hazards of greatest concern to the Village of McCool Junction are hail, tornados, high winds, severe winter storms, and chemical and radiological hazards. These five hazards are discussed further in the subsections below. Additional hazards are discussed if previous occurrences or current circumstances lead the Planning Team to determine the hazards are a significant threat to the community.

Table 111: Community Based Risk Assessment

Hazard Type	Previous Occurrence? Yes/No	Specific Concerns Identified
Severe Winter Storm*	Yes	Power outages and roadway closures
Tornado*	Yes	Significant damages and loss of life
High Winds*	Yes	Potential damages to property
Hail*	Yes	Significant damages to property and crops
Severe Thunderstorm	Yes	Potential damages to property and prolonged power outages
Flooding	Yes	Thirty-three structures located in the floodplain; potential for property damages
Extreme Heat	Yes	20.5% of population at higher level of vulnerability; Secondary hazards such as wildfires
Drought	Yes	Economic impacts; Land degradation; Secondary hazards such as wildfires
Earthquake	No	None
Wildfire	Yes	Potential loss of life and properties; Economic impacts
Dam Failure	No	None
Levee Failure	No	None
Agricultural Disease	No	Economic concerns; Agriculture is major economic sector for the county
Earthquakes	No	None
Landslides	No	None
Urban Fire	Yes	Age and density of housing
Chemical and Radiological Hazards*	No	Vulnerability due to proximity to Highway 81 and I80
Terrorism	No	None
Civil Disorder	No	None

**Identified as one of the five hazards of most concern to the community*

HISTORICAL OCCURRENCES

The NCDC counted a total of 37 hazard events in the Village of McCool Junction between 1996 and 2013. There were no recorded deaths or injuries, but $2,541,000 in damages to property and $4,628,000 in crop damages.

Tornados

The local planning team identified tornados as the greatest concern for the community. According to the NCDC data, there have been four tornados in McCool Junction. These storms have caused significant damages to both property and crops. The May 2014 tornado caused damage to a high voltage power line which resulted in a power outage for eight hours.

Table 112: Historic Tornado Events

Date	Extent	Property Damage	Crop Damage
5/15/1998	F1	$250,000	$400,000
5/29/2013	EF1	$1,500,000	-
5/11/2014	**EF3**	$60,000	-
Total	-	**$2,350,000**	**$400,000**

Source: NCDC

High winds

The local planning team identified high winds as a significant concern for the village. According to the NCDC data, there have been six storm events in McCool Junction which included strong winds (50 kts./58 mph). Winds of this magnitude, according to the Beaufort Wind Force Ranking, can cause trees to uproot, considerable structure damage, and over turning of improperly anchored mobile homes.

Hail Events

The local planning team identified hailstorms as a significant concern for McCool Junction. NCDC data records 24 events with a total of $495,000 in property damages and $3,828,000 in crop losses. A summary of the events with recorded damages can be seen in Table 113. In 2014, there were damages to the school but damage data was not available. Municipal facilities are insured for hail events.

Table 113: Historic Hail Events

Date	Extent	Property Damage	Crop Damage
5/17/1996	1.75 inch	-	$18,000
5/24/1996	1.5 inch	-	$10,000
5/11/1998	1.0 inch	$10,000	$50,000
6/9/1999	1.0 inch	$10,000	$500,000
6/25/2000	1.0 inch	$10,000	$200,000
7/3/2000	1.75 inch	$100,000	$2,000,000
9/22/2001	1.25 inch	$50,000	$100,000
5/22/2004	2.5 inch	$75,000	$150,000
9/16/2006	2.0 inch	$40,000	$200,000
6/11/2008	1.5 inch	$50,000	$250,000
4/14/2012	1.75 inch	$150,000	$250,000
Total	-	**$495,000**	**$3,828,000**

Source: NCDC

Severe Winter Storms

The local planning team identified severe winter storms as a significant concern for the community. This is consistent with risk assessment for the entire planning area. NCDC data records severe winter storms as "zonal" events meaning there is not a specific record of what communities are impacted or at least what the level impacts were per community.

Winter storms frequently result in roadway closures and power outages. The local planning team identified that severe winter storms are responsible for approximately two power outages each year. Snow removal resources have identified as sufficient for local events.

Chemical and Radiological Hazards

The local planning team identified chemical and radiological hazards as a significant concern facing the village. According to the PHMSA incident reports, there have been one chemical spill in McCool Junction reported from 1980

to 2013. In 1991, 10 JGA of hazardous chemicals were released when the receptacle was overfilled. There were no recorded losses related to this incident.

Table 114 identifies the chemical storage facilities within the community and identifies if the sites store hazardous materials. Some residences are located near mild chemical storage areas. There are no radiological fixed site facilities in or near McCool Junction.

Table 114: Chemical Storage Facilities

Facility	Address	Hazardous
Farmers Cooperative	104 N 6th Street	Yes
McCool Air Service	311 Road P	Yes
Farmers Cooperative	723 E. K Street	No
NPPD McCool Substation	214 Road L	Yes

McCool Junction is located approximately five miles south of Interstate 80. The primary connection to Interstate 80 is HWY 81. The NDOR traffic count for HWY 81 at McCool Junction is 7,190 motor vehicles and 1,120 heavy trucks per day. McCool Junction has a high volume of traffic (both motor vehicles and heavy trucks) compared to other municipalities in York County.

It is difficult to ascertain exactly what materials are being transported across the state, and McCool Junction may be vulnerable if there were a chemical or radiological incident along these high traveled transportation routes.

Grass/wildfires

The local planning team did not identify grass/wildfire as a significant concern for the Village. However, according to the Nebraska Forestry Department there were 4 reported fires by the McCool Junction Fire Department from 2000 to 2012 which consumed a total of 1 rangeland acres and 12 crop land acres. The fires resulted in more than $6,000 in damages to crops.

Urban Fire

The planning team did not rank urban fire as one of their top five concerns for the village. Given the age of the building structures and density of housing units within the corporate limits, the Planning Team felt it was possible for fire to spread quickly between structures. Like all structures the critical facilities are as vulnerable to the threat of urban fire as other structures. The Stone Creek Event Center has a fire suppression system.

The village does have an all-volunteer fire and rescue department with approximately 24 active volunteers. McCool Junction is currently building a new fire station. The department also has mutual aid agreements with neighboring fire departments. The local planning team identified that there were approximately ten fires calls in the last two years. The McCool Junction Area Rural Fire District #7 has used school outreach to improve fire prevention education. The local planning team determined the water supply is sufficient for firefighting.

Severe Thunderstorms

The local planning team did not identify severe thunderstorms as one of the top five concerns for the village. However, severe thunderstorms are a regular part of the climate for York County and McCool Junction. The NCDC recorded eight events which resulted in $296,000 in property damages and $400,000 in crop damages. A summary of storms recording losses can be seen in Table 115.

Table 115: Historic Severe Thunderstorm Events

Date	Extent	Property Damage	Crop Damage
6/26/1996	55 kts./63 mph	$1,000	-
7/10/1997	7 inches of rain in a five hour period	$50,000	$250,000
5/29/2000	55 kts. EG/63 mph	$75,000	$150,000
5/6/2002	62 kts. EG/71 mph	$25,000	-
6/22/2003	52 kts. EG/60 mph	$50,000	-
5/11/2005	61 kts. EG/70 mph	$75,000	-
4/11/2006	61 kts. EG/70 mph	$20,000	-
Total	-	**$296,000**	**$400,000**

Source: NCDC

Critical municipal records are protected with surge protectors on electronic devices. Critical facilities such as the Town Hall, and well houses have back up power generators; the new fire department building will have back up power generation as well. Most power lines feeding McCool Junction are overhead, however buried power lines are required with new construction. Although specific locations of hazardous trees have not been located, varieties of maple trees throughout the community have been identified as vulnerable to local weather events.

Flooding

There were zero reported flash flood events for McCool Junction. However, the local planning team identified that minor flooding does occur. For the purposes of calculating potential losses, it was estimated that all structures within the flooding hazard area would sustain 20 percent building damage at a flood depth of two feet. This information is from the Flood Building Loss Estimation Table provided by the FEMA Benefit-Cost Analysis Full Data Module, with the evaluation based on the average for one to two story buildings with basements. Using this estimated flood event, the potential building damages in McCool Junction would be $411,626. The area around Spring Lake has been identified as a flooding concern.

Table 116: Structural Inventory in the 1% Annual Flood Area

Structures in 100-year Flood Boundary		Structure Valuation		
Structure Type	Number of Structures	Average Value	Total Value	Approximate Damage Value
Commercial/Industrial	7	$73,521	$514,647	$102,929
Out Building	4	$6,459	$25,836	$5,167
Residential	21	$72,124	$1,514,604	$302,920
Public/Quasi Public	1	$3,409	$3,409	$610
TOTAL STRUCTURES	**33**	**-**	**$2,058,496**	**$411,626**

**Values are rounded to the nearest dollar*

CAPABILITY ASSESSMENT

Thus far the planning process has identified the major hazards for the communities and described and quantified the vulnerability of the community to these risks by acquiring updated information from FEMA, the local jurisdiction, and other sources. The following step shall be assessing what loss prevention or preparedness mechanisms are already in place which is referred to as capability assessment. Combining the risk assessment with the local capability assessment results in a better understanding of the locality's "net vulnerability" and to what extent they could be able to implement the goals, objectives, and actions.

Village Governance

A community's governance indicates the number of entities that may be available to help implement hazard migration actions. The Village of McCool Junction is governed by a five member village board. The village also has the following boards or departments:

- Roads
- Economic Development
- Village Maintenance

Table 117: Capabilities Assessment

Survey Components/Subcomponents		*Comments*
Planning & Regulatory Capability	Comprehensive Plan	***Yes, 2010***
	Capital Improvements Plan	***Yes, Annually***
	Hazard Mitigation Plan	***Yes, 2010***
	Economic Development Plan	***Yes***
	Emergency Operational Plan	***Yes (County)***
	National Resources Protection Plan	***No***
	Open Space Preservation plan	***No***
	Floodplain Management Plan	***Yes***
	Storm Water Management Plan	***Yes, 1998***
	Zoning Ordinance	***Yes, 2010***
	Subdivision Regulation/Ordinance	***Yes, 2010***
	Floodplain Ordinance	***Yes, 2010***
	Building Codes	***No***
	National Flood Insurance Program	***Yes***
	Community Rating System	***No***
	Other (if any)	***Tree Survey, 2009***
Administrative & Technical Capability	Planning Commission	***5 member board***
	Hazard Mitigation Planning Commission	***Yes***
	Floodplain Administration	***Yes, CFM***
	Emergency Manager	***Yes (Local and County)***
	GIS Coordinator	***Yes***
	Chief Building Official	***Yes, Zoning Administrator***
	Civil Engineering	***Contract as needed***
	Staff Who Can Assess Community's Vulnerability to Hazards	***Multiple***
	Grant Manager	***Yes, Zoning Administrator***
	Other (if any)	***McCool Development Corporation***
Fiscal Capability	Capital Improvement Project Funding	***Yes***
	Community Development Block Grant	***Yes***
	Authority to Levy Taxes for Specific Purposes	***Yes***
	Gas/Electric Service Fees	***No***
	Storm Water Service Fees	***No***

Survey Components/Subcomponents		*Comments*
	Water/Sewer Service Fees	***Yes***
	Development Impact Fees	***No***
	General Obligation Revenue or Special Tax Bonds	***Yes***
	Other (if any)	***Tax Increment Financing (TIF)*** ***Redevelopment Fund*** ***DHHS Grants***
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	***No***
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	***Yes (Local, County, NRD)***
	Natural Disaster or Safety related school programs	***No***
	StormReady Certification	***No***
	Firewise Communities Certification	***No***
	Public-private partnership initiatives addressing disaster-related issues	***No***
	Other (if any)	

PLAN INTEGRATION

When the community updated the local comprehensive plan in 2010 they did not incorporate the existing hazard mitigation plan into that document. Future growth areas and zoning does support development outside of the SFHA area.

MITIGATION ACTIONS

The following mitigation actions have been completed or are no longer needed:

ACTION 2.1.2	**Electrical System Looped Distribution / Redundancies**
Analysis	Provide looped distribution service and other redundancies in the electrical system as a backup power supply in the event the primary system is destroyed or fails.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados and high winds, severe winter storms, severe thunderstorms
Benefits	More reliable and resistant power distribution system.
Estimated Cost	$40,000 per mile
Potential Funding	HMGP, PDM, Perennial Public Power District, Nebraska Department of Health and Human Services
Timeline	Completed
Priority	N/A
Lead Agency	Utility Superintendent, Perennial Public Power District
Status	This action was completed since the adoption of the 2010 Hazard Mitigation Plan. Village installed three separate redundancies entering Village.

ACTION 2.1.9	**Stream Bank Stabilization / Grade Control Structures/ Channel Improvements**
Analysis	Stream bank/ bed degradation can occur along many rivers and creeks. Stabilization improvements including rock rip rap, vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Grade control structures including sheet-pile weirs, rock weirs, ponds, road dams, etc. can be implemented and improved to maintain the channel bed. Channel stabilization can protect structures, increase conveyance and provide flooding benefits. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Flooding
Status	This action was determined to be no longer needed by the local planning team as no needed improvements have been identified. This action will be reevaluated if improvement projects are identified.

ACTION 2.2.2	**Flood-Prone Property Acquisition**
Analysis	Voluntary acquisition and demolition of properties prone to flooding will reduce the general threat of flooding for communities. Additionally, this can provide flood insurance benefits to those communities within the NFIP. Communities must be in good standing with NFIP in order to be eligible for HMGP.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	Flooding
Status	This action was determined to be no longer needed by the local planning team. The area in question during the creation of the 2010 Hazard Mitigation Plan has experienced minimal flooding. Floodplain regulations implemented appear to have minimized flooding.

ACTION 2.3.4	**Tree City USA**
Analysis	Work to become a Tree City USA through the National Arbor Day Foundation in order to receive direction, technical assistance, and public education on how to establish a hazardous tree identification and removal program in order to limited potential tree damage and damages caused by trees in a community when a storm event occurs. The four main requirements include: 1) Establish a tree board; 2) Enact a tree care ordinance; 3) Establish a forestry care program; 4) Enact an Arbor Day observance and proclamation.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Status	This action is determined to be no longer needed by the local planning team and will be removed from future mitigation plans. Village Maintenance has implemented a tree care program, however, the Village does not have the necessary workforce to accomplish this mitigation action.

ACTION 4.3.1	**Alert / Warning Sirens**
Analysis	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking and remote activation.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather; promoting awareness and ensures people take shelter when needed.
Estimated Cost	$15,000+
Potential Funding	HMGP, PDM, Village budget, Grant assistance through Southeast Nebraska Development District
Timeline	Completed
Priority	Medium
Lead Agency	Fire Chief
Status	This action is completed. Additional siren was installed and update of existing siren completed in 2011.

ACTION 2.1.10	**Windbreaks / Living Snow Fence**
Analysis	Installation of windbreaks to increase water storage capacity in soil.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Drought
Status	This action was determined to be no longer needed by the local planning team due to sufficient number of snow fences.

The following mitigation actions are new, ongoing, or have not been completed:

ACTION 2.1.1	**Backup Generators**
Analysis	Provide a portable or stationary source of backup power to redundant power supplies, county wells, lift stations, and other critical facilities and shelters.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduce the danger to human life/health by keeping utilities operating. Reduce the economic downtime associated with utility loss.
Estimated Cost	$15,000-$30,000 per generator
Potential Funding	HMGP
Timeline	5 Years
Priority	Medium
Lead Agency	Fire Chief, York County Emergency Management
Status	Not Yet Completed. Progress is estimated at 66% completed. Fire Department and School still need backup power supply. Well #2 has portable backup power unit, but permanent structure is needed. NEMA grant has been received for structure.

ACTION 2.1.3	**Hazardous Tree Removal Program**
Analysis	Identify and remove hazards limbs and/or trees.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$20,000
Potential Funding	HMGP, US Forest Service, Village Budget
Timeline	7 to 10 Years
Priority	Low
Lead Agency	Village Maintenance
Status	Approximately 20% complete. Areas in need of tree removal have been identified throughout the Village in street Right-of-Way. Removal dependent upon available funding and availability of Village workforce.

ACTION 2.1.5	**Power, Service, Electrical, and Water Distribution Lines**
Analysis	Village can work with Perennial Public Power District to identify vulnerable transmission and distribution lines and plan to bury lines underground, upgrade, or retrofit existing structures to be less vulnerable to storm events. Electrical utilities shall be required to use underground construction methods where possible for future installation of power lines.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms, Flooding
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$50,000 to $70,000 (per mile for electrical)
Potential Funding	HMGP, PDM, Perennial Public Power District, Developers, Village budget
Timeline	5 to 10 Years

ACTION 2.1.5	**Power, Service, Electrical, and Water Distribution Lines**
Priority	Medium
Lead Agency	Perennial Public Power District, Utility Superintendent, Developers
Status	Approximately 10% complete. Action is placed in zoning regulations as a suggestion for new subdivisions and new service connections.

ACTION 2.1.8	**Stormwater System and Drainage Improvements**
Analysis	Drainage improvement needs have been identified. In McGowan Subdivisions a reroute of drainage to facilitate development. In ditch along K St. from 2nd Ave. to 3rd Ave. modification of ditch to facilitate drainage with street paving. O St. from 2nd to 4th, construction of storm sewer and outlets to facilitate better drainage, identified as a problem in 1998 Drainage Study. O St. from 5th to 8th, construction of storm sewer and modification of ditch to facilitate better drainage around COOP.
Goal/Objective	Goal 2/Objective 2.1
Benefits	These improvements can serve to more effectively convey runoff within cities and towns, preventing interior localized flooding. May also reduce the risk of illness/ disease by eliminating standing water.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000 to $100,000+
Potential Funding	HMGP, CDBG, Upper Big Blue NRD, Developers & Village budget
Timeline	1 – 5 Years
Priority	Medium
Lead Agency	Village Maintenance and Board
Status	In progress. Projects included in Village's one and six year street program.

ACTION 2.3.1	**Floodplain Regulation Enforcement and Updates**
Analysis	Continue to enforce local floodplain regulations for structures located in the 1-percent floodplain. Strict enforcement of the type of development and elevations of structures should be considered through issuance of building permits by the community. Continue education of Certified Floodplain Manager.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Ensures that no new structures built will be vulnerable to flooding. Reducing damages and health risks associated with flooding.
Estimated Cost	$4,000+
Potential Funding	HMGP, CDBG
Timeline	Ongoing
Priority	Medium
Lead Agency	Village Floodplain Manager
Status	This is an ongoing action. Village CFM maintains certification through continuing education and electronic updates to regulations.

ACTION 2.3.2	**Maintain Good Standing with National Flood Insurance Program (NFIP)**
Analysis	Maintain good standing with National Flood Insurance Program (NFIP) including floodplain management practices/ requirements and regulation enforcements and updates.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Enable property owners to purchase insurance protection against flood losses. Good standing enables participants to apply for PDM and HMGP cost-share.
Estimated Cost	N/A
Potential Funding	Village budget, NDNR, FEMA
Timeline	Ongoing
Priority	High
Lead Agency	Village Floodplain Manager
Status	This action is an ongoing action.

ACTION 3.1.1	**Public Awareness / Education**
Analysis	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing education equipment such as overhead projectors and laptops.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Public awareness reduces the risk of property loss and damage, injury and death. It increases knowledge on emergency procedures, facilities, conservation, and is key to preparedness.
Estimated Cost	$0-$5,000+
Potential Funding	HMGP, PDM, Village budget
Timeline	10 Years
Priority	Low
Lead Agency	Village Maintenance, School, Fire Department, Floodplain Manager
Status	In Progress. Village Maintenance has a water hazard education program. Fire Department holds fire training and tornado drills for children at school.

ACTION 4.3.2	**Emergency Communications**
Analysis	Update LEOP & local action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish inner-operable communications.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Coordination and clear and efficient communications between agencies increases the capabilities to protect and rescue, increases safety, and reduces the risk of mistakes due to miscommunications.
Estimated Cost	$10,000+
Potential Funding	Homeland Security, Upper Big Blue NRD, York County & Village budget
Timeline	5 Years

ACTION 4.3.2	**Emergency Communications**
Priority	High
Lead Agency	Village Maintenance, Floodplain Manager, Zoning Administrator, Clerk
Status	In Progress. LEOP was last updated in 2014. Local action plan will be updated as needed.

