

- DRAFT -
KOOCHICHING COUNTY
HAZARD MITIGATION PLAN



September 2008

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- **Laurie Whitfield-Trautlein**..... Falls Memorial Hospital

Arrowhead Regional Development Commission Staff:

Rudy SchooldermanSenior Planner
Brandon Kohlts.....Planner
Josh Bergstad..... Associate Planner
David Yapel..... GIS
Leah Reese Division Secretary

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SECTION ONE:

Introduction and Background

SECTION 1: INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Koochiching County is vulnerable to a variety of potential disasters. These hazards, both natural and human caused, threaten loss of life and property of the County. Such hazards as flooding, wildfires, blizzards, straight line winds, ice storms, and hazardous material spills have the potential for inflicting vast economic loss and personal hardship.

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, the State shall endeavor to be prepared as much as possible for a disaster.

This Hazard Mitigation Plan represents the efforts of local agencies in Koochiching County in fulfilling 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.

1.1.1 SCOPE

The Hazard Mitigation Plan evaluates and ranks the major natural, technological and domestic preparedness hazards, affecting Koochiching County as determined by frequency of event, economic impact, deaths, and injuries. Mitigation recommendations are based on input from state and local agencies and national best practices.

This plan is a multi-jurisdictional plan and covers Koochiching County and the Cities of International Falls, Ranier, Little Fork, Northome and Mizpah. Members from each of these jurisdictions actively participated in the planning process by participating in the workgroup meetings, providing information through the community risk assessment survey and critical infrastructure inventory, suggesting mitigation strategies and reviewing the plan document. Each jurisdiction adopted the plan by resolution after a public review process. Copies of the resolutions can be found in Appendix C in the back of the plan.

Cities Participating the Koochiching County Hazard Mitigation Plan	
City	Population (2000 Census, 2007 MN State Estimates)
Big Falls	264
International Falls	6,703
Littlefork	680
Northome	230
Ranier	180

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 and man-made 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 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

1.1.4 PLAN OBJECTIVES

1. Determine the extent of existing mitigation programs and policy capabilities within Koochiching County
2. Evaluate and rank the hazards that impact Koochiching County.
3. Create a detailed, working document that will establish a standardized process for ensuring coordination of recovery-related hazard mitigation efforts following a major emergency/disaster and implement an on-going, comprehensive state hazard mitigation strategy.
4. Familiarize state and local officials, and the general public about comprehensive hazard mitigation in Koochiching County and obtain their support.

1.2 FOUNDATIONS OF THE COUNTY MITIGATION PLAN

FEMA currently has five mitigation grant programs that are administered by the State of Minnesota: the Hazard Mitigation Grant Program (HMGP), the Pre Disaster Mitigation program (PDM), the Flood Mitigation Assistance (FMA) program, Repetitive Flood Claims Grant Program (RFC), and Severe Repetitive Loss Program (SRL). HMGP, PDM RFC, SRL, and FMA are administered through the Department of Public Safety, Division of Homeland Security and Emergency Management; the Flood Damage Reduction Program (FDR) is administered by the Minnesota Department of Natural Resources. Future funding eligibility for these programs requires the completion of a Hazard Mitigation Plan.

1.2.1 HAZARD MITIGATION GRANT PROGRAM (HMGP)

Authorized under Section 404 of the Stafford Act, the Hazard Mitigation Grant Program (HMGP) provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.

Hazard Mitigation Grant Program funding is only available to states following a Presidential disaster declaration. Eligible applicants are:

- State and local governments
- Indian tribes or other tribal organizations
- Certain private non-profit organization

Individual homeowners and businesses may not apply directly to the program; however a community may apply on their behalf. HMGP funds may be used to fund projects that will reduce or eliminate the losses from future disasters. Projects must provide a long-term solution to a problem, for example, elevation of a home to reduce the risk of flood damages as opposed to buying sandbags and pumps to fight the flood.

In addition, a project's potential savings must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage.

1.2.2 PRE-DISASTER MITIGATION PROGRAM (PDM)

The Pre-Disaster Mitigation (PDM) program provides technical and financial assistance to states and local governments for cost-effective pre-disaster hazard

mitigation activities that complement a comprehensive mitigation program, and reduce injuries, loss of life, and damage and destruction of property. FEMA provides grants to states and federally recognized Indian tribal governments that, in turn, provide sub-grants to local governments (to include Indian Tribal governments) for mitigation activities such as planning and the implementation of projects identified through the evaluation of natural hazards. The Pre-Disaster Mitigation (PDM) Program was authorized by §203 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act (Stafford Act), 42 USC, as amended by §102 of the Disaster Mitigation Act of 2000.

Funding for the program is provided through the National Pre-Disaster Mitigation Fund to assist states and local governments (to include Indian Tribal governments) in implementing cost-effective hazard mitigation activities that complement a comprehensive mitigation program. All applicants must be participating in the National Flood Insurance Program (NFIP) if they have been identified through the NFIP as having a Special Flood Hazard Area (a Flood Hazard Boundary Map (FHBM) or Flood Insurance Rate Map (FIRM) has been issued). In addition, the community must not be suspended or on probation from the NFIP.

44 CFR Part 201, Hazard Mitigation Planning establishes criteria for State and local hazard mitigation planning authorized by §322 of the Stafford Act, as amended by §104 of the DMA. After November 1, 2003, local governments and Indian Tribal governments applying for PDM funds through the states will have to have an approved local mitigation plan prior to the approval of local mitigation project grants. States will also be required to have an approved standard state mitigation plan in order to receive PDM funds for state or local mitigation projects after November 1, 2004. Therefore, the development of state and local multi-hazard mitigation plans is key to maintaining eligibility for future PDM funding.

1.2.3 FLOOD MITIGATION ASSISTANCE PROGRAM (FMA)

FMA provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP). There are three types of grants available under FMA: Planning, Project, and Technical Assistance Grants.

FMA Planning Grants are available to states and communities to prepare Flood Mitigation Plans. NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project Grants. FMA Project Grants are available to states and NFIP participating communities to implement measures

to reduce flood losses. Ten-percent of the project grant is made available to states as a Technical Assistance Grant.

These funds may be used by the state to help administer the program. Communities receiving FMA Planning and project grants must be participating in the NFIP. A few examples of eligible FMA projects include: the elevation, acquisition, and relocation of NFIP-insured structures. Funding for the program is provided through the National Flood Insurance Fund, and FMA is funded at \$20 million nationally.

States are encouraged to prioritize FMA project grant applications that include repetitive loss properties. The FY 2001 FMA emphasis encourages states and communities to address targeted repetitive loss properties identified in the Agency's Repetitive Loss Strategy. These include structures with four or more losses and structures with two or more losses where cumulative payments have exceeded the property value.

1.2.4 FLOODPLAIN MANAGEMENT ACTIVITIES

Preventive activities keep flood problems from getting worse. The use and development of flood prone areas is limited through planning, land acquisition, or regulation. Preventive measures are usually administered by building, zoning, planning, and/or code enforcement offices:

- Planning and zoning/storm water management
- Open space preservation/drainage system maintenance
- Floodplain regulations/dune and beach maintenance

Property protection activities are usually undertaken by property owners on a building-by-building or parcel basis including the following:

- Relocation flood proofing
- Acquisition sewer backup protection
- Building elevation insurance

Natural resource protection activities preserve or restore natural areas or the natural functions of floodplain and watershed areas. Parks, recreation, or conservation agencies or organizations usually implement these activities:

- Wetlands protection/best management practices
- Erosion and sediment control

Emergency services measures are taken during a flood to minimize its impact. These measures are the responsibility of city or county emergency management staff and the owners or operators of major or critical facilities:

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- Flood warning/critical facilities protection
- Flood response/health and safety maintenance

Structural projects keep floodwaters away from an area with a levee, reservoir, or other flood control measure. They are usually designed by engineers and managed or maintained by public works staff:

- Reservoirs/channel modifications
- Levees/floodwalls/seawalls beach nourishment
- Diversions/storm sewers

Public information activities advise property owners, potential property owners, and visitors about the hazards, ways to protect people and property from the hazards, and the natural and beneficial functions of local floodplains. A public information office usually implements them:

- Map information library
- Outreach projects/ technical assistance
- Real estate disclosure/environmental education

1.2.5 Repetitive Flood Claims Grant Program (RFC)

The Repetitive Flood Claims (RFC) Grant Program is de-signed to reduce or eliminate the long-term risk of flood damage to structures that are insured under the NFIP and have had one or more claim payment(s) for flood damages. RFC funds may only be used to mitigate structures located within a State or community that is participating in the NFIP and cannot meet the requirements of the FMA program due to lack of cost share or lack of capacity to manage the activities.

Project grants are available for acquisition, structure demolition, or structure relocation with the property deed restricted for open space uses in perpetuity.

The RFC grants are awarded to applicants on a nation-wide basis without reference to State allocations, quotas, or other formula-based allocations. All grants are eligible for up to 100 percent Federal assistance.

Awards will be prioritized to fund acquisitions that create the greatest amount of savings to the NFIF based on a benefit-cost analysis. A FEMA-approved State/Tribal standard or enhanced hazard mitigation plan is required for eligibility; however, a local plan is not required. All properties must be insured at the time of application.

1.2.6 Severe Repetitive Loss Program

The Severe Repetitive Loss (SRL) Program provides funds to assist States, Indian Tribal governments, and local governments participating in the NFIP in

reducing or eliminating the long-term flood risks to severe repetitive loss properties, thus reducing outlays from the National Flood Insurance Fund (NFIF). Severe repetitive loss was defined by the Flood Insurance Reform Act (FIRA) of 2004. For a property to be designated SRL, it must:

Be a residential property currently insured under the National Flood Insurance Program

Have incurred flood losses that resulted in either (1) four or more flood insurance claims payments that each exceeded \$5,000 with at least two of the payments occurring within a 10-year period, or (2) two or more flood insurance claims payments that cumulatively exceeded the value of the property

SRL funds will be allocated annually to States, Territories, and Tribes based on the number of severe repetitive loss properties in their respective jurisdictions. Eligible SRL activities include:

- Elevation, relocation, or demolition of existing residential properties
- Flood proofing measures for historical properties
- Minor physical localized flood control projects
- Demolition and rebuilding of properties to at least the Base Flood Elevation (BFE) or greater if required by any local ordinance

Grants are eligible for up to a 75 percent Federal cost share. The non-Federal cost share may be adjusted to 10 percent if the applicant has a FEMA-approved State mitigation plan that also addresses how the State has and will continue to reduce the number of severe repetitive loss properties.

1.3 PLANNING PROCESS BACKGROUND

Koochiching County is the second largest county within the State of Minnesota. A total of 1.48 million acres of land, or 73-percent, of Koochiching County is publicly owned land. In addition to the 73-percent of land in public ownership, the timber industry manages 204,123 acres, over 10-percent, of land area within Koochiching County for forestry purposes.

Koochiching County is sparsely developed, with extensive bogs and forests dominating the landscape. State and local government, construction, manufacturing and services are the largest industries within the County. The timber and tourism industries are the two dominant sectors of the economy of the County. The transportation system within Koochiching County has well-established accesses to the state highway system, two general aviation airports, and one primary airport.

Koochiching County has a relatively small population of 14,355 people, considering the large geographic size. The majority of the population and development within Koochiching County is concentrated in northeast in and around the City of International Falls. The largest city and County Seat within Koochiching County is the City of International Falls, with a population of 6,703 people.

The goal of this plan is to assist Koochiching County in reducing the human and economic costs of natural disasters. This plan includes a comprehensive risk assessment, a countywide vulnerability analysis, mitigation strategies, and an implementation schedule for the County and hazard mitigation plan partners. This plan analyzes both natural and man-made hazards including acts of terrorism.

1.3.1 PLANNING PROCESS

The Koochiching County Hazard mitigation planning process was coordinated through the Koochiching County Sheriff's Office with staff assistance from the Arrowhead Regional Development Commission. Koochiching County utilized a planning process as laid out by the FEMA 386 Local Mitigation Planning "How To Guide" series. In addition, Minnesota Planning developed a "mock plan" under contract with the Department of Homeland Security and Emergency Management. The outline and organization of this "mock plan" was used as a framework to organize this plan. The planning process and timeline are included the following steps, which are discussed in more detail on the following pages:

Step 1: Getting Started

- Establish an Koochiching County Hazard Mitigation Steering Committee
- Announce the planning process to all local units of government
- Contact and involve the proper state and federal agencies

Step 2: Assessing the State of the County

- Create a county profile for Koochiching County
- Conduct a survey of stakeholders to assess concerns regarding hazards, current hazard mitigation activities, and needs.

Step 3: Assessing County Hazards

- Identify and define hazards impacting Koochiching County
- Develop a hazard history discussion how each hazard has impacted Koochiching County
- Assess programs currently in place to address each of the hazards
- Identify the gaps in the program addressing hazards
- Assess the risks to Koochiching County community and assets

Step 4: Setting the County Course

- Create a vision for hazard mitigation efforts in Koochiching County
- Set Goals and objectives
- Develop strategies
- Set priorities

Step 5: Implementing the Hazard Mitigation Plan

- Implement plan through administrative actions, programs, and partnerships
- Monitor plan progress
- Update plan as needed
- Plan Adoption

1.3.2 PLANNING PROCESS TIMELINE

<u>August 2003</u>	Koochiching County Board passes Board Resolution to participate in the development of an All Hazard Mitigation Plan and provide part of the required match.
<u>October 2003</u>	Steering committee members identified and invited to participate in the planning process.
<u>Nov '03- Feb '04</u>	Development of County Profile, Community Survey, Risk Assessment, initial identification of programs in place and program gaps.
<u>February 2004</u>	Steering Committee Meeting 1, risk assessment and gap analysis.
<u>May 2004</u>	Steering Committee Meeting 2, develop goals and strategies.
<u>June 2004</u>	Steering Committee Meeting 3, refine goals and strategies, finalize draft document.
<u>August 2008</u>	Plan update.
<u>Fall 2008</u>	Public Hearing and Koochiching County Board meeting.

The Koochiching County Board adopted a resolution approving the development of a Koochiching County Hazard Mitigation Plan in August of 2003. Koochiching County staff developed, with the assistance of ARDC staff, a work plan to guide the planning process. In addition, a list of steering committee members representing a broad range of interests for Koochiching County was developed that would form the core group responsible for guiding the planning process. A listing of the steering committee members and their affiliations can be found on the acknowledgement page in the front of this report. Further, regional updates on the planning process were provided at the quarterly regional Emergency Management meetings organized by the State DHEM Regional Director.

All local units of government within Koochiching County were notified of the planning process prior to the start of the project. A copy of the project announcement letter can be found in Appendix A. Members of the incorporated communities that would have the option of adopting the Koochiching County Plan as their own plan were invited to participate on the core steering committee. At the meetings committee members representing local jurisdictions shared

information regarding their communities and assisted in identifying risks and mitigation strategies. Each local jurisdiction received a written request to review and comment on the draft plan.

Koochiching County has significant public land holdings and therefore the agencies managing these lands were invited to participate in the planning process as well. In addition, state regulatory agencies were notified of the planning process.

1.4 ASSESSING THE STATE OF THE COUNTY

All local units of government, as well as steering committee members and other local interests such as the business and healthcare community received a survey asking information on perceived risks of hazards, the impacts hazards have had on Koochiching County historically, and current activities in place to address these hazards.

ARDC staff developed a county profile using current county plans and census information. Local plans reviewed included the Koochiching County Comprehensive Land Use Plan, the County Water Plan and the County's Emergency Operations Plan. Each of the local units of government received a request to document critical public facilities this information was included in a Geographic Information System (GIS) that allowed for the analysis of information and the production of maps. In addition to the GIS information that was collected from local units of government information was collected from a variety of sources at the state and federal level. These maps can be located in Appendix C in the back of the plan.

1.4.1 RISK ASSESSMENT

The first step in this assessment was identifying and defining the hazards impacting Koochiching County. The State Hazard Mitigation Plan and the State "mock plan" were used as guidelines to identify and define hazards. ARDC staff started the process by conducting a newspaper search and reviewed survey information to document the hazard history. This information was supplemented with information from the state hazard plan, the National Climatic Data Center (NCDC) and the Minnesota Department of Natural Resources and the U.S. Forest Service.

The next step in this process was identifying programs in place to address hazards. Information for this section was derived from the State Hazard Mitigation Plan, local plans, input from the steering committee members, and through communication with state and federal agencies.

Program gaps were determined by the steering committee after review of the risks each of the identified hazard pose in the County and the programs in place. Looking at the programs in place and the program gaps combined with the historical information on how hazards have impacted the county allowed for an assessment of the risk to community assets. Koochiching County was divided into distinct sectors, where each hazard was given a rating based on the degree of risk posed to the County.

1.4.2 SETTING THE COURSE OF KOOCHICHING COUNTY

The risk assessment and gap analysis offered a starting point for discussing hazard mitigation needs. The steering committee developed an overall vision for hazard mitigation for Koochiching County and reviewed the gaps identified for each hazard. The gaps were addressed through the development of goals, objectives, and strategies. The steering committee then went through an exercise reviewing the objectives and strategies and prioritized each of them.

1.4.3 IMPLEMENTATION

Following the official county adoption of the plan local jurisdictions that have participated in the planning process can adopt the plan by resolution as their own plan. Resolutions from these entities are included in Appendix C of this document.

The steering committee established policies that will ensure the plan is reviewed at least every five-years. The entities identified for each of the strategies will carry the primary responsibility to implement or coordinate the implementation of each strategy. The ability to implement each strategy depends to a great extent on available resources and staff time.

1.4.4 PUBLIC INVOLVEMENT

The public had an opportunity to provide input on the draft plan at the public hearing held at the regularly scheduled October 26, 2004 Koochiching County Board Meeting. Copies of the draft plan were made available to the public for review in hard copy and via the internet prior to the meeting. The public hearing and availability of the plan for review was advertised three weeks prior to the hearing date.

Planning Time Line

August 2002	ARDC staff meets with Koochiching County emergency management staff to discuss the application for a Pre-Disaster
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Mitigation Grant from the Department of Homeland Security and Emergency Management.

August 2002	ARDC is awarded a \$70,000 grant requiring a \$23,000 match for the development of three all hazard mitigation plans for Cook, Lake and St. Louis Counties and the development of a general risk assessment for these three counties plus 4 additional counties in the region including Koochiching.
January 2003	Hazard Mitigation Planning Training offered by the Division of Homeland Security and Emergency Management, Minnesota Planning and FEMA.
March 2003	Contract for the development of the three hazard mitigation plans and seven county risk assessments put in place between ARDC and the Division of Homeland Security and Emergency Management.
April 2003	KoochichingCounty Board passes Board Resolution to participate in the development of an All Hazard Mitigation Plan and provide part of the required match.
April 2004	Steering committee members identified and invited to participate in the planning process.
April 2004	Development of County Profile, Community Survey, Risk Assessment, initial identification of programs in place and program gaps.
June 2004	Steering Committee Meeting 1, risk assessment and gap analysis.
July 2004	Identification of sectors and development of draft goals and strategies.
July 2004	Steering Committee Meeting 2, review draft goals and strategies.
August 2004	Meeting 3, review and development of plan implementation strategies and review of sectors.
October 2004	Open House.
October 2004	Steering Committee review of comments and final draft
October 2008	Web based public review process
October 2008	Adoption of Hazard Mitigation Plan by County

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November 2008 Adoption of Hazard Mitigation plan by LUGs.

