

Todd County

Hazard Mitigation Plan



Region Five
DEVELOPMENT COMMISSION

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1.0 PURPOSE AND INTRODUCTION

1.1 Purpose

This plan is intended to reduce the threat of natural, human induced and technological hazards through the assessment of these hazards and through the development of an action plan specifying goals, objectives and strategies. Through these advances in planning, Todd County will continue to be a leader in ensuring the safety and public protection of the entire countywide community. The purpose for the creation of this plan is to:

1. Foster communication between cities, townships, businesses, community organizations, public and private facilities, organizations, and similar entities throughout the County
2. Promote sound public policy designed to protect life and property from natural, human caused and technological hazards
3. Develop and implement educational programs to increase public awareness of the risks associated with all hazards
4. Provide for a safer and more enjoyable countywide community

1.2 Background

The Todd County All Hazard Mitigation Plan was funded through the Pre-Disaster Mitigation (PDM) Program established by the Disaster Mitigation Act of 2000 and through in-kind contributions on behalf of Todd County and Region Five Development Commission. Intended to break the cycle of disaster and rebuild, assistance to local governments to prepare and implement their local all hazard mitigation plans. More information on the PDM program can be found through the Federal Emergency Management Agency, and the Minnesota Department of Homeland Security and Emergency Management.

1.3 Definition of Mitigation

Hazard Mitigation is defined as any action taken to eliminate or lessen the risk of natural and human caused or technological hazards to life and property. Mitigation measures might include public education, development of regulations, or public policy, structural hazard control or protection projects, altering or retrofitting facilities, acquisitions or relocation of structures, or the development of improved or increased warning systems.

1.4 The Planning Process

Multiple steps were taken in the approach of the Todd County Hazard Mitigation Plan. Region Five Development Commission was secured to complete the writing of this plan due to their experience with the completion of three other county Hazard Mitigation Plans (Cass, Morrison and Wadena Counties). Various groups assisted with the development of this plan along with assistance provided by departmental staff from Todd County.

Multiple steps were followed in the development of this plan, with a strong emphasis on involving citizens and local units of government. These steps are identified throughout section 1.4 more in-depth. A timeline of actual progress towards this plan is shown in the chart below.

Table 1-1

May 2003 – November 2004	Data Collection
May 2003 – December 2005	Public Participation Component
December 2004 – January 2005	Develop Goals, Objectives and Strategies
January 2007	State and FEMA Review and Adoption
February 2007	Public Review and Adoption

The Todd County Hazard Mitigation Plan will be reviewed annually and updates as necessary, while the entire plan will be formally reviewed and updated every five years.

1.4.1 Data Collection

The data collection process involved the reviewing of many existing plans, policies, and programs that are either exclusively Todd County's or effect Todd County. Plans are listed as follows:

Planning Documents Reviewed:

- Todd County Comprehensive Land Use Plan (2000)
- Todd County Zoning Ordinance (2004)
- Todd County Comprehensive Water Plan (2000)
- Todd County Emergency Operations Plan (2000)
- Todd County Public Health Emergency Preparedness Plan (2005)
- Todd County Drainage Management Policy (2005)
- City of Bertha Comprehensive Plan
- City of Browerville Comprehensive Plan
- City of Browerville Zoning Ordinance
- City of Clarissa Comprehensive Plan
- City of Clarissa Zoning Ordinance
- City of Eagle Bend Comprehensive Plan
- City of Eagle Bend Zoning Ordinance
- City of Hewitt Comprehensive Plan
- City of Long Prairie Comprehensive Plan
- City of Long Prairie Zoning Ordinance
- City of Osakis Comprehensive Plan
- City of Osakis Zoning Ordinance
- City of Staples Comprehensive Plan
- City of Staples Zoning Ordinance

Programs Reviewed:

- Todd County Emergency Management Programs
- Todd County National Flood Insurance Program (NFIP) Participation
- Todd County Public Health Programs
- Todd County Sheriff Department Programs
- Environmental Programs EPA and MPCA
- Minnesota Department of Homeland Security & Emergency Management Programs

