

Lake of the Woods Hazard Mitigation Plan

July 20

2013

Lake of the Woods County has completed a planning process to update their hazard mitigation plan according the FEMA guidelines, with funding and input from HSEM of the State of Minnesota.

A multi-jurisdictional plan serving Lake of the Woods, Baudette, and Williams.

A special thanks to our partner agencies that made this possible:

The Federal Emergency Management Agency
Minnesota Homeland Security and Emergency Management

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The Plan Introduction

Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk—to people, property, and the natural environment—from natural or human caused hazards or effects. The Federal Emergency Management Agency works with states, local governments, and tribes to accomplish hazard mitigation planning and mitigation activities.

A hazard, like a flood or wildfire, can have costly impacts on a community. Hazards may destroy property, disrupt business, or at their worst cause injury and death. When the impacts of a hazard are large there is typically said to have been a disaster. Following a disaster, FEMA, states, local governments, and private citizens spend immense amounts of money to rebuild their lives and communities. A cycle of—*damage, recover, damage, recover, and so on*—has developed.

Mitigation Goals

The Lake of the Woods Hazard Mitigation Plan outlines three primary goals.

1. Limit the impact of hazards on people, protect their life and safety.
2. Preserve critical infrastructure, continuity of government, and services serving vulnerable populations.
3. Protect property (public and private) from damage and/or reduce the impact.

Mitigation is a way to reduce the impact of hazards, and therefore the cost of rebuilding. Furthermore it breaks the cycle of *damage, recover, damage, recover*. Mitigation activities can be typically fit onto one of the following categories:

- Prevent hazards,
- Protect property,
- Educate and raise awareness among the public,
- Protect natural resources,
- Prepare emergency services, and
- Other structural projects.

Mitigation's role in disaster recovery is shown right. When mitigation actions are implemented as part of the recovery process it can reduce the impact of future hazards.



Document Purpose

The purpose of this plan is to assess the risk of hazard occurrence, identify what is vulnerable to those risks, and identify mitigation projects to prevent or reduce the impact of hazards. It is an update to an existing mitigation plan. A planning and engagement process working with local government officials, local agency staff, regional and statewide staff, and the public was used to create this plan.

This document is a working document, one that can be modified and updated easily as community priorities change, mitigation activities progress, and new data becomes available.

Benefits

The hopeful benefit of this plan is to reduce the impact of hazards through 1) thoughtful engagement, and 2) monetary support.

The process of creating this plan requires that stakeholders throughout the community and region come together to be thoughtfully engaged in reducing the impacts of hazards. This engagement leads to discussion that might not normally take place, focused research, and collaboration. This engagement helps to create strategies that can be implemented to reduce the impact of hazards.

Many strategies for hazard mitigation are low-cost or no-cost solutions. Some strategies are more costly. This plan helps communities to identify which strategies are most important and how much they might cost. Also, by documenting mitigation actions as important to the community and having a monetary benefit, this plan can provide support for different grant funding opportunities. For example, the Federal Emergency Management Agency and the Economic Development Administration both provide grant funding for mitigation activities.

Scope

Geography

This plan serves Lake of the Woods County and the cities of Baudette and Williams. The City of Roosevelt, on the west side of

the County, is incorporated into emergency preparedness and planning activities in Roseau County and is not included in this plan.

Other political geographies exist within the County: school districts, the Soil and Water Conservation district, the Headwaters Regional Development Commission, and others. Many government units and stakeholders were engaged in the process.

The Red Lake Tribe has jurisdiction over lands throughout the County. The southern portion of Lake of the Woods has some Red Lake lands, while much of the Northwest Angle is Red Lake land. The County has no jurisdiction on these lands and does not include them in this mitigation planning effort. The Red Lake Tribe is in the process of beginning a hazard mitigation planning process. The lands of the Red Lake Tribe will not be included in the scope of this plan.

Hazard Scope

Hazards are typically described in three broad categories, natural hazards, technological hazards, and human caused hazards.

Natural hazards are those related to weather, atmosphere, the hydrologic cycle, soils and bedrock, and other things related to natural processes. Examples of these include: wildfire, overland flooding, groundwater flooding, subsidence and mass movements, hail, high winds, or tornadoes. With the advent of human caused climate change and changing weather patterns the clarity of which hazards are pertinent can be unclear.

Technological hazards include hazards that result from failure of human technology. Examples of technological hazards might be the unintentional failing of a bridge because it was under-engineered,

or a dam/levee failure, or the failure of an important computer network or online service.

Human caused hazards are hazards caused by people's actions. These actions might be well intentioned, accidental, or ill-intentioned, but because of these actions a hazard precipitated. An example of a human caused hazard is a terrorist attack or a motorist accidentally striking a liquid propane tank causing an explosion.

All of these hazards are pertinent to the community and belong in their hazard mitigation plan. In this plan a more detailed focus is placed on natural hazards because human caused hazards and technological hazards are more regularly managed through other planning processes and policies.

Legal Authority

This plan was developed in accordance with the requirements set forth by Section 104 of the Disaster Mitigation Act of 2000 (DMA 2000).

Guidance documents developed by the Minnesota Department of Homeland Security and Federal Emergency Management Agency were used during development of the plan to help direct the planning process and outline the scope of work.

Cities within Lake of the Woods County have delegated their authority for emergency management to the County and hazard mitigation planning is one part of the programmatic responsibility of Lake of the Woods County Emergency Management.

Planning Framework

Plan Adoption

The Lake of the Woods County Hazard Mitigation Plan will be effective upon approval by HSEM and FEMA, and adoption by the Lake of the Woods County Board of Commissioners thereafter.

This plan will also serve as a plan for the cities in Lake of the Woods County.

History of Mitigation Planning

After the passage of the Disaster Mitigation Act of 2000 Lake of the Woods County contracted with the Headwaters Regional Development Commission (HRDC) to write the County's first hazard mitigation plan, adopted by the County in 2008.

By 2011 many of the activities in the original hazard mitigation plan had either been accomplished, outdated, or irrelevant. It was time to review the plan, review the mitigation actions accomplished, and develop some new strategies. In 2012, the Lake of Woods County Emergency Manager, Holly House, worked with HRDC to pursue grant funding for a plan update and subsequently contracted with HRDC to execute the plan update.

Planning Team

A hazard mitigation planning team was formed to guide the process of updating the hazard mitigation plan. The core planning team, or Planning Taskforce, consisted of:

- Todd Beckel/Tom Hanson County Board Chair
- Rick Rone Baudette Mayor
- Tim Erickson County Engineer
- Jacqui Becklund Williams Clerk
- Brad Levasseur Baudette Fire Chief
- Michelle Brown Public Health
- Holly House Emergency Management

- Gary Fish Sheriff
- Josh Stromlund Land and Water Planning
- Jason Goulet Deputy NW Angle
- Mary Jo Otten Assessor
- Marcus Grubbs Planning Consultant, HRDC

Other stakeholders were engaged throughout the process including emergency services, cities, townships, consulting engineers, utilities, other agency staff, political leaders, professional planners, and the public.

Section I: Background

Community Profile and Background

The following community profile provided context to the planning process. The information in this profile is related to the physical, demographic, economic, and social characteristics of the community. It focuses on understanding the trends related to growth, development, and changing needs of the population.

Introduction

Lake of the Woods County is located in Central Northern, MN. It has a population of about 4,000 people and is probably most widely known for its great fishing on Lake of the Woods. The County seat is Baudette with a little over 1,100 residents. Smaller communities, Williams and Roosevelt, are also in Lake of the Woods County. On the north side of the lake, and accessible only through Canada or by air is the Northwest Angle, a community with about 100 residents on the main land and islands.

Lake of the Woods County is 1,773 square miles or 1,133,887 acres. Of that approximately 30% is open water and another 50% is wetlands of some kind.

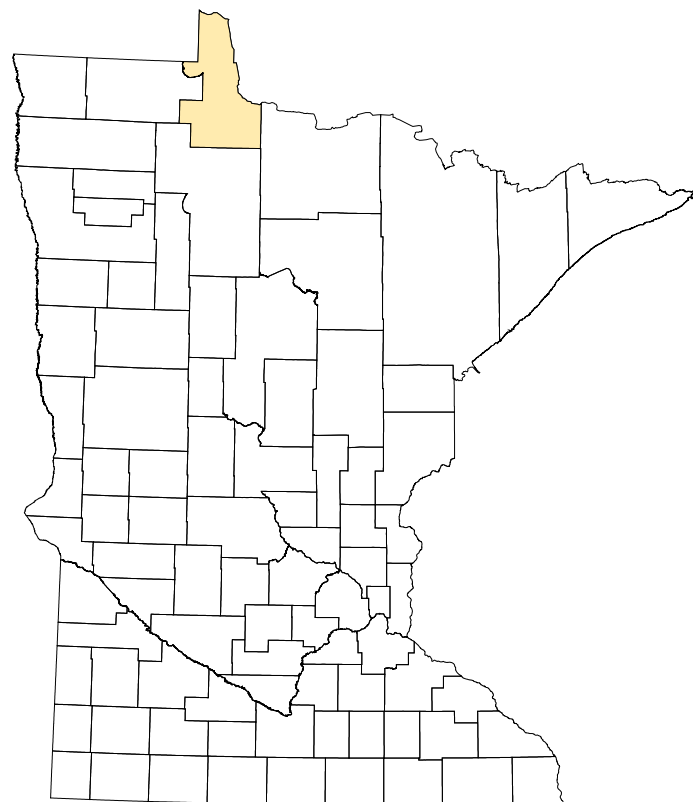


Figure 1-1. Lake of the Woods County in Central Northern Minnesota.

Demographic Characteristics

Population Characteristics

In 2010, Lake of the Woods County had a population of 4,045 residents; Baudette had a population of 1,106 residents, and the city of Williams had a population of 191 residents. 2,748 people lived outside the cities of Baudette and Williams, about 68 percent of the population. This 68 percent live in low density rural development. The total population of Lake of the Woods County has declined by approximately 12 percent since 2000.

The median age has increased by seven years from 2000 to 2010, and population under 20 has declined by 5 percent from 2000 to 2010. Also the population of 65 and over has increased 3 percent from 2000 to 2010. Generally, the population has become older.

There has been a very slight increase in diversity in Lake of the Woods County, as the percentage of residents identifying as white has dropped by a little over 1 percent since 2000. There was slight growth in the Asian population and Hispanic or Latino populations. There was a slight decline in the American Indian or Alaskan Native populations.

Population Projections

The data in the **table 1-2**, right, represent population projections from the Minnesota

Table 1-1. Demographic Summary Table: Baudette and Lake of the Woods Co.

	Baudette		LOW County	
	2010	2000	2010	2000
Population	1,106	1,104	4,045	4,522
Median Age	46.1	42.2	48.7	41.6
Under 20 (%)	25	27	22	27
Over 64 (%)	22	25	20	17
White Population (%)	94.4	94	95.8	97.2
Minority Populations (Alone or in Combination) (%)				
Black or African American (%)	0.1	0.5	0.3	0.3
American Indian or Alaskan Native (%)	0.7	2.9	0.7	1.1
Asian (%)	0.8	0.4	0.8	0.2
Hispanic or Latino (Any Race) (%)	1.8	0.7	0.9	0.6

Source: U.S. Decennial Census 2010, 2000

State Demographic Center, for Lake of the Woods County. The estimated population for 2010 was 4,410, increasing to 4,500 by year 2020. The projections shows a peak of 4,550 by year 2025 and then a decline back to 4,500 in year 2035. The actual population recorded from the 2010 U.S. Census was 4,045 which is 365 lower than the 2010 projection. This indicates some inaccuracy in the projection, which is not surprising.

Table 1-2. Lake Of The Woods County Population Projections

Year	2010 (Actual)	2010 (Estimated)	2015	2020	2025	2030	2035
Population	4,045	4,410	4,420	4,500	4,550	4,530	4,500

Source: Minnesota State Demographic Center and U.S. Decennial Census, 2010 (Actual)

Economic Characteristics

The Labor force

The Minnesota Demographic Center projections show that the overall labor force will decrease by 17.2 percent over the next 25 years, see **table 1-3**, right.

The only age cohort projected to see an increase is the cohort 65 and over. The 65 and over cohort is expected to grow by 66 percent. .

Other age cohorts in the workforce are expected to decline. Each group is projected to decrease by 19-24 percent over the next 25 years.

Table 1-3. Lake Of The Woods County Labor Force Projections: 2010-2035

Labor Force Type							2010 - 2035	
	2010	2015	2020	2025	2030	2035	% Change	
Total labor force	2,320	2,220	2,140	2,110	1,990	1,920	-17.2	
Age 16-24	260	220	190	210	210	210	-19.2	
Age 25-44	800	730	720	690	630	610	-23.8	
Age 45-64	1,110	1,110	980	920	870	850	-23.4	
Age 65 plus	150	170	250	290	280	250	66.6	

Source: Minnesota State Demographic Center.

Table 1-4. All Industry Employment in Baudette and Lake Of The Woods County

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Baudette	1,156	1,119	1,112	1,150	1,146	1,148	1,121	1,084	911	866	825
Lake Of The Woods	1,537	1,499	1,507	1,602	1,611	1,620	1,604	1,518	1,480	1,410	1,412

Source: Minnesota Department of Employment and Economic Development

Industry and Business Statistics

Employment in all industries is shown in **table 1-4**, right. From 2000 to 2010 overall employment has decrease by 28.6 percent for the City of Baudette. Lake of the Woods County has also seen decreases in overall employment by about 8 percent. The drop-off in overall employment is much greater for Baudette, compared to the rest of the county.

Minnesota overall employment is projected to increase by 7.6 percent over the period of 2009 to 2019. The only industry which is projected to experience a decrease in employment is manufacturing. The greatest increases projected are in professional and business services, and education and health services.

Projections

Employment projections in the Northwest Region of the State, including Lake of the Woods County, are shown by industry in **table 1-5**, below. The data shows that for the Northwest Region of

Table 1-5. Long-Term Employment Projections in the Northwest Region of the State, Including Lake Of The Woods County

Industry	Estimated Employment 2009	Projected Employment 2019	Percent Change 2009 - 2019	Numeric Change 2009 - 2019
Total, All Industries	250,094	269,203	7.60%	19,109
Natural Resources and Mining	4,839	4,955	2.40%	116
Construction	9,303	10,097	8.50%	794
Manufacturing	25,770	25,221	-2.10%	-549
Trade, Transportation and Utilities	44,451	45,655	2.70%	1,204
Financial Activities	7,357	8,123	10.40%	766
Professional and Business Services	9,012	11,014	22.20%	2,002
Education and Health Services	56,428	66,976	18.70%	10,548
Leisure and Hospitality	24,330	26,163	7.50%	1,833
Other Services	10,048	10,641	5.90%	593
Public Administration	22,901	23,621	3.10%	720
Total Self-employed	32,195	33,363	3.60%	1,168

Source: Minnesota Department of Employment and Economic Development

Agricultural Statistics

The 2007 Agricultural Census, highlighted in **table 1-6**, identify 225 farms located in Lake of the Woods County. The average farm size is 431 acres of land. The total acreage of farmland for the county is 96,932 acres.

Agriculture is an important industry in Lake of the Woods with over 11 percent of the entire County used for agricultural purposes and market values of crop sales amounting for 6,386,000 dollars and value of livestock sales being 1,028,000 dollars.

Social Profile and Quality of Life

Income and Poverty

The mean income for 1,784 total households in Lake of the Woods County was 61,913 dollars compared to the national mean income for households of 68,259 dollars. The median income for those 1,784 households was 46,080 dollars compared to the national median income for households of 50,046 dollars. Household income is slightly more skewed towards having a few higher income residents and many lower income residents in comparison to the Nation.

Of 1,333 families the mean income was 69,798 dollars compared to the National mean income for families of 79,338 dollars. The median income for those 1,333 families was 51,161 dollars compared to the National median income for families

Table 1-6. Agricultural Data for Lake of the Woods Co.

Number of Farms	225
Land in Farms	96,932 acres
Average Size of Farm	431 acres
Market Value of Production Sold	
Crops Sales	\$6,386,000 (86 percent)
Livestock Sales	\$1,028,000 (14 percent)
Types of Farm Land	
Cropland	60.11%
Woodland	26.51%
Pasture	6.75%
Other Uses	6.63%

Source: 2007 Census of Agriculture, USDA

Table 1-7. Income in Lake of the Woods

	Total	MOE	Dollars	MOE	United States
All Households (Mean Income)	1,784	141	61,913	9,896	68,259
All Families (Mean Income)	1,333	134	69,798	13,039	79,338
All Households (Median Income)	1,784	141	46,080	5,140	50,046
All Families (Median Income)	1,333	134	51,161	12,906	60,609
PER CAPITA INCOME (Total Population)	4,147		27,192	4,928	26,059

Source: American Community Survey (ACS) 2010

of 60,609 dollars. Families in Lake of the Woods have less income than their nation-wide counterparts. The per capita income for Lake of the Woods County was \$27,192, while the National per capita income is about 1,000 dollars less.

Table 1-8. Poverty in Lake of the Woods County

	Total	Below Poverty Line	MOE	Percentage	MOE
Population	4,137	565	176	13.7	4.3
Civilian Labor Force (16+)	2,200	237	82	10.8	3.8
Persons age 65+	809	41	30	5.1	3.7
Source: American Community Survey (ACS) 2010					
Note: MOE Columns represent the Margin of Error					

While families have less income individual incomes hold their own, and even exceed National per capita incomes.

Table 1-8, above, highlights poverty issues in Lake of the Woods. Over 13 percent of Lake of the Woods County is impoverished. Of the 2,200 people that are a part of the civilian labor force almost 11 percent of them are impoverished. Lake of the Woods County has 809 people that are 65 and over, about 5 percent of those people are impoverished.

Household make up and Housing Stock

There are 3,672 housing units in Lake of the Woods County, **table 1-9** right. Of those 3,672; 49 percent are occupied and 51 percent are vacant. Of the 49 percent that is occupied housing; 41 percent is owner occupied and 8 percent is rental housing. In the 51 percent that is overall vacant housing; 1 percent is rental, 1 percent is for sale, 46 percent is seasonal, and 3 percent is listed as other.

Baudette and Williams have a total of 687 housing units, which accounts for about 19 percent of the total housing in Lake of the

Table 1-9. Housing Units and Ownership, 2010

Description	Units	Percent of all Households
Housing Units	3672	100
Occupied	1784	49
Vacant	1888	51
Owner Occupied	1479	41
Rented	305	8
Vacant	1888	51
For Rent	40	1
For Sale	42	1
Seasonal	1696	46
Other	110	3

Source: U.S. Decennial Census, 2010

Woods County. In other words, the other 81 percent of housing units is rural.

Table 1-10. 65 and Over Householders in LOW

Householder	Number	Percent of all Households
Householders	523	29
Owner Occupied	433	24
Renter Occupied	90	5
Living Alone	221	12

Source: U.S. Decennial Census, 2010

Another focus is the housing situation for those residents 65 and older. Lake of the Woods County has 523 householders that are 65 years and over. Of those 523 houses, 433 are owner occupied and

90 are renter occupied. It's important to also look at those 65 and over that are living alone. Out of the overall 523 households, approximately 221 are living alone. About 50 percent of those 65 and over-living alone live outside of the city of Williams or Baudette.

Projections

The Minnesota Demographic Center produces projections for household numbers in Lake of the Woods County, shown in **table 1-11**, right. Married couples with children are projected to decrease by 33 percent from 2010 to 2035. Households categorized as other families with children are projected to decline by 16 percent. Projections for Nonfamily households show an increase over this 25 year period of over 27 percent.

The most significant change projected is in the category of 65 years and older, showing an increase of more than 88 percent. The projections for total households show an increase of more than 31 percent, with the number peaking at 2,020 by the year 2030.

Table 1-11. Projections for Households in Lake of the Woods County

Household Type	2010	2015	2020	2025	2030	2035	2010 - 2035
							% Change
Married Couples with Children	360	300	280	270	250	240	-33.3
Other Families with Children	120	120	110	110	100	100	-16.6
Nonfamily Households, Living Alone	620	650	680	720	770	790	27.4
Living Alone, 65+	270	290	340	410	480	510	88.8
Other Nonfamily Households	70	70	70	70	70	70	0
TOTAL HOUSEHOLDS	1920	1910	1950	2000	2020	2010	31.8
Source: Minnesota Demographic Center							

Physical Characteristics

Geology

The land area the County occupies was created largely by several periods of glaciation, particularly glacial Lake Agassiz. The County is on the southern edge of the Canadian Shield, is generally flat, sloping very gradually toward the Rainy River and Lake of the Woods, with scattered bedrock outcrops and glacial lake beach deposits. Lake of the Woods is the dominant water related feature, covering 950,400 acres in Minnesota and Canada, itself containing 14,000 islands.

The bedrock in the County consists of a complex of Precambrian igneous and metamorphic rocks. Bedrock distribution is mainly inferred from gravity and aeromagnetic data. Glacial drift thickness ranges from zero to greater than 200 feet in the County. The thinnest drift is near Rainy River and Lake of the Woods. In the eastern part of the County, where subsurface control permits relatively close definition, extreme variability in the drift thickness is evident. Within a mile of a bedrock outcrop, drift thickness may exceed 100 feet. Data was obtained from USGS Hydrologic Investigations.

Soils

Soils contribute greatly to the development of a place through their unique properties. Soil properties are developed through five major contributing environmental elements: 1) parent geological material, 2) climate, 3) topographic relief, 4) organismal contributions (plants and animals interacting with the soil), and lastly 5) the length of time for which the previous four have been interacting.

Woods Soils depicts the distribution of soil textures throughout the County. A set of broad soil types result from the above mentioned five contributing elements. These soil types in Lake of the Woods County include:

- forest soils with mean temperatures below 47 degrees Fahrenheit,
- soils of the prairie-forest transit with mean temperatures below 47 degree Fahrenheit, and
- organic soils.

Soils are further described by their properties. And broadly, **table 1-12** describes the major soil texture characteristics. The majority of soils are fine-loamy soils, spread across the eastern portion of the County and including the Northwest Angle. Other soil

Table 1-12. Soil Characteristics not Including Lake Beds

Soil Character	Acres	Percent
Fibric	6,111	1
Fine-Loamy	386,185	46
Hemic	176,206	21
Sandy/Loamy	193,614	23
Sapric	28,136	3
Very-fine	41,596	5

Source: U of M, Dept. of Soils, Water, and Climate. 2007.

types include sandy/loamy soils in the west. Hemic soils also occur widely throughout the County. Baudette rests largely on very-fine soils, while Williams rests on fine-loamy soils. All of this soil is a result of similar climactic conditions, the same gray till parent material, and very little topographic relief. A map of soils can be found in the *Lake of the Woods County Comprehensive Land Use Plan*.

Soil characteristics are important because they affect how water drains, how stable structural foundations will be, and the economic

success of soil dependent activities such as farming. These are only a few examples. A good place to begin researching properties related to the soils of Lake of the Woods is to further review a Cummings/Grigal Soils map, review the United States Department of Agriculture Natural Resource Conservation Service's *Keys to Soil Taxonomy Eleventh Edition*. More detailed information about soils is available in print through the county soil survey.

Topography

There is very little topographic relief throughout the County. Although digital data of absolute elevations is not available, we can demonstrate the relative topographic relief. **Map 4 – Shaded Relief of Lake of the Woods** demonstrates this relative topographic relief in relation to some major landmarks. The lowest lying land is adjacent to the lake, the Rapid River, and the Rainy River. This should be no surprise, but does inform which elevations may be more at risk for flooding.

One important feature we can't glean from the shaded relief is the slope. We do know there is slope, but the degree of slope is unclear. Lake of the Woods County is a series of steps formed by glacial Lake Agassiz beaches sloping gradually toward the northeast. The highest elevation in the county is 1,312 feet at Norris Camp. The lowest point is Lake of the Woods at 1,060 feet. Baudette has an elevation of 1,090 feet. Elevations in the southwestern part of the County are approximately 200 feet higher than areas near Lake of the Woods. A topographic relief with elevation iso-lines would illuminate any questions about topographic relief.

Land Cover

Land cover impacts a number of hazard related issues on the landscape. **Map 2 – Land Cover** depicts the land covers described by the Minnesota Land Cover Classification System. This geospatial data is available through the Minnesota Department of Natural Resources. One of the most important land covers to take notice of is "impervious surface." These surfaces are measured to a varying degree, but

	Table 1-13. Land covers of Lake of the Woods	
	Acres	Percent
they indicate a highly developed area. Other land covers, such as lawn, also indicate developed areas.	Open Water	304,494 26.85
	Developed Open Space	9,340 0.82
	Developed, Low Density	1,133 0.10
	Developed, Medium Density	161 0.01
	Developed, High Density	56 0.00
	Barren Land	228 0.02
	Deciduous Forest	210,914 18.60
	Evergreen Forest	41,987 3.70
	Mixed Forest	100 0.01
	Shrub/Scrub	4,355 0.38
Other land covers are hugely important. The varying types of natural	Grassland Herbaceous	14,362 1.27
	Pasture/hay	30,083 2.65
	Cultivated Crops	39,963 3.52
	Woody Wetlands	257,169 22.68
	Emergent Herbaceous Wetlands	220,274 19.43
	Source: National Land Cover Data Base. 2001.	

covers might indicate how the certain drainages will work because some covers evapo-transpire more waters than others. Likewise impervious covers allow for minimum infiltration and affect

drainages. These things are most relevant to issues related to flooding and wildfire.

Open water, including Lake of the Woods Lake, and wetlands accounts for over 60 percent of the land cover in Lake of the Woods. Deciduous forest amounts to approximately another 20 percent of the land cover. Developed lands account for about one percent of the County.

Some discrepancy between **Map 2** and **Table 1.13** exists because they are generated from different surveys, the former from the Minnesota Land Cover Classification System (1997) and the later from the National Land Cover Data Base (2001).

Land Use

Lake of the Woods is unique in the region in that it has made a strong land use planning effort. Land use in Lake of the Woods County is managed by the County Land and Water Planning department. They maintain a comprehensive land use plan, zoning ordinances, a wetland plan and ordinance, a comprehensive water plan, and are the County's flood plain manager. Likewise the City of Baudette maintains a floodplain management ordinance and zoning ordinances. The City of Williams also maintains zoning ordinances.

Surface Water Resources

As previously stated, open water and wetlands amount to approximately 60 percent of land cover, based on 2001 National Land Cover Database data. The Minnesota Department of Natural Resources maintains a map of wetlands based on aerial photography. This data is accurate to at least 1:100,000, but many lakes are accurate to the 1:5,000 levels. In many counties the

smallest mapped lakes are two acres. **Map 3 – Wetlands and Surface Water** in Lake of the Woods shows wetlands and surface waters

Map 7 – Historic Flood Damage and Floodplain depicts historic flooding and mapped flood plains. The importance of open water and wetland resources are discussed further in the *Community Assets* section, below.

Lakes and wetlands cover almost 1,000,000 acres of the County. Most of this area is Lake of the Woods in the northern areas of the County, as well as massive wetland and peat bog complexes throughout the County. Most of the southwestern part of the County is uninhabited due to the intensity of the wetlands.

Table 1-14. Wetland by Type, Excluding Open Water

		Acres	Percent
Type 1	Seasonally Flooded	1,880	0.00
Type 2	Inland Fresh Meadows	51,757	0.05
	Inland Shallow Fresh		
Type 3	Marshes	7,979	0.01
Type 4	Inland Deep Fresh Marshes	2,154	0.00
Type 5	Inland Open Fresh Water	303,253	0.31
Type 6	Shrub Swamps	197,330	0.20
Type 7	Wooded Swamps	154,285	0.16
Type 8	Bogs	272,805	0.28
	Total	991,443	1.00

Source: National Wetland Inventory

The term "wetland", as defined by the Minnesota Department of Natural Resources, refers to transitional land between terrestrial

and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water. For the purposes of this definition, wetlands must have the following three attributes:

- a predominance of hydric soils;
- inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of hydrophilic vegetation typically adapted for life in saturated soil conditions; and
- under normal circumstances, able to support a prevalence of such vegetation.

There are a total of 1,138,959 acres in Lake of the Woods County. Of this total, 991,443 acres are wetlands. The total acreage of wetlands by type is presented in **table 1-14**, from the National Wetland Inventory.

Ground Water Resources

Ground water is also an important resource for the community. The numerous wetland complexes are expressions of groundwater. It is very apparent that groundwater resources are near the surface throughout the County. This also means that groundwater is more highly susceptible to contamination. Wetland areas are particular point of vulnerability for groundwater.

Existing Development Patterns

Existing development patterns and population distribution are demonstrated by mapping E-911 data, or data points depicting driveway entrances. **Map 5 – Development Density** shows these points dissolved over a grid to show density. As expected the predominance of development occurs in Baudette, Williams, and

along the Rainy River. Development is very limited in the southern area of the county, due to the predominance of wetlands.

Climate and Weather

Climate

Climatic conditions are the conditions that produce weather. Climate is typically measured by long-term averages of weather activities. Climatic conditions contributing to weather include ocean currents, large air currents across the continent, and cyclical conditions like El Niño and la Niña associated with Pacific Ocean temperatures. All of these conditions impact the weather in Lake of the Woods.

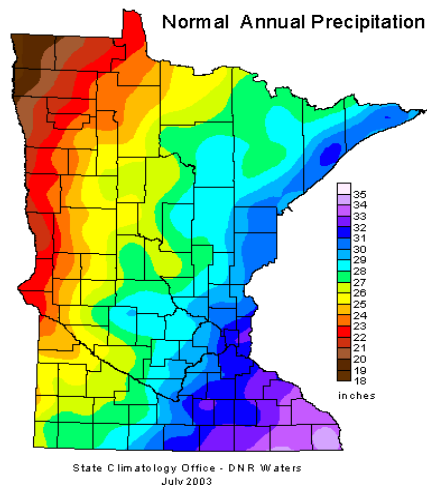


Figure 1.2 – Normal Annual

Table 1-15. Lake of the Woods, 1981-2010 Normal Climate Summary (Degrees Fahrenheit, Inches)

Location	Ave Annual Temp	Summer Ave Temp	Winter Ave Temp	Spring Ave Temp	Fall Ave Temp
Baudette International Airport	38.3	64.2	8.8	38.8	40.9
Baudette	39.4	66.5	8.9	39.8	42
Camp Norris, DNR	38.2	64.5	8.2	38.9	40.8
	Ave Annual Precip	Summer Ave Precip	Winter Ave Precip	Spring Ave Precip	Fall Ave Precip
Baudette International Airport	24.11	11.14	16.2	5.05	6.3
Baudette	23.44	11.13	15.4	4.73	6.04
Camp Norris, DNR	25.22	11.53	20	5.34	6.35

Note: Most data points are comprised using scaled data to fill the entire data series where some points are missing.

Source: National Climatic Data Center, National Oceanic Atmospheric Administration. 1981-2010 Normal Values.

On a micro geographic scale, the presence of the Lake of the Woods impacts the short-term weather conditions in the area, increasing snow falls and insulating the area from temperature swings.

Weather

Normal weather conditions from 1981-2010 are shown in **table 1-15** above. Measurements were taken at the Baudette Airport, the City of Baudette, and the MN DNR Camp Norris. The mean annual precipitation is about 24 inches of water, with winter precipitation account for more than half, between 15-20 inches of water.

Precipitation is relatively less than the majority of the State, see ***figure 1-2.***

Average annual temperature is approximately 38-39 degrees Fahrenheit, with summer averages in the mid 60's and winters in the single digits.

Projected Changes

Climatic changes have been predicted and witnessed over the last 20 years. These changes are generally attributed to human behaviors releasing greenhouse gasses into the atmosphere as a result of increased industrial activities. The general projection is that as a result of more energy in the atmosphere (global warming) there will be changes to weather patterns. Weather will become predictably more volatile causing drier droughts in some places, but wetter seasons in others, and both droughts and floods in some places.

