

July 2012



# Multijurisdictional Hazard Mitigation Plan

Ramsey County, Minnesota

# RAMSEY COUNTY MULTIJURISDICTIONAL HAZARD MITIGATION PLAN

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# RAMSEY COUNTY MULTIJURISDICTIONAL HAZARD MITIGATION PLAN

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The plan was prepared under the direction of the Ramsey County Multijurisdictional Hazard Mitigation Planning Committee. For additional information, please contact the Ramsey County Emergency Management and Homeland Security.

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# EXECUTIVE SUMMARY

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Mitigation should form the foundation of every emergency management agency's plans and procedures. Emergency management agencies must adopt mitigation practices to reduce, minimize, or eliminate hazards in their community. Ramsey County adopted the Ramsey County Hazard Mitigation Plan in 2007 that identified the hazards they faced, certain vulnerabilities to these hazards, and mitigation strategies for the future. The Ramsey County Multijurisdictional Hazard Mitigation Plan (HMP) is the update to this plan. The plan fulfills the requirements of the Federal Disaster Mitigation Act as administered by the Minnesota Department of Homeland Security and Emergency Management (HSEM) and the Federal Emergency Management Agency (FEMA).

The Ramsey County (HMP) is a guide for all communities that participated in its development. Participating municipalities include the cities of Arden Hills, Falcon Heights, Gem Lake, Lauderdale, Little Canada, Maplewood, Mounds View, New Brighton, North Oaks, North St. Paul, Roseville, Shoreview, Vadnais Heights, White Bear Lake, and the Town of White Bear. These communities were identified as participating in the 2007 Ramsey County Hazard Mitigation Plan and have renewed their commitment for this HMP update. The cities of St. Paul, Blaine, Spring Lake Park, St. Anthony, and the University of Minnesota – Twin Cities campus all reside (at least partially) within Ramsey County, but are covered under other HMPs.

Representative and citizens from participating communities attended public meetings to discuss the hazards their communities face and the vulnerabilities those hazards present. Representatives from each participating municipality reviewed drafts of the HMP and added input to the mitigation strategies presented in the plan. Ramsey County citizens were also active participants in the development of the plan. Citizens attended public meetings that were advertised online and in news articles to share their concerns about hazards faced in the community and how to mitigate the effects of these hazards.

Ramsey County and its cities and townships understand the benefits of developing and implementing mitigation plans and strategies. Ramsey County elected officials, public safety organizations, planners, and many others have worked together to develop and implement this HMP, proving that they have the vision to implement mitigation practices and therefore reduce the loss of life and property in their communities.

## **Hazard Analysis**

The process of updating the Ramsey County HMP began with a review of the hazards faced in the community. Identifying the frequency of the hazard, impact potential, severity of damage, vulnerable critical facilities, and overall economic disruption, the Ramsey County Hazard Mitigation Planning Committee ranked the hazards as follows.

**Change from 2006 HMP:** Many hazards have been combined into one category. See section 4 for further details.

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Hazard	Annual Probability	Impact Location	Square Miles Affected	Hazard Rating	Property Damage	Vulnerable Critical Facilities	Economic Disruption
Severe Thunderstorms	100%	Anywhere	155.78	High	Moderate to Major	Communications, schools, medical care facilities, hospital, water/sewer/electric, transportation infrastructure	Utility systems disrupted, business and residential impact, hail damage to crops, roads damaged/closed
Lightning	100%	Anywhere	155.78	High	Moderate	Communications, schools, medical care facilities, hospital, water/sewer/electric, transportation infrastructure	Utility systems disrupted, business and residential impact, hail damage to crops, roads damaged/closed
Hailstorms	80%	Anywhere	155.78	High	Moderate to Major	Communications, schools, medical care facilities, hospital, water/sewer/electric, transportation infrastructure	Utility systems disrupted, business and residential impact, hail damage to crops, roads damaged/closed
Tornadoes	30%	Anywhere	155.78	Medium	Major	Communications, schools, medical care facilities, hospital, water/sewer/electric, transportation infrastructure, businesses, residential homes	Utility lines down, medical care disruption
Severe Winter Storms	100%	Anywhere	155.78	High	Minor	Communications infrastructure, transportation infrastructure, medical care facilities, hospitals, schools, businesses, residential homes	Utility lines down, livestock threatened
Power Failure	100%	Anywhere	155.78	High	Moderate	Communications infrastructure, transportation infrastructure, medical care facilities, hospitals, schools, businesses, residential homes	Business and residential impact
Extreme Temperatures	8%	Anywhere	155.78	Medium	Moderate	Medical care facilities, elderly care facilities	Businesses, roads damaged/closed, utilities affected
Wild Fires	40%	Rural areas, rural urban interface areas	155.78	Medium	Moderate	Communications infrastructure, transportation infrastructure, medical care facilities, hospitals, schools, businesses, residential homes	Agricultural, residential impact, road closures, utility impacts
Flooding	10%	Floodplains/Floodways	155.78 (land)	Medium	Moderate to Major	Communications infrastructure,	Businesses, roads

Hazard	Annual Probability	Impact Location	Square Miles Affected	Hazard Rating	Property Damage	Vulnerable Critical Facilities	Economic Disruption
			14.36 (water)			transportation infrastructure, medical care facilities, hospitals, schools, businesses, residential homes	damaged/closed, utilities affected
Drought	3%	Anywhere	155.78	Medium	Moderate to Major	Agri-business	Agriculture, business and residential impact, fire suppression
Rockslides	5%	Localized areas with steep slopes	155.78	Low	Low to Moderate	Transportation infrastructure, critical facilities, businesses	Transportation infrastructure, businesses and residential
Dam/Levee Failure	4%	Floodplains/floodways	155.78	High	Major	Communications infrastructure, transportation infrastructure, medical care facilities, hospitals, schools, businesses, residential homes	Businesses, roads damaged/closed, utilities affected
Hazardous Materials Spills	80%	Anywhere	155.78	Medium	Moderate	Communications infrastructure, transportation infrastructure, medical care facilities, hospitals, schools, businesses, residential homes	Business/industry and residential impact, evacuation, environmental impact
Epidemics/Pandemics	30%	Anywhere	155.78	Medium	Minor	Communications infrastructure, transportation infrastructure, medical care facilities, hospitals, schools, businesses, residential homes	Business/industry impact, health care system impact, and communications impact
Critical Facilities and Infrastructure Failure	25%	Anywhere	155.78	Medium	Moderate	Communications infrastructure, utility infrastructure	Business/industry impact, health care system impact, and communications impact
Terrorism	1%	Urban or agricultural areas	155.78	High	Major	Communications infrastructure, transportation infrastructure, medical care facilities, hospitals, schools, businesses, residential homes	Utility systems disrupted, business and residential impact, evacuations, roads damaged/closed
Energy/Fuel Shortage	3%	Anywhere	155.78	Low	Moderate	Communications infrastructure, transportation infrastructure, medical care facilities, hospitals, schools, businesses, residential homes	Utility systems disrupted, business and residential impact, evacuations, roads damaged/closed
Civil Disturbance	20%	Urban areas, anywhere	155.78	Low	Minor to Moderate	Government functions	Government functions,

## EXECUTIVE SUMMARY

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Hazard	Annual Probability	Impact Location	Square Miles Affected	Hazard Rating	Property Damage	Vulnerable Critical Facilities	Economic Disruption
							businesses
Invasive Species	100%	Lakes, localized areas	155.78	High	Minor	Business/industry, parks	Business/industry impact
Aircraft Accidents	15%	Anywhere	155.78	Low	Minor	Businesses/residential homes	Business/industry impact

## Mitigation Vision for the Future

Mitigation should be the very foundation of every emergency management agency's plans and procedures. Emergency management agencies must adopt mitigation practices to reduce, minimize, or eliminate hazards in their community. The Disaster Mitigation Act of 2000 (PL 106-390) outlines the criteria for communities to successfully implement hazard mitigation practices.

Ramsey County and its cities and township realize the benefits achieved by the development and implementation of mitigation plans and strategies. Ramsey County elected officials, public safety organizations, planners, and many others have worked together in the development and implementation of this hazard mitigation plan, proving that they have the vision to implement mitigation practices and therefore reduce the loss of life and property in their communities.



# Section 1

## PLAN, BACKGROUND, AND PURPOSE

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### 1.1 Overview

The Ramsey County Multijurisdictional Hazard Mitigation Plan (HMP) as written fulfills the requirements of the Disaster Mitigation Act of 2000, which is administered by the Federal Emergency Management Agency (FEMA). The Disaster Mitigation Act requires that all HMPs be updated every five years. The previous HMP was adopted effective 23 May 2006, and the current update began in 2011 in accordance with the law. The Disaster Mitigation Act also provides federal assistance to state and local emergency management to mitigate the effects of disasters. The HMP also encourages cooperation among various organizations and crosses political subdivisions.

The following communities participated in the update of the Ramsey County HMP: the Cities of Arden Hills, Falcon Heights, Gem Lake, Lauderdale, Little Canada, Maplewood, Mounds View, New Brighton, North Oaks, North St. Paul, Roseville, Shoreview, Vadnais Heights, White Bear Lake, and the Town of White Bear. The City of St. Paul has developed a separate HMP.

The Cities of Blaine and Spring Lake Park have a portion of their cities within the boundaries of Ramsey County; however, they primarily reside in Anoka County. They are not politically involved in Ramsey County and will not be discussed in this HMP, as they will be in Anoka County's Mitigation Plan.

The City of St. Anthony politically resides in Hennepin County; however, the city geographically is half in Hennepin County and half in Ramsey County. Although the city's police department is the primary first responder for two cities within Ramsey County, and it shares a school district with another city within Ramsey County, the City of St. Anthony will not be covered by the Ramsey County Plan. The Hennepin County HMP will cover the City of St. Anthony.

The University of Minnesota – Twin Cities Campus also presents a unique situation. The university is located in both Minneapolis and Falcon Heights, the St. Paul campus. For the St. Paul Campus, the University of Minnesota Police Department (UMPD) is the primary police response; however, fire, hazmat, and EMS response come from the Falcon Heights Fire Department and/or the St. Paul Fire Department. The university also operates its own Basic Life Support (BLS) specialized ambulance service, but that does not respond to 9-1-1 calls from either campus. The City of St. Paul HMP will cover the University of Minnesota – St. Paul Campus.

### 1.2 Authority

Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act Title 44 CFR as amended by Section 102 of the Disaster Mitigation Act of 2000 gives state and local governments the framework to evaluate and mitigate all hazards as a condition of receiving federal disaster funds. The Ramsey County Multijurisdictional HMP is a requirement of the law. In Minnesota, federal regulatory authority for hazard mitigation planning resides with FEMA Region V.

### 1.3 Scope

The scope of the Ramsey County Multijurisdictional HMP encompasses all areas of Ramsey County, as noted in Section 1.1 (above). The City of St. Paul has developed its own HMP, but regularly coordinates with Ramsey County on mitigation planning and activities. The plan will identify the natural and technological hazards that could threaten life and property in our communities. The scope of this plan includes both short-term and long-term mitigation strategies, implementation, and possible sources of project funding.

The plan also contains the following information:

- General information about the plan (Executive Summary)
- The vision for mitigation in our community (Preface)
- The profile of Ramsey County, its geography, history, physical features, and other community indicators (Section 2: Community Profile)
- The planning process and the involvement of all cities, townships, state and federal governments, the public, the private sector, and other community players (Section 3: Planning Process)
- Documentation of Ramsey County's past and predicted exposure to natural hazards and the potential risks that include the impacts on critical infrastructure with anticipated losses (Section 4: Risk and Vulnerability Assessment)
- An overview of Ramsey County's capabilities to implement hazard mitigation goals and objectives, policies that will effectively mitigate risks to our community (Section 5: Hazard Mitigation Goals and Objectives)
- Procedures for maintaining an effective, long-range HMP and the strategy to implement it (Section 6: Executing the Plan)
- Critical facilities information
- Documentation of the process (Appendixes)

### 1.4 Purpose

The purpose of the Ramsey County Multijurisdictional HMP is to identify risks and vulnerability to Ramsey County and to formulate a plan of action to reduce damage and loss of life from natural and technological disasters. This plan shall serve as a benchmark for future mitigation activities and will identify mitigation goals and objectives for Ramsey County and its cities and townships. The plan will also prioritize potential risks and vulnerabilities in an effort to minimize the effects of disasters in our community.

Realizing that identifying our community's risks and working collectively toward the prevention of disasters in our community is in everyone's best interest, Ramsey County Emergency Management and Homeland Security has taken a lead role in the development of the Ramsey County Multijurisdictional HMP.

Mitigation planning is imperative to lessen the impact of disasters in Ramsey County. The written plan is an excellent method by which to organize Ramsey County's mitigation strategy. The implementation of the plan and its components is vital to achieve a community that is resistant to the effects of a disaster. The implementation of the plan will reduce loss of life and property and allow our community to prosper with minimal disruption of vital services to our citizens. The plan provides a risk assessment of the hazards Ramsey County is exposed to and puts forth several mitigation goals and objectives that are based

on that risk assessment. This plan has been formally adopted by each participating entity and is required to be updated every five years.

### 1.5 Consistency with Federal and State Mitigation Policies

The plan is intended to enhance and complement state and federal recommendations for the mitigation of natural and technological hazards in the following ways:

- Substantially reduce the risk of loss of life, injuries, and hardship from the destruction of natural and technological disasters on an ongoing basis.
- Improve the public's awareness of the need for individual preparedness and building safer, more disaster-resilient communities.
- Develop strategies for long-term community sustainability during community disasters.
- Develop governmental and business continuity plans that will continue essential private sector and governmental activities during disasters.

FEMA publishes many guidance documents for local governments for mitigating natural disasters. The Ramsey County Multijurisdictional HMP fully recognizes, adopts, incorporates, and endorses the following principles:

- Develop a strategic mitigation plan for Ramsey County.
- Enforce current building codes.
- Develop incentives to promote mitigation.
- Incorporate mitigation of natural hazards into land-use plans.
- Promote awareness of mitigation opportunities and programs throughout our community on a continual basis.
- Identify potential funding sources for mitigation projects.

The private sector is often an overlooked segment of the community during disasters. It is vital that this sector of a community is included in mitigation efforts that are consistent with state and federal recommendations such as the following:

- Develop mitigation incentives with insurance agencies and lending institutions.
- Encourage the creation of a business continuity plan for the continuance of commerce during disasters.
- Partner with businesses in an effort to communicate with customers about the hazards in our community and possible solutions.

Individual citizens must be made aware of the hazards they face. Additionally, they must be educated in how to protect themselves from the hazards they face. They must be shown that mitigation is an important part of reducing loss of life and property in their community. Their support is critical to the success of any mitigation effort. The Ramsey County Multijurisdictional HMP supports the following FEMA recommendations regarding individual citizens:

- Become educated on the hazards that you and your community face.
- Become part of the process by supporting and encouraging mitigation programs that reduce vulnerability to disasters.

## Section 1

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- Take individual responsibility for safeguarding yourself and your family prior to a disaster.

### 1.6 Goals and Objectives

The following goals and objectives are the basis of this plan and summarize what the Ramsey County Multijurisdictional Hazard Mitigation Planning Committee will accomplish as a result of implementing this plan.

- Maximize the use of all resources by promoting intergovernmental coordination and partnerships in the public and private sectors.
- Harden our communities against the effects of disasters through the development of new mitigation strategies and strict enforcement of current regulations that have proved effective.
- Reduce and, where possible, eliminate repetitive damage, loss of life, and property from disasters.
- Bring greater awareness throughout the community about potential hazards and the need for community preparedness.
- Continue county and city training for Ramsey County and St. Paul/Ramsey County Public Health.

## 2.1 Overview

Ramsey County is located in east central Minnesota. It is at the center of the Seven-County Metro Area. Four counties border Ramsey County: Hennepin to the west and south, Dakota to the south, Washington to the east, and Anoka to the north. Of the 87 counties in the state of Minnesota, Ramsey County is geographically the smallest. Ramsey County has the second largest population in Minnesota and is the most densely populated county in the state.

Ramsey County houses the state capital in the City of St. Paul, along with 15 other municipalities and 1 township (and, as noted in Section 1.1, three other cities are partially located within Ramsey County). It is also home to over 80 lakes, 20 regional and county parks, and 5 golf courses. Ramsey County is home to an airport that is a primary reliever for the St. Paul/Minneapolis International Airport, located in Hennepin County just south of the border of Ramsey County. Within its borders are the Mississippi River, three major railroad companies, and all but one of the major interstates. A few of the major attractions include the State Fair, the Xcel Center, the Ordway Music Theatre, and the Science Museum of Minnesota and the Children's Museum. Aside from relaxing at the lakes and parks or visiting one of the attractions located in Ramsey County, a number of major employers have planted their roots here. A few of the major employers include the 3M Company, Medtronic, US Bank, and Wells Fargo Bank and employment in the County totals more than 330,000 people. A number of prestigious schools are also located within Ramsey County, including, the University of Minnesota, the University of St. Thomas, and Hamline University.

There are also a number of prominent healthcare systems and hospitals in the confines of Ramsey County. The county has not seen significant growth over the past 10 years. Reports from the 2010 United States Census show a decline of 0.5 percent in population, which may be attributed to other areas of the Minneapolis-St. Paul region opening up to urbanization.

Figure 2-1  
Location Map of Ramsey County MN



## 2.2 Early History

The passage of the bill creating the Minnesota Territory in the spring of 1849 immediately attracted settlers to the area. Nine counties were created later that year, Ramsey being one of them. The original Ramsey County boundary included all of the present-day counties of Ramsey, Anoka, Isanti, Kanabec and part of Washington, Pine, Carlton, Aitkin, Mille Lacs, and Hennepin.

Flooding into St. Paul by steamboat, many people remained right in the city, but others established farms on the vacant land in what is now northern Ramsey County. The rise of the railroads after the Civil War made Ramsey County and St. Paul the transportation center of the Upper Midwest and the gateway to the Northwest. It is almost impossible to exaggerate the railroad's impact on the 19th century city and county. Toward the end of the century, an enormous network of rails linked St. Paul with Chicago and the Pacific. "Empire Builder" James J. Hill had reorganized the St. Paul, Manitoba and Pacific Railroads into the Great Northern and acquired operating control of the bankrupt Northern Pacific. In addition, at least 10 other lines were serving the region. Some eight million people passed through St. Paul's Union Depot in 1888, a peak year, with 150 trains arriving and departing daily.

At the same time, much of the land in northern Ramsey County had remained farmland. During the last decades of the 19th century, villages began to spring up in this section of Ramsey County. New Brighton was founded in 1887, North St. Paul in the late 1880s and Roseville in the 1870s. White Bear Lake dates back to the 1850s.

By the beginning of the 20th century, St. Paul and Ramsey County had become leaders in a social service network that would sustain its people through World War I, Prohibition, the Depression, World War II and the rapid changes in civil, cultural, and social life that would mark the decades of the 1950s, 1960s, 1970s and beyond. Additionally, the farms that had once dotted the land north of the city limits had disappeared, and the communities that serve the area - the historic villages of Ramsey County - had become flourishing suburbs whose businesses and industries now occupy once open farm land.<sup>1</sup>

## 2.3 Demographics

Ramsey County is the most densely populated county in Minnesota with a total of 508,640 people residing within its borders (3,341.7 persons/sq. mi.). Over half of the population lives in the City of St. Paul. The next two largest cities are Maplewood and Roseville.

The follow statistical data from the U. S. Census Bureau represents the demographics of Ramsey County, Minnesota.

Table 2-1  
Demographics<sup>2</sup>

People Quick Facts	Ramsey County	Minnesota
Population, 2010	508,640	5,303,925
Population, percent change, 2000 to 2010	-0.5%	7.8%
Population, 2000	511,035	4,919,479
Persons under 5 years, percent, 2010	6.9%	6.7%
Persons under 18 years, percent, 2010	23.3%	24.2%
Persons 65 years and over, percent, 2010	12.0%	12.9%
Female persons, percent, 2010	51.5%	50.4%
White persons, percent, 2010 (a)	70.1%	85.3%
Black persons, percent, 2010 (a)	11.0%	5.2%
American Indian and Alaska Native persons, percent, 2010 (a)	0.8%	1.1%
Asian persons, percent, 2010 (a)	11.7%	4.0%

<sup>1</sup> Kunz, Virginia B. "Brief History of Ramsey County and St. Paul." *Ramsey County Historical Society*. 2012. Web. 01 Feb. 2012. <<http://www.rchs.com/historyramsecounty.htm>>

<sup>2</sup> U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, American Community Survey, Census of Population and Housing, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report

## Section 2

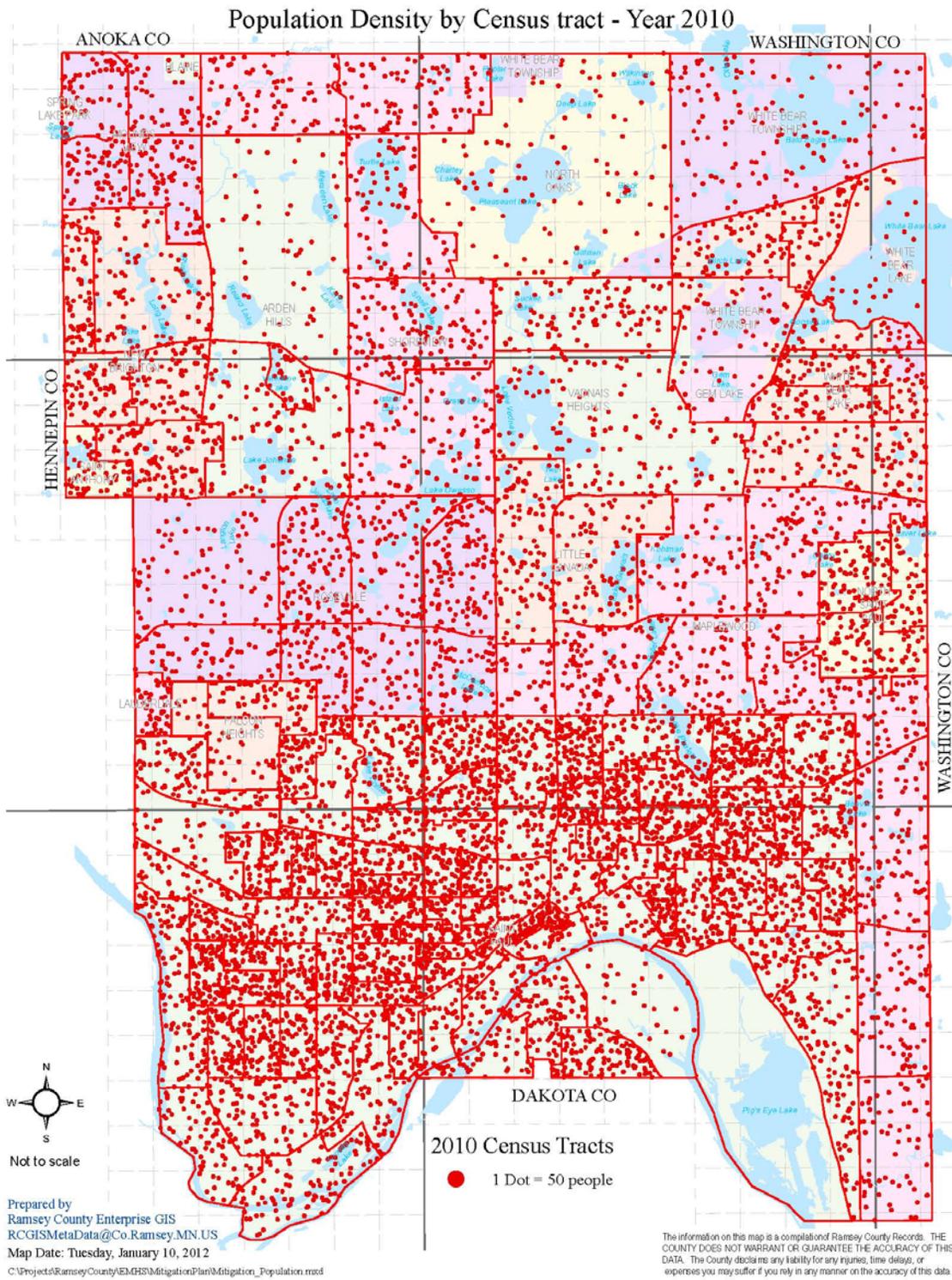
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People Quick Facts	Ramsey County	Minnesota
Native Hawaiian and Other Pacific Islander, percent, 2010 (a)	0.0%	0.0%
Persons reporting two or more races, percent, 2010	3.5%	2.4%
Persons of Hispanic or Latino origin, percent, 2010 (b)	7.2%	4.7%
White persons not Hispanic, percent, 2010	66.9%	83.1%
Foreign born persons, percent, 2005-2009	11.7%	6.5%
Language other than English spoken at home, pct age 5+, 2005-2009	17.5%	9.6%
High school graduates, percent of persons age 25+, 2005-2009	90.1%	91.1%
Bachelor's degree or higher, pct of persons age 25+, 2005-2009	38.9%	31.2%
Veterans, 2005-2009	34,108	400,974
Housing units, 2010	217,197	2,347,201
Median value of owner-occupied housing units, 2005-2009	\$223,200	\$207,000
Households, 2005-2009	201,224	2,061,882
Persons per household, 2005-2009	2.4	2.45
Median household income, 2009	\$48,008	\$55,621
Persons below poverty level, percent, 2009	16.4%	10.9%

Geography Quick Facts	Ramsey County	Minnesota
Land area in square miles, 2010	152.21	79,626.74
Persons per square mile, 2010	3,341.7	66.6
Metropolitan Area	Minneapolis-St. Paul-Bloomington, MN-WI Metro Area	
FIPS Code	127	27

Business Quick Facts	Ramsey County	Minnesota
Private nonfarm establishments, 2009	13,313	146,453
Private nonfarm employment, 2009	288,523	2,417,174
Private nonfarm employment, percent change 2000-2009	-5.4%	0.9%
Nonemployer establishments, 2009	32,424	362,739
Total number of firms, 2007	43,851	496,657
Black-owned firms, percent, 2007	5.6%	2.5%
American Indian- and Alaska Native-owned firms, percent, 2007	0.6%	0.6%
Asian-owned firms, percent, 2007	5.1%	2.3%
Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007	S	S
Hispanic-owned firms, percent, 2007	1.7%	1.0%
Women-owned firms, percent, 2007	30.6%	26.8%
Manufacturers' shipments, 2007 (\$1000)	7,578,926	107,563,060
Merchant wholesaler sales, 2007 (\$1000)	9,278,366	82,878,056
Retail sales, 2007 (\$1000)	6,156,546	71,384,103
Retail sales per capita, 2007	\$12,328	\$13,751
Accommodation and food services sales, 2007 (\$1000)	963,534	10,423,660
Building permits, 2010	122	9,840
Federal spending, 2009	6,709,681	44,338,124

Figure 2-2  
Population Density by Census Tract



## 2.4 Economy

Ramsey County is one of two major employment centers for the Minneapolis-St. Paul metropolitan region. More people are employed in Ramsey County companies than there are working residents, and the working population accounts for 98.3 percent of the overall metropolitan area. The largest employers by industry include healthcare and social assistance, retail trade, manufacturing, public administration, accommodation and foodservices, administrative and waste services, and financial and insurance.

According to the Ramsey County Comprehensive Plan Update for 2030, the County's infrastructure supports the whole metropolitan area's economic activity and its population's characteristics significantly influence employment and economic development, housing, use of recreational facilities, transit services and transportation, utilization of county services, and other system infrastructures. Therefore, effects of hazards on Ramsey County infrastructure are directly linked to the economic well-being of the entire metro area.

## 2.5 Climate

The Ramsey County climate is considered severe, especially in the winter months. This problem is becoming worse as the impacts of climate change have continued to affect the County with additional extreme weather. Averaging 30.44 inches of rain per year and temperatures can range from a high of 90 to 100 degrees Fahrenheit in summer to a low of -30 to -40 degrees Fahrenheit in winter. This equates to an average temperature of 44 degrees and consists of warm summers and cold winters. Residents of Ramsey County experience four distinct seasons. Weather conditions can be extreme during the winter months. Annual snowfall averages approximately 45 inches. During the summer, Ramsey County is on the northern edge of "tornado alley" and severe thunderstorm are commonplace.

## 2.6 Land Use

### Current Land Use

Ramsey County has been completely urbanized since 1990. All land is used for residential or commercial purposes with the exception of those areas designated as historic sites or used for recreation.

### Future Land Use

The Metropolitan Council is responsible for determining land use within the Metropolitan Urban Service Area (MUSA), the seven counties surrounding the Twin Cities, including Ramsey County. The Metropolitan Council ensures that regional services and facilities, such as sewers and major highways, are provided or planned. The Council oversees provision of these services under the authority of the Metropolitan Land Planning Act in state law. The Council provides growing cities the flexibility to decide where development occurs within broader areas that are planned and staged for development, consistent with regional perspectives<sup>3</sup>. The Metropolitan Council makes all decisions regarding future land use within Ramsey County; therefore, the County has no authority.

This section displays a number of maps illustrating Ramsey County's current land use, project land use, topography, bedrock geology, steep slopes, and bodies of water.

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<sup>3</sup> Metropolitan Urban Service Area FAQs. The Metropolitan Council. August 2006.  
<http://www.metrocouncil.org/about/facts/MUSAFacts.pdf>

## Section 2

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Ramsey County is geographically located at the 45.03 latitude and -93.08 longitude according to the Department of Natural Resources (DNR) tomography website. It encompasses 155 square miles. The land was formerly farmland and is now part of the urban metro area. Its southern border is mostly composed of the Mississippi River and the County itself contains over 80 lake basins.

