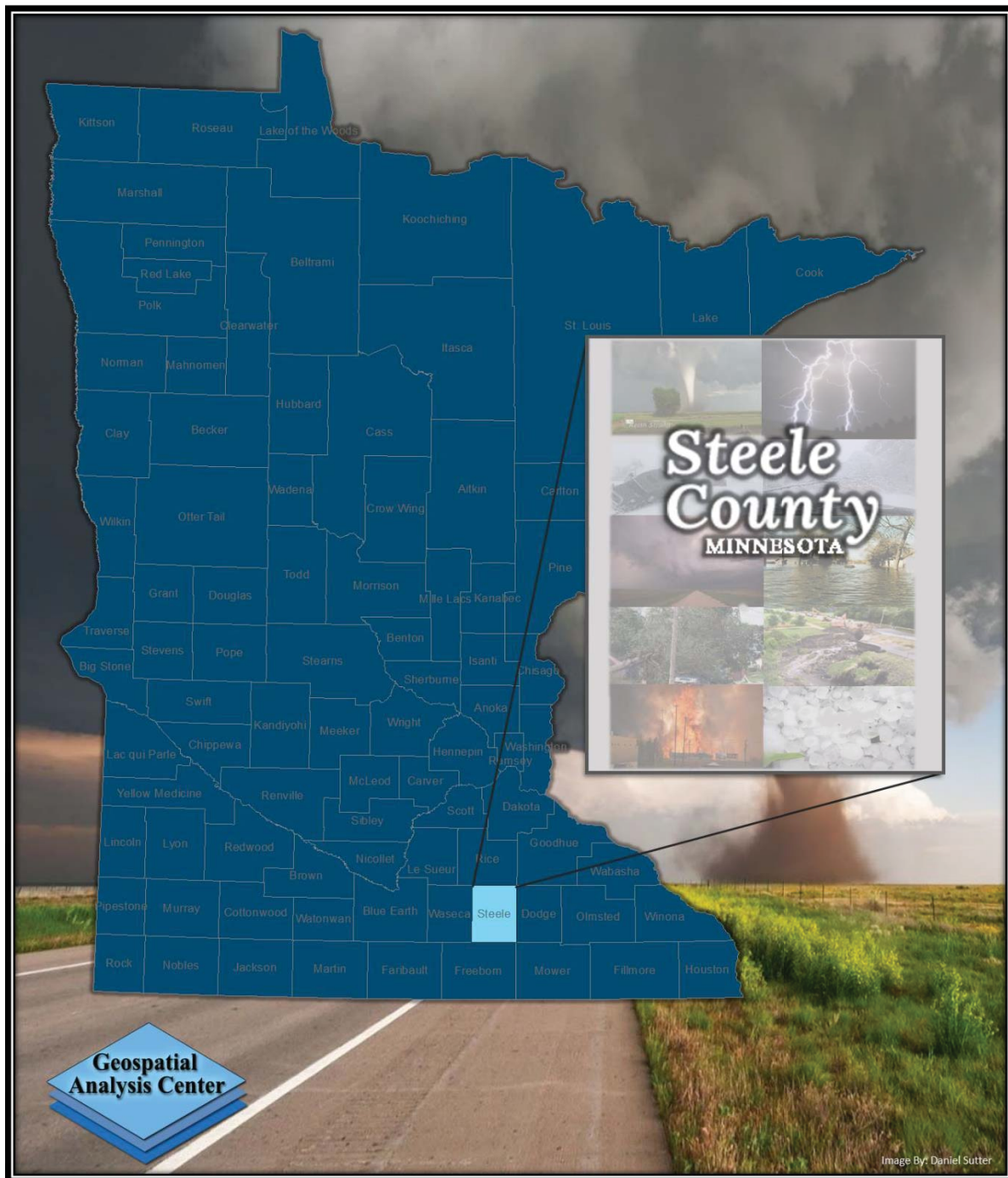


Multi-Hazard Mitigation Plan

Steele County, Minnesota, 2017



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Multi-Hazard Mitigation Plan

Steele County, Minnesota

2017

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Section I – Introduction

I.1 Introduction

Hazard mitigation is defined as any sustained action to reduce or eliminate long-term risk to human life and property from hazards. The Federal Emergency Management Agency (FEMA) has made reducing hazards one of its primary goals; hazard mitigation planning and the subsequent implementation of resulting projects, measures, and policies is a primary mechanism in achieving FEMA's goal.

Between 1960 and 2014, natural hazards cost the U.S. an annual average loss of \$15.6 billion (Hazards & Vulnerability Research Institute, 2015).

Hazard mitigation planning and preparedness will be the most effective instrument to diminish losses by reducing the impact of disasters upon people and property. Although mitigation efforts will not eliminate all disasters, each county shall endeavor to be as prepared as possible for a disaster.

The Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000 (DMA 2000). The development of a local government plan is required in order to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs. In order for communities to be eligible for future mitigation funds, they must adopt an MHMP.

According to an analysis by the Multi-hazard Mitigation Council (a public/private partnership designed to reduce the economic and social costs of natural hazards), for every dollar spent by the federal treasury on FEMA mitigation grants, \$3.65 is saved: "The present value of potential annual savings to the federal treasury because of the FEMA grants studied is approximately \$970 million compared to an annual budget expenditure on these grants of \$265 million" (Multihazard Mitigation Council, 2005). Thus, every dollar spent on mitigation grants leads to an average of \$3.65 in avoided costs post-disaster and increased federal tax revenues.

Steele County is vulnerable to a variety of potential natural disasters, which threaten the loss of life and property in the county. Hazards such as tornadoes, flooding, wildfires, blizzards, straight-line winds, ice storms, and droughts have the potential for inflicting vast economic loss and personal hardship. In 2013, Minnesota had some of the highest weather-related disaster claims in the country (MN Environmental Quality Board, 2014).

This Multi-Hazard Mitigation Plan represents the efforts of Steele County and its local governments to fulfill the responsibility for hazard mitigation planning. The intent of the plan is to reduce the actual threat of specific hazards by limiting the impact of damages and losses.

I.1.1 Scope

The Steele County Emergency Management Director and the University of Minnesota Duluth Geospatial Analysis Center have combined efforts to update the 2010 Steele County Multi-Hazard Mitigation Plan.