The increasing proportion of record setting high temperatures compared to record setting low temperatures is a visible trend to support the claim of increased energy and warming. The historic prevalence of certain risks should be taken with a grain of salt given this recent and ongoing climate change. It is expected that extreme heat events will become more common. Additionally, drought will be an increased risk. Not only can heat and drought impact agricultural production, but water quality and quantity issues may also result. The bottom-line is that hazard mitigation must consider events and conditions that were never even possible before.

Community Profile Conclusions

The Planning Taskforce had the opportunity to review the community profile of Lake of the Woods County, but was also provided with a brief summary, included below.

The Community Profile discusses issues related to:

- Demographics,
- Economics,
- Households,
- Geography (development patterns),
- Topography (land cover and topographic relief),
- Groundwater,
- Surface waters,
- Climate,
- Weather, and
- Natural resource recreation amenities.

While much of this information is valuable, much of it is not new to folks with a local perspective. However, there are few items we think are valuable and should be considered throughout the planning process.

- **Rural population-** Over 68 percent of Lake of the Woods County residents live outside Baudette and Williams.
- **Population** - Projections show the population 65 and older increasing by over 66 percent over the next 25 years, while overall population changes are unclear.
- **Impoverished population-** Thirteen percent of Lake of the Woods County residents are living below the poverty line.

- **Vacant housing-** Fifty-one percent of all Lake of the Woods County housing units are vacant.
About 46 percent of all housing in Lake of the Woods County housing is considered seasonal, recreational, or occasional use.
- **Industries relying on natural resources** - Projections show that by 2019 about 1,000 jobs will be added to this industry.
- **Protection of agricultural areas-** according to 2007 Ag. Census 11 percent of the land area in Lake of the Woods County is farmland. The value of total production from that farmland was about \$7,414,000.
- **Awareness for recreational activities** – There is a predominance of “visitors” who may be exposed to hazards like the lake; they might not be familiar with.
- **Land cover** – Open water and wetlands comprise about two-thirds of the County’s land cover.

Community Assets

The first goal of hazard mitigation is to limit the impact of hazards on people, to protect life and safety. The remaining two goals of hazard mitigation are to protect critical infrastructure, and other property. In this section we discuss community assets, the critical infrastructure and property valued by the community. This provides valuable context and understanding to help develop mitigation strategies.

The following is an overview of community assets including:

- 1) Critical infrastructure,
- 2) Natural and cultural resources,
- 3) Property,
- 4) Locations of concern, and
- 5) Locations contributing to hazards.

People and businesses rely on critical infrastructure to go about their daily business. Critical infrastructure includes things like roads, power, food supplies, emergency services, and continuity of government. Natural and cultural resources are highly valued for their contribution to our economy, way of life, and cultural enrichment. We also recognize that public and private citizens have invested large sums into property. This property may not be critical infrastructure, but because of the large investment it is something we look to protect. Locations of concern are places where large groups of people and particularly vulnerable populations congregate, like daycares or fair grounds. Some functions in our community may actually contribute to a hazard like failing bridges or sites where hazardous materials are used and stored.

Critical Infrastructure

The following is a brief overview of critical infrastructure in Lake of the Woods County. The definition and inclusion of critical infrastructure in this document is loose and is not an exact representation of what FEMA describes as “critical infrastructure sectors.” The following facilities and infrastructure have been identified and discussed during the planning process.

Public Services

Lake of the Woods County is the primary public support service deliverers in the County. The Human Services office is located in the Government Center in Baudette. Public Health facilitates the provision of health care throughout the community to some vulnerable populations.

Retailers and Services

The City of Baudette and the City of Williams are the centers for retail services in the County. The City of Williams is limited largely to convenience shopping, automobile fuel, restaurants, and bars.

The City of Baudette boasts banking, grocery, electronics, clothing, tackle, hardware, and all of the other usual amenities. However, there are no “big box” retailers. Residents must go to the neighboring Counties, Roseau and Beltrami, for those services.

Electricity, Gas, Sewer Treatment, Water, and Stormwater

Electricity

The City of Baudette is a member of the Northern Municipal Power Agency. The Northwest Angle is served by Roseau Electric, and other areas in the County are served by Northstar Electric.

Gas

The City of Baudette and Williams are on the natural gas grid. Remaining homes and businesses may rely on electricity or propane delivery.

Sewer

The City of Baudette and Williams both have sewer water treatment facilities. The City of Williams and Baudette both use ponded treatment systems. Other residents and property owners must rely on on-site septic systems. There is considerable development pressure in the area from Baudette to Wheeler's Point. The County, along with Wheeler's Point property owners has been working with the engineering firm Freeburg and Grund out of Bemidji, to develop a sanitary sewer system to alleviate the pressure on septic systems.

Storm Water

The City of Baudette has since the flooding in the early 2000's expanded its storm water sewer system on the west side of Baudette to drain tile include curb, gutter, and large catch basins.

The City of Williams is not curbed and guttered, but there is a small ditch for conveying water on the east side of town.

In other parts of the County is the judicial ditch system intended to convey water and dry landscapes, and County road ditches intended to drain water from road surfaces.

Transportation

Roadway System

The County, Cities, the MN DoT, the Red Lake Tribe, and other State and Federal agencies have road ownerships in the County. Major thoroughfares to and through the County include MN HWY 72 going North to Baudette from Beltrami County in the South. MN HWY 11 is a major east-west route from Baudette to Warroad. MN HWY 172 is the route to access Wheeler's Point from Baudette.

Railroads

A railroad line runs west, from Canada at Baudette, through Williams and to Warroad along MN HWY 11.

Airport/Runways

There is a public airport in Baudette, MN. A private airstrip exists on the Northwest Angle.

Pipelines

There is a gas transmission line in Lake of the Woods County serving Baudette and Williams, running roughly along the route of HWY 11. A map is included in **Appendix I – Map Folio, Map 10**.

Postal and Shipping

There is both private, Fed Ex and UPS, and the U.S. Postal service.

Public Safety

Emergency Operations and Management

The County employs an Emergency Manager who works with emergency service functions in the County to coordinate emergency management activities.

Emergency Medical

The Baudette Ambulance serves both Baudette and Williams. Emergency room services are available at the Lake of the Woods Health Center in Baudette. Available onsite is a helicopter landing site and fixed-wing ambulances can land at the Baudette Airport for Advanced Life Support transports.

Fire

The MN DNR has responsibility for fire prevention and suppression on the State lands in the County. The City of Williams and Baudette both have active fire departments and the Northwest Angle has a less active fire department.

Law Enforcement

The Sheriff provides law enforcement throughout the County with 24 hour coverage. A deputy resides on Northwest Angle and provides a law enforcement presence there. The City of Baudette has a police force. Local law enforcement works closely with Border Patrol who secures the Border crossing into Canada at Baudette.

Getting into the Northwest Angle requires either entry into Canada through Roseau County and then into the Angle, or flying directly into the Angle.

Public Works

The City of Baudette and the City of Williams have a public works department and the County HWY department serves the County. There is a County Highway employing residing in the Northwest Angle, with limited equipment, to manage roads and a solid waste transfer station.

Emergency Public Warning System

The Lake of the Woods County Public Safety Answering Point operates an emergency warning system: including sirens in Baudette, Williams, Wheeler's Point and a reverse 911 warning system.

Natural and Cultural Resources

Productive Resources

There is relatively little productive land in the County because of the high proportion of wetlands. About 11 percent of land in the County is used for agricultural production. Much of the wetlands are peat bogs, not generally considered productive resources.

Recreational Resources

The Lake of the Woods, Rainy River, and Baudette Bay are the primary recreational resources. They are heavily fished both during ice conditions and open water conditions. This is huge draw for tourism to the County. During peak weekends the numbers of visitors to the County can easily double the population.

A new trail in Baudette, traveling along HWY 11, from the east side of town to the High School on the west side of town, facilitates, walking, running, and biking. Lake of the Woods and Baudette developed a trail plan to expand the use of this trail.

Other recreational places include:

- Zippel State Park,
- Beltrami Island State Forest.

Property

On the following page is **table 1-16**, describing the value of properties, by type and by location in the County. Throughout the County residential properties, seasonal residential properties, and commercial properties have the most value. The value of seasonal residential property reflects the large proportion of seasonal residential homes in the area, the Northwest Angle having the most. The Baudette area and Wheeler's point represent the highest value in residential properties. It is worth noting that there is a lot of value in resorts in the Northwest Angle, Wheeler's Point, and in the Zippel Bay areas. The County has approximately 4.6 million dollars in property throughout the County and this is tax exempt, of course.

Table 1-16. Lake of the Woods County Property Values (\$)

Jurisdiction	Seasonal Re	Residential	Commercial	Industrial	Apartments	Resorts	AG H&G	AG Outbldgs	B&B
Northwest Angle	22,724,700	8,874,700	464,500	0		3,539,500	0	0	0
Baudette TWP	2,776,400	11,820,600	939,200	0		38,300	499,700	83,600	0
Boone	130,000	362,600	0	0		0	221,900	75,400	0
Chilgren	550,700	4,189,700	12,500	0		0	436,600	526,700	0
Gudrid	1,349,200	6,600,900	52,700	0		235,000	658,000	204,800	0
Keil	194,900	14,800	0	0		0	0	10,100	0
Lakewood	4,530,400	1,665,800	107,100	0		882,700	749,000	391,300	0
McDougald	516,900	4,513,300	36,600	0		0	1,340,900	275,300	0
Myhre	367,800	3,324,300	19,600	0		0	631,800	18,300	0
Potamo	486,500	1,835,400	0	0		0	826,200	176,800	0
Prosper	8,892,300	7,822,100	65,600	0		407,600	57,400	98,900	0
Rapid River	317,000	169,200	0	0		0	216,800	86,400	0
Rulien	4,200	0	0	0		0	0	0	0
Spooner	157,300	3,146,400	537,100	181,500		0	2,429,800	330,300	0
Swiftwater	266,900	875,300	0	0		0	848,300	138,000	0
Victory	107,500	174,900	0	0		0	33,600	0	0
Wabanica	4,884,900	9,548,200	233,500	0		534,500	852,700	264,200	0
Walhalla	190,600	2,905,000	3,200	0		0	1,220,900	345,100	0
Wheeler	8,829,600	12,070,500	5,072,800	0		6,388,100	457,300	93,600	229,300
Zippel	2,497,600	2,437,600	64,300	0		832,300	1,388,800	526,500	0
Unorg/Forest Area	374,900	280,600	0	0		0	58,500	45,600	0
Total	60,150,300	82,631,900	7,608,700	181,500	0	12,858,000	12,928,200	3,690,900	229,300
City of Baudette	59,400	22,509,600	9,758,700	3,274,200	1,563,300	0	161,300	38,600	0
City of Williams	82,400	2,971,000	484,900	457,900	0	0	0	212,100	0
City of Roosevelt	0	17,400	146,200	0	0	0	0	0	0
Total	141,800	25,498,000	10,389,800	3,732,100	1,563,300	0	161,300	250,700	0
County Total	60,292,100	108,129,900	17,998,500	3,913,600	1,563,300	12,858,000	13,089,500	3,941,600	229,300
County Owned Properties		4,654,300							

Source: County Assessor's Office, Fall 2012

Special Locations of Concern

Care Facilities

The Lakewood Health Center has a hospital, clinic, and care center.

Schools

There is a K-12 school in Baudette and an elementary school in the Northwest Angle. Other students go to Warroad, including other students from the Northwest Angle and students from Williams.

In Baudette there is a Linemen technical training school operated by MNSCU.

Lake of the Woods

The Lake of the Woods is a special location of concern because of the large numbers of people that may be on the lake, during open water and ice conditions. A major incident on the lake has been identified by local Emergency Services as the most likely event to happen that could overwhelm local response capacity. Emergency Medical in particular would be overwhelmed simply because the ambulance and hospital do not have capacity to handle the large numbers of patients that might result from an incident on the lake.

Government Facilities

- The City of Baudette City hall and garage
- The County Government Center and garage
- The County transfer station and garage on the Northwest Angle.
- The City of Williams City Hall/Community Center
- The MN DNR Offices
- Post Office

Large Employers and Commercial Facilities

- ANI Pharmaceuticals in Baudette
- The Bosch testing facility
- Resorts
- Retail services in Baudette

Resort Areas

There are number of resorts in the Wheeler's Point area west of Baudette and a number of resorts in the Northwest Angle.

Facilities Contributing to Hazard

Sites with Hazardous Materials

A number of sites in the county use, store, and/or distribute materials that are registered with the State of Minnesota as hazardous materials. These materials are hazardous for any number of reasons. They may be toxic to someone's health if inhaled, they may be slightly radioactive, and they might be combustible or be explosive. The majority of hazardous materials in Lake of the Woods County are combustibles like gasoline or diesel fuel, but there are other types of facilities.

Facilities with hazardous materials self-report to local fire departments and must have an emergency response plan in place. These plans focus on the possibility of a release of hazardous material at their site. However, we must also consider that these facilities cannot control for all of the conditions that act on them. Hazards, like straight-line winds or wildfire might be serious concerns to a facility storing hazardous materials. They are also serious concerns for the community because the materials at these facilities could be a hazard to the community or contribute to the severity of a hazard.

There are 14 sites listed at the time of this document's drafting that store hazardous materials. One of these is in Williams, with the other 13 in Baudette.

Dams and Impoundments

There are four dams listed with the MN DNR in Lake of the Woods County. At the time of this document's drafting, according to the MN DNR, none of those dams were a risk to communities. They are owned by various offices in the MN DNR. **Table 1-17 below**, lists the dams in Lake of the Woods County.

Transportation Infrastructure

Transportation infrastructure, particularly those where hazardous materials can be moved present a risk to the community. This infrastructure includes roads, rail, and pipeline. Those folks living, working, and playing along transportation infrastructure are vulnerable to the release of these materials.

Table 1-17. Lake of the Woods Dams

Dam Name	ID Number	River	Inspecting Group	Sect Town	Owner
BROWNS LAKE	MN00689	JUDICIAL DITCH NO. 62	Area Hydro	S11 T159N R35W	MNDNR-Forestry
HANSEN CREEK	MN01470	HANSEN CREEK	Exempt	S07 T159N R36W	MNDNR-Wildlife
KELLER	MN00917	WINTER ROAD RIVER - TRIB	Dam Safety	S32 T160N R34W	MNDNR-Fisheries
ROSEAU RIVER	MN00219	ROSEAU RIVER	Area Hydro	S32 T159N R36W	MNDNR-Wildlife

Source: MN DNR

Policy, Planning, and Development

Jurisdiction

Lake of the Woods County has jurisdiction to promote hazard mitigation efforts throughout the County. However, the State of MN owns much of the land in the County, particularly the boggy lands in the southern half, and they maintain their own hazard mitigation plan that applies to their efforts. Additionally, the Red Lake Nation holds land in a “checkerboard” pattern in the Southern portion of the County and holds much of the land in the Northwest Angle. The Red Lake Nation is responsible for mitigation efforts on these lands. A land ownership map is included as **Appendix I, Map 11**.

Capacity

Lake of the Woods County has a robust policy and planning capacity. They have a strong history of developing, maintaining, and executing effective planning efforts and are proactive policy developers. This stems from facing issues related to water and wetlands.

Existing Policy and Planning

Numerous plans and policies related to hazard mitigation are listed below. These plans and policies are means by which to incorporate

hazard mitigation principles into every County effort. Many of them are related specifically to the management of water and the reduction of risk to flooding.

These policy and planning tools include:

- Lake of the Woods Comprehensive Land Use Plan and Land Use Ordinances including shoreline and flood ordinances;
- Development Corridor addendum to the Comprehensive Plan;
- Lake of the Woods County Local Water Management Plan;
- Lake of the Woods County Wetland Plan;
- Lake of the Woods County Wetland Conservation Ordinance;
- County-wide Stormwater Management Plan;
- Universal Building Code;
- Capital Improvement Plans; and
- Baudette land use ordinance including shoreline and floodplain ordinance.

Development

Existing Development Patterns

Existing development is focused in the Cities of Baudette, Williams, the areas of Wheeler’s Point, Zippel Bay, and the Northwest Angle.

Anticipated Development

The area between Baudette and the Wheeler’s Point is beginning to experience development pressures, largely for seasonal residential properties. It is expected that this area will experience increased

development pressure. Many of the “developments” in this area are and may be for recreational vehicles, trailers, and camping.

The County is working with the Wheeler’s Point Association to develop a sanitary sewer system for that area. If/when this project is complete it will allow for existing resorts to expand and increase the overall density of the Wheeler’s Point Area.

The County is currently working with an engineering and planning firm to explore the possibility of constructing a public airport or airstrip in the Northwest Angle.

There MNSCU lineman’s school has been a very popular program and has led to some pressure on the local rental housing market in Baudette. This may lead to the addition of a few units of housing. The City is currently working with a consulting firm to study the housing market and potential for more housing.

Policy and Planning Tool Descriptions

Lake of the Woods Comprehensive Land Use Plan and Land Use Ordinances

The County Comprehensive Land Use Plan was developed using planning tools that included a development suitability analysis; analysis of economic, demographic, and social trends; and public and stakeholder engagement. The suitability analysis identifies land suitable for development. It considered several factors, including, but not limited to: wetlands, floodplains, land cover, productive agricultural lands, and land ownership.

The Land Use Ordinance is the implementation policy tool of the Land Use Plan. This includes ordinances related to floodplain and

shoreland management. The instrumental floodplain management policies are:

- The lowest floor of all structures in the County must be above 1,065 feet above mean sea level, and
- In development adjacent to river segments and in floodplains the lowest floor must be 3 feet above the flood of record (or otherwise certified by a qualified engineer to be 3 feet above the normal high water mark). Worth noting, the construction in a floodplain is not strictly prohibited.

Of course other pertinent policies related to shoreland development common to other communities in MN are included.

Development Corridor addendum to the Comprehensive Plan

In 2008 the County worked with HRDC to craft an addendum to their Land Use Plan that identified a Growth Corridor between Baudette and Wheeler’s Point. This corridor is identified in *Appendix I, Map 6*. Also identified in this map is the planned for land uses in this corridor.

Lake of the Woods County Local Water Management Plan

This plan was last updated in 2010 to plan until 2020. It identifies the work done to-date and identifies strategies to be executed in the next 10 years. This plan is championed by the County and the Watershed District. This plan addresses issues related to controlling water throughout the County and protecting water quality.

Lake of the Woods County Wetland Plan and Wetland Conservation Ordinance

Lake of the Woods is well versed in the management and conservation of wetlands and this is their policy tool to guide the protection, conservation, and mitigation of wetlands.

County-wide Stormwater Management Plan

A County-wide Stormwater Management Plan exists to address all of the stormwater issues in the County, including those in Baudette. The County drainage system and City stormwater system are collaborative.

Baudette Land Use Plan and Ordinance

The Baudette Land Use Plan and Ordinance address issues similar to those in the County's plan and ordinance. Those important features of the County's shoreland and floodplain ordinance also exist in the City's ordinance.

Section II: The Planning Process

Planning Process and Analysis Methodology

division (HSEM) to fund this planning process with a Federal Emergency Management Agency (FEMA) grant. Lake of the Woods contracted with HRDC to work with Emergency Management to execute the planning process, draft, and deliver the planning document through the approval process.

Process Overview

This planning process is similar to the process used to complete the 2008 hazard mitigation plan. Conceptually, the planning process can be organized into phases. These phases are as follows:

- Phase 1:** Orient Planning Process;
- Phase 2:** Initial Assessment and Priority Hazard Identification;
- Phase 3:** In-depth Analysis and Issue Clarification; Mitigation Strategy Development;
- Phase 4:** Implementation Plan and Plan Vetting; and
- Phase 5:** Plan Approval and Adoption.

Prior to Phase 1, Lake of the Woods County Emergency Management (LoW EM) worked with the Planning Consultant Headwaters Regional Development Commission (HRDC) to develop and successfully apply to the State of Minnesota, Department of Public Safety, Homeland Security and Emergency Management

Phase 1: Orient the Planning Process

Purpose

During Phase 1, HRDC and LoW EM met to establish practical questions about roles, responsibilities, project deliverable, timelines, planning requirements, plan scope, and others.

The Planning Taskforce

They also reached out to stakeholders at the County, regional, municipal, and other levels to participate in the planning process. A Planning Taskforce was formed which included:

- | | |
|-------------------|-------------------------|
| • Todd Beckel | County Board Chair |
| • Rick Rone | Baudette Mayor |
| • Tim Erickson | County Engineer |
| • Jacqui Becklund | Williams Clerk |
| • Brad Levasseur | Baudette Fire Chief |
| • Michelle Brown | Public Health |
| • Holly House | Emergency Management |
| • Gary Fish | Sheriff |
| • Josh Stromlund | Land and Water Planning |
| • Jason Goulet | Deputy NW Angle |
| • Mary Jo Otten | Assessor |

Input Gained

The Planning Taskforce held a Kick-off meeting on June 11. At this meeting they covered a lot of ground, they:

- were introduced to hazard mitigation concepts;
- discussed history of hazard mitigation and the history of hazards in Lake of the Woods;
- identified roles and responsibilities;

- vetted a planning process presented to them by the planning consultant; and
- reviewed the current mitigation plan.

Input Incorporated

The input from the Kick-off meeting shaped the planning process going forward, particularly:

- how other stakeholders were engaged; and
- how the Taskforce would be engaged.

Phase 2: Initial Assessment and Priority Hazard Identification

Purpose and Participants

On July 25, 2012 the Planning Taskforce held a meeting to begin focusing the scope of this plan update.

Materials

The Taskforce was presented with:

- the conclusions of a *Community Profile* that discussed demographic, economic, and social conditions and trends in Lake of the Woods;
- a review of documented hazard events pertinent to the community to be considered as an “initial assessment” (some of which are included in the *Hazard Profile* section of this document); and
- the results of previous mitigation strategies.

Input Gained

The Taskforce was asked to identify several items to focus the scope of the planning process. This included:

- paring down the list of hazards in the initial assessment into a list of “priority hazards” to be assessed in-depth in the planning process; and
- a list of community assets they are especially concerned about.

Input Incorporated

The list of priority hazards and community assets was assessed in-depth with stakeholders in Phase 3 of the planning process and incorporated into the planning document.

Phase 3: In-depth Analysis and Issue Clarification; and Mitigation Strategy Development

Purpose

The goal of Phase 3 was to complete in-depth assessments of the priority hazards, included in this document as *hazards profiles*, and understand how those hazards affect community assets. These affects were used to develop problem statements, or key issue statements. Simultaneously we were working with stakeholder groups to create some mitigation strategies that respond to the key issues that make sense for the community.

An important note is that input from the public at-large was sought during this phase of the process, during plan development. A survey was conducted of the public. The results were reviewed, are included in this document as **Appendix III**, and were discussed with stakeholders and the Planning Taskforce.

Participants

Phase 3 broadens the net of stakeholders engaged in the process in accordance with the participation strategy developed by the planning consultant and the Planning Taskforce. A number of meetings were held to work with these stakeholders. More detail regarding these meetings can be found in **Appendix II**. These new stakeholders included:

- the public;
- City of Baudette Stakeholders;
- City of Williams stakeholders;
- engineering, water, soils, transportation, etc.;
- emergency medical;
- fire;

- the Northwest Angle; and
- property and development.

Materials

Numerous materials were used during these participation events including, but not limited to:

- detailed history of hazard events;
- maps identifying hazard areas;
- surveys to which the public could respond;
- notice of opportunity to participate;
- mitigation strategy ideas; and
- existing planning and policy documents.

Input Gained

These meetings yielded great input. Most importantly we were able to create refined key issue statements to help focus strategy development and the development of the implementation plan.

Strategies catering to the key issues were created with informed stakeholder input.

Input Incorporated

One of the tools developed with the input gained in the in-depth assessment was a simple table describing hazard risk in each community included in the mitigation plan.

The key issue statements were presented to the Planning Taskforce for vetting and for their information as a way to review the input gained by other stakeholders. The Planning Taskforce also reviewed the strategy ideas developed by stakeholders in the development of the implementation plan.

Phase 4: Implementation Plan and Plan Vetting

Purpose and Participants

The purpose of Phase 4 was to create an implementation plan for mitigation strategies. The Planning Taskforce was responsible for creating the implementation plan for the County, while the Cities of Baudette and Williams crafted their own implementation plans.

The Planning Taskforce met on January 30 to review the work done to-date, provide input and feedback, and develop an implementation plan.

A public hearing was held on March 12 at a County Commissioner's meeting. This public hearing was advertised. The purpose of this meeting was to allow the public at-large, other jurisdictions, agencies, and the Commission to have a final review and opportunity to provide input on the plan, specifically, the selected strategies and the implementation plan, and also to discuss options for updating and maintaining the plan in the future.

The plan was drafted and a public comment and review period was held from June 5 to July 4 to gather input from the public on the plan draft.

Materials

The Planning Taskforce was presented with the key issues and in-depth assessments of hazards and was asked to provide feedback.

Between stakeholder meetings in Phase 3 and the January 30th meeting with the Planning Taskforce, the planning consultant worked with stakeholders and Taskforce members to refine and

further develop mitigation strategies. These refined strategies were presented to the Planning Taskforce.

Input Gained

The Taskforce provided feedback regarding the key issues and in-depth analysis.

The Planning Taskforce worked through each strategy to develop an understanding of it. They also worked through understanding several other factors, especially related to environmental concerns, cost-benefit, and funding issues of each. The Taskforce then crafted an implementation plan.

The implementation plan for Lake of the Woods County developed by the Taskforce along with other materials was presented to the Lake of the Woods Commission. They also provided input regarding how the plan ought to be updated and maintained, and to what degree the public should be involved.

Input Incorporated

The implementation plan crafted by the Planning Taskforce received some revision by the County Board.

No public input came forward at the public hearing regarding the plan implementation. A few questions were fielded by the planning consultant from members of the local press. These questions regarded the process going forward.

The County Board's input regarding the public participation in the update process, to have an annual public hearing regarding the plan status, was incorporated into the planning document.

Phase 5: Plan Approval and Adoption

Purpose and Participants

The purpose of Phase 5 is to gain approval of the plan by HSEM and FEMA. Once FEMA has approved the plan Lake of the Woods County will be sent a “plan approved pending adoption letter.” The County, Cities of Baudette and Williams will then adopt the plan, at which time the plan will be approved by FEMA.

The plan was submitted to HSEM on July 5, 2013 and returned with remarks on July 8, 2013. Additional content was added to address concerns related to the description of hazard vulnerability in each hazard profile. Additional information was also added to the flood hazard profile to further describe NFIP administration. Additional content was added to describe things to include in the next plan update.

Overview of Methods

Various methods were deployed during the planning process that should be explained. There is some vague reference to these items in the previous section of the planning process. Following is a more detailed explanation.

Initial Assessment

An initial assessment was developed that looked broadly at all hazards that might be of interest to the Planning Taskforce. The Planning Taskforce was presented with hazards documented in the:

- existing hazard mitigation plan,
- the State of Minnesota Hazard Mitigation Plan, and
- hazards considered during a recently completed public health hazard risk assessment.

They were also asked to brainstorm other hazards that are pertinent to them.

The State of Minnesota, Homeland Security and Emergency Management (HSEM), the Federal Emergency Management Administration, the State of Minnesota, Department of Health (MDH), all provide a good starting point for identifying priority hazards in Lake of the Woods County, the City of Baudette, and the City of Williams. Additionally, local plans such as the Lake of the

Woods County Land Use Plan highlight areas of concern. The Planning Taskforce holds a great body of local knowledge that is not necessarily documented. Their first-hand knowledge and accounts are one of the most important resources for identifying hazards in the community that outsiders might not be familiar with.

The State of Minnesota HSEM has identified the following items in the State of Minnesota All-Hazard Mitigation Plan:

Natural Hazards

- Flooding
- Wildfire
- Windstorms
- Tornadoes
- Hail
- Lightning
- Coastal Erosion
- Severe Winter Storms
- Landslide
- Sinkholes and Land Subsidence
- Earthquake
- Drought
- Extreme Temperature
- Dam Failure

Other Hazards

- Water Supply Contamination
- Structural Fire
- Hazardous Materials

- Nuclear Accidents (uncontrollable release of radioactive materials)
- Infectious Disease
- Infrastructure Failure

The MDH has asked local Public Health organizations to consider the public health impacts of the following hazards:

- Flood
- Tornado/Straight-line winds
- Severe thunderstorms/Flash floods
- Ice/Snow storm
- Extreme Heat
- Major Wildfire
- Water Supply Contamination
- Biological Attack (infectious disease)
- Biological Attack (non-infectious disease)
- Chemical Spill (Toxic industrial Chemicals)
- Radiological Dispersal Device (Dirty Bomb)
- Major Radiation Emergency (Nuclear Power Plant)
- Nuclear Detonation (10 kiloton)
- Major Power Outage
- Cyber Attack
- Active Shooter

They Public Health stakeholders were to consider the probability of an event happening, the severity of the impact, and any planning and mitigation efforts that have taken place. Local Public Health identified the top three prioritized risks in Lake of the Woods County to be 1) Ice/Snow Storms, 2) Tornado/Straight-line winds,

and 3) Chemical Spills. A report provided by Lake of the Woods Public Health to the MDH, submitted in the spring of 2012, indicated that they considered ice/snow storms, tornado/straight-line winds, and chemical spills to be the biggest risk to Lake of the Woods.

The Public Health assessment focused on the history of the above hazards in the community or the potential for those hazards in the community and what those impacts might be.

Hazard History

A hazard history document was presented to the Planning Taskforce during Phase 2 of the process. It included hazards that were not immediately dismissed by the Planning Taskforce during Phase 1. The hazards included in this document were:

- flooding,
- wildfire,
- extreme summer weather,
- extreme winter weather,
- open-water related hazards,
- drought,
- extreme temperatures,
- erosion and earth movements,
- hazardous materials incidents,
- major power outages,
- communication/information infrastructure failure,
- water supply contamination,
- structural fires,
- infectious disease,

- non-infectious disease,
- active shooter incidents,
- vacant structures, and
- border safety and security.

This helped to inform the initial assessment and selection of priority assets.

Community Assets

The Planning Taskforce developed a list of community assets. This list of assets helps to frame the discussion about what the community values and what they would like to focus on when crafting mitigation strategies.

This list is included previously in this document, in *Section II: Background, Subsection Community Assets*.

Priority Hazards

The Planning Taskforce was asked to consider both the hazards and community assets and to identify “priority hazards.” Not all hazards were included in the list of priority hazards. Some hazards were excluded because there are other planning and policy mechanisms that are better suited. For example, traffic accidents are a hazard, but regional MN DOT transportation planning is a better mechanism for handling them.

In-Depth Assessment

An in-depth assessment was created. This assessment was used to create a profile for each priority hazard. These profiles include the:

- 1) Nature of the hazard,
- 2) Location and severity of historic impacts or likely locations and severities of future impacts,
- 3) Historic probability of this hazard occurring or likelihood to occur in the future,
- 4) Vulnerability of people, property, and community assets to this hazard, and
- 5) Relevant discussion about past or current mitigation projects.

The information for these profiles is drawn from the previous hazard histories in the previous assessment, local anecdotal knowledge, media, regional and state agency experts, and geospatial and tabular data.

Key Issues

The information gathered in the in-depth assessment was used to develop “key issue” statements that summarize the actual or potential impact of hazards in the community.

Mitigation Strategies

The process of identifying issues, developing mitigation strategies, and developing an implementation plan was completed by the Planning Taskforce and vetted by the County Board on behalf of the County. The process was also completed individually at the City of Williams and City of Baudette.