ACTION 2.1.4	**New Municipal Well**
Analysis	Communities can evaluate the need to install a new well to provide a safe backup water supply for the community, replace existing wells affected by drought, and additional water for fire protection.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Drought
Benefits	Provide adequate water sources to mitigate potential damages or expenses due to drought. New well will replace current well with high nitrate contamination.
Estimated Cost	$350,000 to $450,000
Potential Funding	Community Development Block Grant (CDBG), Nebraska Department of Health and Human Services (NDHHS).
Timeline	5 - 10 Years
Priority	Medium
Lead Agency	Village Board
Status	Not Yet Started.

ACTION 4.1.1	**Civil Service Improvements**
Analysis	Improve emergency rescue and response equipment and facilities by providing additional, or updating existing emergency response equipment. This could include fire equipment, ATVs, water tanks/truck, snow removal equipment, pumps, etc. This would also include developing backup systems for emergency vehicles, identifying and training additional personnel for emergency response, or continuing educational opportunities for current personnel.
Goal/Objective	Goal 4/Objective 4.2
Hazard(s) Addressed	All Hazards
Benefits	Having appropriate and up to date equipment along with adequately trained and numbered personnel increases safety and reduces the risk of damage.
Estimated Cost	$5,000 to $400,000 per vehicle, varies depending on what equipment is needed
Potential Funding	PDM, NEMA, Governing County and Local Governing Agency
Timeline	5 Years
Priority	High
Lead Agency	Fire District
Status	In Progress, approximately 35% complete. New fire barn constructed, new grass rig purchase, comprehensive training for emergency response personnel.

ACTION 4.1.2	**Improve Snow / Ice Removal Program / Snow Fence**
Analysis	Revise and improve the snow and ice removal program for streets. Revisions should address situations such as plowing snow, ice removal, parking during snow and ice removal, and removal of associated storm debris. This would include updating the emergency routes, acquiring equipment that is needed, paving routes, and ordinances as necessary.
Goal/Objective	Goal 4/Objective 4.1
Hazard(s) Addressed	Severe Winter Storms
Benefits	Having an effective snow/ice removal program will improve capabilities to rescue stranded residents and increase the capacity in which snow can be removed after a severe winter storm.
Estimated Cost	$20,000+
Potential Funding	PDM, Village budget, Tax Increment Financing (TIF)
Timeline	Ongoing
Priority	Medium
Lead Agency	Village Maintenance
Status	In progress, approximately 20% complete. The purchase of up-to-date equipment reduces the time snow/ice remain on the surfaces. Up-to-date equipment reduced amount of snow left on gravel street - previously left more snow/ice to leave gravel on streets. Plan to pave more streets.

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PARTICIPANT SECTION FOR THE VILLAGE OF WACO

York County

Multi-Jurisdictional Hazard Mitigation Plan

April 2015

HISTORY AND DEVELOPMENT OF WACO

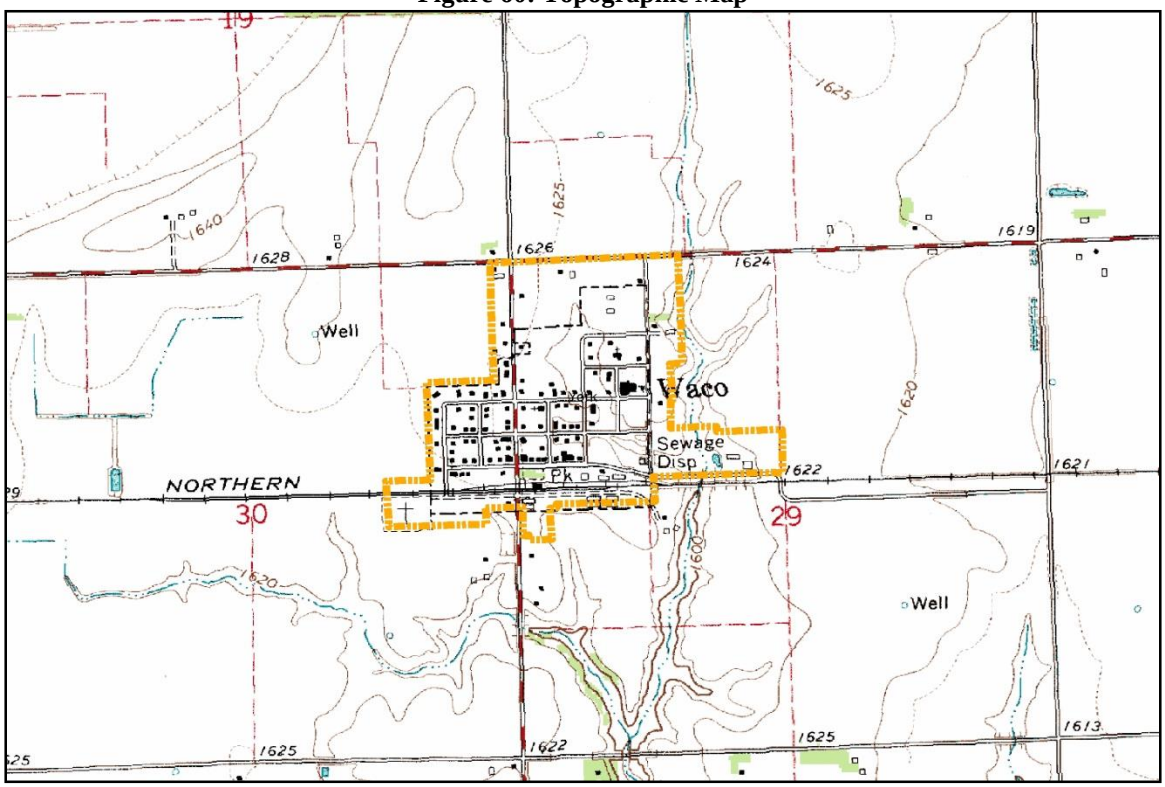
The beginning of Waco, coincided with the railroad laying its track through the county, from Seward to York in 1877. In June a depot was established in a box car and Joseph Strickler was appointed station agent. Sarah Chapin, niece of the president of the railroad, owned 160 acres of land along the right-of-way. She offered 10 acres as a town site if "Waco" would be selected for its name. She had grown up in Waco, Texas, and was a graduate of the college in that city and wished to honor her home town and alma mater.

LOCATION AND GEOGRAPHY

Waco is a village located in the east central portion of York County. The Village of Waco covers an area of 147 acres and has an elevation of 1,625 feet above sea level. Waco is 40 miles northwest of Lincoln.

The community of Waco lies in an area of plains. The land use surrounding the community is mainly agricultural crops with some ranching. Flat lying land above the valley with materials of sandstone or stream deposited silt, clay, sand and gravel overlain by wind deposited silt is prevalent. The community lies approximately ten miles north of Beaver Creek. The watershed flows generally from the northwest to the southeast.

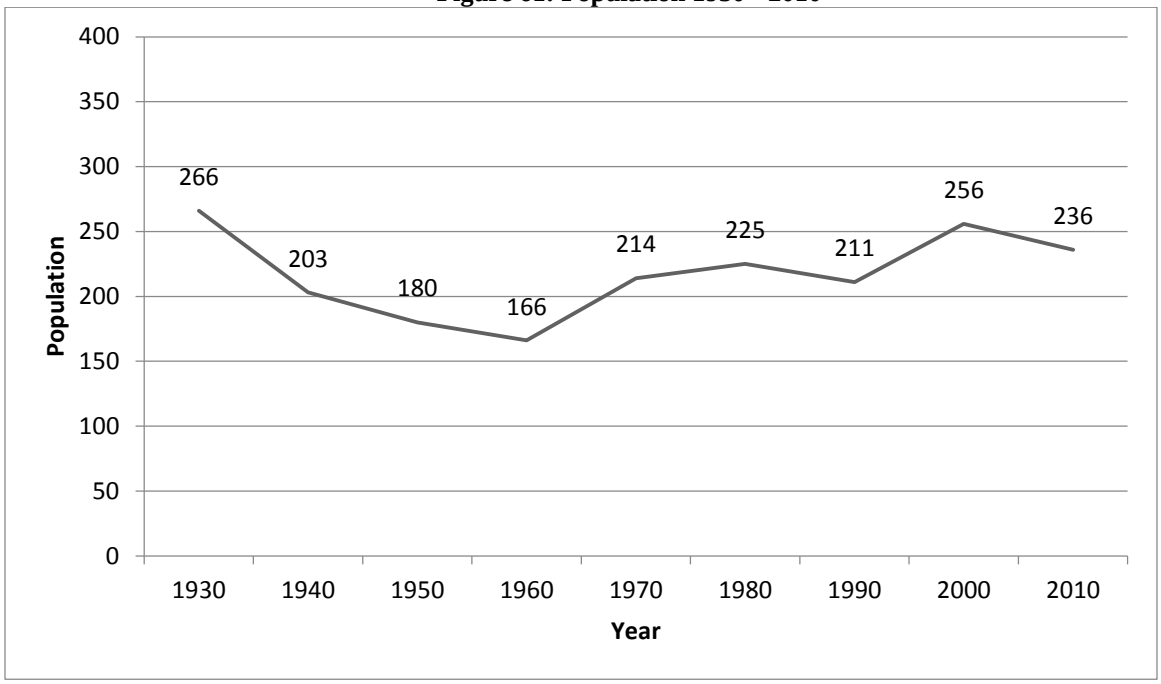
Figure 60: Topographic Map



WACO DEMOGRAPHICS

Figure 61 displays the historical population trend for Waco from 1930 to 2010. The Village of Waco was experiencing a rapid decline of population from 1930 to 1960, before steadily increasing population through 2000, and presently declining. Declining populations may have a higher number of unoccupied housing that is not being maintained. Declining population trends can also represent decreasing tax revenue for the community which could make implementation of mitigation actions more challenging.

Figure 61: Population 1930 - 2010



The following table illustrates the age distribution and median age for York County in comparison to the Village of Waco. The median age for the Village of Waco is significantly higher than the rest of the County. Elderly and very young residents are more vulnerable to certain hazards than others. This group represents 23.3 percent of the population, which is slightly less than the county average.

Table 118: Population by Age

	York County	Waco
< 5 yrs.	6.4%	5.9%
5 - 64 yrs.	75.4%	76.7%
> 65 yrs.	18.2%	17.4%
Median Age	40.1	46.7

HOUSING AND ECONOMICS

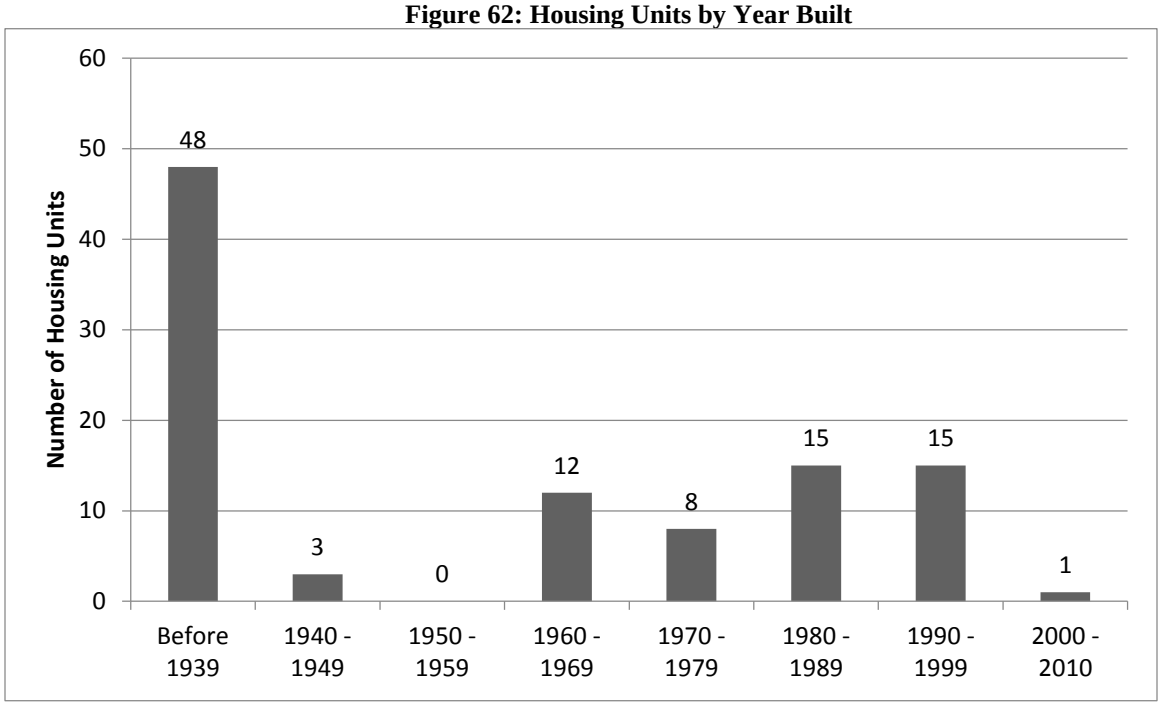
Median household income, per capita income, home value and rent for the county as a whole compare with the Village of Waco. These economic indicators are significantly lower than the County and State averages. Economic indicators such as those seen in Table 119 can influence a community's level of resiliency during hazardous events.

Table 119: Housing and Economics

	Nebraska	York County	Waco
Median Household Income	$49,342	$47,689	$34,375
Per Capita Income	$25,229	$25,412	$23,968
Median Home Value	$123,900	$92,300	$68,100
Median Rent	$648	$527	$480

Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

Figure 62: Housing Units by Year Built



Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

Figure 62 indicates that nearly half of Waco homes were built prior to 1940. Older homes built prior to statewide building codes may be more vulnerable to certain hazards. According to the U.S. Census there are a total of 102 housing units in Waco. Of those 102 units, more than 6 percent (7 total units) are reported as vacant. Waco has a significantly higher percentage of homes that are owner occupied than the county average.

Table 120: Housing Units

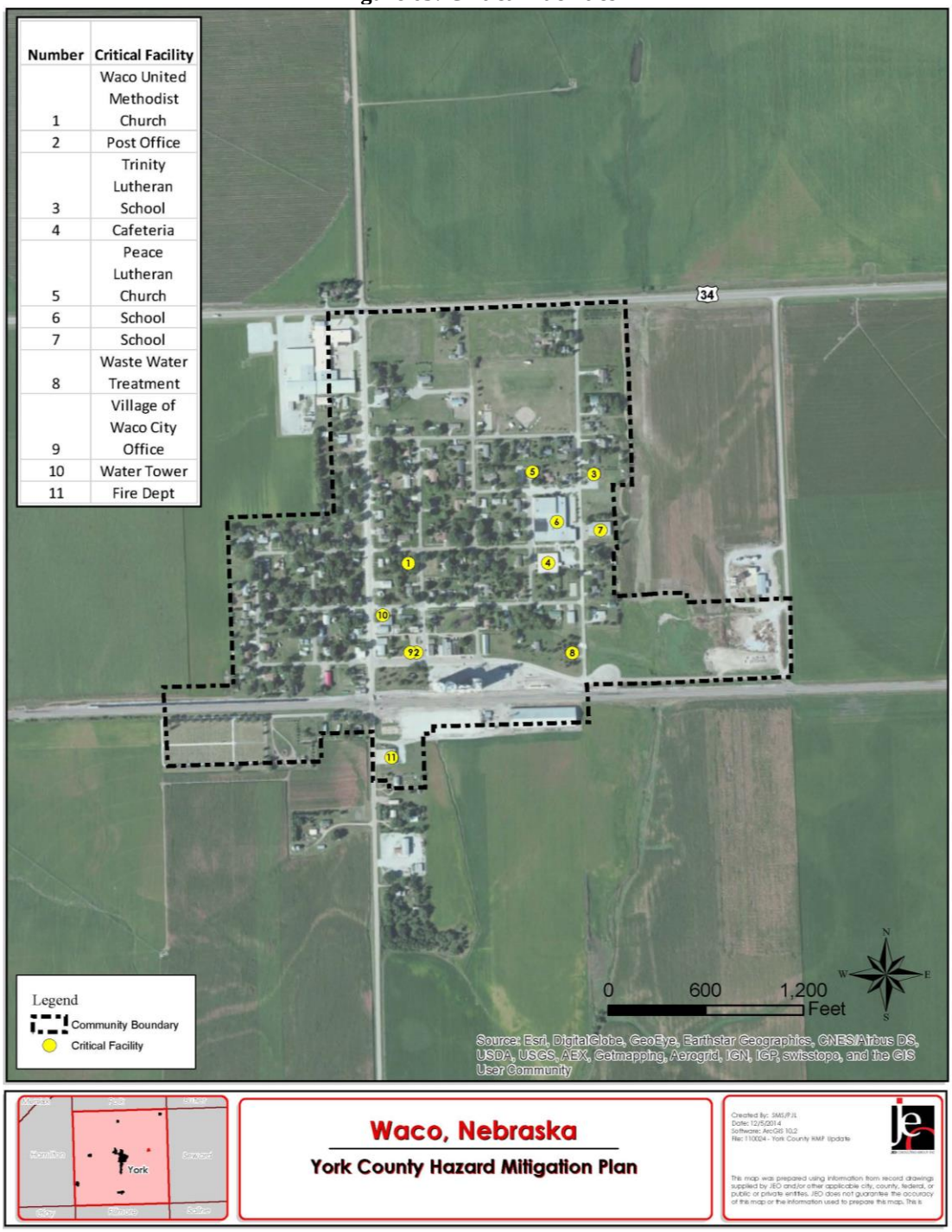
Jurisdiction	Total Housing Units					Occupied Housing Units			
	Occupied		Vacant			Owner		Renter	
	Number	Percent	Number	Percent		Number	Percent	Number	Percent
York County	5,771	92.9%	443	7.1%		4,397	76.2%	1,374	23.8%
Waco	95	93.1%	7	6.9%		83	87.4%	12	12.6%

Source: Selected Housing Characteristics: 2006 - 2010 ACS 5-year estimate

CRITICAL FACILITIES

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster. Critical facilities were identified during the original planning process and updated by the local planning team as a part of the plan update. Figure 63 is a summary of the critical facilities for the Village of Waco.

Figure 63: Critical Facilities



STRUCTURAL INVENTORY AND VALUATION

A structural inventory was completed for the corporate limits of Waco though a window survey using GIS for the 2010 hazard mitigation plan, the inventory was updated utilizing building permits issued between 2010 and 2014. The values of these structure types were determined from the 2013 Property Type Values as provided by the Nebraska Department of Revenue Property Assessment Division.

Results from the structural inventory completed for the Village of Waco are found in Table 121. Information displayed in this table includes the number of structures, value per structure, and total value of each structure type.

Table 121: Structural Inventory and Valuation Summary

Total Structures		Structure Valuation	
Structure Type	Number of Structures	Total Value	Value per Structure
Commercial/Industrial	16	$7,223,866	$451,491
Out Building	13	$61,243	$4,711
Residential	115	$7,416,468	$64,491
Public/Quasi Public	12	$107,234	$8,936
TOTAL STRUCTURES	**156**	**$14,808,811**	-

**Values are rounded to the nearest dollar*

FUTURE DEVELOPMENT TRENDS

The Village of Waco is not expecting significant development in the near future. If additional development occurs in the future, it should be done in a way to minimize its vulnerability to hazards.

RISK ASSESSMENT

Table 122 is a Risk Assessment identified specifically for the community. Refer to *Section 4: Risk Assessment* for a detailed explanation as to what this methodology is and why certain hazards did not pose a significant enough threat and were eliminated from detailed discussion.

According to the local planning team, the five hazards of greatest concern to the Village of Waco are hail, tornados, high winds, severe winter storms, and severe thunderstorms. These five hazards are discussed further in the subsections below. Additional hazards are discussed if previous occurrences or current circumstances lead the Planning Team to determine the hazards are a significant threat to the community.

Table 122: Community Based Risk Assessment

HAZARD TYPE	PREVIOUS OCCURRENCE? Yes/No	Specific Concerns Identified
Severe Winter Storm*	Yes	Potential power outages and damages to critical facilities
Tornado*	No	Significant damages and loss of life
High Winds*	Yes	Potential damages to property and critical facilities
Hail*	Yes	Potential damages to property and crops
Severe Thunderstorm*	Yes	Potential damages and prolonged power outages
Flooding	No	None
Extreme Heat	Yes	23.3% of population at higher level of vulnerability; Ag losses; Secondary hazards such as wildfires
Drought	Yes	Economic impacts; Land degradation; Secondary hazards such as wildfires
Earthquake	No	None
Wildfire	Yes	Potential loss of life and properties; Economic impacts
Dam Failure	No	None
Levee Failure	No	None
Agricultural Disease	No	Economic concerns; Agriculture has major impact on the local economy
Earthquakes	No	None
Landslides	No	None
Urban Fire	Yes	Spread of fires due to age and density of structures

Chemical and Radiological Hazards	Yes	Major transportation route of Highway 34, potential property losses due to chemical spills
Terrorism	No	None
Civil Disorder	No	None

** Top five hazards of most concern*

HISTORICAL OCCURRENCES

The NCDC counted a total of 23 hazard events in the Village of Waco and there were no recorded deaths or injuries, but $525,500 in damages to property and $2,000,000 in crop damages.