This Multi-Hazard Mitigation Plan evaluates and ranks the major natural hazards affecting Steele County as determined by frequency of event, economic impact, deaths, and injuries. Mitigation

recommendations are based on input from state and local agencies, public input, and national best practices.

The University of Minnesota Duluth Geospatial Analysis Center (GAC) performed the hazard risk assessment for 100-year floods using the Hazus-MH GIS tool. In recognition of the importance of planning in mitigation activities, FEMA created **Hazards USA Multi-Hazard** (Hazus-MH), a powerful geographic information system (GIS)-based disaster risk assessment tool. This tool enables communities of all sizes to predict estimated losses from floods, hurricanes, earthquakes, and other related phenomena and to measure the impact of various mitigation practices that might help reduce those losses. The Minnesota Homeland Security and Emergency Management (HSEM) office has determined that Hazus-MH should play a critical role in Minnesota's risk assessments, and therefore the 100-year flood hazard analysis is introduced in this plan.

This is a multi-jurisdictional plan that covers Steele County, including the cities of Blooming Prairie, Ellendale, Medford, and Owatonna. The Steele County risks and mitigation activities identified in this plan also incorporate the concerns and needs of townships, school districts, and other entities participating in this plan.

Members from each of these jurisdictions actively participated in the planning process by attending workgroup meetings, providing information, suggesting mitigation strategies and reviewing the plan document. Each jurisdiction will adopt the plan by resolution after approval by FEMA. County and local city resolutions will be added by Steele County after final approval by FEMA, in Appendix D in the back of the plan.

Steele County has specified the following goals for this Multi-Hazard Mitigation Plan:

- To evaluate and rank the hazards that impact Steele County.
- To determine the extent of existing mitigation programs and policy capabilities within Steele County.
- To create a detailed, working document that will establish a standardized process for ensuring coordination of hazard mitigation efforts and to implement an ongoing and comprehensive hazard mitigation strategy.
- To familiarize state and local officials and the general public about comprehensive hazard mitigation in Steele County and obtain their support.

1.1.2 Hazard Mitigation Definition

Hazard mitigation may be defined as any action taken to eliminate or reduce the long-term risk to human life and property from natural hazards. Potential types of hazard mitigation measures include the following:

- Structural hazard control or protection projects
- Retrofitting of facilities
- Acquisition and relocation of structures
- Development of mitigation standards, regulations, policies, and programs
- Public awareness and education programs

- Development or improvement of warning systems

1.1.3 Benefits of Mitigation Planning

The benefits of hazard mitigation planning include the following:

- Saving lives, protecting the health of the public, and reducing injuries
- Preventing or reducing property damage
- Reducing economic losses
- Minimizing social dislocation and stress
- Reducing agricultural losses
- Maintaining critical facilities in functioning order
- Protecting infrastructure from damage
- Protecting mental health
- Reducing legal liability of government and public officials

1.2 State Administration of Mitigation Grants

FEMA currently has 3 mitigation grant programs that are administered by the State of Minnesota: the Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation program (PDM), and the Flood Mitigation Assistance (FMA) program. The HMGP, PDM and FMA are administered through the Department of Public Safety, Division of Homeland Security and Emergency Management.

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Section 2 – Public Planning Process

2.1 Steering Committee Information

The Steele County multi-hazard mitigation plan steering committee is headed by the Steele County Emergency Management Director, who is the primary point of contact. University of Minnesota Duluth staff under contract with Steele County includes Stacey Stark (GAC Director), Steve Graham (GAC Research Analyst) and Micaella Penning (GAC Research Assistant). GAC also sub-contracted with planner Bonnie Hundrieser of Hundrieser Consulting, LLC. Members of the Steele County MHMP steering committee include representatives from the public, private, and governmental sectors. Table 1 identifies the steering committee individuals and the organizations they represent.

Table 1. Multi-Hazard Mitigation Steering Committee

| Organization | Name | Participant Title |
|--------------------------------------|-----------------------|--------------------------------|
| Steele County | Jim Abbe | Commissioner |
| Steele County | Anita Benson | County Engineer |
| Steele County | James Brady | Commissioner |
| City of Owatonna | Kris Busse | Administrator |
| Steele County | Laura Elvebak | Administrator |
| Steele County GIS | Nick Flatgaud | GIS Coordinator |
| Steele County Public Health | Karen Fountain | Emergency Preparedness |
| Steele County | Rick Gniemi | Commissioner |
| Steele County Environmental Services | Scott Golberg | Environmental Director |
| Steele County CAER | Sandee Hardee – Hagen | Board Member |
| City of Ellendale | Lee Ann Hoiberg | City Council |
| City of Ellendale | Jerry Iberson | Emergency Management |
| Steele County CAER | Iris Johnson | Board Member |
| Steele County | Mike Johnson | Emergency Management Director |
| Owatonna Public Utilities | Ronnie Johnson | Director of Engineering |
| City of Blooming Prairie | Mike Jones | Administrator |
| Steele County CAER | Tom Karnauskas | President |
| Allina Hospital | Jonathon King | Safety & Security |
| City of Owatonna | Troy Klecker | Community Development Director |
| Steele County | Greg Krueger | Commissioner |
| Steele County CAER | Alec Neubauer | Board Member |
| City of Owatonna | Jeff Okerberg | City Council |
| OPU Engineer | David Olson | Electric Engineer |
| City of Owatonna | Bill Pekuri | Assistant Engineer |
| SWCE | Lori Read | Compliance Coordinator |

| Organization | Name | Participant Title |
|------------------------|----------------|--------------------|
| City of Owatonna | Rick Smith | Parks & Recreation |
| City of Owatonna | Doug Voss | City Council |
| City of Medford | Andy Welti | Administrator |
| Rice/Steele 911 Center | Karen Whitiker | Operations Manager |

Jurisdictional representatives participating on the steering committee were contacted throughout the plan update process to provide feedback on the hazards of concern to their community and the mitigation actions which they would seek to implement upon plan adoption. The list of final mitigation actions was divided into jurisdiction-specific mitigation action charts so that each could see and address those actions that applied specifically to their cities (see *Appendix G: Mitigation Actions by Jurisdiction*).