Mitigation Goals and Objectives

The first step in developing strategies and an implementation strategy was to develop goals and objectives. The mitigation goals were discussed and defined in the beginning of the planning process

and the objectives were developed to respond to particular needs identified in the key issue statements.

Mitigation Strategies

Examples of previous mitigation efforts in the region and state and stakeholder input were used to develop mitigation strategies. These strategies were vetted by the planning consultant and planning stakeholders and prepared for the Planning Taskforce whom further vetted them. The County Board further vetted the strategies.

When crafting strategies we aimed to answer each of the following questions.

- What hazard or hazards will be mitigated?
- Will it mitigate in existing or new development activities?
- With what mechanism will it be implemented?
- Who is the project champion?
- What is the targeted completion date?
- What are estimated benefits and costs?
- What funding mechanisms are available to fund this activity?

We also aimed to develop strategies that consider the “triple bottom line:”

- social considerations;
- benefit: cost considerations; and
- environmental impacts.

Social Considerations

Vulnerable individuals—those with health care needs, the elderly, and the young— especially in rural areas are more vulnerable to

almost all natural hazards than folks in Cities. It is also important to recognize that strategies not be exclusive of any minority groups.

Benefit: Cost Considerations

Spending public dollars in a pertinent way is valued by Lake of the Woods County. The intent of this planning process was to help inform decision making about executing mitigation strategies, to help decision makers understand the true risks of hazard occurrence and the vulnerability of people and property.

The Planning Taskforce identified the plan goals along with other values that have helped them select and prioritize mitigation strategies.

Implementation Plan

The mitigation strategies selected by the Planning Taskforce are expected to be realistic and actionable given current circumstances. The Planning Taskforce developed an implementation strategy by prioritizing mitigation strategies and identifying timelines within which they are expected to be completed.

The Planning Taskforce reviewed the various aspects of the strategies identified earlier and used consensus to prioritize each mitigation strategy in relation to the others. The “low hanging fruit” and the measures that promoted the protection of life and safety tended to be higher priorities.

The prioritization and factors identified during strategy development like, the champion, targeted completion date, estimated benefits and costs, and funding mechanisms, comprise the implementation plan.

Notes about Participation Requirements

Public Participation

The public was engaged in several opportunities during the plan development phases of the process where their input was specifically sought for the purpose of developing the plan with public input. There opportunities were through mailed surveys, print media, and public meetings. These included:

- a public survey, advertised in utility newsletters, sent in utility bills, advertised in the local paper, advertised at the local farmer's market, advertised on the County webpage, and emailed to stakeholders for distribution;
- an advertised meeting for the residents and officials of Williams,
- a regular working meeting of the City Council of Baudette, in accordance with the City's public notice requirements;
- a public hearing during a regular meeting of the County Commission, in accordance with the County's public notice requirements, and advertised with local media.

The input gained was incorporated in the planning process in a meaningful way. Namely, the results of the public survey helped to shape the key issue statements and in-depth analysis. They were

presented to the Planning Taskforce and an analysis of the survey can be found in **Appendix III**. More detail regarding each of these can be found in **Appendix II**.

Finally, the public will be offered a month long review and comment period from June 5 through July 4. The plan was made available online at the HRDC website, linked to from the Lake of the Woods County website. A notice of its availability was emailed to planning process participants, and was posted at the County and Cities per their posting requirements, and a notice was sent to local media.

Regional and Adjacent Agencies and Jurisdictions

Each of the opportunities for public participation was also opportunities for neighboring agencies and jurisdiction to also participate. However, specific steps were taken to engage other agencies and jurisdictions in the plan development stages. These included:

- the MN Department of Natural Resources in regards to risks related to dams and other impoundments;
- presenting resources available from FEMA regarding flood risk;
- The Border Patrol, and US Coast Guard were specifically invited to participate in discussions regarding border security and safety on the water;
- The Lake of the Woods Soil and Water Conservation District was interviewed;
- the Floodplain manager was interviewed; and
- the results of the planning process were reviewed at a County Board meeting to allow other jurisdictions, agencies,

and the public to provide input, prior to drafting the document.

Multi-Jurisdictional Participation

Each jurisdiction included in this plan, Lake of the Woods County, the City of Baudette, and the City of Williams went through hazard identification, risk identification, strategy development, and implementation plan development. Also pertinent planning and policy documents were reviewed for each of these communities. More detail is provided in other sections of this document.

Furthermore, each community was represented on the Planning Taskforce. The City of Williams was less involved, but this is appropriate given that they are a smaller community with limited financial capacity for staff and officials to be involved.

Section III: Hazards

Initial Assessment

A review of hazards was presented to the Planning Taskforce at the second planning meeting. The hazards in this review were gathered from several sources:

- The National Climactic Data Center,
- The MN Department of Natural Resources,
- The State of Minnesota Hazard Mitigation Plan,
- Local public health hazard risk assessment,
- Local anecdotal evidence,
- Media records,
- and presidential disaster declarations.

Hazard History

A hazard history documented was presented to the Planning Taskforce during Phase 2 of the process including the hazards that the Taskforce expressed interest in learning more about or/have a historic presence. It included:

- flooding,
- wildfire,

- extreme summer weather,
- extreme winter weather,
- open-water related hazards,
- drought,
- extreme temperatures,
- erosion and earth movements,
- hazardous materials incidents,
- major power outages,
- communication/information infrastructure failure,
- water supply contamination,
- structural fires,
- infectious disease,
- non-infectious disease,
- active shooter incidents,
- vacant structures, and
- border safety and security.

Community Assets

The Planning Taskforce developed a list of community assets. This list of assets helps to frame the discussion about what the community values and what they would like to focus on when crafting mitigation strategies.

This list is included previously in this document, in **Section II: Background, Subsection Community Assets.**

Presidential Disaster Declaration

Presidential Disaster Declarations are not comprehensive records of hazard events. They do, however, provide the Planning Taskforce with a snapshot of the most impactful hazard events in the recent history of Lake of the Woods. Right, is a review of the Presidential Disaster Declarations that have affected Lake of the Woods County.

Flooding is a very common disaster declaration in Lake of the Woods. Of the 12 disaster declarations in Lake of the Woods 10 include flooding, one is for severe winter weather, and the last is related to the hurricane Katrina evacuation.

Historically important in Lake of the Woods is the 2002 flood event. It impacted the Baudette and Williams area and precipitated mitigation interventions.

Table 3-1. Lake of the Woods Presidential Disaster Declarations

Declaration	Incident Dates	Description	Types of Assistance
DR-1830	March 16-May 22, 2009	Severe Storms and Flooding	Public Assistance HMPG
EM-3242	August 29-October 1, 2005	Hurricane Katrina Evacuation	Public Assistance HMPG
DR-1419	June 9-June 28, 2002	Severe Storms, Flooding and Tornadoes	Public Assistance HMPG
DR-1370	March 23-July 3, 2001	Flooding	Individual Assistance Public Assistance HMPG
DR-1175	March 21-May 24, 1997	Severe Storms and Flooding	Individual Assistance Public Assistance
DR-1158	January 3-Feb 3, 1997	Severe Winter Storms/Blizzards	Public Assistance
DR-1116	March 14-June 17, 1996	Flooding	Public Assistance
Dr-582	30-Apr-79	Severe Storms, Flooding	Public Assistance
DR-440	10-Jun-74	Heavy Rains, Flooding	Individual Assistance Public Assistance
DR-255	18-Apr-69	Flooding	Individual Assistance Public Assistance
DR-215	22-Mar-66	Flooding	Individual Assistance Public Assistance
DR-188	11-Apr-65	Flooding	Individual Assistance Public Assistance

Review of Mitigation Work Done To-Date

Review of 2008 Mitigation Strategies

Fire

1. *Investigate other options in addition to dry hydrants to provide water refill capacity for fire units.*

Status: Not executed.

Next Steps: Incorporated into 2013 plan, strategy F.

2. *Purchase a large capacity water truck (5,000 gallons) or additional compressed air foam tanks.*

Status: Not executed.

Next Steps: Incorporated into 2013 plan, strategy F.

3. *Implement the Federal Firewise Program in priority areas of LOW County.*

Status: Not executed.

Next Steps: Incorporated into 2013 plan, strategy F.

4. *Install permanent structure-oriented property sprinklers on homes and businesses in the Northwest Angle (similar to units in rural Grand Marais or on the Gunflint Trail)."*

Status: Not executed.

Next Steps: Incorporated into 2013 plan, strategy F.

Flooding

1. *Continue to implement construction and maintenance projects that will relieve stormwater buildup throughout the County.*

Status: Executed.

Evaluation: Baudette and the County have worked together to significantly improve how the County drains. Baudette has installed curb, gutter, and larger than usual catch basins in the west side of Baudette, the area most affected by 2002 flooding.

Additionally, the County has been working to slow and reduce the volume of water that flows from the County, through Baudette, and into the Baudette Bay. Their strict enforcement of their floodplain and shoreland ordinance has all but eliminated homes vulnerable to flooding.

A drainage ditch was created by the County using mitigation assistance money on the east site of Williams to drain water from that side of the City into the County drainage system.

These improvements haven't been "tested" with a rainfall like the rainfall in 2002 and 2005. More evaluation regarding their effectiveness is needed.

Next Steps: Additional work identified in the 2013 plan.

2. *Construct and maintain the high and medium priority ditch projects listed in the County's Drainage Management Plan.*

Status: Executed.

Evaluation: While ditch projects have been completed, more remain. Improved effectiveness of newer agricultural tiling systems is increasing pressure on the system unduly. Maintenance of this system is a continual process.

Next Steps: Additional work incorporated in the 2013 plan.

Windstorm and Tornados

1. *Develop and implement a public education campaign county-wide that will raise disaster awareness and guide personal response preparations.*

Status: Not executed.

Next Steps: Some specific education and outreach activities have been identified in the 2013 plan with the intent that more specific strategies are more executable.

2. *Develop a resource list of equipment that could help the County clear roads or fallen trees and debris.*

Status: Executed.

Evaluation: The County Emergency Manager Maintains a Resource Manual with documented equipment and contractors. There has not been an event so significant since the development of this list that has required the use of it.

Next Steps: More evaluation is necessary.

3. *Purchase additional equipment within the County Highway Department as needed to help clear away debris after a windstorm.*

Status: Executed.

Evaluation: The County is sufficiently equipped for day-to-day operations and with the availability of non-County resources no additional equipment is necessary.

Next Steps: Removed from plan.

4. *Purchase four snowmobiles for Sheriff's Department use during winter storm event rescue and recovery efforts.*

Status: Executed.

Evaluation: The Sheriff's Office maintains winter rescue equipment on the main land and on the Northwest Angle. However, resort owners also have equipment and are ready to help with winter rescue operations, which are typically necessary on the lake.

Next Steps: Removed from plan.

Structural Fire

1. *Work with the school district and the City of Williams to safely demolish and remove the Williams School building.*

Status: Not executed.

Next Steps: Ownership of the Williams School changed to a private party during the last five years and demolition had not been possible. Ownership has reverted back to the County and the strategy is now more viable. The strategy is incorporated into the 2013 plan, Strategy K.

Hazardous Materials

1. *Train and equip a local team of 10 people in Baudette and 5 people in Williams for the handling and clean-up of the most likely types of hazardous materials spills.*

Status: Not executed. It was attempted, but the maintenance costs of training were too high. The local responding agencies retain a hazardous materials “awareness” training level. The costs of higher training are not practical for the needs of the community.

Next Steps: Not included in the 2013 plan. Strategy N related to hazardous materials response is.

Emergency Communications

1. *Purchase up to six satellite phones and service subscriptions for emergency services throughout the County.*

Status: Not executed. The availability of cellular phone technology and the improved coverage area of cellular

phone towers negate the need for high-cost satellite phones.

Next Steps: Not included in the 2013 plan. Work to improve cellular phone coverage is included as Strategy J.

2. *Work with cellular phone companies to improve cell phone communications in the south shore and northwest angle areas.*

Status: The Commission has been and is continuing to engage in conversation with cellular phone companies to improve coverage.

Next Steps: The Commission will continue to engage in conversation. Recently added towers provide a ripe opportunity for improved coverage. Included as Strategy J in this plan.

3. *Continue to maintain and improve the County’s radio repeater system, including the provision of backup power sources.*

Status: The County has made changes and improvements to its radio system to meet National narrowbanding requirements and interoperability with the Statewide ARMER system.

Next Steps: This is not being included in the hazard mitigation plan because the County maintains a separate communications plan.

4. *Construct an Emergency Siren system in the Wheeler Point area and provide a battery backup for the Williams area siren system.*

Status: *Partially executed.*

Evaluation: *A warning siren has been installed in the Wheeler's Point area.*

Next Steps: Additional work needs to be done to create/identify a funding mechanism for provision of emergency services in the Wheeler's Point Area. Included as Strategy M in the 2013 plan.

5. *Investigate a reverse E-911 system and purchase if feasible.*

Status: The County now operates a reverse 911 system called Code Red.

Evaluation: The functionality of Code Red greatly improves the County's ability to warn folks about extreme weather or any kind of event.

Integration of Hazard Mitigation Principles

There has been integration of hazard mitigation principles and strategies into other plans, policies, and work plans throughout the County. Below is a means by which plan integration has been accomplished historically in each jurisdiction included in the 2013 hazard mitigation plan.

Lake of the Woods

Historic Plan Integration

The County takes the lead amongst its neighboring counties in regards to plan integration. Many of the planning needs of the community are very sophisticated, especially related to water, and because of this there is ample plan integration. Still there is room to improve in relation to other hazards.

Flooding - The County maintains a floodplain and shoreland ordinance and actively enforces the ordinance throughout the County. Highlights are described in the *Policy, Planning, and Development* subsection of *Section I: Background*.

The County also maintains hazard mitigation principles in its County Water Plan, Wetland Management Plan, and Stormwater Management Plan. All of which are current in their updating cycle.

Wildfire - There is room to improve on the integration of wildland fire mitigation principles into the County's policies. Progress on wildfire mitigation strategies has been lacking and this has been a road block to integration.

Extreme Summer Weather - There is room to improve on the integration of extreme summer weather mitigation principles into plans and policies. No such integration has happened to-date.

Extreme Winter Weather - Extreme winter weather is way of life in Northern MN, however, formal integration of mitigation principles, like taking extra efforts to meet the needs of vulnerable populations, into written policies is lacking.

Baudette

Historic Plan Integration

Flooding - The City maintains a floodplain and shoreland ordinance that mirrors the County's.

The City has increased its capacity for stormwater management by incorporating into all of its street reconstruction projects drain tiling, curb, gutter, and up-scaled catch basins.

Extreme Summer Weather - The City has identified storm safe places for residents to go. Additional, work needs to be done to identify a safe place for some residents of Baudette do go.

Extreme Winter Weather - There is no formal integration of hazard mitigation principles regarding extreme winter weather into policy.

Williams

Historic Plan Integration

Williams' ability to integrate hazard mitigation principals into other policies and plans is limited because there are limited policies and plans in which to integrate. Still, there is room to improve integration.

Flooding - The City maintains a shoreland and floodplain ordinance similar to that of the County and City of Baudette.

Extreme Summer Weather - The City maintains the water treatment plant as the City severe weather safe place. It is cast concrete structure.

Extreme Winter Weather - No effort has been made to integrate extreme winter weather hazard mitigation principles into policies or plans.

prudently use planning resources and ensure planning requirements were met the planning Task Force focused on natural hazards.

Priority Hazards

Following the initial assessment, identification of community assets, and review of mitigation work done to-date, the Planning Task force identified the following as hazards to be included within this planning process. Groups in Baudette and Williams did likewise.

Table 3.2, right, lists the hazards included in the planning process and the affected communities.

Natural Hazards

- Flooding
- Wildfire (Structural Fire on the Northwest Angle)
- Extreme Summer Weather
- Extreme Winter Weather
- Weather and safety hazards on Lake of the Woods

Technological Hazards

- Hazardous Materials
- Water Quality Concerns (potable and surface waters)

Human Caused Hazards

- Active Shooter

There is a distinction between natural hazards and other types of hazards. Other types of hazards do not need to be explored to the same degree as natural hazards to meet FEMA requirements. To

Table 3-2. Hazard Identification by Jurisdiction

	Lake of the Woods County	Baudette	Williams
Natural Hazards Considered			
Flooding	X	X	X
Wildfire	X		
Extreme Summer Weather	X	X	X
Extreme Winter Weather	X	X	X
Technical Hazards Considered			
Hazardous Materials	X	X	X
Water Quality	X	X	
Human Caused Hazards			
Active Shooter	X		
Key			
X = Affects the jurisdiction			
N/A = Not a hazard to the jurisdiction			

Changes in Assessment

The 2007 Hazard Mitigation Plan prioritizes hazards within three planning sectors, roughly identified as: 1) the Northwest Angle, 2) the Central Sector (Williams and Baudette), and 3) the Southern

Sector (South of Williams and Baudette). These prioritized hazards are listed below.

Northwest Angle

- Wildfire
- Flood
- Structural Fire

Central Sector

- Flood
- Tornado
- Hazardous Materials

Southern Sector

- Tornado
- Windstorm
- Structural Fire

It's clear that two things changed from 2007 to now. The first, the Planning Taskforce did not identify risk of hazard event by sector, but rather by jurisdiction. This change was made to more clearly meet FEMA planning requirements that require risk and vulnerability assessments must be done by each jurisdiction included in a multi-jurisdictional plan. The second change is that the priority hazards have changed. There are some omissions and some additions.

Omissions

The only omission is that of "structural fire." The previous plan included structural fire to describe the vulnerability of structures to

wildfires in the Northwest Angle. This 2013 update simply describes the vulnerability of structures to wildfire in the Northwest Angle.

"Tornados" and "windstorms" in the 2007 plan can be found in this plan in discussions of "extreme summer weather" and "extreme winter weather. "

No known hazards commonly known to affect the community were omitted.

Additions

"Extreme winter weather" was added to be more inclusive of the deep snows, cold, high winds, and blizzard conditions that impact Lake of the Woods County.

"Extreme summer weather" was added to be more inclusive of the summer storms that are characteristic of Northern MN which include tornados, high winds, lightning, hail, and heavy rains. Tornado was not specifically identified because the tornados in this part of the State create damages similar to those of high winds.

Technological and Human Caused

"Hazardous materials," "water quality concerns," and "Active Shooter" were added to this planning effort. Mitigation for these hazards is not a priority of FEMA hazard mitigation funding; however, they were included in this planning process because there are no other opportunities to have community dialogue about them. Because they are not a priority of hazard mitigation funding they are addressed in less depth than the natural hazards.

In-Depth Assessment

Following the selection of priority hazards, an in-depth assessment was completed to profile each hazard. We've taken input from those people we engaged, incorporated research included in the initial assessment, further research, and analysis to profile these priority hazards.

Hazard Profiles

Each hazard is profiled in this section. These profiles include the:

- 6) Nature of the hazard,
- 7) Location and severity of historic impacts or likely locations and severities of future impacts,
- 8) Historic probability of this hazard occurring or likeliness to occur in the future,
- 9) Vulnerability of people, property, and community assets to this hazard, and
- 10) Relevant discussion about past or current mitigation projects.

Nature of the Hazard – The nature of the hazard is simply how the Committee understands the hazard to be, the causes, characteristics of the events, and the typical damages.

Location and Severity – The location and severity simply speaks to the specific locations impacted by the hazard and the severity of the events. Some hazard events can be measured by regularly accepted scales and some are measured by the typical damages they cause.

Probability – The probability discusses how likely a particular hazard event is. This claim can sometimes be supported by historic evidence, whether it is anecdotal or documented. In some cases it is simply enough to say that while a particular hazard has not historically been an issue, it is possible and plausible in the future.

Vulnerability – Vulnerability discusses what the impacts of hazard could be on people, private property, public property, and community assets. It's important to discuss both current and future development. However, future development is not particularly anticipated.

Mitigation Actions – Mitigation actions are part of the day-to-day operations, in many cases, of organizations in the community. Additionally, mitigation actions from previous hazard mitigation planning have been implemented. These actions are reviewed, along with discussion about new potential mitigation projects.

Profile Specific Methodology - In the case of some hazards, special analysis was performed and the accompanying methodology is included in the profile along with potential sources for future research.

Flooding

Nature of the Hazard

For floodplain management purposes, a flood is defined as an overflowing of water onto an area of land that is normally dry. This is called **overland flooding**. Floodplains are lowlands adjacent to water bodies that are subject to recurring floods. Flooding may result from many conditions, such as: ice dammed rivers or culverts, spring snow melt, saturated soils, excessive-reoccurring precipitation, or high-intensity rainfalls.

Overland flooding is not the only type of flooding, however. Flooding as a result of high soil-water saturation or high water tables can result in **ground water flooding**. These floods are fairly common in some parts of the County and tend to result from longer-term weather and hydrologic conditions.

Because of the climate and weather conditions in the area, the season in which flooding occurs is also important to discuss. Summer storm events usually result in large precipitation events in a short period of time in an isolated location. These types of event can result in flash flooding. In the spring, flood events are more likely a result of snow melt overwhelming the drainage capacity of an area or entire watershed.

Many things can contribute to spring flooding: deep snow pack, high water content of snow, fast melt rate, frozen and saturated soils, and ice jams.

A **flash -flood** is a rapid and extreme flow of high water into a normally dry area, or rapid water level rise in a stream or creek above a predetermined flood level.

History

Heavy rains are the most common cause of flooding in Lake of the Woods County. Presidential Disaster Declarations and the National Climactic Data Center report 11 major flood events over the last 50 years. Flash floods have typically caused road and/or shoulder washouts, as well as area flooding. Road washouts and area flooding have occurred predominantly in the Central sector near Baudette. Some select events are described below.

March 25, 2009

A stretch of warmer weather occurred from March 14th to 17th, which resulted in high temperatures in the 40s and low 50s. The snow depth in Fargo on the 14th was 15 inches with a melted water equivalent of 3.10 inches. A Presidential Disaster Declaration was declared for Counties in Northwest Minnesota, including Lake of the Woods and Red Lake Reservation.

June 2002 – Flash flooding was reported in June of 2002 in Arnesen and Baudette on three separate days throughout the month. For that same time period a Presidential Disaster Declaration for severe storms, flooding, and tornadoes including Lake of the Woods County.

Over eight inches of rain fell over the entire county, causing washouts of County Roads 3, 65, and 66, and necessitating the closing of Hwy 11 due to high water. Most of the streets in Baudette were also flooded. The Arneson flooding in the Central planning sector resulted in County Roads 55 and 241 being submerged.

Low lake levels allowed absorption of most of the runoff with minimal property damage. Even so, over 200 homes sustained \$500,000 of flood damage. To put this storm in perspective, a 48-hour rainfall total of six and one-half inches is considered a one percent probability in this area. Within Minnesota, only two other flood events have been of this magnitude - one in 1972, and one in 1975, neither of which affected Lake of the Woods County.

March 2001

A Presidential Disaster Declaration was declared including Lake of the Woods County and the Red Lake Reservation for flooding events between March 23rd and July 3rd. This declaration differed from the vast majority of others by allowing for individual assistance in addition to public assistance.

July 2001

Between the 17th, 18th, and 31st of July in 2001 flash flooding occurred in Baudette, Graceton, Lude, Williams, and Carp. These storms impacted the Southern sector up to the central sector including Baudette.

On July 17th it was reported that 4.5 inches fell over a short period of time in the Lude area. As a result of these three events downed trees, damaged roofs, downed power lines, damaged homes, and damaged boats were reported. Additionally, some streets of

Baudette were reported to be less than 12-16 inches of water, County Road 66 was also washed out, and many basements were reported to be flooded.

High water in Lake of the Woods and the Rainy River caused \$250,000 of damage to resorts and homes. Several resort owners brought in rocks to line the lakeshore in hopes of preventing further erosion.

Spring 1997

A Presidential Disaster Declaration was declared for flooding and severe storms, for the period of March 21st through May 24th, for Minnesota Counties including Lake of the Woods.

May 1996

On May 17, 1996 flash flooding was documented in Baudette. A Presidential Disaster Declaration was declared for a period in the spring of 1996 including this event, for counties including Lake of the Woods. Flooding has also occurred in Baudette in 1996.

April 30th, 1979

A Presidential Disaster Declaration was declared for counties including Lake of the Woods for a flooding event on April 30th.

June 1974

A Presidential Disaster Declaration was declared for flooding and heavy rains for June 10th for counties including Lake of the Woods.

April 1969

A Presidential Disaster Declaration was declared for flooding on April 18th, 1969.

March 1966

A Presidential Disaster Declaration was declared for flooding on March 22nd, 1966.

April 1965

A Presidential Disaster Declaration was declared for flooding on April 11th, 1965.

NFIP Participation**Enrollment**

Lake of the Woods County and Baudette are enrolled in the National Flood Insurance Program. The current effective Flood Insurance Rate Map was adopted in 1990. Williams is enrolled in NFIP with their current effective Flood Insurance Rate map adopted in 1975.

Participation in the NFIP requires that each community:

1. Complete and application;
2. Adopt a resolution of intent to participate and cooperate with FEMA; and
3. Adopt and submit a floodplain management ordinance that meets or exceeds the minimum NFIP criteria. They must also adopt any FIRM or FHBM for the community.

These participation criteria were met, as Lake of the Woods, Baudette, and Williams are currently enrolled in the NFIP as documented in the NFIP Community Status Book.

Program Administration

Floodplain management responsibilities in the City of Baudette and Williams reside with the respective Zoning Administrator.

Management responsibilities in the County reside with the County Land and Water Planning Department. The County Land and Water Planning Department assist the Cities of Williams and Baudette to identify parcels and structures in floodplains.

Structures and parcels are typically identified during construction and refinancing processes. There has been no formal effort to inventory structures within floodplains. There are a very limited number of structures affected by floodplains.

The County and Cities have adopted the most current FIRM with their ordinance. The County assists the Cities by providing GIS capacity to stay current on floodplain mapping issues and to help utilize these maps.

Repetitive Flood Loss Structures

The Floodplain Manager and Statewide Floodplain Manager (MN DNR) know of no repetitive loss or severe repetitive loss structures within the County or Cities of Baudette and Williams. Records of flood damages related to disaster assistance declarations are maintained at the County Land and Water Planning Department.

Local Regulations***Land Use Controls***

The Cities of Baudette, Williams, and Lake of the Woods County have adopted floodplain ordinances that mirror each other. The key tenants to this ordinance require that:

- The lowest floor of all structures in the County must be above 1,065 feet above mean sea level (must provide administrator with elevation certificate); and
- In development adjacent to river segments and in floodplains the lowest floor must be 3 feet above the flood of record (or otherwise certified by a qualified engineer to be at the Regulatory Flood Protection Elevation). Worth noting, the construction in a floodplain is not strictly prohibited, but the RFPE requirement of the State of MN does accommodate for the effects of filling in the flood fringe.

The first requirement means that structures are either built outside of the floodplain or substantially elevated (typically with fill) which may give them the opportunity to get an elevation certificate by an engineer and request a map amendment.

Construction permits are required and all pertinent records are maintained by the respective Floodplain Manager.

Other Issues

The County has seen an increase in individual properties looking for engineering certifications to show they are outside of the floodplain or elevated above BFE while going through refinancing.

Location and Severity

Lake of the Woods

A map of the floodplains in Lake of the Woods County and Baudette are included in **Appendix I – Map Folio**. In general the floodplain

follows the Lake of the Woods shoreline and shoreland of rivers draining into Lake of the Woods.

Baudette

A map of the floodplain in Baudette is also included in **Appendix I – Map Folio**. The Rainy River is a major drainage for the County in Lake of the Woods. The shoreland around Rainy River and Baudette Bay is included in the 100 year floodplain. However, some of the areas within the depicted floodplain around Baudette bay are 35-40 feet above the normal high water mark.

Williams

Williams has experience some basement flooding on the east side of town which has precipitated some drainage work in the past.

Probability and Vulnerability

Probability

The floodplain maps shown in **Appendix I – Map Folio** depict a 100 year floodplain, the area which would be flooded in the event of a precipitation event that has a 1% chance of occurring in any given year. This implies that there is a 1% chance every year that these areas will be flooded.

This is merely an estimate based on historic precipitation and flood events. Trends in climate change suggest that heavy rain events will become more frequent in the future. Additionally, conditions vary from year to year—like soil water content, snow pack water content, ice conditions on the lake and river, and others—that can change the likelihood of flooding.

Vulnerability

Social

Flooding and high waters don't have an apparent social cost in the Community. In some communities flood prone areas are more heavily populated by lower income residents. In the communities of Lake of the Woods, higher valued properties, typically occupied by higher income residents, are those along waterways. That suggests that a big social disparity isn't present.

Environmental

Flooding can impact water quality, soil quality, and impact historical and cultural resources. Of concern, is flooding that might impact the development corridor from Baudette to Wheeler's Point which does not have a sanitary sewer system, but rather relies on individual septic systems. Flood waters could impact water quality by releasing contaminants from these systems. County zoning code does address this concern in regulating the placement of septic systems in relation to floodplains.

Economic

There are obvious economic impacts from flooding. County infrastructure is particularly vulnerable to the impacts of flooding. A few structures are present in the floodplain. Many of these have elevation certificates and have precipitated floodplain map amendments.

Lake of the Woods County

For the County as a whole, one of the biggest impacts of flood waters, or unusually high water flows generally, is the impact on the drainage system. Heavy precipitation events or spring snow melt

can cause damage to the drainage system. The water in the system is deeper and faster than usual. Erosion of soil in the drainage system, undercutting of structures, and moving loose rock material are common and require repair and maintenance.

The map of Lake of the Woods floodplains also includes historic damages. Some of these damages are related to shoreline erosion and some are related to road damage. While some of this has been corrected there are still County roads vulnerable to flooding and flood damage.

Baudette

The City of Baudette floodplain ordinance keeps homes out of the floodplain and shoreland areas of the Rainy River and Baudette. Still high soil water can contribute to basement flooding. The floodplain along Asplund Dr in the east side of Baudette can cause some flooding in the County Highway shop.

Williams

The above mentioned drainage work on the east side of Williams included digging a shallow depression and a ditch to connect an area of low elevation on the east side of the City to the County drainage ditch system.

A new ponded sanitary sewer treatment system was built in Williams in 2012 and tested in 2013. This system drains into this same drainage ditch and out to the County drainage system. It has the potential to flood forested lands of downstream property owners. While that is unpopular, no structures are vulnerable.

Mitigation Actions

Lake of the Woods County

The County Floodplain Ordinance, Local Water Management Plan, and Stormwater Management Plan are managed and implemented by the Land and Water Planning Department of Lake of the Woods.

The Local Water Management Plan was last updated in 2010 and includes a list of accomplishments from 2003-2010 and an implementation plan for 2010-2020. The list of accomplishments includes, but is not limited to, the following.

1. Installation of more than a dozen shoreline stabilization and protection projects utilizing the State Cost Share Program and other funds.
2. Establishment of a water level monitoring gauge at Morris Point.
3. Active participation with the Rainy River Basin Planning Process.
4. Revision of the County Drainage Inventory Book.
5. Creation of a County Ditch Maintenance Policy.
6. Over 10,000 acres enrolled in EQIP for the following practices: field borders, buffer strips, riparian CRP< and residue management.
7. Creation of Wheeler's Point Sanitary Sewer District.
8. Completion of SE LOW TMDL and continuation of monitoring activities.
9. Administration of the Wetland Conservation Act.
10. Collection of culvert inventory data to assist with a county-wide stormwater management plan.
11. Development of an annual well water testing clinic.

12. Completed 21 abandoned well sealing contracts.

The plan update identifies goals, objectives, and strategies to be implemented by 2020 related to five issues:

- Erosion and Sedimentation,
- Land use management,
- Sewage treatment systems and other potential sources of water contamination,
- Water quality, and
- Education.