Figure 2-3  
Metropolitan Council Generalized Land Use

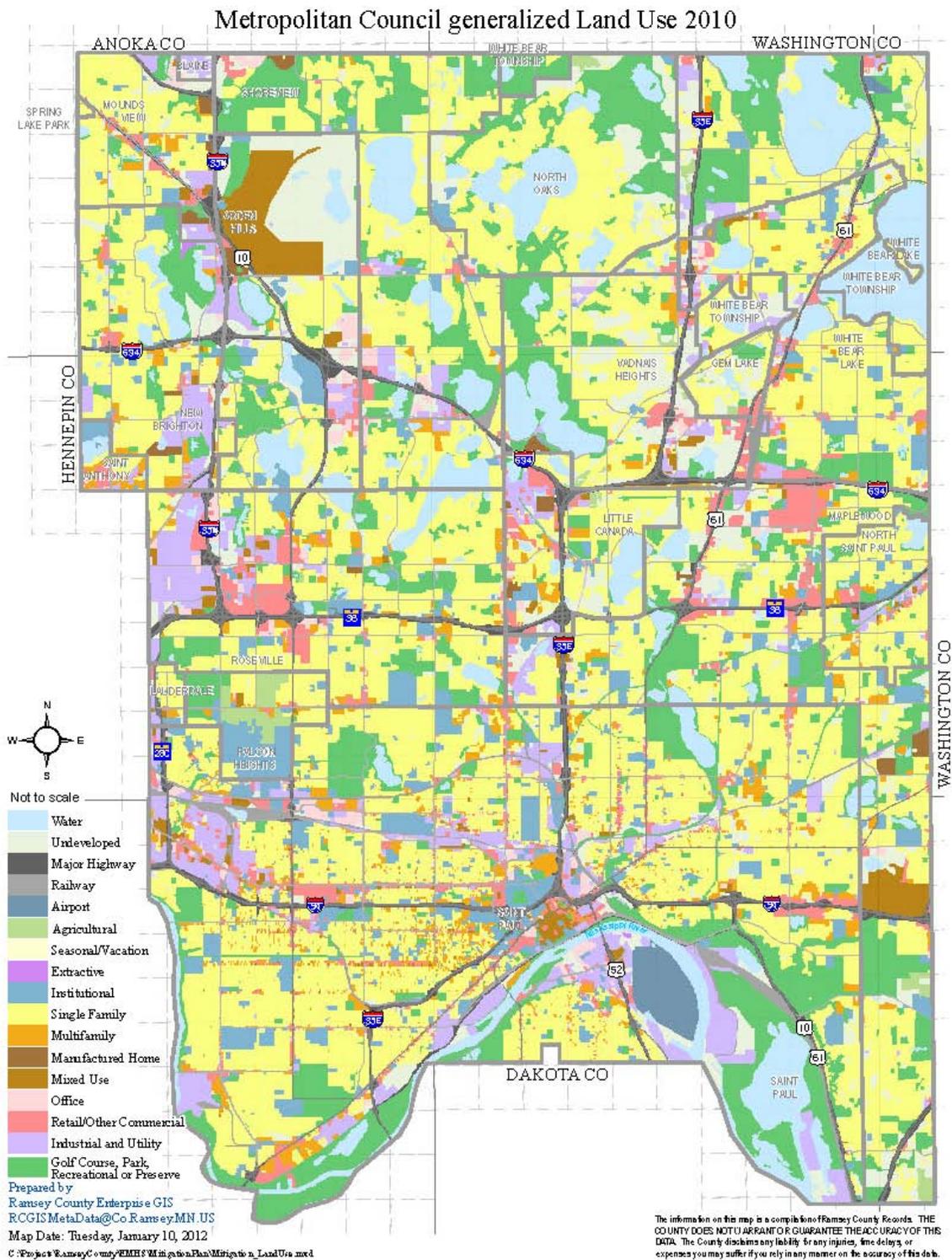


Figure 2-4  
Future Planned Land Use

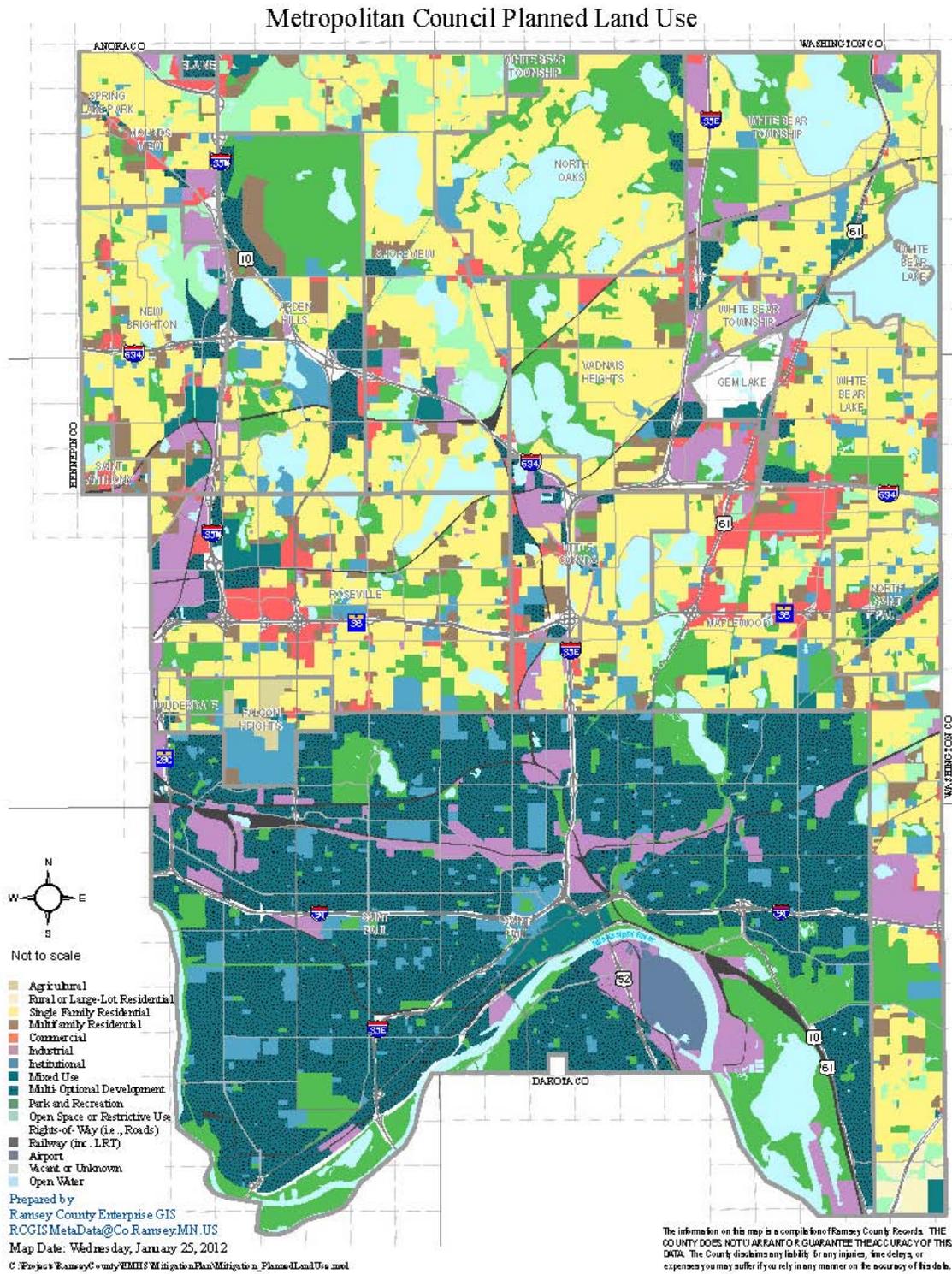


Figure 2-5  
Bedrock Topology

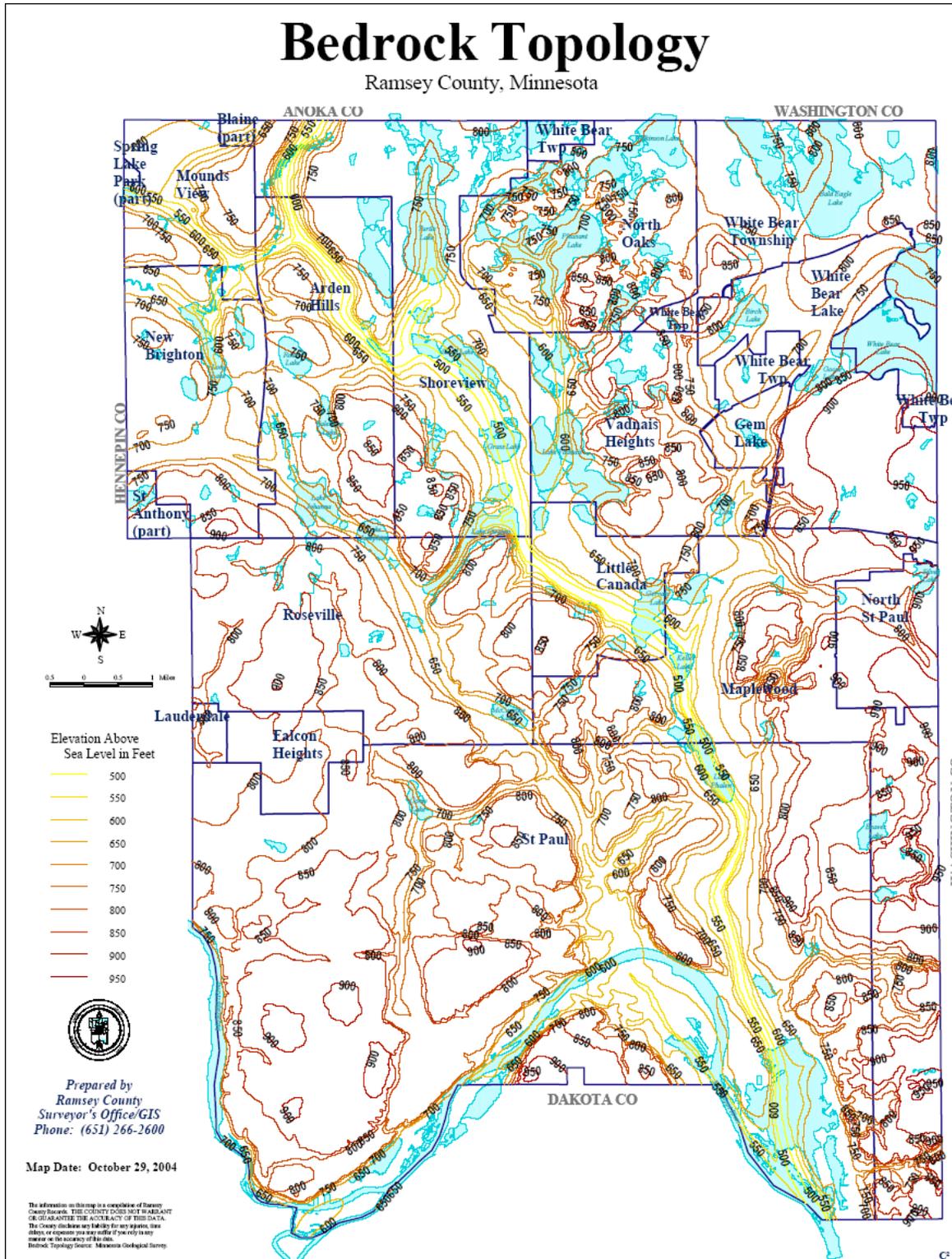


Figure 2-6  
Bedrock Geology

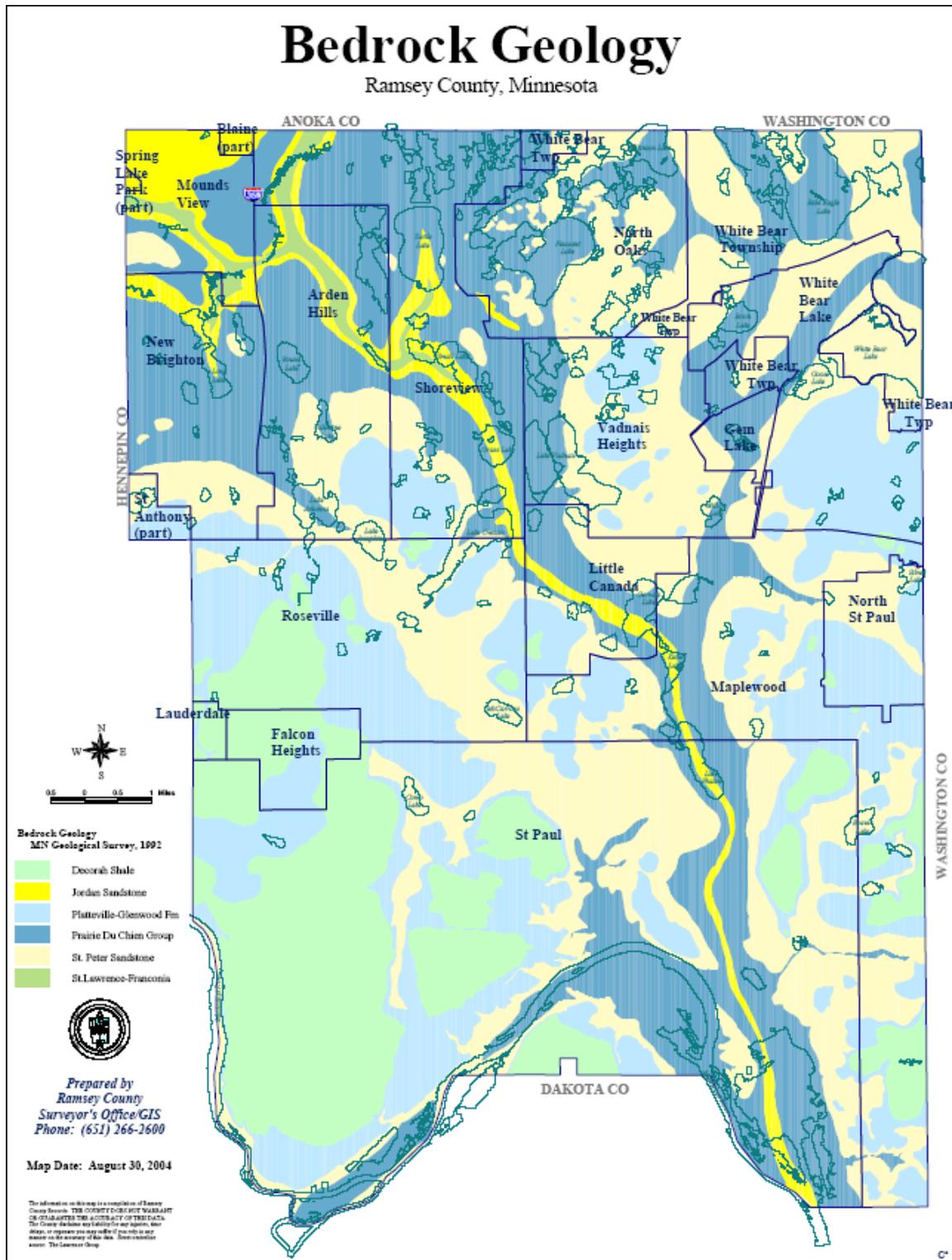
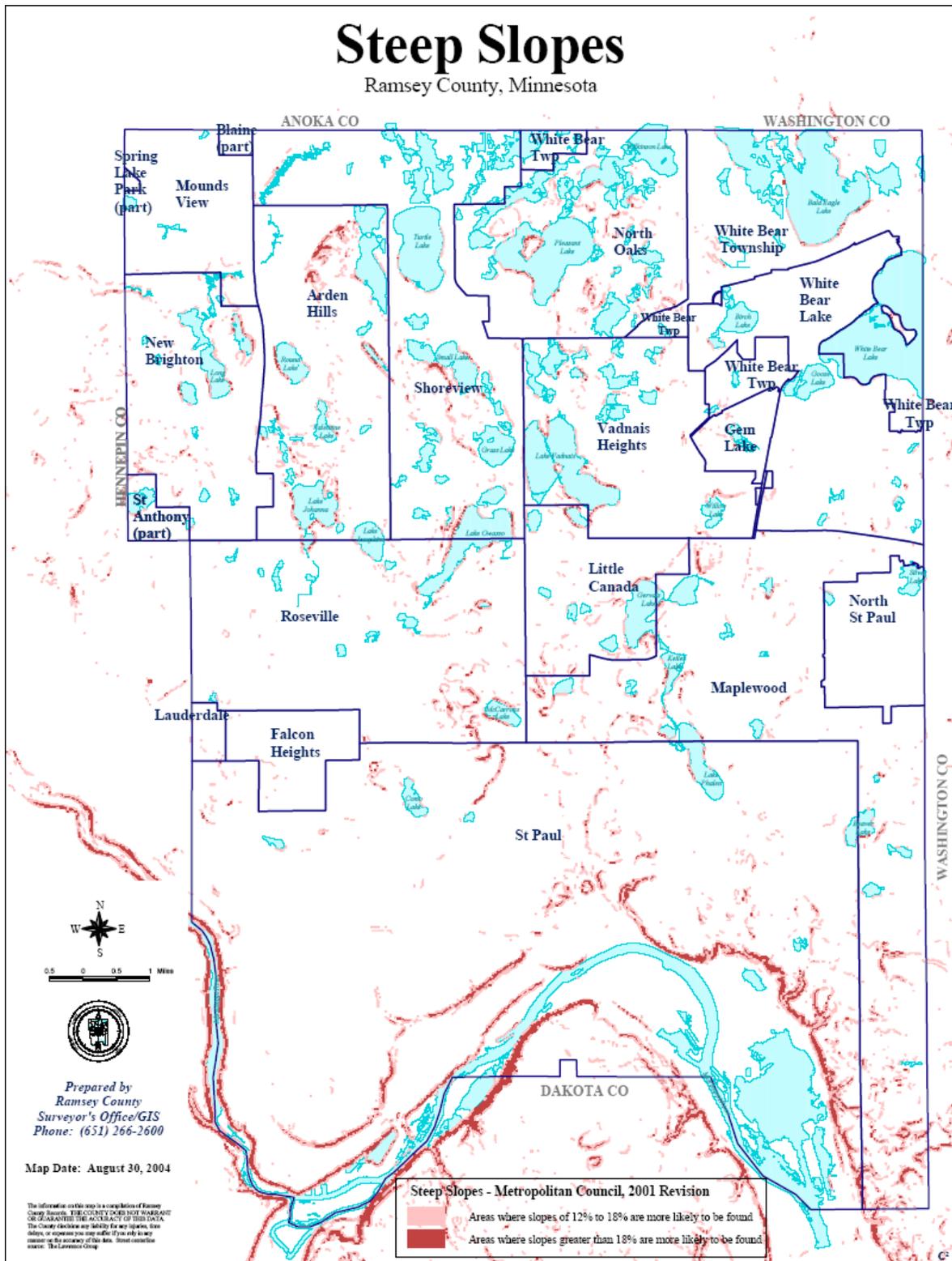


Figure 2-7  
Steep Slopes





## Groundwater Hydrology

Ramsey County is located over the Prairie Du Chien-Jordan Aquifer which is the major source of ground water for the Minneapolis & Saint Paul Twin Cities Metropolitan Area. Other Aquifers that supply Ground Water to Ramsey County are the St. Peter Aquifer, Franconia-Ironton-Galesville Aquifer and the Mt. Simon Aquifer.

### ST. PETER AQUIFER

The St. Peter aquifer is not a major source of ground water. It is used locally for domestic supply and other low-capacity uses. The St. Peter aquifer underlies about three- fourths of the county. It is absent in northwestern Ramsey County and in bedrock valleys filled by glacial sediments. The upper part of the St. Peter Sandstone is composed of fine- to medium-grained sandstone with an average thickness of about 100 feet. The lower third of the formation (Plate 4) is composed of mudstone, siltstone, and shale beds having an average thickness of 50 to 60 feet. They act as confining units between the St. Peter aquifer and the underlying Prairie du Chien Group.

Ground water in the St. Peter aquifer flows from areas with the highest hydraulic head in northern Ramsey County toward the Mississippi River. In the southern part of Ramsey County the aquifer is unconfined, because discharge into the Mississippi River lowers the pressure created farther north by the overlying confining units.

### PRAIRIE DU CHIEN-JORDAN AQUIFER

The Prairie du Chien Group and Jordan Sandstone together form the most heavily used aquifer in the county. This aquifer is present throughout the county except in a narrow bedrock valley in the northwest (the Phalen channel), where the first bedrock is the St. Lawrence or Franconia Formation. The aquifer is overlain by the shaly basal part of the St. Peter Sandstone in much of the county. The Prairie du Chien Group is composed predominantly of dolostone; water flows mainly through fractures, joints, and solution cavities. Its total thickness is about 120 to 130 feet. The Jordan Sandstone (70 to 100 feet thick) consists of highly permeable, fine- to coarse-grained quartzose sandstone, and most water movement is intergranular. Despite their difference in rock type, the Prairie du Chien Group and Jordan Sandstone function as a single aquifer because no regional confining bed separates them. Locally, however, small water-level differences may exist, owing to relatively impermeable beds of shale of limited extent. In general, the ground water flows from areas with the highest hydraulic head in northeastern Ramsey County toward the Mississippi River. This flow pattern indicates that the Prairie du Chien-Jordan aquifer discharges into the river. The flow pattern may be altered by localized pumping of high-capacity wells, especially during the summer when heavy demands are placed on it. The Prairie du Chien-Jordan aquifer is a confined aquifer except for the southeastern corner of the county.

### ST. LAWRENCE CONFINING UNIT

The St. Lawrence Formation consists of dolomitic shale and siltstone and ranges in thickness from 30 to 60 feet. Regionally, it has low permeability and thus hydrologically separates the Prairie du Chien Jordan aquifer from the Franconia- Ironton-Galesville aquifer.

### FRANCONIA-IRONTON-GALESVILLE AQUIFER

The Franconia-Ironton-Galesville aquifer underlies the entire county. The aquifer has three parts: (1) the upper part is the Franconia Formation, which consists of about 115 to 160 feet of feldspathic and glauconitic sandstone with some shale and dolomite; (2) the middle part is the 15- to 20-foot -thick Ironton Sandstone, which contains minor shale partings; and (3) the basal part is the 30- to 40-foot -thick Galesville Sandstone. All three bedrock units are hydrologically connected, although small hydraulic head differences may be found locally.

Ground-water movement in this aquifer, like that in the overlying Prairie du Chien-Jordan aquifer, is from areas having the highest hydraulic head in northern Ramsey County toward the Mississippi River. The

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difference in water level between wells in the Prairie du Chien-Jordan and wells in the Franconia Ironton-Galesville, which ranges from 20 to 80 feet (Fig. I), demonstrates the effectiveness of the St. Lawrence confining unit. The difference in a particular area can be estimated by comparing the two maps. The Franconia-Ironton-Galesville aquifer is little used in the county. In the northwestern part of the county the aquifer is used in a few multiple-aquifer wells drilled into the deeper Mt. Simon aquifer.

### EAU CLAIRE CONFINING UNIT

The Eau Claire Formation consists of siltstone, shale, and silty sandstone and is about 60 to 110 feet thick. It has low hydraulic conductivity and thus hydrologically separates the Franconia- Ironton-Galesville aquifer from the Mt. Simon aquifer.

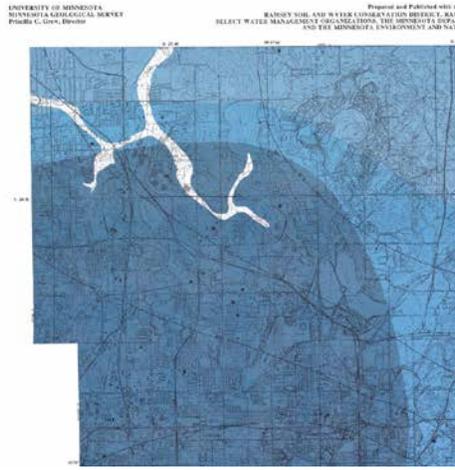
### MT. SIMON AQUIFER

The Mt. Simon aquifer underlies all of Ramsey County. It is composed of fine- to coarse-grained sandstone with many thin beds of siltstone and shale in the upper part. and ranges in thickness from 250 to 330 feet. Nearly all high-capacity wells in the aquifer are located either in the south-central or the northwestern part of the county.

Data on ground-water movement are very limited, but the pattern of flow in the Mt. Simon aquifer apparently differs greatly from the pattern in the overlying aquifers. The general movement of ground water is from east to west toward the cone of depression formed by the major pumping centers in Hennepin County. The location of the 650-foot contour is extrapolated from information compiled for the Hennepin County geologic atlas (Minnesota Geological Survey Atlas C-4, 1989). In general, the Mt. Simon aquifer has no hydraulic connection with either the shallow ground-water system or the major streams. Much of the water in the aquifer is derived from leakage from the overlying aquifer system, although lateral movement from outside the county also occurs. The difference in the hydraulic head in the Franconia Ironton-Galesville aquifer and the Mt. Simon aquifer ranges from zero in the southeast to 175 feet (Fig. 1) in the west-central part of the county.

*By Roman Kanivetsky and Jane M. Cleland 1992. Prepared and Published with the Support of Ramsey Soil and WATER Conservation District, Ramsey County Board of Commissioners, Select Water Management Organizations, The Minnesota Department of Natural Resources, Division of Waters, and the Minnesota Environment and Natural Resources Trust Fund.*

Figure 2-9  
Ramsey County Bedrock Hydrogeology



### Watersheds

According to the Ramsey County Comprehensive Plan, there are four watersheds in Ramsey County. These watersheds include Capital Region Watershed, Valley Branch Watershed, Ramsey-Washington Metro Watershed, and Rice Creek Watershed. These watersheds all have Water Management



**Mississippi River Critical Area**

According to the Ramsey County Comprehensive Plan’s section on the Mississippi River Critical Area – Minnesota National River and Recreation Area Plan, the Mississippi River plays a significant role in Ramsey County’s history, its current life, and its future. The river in downtown St. Paul has been, and will continue to be, a major transportation resource and the focus of extensive commercial and industrial activity. Ramsey County’s Mississippi Critical Area – Minnesota National River and Recreation Area Plan addresses the County’s policies, plans, and activities related to the portions of the Minnesota’s Mississippi River Critical Area Corridor and the U.S. Department of the Interior’s Mississippi National River and Recreation Area (MNRRA) that are located in the County. This plan focuses on topic areas where Ramsey County has responsibilities and is active. Since Ramsey County is exempt from the Land Use planning requirements, it does not have a role in regulating land use by other jurisdictions or entities. In general, Ramsey County’s role in the Critical Area – MNRRA Corridor stems from its ownership of property and its provision of transportation, parks, recreation, and open space services. Although it has a strong interest in activities within the corridor, Ramsey County does not do land use planning and does not have the ordinances, regulations, or other authorities associated with land use planning.

Figure 2-11  
Mississippi River Critical Area Districts

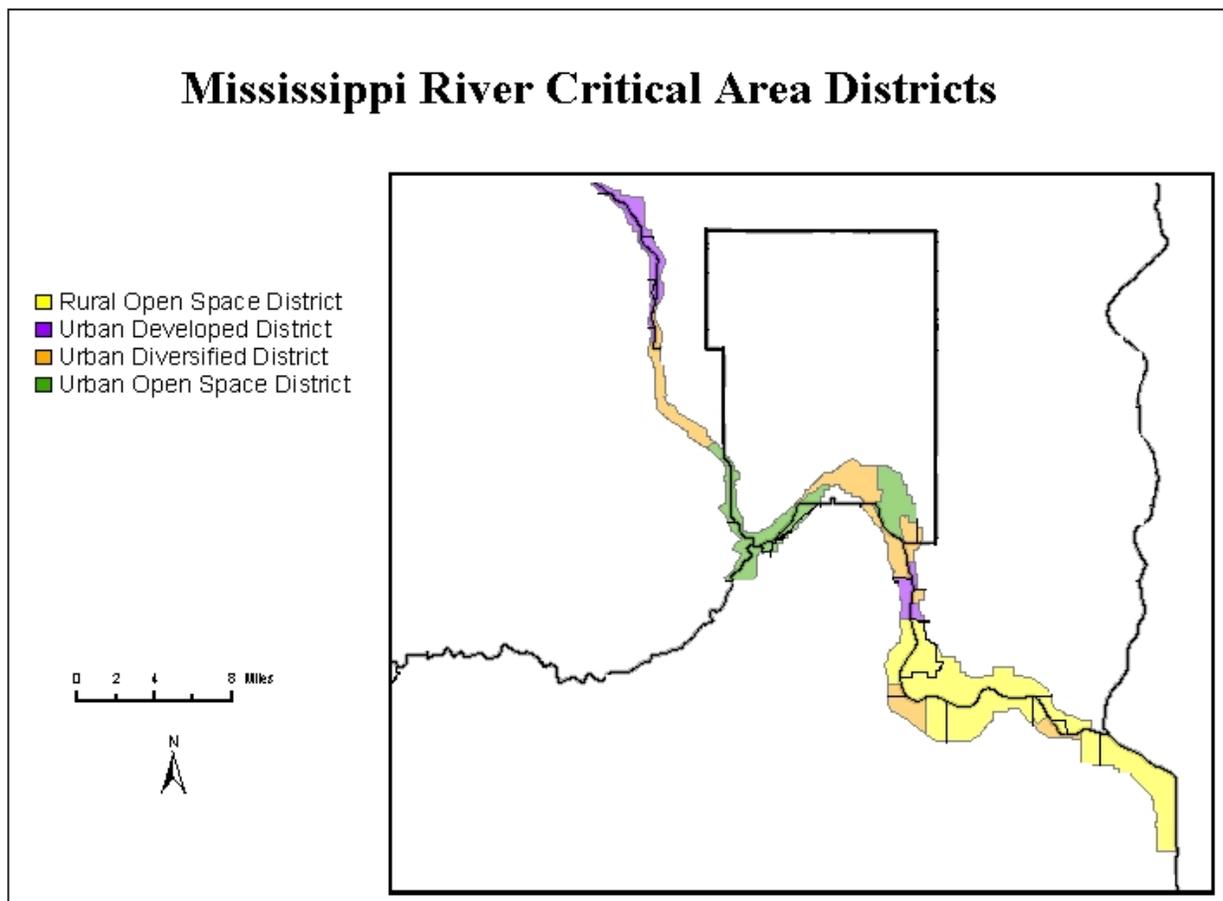




Figure 2-13  
Manufactured Homes

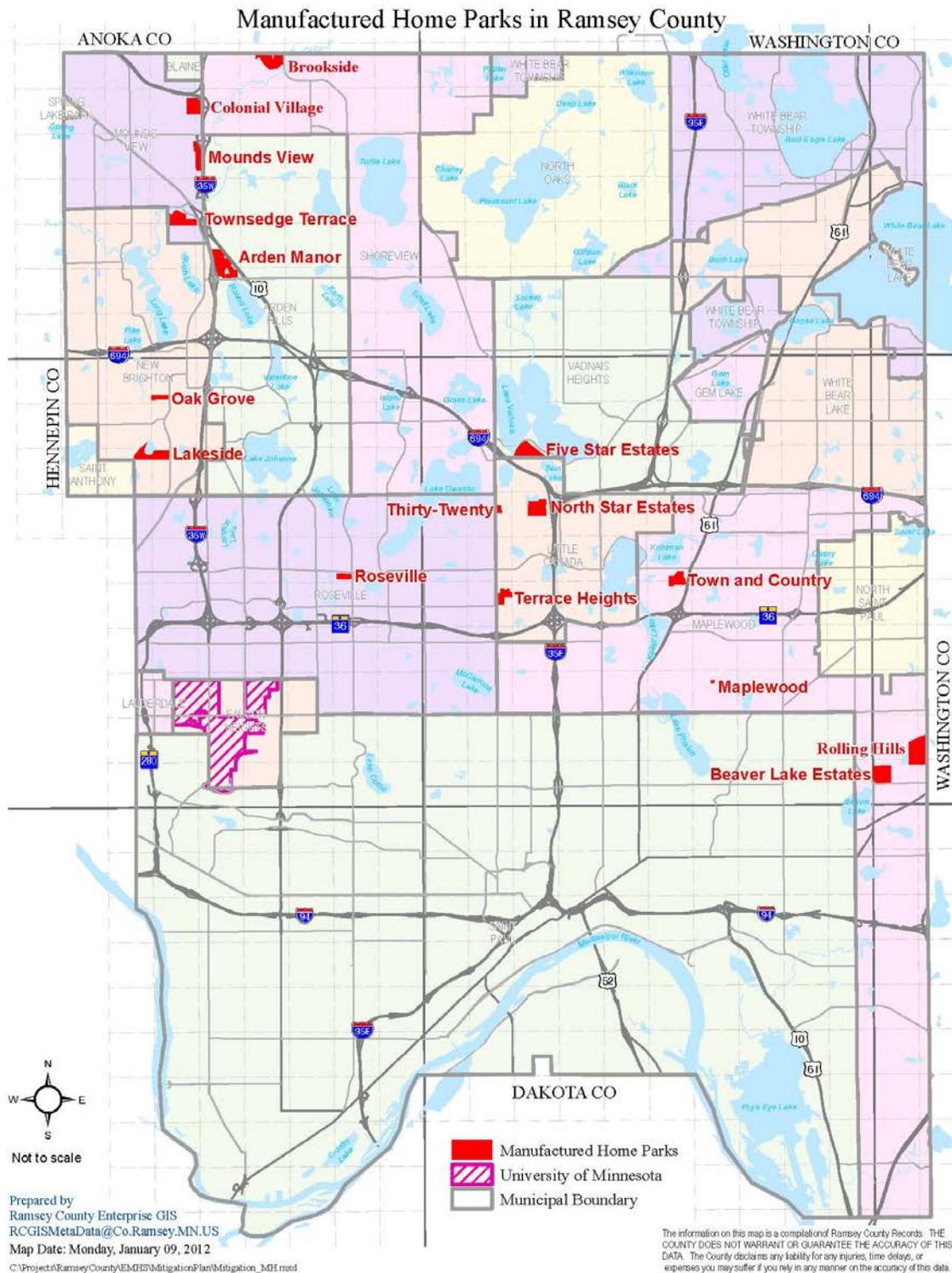


Figure 2-14  
Nursing Homes

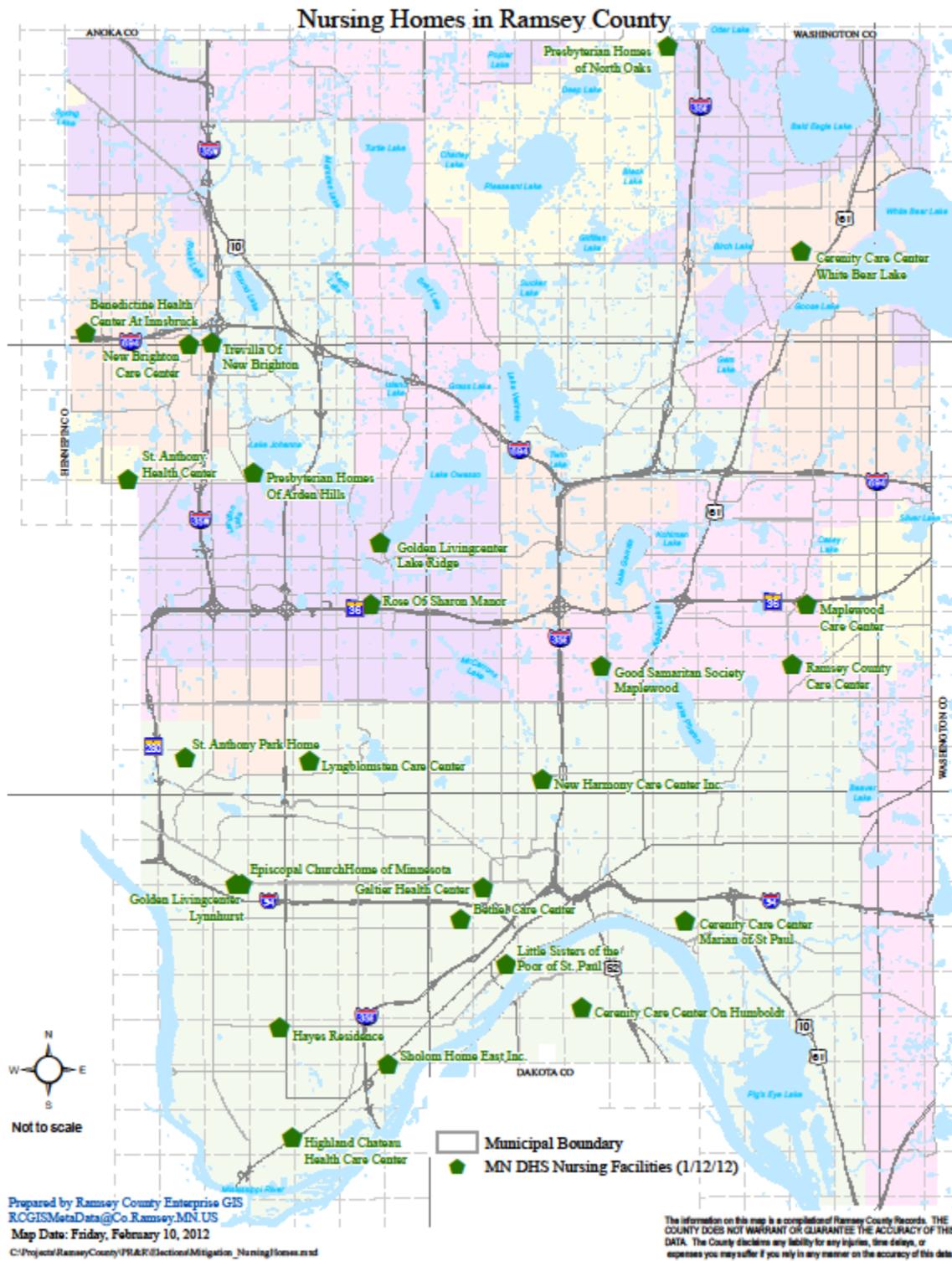
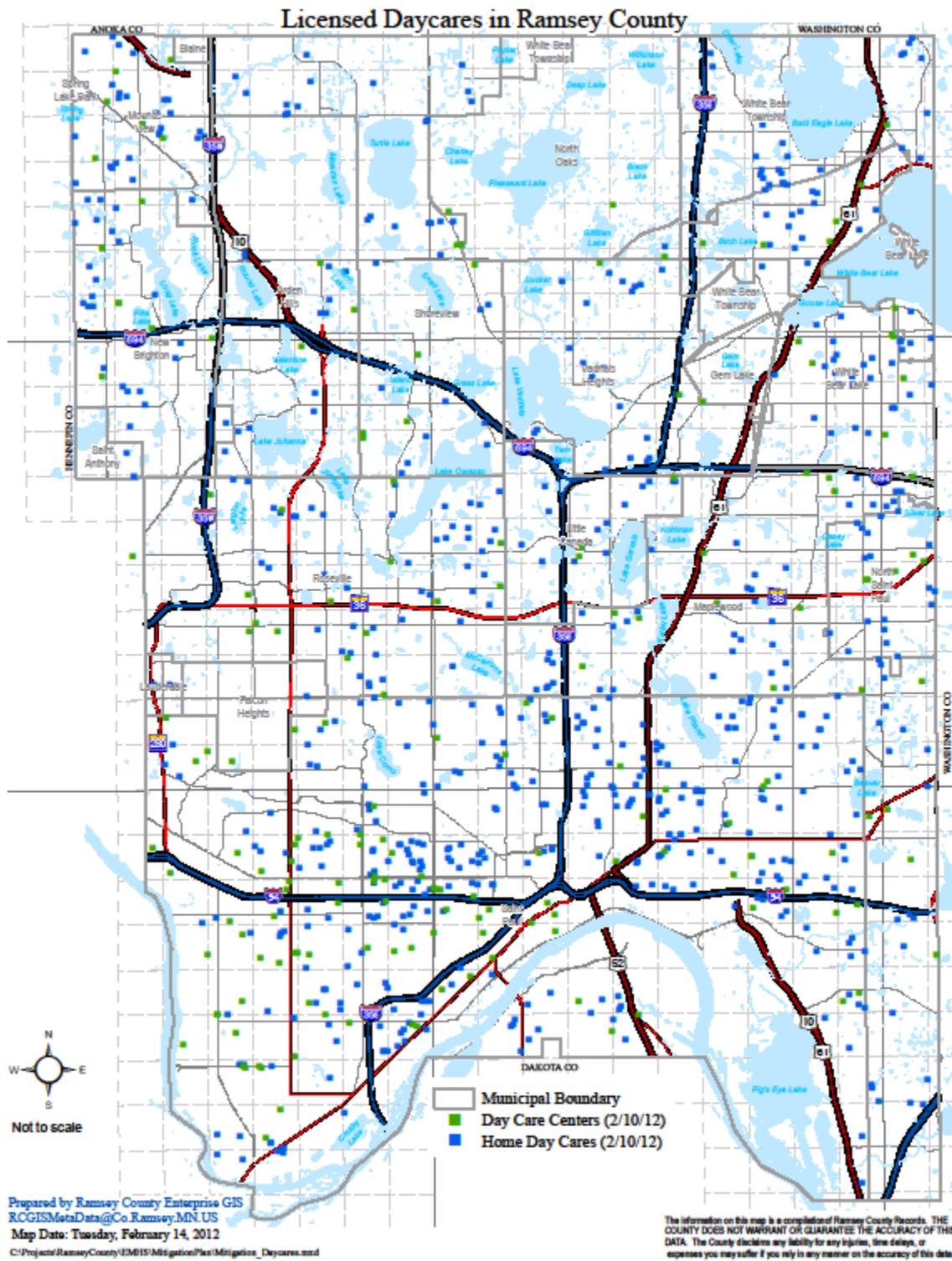
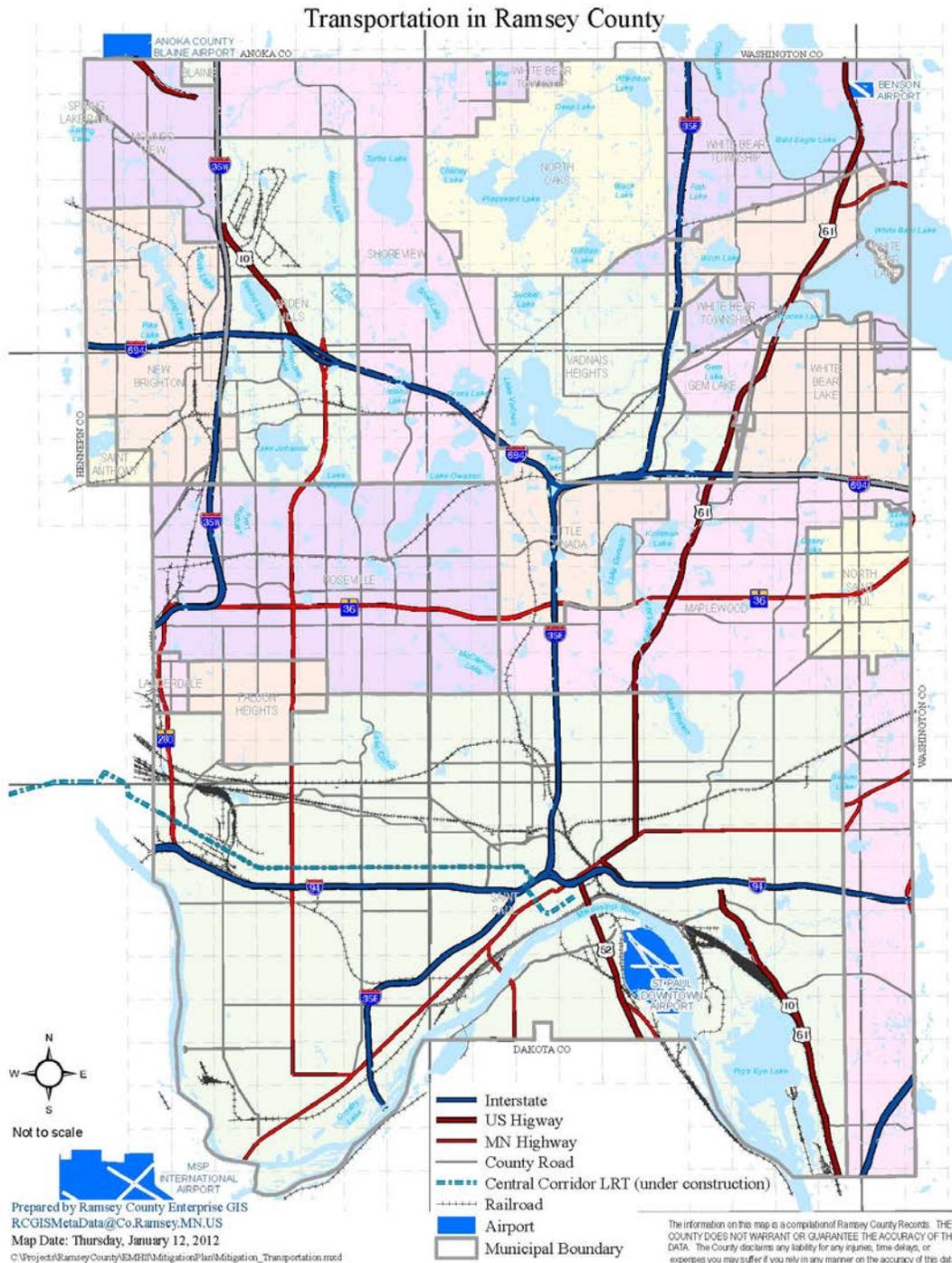


Figure 2-15  
Daycares



## 2.7 Transportation

Figure 2-16  
Transportation Routes





### 2.7.1 Vehicle Traffic

Ramsey County's transportation system consists of interstate and state highways, arterial collectors, and secondary county and city roads. Major transportation routes include Interstate highways 35E, 35W, 94, and 694. Additionally, U.S. Highways 10, 52, and 61 are major thoroughfares. There are several Minnesota State Highway routes, including Highway 5, 13, 36, 51, 96, 120, 149, 156, and 280.

MetroTransit is the main provider of bus services throughout St. Paul and Ramsey County.

### 2.7.2 Rail

Twin Cities and Western Railroad (TC&W) operates between Minneapolis/St. Paul, Minnesota, and Milbank, South Dakota and runs through Ramsey County. TC&W's traffic base consists largely of coal, grains (corn, wheat, and barley), soybeans, sugar, beet pulp pellets, lumber and other forest products, canned vegetables, edible beans, molasses, distillers dry grain (DDGs), fertilizers, crushed rock, and agricultural machinery. The Minnesota Prairie Line (MPL) is a wholly owned subsidiary of TC&W and operates the 94-mile line that runs through Ramsey County. Commodities handled by MPL include corn, soybeans, DDGs, fertilizer, ethanol, butter, lumber, canned vegetables, biodiesel, tallow, salt (commercial and industrial), aggregates, and rail car storage.

MetroTransit provides light rail services to Twin Cities metropolitan area citizens.

### 2.7.3 Air Service

There are two airports within Ramsey County: the St. Paul Downtown Airport (Holman Field) and Benson Airport. The St. Paul Downtown Airport is classified as an intermediate, primary reliever airport providing service by commuter, air-taxi, and corporate aircraft primarily for business flying. Its main service area is within 30 minutes ground travel time of the airport and includes downtown Minneapolis. Benson Airport is publicly owned by White Bear Township and therefore not part of the metropolitan airport system. Benson Airport is limited to the public use of small, single-engine propeller aircraft. The Anoka County-Blaine Airport borders Ramsey County along County Road J. This airport is classified as a minor, secondary reliever, and provides service by medium-size, twin-engine aircraft, which are used primarily for training, pleasure, and business flying. Its service area includes most of northern Ramsey County and part of St. Paul. The FAA designates both the St. Paul Downtown and the Anoka County-Blaine Airport as relievers for the Minneapolis-St. Paul International (MSP) Airport.



### 2.8 Utilities

Internet service is provided through several companies. These include Adelphia, BellSouth, Charter, Comcast, EarthLink, Insight, Mediacom, Sprint, Verizon, and SBC Yahoo DSL.

#### 2.8.1 Electricity

The main electric utility in Ramsey County is Xcel Energy. The City of North Saint Paul provides their own electricity. Conexus is responsible for electricity in the northern part of the County

#### 2.8.2 Natural Gas

CenterPoint Energy and Xcel Energy oversee the natural gas services throughout Ramsey County. Gas services in Ramsey County and throughout Minnesota allow for gas marketers to sell natural gas in Ramsey County.



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- Saint Paul Regional Water Services and its Chain of lakes supplemented by pumping from the upper Mississippi River.
- The other source is Municipal Wells in New Brighton and White Bear Lake.

Drinking water quality is primarily the responsibility of the water utilities, but Ramsey County is also served by 4 Watershed districts that not only look at the control of water drainage but water quality issues that may affect surface and ground water.

The Ramsey County Public Works Department also monitors water quality of Surface water Ramsey County is responsible for the operation and maintenance of a storm water drainage system associated with its roads, buildings, and parks and open space property. The County drainage system is regulated by the National Pollution Discharge Elimination System (NPDES) permit program. Information is provided here on the County's Storm Water Pollution Prevention Program (PDF), as well as links to other agencies involved in Ramsey County water management.

### 2.8.4 Wastewater Services

Most cities have expanded their wastewater treatment facilities or will do so in the near future.



### 2.8.5 Solid Waste

There are no landfills located in Ramsey County. Household and demolition waste are taken to landfills in neighboring cities. These include Burnsville Landfill, Elk River Sanitary Landfill, and Pine Bend Sanitary Landfill.

### 2.8.6 Communications

Ramsey County's landline phone service, cable, and Internet service is provided by (depending on the community) Vonage, Comcast, CenturyLink, Sprint, TDS, and VISI. There are backup facilities in Ramsey County. These facilities provide primary and battery backup phone capabilities. All major cell phone providers have cell towers and capabilities in Ramsey County.

Ramsey County public safety agencies currently communicate through a state-of-the-art 800 MHz digital radio sub-system to the regional and state ARMER (Allied Matrix For Emergency Response Program). Established in 2004, the Allied Radio Matrix for Emergency Response (ARMER) Program, administered in coordination with the Statewide Radio Board, manages the implementation of the 700/800 megahertz (MHz) shared digital trunked radio communication system.

The ARMER backbone is a robust, scalable, state-of-the-art system that will be capable of servicing the radio communications needs of every city, county, state agency, tribal government and non-government public safety entity operating in the state.

The ARMER system is the fundamental infrastructure necessary for emergency responders to achieve seamless interoperable communications.

For additional information on Ramsey County Emergency Communications Center and Radio Systems refer to Appendix D.