2.2 Review of Existing Plans

Steele County and its local communities utilized a variety of planning documents to direct community development. These documents include a Comprehensive/Master Plan, Capital Improvements Plan, Emergency Operations Plan, Transportation Plan, Continuity of Operations Plan, etc. (see Appendix J for a full listing of plans and programs in place in Steele County). The planning process also incorporated the existing natural hazard mitigation elements from previous planning efforts. Table 2 lists the plans, studies, reports, and ordinances used in the development of the plan.

Table 2. Planning Documents used for MHMP Planning Process

| Author(s) | Year | Title | Description | Where Used |
|--|------|---|---|------------|
| Minnesota Division of Homeland Security and Emergency Management | 2014 | Minnesota All-Hazard Mitigation Plan Update | Statewide hazard mitigation plan. | Section 4 |
| Steele County | 2011 | Steele County Local Water Management Plan 2007 - 2016 | The purpose of this plan is to provide a framework and schedule for implementing activities that address priority water management concerns. | Section 4 |
| Steele County | 2007 | Steele County Comprehensive Land Use Plan | This plan provides an objective study of Steele County's physical features, land use, population, natural resources, development trends and other factors in order to guide future decision making. | Section 3 |

2.3 Planning Process Timeline and Steps

In order to update the 2010 Steele County Multi-Hazard Mitigation Plan, UMD consultants worked in coordination with the Steele County Emergency Management Director, State of Minnesota Hazard Mitigation officials, and members of the steering committee. The goals of the updating process were to include more recent data documenting the critical infrastructure and hazards faced by Steele County, reformat and reorganize the plan to reflect definitions of hazards as expressed in the 2008 State of Minnesota Multi-Hazard Identification and Risk Assessment Plan, and reflect current hazard mitigation

priorities in Steele County. Therefore, the new plan includes not only new data documenting the types of hazards faced by Steele County residents and emergency planning officials, but also new thinking about how to best address these hazards.

This is a multi-jurisdictional plan that covers Steele County and the cities of Blooming Prairie, Ellendale, Medford and Owatonna. The Steele County risks and mitigation activities identified in this plan incorporate the concerns and needs of townships, school districts, and other entities participating in this plan.

On December 4, 2016, the Geospatial Analysis Center hosted a kickoff telephone meeting with the Steele County Emergency Management Director. The meeting included a project overview, GAC background, the roles and responsibilities of the Emergency Management Director, contents of the Multi-Hazard Mitigation Plan, planning process and projected timeline.

A steering committee meeting took place on March 15, 2017, at the Steele County Administrative Building in Owatonna, which included the Steele County MHMP steering committee, UMD staff, and Bonnie Hundrieser of Hundrieser Consulting, LLC. The steering committee was provided with an overview of the purpose, process and timeline for the Steele County Multi-Hazard Mitigation Plan update, as well as the role and responsibilities of steering committee members. Appendix E provides documentation of steering committee meeting summaries, including participant sign-in sheets and presentation slides.

Steering committee members were engaged in providing feedback on plans and programs in place as they relate to hazards facing the county, and they discussed potential mitigation actions to be added to the plan. This information was used to inform the development of mitigation strategies in the updated plan.

In April of 2017, Steele County issued a news release inviting public feedback and participation for the Steele County MHMP update (for complete documentation, see *Appendix F: Public Outreach & Engagement Documentation*).

On May 10, 2017, members of the steering committee convened to conduct a review and discussion of the draft mitigation action charts developed for Steele County and the city jurisdictions participating in the plan. The meeting was facilitated by Bonnie Hundrieser, a member of the University of Minnesota – Duluth Geospatial Analysis Center (GAC) planning team that is leading the update of the Steele County MHMP. See Appendix E for a full meeting summary.

In order to provide opportunity for public input, Steele County issued a second new release on September 5, 2017 inviting public review and feedback on the draft plan. The news release provided information on where the plan could be viewed and comments submitted. The UMD Geospatial Analysis Center hosted a webpage to post the full draft Steele County MHMP, including excerpts of the Steele County Master Mitigation Action Chart, each of the jurisdictional mitigation action charts, an electronic feedback form, and an Esri Story Map that documents the history of natural hazards in Steele County. Story maps combine mapping and analysis with multi-media content such as images, videos, text, and hyperlinks. Data layers such as the 100-year floodplain and potential economic loss produced with the FEMA Hazus-MH tool were integrated with poignant imagery from past events, in the hope that the

story map would serve as a helpful tool for visually ‘reminding’ residents about hazards, to encourage their participation in future mitigation (<http://arcg.is/0LW1Wn>).

Appendix F provides documentation of the public outreach for feedback on the draft plan by Steele County and jurisdictions. The public feedback period for the draft plan was open from September 5 to September 20, 2017, for a total of 15 days.

Table 3. Steele County Hazard Mitigation Update Meetings and Public Outreach

| Meeting Type | Date | Location |
|--------------------|-------------|--|
| Kickoff | 12/4/2016 | Telephone meeting |
| Steering Committee | 3/15/2017 | Steele County Administrative Building, Owatonna, MN |
| Public Outreach | 4/2017 | News release inviting public feedback |
| Steering Committee | 5/10/2017 | Steele County Administrative Building, Owatonna, MN |
| Public Outreach | 9/5-20/2017 | News release inviting public review of draft plan materials and feedback |

At the close of the public outreach period, the UMD consultants worked with the Steele County Emergency Management Director and members of the steering committee to incorporate comments from the public into the Multi-Hazard Mitigation Plan.

For more information on the planning process, see sections 5 and 6.

Section 3 – Steele County Profile

This section offers a general overview of Steele County to provide a basic understanding of the characteristics of the community, such as the physical environment, population, and the location and distribution of services.

3.1 General County Description

Steele County is located in southeastern Minnesota, south of the Minneapolis/St. Paul metropolitan area. To the west lies Waseca County, and to the south is Freeborn County. Rice County is on the northern border of the Steele county border, and to the east is Dodge County. Steele County covers 432 square miles (276,480 acres), and the county's estimated population in 2010 was 36,576. Owatonna is the county seat and the largest city in the county.

The 4 cities in Steele County are Owatonna, Medford, Ellendale and Blooming Prairie. The 13 townships are Meriden, Clinton Falls, Lemond, Havana, Somerset, Deerfield, Merton, Berlin, Aurora, Medford, Summit and Blooming Prairie.