The County Engineer has identified an area of concern along County Highway Four that experiences regular flooding and damage. A hydrologic study has been completed and a preliminary mitigation strategy to install box culverts to equalize water on each side has been identified.

The Water Management Plan is fairly comprehensive and mechanisms created through this plan like the Stormwater Management Plan are key mechanism for working on issues related to flooding. Due to the high water table, vast amounts of surface waters and a host of other issues, the County has very sophisticated planning and policy mechanisms regarding water.

Baudette

The floodplain ordinance is Baudette is identical to that of the County. Additionally, they work with the County very closely on storm water management issues because much of the County drains through to the Lake of the Woods through Baudette.

The City has made structural improvements including tiling, curb, gutter, improved stormwater catch basins and piping.

Williams

A ditch was constructed to drain a depression on the east side of Williams to the County drainage system. No other mitigation efforts have taken place.

Data Resources

Flooding events are recorded by the National Climactic Data Center. These events are recorded back through the mid 1990's. Presidential Disaster Declarations also serve as a record of flood events going further back in time.

Further Assessment

An inventory of structures currently in the floodplain with estimates of their elevation or associated elevation certificates when available should be completed to better understand flood vulnerability. Currently, no such map exists. The County Floodplain Manager will review this on an as-needed basis using a map of elevation contours, floodplains, and imagery. These characteristics would likely be the methodology used in such an inventory.

Wildfire

Nature of the Hazard

Wildfire is fire that starts because of natural causes or starts in vegetative materials. These fires may or may not spread to structures. Many factors contribute to the cause and severity of wildfires. Heat and drought contribute to dry conditions making wildfire more likely; storms, disease, and insects provide fuel for fires; wind and steep topography speed the spread of wildfire; and human behavior can do much to cause or prevent wildfire.

Many stakeholders are engaged in preventing and suppressing wildfires. The Minnesota Department of Natural resources plays a huge role in educating the public, enforcing rules in regards to burning, and aids in suppression. The MN DNR coordinates with local fire departments and the National Interagency Fire Center to ensure that resources are available for fire suppression.

History

There have been a recorded 616 wildland fires in Lake of the Woods from 1985 till May of 2012. Since 2002, a little over more than the last 10 years, there have been only 226 reported fires. These fires have been on average almost 14 acres in size, but the largest was 631 acres.

Summary of Recent Wildland Fire in Lake of the Woods County

Fires since 2002	226
Average Size (Ac)	13.75
Size Range	.01-631

Top 3 Causes	Number of Incidents
Arson	111
Debris	47
Misc.	20

Costs	
Supply Costs	164,811
Timber Loss	14,116
Ag Losses	300
Personal Losses	40,040
Residents Damaged	1
Residents Destroyed	2
Outbuildings Damaged	1
Outbuildings Destroyed	3

Permitted Fires Resulting in Wildland Fire	26
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Source: MN Dept. of Natural Resources.
May 1, 2012.

The primary cause of fires in Lake of the Woods is arson. The reported supply costs for suppression and costs of property losses are relatively low, but the State reportedly spends between 19 and

21 million dollars statewide on wildland fire suppression in any given year.

Location and Severity

Since 1985 there have been 27 fires 100 acres or larger, the largest being over 3,400 acres. These fires occurred between 1985 and 2011. It should be noted that fires are a necessary disturbance in forest ecosystems, but they can also pose a risk to life and property.

The majority of fires occur in an area between Baudette and Williams in the mainland portion of Lake of the Woods County, as seen in **Appendix I – Map 9**, identified by an ellipse. Few fires have happened in or near the limits of either city. The average fire since 2002 was 13 acres in size, but they ranged from 0.01 acres to over 600 acres.

Only four fires have been recorded in the Northwest Angle mainland or islands.

Probability and Vulnerability

Probability

Fires occur every year in Lake of the Woods County. The majority of the fires occur in an area relatively close to Baudette and Williams with firefighting capacity, seen in **Appendix I – Map 9**. The low development density of the affected area reduces the impact they might have.

Losses have been limited in the last 10 years to 10s of thousands of dollars, while supply costs for suppression have topped over 150,000 dollars.



Figure 3.5 – Wildfire in nearby Karlstad, MN, October 2012.

People and structures on the Northwest Angle and islands are most vulnerable to the impact of wildfire because their fire department has limited capacity and because they are isolated. The structures—homes, resorts, and others—are particularly vulnerable to wildfire. The health and safety risk is also of concern because of the severe isolation. Most residents of the Angle would suggest they can seek shelter on the water.

Vulnerability

Social

Impacts of wildland fire in Lake of the Woods are born most by those folks in the Northwest Angle. The impacts do affect those in the Cities of Baudette and Williams, potentially by a fire spreading towards town or by poor air quality. Those folks served by Baudette and Williams fire in the rural parts of Lake of the Woods are subject to property damage and also life and safety threats, but some of them are also served by these municipal fire departments with relatively higher capacities.

Environmental

Wildfire is a naturally occurring disturbance, however, the majority of wildfire in Lake of the Woods is caused by arson. Impacts on vegetation affect the hydrologic cycle, water quality, wildlife habitat, overall ecosystem health, and aesthetic. Fire events can impact local air quality.

Economic

Fires are most prevalent in the area identified in **Appendix I – Map 9** (indicated by an ellipse) in the area south of Baudette running approximately Northwest-Southwest. This area also has the greatest

firefighting capacity. The area of the Northwest Angle has a lower fighting capacity and is more remote. The large investments in this area, the resorts, are subject to fire risk. The greatest relative economic effects of fire are in the Northwest Angle.

Mitigation Actions

There has been a persistent effort to develop a Community Wildfire Protection Plan (CWPP) for the County with a focus on the Northwest Angle. In June of 2012 the County Board met with Northwest Angle residents and the Emergency Manager inquired about their interest in developing a CWPP. The same message was delivered in June of 2013 and the Angle residents expressed interest in pursuing it. Additionally, potential locations for dry hydrants have been identified for the mainland, but should be vetted during the CWPP planning process.

A Community Wildfire Protection Planning process examines fire risk, vulnerability of structures (based on proximity to each other, proximity to fuels, and fuels characteristics), and capacity of firefighting agencies in the communities. These factors are considered in prioritizing where wildfire mitigation efforts should take place. Loss reduction strategies can be funded, at least in part, by the Federal Firewise grant program administered by the MN Department of Natural Resources. These strategies may include:

- Assessments of building sites in high fire risk areas;
- Creating fuel breaks to protect developed communities where needed;
- Reducing fuels at individual building sites in the community;
- Funding outdoor fire suppression sprinkler systems;
- Funding the use of fire resistant building materials;

- Education and outreach; and other strategies.

All of these things together can help reduce fuels. The cause of most fires in the County is arson. It is understood that long-term educational efforts of young people and levying heavy fines on non-permitted burns has had a positive effect in reducing those incidences. Many of these strategies are geared towards reducing fuels and creating defensible space around buildings, the space needed to create a fire break and provide access and egress to firefighters.

Future Planning

Future hazard mitigation planning efforts should include a “Level I” assessment that is consistent with assessments completed by the MN DNR Firewise Coordinator in the Bemidji office. This assessment should examine structural vulnerability of wildland fire based on proximity to fuels, fuel types, and proximity to other structures. A CWPP has been recommended as mitigation strategy to execute in this planning cycle. The CWPP process would include such an assessment and could then be incorporated into this plan.

Severe Summer Weather

Nature of the Hazard

Extreme summer weather presents problems for Lake of the Woods County. It can bring strong winds, thunderstorms, hail, and tornados. These events were examined collectively because they typically accompany each other and have similar impacts. The biggest indicators we look at are tornados and high winds. These events typically cause similar types of damage and their risk persists throughout the County.

The nature of summer storms in this Region is that they include high winds, small tornadoes, and hail. These types of events are all caused by similar types of storm systems that either involves frontal weather systems causing convection currents or isolated storms systems that result from convection currents. These types of storms lift heated air into a cooler upper level of the atmosphere. They carry a lot of energy and can result in tornado activities.

Hazard History

Since the last hazard mitigation plan approval there have been limited severe events and limited damages. The most recent thunderstorm events recorded to have caused damaged occurred in July of 2008, causing approximately \$30,000 in recorded crop



Figure 3.4 - Tornado Damage in Wadena, MN, June 2010 Tornado.

damages. Since the last plan a tornado in 2008 traveled through the Williams area, with a severity of F0 on the Fujitu scale. There were six recorded hail events in 2008, four in 2010, and one in 2011. These all occurred during the late spring and summer. No damages were recorded, with recorded hail ranging from three-fourths to two inches in size.

Thunderstorm Winds

The highest recorded thunderstorm winds specific to Lake of the Woods were recorded in the Northwest Angel at 78 miles per hour. Other areas of the County experienced winds in the lower 70 miles per hour. A total of 85 thunderstorm wind speeds have been recorded since the mid 1950's. This data set is simply a representative sample of historic events. Property damage has been reported over the last approximately 15 years. In these years single events have caused upwards of 100,000 dollars in damages.

Tornados

Fourteen tornado events have been recorded since the mid 1950's. Tornados have occurred as early in the season as May 5th, in 2005, and as late as September 1st in 1961. One of these events is a funnel cloud, and a waterspout on Lake of the Woods. None of the recorded tornados exceeds an F value of zero. They have, however, been able to cause crop losses in the values of \$100,000 in any single event. There was also one reported injury in September of 1961.

Hail

There have been a recorded 94 hail events in Lake of the Woods County since the mid 1950's. These events have all occurred between April and September, with the majority between May and September. Only one instance of damages was reported, but it's more likely that many instances of damages have actually occurred because it is also likely that this isn't a comprehensive list of events.

Location and Severity

The entire County is subject to severe summer weather conditions, which are generally mild. They include high winds, tornados, and hail. High wind events have caused damages upwards of 100,000 dollars in single events in the last 15 years with winds nearing 80 miles per hour. Similar damages have been resulted from tornados in the County. No recorded tornado has exceeded and F0 on the Fujitu Scale with winds from 40-72 miles per hour. Demonstrating the risk to people recreating on Lake of the Woods is documentation of a water spout on Lake of the Woods.

Probability and Vulnerability

Probability

Severe summer storms, high winds, tornados, and hail have been documented to be less frequent than in other parts of the State. Severe summer weather is expected every year. The worst of severe summer weather, tornados, are fairly infrequent. Most of the historic damage has been done to crops, but damage to homes, businesses, and resorts could also result.

Vulnerability

Social

In facilities where people congregate, such as the Lake of the Woods School, Lakewoods Hospital and care center, the Northwest Angle School, the County Courthouse, apartment buildings, and the like. Some of these facilities have dominant occupancy by vulnerable populations, while others are simply high density populations. Damage to these structures, potentially caused by high winds or tornados puts these people at risk.

Environmental

The environmental impacts of severe summer weather are limited. High winds and tornados may cause an excess of down timber which can reduce property values and be expensive to clean-up, but more importantly create a heightened fire risk.

Economic

Tourism - People recreating on Lake of the Woods are particularly vulnerable to severe summer weather because they have no place to take shelter. In fact, because of the size of the lake it is easy for

smaller boats to be overpowered by waves requiring them to seek shelter at the nearest shore. Lighting presents an additional risk to people on the lake because, once again, they are completely unprotected from the elements.

Structures – Structures throughout Lake of the Woods are vulnerable to severe summer weather. There are no heightened building standards for wind and tornado resistance in Lake of the Woods currently.

Climate Change

A heightened awareness of the risk of damage from tornados is warranted despite a limited recorded history of events. Not until recently, with advancements in Doppler technology have records become reliable. Also, the impacts of a warming climate on tornado occurrence and severity are largely understood. According to the Center for Energy and Climate the location and time of year of tornados may be affected.

Mitigation Actions

The County does use warning sirens. People in town or on the Lake, near town, may be able to hear the sirens depending on the direction and velocity of the wind. The County also employs a reverse 911 system.

Emergency responders are equipped to respond to incidents on the Lake. Resort owners are instrumental in helping to keep visitors safe and are instrumental in responding to emergencies on the Lake.

Profile Specific Methodology

Data comes from the NCDC whom has records of thunderstorm wind events going back to the 1950's. Records of tornadoes and hail events have been kept for similar time period.

Severe Winter Weather

Nature of the Hazard

Extreme winter weather is common place in Lake of the Woods County. Winter weather brings snow, ice, and cold. Lake of the Woods County is well prepared to handle the typical extreme winter weather. The obvious implications are residents, particularly rural residents, stranded at home, and without heat.

The average winter temperature is about nine degrees Fahrenheit and the average winter low is about negative two degree Fahrenheit. Deep snows, winds, and ice add to the dangers of winter. Winter average precipitation is around 16 inches of water equivalent, which are about two-thirds of all the year-round average precipitation.

Hazard History

At least one blizzard has been recorded by the National Climactic Data Center for every year from 1994 till now. A few large storms in this time period have produced freezing rain, which may be the most important component, causing property damage and making travel conditions most dangerous.

Location and Severity

The entire County is subject to severe winter weather conditions. Areas surrounding the lake are subject to greater amounts of snow and wind because of the lake effect. Winter conditions on the Lake of the Woods can be extremely bad, with blind-out conditions whipping up in minutes.

Probability and Vulnerability

Probability

Severe winter weather is winter in Lake of the Woods County and the community is uniquely prepared for it. Severe winter weather conditions occur every year.

Vulnerability

There are several specific groups of people that are most vulnerable to severe winter weather. These groups include:

- Young people,
- Old people,
- People with medical conditions,
- Residents in the most remote and isolated parts of the County, and
- Visitors to the County recreating on Lake of the Woods.

Social

A social disparity exists in relation to vulnerability to severe winter weather. Lower income residents are more greatly impacted. However, the State of Minnesota provides heating assistance and it is unlawful to cancel fuel delivery during cold weather months (referred to as non-shutoff months).

Rural residents have a heightened vulnerability to severe winter weather. Those rural residents with special health care needs or those likely to need emergency health care are further vulnerable. Severe winter weather may cause a power outage effecting folks with at home health care equipment like C-PAPs or oxygen condensers.

Care facilities, like the Lakewood Hospital Care Center, in Baudette, should be equipped with a back-up generator. This facility is also in-town, which reduces its vulnerability.

Visitors to the County on Lake of the Woods, are subject to greater risk because of their unfamiliarity with the Lake. These folks are vulnerable to white-out conditions, being stranded on loose ice, or getting lost on the lake. These may all lead to life and safety concerns.

Environmental

There are no serious environmental concerns related to severe winter weather. These are all natural processes.

Economic

Winter weather has an economic impact on the Region. Snow removal is an added maintenance cost. Retail shopping might be impacted during severe weather events. Tourism benefits from cold and snow. Deeper snow creates conditions for tourists looking to snowmobile and earlier ice leads to more tourists looking to fish.

Mitigation Actions

The County works carefully to ensure that extra precautions are taken to ensure the safety of those vulnerable groups listed above.

For example, County Highway will dispatch a plow truck to assist an ambulance accessing a snowed in residence.

The Sheriff patrols the Lake of the Woods when it is being used heavily. Resort owners play an important role in keeping people on the ice safe. They maintain a road on the ice, bring in visitors when severe weather is expected, and respond to emergencies on the ice.

Hazardous Materials

Nature of the Hazard

Risk of a hazardous materials incident is created by both the storage and transportation of hazardous materials.

Hazardous materials incidents are typically described as low risk, high impact. Materials in transported pose a risk to people and the natural environment. If released they may contaminate soils, ground water, surface water, or air, and under the right conditions can lead to explosion and fire.

Location and Severity

Storage

At the time of this documents drafting there are 14 registered locations that store hazardous materials. Of those, 13 are in Baudette and one is in Williams. The majority of these are fuels: propane, fuel oil, diesel, and gasoline.

Transportation

Three key features on the landscape dictate where a hazardous materials incident might happen:

- The road network,
- The pipeline network,

- The rail network.

Major roads include MN HWY 72, and HWY 11, traveling through both Williams and Baudette. Roughly along the HWY 11 corridor is a gas pipeline and a railroad corridor.

Probability and Vulnerability

Responders

The primary concern with hazardous materials is to protect people and the environment. Response to a hazardous materials incident puts responder's life and safety at risk. While the objective of any emergency responder is to protect themselves first, some interaction with hazardous materials may occur intentionally or accidentally.

Public

The public at large is also exposed to risk because these transportation corridors are heavily traveled by the public and the greatest density of development is along these corridors.

Water

Additional risk is associated with the potential susceptibility of groundwater and surface water to contamination. High quality groundwater is essential in the county because of the prevalence of individual wells. If an incident were to happen, a city the size of Baudette may be able to afford treating ground water in its delivery system because it operates at a relatively large economy of scale. Residents that rely on their own well systems would not likely be able to afford treatment.

Contaminates in soils may not be an immediate concern, but these contaminants may migrate through soil and bedrock to contaminate drinking water supplies.

Mitigation Actions

Road, Rail, and Pipeline

Hazardous materials that meet a particular quantity threshold are regulated by the US DoT and must be appropriately placarded. These placards help emergency responders understand what is being transported should an accident happen. Drivers must also be specially licensed through their State to transport hazardous materials.

Similarly the hazardous materials transport by rail and pipeline is regulated by the US DoT. An international standard is established for the transportation of hazardous materials within North America.

Storage

Sites that store hazardous materials are registered with the local fire department and the State of MN. They must also have an emergency response plan and must register two emergency contacts available to local responders.

Response

Some local responders (i.e. fire departments) are trained to a hazardous materials response "Awareness" level. This is a 40 hour training that can be taken online or with an instructor, but requires that it be repeated every two years. The next level of training is for people that actually handle materials. This requires hours of hands on experience working in clean-up efforts. Both of these levels of

response training require significant time and energy to earn and maintain. With the limited number of incidents historically training to an awareness level has been sufficient.

The State maintains a Chemical Assessment Team that can be dispatched at the request of the State Duty Officer to the scene of a hazardous materials incident to execute emergency containment and clean-up efforts. They will not execute remediation efforts.

The railroad and pipeline both maintain response crews that they can deploy to execute emergency containment, clean-up, and remediation efforts.

Active Shooter

Nature of the Hazard

An active shooter is defined as an individual killing or attempting to kill in a confined and/or populated area.

- These incidents typically involve firearms, but do not always.
- They are becoming more common.
- There is usually no pattern in selection of victims.
- Common motives include anger, revenge, ideology, or untreated mental illness.

Nationally active shooter incidents have flooded news media outlets. It seems that active shooter incidents are becoming more commonplace. A high profile active shooter incident has even occurred in a community neighboring Lake of the Woods.

Mitigation Actions

An institution like a school or government building typically has a “safety committee” or other safety policies. They educate their employees, or in the case of a school the school children, about the resources that might be available for counseling and the appropriate actions to take if an active shooter incident takes place.

Other community members, like small business, do not have the capacity to reach out to their employees and ensure they have the counseling resources they need or know how to respond if an active shooter incident should happen.

It’s important to know that there are some low-cost or no-cost solutions to mitigation the risk and impacts of these events. However, the immediate deployment of law enforcement is required to stop the shooting and mitigate the hazards to victims.

Some things can be done to mitigate the risk before the event happens.

- Educating and providing a reporting system so people may help identify and report people portraying profiled characteristics prior to an incident.
- Conducting effective employee screenings can mitigate the risk in work places.
- Making counseling services available through employers or other organizations.
- Developing an emergency action plan that includes policies and procedures for dealing with an active shooter situation, as well as after action planning.

Water Quality Concerns

Nature of the Hazard

The community has concerns regarding water quality in addition to the potential for flooding and hazardous materials to negatively impact surface and ground water.

These additional concerns are related to the security of community water supply and point source and non-point source pollutants.

The Cities of Baudette and Williams both maintain drinking water systems. All other residents rely on their own wells.

Mitigation Actions

The County maintains a Local Water Management Plan that provides for water quality improvement programs. The Cities of Baudette and Williams follow established guidelines for provision of community drinking water.

Summary of Hazard Risk and Vulnerability

Following the initial assessment and the in-depth assessment—resulting in the hazard profiles, above—a simple summary of hazard risk and vulnerability was created by participants for each hazard in each affected jurisdiction. This summary is shown in **Table 3.3**, right.

The likelihood for a hazard occurrence and the vulnerability of the community to that hazard was categorized using the following tool.

Likelihood of occurrence

0 – Not likely, ever. We’ve had no history of these types of events and we don’t expect to ever have one.

1 – Rare. These types of events might happen, but less than once every ten years.

2 – Somewhat likely. These events happen at least once every ten years but less than once every year.

3 – Certain. These types of events happen every year or multiple times per year.

Vulnerability

L – Low. Little damage potential (for example, minor damage to less than 5% of the jurisdiction)

M – Medium. Moderate damage potential (for example, causing partial damage to 5-10% of the jurisdiction)

H – High. Significant impact/major damage potential (for example, destructive damage to more than 10% of the jurisdiction)

Table 3.3 - Hazard Risk/Vulnerability by Jurisdiction

	Lake of the Woods County	Baudette	Williams
Natural Hazards Considered			
Flooding	1L	2M	2M
Wildfire	3L		
Extreme Summer Weather	1L	1M	1M
Extreme Winter Weather	3L	3L	3L
Technical Hazards Considered			
Hazardous Materials	1L	1H	1H
Water Quality	1L	1H	
Human Caused Hazards			
Active Shooter	0H	0H	0H

For additional information please see the preceding sections discussing each hazard.

Section IV: The Plan for Action

Key Issues

We've summarized the effect of hazards on the communities by creating "key issue" statements.

Flooding

Flooding is a concern throughout the County with elevated concerns in Baudette. The County has very little topographic relief, draining to Lake of the Woods and Baudette Bay, with high water tables and ample surface water. The County, Williams, and Baudette participate in the National Flood Insurance Program. The City of Baudette and the County have experienced damaging flood events, and have done and continue to prioritize structural and policy actions to reduce the impact of high water. Increased drainage from agricultural land uses overwhelming the County drainage system is an emerging issue, while high waters continue to deteriorate infrastructure in Baudette.

Wildfire

In the contiguous portion of Lake of the Woods, there are a few small areas outside of Baudette and Williams where the fire risk is

elevated. People and property in the Northwest Angle are most vulnerable to wildfire because of their isolation and because they lack an active fire department. In both cases, access to reliable water limits fire suppression.

Extreme Weather

Summer storms cause high winds, hail, tornadoes, lightning strikes, and rain. These storms can cause property damage, power outages, flash flooding, and injury/death. Especially of concern are places where people congregate: for camping outside or in campers, residing in manufactured homes, gathering for outdoor events, or in public places like schools. Rural residents might become stranded for extended periods of time.

Winter storms cause high winds, cold temperatures, freezing rain, and snow. These storms can cause property damage, power outages, and expose people to lethally cold temperatures. Especially of concern are rural residents who might become stranded for an extended period of time without power and heat.

On summer and winter weekends the population of the County can double or triple with visiting fisher-people. These visitors are vulnerable to extreme summer and winter weather on the Lake. Emergency Services and resort owners frequently respond to visitors stranded or lost, visitors with medical emergencies, fires, or vehicles through the ice. Extreme weather could cause or contribute

to an emergency on the Lake that might overwhelm emergency services in the County.

Development

The area stretching from Baudette to Wheeler's point will likely be the area subject to the most development pressure in the next ten years. This is motivated by increasing tourism and anticipated sewer system development in the Wheeler's Point area. This area is not well served by emergency services. It lacks adequate public warning systems and taxes emergency response resources from the Baudette area.

Hazardous Materials

The Planning Taskforce is also concerned with hazardous materials storage and transportation. The County manages hazardous materials disposal in the County and sites with hazardous materials storage are registered according to *SARA Title III, the Community Right to Know Act*. Local emergency responders are typically trained to an Awareness level in regards to hazardous materials incident response. Higher trained regional response assets are available and maintaining higher levels of local response capacity is not feasible. The old Williams School is a persisting problem and poses health and safety risks to the community.

Water Quality

Protecting potable water and recreational surface water is crucial to health and safety of people and visitors and crucial to the economic vitality of local tourism. Water quality can be impacted by a number of actions and contaminants, from erosion to intentional contamination. Increased development pressure in the area from Baudette to Wheeler's point may be a source of point source and non-point source pollution.

Active Shooter

While the likelihood of an active shooter incident is low, the impact could be devastating. This is an emerging national issue and deserves local attention to prevent active shooter incidents and improve response preparedness in community.

Mitigation Actions

We organize mitigation strategies by talking about Goals, Objectives, and Strategies.

Goals

There are three goals of hazard mitigation identified in this plan:

1. Limit the impact of hazards on people, protect their life and safety;
2. Preserve critical infrastructure, continuity of government, and services serving vulnerable populations;
3. Protect Property (public and private) to save money.

Objectives

The objectives of our hazard mitigation plan are smaller in scale than goals, typically have measurable outcomes, and respond to particular issues. In this case they directly correspond to “key issues” identified during the planning process.

Strategies

Strategies are the actions we can take to meet our objectives.

We’ve talked about hazard mitigation strategies previously. They typically include: policy decisions, land use regulations or building codes, structural improvements, education and advertisement to change behaviors, and natural resource protection.

Objectives and Strategies

Objective 1: Reduce the damaging impact of high water and drainage on infrastructure.

Strategy A: Create a drainage policy to manage the recently increased drainage caused by demand for increased agricultural productivity.

Hazard Assessed: Flooding

New or existing development: New and Existing

Mechanism: County Land Use Ordinance, County Water Plan

Champion: Lake of the Woods SWCD, Josh Stromlund

Targeted Completion Date: End of 2013

Estimated Costs: Budgeted staff time.

Funding Mechanism: Staff time, or general fund for contractor

Strategy B: Install a centerline culvert under County RD 4 to resolve road bed deterioration and overtopping issues from regularly occurring seasonal flooding.

Hazard Assessed: Flooding

New or existing development: Existing

Mechanism: Capital Improvement

Champion: Lake of the Woods Engineer, Tim Erickson

Targeted Completion Date: When funding available

Estimated Costs: Rough estimate of \$150,000

Funding Mechanism: Staff time, Hazard Mitigation Grant, EDA Hazard Mitigation

Strategy C: Continue maintenance of the stormwater management system in the County per the prescription of the Lake of the Woods County Stormwater Management Plan and County Local Water Management Plan.

Hazard Assessed: Flooding

New or existing development: New and Existing

Mechanism: County Water Plan, Maintenance and Capital Improvement, Stormwater Management Plan

Champion: Lake of the Woods SWCD, Josh Stromlund
Targeted Completion Date: Ongoing
Estimated Costs: Refer to planning documents
Funding Mechanism: Staff time, Capital Improvement, Various Grants

Strategy D: Further explore the need for improved drainage on the east side of Williams, connecting to the County drainage system without further impacting private property owners.

Hazard Assessed: Flooding
New or existing development: Existing development
Mechanism: County Water Plan, Capital Improvement
Champion: Lake of the Woods Engineer, and SWCD
Targeted Completion Date: Ongoing assessment
Estimated Costs: Unknown
Funding Mechanism: Staff time

Strategy E: Include curb, gutter, and drain tiling in street reconstruction projects in the City of Baudette.

Hazard Assessed: Flooding
New or existing development: Existing
Mechanism: Capital Improvement Plan
Champion: City of Baudette Utilities, George Taylor
Targeted Completion Date: Ongoing
Estimated Costs: Unknown, assessed as projects emerge
Funding Mechanism: Staff time, capital improvement, potentially Hazard Mitigation Assistance

Objective 2: Reduce the potential for wildfire occurrence and the impact it would have on people and property, especially in the Northwest Angle.

Strategy F: Create a Community Wildfire Protection Plan focusing on the Northwest Angle and other higher risk wildfire areas in the County. This planning can be funded through the federal Firewise grant program administered by the MN DNR.

Hazard Assessed: Wildfire

New or existing development: Existing

Mechanism: Community Wildfire Protection Plan is a new mechanism

Champion: Emergency Management

Targeted Completion Date: 2018

Estimated Costs: \$20,000

Funding Mechanism: \$12,500 Firewise grant, \$2,500 Successful Communities Challenge Fund grant, \$3,000 staff time (match), \$2,500 Northwest Minnesota Foundation (match), in-kind \$7,000 (match)

Strategy G: Engage the residents and resort owners of the Northwest Angle in October of 2013 to discuss hazard mitigation strategies with an emphasis on wildfire.

Hazard Assessed: All hazard, emphasis on wildfire

New or existing development: New and Existing

Mechanism: Work program

Champion: Headwaters Regional Development Commission

Targeted Completion Date: October 2013

Estimated Costs: 14 hours

Funding Mechanism: Staff time

Strategy H: Identify locations for dry hydrants pertinent to areas where water access is limited and wildfire risk is relatively higher than in other areas of the County. Dry hydrants can be installed with funding from hazard mitigation grant programs.

Hazard Assessed: Wildfire

New or existing development: Existing

Mechanism: N/A

Champion: MN DNR, Forestry and Emergency Management

Targeted Completion Date: Ongoing

Estimated Costs: Unknown

Funding Mechanism: Implementation might be accomplished using a Firewise grant

Objective 3: Reduce the life and safety risks caused by extreme weather.

Strategy I: Create a memorandum of understanding between resort owners and the County to ensure that the good will of resort owners is supported by the County. This is to reinforce existing favorable behavior that promotes tourism and safety of visitors.

Hazard Assessed: Extreme winter and summer weather, Lake of the Woods lake

New or existing development: Neither

Mechanism: Work program

Champion: Emergency Management

Targeted Completion Date: Fall 2014

Estimated Costs: 24 hours

Funding Mechanism: Staff time

Strategy J: Proactively encourage cell phone carriers to improve coverage on the Lake of the Woods, taking advantage of already existing towers.

Hazard Assessed: Extreme winter and summer weather, Lake of the Woods lake

New or existing development: New and Existing

Mechanism: N/A

Champion: County Commissioners

Targeted Completion Date: Ongoing

Estimated Costs: Unknown staff hours

Funding Mechanism: Staff time

Strategy K: Identify a **safe room** type of shelter for emergency storm sheltering on the east side of Baudette for residents of apartments and the manufactured home park.

Hazard Assessed: Extreme summer weather

New or existing development: Existing

Mechanism: Emergency Management planning

Champion: City of Baudette with Emergency Management

Targeted Completion Date: March 2013

Estimated Costs: Staff time, unknown dollars - likely none

Funding Mechanism: Use of existing building is free, but construction of a saferoom could be funded using Hazard Mitigation Assistance

Objective 4: Improve emergency service coverage to the development corridor area between Wheeler's point and Baudette without taxing the emergency services in Baudette.

Strategy L: Identify a funding mechanism and the funding level necessary to improve emergency services coverage in the Wheeler's point area.

Hazard Assessed: All hazards

New or existing development: New

Mechanism: County Commission

Champion: Lake of the Woods County Commission

Targeted Completion Date: Ongoing

Estimated Costs: Unknown

Funding Mechanism: Staff time

Objective 5: Reduce the potential health and safety impacts and natural resource impacts of a hazardous materials incident.

Strategy M: Continue to maintain the current levels of local response resources while exploring collaborative ways with other private and public sector partners to improve response capacity.

Hazard Assessed: Hazardous materials

New or existing development: New and Existing

Mechanism: Emergency Operations Plan, Training Programs

Champion: Lake of the Woods Emergency Management

Targeted Completion Date: Ongoing

Estimated Costs: Unknown

Funding Mechanism: Staff time, Volunteer time

Strategy N: Demolish the old Williams school building. The old school building poses a health and safety threat because of the environmental contaminants, including lead and asbestos, use as building materials. The school has long been vacant and razing the

building has long been a priority. Obstacles to razing the building are acquisition, as it is now not in private ownership, and the cost of demolition. The most likely way to attract funding to assist in demolition would be if a development project were to take place on the site, taking advantage of brownfield redevelopment grant opportunities.