Hail Events

The local planning team identified hailstorms as the greatest concern for Waco. NCDC data records 13 events with a total of $190,000 in property damages and $1,000,000 in crop losses. A summary of the events with recorded damages can be seen in Table 123.

Table 123: Historic Hail Events

Date	Maximum Recorded	Property Damage	Crop Damage
5/17/1996	1.75 inch	-	$20,000
5/22/1996	.75 inch	-	$5,000
5/11/1998	2.5 inch	$80,000	$300,000
6/13/2001	1.0 inch	$10,000	$75,000
9/15/2006	1.25 inch	$15,000	$50,000
6/7/2009	1.0 inch	$10,000	$50,000
5/27/2012	1.75 inch	$75,000	$500,000
Total	**-**	**$190,000**	**$1,000,000**

Source: NCDC

Tornados

The local planning team identified tornados as a significant concern for the community. According to the NCDC, there have been zero tornados in the past seventeen years. Despite the lack of occurrences, tornados are a significant concern due to the potential for loss of property and life.

High Winds

The local planning team identified high winds as a significant concern for the community. According to NCDC data, three storm events have included strong winds (50 kts./58 mph). Winds of this magnitude, according to the Beaufort Wind Force Ranking, can cause trees to uproot, considerable structure damage, and over turning of improperly anchored mobile homes.

Severe Winter Storms

The local planning team identified severe winter storms as a significant concern for the community. This is consistent with risk perception for the entire planning area. NCDC data records severe winter storms as "zonal" events meaning there is not a specific record of what communities are impacted or at least what the impacts were per community.

Severe Thunderstorms

Severe thunderstorms are a regular part of the climate for York County and Waco. The local planning team identified severe thunderstorms as a significant concern for the village. The NCDC recorded five events which resulted in $235,500 in property damages and $1,000,000 in crop damages. A summary of storms recording losses can be seen in Table 124.

Table 124: Historic Thunderstorm Events

Date	Extent	Property Damage	Crop Damage
5/16/1996	60 kts./69 mph	$500	-
6/27/2003	56 kts. EG/64 mph	$25,000	-
5/10/2004	Lightning	$90,000	-
7/5/2011	61 kts. EG/70mph	$120,000	$1,000,000
Total	-	**$235,500**	**$1,000,000**

Source: NCDC

Grass/wildfires

The local planning team identified grass/wildfire was not one of the five greatest concerns for the village. According to the Nebraska Forest service there were 39 reported fires by the Waco Fire Department from 2000 to 2012 which consumed a total of 26 rangeland acres. The fires resulted in more than $10,100 in damages to structures. The most significant event occurred in 2000 when a debris fire consumed one acre and resulted in $10,000 in structural damages.

Urban Fire

The planning team identified that urban fire was not one of the greatest concerns for the village. The team estimated that urban fires would occur periodically in the future as they have in the past. Given the age of the building structures and density of housing units within the corporate limits the planning team felt it was possible for fire to spread quickly between structures. Like all structures the critical facilities are as vulnerable to the threat of urban fire as other structures.

The Village of Waco does have an all-volunteer fire and rescue department with approximately 23 active volunteers. From 2008 to 2012 there were 54 fires and one rescue/EMS calls reported by the Waco Volunteer Fire Department according the Nebraska State Fire Marshal's Office. The Waco Fire Department also provided aid to neighboring communities two times during this time period.

CAPABILITY ASSESSMENT

Thus far the planning process has identified the major hazards for the communities and described and quantified the vulnerability of the community to these risks by acquiring updated information from FEMA, the local jurisdiction, and other sources. The following step shall be assessing what loss prevention or preparedness mechanisms are already in place which is referred to as capability assessment. Combining the risk assessment with the local capability assessment results in a better understanding of the locality's "net vulnerability" and to what extent they could be able to implement the goals, objectives, and actions.

Village Governance

A community's governance indicates the number of entities that may be available to help implement hazard mitigation actions. The Village of Waco is governed by a five member Village Board, headed by a Chairman. The village also has the following boards or departments:

- Parks
- Trees Committee
- Roads
- Village Maintenance
- Village Utilities

Table 125: Capability Assessment

Survey Components/Subcomponents		*Comments*
Planning & Regulatory Capability	Comprehensive Plan	***Yes, will be adopted in 2016***
	Capital Improvements Plan	***Yes, every September***
	Hazard Mitigation Plan	***Yes***
	Economic Development Plan	***No***
	Emergency Operational Plan	***Yes, County Emergency Management***
	National Resources Protection Plan	***No***
	Open Space Preservation plan	***No***
	Floodplain Management Plan	***Yes, adopted in 2011***
	Storm Water Management Plan	***No***
	Zoning Ordinance	***Yes, updated in 2015***
	Subdivision Regulation/Ordinance	***Yes, updated in 2015***
	Floodplain Ordinance	***No***
	Building Codes	***Yes, updated in 2015***
	National Flood Insurance Program	***Yes, adopted ordinance in 2011***
	Community Rating System	***No***
	Other (if any)	***No***
Administrative & Technical Capability	Planning Commission	***Yes***
	Hazard Mitigation Planning Commission	***Yes***
	Floodplain Administration	***Yes, Clerk***
	Emergency Manager	***Yes***
	GIS Coordinator	***No***
	Chief Building Official	***Yes***
	Civil Engineering	***Yes, Contract***
	Staff Who Can Assess Community's Vulnerability to Hazards	***Yes, Village Board***
	Grant Manager	***No***
	Other (if any)	***No***
Fiscal Capability	Capital Improvement Project Funding	***Yes, Village Board***
	Community Development Block Grant	***No***
	Authority to Levy Taxes for Specific Purposes	***Yes, Village Board***
	Gas/Electric Service Fees	***Perennial Public Power***
	Storm Water Service Fees	***No***
	Water/Sewer Service Fees	***Yes, Village Board***
	Development Impact Fees	***No***
	General Obligation Revenue or Special Tax Bonds	***Yes, Village Board***
	Other (if any)	***No***
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	***No***
	Ongoing public education or information program (e.g., responsible water use, fire safety,	***Yes, Waco Volunteer Fire Department***

Survey Components/Subcomponents		*Comments*
	household preparedness, environmental education)	
	Natural Disaster or Safety related school programs	***No***
	StormReady Certification	***Yes, County***
	Firewise Communities Certification	***No***
	Public-private partnership initiatives addressing disaster-related issues	***No***
	Other (if any)	***No***

PLAN INTEGRATION

When the community updated the local comprehensive plan in 2010 they did not incorporate the existing hazard mitigation plan into that document.

MITIGATION ACTIONS

The following mitigation actions have been completed or are no longer needed:

ACTION 1.1.1	**Obtaining Missing Data For Future Updates**
Analysis	Obtain necessary data to improve vulnerability assessments when updating the plan.
Goal/Objective	Goal 1/Objective 1.1
Hazard(s) Address	All hazards
Status	No longer needed. This action was listed in the previous mitigation plan, however, Waco has decided this action is not relevant and will remove this action following this plan update.

ACTION 2.1.2	**Electrical System Looped Distribution / Redundancies**
Analysis	Provide looped distribution service and other redundancies in the electrical system as a backup power supply in the event the primary system is destroyed or fails.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados and high winds, severe winter storms, severe thunderstorms
Benefits	More reliable and resistant power distribution system.
Estimated Cost	$40,000 per mile
Potential Funding	HMGP, PDM, Perennial Public Power District
Timeline	Ongoing
Priority	Low
Lead Agency	Village Clerk
Status	Complete. The local planning team identified that electrical system redundancies have been installed since the previous HMP. This action will be revisited as necessary due to future development.

ACTION 2.1.9	**Stream Bank Stabilization / Grade Control Structures/ Channel Improvements**
Analysis	Stream bank/ bed degradation can occur along many rivers and creeks. Stabilization improvements including rock rip rap, vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Grade control structures including sheet-pile weirs, rock weirs, ponds, road dams, etc. can be implemented and improved to maintain the channel bed. Channel stabilization can protect structures, increase conveyance and provide flooding benefits. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Flooding
Benefits	Protects structures near banks from flooding and shifting by reducing risk of flow disruption. Low maintenance solution to reduce the risk of recurring maintenance from banks falling in and increase conveyance.
Estimated Cost	$50,000 to $100,000+
Potential Funding	This was funded through a local bond.
Timeline	Completed.

ACTION 2.1.9	**Stream Bank Stabilization / Grade Control Structures/ Channel Improvements**
Priority	Medium
Lead Agency	Village Maintenance, Upper Big Blue NRD
Status	This action has been completed since the previous HMP.

ACTION 2.2.1	**Drainage Study/ Stormwater Master Plan**
Analysis	Preliminary drainage studies and assessments can be conducted to identify and prioritize design improvements to address site specific localized flooding/drainage issues to reduce and/or alleviate flooding. Stormwater master plans can be developed to help identify stormwater problem areas and potential drainage improvements.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	Flooding
Status	No Longer Needed. Waco has identified drainage issues and plans to address them have been developed.

ACTION 2.2.2	**Flood-Prone Property Acquisition**
Analysis	Voluntary acquisition and demolition of properties prone to flooding will reduce the general threat of flooding for communities. Additionally, this can provide flood insurance benefits to those communities within the NFIP. Communities must be in good standing with NFIP in order to be eligible for HMGP.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	Flooding
Status	No Longer Needed. There are no Repetitive Loss Properties in Waco.

The following mitigation actions are new, ongoing, or have not been completed:

ACTION 2.1.1	**Backup Generators**
Analysis	Provide a portable or stationary source of backup power to redundant power supplies, county wells, lift stations, and other critical facilities and shelters.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms
Benefits	Reduce the danger to human life/health by keeping utilities operating. Reduce the economic downtime associated with utility loss.
Estimated Cost	$15,000-$30,000 per generator
Potential Funding	HMGP, Local Budget
Timeline	1 – 2 years
Priority	High
Lead Agency	Village Board, Village Maintenance
Status	Not Yet Started. Waco indicates this is their top priority project. Generators are needed for the sewer plant, the community building, and the fire department.

ACTION 2.1.4	**Hazardous Tree Removal Program**
Analysis	Identify and remove hazards limbs and/or trees.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$20,000
Potential Funding	HMGP, US Forest Service
Timeline	Ongoing
Priority	High
Lead Agency	Village Maintenance / Tree Board
Status	Ongoing. This action is a part of the village's regular maintenance program.

ACTION 2.1.6	**Safe Rooms**
Analysis	Assess, design and construct fully supplied safe rooms in highly vulnerable urban and rural areas such as mobile home parks, campgrounds, schools, and other such areas throughout the planning area. Assess the adequacy of current public buildings to be used as safe rooms. Construct safe rooms in areas of greatest need, either as new construction or retrofitting.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms
Benefits	Reduce the risk of death or injury in areas vulnerable to tornados, severe thunderstorms and other hazards.
Estimated Cost	$200-$300/sf stand alone; $150-200/sf addition/retrofit
Potential Funding	PDM, HMPG
Timeline	10 Years
Priority	Medium
Lead Agency	Village Board, County Emergency Manager, Consulting Engineer
Status	Not Yet Started. Waco indicated that the school and industrial areas in the northwest corner of Waco would be serviced by this action.

ACTION 2.1.8	**Stormwater System and Drainage Improvements**
Analysis	Communities may utilize stormwater systems comprising of ditches, culverts, or drainage ponds to convey runoff. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements. Bridges typically serve as flow restrictions along streams and rivers. Cleanout and reshaping of channel segments at bridge crossing can increase conveyance, reducing the potential for flooding. Replacement or modification of bridges and other flow restrictions may be necessary to provide greater capacity, maintain or improve structural integrity during flood events, and eliminate flooding threats and damages. Flood protection for critical and/or highly vulnerable facilities, areas, populations, and infrastructure are key.
Goal/Objective	Goal 2/Objective 2.1

ACTION 2.1.8	Stormwater System and Drainage Improvements
Benefits	These improvements can serve to more effectively convey runoff within cities and towns, preventing interior localized flooding. May also reduce the risk of illness/ disease by eliminating standing water.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000 to $100,000+
Potential Funding	HMGP, CDBG, Upper Big Blue NRD, York County & Local Budget
Timeline	1 - 2 Years
Priority	High
Lead Agency	Village Board
Status	Ongoing. This is a part of the village's regular maintenance program. Waco indicated that Stafford Street has been identified as needing drainage improvements.

ACTION 2.1.10	Relocate Storage Tanks
Analysis	Pursue relocation of anhydrous ammonia storage tanks to property located at 202 Midland Street.
Goal/Objective	Goal 2/ Objective 2.1
Hazard(s) Addressed	All hazards
Benefits	It would greatly reduce hazard vulnerability as additional distance from the railroad tracks would be safer.
Estimated Cost	Unknown
Potential Funding	Owners of the private property
Timeline	2 Years
Priority	High
Lead Agency	Village Board
Status	Not Yet Started

ACTION 2.3.1	Floodplain Regulation Enforcement and Updates
Analysis	Continue to enforce local floodplain regulations for structures located in the 1-percent floodplain. Strict enforcement of the type of development and elevations of structures should be considered through issuance of building permits by any community or county. Continue education of building inspectors or Certified Floodplain Managers.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Ensures that no new structures built will be vulnerable to flooding. Reducing damages and health risks associated with flooding.
Estimated Cost	$4,000+
Potential Funding	HMGP, CDBG
Timeline	Ongoing
Priority	High
Lead Agency	Floodplain Administrator
Status	This is an ongoing action.

ACTION 2.3.2	**Maintain Good Standing with National Flood Insurance Program (NFIP)**
Analysis	Maintain good standing with National Flood Insurance Program (NFIP) including floodplain management practices/ requirements and regulation enforcements and updates.
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Benefits	Enable property owners to purchase insurance protection against flood losses. Good standing enables participants to apply for PDM and HMGP cost-share.
Estimated Cost	N/A
Potential Funding	Local Budget
Timeline	Ongoing
Priority	High
Lead Agency	Floodplain Administrator
Status	This is an ongoing action.

ACTION 3.1.1	**Public Awareness / Education**
Analysis	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing education equipment such as overhead projectors and laptops.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Public awareness reduces the risk of property loss and damage, injury and death. It increases knowledge on emergency procedures, facilities, conservation, and is key to preparedness.
Estimated Cost	$0-$5,000+
Potential Funding	HMGP, PDM, Local Budget
Timeline	Ongoing
Priority	Low
Lead Agency	County Emergency Manager, Fire Department
Status	The Village is working with Emergency Management to develop education materials.

ACTION 4.3.1	**Alert / Warning Sirens**
Analysis	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking and remote activation.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather; promoting awareness and ensures people take shelter when needed.
Estimated Cost	$15,000+
Potential Funding	HMGP, PDM, Upper Big Blue NRD, York County & Local Budget
Timeline	3 - 5 Years

ACTION 4.3.1	**Alert / Warning Sirens**
Priority	High
Lead Agency	Village Maintenance
Status	Not Completed. This is a new action. Waco would like a siren on the NE side of town near the school.

ACTION 4.3.4	**Weather Radios**
Analysis	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All Hazards
Benefits	Reduces the risk of death/injury associated with severe weather conditions by communication.
Estimated Cost	$50 per radio
Potential Funding	HMGP, PDM, Natural Resource District, County & Local Budget
Timeline	5 Years
Priority	Medium
Lead Agency	Village Board, Clerk
Status	Not Yet Started.

PARTICIPANT SECTION FOR UPPER BIG BLUE NRD

York County

Multi-Jurisdictional Hazard Mitigation Plan

April 2015

Community Profile

HISTORY

More than 56,000 citizens rely on the Upper Big Blue Natural Resources District (UBB NRD) to provide direction and assistance in the wise use, conservation and development of our soil, water and related natural resources. The NRD is dedicated to the conservation and careful development of natural resources to serve everyone's needs.

The NRD system was created in 1972, following Nebraska legislation which consolidated more than 150 statewide special-purpose districts into 23 NRDs. The NRDs correspond to major river basins in Nebraska. Therefore, NRDs carry the names of these rivers, hence the Upper Big Blue NRD is named after the uppermost portion of the Big Blue River.

NRDs are organized as governmental subdivisions of the state. Local control is provided by a board of directors. At the Upper Big Blue NRD, a 17-member board establishes policy. These directors are placed in office through the general election process and represent the community's interests in conservation. Across the state, NRDs offer a major source of assistance to landowners in conservation and natural resources management. Not only do the board members make decisions about conservation programs at the District level, they also bring a wealth of local judgment and experience when adapting state and national programs to local situations. The NRD staff is responsible for the day-to-day operations. The Board sets policy only.

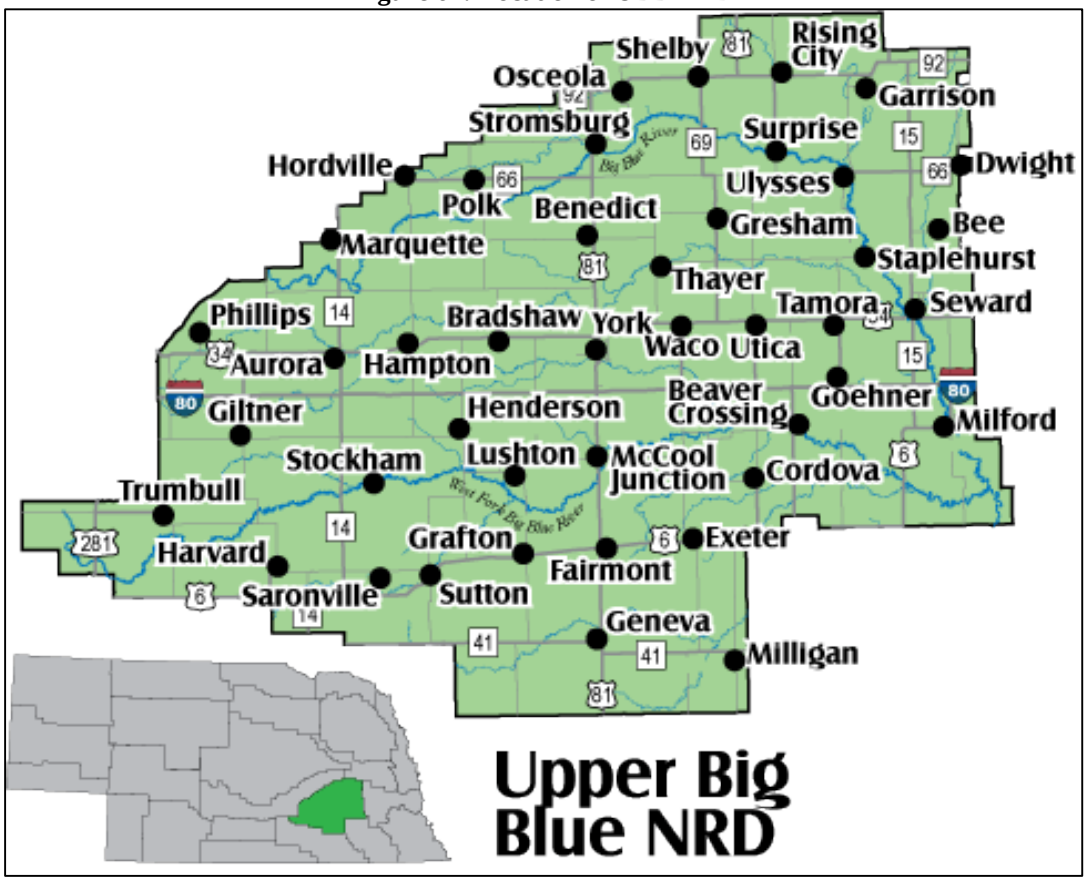
The NRD staff at York and the field clerks at the Natural Resources Conservation Service (NRCS) offices in each county are responsible for implementing NRD policy and regulations.

A major source of funding for projects, programs and administration comes from a levy on all taxable property within the District. Other sources include federal and state funding, as well as program fees. Certain projects may also be funded with a portion of other local, state, private and/or federal revenues. The NRD is empowered to coordinate land and water management programs with local, state and federal conservation organizations and other governmental units.

LOCATION

UBB NRD is located in the southeast portion of Nebraska. The UBB NRD includes all of Seward and York Counties as well as portions of Adams, Butler, Fillmore, Hamilton, Polk, and Saline Counties (refer to Figure 64 for NRD location).