Steele County is dominated by the manufacturing and trade/transportation/utilities industries, with 44% of jobs in the county. Education/health services and professional/business services are also major components of the county's economy.

3.2 Environmental Characteristics

The southwestern and southeastern parts of Steele County are covered by recessional moraines that exhibit a rolling to hilly landscape with relief ranging from 10 to 50 feet. The southwestern moraine is a wide area of hills that are circular with flat tops, exhibiting a rolling landscape. The southeastern moraine is a narrow belt of hills that are more irregular in shape. The hills in both moraine belts are separated by lowlands that serve as drainage ways and contain lakes and wetlands. The northern and eastern parts of the county contain a nearly level to gently rolling ground moraine that exhibits a local relief of 5 to 20 feet. In the north central part of the county the relief may be as much as 90 feet where the Straight River has carved a valley into the nearly level uplands. Many of the nearly flat areas of the ground moraine are artificially drained to improve agricultural conditions. The highest surface elevation, about 1,330 feet above mean sea level, is located in the southeastern part of the county. The lowest elevation, about 1,060 feet above mean sea level, is located on the north central edge of the county where the Straight River leaves Steele County to the north. The maximum total relief is approximately 270 feet.

3.3 Hydrography

The availability of groundwater in Steele County is generally not a problem. In addition to the sand and gravel aquifers in the glacial deposits, there are 4 major bedrock aquifer systems that underlie Steele County which readily yield water: the Cedar Valley-Maquoketa-Galena aquifer system, St. Peter-Prairie Du Chien-Jordan aquifer system, Franconia-Ironton-Galesville aquifer system, and Mt. Simon-Hinckley aquifer system. Steele County residents are dependent on groundwater for residential, commercial, industrial, and agricultural uses. Because groundwater is such a precious resource that we know very

little detailed information about, there is a need to obtain more useful information about groundwater quantities.

Steele County contains approximately 2,000 acres of surface water including lakes, 1 major river with its tributaries, and several ditches, streams, and wetlands. Surface water constitutes less than 1% of the total surface area of Steele County. There are 2 lakes, Rice Lake and Beaver Lake, which have established “ordinary high water marks” (OHW) for regulatory purposes.

More than 80% of the original pre-settlement wetlands in Steele County have been drained or filled. Wetlands greater than 10 acres that once existed were mainly in shallow basins formed by the irregular deposition of till along the eastern and western borders of the county.

Basic hydrography in Steele County is mapped in Figure A-1 in Appendix A, while aquifer vulnerability (using 2011 data from the Minnesota Department of Agriculture) and public wells are mapped in Figure A - 14.

3.3.1 Groundwater

The groundwater supplies that are contained in the bedrock aquifers underlying Steele County appear to be adequate for present and foreseeable needs. Water wells in the county range in depth from shallow (i.e. 20-30 ft.) for some rural wells to over 1,000 ft. deep for a municipal well in Owatonna. The shallow glacial deposit wells are generally more susceptible to groundwater quantity and quality (contamination) problems. Two observation wells have been monitored monthly since early 1994 by the Steele County SWCD staff. This monitoring can provide some critical data on how groundwater levels respond to various climatic conditions and land use activities. The observation well network should be expanded to include more wells of different depths and locations. Even though groundwater quantity has not been a limiting factor for present water and land uses in Steele County, there is still a need for individual residents and industry to practice water conservation measures to ensure an adequate supply for future use.

3.3.2 Lakes

Steele County contains 12 lakes all 10 acres or greater; Rice Lake is the largest, covering 610 acres. Together, these lakes represent 1,292 of the county's 276,480 acres (0.4%).

Rice Lake has an OHW elevation of 1,238.2 feet and is located in the Zumbro River major watershed; Beaver Lake has an OHW elevation of 1,204.9 feet and is located in the Cannon River watershed. The OHW is the elevation delineating the highest water level which has been maintained for a sufficient period of time to leave evidence upon the landscape. Generally, the OHW is the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial. Any work done below the OHW is within the beds of public waters or wetlands and is therefore subject to permit authority of the Department of Natural Resources. Water levels in lakes do fluctuate naturally as a result of climatic conditions.

An 'Unnamed gravel pit' located in S16, T108, R20W was identified to contain Eurasian watermilfoil and added to the Minnesota Department of Natural Resources Infested Waters List in 2012. This water body is recognized as the only infested site by the Minnesota DNR as of February 07, 2017.

3.3.3 Rivers

There are 6 rivers in Steele County: Cedar River (west fork), Le Sueur River, Little Le Sueur River, Straight River and Zumbro River. The Straight River is the source of 8 of the 9 named creeks that flow through Steele County. This river originates in the southeast quadrant of the state and meanders south and then west before following a northern path through the center of the state.

Protected flows are also established by the DNR on rivers and streams when there is a need because of climatic conditions and public uses (i.e. water appropriation). Since there is currently minimal data available on surface water quantity in Steele County, there is a need for local agencies to work with the DNR and other sources in gathering useful information such as streamflow data. Protected flows should be carefully monitored with respect to surface water appropriation permits, especially during drought years.

3.3.4 Wetlands

Important benefits of wetlands include storage area for excess water during flooding; filtering of sediments and nutrients before they enter lakes, rivers and streams; and fish and wildlife habitat. According to a 1965 DNR bulletin, nearly 90% of these larger wetlands have been artificially drained over the last 100 years and turned into agricultural land. The majority of wetlands that are left in Steele County are classified as Type 2 (inland fresh meadows) or Type 3 (inland shallow fresh marshes) wetlands; these are areas where the soil is usually waterlogged to within a few inches of the surface or covered with up to 6 inches of water during parts of the growing season. The wetlands that still exist are scattered throughout the county.

Because of current wetland regulatory programs, there will be minimal further loss of wetlands in Steele County. The incentive programs to preserve or restore wetlands provide opportunities for increasing wetland areas. The Wetland Conservation Act (WCA) requires counties to designate high priority wetland preservation areas in the water plan.

3.4 Climate

The climate of Steele County is classified as continental, characterized by wide variations in temperature from summer to winter. Although the climate is essentially uniform throughout the county, variations in microclimate may occur as a result of differences in vegetation, soil and relief.