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SECTION TWO:

Koochiching County Community Profile

Section 2: KOOCHICHING COUNTY COMMUNITY PROFILE

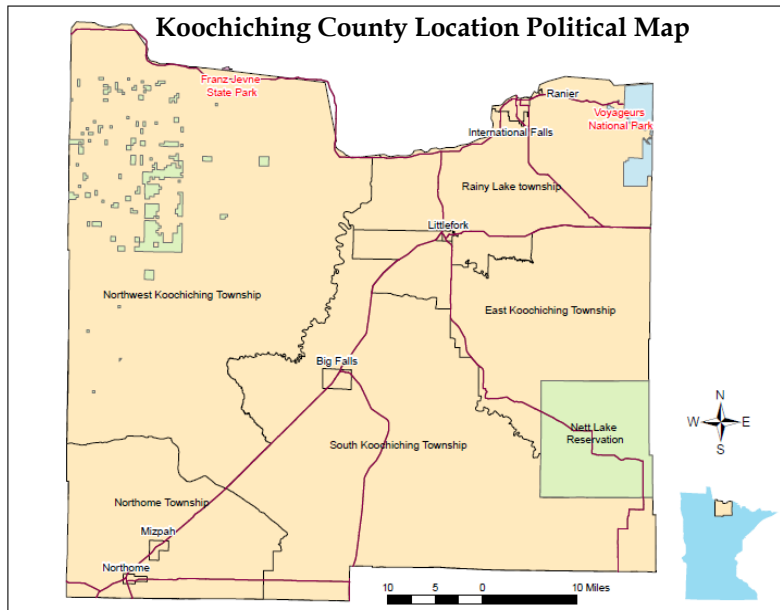
2.1 INTRODUCTION

This section offers a general overview of Koochiching County in order to provide a basic understanding of the characteristics of the community, such as the physical environment, population, and the location and distribution of services. Throughout this section, reference is made to Appendix A, which includes an atlas of maps graphically portraying elements discussed in the following narrative.

2.2 GENERAL COUNTY DESCRIPTION

Koochiching County has a total land area of 3,200 square miles, mostly located in the Rainy River drainage basin and partially within the Red River drainage basin. Koochiching County is bordered on the north by Ontario, Canada on the west by Beltrami and Lake of the Woods counties, on the south by Itasca County, and on the east by St. Louis County. Koochiching County is sparsely developed, with extensive bogs and forests dominating the landscape .

Koochiching County is richly endowed with lakes, rivers, streams, and wetlands. State and local government, construction, manufacturing and services are the largest industries within the County. The timber and tourism industries are the two dominant sectors of the economy of the County. The



transportation system within Koochiching County has well-established accesses to the state highway system, two general aviation airports, and a primary airport.

Koochiching County has a relatively small population of 14,355 people, considering the large geographic size. The majority of the population and development within Koochiching County is concentrated in northeast in and around the City of International Falls. A total of 60-percent of the population

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within Koochiching County lives within cities. The largest city and County Seat within Koochiching County is the City of International Falls, with a population of 6,703 people. According to the Minnesota State Demographer’s Office, the population of Koochiching County is anticipated to decline from 14,355 people currently to 13,580 people in the year 2025. Table 2-1 depicts population change within Koochiching County between 1940 and 2000. Koochiching County has seen a 15.2-percent decrease during this time, while the rest of the Arrowhead Region (Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, and St. Louis Counties) has experienced growth of 4.3-percent.

Table 2-1: Koochiching County Population Change 1940-2000

County	1940	1950	1960	1970	1980	1990	2000	Change 1940-2000	Change 1990-2000
Koochiching	16,930	16,910	18,190	17,131	17,571	16,299	14,355	-15.2%	-11.9%
Total Arrowhead	308,726	305,885	344,857	329,603	343,344	311,342	322,073	4.3%	3.4%

Source: United States Census Bureau

Table 2-2 below shows population projections for Koochiching County out to the year 2030.

Table 2-2 Koochiching County Population Projections 2000-2030

County	2000	2005	2010	2015	2020	2025	2030	Projected Change 2000-2030
Koochiching	14,355	13,910	13,570	13,340	13,180	13,040	12,950	-9.8%
Total Arrowhead	322,073	329,800	338,500	347,800	356,500	364,200	370,600	15.1%

Source: Minnesota State Demographic Center, Minnesota Planning

As shown in the table above, the population of Koochiching County in the year 2030 is anticipated to be 12,950, a 9.8-percent decrease from the 2000 U.S. Census population of 14,355.00000

2.3 PHYSICAL CHARACTERISTICS

2.3.1 Introduction

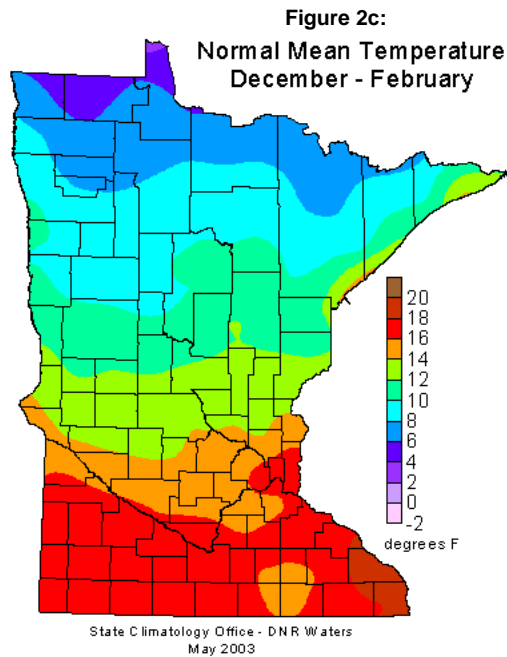
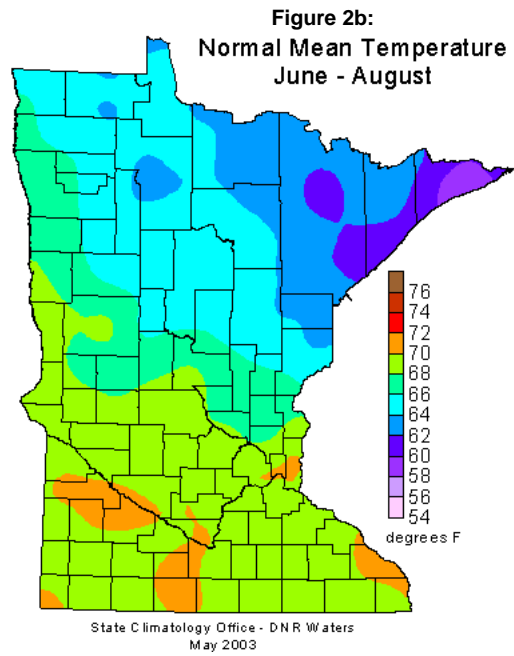
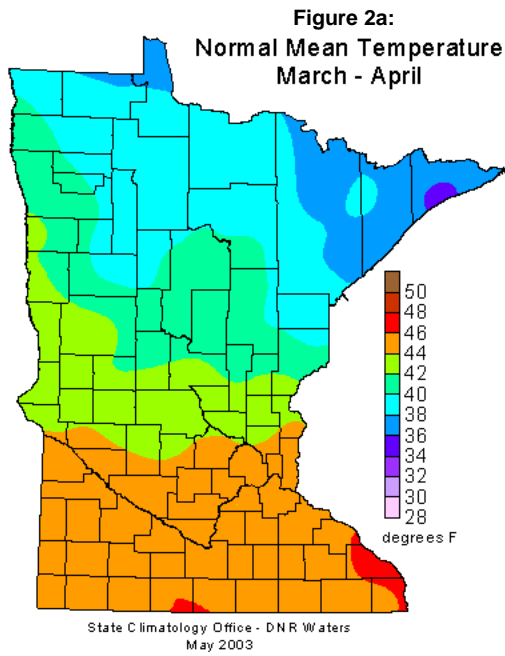
Koochiching County is the second largest county within the State of Minnesota. A total of 1.48 million acres of land, or 73-percent, of Koochiching County is publicly owned land. In addition to the 73-percent of land in public ownership, the timber industry manages 204,123 acres, over 10-percent, of land area within Koochiching County for forestry purposes.

2.3.2 Climate and Precipitation

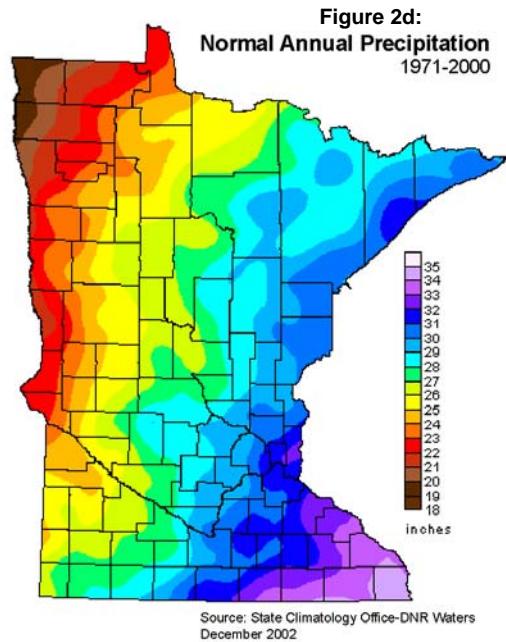
The climate of Koochiching County is classified as a continental climate regime characterized by wide variations in temperature. Temperatures can range from 98-degrees Fahrenheit (F) in the summer to 46-degrees below F in the wintertime.

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Figures 2a, 2b, and 2c on the following page depict average seasonal temperatures across the State of Minnesota.



Each year, Koochiching County averages a total of 24.4-inches of precipitation. In the western portion of Koochiching County, the median seasonal snowfall is 45-inches, while the eastern portion has a median seasonal snowfall of 55-inches. Koochiching County averages 124 days a year with snow cover, or about 34-percent of the year. Figure 2d depicts normal average precipitation and snowfall between 1971 and 2000 for the State of Minnesota. The average date of the last frost in the spring in Koochiching County is May 24th, with the first frost in the fall occurring on September 17th.



2.3.4 Geology/Topography/Soils

Koochiching County has a variety of surface landforms that are the result of glacial activity. The Wisconsin Ice Age created large glacial lakes such as Glacial Lake Agassiz, which covered much of Koochiching County. As the lake disappeared, a plain of silts, sediments, and tills was created covering most of

the area within the County. Those portions of Koochiching County found in the nearly level lake plain are comprised of mainly poorly drained silts and clays. On the moraines and outwash plains, sands and gravel dominate the soil characteristics. Areas in the eastern portion of Koochiching County outside the lake plain contain gravel sands and exposed bedrock and are generally better drained. Wetlands cover nearly 68-percent of the total land in Koochiching County due to the poorly drained soils.

2.3.5 Water Resources

Koochiching County lies north of the Laurentian Divide. This marks the divide between two continental watersheds. Waters north of the Laurentian Divide, including those within Koochiching County, flow north and west eventually reaching the Hudson Bay in Canada. Waters south of the Laurentian Divide eventually flow to Lake Superior.

Ground water

There are three primary aquifers in Koochiching County, they include the bedrock aquifer, the confined, and the unconfined glacial drift aquifers. The confined glacial drift aquifer is the most used within the County. However, the depth of good water is not predictable from one section to another. Currently there is no information on recharge rates of aquifers in Koochiching County.

Lakes

There are a total of 15 lakes and 14 rivers within Koochiching County. Open water covers approximately 50,000 acres of the County, equating to two-percent of the total surface area. The most significant lake in Koochiching County is Rainy Lake, with approximately 162-miles of shoreline. All of the major rivers in Koochiching County are classified by the Minnesota Department of Natural Resources (MN DNR) as protected waters.

Recently, surface water has become especially important in Koochiching County due to the many inadequate septic systems within the County. The County also has an unknown number of abandoned and improperly sealed wells. The effects of abandoned wells could be substantial in terms of the contamination of water resources.

Wetlands

Wetlands are the most dominant feature in Koochiching County due to existing soil characteristics. A total of approximately 1,350,000-acres of water and wetlands exist throughout Koochiching County. Wetlands make up a total of 68-percent of the land in Koochiching County and comprise 16-percent of the wetland base across the State of Minnesota.

2.3.6 Land Use and Ownership

Land Use

As mentioned in the introduction, the majority of residential and commercial development within Koochiching County is located in the northeast corner of County within International Falls and Ranier. Map A-6 in Appendix A provides an overview of the zoning in place for Koochiching County.

Land Cover

Koochiching County has a total of 2,017,026 acres of land. A breakdown of land cover classifications is shown in Table 2-3 below. Several different interests have ownership of the forests within Koochiching County. The State owns 51.6 percent of the timberland in the County, the County manages 19.6 percent, and the forest industry owns 14.3 percent. Tribal ownership accounts for two and a half percent and two percent is federally owned. Private landowners own 6.8 percent of the timberland.

Table 2-3: Koochiching County Land Cover Statistics

Description	Acreage	Percent of Total
Urban and Rural Development	6,086	0.3%
Cultivated Land	1,976	0.1%
Hay/Pasture/Grassland	108,353	5.4%
Brushland	75,677	3.8%
Forested	840,070	41.6%
Water	45,124	2.2%
Bog/Marsh/Fen	939,167	46.6%
Mining	573	0.0%
Total	2,017,026	100.0%

Source: Minnesota Department of Natural Resources

Scientific and Natural Areas and State Parks

The MN DNR has designated eight extensive wetland areas as Scientific and Natural Areas (SNA) because, as is common in this area, they represent a unique plant and animal community that once flourished in other parts of the Minnesota. These designated SNA include Myrtle Lake, South Black River, Red Lake, Lost River, North Black River, the West and East Rat Root River, the Caldwell Brook Cedar Swamp, and Nett Lake. There is one State Park within Koochiching County. This is the Franz Jevne State Park. Table 2-4 below shows the state parks and SNA within Koochiching County.

Table 2-4 Koochiching County State Parks and Scientific Natural Areas

State Parks	Scientific Natural Areas
Franz Jevne State Park	Myrtle Lake SNA
	South Black River SNA
	Red Lake SNA
	Lost River SNA
	North Black River SNA
	The West and East Rat Root River SNA
	The Caldwell Brook Cedar Swamp SNA
	Nett Lake SNA

Source: Minnesota Department of Natural Resources

2.4 Koochiching County Community Facilities/Infrastructure

A community provides a variety of services to residents, visitors, and businesses. Community facilities and services include such things as drinking water, solid and sanitary waste disposal, education, emergency services, power, and health care. The provision of utility services, public safety programs, and facilities for public health and education are all issues that increasingly challenge local governments. Planning is essential to ensure that the provision of these services and facilities meet the future needs of Koochiching County. Community services require significant expenditures of public funds and have a tremendous impact on the quality of life of residents.

2.4.1 Healthcare Providers

There are a number of healthcare facilities within Koochiching County. The primary facility is the Falls Memorial Hospital located in the City of International Falls. The Falls Memorial Hospital contains a total of 49 hospital beds as well as 11 infant beds. Another facility, the Littlefork Medical Center, is located in the City of Littlefork. Finally, the Koochiching County Rural Health Clinics serve the healthcare needs of Koochiching County residents.

2.4.2 Public Safety Providers

Police

There are three locally controlled law enforcement organizations that operate at three separate administrative levels within Koochiching County. The Koochiching County Sheriff's Department is administered at the county level, the International Falls Police Department is administered at the city level, and the Bois Forte Indian Reservation Police Department administered at the reservation level. These three agencies have a combined total of 29 full-time officers and 23 part-time officers.

Fire

Residents of Koochiching County are served by seven fire departments. Of the seven departments, one is a paid-position department, five are volunteer departments, and one is a reservation department. Key issues for fire protection

services include response times, large service areas, equipment cost and availability, communications, and the recruitment and training of new volunteers. The fire departments located in Koochiching County are found in Big Falls, Birchdale, International Falls, Littlefork, Loman, Nett Lake, and Northome.

Emergency Medical Response

There are three ambulance services located within Koochiching County. These are based in the City of International Falls, the City of Littlefork, and the City of Northome. In addition, the Big Falls Fire Department has an EMS division. Parts of rural Koochiching County are served by ambulance services located outside the county, including Blackduck, Baudette, Orr, and Fort Francis, Ontario. Most of Koochiching County is served by EMT and first responder service.

2.4.3 Koochiching County Transportation Facilities

The transportation system of Koochiching County is comprised of a variety of different modes. These include local roads, highways, airports, transit, railroads, and trails. The system serves residential, industrial, commercial, and tourism needs.

Roads & Highways

There are multiple layers of road jurisdictions within Koochiching County. These range from local city streets to state trunk highways. In total, there are approximately 2,077-lane miles of roadway within Koochiching County. The breakdown of mileage by jurisdiction type is shown in Table 2-5 below.

Table 2-5: Koochiching County Road Mileage (Lane Miles)

Road Type	Mileage
Trunk Highways	579.39
County State-Aid Highways	453.80
County Roads	392.00
City Streets	113.23
Township	13.79
Reservation/Forest/Other	525.24
Total Mileage	2077.45

Source: Minnesota Department of Transportation

There are a total of nine trunk highways within Koochiching County that are administered by the Minnesota Department of Transportation (Mn/DOT). These include both State and U.S. highways. Trunk Highway (TH) 53 is the main

connecting route to the Range Cities of Minnesota and the Canadian Border and has been named a High Priority Trade Corridor by the United States Congress. In addition, TH 53 has the highest average daily traffic (ADT) and heavy commercial average daily traffic (HCADT) in Koochiching County.

Railroads

Two railroad companies provide rail services in Koochiching County. They are the Duluth, Winnipeg and Pacific (DWP) Railroad and the Minnesota, Dakota, and Western (MDW) Railroad.

□ **Duluth, Winnipeg, and Pacific Railroad**

The DWP is the third largest railroad in terms of track mileage in the Arrowhead Region. The DWP line runs between Ranier and Duluth. It provides an important rail connection with Canada. The DWP railroad has 157.13 miles of track in the Region of which 26.08 miles are located in Koochiching County. The track has an average volume of approximately 16 trains per day with a speed of 49 miles per hour.

□ **Minnesota, Dakota, and Western**

The Minnesota, Dakota, and Western (MDW) Railroad owns 13 miles of track. The line serves the Boise Cascade Company in International Falls. The MDW line contains six rail crossings and trains operate at a speed of five miles per hour.

Air Transportation

Koochiching County has one primary airport and two general aviation airports. The Falls International Airport provides domestic and international air service for the region. This airport serves as a major player in the northeast Minnesota airport system by serving as customs airport of entry, and by providing commercial service (Mesabi Airlines) and military assistance. Two smaller airports serve Koochiching County. They are Littlefork-Hanover and the Northome Municipal Airports. The Littlefork airport consists of a turf runway and is located northwest of Littlefork on Trunk Highway 71. This airport is closed during winter months. The Northome Municipal Airport consists of a turf and crosswinds runway.