Figure 64: Location of UBB NRD



UPPER BIG BLUE NRD DEMOGRAPHICS

The NRD does not collect information on age, or other demographics of their population, not does the U.S. Census Bureau. The NRD does report more that more than 56,000 people reside within their boundaries.

RECREATION AREAS

As part of the NRD mission to conserve and protect natural resources, the UBB NRD has been involved in several large-scale dam and reservoir projects dating back to 1983. These multi-purpose projects are designed for flood and erosion control, ground water recharge and used in ground water management and research. An additional benefit of these project is the opportunity for outdoor recreation.

The NRD has (to date) developed five recreation areas: Smith Creek (Seward County), Recharge Lake (York County), Pioneers Trails (Hamilton County), Oxbow Trail (Butler County), and Overland Trail (York County). The Bruce L. Anderson Recreation Area (Recharge Lake) is located one and three quarter miles west of York. The recreation area features a 44-surfece acre lake which stores approximately 310 acre feet of water on a tributary of Beaver Creek. At this site visitors can boat, hike, picnic and a range of other outdoor activities. While camping is not permitted at this site day visitors are vulnerable to tornados, severe thunderstorms, and high winds as there are no reinforced safe rooms located at this site. The Overland Trail Recreation Area is located two miles east/one mile south of York. The recreational area features a 17-surface acre lake which stores approximately 121 acre feet of water. At this site visitors can boat, camp, hike, picnic, and a range of other outdoor activities. At this time there are no reinforced safe rooms for guests of the recreation area.

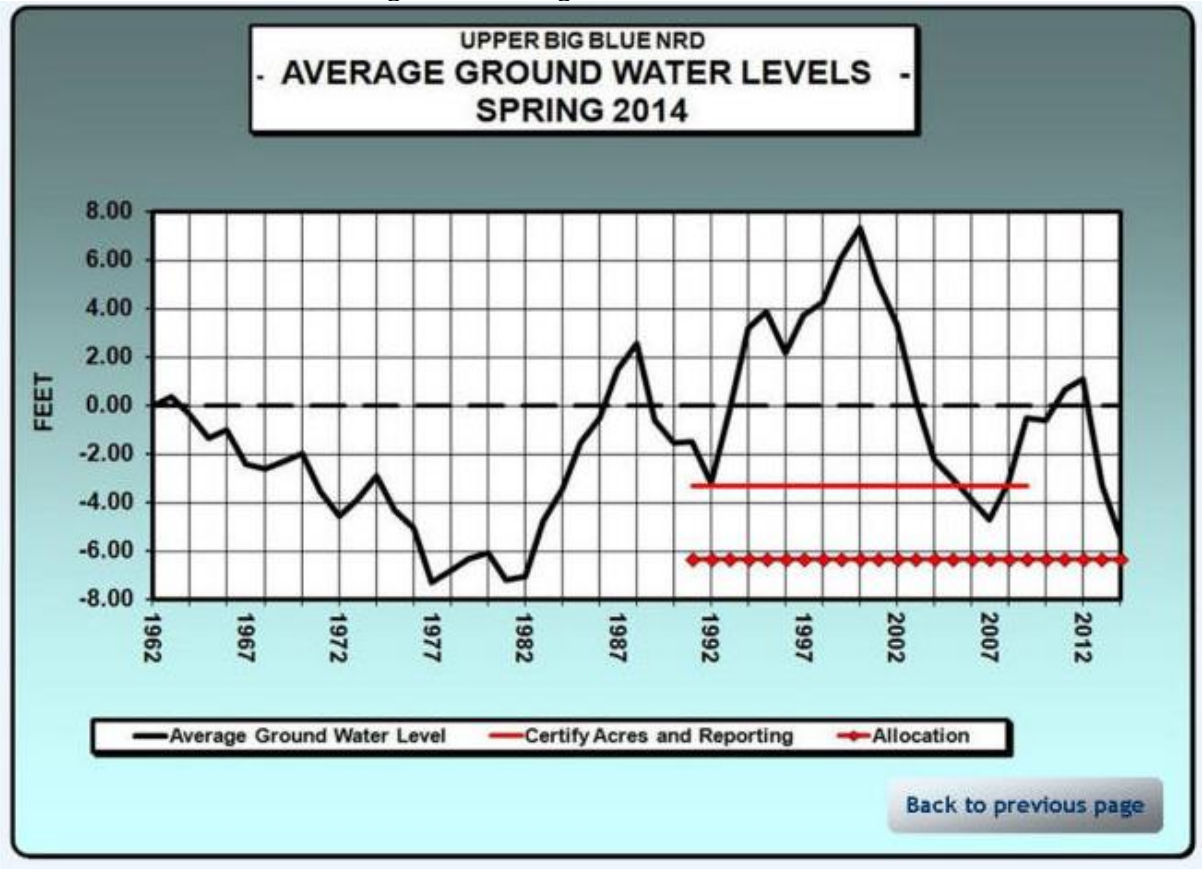
FUTURE DEVELOPMENT TRENDS

No future development is planned at this time. Examples of possible development within an NRD include additional flood control structures, and recreation areas.

GROUND WATER MONITORING

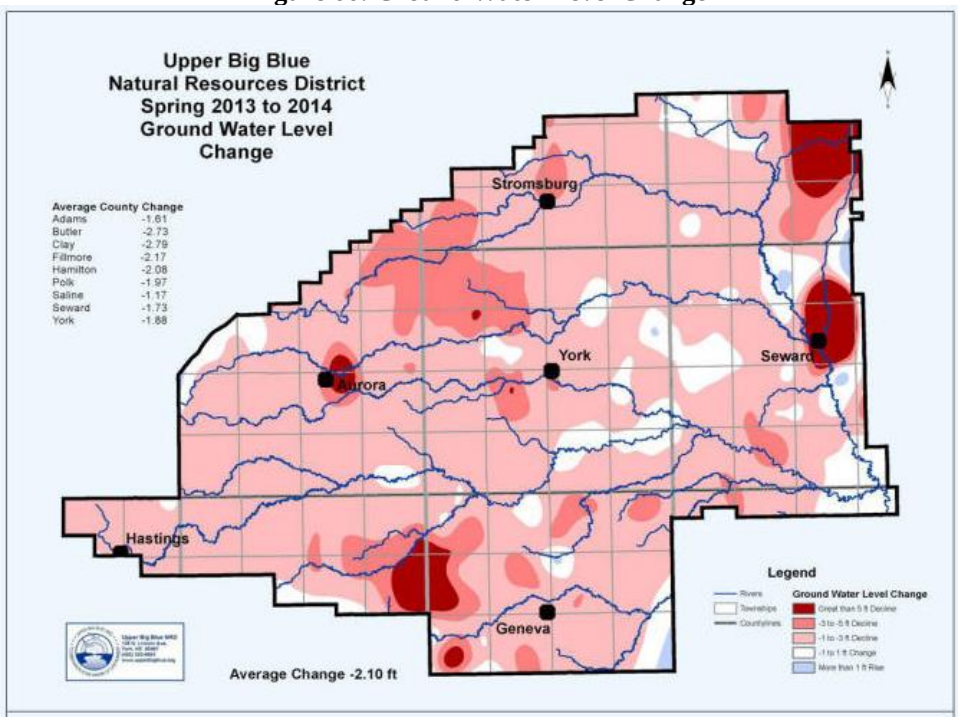
The NRD completes annual ground water monitoring across the district. The goal of this program is to maintain an inventory of ground water resources. The following figure shows ground water measurements through 2014. The figure clearly shows that there are some fluctuations that occur naturally across the district. It should be noted that following the 2012 drought water levels do reflect a slight decline.

Figure 65: Average Ground Water Levels



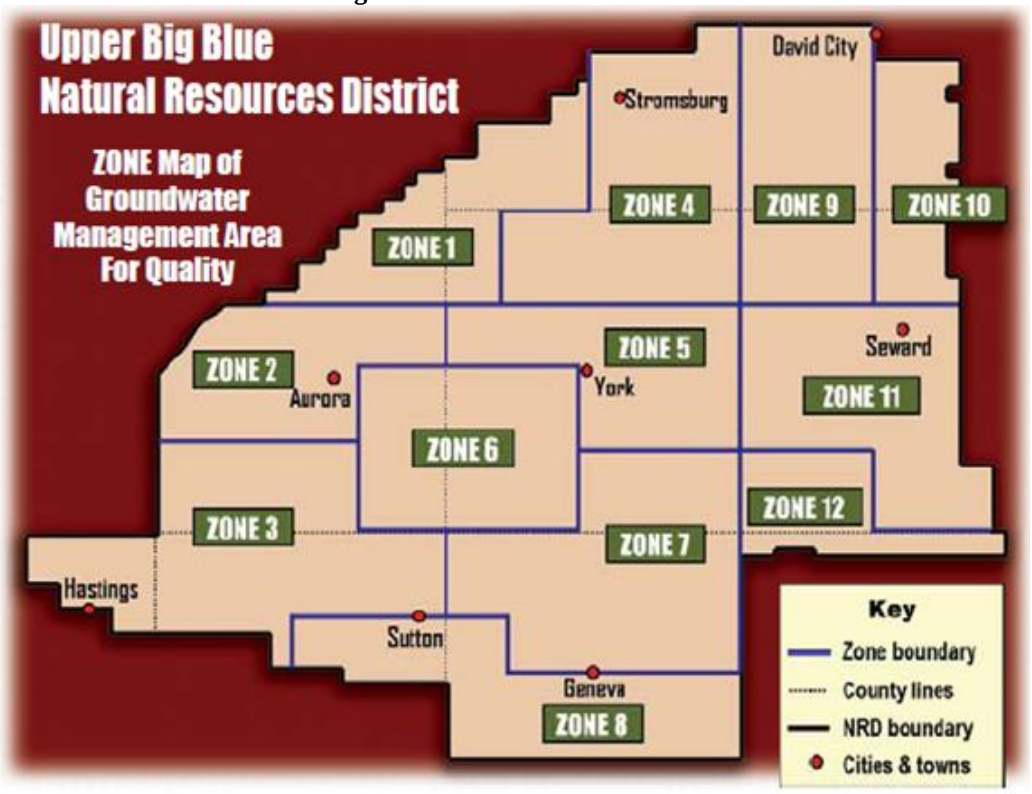
In addition to completing annual monitoring the NRD reviews changes in water levels. From 2013 to 2014 York County experienced a lower level of variance in ground water supplies (see Figure 66).

Figure 66: Ground Water Level Change



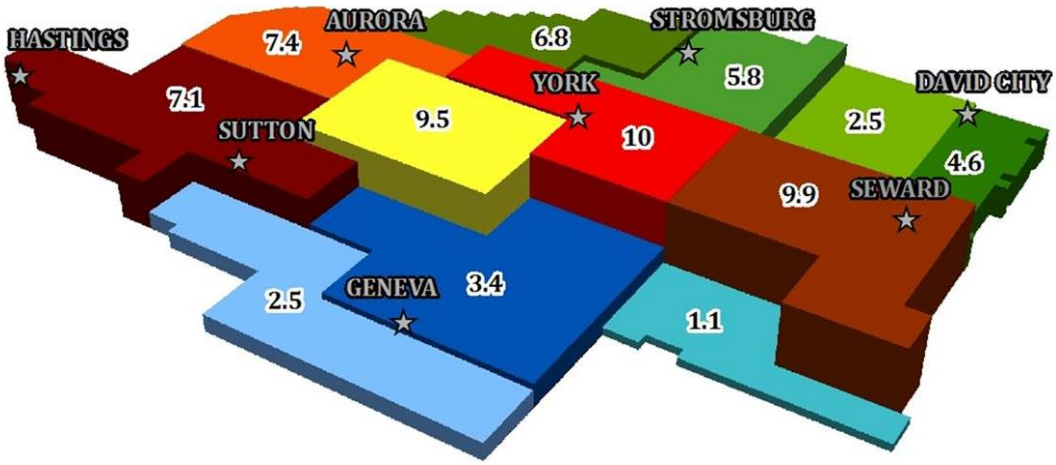
The NRD not only monitors ground water for quantity but also quality. The district is divided into twelve zones, York County is located in three ones (Zone 5, 6, and 7). The following figure provides a map outlining the ground water management zones for the NRD.

Figure 67: Groundwater Zones



From the ground water quality perspective a major concern for the state is nitrate levels. Nitrates are a common by-product in agricultural areas. The following figure shows that the management zones which include York County are among the highest in nitrates levels in the district.

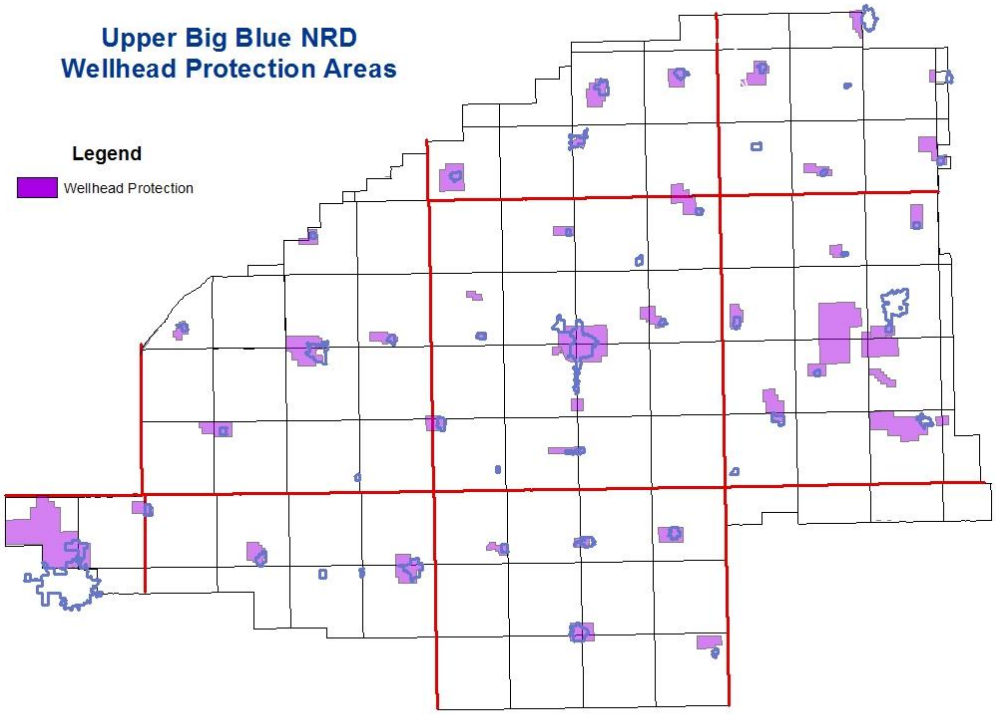
Figure 68: Average 2013 Nitrate Levels Per Zone



WELLHEAD PROTECTION

Another of the NRD programs that is important for consideration from a mitigation perspective is wellhead protection. The Wellhead Protection Area program is a voluntary program to assist public water supplies in the prevention of contamination. The goal of the program is to protect the land and ground water surrounding a public water supply. There are five components to establishing a Wellhead Protection Area. The first step in the process is establishing a delineated area for the protection area. The boundaries are created utilizing computer modeling that illustrates where the public drinking water is expected to come from in the next 20 years. Second, is the development of an inventory of potential sources of contamination. The development of the inventory is conducted through database research and on-the-ground observations. Third is developing a plan for contaminant source management plan, this includes ordinances, laws, zoning restrictions, purchase of lands or conservation easements, cooperative efforts between landowners and the NRD. The fourth step is the development of an Emergency, Contingency, and Long-term Plan. This plan outlines what actions will be necessary to ensure drinking water in the event of contamination, natural disaster, mechanical breakdown, or vandalism. The final step in the process is educating member of the community about what they can do to assist in implementing the plan and other best practices. The following figure illustrates the areas participating in the Wellhead Protection Program.

Figure 69: Defined Wellhead Protection Areas as of April 2014



NRD DAMS

The NRD owns and maintains dams across the district. The NRD owns and maintains six dams in York County, according to NDNR all dams are low or significant hazard dams. Failure of these structures would result in property damage, no one resides downstream on these structures.

RISK ASSESSMENT

Table 126 is a Risk Assessment identified specifically for UBB NRD. Refer to *Section 4: Risk Assessment* for a detailed explanation as to what this methodology is and why certain hazards did not pose a significant enough threat and were eliminated from detailed discussion. The five hazards of most concern to York County are: tornados, severe thunderstorms, severe winter storms, hail, and high winds. These hazards are discussed further in the subsections below. Additional hazards are discussed if previous occurrences or current circumstances lead the Planning Team to determine the hazards are a significant threat to the community.

Table 126: Community Based Risk Assessment

HAZARD TYPE	PREVIOUS OCCURRENCE? Yes/No	Specific Concerns Identified
Severe Winter Storm*	Yes	Damages to property and crops; power outages; damages to critical facilities
Tornado*	Yes	Increased vulnerability to older housing units and mobile homes; significant damages to property; potential loss of life
High Winds*	Yes	Increased vulnerability to older housing units and mobile homes; damages to property
Hail	Yes	Significant damage to property and crops
Severe Thunderstorm*	Yes	Potential damages to property and crops; secondary hazards such as flooding and wildfires
Flooding	Yes	Potential damages to properties; many structures in the floodplain
Extreme Heat*	Yes	24.6% of population are at higher level of vulnerability (in York County); Ag losses; Secondary hazards such as wildfires
Drought	Yes	Economic impacts; Land degradation; Secondary hazards such as wildfires
Earthquake	No	None
Wildfire	Yes	Potential loss of life, properties, and crops; Economic impacts
Landslide	No	None
Dam Failure	No	Loss of life and property damages due to high hazard dam failure
Levee Failure	No	None
Agricultural Disease	Yes	Economic concerns; Ag is major sector for the county
Earthquakes	No	None
Landslides	No	None
Urban Fire	Yes	Spread of fire due to age and density of structures; lack of sprinkler systems in critical facilities
Chemical and Radiological Hazards	Yes	Proximity to major transportation routes may increase vulnerability; economic impact
Terrorism	No	None
Civil Disorder	No	None

** One of the five hazards of most concern to the community*

According to the planning team, the top hazard for the UBB NRD are severe winter storms, severe thunderstorms, tornados and high winds, and extreme heat. Because much of the NRD's mission involved flood control, flooding will also be briefly discussed.

HISTORICAL OCCURRENCES

The NCDC and other sites offering a hazard history do not provide event history at the NRD level. Reported events are available in the profiles for specific communities.

Severe Winter Storm

The NRD planning team identified severe winter storms as a significant concern. Severe winter storms are a regular part of the climate across York County and other counties covered by the NRD. There are designated snow routes throughout York County, and snow removal resources are sufficient for county winter weather events.

According to the NCDC there were 54 severe winter storms in York County from 1996 through January 2013. These events resulted in $1,380,000 in property damage. The most significant winter storm event occurred in November of 2010 when widespread drizzle resulted in icy roads across the region. This event resulted in the death of four people in an auto accident; the driver of the vehicle lost control and crossed the median, colliding with an oncoming semi-truck.

Tornados

The NRD identified tornados as a top concern. The NCDC recorded 14 tornados from January 1996 to December 2013, which caused $6,100,000 in property damages and $1,000,000 in crop damages. The NRD reported that the lack of safe rooms near their office as well as at recreation areas presents a real concern.

Severe Thunderstorm

The NRD identified severe thunderstorms as a significant concern. Severe thunderstorms are a regular part of the climate across York County and the NRD. NCDC data records 52 events with a total of $1,731,000 in property damages and $850,000 in crop damages. A summary of the events with recorded damages can be found in the community sections where they occurred.

High Winds

The NRD identified high winds as a significant concern. According to NCDC data, there have been 14 storm events which included strong winds (50 kts./58 mph) resulting in $19,080 in property damages. Winds of this magnitude, according to the Beaufort Wind Force Ranking, can cause trees to uproot, considerable structure damage, and over turning of improperly anchored mobile homes.