Figure 2-21  
PSAP and Dispatch Boundaries

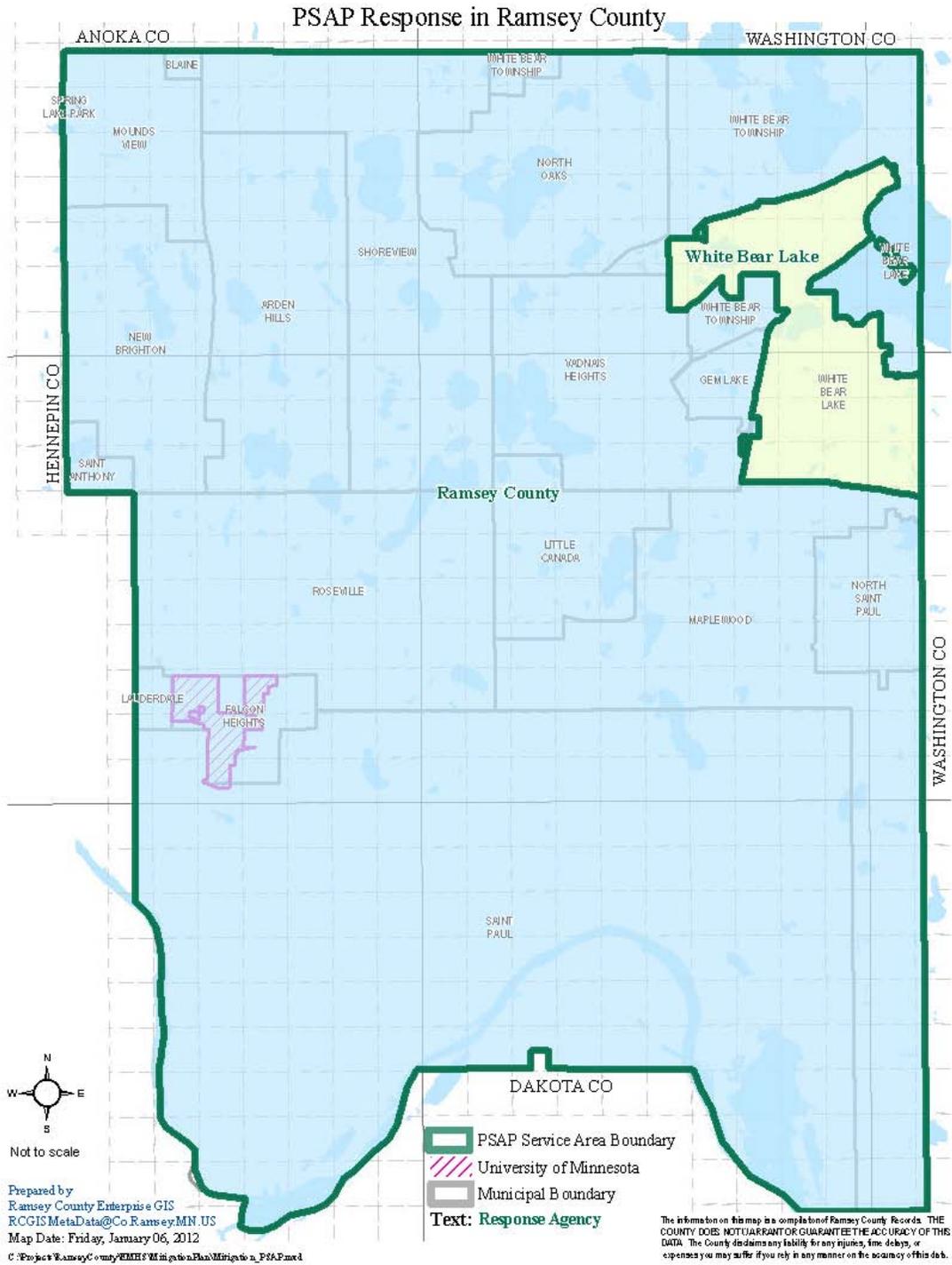
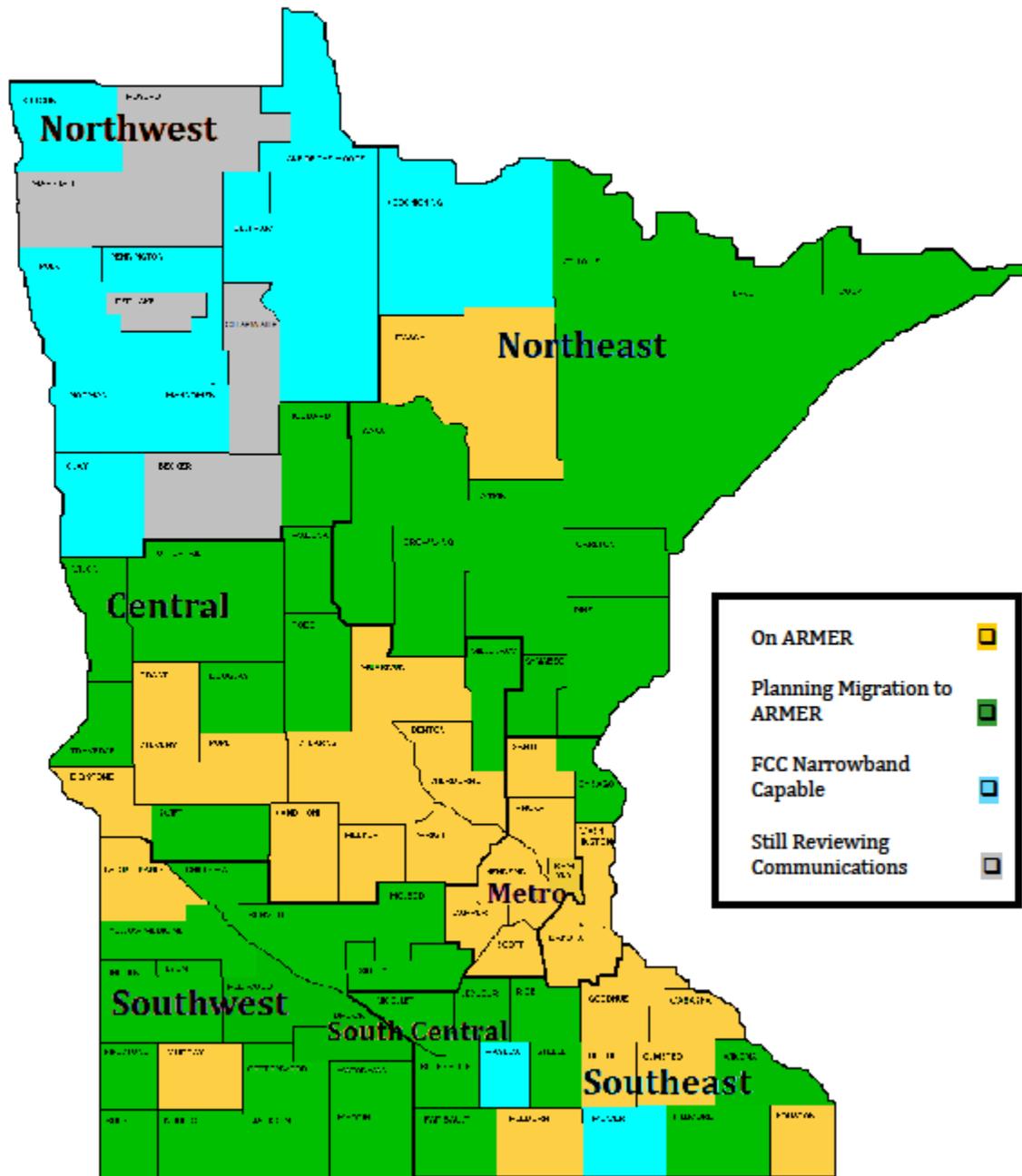


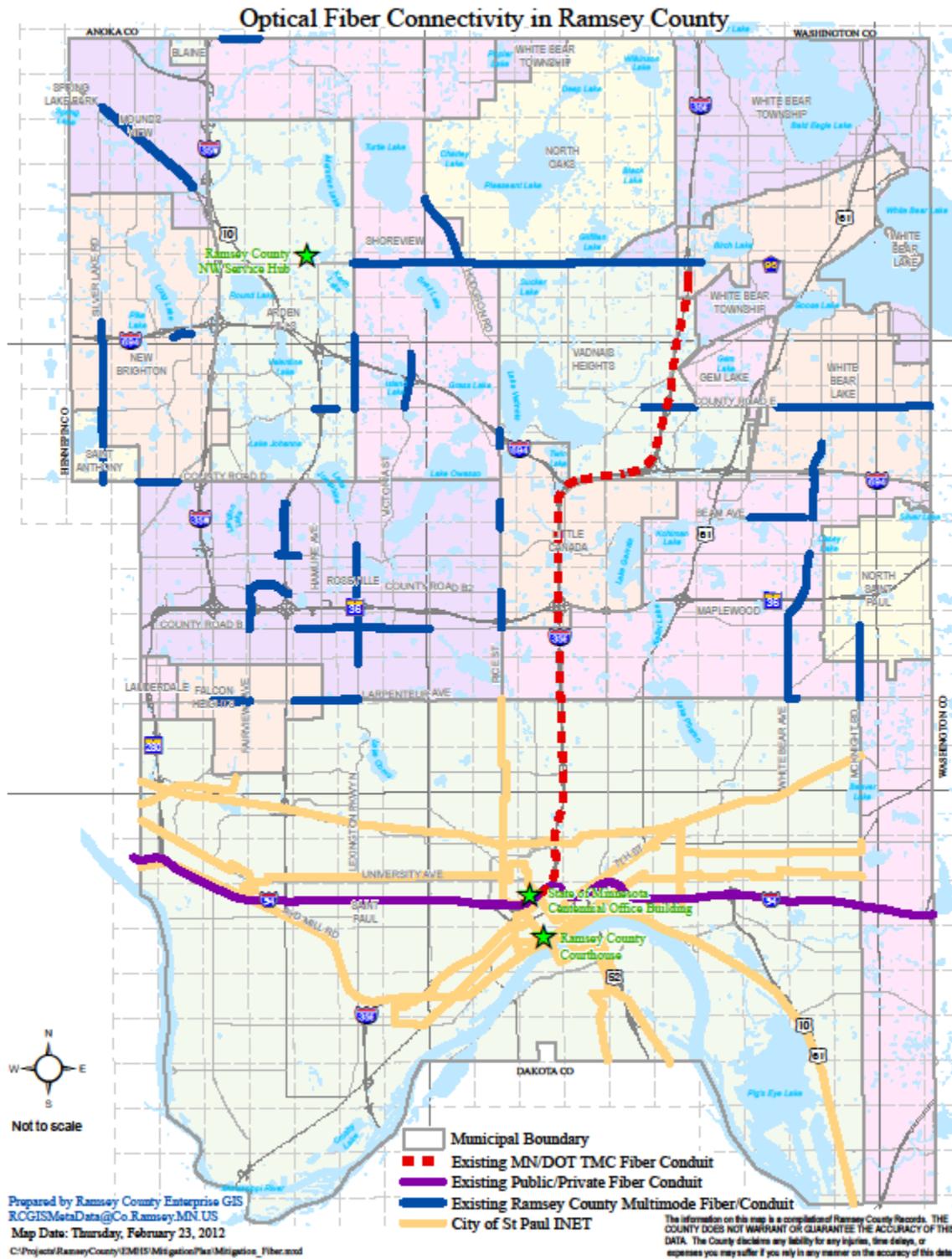
Figure 2-22  
State Wide Radio System Participation Status

# ARMER Participation Status



Updated December 22, 2011

Figure 2-23  
Fiber Networks

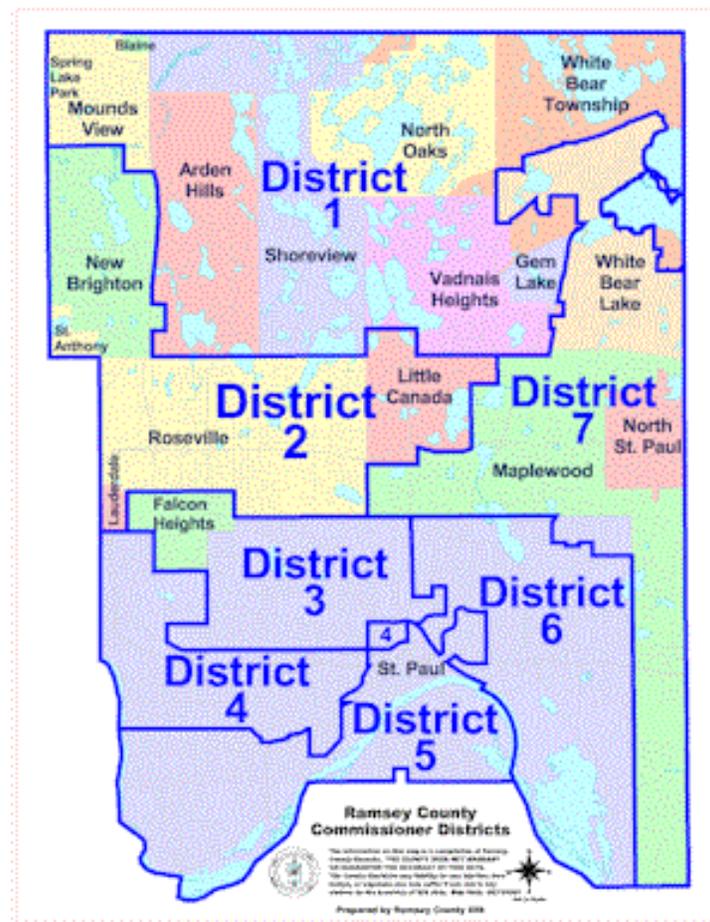




## 2.9 Government

Ramsey County is governed by an elected seven-member Board of Commissioners. There are 18 cities in Ramsey County, which include Arden Hills, Blaine, Falcon Heights, Gem Lake, Lauderdale, Little Canada, Maplewood, Mounds View, New Brighton, North Oaks, North St. Paul, Roseville, Shoreview, St. Anthony, St. Paul, Spring Lake Park, Vadnais Heights, and White Bear Lake. There is one township in Ramsey County named White Bear Township.

Figure 2-25  
Commissioners Boundaries in Ramsey County<sup>4</sup>



<sup>4</sup> [http://www.co.Ramsey.mn.us/departments/admin/IS/docs/Cities\\_Twps2.pdf](http://www.co.Ramsey.mn.us/departments/admin/IS/docs/Cities_Twps2.pdf)

Figure 2-26  
EMS Response

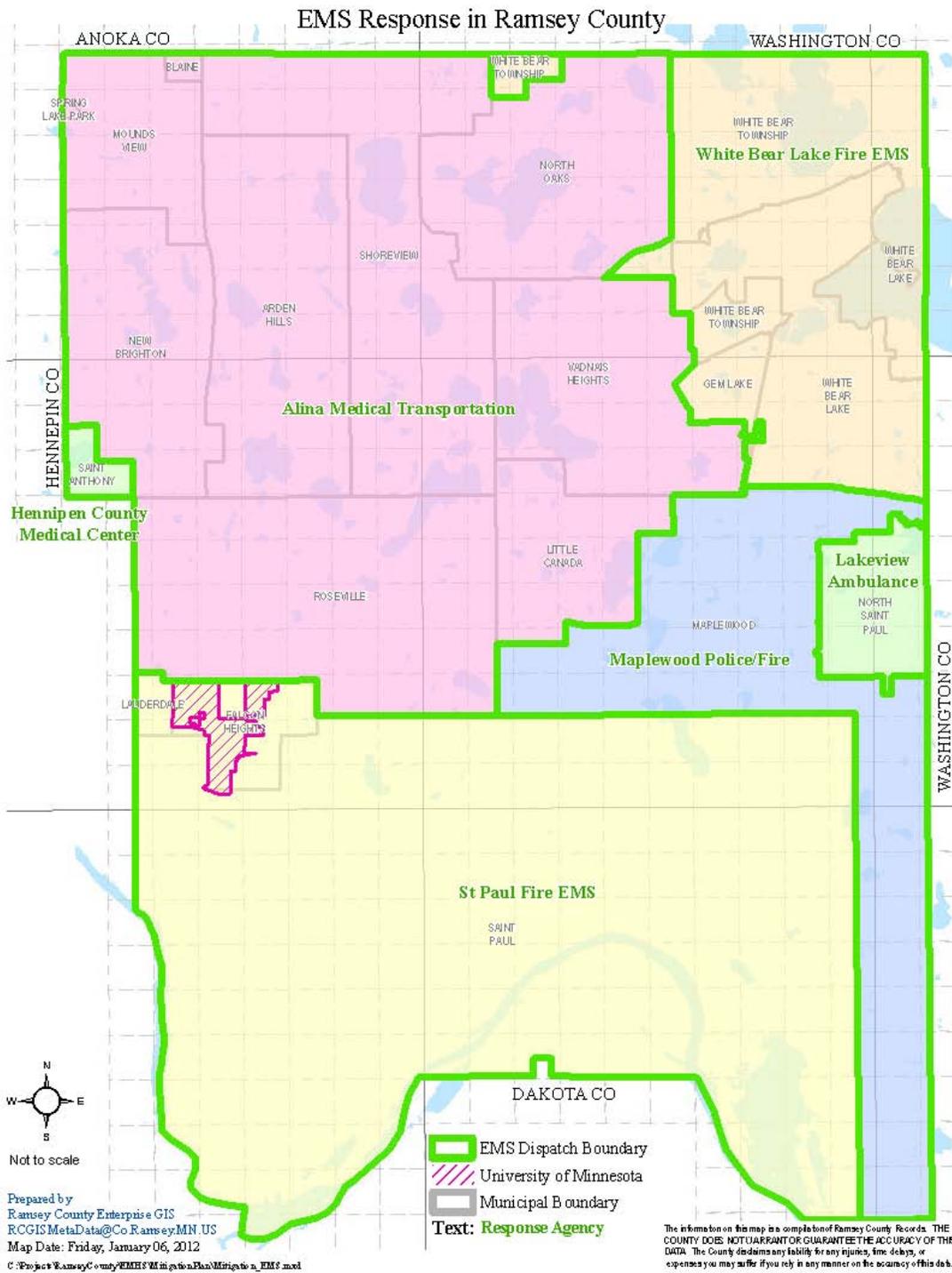


Figure 2-27  
Fire Response

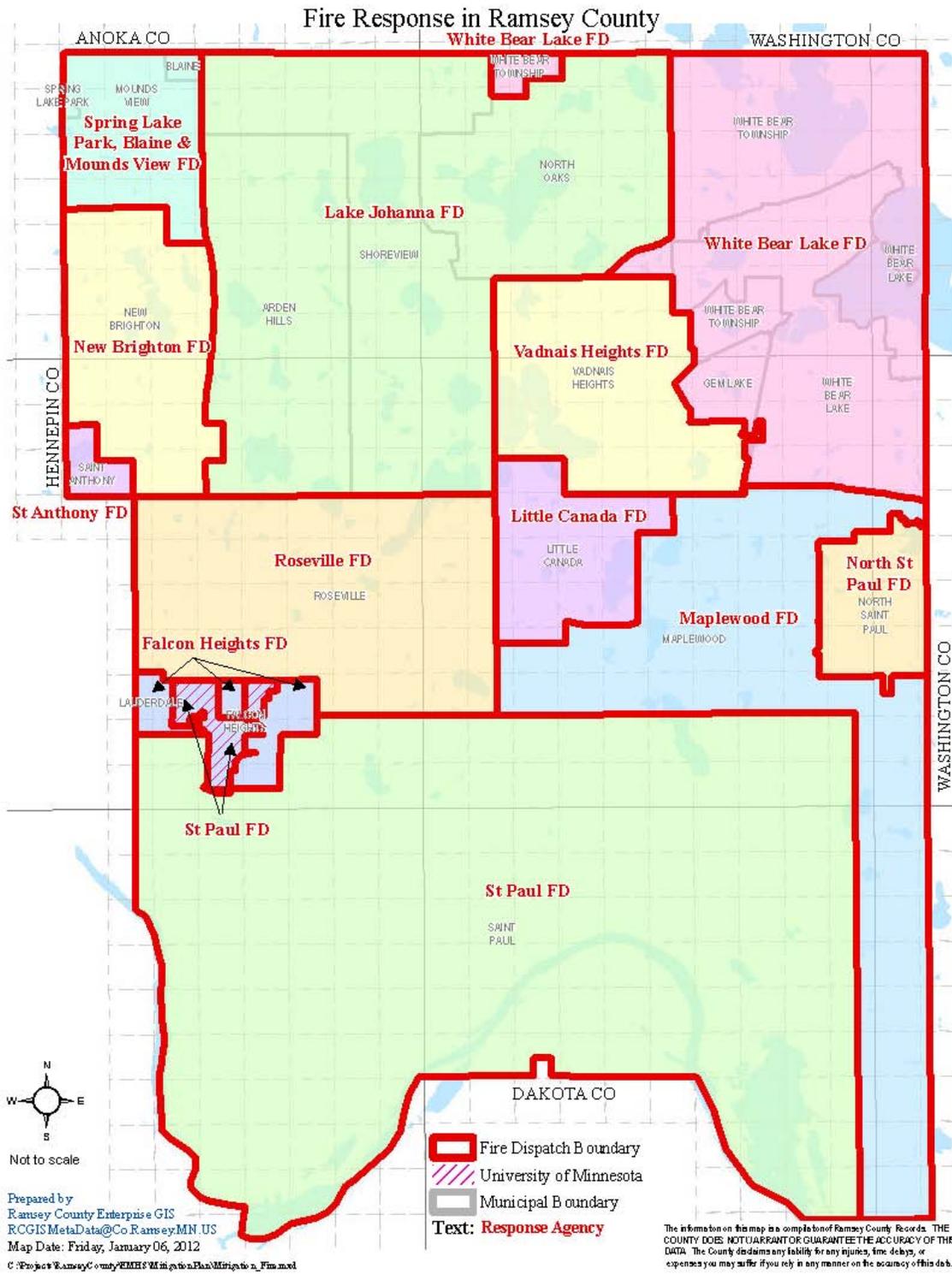
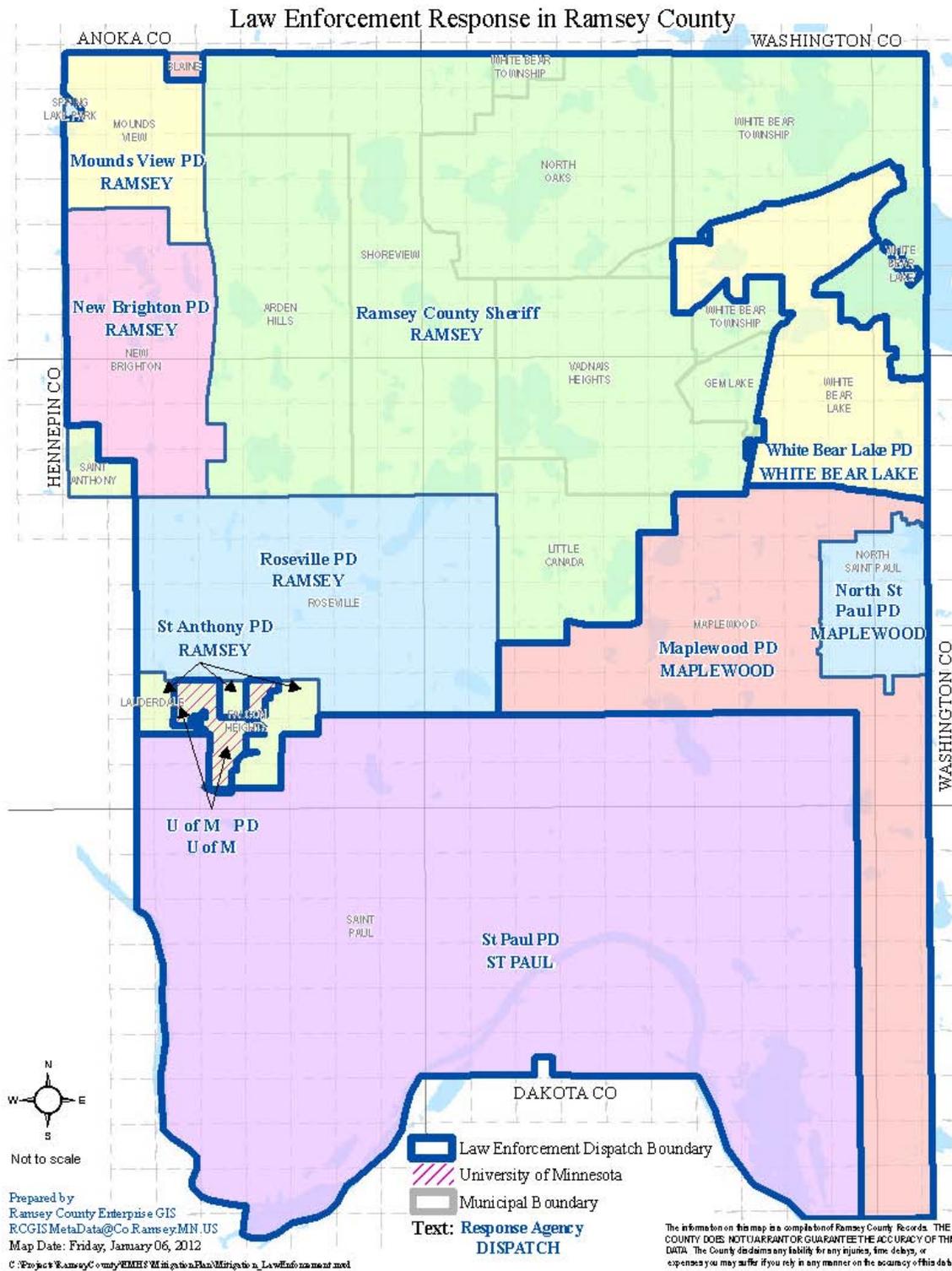


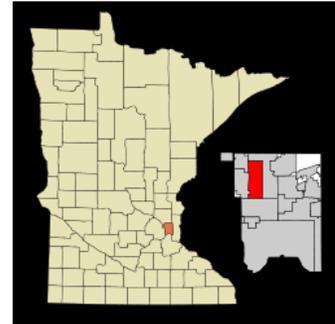
Figure 2-28  
Law Enforcement Response



## 2.10 Municipalities

### Arden Hills

Arden Hills is located in the northwest corner of Ramsey County and has a total area of 9.6 square miles. The population at the time of the 2010 census was 9,552. There are several college campuses located in the city, including Bethel University, seminary, and a portion of the Northwestern College campus. With a median income of \$64,773 and a median family income of \$72,236, the economic future of those in Arden Hills is bright.



### Falcon Heights

Falcon Heights, a city as of 1973, is a small suburb of St. Paul. The 2010 census states the population at this time is approximately 5,321, with only 2.2 square miles of land. It is home to the Minnesota State Fairgrounds and is also home to the University of Minnesota St. Paul Campus. This is fitting as Falcon Heights is the 65<sup>th</sup> best educated city in the United States and best educated in Minnesota. Approximately 70 percent of residents have a bachelor's degree or higher and 38 percent have a graduate or professional degree.



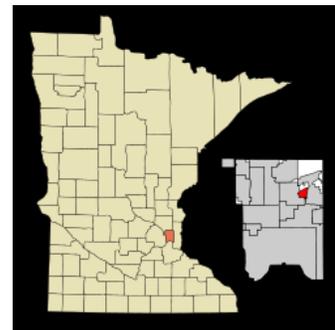
### Gem Lake

The City of Gem Lake is the smallest city in Ramsey County with a population of 393 people and a total area of 1.1 square miles. It was discovered as early as 1843 when French explorer Jean Nicollet drew the first map of the Gem Lake area, titled Bear's Lake. This land would become the Town of White Bear and more than one hundred years later, the land would become Gem Lake. The city, incorporated in 1959, is located close to both downtown St. Paul and Minneapolis.



### Lauderdale

The City of Lauderdale is surrounded by Minneapolis, St. Paul, Roseville, and Falcon Heights. The total area of the city is only 0.4 square miles but it has a population of 2,364 people. Lauderdale stands out as one of the top 25 retirement suburbs in the country and is also one of two suburbs in the Twin Cities that is adjacent to both St. Paul and Minneapolis.

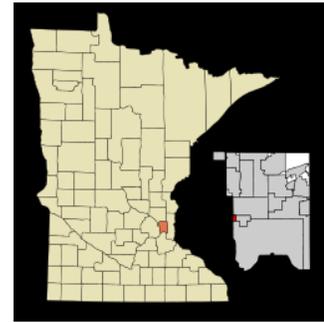


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### **Little Canada**

As its name infers, the City of Little Canada is not shy about its Canadian heritage. It was founded by French Canadian settler Benjamin Gervais in 1844, who moved north from St. Paul to build the first grist mill in Minnesota that was independent from the government. The grist mill is now a park and is considered the birthplace of the city. The Village of Little Canada was established in 1953 and later, in 1974, became a city. To celebrate its founder, the flag of Canada is displayed in council chambers and its symbol reflects the maple leaf. The City even hosts an annual event with Thunder City, Ontario called Canadian Days. There are 9,773 people as of the 2010 census in a total land area of 4.5 miles.



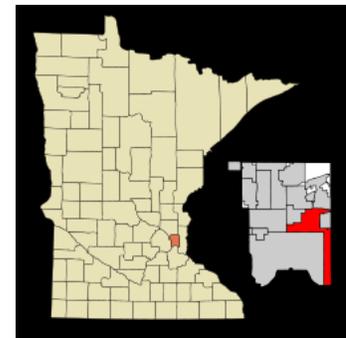
### **Maplewood**

Maplewood was incorporated in 1957 and is the second largest city in Ramsey County with a population of 38,018. It is the home to the corporate headquarters of the 3M Corporation, which employs over 10,000. The City of Maplewood is growing rapidly and its proximity to St. Paul, only 9 miles or 15 minutes, is one of the reasons. The City of Maplewood also has over 33 parks and a large hiking trail system that attract people to the area.



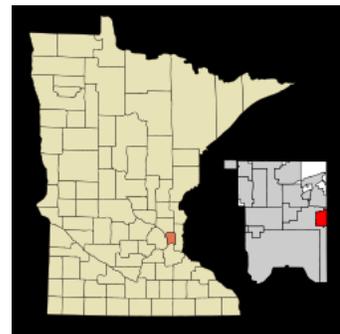
### **Mounds View**

Mounds View was originally part of the Mounds View Township that also included parts of present-day Shoreview, Arden Hills, and Spring Lake Park. The City of Mounds View was officially incorporated in 1958 following a large population growth spurred by their proximity to the Twin Cities Arsenal. As of the 2010 census, the population of Mounds View was 12,155 people and a total area of 4.1 square miles. This land is primarily residential with several business parks and other businesses located in the City of Mounds View.



### **New Brighton**

The original settlers to New Brighton were the Mdewakanton Dakota tribes who lived in the marshy lakes of the area harvesting wild rice. As they settled villages nearby, British and French immigrants moved into the area and started building in 1858. The village they created grew as the Minneapolis Stockyards and Packing Company established business and other companies moved into the area. On January 20, 1891, the City of New Brighton was incorporated. 120 years later, the City of New Brighton has grown to over 21,000 people and has a large amount of land with a total area of 7.1 square miles.



**North Oaks**

North Oaks is located 10 miles north of Saint Paul in Ramsey County. The area began as a water source for the Saint Paul municipal water system, which maintains water access rights today. It was then bought and turned into the North Oaks Farm by the Hill family, but after the death of Louis Hill in 1950, the land was developed as a residential community. Their vision was to respect the natural environment and in response, they created the North Oaks Home Owners' Association whose responsibility was to maintain the roads and recreation. North Oaks maintains a trespassing ordinance that makes it an exclusive community for its 4,469 residents.



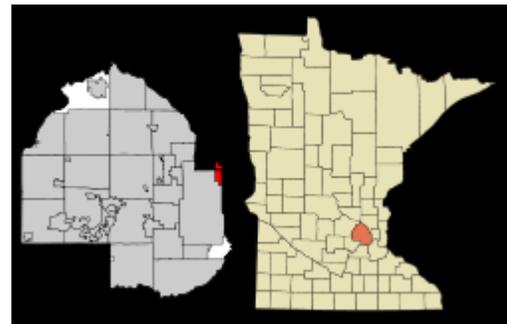
**North St. Paul**

Although its name is similar to nearby City of St. Paul, North St. Paul is a distinct city on the far east side of the County. It was founded by Henry Castle in 1870 and pays homage to its founder with streets named after Henry, his wife Margaret, firstborn daughter Helen, and firstborn son Charles. There are currently 11,460 people in the 3.0 square miles of total area.



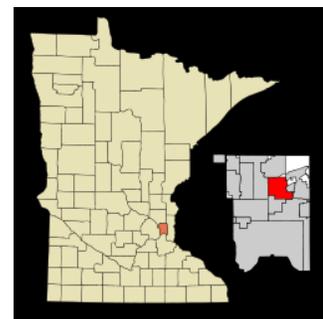
**Roseville**

The City of Roseville is one of two suburbs that are adjacent to both St. Paul and Minneapolis. The City of Roseville is home to several major shopping centers and these are just some of the businesses that make up the extensive commercially zoned land. It is the location of the first Target store; the first Best Buy store; the first Barnes & Noble outside of New York City; and the first McDonald's and Dairy Queen restaurants in Minnesota. It is one of the larger cities with a total area of 13.8 square miles and a population of 33,660 as of 2010.



**Shoreview**

Shoreview is located in the northern part of Ramsey County and has a total population of 25, 043 as of 2010. There are 12.75 square miles of total area in the City of Shoreview, of which 1.5 square miles are water. There are seven lakes in the City, with the largest being Turtle Lake, Snail Lake, Lake Owasso, and Island Lake. Rice Creek also flows through the northwestern portion of the City of Shoreview.



### **St. Paul**

St. Paul was originally a trading and transportation center, rising to prominence when it was named the Minnesota Territory capital in 1849. It is still the state capital of Minnesota and the second most populous city in the state. St. Paul is on the east bank of the Mississippi River and is adjacent to the state's largest city, Minneapolis. The city's population at the 2010 census was 285,068 people, part of the 3.3 million residents that make up the Twin Cities area. It is Ramsey County's largest city by population and by area (56.2 square miles). In addition to being the state capital, it is also the county seat of Ramsey County. Its outstanding physical characteristic is the convergence of the Mississippi River and Minnesota Rivers, whose ports carry a large portion of the entire state's gross domestic product.



### **Vadnais Heights**

Vadnais Heights has a total area of 8.3 square miles and a population of 12,302. The City of Vadnais Heights has grown from a small, agricultural area to a thriving suburban community of the Twin Cities since its incorporation in 1957. Vadnais Lake is located in the City of Vadnais Heights and is an important scenic and natural area that has remained undeveloped.



### **White Bear Lake**

White Bear Lake has long been a community that inspires. In 1874, Mark Twain included the City of White Bear Lake as the resort in "Life on the Mississippi" and it is rumored that it was the object of writer F. Scott Fitzgerald's *Winter Dreams*. The City of White Bear Lake started out as a small agricultural community, but experienced substantial growth between 1950 and 1970, when the population increased 252.4 percent. There are currently 23,797 people that live in the City, and it has a total area of 8.7 square miles.



### **White Bear Township**

White Bear Township is the only Township in Ramsey County. It was established in 1858 and since then has decreased in size as the cities of White Bear Lake, Vadnais Heights, Gem Lake, and North Oaks were carved out of the original 36 square miles. It is now only 9.3 square miles and has a population of 10,949 people. Regional parks and open spaces dominate the land of White Bear Township, as do wetlands, floodplains, and upland pools. In more than 150 years, the Township has transcended from a farming community, a resort area, and a freestanding town into a cluster of suburban communities within the Minneapolis-St. Paul metropolitan area.

Cities and townships located within Ramsey County

Cities	Townships
<p>Arden Hills Patrick Klaers, City Administrator Phone: 651-792-7810 E-mail: <a href="mailto:patrick.klaers@ci.arden-hills.mn.us">patrick.klaers@ci.arden-hills.mn.us</a></p>	<p>White Bear William Short, Clerk/Treasurer Phone: 651-747-2758 Cell: 651-249-3553 E-mail: <a href="mailto:bill.short@ci.white-bear-township.mn.us">bill.short@ci.white-bear-township.mn.us</a></p>
<p>Blaine* Kerry Fenner, EM Director City of Blaine 10801 Town Square Drive NE Blaine, MN 55449 Phone: (763)785-6131 Email: <a href="mailto:kfenner@ci.blaine.mn.us">kfenner@ci.blaine.mn.us</a></p>	
<p>Falcon Heights 2077 W. Larpenteur Avenue Falcon Heights, MN 55113 Phone: 651-792-7600 Phone: 651-792-7611 Fax: 651-792-7610</p>	<p><b>Other</b> University of Minnesota – Twin Cities Campus*</p>
<p>Gem Lake Bob Uzpen, Mayor Phone: 651-492-5083 Fax: 651-747-2795 Email: <a href="mailto:City@gemlakeMN.org">City@gemlakeMN.org</a></p>	<p><b>Counties Adjacent to Ramsey</b> Hennepin Dakota Washington Anoka</p>
<p>Lauderdale Heather Butkowski, City Administrator Home: 612-205-1208 E-mail: <a href="mailto:heather.butkowski@ci.lauderdale.mn.us">heather.butkowski@ci.lauderdale.mn.us</a></p>	
<p>Donald Smiley, Fire Chief / Emergency Management Director Work: 651-266-7716 E-mail: <a href="mailto:lcfchief1@comcast.net">lcfchief1@comcast.net</a></p>	
<p>Maplewood Steve Lukin, Chief Phone: 651-249-2802 E-mail: <a href="mailto:steve.lukin@ci.maplewood.mn.us">steve.lukin@ci.maplewood.mn.us</a></p>	
<p>Mounds View Tom Kinney, Police Chief/EM Director Phone: 763-717-4073 E-mail: <a href="mailto:tom.kinney@ci.mounds-view.mn.us">tom.kinney@ci.mounds-view.mn.us</a></p>	
<p>New Brighton Robert Jacobson, Director/Emergency Management Director Phone: 651-288-4101 E-mail: <a href="mailto:bob.jacobson@newbrightonmn.gov">bob.jacobson@newbrightonmn.gov</a></p>	
<p>North Oaks James Daly, Emergency Management Director Home: 651-490-9022</p>	

## Section 2

Cities	Townships
E-mail: <a href="mailto:DalyJim3@aol.com">DalyJim3@aol.com</a>	
North St. Paul Scott Duddeck, Fire Chief Phone: 651-747-2551 E-mail: <a href="mailto:sduddeck@ci.north-saint-paul.mn.us">sduddeck@ci.north-saint-paul.mn.us</a>	
Roseville David Brosnahan Battalion Chief Roseville Fire Department Roseville, MN 55113 Phone: 651-792-7000 Email: <a href="mailto:david.brosnahan@ci.roseville.mn.us">david.brosnahan@ci.roseville.mn.us</a> Greg Peterson, BS, EFO Battalion Chief/Emergency Manager Roseville MN 55113 Phone: 651-792-7306 Email: <a href="mailto:greg.peterson@ci.roseville.mn.us">greg.peterson@ci.roseville.mn.us</a>	
St. Anthony* John Malenick, Fire Chief / Emergency Management Director St. Anthony Fire Department 3505 Silver Lake Rd., St. Anthony, MN 55418 Main: 612-782-3400 E-mail: <a href="mailto:jmalenick@ci.saint-anthony.mn.us">jmalenick@ci.saint-anthony.mn.us</a>	
St. Paul* Rick Larkin, Director Phone: 651-266-5490 E-mail: <a href="mailto:rick.larkin@ci.stpaul.mn.us">rick.larkin@ci.stpaul.mn.us</a>	
Shoreview Walter Johnson, Emergency Management Director Phone: 651-490-4684 E-mail: <a href="mailto:WJOHNSON@SHOREVIEWMN.GOV">WJOHNSON@SHOREVIEWMN.GOV</a>	
Spring Lake Park* Doug Ebeltoft, Chief/Emergency Management Director Phone: 763-792-7220 E-mail: <a href="mailto:debeltoft@ci.spring-lake-park.mn.us">debeltoft@ci.spring-lake-park.mn.us</a>	
Vadnais Heights Edward Leier, Fire Chief – Emergency Management Director Phone: 651-204-6000 Email: <a href="mailto:eleier@cityvadnaisheights.com">eleier@cityvadnaisheights.com</a>	
White Bear Lake Tim Vadnais, Chief/Emergency Management Director White Bear Lake Fire Department Phone: 651-429-8567 E-mail: <a href="mailto:tvadnais@whitebearlake.org">tvadnais@whitebearlake.org</a>	

*\*Reside partially within another jurisdiction and are covered by their HMP*





**Requirement 44 CFR 201.6(c)(1)**

The plan shall document the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

## 3.1 Ramsey County Multijurisdictional Hazard Mitigation Planning Committee

The Ramsey County Emergency Management and Homeland Security department was tasked with developing the Ramsey County Multijurisdictional Hazard Mitigation Planning Committee. This Committee was tasked with the development and completion of this plan as required per state and federal guidelines. The Ramsey County Emergency Management and Homeland Security department oversaw the project, organized the data, set meeting dates, documented in-kind services, and worked with the Minnesota Division of Homeland Security and Emergency Management to complete this plan.

### 3.1.1 Additional Partners

**Requirement 44 CFR 201.6(b)(2)**

An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process.

The Ramsey County Multijurisdictional Hazard Mitigation Planning Committee relied on the assistance of various public and private organizations to compile the data, maps, and other vital components of the plan.

A range of stakeholders were invited and encouraged to participate in the development of the HMP. Stakeholder involvement was encouraged through notifications and invitations to agencies and individuals to participate. These included representatives from Ramsey County and each participating jurisdiction, private sector businesses, voluntary agencies, citizens, and surrounding counties. In addition to the mitigation planning committee meetings, Ramsey County encouraged open and widespread participation in the mitigation planning process through the publication of newspaper notices promoting open public meetings. These media advertisements and survey instruments provided local officials, residents, businesses, academia, and other private interests in Ramsey County the opportunity to be involved and offer input throughout the local mitigation planning process.

Ramsey County encouraged continued stakeholder involvement by reminding all participating jurisdictions to make announcements and notifications consistent with their existing local plan adoption procedures. It will be the responsibility of each participating jurisdiction and its local governing body to determine if and how any additional specific stakeholder groups or individuals should be involved in the planning process going forward.

Many departments, agencies, and individuals became mini-stakeholders when contacted to provide information as the committee gathered data for capability and vulnerability assessments, these participants played a vital role in the completion of this plan.

### 3.2 Plan Organization

The Multijurisdictional Hazard Mitigation Planning Committee was responsible for the organization, data collection, and completion of the plan.

It was the responsibility of the members of the Multijurisdictional Hazard Mitigation Planning Committee to include all pertinent departments within their respective governments and to request information as needed for the completion of the plan. These other departments include a variety of organizations whose input and data is vital to the success and accuracy of the plan.

The Multijurisdictional Hazard Mitigation Planning Committee conducted several meetings and involved all available departments and resources in an effort to gain any information that would increase the effectiveness of the plan.

The Multijurisdictional Hazard Mitigation Planning Committee was also tasked with including any external organizations that could benefit from the overall effectiveness of the plan. The Multijurisdictional Hazard Mitigation Planning Committee is aware of the importance of including a variety of external and internal organizations. Their input is vital to the short-term and long-term success of the plan. External organizations include but are not limited to Minnesota Homeland Security and Emergency Management, the Federal Emergency Management Agency, National Weather Service, local citizens, businesses and industry, media outlets, the National Flood Insurance Program representatives, and others. These agencies and organizations were invited to the public meetings, provided information for data collection, and provided feedback on documents throughout the planning process.

The plan is based on the data gathered and identified by all committee members, the public, and all jurisdictions in an effort to prioritize mitigation projects in order of severity in an effort to reduce loss of property and life.

### 3.3 Planning Team Goals and Objectives

The Ramsey County Multijurisdictional Hazard Mitigation Planning Committee, early in the process, established a set of goals and objectives to ensure the effectiveness of this plan. These goals and objectives established the paradigm for the planning process. These goals and objectives are as follows:

- Actively involve and gain support from all city and township governments and Ramsey County for the reduction of disasters in our community.
- Prioritize identified mitigation projects.
- Seek and implement any grant funding for the reduction of disasters in Ramsey County and its cities and townships.
- Monitor, evaluate, and update the progress of the plan as needed.
- Form partnerships among local, state, and federal agencies to make Ramsey County more resistant to the effects of disasters.

The following table is the time line agreed upon by the planning team for the development of the Ramsey County HMP.

**Table 3-1  
Calendar of Events**

Date	Task
October 2011	Letter requesting support for the plan to all interested parties
November 10, 2011	Kickoff meeting and public meeting of mitigation process
January 4, 2012	First draft written
January 10, 2012	Public meeting #2
February 9, 2012	Final mitigation strategy
February 24, 2012	Draft updated HMP with changes required from public meeting for submittal to Minnesota Department of Homeland Security and Emergency Management (HSEM) and FEMA for official review
February 24–May 9, 2012	State review period
May 9 – June 18, 2012	FEMA review period
July 10, 2012	Final draft updated plan based on State of Minnesota and FEMA recommendations
July 11, 2012	Public meeting #3
September 18, 2012	Final approval obtained from jurisdictions and forwarded to FEMA

### 3.4 Multijurisdictional Considerations

Ramsey County, like many counties in Minnesota, has numerous cities and townships. All cities and townships were notified of the requirement concerning the Ramsey County Multijurisdictional HMP and process. Representatives from all cities and townships and the County were invited to the general session meeting on November 10, 2011 and have worked collectively over the past months to gather data that included known hazards, flood prone areas, areas of vulnerability, existing mitigation plans and projects, and technical information for the plan. The data was forwarded to the County’s emergency management coordinator for review and plan development. Subsequent meetings have been held in an effort to ensure that all information is correct, and that all agencies’ and organizations’ input was included as presented. Listed in section 3.6 is a chronology of meetings and events. Municipalities participated by providing input and data for the risk assessment section as well as the mitigation strategies. In addition to providing input via e-mail, phone call, and in person contact, municipalities attended public meetings held to introduce and discuss various elements of the plan. Each jurisdiction was an active participant in the planning and development process.