January is the coldest month on average in Owatonna. The lowest temperature ever recorded there occurred in 1977, when it fell to -35° F. The average low temperature in Owatonna for the month of January is 2° F, with an average annual snowfall of 8.5" (Intellicast, 2017).

July is the hottest month on average in Owatonna. The highest temperature ever recorded there occurred in 1988, 1990 and 1995, when it rose to 102° F. The average high temperature in July is 83° F (Intellicast, 2017).

3.4.1 Climate Change

Minnesota's climate is currently changing in ways that affect the environment, economy and everyday life. Historical weather data show changing trends in some weather phenomenon over the past few decades, and future changes are likely. Definite predictions are difficult to make, as changes may vary depending on geographical location, even within Minnesota. Intense study of these topics is ongoing.

According to the 2015 Minnesota Weather Almanac,

During the three most recent decades, the Minnesota climate has shown some very significant trends, all of which have had many observable impacts...Among the detectable measured quantity changes are: (1) warmer temperatures, especially daily minimum temperatures, more weighted to winter than any other season; (2) increased frequency of high dew points, especially notable in mid- to late summer as they push the Heat Index values beyond 100°F; and (3) greater annual precipitation, with a profound increase in the contribution from intense thunderstorms (Seeley M. , 2015).

Winter temperatures in Minnesota have been warming nearly twice as fast as annual average temperatures, a trend that has been noticed throughout the Midwest. There has also been a distinct spread of warmer lows into the northern portion of the state, and 7 of the top 10 warmest years in Minnesota since record-keeping began in 1895 have occurred within the last 15 years (Minnesota Department of Health, 2015). Various studies have also concluded that the frequency and intensity of precipitation in the Midwest has increased, with more storm events leading to flooding.

Rural communities are particularly vulnerable to climate change, due to their dependence upon natural resources, physical isolation, limited economic diversity, higher poverty rates and aging populations. According to *Climate Change Impacts in the United States: The Third National Climate Assessment*,

Warming trends, climate volatility, extreme weather events, and environmental change are already affecting the economies and cultures of rural areas. Many rural communities face considerable risk to their infrastructure, livelihoods, and quality of life from observed and projected climate shifts...These changes will progressively increase volatility in food commodity markets, shift the ranges of plant and animal species, and, depending on the region, increase water scarcity, exacerbate flooding and coastal erosion, and increase the intensity and frequency of wildfires across the rural landscape (Hales, et al., 2014).

The Assessment also notes that transportation systems in rural areas are more vulnerable to risks such as flooding, since there are typically fewer transportation options and infrastructure redundancies. In addition, power and communication outages due to severe weather events typically take longer to repair in rural areas, which can increase the vulnerability of elderly populations. Rural areas are also more vulnerable since they typically have more limited financial resources to deal with the effects of climate change.

The composition of the region's forests is expected to change as increasing temperatures shift tree habitats northward. While forests in the Midwest are currently acting as a net absorber of carbon, this could change in the future due to projected increases in insect outbreaks, forest fires, and drought, which will result in greater tree mortality and carbon emissions (Pryor, et al., 2014).

The National Climate Assessment suggests that infrastructure planning (particularly water resources infrastructure) should "be improved by incorporating climate change as a factor in new design standards and asset management and rehabilitation of critical and aging facilities, emphasizing flexibility, redundancy, and resiliency" (Georgakakos, et al., 2014).

Federal, state, and tribal governments are increasingly integrating climate change adaptation into existing decision-making, planning, or infrastructure-improvement processes (Georgakakos, et al., 2014).

3.5 Demographics

Owatonna City is the largest city in Steele County (pop. 37,076) and the designated county seat. There are 4 cities and 13 townships within the county.

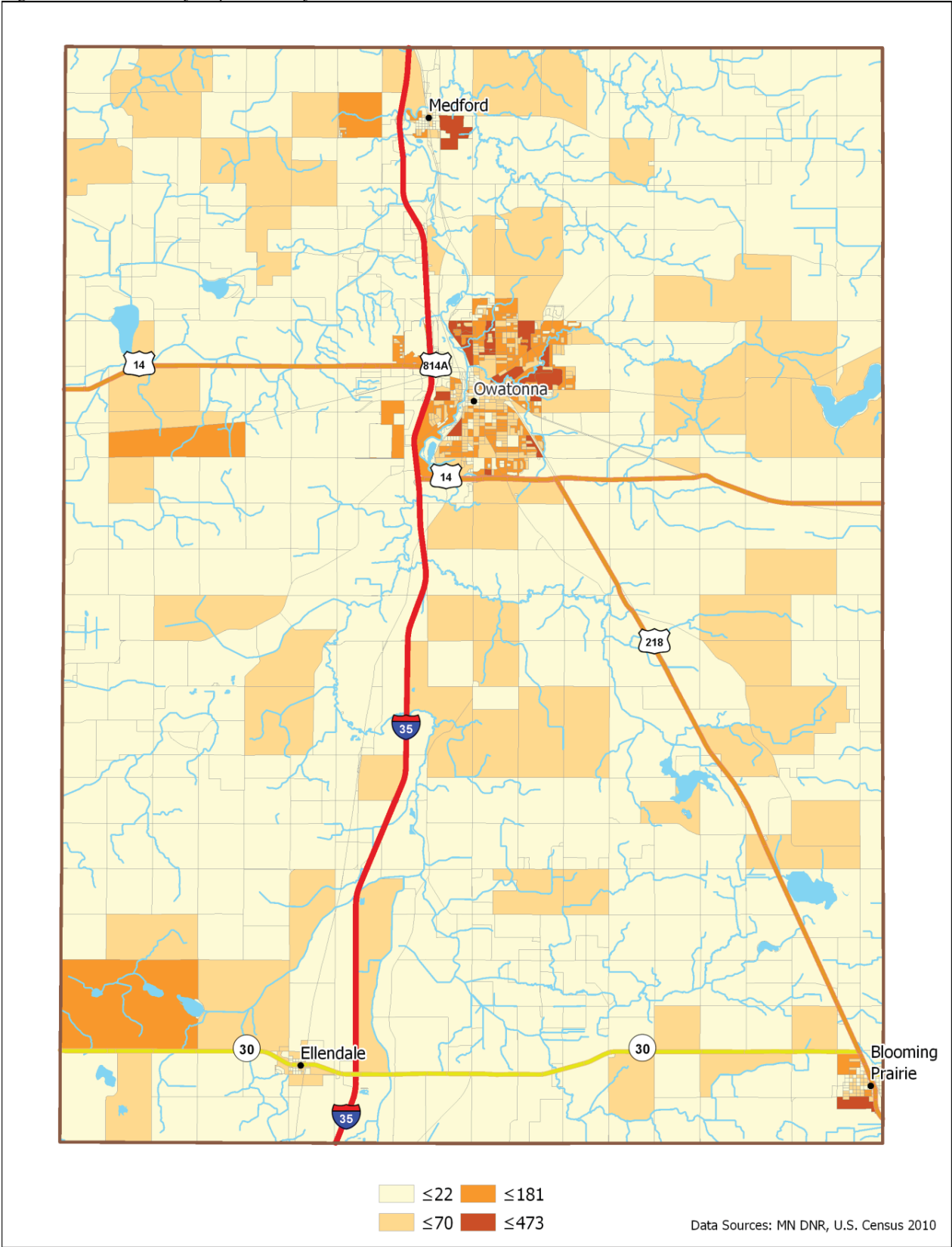
Table 4 summarizes population by community according to the 2010 U.S. Census. Figure 1 shows Steele County population density by census block.