CAPABILITY ASSESSMENT

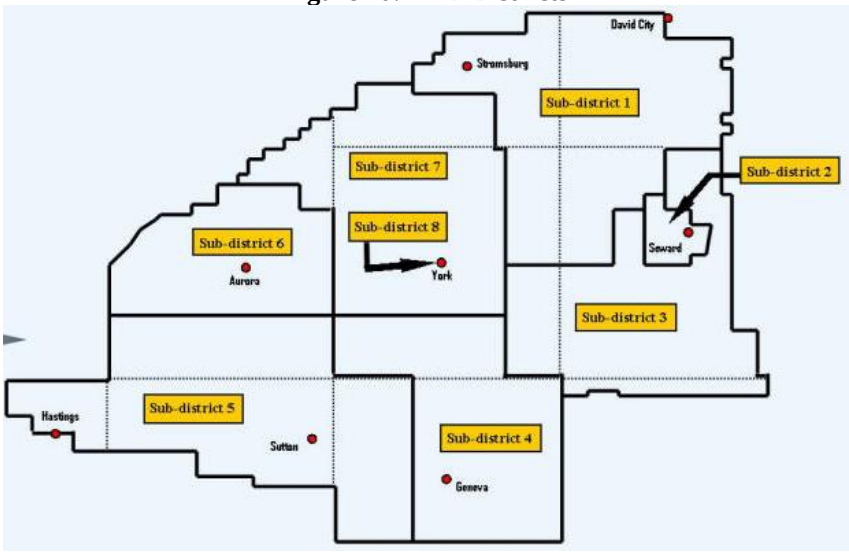
Thus far the planning process has identified the major hazards for the NRD. The following information pertains to the NRD's capability to implement mitigation projects.

NRD Governance

17 member NRD Board:

- Set NRD policy
- Provide local knowledge

Figure 70: NRD Districts



Departments

The NRD works closely with community members as well as elected officials and staff from counties and communities. The NRD supports communities in many areas related to hazard mitigation including: flood control structures, tree care programs, wellhead protection, water monitoring, well permitting, public outreach and education. The NRD currently has sufficient staff and expertise to fulfill its responsibilities.

- Water Department
  - Six employees
  - Responsible for implementing and managing water conservation programs aimed at protecting both quantity and the quality of ground water
- Projects Department
  - Three employees
  - Responsible for providing engineering service and NRD projects, such as dams, recreational facilities, groundwater studies, drainage and stormwater management, regional planning, and soil and water conservation programs
- Forestry Department
  - Two employees
  - Responsible for implementing and managing forestry establishment and wildlife conservation programs
- Administrative Department
  - Six employees
  - Responsible for support other departments
- Public Relations Department
  - One employee
  - Responsible for public outreach and education programs
- General Manager

MITIGATION ACTIONS

UBB NRD will support the county and communities in some of the actions they have identified. In addition the following represent actions identified by the NRD.

ACTION 2.1.3	**Hazardous Tree Removal Program**
Analysis	Identify and remove hazards limbs and/or trees.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Severe Thunderstorms, Tornados, High Winds, Severe Winter Storms
Benefits	To protect the power and water infrastructure and prevent lines from coming down or being washed out during storm events.
Estimated Cost	$20,000
Potential Funding	HMGP, US Forest Service, NRD Funds
Timeline	Ongoing
Priority	Low
Lead Agency	Forestry Department of NRD
Status	This is an ongoing effort. Hazardous trees will be removed as they are identified.

ACTION 2.1.6	**Safe Rooms**
Analysis	Assess, design and construct fully supplied safe rooms in highly vulnerable urban and rural areas such as mobile home parks, campgrounds, schools, and other such areas throughout the planning area. Assess the adequacy of current public buildings to be used as safe rooms. Construct safe rooms in areas of greatest need, either as new construction or retrofitting.
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms
Benefits	Reduce the risk of death or injury in areas vulnerable to tornados, severe thunderstorms and other hazards.
Estimated Cost	$200-$300/sf stand alone; $150-200/sf addition/retrofit
Potential Funding	PDM, HMPG, County funds
Timeline	5 Years
Priority	High
Lead Agency	Project Department of the NRD
Status	Not Yet Started

ACTION 2.2.1	**Drainage Study/ Stormwater Master Plan**
Analysis	Preliminary drainage studies and assessments can be conducted to identify and prioritize design improvements to address site specific localized flooding/drainage issues to reduce and/or alleviate flooding. Stormwater master plans can be developed to help identify stormwater problem areas and potential drainage improvements.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Address	Flooding
Benefits	Proactive steps to identify all potential problems/issues can lead to effectively addressing improvements and prioritizing the projects to improve conditions. These improvements can serve to more effectively convey runoff

	within jurisdictions, preventing interior localized flooding resulting in damages. This ensures that the most beneficial projects are done first and could possibly eliminate the need for others.
Estimated Cost	$10,000 to $100,000+
Potential Funding	CDBG, Upper Big Blue NRD, York County & Local budgets
Timeline	5 Years
Priority	Medium
Lead Agency	Water Department of the NRD
Status	Not Yet Started

ACTION 3.1.1	**Public Awareness / Education**
Analysis	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing education equipment such as overhead projectors and laptops.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Benefits	Public awareness reduces the risk of property loss and damage, injury and death. It increases knowledge on emergency procedures, facilities, conservation, and is key to preparedness.
Estimated Cost	$0-$5,000+
Potential Funding	County funds
Timeline	1 Year
Priority	High
Lead Agency	Public Relations Department of the NRD
Status	In Progress. County is developing news articles, public displays, and spotter training.

APPENDIX A: ADOPTION LETTERS AND RESOLUTIONS

Contains the following:

1. Adoption Letter
2. Resolutions

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RESOLUTION NUMBER 2015-07

WHEREAS, the Federal Disaster Mitigation Act of 2000 was signed in to law on October 30, 2000, placing new emphasis on state and local mitigation planning for natural hazards and requiring communities to adopt a hazard mitigation action plan to be eligible for pre-disaster and post-disaster federal funding for mitigation purposes; and

WHEREAS, a Multi-jurisdictional Hazard Mitigation Plan was prepared by York County, Nebraska with assistance from JEO Consulting Group, Inc. of Lincoln, NE., which includes the jurisdiction of Benedict.

WHEREAS, the purpose of the mitigation plan was to lessen the affects of disasters by increasing the disaster resistance of the County and participating jurisdictions located within the planning boundary by identifying the hazards that affect the County and prioritize mitigation strategies to reduce potential loss of life and property damage from those hazards, and

WHEREAS, FEMA regulations require documentation that the plan has been formally adopted by the governing body of Benedict in the form of a resolution and further requesting approval of the plan at the Federal Level; and

NOW, THEREFORE, the governing body of Benedict, does herewith adopt the York County Multi-jurisdictional Hazard Mitigation Plan in its entirety; and

PASSED AND APPROVED this 13 day of October, 2015.

VILLAGE OF BENEDICT SEAL NEBRASKA

Miranda Martin
Board Chair

ATTEST:
Kelly K Brooke
Village Clerk

2015-4

RESOLUTION NUMBER 2015-4

WHEREAS, the Federal Disaster Mitigation Act of 2000 was signed in to law on October 30, 2000, placing new emphasis on state and local mitigation planning for natural hazards and requiring communities to adopt a hazard mitigation action plan to be eligible for pre-disaster and post-disaster federal funding for mitigation purposes; and

WHEREAS, a Multi-jurisdictional Hazard Mitigation Plan was prepared by York County, Nebraska with assistance from JEO Consulting Group, Inc. of Lincoln, NE., which includes the jurisdiction of Bradshaw.

WHEREAS, the purpose of the mitigation plan was to lessen the affects of disasters by increasing the disaster resistance of the County and participating jurisdictions located within the planning boundary by identifying the hazards that affect the County and prioritize mitigation strategies to reduce potential loss of life and property damage from those hazards, and

WHEREAS, FEMA regulations require documentation that the plan has been formally adopted by the governing body of Bradshaw in the form of a resolution and further requesting approval of the plan at the Federal Level; and

NOW, THEREFORE, the governing body of Bradshaw, does herewith adopt the York County Multi-jurisdictional Hazard Mitigation Plan in its entirety; and

PASSED AND APPROVED this 12 day of NOVEMBER 2015.

Board Chair

ATTEST:

Mary Van Ness
Village Clerk

RESOLUTION NUMBER 2015-17

WHEREAS, the Federal Disaster Mitigation Act of 2000 was signed in to law on October 30, 2000, placing new emphasis on state and local mitigation planning for natural hazards and requiring communities to adopt a hazard mitigation action plan to be eligible for pre-disaster and post-disaster federal funding for mitigation purposes; and

WHEREAS, a Multi-jurisdictional Hazard Mitigation Plan was prepared by York County with assistance from JEO Consulting Group, Inc. of Lincoln, NE, which includes the jurisdiction of the City of York, Nebraska; and

WHEREAS, the purpose of the mitigation plan was to lessen the effects of disasters by increasing the disaster resistance of the Natural Resources District and participating jurisdictions located within the planning boundary by identifying the hazards that affect the City of York, Nebraska and prioritize mitigation strategies to reduce potential loss of life and property damage from those hazards, and

WHEREAS, FEMA regulations require documentation that the plan has been formally adopted by the governing body of City of York, Nebraska in the form of a resolution and further requesting approval of the plan at the Federal Level; and

NOW, THEREFORE, the City Council of the City of York, Nebraska, does herewith adopt the York County Multi-Jurisdictional Hazard Mitigation Plan Update in its entirety; and

PASSED AND APPROVED this 3rd day of September, 2015.

Charles W. Harris, Mayor

ATTEST:

C. Jean Thiele, City Clerk

RESOLUTION NUMBER 03-2015

WHEREAS, the Federal Disaster Mitigation Act of 2000 was signed in to law on October 30, 2000, placing new emphasis on state and local mitigation planning for natural hazards and requiring communities to adopt a hazard mitigation action plan to be eligible for pre-disaster and post-disaster federal funding for mitigation purposes; and

WHEREAS, a Multi-jurisdictional Hazard Mitigation Plan was prepared by York County, Nebraska with assistance from JEO Consulting Group, Inc. of Lincoln, NE., which includes the jurisdiction of Gresham.

WHEREAS, the purpose of the mitigation plan was to lessen the affects of disasters by increasing the disaster resistance of the County and participating jurisdictions located within the planning boundary by identifying the hazards that affect the County and prioritize mitigation strategies to reduce potential loss of life and property damage from those hazards, and

WHEREAS, FEMA regulations require documentation that the plan has been formally adopted by the governing body of Gresham in the form of a resolution and further requesting approval of the plan at the Federal Level; and

NOW, THEREFORE, the governing body of Gresham, does herewith adopt the York County Multi-jurisdictional Hazard Mitigation Plan in its entirety; and

PASSED AND APPROVED this 3rd day of November, 2015.

Thomas L. Luetto
Board Chair

ATTEST:

Linda L. Eschenweck
Village Clerk

RESOLUTION NUMBER 2015-06

WHEREAS, the Federal Disaster Mitigation Act of 2000 was signed in to law on October 30, 2000, placing new emphasis on state and local mitigation planning for natural hazards and requiring communities to adopt a hazard mitigation action plan to be eligible for pre-disaster and post-disaster federal funding for mitigation purposes; and

WHEREAS, a Multi-jurisdictional Hazard Mitigation Plan was prepared by York County with assistance from JEO Consulting Group, Inc. of Lincoln, NE, which includes the jurisdiction of the Village of McCool Junction.

WHEREAS, the purpose of the mitigation plan was to lessen the effects of disasters by increasing the disaster resistance of the Natural Resources District and participating jurisdictions located within the planning boundary by identifying the hazards that affect the Village of McCool Junction and prioritize mitigation strategies to reduce potential loss of life and property damage from those hazards, and

WHEREAS, FEMA regulations require documentation that the plan has been formally adopted by the governing body of the Village of McCool Junction in the form of a resolution and further requesting approval of the plan at the Federal Level; and

NOW, THEREFORE, the governing body of the Village of McCool Junction, does herewith adopt the York County Multi-Jurisdictional Hazard Mitigation Plan Update in its entirety; and

PASSED AND APPROVED this 14th day of September, 2015.

Steven M. Green, Board Chairperson

ATTEST:

Vanee K. Holtmeier, Village Clerk

RESOLUTION NUMBER 2015-14

WHEREAS, the Federal Disaster Mitigation Act of 2000 was signed in to law on October 30, 2000, placing new emphasis on state and local mitigation planning for natural hazards and requiring communities to adopt a hazard mitigation action plan to be eligible for pre-disaster and post-disaster federal funding for mitigation purposes; and

WHEREAS, a Multi-jurisdictional Hazard Mitigation Plan was prepared by York County with assistance from JEO Consulting Group, Inc. of Lincoln, NE, which includes the jurisdiction of Village *City/Village NAME* Waco.

WHEREAS, the purpose of the mitigation plan was to lessen the effects of disasters by increasing the disaster resistance of the Natural Resources District and participating jurisdictions located within the planning boundary by identifying the hazards that affect the Village *City/Village of NAME* Waco and prioritize mitigation strategies to reduce potential loss of life and property damage from those hazards, and

WHEREAS, FEMA regulations require documentation that the plan has been formally adopted by the governing body of Village *City/Village NAME* Waco in the form of a resolution and further requesting approval of the plan at the Federal Level; and

NOW, THEREFORE, the governing body of Village *City/Village NAME* Waco, does herewith adopt the York County Multi-Jurisdictional Hazard Mitigation Plan Update in its entirety; and

PASSED AND APPROVED this 14th day of September, 2015.

Board Chairperson/Mayor

ATTEST:

Village/City Clerk

RESOLUTION

WHEREAS, the Federal Disaster Mitigation Act of 2000 was signed in to law on October 30, 2000, placing new emphasis on state and local mitigation planning for natural hazards and requiring communities to adopt a hazard mitigation action plan to be eligible for pre-disaster and post-disaster federal funding for mitigation purposes; and

WHEREAS, a Multi-jurisdictional Hazard Mitigation Plan was prepared by York County with assistance from JEO Consulting Group, Inc. of Lincoln, NE, which includes the jurisdiction of the Upper Big Blue Natural Resource District.

WHEREAS, the purpose of the mitigation plan was to lessen the effects of disasters by increasing the disaster resistance of the County, Natural Resources District and participating jurisdictions located within the planning boundary by identifying the hazards that affect the Upper Big Blue Natural Resource District and prioritize mitigation strategies to reduce potential loss of life and property damage from those hazards, and

WHEREAS, FEMA regulations require documentation that the plan has been formally adopted by the governing body of Upper Big Blue Natural Resource District in the form of a resolution and further requesting approval of the plan at the Federal Level; and

NOW, THEREFORE, the governing body of Upper Big Blue Natural Resource District does herewith adopt the York County Multi-Jurisdictional Hazard Mitigation Plan Update in its entirety; and

PASSED AND APPROVED this 17th day of September, 2015.

Board Chairperson

ATTEST:

RESOLUTION NUMBER 2015-07

WHEREAS, the Federal Disaster Mitigation Act of 2000 was signed in to law on October 30, 2000, placing new emphasis on state and local mitigation planning for natural hazards and requiring communities to adopt a hazard mitigation action plan to be eligible for pre-disaster and post-disaster federal funding for mitigation purposes; and

WHEREAS, a Multi-jurisdictional Hazard Mitigation Plan was prepared by York County, Nebraska with assistance from JEO Consulting Group, Inc. of Lincoln, NE., which includes the jurisdiction of the City of Henderson.

WHEREAS, the purpose of the mitigation plan was to lessen the affects of disasters by increasing the disaster resistance of the County and participating jurisdictions located within the planning boundary by identifying the hazards that affect the County and prioritize mitigation strategies to reduce potential loss of life and property damage from those hazards, and

WHEREAS, FEMA regulations require documentation that the plan has been formally adopted by the governing body of the City of Henderson in the form of a resolution and further requesting approval of the plan at the Federal Level; and

NOW, THEREFORE, the governing body of the City of Henderson, does herewith adopt the York County Multi-jurisdictional Hazard Mitigation Plan in its entirety; and

PASSED AND APPROVED this 13 day of October, 2015.

Mayor

ATTEST:

City of Henderson Clerk

APPENDIX B: DOCUMENTS OF PUBLIC INVOLVEMENT

Contains the following:

1. Letters
2. Sign-in Sheets
3. Flyers

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March 27, 2014

RE: York County
Multi-Jurisdictional Hazard Mitigation Plan (HMP) Update
Hazard Identification Meeting

Dear Hazard Mitigation Planning Participant:

York County has secured grant funding from the Federal Emergency Management Agency (FEMA) and is in the process of updating the district-wide Hazard Mitigation Plan (HMP). Y**our jurisdiction is eligible and encouraged to participate in this planning effort, which would benefit your community in multiple ways.**

An HMP identifies the vulnerability of a jurisdiction to various natural hazards (e.g., flood, drought, wildfire, winter storm, etc.), as well as man-made hazards (e.g., terrorism, urban fire, transportation incidents, etc.), identifies possible impacts to the communities, and assesses their potential losses. The HMP also identifies mitigation alternatives to enhance communities' preparedness to specific hazards and establishes a prioritized list of potential mitigation projects to be implemented in the post-plan period.

The York County's existing HMP was approved by FEMA in February 2010. As required by the Disaster Mitigation Act of 2000, an HMP must be updated and approved every five years. Generally, the FEMA approved plan update requires a 12-month to 18-month period.

The updated plan will incorporate detailed project recommendation for post-plan implementation. Examples of projects that are potentially eligible for funding include drainage and stormwater infrastructure improvements, warning sirens, assistance with educational activities, storm shelters, bridge elevation improvements, and a number of other possible mitigation activities.

FEMA requires at least one 'designated representative' from your jurisdiction to be recognized as a participating jurisdiction at the upcoming hazard identification public meeting:

- **April 22nd, 2014 at 6:30 pm at 2400 N Nebraska Avenue, York 4-H Building in York, Nebraska.**

***ATTENTION** *planning team members: Please attend a brief planning team meeting at 5:30 pm prior to the public meeting as outlined above*.

If your jurisdiction is interested in participating in this planning effort, please have your designated representative contact Gary Petersen at (402) 643-4722 or by email at seward.yorkEMA@gmail.com.

We are looking forward to seeing you at the meeting!

Sincerely,

Gary Petersen
York County Emergency Manager
CC. Jeff Henson, JEO Consulting Group, Inc.

March 27, 2014

RE: York County
Multi-Jurisdictional Hazard Mitigation Plan (HMP) Update
Hazard Identification Meeting

Dear Representative of the Stakeholder Group:

York County has secured grant funding from the Federal Emergency Management Agency (FEMA) and is in the process of updating its multi-jurisdictional Hazard Mitigation Plan (HMP) with assistance from JEO Consulting Group, Inc. Federal legislation requires HMPs be updated every five years. **FEMA requires hazard mitigation plans to involve public participation throughout each step in the process. You are receiving this letter because you represent a part of the public which may benefit from mitigating natural hazards.**

A hazard mitigation plan identifies the vulnerability of a jurisdiction to various natural hazards (flood, drought, wildfire, winter storm, etc.) and assesses the potential losses associated with each hazard. In addition, the plan identifies mitigation alternatives to decrease the threat from identified hazards and establishes a prioritized list of potential mitigation projects. Stakeholder groups like yours are encouraged to be involved in the process to present data and information that might be helpful. Also, working with participating jurisdictions will help to ensure that needs and concerns for your groups and the citizens you work with are represented in this process. We have found that community groups and stakeholder groups are a good way to engage the public who may otherwise decide not to be involved in the planning process.

The hazard identification public meeting will be held:

- **April 22nd, 2014 at 6:30 pm at 2400 N Nebraska Avenue, York 4-H Building in York, Nebraska.**

If your jurisdiction is interested in participating in this planning effort, please have your designated representative contact Gary Petersen at (402) 643-4722 or by email at seward.yorkEMA@gmail.com.

We are looking forward to seeing you at the meeting!

Sincerely,

Gary Petersen
York County Emergency Manager

CC. Jeff Henson, JEO Consulting Group, Inc.

April 8, 2014

RE: York County
Multi-Jurisdictional Hazard Mitigation Plan (HMP) Update
Hazard Identification Meeting

Dear Planning Team Member:

The County's Hazard Mitigation Plan is a community-guided document which identifies vulnerability to natural disasters and ways to reduce or eliminate this exposure. York County has secured grant funding from FEMA and is in the process of updating the Hazard Mitigation Plan with assistance from JEO Consulting Group, Inc. Federal legislation requires HMPs be updated every five years.

This planning effort will be guided by a 'Planning Team'. As a Planning Team Member, your role will be to provide guidance and input to the plan and assist with decisions to solidify the planning process. It is anticipated that your involvement on the planning team will consist of at least two meetings throughout the 12 month process. Your hard work and commitment in fulfillment of this important role will in turn reduce the impacts of natural hazards on participating jurisdictions and the County.

The Planning Team meeting has been scheduled for:

- **April 22nd, 2014 at 5:30 pm at 2400 N Nebraska Avenue, 4-H Building in York, Nebraska.**

Please note, immediately after the above meeting, the required "Hazard Identification" public meeting will occur. Your attendance at the public meeting is optional.

If you have any questions or concerns about this project, please feel free to contact me at (402) 643-4722 or by email at seward.yorkEMA@gmail.com.

We highly encourage you to take part in this planning effort and look forward to seeing you at the meeting.