**Requirement 44 CFR 201.6(b)(3)**

An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

### 3.5 Review of Existing Technical/Planning Information

An important aspect of the planning process involved the review of existing federal, state, and local plans, studies, reports, and technical information as well as the ordinances, regulations, and resolutions of each participating jurisdiction for incorporation into the Ramsey County Multijurisdictional HMP. Plans and documents reviewed by various members of the committee include:

***State/Federal Data, Reports, and Plans Utilized***

- 2010 United States Census Data
- Minnesota Department of Natural Resources, water and land cover data
- FEMA regulations and guidance
- State of Minnesota HMP

***County/Regional Plans, Ordinances, Data Utilized***

- Ramsey County Comprehensive Plan 2030
- Metropolitan Council, land use and transit data
- Ramsey County HMP, 2007
- Ramsey County GIS User Group Data

These documents are on file at the Ramsey County Emergency Management and Homeland Security office in electronic or hard copy format and provide valuable guidance in the planning process. Some served to acquaint committee members with the many roles of emergency management. Planning guides helped to tie together the phases of mitigation planning for committee members from a broad range of backgrounds outside mitigation and emergency management.

State and federal response and homeland security documents were referenced to ensure Ramsey County's goals supported these plans and promoted compliance with requirements. The State of Minnesota HMP formed the basis for identifying and analyzing the natural hazards and technological hazards that could affect Ramsey County and participating jurisdictions. The Ramsey County Emergency Operations Plan provided insight into the jurisdictional response to disasters and was used to develop and validate mitigation goals, objectives, and actions.

### 3.6 Public Involvement

**Requirement 44 CFR 201.6(b)(1)**

An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.

To be an effective plan, input from the public is vital. The Multijurisdictional Hazard Mitigation Planning Committee recognizes the valuable input that the public can provide on the plan. Additionally, public input builds support and ensures a strong base for future mitigation activities, and allows Ramsey County citizens the opportunity to have their interests included in the plan. The public was invited to participate in the development of this plan via the internet and press releases by the Ramsey County Emergency Management and Homeland Security Department.

The main activity for public involvement was invitation to public meetings where they could learn about the hazard mitigation planning process and contribute ideas about the County's risks, vulnerabilities, and mitigation strategies to the plan.

The first public meeting was held on November 10, 2011. The meeting introduced the hazard mitigation planning process, including the Disaster Mitigation Act of 2000, the importance of public participation, and the overall approach to planning. Complete meeting notes, rosters, and notices can be found in appendix B.

The second meeting, held on January 10, 2012, was an opportunity for attendees to review all hazard profiles, vulnerabilities, and mitigation strategy recommendations. This was an opportunity for public attendees to comment on the draft of the updated Ramsey County HMP. Complete meeting notes, rosters, and notices can be found in appendix B.

A third meeting will be held prior to the approval of this plan to present an overview to county residents and solicit input to the final draft. The complete meeting notes, rosters, and notices for this meeting will be included in the plan prior to final approval by the Ramsey County Board of Commissioners.



## Section 4

# RISK AND VULNERABILITY ASSESSMENT

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## 4.1 Updates to the Risk and Vulnerability Assessment

There have been several updates to the risk and vulnerability assessment since the Ramsey County HMP of 2007 was approved. Many of the updates included in this section are updates of events that have occurred in the past five years and updated versions of graphics. There are some updates that change the way that hazards are profiled in the Ramsey County HMP.

- The previous version of the Ramsey County HMP included severe thunderstorms, tornadoes, hailstorms, and lightning under one section titled “Summer Storms”. In the updated version of the plan, each of these hazards has been broken out into their own hazard profile section to reflect the notion that there are multiple forms of summer severe weather. The Ramsey County Hazard Mitigation Planning Committee determined that severe thunderstorms, tornadoes, hailstorms, and lightning should be classified as individual hazards in this plan update.
- The identified hazard “winter storm” has been reclassified as “severe winter storms”. Minnesota is a climate that is experienced in handling winter weather frequently. Although all winter weather poses a risk to Ramsey County, severe winter storms produce a higher vulnerability level for emergency response capabilities.
- In the 2007 Ramsey County HMP, fire was identified as a hazard. In the update, this hazard has been removed and only wildfires are profiled. The vulnerabilities posed by fires in the County, historically, only pose a risk to individual structures and do not threaten countywide areas. County municipalities have robust emergency response capabilities for responding to fires, including full-time, part-time, and volunteer fire departments to control this hazard. Wildfires are unpredictable and their severity can vary depending on wind speed and drought. Therefore, wildfires have been profiled and fires have been omitted in this plan update.
- “Infectious diseases” have been renamed “epidemics/pandemics” in the updated plan. Outbreaks are included in this section in the plan, although in the 2007 version, outbreaks were a separately identified risk.
- The following hazards were added to this version of the HMP due to an occurrence over the past five years and/or recommendations from the public during public meetings:
  - Rockslides
  - Energy/fuel shortage
  - Aircraft accidents
  - Civil disturbance
  - Invasive species
  - Critical facilities/infrastructure loss
- The following profiles were omitted from the plan due to low vulnerability and low occurrence in Ramsey County in the past five years:
  - Water contamination

## 4.2 Risk and Vulnerability Assessment Process

The Multijurisdictional Hazard Mitigation Planning Committee conducted a comprehensive hazard, risk, and vulnerability assessment of Ramsey County.

**Requirement 44 CFR 201.6(c) (2) (ii)**

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

To develop effective hazard mitigation strategies, it is first necessary to identify and profile all hazards facing the community. A risk assessment is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards by assessing the vulnerability of people, buildings, and infrastructure to natural and technological disasters. Several methods were used to identify risks to the community that included evaluating historical data from scientific and news media sources, soliciting opinion and experiences from participating jurisdictions and Ramsey County residents, and surveying risks identified in the State of Minnesota HMP that were pertinent to Ramsey County.

**Requirement 44 CFR 201.6(c) (2) (i)**

The risk assessment shall include a description of the type, location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Following the risk assessment, a vulnerability assessment was conducted. This analysis predicts the extent of damage that may result from a hazard event of a given intensity in a given area on the existing and future build environment. Determining the community’s vulnerability involved identifying the risk posed to people, property, and the environment. This also included identifying critical facilities that could be affected by each hazard.

The following natural and technological hazards were identified:

Hazard	Justification for Inclusion
Severe Winter Storms	Frequency, previous incidents, county-wide hazard
Severe Thunderstorms	Frequency, previous incidents, county-wide hazard
Tornadoes	Frequency, previous incidents, county-wide hazard
Lightning	Frequency, county-wide hazard
Extreme Temperatures	Frequency, county-wide hazard
Hailstorms	County-wide hazard
Wildfires	Frequency, potential adverse impact
Flooding	Frequency, previous incidents
Drought	Previous incidents, county-wide hazard
Rockslides	Previous incidents
Epidemics/Pandemics	Previous incidents
Dam/Levee Failure	Potential adverse impact
Terrorism	Potential adverse impact

Hazard	Justification for Inclusion
Hazardous Materials Spills	Frequency, previous incidents, county-wide hazard
Energy/Fuel Shortage	Potential adverse impact
Power Failure	Frequency, previous incidents, county-wide hazard
Aircraft Accidents	Potential adverse impact
Invasive Species	Potential adverse impact
Civil Disturbance	Previous incidents
Critical Facilities and Infrastructure Loss	County-wide hazard, potential adverse impact

The following hazards were not profiled in this plan due to geographic location, low occurrence, or low potential for damage.

Hazard	Justification for Omission
Avalanche	Geographic Proximity
Coastal Erosion	Geographic Proximity
Earthquake	Low occurrence, Low vulnerability
Expansive Soils	Low vulnerability
Hurricane/Tropical Storms	Geographic Proximity
Karst Topography	Low occurrence
Sinkholes	Low vulnerability
Tsunami	Geographic Proximity
Volcano	Geographic Proximity

The following information was included in each hazard profile:

- **Hazard Identification.** The Multijurisdictional Hazard Mitigation Planning Committee has identified 10 natural and 6 technological hazards that have consistently affected Ramsey County and its cities and townships. These hazards were identified by using statistical data and records from a variety of sources, including presidential disaster declarations, maps, and hazardous materials response data. The lists of hazards are based upon frequency, severity, probability, potential loss, vulnerability, and large-scale effects on Ramsey County.
- **Profile of Hazards.** Each hazard will be profiled to explain how it will or has affected Ramsey County. This will include areas prone to specific hazards and the effects that they have had on Ramsey County infrastructure. It also includes previous events that have affected the County.
- **Assets Exposed to the Hazard.** The plan compares identified hazards with the inventory of affected critical facilities and the effects on the population that is exposed to each hazard. This section will also include a vulnerability assessment for future development, such as schools, water and waste treatment facilities, and other critical infrastructure.

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- **Vulnerability:** The vulnerability of each hazard will be summarized based on a common set of definitions and classifications used to estimate vulnerability and rank hazards.

### Hazard Identifications/Classifications

**Frequency of Occurrence:** Probability

- |                   |  |
|-------------------|--|
| 1 = Unlikely      | <1% probability of occurrence in the next 100 years                                |
| 2 = Occasionally  | 1-10% probability of occurrence per year, or at least one change in next 100 years |
| 3 = Likely        | >10% but <100% probability per year, at least one chance in next 10 years          |
| 4 = Highly Likely | 100% probable in a year  |

**Warning Time:** Amount of time generally given to alert people to hazard

- 1 = More than 12 hours
- 2 = 6-12 hours
- 3 = 3-6 hours
- 4 = None – Minimal

**Geographic Extent:** How large an area would likely be affected

- 1 = Localized
- 2 = Community-wide
- 3 = County-wide

**Potential Impact:** Severity and extent of damage and disruption

- |                |  |
|----------------|--|
| 1 = Negligible | Isolated occurrences of minor property damage, minor disruption of critical facilities and infrastructure, and potential for minor injuries        |
| 2 = Minor      | Isolated occurrences of moderate to severe property damage, brief disruption of critical facilities and infrastructure, and potential for injuries |
| 3 = Moderate   | Severe property damage on a neighborhood scale; temporary shutdown of critical facilities, and/or injuries or fatalities                           |
| 4 = Major      | Severe property damage on a neighborhood scale; temporary shutdown of critical facilities, and/or injuries or fatalities                           |

- **Multijurisdictional Concern:** This component of the plan will identify what areas of Ramsey County are most susceptible to effects of the hazard.
- **Land Use Plans and Development Trends:** This component of the plan will identify land use trends, the County's land use and development plans, and reference current plans and regulations are in place in Ramsey County regarding land use plans and trends that could prevent the impact of the disaster.

**44 CFR Requirement 201.6 (c)(2)(iii)**

For multijurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

**44 CFR Requirement 201.6 (c)(2)(ii)(C)**

Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

## 4.3 Natural Hazards

Natural hazards such as floods, tornadoes, winter storms, and the like are an enduring condition around the human environment. Natural hazards become disasters when they intersect with the human environment. This problem has been exacerbated due to the impacts of climate change. In Minnesota, natural disasters have had devastating effects on human lives, property, the economy, and the community. While most processes present little danger to human well-being, some develop into hazardous situations that place life, property, economy, and community at higher risk.

### 4.3.1 Atmospheric Hazards

Atmospheric hazards include weather-generated incidents. Each has its own natural characteristics, geographic location and/or aerial extent, seasonality, severity, and associated risks. Though these characteristics allow identification of each individual hazard, many of these hazards are interrelated (FEMA, 1997). For example, tornadoes can be a product of severe thunderstorms or tropical storms/hurricanes, and snow or ice can be a byproduct of nor'easters. These hazards may also be directly linked to other categories of natural hazards (for example, excessive rain can cause the geologic hazard of sinkholes and landslides). In addition, atmospheric hazards can be interlinked with technological hazards (for example, excessive rains can cause dam/levee failure, which can lead to flooding). These linkages make it difficult to attribute damage to one hazard or to assess the risk one hazard has on the planning area, but mitigation strategies quite often have beneficial effects on several types of hazards.

In this subsection, six atmospheric hazards were addressed: severe winter storms, severe summer thunderstorms, tornadoes, lightning, extreme temperatures, and hailstorms. Each category has a general description of the hazard, a vulnerability summary for the planning area, and specific hazard information for each individual governing jurisdiction.

#### 4.3.1.1 Severe Winter Storms

##### Hazard Identification

Ramsey County researched historical data from the National Climatic Data Center (NCDC) and the National Weather Service (NWS) as well as information from past newspaper articles relating to severe winter storms in Ramsey County. Severe winter storms bring the threat of snow, freezing rain, and ice storms to the County. A heavy accumulation of ice, especially when accompanied by high winds, devastates trees and power lines. Sidewalks, streets, and highways become extremely hazardous to pedestrians and motorists. Severe winter storms originate as mid-latitude depressions of cyclonic weather systems and can cause snowstorms, blizzards, and ice storms. Winter storms can paralyze a county/community by shutting down normal day-to-day operations and can produce an accumulation of snow and ice on trees and utility lines, resulting in loss of electricity and blocked transportation routes. These storms can also lead to frozen water pipes, which when erupted, can lead to extensive property damage and the depletion of natural resources. When counties/communities have long-term loss of utilities, elderly and extremely young populations become more vulnerable to the effects of the extreme temperatures associated with these storms.

##### Hazard Profile

To determine Ramsey County's vulnerability to severe winter storms, a time period from 1993 to 2010 was examined. Numerous sources were used in identifying the severe winter storm hazards that have occurred in Ramsey County since 1993 (both primary and secondary). Sources included the Cable News Network, National Oceanic Atmospheric Agency (NOAA), National Climatic Data Center (NCDC), the

## Section 4

National Weather Service (NWS), the Spatial Hazard Events and Losses Database (SHELDUS), and the Weather Channel.

Research from the SHELDUS and NCDC indicates there have been 49 severe winter storm occurrences recorded for Ramsey County in the past 18 years. Although severe winter storms occur infrequently, they have the potential to wreak havoc to the community when they do strike. Statistically, Ramsey County can expect a severe winter storm every year; the most frequent occurrences were in 1996. A winter storm that struck the Ramsey County area in December of 2010 was particularly devastating to Ramsey County. Numerous power lines were downed; several roads, bridges, and buildings were damaged as a result of the heavy snow and ice accumulation. Ramsey County has never received an emergency declaration (local or presidential) as a result of a winter storm.

Table 4-1  
Winter Storm Events<sup>56</sup>

	Location or County	Date	Type	Dth <sup>7</sup>	Inj <sup>8</sup>	PrD <sup>9</sup>
1	Ramsey County	11/24/1993	Heavy Snow	0	0	0
2	Ramsey County	1/5/1994	Heavy Snow	0	0	0
3	Ramsey County	4/28/1994	Heavy Snow And Ice	0	0	0
4	Ramsey County	11/27/1994	Heavy Snow/ice	0	0	0
5	Ramsey County	11/26/1995	Heavy Snow	0	0	0
6	Ramsey County	12/8/1995	Heavy Snow	0	0	0
7	Ramsey County	12/13/1995	Glaze	0	0	0
8	Ramsey County	1/10/1996	Heavy Snow	0	0	0
9	Ramsey County	1/17/1996	Ice Storm	0	0	0
10	Ramsey County	3/23/1996	Heavy Snow	0	0	0
11	Ramsey County	11/20/1996	Heavy Snow	0	0	0
12	Ramsey County	11/22/1996	Heavy Snow	0	0	0
13	Ramsey County	12/14/1996	Heavy Snow	0	0	0
14	Ramsey County	12/23/1996	Winter Storm	1	0	0
15	Ramsey County	3/13/1997	Winter Storm	0	0	0

<sup>5</sup> Source: National Climatic Data Center, <http://www.ncdc.noaa.gov/oa/ncdc.html>

<sup>6</sup> Explanation of Storm Data can be found in appendix A

<sup>7</sup> Dth = Deaths

<sup>8</sup> Inj = Injuries

<sup>9</sup> PrD = Property damage

## RISK AND VULNERABILITY ASSESSMENT

	Location or County	Date	Type	Dth <sup>7</sup>	Inj <sup>8</sup>	PrD <sup>9</sup>
16	Ramsey County	3/8/1999	Winter Storm	0	0	0
17	Ramsey County	1/12/2000	Heavy Snow	0	0	0
18	Ramsey County	1/19/2000	Heavy Snow	0	0	0
19	Ramsey County	12/28/2000	Winter Storm	0	0	0
20	Ramsey County	1/29/2001	Winter Storm	0	0	0
21	Ramsey County	3/11/2001	Heavy Snow	0	0	0
22	Ramsey County	11/26/2001	Winter Storm	0	0	0
23	Ramsey County	3/8/2002	Winter Storm	0	0	0
24	Ramsey County	3/14/2002	Winter Storm	0	0	0
25	Ramsey County	2/2/2003	Winter Storm	0	0	0
26	Ramsey County	11/22/2003	Winter Storm	0	0	0
27	Ramsey County	12/9/2003	Winter Storm	0	0	0
28	Ramsey County	1/24/2004	Winter Storm	0	0	0
29	Ramsey County	2/1/2004	Winter Storm	0	0	0
30	Ramsey County	3/5/2004	Winter Storm	0	0	0
31	Ramsey County	1/1/2005	Winter Storm	0	0	0
32	Ramsey County	1/21/2005	Winter Storm	0	0	0
33	Ramsey County	3/18/2005	Winter Storm	0	0	0
34	Ramsey County	3/12/2006	Winter Storm	0	0	0
35	Ramsey County	3/15/2006	Winter Storm	0	0	0
36	Ramsey County	2/24/2007	Winter Storm	0	0	OK
37	Ramsey County	3/1/2007	Winter Storm	0	0	OK
38	Ramsey County	12/1/2007	Winter Storm	0	0	OK
39	Ramsey County	3/31/2008	Heavy Snow	0	0	OK
40	Ramsey County	4/1/2008	Heavy Snow	0	0	OK
41	Ramsey County	2/26/2009	Winter Storm	0	0	OK
42	Ramsey County	10/12/2009	Winter Weather	0	0	OK

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	Location or County	Date	Type	Dth <sup>7</sup>	Inj <sup>8</sup>	PrD <sup>9</sup>
43	Ramsey County	12/8/2009	Winter Storm	0	0	OK
44	Ramsey County	12/23/2009	Winter Storm	0	0	OK
45	Ramsey County	11/13/2010	Winter Storm	0	0	OK
46	Ramsey County	12/3/2010	Winter Storm	0	0	OK
47	Ramsey County	12/10/2010	Winter Storm	0	0	OK
48	Ramsey County	2/20/2011	Winter Storm	0	0	OK
49	Ramsey County	3/22/2011	Winter Storm	0	0	OK

### Assets Exposed to Hazard

In evaluating assets that may potentially be impacted by the effects of severe winter storms, the HMPT determined that all critical facilities as well as all public, private, and commercial property are susceptible.

- **Property Risk/Vulnerability:** In evaluating assets that may potentially be impacted by the effects of severe winter storms, the committee determined that all critical facilities as well as all public, private, and commercial properties are susceptible to the effects of a winter storm. An additional vulnerability in this area is that the County does not have any pre-determined locations for temporary storage of debris and/or snow.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of the County since there is no way to determine the impact/magnitude of a severe winter storm and no way to predict where a storm will hit. People are vulnerable to winter storms through power outages, effects on transportation routes, establishment of shelters, water freezing, etc. This is particularly true due to a 100 percent chance of a winter storm occurring in any given year in Ramsey County.
- **Environment Risk/Vulnerability:** Risks to the environment are low for a winter storm. Most of the environmental risks would be access to water due to frozen water pipes and supply. In addition, winter thaw can cause flooding, which in turn can affect and create contamination of potable water for public consumption.

### Vulnerability

#### Severe Winter Storms

Frequency of Occurrence	Highly Likely
Warning Time	More than 12 hours
Geographic Extent	County-wide or greater extent
Potential Impact	Minor

### Multijurisdictional Concerns

All of Ramsey County can potentially be affected by a severe winter storm. As a result, any mitigation steps taken related to severe winter storms should be undertaken on a countywide basis.

### Land Use and Development Trends

Ramsey County currently has no land use or development trends related to severe winter storms.

### Hazard Summary

Severe winter storms, unlike other natural hazards, typically afford communities some advance warning. The NWS issues winter storm watches, warnings, and advisories as these storms make their way through the County. Due to the frequency of winter storms in Ramsey County, most buildings and infrastructure are typically designed to sustain severe winter conditions. However, aging facilities and particularly heavy snowfalls bring the possibility of building collapse and infrastructure damage. Additionally, while many motorists are accustomed to driving in snow and icy conditions, winter weather always brings a possibility for dangerous driving conditions and therefore should be a consideration in hazard mitigation planning. It is also important to note that the County has never received an emergency declaration (local or presidential) due to a winter storm event.

#### 4.3.1.2 Severe Thunderstorms

##### Hazard Identification

Ramsey County used data from the NCDC, the NWS, and Ramsey County Emergency Operations Plan in researching severe thunderstorms and their impact on Ramsey County. Severe thunderstorms include thunderstorms and winds associated with the thunderstorms. Thunderstorm winds are generally short in duration, involving straight-line winds and/or gusts in excess of 50 mph. Thunderstorm winds tend to affect areas of the County with significant tree stands as well as areas with exposed property and infrastructure and aboveground utilities. Thunderstorm winds can cause power outages, transportation and economic disruptions, and significant property damage, and pose a high risk for injuries and loss of life.

##### Hazard Profile

The most prevalent natural hazard event occurring in Ramsey County is severe thunderstorms and the winds from these thunderstorms. During the spring and summer months, the County typically experiences multiple thunderstorms, some with significant winds. Over the past 20 years, 100 severe summer thunderstorm wind events have been recorded within Ramsey County. A review of historical weather data indicates there is a very significant chance of severe summer thunderstorm winds impacting Ramsey County each year. Severe summer thunderstorm winds occur more frequently than any other natural hazard event within Ramsey County. The most damaging severe thunderstorm/high winds occurred on September 21, 2005, when high winds caused damage costing \$25 million statewide.

##### Assets Exposed to Hazard

- **Property Risk/Vulnerability:** In evaluating assets that are susceptible to severe thunderstorms, it was determined that all critical facilities as well as all public, private, and commercial property is susceptible to severe thunderstorms.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of the County since there is no way to determine the impact/magnitude of a severe summer thunderstorm and no way to predict where a storm will hit. People are vulnerable to severe summer thunderstorms through power outages, effects on transportation routes, establishment of shelters, roofs blown off structures, etc. This is particularly true for severe summer thunderstorms, since they occur frequently within the County. Furthermore, high winds associated with severe thunderstorms can take down power and cable lines, cutting residents' links to public information and other critical information.

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- **Environment Risk/Vulnerability:** Risks to the environment are minimal for a severe summer thunderstorm. Severe thunderstorms can cause flooding, which in turn can affect and create contamination of potable water for public consumption.

### Estimate of Potential Losses

Using a straight-line method for estimating losses, it can be assumed that structures or facilities with the greatest replacement value will be those that sustain the most monetary damage. Facilities with vulnerable populations include 4 nursing homes as well as over 56 public and private schools located throughout Ramsey County. Ramsey County was able to determine potential monetary losses for all critical facilities in the County. Structure loss combined with content loss and functional downtime is evaluated at intervals of 25 percent, 50 percent, 75 percent, and 100 percent.

### Vulnerability

#### Severe Thunderstorms

Frequency of Occurrence	Likely
Warning Time	Minimal
Geographic Extent	Community-wide
Potential Impact	Moderate to Major

### Land Use and Development Trends

Ramsey County currently has no land use or development trends related to severe summer thunderstorm winds.

### Multijurisdictional Concerns

All of Ramsey County can potentially be affected by severe thunderstorm and high winds. As a result, any mitigation steps taken related to severe thunderstorm winds should be undertaken on a countywide basis.

### Hazard Summary

Overall, severe summer thunderstorm winds pose one of the greatest threats to Ramsey County in terms of property damage as well as injuries and loss of life. Severe summer thunderstorm winds are the most frequently occurring natural hazard in the County and have the greatest chance of affecting the County each year. Based on the frequency of this hazard as well as its ability to negatively impact the County, the pre-disaster mitigation measures identified in this plan should be aggressively pursued.

Table 4-2  
Thunderstorm Winds<sup>10,11</sup>

Location	Date	Type	Mag	Dth <sup>12</sup>	Inj <sup>13</sup>	PrD <sup>14</sup>
1 RAMSEY	6/8/1963	Tstm Wind	0 kts.	0	0	0

<sup>10</sup> Source: National Climatic Data Center: <http://www.ncdc.noaa.gov/oa/ncdc.html>

<sup>11</sup> For an explanation of the NCDC reports, see appendix A

<sup>12</sup> Dth = Deaths

<sup>13</sup> Inj = Injuries

<sup>14</sup> PrD = Property damage

## RISK AND VULNERABILITY ASSESSMENT

Location	Date	Type	Mag	Dth <sup>12</sup>	Inj <sup>13</sup>	PrD <sup>14</sup>
2 RAMSEY	7/1/1965	Tstm Wind	0 kts.	0	0	0
3 RAMSEY	7/4/1966	Tstm Wind	0 kts.	0	0	0
4 RAMSEY	6/10/1970	Tstm Wind	0 kts.	0	0	0
5 RAMSEY	6/4/1971	Tstm Wind	0 kts.	0	0	0
6 RAMSEY	4/20/1973	Tstm Wind	0 kts.	0	0	0
7 RAMSEY	6/20/1974	Tstm Wind	86 kts.	0	0	0
8 RAMSEY	5/19/1975	Tstm Wind	0 kts.	0	0	0
9 RAMSEY	5/23/1975	Tstm Wind	50 kts.	0	0	0
10 RAMSEY	7/9/1975	Tstm Wind	62 kts.	0	0	0
11 RAMSEY	7/12/1978	Tstm Wind	61 kts.	0	0	0
12 RAMSEY	6/19/1979	Tstm Wind	0 kts.	0	0	0
13 RAMSEY	6/19/1979	Tstm Wind	0 kts.	0	0	0
14 RAMSEY	6/19/1979	Tstm Wind	0 kts.	0	0	0
15 RAMSEY	8/2/1979	Tstm Wind	52 kts.	0	0	0
16 RAMSEY	8/7/1980	Tstm Wind	78 kts.	0	0	0
17 RAMSEY	4/29/1981	Tstm Wind	66 kts.	0	0	0
18 RAMSEY	9/5/1982	Tstm Wind	0 kts.	0	0	0
19 RAMSEY	7/19/1983	Tstm Wind	0 kts.	0	0	0
20 RAMSEY	4/26/1984	Tstm Wind	0 kts.	0	6	0
21 RAMSEY	6/7/1984	Tstm Wind	52 kts.	0	0	0
22 RAMSEY	6/22/1984	Tstm Wind	52 kts.	0	0	0
23 RAMSEY	6/16/1985	Tstm Wind	56 kts.	0	0	0
24 RAMSEY	3/31/1986	Tstm Wind	0 kts.	0	0	0
25 RAMSEY	7/12/1986	Tstm Wind	0 kts.	0	0	0
26 RAMSEY	7/12/1986	Tstm Wind	0 kts.	0	0	0
27 RAMSEY	6/28/1987	Tstm Wind	0 kts.	0	0	0
28 RAMSEY	8/7/1988	Tstm Wind	0 kts.	0	1	0

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Location	Date	Type	Mag	Dth <sup>12</sup>	Inj <sup>13</sup>	PrD <sup>14</sup>
29 RAMSEY	8/11/1988	Tstm Wind	52 kts.	0	0	0
30 RAMSEY	5/29/1989	Tstm Wind	56 kts.	0	0	0
31 RAMSEY	5/29/1989	Tstm Wind	58 kts.	0	0	0
32 RAMSEY	7/8/1990	Tstm Wind	54 kts.	0	0	0
33 RAMSEY	7/17/1990	Tstm Wind	0 kts.	0	0	0
34 RAMSEY	5/28/1991	Tstm Wind	0 kts.	0	1	0
35 RAMSEY	6/30/1991	Tstm Wind	0 kts.	0	0	0
36 Maplewood	4/26/1994	Thunderstorm Winds	0 kts.	0	0	0
37 St. Paul	6/10/1994	Thunderstorm Winds	0 kts.	0	0	0
38 Gem Lake	7/15/1995	Thunderstorm Winds	0 kts.	0	0	0
39 St Paul	5/19/1996	Tstm Wind	54 kts.	0	0	0
40 St Paul	8/6/1996	Tstm Wind	60 kts.	0	0	0
41 Maplewood	8/6/1996	Tstm Wind	70 kts.	0	0	0
42 Maplewood	6/28/1997	Tstm Wind	50 kts.	0	0	0
43 St Paul	5/15/1998	Tstm Wind	61 kts.	0	0	0
44 St Paul	5/15/1998	Tstm Wind	61 kts.	0	0	0
45 St Paul	5/30/1998	Tstm Wind	67 kts.	0	0	0
46 St Paul	6/25/1998	Tstm Wind	60 kts.	0	0	0
47 Vadnais Hgts	6/25/1998	Tstm Wind	65 kts.	0	0	0
48 St Paul	6/26/1998	Tstm Wind	65 kts.	0	0	0
49 St Paul	6/26/1998	Tstm Wind	50 kts.	0	0	0
50 St Paul	6/26/1998	Tstm Wind	55 kts.	0	0	0
51 Vadnais Hgts	7/14/1998	Tstm Wind	55 kts.	0	0	0
52 St Paul	6/6/1999	Tstm Wind	60 kts.	0	0	0
53 Little Canada	7/23/1999	Tstm Wind	50 kts.	0	0	0
54 New Brighton	7/7/2000	Tstm Wind	65 kts.	0	0	0
55 Little Canada	7/7/2000	Tstm Wind	55 kts.	0	0	0

## RISK AND VULNERABILITY ASSESSMENT

Location	Date	Type	Mag	Dth <sup>12</sup>	Inj <sup>13</sup>	PrD <sup>14</sup>
56 White Bear Lake	7/7/2000	Tstm Wind	65 kts.	0	0	0
57 Maplewood	7/7/2000	Tstm Wind	60 kts.	0	0	0
58 Vadnais Hgts	7/7/2000	Tstm Wind	70 kts.	0	0	0
59 North St Paul	7/7/2000	Tstm Wind	55 kts.	0	0	0
60 Mounds View	8/3/2002	Tstm Wind	50 kts.	0	0	0
61 White Bear Lake	9/5/2002	Tstm Wind	50 kts.	0	0	0
62 St Paul	6/23/2003	Tstm Wind	50 kts.	0	0	0
63 Maplewood	6/24/2003	Tstm Wind	50 kts.	0	0	0
64 St Paul	6/24/2003	Tstm Wind	52 kts.	0	0	0
65 Vadnais Hgts	4/18/2004	Tstm Wind	50 kts.	0	0	0
66 Maplewood	4/18/2004	Tstm Wind	50 kts.	0	0	0
67 St Paul	5/9/2004	Tstm Wind	63 kts.	0	0	330K
68 Maplewood	6/11/2004	Tstm Wind	50 kts.	0	0	0
69 Arden Hills	6/30/2004	Tstm Wind	50 kts.	0	0	0
70 St Paul	9/23/2004	Tstm Wind	58 kts.	0	0	0
71 Maplewood	9/23/2004	Tstm Wind	52 kts.	0	0	0
72 Roseville	9/23/2004	Tstm Wind	50 kts.	0	0	0
73 Arden Hills	9/23/2004	Tstm Wind	50 kts.	0	0	0
74 Vadnais Hgts	6/7/2005	Tstm Wind	52 kts.	0	0	0
75 North St Paul	6/8/2005	Tstm Wind	52 kts.	0	0	0
76 St Paul	6/8/2005	Tstm Wind	50 kts.	0	0	0
77 St Paul	6/20/2005	Tstm Wind	52 kts.	0	0	0
78 St Paul	6/20/2005	Tstm Wind	57 kts.	0	0	0
79 White Bear Lake	6/27/2005	Tstm Wind	52 kts.	0	0	0
80 Roseville	7/23/2005	Tstm Wind	52 kts.	0	0	0
81 Little Canada	7/23/2005	Tstm Wind	52 kts.	0	0	0
82 Maplewood	7/23/2005	Tstm Wind	52 kts.	0	0	0

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Location	Date	Type	Mag	Dth <sup>12</sup>	Inj <sup>13</sup>	PrD <sup>14</sup>
83 North St Paul	7/23/2005	Tstm Wind	52 kts.	0	0	0
84 St Paul	7/23/2005	Tstm Wind	52 kts.	0	0	0
85 Vadnais Hgts	7/23/2005	Tstm Wind	52 kts.	0	0	0
86 White Bear Lake	7/23/2005	Tstm Wind	55 kts.	0	0	0
87 St Paul	9/12/2005	Tstm Wind	50 kts.	0	0	0
88 Countywide	9/21/2005	Tstm Wind	65 kts.	0	1	25.0M
89 Arden Hills	6/16/2006	Tstm Wind	55 kts.	0	0	0
90 St Paul	7/24/2006	Tstm Wind	53 kts.	0	0	0
91 St Paul	7/26/2007	Thunderstorm Wind	55 kts.	0	0	0K
92 Falcon Hgts	8/11/2007	Thunderstorm Wind	60 kts.	0	1	0K
93 St Paul	8/11/2007	Thunderstorm Wind	55 kts.	0	0	0K
94 North Oaks	8/13/2007	Thunderstorm Wind	52 kts.	0	0	0K
95 St Paul	8/28/2007	Thunderstorm Wind	50 kts.	0	0	0K
96 Daytons Bluff	8/28/2007	Thunderstorm Wind	52 kts.	0	0	0K
97 St Paul	9/20/2007	Thunderstorm Wind	50 kts.	0	0	0K
98 St Paul	5/25/2008	Thunderstorm Wind	55 kts.	0	0	0K
99 North St Paul	6/14/2008	Thunderstorm Wind	54 kts.	0	0	0K
100 St Paul	7/11/2008	Thunderstorm Wind	50 kts.	0	0	0K
101 New Brighton	8/8/2009	Thunderstorm Wind	52 kts.	0	0	0K
102 St Paul	7/14/2010	Thunderstorm Wind	51 kts.	0	0	0K
103 Mounds View	7/17/2010	Thunderstorm Wind	61 kts.	0	0	25K
104 Lauderdale	7/17/2010	Thunderstorm Wind	52 kts.	0	0	0K
105 White Bear Lake	7/17/2010	Thunderstorm Wind	52 kts.	0	0	0K
106 North St Paul	7/17/2010	Thunderstorm Wind	55 kts.	0	0	5K
107 St Paul	7/17/2010	Thunderstorm Wind	55 kts.	0	0	0K

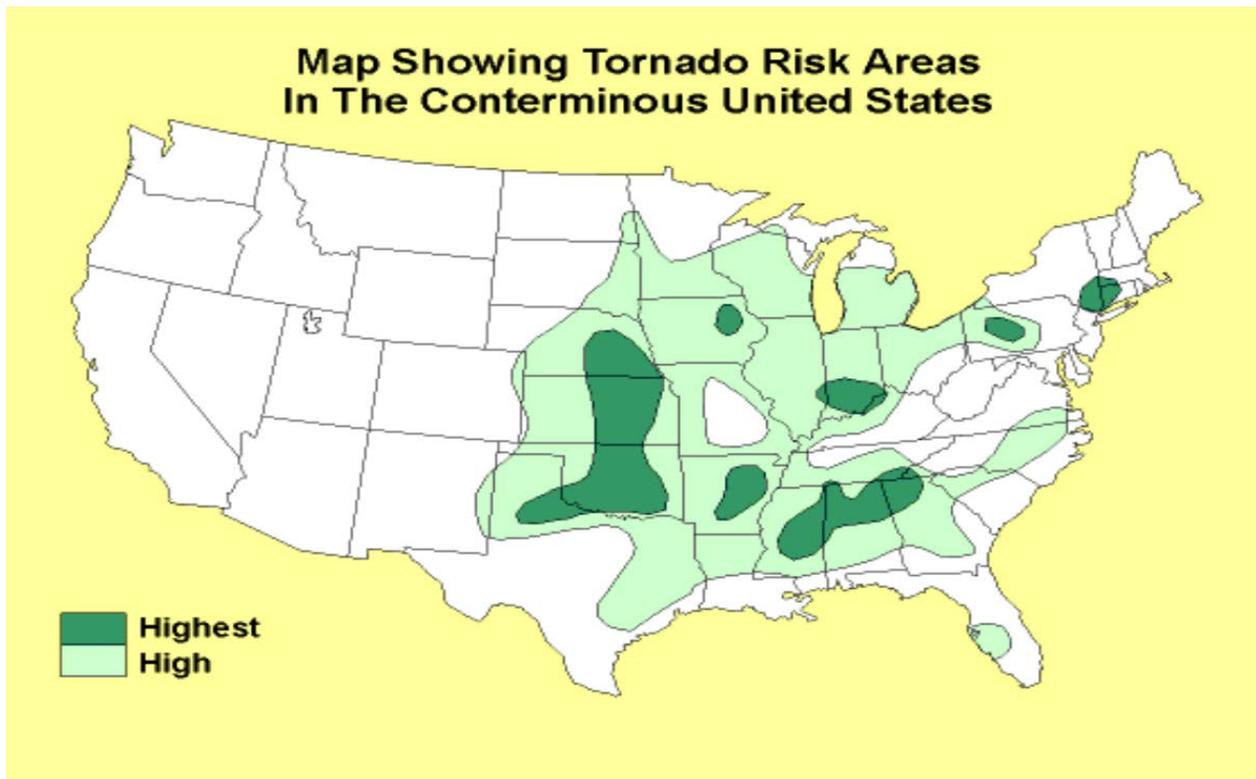
Location	Date	Type	Mag	Dth <sup>12</sup>	Inj <sup>13</sup>	PrD <sup>14</sup>
108 St Paul	9/21/2010	Thunderstorm Wind	52 kts.	0	0	OK
109 White Bear Lake	7/1/2011	Thunderstorm Wind	50 kts.	0	0	OK
110 Falcon Hgts	8/1/2011	Thunderstorm Wind	52 kts.	0	0	OK

### 4.3.1.3 Tornadoes

#### Hazard Identification

Historical data from both SHELDUS and the NCDC was reviewed in researching the past events and effects of tornadoes in Ramsey County. A tornado is a violently rotating column of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be in excess of 1 mile wide and 50 miles long. Tornado season in Minnesota runs ordinarily from March through August; however, tornadoes can strike at any time of the year if the essential conditions are present.<sup>1</sup>

Figure 4-1  
Tornado Risk Areas in the Conterminous United States



<sup>1</sup> Source: National Weather Service, <http://www.nws.noaa.gov>

### Hazard Profile

All of Ramsey County is vulnerable to the threat of a tornado because no one can predict exactly when or where a tornado might strike. Ramsey County has not experienced a tornado within the last 10 years. Although the County has not experienced a tornado in recent history, countless tornado watches have been recorded during this period. Additionally, surrounding counties have experienced tornadoes during this 10-year period. Trend analysis indicates that a tornado will touch down in Ramsey County every 10 years. This equates to a 10 percent chance of a tornado touching down in Ramsey County in any given year. Although the statistical average for the number of tornadoes in one year in the state of Minnesota is 24, there have been instances where many more were reported as a result of one day of large storms. In 2011, a particularly strong storm system moved through the state and produced 48 tornadoes in one day, increasing the overall number of tornadoes to 102 for the year. Tornadoes tend to strike in somewhat random fashion, making the task of reliably calculating a recurrence interval extremely difficult. The damage potential associated with a tornado is extremely high.

### Assets Exposed to Hazard

- **Property Risk/Vulnerability:** It can be assumed that all structures and facilities within Ramsey County could be damaged by a tornado because tornadoes are among the most unpredictable of weather phenomena and are indiscriminate as to when or where they strike.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of the County since there is no way to determine the impact/magnitude of a tornado and no way to predict when or where a tornado will hit. People are vulnerable to the effects of tornadoes, including power and cable outages, disruption to transportation routes, damage to shelter, flying debris, etc. This is particularly true due to a 10 percent chance of a tornado occurring in any given year in the County.
- **Environment Risk/Vulnerability:** Risks to the environment can be significant. Environmental risks can include flying debris and destruction of critical infrastructure that damage and affect water supply and contamination of potable water for public consumption.

### Estimate of Potential Losses

An obstacle to accurate loss estimation is the fact that losses may vary widely even within one category of natural hazard, depending on place and location. For instance, a tornado may hop from one location to another in a primarily rural area of the County, creating virtually no economic damage, whereas a similar hazard incident in an urban area might create millions of dollars in damages. Compounding this obstacle to accurate loss estimation is that tornadoes range considerably in their intensity and duration. When estimating losses related to tornado events, it can be assumed that structures or facilities with the greatest replacement value will be those that sustain the most monetary damage. In addition, facilities with vulnerable populations include nursing homes and personal care homes as well as public and private schools located throughout the County.

### Land Use and Development Trends

Ramsey County currently has no land use or development trends related specifically to tornadoes. The minimum standards established by these codes provide reasonable protection to persons and property within structures that comply with the regulations for most natural hazards.