Table 4. Steele County Population by Community, 2010

| Community | 2010 Population | % of County |
|---------------------------|------------------------|--------------------|
| Aurora Township | 574 | 1.57% |
| Berlin Township | 519 | 1.42% |
| Blooming Prairie City | 1,996 | 5.46% |
| Blooming Prairie Township | 430 | 1.18% |
| Clinton Falls Township | 351 | 0.96% |
| Deerfield Township | 517 | 1.41% |
| Ellendale City | 691 | 1.89% |
| Havana Township | 570 | 1.56% |
| Lemond Township | 501 | 1.37% |
| Medford City | 1,239 | 3.39% |
| Medford Township | 813 | 2.22% |
| Meriden Township | 621 | 1.70% |
| Merton Township | 348 | 0.95% |
| Owatonna City | 25,599 | 69.99% |
| Owatonna Township | 609 | 1.67% |
| Somerset Township | 732 | 2.00% |
| Summit Township | 466 | 1.27% |
| Total | 36,576 | |

Source: U.S. Census Bureau, 2016

Figure 1. Steele County Population by Census Block, 2010



Population growth trends have an important influence on the needs and demands of a variety of services such as transportation, law enforcement, and emergency response. An understanding of population trends and location of population concentrations is important for making projections regarding potential impacts in the event of a disaster.

In 2010, Steele County had a population of 36,576 residents, averaging 85 persons per square mile of land area. Owatonna, the largest city in the county and the county seat, has a population 25,599.

Steele County's population is increasing, rising 19% between 1990 and 2010. Since 1940, the population has risen by 85%. Table 5 below shows the population change in Steele County between 1940 and 2010.

Table 5. Steele County Population Change (1940-2010)

| 1940 | 1950 | 1960 | 1970 | 1980 | 1990 | 2000 | 2010 | Change 1940- 2010 | Change 2000- 2010 |
|--------|--------|--------|--------|--------|--------|--------|--------|-------------------------|-------------------------|
| 19,749 | 21,155 | 25,059 | 26,931 | 30,328 | 30,729 | 33,680 | 36,576 | +85% | +9% |

Source: U.S. Census Bureau, 2013

Steele County's population is projected to grow by 23% between 2015 and 2045. Table 6 below shows population projections for Steele County until 2045.

Table 6. Steele County Population Projections (2015-2045)

| 2015 | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | Projected Change 2015-2045 |
|--------|--------|--------|--------|--------|--------|--------|----------------------------------|
| 38,672 | 40,375 | 41,926 | 43,411 | 44,852 | 46,154 | 47,458 | 23% |

Source: Minnesota State Demographic Center, Minnesota Planning, 2015

3.6 Economy

Steele County is dominated by the manufacturing and trade/transportation/utilities industries, with 44% of jobs in the county. Education/health services and professional/business services are also major components of the county's economy. Major employers include Viracon and Federated Insurance. The county has a strong commercial and industrial base as well as a focus toward entertainment attractions around Owatonna.

The number of jobs in the county rose by 9% between 2004 and 2014. Table 7 provides an overview of the annual average employment by major industry sector in Steele County.

Table 7. Annual Average Employment by Major Industry Sector, Steele County

| Industry | Number of Jobs (2004) | Number of Jobs (2014) |
|----------------------------------|-----------------------|-----------------------|
| Natural Resources and Mining | 161 | 78 |
| Construction | 831 | 569 |
| Manufacturing | 5,786 | 5,395 |
| Trade, Transportation, Utilities | 4,257 | 4,156 |
| Information | 176 | 159 |
| Financial Activities | 1,939 | 1,883 |
| Professional /Business Services | 971 | 3,349 |
| Education and Health Services | 2,894 | 3,274 |
| Leisure and Hospitality | 1,633 | 1,547 |
| Public Administration | 513 | 459 |
| Other Services | 594 | 659 |
| Total Number of Jobs: | 19,755 | 21,530 |