Transit Service

Arrowhead Transit provides the major transit service located within Koochiching County. Arrowhead Transit is a rural public transit system providing coordinated public transit service to the residents within the seven county region of northeast Minnesota. The Arrowhead Economic Opportunity Agency (AEOA), a private non-profit agency, operates the transit system. Arrowhead Transit is the largest rural transit system in the state with 22 class 400 (medium), 17 class 500 (medium), and 15 class 600 (large) buses. Arrowhead Transit provided services to approximately 353,042 riders in 2001. The transit system provides route deviation and dial-a-ride service on weekdays from 5:00 A.M. to 7:00 P.M., with some exceptions. The base fare is \$1.10 for a one-way ride.

Round trip service is more expensive and varies by county. Other transit providers within Koochiching County are listed in Table 2-6 on the following page.

Table 2-6: Koochiching County Transit Providers

Organization	Service Area
Koochiching County Veterans	Northeast Minnesota
Northome healthcare	Koochiching Co. (also transportation to Duluth)
Littlefork Medical Center	Littlefork
Nett Lake Reservation	Nett Lake Reservation
Arrowhead Transit	Northeast Minnesota

Source: Minnesota Department of Transportation

Trails

Within Koochiching County is an extensive network of trails for biking, hiking, cross-country skiing, ATV and snowmobiling, and horseback riding. Some of these trails include the following the Arrowhead Trail, and the Trunk Highway (TH) 11 Bike Trail.

2.4.2 Utilities

Power Facilities

There are three power companies that supply power to Koochiching County. These include the International Falls Power Company, Minnesota Power, and North Star Electric Cooperative. Boise Cascade owns International Falls Power for internal use only.

Water System

Nearly 57-percent of Koochiching County is served by a public water system, while 27-percent of residents rely on wells. A total of 16-percent rely on other sources for their water supply. Most residents in the larger municipalities of Koochiching County have access to public water systems, shown in Table 2-7 below.

Table 2-7: Koochiching County Municipal Water Systems

Municipality	Residents Served	Storage Capacity (gal)
Big Falls	341	400,000
International Falls	8,000	1,500,000
Littlefork	771	160,000
Northome	230	NA

Source: ARDC Library Search

International Falls is the largest water system in Koochiching County, supplying over 8,000 residents with drinking water. The source of water for International Falls is the Rainy Lake. The cities of Littlefork, Northome, and Big Falls utilize deep wells as their source of water.

Sewer System

There are three categories of wastewater treatment systems in Koochiching County. They include public sewer systems operated by sanitary districts and municipalities, cluster systems operated by homeowner associations and resorts, and individual sewage treatment systems. Public sewage systems serve 58-percent of housing units within Koochiching County, 32-percent are served by septic tanks, and 10-percent are served by other means. The municipal public sewer systems that serve Koochiching County are located in the cities of Big Falls, Littlefork, and Northome, as well as the North Koochiching Sanitary District.

2.5 Koochiching County Socio-Economic Profile

2.5.1 Economics Synopsis

Table 2-8 below provides an overview of the annual average employment by major industry sector within Koochiching County. Koochiching County is dominated by the service industry, both government and commercial. Another important source of economic growth is the influx of new residents, often retirees or semi-retiree and seasonal residents. These new residents bring asset and pension based incomes to the region.

Table 2-8: Annual Average Employment Industry Sector, Koochiching County

Industry	1990	2000	1990-2000 % Change
Agriculture/Forestry/Fishing/Mining	217	286	+ 32.8%
Construction	1,108	366	- 67.0%
Manufacturing	1,574	1,510	- 4.1%
Transportation/Utilities	290	307	+ 5.9%
Trade	1,408	884	- 37.2%
Finance, Ins., Real Estate	203	402	+ 98.0%
Service	1,897	2,306	+ 21.6%
Public Administration	321	331	3.1%
All Industries	7,018	6,392	- 8.9%

Source: United States Census Bureau

Table 2-9 below, looks at the annual average labor force estimated for Koochiching County and the entire Arrowhead Region between 1990 and 2002.

**Table 2-9: Koochiching County Annual Average Labor Force
Estimates 1990-2002**

Year	Koochiching County	Arrowhead Region
1990	7,908	144,510
1991	6,747	147,964
1992	6,565	149,134
1993	6,529	151,591
1994	6,465	155,865
1995	6,302	156,006
1996	6,562	155,590

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1997	6,614	156,624
1998	6,486	158,469
1999	6,416	158,502
2000	6,177	159,779
2001	6,350	164,140
2002	6,445	169,732

Source: Minnesota Workforce Center

Table 2-10 below compares labor force, employment, and unemployment data for Koochiching County, the State of Minnesota, the Arrowhead Region, and the United States.

Table 2-10: 2002 Annual Average Labor Force, Employment, & Unemployment Estimates

Entity	Labor Force	Employment	Unemployment	Employment Rate	Unemployment Rate
Koochiching	6,445	6,038	408	93.7%	6.3%
Total Arrowhead	169,732	160,714	9019	94.7%	5.3%
Minnesota	2,918,058	2,789,929	128,129	95.6%	4.4%
United States	147,863,000	136,485,000	8,378,000	92.3%	5.8%

Source: Local Area Unemployment Statistics, Minnesota Workforce Center.

2.5.2 Income

As displayed in Table 2-11 on the following page, income levels significantly increased in Koochiching County between 1980 and 1990, by a total of 54.9-percent. During this same time, the number of people in poverty decreased, however, it still remains considerably higher than the State average. Even though there has been a significant increase in income levels, Koochiching County lags behind the state income levels by over \$10,000 per person.

Table 2-11: Income and Poverty, 1990-2000

Area	Characteristic	1990	2000	1990-00 %Growth
Minnesota	Median HH Income	\$30,909	\$47,111	+52.4%
	People in Poverty	435,331	380,476	-7,480 (-12.6%)
Koochiching County	Median HH Income	\$23,411	\$36,262	+54.9%
	People in Poverty	2067 (12.7% of total)	1,694 (11.8% of total)	-373 (19% change)

Source: United States Census Bureau

2.5.3 Housing Characteristics and Trends

Table 2-12 below displays the total and seasonal housing units within Koochiching County. Koochiching County has experienced a significant increase in total housing units, with most of the growth occurring in the number of

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seasonal units. Of the 2,350 year-round occupied housing units, a total of 1,839 are owner-occupied and 511 are renter occupied. The seasonal housing makes up 23-percent of the housing stock in the County. This is considerably higher than the Minnesota statewide average due to the many lake lots in Koochiching County. The average household size of the owner-occupied units is 2.3 people while the renter-occupied units have an average of 1.8 people per unit.

Table 2-12: Koochiching County Housing Units, 1990-2000

Area	Characteristic	1990 (Percent of Total)	2000 (Percent of Total)
Minnesota	Total Units	1,848,445 (100%)	2,065,946 (100%)
	Seasonal Units	105,122 (5.7%)	105,609 (5.1%)
Koochiching County	Total Units	7,825 (100%)	7,719 (100%)
	Seasonal Units	1,335 (17.1%)	1,117 (14.5%)

Source: United States Census Bureau

SECTION THREE:

Hazards Facing Koochiching County

Section 3: HAZARDS FACING KOOCHICHING COUNTY

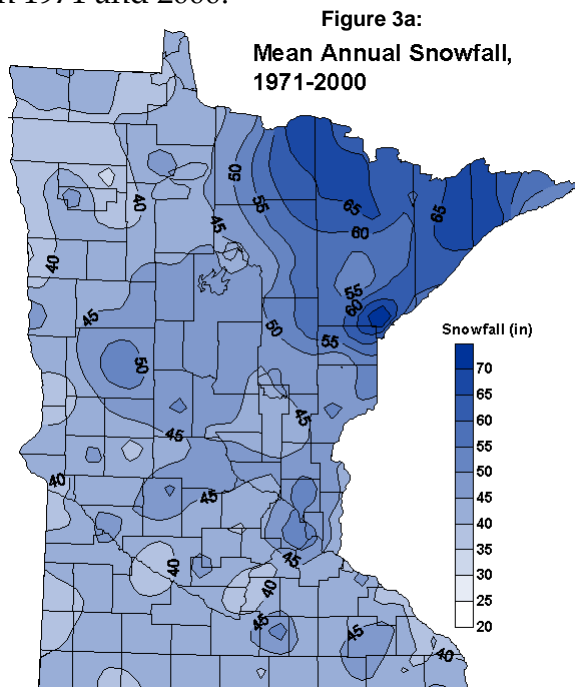
3.1 NATURAL HAZARDS - PRESENTED BY THE PHYSICAL WORLD

3.1.1 Hazard: Violent Winter Storms

Violent storms can occur throughout the year in Koochiching County. For practical purposes violent storms are categorized as summer or winter storms, although there is not a sharp beginning or end to when they may occur.

Blizzards are storms that contain heavy snowfall, strong winds, and cold temperatures. The combination of these elements creates blinding snow with near zero visibility, deep snowdrifts, and life-threatening wind chill temperatures.

Blizzards are the most dramatic and destructive of all winter storms that occur within Koochiching County. Blizzards are generally characterized as storms bearing large amounts of snow accompanied by strong winds. They have the ability to completely immobilize large areas and can be life-threatening to humans and animals in their path. According to the National Weather Service (NWS), although there is no fixed temperature requirement for blizzard conditions, the life-threatening nature of low temperatures in combination with blowing snow and poor visibility increases dramatically when temperatures falls below 20-degrees Fahrenheit. Blizzards typically occur between October and April, however, they occur with the most frequency from early November to the end of March. Figure 3a below shows the mean annual snowfall for the State of Minnesota between 1971 and 2000.



History

Based on historical records between 1975 and 1991, Minnesota averages approximately one blizzard per year. The greatest number of blizzards historically have occurred in the months of January, followed by March and November, respectively. Koochiching County, along with all areas of Minnesota, is susceptible to blizzards. However, the relatively level and tree-barren terrain of western and southern Minnesota makes those regions more susceptible to the high wind speeds which are intrinsic to blizzard conditions. Damages from blizzards can range from human and livestock deaths to significant snow removal costs. During the period of time between 1975-1991, there were 49 deaths associated with blizzards statewide, or an average of three deaths per year. Deaths attributable to blizzards have dropped in recent years, primarily due to increased weather awareness and warning capabilities across the State.

By individuals observing winter storm watches and warnings and preparing adequately, they can help to lessen the impact of blizzard events in Koochiching County. Technical advances made in transportation, including improved vehicles and better constructed and maintained roads, have also contributed to the decline in deaths related to blizzard events. Historical estimates of dollar losses associated with blizzard events were not available for the purposes of this analysis, however, costs incurred by state and local government jurisdictions for snow removal associated with disaster declaration number 1158 (January 1997) totaled over \$27,300,000 dollars. According to a statewide risk analysis, blizzards rank ninth out of the 10 natural hazards that impact the State of Minnesota.

Ice storms are described as occasions when damaging accumulations of ice occur during freezing rain situations. The terms freezing rain and freezing drizzle warn the public that a coating of ice is expected on the ground and on other exposed surfaces. Heavy accumulations of ice can bring down trees, electrical wires, telephone poles and lines, and communication towers.

Communications and power can be disrupted for days while utility companies work to repair damages. Ice forming on exposed objects generally ranges from a thin glaze to coatings up to one inch thick. Even small accumulations of ice on sidewalks, streets, and highways may cause extreme hazards to Koochiching County motorists and pedestrians.

Sleet does not stick to trees and wires, however, sleet in sufficient depth does cause hazardous driving conditions. Heavy sleet is a relatively rare event, defined as an accumulation of ice pellets covering the ground to a depth of ½-inch or more.

Ice and sleet storms generally occur between October and April. According to statistics maintained by the National Climatic Data Center (NCDC), in Koochiching County, freezing rain and freezing drizzle events occur an average of at least one day per year. The month of March, on average, has the greatest number of days in which freezing rain and freezing drizzle occurs.

The National Weather Service (NWS) notes that over 85-percent of all ice storm deaths are traffic related. According to the NCDC, there were a total of 22 snow and ice storm events in Koochiching County between 1993 and 2003, and average of 2.2 per year.

3.1.2 Hazard: Violent Summer Storms

Summer storms, including thunderstorms, windstorms, and hailstorms affect Koochiching County on an annual basis.

Hailstorms are a product of severe thunderstorms. Hail is formed when strong updrafts within the storm carry water droplets above the freezing level, where they remain suspended and continue to grow larger, until their weight can no longer be supported by the winds. Hailstones can vary in size, depending on the strength of the updraft. The National Weather Service (NWS) uses the following descriptions when estimating hail sizes: pea size is $\frac{1}{4}$ -inch, marble size is $\frac{1}{2}$ -inch, dime size is $\frac{3}{4}$ -inch, quarter size is 1-inch, golf ball size is 1 $\frac{3}{4}$ -inches, and baseball size is 2 $\frac{3}{4}$ -inches. Individuals who serve as volunteer "storm spotters" for the NWS are located throughout the State, and are instructed to report hail dime size hail ($\frac{3}{4}$ -inch) or greater. Hailstorms can occur throughout the year, however, the months of maximum hailstorm frequency are typically between May and August. Although hailstorms rarely cause injury or loss of life, they do cause significant damage to property. According to the NCDC, there were a total of 113 reported hailstorm events in Koochiching County between 1953 and present day. This is an average of approximately 2.26 hailstorm events per year.

Lightning caused wildfires is a concern for Koochiching County. Lightning is caused by the discharge of electricity between clouds or between clouds and the surface of the earth. In a thunderstorm there is a rapid gathering of particles of moisture into clouds and forming of large drops of rain. This gathers with it electric potential until the surface of the cloud (or the enlarged water particles) is insufficient to carry the charge, and a discharge takes place, producing a brilliant flash of light.

The power of the electrical charge and intense heat associated with lightning can electrocute on contact, split trees, ignite fires, and cause electrical failures. Most lightning casualties occur in the summer months, during the afternoon and early evening. An average of 215 structural and non-structural fires are caused by lightning each year in Minnesota, with average annual damages totaling \$3,013,171 dollars. Lightning causes an average of 35 wildfires per year in Minnesota, with average annual suppression costs totaling \$54,864 dollars and average annual damages totaling \$10,357 dollars based upon statistics maintained by the Minnesota Department of Natural Resources (MN DNR) Division of Forestry.

Tornadoes are violently rotating columns of air rising up into a cloud. A thunderstorm is the first step in the creation of a tornado. A thunderstorm happens when there is moisture in the atmosphere, a lifting force causing air to begin rising, and unstable air that will continue to raise once it starts. Then, if other conditions are right, the thunderstorm may spin out one or more tornadoes.

All thunderstorms are characterized by updrafts, rising air currents which supply the warm, humid air that fuels thunderstorms; sometimes, however, the column of rising air becomes a vortex -- a funnel cloud, or, if it reaches the ground, a tornado. A tornado is often located at the edge of an updraft, next to air coming down from the thunderstorm with falling rain or hail. This explains why a burst of heavy rain or hail sometimes announces the arrival of a tornado. As air rises from the ground in the vortex of a tornado, a low-pressure area is created near the ground. Air rushes to fill this area, causing additional damage to areas not directly hit by the tornado. As air rushes into the vortex, its pressure lowers, cooling the air. This cooling condenses water vapor in the air into the tornado's familiar funnel-shaped cloud. As the swirling winds pick up dust, dirt, and debris from the ground, the funnel turns even darker. Tornadoes can occur at any time of year however they are a very rare event for Koochiching County.

In Minnesota, the peak months of tornado occurrences are June, May, and July (in that order). The typical time of day in when a tornado occurs in Minnesota ranges between 4:00 P.M. and 7:00 P.M. Most of these are minor tornadoes, with wind speeds under 125 M.P.H. A typical Minnesota tornado lasts approximately ten minutes, has a path length of five to six miles, is nearly as wide as a football field, and has a forward speed of about thirty-five miles an hour and affects less than one-tenth of one-percent of the county warned. Table 3-1 below shows examples of tornado occurrence within Koochiching County and the associated damages. The wind speeds associated with each magnitude are also listed.

Section III: Hazards Facing Koochiching County

- F0: 40-72 MPH
- F1: 73-112 MPH
- F2: 113-157 MPH
- F3: 158-206 MPH
- F4: 207-260 MPH
- F5: 261-318 MPH

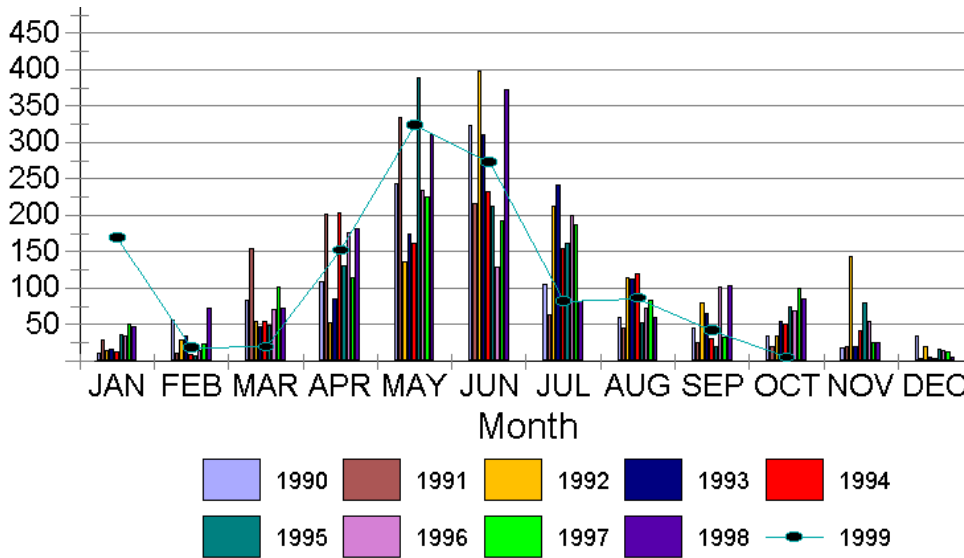
Table 3-1: Koochiching County Tornado Occurrences

Location or County	Date	Time	Type	Magnitude	Death	Injuries	Prop. Damage
Koochiching County	09/17/1955	1930	Tornado	F1	0	0	0
Koochiching County	06/23/1956	1910	Tornado	F?	0	0	0
Koochiching County	09/01/1973	1725	Tornado	F2	0	5	\$250,000
Koochiching County	07/16/1981	1830	Tornado	F0	0	0	0
Koochiching County	06/08/1985	1205	Tornado	F0	0	0	0
Koochiching County	08/09/1993	0135	Tornado	F0	2	0	\$50,000

Source: National Climatic Data Center

Figure 3b below depicts tornado occurrences for the entire State of Minnesota between 1990 and 1999. According to the figure, May and June have typically been the months most prone to tornado activity.