Vulnerability

**Tornadoes**

Frequency of Occurrence	Likely
Warning Time	Minimal
Geographic Extent	Community-wide
Potential Impact	Major

**Multijurisdictional Concerns**

All of Ramsey County has the same design wind speed of 200 mph, as determined by the American Society of Civil Engineers (ASCE). As stated previously, the entire county can potentially be affected by a tornado. As a result, any mitigation steps taken related to tornados should be undertaken on a countywide basis.

**Hazard Summary**

Overall, Ramsey County has high exposure to potential damage from tornadoes. Should a tornado hit certain portions of the County that are highly concentrated with homes or any of the critical facilities identified, depending upon the strength and duration of the event, significant damage could occur. Due to the destructive nature of tornadoes, it is imperative that pre-disaster mitigation measures be identified.

Table 4-3<sup>15</sup>  
Confirmed Tornadoes

Location	Date	Type	Mag	Death	Injuries	Property Damage
1 RAMSEY	5/6/1965	Tornado	F4	0	108	25.0M
2 RAMSEY	6/28/1979	Tornado	F1	0	0	250K
3 RAMSEY	6/14/1981	Tornado	F3	1	60	25.0M
4 RAMSEY	4/26/1984	Tornado	F3	0	0	25.0M
5 Roseville	5/15/1998	Tornado	F1	0	0	150.0M
6 Mounds View	5/22/2011	Tornado	F0	0	0	20K

**4.3.1.4 Lightning**

**Hazard Identification**

Ramsey County researched historical data from the NCDC and the NWS as well as information from past newspaper articles relating to lightning strikes in Ramsey County. By definition, all thunderstorms are accompanied by lightning. The electrical charge from lightning can potentially be as much as 100 million volts. Lightning strikes proceed from cloud to cloud, cloud to ground, or where high structures are involved, from ground to cloud. Lightning strikes in Ramsey County are most prevalent in May and

<sup>15</sup> Source: National Climatic Data Center, <http://www.ncdc.noaa.gov/oa/ncdc.html>

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August. During a public meeting, participants identified that there was a lightning strike during a 1998 storm that resulted in a fatality.

### Hazard Profile

Lightning, as with many natural hazards, can strike anywhere and at any time. Data from NCDC reported three incidents of lightning strikes in Ramsey County since 1998 and local knowledge indicates many more instances.

### Assets Exposed to Hazard

- **Property Risk/Vulnerability:** In evaluating assets that are susceptible to lightning strikes, the committee determined that all critical facilities as well as all public, private, and commercial property are susceptible to being struck by lightning.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of the County, since there is no way to determine the impact/magnitude of a lightning strike/incident and no way to predict where lightning will hit. People are vulnerable to lightning strikes/events through power outages, effects on transportation routes, establishment of shelters, being struck by lightning, etc. This is particularly true due to a significant chance of a lightning strike occurring in any given year in the County.
- **Environment Risk/Vulnerability:** Risks to the environment are low for a lightning strike/incident.

### Estimate of Potential Losses

Lightning strikes can cause varying degrees of damage to a facility. Most common is lightning destroying the electrical components of a facility or damage related to fire after a lightning strike. Unlike most other natural hazards, lightning could potentially damage or destroy the contents of a structure (computers, televisions, phones, etc.) without any effect on the structure itself. As stated previously, all structures are vulnerable to a lightning strike and were evaluated for potential losses.

### Land Use and Development Trends

Ramsey County does not currently have land use or development trends related to lightning.

### Vulnerability

#### Lightning Strikes

Frequency of Occurrence	Likely
Warning Time	None
Geographic Extent	Localized
Potential Impact	Minor

### Multijurisdictional Concerns

All of Ramsey County can potentially be affected by lightning. As a result, any mitigation steps taken related to lightning should be undertaken on a countywide basis.

### Hazard Summary

Lightning strikes, although rare in occurrence, have a high danger potential associated with them. Lightning, as with some of the other natural hazards typical to Ramsey County, can strike anywhere and at any time. Its unpredictability along with its deadly and destructive potential is all the more reason to explore mitigation actions.

Table 4-4<sup>16</sup>  
Lightning 1/01/1950 thru 01/01/2011

Location or County	Date	Time	Type	Magnitude	Death	Injuries	Property Damage
1 White Bear Lake	8/9/1998	6:00 PM	Lightning	N/A	1	0	0
2 Vadnais Hgts	6/7/2005	6:45 AM	Lightning	N/A	0	0	0
3 White Bear Lake	8/8/2005	7:00 AM	Lightning	N/A	0	0	0

### 4.3.1.5 Extreme Temperatures

#### Hazard Identification

Extreme temperatures include both cold and hot events, which can have a significant impact on human health and commercial/agricultural businesses, and primary and secondary effects on infrastructure (for example, burst pipes and power failure). What constitutes “extreme cold” or “extreme heat” can vary across different areas of the country based on what the population is accustomed to in their respective climates.

#### Hazard Profile

Table 4-5  
Extreme Temperatures Events<sup>17</sup>

Location	Date	Type	Death	Injuries	Property Damage
All Of Minnesota	1/15/1994	Extreme Cold	1	0	0
Ramsey County	7/10/1995	Heat Wave	2	0	2.0M
Ramsey County	1/18/1996	Extreme Windchill	0	0	0
Ramsey County	1/31/1996	Extreme Cold	0	0	0
Ramsey County	2/1/1996	Extreme Cold	0	0	0
Ramsey County	12/24/1996	Extreme Cold	0	0	0
Ramsey County	1/15/1997	Extreme Windchill	0	0	0
Ramsey County	7/23/1999	Excessive Heat	1	0	0
Ramsey County	7/29/1999	Excessive Heat	0	0	0
Ramsey County	7/30/2001	Excessive Heat	0	0	0

<sup>16</sup> Source: National Climatic Data Center, <http://www.ncdc.noaa.gov/oa/ncdc.html>

<sup>17</sup> Source: National Climatic Data Center, <http://www.ncdc.noaa.gov/oa/ncdc.html>

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Location	Date	Type	Death	Injuries	Property Damage
Ramsey County	8/1/2001	Excessive Heat	1	0	0
Ramsey County	8/4/2001	Excessive Heat	5	0	0
Ramsey County	1/15/2005	Extreme Cold/wind Chill	1	0	0
Ramsey County	7/30/2006	Heat	0	0	0
Ramsey County	2/10/2008	Cold/wind Chill	0	0	OK
Ramsey County	2/19/2008	Cold/wind Chill	0	0	OK
Ramsey County	6/7/2011	Excessive Heat	0	0	OK

### Vulnerability Assessment

Ramsey County has experienced extreme cold conditions in the past. According to the National Climatic Data Center, Ramsey County has experienced extremely cold temperatures/weather nearly every year since 1994.

The NCDC defines temperatures that hover 10 degrees or more above the average high temperature for a region and last for several weeks as extreme heat. Extreme heat does not occur that frequently in Ramsey County, but there were occurrences in 2006, 2001, and 1995.

### Assets Exposed to Hazard

- **Property Risk/Vulnerability:** It was determined that all critical facilities as well as all public, private, and commercial property are susceptible to being affected by extreme temperatures.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of the County since there is no way to determine the impact/magnitude of an extreme temperature incident and no way to predict where and when an extreme temperature incident will hit. People are vulnerable to the effects extreme temperatures, including power outages, effects on transportation routes, establishment of shelters, etc. Those with existing medical conditions affected by extreme temperatures and the elderly population may be at higher risk.
- **Environment Risk/Vulnerability:** Risks to the environment are low should an extreme temperature incident occur, and the frequency of extreme temperatures in the County is high. Environmental concerns include interruption of water supply (such as water pipes freezing, frozen power lines, etc.) and secondary events such as fires and hazardous materials accidents.

### Damage Assessment

Because all facilities within the County are subject to potential losses due to extreme temperatures, estimations were done assuming 25 percent, 50 percent, 75 percent, and 100 percent damages.

### Land Use and Development Trends

Future development throughout Ramsey County will result in the potential effects of extreme temperatures.

Vulnerability

**Extreme Temperatures**

Frequency of Occurrence	Likely
Warning Time	More than 12 hours
Geographic Extent	County-wide
Potential Impact	Negligible

**Multijurisdictional Concerns**

All of Ramsey County is subject to extreme temperatures and therefore should be included in any prospective mitigation projects. The probability of extreme temperatures occurring in the future is relatively low based on previous data. The entire county is at risk of extreme temperature events. Extreme temperatures affect Ramsey County equally and uniformly.

**Hazard Summary**

Extreme temperatures have occurred across the entire of Ramsey County area. Extreme temperature effects are seen in different regions and vary depending on normal meteorological conditions such as either extreme heat or extreme cold. Extreme temperatures are possible throughout the planning area, with the northern portion of the state being susceptible for extreme cold temperatures during the winter months of the year.

**4.3.1.6 Hailstorms**

**Hazard Identification**

Hail is a form of precipitation composed of spherical lumps of ice. Known as hailstones, these ice balls typically range from 5-50 mm in diameter on average, with much larger hailstones forming in severe thunderstorms. The size of hailstones is a direct function of the severity and size of the storm. During a public meeting, participants identified that during a 1999 hailstorm some residents experienced damaged and destroyed roofs.

**Hazard Profile**

**Table 4-6  
Hail Events<sup>18</sup>**

Location	Date	Type	Magnitude	Death	Injuries
1 RAMSEY	4/23/1960	Hail	1.00 in.	0	0
2 RAMSEY	6/23/1962	Hail	1.75 in.	0	0
3 RAMSEY	7/21/1962	Hail	1.00 in.	0	0
4 RAMSEY	7/8/1966	Hail	1.75 in.	0	0
5 RAMSEY	6/20/1974	Hail	0.75 in.	0	0

<sup>18</sup> Source: National Climatic Data Center, <http://www.ncdc.noaa.gov/oa/ncdc.html>

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Location	Date	Type	Magnitude	Death	Injuries
6 RAMSEY	7/12/1978	Hail	2.50 in.	0	0
7 RAMSEY	6/26/1979	Hail	1.75 in.	0	0
8 RAMSEY	7/10/1979	Hail	1.75 in.	0	0
9 RAMSEY	6/25/1980	Hail	1.00 in.	0	0
10 RAMSEY	9/19/1980	Hail	1.50 in.	0	0
11 RAMSEY	6/23/1981	Hail	1.75 in.	0	0
12 RAMSEY	7/23/1981	Hail	1.75 in.	0	0
13 RAMSEY	5/9/1985	Hail	1.25 in.	0	0
14 RAMSEY	5/9/1985	Hail	1.75 in.	0	0
15 RAMSEY	5/9/1985	Hail	1.75 in.	0	0
16 RAMSEY	3/31/1986	Hail	1.00 in.	0	0
17 RAMSEY	5/12/1986	Hail	1.50 in.	0	0
18 RAMSEY	6/23/1986	Hail	1.00 in.	0	0
19 RAMSEY	8/5/1986	Hail	1.75 in.	0	0
20 RAMSEY	8/16/1986	Hail	1.75 in.	0	0
21 RAMSEY	6/28/1987	Hail	1.00 in.	0	0
22 RAMSEY	7/20/1987	Hail	1.75 in.	0	0
23 RAMSEY	5/7/1988	Hail	1.75 in.	0	0
24 RAMSEY	5/7/1988	Hail	2.50 in.	0	0
25 RAMSEY	8/31/1989	Hail	1.75 in.	0	0
26 RAMSEY	5/28/1991	Hail	1.00 in.	0	0
27 Shoreview	5/30/1994	Hail	1.75 in.	0	0
28 New Brighton	7/14/1995	Hail	1.50 in.	0	0
29 St Paul	6/15/1997	Hail	0.75 in.	0	0
30 Mounds View	6/28/1997	Hail	0.88 in.	0	0
31 St Paul	6/28/1997	Hail	0.75 in.	0	0
32 St Paul	5/15/1998	Hail	1.00 in.	0	0

## RISK AND VULNERABILITY ASSESSMENT

Location	Date	Type	Magnitude	Death	Injuries
33 St Paul	6/16/1998	Hail	1.00 in.	0	0
34 St Paul	6/16/1998	Hail	0.75 in.	0	0
35 St Paul	8/9/1998	Hail	0.75 in.	0	0
36 St Paul	8/9/1998	Hail	0.88 in.	0	0
37 St Paul	8/9/1998	Hail	1.25 in.	0	0
38 White Bear Lake	6/5/1999	Hail	0.75 in.	0	0
39 White Bear Lake	9/7/1999	Hail	0.75 in.	0	0
40 White Bear Lake	7/7/2000	Hail	0.75 in.	0	0
41 Maplewood	7/7/2000	Hail	1.75 in.	0	0
42 North St Paul	7/7/2000	Hail	2.00 in.	0	0
43 Vadnais Hgts	7/7/2000	Hail	1.50 in.	0	0
44 St Paul	5/1/2001	Hail	1.00 in.	0	0
45 St Paul	5/1/2001	Hail	1.00 in.	0	0
46 Vadnais Hgts	5/1/2001	Hail	0.88 in.	0	0
47 St Paul	5/1/2001	Hail	1.25 in.	0	0
48 Maplewood	6/11/2001	Hail	0.75 in.	0	0
49 White Bear Lake	6/16/2001	Hail	0.75 in.	0	0
50 St Paul	4/18/2002	Hail	1.00 in.	0	0
51 North St Paul	4/18/2002	Hail	0.75 in.	0	0
52 Maplewood	4/18/2002	Hail	0.75 in.	0	0
53 New Brighton	5/5/2002	Hail	0.88 in.	0	0
54 New Brighton	5/5/2002	Hail	0.88 in.	0	0
55 Vadnais Hgts	5/5/2002	Hail	1.00 in.	0	0
56 North St Paul	5/5/2002	Hail	0.75 in.	0	0
57 St Paul	5/5/2002	Hail	0.75 in.	0	0
58 New Brighton	8/12/2002	Hail	0.88 in.	0	0
59 St Paul	5/9/2004	Hail	0.88 in.	0	0

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Location	Date	Type	Magnitude	Death	Injuries
60 New Brighton	5/9/2004	Hail	0.75 in.	0	0
61 Maplewood	5/9/2004	Hail	0.75 in.	0	0
62 North St Paul	5/9/2004	Hail	1.00 in.	0	0
63 Vadnais Hgts	6/23/2004	Hail	0.75 in.	0	0
64 Vadnais Hgts	6/30/2004	Hail	0.75 in.	0	0
65 St Paul	7/31/2004	Hail	0.75 in.	0	0
66 Vadnais Hgts	10/30/2004	Hail	0.75 in.	0	0
67 Vadnais Hgts	6/7/2005	Hail	1.00 in.	0	0
68 White Bear Lake	6/7/2005	Hail	1.00 in.	0	0
69 St Paul	6/13/2005	Hail	1.00 in.	0	0
70 St Paul	6/13/2005	Hail	1.00 in.	0	0
71 St Paul	6/13/2005	Hail	1.00 in.	0	0
72 New Brighton	6/13/2005	Hail	0.75 in.	0	0
73 North St Paul	6/13/2005	Hail	0.75 in.	0	0
74 Maplewood	6/13/2005	Hail	0.75 in.	0	0
75 Vadnais Hgts	6/13/2005	Hail	0.75 in.	0	0
76 St Paul	6/20/2005	Hail	0.75 in.	0	0
77 Maplewood	6/20/2005	Hail	0.75 in.	0	0
78 St Paul	6/20/2005	Hail	1.75 in.	0	0
79 New Brighton	6/27/2005	Hail	0.75 in.	0	0
80 Stanthony	9/21/2005	Hail	1.00 in.	0	0
81 St Paul	4/6/2006	Hail	1.00 in.	0	0
82 St Paul	5/29/2006	Hail	0.88 in.	0	0
83 St Paul	7/24/2006	Hail	0.88 in.	0	0
84 St Paul	7/24/2006	Hail	1.50 in.	0	0
85 North St Paul	8/24/2006	Hail	0.75 in.	0	0
86 St Paul	6/2/2007	Hail	0.75 in.	0	0

## RISK AND VULNERABILITY ASSESSMENT

Location	Date	Type	Magnitude	Death	Injuries
87 St Paul	7/8/2007	Hail	1.50 in.	0	0
88 Mounds View	8/13/2007	Hail	1.00 in.	0	0
89 North Oaks	8/13/2007	Hail	2.00 in.	0	0
90 Vadnais Hgts	8/13/2007	Hail	1.50 in.	0	0
91 White Bear Lake	8/13/2007	Hail	1.50 in.	0	0
92 White Bear Lake	8/13/2007	Hail	2.50 in.	0	0
93 White Bear Lake	8/13/2007	Hail	0.88 in.	0	0
94 Vadnais Hgts	8/13/2007	Hail	1.00 in.	0	0
95 Maplewood	8/13/2007	Hail	1.00 in.	0	0
96 White Bear Lake	8/13/2007	Hail	1.75 in.	0	0
97 St Paul	8/28/2007	Hail	1.00 in.	0	0
98 St Paul	8/28/2007	Hail	1.00 in.	0	0
99 New Brighton	9/20/2007	Hail	0.75 in.	0	0
100 St Paul	9/20/2007	Hail	0.75 in.	0	0
101 White Bear Lake	5/25/2008	Hail	0.75 in.	0	0
102 Little Canada	7/21/2009	Hail	0.88 in.	0	0
103 St Paul	7/21/2009	Hail	0.75 in.	0	0
104 North Oaks	7/24/2009	Hail	1.50 in.	0	0
105 New Brighton	7/24/2009	Hail	1.00 in.	0	0
106 North Oaks	7/24/2009	Hail	1.25 in.	0	0
107 North St Paul	7/24/2009	Hail	1.75 in.	0	0
108 Roseville	6/25/2010	Hail	0.75 in.	0	0
109 North St Paul	6/25/2010	Hail	0.88 in.	0	0
110 St Paul	6/25/2010	Hail	1.75 in.	0	0
111 St Paul	7/10/2010	Hail	0.75 in.	0	0
112 St Paul	9/21/2010	Hail	1.50 in.	0	0
113 Roseville	5/30/2011	Hail	0.75 in.	0	0

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Location	Date	Type	Magnitude	Death	Injuries
114 Vadnais Hgts	5/30/2011	Hail	0.75 in.	0	0
115 White Bear Lake	5/30/2011	Hail	1.00 in.	0	0
116 Arden Hills	7/1/2011	Hail	0.88 in.	0	0
117 Arden Hills	7/19/2011	Hail	1.00 in.	0	0
118 New Brighton	7/19/2011	Hail	1.00 in.	0	0
119 Arden Hills	7/19/2011	Hail	1.00 in.	0	0
120 St Paul	7/19/2011	Hail	0.88 in.	0	0
121 Falcon Hgts	7/19/2011	Hail	1.00 in.	0	0
122 Roseville	7/19/2011	Hail	1.25 in.	0	0
123 St Paul	7/19/2011	Hail	1.25 in.	0	0
124 Lauderdale	7/19/2011	Hail	1.00 in.	0	0
125 St Paul	8/1/2011	Hail	0.75 in.	0	0

### Vulnerability Assessment

Data on the probability and frequency of occurrence of hailstorms is limited, with little recent research. The available data shows that only a localized area along the border of northern Colorado and southern Wyoming experiences hailstorms eight or more days each year. Outside of the coastal regions, most of the United States experiences hailstorms at least two or more days each year.

Hailstorms occur more frequently during the late spring and early summer, when the jet stream migrates northward across the Great Plains. This period has extreme temperature changes from the ground surface upward into the jet stream, which produces the strong updraft winds needed for hail formation.

Peak periods for hailstorms coincide with the Midwest's peak agricultural seasons for crops such as wheat, corn, barley, oats, rye, tobacco, and fruit trees. Long-stemmed vegetation is particularly vulnerable to damage by hail impacts and winds. The land area affected by individual hail events is not much smaller than that of a parent thunderstorm, an average of 15 miles in diameter around the center of a storm. The entire population of Ramsey County is vulnerable to a hail incident.

### Assets Exposed to Hazard

- **Property Risk/Vulnerability:** It was determined that all critical facilities as well as all public, private, and commercial properties are susceptible to being affected by a hailstorm.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of the County since there is no way to determine the impact/magnitude of a hailstorm incident and no way to predict where and when a hailstorm will hit. People are vulnerable to the effects of hailstorms, including power outages, effects on transportation routes, damage to homes and cars, etc.
- **Environment Risk/Vulnerability:** Risks to the environment are low should a hailstorm occur.

## Damage Assessment

Because all facilities within the County are subject to potential losses due to hailstorms, estimations were done assuming 25 percent, 50 percent, 75 percent, and 100 percent damages.

## Land Use and Development Trends

Future development throughout Ramsey County will result in the potential damage of property from hailstorms since no property is immune from their effects.

## Vulnerability

### Hail Storms

Frequency of Occurrence	Likely
Warning Time	3-6 hours
Geographic Extent	Community-wide
Potential Impact	Minor

## Multijurisdictional Concerns

All of Ramsey County is subject to hailstorms and therefore should be included in any prospective mitigation projects. The probability of hailstorms occurring in the future is relatively high based on previous data. Hailstorms affect Ramsey County equally and uniformly.

## Hazard Summary

The severity of hailstorms is measured by duration, size of the hail itself, and geographic extent. All of these factors are directly related to the weather phenomena that create hail and thunderstorms. There is wide potential variation in these severity components. The size of the hail is a direct function of the severity and size of the storm. The duration of each storm varies but rarely lasts longer than a couple of hours.

Hailstorms rarely result in the loss of human life but they cause nearly \$1 billion in property, livestock, and crop damage in the United States each year. Once a hailstone reaches the size of about 1.5 inches in diameter, damage to cars, windows, and siding will occur. There are no known instances of injuries or death from hailstorm events in Ramsey County. Although typically not life-threatening, severe hailstorms have the potential to cause significant property damage, particularly to automobiles and some building types. The development of hailstorms from thunderstorm events causes nearly \$1 billion in property and crop damage each year. The NCDC database indicates there have been no deaths or injuries from hailstorms between 1950 and 2011.

## 4.3.2 Wildfires

### Hazard Identification

A wildfire is the uncontrolled burning of woodlands, brush, or grasslands. According to FEMA, there are four categories of wildfires that are experienced throughout the United States:

- **Wildland Fires:** Fueled by natural vegetation. Typically occur in national forests and parks, where federal agencies are responsible for fire management and suppression.
- **Interface or Intermix Fires:** Urban/wildland fires in which vegetation and the built-environment provide fuel.

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- **Firestorms:** Events of such an extreme intensity that effective suppression is virtually impossible. Occur during extreme weather and generally burn until conditions change or the available fuel is exhausted.
- **Prescribed Fires and Prescribed Natural Fires:** Fires that are intentionally set or selected natural fires that are allowed to burn for beneficial purposes.

Wildfires can be a result of naturally occurring influences such as lightning, extreme drought, and heat as well as human influences such as a discarded cigarette butt, improperly extinguished campfire, or a stray spark from nearby railroad tracks. The potential for threat of wildfires is dependent upon topography and slope, surface fuel characteristics, recent climate conditions, current meteorological conditions, and fire behavior. Once a wildfire threatens a community, it is often too late to protect nearby structures, and populations have to be evacuated for their own safety. These fires have damaged structures and utilities as well as hundreds of acres of woodlands.

### Hazard Profile

From 1999 to 2010, there were 1,389 wildfires in the state of Minnesota. In Ramsey County, the primary months of occurrence are March through October, when high temperatures, possible drought conditions, and high winds increase the likelihood of wildfires.

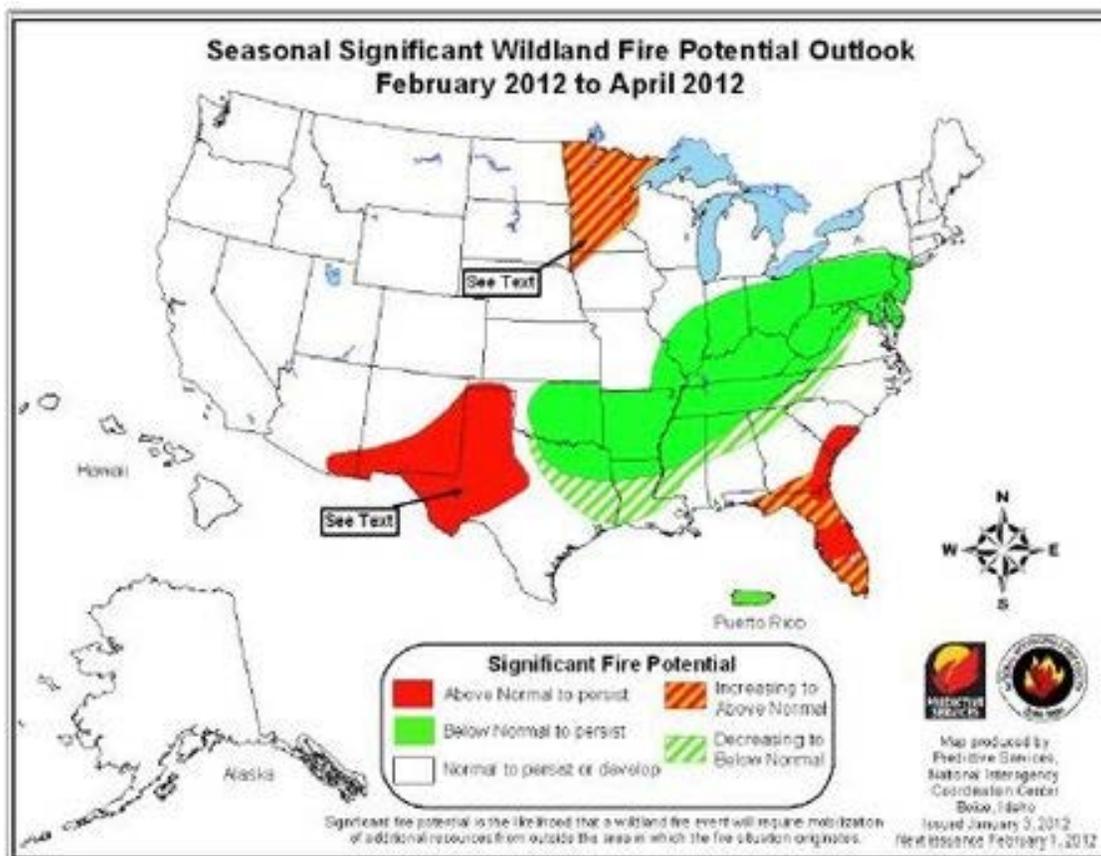
The National Climactic Data Center does not have record of any wildfires occurring in Ramsey County for the period of 1950 through 2011. However, local fire departments have provided data that shows that small grass and wild fires occur regularly in the area. Since 2005, the Vandais Heights Fire Department has responded to 25 different wildfire incidents. Mounds View Fire Department recorded 18 grass fire responses. Lake Johanna Fire Department, whose jurisdiction includes Shoreview, Arden Hills, and North Oaks, has responded to 47 grass and brush fires in the last five years.

### Vulnerability Assessment

All assets within Ramsey County are susceptible to being affected by a wildfire. The county is urbanized, but smoke from wildfires in more rural parts of the state may affect the breathing quality, as well as travel on highways and roads, throughout the County.

The potential for wildfires in the year 2012 is above average for the state of Minnesota. As such, this could be a significant hazard and vulnerability facing the community in the coming year.

Figure 4-2  
Wildland Fire Potential Outlook



### Assets Exposed to Hazards

- **Property Risk/Vulnerability:** All assets in Ramsey County are exposed to the threat of wildfires. Any of the assets could be lost during a wildfire. The amount of loss would vary from facility to facility.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of the County, since there is no way to determine the impact/magnitude of a wildfire incident and no way to predict where a wildfire incident will hit. People are vulnerable to wildfires through burning of structures, power outages, effects on transportation routes, establishment of shelters, etc. People living in rural areas of the County are more vulnerable than people living in urban areas due to availability of fuel for a wildfire (woods, open spaces, green area, etc.).
- **Environment Risk/Vulnerability:** Risks to the environment are low for a wildfire incident due to the frequency of occurrence. Environmental concerns would be loss of vegetation and risk of erosion in areas that are affected by wildfires.

### Damage Assessment

Because all facilities within the County are subject to potential losses due to wildfires, estimations were done assuming 25 percent, 50 percent, 75 percent, and 100 percent damages.

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### Land Use and Development Trends

Future development throughout Ramsey County will result in the potential for damage from wildfires. The Minnesota Department of Natural Resources (DNR) enforces the regulations on outdoor burning to assist in the reduction of wildfires. Land use codes do require that firebreaks be utilized in areas susceptible to wildfires.

### Vulnerability

#### Wildfires

Frequency of Occurrence	Occasionally
Warning Time	Minimal
Geographic Extent	Localized to Community-wide
Potential Impact	Minor to Moderate

### Multijurisdictional Concerns

All of Ramsey County is subject to wildfires and therefore should be included in any prospective mitigation projects. Rural areas of the County are more prone to wildfires than the urban areas. The smoke from the fires may also affect the urban areas as well as the travel on highways and roads throughout Ramsey County.

### Hazard Summary

Wildfires have the potential to cause extensive property damage and affect many lives in the Ramsey County area. Although no wildfires have been reported in Ramsey County in 2011, the entire county is susceptible to the effects of a wildfire and it remains a threat.

## 4.3.3 Flooding

### Hazard Identification

Flood information for Ramsey County was retrieved from the NCDC, the NWS, FEMA, the Ramsey County Vulnerability Report and the National Flood Insurance Program (NFIP), as well as information from past newspaper articles relating to flooding in Ramsey County.

### Hazard Profile

The majority of flooding that occurs in Ramsey County does so during longer term “wet” periods involving several consecutive high intensity, long duration storms or a wetter than normal spring, involving a rising water table<sup>19</sup>. There two types of flooding that can occur almost anywhere on earth. The first is general flooding, which is defined by the National Weather Service as, “An overflow of water onto normally dry land. The inundation of a normally dry area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch. Ponding of water at or near the point where the rain fell.” The second type of flooding is flash flooding. Flash flooding is defined as, “A flood caused by heavy or excessive rainfall in a short period of time, generally less than 6 hours.” Flash flooding can also be caused by a levee or dam failure or the rush of water from an ice jam or barge release. Typically, general flooding is a longer term event whereas flash flooding is usually shorter in duration. Flood-related

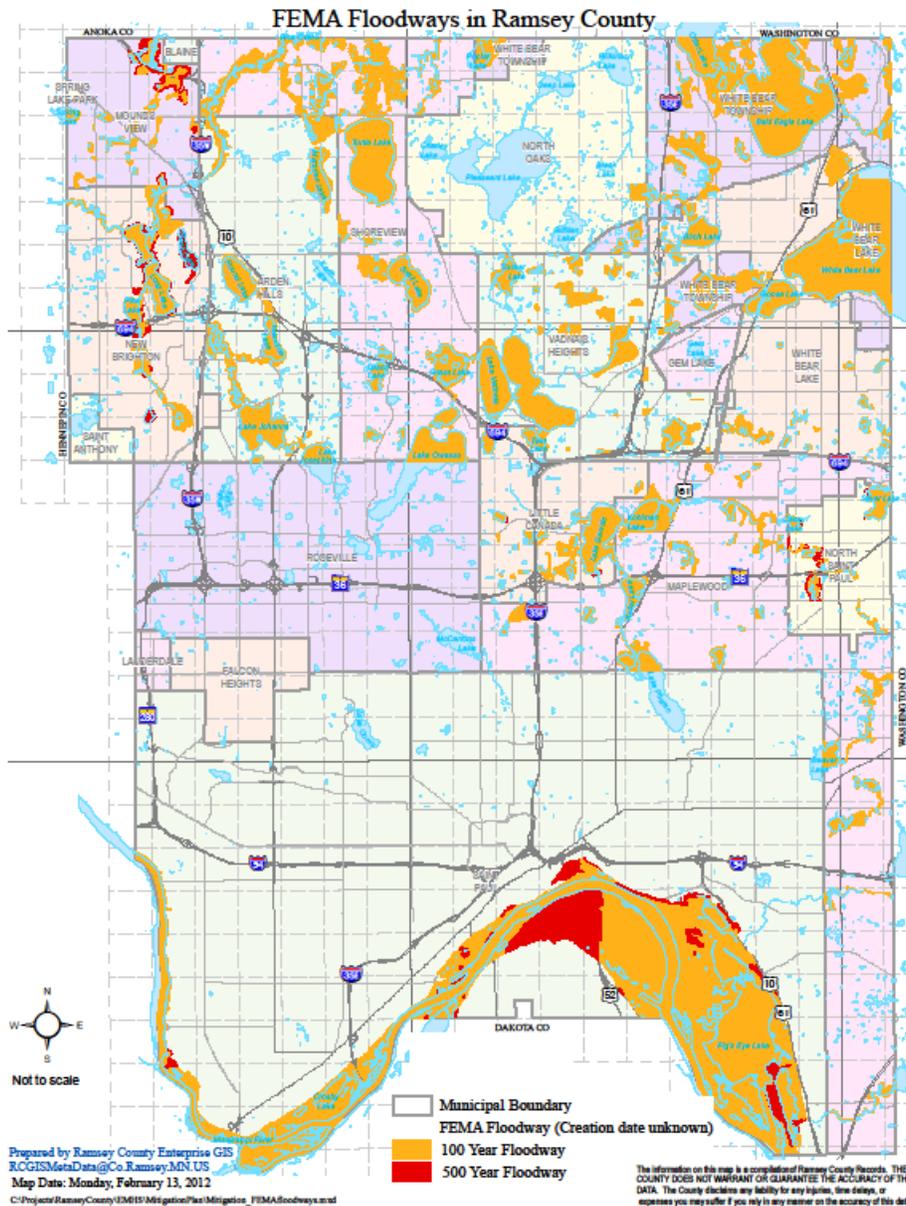
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<sup>19</sup> Ramsey County, Minnesota Flood Insurance Study. Federal Emergency Management Agency (FEMA). 2010.

damages due to historic events within Ramsey County are composed primarily of backyard erosion and water filled basements.

Research indicates that there have been 17 flood occurrences recorded for Ramsey County since 1997. Statistically, Ramsey County can expect flooding every 2–5 years. This equates to a 30 percent chance of flooding occurring in any given year. The county has added no new repetitive loss properties since 2006. The following jurisdictions experienced flash flooding in 2011 (none of the events resulted in a declaration); Arden Hills, Maplewood, New Brighton, North St. Paul, Roseville, St. Anthony, and Shoreview.

Figure 4-3  
FEMA Floodways



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### Assets Exposed to Hazard

- **Property Risk/Vulnerability:** Ramsey County is continuing to evaluate and prioritize properties for reconstruction and/or acquisition/removal.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined, that risk/vulnerability includes the entire population of the County. People living in and around identified floodplain areas are more vulnerable to a flooding incident than those who live/work out of floodplain areas, but these areas can still be impacted depending on the severity of the flooding incident. This is particularly true due to a significant chance of a flooding incident occurring in any given year in the County.
- **Environment Risk/Vulnerability:** Risks to the environment are high for a flooding incident should one occur. Most of the environmental risks would be access to water and the effects floodwater has on public water supply. Flooding can affect and create contamination of potable water for public consumption.

### Estimate of Potential Losses

HAZUS-MH was used to estimate the damages incurred for a 100-year flood incident in Ramsey County. An estimated 26 buildings could be damaged, totaling \$15.7 million in building losses and \$32.5 million in total economic losses. HAZUS-MH estimates seven census blocks with losses exceeding \$1 million.

### Land Use and Development Trends

The Metropolitan Council determines land use and development for Ramsey County and takes flooding into consideration.

Elevation controlled outlet structures stabilize low water elevations and control discharge during high water events. In association with development on Johanna Lake, Little Johanna Lake, Josephine Lake, Lake Owasso, Lake Wabasso, Lake Emily, Mud Lake, and Turtle Lake, these structures have been installed to protect against flooding. Additionally, discharge from Mud Lake flows through underground piping into Lake Emily to avoid flooding on Victoria and Arbogast streets.

Within the county, numerous wetland areas are reserved as storm water detention areas to aid in reducing flood discharges.

### Vulnerability

#### Flooding

Frequency of Occurrence	Likely
Warning Time	More than 12 hours
Geographic Extent	Community-wide
Potential Impact	Major

### Multijurisdictional Concerns

#### 44 CFR Requirement 201.6 (c)(2)(ii)

The risk assessment **must** also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.

Previous mitigation measures have occurred at the County and regional level. Ramsey County participates in the National Flood Insurance Program (NFIP) of the Federal Emergency Management Agency (FEMA). As a participating community, the County has adopted Floodplain Management practices

through several ordinances that severely limit the development allowed in 100-year floodplains (the area inundated by a storm that has a 1 percent chance of happening in any year). Ramsey County standards require all new structures be constructed 2 feet above the existing water surface elevation of the 100-year floodplain or 1 foot above the "ultimate" water surface elevation. Maps detailing structures within floodplains can be found in appendix C.

**Ramsey County Repetitive Loss Information**

Repetitive loss properties are a serious concern from a mitigation standpoint. A repetitive loss property is considered so when there are two or more flood insurance claims that were paid more than \$1,000 for each loss. The two losses must be within 10 years of each other and be at least 10 days apart. A property is considered a severe repetitive loss property when there are at least four losses each exceeding \$5,000 or when there are two or more losses where the building payments exceed the property value. The county has added no new repetitive loss properties since 2006.

Table 4-7  
Jurisdictional Participation in NFIP

Location	Notes
Arden Hills	Participates
Blaine	Participates
Falcon Heights	Participates
Gem Lake	Does not participate, has mapped high risk flood areas
Lauderdale	Participates
Little Canada	Participates
Maplewood	Participates
Mounds View	Participates
New Brighton	Participates
North Oaks	Does not participate, has mapped high risk flood areas
North St. Paul	Participates
Roseville	Participates
St. Paul	Participates
Shoreview	Participates
Vadnais Heights	Participates
White Bear Lake	Participates
White Bear Township	Participates

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### Hazard Summary

The hazard for flooding in Ramsey County remains low, due largely in part to previous mitigation measures. The Ramsey County Hazard Mitigation Planning Committee recognized the dangers posed by flooding and has identified specific mitigation actions that have been taken and would be considered in the future.

Table 4-8  
Significant Floods Events in Ramsey County

Location	Date	Type	Magnitude	Death	Injuries	Property Damage
1 Ramsey County	4/4/1997	Flood	N/A	0	0	0
2 St Paul	7/1/1997	Flash Flood	N/A	0	1	0
3 Roseville	9/2/2000	Flash Flood	N/A	0	0	0
4 Ramsey County	4/1/2001	Flood	N/A	3	1	200.0M
5 Ramsey County	5/1/2001	Flood	N/A	0	0	0
6 Vadnais Hgts	7/28/2002	Flash Flood	N/A	0	0	0
7 St Paul	6/25/2003	Flash Flood	N/A	0	0	0
8 Countywide	6/20/2005	Flash Flood	N/A	0	0	2K
9 North Portion	9/21/2005	Flash Flood	N/A	0	0	0
10 Countywide	10/4/2005	Flash Flood	N/A	0	0	0
11 Ramsey County	10/4/2005	Flood	N/A	0	0	0
12 St Paul	9/20/2007	Flash Flood	N/A	1	0	200K
13 St Paul	3/20/2010	Flood	N/A	0	0	2.4M
14 St Paul	6/26/2010	Flash Flood	N/A	0	0	0K
15 Little Canada	8/10/2010	Flash Flood	N/A	0	0	0K
16 White Bear Lake	7/16/2011	Flash Flood	N/A	0	0	500K
17 New Brighton	8/16/2011	Flash Flood	N/A	0	0	0K

### 4.3.4 Drought

#### Hazard Identification

Historical data from the NCDC and the Minnesota DNR were included while determining drought hazards in Ramsey County. By definition, a drought is a prolonged period of moisture deficiency. Drought conditions affect the cultivation of crops as well as water availability and water quality. Drought

is also a key factor in wildfire development. Drought conditions make natural fuels (grass, brush, trees, dead vegetation) more fire-prone.

Figure 4-4  
Drought

Drought Severity	Return Period (years)	Description of Possible Impacts	Drought Monitoring Indices		
			Standardized Precipitation Index (SPI)	NDMC* Drought Category	Palmer Drought Index
Minor Drought	3 to 4	Going into drought; short-term dryness slowing growth of crops or pastures; fire risk above average. Coming out of drought; some lingering water deficits; pastures or crops not fully recovered.	-0.5 to -0.7	D0	-1.0 to -1.9
Moderate Drought	5 to 9	Some damage to crops or pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing or imminent, voluntary water use restrictions requested.	-0.8 to -1.2	D1	-2.0 to -2.9
Severe Drought	10 to 17	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.	-1.3 to -1.5	D2	-3.0 to -3.9
Extreme Drought	18 to 43	Major crop and pasture losses; extreme fire danger; widespread water shortages or restrictions.	-1.6 to -1.9	D3	-4.0 to -4.9
Exceptional Drought	44+	Exceptional and widespread crop and pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells creating water emergencies.	less than -2	D4	-5.0 or less

\*NDMC - National Drought Mitigation Center

### Hazard Profile

Ramsey County experienced its worst drought in the 1930s and again experienced drought conditions in 1976. To date, agricultural losses have been the primary losses associated with drought, as no critical facilities have sustained any damage or functional downtime due to dry weather conditions. Because of the extremely unpredictable nature of drought (including duration), reliably calculating a recurrence interval is difficult.

### Assets Exposed to Hazard

- Property Risk/Vulnerability:** Drought conditions typically pose little or no threat to structures; however, fires can occur as a result of dry weather. The Ramsey County Hazard Mitigation Planning Committee concluded that drought in itself presents no credible threat to critical facilities. The drought could result in the loss of the availability of municipal water supply. This threat has been addressed by mitigation actions. Wildfire because of drought was considered, and the committee determined that since previous instances of wildfire in the County have been relatively minimal, it does not bear a significant threat to the community.
- People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of the County since there is no way to determine the impact/magnitude of a drought incident. People are vulnerable to the effects of

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drought, including reduction to the available water supply (both public and private wells), wildfires, and limited ability to grow and water crops.