Policy Documents Reviewed:

- Todd County Comprehensive Land Use Plan (2000)
- Todd County Zoning Ordinance (2004)
- Todd County Comprehensive Water Plan (2000)
- Todd County Emergency Operations Plan (2000)
- Todd County Public Health Emergency Preparedness Plan (2005)
- Todd County Drainage Management Policy (2005)
- City of Bertha Comprehensive Plan
- City of Browerville Comprehensive Plan
- City of Browerville Zoning Ordinance
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- City of Clarissa Zoning Ordinance
- City of Eagle Bend Comprehensive Plan
- City of Eagle Bend Zoning Ordinance
- City of Hewitt Comprehensive Plan
- City of Long Prairie Comprehensive Plan
- City of Long Prairie Zoning Ordinance
- City of Osakis Comprehensive Plan
- City of Osakis Zoning Ordinance
- City of Staples Comprehensive Plan
- City of Staples Zoning Ordinance

1.4.2 Public and Local Government Participation Component

Todd County recognizes the importance of public participation in developing a strong all-hazard mitigation plan. In order to achieve this, Todd County invited members of the public to participate numerous times during the planning process. These meetings are as follows:

Subcommittee Meeting:

During the process of developing the Todd County Hazard Mitigation Plan, a Hazard Mitigation Team was assembled to assist with the collection of public comments and the overall development of the plan. Team members consisted of:

Table 1-2

Dave Kircher	Todd County Sheriff/Emergency Management Director
Duane Lorsung	Todd County Public Works Department
Gloria Stevenson	Todd County GIS Department
Kitty Tepley	Soil and Water Conservation District (SWCD)
Cheryl Schneider	Todd County Public Health Department
Tim Cadwallader	Todd County Solid Waste Department
Ben Oleson	Todd County Planning & Zoning Department

Overall Meetings:

October 24, 2002

Location: Todd County Old Courthouse

Attendance: Hazard Mitigation Team

April 8th, 2003 (1st Hazard Mitigation Meeting)

Location: Todd County GIS Office

Attendance: Hazard Mitigation Team

April 10th, 2003 (Annual Township Meeting)

Location: Browerville Community Center

Attendance: Todd County Townships attending the Township Association Meeting

April 30th, 2003 (Monthly City Clerk Meeting)

Location: Long Prairie City Hall

Attendance: City Clerks of Todd County

Held: May 7th, 2003 1:00 PM

Location: Todd County Old Courthouse Breakroom

Attendance: Hazard Mitigation Team

Topics Discussed: Reviewed various hazards for the county and legal issues plus concerns about identifying risks to a particular site (matter to be looked into more in depth).

Held: May 13th, 2003 7:00 PM

Location: Todd County, Annex 1 basement

Attendance: Township and City officials

Topics Discussed: Information about past hazard events to be gathered.

Held: May 21st, 2003 1:00 PM

Location: Todd County, Old Courthouse Breakroom

Attendance: Hazard Mitigation Team

Topics Discussed: What is being done to address issues identified on May 7th, 2003.

June 21st, 2004 2:00 PM

Attendance: Matt Johnson, Dave Kircher & Gloria Stevens

Topic: Discussion of hazard mitigation plan

October 13th, 2004 2:00 PM

Location: County Commissioners Room

Attendance: Hazard Mitigation Team

December 14th, 2004 9:00 AM
Location: County Board Room
Attendance: Hazard Mitigation Team

January 5th, 2005
Location: County Commissioners Room
Attendance: Hazard Mitigation Team
Topic: Strategy Completion Meeting

January 25th, 2005
Location: County Commissioners Room
Attendance: Hazard Mitigation Team
Topic: Review and comment on Hazard Mitigation Plan Draft

1.4.3 Development of Goals, Objectives and Strategies (Subcommittee Meeting)

Project Identification Process:

Local governments throughout Todd County assisted with the identification of specific projects intended to mitigate potential hazards through the project identification process. This process included the following steps:

1. Supplying each local unit of government within Todd County with information about hazard mitigation
2. Identification of projects by local units of government and submission of projects to Todd County
3. Inclusion of hazard mitigation projects identified by local units of government within the Todd County Hazard Mitigation Plan

1.4.4 Drafting and Development

In the drafting and development phase, Region Five Development Commission staff prepared the Todd County Hazard Mitigation Public review document with the cooperation of the Todd County Emergency Management Director and the Todd County Planning & Zoning Department. The plan was then forward on to process participants, local officials, the Minnesota Department of Homeland Security and Emergency Management, and the general public for review and comment.