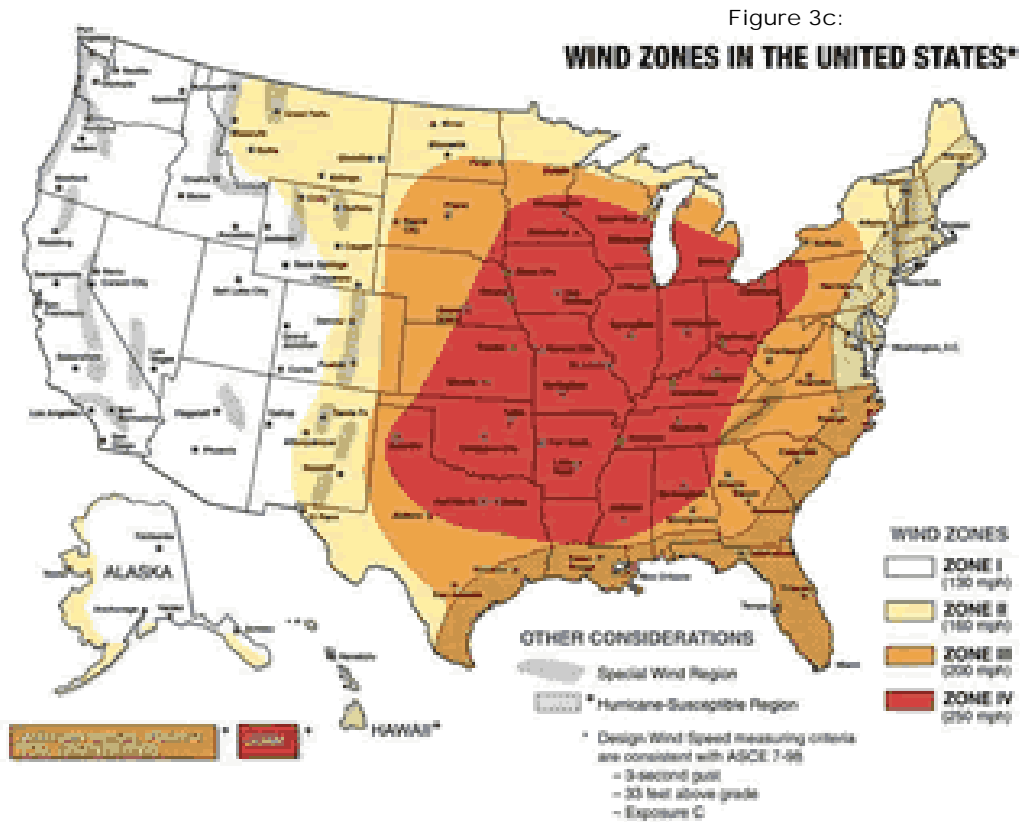
Figure 3b: State of Minnesota Tornado Occurrences: 1990-1999



Wind Storms can and do occur in all months of the year, however, the most severe windstorms usually occur during severe thunderstorms in the warm months. The most common windstorm to affect Koochiching County is straight-line winds or downbursts associated with strong thunderstorms. A downburst is

Section III: Hazards Facing Koochiching County

a severe localized downdraft from a thunderstorm or a rain shower. This outflow of cool or colder air can create damaging winds at or near the surface. Winds up to 130 M.P.H. have been reported in the strongest thunderstorms. Downburst winds can cause as much damage as a small tornado and are frequently confused with tornadoes because of the extensive damage they cause. As these downburst winds spread out they are often referred to as straight-line winds. They can cause major structural and tree damage over a relatively large area. Winds of greater than 60 M.P.H. are also associated with intense winter, spring, and fall low-pressure systems. These can also inflict damage to buildings and in some cases overturn high profile vehicles. Figure 3c below shows a wind zone map for the United States.



According to the National Climatic Data Center (NCDC), there were a total of 59 wind and thunderstorm events reported in Koochiching County between 1957 and present day.

I. SEVERE STORMS - Relationship to Other Hazards

Flooding

Snow melts from heavy snows and rain from slow moving thunderstorms can cause localized flooding which can impact property and infrastructure such as roads.

Public Health

Public health can be impacted as a result of wastewater spills as a result of flooding.

Transportation Access

Alternative routes are limited in some areas. This can cause access problems for regular traffic and emergency response vehicles if for example a commercial vehicle would be overturned as a result of high winds.

II. SEVERE STORMS - Plans and Programs in Place

Storm Spotter Network

- The Koochiching County Assessor leads the RACES group for storm spotting. There are currently six-people in Koochiching County trained for Sky-Warn
- Annual Sky-Warn training is provided by the National Weather Service (NWS). The Department of Natural Resources (DNR) is being invited to participate in these trainings.
- The National Weather Service (NWS) activates the Sky-Warn members. The NWS also contacts the Koochiching County Sheriff's Office.

Weather and Radio Warning Systems

- Koochiching County can contact the National Weather Service in Duluth to get warnings on the television.
- The National Weather Service (NWS) delivers storm warnings over the radio and television in the event of a storm event.

Outdoor Warning Sirens

- The City of International Falls, Northome, and Big Falls all have outdoor warning sirens in place. The City of Littlefork has two sirens.

Highway Treatment/Road Access

- Koochiching County, the Minnesota Department of Transportation (Mn/DOT), and the City of International Falls have capabilities for snow removal and highway treatment in order to maintain safe winter driving conditions.
- Budget constraints at the State level have impacted snow removal on Trunk Highway routes within Koochiching County.
- Winter access to homes is a concern because private roads take additional time to get plowed after a significant storm event.
- Adequate plowing is a concern during the spring thaw because driveways turn into mud and slush.

Citizen Education

- Koochiching County uses the winter awareness week information that is prepared and distributed by the State of Minnesota. This is in the form of newspaper ads and brochures.

Back-up Power

- The Koochiching County Highway Department has a small back-up generator in place.
- The radio station in International Falls does not have back-up power, but is currently working on this.
- The International Falls City Hall and Koochiching County Courthouse have back-up power generators.

Storm Shelters

- Mobile home park operators are individually responsible for a storm shelter plan.

III. SEVERE STORMS - Program Gaps and Deficiencies

Storm Spotters

- The topography of Koochiching County is such that Doppler radar does not always register storms if they come in low. Koochiching County relies heavily upon citizens and storm spotters to identify storms and notify the proper authorities.

Weather and Radio Warning Systems

- There is a need to promote the use of NOAA weather radios throughout communities in Koochiching County. Citizen education would also be helpful in terms educating about the benefits of weather radio.
- There is EAS equipment in place in Koochiching County, however it is not currently operating.
- Radio warnings over AM/FM radio do not reach the City of Northome.

Highway Treatment/Road Access

- Due to current budget constraints at the State level, trunk highway routes are not seeing the same level of snow removal by the Minnesota Department of Transportation (Mn/DOT) as they have in past years.

Tree/Vegetation Management

- Brushing and tree management is important to keep roads open. By maintaining an aggressive brushing program, the amount of debris that fall on roads during a windstorm can be reduced. This also helps in reducing brush and wildfires. Another important factor in tree management is that it allows enough room for emergency.

Citizen Education

- There are no signs posted along Koochiching County informing residents and tourists on a local radio station in which to obtain weather information.

Power Lines

- Above ground power lines are susceptible to damage as a result of ice and windstorms. Locating lines underground where it is feasible and cost effective, as is occurring in some parts of Koochiching County, can reduce the damages and potential power outages.

Back-up Power/Storm Shelters

- Not all critical facilities in Koochiching County have back-up power.
- There is a need to inventory designated shelter sites. Shelter sites are not well known by the general public.
- There could be a need to pre-wire some shelter facilities to allow hook-ups to portable generators.

3.1.3 Hazard: Extreme Temperatures

Wintertime in Koochiching County can be a most brutal time, and especially dangerous for our disabled citizens and outdoor workers. Record temperature lows and arctic-like wind chill factors can cause cold-related illness such as frostbite and hypothermia, which can be deadly. Hypothermia is the greatest and most life-threatening cold weather danger.

Summer Heat - Human beings need to maintain a constant body temperature if they are to stay healthy. Working in high temperatures induces heat stress when more heat is absorbed into the body than can be dissipated out. Heat illness such as prickly heat, fainting from heat exhaustion, or heat cramps are visible signs that people are working in unbearable heat. In the most severe cases, the body temperature control system breaks down altogether and body temperature rises rapidly. This is a heat stroke, which can be fatal. The National Weather Service (NWS) issues a heat advisory when, during a 24-hour period, the Heat Index ranges from 105 to 114-degrees during the day, and remains at or above 80-degrees at night.

Winter Cold - In Koochiching County cold winter weather can have severe or fatal impacts. Hypothermia occurs when core body temperature drops below 96° F. Anyone who is exposed to severe cold without enough protection can develop hypothermia. Frostbite occurs when skin tissue and blood vessels are damaged from exposure to temperatures below 32-degrees Fahrenheit. It most commonly affects the toes, fingers, earlobes, chin, cheeks, nose, and other body parts that are often left uncovered in cold temperatures. The National Weather Service (NWS) issues a wind chill warning when wide spread wind chills of 60-degrees below zero or lower with winds greater than 10 M.P.H are expected.

History

Summer temperatures in Koochiching County rarely reach to the point where a heat advisory is warranted. Summer temperatures typically are in the seventies and eighties.

Below zero temperatures occur almost every winter for a period of time. Extreme cold was documented in February and December of 1996 and extreme wind chills were documented in February of 1995. No deaths were reported in either case. The winter of 2002-2003 was one of the driest winters on record for the State of Minnesota. Limited snow cover combined with long cold spells of sub-zero temperatures impacted a large number of septic systems and water pipes due to frost that went deeper than normal.

I. EXTREME TEMPERATURES - Relationship to Other Hazards

Wildfires

Dry and hot conditions can increase the risk of wildfires.

II. EXTREME TEMPERATURES - Plans and Programs in Place

School Closings

- Each year schools in Koochiching County are allotted a certain amount of weather related school closings each year.

Winter Awareness Week

- Koochiching County has a winter storm awareness week in place. This includes informational announcements in the local newspaper on an annual basis each year.

Weather Advisories

- The National Weather Service (NWS) issues heat advisories in cases of extreme heat. The NWS also issues winter weather and wind chill advisories. These are only effective if individuals hear the warnings on the radio or television. The NWS also provides hourly weather and storm warnings.

Koochiching County Health and Human Services Department

- The Koochiching County Department of Health and Human Services works constantly with the elderly on how to deal with extreme hot and cold temperatures.

III. EXTREME TEMPERATURES - Program Gaps and Deficiencies

Remote Areas

- Many children in Koochiching County live in more remote areas where travel distances to school present a problem.

Medical Facility Access

- A significant portion of the population in Koochiching County lives a distance of 25-miles or more from a hospital.
- It is a concern of ambulance operators getting stuck in the winter and spring on unpaved roads.

School Closings

- On cold days, late arrival/early dismissal could be used as a way to keep the schools open and not use a “snow day”. Running out of “snow days” can be concern.
- Closing school in the middle of a day also presents a problem if children do not have transportation arranged to get home.

At-Risk Populations

- In the more remote areas of Koochiching County, neighbors have to watch out for one another in times of extreme temperatures, especially the elderly. With extreme heat, the elderly are especially susceptible to ill effects. Education to this demographic is important so they learn the importance of staying cool and keeping hydrated.
- There is a real need to educate the elderly on how to protect themselves in case of extreme cold or violent storms, either through newspaper articles, radio spots, or speakers at senior housing.

3.1.4 Hazard: Flooding

Flooding in Koochiching County is usually a result of small-scale flash floods and during the spring as a result of snowmelt. Flash floods usually result from powerful, slow-moving thunderstorms. There is another type of flood that should be addressed and that does not result directly from overflowing lakes and streams but is flooding which results from *poor infrastructure* (e.g., inadequate sewer and storm water systems). Analysis of flash flood history in Minnesota has revealed that 37-percent of flash floods occur between 6:00 P.M. and 8:00 P.M. Over 50-percent occur in the evening between 6:00 P.M. and 11:00 P.M. Twenty-seven percent of flash floods occur from midnight through 7:00 A.M. Many floods resulting from poor infrastructure are often upstream and away from traditionally delineated floodplain areas adjacent to lakes and streams.

History

One flood event in Koochiching County between 1950 and April 2008 is reported in the 2008 Minnesota All Hazard Mitigation Plan. On June 09, 2002 three to six inches of rain fell overnight in northern Koochiching causing most roads in that area to become water-covered. Small streams overflowed their banks and 139 homes were damaged.

Koochiching County's agricultural losses due to water related insurance claims totaled less than one million dollars. In the time from 1994 to 2006, total indemnity claims were \$959,122.

Public assistance damage claims related to severe storms and flooding for Koochiching County from 1989 to 2006 were \$39,397.

I. FLOODING - Plans and Programs in Place

Stream Gauging

- The Joint Council sets water levels for the border lakes and impacts the levels of the Rainy River.

Floodplain Mapping

- Koochiching County does have floodplain maps; however they are over 20-years old.

Roads and Culverts

- Koochiching County replaces road and culvert infrastructure on an as-needed basis.

Shoreline Management Ordinance

- The shoreline ordinance regulates development and setbacks on shorelines within Koochiching County.

II. FLOODING Program Gaps and Deficiencies

Training/Technical Assistance

- Training should be made available for realtors and insurance agents on the flood insurance program, as well as technical assistance to other decision makers regarding flood damages and insurance programs. Realtors and buyers of property in Koochiching County need to be more aware of issues.

Roads and Culverts

- Many roads and culverts built throughout Koochiching County are not built to withstand flooding. Many of these roads flood out frequently, particularly some gravel roads that only serve a few residences. This makes it hard to justify great investment; however, over time repeated construction may be more costly than building a flood resistant road.
- There are so many miles of road in Koochiching County that it is not feasible to make them all flood-proof.

- Ice dams are a problem for culverts in the wintertime. These culverts need to be cleared periodically to prevent flooding during the spring thaw.
- County Road 1 has flooding concerns. A number of roads flood on a regular basis and access can be seriously hampered. It may be necessary to document and better inventory these roads.

Ice/Beaver Dams

- The Big Fork and Little Fork rivers flood during spring thaw when there are ice dams.
- Beaver dams can be a problem in Koochiching County in terms of causing flooding.

Floodplain Mapping

- The floodplain/firm maps in Koochiching County do not have elevations listed on them. The need exists to do aerial/topography mapping. This information would be an extremely useful tool for the Planning and Zoning departments in the County.

Drainage

- Koochiching County has flooding issues related to a very high water table and soils with poor drainage.

Storm Water Management

- Storm water management is a big concern in International Falls. Recent storms have resulted in the repeated flooding of basements.

Erosion

- Erosion on the banks of rivers within Koochiching County is a major problem. This is especially a problem along the Rainy River.

3.1.5 Hazard: Drought

A drought refers to an extended period of deficient rainfall relative to the statistical mean for a region. Drought can be defined according to meteorological, hydrological, socioeconomic, and agricultural criteria. Meteorological drought is qualified by any significant deficit of precipitation. Hydrological drought is manifest in noticeably reduced river and stream flow and critically low groundwater tables. The term agricultural drought indicates an extended dry period that results in crop stress and harvest reduction. Socioeconomic drought refers to the situation that occurs when water shortages

begin to effect people and their lives. It associates economic good with the elements of meteorological, agricultural, and hydrological drought. It is different than the other definitions in the fact that this drought is based on the process of supply and demand. Many economic goods (e.g., water, food grains, fish, hydroelectric power) have their supplies greatly dependent on the weather. Due to natural variations in climate, some years have high supplies of water, but other years the supply is very low.

A socioeconomic drought takes place when the supply of an economic good cannot meet the demand for that product, and the cause of this shortfall is weather-related (water supply). Droughts in Koochiching County are of particular concern because of the potential it forest fire danger as well as the lake levels and impacts on recreation.

History

<i>Carlton County Drought History (MN State AHMP, 2008)</i>		
Month/ Year	Location	Remarks
August 7, 2007	Koochiching County	USDA designated 24 counties, including Koochiching, as primary natural disaster areas because of drought that occurred from May 1, 2007 and continuing.
July 2006-September 2007	Koochiching County	Warmer than normal temperatures and a lack of rain both contributed to a D2 drought designation (per the U.S. Drought Monitor) across portions of northwest and west central Minnesota on July 18th. By July 25th, the designation was upgraded to a D3 (extreme drought). The dry trend started in May, but became much worse by June and July. Drought conditions continue in the fall of 2007.

I. DROUGHT - Relationship with Other Hazards

Wildfires

A drought situation can significantly increase the risks of wildfire.

II. DROUGHT - Plans and Programs in Place

Water Plan

- The Rainy River Basin Plan is in place in Koochiching County

III. DROUGHT - Program Gaps or Deficiencies

Rainy River

- Peaking on the Rainy River is a concern.

3.1.6 Hazard: Wildfire

The immediate danger from wildfires is the destruction of timber, property, wildlife, and injury or loss of life to persons who live in the affected area or who are using recreational facilities in the area. Long-term effects from wildfires are numerous. Forest fires can leave large amounts of scorched and barren land, which may not return to its pre-fire condition for many years. Major fires can completely destroy ground cover, which can, in turn, cause erosion. Flash floods, landslides, and mudflows can occur if heavy rains follow a major fire.

The Minnesota State Fire Marshal Division (MFIRS) collects data from fire departments each year. The MFIRS input is essential in order to understand and effectively combat the fire problem in Minnesota. On the local level, this data provides knowledge to intelligently focus prevention efforts and it also documents needs when making budget requests for staffing or equipment. Table 3-2 on the following page shows data as reported to the MFIRS by Koochiching County for 2000-2001. The MFIRS data includes city fire departments only.

Table 3-2: Koochiching County MFIRS Data (2000-2002)

Year	Total Fire Runs	Total Other Runs	Total Dollar Loss	Avg. Dollar Loss/Fire	Percent of F.D. Represented
2000	47	15	\$328,100	\$7,291	83%
2001	51	26	\$452,150	\$9,420	100%
2002	57	30	\$337,875	\$6,033	100%

Source: Minnesota State Fire Marshall (MFIRS)

I. WILDFIRE - Relationship to Other Hazards

Flood/erosion

Floods, combined with landslides in areas with steep terrain, could occur if a larger fire event is followed by significant rainfall.

II. WILDFIRE - Plans and Programs in Place

MN Department of Natural Resources (DNR) Forestry Division

- The MN DNR has mutual-aid agreements with all local fire departments in Koochiching County.

National Fire Plan

- The USDA Forest Service maintains the National Fire Plan that is updated annually. This plan promotes the effective use of national resources to combat wildfires throughout the United States.

Grand Rapids/Minnesota Inter-agency Fire Center (MIFC)

- The purpose of the MIFC is to allow for an efficient flow of information between agencies and the exchanging of resources to fight wildfires. Partners include staff from the Department of Natural Resources (DNR), the United States Forest Service (USFS), and the Minnesota Department of Homeland Security and Emergency Management (DHSEM).