- **Environment Risk/Vulnerability:** Risks to the environment are high for a drought incident. Environmental concerns would be loss of vegetation and risk of erosion in areas that area affected by drought and reduced availability of water supply (both public and private wells).

### Estimate of Potential Losses

No damage to facilities is anticipated as a result of drought conditions. Crop damage cannot be accurately quantified due to several unknown variables, including duration of the drought, temperatures during the drought, and severity of the drought. In addition, different crops require different amounts of rainfall and different growing seasons.

### Land Use and Development Trends

Ramsey County has used water restrictions in the past and conservation programs are in place to address water consumption during the drought of 1976. As the population grows in Ramsey County and areas currently used for agriculture are urbanized, the County will become less vulnerable to drought situations because the economy will not be as dependent on agriculture.

### Vulnerability

#### Drought

Frequency of Occurrence	Likely
Warning Time	More than 12 hours
Geographic Extent	County-wide
Potential Impact	Moderate to Major

### Multijurisdictional Concerns

Agricultural losses associated with drought are more likely to occur in the rural, less concentrated areas of the County.

### Hazard Summary

Droughts do not have the immediate effects of other natural hazards, but sustained drought can cause severe economic stress to the agricultural interests in Ramsey County and the entire state. The potential negative effects of sustained drought are numerous. In addition to an increased threat of wildfires, drought can affect municipal and industrial water supplies, stream-water quality, water recreation facilities, hydropower generation, as well as agricultural and forest resources.

## 4.3.5 Rockslides

### Hazard Identification

Rockslides (landslides) are a geological hazard present in almost every state. Rockslides occur on steep on hills or mountainous slopes. Typically, these events occur following intense rainfall or rapid snowmelt. In some cases, rockslides have been precipitated by a wildfire, which burns the vegetation holding the land on steep slopes together.

### Hazard Profile

Ramsey County includes a number of areas that are susceptible to rockslides, including the Mississippi River Bluffs. During the public meetings, Ramsey County residents identified that a rockslide occurred at the B&B Bakery in late March of 2011.

### Assets Exposed to Hazard

Assets in close proximity to areas with slopes are susceptible to being affected by a rockslide. Additionally, rockslides can damage buildings and infrastructure as well as block roads and transportation routes, which could impact the entire county.

### Damage Assessment

During public meetings, county residents identified that the B&B Bakery experienced a rockslide in late March of 2011.

### Land Use and Development Trends

There are no land use and development trends related to rockslides.

### Vulnerability

#### Rockslide

Frequency of Occurrence	Unlikely
Warning Time	None
Geographic Extent	Localized areas
Potential Impact	Minor to moderate

### Multijurisdictional Concerns

Certain areas of the County are susceptible to rockslides, but in some cases, the entire county could be impacted if critical roads or transportation routes become blocked by an occurrence.

### Hazard Summary

The likelihood of a rockslide in Ramsey County is considered low. The most recent occurrence of a rockslide within the County occurred in March 2011.

## 4.3.6 Epidemics/Pandemics

### Hazard Identification

A widespread epidemic/pandemic incident is a plausible incident in Ramsey County. Epidemic/pandemic incidents are a danger to emergency responders, healthcare providers, schools, and the public. This can include influenza (e.g., H5N1), Severe Acute Respiratory Syndrome (SARS), or biological incidents without an available vaccine or treatment. Bioterrorism incidents are also included in this identified hazard area.

### Hazard Profile

Seasonal influenza comes to Ramsey County every winter, usually between October and March. Influenza is a specific viral infection that is responsible for a substantial number of hospitalizations and deaths. The Centers for Disease Control and Prevention (CDC) estimates 36,000 excess deaths are caused

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by influenza each year in the United States. The continuous genetic changes in the virus, called “antigenic drift,” means that people can get sick from a slightly different influenza virus each year; last year’s flu shot does not prevent this year’s illness.

Historians estimate that over the last three centuries, there have been 10 influenza pandemics. A pandemic is an epidemic that affects the entire world. Influenza pandemics occur when the virus undergoes such dramatic changes that virtually no one has resistance to infection and there is no vaccine readily available for use. When this occurs, the number of people infected is much higher than during ordinary flu seasons. In addition, during some pandemics, the severity of illness is higher. For example, in 1918–1919, not only was the number of ill people high, but also the death rate was 50 times higher than usual. Furthermore, there was a shift in the age group most severely affected from the elderly to those 20–40 years of age. In contrast, the more recent pandemics of 1957 and 1968 caused far less dramatic increases in the death rate (only about two times the norm of 36,000 per year from regular flu). The H1N1 novel influenza virus rapidly established itself as a pandemic in 2009–2010, becoming the dominant influenza strain in most parts of the world. The current influenza vaccine includes this strain of virus and protects against H1N1. The outbreak of the H5N1 influenza strain (bird flu) in wild and domestic birds, which began in Asia in late 2003, is being carefully watched as a potential precursor to a pandemic since several hundred humans have been infected and died. Although the number of human infections is quite small, about 60 percent of those infected have died, demonstrating the severity of this infection. The conditions to trigger a pandemic are not yet present since, at this point, the H5N1 virus is not efficiently transmitted from human to human.

### Vulnerability Assessment

All populations within Ramsey County are susceptible to epidemic/pandemic events that occur in the County.

### Assets Exposed to Hazard

- **Property Risk/Vulnerability:** It was determined that all critical facilities as well as all public, private, and commercial properties are susceptible to being affected by a epidemic/pandemic incident due to people being ill and possibly being unable to maintain the facilities.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of Ramsey County since there is no way to determine the impact/magnitude of an epidemic/pandemic incident and no way to predict which target group(s) will be the most susceptible to the virus. In addition to sickness (morbidity) and death (mortality), the impact of human resources would suffer with the potential of 40 percent of the workforce becoming ill. Ramsey County’s current just-in-time economy would suffer major setbacks in community infrastructure such as public water supply, food, trucking, health care delivery, and energy resources.
- **Environment Risk/Vulnerability:** Risks to the environment are low should an epidemic/pandemic incident occur.

### Damage Assessment

Although pandemics/epidemics like polio and plague have largely been eradicated from the world and tuberculosis is under control in the United States, past historical complications on human health were devastating and any new infectious diseases introduced to the world could have health emergency implications. Recent SARS, H1N1, and seasonal influenza cases demonstrate that health emergencies are unpredictable, can erupt quickly, and have significant impact on communities, including Ramsey County.

### Land Use and Development Trends

As more and more people move into populated areas, all of Ramsey County is susceptible to outbreaks of pandemics/epidemics.

### Vulnerability

#### Epidemics/Pandemics

Frequency of Occurrence	Likely
Warning Time	More than 12 hours
Geographic Extent	County-wide
Potential Impact	Minor to Moderate

### Multijurisdictional Concerns

No one area in Ramsey County is less susceptible than another from the effects of an epidemic/pandemic incident. Of course, the more densely populated the area is, the greater threat of the spread of the epidemic/pandemic.

### Hazard Summary

Pandemics/epidemics pose a threat to all of Ramsey County. As part of a county effort, the staff from the City of St. Paul/Ramsey County Public Health department participates in emergency preparedness planning, drills, tabletop and functional exercises, and education and outreach together with local, state, and federal government agencies as well as health care organizations, private businesses, and other individuals from the community.

## 4.4 Technological Hazards

Technological hazards are distinct from natural hazards primarily in that they originate from human activity. In contrast, while the risks presented by natural hazards may be increased or decreased as a result of human activity, they are not inherently human-induced. The term “technological hazards” refers to the origins of incidents that can arise from human activities such as the manufacturing, transportation, storage, and use of hazardous materials.

### 4.4.1 Dam/Levee Failure

#### Hazard Identification

According to the State of Minnesota, dam hazard ranking is based on the National Inventory of Dams (NID) classification located in Ramsey County. The NID ranks dams according to the potential loss of life as well as the potential impacts on economic, environmental, and important community lifelines.

#### Hazard Profile

There have been no dam or levee failures in Ramsey County in the past. There have been no known deaths, injuries, or property damage from dam or levee failures in the County. The effects on life and property in the area could be significant if a dam were to fail because of the nature of the built environment.

The largest lock and dam in Ramsey County, is Lock and Dam 1 located on the Mississippi River at mile 847.9. According to the U.S. Army Corps of Engineers, this dam is 56 feet wide by 400 feet long. The

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dam is an Ambersen concrete overflow structure, 574 feet long, hydro power station owned and operated by Ford Motor Company located in St. Paul, MN next to Lock and Dam 1. The lock is 56 feet wide by 400 feet long. The dam was constructed in 1917, reconstructed in 1929, and the main lock was completed in May 1932. The last major rehabilitation was done from 1978–1983. There is also a dam structure (McKnight Basin Embankment) along McKnight Road that the Watershed District is required to have a contingency plan in place for (Minnesota Statutes Chapter 112). The dam was constructed in 1981 and came closest to breach in 1987 after an extreme rain event dropped 8 inches of rain in less than 5 hours.

### Vulnerability Assessment

The probability of any dam failure or levee failure in the area is minimal. The low probability of an incident suggests that the potential for impacts is minimal. Based on historical records from the past 75 years, the probability of future dam and levee failure occurring in Ramsey County and the planning area is considered low.

### Assets Exposed to Hazard

- **Property Risk/Vulnerability:** It was determined that critical facilities as well as public, private, and commercial properties are susceptible to being affected by a dam failure if they are located in the inundation area.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that people are vulnerable to the effects of dam failure through power outages, effects on transportation routes, establishment of shelters, flooding, etc.
- **Environment Risk/Vulnerability:** Risks to the environment are high should a dam failure occur, but the frequency of dam failures in Ramsey County is low. Environmental concerns would be interruption of water supply, water contamination, and loss of properties.

Table 4-8  
Dam/Levee Classifications

Category	Descriptions	Quantity
Category I	High hazard	1

### Damage Assessment

Because all facilities are subject to potential losses due to levy failure in affected areas, estimations were done assuming 25 percent, 50 percent, 75 percent, and 100 percent damages.

### Land Use and Development Trends

Future development throughout Ramsey County will result in the potential effects of dam failure.

### Vulnerability

#### Dam/Levee Failure

Frequency of Occurrence	Unlikely
Warning Time	3-6 Hours
Geographic Extent	Community-wide
Potential Impact	Major

### Multijurisdictional Concerns

Areas located below around the aforementioned levees are susceptible to flooding and therefore should be included in any prospective mitigation projects. The probability of levee failure occurring in the future is relatively low based on previous data.

### Hazard Summary

Ramsey County has experienced no dam failure over the last 75+ years.

## 4.4.2 Terrorism

### Hazard Identification

Ramsey County is a densely populated county, home to the state capital and many federal buildings, thus making it an attractive terrorist target. Additional analyses to further characterize the risks of this hazard and the development of suitable mitigation action items will be conducted in the future based on periodic reviews of this hazard mitigation plan and available resources

### Hazard Profile

Terrorism is defined in the Code of Federal Regulations as "The unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives." Over the past few years, the definition of terrorism has also been expanded to encompass cyberterrorism and agricultural terrorism.

### Vulnerability Assessment

Terrorist incidents in this country prior to the September 11, 2001 attacks have included bombings of the World Trade Center (1993) in New York City, the United States Capitol Building in Washington, D.C., and Mobil Oil corporate headquarters in New York City. There was also the 1995 bombing of the Murrah Federal Building in Oklahoma City. In the United States, most terrorist incidents have involved small extremist groups using terrorism to further a designated objective or obtain publicity for a cause. Bombings have been the most frequent method of attack in the United States. Other possibilities include attacks against transportation facilities, utilities, or other public services, or an incident involving chemical or biological materials.

The primary objectives of most terrorist groups include the following:

- Gain publicity.
- Stimulate loss of confidence in the government.
- Attract recruits.
- Get public support.
- Gain financial support, and ultimately weaken and overthrow the government.

Techniques used to gain an audience for their platform include hostage-taking, product-tampering, criminal extortion, arson, sabotage, threats against individual family members, assassinations, kidnapping, explosive bombings, and armed attacks. The most likely targets of these forms of terrorism are political leaders, key military personnel, foreign missions, military facilities, corporate executives and facilities, and celebrities. Unfortunately, the risk of terrorist acts exists in the state of Minnesota and cannot be ruled out for Ramsey County. Terrorist attacks can take a wide variety of forms, ranging from a verbal threat to sabotage to biological weapons to a bomb.

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The most frequently used terrorist methods in the United States include, but are not limited to:

- **Bombs, Guns, and Explosives.** These are the “traditional” weapons used by terrorists worldwide. Typically, these weapons are less technically and resource demanding.
- **Biological Weapons.** These weapons use infectious microbes or toxins to produce illness or death in people, animals, or plants. Potential biological weapons include anthrax, botulism, smallpox, viral hemorrhagic fevers, water safety threats (for example, cholera), and food safety threats (for example, salmonella). Biological weapons are relatively difficult to cultivate and disseminate.
- **Chemical Weapons.** Chemical weapons cause severe health reactions designed to incapacitate or cause death. There is a wide array of potential chemical agents that could be used as weapons. These agents vary in how their effects on the body, required dose, exposure mechanism, length of exposure, toxicity, origination, and form (for example, liquid gas). Examples of chemical agents include sarin, mustard agent, VX, and cyanide.
- **Radiological and Nuclear Weapons.** Although there has been much speculation by media and various governmental agencies regarding the potential for a terrorist to obtain fissionable material or a nuclear bomb, there are no known unclassified cases of any such organization or group actually obtaining weapons-grade material. Constructing a nuclear bomb would be relatively difficult and require special resources, training, and materials.

### Assets Exposed to Hazard

- **Property Risk/Vulnerability:** All assets within Ramsey County are susceptible to being affected by a terrorist incident. Ramsey County is also home to several labs that perform experiments and test chemicals on animals. This increases the risk that animal activist groups may pose a threat within the County. Typically, animal activist groups target property and infrastructure as opposed to people.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in the County, it was determined that risk/vulnerability includes the entire population of Ramsey County since there is no way to determine the impact/magnitude of a terrorist incident and no way to predict where and when a terrorist incident will occur. People are vulnerable to terrorist events through physical injury or disease, power outages, effects on transportation routes, establishment of shelters, effect of incident on mental state of the public, confidence of public in law enforcement support, etc.
- **Environment Risk/Vulnerability:** Risks to the environment are high should a terrorist incident occur but the frequency of terrorist events in Ramsey County are low. Environmental concerns would be interruption or contamination of water or food supplies, secondary events such as fires and hazardous materials accidents (such as gas pipelines rupturing, rupture of hazardous material containers at facilities, etc.).

### Land Use and Development Trends

Future development throughout Ramsey County will take into consideration possible events.

Vulnerability

**Terrorism**

Frequency of Occurrence	Unlikely
Warning Time	None - Minimal
Geographic Extent	Community-wide
Potential Impact	Negligible to Major

**Multijurisdictional Concerns**

All of the County is subject to events and therefore should be included in any prospective mitigation projects.

**Hazard Summary**

Although there have been no terrorism events in Ramsey County, multiple attacks in different areas of the United States remind us that terrorism is always a threat. Ramsey County officials work with state and federal officials on domestic preparedness efforts, the details of which go beyond the scope of this plan. The community should always remain vigilant to the threat of an attack, whether it is via explosives, agriculture, or a cyber-attack.

**4.4.3 Hazardous Materials Spills**

**Hazard Identification**

Historical data from Ramsey County and the Environmental Protection Agency (EPA) shows incidents involving hazardous materials spills in Ramsey County. Hazardous materials are substances that are harmful to the health and safety of people and property. Hazardous materials spills often occur along roadways, highways, and railways. Facilities that produce, process, or store hazardous materials are at risk, as are facilities that treat or dispose of hazardous waste. Ramsey County is required by the State of Minnesota to regulate generators of hazardous waste.

**Hazard Profile**

Hazardous materials spills occur occasionally within the County. In February 2007, the North Suburban Hazardous Materials Response Team (NSHM) responded to St. John the Baptist Church regarding a mercury spill. A custodian moving a box un-knowingly spread mercury throughout the school. Crews from the Fire Division and the NSHM screened 642 people for mercury contamination over the course of two days and screened over 500 bags the following two days for mercury contamination. As a result of the efforts of the school, county, state, and emergency personnel, contamination was contained to fewer than 10 residences and 11 percent of the people and bags<sup>20</sup>. The City of White Bear Lake experienced an Anhydrous Leak at the Kohler Mix (now KMS Dairy) plant in 2005.

Many of the hazardous materials incidents in the County are a household gas or carbon monoxide leak. In the past five years, the Lake Johanna Fire Department responded to 200 hazmat calls for assistance, Vadnais Heights Fire Departments has responded to 21 incidents, and the New Brighton Fire Department, including the NSHM, has responded to 160 hazmat incidents. It should also be noted that anhydrous ammonia is used for refrigeration in the area.

<sup>20</sup> [http://www.ci.new-brighton.mn.us/index.asp?Type=B\\_LIST&SEC={7CF82283-F08F-4C4D-849A-298B91A6AF3E}](http://www.ci.new-brighton.mn.us/index.asp?Type=B_LIST&SEC={7CF82283-F08F-4C4D-849A-298B91A6AF3E})

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Ramsey County is also at risk to transportation related hazardous materials incidents. This is directly attributable to the presence of multiple highways (Interstate 35E, 35W, 94, 494, 694; U.S. Hwy 10, 52, 61; MN Hwy 5, 13, 36, 51, 96, 120, 149, 156, 280) running through portions of the County as well as the several railroads that carry materials through the County.

### Vulnerability Assessment

Ramsey County averages approximately 90 hazardous materials spill occurring in any given year.

### Assets Exposed to Hazard

- **Property Risk/Vulnerability:** With multiple highway system, all critical facilities have the possibility of being affected by a hazardous materials incident.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of the County since there is no way to determine the impact/magnitude of a hazardous materials incident and no way to predict where and when a hazardous materials incident will occur. People are vulnerable to hazardous materials incidents through effects on transportation routes, establishment of shelters, etc.
- **Environment Risk/Vulnerability:** Risks to the environment are high should a hazardous materials accident occur. Environmental concerns would be interruption of water supply and secondary events such as fires and hazardous materials accidents (such as gas pipelines rupturing, rupture of hazardous material containers at facilities, etc.). When spills do occur, whether inside or outside facilities or along roadways, shutdowns, lost time, and expended man-hours are all factors mitigation planners must take into account.

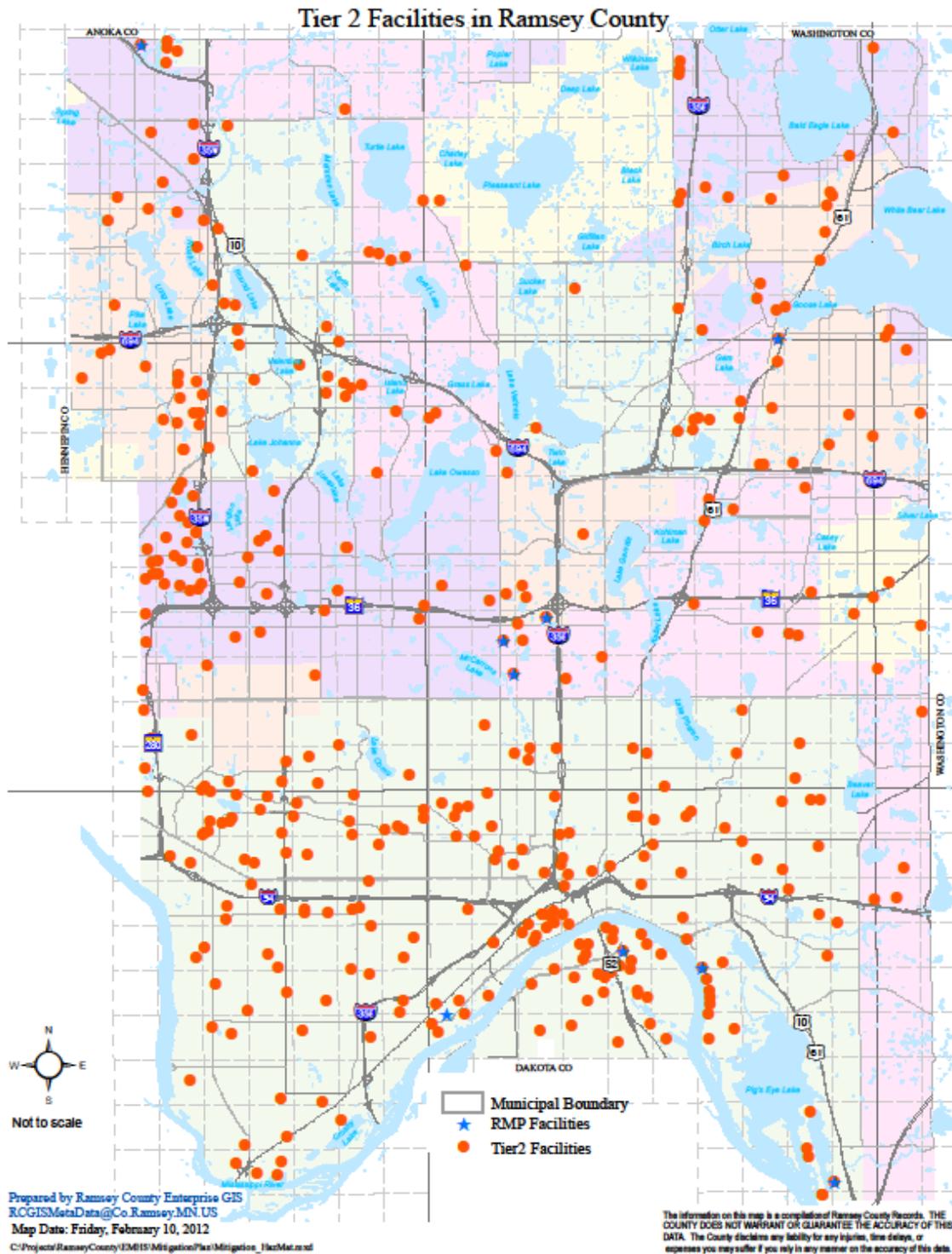
### Damage Assessment

It is difficult to determine the damage to the environment associated with hazardous materials spills. Ramsey County has no recorded instances of critical facilities and/or other property being damaged as a result of hazardous materials spills.

### Land Use and Development Trends

Ramsey County currently has no land use or development trends related to hazardous materials spills.

Figure 4-5  
Tier 2 Facilities



### Vulnerability

#### Hazardous Materials

Frequency of Occurrence	Highly Likely
Warning Time	None – Minimal
Geographic Extent	Localized to Community-Wide
Potential Impact	Moderate

### Multijurisdictional Concerns

All of Ramsey County is vulnerable to both fixed location and transportation-related hazardous materials spills. The highways (Interstate 35E, 35W, 94, 494, 694; U.S. Hwy 10, 52, 61; MN Hwy 5, 13, 36, 51, 96, 120, 149, 156, and 280) are most vulnerable to transportation-related spills. Fixed location spills are possible in all areas of the County. Ramsey County Emergency Management and Homeland Security can provide a list of the facilities located in the County.

### Hazard Summary

Hazardous materials spills are a relatively common occurrence in Ramsey County. The volume of spills experienced in the past dictates that mitigation measures be considered. The types of hazardous materials passing through Ramsey County are many and varied. The presence of multiple highways with an unknown quantity of hazardous materials traveling through the County on a daily basis poses a challenge in the development of adequate mitigation measures.

## 4.4.4 Energy/Fuel Shortage

### Hazard Identification

Recent tropical storm events in the past 20 years have identified the possibility of energy/fuel shortage for Ramsey County. This is due to limited supplies coming into the area following an incident and therefore causing fuel rations or the prioritization of fuel supply for both emergency services and residents of the County. An energy/fuel shortage could also be due to damage to natural gas pipelines post-storm and the need to shut down the pipelines for repairs.

### Hazard Profile

There have been no energy/fuel shortages in the past in Ramsey County. However, in the last five years, events have shown the potential is there for an interruption/shortage of fuel supply.

### Vulnerability Assessment

The probability of energy/fuel shortage is minimal. The low probability of an incident suggests that the potential for impacts is minimal. Based on historical records from the past 10 years, the probability of future energy/fuel shortage occurring in Ramsey County and the planning area is considered low.

### Assets Exposed to Hazard

- **Property Risk/Vulnerability:** All critical facilities are considered as having the possibility of being affected by an energy/fuel shortage.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of the County since there is no way to determine the impact/magnitude of an energy/fuel shortage incident and no way to predict where

and when an energy/fuel shortage incident will occur. People are vulnerable to energy/fuel shortage events through effects on transportation routes, pipelines being damage, etc.

- **Environment Risk/Vulnerability:** Risks to the environment are low should an energy/fuel shortage occur. Environmental concerns would be interruption of natural gas fuel supply and secondary events such as fires and hazardous materials accidents (such as gas pipelines rupturing, rupture of hazardous material containers at facilities, etc.). When spills do occur, whether inside or outside facilities or along roadways, shutdowns, lost time, and expended man-hours are all factors mitigation planners must take into account.

### Damage Assessment

Interruption of fuel supply to the County would have a detrimental effect on the County. The magnitude of the interruption and the long-term expectations of the incident would determine the impact on both emergency services and residents of Ramsey County.

### Land Use and Development Trends

Ramsey County currently has no land use or development trends related to energy/fuel shortage.

### Vulnerability

#### Energy/Fuel Shortage

Frequency of Occurrence	Occasionally
Warning Time	More than 12 hours
Geographic Extent	County-wide
Potential Impact	Moderate

### Multijurisdictional Concerns

All of Ramsey County is vulnerable to an energy/fuel shortage.

### Hazard Summary

Energy/fuel shortages are an uncommon occurrence in Ramsey County. However, the potential for an energy/fuel shortage in the County poses an interesting challenge in the development of adequate mitigation measures.

## 4.4.5 Power Failure

### Hazard Identification

A power outage is the loss of electricity supply to an area. Power failure can result from winter storms, high winds, tornadoes, severe summer storms, energy shortages, damage to a power line or other part of the distribution system, a short circuit, or the overloading of electricity mains. If lost entirely, a power loss is referred to as a blackout. A brownout occurs when some power is retained but the voltage level is below the minimum level specified for the system. Connexus Energy and Xcel Energy provide electricity services to Ramsey County.

A power failure can last seconds, hours, and in some extreme cases days. Power failures are particularly hazardous during winter months when they threaten the ability to heat a home or office, directly impacting the health of its inhabitants. Extreme temperatures in summer months can be difficult to manage if power outages impact air conditioning. Transportation routes are affected when traffic signals are disrupted by power outages. Additionally, when power is restored surges can cause fires.

## Section 4

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### Hazard Profile

Power outages occur frequently in the residential and business areas of Ramsey County. These outages have been due to winter storms, severe summer storms, transformer outages, and flooding. A transformer blast in August 2010 cut power to 11,000 residents.

### Vulnerability Assessment

Ramsey County averages approximately 6 power failures every year.

### Assets Exposed to Hazard

- **Property Risk/Vulnerability:** All critical facilities have the possibility of being affected by a power failure.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of the County since there is no way to determine the impact/magnitude of a power failure and no way to predict where and when a power failure will occur.
- **Environment Risk/Vulnerability:** Risks to the environment are minimal should a power failure occur.

### Land Use and Development Trends

Ramsey County currently has no land use or development trends related to power failures.

### Vulnerability

Power Failure	
Frequency of Occurrence	Highly Likely
Warning Time	None
Geographic Extent	Localized
Potential Impact	Moderate

### Multijurisdictional Concerns

All of Ramsey County is vulnerable to a power outage.

### Hazard Summary

Power failure's greatest threat is disrupting the daily operations of business and government. The economic effects of an outage impact the entire community. Preparing for power outages includes storing alternative electricity sources such as flashlights in the home and generators in office buildings.

## 4.4.6 Aircraft Accidents

### Hazard Identification

Ramsey County is located in the flight pathway of the Minneapolis-St. Paul International Airport, Benson Airport, the St. Paul Downtown Airport (Hulman Holman Field), and Anoka County-Blaine Airport, making it vulnerable to the effects of aircraft accidents. Additionally, the Anoka-Blaine Airport and Benson Airport are in operation for private aircraft. The Minnesota Army National Guard Aviation operates out of Holman Field and the Air National Guard operates out of the Minneapolis-St. Paul Airport.

Hazard Profile

There have been no aircraft accidents in Ramsey County in recent history. However, the potential exists due to the high volume of air traffic that goes in and out of the Minneapolis-St. Paul International Airport as well as additional air traffic from the Benson Airport, the St. Paul Downtown Airport (Hulman Field), and Anoka County-Blaine Airport.

Vulnerability Assessment

The probability of an aircraft accident is minimal. The low probability of an incident suggests that the potential for impact is minimal. Based on historical records from the past 10 years, the probability of an aircraft accident occurring in Ramsey County and the planning area is considered low.

Assets Exposed to Hazard

- **Property Risk/Vulnerability:** It was determined that all critical facilities have the possibility of being affected by an aircraft accident.
- **People Risk/Vulnerability:** In evaluating vulnerability of the population in Ramsey County, it was determined that risk/vulnerability includes the entire population of the County since there is no way to determine the impact/magnitude of an aircraft accident incident and no way to predict where and when an aircraft accident incident will occur. People are vulnerable to aircraft accident events due to the location of the County to the Minneapolis-St. Paul International Airport as well as additional air traffic from the Benson Airport, the St. Paul Downtown Airport (Hulman Field), and Anoka County-Blaine Airport.
- **Environment Risk/Vulnerability:** Risks to the environment are low should an aircraft accident occur. Environmental concerns would be impact of the aircraft in or near a natural gas line and secondary events such as fires and hazardous materials accidents (gas pipelines rupturing, rupture of hazardous materials containers at facilities, etc.).

Damage Assessment

An aircraft accident in the County could have a detrimental effect. The magnitude of the accident and the long-term effects of the incident would determine the impact on both emergency services and residents of Ramsey County.

Land Use and Development Trends

Ramsey County currently has no land use or development trends related to aircraft accidents.

Vulnerability

Aircraft Accidents

Frequency of Occurrence	Occasionally
Warning Time	None
Geographic Extent	Localized
Potential Impact	Minor to Moderate

Multijurisdictional Concerns

All of Ramsey County is vulnerable to an aircraft accident.

## Section 4

### Hazard Summary

Aircraft accidents are an uncommon occurrence in Ramsey County. However, the potential for an aircraft accident in the County poses a challenge in the development of adequate mitigation measures.

### 4.4.7 Critical Facilities and Infrastructure Loss

**Requirement 44 CFR 201.6(c) (2) (ii)(A)(B)**

The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area. (B) An estimate of the potential dollar losses to vulnerable structures identified in ... this section and a description of the methodology used to prepare the estimate.

### Hazard Identification

According to FEMA, critical facilities and infrastructure are those systems “whose incapacity or destruction would have a debilitating impact on the defense or economic security of that community.” These systems include the following seven general categories: fire and emergency services, telecommunications infrastructure, hospitals, law enforcement, educational buildings, government services, and public utilities.

Ramsey County Emergency Management and Homeland Security maintains a database for critical facilities and infrastructure. Participating organizations provided the critical facilities and/or assets within their communities. County Emergency Management identifies the structure value of all critical assets and structures.

### Hazard Profile

All facilities and infrastructure within Ramsey County are susceptible to natural and terrorist events. Lightning and wind within the County can cause damage to facilities. The possibility of a fire within the facilities could cause damage, as could flooding and hazardous materials incidents. Ramsey County houses a number of facilities and infrastructure that should be highlighted. 40 percent of the state’s gross domestic product passes through the Port of St. Paul. The Prairie Island Nuclear Generating Plant is located in nearby Red Wing, MN, but an evacuation of the area would likely impact Ramsey County. In addition, the County is highly reliant on the City of St. Paul’s Water Department for potable water. There are few redundancies in the system.



Critical Infrastructure	Number of Critical Facilities
[REDACTED]	1



























## Section 4

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### Multijurisdictional Concerns

All of the County is subject to events and therefore should be included in any prospective mitigation projects.

### Hazard Summary

Critical facilities in Ramsey County are susceptible to many hazards, including but not limited to flood; wildfires; severe weather including tornadoes; terrorism; and energy shortages. The destruction of critical facilities or outage of infrastructure can affect the entire community for a vast amount of time. Mitigating against their loss is of the utmost importance for the continuing operational ability of the County.

## 4.4.8 Civil Disturbance

### Hazard Identification

Any incident that disrupts a community where intervention is required to maintain public safety is a civil disturbance. Examples include demonstrations, riots, strikes, public nuisances, and criminal activities.

### Hazard Profile

Ramsey County includes the urban area of St. Paul. History shows that civil disturbances most often take place in cities and are the result of socio-political issues or even the result of sporting events. There are several large sporting arenas in the Twin Cities area and a win or significant loss may provide motivation for a civil disturbance in the area. In the past, the County has experienced civil disturbances during protests in the 1960s as well as during the 2008 Republican National Convention.

### Assets Exposed to Hazard

All assets within the County are susceptible to being affected by a civil disturbance. Plans have been developed to prevent these events from impacting facilities and infrastructure.

### Damage Assessment

There are no recorded instances of damage to facilities as a result of civil disturbance.

### Land Use and Development Trends

There are no land use and development trends related to civil disturbance.

### Vulnerability

#### Civil Disturbance

Frequency of Occurrence	Occasionally
Warning Time	More than 12 hours
Geographic Extent	Localized
Potential Impact	Negligible to Moderate

### Multijurisdictional Concerns

All of the County is subject to events and therefore should be included in any prospective mitigation projects.

### Hazard Summary

There are no civil disturbances on record in St. Paul or Ramsey County that have affected the population. With several sporting arenas and the many socio-political demonstrations that may occur, the potential for a civil disturbance is high.

## 4.4.9 Invasive Species

### Hazard Identification

Invasive species are plants and animals that are not native to our region and are very aggressive growers that can take over and change habitat. The control of invasive species is difficult and expensive.

### Hazard Profile

Within Ramsey County, the main invasive species are European Buckthorn, Glossy Buckthorn, Garlic Mustard, Reed Canarygrass, purple loosestrife, leafy spurge, spotted knapweed, smooth brome, and earthworms. There are also many species that are found in adjacent states but currently are not in Minnesota. Zebra mussels, Eurasian water milfoil, ruffe, and other invasive species pose a severe threat to Minnesota waters and native aquatic plants and animals. These nonnative invaders also pose a threat to water-based recreation, including fishing. Currently, these invasive species are living in relatively few Minnesota lakes and rivers.

The control techniques of these species varies from mechanical and chemical to biological. Ramsey County works with various state agencies to develop better techniques. The Department of Natural Resources (DNR) tracks and develops programs to minimize the impacts and spread of invasive species. The inclusion of invasive species in the HMP was recommended by residents of Ramsey County during public meetings.

### Assets Exposed to Hazard

Impacts of invasive species within Ramsey County are mainly localized to parks and wooded areas as well as lakes, rivers, streams, and other bodies of water.

### Damage Assessment

There are no recorded instances of damage to facilities as a result of invasive species.

### Land Use and Development Trends

There are no land use and development trends related to invasive species.

### Vulnerability

#### Invasive Species

Frequency of Occurrence	Occasionally
Warning Time	More than 12 hours
Geographic Extent	Localized
Potential Impact	Negligible to Moderate

## Section 4

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### Multijurisdictional Concerns

Impacts of invasive species within Ramsey County are mainly localized to parks and wooded areas as well as lakes, rivers, streams, and other bodies of water, but effects could continue to expand if not mitigated.

### Hazard Summary

There are a variety of invasive species that have been identified in Ramsey County and the State of Minnesota. The county and state engage in programs and activities to reduce the spread and impact of these invasive species.

# Section 5

## HAZARD MITIGATION GOALS AND OBJECTIVES

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### 5.1 Previous Hazard Mitigation Accomplishments

**44 CFR Requirement 201.6 (d) (3)**

*A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.*

In the previous Ramsey County All-Hazard Mitigation Plan, several action items were identified to mitigate hazards in the community. The following activities have taken place in accordance with the action steps listed:

#### Extreme Temperatures

- The county worked with the Minnesota Department of Health to create a plan and public information response for high temperatures.
- ECHO has developed programs to educate about the health risks of extreme temperatures.
- Get Ready Gopher programs to educate about the health risk of extreme temperatures to coincide with Weather Awareness Weeks
- The National Weather Service has warning programs in place to alert people of extreme temperatures.

#### Pandemic Influenza (formerly Disease Outbreak)

- The county worked with St. Paul/Ramsey County Public Health to improve plans to deal with infectious disease outbreak, regardless of the cause. Plans are in place and being improved.

#### Precipitation / Flooding / Dam Failure

- The County worked with the City of St. Paul and the Ramsey Washington Watershed District on contingency plans for dam failure as the McKnight Road water retention facility. The dam is located in Maplewood, but over flow only affects St. Paul.
- To include warning of affected populations and road closures.

#### Drought

- Public education and information coordinated with the regional water providers about water conservation.

#### Severe Storms and Tornadoes

- Improve the warning system so that it will include IPAWS.
- Improve outdoor warning system so that it only sounds sirens in the warned area, rather than all of Ramsey County.
- Ensure that the Emergency Communications Center (Warning Point) has the technology and training to effectively activate warning systems.

### Power Loss

- The City of North St. Paul has buried the “mains” that feed electricity into their service area.
- Encourage new developments to use underground electrical wiring.
- Xcel Energy has programs to educate people about proper use of heaters and generators.

### All Utilities

- Minnesota has a “One Call” service for any excavation; educate home owners about its use.

### Severe Winter Storms (Formerly Winter Storms)

- Get Ready Gopher winter storm campaign completed in 2011.

## 5.2 Natural Hazard Mitigation Goals and Objectives

44 CFR Requirement	
§201.6(c)(3)	The plan shall include the following: A <i>mitigation strategy</i> that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools.
§201.6(c)(3)(i)	The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
§201.6(c)(3)(ii)	The hazard mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate.
§201.6(c)(3)(iii)	The hazard mitigation strategy shall include an action plan, describing how the action identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
§201.6(c)(3)(iv)	For multijurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.
§201.6(c)(4)(ii)	The plan shall include a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvements, when appropriate.

The foundation of this plan is the identification of strategies through which Ramsey County implement natural hazard mitigation goals, objectives, and actions. As identified in Section 4, the Multijurisdictional Hazard Mitigation Planning Committee has a clear understanding of the community’s hazards and risks. The next step is to develop a mitigation strategy. The multijurisdictional hazard mitigation goals, objectives, and actions are listed in this section are listed in order of priority. The methodology that was used to determine the priority of projects was based on repetition of the incident, monetary loss, anticipated costs, and the potential for loss of life. For each of the hazards identified in section, the Multijurisdictional Hazard Mitigation Planning Committee has outlined goals and objectives as part of the mitigation strategy. Mitigation actions for all the cities and townships within Ramsey County are incorporated into Ramsey County’s goals, objectives, and actions. Individual jurisdictions adopt specific goals and strategies based on the needs of the jurisdiction.

### 5.2.1 Flooding

**Mitigation Goals.** Mitigation strategies, which reduce the negative effects of flooding, must be considered. Flooding issues that arise following the development of this plan should be addressed in a timely manner with mitigation projects that address all aspects of the situation.

**Range of Mitigation Options.** The mitigation options to reduce the effects of flooding in Ramsey County and within the cities and townships include continual updates of policies and procedures, enhanced data collection, and efforts to reduce localized flooding.

**Mitigation Strategies for Flooding:**

- **Mitigation Goal #1** - Identify and map all structures located in the identified floodplain in Ramsey County.
- **Mitigation Goal #2** - Ensure that all Ramsey County communities are enrolled in the National Flood Insurance Program and that this information is identified in the plan.
- **Objective #1** - Identify all residential and commercial structures in the floodplain throughout Ramsey County.
- **Objective #2** – Identify Ramsey County communities that are not currently enrolled in the National Flood Insurance Program and work with them to complete enrollment.

**Action Steps:**

- Review and update the FEMA flood maps for Ramsey County and its cities and townships so as to accurately map the actual flood plain and identify structures, both residential and commercial, not already on the FEMA maps.

Responsible Organization	Ramsey County Emergency Management and Homeland Security
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	Ongoing
Funding Sources	General funds, mitigation grants

- Have sand bags available and manpower ready when a flood occurrence occurs in the cities and townships located within Ramsey County.

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Responsible Organization	Ramsey County Emergency Management and Homeland Security, Individual Cities
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012-2014
Funding Sources	Individual cities general funds and Ramsey County general funds, FEMA

- Conduct a comprehensive public education campaign on flooding, including updating the existing Ger Ready Gopher video series (<http://www.youtube.com/watch?v=U6KT11nrYKU>).

Responsible Organization	Ramsey County Emergency Management and Homeland Security, Individual Cities
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	Ongoing
Funding Sources	Individual cities general funds and Ramsey County general funds, FEMA

- Work with Ramsey County communities to ensure their enrollment in the National Flood Insurance Program.

Responsible Organization	Ramsey County Emergency Management and Homeland Security, Individual Cities (communities)
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	Ongoing
Funding Sources	Individual cities general funds and Ramsey County general funds

**Multijurisdictional Considerations.** Flooding events have affected all areas of Ramsey County. All of the cities and townships in Ramsey County participate in flood mitigation activities. Ramsey County is part of the National Flood Insurance Program. Ramsey County and the participating cities plan to continue and encourage non-participating cities/townships to participate in the NFIP by developing and implementing public awareness campaigns, further identification of critical infrastructure in floodplains, promotion of storm water management plans and/or activities and continuation of updating of flood maps for all of Ramsey County.

**Public Information and Awareness Strategies.** The Ramsey County Multijurisdictional Hazard Mitigation Planning Committee has identified public awareness campaigns to ensure that the citizens of Ramsey County are informed of the hazards affecting them and about the mitigation efforts that taking place to mitigate flooding situations.