Your commitment to the successful completion of this plan is greatly appreciated!

Sincerely,

Gary Petersen
York County Emergency Manager

CC. Jeff Henson, JEO Consulting Group, Inc.

April 8, 2014

RE: York County
Multi-Jurisdictional Hazard Mitigation Plan (HMP) Update
Hazard Identification Meeting

To Whom It May Concern:

This letter is being sent to inform your jurisdiction of a planning effort underway by York County to update its Hazard Mitigation Plan (HMP). An HMP is a community-guided document that identifies both vulnerability to natural hazards, and mitigation measures to reduce or eliminate this vulnerability.

Hazard mitigation plans are a requirement of the Disaster Mitigation Act of 2000, administered by the Federal Emergency Management Agency (FEMA), and once a community is part of a plan they become eligible to apply for FEMA hazard mitigation grants. These grants can be used for up to a 75% cost share for a wide variety of projects listed in the plan. Other funding opportunities will also be explored. FEMA requires that your jurisdiction, a neighboring community, be notified of this planning effort. **Your jurisdiction is encouraged, but is not required to attend these meetings.**

A 'Hazard Identification' public meeting has been scheduled for this plan update to begin obtaining information for the update. The meeting will be held at the following location:

- **April 22nd, 2014 at 6:30 pm at 2400 N Nebraska Avenue, 4-H Building in York, Nebraska.**

If you have any input or would like more information about the plan, please feel free to contact me at (402) 643-4722 or by email at seward.yorkEMA@gmail.com.

Sincerely,

Gary Petersen
York County Emergency Manager

CC. Jeff Henson, JEO Consulting Group, Inc.

York County – Hazard Mitigation Plan Update
"Planning Team Meeting"
York, NE – Tuesday, April 22nd, 2014; 5:30 PM
PLEASE PRINT CLEARLY- THANK YOU!

NAME	TITLE	JURISDICTION Represented	Official Designated Representative for this Jurisdiction?	ADDRESS Street #, Street Name, City, Zip	PHONE	EMAIL
Gary Petersen	EMA Director	York EMA		510 Lincoln Ave, York, NE	402-643-5761	—
Kevin Stuhr	Fire Chief	City of York - FIRE		815 N Grant, York, NE	402-363-2610	
John Cook	Haz Mitigation Specialist	NEMA		2433 NW 24st, Lincoln	402-471-7217	john.cook@nebraska.gov
Mitch Paine	Flood Mitigation Planning Coord.	NDNR		301 Centennial Mall S	402-471-9252	mitch.paine@nebraska.gov
Bill Bamesberger	Commissioner			P.O. Box 565 Henderson NE	402-723-5740	billb@mainstaycomm.net
Kelly Brooke	Village Clerk	Benedict		PO Box 116 Benedict NE 68316	402-732-6801	vob@windstream.net
Jeff Ball	Lead Eng Tech	UBB NRD		105 N. Lincoln Ave, York, NE	402-362-6601	jball@upperbigblue.org
Jim Green	Town Maint, Flood Plain Admin, etc.	Village of McCool		P.O. Box 145, McCool Jct NE 68401	402-724-2525	mccoolutilities@galaxyrealtel.net jimg54@hotmail.com
*Gerald Hinrichs	EMA Deputy	York Co EMA	public meeting.	510 Lincoln Ave York Ne	(402) 362-7744	—
Pakiza Shirinova	Planner	JEO Consulting				pshirinova@jeo.com

Please Sign In!

York County – Hazard Mitigation Plan Update
"Hazard ID Public Meeting"
York, NE – Tuesday, April 22nd, 2014; 6:30 PM
PLEASE PRINT CLEARLY- THANK YOU!

NAME	TITLE	JURISDICTION Represented	Official Designated Representative for this Jurisdiction?	ADDRESS Street #, Street Name, City, Zip	PHONE	EMAIL
Jim Dunker	EM Fillmore	Fillmore County	Neighboring Juris.		402-759-1123	jim.dunker@fillmore.nacone.org
Kenneth M. Kinney	Board Member	Waco Village	✓		402-728-5547	
Pat Sheehan	Fire Chief	Gresham VFD	✓		402-366-9542	pasheehan79@gmail.com
Viv Novotny		JEO				
Sheldon Epp	Fire Lieutenant	Henderson VFD	✓		402-363-4683	firefighterhvfd@gmail.com
James Gordan	Mayor/Fire Capt.	Bradshaw	✓	545 West St Bradshaw, NE 68371	402-366-0701	1-402-736-4468
Mike Wall	City Council Member	Henderson		PO Box 460 Henderson	402-710-3196	mwall@mainstaycomm.net
*Kelly Brooke	Village Clerk	Benedict	✓	PO Box 116 Benedict NE 68316	402-732-6801	vob@windstream.net
Stuart Wallace	Planner	SW LLC (JEO)				
Kevin Stuhr	Fire Chief	City of York		815 N Grant Ave 68467	402-363-2610	yorkfirechief@cityofyork.net
Pakiza Shirinova	planner	JEO Consulting				pshirinova@jeo.com

Please Sign In!

York County – Hazard Mitigation Plan Update
"Mitigation Strategies Public Meeting"
York, NE – Wednesday September 10, 2014
PLEASE PRINT CLEARLY- THANK YOU!

NAME	TITLE	JURISDICTION Represented	ADDRESS Street #, Street Name, City, Zip	PHONE	EMAIL
Kenneth M. Kinney	Village Board Member	Waco	304 Stafford Box 25 Waco 68360	402-728-5547	
Cheryl Kraft	Village Clerk	Waco	403 Midland St. POBox 65 Waco	402-728 5223	villageofwaco@windstream.net
CORBIN A. JESSMAN	C.M Council	HENDERSON	1160 16th ST HENDERSON NE 68371	402-723-5433	
MIKE WALL	CITY COUNCIL	HENDERSON	1181 17TH ST. HENDERSON, NE 68371	402-723-4881	mwall@mainstaycomm.net
Kelly K Brooke	Village Clerk	Benedict	PO Box 116, Benedict NE 68316	402.732-6801	vob@windstream.net
Tim Beckman	Water/Wastewater Operator Utilities & Maint Operator	Benedict	✓	✓	✓
Jim Green	Village of McCool Jct	McCool Jct	P.O. Box 145 323 Eastern Street, McCool Jct	402-724-2525	mccoolutilities@galaxycable.net

Please Sign In!

York County – Hazard Mitigation Plan Update
"Mitigation Strategies Public Meeting"
York, NE – Wednesday September 10, 2014
PLEASE PRINT CLEARLY- THANK YOU!

NAME	TITLE	JURISDICTION Represented	ADDRESS Street #, Street Name, City, Zip	PHONE	EMAIL
Gary Petersen	EMA Director	Seward/York	510 Lincoln Ave, York, NE	402-362-7744	seward.yorkema@gpridley

Please Sign In!

Help Build a Stronger, More Resilient Community
Become More Involved in the Hazard Mitigation Process
Tell Us How You Prepare
Take the Survey at:
https://www.surveymonkey.com/s/york_hazard_survey
Or Scan Here to Connect to the Survey

Help Build a Stronger, More Resilient Community
Become More Involved in the Hazard Mitigation Process
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https://www.surveymonkey.com/s/york_hazard_survey
Or Scan Here to Connect to the Survey

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APPENDIX C: PUBLIC MEETING MATERIALS AND WORKSHEETS

Contains the following:

1. Example of Risk Assessment Survey
2. Example of STAPLEE Worksheet

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- Probability of Future Occurrence:
  - ***Low***: likely to occur ***0-1 times in the next 10 years***
  - ***Medium***: likely to occur at least ***2-4 times in the next 10 years***
  - ***High***: likely to occur ***5 or more times in the next 10 years***

- Vulnerability of Population: *(loss of life or serious injury)*
  - ***Low***: ***less than 10%*** of the population impacted
  - ***Medium***: ***10-40%*** of the population impacted
  - ***High***: ***more than 40%*** of the population impacted

- Vulnerability of Property:
  - ***Low***: ***less than 10% of property*** in the impacted area damaged or destroyed
  - ***Medium***: ***10-40%*** of property in the impacted area damaged or destroyed
  - ***High***: ***more than 40%*** of property in the impacted area damaged or destroyed

- Impact on Critical Facilities & Infrastructure:
  - ***Low***: temporary shutdown of public services and/or infrastructure ***less than 1 day***
  - ***Medium***: shutdown of public services and/or infrastructure for ***1 day to 1 week***
  - ***High***: shutdown of public services and/or infrastructure for ***more than 1 week***

- Potential Impact on Economy:
  - ***Low***: little to no impact on economy (business interruption ***1 day or less***) or **less than 10%** of economy impacted
  - ***Medium***: temporary loss of income or jobs (business interruption ***1 day to 1 week***) or ***10 – 40%*** of economy impacted
  - ***High***: long term disruption or permanent loss of income and jobs (business interruption ***great than 1 week***) or ***more than 40%*** of economy impacted

York County HMP
Risk Assessment Worksheet

2014 _____ Risk Assessment						
HAZARD	**PREVIOUSLY OCCURRED**	**PROBABILITY OF FUTURE OCCURRENCE**	**VULNERABILITY OF POPULATION**	**VULNERABILITY OF PROPERTY**	**IMPACT ON CRITICAL FACILITIES**	**IMPACT ON LOCAL ECONOMY**
Severe Winter Storms (Blizzard, Ext. Cold, Heavy Snow, Winter Storms)	2003 – 2013: 38 Events (NCDC)	HIGH (5 or more events in 10 Years)				
Tornado	2003 – 2013: 8 Events (NCDC)	HIGH (5 or more events in 10 Years)				
High Winds	2003 – 2013: 30 Events (NCDC)	HIGH (5 or more events in 10 Years)				
Severe Thunderstorms	2003 – 2013: 8 Events (NCDC)	HIGH (5 or more events in 10 Years)				
Hail Events	2003 – 2013: 48 Events (NCDC)	HIGH (5 or more events in 10 Years)				
Flooding	2003 – 2013: 11 Events (NCDC)					
Extreme Heat	2003 – 2013: 1 Event (NCDC)					
Drought	7/2012 – 7/2013	MEDIUM (1-4 events in 10 Years)				

York County HMP
Risk Assessment Worksheet

HAZARD	**PREVIOUSLY OCCURRED**	**PROBABILITY OF FUTURE OCCURRENCE**	**VULNERABILITY OF POPULATION**	**VULNERABILITY OF PROPERTY**	**IMPACT ON CRITICAL FACILITIES**	**IMPACT ON LOCAL ECONOMY**
Wildfire	2003 – 2012: 11 Events (NFS)					
Urban Fire	2013: 100+ reported (NEFIRS)					
Dam Failure		Low (0 -1 event in 10 Years)				
Earthquake		Low (0 -1 event in 10 Years)				
Landslide		Low (0 -1 event in 10 Years)				
Animal Disease	2013 – 2014: 7 Events (USDA)					
Plant Disease						
Chemical Spills (during transport)	2003 – 2013 2 Events (PHMSA)					
Chemical Spills (fixed site)						
Major Transportation Incident						
Radiological Incident (during transport)						
Radiological Incident (fixed site)						
Prolonged Power Outages						
Terrorist Incident						
Civil Disorder						

York County HMP
Risk Assessment Worksheet

2014 Village of Benedict Risk Assessment						
HAZARD	**PREVIOUSLY OCCURRED**	**PROBABILITY OF FUTURE OCCURRENCE**	**VULNERABILITY OF POPULATION**	**VULNERABILITY OF PROPERTY**	**IMPACT ON CRITICAL FACILITIES**	**IMPACT ON LOCAL ECONOMY**
Severe Winter Storms (Blizzard, Ext. Cold, Heavy Snow, Winter Storms)	2003 – 2013: 38 Events (NCDC)	HIGH (5 or more events in 10 Years)	H	L	H	M
Tornado	2003 – 2013: 8 Events (NCDC)	HIGH (5 or more events in 10 Years)	H	H	H	H
High Winds	2003 – 2013: 30 Events (NCDC)	HIGH (5 or more events in 10 Years)	H	H	H	M
Severe Thunderstorms	2003 – 2013: 8 Events (NCDC)	HIGH (5 or more events in 10 Years)	H	H	H	M
Hail Events	2003 – 2013: 48 Events (NCDC)	HIGH (5 or more events in 10 Years)	H	H	H	M
Flooding	2003 – 2013: 11 Events (NCDC)	L	L	L	L	L
Extreme Heat	2003 – 2013: 1 Event (NCDC)	H	M	M	M	M
Drought	7/2012 – 7/2013	MEDIUM (1-4 events in 10 Years)	M	L	M	M

York County HMP
Risk Assessment Worksheet

HAZARD	PREVIOUSLY OCCURRED	PROBABILITY OF FUTURE OCCURRENCE	VULNERABILITY OF POPULATION	VULNERABILITY OF PROPERTY	IMPACT ON CRITICAL FACILITIES	IMPACT ON LOCAL ECONOMY
Wildfire	2003 – 2012: 11 Events (NFS)	L	L	L	L	L
Urban Fire	2013: 100+ reported (NEFIRS)	L	L	L	L	L
Dam Failure		Low (0 -1 event in 10 Years)	L	L	L	L
Levee Failure		Low (0 -1 event in 10 Years)	L	L	L	L
Landslide		Low (0 -1 event in 10 Years)	L	L	L	L
Animal Disease	2013 – 2014: 7 Events (USDA)	L	L	L	L	L
Plant Disease		L	L	L	L	L
Chemical Spills (Central Business)	2003 – 2013 2 Events (PHMSA)	L	L	L	L	L
Chemical Spills (Residential)		L	L	L	L	L
Major Transportation Incident		L	L	L	L	L
Radiological Incident (during transport)		L	L	L	L	L
Radiological Incident (Fixed Site)		L	L	L	L	L
Prolonged Power Outage		M	M	M	M	M
Terrorist Incident		L	L	L	L	L
Civil Disorder		L	L	L	L	L

York County
Hazard Mitigation Plan Update

PROJECT RANKING USING STAPLEE
CITY OF YORK

RANKING INSTRUCTIONS – On the following pages are two lists of projects that were identified by your community to reduce the losses or damages from hazards as part of the 2010 hazard mitigation plan. The first list include projects that were identified as part of the 2010 Hazard Mitigation Plan, FEMA will expect to see an update of these projects in this update. The second list was developed based on the results of the preliminary risk assessment and by researching projects that would be beneficial to your community. The "Recommended for Consideration" list does not have to be completed and therefore, is optional. From this list you should only include projects/strategies that you expect to implement.

When completing the project ranking sheet, it is important to be as specific as possible, and to provide information for each Action Item. FEMA has high standards for this process and expects to see projects prioritized to reflect the needs of the community. For each project there are a number of questions. The table below outlines the questions and desired content for responses.

Description	**Title for Projects, No attention/input required**
Action	More in depth description of the action to be considered. **Change as needed to make appropriate for your community.**
Has this action been completed	Please indicate the status of the project: Completed, In Progress, Not Yet Started, No Longer Relevant
What facilities need generators	Project specific questions: where is the project needed, are there specific problem areas, etc. Please be specific in your description
Potential Funding Source	If this project is implemented how would it be funded? Options to consider: local budget, partnering with other agencies, grants, levy local taxes, etc. Feel free to identify multiple funding sources, if partners are a potential source please identify partnering agencies.
Timeline	Provide a time frame for project implementation. When would you like to see this done? Typically ten years or less.
Priority	Please indicate a priority for each project. If there are items that you know will be implemented please indicate that in the priority section.
What department/position would be responsible for making this happen	Who, locally, will be responsible for making this action happen? Please provide a specific department, position, or group that will be responsible for this project (i.e. clerk, village maintenance director, county emergency manager, etc.)

S	**T**	**A**	**P**	**L**	**E**	**E**

*Note: Listing projects in the Hazard Mitigation Plan does **NOT** require their implementation; however, it DOES indicate their benefit for your community. These are potential activities your community could do in the future should funds become available. Please prioritize and identify projects that could be implemented within 5-10 years.*

York County
Hazard Mitigation Plan Update

The final portion of the project table is the STAPLEE ranking process. Mitigation alternatives or actions need to be prioritized based on certain considerations. FEMA recommends using the STAPLEE evaluation, as this process addresses all the major factors when weighing the costs to the benefits of implementing one action over another.

For the STAPLEE ranking, please place a '+, '-', or '0' in each of the columns referring to the STAPLEE criteria. For example, if a project is socially beneficial place a '+' under the 'S' If the project would have a negative impact, then place a '-' in that column. If the project has no discernible impact use the '0".

Below is an explanation of the STAPLEE criteria taken from FEMA's Multi-Hazard Mitigation Planning Guidance (March 2013):

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

For the STAPLEE ranking, please place a '+, '-', or '0' in each of the columns referring to the STAPLEE criteria. For example, if a project is socially beneficial place a '+' under the 'S' If the project would have a negative impact, then place a '-' in that column. If the project has no discernible impact use the '0".

EXAMPLE PROJECT RANKING TABLE						
Description	**Mitigation Plan**					
Action	Work to update the local hazard mitigation plan to remain eligible for the HMA grant programs.					
Has this action been completed?	COMPLETED	NOT COMPLETED	(ONGOING)	NO LONGER NEEDED		
When was the plan last updated?	Last updated 2010, expire in January 2015.					
Potential Funding Source	HMGP, York County, Local Budget					
Timeline	1 year					
Priority	HIGH	(MEDIUM)	LOW	UNLIKELY TO OCCUR		
What department/position would be responsible for making this happen?	Village Clerk, Village Board					
Social	**Technical**	**Administrative**	**Political**	**Legal**	**Economic**	**Environmental**
+	-	-	0	+	+	0

York County
Hazard Mitigation Plan Update

REQUIRED FOR UPDATE

Description	Obtain Missing Data
Action	Obtain necessary data to improve vulnerability assessments when updating the plan.
Has this action been completed?	COMPLETED NOT COMPLETED (ONGOING) NO LONGER NEEDED
Please note any departments which might be especially behind for updating data.	
Potential Funding Source	NORMAL BUDGETS - SHOULD NOT BE SIGNIFICANT EXPENSES.
Timeline	
Priority	HIGH (MEDIUM) LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	POLICE / FIRE

Social	Technical	Administrative	Political	Legal	Economic	Environmental
+	0	+	+	+	0	0

Description	Backup Generators
Action	Provide a portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other critical facilities and shelters.
Has this action been completed?	(COMPLETED) NOT COMPLETED ONGOING NO LONGER NEEDED
What facilities need generators?	NONE AT THIS TIME
Potential Funding Source	N/A
Timeline	DONE
Priority	N/A HIGH MEDIUM LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	PUBLIC WORKS

Social	Technical	Administrative	Political	Legal	Economic	Environmental
+	+	+	+	+	0	0

Description	New Municipal Well
Action	Communities can evaluate the need to install a new well to provide a safe backup water supply for the community, replace existing wells affected by drought, and additional water for fire protection.
Has this action been completed?	(COMPLETED) NOT COMPLETED ONGOING NO LONGER NEEDED
What will be the primary function of the new well?	CITY HAS PLENTY OF WELL CAPACITY AT THIS TIME.
Potential Funding Source	N/A
Timeline	Done
Priority	N/A HIGH MEDIUM LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	PUBLIC WORKS

Social	Technical	Administrative	Political	Legal	Economic	Environmental
+	+	+	+	+	+	0

York County
Hazard Mitigation Plan Update

Description	Safe Rooms
Action	Design and construct storm shelters and safe rooms in highly vulnerable areas such as churches, schools, and other areas.
Has this action been completed?	COMPLETED NOT COMPLETED ONGOING NO LONGER NEEDED
Are there currently safe rooms within the community?	NOT AVAILABLE OF ANY
Is there a specific location in need of a safe room (park, community center, trailer park, etc.)?	POSSIBLY AT TRAILER PARKS
Potential Funding Source	GRANTS
Timeline	UNKNOWN
Priority	HIGH MEDIUM LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	?