Hazard Assessed: Hazardous Materials

New or existing development: Existing

Mechanism: Work program

Champion: Emergency Management

Targeted Completion Date: 2018

Estimated Costs: \$50,000 or more

Funding Mechanism: Unknown and staff time, potentially EDA grant for brownfield redevelopment.

Objective 6: Protect potable water and surface water quality.

Strategy O: Construct fences around the City of Baudette municipal wells. Add this work to work program of the next capital improvement project.

Hazard Assessed: Water contamination - potable

New or existing development: New and Existing

Mechanism: City Capital Improvement

Champion: City of Baudette, George Taylor

Targeted Completion Date: Ongoing

Estimated Costs: Unknown

Funding Mechanism: Capital Improvement

Strategy P: Continue to pursue the construction of a sanitary sewer system in the Wheeler's Point area.

Hazard Assessed: Water contamination – potable and surface waters

New or existing development: New and Existing

Mechanism: County Water Plan, Maintenance and Capital Improvement

Champion: Lake of the Woods Commissioner, Patty Beckel

Targeted Completion Date: Ongoing

Estimated Costs: Refer to Brian Grund

Funding Mechanism: Staff time, Capital Improvement, Rural Development grant and loan

Objective 7: Reduce the potential for active shooter incidents and improve the response readiness.

Strategy Q: Develop a program for reducing the potential for an active shooter incident through awareness and education, and ensure institutions and employers have response plans.

Hazard Assessed: Active shooter

New or existing development: New and Existing

Mechanism: County Water Plan, Maintenance and Capital Improvement

Champion: Emergency Management and Public Health

Targeted Completion Date: Ongoing

Estimated Costs: Unknown

Funding Mechanism: Staff time

Implementation Plans

Lake of the Woods County

Jurisdiction Implementation Strategy

Lake of the Woods County

Priority	Mitigation Action	Hazard Assessed	Applies to New or Existing	Mechanism to Implement	Primary Agency/Champion	Targeted Completion Date	Estimated Cost	Funding Sources
1	A- Drainage Policy	Flooding	Both	Water Plan	SWCD	Fall 2013	\$7-10,000	Staff time, Planning Grant?
2	B- CHWY 4 Culvert	Flooding	Existing	Capital Improvement	County Engineer	Spring 2018	\$150,000	Capital Improvement, HMA
3	C- Maintenance	Flooding	Both	Water Plan	SWCD	Ongoing	Unknown	Budget
4	F- CWPP	Wildfire	Existing	NA	Emergency Management	Fall 2017	\$20,000	Firewise grant
5	G- NW Angle	All	Both	Work Program	HRDC	Oct-13	14 hours	Staff time

6	H- Dry hydrants	Wildfire	Both	CWPP	Emergency Management	Ongoing	Unknown	Firewise grant
7	I- MOU	Extreme Weather	Neither	Work Program	Emergency Management	Fall 2014	24 hours	Staff time
8	J- Cell Coverage	Extreme Weather	Both	Commission	Emergency Management	Unknown	Staff time	Staff time
9	M- W Pt, ES	All	New	Commission	Commission	Unknown	Staff time	Staff time
10	N- HazMat Response	Hazardous Materials	Both	EOP, Training	Emergency Management	Ongoing	Unknown	Staff time, Volunteer time
11	P- Wheeler Sewer	H2O contamination	Both	Capital Improvement	Sewer Committee	Unknown	Refer to Brian Grund	Rural Development
12	Q- Active Shooter	Active Shooter	Both	Staff Time	Emergency Management, Public Health	Unknown	Unknown	Staff Time

Priority assigned using a method that emphasized benefit cost review. Please see plan text.

Plan Integration

An integration step has been identified for each strategy. It has been documented as the “Mechanism to Implement” in each strategy’s description. This may simply be to include this effort into the work program of a staff member. Lake of the Woods County has already integrated many principles of hazard mitigation into the

Lake of the Woods County Local Water Plan, the Stormwater Management Plan, the Development Corridor addendum to the Land Use Plan and ordinances regarding floodplain management, and the Wetland Management Plan and accompanying ordinance.

Further integration was discussed regarding the next plan update process. This process may simply be to create a hazard mitigation addendum to the Land Use Plan.

City of Baudette

Jurisdiction Implementation Strategy

City of Baudette

Priority	Mitigation Action	Hazard Assessed	Applies to New or Existing	Mechanism to Implement	Primary Agency/Champion	Targeted Completion Date	Estimated Cost	Funding Sources
1	E- Curb and Gutter	Flooding	Both	Capital Improvement	Baudette	Ongoing	Unknown	Capital Improvement, HMA?
2	L- Safe Room	Tornados	Existing	Emergency Management Planning	Baudette, Emergency Management	Unknown	Unknown	HMA
3	O- Fences	H2O Contamination	Both	Capital Improvement	Baudette	Unknown	Unknown	Capital Improvement

Priority assigned using a method that emphasized benefit cost review. Please see plan text.

Plan Integration

An integration step has been identified for each strategy. It has been documented as the “Mechanism to Implement” in each strategy’s description. This may simply be to include this effort into

the work program of a staff member. The City of Baudette has worked to incorporate mitigation principles into their capital improvement planning and they continue to do so.

City of Williams

Jurisdiction Implementation Strategy

City of Williams

Priority	Mitigation Action	Hazard Assessed	Applies to New or Existing	Mechanism to Implement	Primary Agency/Champion	Targeted Completion Date	Estimated Cost	Funding Sources
1	D- Drainage	Flooding	Existing	Stormwater Plan	SWCD, PW	Spring 2013	Unknown	Unknown, HMA?
2	Old School	Hazardous Materials	Existing	Unknown	Williams	Unknown	Unknown	Unknown, EDA?

Priority assigned using a method that emphasized benefit cost review. Please see plan text.

Plan Integration

An integration step has been identified for each strategy. It has been documented as the “Mechanism to Implement” in each

strategy’s description. This may simply be to include this effort into the work program of a staff member. Williams has limited policy or planning activities in which to integrate hazard mitigation principles.

Plan Maintenance and Updating

The Lake of the Woods County Emergency Management Office is responsible for monitoring the progress of this plan, evaluating its effectiveness, and updating this plan every five years. They must also continually maintain this plan, from the time of adoption until the next plan update. The following is a timeline for procedure and plan maintenance.

Maintenance and update activities will be documented in **Appendix VI - Plan Maintenance Log**. Maintenance should be an ongoing process, but at a minimum this plan will be reviewed once a year. This yearly review will include: 1) documentation of hazard events that have occurred during the year, and 2) an evaluation of the status of mitigation strategies.

The Emergency Management Office is also responsible for assuring that these mitigation strategies get included in relevant planning processes over the next five years.

Plan Maintenance

A Working Document

It is important to remember that this is a plan, but it is also a working document, a living and breathing document. For it to be effective it must be maintained per the plan maintenance procedures below.

Hazard Event Updates

The Emergency Manager should document, in **Appendix VI**, hazard events that occur throughout the year. These hazard events could be hazards of the type discussed in this plan, or others. It is important that an up-to-date record of events is maintained. This documentation will include the date and time, the hazard event, the duration, the severity of the event, the location affected, and the damage caused. If relevant, other pertinent information should be included, duration of recovery efforts, agencies involved, if any support was used from outside of the County, and anything else deemed relevant.

Mitigation Strategy Evaluation

The Emergency Manager will complete a yearly review of the mitigation strategies developed in this plan. They will work closely with the strategy champion identified during the planning process. This review will be documented in **Appendix VI**. It will include: 1) the status of the mitigation strategy; 2) whether this strategy is still appropriate, why or why not; 3) any needed changes to this strategy; and 4) if the strategy has been implemented how effective has it been in mitigating hazards.

Other Information

Other relevant information should be recorded at the discretion of the Emergency Manager. It would be appropriate to record events such as: approval of relevant land use and building codes, approval of new developments, and means used to avoid building in hazard areas or to strengthen structures against hazards.

Public Involvement

The public will be involved through several of the mitigation strategies that were developed. Some of them will require the appropriate public notices and engagement depending on their funding source. Other strategies are to specifically engage the public in education or awareness.

Yet, more public engagement in the plan maintenance is necessary. Annually the plan and strategies are reviewed by the Emergency Manager. During this review the status of strategies will be posted for public comment. A brief public hearing will be held to allow the public to comment every year.

Plan Amendment

If maintenance procedures lead the Emergency Manager to believe a new mitigation strategy is necessary, or modification of an existing strategy is necessary, they should reconvene the relevant stakeholders to develop a new strategy. This group of stakeholders will include, but is not limited to: 1) the Beltrami County Emergency Manager, 2) the project champion, 3) an elected official of the jurisdiction or jurisdictions affected by the newly understood circumstances and mitigation strategy, 4) staff from any affected agencies, and 5) at least one community member from the affected jurisdictions.

The stakeholders must approve the new or updated strategy by means of developing a consensus. The stakeholders must also document the priority of this new or updated strategy in relation to other strategies in the affected jurisdiction.

New mitigation or updated mitigation strategies may be adopted into this plan at any time. For these strategies to be formally adopted, the County Board must approve, by motion, the adoption of the new or update strategy or strategies.

Plan Update

This plan will expire five years from the date it is formally adopted. Two years and six months prior to this plan's expiration the Emergency Manager will begin the process of pursuing funding for a plan update. The plan update process should begin 12-14 months prior to the plan expiring because of the lengthy review process. To promote the efficient use of planning dollars it is recommended that this document be used as the basis and changes made as necessary.

Process

The process for the plan update will largely follow the process that was used for this update. More specifically, it will include: an update of the community profile, an update of the hazard profiles, and an assessment of mitigation strategies. Key components also include: an initial assessment and identification of priority hazards, in-depth analysis and key issue identification, and mitigation strategy development, and implementation strategy development.

A greater emphasis should be placed on strategy development and implementation plan development with a simple review and validation of assessment and prioritization.

The planning process used to update this plan shall follow any guidelines established by HSEM and FEMA should they be funding

agencies. It should also be inclusive to the greatest extent possible and practical.

Participation

The Public

During the next planning process the timing of the at-large public participation opportunities should be more intentionally scheduled to coincide with ongoing festivals and activities. For example, renting a booth at the County fair for a day might solicit more input from the public at-large.

The Planning Taskforce

Also the planning Taskforce should be well balanced, to include experts in infrastructure, but also experts in softer activities such as public outreach to help craft strategies. Each section should be vetted and updated with the Planning Team representing the interests of the County.

Multi-Jurisdictional

Each political geography in the County will be included on the planning team. Also, each political geography must have an opportunity rate risk, vulnerability, and craft an implementation plan.

Prior to any application for funding to assist with the plan development, every incorporated city within the County shall be sent a letter asking for their interest in participation. The reason for this step is to determine if the next plan will be multi-jurisdictional and what jurisdictions will be included. It also serves to educate the cities on the importance of having a hazard mitigation plan in place. Additionally, it will inform any funding requests and contracting.

Neighboring Jurisdictions and Agencies

Future renditions of the plan should include a table of participants from other agencies and jurisdictions consulted during the planning process. This table may or may not include others consulted during the planning process, for example, engineering firms or utility providers.

Content

Hazard Profiles

More detailed assessments of hazard vulnerability should be included. For example, an inventory of structures within the floodplain has been suggested for the next plan update. Further suggestions are listed throughout.

Plan for Action

More strategies should be promoted as low priority options in the plan for action to increase the flexibility of plan document. For example, including strategies for acquisition of flood prone properties is not currently pertinent it may become pertinent in the next five years due to a flood event.

Update Requirements

The suggested identified here are merely that—suggestions. They align with current planning requirements, are interpreted by FEMA, and further interpreted by Homeland Security and Emergency Management at the State of Minnesota. It would be reasonable to expect that either FEMA or HSEM requirements will change between the approval of this plan and the next update. The planner should consult with HSEM and FEMA when establishing their planning process.

Section V: Appendices

Appendix I – Map Folio

Map 11 – Land Ownership

Map 12 – Land Suitable for Development

Map 1 – Lake of the Woods County

Map 2 – Land Cover/Land Use

Map 3 – Wetland and Surface Water

Map 4 – Shaded Relief

Map 5 – Development Density

Map 6 – County Development Corridor

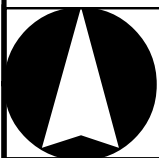
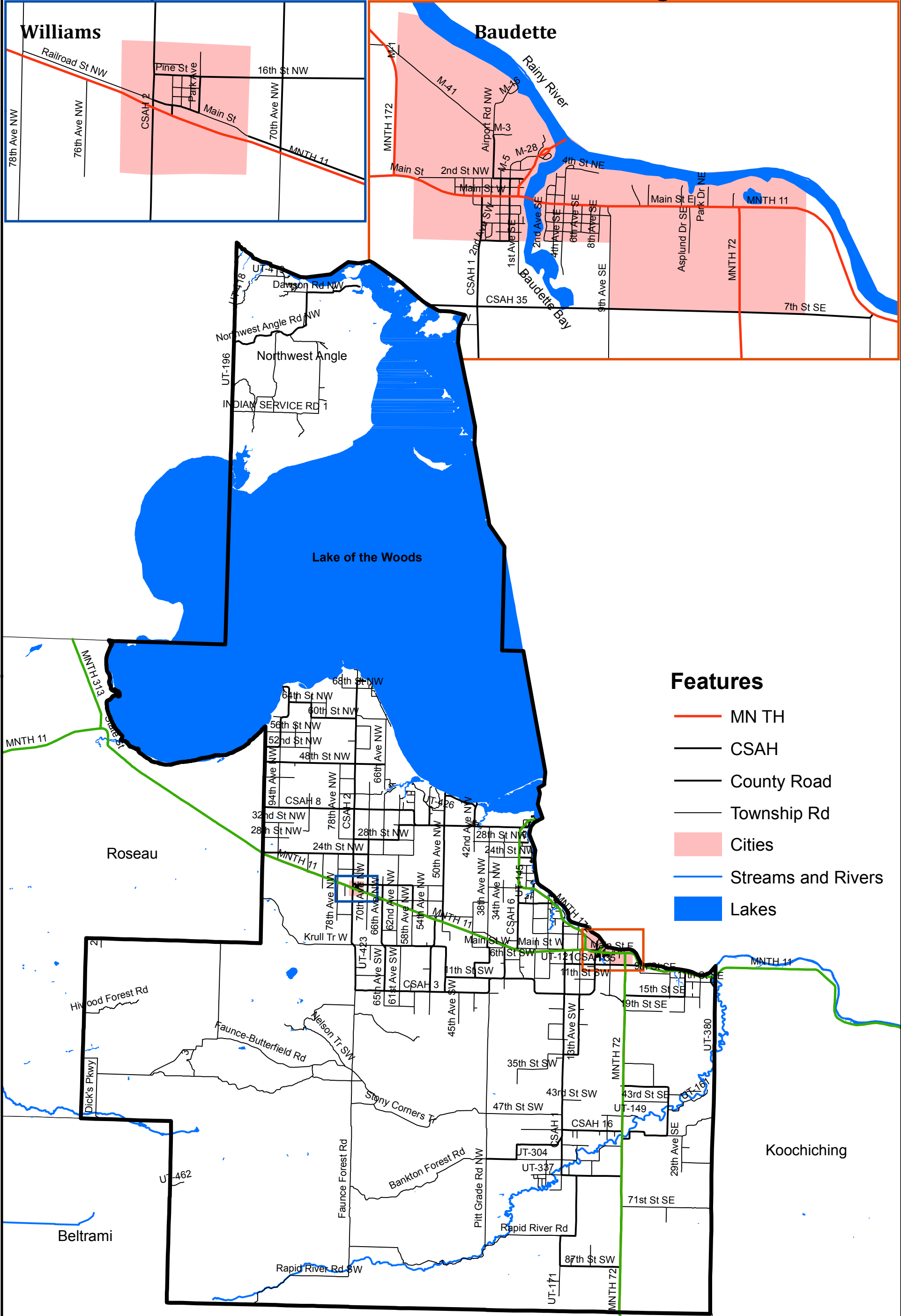
Map 7 – County Historic Flood Damage and Floodplain

Map 8 – Baudette Historic Flood Damage and Floodplain

Map 9 – County Wildfire Hazard

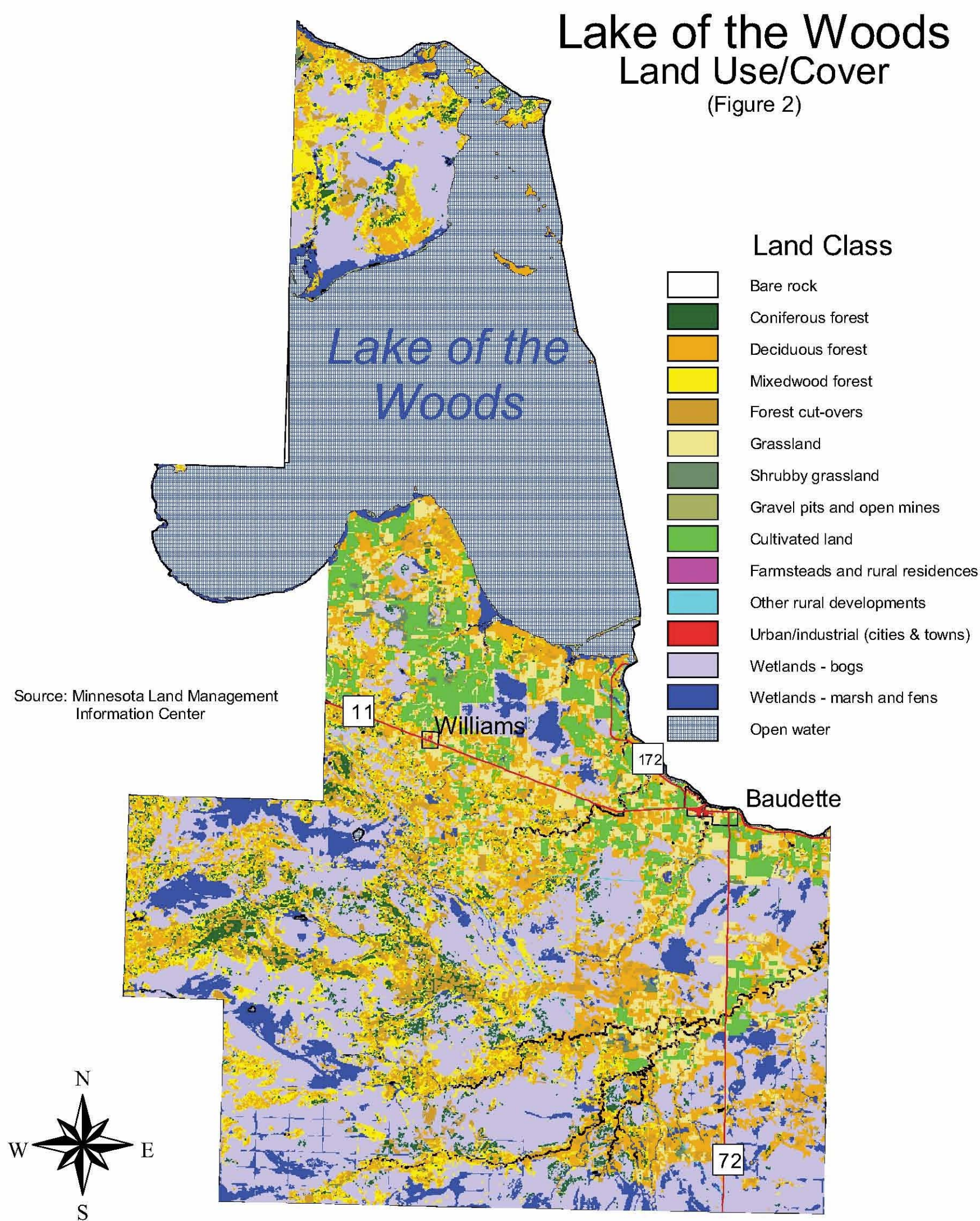
Map 10 – Pipeline Infrastructure

Map 1. Lake of the Woods Hazard Mitigation Plan

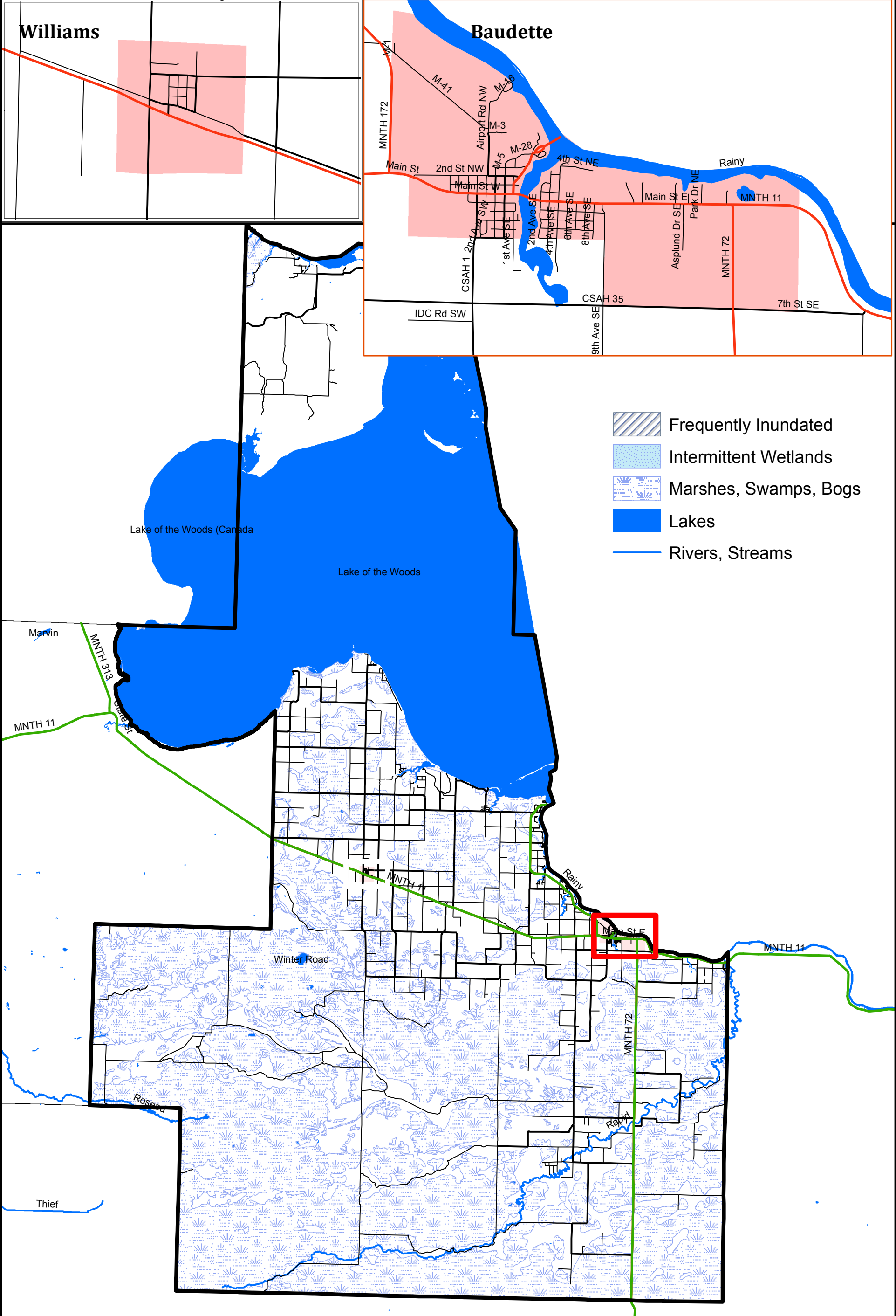


Created by: Headwaters RDC Data Sources:
Draft Date: June 2013 MN DNR

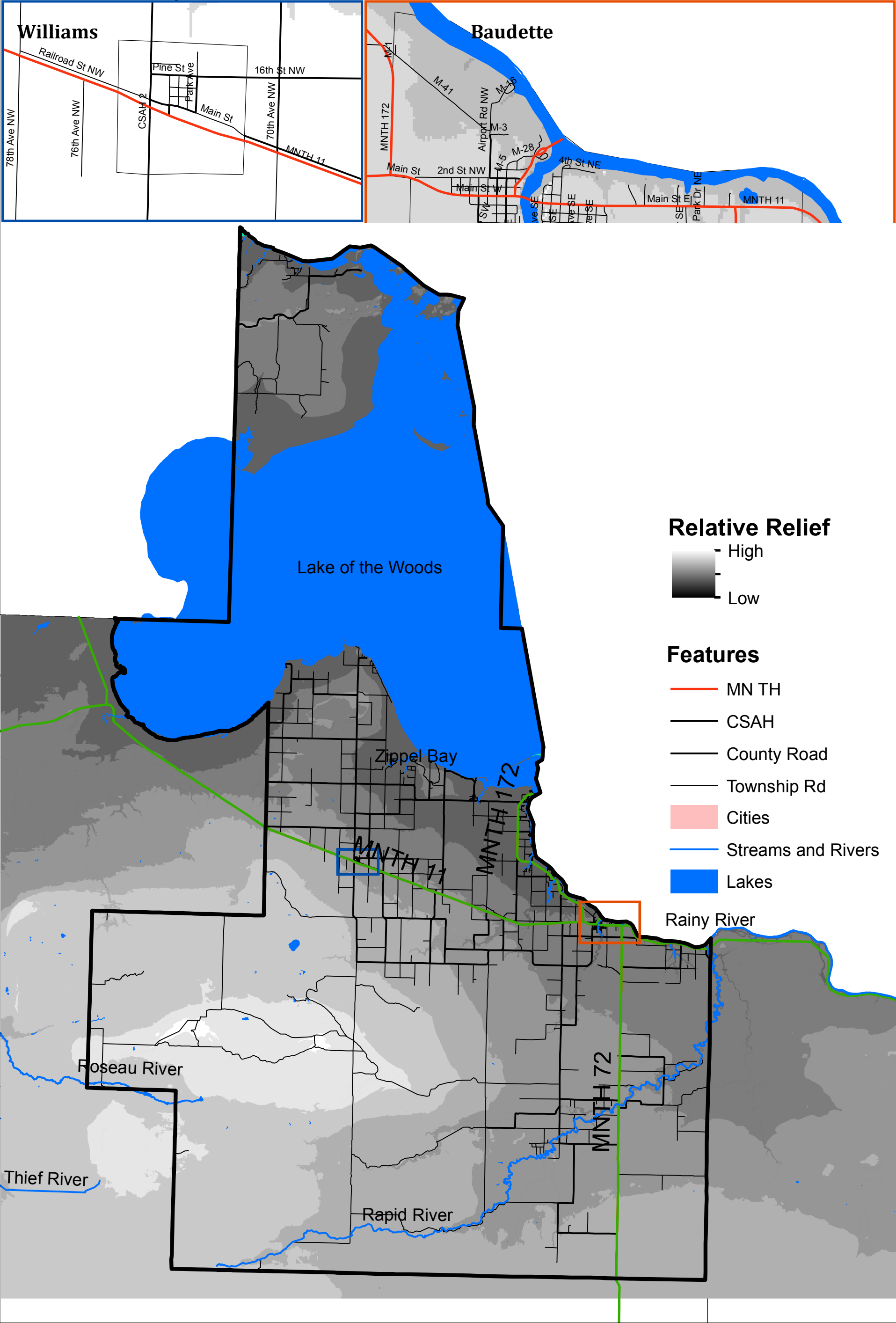
Map 2. Land Use/Cover, from County Land Use Plan



Map 3. Surface Waters and Wetlands



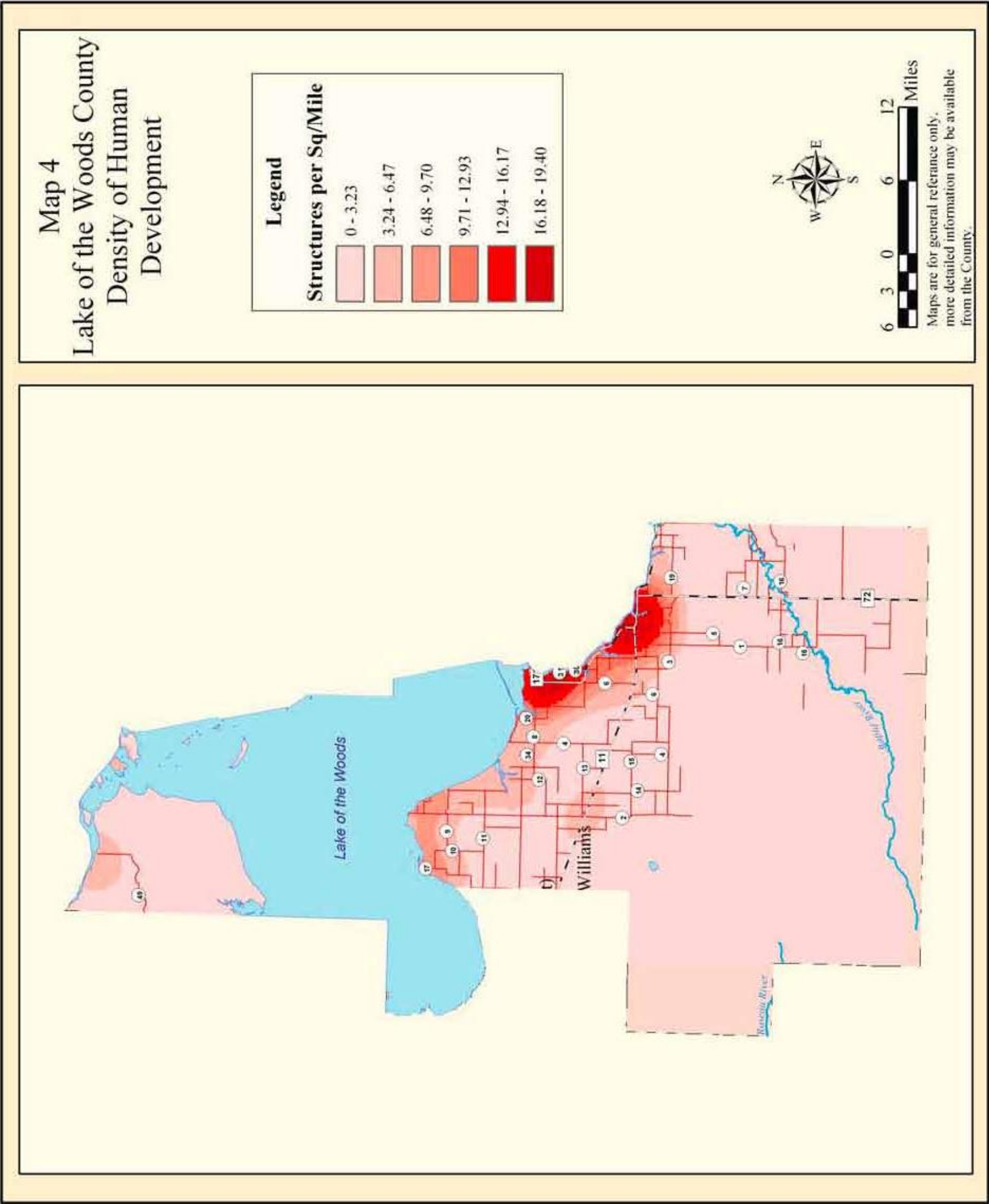
Map 4. Shaded Relief of Lake of the Woods