### 5.2.2 Tornadoes

**Mitigation Goals.** The potential for significant damages to property, injuries, and/or deaths are often associated with tornadoes. There is a need for advanced planning due to major consequences this type of incident. There are several courses of action below that could increase the survival chances of vulnerable populations while also reducing the overall damage to critical infrastructure.

## HAZARD MITIGATION GOALS AND OBJECTIVES

**Range of Mitigation Options.** The suggested mitigation options for tornadoes in Ramsey County provide enhanced sheltering, advanced warning, and as well as options for more sustainable facilities.

**Mitigation Strategy for Tornadoes:**

- **Mitigation Goal #1** - To minimize the losses of life and property due to tornadoes in Ramsey County.
- **Mitigation Goal #2** - To develop policies and plans to handle reconstruction from wind and storm damage.
- **Mitigation Goal #3** - To provide backup generators in identified critical facilities throughout Ramsey County.
- **Objective #1** - To provide advanced severe weather warning and to protect the residents and their property from the effects of tornadoes in Ramsey County.
- **Objective #2** - To provide safe rooms or community shelters needed for mobile home parks, recreation/open areas.
- **Objective #3** – To provide safe rooms at all schools, including new and retrofit installations.
- **Objective #4** - To provide information on benefits of tie-down straps for mobile homes.
- **Objective #5** - To minimize the wait time for residents and business owners to get building permits and inspections of construction activities.
- **Objective #6** - To provide automatic emergency power in identified critical facilities throughout Ramsey County.

**Action Steps:**

- Encourage retrofitting of existing and future public schools with special high wind resistant films for doors and windows.

Responsible Organization	School districts within Ramsey County
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012
Funding Sources	General funds, FEMA grants

- Identify facilities throughout Ramsey County that need backup generators to provide emergency power in case of power outages due to tornadoes/storms.

Responsible Organization	Ramsey County Emergency Management and Homeland Security
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012-2013
Funding Sources	General funds and/or State and federal grants

- Identify community areas (parks, recreation areas) and facilities (schools, government buildings) that are vulnerable to tornadoes and provide tornado safe rooms to each area and facility.

## Section 5

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Responsible Organization	Ramsey County Emergency Management and Homeland Security
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–2013
Funding Sources	General funds and/or State and federal grants, FEMA grants

- Educate individual communities and county on tornado safety with open houses at local police, sheriff, and fire departments. This would include the cities of Arden Hills, Blaine, Falcon Heights, Gem Lake, Lauderdale, Little Canada, Maplewood, Mounds View, New Brighton, North Oaks, North St. Paul, Roseville, Shoreview, St. Anthony, St. Paul, Spring Lake Park, Vadnais Heights, and White Bear Lake.

Responsible Organization	Individual cities, Ramsey County Emergency Management and Homeland Security, and local law enforcement
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–2013
Funding Sources	Individual Cities General Funds and County General Funds, FEMA grants

**Multijurisdictional Considerations.** Tornadoes can affected all areas of Ramsey County. All of the cities and townships in Ramsey County should be participants in tornado mitigation activities.

**Public Information and Awareness Strategies.** The Ramsey County Hazard Mitigation Steering Committee has identified many public awareness campaigns to ensure that the citizens of Ramsey County have advanced warning of the hazards affecting them and the about the mitigation efforts in place to mitigate potential tornado situations.

### 5.2.3 Severe Summer Storms

**Mitigation Goals.** Thunderstorm winds and lightning has caused numerous injuries and deaths as well as millions of dollars in property damage in Ramsey County over the past 45 years. There is a great need to reduce the risk to lives and property due to this hazard. There are many similarities for mitigating thunderstorm winds and tornadoes. This section identifies mitigation solutions to lightning events and severe thunderstorms.

**Range of Mitigation Options.** Possible mitigation options for severe storms include early warning devices and property protection systems. The early warning devices should allow residents to take shelter before the storm approaches.

#### Mitigation Strategy for Thunderstorm Wind and Lightning:

- **Mitigation Goal #1** - To minimize the loss of life and property due to thunderstorm winds and lightning in Ramsey County.
- **Objective #1** - To adequately warn and protect the people and property from the effects of thunderstorm winds and lightning of Ramsey County.

#### Action Steps:

- Equip all county and city recreation parks, fair grounds, as well as outdoor venue areas with adequate early severe weather warning devices and lightning detection devices.

## HAZARD MITIGATION GOALS AND OBJECTIVES

Responsible Organization	Ramsey County Parks and Recreation Department, Ramsey County Emergency Management and Homeland Security
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–ongoing
Funding Sources	Grants, general fund, FEMA grants

- Update Get Ready Gopher public service announcement videos and provide them to local schools for severe weather training.

Responsible Organization	Ramsey County Parks and Recreation Department, Ramsey County Emergency Management and Homeland Security
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–ongoing
Funding Sources	Grants, general fund, FEMA grants

- Develop and distribute flyers by mail to citizens to promote and educate citizens on severe summer storms issues to include the cities of Arden Hills, Blaine, Falcon Heights, Gem Lake, Lauderdale, Little Canada, Maplewood, Mounds View, New Brighton, North Oaks, North St. Paul, Roseville, Shoreview, St. Anthony, St. Paul, Spring Lake Park, Vadnais Heights, and White Bear Lake.

Responsible Organization	Individual Cities and Ramsey County Emergency Management and Homeland Security
Coordinating Organization	Individual Cities and Ramsey County Emergency Management and Homeland Security
Time Line	2012–2013
Funding Sources	Individual cities general funds and county general funds, FEMA grants

**Multijurisdictional Considerations.** All of Ramsey County should be considered when developing mitigation strategies related to thunderstorm winds and lightning. Thunderstorms with associated lightning have caused significant damage in all areas of the County.

**Public Information and Awareness Strategies.** The Ramsey County public safety community is taking an all hazards approach to community awareness programs. Thunderstorm winds and lightning events are inclusive of this all hazards program. All jurisdictions have implemented NOAA weather radios in public buildings, critical infrastructure, major businesses, nursing homes, and day care centers as a public information strategy. Local fire departments have distributed severe weather information to bring awareness of the potential of severe weather. All jurisdictions and the Ramsey County school districts participate in the statewide tornado drill as an exercise each year.

### 5.2.4 Extreme Winter Storms

**Mitigation Goals.** Winter storms are a frequent occurrence in Ramsey County and have the potential to cause extensive problems when they occur. Ramsey County and its cities and townships do have the proper equipment to efficiently deal with snow and ice removal.

## Section 5

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**Range of Mitigation Goals.** The major mitigation need for Ramsey County in relation to winter storms is to educate and prepare residents of our community for winter storms.

**Mitigation Strategy for Winter Storms:**

- **Mitigation Goal #1** - To minimize the losses of lives and property due to winter storms in Ramsey County.
- **Objective #1** - To educate and prepare the residents of Ramsey County for effects of winter storms.

**Action Steps:**

- Conduct a public education outreach program on winter storms.

Responsible Organization	Ramsey County Emergency Management and Homeland Security, Fire Departments
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012
Funding Sources	General funds, FEMA grants

- Update Get Ready Gopher public service announcement videos and provide them to local schools for severe weather training.

Responsible Organization	Ramsey County Parks and Recreation Department, Ramsey County Emergency Management and Homeland Security
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–ongoing
Funding Sources	Grants, general fund, FEMA grants

**Multijurisdictional Considerations.** Winter storms have affected all areas of Ramsey County. All of the cities and townships in Ramsey County should participate in winter storm mitigation and preparedness activities.

**Public Information and Awareness Strategies.** The Ramsey County Multijurisdictional Hazard Mitigation Planning Committee has identified and implemented many public awareness campaigns to ensure that the citizens of Ramsey County are kept abreast of the hazards affecting them and the mitigation efforts to reduce the severity of winter storm situations.

### 5.2.5 Wildfires

**Mitigation Goals.** Wildfires have affected Ramsey County during the last few years.

**Range of Mitigation Goals.** The main areas where mitigation projects are needed for wildfire conditions include expanding and enhancing fire department response capabilities, enhancing the wildfire equipment, as well as increasing the public awareness about wildfires.

**Mitigation Strategy for Wildfires:**

- **Mitigation Goal #1** - To minimize the effects of wildfires in Ramsey County.

## HAZARD MITIGATION GOALS AND OBJECTIVES

- **Objective #1** - Protect people and property from the effects of wildfires by ensuring an adequate response capability in Ramsey County and educating communities in becoming members of the MN Firewise Program and National Firewise Program.
- **Objective #2** - Provide public education to homeowners on the importance of proper fuel storage techniques.

**Action Steps:**

- Improve the process for distributing and tracking burn permits.

Responsible Organization	Various Fire Departments
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–ongoing
Funding Sources	City and county general funds, FEMA

- Work with the Minnesota Department of Natural Resources (DNR) to develop state-level and county-level burning regulations.

Responsible Organization	Minnesota DNR, Ramsey County
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–ongoing
Funding Sources	City and county general funds, FEMA

- Stricter enforcement of countywide outdoor burning regulations from May through October to prevent wildland fires.

Responsible Organization	Various Fire Departments
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–ongoing
Funding Sources	None

- Provide public education on the appropriate distance for tree and shrub clearance around buildings to prevent them from catching fire as a wildfire approaches.

Responsible Organization	Various Fire Departments
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–ongoing
Funding Sources	None

- Provide public education on proper fuel storage techniques.

Responsible Organization	Various Fire Departments
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–ongoing
Funding Sources	None

**Multijurisdictional Considerations.** Wildfires have affected all areas of Ramsey County. All of the cities and townships in Ramsey County should participate in wildfire related mitigation activities.

**Public Information and Awareness Strategies.** The Ramsey County Hazard Mitigation Steering Committee has identified and implemented public awareness campaigns to ensure that the citizens of Ramsey County are kept abreast of the hazards affecting them and the mitigation efforts to reduce the effects of potential wildfire situations. These include ordinances for the enforcement of outdoor burning bans.

## 5.2.6 All-Hazards

**Mitigation Goals.** Ramsey County follows an all-hazards approach to community planning. There are many mitigation projects, which can positively influence the outcomes of any natural disaster; these projects are described in this section.

**Range of Mitigation Goals.** All-hazards mitigation goals cover a wide variety of areas. There is a great need in Ramsey County for countywide National Incident Management System (NIMS) and Incident Command System (ICS) training and planning for all-hazards in Ramsey County.

### Mitigation Strategies for All Hazards:

- **Mitigation Goal #1** - To minimize the losses of life and property due to all natural hazards in Ramsey County.
- **Mitigation Goal #2** - To provide training to all department heads and staff in the Basic NIMS/ICS courses.
- **Mitigation Goal #3** - To provide continuing education of NIMS/ICS to all emergency response agencies in Ramsey County.
- **Mitigation Goal #4** - To provide education and training to all City Mayors and Councils on emergency preparedness (Public Safety) within Ramsey County.
- **Mitigation Goal #5** - To ensure computer operations for city and county infrastructure.
- **Mitigation Goal #6** - To identify access alternatives for neighborhoods with single access points.
- **Mitigation Goal #7** - To develop and further enhance GIS throughout Ramsey County.
- **Mitigation Goal #8** - To improve disaster training for all volunteers.
- **Mitigation Goal #9** - Update notification and warning siren system in Ramsey County.
- **Mitigation Goal #10** - To effectively communicate emergency preparedness information to all Ramsey County residents (including, non-English speaking, special needs populations, day cares, etc.).
- **Objective #1** - To protect people and property from the effects of all potential hazards in Ramsey County.

## HAZARD MITIGATION GOALS AND OBJECTIVES

- **Objective #2** - To provide understanding of unified command structure through NIMS/ICS training.
- **Objective #3** - Ensure all city and county officials understand their roles and responsibilities in the County in the incident of an emergency.
- **Objective #4** - Conduct public meetings to educate all of Ramsey County citizens on safety and emergency preparedness including those with special needs, non-English speaking, day cares, etc.
- **Objective #5** - Integrate GIS throughout all cities and townships and Ramsey County governments.
- **Objective #6** - Identify volunteers that should engage in disaster training and create an all hazards training curriculum.
- **Objective #7** - Evaluate and update activation system and install new sirens throughout Ramsey County and the cities and townships to include fair grounds and outdoor venue areas.

**Action Steps:**

- Provide NIMS/ICS training to all incoming emergency response personnel throughout Ramsey County.

Responsible Organization	Ramsey County Emergency Management and Homeland Security and Fire Department Chiefs
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012
Funding Sources	County and City General Funds

- Work with local cable and radio providers to develop and broadcast public education on emergency preparedness.

Responsible Organization	Ramsey County Information Systems, local Cable Company
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–2014
Funding Sources	County and City General Funds

- Continue training of all emergency response personnel in Ramsey County on NIMS/ICS.

Responsible Organization	Ramsey County Emergency Management and Homeland Security
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–2017
Funding Sources	General funds

- Continue to adopt updates from the International Building Code. Any code revisions should be consistent with the efforts undertaken by multi-community organizations of building department staff.

## Section 5

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Responsible Organization	Planning and Zoning Department
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	Ongoing
Funding Sources	Staff time

- Train building department staff on natural hazards aspects of the International Building Code, regulation of mobile home installation, and the County water management ordinance and its flood protection, wetland protection, erosion and sediment control and best management practices provisions.

Responsible Organization	Individual Municipalities
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	Ongoing
Funding Sources	Staff time

- Evaluate critical facilities for exposure to damage from all hazards, especially high impact hazards affecting Ramsey County. Should major work be needed to protect a facility, and it can be shown that the project would be cost-effective, funding assistance could be applied for from FEMA. New facilities will be reviewed when they are permitted.

Responsible Organization	Ramsey County Risk Management Department
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	Ongoing
Funding Sources	Staff time

- Identify volunteers that should engage in disaster training and develop an all-hazards disaster training curriculum.

Responsible Organization	Ramsey County Emergency Management and Homeland Security, Sheriff's Office
Coordinating Organization	Ramsey County Emergency Management and Homeland Security, Volunteer Agencies and Organizations
Time Line	Ongoing
Funding Sources	Staff time

- Evaluate current needs and review Siren placement to ensure adequate coverage of outdoor recreation areas. Acquire a new integrated activation system for sirens county-wide.

Responsible Organization	Ramsey County Emergency Management and Homeland Security
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–2017
Funding Sources	County General Funds, FEMA

**Multijurisdictional Considerations.** Some of the above projects cross-jurisdictional boundaries. All jurisdictions should be involved in the planning process.

**Public Information and Awareness Strategies.** The Ramsey County Multijurisdictional Hazard Mitigation Planning Committee has identified many public awareness campaigns to ensure that the citizens of Ramsey County are kept abreast of the hazards affecting them and the mitigation efforts to alleviate potential situations.

### 5.2.7 Pandemics/Epidemics

**Mitigation Goals.** Epidemic/pandemic events are identified as a natural hazard in Ramsey County. Since the early 1800s, there have been epidemic/pandemic events that have occurred throughout Ramsey County. Pandemics/epidemics are considered a threat to all residents and emergency response personnel in Ramsey County.

**Range of Mitigation Options.** The identified mitigation strategies for pandemics/epidemics include ensuring that responders are trained and equipped to effectively and efficiently respond to the incident and working in partnership with residents in Ramsey County to plan an effective response strategy to epidemic/pandemic incidents.

#### Mitigation Strategy for Pandemics/Epidemics Incidents:

- **Mitigation Goal #1** - To provide mass dispensing of medication and vaccines for all county citizens and emergency response personnel in Ramsey County.
- **Mitigation Goal #2** - To provide accurate and prompt health communications with regard to pandemics/epidemics in Ramsey County.
- **Mitigation Goal #3** – To provide accurate and prompt health communications with regard to pandemics/epidemics to all Ramsey County residents.
- **Mitigation Goal #4** - To provide public health workforce readiness throughout Ramsey County.
- **Mitigation Goal #5** - To have personnel trained in epidemic/pandemic procedures throughout Ramsey County.
- **Objective #1** - To plan, train, and exercise for biological terrorist events and infectious disease outbreaks.
- **Objective #2** - To inform, educate, and empower citizens about specific health issues pertaining to an epidemic/pandemic outbreak in Ramsey County.
- **Objective #3** – Develop strategies for ensuring outreach on public health topics to non-English speaking (or other cultural boundaries) residents of Ramsey County.
- **Objective #4** - To monitor health status throughout Ramsey County.
- **Objective #5** - To ensure competent and trained public health staff and volunteers throughout Ramsey County.

## Section 5

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### Action Steps:

- Update and improve policies and plans that support the health response to an epidemic/pandemic in Ramsey County.

Responsible Organization	City of St. Paul/Ramsey County Public Health
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012
Funding Sources	Centers for Disease Control and Prevention (CDC) grant

- Continue to purchase supplies and equipment needed for an epidemic/pandemic incident in Ramsey County.

Responsible Organization	City of St. Paul/Ramsey County Public Health
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012
Funding Sources	CDC grant

- Maintain 24/7 community partner contacts.

Responsible Organization	City of St. Paul/Ramsey County Public Health
Coordinating Organization	Ramsey County
Time Line	Ongoing
Funding Sources	CDC grant

- Identify risks specific to public health, behavioral/mental health, and healthcare in Ramsey County following an emergency incident.

Responsible Organization	City of St. Paul/Ramsey County Public Health
Coordinating Organization	Ramsey County
Time Line	Ongoing
Funding Sources	CDC Grant

- Maintain the ability to communicate to all citizens (including non-English speaking and special needs populations) through multiple channels the potential health hazards and the response needed during an emergency.

## HAZARD MITIGATION GOALS AND OBJECTIVES

Responsible Organization	City of St. Paul/Ramsey County Public Health
Coordinating Organization	Ramsey County
Time Line	Ongoing
Funding Sources	CDC Grant

- Continue to conduct staff training and participate in yearly exercises.

Responsible Organization	City of St. Paul/Ramsey County Public Health
Coordinating Organization	Ramsey County
Time Line	Ongoing
Funding Sources	CDC Grant

**Multijurisdictional Considerations.** Epidemic/pandemic events have occurred throughout Ramsey County through the years.

**Public Information and Awareness Strategies.** The Ramsey County Multijurisdictional Hazard Mitigation Planning Committee has identified public awareness campaigns to ensure that the citizens of Ramsey County are kept abreast of the hazards affecting them and the mitigation efforts to alleviate potential situations.

### 5.3 Technological Hazard Mitigation Goals and Objectives

Hazard materials release was identified in Section 4 as a potential risk to the community. The Multijurisdictional Hazard Mitigation Planning Committee has identified and will work toward implementation of the following goals and objectives that will reduce Ramsey County's vulnerability to technological hazards.

#### 5.3.1 Hazardous Materials Release

**Mitigation Goals.** A hazardous materials release is identified as a technological hazard in our community. Historical trends suggest that there will be approximately one major hazardous material incident in the County during any given year. This includes both fixed facility and transportation related incidents.

**Range of Mitigation Options.** The identified mitigation strategies for hazardous materials include ensuring that first responders are trained and equipped to effectively and efficiently respond to the incident. Additionally, to work in partnership with industry to plan an effective response strategy to hazardous materials incidents

#### Mitigation Strategy for Hazardous Materials Spills:

- **Mitigation Goal #1** - To minimize the losses of lives, property, and damage to the environment due to hazardous materials spills in Ramsey County.
- **Goal #1** - To protect the people, property, and the environment from the effects of hazardous materials spills in Ramsey County.

## Section 5

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### Action Steps:

- Conduct a hazardous materials exercise annually.

Responsible Organization	All Emergency Response Agencies
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2013
Funding Sources	Grants and private funding

- Purchase additional hazardous materials response equipment necessary to sustain hazardous materials response operations as well as for new chemicals entering the community.

Responsible Organization	Ramsey County Fire Departments
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–ongoing
Funding Sources	Grants and private funding

- Educate private sector stakeholders on security strategies and safeguards for the containment of hazardous materials at fixed facilities.

Responsible Organization	Ramsey County Fire Departments
Coordinating Organization	Ramsey County Emergency Management and Homeland Security
Time Line	2012–ongoing
Funding Sources	Private funding

**Multijurisdictional Considerations.** Ramsey County is always susceptible to transportation accidents on its state highway system. Ramsey County relies on outside resources to respond to hazardous materials releases. The area fire departments in Ramsey County have individuals certified in various levels of hazardous materials response.

**Public Information and Awareness Strategies.** The Ramsey County Multijurisdictional Hazard Mitigation Planning Committee has identified public awareness campaigns to ensure that the citizens of Ramsey County are kept abreast of the hazards affecting them and the mitigation efforts to alleviate potential situations.

### **44 CFR Requirement 201.6 (c) (4)(i)**

[The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

## 6.1 Plan Implementation

The Ramsey County Multijurisdictional Hazard Mitigation Planning Committee process was overseen by the Ramsey County Emergency Management and Homeland Security department. The plan will then be submitted to the Minnesota Homeland Security and Emergency Management and the Federal Emergency Management Agency (FEMA) for approval. The Ramsey County Board of Commissioners and all cities and townships will formally adopt the plan by resolution in accordance with the Disaster Mitigation Act of 2000.

Each jurisdiction participating in this plan is responsible for implementing specific mitigation actions as prescribed in the mitigation strategies. In each mitigation strategy, every proposed action is assigned to a specific local department or agency in order to assign responsibility and accountability and increase the likelihood of subsequent implementation. This approach enables individual jurisdictions to update their unique mitigation strategy as needed without altering the broader focus of the countywide plan. The separate adoption of locally specific actions also ensures that each jurisdiction is not held responsible for monitoring and implementing the actions of other jurisdictions involved in the planning process.

In addition to the assignment of a local lead department or agency, an implementation time period or a specific implementation date has been assigned in order to assess whether actions are being implemented in a timely fashion. As necessary, Ramsey County and its participating jurisdictions will seek outside funding sources to implement mitigation projects in both the pre-disaster and post-disaster environments. When applicable, potential funding sources have been identified for proposed actions listed in the mitigation strategies.

## 6.2 Evaluation

All members of the Ramsey County Multijurisdictional Hazard Mitigation Planning Committee and the emergency management director will be responsible for ensuring that the Ramsey County Multijurisdictional Hazard Mitigation Plan is evaluated as required. The evaluation will include analyzing current mitigation projects and evaluating success and reevaluating future mitigation needs and prioritization based upon changes in needs and/or capabilities of Ramsey County.

The Ramsey County Multijurisdictional Hazard Mitigation Planning Committee will reconvene annually to ensure that projects are on track and to reevaluate the mitigation goals, objectives, and action steps. The mitigation plan shall be viewed as an evolving, dynamic document.

## 6.3 Multijurisdictional Strategy and Considerations

The Ramsey County Emergency Management and Homeland Security Director will lead activities for mitigation planning countywide. All cities and townships within the County are participating in this process through active involvement on the Multijurisdictional Hazard Mitigation Planning Committee.

## 6.4 Plan Update

The Disaster Mitigation Act of 2000 requires that the Multijurisdictional Hazard Mitigation Plan be updated at least once every five years. The Ramsey County Emergency Management and Homeland Security Director will be responsible for ensuring that this requirement is met. The Ramsey County Emergency Management and Homeland Security Director and the Multijurisdictional Hazard Mitigation Planning Committee will annually review the plan for needed updates. The Multijurisdictional Hazard Mitigation Planning Committee will be involved in this process to ensure all jurisdictions provide input into the planning process. The public will be invited to participate in this process through public hearings.

## 6.5 Plan Maintenance

### **44 CFR Requirement 201.6 (c) (5)**

The plan shall include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

It is the intention of all documented plan participants to formally adopt the Multijurisdictional Hazard Mitigation Plan after each maintenance revision. Once all participants adopt the changes, the revised plan will be submitted to the Minnesota Homeland Security and Emergency Management and FEMA. The plan will be revised and maintained as required under the guidance of the Multijurisdictional Hazard Mitigation Planning Committee and formally adopted by the Board of Commissioners after each revision.

### **44 CFR Requirement 201.6 (c) (4)(iii)**

The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

Public participation will be sought throughout the implementation, evaluation, and maintenance of the hazard mitigation plan. This participation will be sought in a multitude of ways, including but not limited to periodic presentations on the plan's progress to elected officials, schools, or other community groups; annual questionnaires or surveys; public meetings; and postings on social media and interactive websites.

## 6.6 Incorporation into Existing Planning Mechanisms

It will be the responsibility of each participating jurisdiction to determine additional implementation procedures when appropriate. This includes integrating the requirements of the Ramsey County Multijurisdictional Hazard Mitigation Plan into other local planning documents, processes, or mechanisms such as the following:

- Comprehensive plans
- Strategic plans
- Capital improvement plans
- Growth management plans
- Ordinances, resolutions, and regulations
- Continuity of operations plans

Opportunities to integrate the requirements of this plan into other local planning mechanisms will continue to be identified through future meetings of the Hazard Mitigation Steering Committee and through the five-year review process as required by FEMA.

The primary means for integrating mitigation strategies into other local planning mechanisms will be through the revision, update, and implementation of each jurisdiction's individual plans that require specific planning and administrative tasks (for example, plan amendments, ordinance revisions, capital improvement projects, etc.).

The members of the Hazard Mitigation Steering Committee will remain charged with ensuring that the goals and strategies of new and updated local planning documents for their jurisdictions or agencies are consistent with the goals and actions of the Ramsey County Multijurisdictional Hazard Mitigation Plan and will not contribute to increased hazard vulnerability in Ramsey County or its participating municipalities

During the planning process for new and updated local planning documents, such as a comprehensive plan, capital improvements plan, or emergency management plan, Ramsey County will provide a copy of the Ramsey County Multijurisdictional Hazard Mitigation Plan to the appropriate parties and recommend that all goals and strategies of new and updated local planning documents are consistent with and support the goals of the Ramsey County Multijurisdictional Hazard Mitigation Plan and will not contribute to increased hazards in the affected jurisdiction(s).

Although it is recognized that there are many possible benefits to integrating components of this plan into other local planning mechanisms, the development and maintenance of this stand-alone hazard mitigation plan is deemed by the Ramsey County Hazard Mitigation Steering Committee to be the most effective and appropriate method to ensure implementation of local hazard mitigation actions at this time.

All organizations will incorporate the Ramsey County Multijurisdictional Hazard Mitigation Plan into existing plans in an effort to mitigate the impact of future disasters.



### 7.1 Conclusion

Through the development of this plan, Ramsey County has developed a thorough hazard history, an inventory of critical facilities, and an updated contact list for emergency contacts at critical facilities. This data, when used in conjunction with the updated information about hazard threats and vulnerabilities, will prove to be invaluable to the County and its cities and townships.

Natural and technological hazards have been identified countywide. Possible mitigation projects that would reduce the risk of lives and property due to the identified threats have been compiled and prioritized.

The creation of the Ramsey County Multijurisdictional Hazard Mitigation Planning Steering Committee has brought together stakeholders from communities and organizations into one planning team. This group has been able to work together effectively and efficiently to produce this document and establish a greater awareness of our risks and our mitigation strategies.

This plan will continue to evolve as necessary to properly represent the threats and vulnerabilities affecting Ramsey County.

Continued public participation is encouraged and will be continued through the ongoing multijurisdictional hazard mitigation process.

### 7.2 References

- Publications
  - FEMA Pre-Disaster Mitigation How-to-Guides #1, 2, 3, 7
  - Minnesota Emergency Management Supplements to FEMA Pre-Disaster How-to-Guides
  - Ramsey County Emergency Operations Plan
- Web Sites
  - FEMA ([www.fema.gov](http://www.fema.gov))
  - Minnesota Homeland Security and Emergency Management ([www.hsem.state.mn.us](http://www.hsem.state.mn.us))
  - Ramsey County ([www.co.Ramsey.mn.us](http://www.co.Ramsey.mn.us))
  - National Climatic Data Center ([www.ncdc.noaa.gov](http://www.ncdc.noaa.gov))
  - National Weather Service ([www.srh.noaa.gov/ffc/default.html](http://www.srh.noaa.gov/ffc/default.html))
- Other Sources
  - American Red Cross
  - Ramsey County
  - Minnesota Forestry Commission
  - Minnesota Department of Natural Resources

## Section 7

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- National Weather Service Peachtree City
- U.S. Geological Survey

# Appendix A

## STORM DATA FREQUENTLY ASKED QUESTIONS<sup>21</sup>

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### When does data become available?

Due to the amount of time it takes to collect, validate, and enter post Storm Data information, the National Climatic Data Center (NCDC) regularly receives Storm Data from the National Weather Service (NWS) approximately 60-90 days after the end of the data month.

The NWS has 60 days to submit their data files to the NWS Headquarters in Silver Spring, MD. The NWS Headquarters (NWSHQ) then collects all of the data files from the 124 NWS Forecast Offices (NWSFO). The NWSHQ then uses several algorithms to prepare the Storm Data product into the integrated database. The NCDC receives a copy of this database approximately 75-90 days after the end of the month. A publication and archive are produced and the Storm Events Database is then updated within 90-120 days after the end of the month.

### Where does the data come from?

NCDC receives Storm Data from the National Weather Service. The National Weather service receives their information from a variety of sources, which include but are not limited to county, state and federal emergency management officials, local law enforcement officials, skywarn spotters, NWS damage surveys, newspaper clipping services, the insurance industry, and the general public.

### How accurate is the data?

Storm Data Disclaimer:

Storm Data is an official publication of the National Oceanic and Atmospheric Administration (NOAA) that documents the occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce. In addition, it is a partial record of other significant meteorological events, such as record maximum or minimum temperatures or precipitation that occurs in connection with another event. Some information appearing in Storm Data may be provided by or gathered from sources outside the National Weather Service (NWS), such as the media, law enforcement and/or other government agencies, private companies, individuals, etc. An effort is made to use the best available information but because of time and resource constraints, information from these sources may be unverified by the NWS. Therefore, when using information from Storm Data, customers should be cautious as the NWS does not guarantee the accuracy or validity of the information. Further, when it is apparent information appearing in Storm Data originated from a source outside the NWS (frequently credit is provided), Storm Data customers requiring additional information should contact that source directly. In most cases, NWS employees will not have the knowledge to respond to such requests. In cases of legal proceedings, Federal regulations generally prohibit NWS employees from appearing as witnesses in litigation not involving the United States.

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<sup>21</sup> <http://www.ncdc.noaa.gov/oa/climate/sd/sdfaq.html>

### How are the latitude and longitudes determined?

Storm data is entered into the database as a distance in miles and a direction on 16-point compass scale from a known location, usually a town or city. Example: 4.5 miles ESE Atlanta. The NWS uses a database of over 106,000 cities and towns including their latitudes and longitudes. Using an algorithm, the location 4.5 miles ESE of Atlanta can be derived from the known latitude and longitude of Atlanta. These latitude and longitude pairs are generated by the NWS and populated into the database. The latitude and longitude are in DMS (degrees, minutes, and seconds) format.

### How are the damage amounts determined?

The National Weather Service makes a best guess using all available data at the time of the publication. The damage amounts are received from a variety of sources, including those listed above in the Data Sources section. Property and Crop damage should be considered as a broad estimate.

### Why is there no lightning strike information?

At this time, the only lightning data contained within Storm Data are lightning events that result in fatality, injury, and/or property and crop damage. These events are reported to the NWS for inclusion into the Storm Events Database. If you need information on lightning strikes that do not result in this criteria, you can obtain the lightning strike data from Vaisala here: [Vaisala Lightning Strike Data](#)

### How are tornadoes counted?

Tornadoes may contain multiple segments. A tornado that crosses a county line or state line is considered a separate segment. In addition, a tornado that lifts off the ground for less than 5 minutes or 2.5 miles is considered a separate segment. If the tornado lifts off the ground for greater than 5 minutes or 2.5 miles, it is considered a separate tornado. Tornadoes reported in Storm Data and the Storm Events Database are in segments. For official tornado counts by state, please use the Annual Summaries, found here: [NCDC Annual Summaries](#) or use the monthly counts at the Storms Prediction Center here: [Storms Prediction Center Tornado Data](#)

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### Other information:

- Fatality Codes:
  - For events that include a fatality, there is a code containing the gender, age and fatality location at the end of the event narrative.
    - 1st letter: Gender (M/F)
    - 2nd numbers: Age
    - 3rd letters: Fatality location (see table below)
  - Example: M51IW Male, 51 years of age, fatality occurred In Water.

**STORM DATA FREQUENTLY ASKED QUESTIONS**

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<b>Fatality Location Abbreviations:</b>	
<b>Code</b>	<b>Location</b>
BF	Ball Field
BO	Boating
BU	Business
CA	Camping
EQ	Heavy Equipment/Construction
GF	Golfing
IW	In Water
LS	Long Span Roof
MH	Mobile Home
PH	Permanent Home
OT	Other
OU	Outside/Open Areas
SC	School
TE	Telephone
UT	Under Tree
VE	Vehicle

- List of Acronyms:**
- WCM - Warning Coordination Meteorologist
  - NWS - National Weather Service
  - NOAA- National Oceanic and Atmospheric Administration

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■ **More Notes**

An Episode is an entire storm system and can contain many different types of events.

An Event is an individual type of storm event. (Thunderstorm Wind, Hail, Tornado, and Flood are events)

When listing wind speed values under Magnitude, Ex. 81 kts., the value listed is can be either estimated by damage caused, or measured by official NWS approved calibrated anemometers. 1 kt. = 1.152 mph.

When listing hail size under Magnitude, ex. 2.25 in, the hail size is given in inches and hundredths of inches. These values are assigned a size in inches from their appearance.

<b>Approximate hail size</b>	
<b>Appearance</b>	<b>Approximate size in inches</b>
Pea	0.25 - 0.50 inch
Penny	0.75 inch
Nickel	0.88 inch

<b>Approximate hail size</b>	
<b>Appearance</b>	<b>Approximate size in inches</b>
Quarter	1.00 inch
Half dollar	1.25 inch
Walnut/Ping Pong	1.50 inch
Golf ball	1.75 inch
Hen Egg	2.00 inch
Tennis Ball	2.50 inch
Baseball	2.75 inch
Tea Cup	3.00 inch
Grapefruit	4.00 inch
Softball	4.50 inch

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When listing property and crop damage, the figures indicated are the best guess made by the NWS from the available sources of information at the time of the printing.

The fatalities, injuries, and damage amounts appearing in tropical cyclone events are attributed only to wind damage experienced in the coastal counties/parishes listed. Other tropical cyclone related events such as tornadoes and flooding are listed within their separate event types.

# Appendix B

## PUBLIC MEETING ATTENDANCE ROSTERS, MEETING MINUTES, AND NOTICES

### Ramsey County Hazard Mitigation Plan Project Kickoff Meeting/Public Meeting #1 Summary

November 10, 2011

#### Purpose

The purpose of the two meetings were to introduce Ramsey County stakeholders to the hazard mitigation planning process. The meetings, held in the afternoon and evening, also gave stakeholders an opportunity to discuss their involvement in the project, the phases of the project, and the time line for each phase.

#### Meeting Attendees – 1:00 p.m.

Name	Organization	Phone	E-mail
Baughman, Mel	Falcon Heights Community Emergency Response Team (CERT)	651-645-9409	<a href="mailto:baughman@umn.edu">baughman@umn.edu</a>
Crump, Harry	Ramsey County Sheriff's Office (RCSO)-Chaplain	763-443-7407	<a href="mailto:hseymourcrump@gmail.com">hseymourcrump@gmail.com</a>
Duzan, Mike	Chaska Police Department	952-448-4200	<a href="mailto:mduzan@chaskamn.com">mduzan@chaskamn.com</a>
Fox, Brent	Ramsey County Emergency Management and Homeland Security (RCEMHS) Volunteer	651-491-0101	<a href="mailto:brentfox@hotmail.com">brentfox@hotmail.com</a>
Freed, Judd	RCEMHS	651-266-1020	<a href="mailto:judd.freed@co.ramsey.mn.us">judd.freed@co.ramsey.mn.us</a>
Hasty, Drew	Salvation Army	651-895-5430	<a href="mailto:drew_hasty@usc.salvationarmy.org">drew_hasty@usc.salvationarmy.org</a>
Hughes, Bill	Ramsey County	651-266-1016	<a href="mailto:william.hughes@co.ramsey.mn.us">william.hughes@co.ramsey.mn.us</a>
Kumlin-Diers, Karma	RCEMHS	651-266-1013	<a href="mailto:karma.kumlin-diers@co.ramsey.mn.us">karma.kumlin-diers@co.ramsey.mn.us</a>
Mann, Tamala	Science Applications International Corporation (SAIC)	260-729-7589	<a href="mailto:tamala.g.mann@saic.com">tamala.g.mann@saic.com</a>
Michaud, Ed	Triad Volunteers	651-429-1891	<a href="mailto:edmichaud@aol.com">edmichaud@aol.com</a>
O'Leary, Barbara	Falcon Heights	651-645-6196	<a href="mailto:olearydum@aol.com">olearydum@aol.com</a>

## Appendix B

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Name	Organization	Phone	E-mail
O'Leary, Terrance	Falcon Heights	651-645-6196	<a href="mailto:olearydum@aol.com">olearydum@aol.com</a>
Rosard, Lorne	Roseville Police Department	651-792-7211	NA

### Meeting Attendees – 6:00 p.m.

Name	Organization	Phone	E-mail
Andre, Veryl	CERT	651-645-2976	<a href="mailto:veryl.andre@gmail.com">veryl.andre@gmail.com</a>
Dunk, Tara Dr.	CERT	651-283-6736	<a href="mailto:jlddc@aol.com">jlddc@aol.com</a>
Foster, Ann	RCEMHS	NA	<a href="mailto:annfoster449@msn.com">annfoster449@msn.com</a>
Freed, Judd	RCEMHS	651-266-1020	<a href="mailto:judd.freed@co.ramsey.mn.us">judd.freed@co.ramsey.mn.us</a>
Hughes, Bill	Ramsey County	651-266-1016	<a href="mailto:william.hughes@co.ramsey.mn.us">william.hughes@co.ramsey.mn.us</a>
Johnson, Randy W.	White Bear	651-429-8553	<a href="mailto:rjohnson@whitebearlake.org">rjohnson@whitebearlake.org</a>
Lund, Howard	RCEMHS	NA	<a href="mailto:howard.lund@rcemhs.org">howard.lund@rcemhs.org</a>
Mann, Tamala	SAIC	260-729-7589	<a href="mailto:tamala.g.mann@saic.com">tamala.g.mann@saic.com</a>
Rosard, Lorne	Roseville Police Department	651-792-7211	NA

Host: Judd Freed and William Hughes, RCEMHS  
Consultant: Tami Mann, SAIC  
Handouts: Agenda and presentation slides

## Overview of Activities

### WELCOME AND INTRODUCTIONS

Mr. Judd Freed of Ramsey County opened the meeting by discussing the previous mitigation planning effort that took place in 2004–2005 and the importance of each jurisdiction's and the public's participation in the process. He then introduced Ms. Tami Mann of SAIC.

Ms. Mann presented a high-level summary of the hazard mitigation planning project. Below is a summary of the key discussion points in the presentation. The full presentation is available through RRCEMHS.

### PURPOSE AND IMPORTANCE OF HAZARD MITIGATION PLANNING

Hazard mitigation planning is required under the Disaster Mitigation Act of 2000. It guides post-disaster recovery, engages multiple community stakeholders, promotes public participation,

evaluates hazards and risks, builds support for mitigation activities, helps educate community officials, and develops more effective community policies. In the future, federal funding for mitigation projects will be contingent upon having a hazard mitigation plan (HMP) or being in the process of developing one.

The benefits of an HMP include reducing vulnerability to future hazards, saving lives and property, gaining disaster funding, maintaining economic stability, and expediting the recovery period.

### APPROACH TO HAZARD MITIGATION PLANNING

SAIC's approach to hazard mitigation planning complies with industry standards and includes four phases.

The first phase of hazard mitigation planning involves initiating the planning project and organizing resources. A kickoff meeting with the Hazard Mitigation Planning Committee will occur and data collection will begin. The first site visit and public meeting will also occur during this phase. SAIC will provide public meeting minutes to the project sponsor.

The second phase involves identifying hazards and gathering preliminary risk assessment results. This includes updating the current base list of hazards, gathering information about those hazards, and conducting an updated risk assessment. Additionally, the second phase involves drafting a findings report through a risk assessment and consequence analysis. Mitigation strategies will also be developed. Ms. Mann reviewed specific objectives and provided examples of mitigation strategies. In addition to drafting the mitigation strategies and actions, the second site visit and public meeting will be conducted during this phase. SAIC will provide public meeting minutes to the project sponsor.

The draft updated HMP will be completed during the third phase. This phase includes submitting draft updated plans to Ramsey County, the Minnesota Department of Homeland Security and Emergency Management (MDHSEMA), and the Federal Emergency Management Agency (FEMA) officials for review.

The fourth phase of the project includes presenting the final updated HMP to the public through the third public meeting. SAIC will provide public meeting minutes to the project sponsor.

Following the four phases, the updated HMP will be presented to the County for adoption and county personnel can begin working towards achieving the plan's goals and strategies. Plan maintenance, including identifying the plan's successes and areas for improvement, will be an ongoing process.

### ADDITIONAL DISCUSSION

An attendee pointed out that the updated HMP should include information regarding Ramsey County being in the ingestion pathway of area nuclear power plant.

Although terrorism is identified in the current HMP, attendees pointed out that the updated HMP should specifically note the potential for and consequences of cyberterrorism.

### PROJECT TIME LINE

Ms. Mann reviewed the project time line with the group.