Wildfire Condition Monitoring

- The MN DNR Division of Forestry collects weather data on a daily basis. This data is input into a U.S. Department of Agriculture (USDA) Forest Service computer, which uses the National Fire Danger Rating System to determine daily and forecasted fire danger indices. This information combined with fire/weather forecasts from the National Weather Service (NWS) are used to develop short-range guidelines for scheduling, detection, equipment stand-by, and personnel.

Burning Permits/Restrictions

- Burning permits are issued through DNR Fire Warden. This system regulates the hours or whether residents and visitors can burn or have a campfire.

Water Access

- Dry-hydrants can be installed in Koochiching County through the Firewise Program.

Water Storage

- There are water storage tanks outside of Littlefork and International Falls.

II. WILDFIRE - Program Gaps and Deficiencies

Firewise Program

Firewise is a national program. According to the Minnesota Department of Natural Resources “firewise addresses the risk of homes in the wildland/urban interface to wildland fire. As more homes are built in the woods and fields of Minnesota, the existing firefighting resources are less able to protect everyone's property while trying to control a wildfire.

Homes close to evergreens and the tall grasses of prairies or marshes are most at risk. Making your home able to survive an approaching wildfire is the goal of the Firewise program.”

Firewise offers mitigation techniques for communities, homeowners, and contractors and landscapers. Firewise should be promoted to all these groups in Koochiching County.

Radio Warning System

- Fire warnings should be broadcast over local television and radio stations informing people which evacuation routes are safe and open. However, these are only effective if individuals are tuned into their radio or television and know how to respond in case of an emergency. Contacting residents in rural areas for evacuation purposes is not feasible. People primarily have to rely on radio information and take their own responsibility.

Vegetation Management

- Vegetation in close proximity to a residence and heavy brush or dead wood can increase the risk of a structure being impacted as wildfire moves through an area.

Water Access

- Water needs to be shuttled to a fire in some instances where water resources are limited.
- Installation of dry-hydrants is expensive and requires ongoing maintenance.
- Birchdale could benefit from the installation of a dry-hydrant.

Department Resources

- Koochiching County may be able to play a larger role in the coordination and assistance of small fire departments. Most departments have very limited resources and there is a concern that this will create unsafe conditions.

3.1.7 Hazard: Infectious Diseases

Changes in land and water use patterns will remain major factors in the spread of infectious diseases. The emergence of Lyme Disease in the United States has been linked to reforestation and increases in the deer tick population. Water management efforts, such as dam building, will encourage the spread of water-breeding vectors such as mosquitoes carry the West Nile Virus.

In the years following World War II many life threatening infectious diseases were cured using antibiotics or could be prevented through vaccination. However, new diseases continue to emerge. New strains of influenza require yearly updates of vaccinations. The recent surfacing of diseases such as SARS for which there is no cure or vaccination and bio-terrorism threats underscore the need for a good public health system to early detect new diseases in order to prevent a large scale epidemic. Increased resistance of diseases to various antibiotics is another area of concern. There are also concerns in Koochiching County of e-coli in lake water as a result of residential septic tanks.

History

No major outbreaks have been recorded within Koochiching County

I. INFECTIOUS DISEASES - Relationship to Other Hazards

Association With Other Disasters

- Infectious disease outbreaks can occur as primary events themselves or they may be secondary events to another disaster or emergency such as a terrorist attack or natural disaster.

Civil Unrest

- If a disease outbreak would occur, deaths, fear and misinformation could trigger civil unrest, lawlessness and panic.

II. INFECTIOUS DISEASES: Plans and Programs in Place

Emergency Operations Plans

- The Koochiching County Emergency Operations Plan (EOP) contains protocol on how to deal with infectious disease outbreaks. The plan outlines procedures for Koochiching County and the local units of government for contacting appropriate state and federal agencies to provide guidelines and strategies for dealing with infectious disease and command structures with County Health Department Staff and Emergency Managers. An appropriate response can limit the spread of a disease and reduce the number of people impacted.

Bio-Terrorism Plan

- Planning efforts focus on mass clinic sites and how to get supplies and pharmaceuticals.
- Koochiching County is working on getting sites in place for mass vaccination in regard to pandemic flu outbreaks.

Arrowhead Hospitals Mutual Aid

- There is a mutual-aid agreement in place between the 16 hospitals in the Arrowhead Region that allows for the sharing of decontamination technology.

Public Health Nuisance

- There is a public health nuisance committee in place in Koochiching County.

Well-testing

- Water testing is done by the Koochiching County Health Department, as well as private well testing.

II. INFECTIOUS DISEASES: Program Gaps and Deficiencies

Infectious Disease Response Training

- There needs to be more practice responding with the plans and programs that are currently in place. Practice needs to occur with all the needed parties and entities to ensure that response is coordinated in case of a real occurrence.
- It is difficult to be proactive in training when there is limited staffing in the field of infectious diseases.

Wells and Septics

- Flooding of wells and septic systems are a concern. Awareness is an issue.

3.1.8 Hazard: Earthquake

An earthquake is defined as a shaking or trembling of the crust of the earth as a result of underground volcanic forces or by the breaking and shifting of rock beneath the surface.

History

Koochiching County is located in an area with a zero-percent Peak Ground Acceleration rating. No earthquakes have been documented in Koochiching County.

3.1.9 Hazard: Solar Storm

A solar storm is defined as solar flares and other related eruptions from the sun that blast energy and energy-charged material through interplanetary space at more than 600,000 M.P.H. As this energy impacts the protective upper atmosphere of the Earth, magnetic storms are produced that affect our climate

and occasionally result in temporary damages to some of our most critical technological systems.

Solar storms can impact the power grid, communications systems, impact satellites, and with that, navigational systems depending on accurate satellite information.

History

In March of 1989, a powerful solar storm caused widespread power disruptions in the northeastern United States.

I. SOLAR STORMS: Plans and Programs in Place

Koochiching County has no specific plans and programs in place to respond to solar storms. The State Hazard Mitigation Plan identifies no mitigation recommendations other than promoting an awareness and understanding of the impacts a solar storm can have on technological systems.

3.2 TECHNOLOGICAL HAZARDS: HAZARDS PRESENTED BY MAN

3.2.1 Hazard: Fire

Fire is a rapid, persistent chemical reaction that releases heat and light. A fire is categorized as both a natural and a technological hazard that occurs both inside and outside. Structure fires are categorized as residential, public/mercantile, and industrial/manufacturing/other buildings. A second category of fires includes vehicle fires, encompassing aircraft, boats, trucks, buses, automobiles, and trains.

Cooking is the leading cause of home fires. It is also the leading cause of home fire injuries. Cooking fires often result from unattended cooking and human error, rather than mechanical failure of stoves or ovens. Careless smoking is the leading cause of fire deaths. Smoke alarms and smolder-resistant bedding and upholstered furniture are significant fire deterrents.

Arson is both the second leading cause of residential fires and residential fire deaths. In commercial properties, arson is the major cause of deaths, injuries and dollar loss.

Heating is the third leading cause of residential fires. Heating fires are a larger problem in single-family homes than in apartments. Unlike apartments, the heating systems in single-family homes are often not professionally maintained.

I. FIRE: Plans and Programs in Place

Fire Districts and Departments

- Structure fires are served by the local fire departments. The locations of the fire halls can be found on the Community Infrastructure Map included in Appendix A.

Zoning

- Portions of the zoning regulation are intended to improve safety from fire, such as setbacks and road width to allow easy emergency vehicle access.

Response Times

- The City of International Falls and the City of Littlefork fire departments have good response times to fire and medical emergencies.

II. FIRE: Program Gaps and Deficiencies

Access to Properties

- There are concerns in some of the rural areas because of long response times. In some cases, roads are too narrow and/or overgrown for rescue equipment to go down.

Availability of Water

- Water needs to be shuttled to a fire in some instances where water resources are limited.
- Installation of dry-hydrants is expensive and requires ongoing maintenance.

Citizen Education

- It is important to educate citizens in remote and rural areas of the importance of personal responsibility for eliminating fire hazards and debris around their structures. It needs to be made clear to residents in remote areas that there is not “city level” of response time to a fire.

Staffing and Training of Volunteer Fire/Ambulance Responders

- Adequate coverage to respond properly to a fire can be a problem. Retention and recruitment of volunteer fire fighters is critical. In addition, there are some concerns regarding the level of training of volunteers and level of equipment available for fire fighting which impacts the ability of a fire department to recruit.

There is a need for strategic planning for the fire departments within Koochiching County. This would help them focus on the future needs such as training, equipment needs, grants and funding, and morale issues.

- Not too much is expected from Koochiching County volunteer ambulance responders in terms of degree of difficulty of medical emergencies.
- There is a concern in Koochiching County that in 5-10 years that the volunteer programs in the County are going to dry up. Part of the problem is the aging population and out migration of the younger population.

Building Codes

- Many communities in Koochiching County do not have building codes or enforcement of fire codes in place, which leads to safety concerns for residents and fire fighters and safety workers who need to these properties.
- There is a need to enforce building codes, not just setback requirements. Having a plan in place dealing with building codes would be a major mitigation effort. Enforcement of building codes would be difficult because of staffing constraints.

Response Times

- Response times for areas in Koochiching County covered by volunteer fire departments can be a concern in terms of mobilizing fire resources and arriving at the fire scene.

3.2.2 Hazard: Hazardous Materials

Hazardous materials are comprised of substances that are either flammable or combustible, explosive, toxic, noxious, corrosive, oxidizers or radioactive

Business types that commonly use hazardous materials locally include hospitals, schools, metal plating and finishing, the aircraft industry, public utilities, cold storage companies, the fuel industries, the communication industry, chemical distributors, research, and high technology firms. Each of these facilities is required to maintain plans for warning, notification, evacuation and site security under various regulations. Hazardous materials incidences are generally associated with transportation accidents or accidents at fixed facilities.

Hazardous materials may also be released as a secondary result of natural disasters fire and floods. In either case, building or vehicles can release their hazardous materials inventories when they are structurally compromised or are involved in traffic accidents. Pipelines can be exposed or ruptured from

collapsed embankments, road washouts, bridge collapses, and fractures in roadways.

Hazardous materials spills might cause the short term or long term evacuation of an affected area. Depending on the nature of the spill and local weather conditions, residences, businesses, hospitals, schools, nursing homes, and roadways may be evacuated or closed to traffic until cleanup can be affected.

While the majority of incidents tend to involve petroleum products, a significant number can involve extremely hazardous materials. Extremely hazardous materials are those materials that may do irreversible damage or cause death to people or harm the environment when released or used outside their intended use. Examples are ammonia, chlorine and sulfuric acid.

In Koochiching County there are three (3) small quantity generators (SQG) of hazardous materials and no (0) large quantity generators (LQG). A SQG is defined as a generator that produces 220 to 2200 pounds of hazardous waste each month. A LQG is a generator that produces 2200 pounds of hazardous waste or more each month.

I. HAZARDOUS MATERIALS - Relationship to Other Hazards

- There is a risk of wastewater contamination resulting from the improper disposal of chemicals.
- Impacts on water resources and fisheries as a result of a spill.

II. HAZARDOUS MATERIALS - Plans and Programs in Place

State agency cooperation

- Koochiching County works directly with the appropriate state agencies to address needs for responding to and mitigating the impacts of a hazardous event.

Mutual Aid Agreements

- All local fire departments in the County have mutual-aid agreements with one another. The Town of Fort Francis, Ontario has a mutual-aid agreement with the City of International Falls.

Emergency Operations Plan

- Koochiching County has an EOP in plan that outlines procedures for dealing with hazardous materials accidents, spills or releases. All emergency staff has awareness level training in regard to hazardous materials and spills.

Koochiching County Emergency Personnel/Equipment

- The City of International Fire Department is trained at a technician level for dealing with hazardous material leaks and/or spills. The goal of the International Falls Fire Department is to become a Chemical Assessment Team (CAT).

Grand Rapids Chemical Assessment Team (CAT)

- The City of Grand Rapids has a chemical assessment team (CAT) in place that covers Koochiching County and is trained to take offensive actions in the event of a spill or leak. This staff is trained at technician level.

55th Civil Support Group

- This unit can provide assistance in analyzing threats and proper response. Local units of government need to make contact through the State Duty Officer to access this resource.

Methamphetamine Labs

- Koochiching County is in the process of developing a Methamphetamine Lab Ordinance
- Forestry staff in Koochiching County has all gone through a four-hour training course in methamphetamine lab identification.
- The City of International Falls has a certified methamphetamine inspector on staff.
- The City of International Falls has methamphetamine lab recognition training with area civic groups.

Information on Hazardous Material Transportation

- The United States Custom Service tracks hazardous materials entering the United States by rail.

III. HAZARDOUS MATERIALS - Program Gaps and Deficiencies

Information on Hazardous Material Transportation

- Koochiching County does not have a recent assessment of what types of hazardous materials are being transported through the County on a regular basis.

Railroads

- Trains traveling on the DWP are now over 2-miles long and traveling in excess of 60 miles per hour. There is a major concern if there were to be a derailment.

Boise Cascade

- Boise Cascade has a company team of 23 staff trained in dealing with hazardous materials. There is currently no agreement between either Boise Cascade and the City of International Falls or Koochiching County.

Grand Rapids Chemical Assessment Team (CAT)

- The Grand Rapids CAT is the closest team to Koochiching County and International Falls. It takes the Grand Rapids team in excess of two hours to reach the area. The State of Minnesota has a goal that communities are within two hours of a Chemical Assessment Team.

3.2.3 Hazard: Water Supply Contamination

The causes of water contamination are numerous and range from agricultural runoff to improper use of household chemicals and everything in between. Municipal water treatment facilities are not designed or effective for removing these synthetic chemicals and typically only consist of sand bed filtration and disinfection, much like a standard swimming pool filter.

In Koochiching County the water supply for seasonal or vacation homes that are used infrequently may go untested for years. It is important to test water every year if the well is not used continuously. Residences near lakes and rivers often have wells that use shallow ground water. Seasonal homes or cottages may have older wells that need repair or replacement, but are a lower priority than the primary residence. Older, shallow wells are at the most risk from ground water contamination, so the water from these needs to be tested annually.

Many vacation dwellings in Koochiching County use surface water for the household water supply. Surface water presents a different set of risks and problems; information about special consideration and testing for surface water is available from the MN Department of Health (MDH).

The most obvious concern about an unsafe water supply is the health risk to family or guests. Wastewater contamination serves as a source of bacteria, viruses, and parasites that can cause gastrointestinal problems or transmit contagious diseases. High levels of nitrate from fertilizer or wastewater can present a serious health risk to infants, and poisons resulting from improper use or disposal of chemicals can cause long-term or chronic health problems for humans or animals.

I. WATER SUPPLY CONTAMINATION - Relationship to Other Events

Infectious diseases

Polluted human water resources can cause illness and epidemics in both the human and animal population.

II. WATER SUPPLY CONTAMINATION - Plans and Programs in Place

Drinking Water Standards/Requirements

- The U.S. Environmental Protection Agency (EPA), as required by the Safe Drinking Water Act of 1974, sets uniform nationwide minimum standards for drinking water. State public health and environmental agencies have the primary responsibility for ensuring that each public water supplier meets federal drinking water standards, or more stringent ones established by the State.

Public Water Supply Monitoring

- The Environmental Protection Agency (EPA) requires an ongoing water quality-monitoring program to ensure public water systems are working properly. Local officials work together with the Minnesota Department of Health and the EPA to ensure that all public water supplies are safe.

Wellhead Protection Program

- The City of International Falls has a wellhead protection plan in place, as does Koochiching County.
- The City of International Falls recently completed a surface water protection plan with the Koochiching County Health Department.

Well Construction and Testing

- Since 1974, all water wells constructed in Minnesota must meet the location and construction requirements of the Minnesota Well Code. It is recommended that private wells be tested annually, however this is at the discretion of the property owner. All well drillers are licensed by the State of Minnesota.

III. WATER SUPPLY CONTAMINATION - Program Gaps and Deficiencies

Personal Responsibility

- Residents in Koochiching County carry personal responsibility to test their well water on a regular basis to ensure their water supply is safe.

3.2.4 Hazard: Wastewater Treatment System Failure

Wastewater collection systems often receive additional water during heavy storm events as a result of Inflow and Infiltration. This may cause the wastewater treatment system to reach its maximum treatment capacity. In this event, excess flow will be directed into waterways untreated, resulting in sewage contamination. Urban runoff is usually collected by a separate storm sewer system and discharged directly into waterways.

Septic tanks are enclosures that store and process wastes where no sewer system exists, such as in rural areas or on boats. Treatment of waste in septic tanks occurs by bacterial decomposition. The resulting material is called sludge. The majority of Koochiching County is still served by septic systems as opposed to public waste treatment facilities. Contamination of water from septic tanks can occur under various conditions.

- Septic tanks are enclosures that store and process wastes where no sewer system exists, such as in rural areas or on boats. Treatment of waste in septic tanks occurs by bacterial decomposition. The resulting material is called sludge. The significant number of residences in Lake County is served by septic systems as opposed to public waste treatment facilities. Contamination of water from septic tanks can occur under various conditions.
- Poor placement of septic leach fields can feed partially treated wastewater into a drinking water source. Leach fields are part of the septic system for land based tanks and include an area where wastewater percolates through soil as part of the treatment process.
- Badly constructed percolation systems may allow water to escape without proper treatment.
- System failure can result in clogging and overflow to land or surface water.
- High density placement of tanks, as in suburban areas, can result in regions containing very high concentrations of wastewater. This water may seep to the land surface, run-off into surface water or flow directly into the water table.

I. WASTEWATER TREATMENT FAILURE - Plans and Programs in Place

Certified Operators and Inspectors

- The Minnesota Pollution Control Agency (MPCA) requires routine inspections of all wastewater treatment systems.

State Permit Enforcement

- The MPCA regulates wastewater systems. State staff in the water-quality point-source program issues permits, monitors compliance through data review and inspections, and enforces permit conditions.

Septic Inspections in Shoreland Areas

- Inspection of a septic system is required at the point of sale of property or after a property owner applies for a permit for an addition to a structure in shoreland areas.

Wastewater Treatment Plants

- The cities of International Falls, Littlefork, Northome, and Big Falls all have water treatment plants in place.

II. WASTEWATER TREATMENT FAILURE - Programs Gaps and Deficiencies

Failure Rates

- Septic system failure rates have not been determined systematically throughout Koochiching County.

3.2.5 Hazard: Dam Failure

Dam failures can also result in flooding. There have been very few dam failures in Minnesota that have resulted in major damages or loss of life. However, dams can cause problems when they fail or are not operated properly. A problem at a dam would most likely occur during a flood event, but could occur anytime. There are about 1,000 dams in Minnesota that are over six feet high.

I. DAM FAILURE – Plans and Programs in Place

- No needs identified.

II. DAM FAILURE – Program Gaps and Deficiencies

- No needs identified.

3.2.6 Hazard: Radiological

A radiological hazard is defined as an unintentional exposure to materials that emit ionizing radiation. The primary radiological hazard is the health effects resulting from unintentional exposure to ionizing radiation. When radiation interacts with atoms, energy is deposited, resulting in *ionization* (electron

excitation). This ionization may damage certain critical molecules or structures in a cell. Ionizing radiation is emitted from molecular elements generally referred to as radio nuclides, and this radiation has the ability to alter in varying amounts the function of living processes at the cellular level. Types of ionizing radiation include Alpha particles, Beta particles, Gamma rays, X-rays, and Neutron particles.