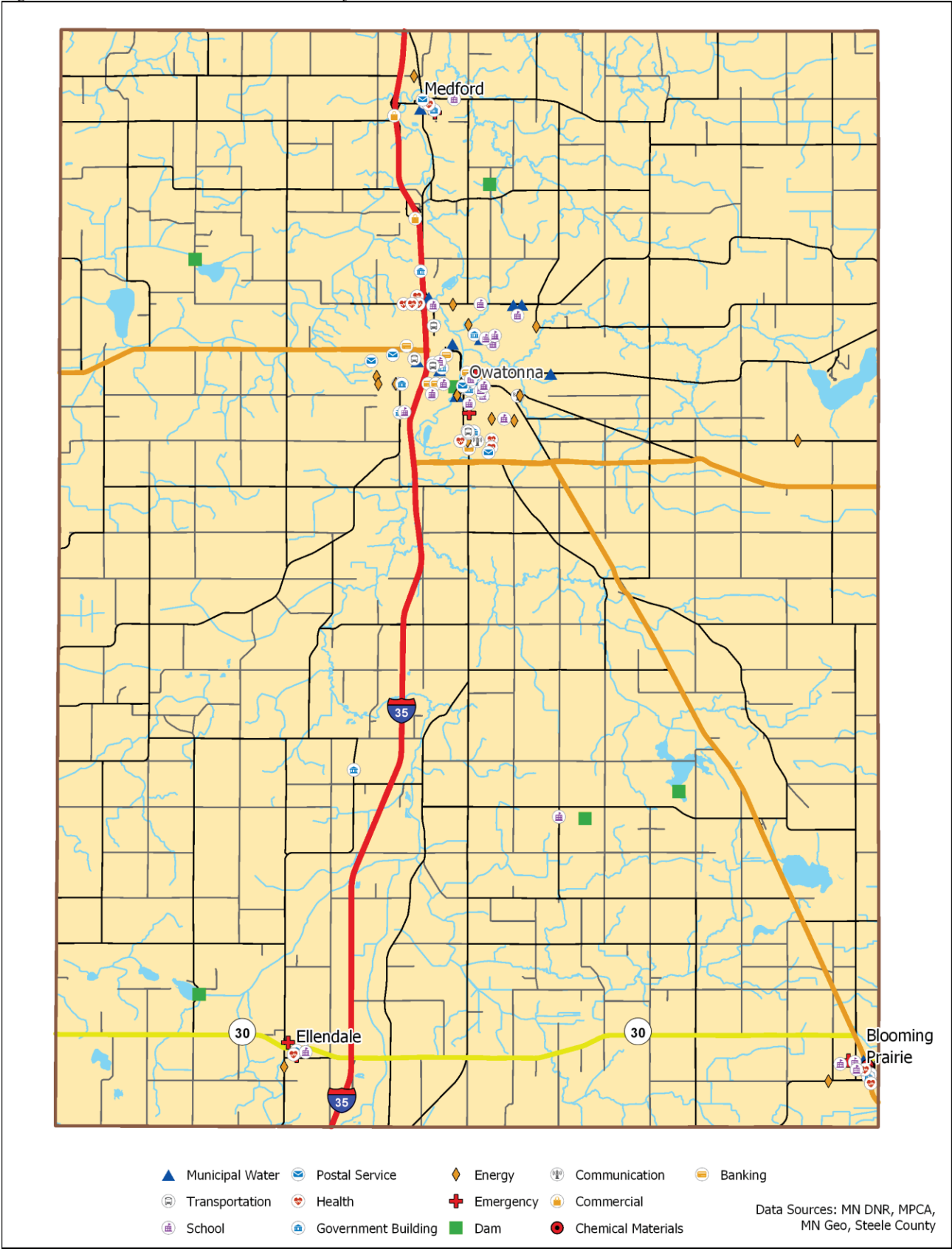
Source: Minnesota Dept. of Employment and Economic Development. Note: data discrepancies between segment values and totals exist due to data suppression for confidentiality.

According to 2015 ACS estimates, the median household income in Steele County was \$57,858, compared to a Minnesota average of \$61,492. The percent of the county's population living below the poverty level was 10.4%, compared to 11.3% for the state of Minnesota.

3.7 Community Services & Infrastructure

The following section provides an overview on community services and infrastructure within Steele County. Examples of community services include healthcare and public safety, while examples of community infrastructure include power utilities, water and sewer facilities, and the transportation network. Figure 2 below shows critical facilities in the county, and tables of all critical facilities can be found in Appendix B.

Figure 2. Critical Facilities in Steele County



3.7.1 Health Care Providers

There is one hospital in Steele County, the Owatonna Hospital, which focuses on surgery and trauma care.

Steele County has ambulance services through the Gold Cross EMS provider.

Figure A - 13 in Appendix A depicts health services within Steele County.

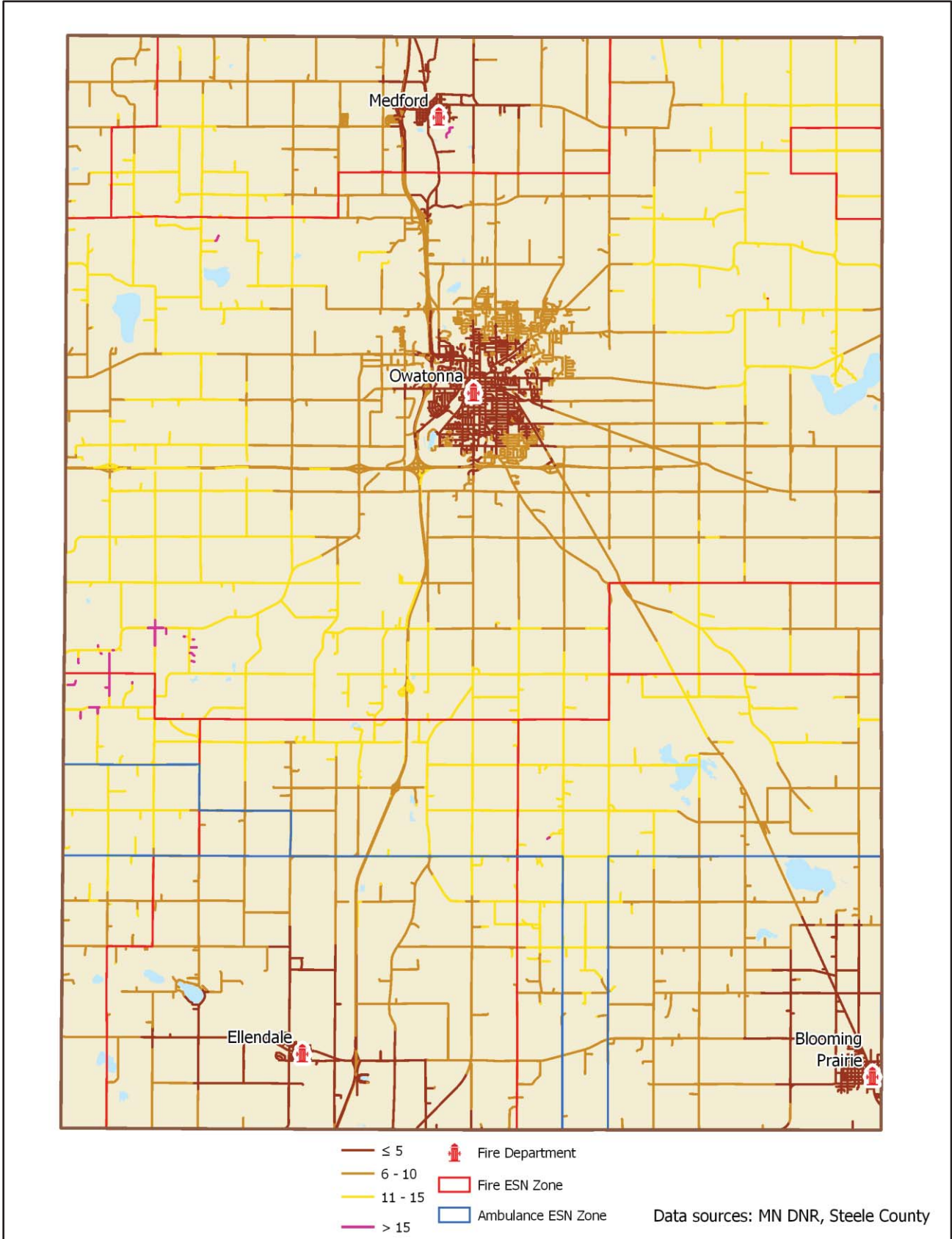
3.7.2 Public Safety Providers/Government Services