Social	Technical	Administrative	Political	Legal	Economic	Environmental
+	0	0	+	0	0	0

Description	Storm Water System Improvements
Action	Storm water system improvements may include pipe upsizing and additional inlets. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other storm water system improvements.
Has this action been completed?	COMPLETED NOT COMPLETED ONGOING NO LONGER NEEDED
What areas need drainage improvements?	IN FLOOD PLAIN AREAS
Please describe the improvements needed.	INCREASED CAPACITY
Are these improvements currently included in local budgets?	NO
Potential Funding Source	NORMAL BUDGET, GRANTS, FINANCE
Timeline	UNKNOWN
Priority	HIGH MEDIUM LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	PUBLIC WORKS

Social	Technical	Administrative	Political	Legal	Economic	Environmental
+	+	0	+	+	0	0

York County
Hazard Mitigation Plan Update

Description	Stream Bank Stabilization/ Grade Control Structures, Channel Improvements
Action	Stabilization improvements including rock rip rap, vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Channel stabilization can protect structures, increase conveyance and provide flooding benefits.
Has this action been completed?	COMPLETED NOT COMPLETED (ONGOING) NO LONGER NEEDED
Are there stream banks that need repairs or stabilization? If yes where?	SOME PLACES ALONG BEAVER CREEK
Potential Funding Source for project implementation	NORMAL BUDGET
Timeline	0 TO 5 YEARS
Priority	HIGH (MEDIUM) LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	PUBLIC WORKS

Social	Technical	Administrative	Political	Legal	Economic	Environmental
0	0	0	+	+	0	0

Description	Floodplain Regulation Enforcements and Updates
Action	Continue to enforce local floodplain regulations for structures located in the 100-year floodplain. Strict enforcement of the type of development and elevations of structures should be considered through issuance of building permits by any community or York County. Continue education of building inspectors or Certified Floodplain Managers.
Has this action been completed?	COMPLETED NOT COMPLETED (ONGOING) NO LONGER NEEDED
Do you expect to have increased development in the floodplain?	
Potential Funding Source for project implementation	
Timeline	
Priority	
What department/position would be responsible for making this happen?	

Description	Windbreaks / Living Snow Fence
Action	Installation of windbreaks and/or living snow fences to increase water storage capacity in soil and reduce blowing snow.
Has this action been completed?	COMPLETED HIGH NOT COMPLETED LOW UNLIKELY TO OCCUR NO LONGER NEEDED
Do you expect to benefit from a snow fence?	LOW PRIORITY

Social	Technical	Administrative	Political	Legal	Economic	Environmental

Description	Maintain Good Standing with the National Flood Insurance Program
Action	Maintain good standing in the National Flood Insurance Program (NFIP).
Has this action been completed?	COMPLETED NOT COMPLETED (ONGOING) NO LONGER NEEDED
Is York currently in the NFIP?	YES
Potential Funding Source for project implementation	NORMAL BUDGET

York County
Hazard Mitigation Plan Update

Timeline	ongoing
Priority	HIGH (MEDIUM) LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	PUBLIC WORKS

Social	Technical	Administrative	Political	Legal	Economic	Environmental
0	+	+	0	+	0	0

Description	Civil Service Improvements
Action	Improve emergency rescue and response equipment and facilities by providing additional, or updating existing emergency response equipment. This can include fire trucks, ATV's, water tanks/trucks, snow removal equipment, etc. This would also include developing backup systems for emergency vehicles and identifying and training additional personnel for emergency response.
Has this action been completed?	COMPLETED NOT COMPLETED (ONGOING) NO LONGER NEEDED
What civil service improvements need to be made?	SNOW REMOVAL EQUIPMENT IS GETTING OLD.
Potential Funding Source for project implementation	NORMAL BUDGET
Timeline	ON-going
Priority	HIGH (MEDIUM) LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	PUBLIC WORKS

Social	Technical	Administrative	Political	Legal	Economic	Environmental
+	0	0	+	0	0	0

Description	Improve Snow / Ice Removal Program
Action	Improve the snow routes and snow/ice removal procedures for streets. Improvements should address plowing snow, ice removal, parking during snow and ice removal, and removal of associated storm debris.
Has this action been completed?	COMPLETED NOT COMPLETED (ONGOING) NO LONGER NEEDED
What areas will benefit most from an improved snow/ice removal program?	EFFICIENCY OF OPERATIONS.
Potential Funding Source for project implementation	NORMAL BUDGET
Timeline	ON-going
Priority	HIGH (MEDIUM) LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	PUBLIC WORKS

Social	Technical	Administrative	Political	Legal	Economic	Environmental
0	+	+	+	2	0	0

York County
Hazard Mitigation Plan Update

Description	**Weather Radios**
Action	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.
Has this action been completed?	COMPLETED NOT COMPLETED ONGOING NO LONGER NEEDED
Do any critical facilities currently have weather radios?	
Potential Funding Source for project implementation	
Timeline	
Priority	HIGH MEDIUM LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	

Social	Technical	Administrative	Political	Legal	Economic	Environmental

Description	**Public Awareness/ Education**
Action	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc.
Has this action been completed?	COMPLETED NOT COMPLETED ONGOING NO LONGER NEEDED
What is done locally related to public education?	NEWSPAPER ADS, FACEBOOK, WEBSITE, RADIO ANNOUNCEMENTS AS NEEDED.
Potential Funding Source for project implementation	NORMAL BUDGET
Timeline	ON-going
Priority	HIGH MEDIUM LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	ALL DEPARTMENTS

Social	Technical	Administrative	Political	Legal	Economic	Environmental
+	+	+	+	0	0	0

York County
Hazard Mitigation Plan Update

RECOMMENDED FOR CONSIDERATION

Description	**Electric System Looped Distribution**
Action	Provide looped distribution service and other redundancies in the electrical system as a backup power supply in the event the primary system is destroyed or fails.
Has this action been completed?	COMPLETED NOT COMPLETED ONGOING NO LONGER NEEDED
Potential Funding Source	UNKNOWN
Timeline	UNKNOWN
Priority	HIGH MEDIUM LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	PUBLIC WORKS / NPLD.

Social	Technical	Administrative	Political	Legal	Economic	Environmental
+	O	O	+	O	+	O

York County
Hazard Mitigation Plan Update

Description	**Hazardous Tree Removal Program**
Action	Identify and remove hazardous limbs and/ or trees
Has this action been completed?	COMPLETED NOT COMPLETED (ONGOING) NO LONGER NEEDED
Are there specific areas in need of tree removal?	
Potential Funding Source	
Timeline	
Priority	HIGH MEDIUM LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	NPPD

Social	Technical	Administrative	Political	Legal	Economic	Environmental

Description	**Power, Service, and Water Distribution Lines**
Action	Communities can work with their local Public Power District or Electricity Department to identify vulnerable transmission and distribution lines and plan to bury lines underground or retrofit existing structures to be less vulnerable to storm events. Electrical utilities shall be required to use underground construction methods where possible for future installation of power lines. Communities should also work with their water providers to ensure that distribution strategies are protected against natural disasters.
Has this action been completed?	COMPLETED NOT COMPLETED (ONGOING) NO LONGER NEEDED
Potential Funding Source	User Fees, Connection Fees, Assessments
Timeline	On-going
Priority	HIGH (MEDIUM) LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	Public Works / N.P.P.D.

Social	Technical	Administrative	Political	Legal	Economic	Environmental

Description	**Stabilize / Anchor Fertilizer, Fuel and Propane Tanks**
Action	Require all fertilizers, fuel, and propane tanks are properly anchored.
Has this action been completed?	COMPLETED NOT COMPLETED (ONGOING) NO LONGER NEEDED
Do current zoning codes address anchoring of outdoor tanks?	Yes
Potential Funding Source	Budget
Timeline	On-going
Priority	HIGH MEDIUM (LOW) UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	Public Works

Social	Technical	Administrative	Political	Legal	Economic	Environmental

York County
Hazard Mitigation Plan Update

Description	**Tree City USA**
Action	Work to become a Tree City USA through the National Arbor Day Foundation in order to receive direction, technical assistance, and public education on how to establish a hazardous tree identification and removal program in order to limit potential tree damage and damages caused by trees in a community when a storm event occurs. The four main requirements include: 1) establishing a tree board; 2) enacting a tree care ordinance; 3) establishing a forestry care program; 4) enacting an Arbor Day observance and proclamation.
Has this action been completed?	(COMPLETED) NOT COMPLETED ONGOING NO LONGER NEEDED
Is tree maintenance presently a priority?	YES
Potential Funding Source for project implementation	Normal Budget
Timeline	On-going
Priority	HIGH MEDIUM (LOW) UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	Public Works

Social	Technical	Administrative	Political	Legal	Economic	Environmental

Description	**Drainage Study / Storm Water Master Plan**

Description	**Flood-Prone Property Acquisition**
Action	Voluntary acquisition and demolition of properties prone to flooding will reduce the general threat of flooding for communities.
Has this action been completed?	COMPLETED NOT COMPLETED (ONGOING) NO LONGER NEEDED
Are there properties that have been identified for purchase?	YES
Potential Funding Source	Unknown — General Fund?
Timeline	On-going
Priority	HIGH MEDIUM (LOW) UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	Public Works

Social	Technical	Administrative	Political	Legal	Economic	Environmental

York County
Hazard Mitigation Plan Update

Action	Drainage studies can be conducted to identify and prioritize improvements to address site specific localized flooding/drainage problems. Storm water master plans can be conducted to perform a community-wide storm water evaluation, identifying multiple problem areas, and potentially multiple drainage improvements for each.
Has this action been completed?	COMPLETED NOT COMPLETED (ONGOING) NO LONGER NEEDED
What areas need drainage improvements?	FLOOD PLAIN AREAS
Are these improvements currently included in local budgets?	NO
Potential Funding Source	FEMA ?
Timeline	5 YEARS
Priority	HIGH (MEDIUM) LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	PUBLIC WORKS

Social	Technical	Administrative	Political	Legal	Economic	Environmental
+	0	0	+	0	0	0

Description	**Alert / Warning Sirens**
Action	Improve city cable TV interruption warning system and implement telephone interrupt system such as Reverse 911, emergency text messaging warning system, etc.
Has this action been completed?	COMPLETED NOT COMPLETED ONGOING NO LONGER NEEDED
Are there currently warning systems which need to be updated?	YES
Potential Funding Source for project implementation	GRANTS
Timeline	5 YEARS
Priority	HIGH (MEDIUM) LOW UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	FIRE

Social	Technical	Administrative	Political	Legal	Economic	Environmental
+	0	0	+	+	0	0

Description	**Emergency Communications**
Action	Update LEOP & local action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish inner operable communications
Has this action been completed?	(COMPLETED) NOT COMPLETED ONGOING NO LONGER NEEDED
When was the LEOP last updated?	LAST SUMMER
Potential Funding Source for project implementation	GRANT
Timeline	DONE
Priority	HIGH MEDIUM (LOW) UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	COUNTY EMERGENCY MANAGER

Social	Technical	Administrative	Political	Legal	Economic	Environmental
0	0	0	+	+	0	0

York County
Hazard Mitigation Plan Update

Description	**Warning Systems**
Action	Improve city cable TV interrupt warning system and implement telephone interrupt system such as Reverse 911, emergency text messaging warning system, etc.
Has this action been completed?	COMPLETED NOT COMPLETED ONGOING NO LONGER NEEDED
When was the LEOP last updated?	LAST SUMMER
Potential Funding Source for project implementation	GRANTS
Timeline	?
Priority	HIGH MEDIUM (LOW) UNLIKELY TO OCCUR
What department/position would be responsible for making this happen?	POLICE

Social	Technical	Administrative	Political	Legal	Economic	Environmental

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APPENDIX D: WORKSHEETS TO ASSIST COMMUNITY IN REVIEW AND UPDATES

Worksheet # 1: Progress Report

Progress Report Period: _____ (Date) to _____ (Date)

Project Title: _____ Project ID#: _____

Responsible Agency: _____

Address: _____

City/County: _____

Contact Person: _____ Title: _____

Phone #(s): _____ e-mail address: _____

List Supporting Agencies and Contacts: _____

_____

Total Project Cost: $_____ Anticipated Cost Overrun/Under run: _____

Date of Project Approval: _____ Start date of the project: _____

Anticipated completion date: _____

Description of the Project (include a description of each phase, if applicable, and the time frame for completing each phase).

_____
_____
_____
_____
_____

Milestones	Complete	Projected Date of Completion

_____

_____

Plan Goal(s)/Objective(s) Addressed:

Goal: _____

Objective: _____

Indicator of Success (e.g., losses avoided as a result of the acquisition program):
In most cases, you will list losses avoided as the indicator. In cases where it is difficult to quantify the benefits in dollar amounts, you will use other indicators, such as the number of people who now know about mitigation or who are taking mitigation actions to reduce their vulnerability to hazards.

_____

_____

_____

Status *(Please checks pertinent information and provide explanations for items with an asterisk. For completed or canceled projects, see Worksheet #2 — to complete a project evaluation):*

Project Status	Project Cost Status
(1) ☐ Project on schedule	(1) ☐ Cost unchanged
(2) ☐ Project completed	(2) ☐ Cost overrun* *explain: _____ _____
(3) ☐ Project delayed* *explain: _____ _____	(3) ☐ Cost under run* *explain: _____ _____
(4) ☐ Project canceled	

Summary of progress on project for this report:

A. What was accomplished during this reporting period?

B. What obstacles, problems, or delays did you encounter, if any?

C. How was each problem resolved?

Next Steps: What is/are the next step(s) to be accomplished over the next reporting period?

Other comments:

Worksheet #2: Evaluating Your Planning Team

When gearing up for the plan evaluation, the planning team should reassess its composition and ask the following questions:

	YES	NO
Have there been local staffing changes that would warrant inviting different members to the planning team? Comments/Proposed Action:		
Are there organizations that have been invaluable to the planning process or to project implementation that should be represented on the planning team? Comments/Proposed Action:		
Are there any representatives of essential organizations who have not fully participated in the planning and implementation of actions? If so, can someone else from this organization commit to the planning team? Comments/Proposed Action:		
Are there procedures (e.g., signing of MOAs, commenting on submitted progress reports, distributing meeting minutes, etc.) that can be done more efficiently? Comments/Proposed Action:		
Are there ways to gain more diverse and widespread cooperation? Comments/Proposed Action:		
Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning? Comments/Proposed Action:		

If the planning team determines the answer to any of these questions is "yes," some changes may be necessary.

Worksheet #3: Evaluate Your Project Results

Project Name and Number: Project Budget: Project Description: Associated Goal and Objective (s): Indicator of Success (e.g., losses avoided):	*Insert location map* *include before and after photos if appropriate*

Was the action implemented?

IF YES ↓

What were the results of the implemented action?

IF NO ↓

Why not?

Was there political support for the action?	YES	NO
Were enough funds available?	YES	NO
Were workloads equitably or realistically distributed?	YES	NO
Was new information discovered about the risks or community that made implementation difficult or no longer sensible?	YES	NO
Was the estimated time of implementation reasonable?	YES	NO
Were sufficient resources (for example staff and technical assistance) available?	YES	NO

Were the outcomes as expected? **YES** **NO** Additional comments or other outcomes:
If No, please explain:

Did the results achieve the goal and objective (s)? **YES** **NO**
Explain how:

↓

Was the action cost-effective? **YES** **NO**
Explain how or how not:

What were the losses avoided after having completed the project?

If it was a structural project, how did it change the hazard profile?

Date _____

Prepared by: _____

Worksheet #4: Revisit Your Risk Assessment

Risk Assessment Steps	Questions	YES	NO	COMMENTS
Identify hazards	Are there new hazards that can affect your community?			
Profile hazard events	Are new historical records available?			
	Are additional maps or new hazard studies available?			
	Have chances of future events (along with their magnitude, extent, etc.) changed?			
	Have recent and future development in the community been checked for their effect on hazard areas?			
Inventory assets	Have inventories of existing structures in hazard areas been updated?			
	Are future developments foreseen and accounted for in the inventories?			
	Are there any new special high-risk populations?			
Estimate losses	Have loss estimates been updated to account for recent changes?			

If you answered "Yes" to any of the above questions, review your data and update your risk assessment information accordingly

Worksheet #5: Revise the Plan

Prepare to update the plan.

When preparing to update the plan:	Check the box when addressed ✓
1. Gather information, including project evaluation worksheets, progress reports, studies, related plans, etc. Comments:	☐
2. Reconvene the planning team, making changes to the team composition as necessary (see results from *Worksheet #2*). **Comments:**	☐

Consider the results of the evaluation and new strategies for the future.

When examining the community consider:	Check the box when addressed ✓
1. The results of the planning and outreach efforts. Comments:	☐
2. The results of the mitigation efforts. Comments:	☐
3. Shifts in development trends. **Comments:**	☐
4. Areas affected by recent disasters. **Comments:**	☐
5. The recent magnitude, location, and type of the most recent hazard or disaster. **Comments:**	☐
6. New studies or technologies. **Comments:**	☐
7. Changes in local, state, or federal laws, policies, plans, priorities, or funding. **Comments:**	☐

8. Changes in the socioeconomic fabric of the community. ☐

Comments:

9. Other changing conditions. ☐

Comments:

Incorporate your findings into the plan.

When examining the plan:	**Check the box when addressed ✓**
1. Revisit the risk assessment.	☐
Comments:	
2. Update your goals and strategies.	☐
Comments:	
3. Recalculate benefit-cost analyses of projects to prioritize action items.	☐
Comments:	

Use the following criteria to evaluate the plan:

Criteria	**YES**	**NO**	**Solution**
Are the goals still applicable?			
Have any changes in the state or community made the goals obsolete or irrelevant?			
Do existing actions need to be reprioritized for implementation?			
Do the plan's priorities correspond with state priorities?			
Can actions be implemented with available resources?			

Comments:

APPENDIX E: HAZARD MITIGATION PROJECT FUNDING GUIDEBOOK

Contents:

Section One: Overview

Section Two: Hazard Mitigation Project Funding Opportunities

3.1 General
3.2 Federal Resources
3.3 State of Nebraska Resources and Priorities
3.4 Alternative Funding Sources

Section Three: References

4.2 Hazard Mitigation Project Funding Opportunities

SECTION ONE: OVERVIEW

This *Hazard Mitigation Project Funding Guidebook* is provided by JEO Consulting Group, Inc.

The intent of the Guidebook is to provide initial guidance on:

- Hazard mitigation project funding opportunities
- Where to find more information

The information in this Guidebook is consistent with established processes for hazard mitigation planning. However, it is important to note the following in terms of the context for this Guidebook relative to the overall planning process:

- Project identification includes identifying all possible options (or alternatives) to address planning objectives; i.e., at this stage, there are no "bad" options. At times, the best option may be to work with other actors in the community to design solutions that are responsive to community values while reducing risk (i.e. a bike path or ball field that can double as a retention area, or the preservation of an animal habitat that also serves as a natural buffer). These types of solutions can often be funded in very innovative ways, including solutions which increase local industry and revenue (i.e. tapping into the entrepreneurial community).
- Project identification is followed by a comprehensive evaluation of possible project options to identify viable, preferred option(s) for development of specific implementation strategies. Preferred options may change as different stakeholders come to the table and additional ideas are proposed or funding sources identified. Incremental mitigation projects, in which risk is slowly bought down through a comprehensive range of actions, can be a much more realistic strategy than identifying the one best (and often costliest) solution.
- Project evaluation criteria include the need for and the availability of funding for specific project options along with technical feasibility, environmental consequences, cost effectiveness, etc.

Even though funding availability is "technically" part of project evaluation, this Guidebook offers information regarding availability of funding in addition to information about identifying projects. The purpose is to reflect the importance of linking project options with potential funding and implementation mechanisms as early as possible to eliminate options with little or no prospects for funding but more importantly, to recognize that successful implementation of the resulting hazard mitigation plan (HMP) will require creative approaches to project funding and the documentation of successful projects. Knowledge of a broader range of funding opportunities and mechanisms beyond federal hazard mitigation grant programs will enable the planning team to keep as many implementation options open as possible, as well as to ensure that some minimal projects can be completed in between plan updates.

SECTION TWO: HAZARD MITIGATION PROJECT FUNDING OPPORTUNITIES

3.1 GENERAL

When the current FEMA hazard mitigation planning program was formulated in the late 1990s as part of the Disaster Mitigation Act of 2000 (DMA 2000), there was an assumption that federal funding would be provided on an substantial, on-going basis for implementing hazard mitigation projects. While hundreds of millions of dollars have been provided by the federal government over the last decade, primarily through FEMA hazard mitigation grant programs, the level of funding has varied from year to year and future prospects are unclear. Additionally, some communities have not been successful in their pursuit of these grants and have not seen the value of their investment in mitigation planning. As a result, while it is still important to have a grasp of how these legacy federal programs can be used to fund hazard mitigation projects, it is increasingly important to look for other opportunities.

Opportunities for funding and technical assistance exist in other federal agencies or possibly state or local agencies. In addition, alternative funding opportunities can be developed at the regional or local level with private sector businesses, private foundations, and other non-governmental organizations (NGOs). In order to fully map out the range of local and state options it is necessary to undertake a detailed stakeholder analysis – something which has not been done at this time. The following contains a brief overview of federal, state, and local government programs that may include opportunities for hazard mitigation project funding as well as alternatives within the private sector and NGOs.