Radiation effects fall into two broad categories:

- Direct effect on cells (direct impact with a particularly sensitive atom or molecule in a cell).
- Indirect effect on cells (interaction with water molecules in the body where the deposited energy in the water leads to the creation of unstable, toxic hyperoxide molecules which then damage sensitive molecules and afflict subcellular structures).

The nature and extent of damage caused by ionizing radiation depend on a number of factors including the amount of exposure (energy strength), the frequency and/or duration of exposure, and the penetrating power of the radiation to which an individual is exposed. Acute exposure to very high doses of ionizing radiation is rare but can cause death within a few days or months. The sensitivity of the exposed cells also influences the extent of damage. For example, rapidly growing tissues, such as developing embryos, are particularly vulnerable to harm from ionizing radiation.

Nuclear power plants are a significant potential source of ionizing radiation. The health and environment impacts from the Three-Mile Island and Chernobyl, Russia disasters illustrate the potential hazards from nuclear power plants. Other sources of ionizing radiation include medical and diagnostic X-ray machines, certain surveying instruments, some imaging systems used to check pipelines, radioactive sources used to calibrate radiation detection instruments, and even some household fire detectors.

History

No radiological incidents have occurred in Koochiching County.

The U.S. Department of Energy (DOE) occasionally transports radioactive material through Minnesota via road and rail. In 1999 there were 21 such shipments (14 via rail and 7 via road). Information on these shipments can be located at www.ntp.doe.gov.

University laboratories, medical treatment facilities and medical laboratories also contain a large number of radionuclides. These materials are used in research, diagnostics and treatment.

Plans and Programs

- At the federal and national level there are a number of agencies that have capabilities to respond to radiological emergencies these include: U.S. Department of Energy (DOE), Nuclear Regulatory Commission (NRC), Federal Emergency Management Agency (FEMA), U.S. Department of Transportation (DOT), American Nuclear Society (ANS). More information on these agencies and their roles and responsibilities can be found in the State All Hazard Mitigation Plan.

- At the state level the following agencies have capabilities:
 - ✓ Department of Public Safety (DPS), Homeland Security and Emergency Management (HSEM): HSEM has response equipment and capabilities related to radiological incidents. In addition, HSEM shall assess the need for protective actions in the event of a radiological incident at a nuclear power plant.

 - ✓ Department of Health (MDH): MDH has response and laboratory equipment capabilities related to radiological incidents.

 - ✓ Department of Health, Environmental Health (EH), Asbestos, Indoor Air, Lead, and Radiation Program: The Section of Asbestos, Indoor Air, Lead and Radiation regulates radioactive materials under letter agreement with the NRC and is prepared to provide accident assessment and advisory support in the event of a nuclear power plant emergency. See <http://www.health.state.mn.us/divs/eh/about.html#programs>

State Hazardous Materials (HAZMAT) teams, based in Duluth for Cook County, have equipment to respond to a radiological incident.

- ✓ The Federal Radiological Emergency Response Plan (FRERP) is in place to establish an organized and integrated capability for a timely, coordinated response by Federal agencies to peacetime radiological emergencies.

- ✓ The MN Department of Health has a response plan for radiological incidents.

- ✓ The Minnesota Emergency Operations Plan (MEOP) addresses the response to radiological incidents for Minnesota Government Agencies.

3.2.5 Hazard: Terrorism

Human caused hazards are intentional, criminal, malicious uses of force and violence to perpetrate disasters against people or property. They can be the result of terrorism, actions intended to intimidate or coerce a government or the civilian population to further political or social objectives, which can be either

domestic or international, depending on the origin, base and objectives of the terrorist organization. Or they can be acts of individuals perpetrated for personal reasons.

Hazards can result from the use of weapons of mass destruction, including biological, chemical, nuclear and radiological weapons; arson, incendiary, explosive and armed attacks; industrial sabotage and intentional hazardous materials releases; and cyber terrorism.

History

Koochiching County has no history of terrorist activity or individual acts to cause disasters against people or property. Vandalism, assaults and other criminal acts do occur, but these isolated incidents fall within the purview of local law enforcement.

I. TERRORISM: Relationship to Other Hazards

Cascading effects of an intentional human-caused disaster are highly dependent on the specific mode used and asset targeted. Impacts could include spread of infectious disease, fires and secondary explosions are possible with explosive attacks and fires from arson attacks can extend beyond intended targets such as cause forest fires.

II. TERRORISM: Plans and Programs in Place

Training

- Koochiching County conducted a tabletop training/forum for terrorism that was attended by local elected officials, emergency responders, healthcare personnel, etc. A total of 150 people attended representing 37 agencies.

Computer Viruses

- Computer viruses and technological attacks to computer infrastructure can seriously impede public safety operations. The Y2K event provided incentive for various government and emergency operations people to get together and discuss concerns.

Terrorism Plan

- The County adopted a terrorism plan in 2004.

International Border

- Koochiching County shares an international border with Canada. Much of the border is lightly populated rural and wilderness areas characterized by woods and waters. The cities of International Falls, Minnesota and

Section III: Hazards Facing Koochiching County

Fort Francis share a border crossing. International Falls and Koochiching County coordinate with the U.S Border Patrol as necessary.

III. TERRORISM: Program Gaps and Deficiencies

- None Identified. The County has adopted a separate County plan addressing the implications of terrorism.

Section III: Hazards Facing Koochiching County

SECTION FOUR:

Koochiching County Risks and Vulnerabilities

SECTION 4: KOOCHICHING COUNTY RISKS & VULNERABILITIES

4.1 INTRODUCTION

The Koochiching County hazard analysis reflects the comprehensive study of all hazards that may impact the communities within the County. It is based on the best available information describing those hazards that have occurred and which ones are most likely to occur. The analysis includes information on the frequency of occurrence for each hazard, historical impacts, advanced warning time, potential severity, and risk level. This data was used to develop a risk rating for each hazard within Koochiching County. Where possible maps were used to illustrate areas of particular vulnerability. Local communities as well as State and Federal agencies provided the data collected for this analysis.

4.2 EVALUATING RISKS

Dividing a community into sectors based on local geography allows one to look at community in manageable sections in relation to a specific hazard event. The sector map for Koochiching County is located on page 68 as Figure 4a.

Sectors in Koochiching County were created to identify local areas of service, vulnerable areas, and determine the risks for future events. Sectors allow Koochiching County to evaluate how a specific area could be impacted, how it has been impacted in the past, and what can be done to mitigate impacts from future events. They can also be used to organize and conduct emergency response activities. For the risk evaluation the steering committee used Hazard Impact and Risk Summary by MCD Worksheet as a guideline. A copy of this worksheet can be found in Appendix E.

Koochiching County is divided into four sectors. The sectors were defined by the hazard mitigation team and mapped. Maps in Appendix A provide more detailed information on population, government, and health and public safety services in Koochiching County.

Sector One: Sector one is the northeast portion of Koochiching County. This is the major population center for the County, containing the cities of International Falls, Ranier, and Littlefork. Sector one also contains a major port of entry into the United States in International Falls. Sector one contains major transportation infrastructure with two state highways (11 and 332) and two U.S. highways (53 and 71), the Falls International Airport, and two railroads (Duluth, Winnipeg, and Pacific and the Minnesota, Dakota, and Western). In addition, sector one contains portions of the Kabetogama State Forest and the Koochiching State Forest.

Section IV: Koochiching County Risks and Vulnerabilities

Sector Two: Sector two makes up the northwest quadrant of Koochiching County. The sector is relatively sparse in population; however it contains many small communities including Pelland, Loman, Indus, Birchdale, and Clementson. Also of note in sector two is the Trunk Highway (TH) 11 corridor. This highway parallels the Rainy River and serves as a major east/west connection in the County. The highway also serves a large volume of commercial truck traffic. Portions of the Red Lake Indian Reservation are included in sector two as are portion of the Smokey Bear State Forest and the Pine Island State Forest.

Sector Three: Sector three makes up the southwest quadrant of Koochiching County. This section of the County is sparsely populated with the major population center located in Big Falls (population 264). Other municipalities within sector three include Northome (pop. 230) and Mizpah (pop. 78). Of importance in sector three is the presence of two airports including the Northome Municipal Airport and the Big Falls Municipal Airport. The Pine Island State Forest covers much of sector three. The main transportation corridor in sector three is U.S. Highway 71. There are two other state highways in this sector, including Trunk Highway (TH) 6 and TH 01.

Sector Four: Sector four makes up the southwest quadrant of Koochiching County. Like sectors two and three, sector four is sparse in population. The main transportation corridor in sector four is Trunk Highway (TH) 65. Sector four contains the Nett Lake Indian Reservation, which houses the major population center of the sector in Nett Lake Village. The Nett Lake Indian Reservation provides much of its own emergency services. The Koochiching State Forest covers a large portion of sector four.

4.3 RISK LEVEL PRIORITY

Each hazard type in Tables 4.1 and 4.2 on the following page is assigned a low, moderate, or high risk. These risk levels are general in nature and should be used solely for the purpose of comparing specific sections of Koochiching County to one another in terms of the degree each risk poses in specific areas. Each risk level is defined below:

- **Low Risk:** A hazard occurrence would most likely pose little or no threat of property damage or to the health and wellness of individuals living in the sector.
- **Moderate Risk:** A hazard occurrence poses some risk of property damage and impact on the safety of residents. Impacts would still likely be relatively minimal and be most likely some form of physical property damage.
- **High Risk:** A hazard occurrence could potentially create a significant risk of property damage and the health and wellness of individuals living in the area, specifically in areas of more dense development and population.

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Table 4.1: Natural Hazards-Priority Rating by Sector

Hazard Type	County	Sector 1 (N.E. Kooch)	Sector 2 (N.W. Kooch)	Sector 3 (S.W. Kooch)	Sector 4 (S.E. Kooch)
Flooding	Moderate	Moderate	Moderate	Low	Low
Drought	Low	Low	Low	Low	Low
Wildfire	Moderate	Moderate	Moderate	Moderate	Moderate
Extreme Temps.	Moderate <i>(cold)</i>	Moderate <i>(cold)</i>	Moderate <i>(cold)</i>	Moderate <i>(cold)</i>	Moderate <i>(cold)</i>
Winter Storms	Moderate	Moderate	Moderate	Moderate	Moderate
Summer Storms	Moderate	Moderate	Moderate	Moderate	Moderate
Earthquake	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Solar Storm	Low	Low	Low	Low	Low
Karst Subsidence	Not Applicable	Not Applicable	Not Applicable	Low	Not Applicable

Table 4.2: Technological/Human Caused Hazards – Priority Rating by Sector

Hazard Type	County	Sector 1 (N.E. Kooch)	Sector 2 (N.W. Kooch)	Sector 3 (S.W. Kooch)	Sector 4 (S.E. Kooch)
Terrorism	Moderate	Moderate <i>(International Falls)</i>	Moderate <i>(Trunk Highway 11)</i>	Low	Low
Fire (structural)	Moderate <i>(Longer response times in rural more remote areas)</i>	Low	Moderate	Moderate	Moderate
Wastewater treatment facility failure	Moderate <i>(Individual septic systems are a concern throughout the County)</i>	Moderate	Moderate	Moderate	Moderate
Dam Failure	Low	Low	Low	Low	Low
Infectious Diseases	Low	Moderate <i>(Major Population Concentrations)</i>	Low	Low	Low
Water Supply Contamination	Low <i>(Individual septic systems can be a concern throughout the County)</i>	Low	Low	Low	Low
Hazardous Materials	Moderate	High <i>(I-Falls)</i>	Moderate <i>(Trunk Highway 11)</i>	Low	Low
Radiological	Low	Low	Low	Low	Low

4.5 NATURAL HAZARDS OF SPECIFIC CONCERN

Flooding

Flooding can be a concern in parts of Koochiching County due to the soil types and the amount of time it takes for the ground to absorb water. The International Falls area has issues with basement flooding following heavy rainfall events. Flooding in the Big Fork and Little Fork River areas is also a concern. Road washouts due to flooded culverts are an issue throughout Koochiching County.

Severe Storms

Severe storms can impact all sectors in Koochiching County. Severe winter storms can pose risks for certain population groups living in the more remote parts of Koochiching County. The population in these areas may have some delays in getting roads cleared. Power may also be interrupted for a period of time. However, in general populations living in more remote areas are well prepared with extra food and water and back-up heat available that risks are limited. Winter travel is another concern during severe storms and cold weather. Ongoing education on the importance of winter storm preparedness is the key to ensure risks are limited.

An aging population living in rural areas can pose additional challenges in the aftermath of severe storms. The older population may have more limited options to clear out snow or debris and ongoing medical needs may be a concern as well. Education and personal preparedness are important tools here to reduce risks.

Wildfire

Wildfire has a potential for damage to lives and property for all sectors in Koochiching County. Wildfire is a natural part of the northern Minnesota forest ecosystem.

Estimating potential losses due to wildfire is difficult. Losses depend on the size of the fire, the area it moves through, weather conditions, and the speed at which it moves. The FEMA 386-2 "*Understanding Your Losses Manual*" does not offer standards for calculating potential losses to structures or content due to wildfires. The wildfire hazard rating form included in this manual does not provide a very applicable methodology to rate the risk of wildfire hazard for properties, as development tends to be scattered in low densities interspersed with larger sections of public lands.

4.6 HUMAN CAUSED HAZARDS OF SPECIFIC CONCERN

Terrorism

Technological and human caused hazards have historically posed limited risk for Koochiching County. With increased concerns regarding terrorism, sector one is the most vulnerable as it holds the main population concentrations, including the City of International Falls which is a major port of entry to the United States. Sector one also contains the Duluth, Winnipeg, and Pacific Railroad, the Minnesota, Dakota, and Western Railroad, five major highway routes, large industrial sites, and the Falls International Airport.

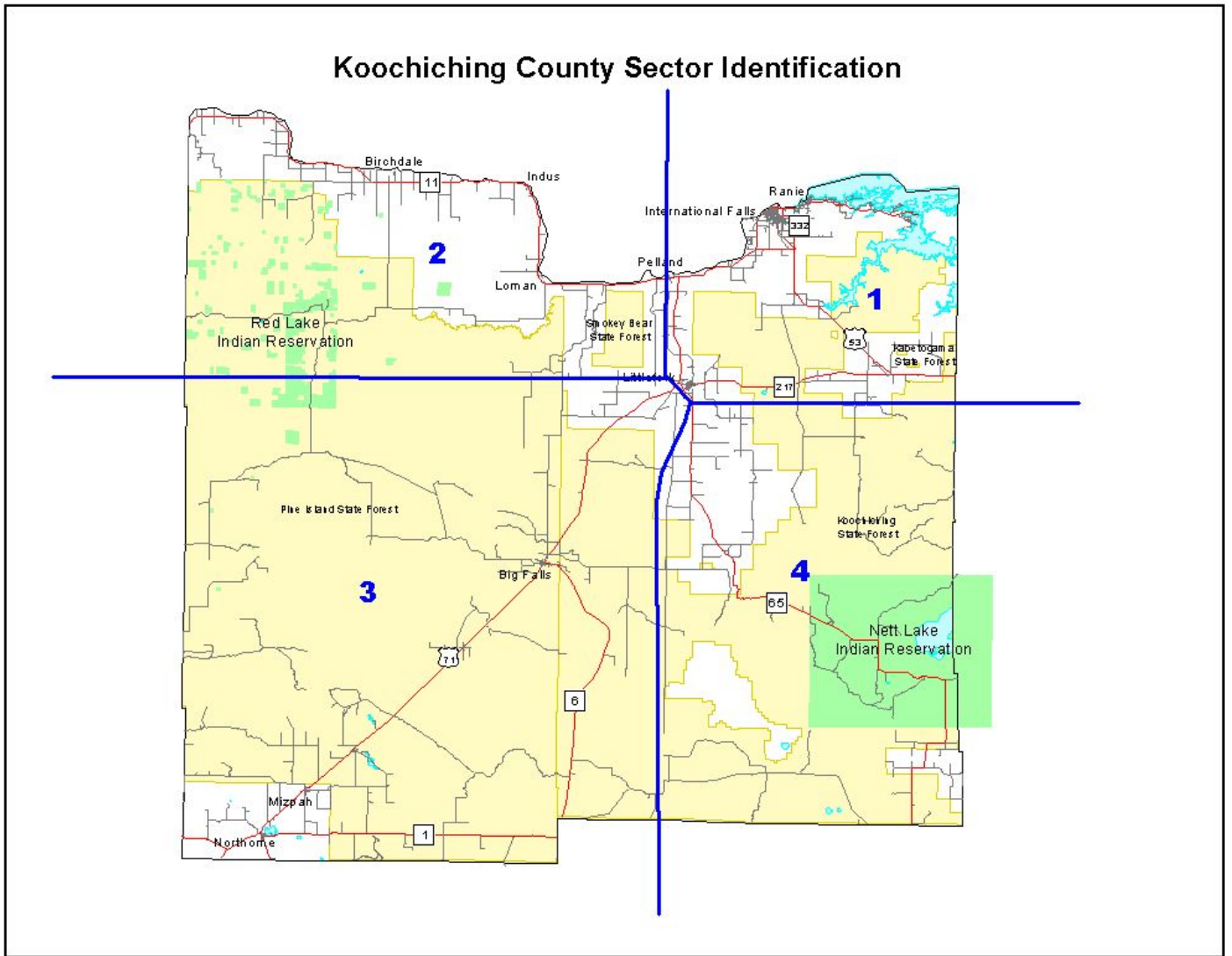
Hazardous Materials

Chemical spills pose the greatest concerns in relation to impacts on the population. Concerns in general focus on all sectors that include major transportation routes or concentrations of businesses using chemicals. Once again, this is one of the largest concerns in sector three, where most of the population and commercial activities are located. The characteristics of sector one make it the most at risk for being impacted by a hazardous materials event.

Structural Fires

Fire in general is a moderate concern. The housing stock in many of the communities in Koochiching County is older, meaning many structures are not built according to modern fire codes. In the rural areas there are no building codes in place. This poses additional risks to the safety of fire fighters. Further, longer response times in rural areas pose additional risks and require increased responsibility of property owners to reduce fire hazards and be prepared in case of a structural fires.

Figure 4a: Koochiching County Sectors



SECTION FIVE:

Koochiching County Goals and Strategies

SECTION 5: GOALS AND ACTIONS

5.1 INTRODUCTION

Section five discusses the goals and actions that have been developed in response to the risk assessment and gap analysis completed in previous chapters. The actions are listed in matrix format for each hazard. To facilitate implementation, a general list of parties who should be involved in discussions regarding each action has been established, as well as a timeline for the completion of each action.