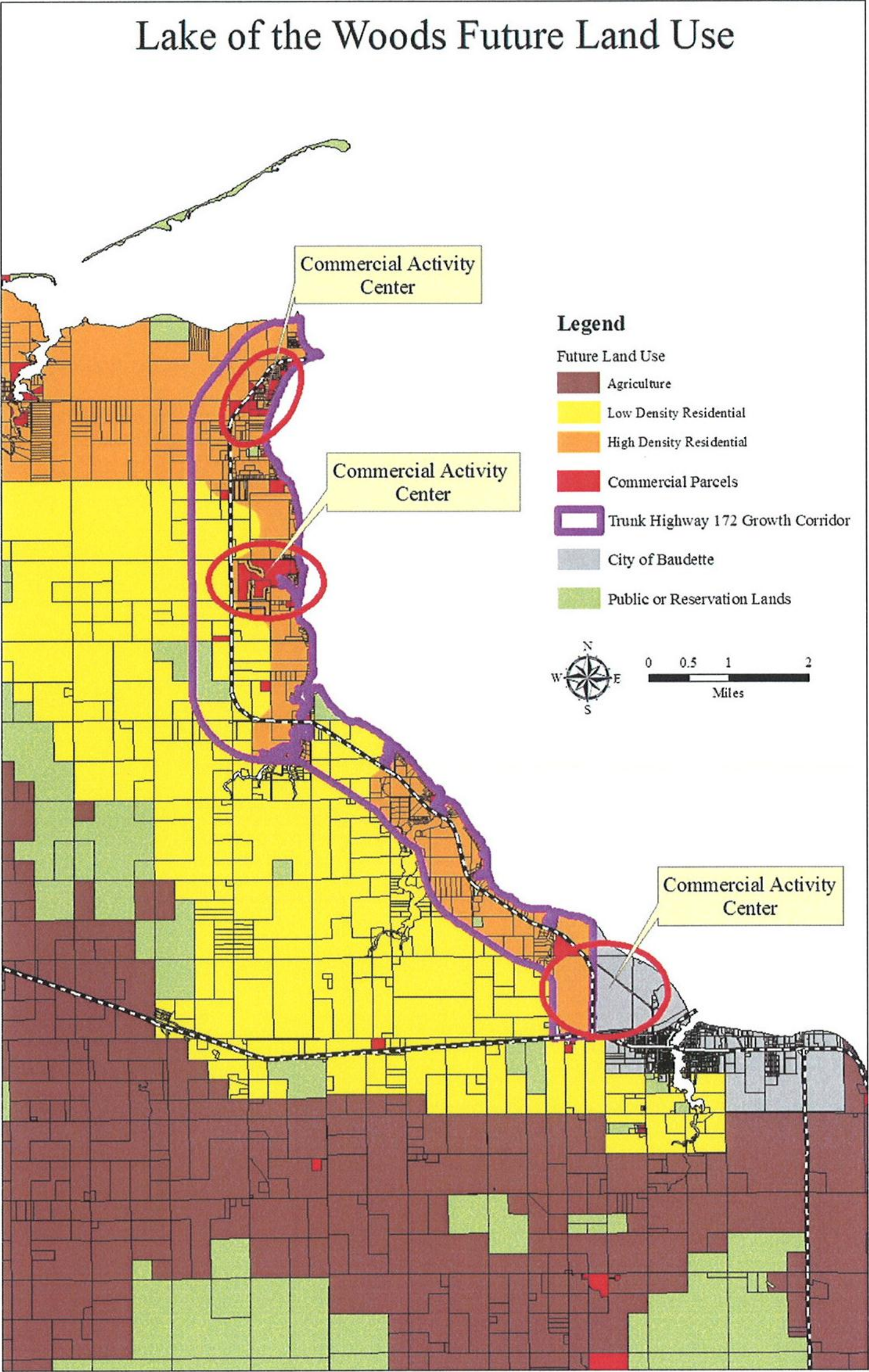
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Created by: Headwaters RDC
Draft Date: June 2013
Data Sources:
MN DNR, MIS Bureau

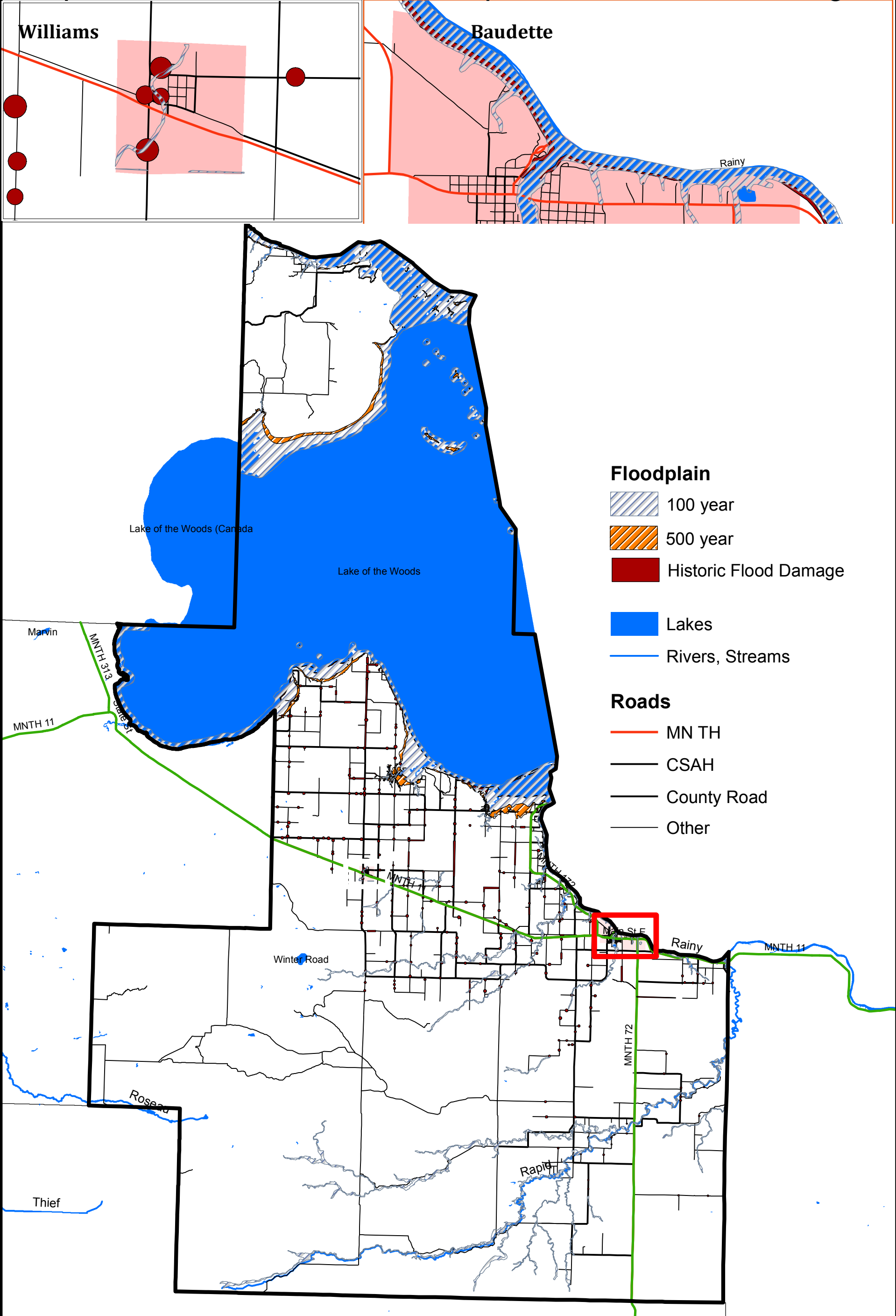
Map 5. Development Density,
from 2008 Hazard Mitigation Plan



Map 6. High Growth Corridor and Future Land Use,
from 2008 Land Use Plan Addendum



Map 7. Lake of the Woods Floodplain and Historic Damage

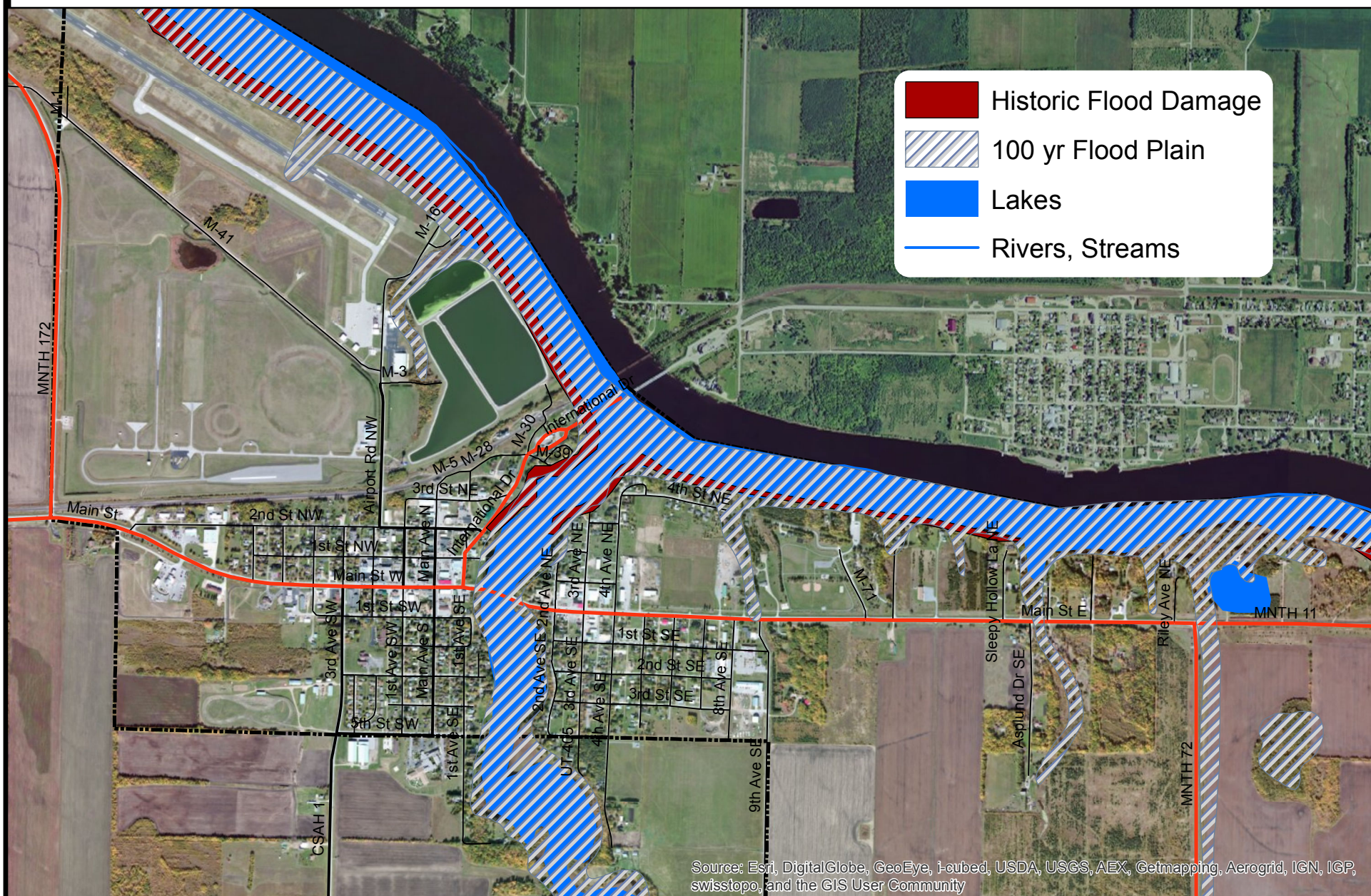


0 5 10 20 Miles

Created by: Headwaters RDC
Draft Date: June 2013

Data Sources:
MN DNR
FEMA Q3

Map 8. City of Baudette Flood Hazard



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

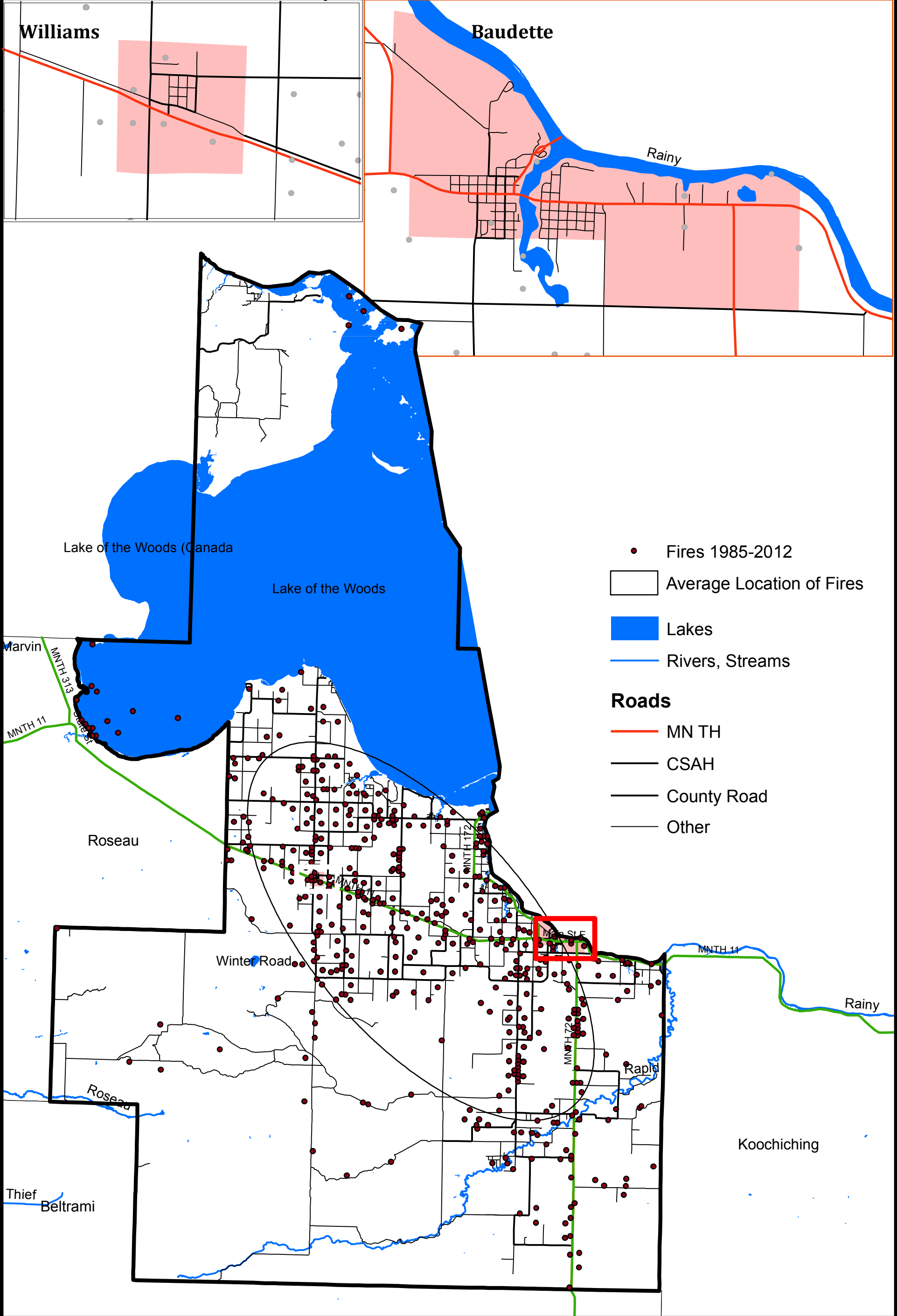
Created by: Headwaters RDC
Draft Date: June 2013

Data Sources: Q3 Data, 1997;
Proprietary Data, 2011



0 0.1 0.2 0.4 0.6 0.8 Miles

Map 9. Wildfire Hazard

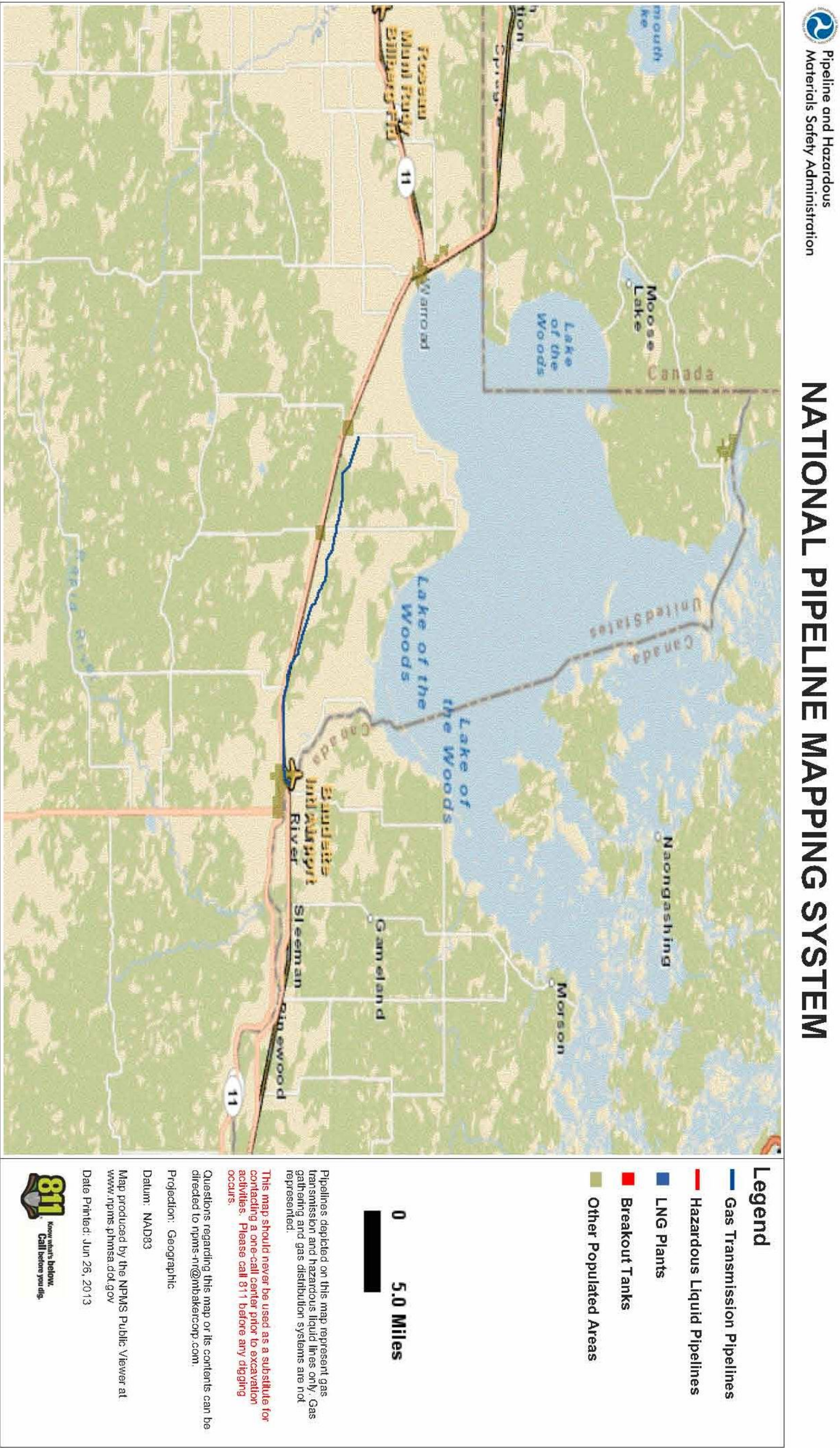


0 5 10 20 Miles

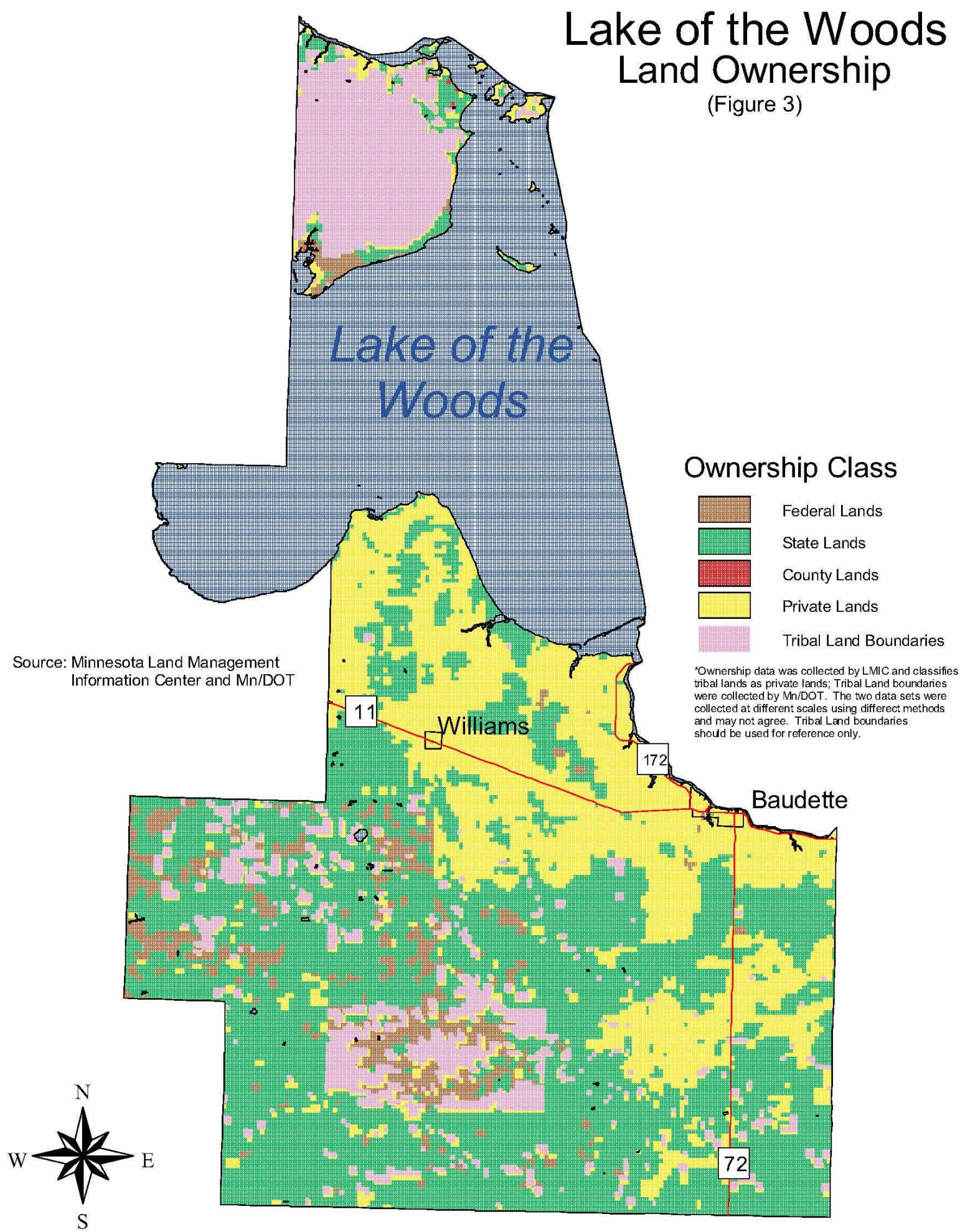
Created by: Headwaters RDC
Draft Date: June 2013

Data Sources:
MN DNR
Fires reported since 1985

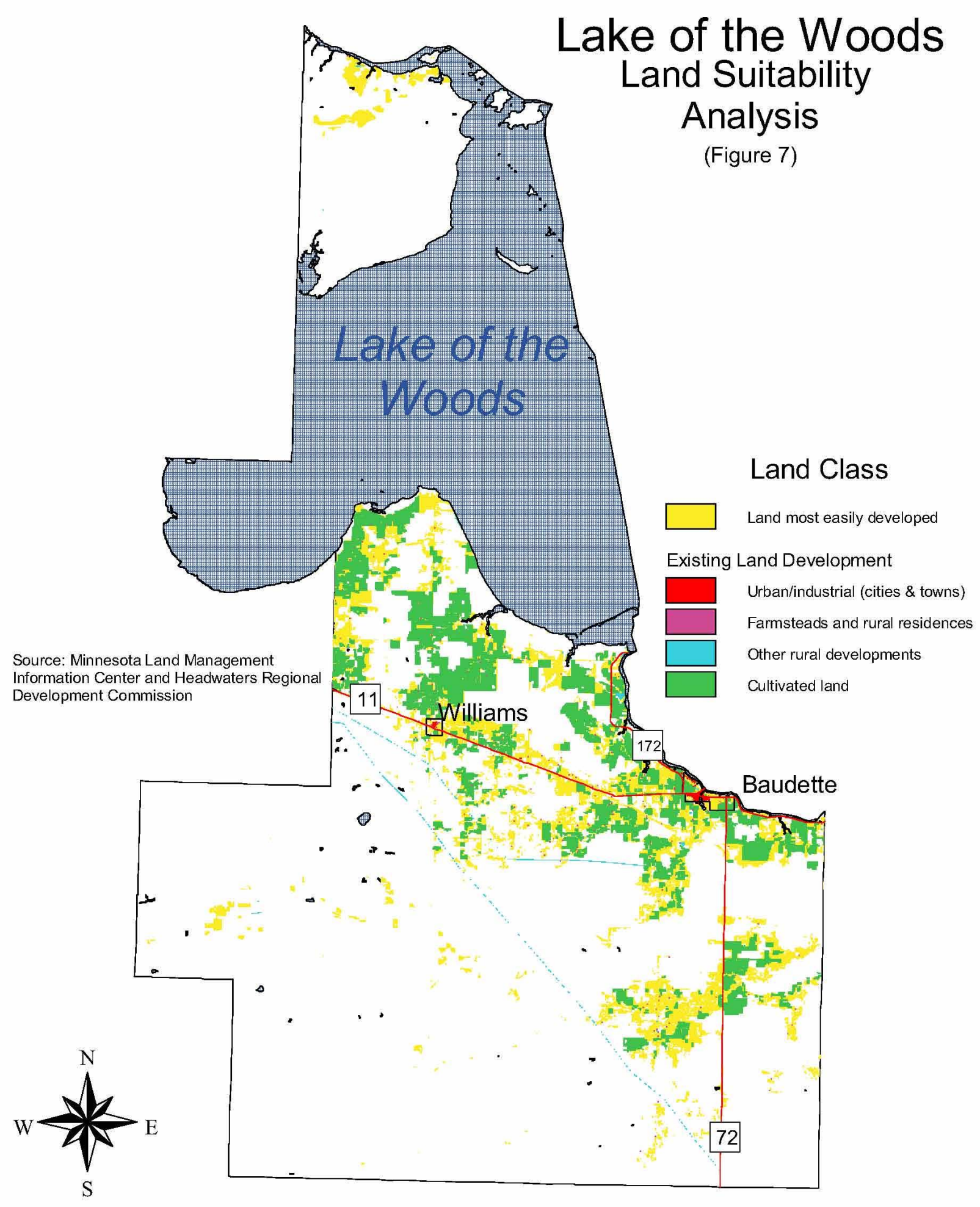
Map 10. Gas Transmission Pipeline, Lake of the Woods



Map 11. Land Ownership, from Land Use Plan



Map 12. Land Suitable for Development, from Land Use Plan



Appendix II – Detailed Process

Detailed Events

The following are specific events that took place. This is not a comprehensive list of the work that was undergone in this planning process. Because of the large size and low density of Lake of the Woods County meetings are not frequently an effective means for communicating with people. For this reason most communication was done over the phone. Other folks engaged in the process and providing input included:

- Utilities – Roseau Electric, North Star Electric;
- Engineers – Consulting engineers for City of Baudette and Williams.

Quarter 2 2012

Preliminary Meeting – April 25

- **Advertisement:** N/A
- **Attendees:** Marcus Grubbs, HRDC, and Holly House, Lake of the Woods Emergency Management.
- **Purpose:** To discuss the plan process, participation requirements, grant requirements, timelines, scope, and other issues.
- **Means:** In person meeting at HRDC offices in Bemidji

- **Results:** Established a preliminary timeline, preliminary participation process, preliminary list of Planning Taskforce Members, and established preliminary understanding of roles and responsibilities.
- **Incorporated:** These were incorporated throughout the planning process. The majority of it was reviewed at the first Taskforce meeting.

Taskforce Meeting – June 11

- **Advertisement:** Taskforce members invited by HRDC.
- **Attendees:** All Taskforce members.
- **Purpose:** To introduce hazard mitigation concepts, introduce the existing plan, introduce and ask for feedback on the process, complete a brainstorming exercise about hazards that impact the community, establish roles and responsibilities.
- **Means:** In person meeting in the Lake of the Woods Commissioner's meeting room.
- **Results:** The purpose was fulfilled.
- **Incorporated:** This shaped the planning process, and reaffirmed the work done on the April 25 meeting.

Quarter 3 2012

Taskforce Meeting – July 25

- **Advertisement:** Taskforce members invited by HRDC.
- **Attendees:** All taskforce members, less the City of Williams.
- **Purpose:** To review an initial assessment of hazards, identify the priority hazards, identify community assets, and identify stakeholder groups around the priority hazards.

- **Means:** In person meeting in the Lake of the Woods County Commissioner's meeting room.
- **Results:** The purpose was fulfilled. A targeted list of hazards was identified for in-depth analysis, a list of stakeholder groups were identified for further engagement, and community assets were discussed.
- **Incorporated:** This input shaped the scope of hazards discussed in the planning document and it shaped who was involved in the process.

Quarter 4 2012

Public Survey – September-October

- **Advertisement:** An online survey, available on the Emergency Management page of the Lake of the Woods County website, was advertised in the Baudette Region Newspaper, Northern Lights Newspaper, the North Star Electrical Cooperative Newsletter, and the City of Baudette Newsletter. A short form survey was included in the City of Baudette utility billing for residents to return with their utility bill payments. Flyers about the online survey were also handed out the Baudette Farmers' Market.
- **Attendees:** The survey was responded to by the public at large. A write up is available in Appendix III.
- **Purpose:** To gain input from the public to be included in the plan development.
- **Means:** Online and paper survey.
- **Results:** See Appendix III.

- **Incorporated:** Key relevant conclusions were presented the Planning Taskforce, the City of Williams, and the City of Baudette meetings.

Health and Medical Stakeholder Meeting – November 21

- **Advertisement:** Invited by HRDC and Emergency Management.
- **Attendees:** Baudette Ambulance (also serving Williams), Public Health, Human Services, Emergency Management, Planning Consultant, Lakewood Health CEO.
- **Purpose:** Understand the needs of emergency health and human services providers. Gain insight into the impact of hazards on those services and discuss mitigation strategies.
- **Means:** In-person meeting at Lake of the Woods County Building.
- **Results:** Key findings were established regarding the hazard resistance of medical and human services and also which hazards had the potential to overwhelm medical and human services.
- **Incorporated:** These inputs inform the impacts of hazards and helped to develop strategies.

Fire Leadership Meeting – November 21

- **Advertisement:** Invited by HRDC.
- **Attendees:** Williams Fire Chief, Baudette Fire Chief, MN DNR Forestry Baudette, Lake of the Woods Emergency Manager, HRDC.

- **Purpose:** To better understand the risk and vulnerability related to wildfire and develop strategies to mitigate those risks.
- **Means:** Meeting held at Lake of the Wood Government Center.
- **Results:** The group identified a few high risk areas, and strategies to mitigate that risk, specifically a CWPP and potential siting of dry hydrants in water scarce areas.
- **Incorporated:** Input was incorporated in the hazard profile and contributed to mitigation strategy development.