## Appendix B

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Project Deliverables/Tasks	Target Completion Date
Project Planning Call	October 11, 2011
Work Plan	October 14, 2011
Kickoff Meeting/Public Meeting #1	November 10, 2011
Minutes from Kickoff Meeting/Public Meeting #1	November 17, 2011
Survey Forms as Required	November 17, 2011
Draft Updated Hazard Identification and Profiles	December 27, 2011
Draft Updated Risk Assessment	December 27, 2011
Final Updated Hazard Identification and Profiles	January 10, 2012
Final Updated Risk Assessment	January 10, 2012
Public Meeting #2	January 10, 2012
Minutes from Public Meeting #2	January 17, 2012
Draft Updated HMP	January 30, 2012
Ramsey County Review Period	January 30–February 10, 2012
Draft Updated HMP with Changes Required from Ramsey County Reviews for Submittal to MDHSEMA and FEMA for Official Review	February 20, 2012
State Review Period	Estimate: February 20, 2012– March 16, 2012
FEMA Review Period	Estimate: March 26 – April 20, 2012
Final Draft Updated HMP Based on MDHSEMA and FEMA Recommendations	May 3, 2012
Public Meeting #3	May 3, 2012
Minutes from Public Meeting #3	May 10, 2012
Project Closeout	May 15, 2012

### ACTION ITEMS/ASSIGNMENTS

- SAIC will begin contacting Ramsey County personnel and jurisdictions within Ramsey County through mid-December to verify data.
- Ramsey County will provide a kickoff meeting summary to stakeholders as requested.
- Ramsey County will post iterative drafts of the HMP and supporting documents on its website for review and comment.

### NEXT MEETING

## PUBLIC MEETING ATTENDANCE RECORDS AND NOTICES

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On January 10, RCEMHS will host hazard mitigation planning update meetings that are open to the public. The same agenda will be used so citizens may attend either session. The sessions are tentatively scheduled for **1:00 p.m. and 6:00 p.m. at the Roseville City Hall**, 2660 Civic Center Drive Roseville, Minnesota. No RSVP needed. Walk in registration begins 15 minutes prior to start time.







Ramsey County Hazard Mitigation Plan Project  
Public Meeting #2 Summary

January 10, 2012

**Purpose**

The purpose of the two meetings were to review the hazard mitigation planning process and elicit public input on the Ramsey County Hazard Mitigation Plan (HMP). The meetings, held in the afternoon and evening, also gave stakeholders an opportunity to discuss hazards faced by the Ramsey County community and potential mitigation strategies for those hazards.

**Meeting Attendees – 3:30 p.m.**

Name	Organization	Phone	E-mail
Baughman, Mel	Falcon Heights Community Emergency Response Team (CERT)	651-645-9409	<a href="mailto:baughman@umn.edu">baughman@umn.edu</a>
Foster, Ann	Ramsey County Emergency Management and Homeland Security (RCEMHS)	612-267-0612	<a href="mailto:annfoster449@msn.com">annfoster449@msn.com</a>
Fox, Brent	RCEMHS Volunteer	651-491-0101	<a href="mailto:brentfox@hotmail.com">brentfox@hotmail.com</a>
Freed, Judd	RCEMHS	651-266-1020	<a href="mailto:judd.freed@co.ramsey.mn.us">judd.freed@co.ramsey.mn.us</a>
Habib, Tamara	Science Applications International Corporation (SAIC)	312-848-4318	<a href="mailto:tamara.a.habib@saic.com">tamara.a.habib@saic.com</a>
Hughes, Bill	Ramsey County	651-266-1016	<a href="mailto:william.hughes@co.ramsey.mn.us">william.hughes@co.ramsey.mn.us</a>
Jacobs, Philip	Public	651-699-5464	<a href="mailto:jaco0253@umn.edu">jaco0253@umn.edu</a>
Kelzenberg, Ryan	Anoka County Emergency Management	612-418-0825	<a href="mailto:ryanokelzenberg@co.anoka.mn.us">ryanokelzenberg@co.anoka.mn.us</a>
Mann, Tamala	SAIC	260-729-7589	<a href="mailto:tamala.g.mann@saic.com">tamala.g.mann@saic.com</a>
Miller, Tom	St. Paul Emergency Management	651-266-5504	<a href="mailto:tom.miller@ci.stpaul.mn.us">tom.miller@ci.stpaul.mn.us</a>
Nelson, Jen	Minnesota State Homeland Security and Emergency Management	651-201-7427	<a href="mailto:jennifer.e.nelson@state.mn.us">jennifer.e.nelson@state.mn.us</a>
O'Neill, Deb	Ramsey County Sheriff's Department	651-227-5140	<a href="mailto:doneillde@q.com">doneillde@q.com</a>
Winkleblack, Heather	St. Paul Emergency Management	651-266-5491	<a href="mailto:heather.winkleblack@ci.stpaul.mn.us">heather.winkleblack@ci.stpaul.mn.us</a>

### Meeting Attendees – 6:00 p.m.

Name	Organization	Phone	E-mail
Carlyle, Josh	RCEMHS	651-644-4239	<a href="mailto:joshua.carlyle@rcemhs.com">joshua.carlyle@rcemhs.com</a>
Freed, Judd	RCEMHS	651-266-1020	<a href="mailto:judd.freed@co.ramsey.mn.us">judd.freed@co.ramsey.mn.us</a>
Grove, Roxanne	City of Lauderdale	612-597-7974	<a href="mailto:barbara.v.grove@healthpartners.com">barbara.v.grove@healthpartners.com</a>
Habib, Tamara	SAIC	312-848-4318	<a href="mailto:tamara.a.habib@saic.com">tamara.a.habib@saic.com</a>
Hughes, Bill	Ramsey County	651-266-1016	<a href="mailto:william.hughes@co.ramsey.mn.us">william.hughes@co.ramsey.mn.us</a>
Lund, Howard	RCEMHS	655-262-3995	<a href="mailto:howard.lund@rcemhs.org">howard.lund@rcemhs.org</a>
Mann, Tamala	SAIC	260-729-7589	<a href="mailto:tamala.g.mann@saic.com">tamala.g.mann@saic.com</a>
Scott, Tom	EM City of Blaine	763-785-6182	<a href="mailto:tscott@ci.blaine.mn.us">tscott@ci.blaine.mn.us</a>

Host: William Hughes, RCEMHS  
Consultants: Tamara Habib, SAIC; Tami Mann, SAIC  
Handouts: Agenda and presentation slides

## Overview of Activities

### WELCOME AND INTRODUCTIONS

Mr. William Hughes of Ramsey County opened the meeting by discussing the efforts that have occurred since the initial kickoff meeting on January 10, 2011, and restating the importance of each jurisdiction's and the public's participation in the process. He then introduced Ms. Tami Mann and Ms. Tamara Habib of SAIC.

Ms. Habib presented a high-level summary of hazard mitigation planning. Below is a summary of the key discussion points in the presentation. The full presentation is available through RCEMHS.

### PURPOSE AND IMPORTANCE OF HAZARD MITIGATION PLANNING

Hazard mitigation planning is required under the Disaster Mitigation Act of 2000. It guides post-disaster recovery, engages multiple community stakeholders, promotes public participation, evaluates hazards and risks, builds support for mitigation activities, helps educate community officials, and develops more effective community policies. In the future, federal funding for mitigation projects will be contingent upon having an HMP or being in the process of developing one.

The benefits of an HMP include reducing vulnerability to future hazards, saving lives and property, gaining disaster funding, maintaining economic stability, and expediting the recovery period.

### PLANNING PROCESS

The original HMP was developed in 2006. The plan update process began in August 2011 with the reestablishment of the Hazard Mitigation Planning Committee (HMPC).

Ms. Habib discussed the HMPC's goals and objectives:

- Actively involve and gain support from all city and township governments and Ramsey County for the mitigation of disasters in the community.
- Prioritize identified mitigation projects.
- Seek and implement any grant funding for the mitigation of disasters in Ramsey County and its cities and townships.
- Monitor, evaluate, and update the progress of the HMP as needed.
- Form partnerships among local, state, and federal agencies to make Ramsey County more resistant to the effects of disasters.

### ADDITIONAL DISCUSSION

An attendee pointed out that climate change should be incorporated into the HMP, using the current warm temperatures as an example.

It was pointed out that we need to add Benson Airport to the discussion regarding hazards as a result of air traffic in the area.

Reviewing the electricity providers in Ramsey County, attendees stated that the City of North Saint Paul provides its own electricity and Conexus is responsible for the northern portion of the County. Xcel is a major electricity provider.

Xcel Energy and CenterPointe provide natural gas services to parts of Ramsey County.

St. Paul has transfer stations and collection sites, but no landfills.

Attendees suggested the Port of St. Paul be added as a critical infrastructure asset in the HMP. Forty percent of Minnesota gross domestic product is brought through the Port of St. Paul and it is therefore a vital piece of critical infrastructure.

After reviewing the hazards that were not considered significant enough to be included in the HMP, attendees suggested that rockslides be included in the overall list of hazards. Attendees commented that B&B Bakery had a rockslide in late March or early April.

Sinkholes are not a significant threat to the County. Sinkholes that occur in Ramsey County are a result of infrastructure breakdowns from flooding and these do not pose significant threats to citizen safety.

Ramsey County and the City of St. Paul will work together to ensure their individual HMPs are a coordinated effort. While many of the hazards mentioned in the Ramsey County HMP will also be in the City of St. Paul HMP, the City of St. Paul may choose to emphasize certain risks or vulnerabilities.

Earthquakes are not addressed in the City of St. Paul HMP in relation to mitigating against the hazard. The group discussed whether there is a need to address earthquakes and determined not to add earthquakes.

Public comment included a concern about one source of energy fuel shortage for the state. The concern was based on the cold winters and no backup source of energy.

An attendee recommended the reasoning for not including tsunamis as a hazard be added to the HMP.

### **WINTER STORMS**

It was stated that following past blizzards, snow removal has been an issue. Although Ramsey County has been able to implement tree debris removal, there are no predetermined locations or temporary debris storage sites for snow. It was suggested that a mitigation strategy for determining possible locations to move excess snow be developed.

There has never been a winter storm declaration in Ramsey County.

### **SEVERE THUNDERSTORMS**

An attendee suggested that tornadoes, thunderstorms, and high winds be included in one hazard category. A representative of the State of Minnesota suggested keeping them as separate hazards.

When discussing high-wind events, attendees voiced concern about cable lines being affected (television, Internet, phone) and citizens losing their links to public information. This concern will be identified as part of the hazard profile. In addition to affecting citizens' communication links, it could also affect City of St. Paul and Ramsey County data.

### **TORNADOES**

Although the statistical average for the number of tornadoes in one year in the state of Minnesota is 24, there have been instances where many more were reported as a result of one day of large storms. In 2011, a particularly strong storm system moved through the state and produced 48 tornadoes in one day, increasing the overall number of tornadoes to 102 for the year. This should be addressed as an update in the HMP. Major tornado events that have occurred in the last two years should also be noted in the HMP. Additionally, the number of tornadoes that have occurred in surrounding counties should be noted in the HMP.

### **LIGHTNING**

Attendees recalled a lightning strike in 1998 that killed one person. Research on that death will be done and included in the HMP.

It was agreed that no mitigation strategies, outside of all hazard mitigation strategies, need be added to the HMP.

### **EXTREME TEMPERATURES**

Ramsey County has a robust electrical system that stands up to extreme heat temperatures well, resulting in a lack of heat-related electrical outages. Occasionally a transformer will explode due to high temperatures, but these instances are rare and do not generally affect the overall population.

### **HAILSTORMS**

A hailstorm in 1999 resulted in the destruction of several residential roofs. This incident will be researched and added to the HMP.

### **WILDFIRE**

Information on wildfires will be added to the HMP based on reports from local fire departments.

### **FLOODING**

The majority of river floods are handled by City of St Paul. Many flood mitigation projects have been completed since 1968 and further mitigation projects are not needed.

There have been no new repetitive loss properties identified since the creation of the 2006 Ramsey County HMP.

Flash floods need to be addressed, specifically in regards to property loss.

The HMP needs to explain the difference between overland flooding and riverine flooding. Previous flash flooding has occurred in a neighborhood in St. Paul and needs to be identified. Mr. Hughes will provide information on areas that have had flash floods recently.

### **EPIDEMICS**

One important mitigation strategy that was identified during the meeting was conducting outreach on public health topics to communities with language barriers. Certain traditions practiced in the region by people of different cultures make these populations more susceptible to disease and more resistant to prevention methods, such as the flu vaccine. This information should be outlined in the hazard profile and a mitigation strategy should be added.

### **ADDITIONAL NATURAL HAZARDS**

Attendees requested that a section on invasive species be added to identified hazards. Certain vegetative diseases and foreign insects pose a threat to the natural habitat of Ramsey County. Additionally, the Asian carp infestation in the Mississippi River poses a threat to the economy of the City of St. Paul, Ramsey County, and potentially the State of Minnesota.

### **DAM/LEVEE**

Mr. Hughes has additional information on the dam and levee hazard to add to the HMP.

### **TERRORISM**

Different forms of terrorism, such as cyber attacks and agricultural terrorism, should be added to the hazard profile. Additionally, one particular vulnerability for Ramsey County is the presence of several laboratories that perform experiments and test chemicals on animals. Activist groups may pose a threat to these facilities and the well-being of those who work there.

An attendee asked if Ramsey County is working with the University of Minnesota and other universities on mitigation planning. The answer is that Ramsey County is coordinating with them but they could not attend this meeting.

### **HAZARDOUS MATERIALS SPILLS**

Anhydrous ammonia is used for refrigeration in the area. Mr. Hughes will provide information on an incident that occurred for the HMP.

Fixed facilities that house hazardous materials should be considered hazards. Pipelines running through the County should be identified based on what materials they carry and by their locations.

### **ENERGY SHORTAGE**

Information on Ramsey County's source of petroleum should be added to the HMP.

Ms. Habib requested that Ramsey County geographic information system (GIS) Department provide a map of all pipelines running through the County.

Ms. Habib suggested that Ramsey County consider drafting an energy assurance plan (EAP) as a mitigation effort. An EAP analyzes the vulnerability of energy sources within a community and suggests contingencies for fuel and energy shortages in an emergency.

### **AIRCRAFT ACCIDENTS**

Huhlman Field, which is a reliever airport for Minneapolis-St. Paul International Airport, should be identified in the hazard profile.

Anoka Airport and Blaine Airport are in operation for private aircrafts and should be added to the hazard profile. Ms. Habib requested a map of all airports in the area to be added to the HMP.

The Air National Guard operates out of the Minneapolis-St. Paul Airport.

### **LARGE VENUES (CRITICAL FACILITIES)**

A large amount of snow recently caused the Metrodome (located in Minneapolis) roof to collapse. This could be a critical facility if there were an incident and a large space were needed for sheltering. This incident should be included in the HMP.

The Prairie Island Nuclear Generating Plant is located in Red Wing, Minnesota. Ramsey County is outside the 10-mile ingestion pathway, so Ramsey County is not required to ensure evacuation routes for the area. However, Ramsey County is in the ingestion planning zone and it should therefore be included in the HMP.

Attendees mentioned that many parts of Ramsey County are highly dependent on the City of St. Paul Water Department for potable water sources. There are few redundancies within the system and this could be vulnerability. Mr. Hughes will provide more information on the water system within Ramsey County.

### **CIVIL DISTURBANCE**

There were riots and protests in Ramsey County in the 1960s. More research will be done on this incident and it will be included in the HMP.

The Republican National Convention was held in St. Paul in 2008. As a result, many protests were held in the area. These events should be added to the HMP.

### **Mitigation Recommendations**

It was suggested that disaster response training be improved for all volunteers (all-hazards strategy).

Ensure that all communities are enrolled in the National Flood Insurance Program and this information is included in the HMP.

Mr. Hughes will find out if school buildings in the area are retrofitted with high wind resistant windows.

Warning system mitigation strategies should be included in the all-hazards section and not in flooding mitigation strategies.

It was recommended that if a facility does not have a basement it should have a saferoom. One attendee commented that this may be difficult to accomplish due to local politics. The item will be discussed later.

Attendees suggested that education on lightning grounding systems not be a mitigation strategy.

Ms. Jennifer Nelson suggested that a mitigation strategy regarding the addition of saferooms to all schools, including new and retrofit installations, be added to the HMP.

Ramsey County has been encouraging the installation of sirens in outdoor venue areas for early warning.

One suggested mitigation strategy for the state fairgrounds included installing a warning system and places for shelter.

Get Ready Gopher public service announcements have been very successful in communicating the risks of winter and severe summer storms. Ramsey County should update these videos and have students watch them as a mitigation strategy.

Mr. Hughes will develop a table of variation of burning permits.

One suggested mitigation strategy included educating the public on the appropriate distance for tree and shrub clearance around structures to prevent them from catching fire if a wildfire approaches the property.

It was suggested that a mitigation strategy be developed to reduce fuel hazards. Chaska County got a grant to bring a fire marshal in to give a fire plan to every rural home on fire protection/reduction of hazards.

New and current responders should be trained on the National Incident Management System (NIMS) and the Incident Command System (ICS). This will be added to the appropriate mitigation strategies.

Privately owned nursing home facilities are required to have emergency operations plans in Minnesota; therefore, this is an unnecessary mitigation strategy. Mr. Hughes will provide more specific information.

It was suggested that special populations be included in any education and awareness campaigns, including daycares.

The Health Department is responsible for licensing of manufactured homes.

## Appendix B

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Mr. Hughes will describe what has been completed in terms of ECHO and will ask a public health representative for assistance.

Maintain and improve policies and procedures on pandemics and epidemics.

Take out the interoperable communications mitigation recommendation.

Discuss hazardous materials exercises and revise the mitigation recommendation.

All public health references should be described as City of St. Paul/Ramsey County Public Health.

Ramsey County does not have a local emergency planning committee (LEPC), so remove that reference in mitigation strategies.

### PROJECT TIME LINE

Ms. Habib reviewed the project time line with the group.

Project Deliverables/Tasks	Target Completion Date
Project Planning Call	October 11, 2011
Work Plan	October 14, 2011
Kickoff Meeting/Public Meeting #1	November 10, 2011
Minutes from Kickoff Meeting/Public Meeting #1	November 17, 2011
Survey Forms as Required	November 17, 2011
Draft Updated Hazard Identification and Profiles	December 27, 2011
Draft Updated Risk Assessment	December 27, 2011
Final Updated Hazard Identification and Profiles	January 10, 2012
Final Updated Risk Assessment	January 10, 2012
Public Meeting #2	January 10, 2012
Minutes from Public Meeting #2	January 17, 2012
Draft Updated HMP	January 30, 2012
Ramsey County Review Period	January 30–February 10, 2012
Draft Updated HMP with Changes Required from Ramsey County Reviews for Submittal to Minnesota Department of Homeland Security and Emergency Management Agency (MDHSEMA) and the Federal Emergency Management Agency (FEMA) for Official Review	February 20, 2012
State Review Period	Estimate: February 20–March 16, 2012

## PUBLIC MEETING ATTENDANCE RECORDS AND NOTICES

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Project Deliverables/Tasks	Target Completion Date
FEMA Review Period	Estimate: March 26–April 20, 2012
Final Draft Updated HMP Based on MDHSEMA and FEMA Recommendations	May 3, 2012
Public Meeting #3	May 3, 2012
Minutes from Public Meeting #3	May 10, 2012
Project Closeout	May 15, 2012

### NEXT MEETING

- On May 3, 2012, RCEMHS will host HMP update meetings that are open to the public. The final HMP will be presented at this meeting. The same agenda will be used for each session, so citizens may attend either session. The sessions are tentatively scheduled for **1:00 p.m. and 6:00 p.m. at the 90 West Plato Boulevard, Plato Conference Room**, West St. Paul, Minnesota. No RSVP needed. Walk-in registration begins 15 minutes prior to start time.

**Ramsey County, Minnesota  
Hazard Mitigation Plan Update Kickoff/ Public Meeting #2  
January 10, 2012**

Name	Department	Position	Phone	E-mail
Brent Fox	RCEMHS	Volunteer	(651) 491-0101	brentfox3@hotmail.com
Ryan Keironburg	Ancker Council	EM Specialist	612-418-0825	Ryan.Keironburg@co.ancker.mn.us
Neil Broughman	Falcon Heights	CEMET	651-645-9409	broughman@umn.edu
Philip Jacobs			651 635 5404	JACO P 253 @ umn.edu
Tami Mauer	SAND	Pj Mgr	866-251-1882	tmauer@brchdb.com
Heather Wagoner	SPEM		763-266-5491	heather.wagoner@ramsay.mn.us
Tom Miller	SPEM	Em. Coord.	651 266-5504	tom.miller@ci.strobel.mn.us
Debo Nell	Ramsey County Sheriff	Volunteer	651-227-5140	doncilla@co.ramsey.mn.us
Ann Foster	RCEMHS	Volunteer	612-267-0612	ann.foster@ci.ramsey.mn.us
Ann Nelson	MSEM		651 261 7497	jean.foster@ci.ramsey.mn.us
Tom Scott	EM CERTIFIED	Assoc.	763 785 6152	Escorte ci.bismarck.mn.us/escort-pg1943
Bill Husbard	Ramsey Co. Sheriff	EM Coord.		
Howard Lund	RCEMHS	Volunteer	651-282-3995	howard.lund@ci.ramsey.mn.us
Josh Casule	RCEMHS	Volunteer	651-644-4089	joshua.casule@ci.ramsey.mn.us
Patricia Lund	Laurelwood	City Council	612 597 7974	Patricia.lund@ci.laurelwood.mn.us

### Hazard Mitigation Plan Update Meeting posting to Ramsey County website – October 28, 2011



# NEWS

Contact  
Art Coulson  
Communications Director  
(651) 266-8017 (office)  
(612) 655-8102 (mobile)  
art.coulson@co.ramsey.mn.us

FOR IMMEDIATE RELEASE

### Ramsey County to host countywide disaster planning meetings

ST. PAUL, MN, OCTOBER 28, 2011 — How should Ramsey County and local communities plan for and reduce the consequences of a major fire? a flood? natural disaster? incident of terrorism? That is a question Ramsey County Emergency Management and Homeland Security officials are working to answer with the help of local emergency responders and the public.

The Ramsey County All-Hazard Mitigation Plan will be aimed at helping the communities in the county to prepare for a variety of hazards, such as flooding, tornadoes, and terrorism before they occur. The plan will outline goals, objectives and strategies for the county in order to coordinate efforts to reduce the effects of disasters. This in turn will help to reduce the costs when hazards do occur.

The public is invited to share their input and ideas about how to lessen the effects of a disaster that may face Ramsey County and East Metro communities. A pair of public meetings to gather input will be held Nov. 10 in Roseville (details below).

The final approval by the State of Minnesota Division of Homeland Security and Emergency Management and the Federal Emergency Management Agency will make Ramsey County and the municipalities that adopt this plan eligible for Hazard Mitigation Grant Program project funds. These funds will help to offset the costs of some of the mitigation projects set forth in this plan.

What: Ramsey County-Wide All Hazard Mitigation Plan Public Meeting  
When: First meeting at 1 p.m.; second meeting at 6 p.m., Thursday, Nov. 10  
Where: Roseville City Council Chambers, 2660 Civic Center Drive, Roseville 55113

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*More information: William B. Hughes, Mitigation Project Lead / Emergency Management Coordinator, Ramsey County Emergency Management and Homeland Security, (651) 266-1016 or william.hughes@co.ramsey.mn.us*

### Hazard Mitigation Plan Update Meeting posting to Ramsey County website – January 3, 2012



# NEWS

Contact  
Art Coulson  
Communications Director  
(651) 266-8017 (office)  
(612) 655-8102 (mobile)  
art.coulson@co.ramsey.mn.us

FOR IMMEDIATE RELEASE

## Ramsey County to host 2nd countywide disaster planning meeting

ST. PAUL, MN, JANUARY 3, 2012 — The public is invited to share their input and ideas about how to lessen the effects of a disaster that may face Ramsey County and East Metro communities. A pair of public meetings to gather input will be held January 10, 2012 in Saint Paul (details below).

How should Ramsey County and local communities plan for and reduce the consequences of a major fire? a flood? natural disaster? incident of terrorism? That is a question Ramsey County Emergency Management and Homeland Security officials are working to answer with the help of local emergency responders and the public.

The Ramsey County All-Hazard Mitigation Plan will be aimed at helping the communities in the county to prepare for a variety of hazards, such as flooding, tornadoes, and terrorism before they occur. The plan will outline goals, objectives and strategies for the county in order to coordinate efforts to reduce the effects of disasters. This in turn will help to reduce the costs when hazards do occur.

The final approval by the State of Minnesota Division of Homeland Security and Emergency Management and the Federal Emergency Management Agency will make Ramsey County and the municipalities that adopt this plan eligible for Hazard Mitigation Grant Program project funds. These funds will help to offset the costs of some of the mitigation projects set forth in this plan.

What: Ramsey County-Wide All Hazard Mitigation Plan Public Meeting

When: First meeting at 3:30 p.m.; second meeting at 6 p.m., Tuesday Jan. 10

Where: Ramsey County Plato Building 90 West Plato Boulevard Saint Paul, MN 55107 (East of Plato and Wabasha)

More information: William B. Hughes, Mitigation Project Lead / Emergency Management Coordinator, Ramsey County Emergency Management and Homeland Security, (651) 266-1016 or [william.hughes@co.ramsey.mn.us](mailto:william.hughes@co.ramsey.mn.us)

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Ramsey County Hazard Mitigation Plan Project  
 Public Meeting #3  
 Meeting Summary

July 11, 2012

**Purpose**

The purpose of this meeting was to review the recently updated Ramsey County Hazard Mitigation Plan (HMP) with county stakeholders. This included summarizing the purpose, community profile, hazard identifications, and mitigation strategies identified in the plan, as conditionally approved by Minnesota Homeland Security and Emergency Management (HSEM) and the Federal Emergency Management Agency (FEMA).

**Meeting Attendees**  
 2:00 p.m. Meeting

Name	Position	Organization
Denzil Mellors	Emergency Management Coordinator	Ramsey County Emergency Management
Tom Miller	Emergency Management Coordinator	St. Paul Emergency Management
Heather Winkleblock	Emergency Management Specialist	St. Paul Emergency Management
Randy W. Johnson	Emergency Management/Police	White Bear Lake
Art McIntyre	Planner	St. Paul / Ramsey County Public Health
Dave Zich	Emergency Management Coordinator	West St. Paul
Tim Vadnais	Emergency Management/Fire	White Bear Lake
Bart Fischer	City Administrator	Falcon Heights
Steve Luki	Emergency Management Fire	Maplewood Fire Department
Greg Peterson	Emergency Management Fire	Roseville
Tom Kinny	Police / Emergency Management	Mounds View
Andy Masterson	Police / Emergency Management	New Brighton
Patrick Klaers	City Administrator	Arden Hills
Heather Butkowski	City Administrator	Lauderdale

## Appendix B

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Name	Position	Organization
Trevor Hamlitt	NBDPS	NBDPS
Walter Johnson	Emergency Manager	Shoreview Emergency Manager
Tamala Mann	Regional Practice Manager	Science Applications International Corporation (SAIC)
Tamara Habib	Emergency Management Specialist	SAIC

### Meeting Attendees 6:00 p.m. Meeting

Name	Position	Organization
Denzil Mellors	Emergency Management Coordinator	Ramsey County Emergency Management
Tamara Habib	Emergency Management Specialist	SAIC
Tamala Mann	Regional Practice Manager	SAIC

**Host:** Denzil Mellors

**Consultants:** Tamara Habib, SAIC; Tamala Mann, SAIC

**Handouts:** Draft Ramsey County HMP

## Overview of Activities

### WELCOME AND INTRODUCTIONS

Mr. Denzil Mellors of Ramsey County Emergency Management opened the meetings. He introduced Ms. Tamara Habib of SAIC.

Ms. Habib provided an overview of why an HMP is necessary for Ramsey County and discussed the regulations supporting the development of the plan. Below is a summary of the key discussion points in the presentation. The full presentation is available through Ramsey County.

### PURPOSE AND IMPORTANCE OF HAZARD MITIGATION PLANNING

Hazard mitigation planning is required under the Disaster Mitigation Act of 2000. It guides post-disaster recovery, engages multiple community stakeholders, promotes public participation, evaluates hazards and risks, builds support for mitigation activities, helps educate community officials, and develops more effective community policies. In the future, federal funding for mitigation projects will be contingent upon having an HMP in place or being in the process of developing an HMP.

The benefits of an HMP include reducing vulnerability to future hazards, saving lives and property, gaining disaster funding, maintaining economic stability, and expediting recovery.

## PUBLIC MEETING ATTENDANCE RECORDS AND NOTICES

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Mr. Mellors requested that the contact information for Ramsey County Emergency Management be updated with his information.

### HAZARD MITIGATION PLANNING PROCESS

The first phase of the plan update involved initiating the planning project and organizing resources. A kickoff meeting with the Hazard Mitigation Steering Committee was conducted and data collection began at that time.

SAIC identified hazards and gathered preliminary risk assessment results. This included developing a base list of hazards, gathering information about those hazards, and conducting a risk assessment.

Additionally, SAIC drafted a findings report based on a risk assessment and consequence analysis.

SAIC developed mitigation strategies and a draft HMP, which was reviewed at a second public meeting and updated based on input from this meeting.

The HMP was then submitted to HSEM, who approved the HMP and then submitted it to FEMA. FEMA has conditionally approved the HMP on the basis that it must still be approved by all participating jurisdictions and the Ramsey County Board of Commissioners.

Public meeting #3 was an opportunity for members of the community to learn about the HMP and its contents.

### CALENDAR OF EVENTS

- Letter requesting support for the plan to all interested parties      October 2011
- Kickoff meeting and public meeting of mitigation process      November 10, 2011
- First draft HMP written      January 4, 2012
- Public meeting #2 for review of draft updated HMP      January 10, 2012
- Final mitigation strategy      February 9, 2012
- Draft updated HMP with changes required from public meeting for submittal to HSEM and FEMA for official review      February 24, 2012
- HSEM review period      February 24– May 9, 2012
- FEMA review period      May 9–June 18, 2012
- Final draft updated plan based on HSEM and FEMA recommendations      July 10, 2012
- Public meeting #3 for review of final updated HMP      July 11, 2012
- Completed HMP      September 18, 2012

### COMMUNITY PROFILE

Ms. Habib reviewed the community profile. This section of the HMP includes the demographics and land use and development trends for the county. Ms. Habib pointed out that Ramsey County is not experiencing significant growth and this is something that should be considered as

mitigation actions occur. Participants had no questions or comments regarding this section of the plan.

### REVIEW OF HAZARDS AND RISKS

Specific information on hazards and risks is located in section 4 of the draft HMP. Ms. Habib stated that hazards that are not included in the plan are not considered hazards for Ramsey County. Participants made the following comments regarding this section of the plan:

- All references to Ramsey County Department of Health should be removed and replaced with Ramsey County Public Health.
- All references to Vikings Stadium should be removed.
- One participant asked the source of information pertaining to critical facilities. Mr. Mellors responded that Ramsey County Emergency Management provided it.

### MITIGATION GOALS, OBJECTIVES, AND ACTION STEPS

Specific information on the mitigation goals, objectives, and action steps is located in section 5 of the draft updated HMP. Participants had no questions or comments regarding this section of the plan.

### FINAL COMMENTS

Following the presentation, Mr. Mellors thanked all participants for attending and SAIC for developing the plan. The next steps are to take the plan to all of the participating cities, townships, and the Ramsey County Board of Commissioners for approval. Once this is complete, Mr. Mellors will submit the approved HMP to FEMA for final approval.

PUBLIC MEETING ATTENDANCE RECORDS AND NOTICES

Ramsey County, Minnesota  
 Hazard Mitigation Plan Update  
 Public Meeting  
 July 11, 2012

Name	Department	Position	Phone	E-mail
Denzil McIlloes	Ramsey County	Em Coordinator	657 266 1015	denzil.mclloes@co.ramsey.mn.us
Tom Miller	SPEM	EM Coordinator	651 266-5804	tom.miller@ci.spaul.mn.us
Heather Winkelman	St Paul 911	EM Specialist	651-266-5491	heather.winkelman@ci.stpaul.mn.us
Faodry W. Johnson	WYRE BEAR LAKE	EM/Police	651-429-8553	fjohnson@whitebearlake.org
Art McKittrick	SFRCPH	Planner	651-266-2435	art@ci.mn.us
David Zick	W. St. Paul	EM coord.	651 755 3245	wdzick@stpaul.org
Jim Wickert	WRP	EM/Fire	651-434-8568	twickert@wrp.org
Bob Fisher	Falcon Heights	City Administrator	651-792-2600	bob.fisher@ci.falconheights.mn.us
Steve Lukin	MADEIRA PD	EM Fire	651-225-7202	steve.lukin@ci.madeira.mn.us
Greg Peterson	Roseville	EM/Fire	651-792-7304	greg.peterson@ci.roseville.mn.us
Tom Kinney	Brooks View	Police/EM	651-763-1173	tom.kinney@ci.brooksview.mn.us
Andy Masterson	Maple Branch	Police/EM	651-775-3480	andy.masterson@ci.maplebranch.mn.us
PATRICK KLERS	Anden Hills	City Administrator	657-792-7800	patrick.klers@ci.anden-hills.mn.us
Heather Butkowski	Handbault	City Administrator	651-792-7657	heather.butkowski@ci.handbault.mn.us
Trevor Barlow	WABPS	NE OPS	651-288-4165	trevor.barlow@ci.wabps.mn.us
Walter Johnson	Shoreview	Emergency	651-490-4684	wjohnson@shoreview.mn.us

Hazard Mitigation Plan Update Meeting posting  
to Ramsey County website – June 28, 2012



# NEWS

Contact  
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FOR IMMEDIATE RELEASE

## County to Host Countywide All-Hazard Mitigation Plan Meetings

ST. PAUL, MN, June 28, 2012 — Ramsey County will host a pair of public meetings July 11 to present its final, approved All-Hazard Mitigation Plan.

**What:** Countywide All-Hazard Mitigation Plan Public Meeting

**When:** First meeting at 2 p.m.; second meeting at 6 p.m., Wednesday, July 11, 2012

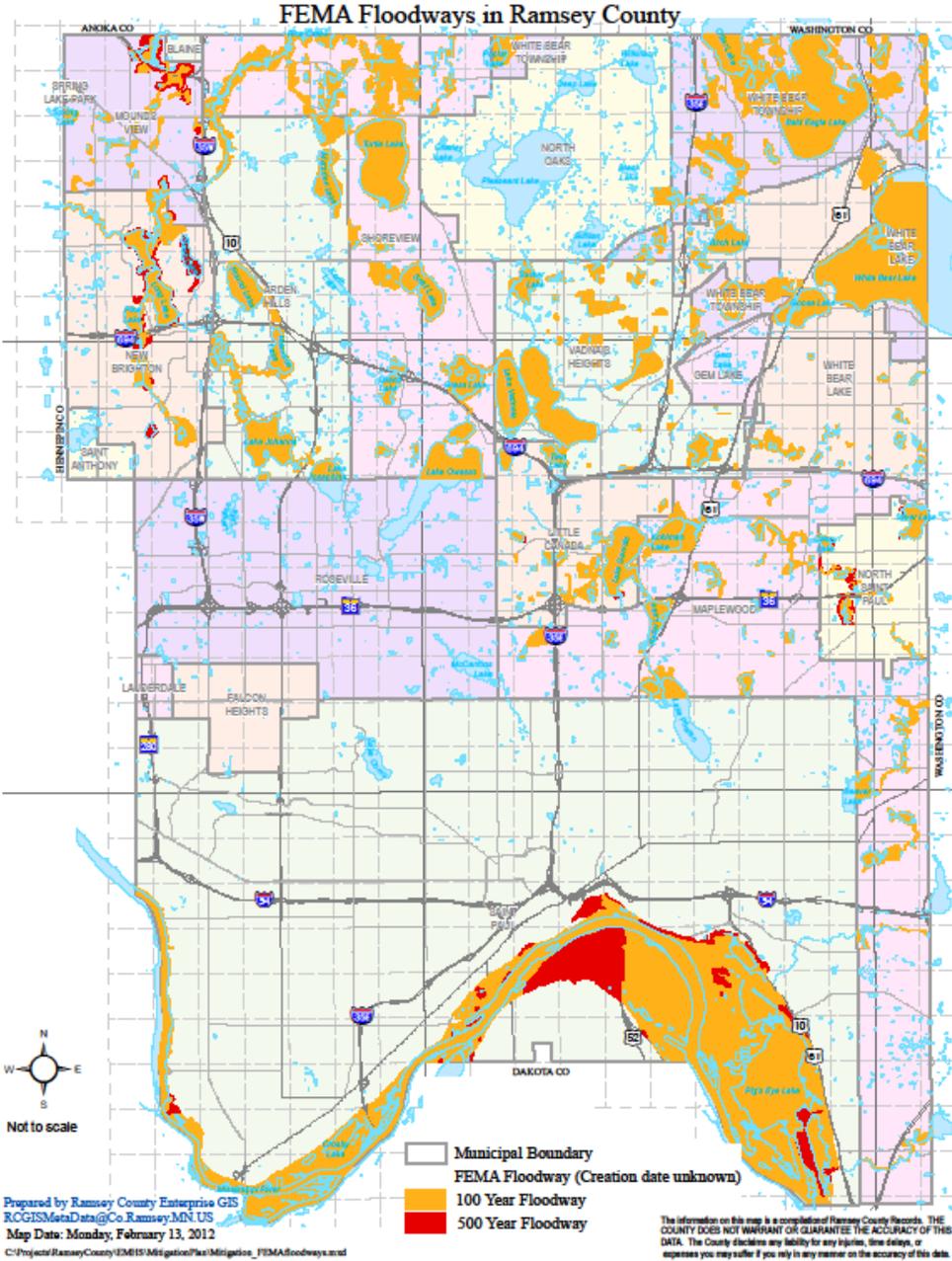
**Where:** Ramsey County Public Works, 1425 Paul Kirkwold Drive, Arden Hills 55112

**More information:** Denzil B. Mellors, Mitigation Project Lead / Emergency Management Coordinator, Ramsey County Emergency Management and Homeland Security, (651) 266-1015 or denzil.mellors@co.ramsey.mn.us

The Ramsey County All-Hazard Mitigation Plan is aimed at helping the communities in the county to prepare for a variety of hazards, such as flooding, tornadoes and terrorist attacks before they occur. The plan outlines goals, objectives and strategies for the county in order to coordinate efforts to reduce the effects of disasters. This in turn will help to reduce the costs when hazards do occur.

The plan has been approved by the State Division of Homeland Security and Emergency Management and the Federal Emergency Management Agency. The adoption of this plan by Ramsey County and the municipalities will allow them to be eligible for Hazard Mitigation Grant Program project funds. These funds will help to offset the costs of some of the mitigation projects set forth in the plan.

# Appendix C FLOOD PLAIN MAPS





## Appendix D

# EMERGENCY COMMUNICATIONS CENTER AND RADIO SYSTEMS

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Ramsey County's decision to upgrade technology for an interoperable 800 MHz radio emergency communications system revived a discussion, dating from the 1940s, concerning consolidation of public safety dispatch services. In 2002, the County Board charged a task force with finding solutions to the rising costs of necessary upgrades for advanced telephone and computer technology, trained personnel, and professional management. The task force was to consider options that might include consolidating the four existing public safety dispatch centers in the Ramsey County.

To build the radio network, the County purchased and installed approximately 3,000 interoperable radios in public safety and public service vehicles, and trained the radio operators. Radios with access to interoperable channels can communicate with other radios on the 800 MHz emergency communications interoperable network throughout the State. The Ramsey County radio system is a subsystem of the metropolitan region-wide radio system with ties to the statewide interoperable radio network. Dispatch, police, fire, ambulance, school security, public works, and public transit personnel within the metropolitan region and beyond have the capacity to communicate via radio when responding to an emergency.

In late 2005, three of four dispatch centers that cover emergency dispatch services for all but one municipality in Ramsey County, reached merger agreements to use the Ramsey County Emergency Communications Center (RCECC) as their emergency communications and dispatch center.

The City of White Bear Lake continues to operate its own dispatch center. Eighteen public agencies, including fire, law enforcement, and emergency medical services are dispatched by the RCECC. The RCECC employs the staff from the dispatch centers previously managed by the Ramsey County Sheriff's Department, the Saint Paul Police Department, and the Maplewood Police Department.

In the spring of 2007, a new facility designed with new technology and improved processes was finished. Employees from the former Maplewood and Ramsey County dispatch centers moved into the new RCECC. By November, 2007, employees from St. Paul's dispatch center moved into the RCECC.

Hiring and training has increased the number and flexibility of staff. The Department currently employs over 130 staff to sustain 24-hour emergency service.

<http://www.co.ramsey.mn.us/ecc/radio.htm>

### **Technical Details of the Ramsey County 800 MHz Radio System**

The ARMER Project 25 digital trunked radio system consists of portions owned and operated by the State and portions owned and operated by individual counties and cities. The Minnesota

State Radio Board (SRB) oversees the system. Counties are responsible for system portions they built, but must operate within SRB rules.

The Ramsey County 800 MHz radio system is a portion of the Minnesota ARMER trunked digital radio system. Because of the connection to the state system, Ramsey County radios can communicate with any other 800 MHz radio anywhere in the State with radio coverage.

The Ramsey County radio system uses APCO Project 25 digital modulation.

This robust modulation scheme works well beyond the boundaries where older FM radio systems fail. This means that the radio transmissions stay clear and easy to understand inside the network.

The Ramsey County portion of the ARMER system consists of seven radio sites around the County, each with 22 transmitters. The radio sites are connected by microwave transmissions and fiber optic cable. One transmitter, used as the "control channel," directs the system-affiliated portable and mobile radios where they should go to send or receive their transmissions. The other 21 transmitters are used as required to transmit the more than 350 virtual channels

("talkgroups") programmed into various Ramsey County radios. The transmissions of other talkgroups that originate in Ramsey County, other counties, or at the state level are sorted by the control channel that respond to what each radio is tuned too.

The 22 transmitters employed by this system do the work of many old style transmitters. Since the system's portions interconnect, each site transmits the same transmission, providing protective redundancy against the failure of one or more sites taking the entire system off the air.

Even if the whole Ramsey County system were to fail, the radios would automatically affiliate with one of the other county or the State sites and transmissions would continue with minimal interruption.