5.2 GOALS AND ACTIONS

For each hazard the plan presents a goal(s) reflecting the desired end to be achieved as part of this plan. For each goal, actions have been identified that work toward the completion of the goal. Each goal and action is listed on the following pages. Actions are separated into items that need to be addressed and items that are a continuation of existing programs. The action items are most likely to change over time as needs change and opportunities arise, and are highly contingent upon the availability of funding sources. Funding has yet to be identified for any of the action items that are not currently considered ongoing. The goals in the document provide a more long-range vision and are less likely to be subject to change.

The Steering Committee developed goals, objectives and strategies based on a review of the risk and program assessment. The committee reviewed the effectiveness of programs in place and emphasized continuation and in some cases strengthening of programs they deemed important. The steering committee recommended additional strategies for areas for which program gaps were identified through the risk and program assessment.

Staff compiled all the program recommendations in a matrix format. For each strategy a responsible party or parties was identified and a timeframe established. The steering committee members discussed the priority rating, responsible parties and timeframes during a workgroup session. In the discussion the committee members considered the appropriateness and effectiveness of each strategy in light of the ability of the county or other entities to follow through on a strategy considering the resources required and political will and community support needed for the proposed actions.

The committee also reviewed the responsible parties identified for each strategy. The steering committee felt that the first priority is maintaining and strengthening current programs in place before new initiatives should be developed considering the limited resource the County has at its disposal. They

further found that many of the recommendations could be implemented by current staff or as part of programs currently in place. The steering committee therefore limited its priority ranking by setting a timeframe for each action item. When setting timeframes the steering committee realized that these are fluid, as implementation will depend on opportunity and resource availability. The timeframes and priorities will be used as a starting point for discussion during the annual plan review.

5.3 HAZARD MITIGATION VISION

The Koochiching County Steering Committee has agreed upon a vision unifying the goals and actions for all hazard mitigation strategies in this plan. The vision statement reads as follows:

“Koochiching County will strive to work on an ongoing basis on identifying risks and the development of programs and partnerships at the local, state, tribal, and federal level that reduce risks and damages as a result of natural, technological, and human caused hazards and will strive to make Koochiching County and the region a safer place to live.”

5.4 IMPLEMENTATION AND REVIEW

The Koochiching County All Hazard Mitigation Plan should be considered a living document. The plan will be reviewed every five-years as required by FEMA. The matrix included in this chapter will function as the primary tool when reviewing progress on the implementation of the Koochiching County All Hazard Mitigation Plan.

The Koochiching County Emergency Management Workgroup will review plan progress and reassess needs and opportunities on an annual basis as part of its Emergency Operations Plan review activities coordinated by the Sheriff’s Department. Additional discussions may take place in response to funding cycles or programs that provide resources for hazard mitigation activities. Additional stakeholders from to be invited to this review include County Department Heads including Environmental Services, Highway Engineering, Public Health and the Land Department. In addition representatives from the local communities and appropriate state and federal agencies should have an opportunity to participate as well. The review or an update on the plan could be an agenda item on an annual basis at a regularly scheduled Koochiching County Board meeting.

The plan monitoring workgroup will provide a mechanism for ensuring that the actions identified in the plan are incorporated into ongoing county and local jurisdiction planning activities or incorporated by departments in their day to

day activities such as ensuring proper access and egress when the planning department approves zoning permits or when setting priorities for infrastructure improvements by the public works department. It further allows for ongoing coordination with state and federal agencies. The county departments and other entities identified in the strategies will need to take the plan recommendations into consideration when preparing work plans and budgets in order to allow for adequate staff time and resources to implement the recommendations.

Koochiching County is committed to involving the public directly in the continual reshaping and updating of the Hazard Mitigation Plan. The workgroup members will be responsible for the annual review and updating of the plan. The public will be able to directly comment and provide feedback about the plan. Copies of the plan will be catalogued and kept on hand at the County Courthouse. The availability of the updated plan for review will be advertised as part of an annual hearing on the plan, which will be part of a regular scheduled County Board meeting. At this hearing the public will have an opportunity to submit comment. Following this hearing the workgroup will review the comments and make changes to the plan as appropriate.

5.5 IMPLEMENTATION TOOLS

A number of implementation tools are available to address hazards. Many of these tools are identified in the matrix however, in some cases additional discussion is needed in order to identify what strategies are most appropriate to use. This will be part of an ongoing discussion as Koochiching County looks for opportunities for plan implementation. The following tools should be considered:

- **Education:** In many cases education of residents has been identified as one of the most effective mitigation strategies. Koochiching County is generally a rural county with low population densities, with the exception of the International Falls area. This limits the ability to provide services and increases the responsibility residents have to prepare for natural and man caused hazards.
- **Capital Investments:** Capital investments such as fire and ambulance equipment, sprinkler systems and dry fire hydrants are tools that can limit risks and impacts of natural and man made hazards.
- **Data Collection and Needs Assessments:** Data collection and needs assessments can aid in gaining a better understanding of threats and allow planning for mitigation strategies accordingly. As resources are limited as part of this planning process, additional data collection is likely to be an ongoing activity as resources become available.
- **Coordination:** Responsibilities for mitigation strategies run across various Koochiching County departments, local fire and ambulance departments, tribal, city and township governments, and a host of state and federal agencies. Ongoing coordination is an important tool to ensure resources are used efficiently. Coordination can also avoid duplication of efforts or prevent gaps that are created because of unclear roles and

Section V: Koochiching County Goals and Actions (DRAFT)

responsibilities. The mitigation plan review process can function as a tool to have an ongoing discussion on roles and responsibilities and opportunities for coordination.

- **Regional Cooperation:** Counties and public safety services providers throughout the Arrowhead Region often share similar challenges and concerns. In some cases a regional approach may be warranted as a mitigation strategy in order to save resources. Mutual-aid agreements are a tool already in use for a number of services. Needs assessments for fire and ambulance services and development of assistance for volunteer recruiting, training, and retention could benefit from a regional approach. Cooperation between counties could also help in lobbying for certain funding priorities that address concerns relating to challenges in service delivery in rural areas. Organizations such as the Arrowhead EMS, Arrowhead Regional Development Commission and the State Regional Emergency Coordinator offer tools and resources to assist in these cooperative efforts.
- **Regulation:** Regulation is an important mitigation tool for Koochiching County. Regulation plays a particularly important role for land use, access to structures and the protection of water resources and public health. One area the plan identifies a potential need for additional regulation is in addressing methamphetamine laboratories.

5.6 HAZARD MITIGATION GOALS AND ACTIONS

Pages 72 through 79 describe goals developed by the Steering Committee as well as the identification of actions to address needs. Actions are broken down into two categories: (1) action items to address, and (2) ongoing and continuing actions. Action items that need to be addressed are numbered with the letter “a”, while ongoing and continuing programs are numbered with the letter “b” and are *italicized*. The actions for each hazard can be found in matrix format on pages 81 through 94 of this section. The action items to be addressed are the priority areas the County will need to focus on. The matrix identifies timeframes for the action items to address and with this offers a priority ranking to work on these areas. The ability to work on these action items depends on available resources.

1) HAZARD: VIOLENT STORMS/EXTREME TEMPERATURE GOALS

- Goal 1.1:** Promote awareness on how to stay safe in case of violent storms.
- Goal 1.2:** Increase awareness and preparedness of Koochiching County Residents for extended periods of extreme temperatures.
- Goal 1.3:** Improve advanced warning of approaching severe weather for both area residents and visitors.
- Goal 1.4:** Maintain critical infrastructure, including power and road infrastructure after severe storm events.

Section V: Koochiching County Goals and Actions (DRAFT)

Goal 1.5: Reduce the impacts of downed trees on community infrastructure within Koochiching County.

Action Items to Address:

- 1a) Work with and encourage mobile home operators in developing storm related shelter plans.
- 2a) Inventory designated shelter sites within Koochiching County. Shelter sites are not well known by the general public.
- 3a) Ensure critical community facilities have back-up power options. Pre-wire selected shelter facilities throughout Koochiching County to allow easy hook-up to portable generators.
- 4a) Expand information on the risks associated with heat related illnesses. Key audiences are the elderly and younger populations engaging in physically strenuous activities.
- 5a) Implement the EAS equipment purchased by Koochiching County
- 6a) Inform the public on snow removal policies in place so there is an understanding of the timeframe it may take to remove snow from certain routes.
- 7a) Provide information to Koochiching County residents and visitors regarding how they can obtain information on severe weather and how to respond to dangerous weather conditions.
- 8a) Increase strategically located signage along roadways informing people about emergency information weather frequencies.
- 9a) Build shelters for public areas such as campgrounds.

Ongoing/Continued Actions:

- 1b) *Continue to educate Koochiching County citizens and visitors on ways to stay safe if adequate shelter is not available during a storm.*
- 2b) *Continue the winter storm awareness program. Since recent winter weather has been relatively mild, residents may not be as prepared to deal with extreme temperatures and snowfall.*
- 3b) *Expand information on the risks of heat related illnesses. Key audiences are the elderly and the younger populations engaging in physically strenuous activities.*
- 4b) *Emergency response staff can continue to play a larger role in warning residents and visitors in the event of approaching severe weather.*

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5b) Promote and educate Koochiching County residents and agencies about the use of NOAA weather radios for relaying weather related emergency information

6b) Locate power lines underground where it is feasible and cost effective. This could be done as part of new or reconstruction projects.

7b) Maintain an aggressive brushing program in order to reduce the risk of downed trees interrupting the power supply.

8b) Maintain an aggressive brushing program in order to reduce the amount of debris that could block a road after a severe windstorm or winter storm

9b) Maintain unpaved roads during winter and spring months to prevent emergency response vehicles from getting stuck.

10b) Make certain storm spotters in Koochiching County receive training on a regular basis through the National Weather Service (NWS) in order to maintain their skill level.

11b) Ensure emergency management personnel, county sheriffs, and other emergency response teams are notified as soon as possible in the event of an approaching severe storm.

12b) Identify responsible entities and promote the provision of safety information at campgrounds in Koochiching County. Information should provide the location of the nearest safe building or location. In addition, it should be stressed that under certain circumstances it is best to stay put, as travel during a severe storm may create greater risk.

2) HAZARD: FLOODING GOALS

Goal 2.1: Ensure the maintenance of transportation infrastructure to be able to withstand flooding events.

Goal 2.2: Make certain the maintenance allows critical infrastructure to be able to withstand flooding events.

Goal 2.3: Make sure that no new developments occur within areas that are designated as flood ways.

Goal 2.4: Prevent future flooding as a result of inadequate storm water management.

Action Items to Address:

9a) Maintain, and where necessary add, storm water retention ponds to protect wastewater treatment facilities throughout Koochiching County.

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10a) Review storm water management guidelines currently in place to ensure that they are adequate to limit post development run-off and will not result in storm water run-off created flood damages.

11a) Inventory and document roads in Koochiching that suffer repetitive flood damages. A number of roads in Koochiching County flood on a regular basis (e.g., County Road 1).

12a) Update Koochiching County floodplain maps. Current maps are over 20-years old and need to be revisited.

13a) Encourage training for realtors and insurance agents on the flood insurance program, as well as technical assistance to other decision makers regarding flood damage and insurance programs. Realtors and buyers of property in Koochiching County need to be more aware of issues.

14a) Work to resolve storm water management issues in International Falls. Recent storms have resulted in the repeated flooding of basements.

Ongoing/Continued Actions:

13b) *Encourage that development occurs away from areas that may be difficult to serve with reliable road access. For example, development that will require access through an area that would be prone to washouts or flooding, such as wetland areas.*

14b) *Continue to enforce city, county, and townships ordinances governing development and setbacks in shoreland areas.*

15b) *Address ice dams that may impact the road system in a timely manner in order to prevent damage to infrastructure, in particular during the spring thaw.*

16b) *Maintain bridge, road, and culvert infrastructure at a level that is capable of sustaining a major storm event and will not be vulnerable to washouts.*

3) HAZARD: WILDFIRE GOAL

Goal 3.1: Reduce the risk of wildfire damaging property and causing injury or death.

Goal 3.2: Promote participation in Firewise program by communities, homeowners, and contractor and landscapers.

Ongoing/Continued Actions:

17b) *Continue and where necessary expand efforts to educate area residents through the FireWise Program on how they can reduce the risk of wildfire doing damage to their property through vegetation management and use of fire resistant building materials.*

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18b) Promote the use of financial assistance for fuel reduction efforts through the FireWise program by area property owners.

19b) Promote through new building codes that building materials are used that can reduce the chance of property damage related to structural fires.

20b) Continue inter-agency and multi-jurisdictional efforts to identify, contain, and extinguish wildfires. Koochiching County may be able to play a larger role in the coordination and assistance of smaller fire departments. Most departments have very limited resources and there is a concern that this will create unsafe conditions.

21b) Local planning staff on the city and county level, along with area fire chiefs, should coordinate to ensure new development will have adequate access and egress for emergency response vehicles.

22b) Maintain an ongoing effort to educate people how to respond in case of a large wildfire event so both residents and visitors will know how to respond to warnings and are aware of evacuation routes.

23b) Work with fire departments to inventory areas where firefighting capacity is limited through the availability of water and consider the strategic installation of dry fire hydrants or water holding tanks, for example in the Birchdale area.

4) HAZARD: INFECTIOUS DISEASES GOAL

Goal 4.1: Reduce the threat of spread of infectious diseases in Koochiching County.

Action Items to Address:

15a) Work with the Minnesota Department of Health to have more frequent inspections of food and lodging establishments. Education is key in informing people how to prevent the spread of diseases.

16a) Finalize County plans for mass dispensing clinics as part of the strategic national stockpile.

Ongoing/Continued Actions:

24b) *Ensure a good public health system is in place to identify outbreaks of infectious diseases and equipped with adequate resources to respond to such outbreaks*

25b) *Make certain that the Koochiching County Emergency Operations Plan (EOP) is reviewed on an as needed basis in order to properly deal with the outbreak of an infectious disease.*

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26b) Participate in exercises to ensure all response personnel understand their roles and responsibilities with the current plans in place and can effectively coordinate activities with other authorities.

27b) Maintain relationships with State and Federal agencies to ensure all local entities know the protocol in responding to an infectious disease outbreak and have knowledge of how to access resources as needed.

28b) Educate citizens to make them aware of available resources and who to contact in case of an emergency and also how they can help reduce the spread of diseases or germs.

29b) Increase vaccination awareness and vaccination rates in all age groups, specifically focusing on childhood and elderly populations.

5) HAZARD: HAZARDOUS MATERIALS GOAL

Goal 5.1: Improve preparedness, training, and equipment for response to hazardous materials events.

Action Items to Address:

17a) Update information on hazardous materials that typically travel in and through Koochiching County.

18a) Where applicable, identify alternative traffic and evacuation routes in the case that major arterials are severed by a hazardous materials spill

19a) Establish the International Falls Fire Department as a certified chemical assessment team (CAT).

20a) Work to formalize an agreement with Boise to utilize their hazardous materials team of 23 staff.

Ongoing/Continued Actions:

30b) *Encourage participation of local jurisdictions in regional exercises that test local plans and interaction between agencies, including the Minnesota State Duty Officer.*

31b) *Ensure local emergency responders have adequate training to identify and safely deal with potential methamphetamine labs within Koochiching County.*

32b) *Maintain up-to-date on new and alternative technologies that could help to improve the ability of Koochiching County to respond to a chemical or hazardous material spill.*

33b) *Educate residents how to properly use and safely dispose of household chemicals.*

6) HAZARD: FIRE GOAL

Goal 6.1: Reduce the risk of damages, injury and loss of life through fire.

Action Items to Address:

21a) Work with volunteer fire departments in their needs to recruit, train, and retain volunteer fire fighters to ensure adequate coverage that allows for proper response to fires as well as conduct inspections and educational programs.

22a) Identify areas that have limited availability of water for firefighting and continue to strategically place dry fire hydrants or water holding tanks (e.g., Birchdale area)

23a) Encourage Koochiching County to adopt and enforce a uniform building code.

24a) Enforce building permits as a part of the re-assessment process.

Ongoing/Continued Actions:

34b) *Educate residents in rural areas that longer response times for fires put greater responsibility on property owners to prevent or address a fire before the fire department arrives.*

35b) *Support educational programs that stress fire prevention, specifically focusing on building contractors for new construction in rural areas where building codes are not enforced.*

36b) *Coordination between local Fire Marshall and the Planning Department is key in order to ensure properties have good access and egress.*

37b) *Increase education for Koochiching County residents regarding the need to have an individual plan in place in the event of a fire.*

7) HAZARD: WATER SUPPLY CONTAMINATION GOAL

Goal 7.1: Protect the quality of drinking water resources within Koochiching County.

Ongoing/Continued Actions:

38b) *Continue working with the Minnesota Department of Health on the development of wellhead and source water protection plans.*

39b) *Make available well water testing kits to Koochiching County residents who request them.*

40b) *Educate Koochiching County residents on how to properly disposal such items as gasoline, oil, antifreeze, etc.*

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41b) Work with the Minnesota Pollution Control Agency (MPCA) on implementing strategies of statewide programs.

8) HAZARD: WASTE WATER SYSTEM FAILURE GOAL

Goal 8.1: Ensure adequate wastewater treatment systems are in place to protect the health of citizens.

Action Items to Address:

25a) Focus on educating residents of the importance of proper septic system maintenance.

Ongoing/Continued Actions:

42b) Continue the implementation of programs that ensure proper septic treatment systems are in place in areas not served by a central wastewater treatment system.

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IDENTIFIED ACTIONS FOR KOOCHICHING COUNTY

Pages 81 through 86 of this document describe actions recommended to address needs within Koochiching County. Each action is broken down by specific hazard type and contains information on who will be involved in future discussion regarding the actions as well as a general status or action timeframe.