City of Williams Meeting – December 5

- **Advertisement:** Worked with City Staff to notify other staff, current Council people, future Council people, and other interested parties. Notice was included in the previous Council agenda.
- **Attendees:** City Clerk, Council person, public works staff, citizen at large, Lake of the Woods Emergency Manager, HRDC.
- **Purpose:** To discuss hazards as they relate specifically to the City of Williams, what mitigation strategies might make sense for them, and how/when they can be implemented.
- **Means:** Meeting held at the Community/Senior center.
- **Results:** Specific insight was gained, participants identified hazards about which they are concern, rated hazard risk and vulnerability, discussed mitigation strategies, and prioritized mitigation strategies.
- **Incorporated:** These results are incorporated throughout the plan, specifically in the assessment, hazard profiles, and plan for action.

Development Focus Stakeholder Meeting – December 6

- **Advertisement:** Invited by HRDC.
- **Attendees:** Tom Hanson, County Commissioner, Patty Beckel, County Commissioner.
- **Purpose:** To discuss the planning framework in the County, where this plan fits in exactly, options for updating and maintenance of the plan, the County's existing plans including, but not limited to: the Wetlands Plan and Ordinance, Land Use Plan, Trails Plan, Development Corridor addendum to the Land Use Plan.
- **Means:** In person meeting.
- **Results:** Planning and policy framework were discussed with an emphasis on the needs of the area identified in the Development Corridor addendum to the Land Use Plan.
- **Incorporated:** Many of the strategies target this identified development Corridor.

Quarter 1 2013

City of Baudette Council Working Meeting – January 24

- **Advertisement:** A normal working meeting of the City Council, advertised through their regular public notice process.
- **Attendees:** City Council, staff, HRDC, local press.
- **Purpose:** To discuss the hazard mitigation plan as related specifically to Baudette, the risk and impact of hazards, the City's policies (specifically regarding NFIP requirements), and strategies important to them. A meeting advertised and

open to the public was specifically chosen to promote further public input in the planning process.

- **Means:** A regular working meeting of the City Council in the City Council meeting room.
- **Results:** The City Council and Staff identified hazard risks, impact vulnerabilities, strategies for mitigation, and an implementation plan.
- **Incorporated:** This material was presented to the Planning Taskforce and included in this plan document.

Taskforce Meeting – January 30

- **Advertisement:** Invited by HRDC
- **Attendees:** The Planning Taskforce, on which Todd Beckel has been replaced by Tom Hanson.
- **Purpose:** To further vet strategy details and crafts an implementation plan.
- **Means:** The Taskforce reviewed the strategies developed prior to the meeting. These included the details identified in each strategy for strategy development and for implementation. The group used consensus to finalize their strategy selection. The Taskforce then vetted details of the implementation plan for each strategy and used consensus to prioritize strategies and complete the implementation plan.
- **Results:** The Taskforce finalized strategy selection and the implementation plan.
- **Incorporated:** These items are included in the planning document.

Public Hearing – March 12

- **Advertisement:** Advertised in the Northern Light Newspaper, public notice was posted with the County, and advertised on local radio stations.
- **Attendees:** County Commissioners, County Staff, HRDC Staff, local press.
- **Purpose:** To provide the public, the Commission, staff and other jurisdictions a review of the work done to-date and to allow all the opportunity to comment on the implementation strategy.
- **Means:** Material presented to the Commission at a special public hearing at the Commission meeting.
- **Results:** There were a few clarifying questions from the press, the Commission made adjustments to the implementation plan—taking over responsibility for a strategy.
- **Incorporated:** The Commission’s input was incorporated in the implementation strategy.

Quarter 2 2013

Public Review and Comment Period – June 5

- **Advertisement:** A notice sent to the Baudette Region, the Northern Light, the City of Baudette, the City of Williams, and Lake of the Woods County for posting. An email sent to surrounding jurisdictions and agencies with the noticed attached.
- **Attendees:** A few comments were received.

- **Purpose:** To allow for the public and other agencies and jurisdictions to review and comment on the planning document.
- **Means:** Available online at the HRDC website with a link from the Lake of the Woods County webpage.
- **Results:** Three comments were received. They are paraphrased below:
 - The plan inaccurately depicts the floodplain ordinance.
 - Comment in the affirmative of the work done.
 - Comment referring to grammatical errors.
 - Comment correcting a date regarding a flood event.
- **Incorporated:** The comments received were all looked into.
 - A correction in the plan draft was made to more clearly describe the floodplain ordinance.
 - The referred to grammatical errors were corrected.
 - The date regarding the flood event was corrected.
- **Incorporated:** Material was added to several sections addressing these concerns. The plan was resubmitted to HSEM on July 22, 2013, dated July 20, 2013.

Quarter 3 2013

Submittal for Review – July 5

- **Advertisement:** N/A
- **Attendees:** N/A
- **Purpose:** To gain feedback regarding meeting the planning requirements of FEMA and HSEM.
- **Means:** Plan sent to Matti Gurney at HSEM.
- **Results:** The plan was received with comments from HSEM on July 8. Several comments were received. Some were required changes and some were suggestions.

Multi-Jurisdictional Summary Sheet

Multi-Jurisdictional Summary Sheet

						Requirements Met (Yes/No)					
#	Jurisdiction Type	Plan POC	Mailing Addresses	Email	Phone	A. Planning Process	B. Hazard ID, Risk Asmt	C. Mit Strat	D. Plan Review	E. Plan Adoption	F. State Requirements
1	Lake of the Woods County	Christina Husband s, Emergency Manager	206 8th Ave SE Baudette, MN 56623 106 West Main Street P.O. Box 548	Nin_h@co.lake-of-the-woods.mn.us	218.634.2836	Yes	Yes	Yes	Yes	TBD	TBD
2	City of Baudette	Tina Rennemo	Baudette, MN 56623 250 Main St, PO Box 98	tinar@ci.baudette.mn.us	218.634.1850	Yes	Yes	Yes	Yes	TBD	TBD
3	City of Williams	Jackie Becklund	Williams, MN 56686	cityofwilliams@wiktel.com	218.783.3271	Yes	Yes	Yes	Yes	TBD	TBD

Appendix III – Community Survey

Introduction

The hazard mitigation planning team conducted a survey of Lake of the Woods residents. The survey was conducted in an effort to assess hazard mitigation awareness, understand the hazards Lake of the Woods has experienced, and gain input from residents about potential mitigation efforts. This appendix describes the survey methodology, results of the survey, and discusses the implication of those results.

The survey was executed in two formats: 1) a long version of the survey was widely advertised and offered online; and 2) a short version of the survey was offered to Baudette residents through the mail. Both surveys offered participants to give input on similar issues. The Headwaters RDC collected survey responses online through Survey Monkey, from September 10 through October 29, 2012. The City of Baudette collected surveys from Baudette residents whom returned surveys with their October utility bills.

These survey responses are used to help inform the strategies developed by the planning team. It is difficult to effectively collect relevant and high quality input from the public at large. This survey

was viewed as a way to reach a broad audience, but we recognize that surveys do not generally gain the most insightful input. This appendix concludes with a brief list of issues that summarize the issues identified by survey responses.

These two surveys were surprisingly effective at gaining input from the public. There were 48 completed online surveys and 89 completed and returned paper surveys, for a total of 137 respondents. With an approximate population of 4,000 and about 1,800 housing units, about 3 percent of people participated or about 8 percent of household participated (assuming no household completed two surveys.)

Online Survey

Introduction

This section of the document offers an overview of the conclusions from a public survey, which was conducted in an effort to assess hazard mitigation awareness throughout Lake of the Woods County. Survey responses were conducted online using Survey Monkey from September 10, 2012 through October 29, 2012. A total of 48 complete responses were received, along with 4 non-complete responses.

Background

The purpose of this survey was to gain input from the public on issues related to hazard mitigation. This survey was drafted by a core group of the planning team, the project consultants and Emergency Management. It was intended to meet participation requirements for FEMA plan approval. It is always a challenge to effectively engage the public with surveys such as this.

The survey available online was, by design relatively long. It would take approximately 15 minutes to complete the survey. The planning team assumed if someone was taking the time to go out of their way to complete the survey they would be willing

Methods

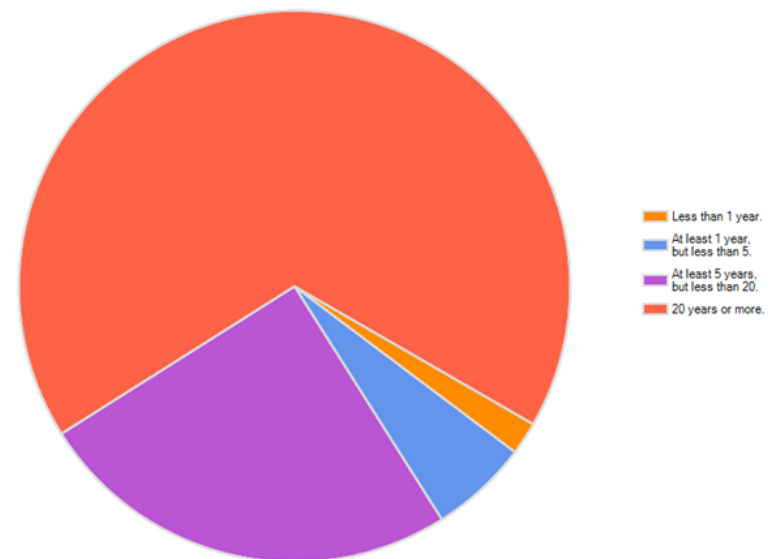
The core group specifically chose the language and questions used, intending to make the survey easily understood, brief, not leading, and appropriate for the audience. For example, the use of the phrases “emergency preparedness” and “reducing the impact of hazards” were seen as more easily understood and relatable than “hazard mitigation.” Emergency preparedness also directly serves to reduce the impacts of hazards because much of the impact may be a result of how prepared or unprepared residents are and how they individually act in response.

To further reduce barriers to participation, very little background personal information was collected and no question responses were required. The entire survey was 18 questions long. However, the last four questions were described as optional.

Advertisement – This survey was advertised in the Northern Lights newspaper, the Baudette Region newspaper, the City of Baudette newsletter, and the Northern Electric utility newsletter. These advertisements should have reached nearly all residents in Lake of the Woods County, rural residents, Baudette residents, and Williams residents.

The survey advertisements were typically 250 words. These advertisements introduced the idea of hazard mitigation and introduced the planning project. They invited readers to go online

How long have you lived in Lake of the Woods County?



to the Lake of the Woods Emergency Management webpage and complete the survey. Readers were encouraged to call if they wanted a paper copy sent to their home.

Topics and Question Groups- The first three questions were described as background questions. We asked where they lived, how long they’ve lived in the county, and how familiar they are with emergency preparedness topics. The second set of questions look to have participants identify hazards that impact their life, how they impact their life, and how likely these hazards are. The next group of questions looks to identify how prepared people are for emergencies related to these hazards and how or if we should help them better prepare.

In addition to the explanation described previously, focusing on emergency preparedness allowed us to tackle one of the key issues identified by the Planning Task Force, “Public education is needed to help prepare residents for hazards and mitigate their impact.” The final set of questions was described as optional and allowed for open ended response. These questions solicited more in-depth thoughts about what the County and other agencies can do to prepare for hazards.

Most questions were posed in a multiple choice format. The survey included a list of possible hazards, and respondents were asked to indicate the likelihood of these prospective hazards occurring. The list of hazards is as follows:

- Ground Flooding;
- Overland Flooding;
- Wildfire;
- Tornado;
- Strong Winds;
- Hail;
- Ice Storm;
- Severe Winter Weather;
- Lightning;
- Earthquake/Earth Movement;
- Extreme Temperature; and
- Drought.

Results

A detailed summary of results is on file with the project consultants. There were a total of 45 completed survey responses. This indicates

that 45 participants went through the survey from beginning to end, but did not necessarily respond to all questions.

Respondent Profile - Participants reported being from cities and townships throughout the County, the majority of respondents were from Baudette. Other respondents were identified from Williams, Roosevelt, and townships south of Lake of the Woods.

Approximately 84 percent of respondents identified as residents of Baudette. Respondents also identified as residing in Williams, Roosevelt, townships south of Lake of the Woods, and other areas.

A significant number, 67 percent, of respondents identified as residing in the county for 20 years or more. Another 25 percent of survey respondents identified as residing in the county for between 5 and 20 years. Approximately 6 percent of respondents identified as having lived in Lake of the Woods for 1 to 5 years. Additionally, approximately 2 percent of those surveyed answered as being residents of the county for less than 1 year.

The results from the survey show that a significant number, 44 percent, have some experience with emergency preparedness responsibilities at their current place of employment, through their education, or at past work experiences. Additionally 40 percent work at an agency with emergency preparedness responsibilities, and an additional 6 percent are involved with this planning process. The remaining 15 percent do not have any preparedness experience outside of preparing their family and homes for hazards and emergencies.

Hazard Identification – Respondents indicated that they have had some experience with the impacts hazards, in regards to personal, household, or property. Furthermore there were really only a few types of hazards that were identified as impactful. The survey responses indicated that the types of hazards that had most significantly affected people were “severe winter storms,” “ice storms,” “ground flooding,” “hail storms,” “strong winds,” and some “overland flooding”. This does not account for the specifics or the level of impact, only the number individuals that were impacted. The most significant impact of any hazard is that from “severe winter storms”. Furthermore 73 percent identified some impact from “severe winter storms”.

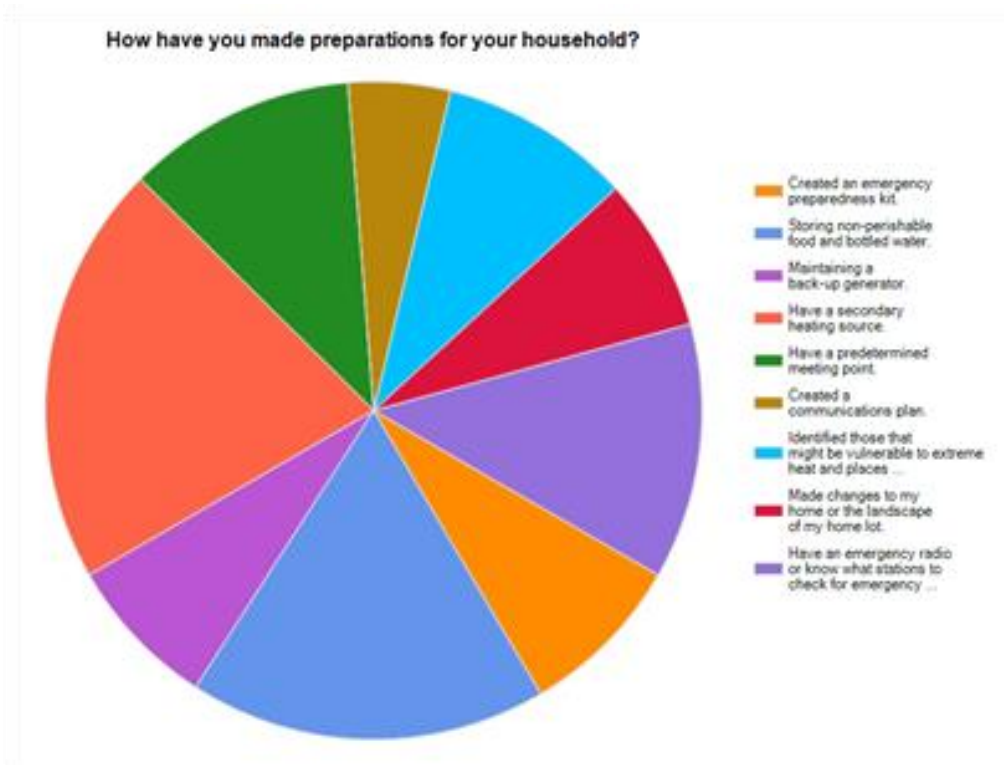
Respondents identified hazards by likelihood of occurrence, in Lake of the Woods County, in any given year, by the following order:

- With a likelihood of 80-100% is “extreme heat or cold” and “dangers while on Lake of the Woods;”
- With a likelihood of 40-60% is “severe winter storms;”
- With a likelihood of 20-40% is “hail,” “ice storm,” and “drought;”
- With a likelihood of 10-20% is “wildfire,” “tornado/strong winds,” and “lightning;”
- With a likelihood of 5-10% is “overland flooding” and “erosion;”
- And with a likelihood of 0-5% is “ground flooding,” “border security issues,” and “hazardous material incident;”

Upon prompting to supply an additional hazards of interest, respondents expressed a strong concern for the release of hazardous materials during transportation accidents, be it pipeline,

rail, or road transport. Additional concern was raised for wildfire during the expected upcoming drought, and human caused hazards.

Lessening the Impacts – Respondents indicated that they were somewhat prepared for hazards, while many feel unprepared, and the smallest category being those that feel very prepared. The hazards that respondents feel most prepared for include “severe winter storms,” “strong winds,” and “ground flooding.” The data also indicated that respondents feel the most strongly about their unpreparedness for “hazardous material incidents.”



After asking whether or not respondents felt their households were prepared, we asked them how they prepared. Respondents indicated that they have prepared in two main ways, with a majority (77%) that “have a secondary heating source” and (65%) “storing non-perishable food and bottled water.” Conversely, less than 20 percent have created a communications plan of some kind.

Approximately 58 percent of respondents indicated that they didn’t want information on how to better prepare their household for emergencies. Others indicated they would like to see printed media sources frequently reminding them on how to prepare.

The majority of respondents (71%) felt the public was effectively warned about upcoming hazards. Of the others, the majority indicated a lack of warning siren coverage as the best way to improve warning systems. Additionally, a significant percent of respondents identified a need for “earlier warnings” and “different methods of warning” as ways to improve the warning system. One respondent stated, ***“expand notification to all areas of the county”***.

It is viewed, by a strong majority of respondents, that the county and other related agencies are “very prepared” or “somewhat prepared” for hazards, with the most significant preparedness pertaining to the threat of “wildfire.” Respondents indicated that the county is least prepared for “drought” related issues. Several respondents indicated with write in responses that the County needs to have better training and education. One such comment says, ***“I think education and continued training will enhance the awareness and preparedness.”*** Additionally, a respondent stated, ***“involve more outside personnel in preparedness and publish more information.”***

One respondent commented the need to focus on Incident Command System (ICS) ***“get an Emergency Manager person with lots of experience working in the ICS.”***

The four final questions listed as “optional” received ten responses or fewer, per question. The question pertaining to “reducing impact of hazards” elicited no consistent reaction.

Regarding potential infrastructure improvements, one respondent stated, “keep all drainage systems cleaned out and function able when heavy rain events occur.” That is consistent with the concerns throughout the survey responses regarding “ground flooding”. In regards to what the “public could do to reduce the impact of hazards” several respondents commented on the need for public awareness and preparedness. Furthermore, continued emergency preparedness drills and improved emergency communications were suggested.

When asked what the public could do to better be prepared, respondents indicated citizens need to take responsibility and become more aware and prepared. Examples were, using common sense in extreme weather situations and also not burning during dry and windy conditions. They also indicated that there are remote areas of the county where warning needs to be improved.

Respondents suggested the County and other agencies need to provide preparedness education and training to the public, and in a more uncomplicated way.

Discussion

The survey shows that hazards have impacted many individuals, in several specific areas. Specifically, respondents indicated that severe winter weather has impacted their employment. Also many respondents indicated they have been impacted by ground flooding and strong winds causing damage to their property. Overall, people indicated that they feel somewhat prepared on most potential hazards and similarly, feel the county is somewhat prepared for most potential hazards. The survey did show that people feel the county is least prepared to handle drought.

There seems to be some contradictory results in the survey. The majority, 58 percent, of respondents indicated that they didn’t want information on how to better prepare their households to reduce the impact of hazards. However, the remaining 42 percent was eager to say they wanted regular material, such as mailers and newspaper articles, to help them prepare.

The issue of transportation related hazardous materials incidents showed up in several open ended remarks despite it not being included in any of the survey language. Inadequate warning also shows up in several remarks.

Conclusions

While this is not a great survey in terms of number of participants, there are some valuable insights to be gained.

The first valuable insight is that strong majorities of the people participating in this portion of the survey have taken measures to prepare for hazards by having a secondary heating source (77%) and storing non-perishable food (65%).

The second, more than 70% of those surveyed feel they have been effectively warned about potential hazards. However, a majority of respondents indicate they would be more prepared for hazards with earlier warning and assurance of coverage throughout the county.

Lastly, out of those who participated in the survey a significant number have lived in the county for 20 or more years (67%) and a significant number also reside in Baudette (84%).

Throughout the survey respondents indicated that they would like to see awareness of hazards improve, with some responsibility falling to the residents and some falling on the county and related agencies. Essentially there is need for a joint effort by both the public and the agencies, to improve preparedness via training and other forms of education.

This survey has provided valuable insight through the above described conclusions. The responses we received, and the responses we didn't receive, tell us that we need to work harder to communicate and reach out to the public on a more regular basis. We also need to find better ways to reach the public.

Short-form Paper Survey

Introduction

This section of the document specifically pertains to the short survey portion that was distributed to the public via mail, with their utility bill. The short survey yielded 89 responses.

Background

The purpose of this survey was to gain input from the public on issues related to hazard mitigation. This survey was drafted by a core group of the planning team, the project consultants and Emergency Management. It was intended to meet participation requirements for FEMA plan approval. It is always a challenge to effectively engage the public with surveys such as this. This survey was executed with the hope that a direct mailed survey, with a postage paid return addressed envelope that takes less than 10 minutes to complete, would be effective at gaining response and insight from participants.

The short survey form was designed to mirror the long survey offered online; however, it is considerably shorter. The concept of hazards was introduced by giving examples of hazards like fire, flood, tornados, and hazardous materials spills. Hazard mitigation was introduced by describing mitigation as "reducing the impact" of hazards.

Methods

This survey included seven questions in total. The intent was to get the most valuable input while taking the least amount of time to complete. The language was chosen very particularly to get very direct input to understand what kinds of natural hazards residents have experience, if they have specifically experienced flooding, if they are concerned about any human caused hazards, if they have any additional input, and if they were interested in providing further input.

The survey first question asked the individual to select the most accurate depiction of how long they have lived in Lake of the Woods County. The choices are "0-1 years," "2-5 years," "6-15 years," and "more than 16 years".

The next questions focused on the respondent being impacted by hazards in the past. Additionally, the respondents were asked to include the "damage estimate," "type of weather," and "date of weather".

In the third survey question, individuals were asked to indicate whether they personally, a friend, or a loved one had ever experienced injury or death that was the result of some type of hazard.

The fourth survey questions asked respondents if they had ever experienced any flooding at their residence or business.

Question 5 on the survey asked if individuals feel there is any risk of a human caused incident (accidental or intentional).

This shorter survey, while following the same framework as the longer on-line portion, called out possible hazard related issues using fewer, more open-ended questions.

Distribution

The short survey was distributed with the City of Baudette utility bills in September. The survey included a short introduction to the topics, hazards and hazard mitigation.

Results

A significant number of survey respondents (49%) indicated they had lived in the county for more than 16 years. Conversely, only 5 percent of those surveyed indicated they had resided in the county for 1 year or less.

The survey results show that approximately 14 percent of individuals have experienced property damage due to hazards. Furthermore, one respondent who had experienced property damage connected it to severe winter weather in which the water lines to their home were frozen. Other people indicated they had experienced as much as \$20,000 in property damages due to flooding from heavy rains.

The survey showed that a very small number of individuals had experienced, or know someone who has experienced injury from a natural hazard. Another part of the survey gauges individual's

feelings regarding potential of human caused incident whether it is accidental or intentional. Approximately 24 percent of respondents felt some potential for risk. Among those possible hazards identified were hazardous material spills.

Conclusions and Future Discussion

This portion of the survey focused on gaining insight regarding impacts of hazards more than the on-line portion which explored opportunities to educate and prepare more than just identify hazards. The responses from the first question indicates that people who have lived in the county for a longer time period are more likely to be engaged in this type of conversation. The second question suggests that while there were few cases where people had experienced property damage due to hazards, the damage that was experienced was very impactful and cost as much as \$20,000. Additionally, more than 20 percent of people surveyed cited that they had experienced some damage from flooding at their residence or business.

While this survey was developed to call out the same information as the on-line component, this survey really centered around four questions:

- property damage;
- physical damage to individuals;
- experience with flooding be it residential or commercial;
- potential threat of human caused incident.

Survey respondents identified several possible threats that could result from human caused incident. Among these identified threats were: terrorism at border crossing, tanker truck accident and

hazardous material spill, hazardous material spill due to train derailment, other potential environmental accidents.

A significant portion of individuals that participated in this survey contributed with additional comments at the end of the survey. These comments covered many areas of hazard related issues, they include: importance of call alerts and warning systems reaching the whole county, necessary actions to prevent traffic from causing train derailment, additional tornado shelters, and necessary measures to ensure safety at the border crossing.

This survey has provided valuable pieces of insight. There are some specific areas where the survey offered valuable insight that will enable us to be intentional in future discussions surrounding hazard mitigation.

Appendix IV – Mitigation Resources

Hazard Mitigation Strategy Ideas

Several resources exist to help craft strategies to mitigate hazards. These resources may also be able to direct one to the appropriate technical assistance. Human resources include:

- The State of MN, Department of Public Safety, Division of Homeland Security and Emergency Management, State Hazard Mitigation Officer;
- The State of MN, Department of Natural Resources, State Floodplain Manager; and
- The State of MN, Department of Natural Resources, State Dam Officer.

Written and electronic resources include:

- FEMA Mitigation Best Practices Search at <http://www.fema.gov/mitigationbp/>
- FEMA, Hazard Mitigation Assistance Unified Guidance, updated from time to time.
- FEMA, Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards, January 2013.
- Numerous hazard mitigation planning how-to guides.

Monetary Resources

Hazard Mitigation Assistance

Hazard mitigation programs of which local agencies can apply for funding through the State of MN include:

- Pre-Disaster Mitigation Grant Program;
- Hazard Mitigation Grant Program;
- Flood Mitigation Assistance Program;
- Repetitive Flood Claims Program; and
- Severe Repetitive Loss Program.

Other Funding Sources

Numerous other funding programs may be useful for funding hazard mitigation projects. These include:

- The Federal Economic Development Authority, Hazard Mitigation Grant program;
- The USDA Rural Development facilities grant and loan programs;
- The MN DNR to access Firewise grants for wildfire hazard mitigation planning and projects.

More detail about Hazard Mitigation Assistance Programs

Flood Mitigation Projects

Property Acquisition and Structure Demolition

The voluntary acquisition of an existing at-risk structure and, typically, the underlying land, and conversion of the land to open space through the demolition of the structure. The property must be deed-restricted in perpetuity to open space uses to restore and/or conserve the natural floodplain functions.

Property Acquisition and Structure Relocation

The voluntary physical relocation of an existing structure to an area outside of a hazard-prone area, such as the Special Flood Hazard Area (SFHA) or a regulatory erosion zone and, typically, the acquisition of the underlying land. Relocation must conform to all applicable State and local regulations. The property must be deed-restricted in perpetuity to open space uses to restore and/or conserve the natural floodplain functions.

Structure Elevation

Physically raising an existing structure to the Base Flood Elevation (BFE) or higher if required by FEMA or local ordinance. Structure elevation may be achieved through a variety of methods, including elevating on continuous foundation walls; elevating on open foundations, such as piles, piers, posts, or columns; and elevating on fill. Foundations must be designed to properly address all loads and be appropriately connected to the floor structure above, and utilities must be properly elevated as well. FEMA encourages Applicants and sub-applicants to design all structure elevation

projects in accordance with the American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) 24-05, *Flood Resistant Design and Construction*.

Mitigation Reconstruction

Mitigation reconstruction is the construction of an improved and elevated building, on the site where an existing building and/or foundation has been partially or completely demolished or destroyed. Mitigation reconstruction is only permitted for structures outside of the regulatory floodway or coastal high hazard area (Zone V) as identified by the existing best available flood hazard data. Activities that result in the construction of new living space at or above the base flood elevation (BFE) will only be considered when consistent with the Mitigation Reconstruction requirements. Such activities are only eligible under the Sever Repetitive Loss (SRL) program. Mitigation reconstruction projects cannot be combined with other activity types within the same project sub-application. To ensure the sub-application scope, schedule, and budget adhere to programmatic requirements, a mixture of activity types other than mitigation reconstruction within the sub-application is not permitted. Applicants must indicate within the mitigation activity section of their sub-application why they are electing to utilize mitigation reconstruction, and have not chosen the other available activity types.

Dry Floodproofing

These are techniques applied to keep structures dry by sealing the structure to keep floodwaters out.

- ***Dry Floodproofing of Historic Residential Structures*** is permissible only when other techniques that would mitigate

to the BFE would cause the structure to lose its status as a Historic Structure, as defined in 44 CFR Section 59.1.

- ***Dry Floodproofing of Non-residential Structures*** must be performed in accordance with NFIP Technical Bulletin (TB) 3-93, *Non-Residential Floodproofing—Requirements and Certification*, and the requirements pertaining to dry floodproofing of non-residential structures found in 44 CFR Sections 60.3(b)(5) and (c)(4).

Minor Localized Flood Reduction Projects

These projects are intended to lessen the frequency or severity of flooding and decrease predicted flood damages, such as the installation or modification of culverts and stormwater management activities such as creating retention and detention basins. These projects must not duplicate the flood prevention activities of other Federal agencies and may not constitute a section of a larger flood control system.

Flood, Earthquake, Erosion, Landslide, Tornado Hazards Mitigation Projects

Structural Retrofitting of Existing Buildings

These retrofits make modifications to the structural elements of a building to reduce or eliminate the risk of future damage and to protect inhabitants. The structural elements of a building that are essential to protect in order to prevent damage include foundations, load-bearing walls, beams, columns, building envelope, structural floors and roofs, and the connections between these elements.

Non-structural Retrofitting of Existing Buildings and Facilities

These retrofits make modifications to the non-structural elements of a building or facility to reduce or eliminate the risk of future damage and to protect inhabitants. Non-structural retrofits may include bracing of building contents to prevent earthquake damage or the elevation of heating and ventilation systems.

Safe Room Construction

Safe room construction projects are designed to provide immediate life-safety protection for people in public and private structures from tornado and severe wind events, including hurricanes. For HMA, the term “safe room” only applies to extreme wind (combined tornado and hurricane) residential, non-residential, and community safe rooms; tornado community safe rooms; and hurricane community safe rooms. This type of project includes retrofits of existing facilities or new safe room construction projects, and applies to both single and multi-use facilities.

Infrastructure Retrofit

These retrofits are measures designed to reduce the risk to existing utility systems, roads, and bridges.

Soil Stabilization

Stabilization projects reduce risk to structures or infrastructure from erosion and landslides, including: installing geo-textiles, stabilizing sod, installing vegetative buffer strips, preserving mature vegetation, decreasing slope angles, and stabilizing with rip rap and other means of slope anchoring. These projects must not duplicate the activities of other Federal agencies.

Wildfire Hazard Mitigation Projects

These projects mitigate the risk to at-risk structures and the associated loss of life from the threat of future wildfire through:

- ***Defensible Space for Wildfire*** – Projects creating perimeters around homes, structures, and critical facilities through the removal or reduction of flammable vegetation.
- ***Application of Ignition-resistant Construction*** – Projects that apply ignition resistant techniques and/or non-combustible materials on new and existing homes, structures, and critical facilities.
- ***Hazardous Fuels Reduction*** – Projects that remove vegetative fuels proximate to the at-risk structure that, if ignited, pose significant threat to human life and property, especially critical facilities.

All Natural Hazards Mitigation Projects

Post-Disaster Code Enforcement - Code enforcement is designed to support the post-disaster rebuilding effort by ensuring that sufficient expertise is on hand to ensure appropriate codes and standards, including NFIP local ordinance requirements, are utilized and enforced.