The Sheriff's Office is centrally located at the law enforcement center in Owatonna. The cities of Owatonna and Blooming Prairie also have their own police departments.

Figure A - 4 in Appendix A depicts government and emergency facilities, including city halls, fire departments, police departments, the Sheriff's Office and the Steele County Courthouse.

Figure 3 shows fire departments and fire response times in Steele County. These drive times were created using ArcGIS Network Analyst extension and Esri's Business Analyst. The user may note discrepancies between MN DOT road data and the map in this document; Network Analyst requires a seamlessly-connected data source in order to perform the calculations for drive times, which Business Analyst provides but MN DOT does not. The Business Analyst data was used for this reason. According to this model, most of the county is within 15 minutes of a fire department.

Figure 3. Fire Departments and Fire Response Times in Minutes in Steele County



3.7.3 Utilities/Communications

There are 3 electricity companies within Steele County: Southern Minnesota Municipal Power Agency, Alliant and Great River Energy.

Established in 2004, the Allied Radio Matrix for Emergency Response (ARMER) Program, administered in coordination with the Minnesota Statewide Radio Board, manages the implementation of a 700/800 megahertz (MHz) shared digital trunked radio communication system. In Steele County, there is one ARMER tower (Figure A - 5).

3.7.4 Transportation

The county transportation system is composed of roads, highways, an airport, public transit and railroads (Figure A - 6). The system is designed to serve all residents, businesses, industries and tourists.

The existing roadway system reflects the concentration of urban development in the north. This area has the greatest concentration of roads and highest traffic volumes. Interstate-35 runs vertically through the center of the county connecting Ellendale with Owatonna. MN-30 proceeds horizontally across the southern region of the county from Blooming Prairie to Ellendale. Additionally, US-218 reaches from the southeastern corner where Blooming Prairie is located to US-14 which is south of Owatonna.

The Steele County transportation infrastructure consists of over 377 centerline miles of road including 132 bridges. The highway system is categorized by funding sources. County State Aid Highways (CSAH) consist of 313 miles and gas tax revenue is distributed by the State of Minnesota to assist in the construction and maintenance of these highways. County Roads (CR) consist of 64 miles and the local property tax levy, wheelage tax and sales tax funds the construction and maintenance of these roads.

There is one airport in the county, the Owatonna Degner Regional Airport. It has a 5,500-foot concrete runway that is 100 feet wide with modern ILS. It can accommodate corporate jets, air freight, flight instruction, aircraft rental and aircraft sales. There is also a crosswind paved runway, which is 3,000-feet long and 75 feet wide.

Railroads in Steele County serve regional agriculture and industrial uses. Two carriers currently operate in Steele County: the Union Pacific Railroad and the Dakota Minnesota and Eastern Railroad.

Residents of Steele County may utilize the Southern Minnesota Area Rural Transit (SMART) as a mode of public transportation in the region. This service is also available to Freeborn and Mower Counties.

3.8 Land Use and Ownership

Steele County covers a total of 432 square miles (276,480 acres). Land in Steele County is primarily used for agricultural production, with farm holdings dominating the county. A few woodland areas are spread throughout the county but are not focused in any large region.

In 2012, cultivated cropland covered 210,663 acres, which correlates to 76% of the county. Deciduous forest, woody wetlands, and emergent herbaceous wetlands contribute 19,161 acres to the classification of Steele County land cover. Impervious surfaces which are defined as developed regions of low, medium, or high intensity in the MN DNR land cover dataset qualify only 9,315 acres in the Steele County parameter. The rest is classified as “open water”, “open space”, “barren land”, “evergreen or

mixed forest”, “shrub/scrub”, and “hay/pasture” which contribute a less significant land cover percentage (Census of Agriculture, 2012).

According to Minnesota DNR data, the number of feedlots in Steele County as of April 15, 2015 was 627, 70 of which have 1,000 or more animal units. Feedlots in Steele County are mapped in Figure A - 27 (*Appendix A: Steele County Maps*).

Agricultural areas in the state such as those in Steele County may need to undergo transformative changes to keep pace with climate change, though the country’s agricultural system is expected to be fairly resilient overall due to “the system’s flexibility to engage in adaptive behaviors such as expansion of irrigated acreage, regional shifts in acreage for specific crops, crop rotations, changes to management decisions (such as choice and timing of inputs and cultivation practices), and altered trade patterns compensating for yield changes” (Hales, et al., 2014).

Land ownership categories from the 2008 U.S. Geological Survey GAP (Gap Analysis Program) are shown in Figure A - 8 (*Appendix A: Steele County Maps*). Land cover is also mapped in Figure A - 7.

Sites with chemical and hazardous waste based on data from the Minnesota Pollution Control Agency (MPCA) are mapped in Figure A - 12.

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