VIOLENT STORMS/EXTREME TEMPERATURES RECOMMENDED ACTIONS

Action	Entity Involvement	Status/Timeframe
<p>1a) Work with and encourage mobile home operators in developing storm related shelter plans. Compliance checks can be done through the licensing process.</p>	<ul style="list-style-type: none"> ▪ Mobile home park operators ▪ Emergency managers County and Cities** ▪ Red Cross 	<p>Short-term</p>
<p>2a) Inventory and post designated shelter sites within Koochiching County. Shelter sites are not well known by the general public.</p>	<ul style="list-style-type: none"> ▪ Public Health Dept. ▪ Emergency managers from County and Cities ▪ Local jurisdictions: Little Fork, Ranier, Northome and Bois Forte Indian Reservation ▪ Red Cross 	<p>Short-term</p>
<p>3a) Ensure critical community facilities have back-up power options. Pre-wire selected shelter facilities throughout Koochiching County to allow easy hook-up to portable generators.</p>	<ul style="list-style-type: none"> ▪ Local jurisdictions including Little Fork, Bois Forte Indian Reservation 	<p>Long-term</p>
<p>4a) Expand information on the risks associated with heat related illnesses. Key audiences are the elderly and younger populations engaging in physically strenuous activities.</p>	<ul style="list-style-type: none"> ▪ County Health Department ▪ School Districts ▪ Hospitals/clinics 	<p>Short-term</p>
<p>5a) Implement the EAS equipment purchased by Koochiching County</p>	<ul style="list-style-type: none"> ▪ Emergency Managers from County and Cities 	<p>Short-term</p>

***Cities* includes Big Falls, International Falls, Little Fork, Mizpah, Northome, and Ranier unless otherwise noted.

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Action	Entity Involvement	Status/Timeframe
<p>6a) Inform the public on snow removal policies in place so there is an understanding of the timeframe it may take to remove snow from certain routes.</p>	<ul style="list-style-type: none"> ▪ County Highway Department ▪ Bois Forte Road Department 	<p>Short-term</p>
<p>7a) Provide information to Koochiching County residents and visitors regarding how they can obtain information on severe weather and how to respond to dangerous weather conditions.</p>	<ul style="list-style-type: none"> ▪ Chamber of Commerce ▪ Emergency managers from County and Cities ▪ County Highway Department 	<p>Shor-term</p>
<p>8a) Increase strategically located signage along roadways informing people about emergency information weather frequencies.</p>	<ul style="list-style-type: none"> ▪ Emergency managers from County and Cities ▪ Mn/DOT ▪ County Highway Department 	<p>Short-term</p>

FLOODING RECOMMENDED ACTIONS

Action	Entity Involvement	Status/Timeframe
<p>9a) Maintain, and where necessary add, storm water retention ponds to protect wastewater treatment facilities throughout Koochiching County.</p>	<ul style="list-style-type: none"> ▪ Local jurisdictions 	<p>Long-term</p>
<p>10a) Review storm water management guidelines currently in place to ensure that they are adequate to limit post development run-off and will not result in storm water run-off created flood damages.</p>	<ul style="list-style-type: none"> ▪ Local jurisdictions ▪ Planning and zoning authorities from County and Cities ▪ Bois Forte Indian Reservation 	<p>Short-term</p>
<p>11a) Inventory and document roads in Koochiching that suffer repetitive flood damages. A number of roads in Koochiching County flood on a regular basis (e.g., County Road 1).</p>	<ul style="list-style-type: none"> ▪ County Highway Department ▪ Cities and townships ▪ Bois Forte Indian Reservation 	<p>Short-term</p>
<p>12a) Update Koochiching County floodplain maps. Current maps are very general and are over 20-years old. The current maps do not have elevations associated with rivers</p>	<ul style="list-style-type: none"> ▪ Land Department ▪ DNR ▪ FEMA 	<p>Short-term</p>
<p>13a) Encourage training for realtors and insurance agents on the flood insurance program, as well as technical assistance to other decision makers regarding flood damage and insurance programs. Realtors and buyers of property in Koochiching County need to be more aware of issues.</p>	<ul style="list-style-type: none"> ▪ Area realtors ▪ Planning and zoning authorities from County and Cities 	<p>Short-term</p>
<p>14a) Work to resolve storm water management issues in International Falls. Recent storms have resulted in the repeated flooding of basements.</p>	<ul style="list-style-type: none"> ▪ City of International Falls ▪ Property owners 	<p>Long-term</p>

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INFECTIOUS DISEASES RECOMMENDED ACTIONS

Action	Entity Involvement	Status/Timeframe
15a) Work with the Minnesota Department of Health to have more frequent inspections of food and lodging establishments. Education is key in informing people how to prevent the spread of diseases.	<ul style="list-style-type: none"> ▪ Bois Forte Health & Human Services ▪ County Health Department ▪ Local food and lodging establishments 	Short-term
16a) Finalize County plans for mass dispensing clinics as part of the strategic national stockpile.	<ul style="list-style-type: none"> ▪ County Health Department ▪ School District ▪ Hospitals/Clinics 	Short-term

HAZARDOUS MATERIALS RECOMMENDED ACTIONS

Action	Entity Involvement	Status/Timeframe
17a) Update information on hazardous materials that typically travel in and through Koochiching County.	<ul style="list-style-type: none"> ▪ Emergency managers from County and Cities ▪ Mn/DOT ▪ Railroads ▪ Local industries ▪ MPCA ▪ Boise Paper ▪ Local fire departments ▪ U.S. Customs 	Short-term
18a) Where applicable, identify alternative traffic and evacuation routes in the case that major arterials are severed by a hazardous materials spill	<ul style="list-style-type: none"> ▪ Emergency managers from County and Cities ▪ Local jurisdictions ▪ Bois Forte Indian Reservation 	Short-term
19a) Establish the International Falls Fire Department as a certified chemical assessment team (CAT).	<ul style="list-style-type: none"> ▪ City of International Falls 	Short-term
20a) Work to formalize an agreement with Boise to utilize their hazardous materials team of 23 staff.	<ul style="list-style-type: none"> ▪ City of International Falls ▪ Koochiching County ▪ Boise 	Short-term

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FIRE RECOMMENDED ACTIONS

Action	Entity Involvement	Status/Timeframe
<p>21a) Work with volunteer fire departments in their needs to recruit, train, and retain volunteer fire fighters to ensure adequate coverage that allows for proper response to fires as well as conduct inspections and educational programs.</p>	<ul style="list-style-type: none"> ▪ Local fire departments ▪ Bois Forte Indian Reservation ▪ DNR ▪ Koochiching County 	<p>Short-term</p>
<p>22a) Identify areas that have limited availability of water for firefighting and continue to strategically place dry fire hydrants or water holding tanks (e.g., Birchdale area)</p>	<ul style="list-style-type: none"> ▪ Local fire departments ▪ Bois Forte Indian Reservation 	<p>Short-ter,</p>
<p>23a) Encourage the County to adopt and enforce a uniform building code.</p>	<ul style="list-style-type: none"> ▪ Local fire departments ▪ Bois Forte Indian Reservation ▪ Local units of government (Cities) 	<p>Short-term</p>
<p>24a) Enforce building permits as a part of the re-assessment process.</p>	<ul style="list-style-type: none"> ▪ County Planning and Zoning ▪ County Assessor's Office ▪ Local Jurisdictions (Cities) 	<p>Short-term</p>

WASTEWATER SYSTEMS RECOMMENDED ACTIONS

Action	Entity Involvement	Status/Timeframe
<p>25a) Focus on educating residents of the importance of proper septic system maintenance.</p>	<ul style="list-style-type: none"> ▪ Property Owners ▪ County Health Department ▪ County Environmental Office 	<p>Short-term</p>

ONGOING ACTIONS IN KOOCHICHING COUNTY

Pages 87 through 94 of this document reaffirm existing and ongoing programs within Koochiching County that address specific hazards and needs. These were activities identified by the steering committee as ongoing programs geared toward addressing the impacts of natural and human caused hazards. These programs are recommended for continuation and where necessary should be built upon and expanded.

VIOLENT STORMS/EXTREME TEMPERATURES ONGOING ACTIONS

Action	Entity Involvement	Status/Timeframe
1b) Continue to educate Koochiching County citizens and visitors on ways to stay safe if adequate shelter is not available during a storm.	<ul style="list-style-type: none"> - County Health Department - National Weather Service - Local Fire and EMS Departments - Emergency Manager 	Ongoing
2b) Continue the winter storm awareness program. Since recent winter weather has been relatively mild, residents may not be as prepared to deal with extreme temperatures and snowfall.	<ul style="list-style-type: none"> - County Health Department - National Weather Service - Emergency Managers from County and Cities - Local Fire and EMS 	Ongoing
3b) Expand information on the risks of heat related illnesses. Key audiences are the elderly and the younger populations engaging in physically strenuous activities.	<ul style="list-style-type: none"> - County Health Department - National Weather Service - Emergency Managers from County and Cities - Local Fire and EMS 	Ongoing
4b) Emergency response staff can continue to play a larger role in warning residents and visitors in the event of approaching severe weather.	<ul style="list-style-type: none"> - Emergency Managers from County and Cities - Local police/fire departments (Cities) - County Health Department - State of Minnesota - National Weather Service 	Ongoing
5b) Promote and educate Koochiching County residents and agencies about the use of NOAA weather radios for relaying weather related emergency information	<ul style="list-style-type: none"> - Emergency Managers from County and Cities - Local jurisdictions 	Ongoing
6b) Locate power lines underground where it is feasible and cost effective. This could be done as part of new or reconstruction projects.	<ul style="list-style-type: none"> - Local jurisdictions - Utility providers - Electric Co-ops 	Ongoing

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VIOLENT STORMS/EXTREME TEMPERATURES ONGOING ACTIONS (CONTINUED)

Action	Entity Involvement	Status/Timeframe
7b) Maintain an aggressive brush removal program in rights-of-way in order to reduce the risk of downed trees interrupting power utilities.	<ul style="list-style-type: none"> - Local jurisdictions - Utility providers 	Ongoing
8b) Maintain an aggressive brushing program in order to reduce the amount of debris that could block a road after a severe windstorm or winter storm	<ul style="list-style-type: none"> - County Highway Department - Local jurisdictions - Mn/DOT - Utility providers 	Ongoing
9b) Maintain unpaved roads during winter and spring months to prevent emergency response vehicles from getting stuck.	<ul style="list-style-type: none"> - County Highway Department - Local Jurisdictions 	Ongoing
10b) Make certain storm spotters in Koochiching County receive training on a regular basis through the National Weather Service (NWS) in order to maintain their skill level.	<ul style="list-style-type: none"> - National Weather Service - Emergency Managers from County and Cities - RACES Group - Local Police and Fire Departments - First Responders 	Ongoing
11b) Ensure emergency management personnel, county sheriffs, and other emergency response teams are notified as soon as possible in the event of an approaching severe storm.	<ul style="list-style-type: none"> - Storm Spotter Network - Emergency Managers from County and Cities - Local Police and Fire Departments - First Responders 	Ongoing
12b) Identify responsible entities and promote the provision of safety information at campgrounds in Koochiching County. Information should provide the location of the nearest safe building or location.	<ul style="list-style-type: none"> - Campground operators - Emergency managers from County and Cities - Chamber of Commerce - Tourism Bureau - Bois Forte Indian Reservation - Lands and Forestry 	Ongoing

FLOODING ONGOING ACTIONS

Action	Entity Involvement	Status/Timeframe
<p>13b) Encourage that development occurs away from areas that may be difficult to serve with reliable road access. For example, development that will require access through an area that would be prone to washouts or flooding, such as wetland areas.</p>	<ul style="list-style-type: none"> - County planning and zoning - Cities & Township planning and zoning - Local road jurisdictions 	<p>Ongoing</p>
<p>14b) Continue to enforce city and county ordinances governing development and setbacks in shoreland areas.</p>	<ul style="list-style-type: none"> - County planning and zoning - Cities and Township planning and zoning 	<p>Ongoing</p>
<p>15b) Address ice dams/jams that may impact the road system in a timely manner in order to prevent damage to infrastructure, in particular during the spring thaw.</p>	<ul style="list-style-type: none"> - Local road jurisdictions - County Highway Dept. - DNR 	<p>Ongoing</p>
<p>16b) Maintain bridge, road, and culvert infrastructure at a level that is capable of sustaining a major storm event and will not be vulnerable to washouts.</p>	<ul style="list-style-type: none"> - County Highway Department - Local road jurisdictions - Mn/DOT 	<p>Ongoing</p>

WILDFIRE ONGOING ACTIONS

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Action	Entity Involvement	Status/Timeframe
<p>17b) Continue and where necessary expand efforts to educate area residents through the FireWise Program on how they can reduce the risk of wildfire doing damage to their property through vegetation management and use of fire resistant building materials.</p>	<ul style="list-style-type: none"> - DNR FireWise Program - Local fire departments - Cities and Township planning and zoning authorities 	<p>Ongoing</p>
<p>18b) Promote the use of financial assistance for fuel reduction efforts through the FireWise program by area property owners.</p>	<ul style="list-style-type: none"> - DNR FireWise Program - Local fire departments - Cities and Township planning and zoning authorities 	<p>Ongoing</p>
<p>19b) Promote through new building codes that building materials are used that can reduce the chance of property damage related to structural fires.</p>	<ul style="list-style-type: none"> - DNR FireWise Program - Local fire departments - Cities and Township planning and zoning authorities 	<p>Ongoing</p>
<p>20b) Continue inter-agency and multi-jurisdictional efforts to identify, contain, and extinguish wildfires. Koochiching County may be able to play a larger role in the coordination and assistance of smaller fire departments. Most departments have very limited resources and there is a concern that this will create unsafe conditions.</p>	<ul style="list-style-type: none"> - United States Forest Service - DNR - Local fire departments 	<p>Ongoing</p>
<p>21b) Local planning staff on the city and county level, along with area fire chiefs, should coordinate to ensure new development will have adequate access and egress for emergency response vehicles.</p>	<ul style="list-style-type: none"> - Cities and Township planning and zoning authorities - Local fire departments - Emergency managers from County and Cities - Local road jurisdictions 	<p>Ongoing</p>
<p>22b) Maintain an ongoing effort to educate people how to respond in case of a large wildfire event so both residents and visitors will know how to respond to warnings and are aware of evacuation routes.</p>	<ul style="list-style-type: none"> - Department of Natural Resources - Local fire departments - Bois Forte Indian Reservation - Koochiching County - Emergency managers from County and Cities 	<p>Ongoing</p>
<p>23b) Work with fire departments to inventory areas where firefighting capacity is limited through the availability of water and consider the strategic installation of dry fire hydrants or water holding tanks, for example in the Birchdale area.</p>	<ul style="list-style-type: none"> - Department of Natural Resources - Local fire departments - Bois Forte Indian Reservation - Koochiching County - Emergency Managers from County and Cities 	<p>Ongoing</p>

D) INFECTIOUS DISEASES ONGOING ACTIONS

Action	Entity Involvement	Status/Timeframe
<p>24b) Ensure a good public health system is in place to identify outbreaks of infectious diseases and equipped with adequate resources to respond to such outbreaks.</p>	<ul style="list-style-type: none"> - Hospitals and Clinics - County Board - County Health Department 	<p>Ongoing</p>
<p>25b) Make certain that the Koochiching County Emergency Operations Plan (EOP) is reviewed on an as needed basis in order to properly deal with the outbreak of an infectious disease.</p>	<ul style="list-style-type: none"> - County Health Department - Emergency Managers from County and Cities - Hospitals and Clinics 	<p>Ongoing</p>
<p>26b) Participate in exercises to ensure all response personnel understand their roles and responsibilities with the current plans in place and can effectively coordinate activities with other authorities.</p>	<ul style="list-style-type: none"> - County Health Department - Hospitals and Clinics - Emergency Managers from County and Cities 	<p>Ongoing</p>
<p>27b) Maintain relationships with State and Federal agencies to ensure all local entities know the protocol in responding to an infectious disease outbreak and have knowledge of how to access resources as needed.</p>	<ul style="list-style-type: none"> - County Health Department - Hospitals and Clinics - Emergency Managers from County and Cities 	<p>Ongoing</p>
<p>28b) Educate citizens to make them aware of available resources and who to contact in case of an emergency and also how they can help reduce the spread of diseases or germs.</p>	<ul style="list-style-type: none"> - County Health Department - Hospitals and Clinics - Emergency Managers from County and Cities 	<p>Ongoing</p>
<p>29b) Increase awareness and vaccination rates in all age groups, specifically focusing on childhood and elderly populations.</p>	<ul style="list-style-type: none"> - County Health Department - School District - Hospitals/Clinics 	<p>Ongoing</p>

HAZARDOUS MATERIALS ONGOING ACTIONS

Action	Entity Involvement	Status/Timeframe
<p>30b) Encourage participation of local jurisdictions in regional exercises that test local plans and interaction between agencies, including the Minnesota State Duty Officer.</p>	<ul style="list-style-type: none"> - Local fire departments - Emergency Managers from County and Cities - Local law enforcement agencies - MPCA - Hospitals and clinics - EMS providers - County Health Department - DNR - Boise - Railroads 	<p>Ongoing</p>
<p>31b) Ensure local emergency responders have adequate training to identify and safely deal with potential methamphetamine labs within Koochiching County</p>	<ul style="list-style-type: none"> - Emergency Managers - Local law enforcement agencies - Local fire departments - County Health Department 	<p>Ongoing</p>
<p>32b) Maintain up-to-date on new and alternative technologies that could help to improve the ability of Koochiching County to respond to a chemical or hazardous material spill.</p>	<ul style="list-style-type: none"> - Emergency Managers from County and Cities - Local fire departments 	<p>Ongoing</p>
<p>33b) Educate residents how to properly use and safely dispose of household chemicals.</p>	<ul style="list-style-type: none"> - County Health Department - Planning and zoning from County and Cities - State Agencies - Wastewater treatment facilities 	<p>Ongoing</p>

FIRE ONGOING ACTIONS

Action	Entity Involvement	Status/Timeframe
<p>34b) Educate residents in rural areas that longer response times for fires put greater responsibility on property owners to prevent or address a fire before the fire department arrives.</p>	<ul style="list-style-type: none"> - Local fire departments - Emergency Manager - DNR FireWise Program 	<p>Ongoing</p>
<p>35b) Support educational programs that stress fire prevention, specifically focusing on building contractors for new construction in rural areas where building codes are not enforced.</p>	<ul style="list-style-type: none"> - Local fire departments - Emergency Managers from County and Cities - DNR FireWise Program 	<p>Ongoing</p>
<p>36b) Coordination between local Fire Marshall and the Planning Department is key in order to ensure properties have good access and egress.</p>	<ul style="list-style-type: none"> - Local fire departments - County Planning and Zoning - Local zoning authorities from Cities 	<p>Ongoing</p>
<p>37b) Increase education for Koochiching County residents regarding the need to have an individual plan in place in the event of a fire.</p>	<ul style="list-style-type: none"> - Local fire departments - Emergency Managers from County and Cities - DNR FireWise Program - County Health Department 	<p>Ongoing</p>

Section V: Koochiching County Goals and Actions (DRAFT)

WATER SUPPLY CONTAMINATION ONGOING ACTIONS

Action	Entity Involvement	Status/Timeframe
<p>38b) Continue working with the Minnesota Department of Health on the development of wellhead and source water protection plans.</p>	<ul style="list-style-type: none"> - County Planning and Zoning - Koochiching County Soil & Water - Local water providers - County Health Department - MN Department of Health - MPCA 	<p>Ongoing</p>
<p>39b) Make available well water testing kits to Koochiching County residents who request them.</p>	<ul style="list-style-type: none"> - County Health Department 	<p>Ongoing</p>
<p>40b) Educate Koochiching County residents on how to properly disposal such items as gasoline, oil, antifreeze, etc.</p>	<ul style="list-style-type: none"> - County Health Department - MPCA - County Environmental Services - County Planning and Zoning 	<p>Ongoing</p>
<p>41b) Work with the Minnesota Pollution Control Agency (MPCA) on implementing strategies of statewide programs.</p>	<ul style="list-style-type: none"> - County Health Department - MPCA 	<p>Ongoing</p>

WASTEWATER SYSTEM FAILURE ONGOING ACTIONS

Action	Entity Involvement	Status/Timeframe
<p>42b) Continue the implementation of programs that ensure proper septic treatment systems are in place in areas not served by a central wastewater treatment system</p>	<ul style="list-style-type: none"> - County planning and zoning - Local jurisdiction (Cities) planning and zoning - MPCA 	<p>Ongoing</p>