5% Initiative Projects

These projects provide an opportunity to fund mitigation actions that are consistent with the goals and objectives of the State or Tribal (Standard or Enhanced) and local mitigation plans and meet all HMGP program requirements, but for which it may be difficult to conduct a standard benefit-cost analysis (BCA) to prove cost effectiveness. Activities that might be funded under the 5% Initiative include:

- The use, evaluation, and application of new, unproven mitigation techniques, technologies, methods, procedures, or products;
- Equipment and systems for the purpose of warning citizens of impending hazards;
- Purchase of permanently installed generators or related equipment, such as generator hook-ups;
- Hazard identification or mapping and related equipment for the implementation of mitigation activities;
- Geographic Information System (GIS) software, hardware, and data acquisition whose primary aim is mitigation;
- Public awareness or education campaigns about mitigation; and
- Evaluation of model building codes in support of future adoption and/or implementation.

Hazard Mitigation Planning

The mitigation planning process includes hazard identification and risk assessment leading to the development of a comprehensive mitigation strategy for reducing risks to life and property. The mitigation strategy section of the plan identifies a range of specific mitigation actions and projects being considered to reduce risks to new and existing buildings and infrastructure. This section includes an action plan describing how identified mitigation activities will be prioritized, implemented, and administered.

Appendix V – Adoption Resolutions

Adoption Resolution
Lake of the Woods County, Commission
206 8th Ave SE
Baudette, MN 56623

Resolution

WHEREAS, the *Lake of the Woods Hazard Mitigation Plan: Update 2013* has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and,

WHEREAS, Lake of the Woods County, participated in the preparation of a multi-jurisdictional plan, *Lake of the Woods Hazard Mitigation Plan: Update 2013*; and,

WHEREAS, the Lake of the Woods County is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the Plan and the actions in the Plan; and

WHEREAS, the Lake of the Woods County has reviewed the Plan and affirms that the Plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by the Commission that Lake of the Woods adopts the *Lake of the Woods Hazard Mitigation Plan: Update 2013* as their jurisdiction's Hazard Mitigation Plan, and is resolved to execute the actions in the Plan.

ADOPTED this xx day of xx, 2013 at the meeting of the Lake of the Woods County Board of Commissioners.

Chair, Tom Hanson

Adoption Resolution
City of Baudette, Council
106 West Main St.
PO Box 548
Baudette, MN 56623

Resolution

WHEREAS, the *Lake of the Woods Hazard Mitigation Plan: Update 2013* has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and,

WHEREAS, the City of Baudette, participated in the preparation of a multi-jurisdictional plan, *Lake of the Woods Hazard Mitigation Plan: Update 2013*; and,

WHEREAS, the City of Baudette is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the Plan and the actions in the Plan; and

WHEREAS, the City of Baudette has reviewed the Plan and affirms that the Plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by the City Council that Baudette adopts the *Lake of the Woods Hazard Mitigation Plan: Update 2013* as their jurisdiction's Hazard Mitigation Plan, and is resolved to execute the actions in the Plan.

ADOPTED this xx day of xx, 20xx at the meeting of the Baudette City Council.

Mayor, Rick Rone

Adoption Resolution
City of Williams, Council
250 Main St
PO Box 98
Williams, MN 56686

Resolution

WHEREAS, the *Lake of the Woods Hazard Mitigation Plan: Update 2013* has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and,

WHEREAS, the City of Williams, participated in the preparation of a multi-jurisdictional plan, *Lake of the Woods Hazard Mitigation Plan: Update 2013*; and,

WHEREAS, the City of Williams is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the Plan and the actions in the Plan; and

WHEREAS, the City of Williams has reviewed the Plan and affirms that the Plan will be updated no less than every five years.

NOW THEREFORE, BE IT RESOLVED by the City Council that Williams adopts the *Lake of the Woods Hazard Mitigation Plan: Update 2013* as their jurisdiction's Hazard Mitigation Plan, and is resolved to execute the actions in the Plan.

ADOPTED this xx day of xx, 2013 at the meeting of the Williams City Council.

Mayor,

Appendix VI – Update and Maintenance Log

This section provides an opportunity to track work regarding this plan and mitigation work in the County. By tracking these activities in this log book subsequent plan updates will be easier, more cost effective, and achieve better results. Additionally, by completing this log book as described in this plan the County will have a more engaged staff in mitigation activities and will help engage the community in execution of this plan.

The first table, right, is for documenting any updating activities or plan changes that may occur. At a minimum this should be done once a year. The following table, next page, can be used for tracking hazard events as they happen during the year. Lastly, the final table may be used to track implementation work.

Table 5.1 - Beltrami County Hazard Mitigation Plan Update Log

[illegible]

Table 5.2 - Strategies Maintenance Log

[illegible]

Table 5.3 - Hazard Events Log

Date/Time and Duration	Type of Event	Severity of Event	Location of Impact	Damage Caused	Other Pertinent

Appendix VII – Miscellaneous Documentation

Lake of the Woods County: Reducing the Impact of Disasters

It seems as though disasters are becoming common place in our news; National disasters like the 2011 BP Gulf of Mexico oil spill; disasters with regional impact as the 2010 tornados in Wadena were; and localized disasters such as the recent train-truck collision in Plummer, MN.

Lake of the Woods County along with the City of Baudette, are looking for your help! We need your input to update our hazard mitigation plan. A hazard mitigation plan identifies hazards as mentioned above, and develops strategies to prevent or reduce their impact. It's vital that we have your input and support.

What kind of input are we looking for? We want to know what risks you, your family, your business, and your community are exposed to that might cause: damage to your property; prevent you from going about your day-to-day life; slow down your business operations; impact your community's safety. Please take the time to complete our survey available online on the Emergency Management page of the Lake of the Woods County website.

Keep posted for more information and an upcoming open house where we will share with the community what we've been working on for this plan. For more information contact Holly House, Lake of the Woods County Emergency Manager by phone at 218.634.4567 or by email at holly_h@co.lake-of-the-woods.mn.us.

Lake of the Woods Hazard Mitigation – Short Survey

Please complete and return this anonymous survey with your utility bill. Lake of the Woods County is updating their hazard mitigation plan to understand the risk of hazards—like fire, flood, tornados, hazardous materials spills—and how to reduce or eliminate their impact. For more information see a description in the City of Baudette Newsletter or contact Holly House, Emergency Manager, Lake of the Woods County at 218.634.4567 or holly_h@co.lake-of-the-woods.mn.us.

1) How long have you lived in Baudette? Please circle one.

0-1 years

2-5 years

6-15 years

More than 16 years

2) Has your property (car, home, natural resources) been impacted by extreme weather? If yes, approximately how much damage did it cause (in dollars)?

_____ Yes

_____ No

Damage Estimate _____ Type of Weather _____ Date of Weather _____

3) Have you, a friend, or a loved one ever experienced injury or death from a hazard caused by nature (e.g. fire, flood, wind)? Please briefly describe.

_____ Yes

_____ No

4) Have you experienced flooding at your residence or business? Please briefly describe.

_____ Yes

_____ No

5) Do you feel there is a risk of a human caused incident (either accidentally or intentionally), such as one associated with the international border, or transportation accidents by rail or road, that might cause damage to people, the environment, or property? Please briefly describe.

_____ Yes

_____ No

6) Do you have any other comments or concerns?

7) If you are interested in giving us more information so we might be able to develop more detailed solutions, please leave your name and contact information. Thank you!

Lake of the Woods County: Reducing the Impact of Disasters

It seems like disaster are becoming more common place in our news; from National disasters like the 2011 British Petroleum Gulf of Mexico oil spill, to disasters with more regional impacts like the 2010 tornados in Wadena, to more localized disasters like the recent train-truck collision in Plummer, MN.

Lake of the Woods County is looking for your help! We need your input to update our hazard mitigation plan. A hazard mitigation plan identifies hazards like those seen recently in the news and develops strategies to prevent or reduce their impacts. It's important to us that we have your input and support.

What kind of input are we looking for? We want to know what risks you, your family, your business, and your community are exposed to that might cause damage to your property, prevent you from going about your day-to-day life, slow down your business operations, or impact your community's safety. Please take the time to complete our survey available online on the Emergency Management page of the Lake of the Woods County website.

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Local

News

Lake of the Woods County: Reducing the impact of disasters

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Keep posted for more information regarding this plan and an upcoming open house to share with the community what we've been working on. For more information contact Holly House, Lake of the Woods County Emergency Manager by phone at 218.634.4567 or by email at holly_h@co.lake-of-the-woods.mn.us.

ATTN: Lake of the Woods County Residents

Lake of the Woods County and the City of Baudette are looking for your help! We need your input to update our hazard mitigation plan. A hazard mitigation plan identifies hazards like those seen recently in the news and develops strategies to prevent or reduce their impacts. It's important to us that we have your input and support.

What kind of input are we looking for? We want to know what risks you, your family, your business, and your community are exposed to that might cause damage to your property, prevent you from going about your day-to-day life, slow down your business operations, or impact your community's safety. Please take the time to complete our survey available online on the Emergency Management page of the Lake of the Woods County website.

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City of Baudette
Work Session Agenda
Thursday, January 24, 2013 12:00 p.m., **City Council Chambers**

- I. Call to Order
- II. Pledge of Allegiance
- III. Staff Reports
 - 1. Finance
 - a. Wells Fargo Investment
 - 2. Library
 - 3. Zoning
 - 4. Law Enforcement
 - 5. Liquor
 - 6. Parks/Cemetery
 - 7. Streets/Building/Utilities
 - 8. Personnel
 - 9. Fire
 - 10. Airport

NEW BUSINESS

- 1. Hazard Mitigation Program—Marcus Grubbs HRDC
- 2. Ordinance Review--- Chapter 74 Bicycles, Roller Blades, Roller Skates, Skis and Skateboards, Chapter 53 Storm Water Drainage Utility and Chapter 54 Rates and Charges
- 3. Ordinance Review—ATV Draft

OLD BUSINESS

- 1. Web Streaming Quality
- IV. Adjourn

es

pushing an integrated emergency management course that she has pitched as a key component for emergency management for the county.

She brought new dates for the course — Sept. 23-27, Oct. 7-11 or Oct. 14-18 at Camp Ripley near

for that next Tuesday, Jan. 23 from 8-10 a.m. could go a long way toward possibly filling the long-vacant and much-needed deputy auditor position. According to John Hoscheid, county auditor,

County to A9 ➤

BAUDETTE CITY COUNCIL

Council talks hazard mitigation plan

BY BRIAN S. PETERSON
Editor

On this day, it was difficult to imagine water as a hazard in Baudette.

Well, water-turned-ice can create slick conditions and, in turn, make travel hazardous. And chunks of this same frozen water, such as icicles, can pose a hazard of sorts.

Yes, with temperatures well below zero on Thursday, Jan. 24, spring and the flooding concerns it often brings with it seemed distant at best. But this frigid day was as good as any to stick indoors and discuss such issues.

That — a hazard mitigation plan conversation — was the most-discussed item on the Baudette City Council's agenda during Thursday's work session. Nothing was decided Thursday, but in the presentation and resulting discussion that took up a good portion of the session, a plan for the city started to take shape.

Marcus Grubbs of the Headwaters Region Development Commission, which is working with the city to develop such a plan, met with the council Thursday to discuss a plan that will work for Baudette.

According to literature provided by Grubbs, the purpose of the meeting was to:

- Identify any hazard the council is concerned about.
- Identify and document any mitigation projects the council

might like to implement in the future.

■ Discuss how effective the ongoing mitigation projects have been.

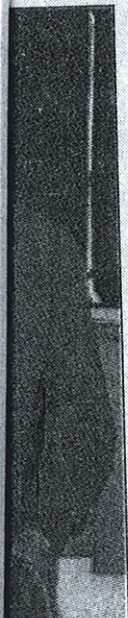
Also according to meeting material provided by Grubbs, "(Lake of the Woods) County is working with both Williams and Baudette to make sure they are fully engaged in the planning process. By doing so, Williams and Baudette will be allowed to access hazard mitigation grant funds through FEMA to complete mitigation projects."

Said Grubbs Thursday: "The purpose is to identify hazards, especially weather-related, like flooding ... To assess the risk and what's at stake. Where you spend money up front to prevent damage later. The county creates a plan and in the past the city has adopted it as its own. Now the city has to have its own plan, a multi-jurisdictional plan. We're trying to appease a standard here."

With that, Grubbs and the council talked hazards specific to Baudette, including flooding, wildfires, extreme summer weather, extreme winter weather and concerns on Lake of the Woods. After that, the council was asked to "grade" the hazards as low, medium and high risk in order to get a better idea of what's needed here.

"FEMA must accept the plan, then they'll call for you to pass

the resolution
Council to A9 ➤



AN S. PETERSON
Baudette
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Bee to A9 ➤

Article in
the Baudette
Region
following
the Jan 24
meeting
with
Baudette.

Lake of the Woods County

Notice: Public Hearing, Hazard Mitigation Plan

10:00 a.m., March 12, 2013

A hearing will be held at the Lake of the Woods County Board Meeting.

The purpose will be to receive input and comment on an ongoing planning process. The Lake of the Woods County Hazard Mitigation Plan, serving Lake of the Woods County, Baudette, and Williams is currently being updated. The public, neighboring jurisdictions, planning authorities, and other interested parties are invited to attend the Lake of the Woods County Board meeting. A brief presentation of the plan update, to-date, will be presented and the floor will be opened to questions and comments. Input is sought at this meeting prior to the planning document being drafted.

Where: Lake of the Woods County Courthouse, Commissioner's Meeting Room

When: 10:00 a.m., March 12, 2013

Who: Any interested Parties

Why: To answer questions and receive input for Lake of the Woods Hazard Mitigation Plan Update

Contact: If you have any questions contact Marcus Grubbs at Headwaters Regional Development Commission, at 218.333.6533

improve the claims against the
tion was seconded by Commissioner Nordioi and the same being put to a vote,
was unanimously carried.

Publish March 6, 2013

he Northern Light online at:
www.page1publications.com

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Baudette, MN 56623
218-634-2685 or
Toll Free 888-399-3847

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Where: Lake of the Woods County Courthouse,
Commissioner's Meeting Room

When: 10:00 a.m. March 12

Who: Any interested Parties

Why: To answer questions and receive input for
Lake of the Woods Hazard Mitigation Plan Update

Contact: If you have any questions contact
Marcus Grubbs at Headwaters Regional Development
Commission, at 218.333.6533

EMPLOYMENT OPPORTUNITY

Minnesota Title & Abstract Company of Baudette is
seeking an Office Assistant/Abstractor
for their office located at 207 Main Avenue North,
Baudette, Minnesota. This position requires a
detailed-oriented individual with strong computer
and office skills. The position available is a part-
time position of 20 hours per week. Pension plan
available. Company is willing to train, but person
must have aptitude to do the job. If interested in this
position, please mail, fax or e-mail your
resume/statement of qualifications to:
Melani Beckel, Office Manager, PO Box 456,
Baudette, MN 56623,
Phone (218) 634-2117, fax (218) 634-2125,
e-mail: minnesotatitle@centurytel.net

NOTICE OF ANNUAL MEETING of the stockholders of Co-Op Service, Inc BAUDETTE, MN

You are hereby notified that the annual meeting of
the stockholders of Co-Op Service, Inc will be held
at Lake of the Woods School in Baudette on
Tuesday, March 19, 2013 at 7:00pm for the
transaction of any business that may come before
the meeting and the election of
two directors. Supper will be served
before the meeting at 6:00pm.

BY ORDER OF THE BOARD OF DIRECTORS
DATED: JANUARY 30, 2013

Gerald Levassuer, Secretary

We will again have the special
drawing for 100 gallons of free
gas. Sign up with each purchase
at the station from now
until March 18.
Patron must be present to win.



The Northern
Light,
March 6, 2013
pg. 16

Marcus Grubbs

From: April Wedin
Sent: Wednesday, March 06, 2013 11:08 AM
To: Marcus Grubbs
Subject: FW: Public Hearing notice

The information you needed ☺



APRIL WEDIN
Administrative Support Specialist

218.333.6542 Direct
218.444.4722 Fax
218.444.4732 General

awedin@hrdc.org

PO Box 906
Bemidji, MN 56619-0906

From: Jill Knutson (WILD 102 Radio) [mailto:jill@wild102fm.com]
Sent: Wednesday, March 06, 2013 10:57 AM
To: April Wedin
Subject: RE: Public Hearing notice

Hi April,
This information will be aired on our Local News segments tomorrow:
6:05 a.m.
6:32 a.m.
7:05 a.m.
7:34 a.m.
8:04 a.m.
9:04 a.m.
12:05 p.m.
3:31 p.m.
6:05 p.m.

It will also air on our Hometown Happenings segments, two times daily March 7th-11th and once on the 12th, at the following times:
March 7th-11th = 7:15 a.m. & 5:05 p.m.
March 12th = 7:15 a.m.

Best Regards,
Jill Knutson

Customer Service/Advertising Sales Agent

WILD 102 Radio - KCAJ-FM

Direct: 218.463.0161



This e-mail and any attachments may contain confidential and privileged information. If you are not the intended recipient, please notify the sender immediately by return e-mail, delete this e-mail and destroy any copies. Any dissemination or use of this information by a person other than the intended recipient is unauthorized and may be illegal.

From: WILD 102 Radio [mailto:info@wild102fm.com]

Sent: Wednesday, March 06, 2013 9:22 AM

To: 'Joseph Bain'; 'Jill Knutson (WILD 102 Radio)'

Subject: FW: Public Hearing notice

Importance: High

PLEASE ADVISE. I WAS PLANNING ON PUTTING THIS IN THE NEWS TOMORROW (JACK'S GONE), BUT LET ME KNOW.

Best Regards,

WILD 102 Radio - KCAJ-FM

Studio Line: 218.463.3360

Office Line: 218.463.0161

Fax Line: 218.463.1977



YOUR #1 HIT MUSIC STATION

This e-mail and any attachments may contain confidential and privileged information. If you are not the intended recipient, please notify the sender immediately by return e-mail, delete this e-mail and destroy any copies. Any dissemination or use of this information by a person other than the intended recipient is unauthorized and may be illegal.

From: April Wedin [mailto:awedin@hrdc.org]

Sent: Wednesday, March 06, 2013 9:18 AM

To: info@wild102fm.com

Subject: Public Hearing notice

Please see attached notice of a public hearing to receive input regarding the Lake of the Woods Hazard Mitigation Plan. Is it possible to have this notice on your radio station? If so, can I get the dates and times it would be broadcast? If there is a charge for this notice please direct bill us.



HEADWATERS

Regional Development Commission

Leading the Way

Appendix VIII – Hazard History Tables

History of Thunderstorm Wind Events in Lake of the Woods County

Date	Mag	Extant	Prop Dam	Crop Dam	Injuries	Fatalities
30-Jun-56	63	Statewide	0	0	0	0
19-Jul-57	55	Statewide	0	0	0	0
14-Aug-57	0	Statewide	0	0	0	0
04-Aug-58	63	Statewide	0	0	0	0
07-Jul-59	0	Statewide	0	0	0	0
28-Jun-60	0	Statewide	0	0	0	0
30-Jun-61	0	Statewide	0	0	0	0
02-Sep-61	0	Statewide	0	0	0	0
05-Aug-62	57	Countywide	0	0	0	0
06-Aug-62	80	Statewide	0	0	0	0
02-Apr-63	0	Statewide	0	0	0	0
22-May-64	50	Statewide	0	0	0	0
08-Jun-64	55	Statewide	0	0	0	0
08-Jun-64	50	Statewide	0	0	0	0
23-Jun-64	51	Statewide	0	0	0	0
01-Jul-65	60	Statewide	0	0	0	0
16-Jul-65	55	Statewide	0	0	0	0
30-Jul-65	70	Statewide	0	0	0	0

04-Jul-66	61	Statewide	0	0	0	0
10-Jul-66	57	Statewide	0	0	0	0
11-Jul-66	55	Statewide	0	0	0	0
08-Jun-67	0	Statewide	0	0	0	0
10-Jul-67	50	Countywide	0	0	0	0
25-Aug-67	52	Statewide	0	0	0	0
09-Apr-68	0	Statewide	0	0	0	0
16-Aug-68	52	Statewide	0	0	0	0
29-Apr-70	57	Statewide	0	0	0	0
18-Jul-70	60	Statewide	0	0	0	0
26-Jul-70	0	Statewide	0	0	0	0
23-Jun-71	0	Statewide	0	0	0	0
19-Apr-73	0	Statewide	0	0	0	0
11-Jul-73	0	Countywide	0	0	0	0
29-Jul-73	62	Statewide	0	0	0	0
09-Oct-73	80	Statewide	0	0	0	0
20-Jun-74	0	Statewide	0	0	0	0
20-Jun-74	0	Statewide	0	0	0	0
07-Jul-74	0	Countywide	0	0	0	0
07-Jul-74	50	Countywide	0	0	0	0
19-Jun-75	0	Statewide	0	0	0	0
21-Aug-75	70	Statewide	0	0	0	0
27-Aug-83	61	Countywide	0	0	0	0
29-Aug-83	0	Countywide	0	0	0	0
08-Sep-83	63	Countywide	0	0	0	0
08-Jul-84	0	Countywide	0	0	0	0
03-Aug-89	74	Countywide	0	0	0	0
25-Jun-91	0	Countywide	0	0	0	0
30-Jul-91	0	Countywide	0	0	0	0
27-Jun-92	0	Countywide	0	0	0	0
18-Aug-95	51	North, Central	0	0	0	0

22-Aug-95	56	Central - Baudette	0	0	0	0
05-Sep-95	50	Central - Baudette	0	0	0	0
01-Jul-97	0	Central - Baudette	0.5	0	0	0
06-Jun-99	52	Central - Baudette	0	0	0	0
25-Jun-99	0	Central - Pitt	3	0	0	0
15-Jul-99	0	North - Angle Inlet	2	0	0	0
15-Jul-99	0	Central - Williams	5	0	0	0
15-Jul-99	0	North - Angle Inlet	0.5	0	0	0
15-Jul-99	0	Central - Baudette	0.5	0	0	0
17-Jul-01	0	South - Carp	4	0	0	0
18-Jul-01	0	Central - Lude	1	0	0	0
18-Jul-01	0	Central - Lude	5	0	0	0
18-Jul-01	0	Central - Lude	50	0	0	0
18-Jul-01	0	Central - Baudette	2	0	0	0
18-Jul-01	0	Central - Baudette	0.5	0	0	0
31-Jul-01	0	Central - Baudette	100	0	0	0
31-Jul-01	0	South - Carp	100	0	0	0
31-Jul-01	0	Central - Pitt	50	0	0	0
08-Aug-01	0	Central - Baudette	1	0	0	0
14-Aug-01	0	South - Carp	0.5	0	0	0
16-Apr-02	0	Central - Baudette	0.5	0	0	0
07-Jul-02	0	Central - Baudette	0.2	0	0	0
01-Sep-02	0	Central - Williams	5	0	0	0
01-Sep-02	51	Central - Baudette	0	0	0	0
23-Jun-05	78	North - Angle Inlet	0	0	0	0
23-Jun-05	70	Central - Baudette	0	0	0	0
03-Jul-05	50	Central - Arnesen	0	0	0	0
03-Jul-05	50	South - Carp	0	0	0	0
05-Aug-06	50	Central - Arnesen	0	0	0	0
05-Aug-06	60	Central - Baudette	0	0	0	0
10-Aug-07	52	Central - Arnesen	0	0	0	0

10-Aug-07	52	Central - Lude	0	0	0	0
11-Jul-08	50	Central - BDE (airport)	20	0	0	0
11-Jul-08	65	Central - Baudette AFS	10	10	0	0
29-May-09	51	Central - Lude	0	0	0	0
20-Jul-11	55	Central - Lude	0	0	0	0

History of High Wind Events in Lake of the Woods County

Date	Mag	Extant	Prop Dam	Crop Dam	Injuries	Fatalities
15-Apr-94	0	Countywide	0	0	0	0
18-Nov-94	52	Countywide	0	0	0	0
17-Mar-99	55	Countywide	0	0	0	0

History of Tornado Events in Lake of the Woods County

Date	Mag	Extant	Prop Dam	Crop Dam	Injuries	Fatalities
01-Sep-61	0	Statewide	25	0	1	0
25-Jun-63	0	Countywide	25	0	0	0
08-Jun-85	0	Countywide	0	0	0	0
15-Jul-99	0	North, Central	0	0	0	0
18-Jul-01	0	Central - Lude	0	0	0	0
31-Jul-01	0	Central - Graceton	100	0	0	0
05-May-05	0	Central - Baudette	5	0	0	0
05-May-05	0	South - Carp	0	0	0	0
23-Jun-05	0	North - Angle Inlet, Oak Island	0	0	0	0
05-Aug-06	0	Central - Williams	0	0	0	0
05-Aug-06	0	South - Faunce	0	50	0	0

24-Jun-07	0	Central - Arnesen	0	0	0	0
22-Aug-95	0	North, Central	0	0	0	0
27-Jun-08	0	Central - Williams	0	0	0	0

History of Hail Events in Lake of the Woods County

Date	Mag	Extant	Prop Dam	Crop Dam	Injuries	Fatalities
11-May-62	250	Statewide	0	0	0	0
18-May-62	300	Statewide	0	0	0	0
22-May-62	75	Statewide	0	0	0	0
17-Jul-62	150	Statewide	0	0	0	0
21-Jul-62	75	Statewide	0	0	0	0
08-Jun-63	75	Statewide	0	0	0	0
11-Aug-63	400	Statewide	0	0	0	0
06-May-65	100	Statewide	0	0	0	0
06-May-65	75	Statewide	0	0	0	0
07-May-65	100	Statewide	0	0	0	0
31-May-65	75	Statewide	0	0	0	0
01-Jul-65	125	Statewide	0	0	0	0
04-Jul-65	75	Statewide	0	0	0	0
16-Jul-65	100	Statewide	0	0	0	0
30-Apr-67	100	Statewide	0	0	0	0
10-Jun-71	75	Statewide	0	0	0	0
11-Jul-73	200	Countywide	0	0	0	0
21-May-74	75	Statewide	0	0	0	0
30-Jul-91	175	Countywide	0	0	0	0
15-Sep-95	150	Central , Baudette	0	0	0	0
01-Jul-97	75	South - Carp	0	0	0	0
01-Jul-97	75	Central - Baudette	0	0	0	0
15-May-98	100	Central - Baudette	0	0	0	0

27-Jun-98	100	Central - Williams	0	0	0	0
20-Jul-98	75	Central - Williams	0	0	0	0
26-Aug-98	175	Central - Baudette	20	0	0	0
26-Aug-98	175	Central - Baudette	0	0	0	0
06-Jun-99	125	Central - Baudette	0	0	0	0
06-Jun-99	100	Central - Baudette	0	0	0	0
25-Jun-99	75	Central - Williams	0	0	0	0
17-Aug-99	75	North - Angle Inlet	0	0	0	0
07-Sep-99	75	Central - Williams	0	0	0	0
31-Jul-00	75	Central - Williams	0	0	0	0
31-Jul-00	75	Central - Williams	0	0	0	0
31-Jul-00	88	Central - Williams	0	0	0	0
15-May-01	88	South - Faunce	0	0	0	0
17-Jul-01	75	Central - Graceton	0	0	0	0
17-Jul-01	100	Central - Williams	0	0	0	0
18-Jul-01	100	Central - Baudette	0	0	0	0
31-Jul-01	100	Central - Pitt	0	0	0	0
29-May-02	75	South - Faunce	0	0	0	0
09-Jun-02	100	Central - Baudette	0	0	0	0
09-Jun-02	75	Central - Clementson	0	0	0	0
01-Jul-02	100	Central - Williams	0	0	0	0
01-Jul-02	100	Central - Lude	0	0	0	0
14-Aug-02	75	Central - Baudette	0	0	0	0
14-Aug-02	100	Central - Baudette	0	0	0	0
06-Jul-03	75	Central - Baudette	0	0	0	0
06-Jul-03	75	Central - Baudette	0	0	0	0
14-Jul-03	75	North - Oak Island	0	0	0	0
14-Jul-03	100	Central - Williams	0	0	0	0
14-Jul-03	75	Central - Clementson	0	0	0	0
17-Sep-03	75	North - Angle Inlet	0	0	0	0
17-Sep-03	150	Central - Williams	0	0	0	0

17-Sep-03	75	Central - Arnesen	0	0	0	0
05-Jun-04	75	Central - Williams	0	0	0	0
10-Jul-04	75	Central - Lude	0	0	0	0
21-Jul-04	88	Central - Williams	0	0	0	0
18-Apr-05	88	Central - Lude	0	0	0	0
05-May-05	75	Central - Baudette	0	0	0	0
05-May-05	100	South - Carp	0	0	0	0
05-May-05	200	South - Carp	0	0	0	0
23-Jun-05	100	North - Angle Inlet	0	0	0	0
23-Jun-05	175	North - Angle Inlet	0	0	0	0
23-Jun-05	75	Central - Williams	0	0	0	0
23-Jun-05	100	Central - Baudette	0	0	0	0
03-Jul-05	100	North - Angle Inlet	0	0	0	0
03-Jul-05	88	North - Oak Island	0	0	0	0
19-Jul-05	150	North - Oak Island	0	0	0	0
17-Aug-05	88	South - Carp	0	0	0	0
26-Jun-06	100	South - Carp	0	0	0	0
26-Jun-06	200	North - Angle Inlet	0	0	0	0
31-Jul-06	75	Central - Baudette	0	0	0	0
05-Aug-06	200	Central - Williams	0	0	0	0
05-Aug-06	88	Central - Lude	0	0	0	0
05-Aug-06	75	South - Carp	0	0	0	0
24-Jun-07	200	Central - Arnesen	0	0	0	0
24-Jun-07	125	Central - Lude	0	0	0	0
04-Jul-07	175	Central - Lude	0	0	0	0
22-Jul-07	75	Central - Arnesen	0	0	0	0
10-Aug-07	100	Central - Lude	0	0	0	0
21-Sep-07	88	South - Faunce	0	0	0	0
21-Sep-07	75	South - Carp	0	0	0	0
25-May-08	88	Central - Clementson	0	0	0	0
12-Jun-08	75	Central - Williams	0	0	0	0

19-Jun-08	88	Central - Lude	0	0	0	0
01-Jul-08	75	South - Carp	0	0	0	0
11-Jul-08	75	Central - Baudette AFS	0	0	0	0
20-Jul-08	88	South - Carp	0	0	0	0
02-Apr-10	100	Central - Lude	0	0	0	0
24-May-10	100	Central - Baudette AFS	0	0	0	0
24-May-10	200	Central - Baudette AFS	0	0	0	0
24-May-10	100	South - Carp	0	0	0	0
28-May-11	100	Central - Williams	0	0	0	0

History of Heavy Snow and Ice Events in Lake of the Woods County

Event	Date	Mag	Extant	Prop Dam	Crop Dam	Injuries	Fatalities
	09-Mar-						
HEAVY SNOW	93	0	Countywide	0	0	0	0
HEAVY SNOW	26-Apr-94	0	Countywide	0	0	0	0
HEAVY SNOW, BLIZZARD	09-Feb-95	0	Countywide	0	0	0	0
	04-Mar-						
HEAVY SNOW, BLOWING SNOW	95	0	Countywide	0	0	0	0
ICE STORM	20-Jan-93	0	Countywide	0	0	0	0

History of Extreme Temperature Events in Lake of the Woods County

Event	Date	Mag	Extant	Prop Dam	Crop Dam	Injuries	Fatalities
	15-Jan-						
EXTREME COLD	94	0	Countywide	0	0	0	1