3.2 FEDERAL RESOURCES

Information about federal hazard mitigation project funding opportunities is organized per the following categories:

- FEMA Unified Hazard Mitigation Assistance Grant Programs
- Other FEMA Hazard Mitigation Programs
- Other Federal Agency Programs

3.2.1 FEMA UNIFIED HAZARD MITIGATION ASSISTANCE GRANT PROGRAMS

There are three (3) grant programs administered at the federal level by FEMA that are grouped under the umbrella heading of the "Unified Hazard Mitigation Assistance Grant Programs" (HMA) including:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)

These programs also have a counterpart agency at the State level. For Nebraska, HMGP and PDM are administered at the state level by the Nebraska Emergency Management Agency (NEMA). The FMA program is managed by the Nebraska Department of Natural Resources (NDNR). Periodically, FEMA issues guidance covering the administrative elements for all three (3) programs, titled the *Hazard Mitigation Assistance Unified Guidance*. The most recent guidance was released in 2013.

There are a number of similarities and differences between these programs but it is important to note three distinctions between HMGP and the other four HMA programs:

- HMGP is only available when authorized under a Presidential major disaster declaration, i.e., post-disaster. The other four HMA programs, when funding is appropriated by Congress, are available pre-disaster.
- Project eligibility under HMGP can be limited by the State as part of the HMGP Administrative Plan developed post-disaster. For example, funding may only be made available for projects that are related to the type of disaster; i.e., HMGP related to a significant flood disaster declaration may only be designated for flood mitigation projects like acquisitions of repetitively flooded properties.
- Eligible projects can include project types that are not typically funded by FEMA hazard mitigation programs if FEMA authorizes what is referred to as the "5 percent initiative". Generally reserved for very large

disasters, authorizing the 5 percent initiative can make funding available for new, unproven mitigation techniques and technologies where benefits are not proven or not clearly measurable such as back-up generators, disaster warning equipment and systems, hazard identification or mapping efforts, and studies or plans to reduce disaster losses. The current State of Nebraska Administrative Plan for HMGP associated with FEMA 4014-DR-NE identifies the potential use of the 5 percent initiative for that particular disaster event.

Note: Section Three includes individual website URLs for more detailed information on these three HMA programs and the Hazard Mitigation Assistance Unified Guidance.

3.2.2 OTHER FEMA HAZARD MITIGATION PROGRAMS

Two (2) other FEMA programs include the potential for funding hazard mitigation projects that may be identified:

- Fire Management Assistance Grant Program (FMAGP) - FMAGP may be applicable to some areas of Nebraska; the NESHMP identifies Wildfires as the third highest ranked hazard on a state-wide basis. FEMA provides the following overview of the FMAGP program:

  [FMAGP] is available to States, local and tribal governments, for the mitigation, management, and control of fires on publicly or privately owned forests or grasslands, which threaten such destruction as would constitute a major disaster.

- Public Assistance (PA) Section 406 Hazard Mitigation Funding – Generally, PA funds are provided post-disaster for the restoration of public infrastructure that has sustained damaged due to a presidentially-declared disaster. The legislation authorizing PA also includes a "*provision for the consideration of funding additional measures that will enhance a facility's ability to resist similar damage in future events*." It is important to note that Section 406 funding can only be used on parts of a facility that were actually damaged by the disaster; although in some cases the damages are sufficient that the entire facility must be replaced.

  Therefore, it is often difficult to include the type of specific predictions in a HMP that would lead to identifying Section 406 as a prime option for funding but it should be noted in the HMP and referenced wherever it is potentially applicable. Areas of vulnerability for particular buildings, or building types, identified through the HMP can be a resource for the identification of PA mitigation projects. Additionally, local and state staff should receive training in the successful use of PA.

Additional FEMA programs include: Community Assistance Program which assists states with the NFIP; various post-disaster funds and programs; and Assistance to Firefigher Grants which can assist with the enhancement of response capabilities.

Note: Section Three includes individual website URLs for more detailed information on these two FEMA programs that are also the sources of the quoted passages.

3.2.3 OTHER FEDERAL AGENCY PROGRAMS

Although FEMA programs are typically thought of as the primary sources of federal agency hazard mitigation project funding, there are a significant number of agencies with programs relevant to local HMPs and hazard mitigation project implementation. The following indicates some of the federal programs which may be of assistance in funding certain types of hazard mitigation projects – or portions of those projects.

Table 1: Federal Programs

Source	Description	Additional Notes	Website
Advisory Council on Historic Preservation	The Preserve America matching-grant program provides planning funding to designated Preserve America Communities to support preservation efforts through heritage tourism, education, and historic preservation planning.	This funding source may be considered as part of efforts to ensure that historic structures are protected from natural hazards. The City of Lincoln is a Preserve America Community.	http://www.preserveamerica.gov/
National Endowment for the Humanities	The National Endowment for the Humanities manages multiple grant programs which may be relevant.	Programs support educational initiatives and cultural institutions.	http://www.neh.gov/grants
U.S. Department of Agriculture (USDA)	USDA administers several programs that are potentially relevant including the National Institute of Food and Agriculture (NIFA), Natural Resource Conservation Service (NRCS), Rural Development, and the Farm Service Agency (FSA).	There are many different NRCS programs which can provide technical assistance and construction of improvements to relieve imminent hazards to life and property from floods and erosion. There are also various rural development programs which can support essential services such as sewer services and assist with fire and police stations. USDA programs also support renewable energy efforts. However, other USDA programs should be examined	http://www.usda.gov/wps/portal/usda/usdahome?navid=GRANTS_LOANS

		relative to identified projects to find potential matches with funding and assistance provisions.	
U.S. Department of Commerce	Economic Development Administration (EDA) – EDA primarily provides a variety of grants, loans, and technical assistance to support long-term economic recovery but also has supported grants for upgrades to critical public infrastructure and essential facilities.	There are various programs and resources available through EDA. The National Weather Service and National Oceanic and Atmospheric Administration have also had programs in the past, but are restricted by funding at the moment.	http://www.eda.gov/ffo.htm
U.S. Army Corps of Engineers (USACE)	USACE can provide a broad range of assistance under legislative authority related to flood control for floodplain management planning, stream bank and shoreline protection, and aquatic ecosystem restoration.	USACE projects generally involve watershed level activities and long project development and implementation timelines but may be applicable to regional considerations.	http://www.nwo.usace.army.mil/
U.S. Dept of Education	Grants support LEAs in the development of communitywide approaches to creating safe and drug-free schools and promoting healthy childhood development. Programs are intended to prevent violence and the illegal use of drugs and to promote safety and discipline. Coordination with other community-based organizations (CBOs) is required. This program is jointly funded and administered by the departments of Education, Justice, and Health and Human Services. The appropriation amounts listed above do not include funds appropriated for	This program can be used to work towards safer schools, taking various potential risks into account.	http://www2.ed.gov/programs/dvpsafeschools/index.html

	the departments of Justice and Health and Human Services.		
U.S Department of Energy (DOE)	DOE undertakes a range of missions related to electricity and energy including improving "*the ability of energy sector stakeholders to prevent, prepare for, and respond to threats, hazards, natural disasters, and other supply disruptions".* DOE works closely with State and local governments on energy assurance issues and develops products and tools to inform and educate State and local officials to support their energy emergency response activities. DOE also partners with State and local organizations to further assist in these efforts including the National Association of State Energy Officials, National Association of Regulatory Utility Commissioners, National Governors Association, National Conference of State Legislatures, and at the local level, Public Technology Institute. Recently, DOE created the Local Energy Assurance Program (LEAP) which included more than $8 million in LEAP grants to 43 cities and towns across the country to develop or expand local energy assurance plans to improve electricity reliability and energy security in these communities	DOE programs fund weatherization efforts, support renewable energy efforts which can be a portion of an energy assurance effort, and can provide technical assistance through the Nuclear Safety and Environment Program.	http://energy.gov/public-services/funding-opportunities
US Dept of Health and	The US Dept of Health and Human Services and its various	Grant programs include technical: assistance and	http://www.hhs.gov/grants/index.html

Human Services	agencies provide a wide range of grants and technical assistance programs.	training related to ensuring safe water and wastewater treatment for rural areas; program to provide AEDs; and programs to ensure that rural areas have access to health services.	
U.S. Department of Housing and Urban Development (HUD)	HUD administers the Community Development Block Grants (CDBG). CDBG funds have been used in conjunction with other hazard mitigation funding sources, e.g., HMGP, to implement projects including acquisitions and elevation of flood prone properties. However, HUD funding for hazard mitigation projects usually comes via special Congressional appropriations related to specific disaster events.	CDBG funds can play a key role in hazard mitigation.	http://portal.hud.gov/hudportal/HUD?src=/topics/grants
US Dept of Justice	The Office of Community Oriented Policing services offers funding to assist with community policing capacity.	This program may be relevant to communities which identify crime, acts of violence and/or terrorism as a hazard.	http://www.justice.gov/business/
US Dept of Labor	National Emergency Grants (NEGs) temporarily expand the service capacity of Workforce Investment Act Dislocated Worker training and employment programs at the state and local levels by providing funding assistance in response to large, unexpected economic events which cause significant job losses. NEGs generally provide resources to	Training and temporary jobs can focus on weatherization or possibly mitigation related activities.	http://www.doleta.gov/neg/

	states and local workforce investment boards to quickly reemploy laid-off workers by offering training to increase occupational skills.		
US Dept of the Interior	The National Parks Service has multiple grants allowing for the purchase of land for recreational facilities, the rehabilitation of recreation facilities, and protecting cultural treasures.	These programs could assist with the securing of land which can serve a dual purpose of mitigation and recreation, as well as for protecting some historic sites.	www.nps.gov
US Dept of Transportation	Funds support recreational trails, bridge replacement, safe routes to schools, road projects in rural areas, and other programs.	These funds can be incorporated into multi-objective projects aimed at hazard mitigation.	http://www.dot.gov/grants
U.S. Environmental Protection Agency (EPA	In May, 2010, EPA signed a memorandum of agreement with FEMA to "*formalize efforts to explore opportunities to incorporate sustainability and smart growth practices into communities' hazard mitigation planning and long term disaster recovery efforts, and to incorporate hazard resilience into smart growth assistance for communities.*" The intent is to coordinate parallel activities within these agencies for an array of policy initiatives that include climate change considerations. For projects that are intended to improve land use planning practices, this joint effort could provide valuable technical assistance.	EPA programs support efforts to clean up brownfields, support water quality, provide safe drinking water, promote green communities, and watershed protection.	http://www2.epa.gov/home/grants-and-other-funding-opportunities

Small Business Administration (SBA)	SBA Disaster Loan Program (DLP) is a significant source of assistance for homeowners, renters, businesses, and nonprofit organizations in the aftermath of disasters. Although this is a post-disaster funding mechanism, it is important to note that loans can be increased up to 20 percent for mitigation to protect property from future disasters of the same kind that caused the current damage.	Small businesses can use SBA loans for many purposes, before and after a disaster.	

These are by no means the only non-FEMA, federal agency programs that could have the potential to support hazard mitigation project implementation. Additionally many of these programs are dependent on yearly funding allocations. However, at this point, it is more important to be aware of the potential for other federal agencies to support a broad array of project types. As needs and potential hazard mitigation project options are identified, more information can begin to be gathered on the range of programs which might be utilized. It will be more efficient to start with project options and then follow-up with the identification of potential matches, working with the full range of available programs and agencies as part of a comprehensive project evaluation process.

3.3 STATE OF NEBRASKA RESOURCES AND PRIORITIES

The 2011 NESHMP identifies a number of agencies and programs with potential applicability to supporting funding and implementation of mitigation projects in addition to the federal hazard mitigation grant programs administered at the state level by NEMA and NDNR already mentioned above. These agencies will also likely be important in earlier stages of the hazard mitigation planning process by providing current hazard and risk assessment data, including:

- NDNR – Public outreach and education programs should be incorporated and cross-referenced as part of any corresponding programs recommended as part of HMPs

- Climate Assessment and Response Committee (CARC) – CARC is a committee comprised of other state agencies and other stakeholders including the University of Nebraska and private livestock and crop producers. A primary concern of the CARC appears to be drought mitigation and at a minimum, the CARC should be a good source of technical support for related mitigation actions at the region or local levels.

- Nebraska Forest Service (NFS) – Per the NESHMP, the NFS "administers state and federal grant monies for fuel treatment on private property…for thinning forested tracts and for applying firewise principles to properties."

One existing mechanism for agency collaboration, particularly in the area of flooding, is the Nebraska Silver Jackets Program (http://silverjackets.dnr.ne.gov/). Silver Jackets teams are active in many states and consist of various state and federal agencies working together in support of flood risk reduction.

Some state agencies which provide technical assistance and other resources include:

- Nebraska Department of Environmental Quality
- Nebraska Department of Economic Development
- Nebraska Department of Roads
- Nebraska Game and Parks Commission
- Nebraska State Historic Preservation Office

In addition to these programs, it is important to always have a sense of the priorities that are identified by other agencies in influential positions regarding future grant funding. For example, the 2012 State of Nebraska Administrative Plan for HMGP, consistent in many ways with aspects of the NESHMP, identifies eligible project types such as:

- Structural hazard control or protection projects
- Retrofitting of facilities
- Property acquisition or relocation
- Development or improvement of warning systems
- Dead-end storm structures
- Replacement of conductors to T-2 Conductors, e.g., for increased wind resistance for electrical transmission lines

3.4 ALTERNATIVE FUNDING SOURCES

In recent years, states and communities across the country have sought and developed innovative funding sources as alternatives to traditional government grant programs. This will be important for current and future hazard mitigation planning efforts for several reasons including:

- Decreases in funding for pre-disaster mitigation grant and assistance programs at the federal level and for state agencies - While technical assistance and other related support functions are still actively supported across federal and state agencies, and in some cases are increasing, allocations for "bricks and mortar" pre-disaster hazard mitigation projects will be competing with a broad range of government funding needs. These funds may not completely disappear but the need will continue to outstrip the supply for the foreseeable future.

- Opportunities to fund projects that might not qualify or align with traditional grant and assistance programs. Funding programs seek solutions that reduce risk for a particular threshold (i.e. 1-percent flood) and meet absolute cost-benefit criteria that the agencies themselves must adhere to. Therefore, these programs, by their basic nature, are not able to support efforts that may help most of the time but don't meet these thresholds, e.g., a homeowner installed flood wall in a repetitive loss area that prevents annual floods, but not larger magnitude events that come along every few years. There is a related concept that can be referred to as "cumulative risk reduction". For example, a homeowner with limited resources (and no real access to grant funds) might be willing to spend a little time and money each year getting just a little bit safer.

The following identifies general kinds of alternative funding sources and techniques that have been employed in other communities:

- Local Funding Options
- Public-Private Partnerships
- Private Foundations

3.4.1 LOCAL FUNDING OPTIONS

Local funding options are just what they sounds like, using local funds for local mitigation projects. Local funds are also needed as the non-federal share or "matching funds" for federal grant programs but can also be used independently to fund a range of project types. Local funding options include the following:

- Capital Improvement Programs – On-going civic improvements can include prioritized hazard mitigation projects or mitigation can be included as one aspect of a larger project. For example, improving the hydraulic capacity of a culvert or bridge to prevent upstream flooding while undertaking periodic replacements for end of service considerations is one example. Replacing windows in a school with shatter resistant glass as part of a overall renovation is another example. Capital improvement programs are generally funded with local tax revenues and municipal bonds.

- Permits, Fees, and Developer Contributions- Communities can establish fees, earmark a portion of existing permit and fee structures, and/or establish requirements for developer contributions for new developments in hazard prone areas that can then be used to fund local mitigation projects. The proceeds can be accumulated in what is often referred to as a "Mitigation Trust Fund" and the uses are typically tied to specific project types and/or relationships with projects already identified in specific plans or documents such as an HMP. These types of funds can also be used to create vouchers or other incentives to individual action.

- Force Account / In-Kind Services – Although there is a "cost" associated with activities of public employees, there are a wide range of activities that can be undertaken by local government staff and officials as well as interested parties on their behalf that would yield significant benefits. Some of the obvious examples are public outreach and education for individual property owners, business and institutions to reduce their risk

through correspondingly inexpensive or essentially activities. This would include tapping into available educations resources[1], promoting individual action, etc.

- Property Owners – For a project that directly benefits one or more specific properties, the property owner can be asked to contribute. Through the HIRA process, property owners can become better aware of their risks and options. Owners that recognize they have a real flood problem may be willing to pay a portion of the cost. In recent years, property owners have voluntarily agreed to pay the non-federal share (up to 25 percent of the total project cost) for FEMA HMA grants in some states. In some cases, the owners have paid even higher percentages of the cost. In addition, after a flood, owners may have cash from insurance claims or disaster assistance that they will be using to repair their homes and properties. By including the right floodproofing and mitigation project components into the repairs, the resilience of the property to future flooding may be improved.

  Having property owners contribute to the project can help stretch available local funds and also gives the property owner an enhanced stake in the outcome of the project and incentive to make sure the property is properly maintained.

- Individual Participation – Although mitigation is ultimately intended to benefit individuals, HMPs often neglect to integrate participation of potential beneficiaries into the process. The participation by individuals, including small business owners, is important for making sure the resulting HMP reflects community needs and priorities but it also allows for the planning team to identify measures and options that individuals can take to reduce their own risk at a cost they can afford.

3.4.2 PUBLIC-PRIVATE PARTNERSHIPS

Developing a "public-private partnership" is a phrase used frequently in a wide range of government programs and for good reason, especially in the content of hazard mitigation. Similar to the point made in the preceding subsection regarding individual participation, participation of private sector organizations in solving their own hazard risk situations can be a low-cost and effective method. The phrase also encompasses finding opportunities for public and private sector partners to share costs equitably for larger projects that require substantial funds to implement. Private sector businesses and organizations have their own cost-benefit calculations to perform but joint efforts may make the balance sheets work for both sides.

3.4.3 PRIVATE FOUNDATIONS

Cultivating relationships with local, regional, or even national foundations with interests or missions consistent with hazard mitigation, community sustainability, climate change adaptation, and other related topics can yield successful results in terms of funding and other means of support.

There are many local foundations around the State of Nebraska, many of which fund programs that can be utilized for components of hazard mitigation projects. Many of these foundations only support non-profit organizations, so the applicability of these funds to projects depends upon the partners involved.

This approach is not as easy to develop as simply listing grants and funding mechanisms as it involves engaging a broad spectrum of stakeholders and employing combinations of funding sources in solving what are increasingly sticky issues related to funding for any public endeavor. However, as noted throughout this guidebook, the reality is that significant federal or state grant allocations for pre-disaster mitigation efforts are not apparent on the immediate horizon and communities will need to be creative, cooperative and proactive to realize risk reduction on a meaningful level.

[1] Several states and agencies have created resources for homeowners, some of which could be readily adapted for use in Nebraska.

SECTION FOUR: REFERENCES

4.1 HAZARD MITIGATION PROJECT FUNDING

The following includes current websites with more detailed information about several of the programs and documents mentioned in this Guidebook.

- *Hazard Mitigation Assistance Unified Guidance*. The current version of this guidance document was developed in 2013 and can be found at: http://www.fema.gov/library/viewRecord.do?id=3649.

In addition, the individual grant programs each have specific websites per the following:

- Hazard Mitigation Grant Program (HMGP) http://www.fema.gov/hazard-mitigation-grant-program
- Pre-Disaster Mitigation (PDM) http://www.fema.gov/pre-disaster-mitigation-grant-program
- Flood Mitigation Assistance (FMA) http://www.fema.gov/flood-mitigation-assistance-program
- Fire Management Assistance Grant Program (FMAGP) - http://www.fema.gov/fire-management-assistance-grant-program
- Public Assistance (PA) Section 406 Hazard Mitigation Funding http://www.fema.gov/public-assistance-local-state-tribal-and-non-profit/hazard-mitigation-funding-under-section-406-0

Note: These websites and reference materials are as current as possible. However, one important aspect of grant programs that is not just applicable to hazard mitigation or to government agencies, is that the status, priorities, and administration of funding sources and programs is dynamic, i.e., subject to frequent changes in direction and emphasis. Therefore, it is useful to be familiar with the current information but it is equally, if not more important, to engage candidate federal and state agencies in a dialog as soon as possible. The intent is to determine the most current information about grant project status and priorities for inclusion in the evaluation of hazard mitigation projects and the development of implementation strategies.

On a related note, it is also recommended to include specific reference in plan maintenance procedures to the monitoring and updating of information regarding grant programs and the agencies or foundations that administer these grants.

There are also a number of documents that include a broad range of project types and how these have been implemented in communities across the country including:

Mitigation Best Practices Portfolio
http://www.fema.gov/mitigation-best-practices-portfolio