1.4.5 Public Review, County Adoption, State and FEMA Review

Copies of the Todd County Hazard Mitigation Plan document were sent to all local units of government within the County and made available on the Region Five Development Commission (www.regionfive.org) and Todd County (www.co.todd.mn.us) websites. A published notice notifying interested persons of this was published in the official newspaper of the County. All comments received by the local units of government and FEMA resulted in revisions and amendments to this plan.

1.5 Plan Implementation and Maintenance

The success of the Todd County Hazard Mitigation Plan is due to the commitment of county officials, staff, and the entire countywide community to the implementation of the goals, objectives, and strategies set forth in section 4.0 of this plan. Changes resulting from internal and external forces, couples with the completion of individual goals, objectives and policies may be cause for revisions of this plan. In order to respond to these changes, the Todd County Emergency Management Director will review this plan at least annually to ensure goals, objectives and policies are being met in accordance with the implementation schedule of the plan. Every five years Todd County shall update and revise this plan to ensure the plan remains consistent with the overall goal which is briefly summarized as the mitigation of potential hazards within the County. Upon completion of revisions and updates to the Todd County Hazard Mitigation Plan, the plan will be submitted to the State of Minnesota and Federal Emergency Management Agency (FEMA) for review and approval.

Implementation of Plans, Programs, and Policies:

The implementation schedule of the Todd County Hazard Mitigation Plan calls for the updating and revisions of several County Plans, programs, and policies. As this plan is implemented, the Todd County Emergency Management Director will coordinate these revisions with the persons identified as “Task Leaders” within the implementation schedule of the plan. Plans, programs and policies to be updated include:

Plans and Policies to be revised as necessary include:

- Todd County Comprehensive Plan
- Todd County Comprehensive Water Plan
- Todd County Public Health Emergency Preparedness Plan
- City of Bertha Comprehensive Plan
- City of Browerville Zoning Ordinance
- City of Clarissa Zoning Ordinance
- City of Eagle Bend Zoning Ordinance
- City of Long Prairie Comprehensive Plan
- City of Osakis Comprehensive Plan
- City of Staples Comprehensive Plan
- Todd County Zoning Ordinance
- Todd County Emergency Operations Plan
- Todd County Drainage Management Policy
- City of Browerville Comprehensive Plan
- City of Clarissa Comprehensive Plan
- City of Eagle Bend Comprehensive Plan
- City of Hewitt Comprehensive Plan
- City of Long Prairie Zoning Ordinance
- City of Osakis Zoning Ordinance
- City of Staples Zoning Ordinance

Programs to be revised as necessary include:

- Todd County Emergency Management Programs
- Todd County National Flood Insurance Program (NFIP) Participation
- Todd County Public Health Programs
- Todd County Sheriff Department Programs
- Environmental Programs EPA and MPCA
- Minnesota Department of Homeland Security & Emergency Management Programs

Ongoing Public Participation:

In order to ensure public involvement in future revisions to this plan, Todd County shall follow a similar procedure, including the memberships of public members on any future Hazard Mitigation Planning Teams and the regular publishing and updating of information related to the hazard mitigation plan revisions process. Mechanisms that are to be used to ensure ongoing public participation included the following:

- General public membership on future hazard mitigation planning teams
- Posting of the Todd County Hazard Mitigation Plan on the County Website (www.co.todd.mn.us)
- Published notices of all public hazard mitigation related meetings
- Maintain copies of the Todd County Hazard Mitigation Plan at all libraries and similar public information outlets within the County

Plan Responsibilities:

The Todd County Emergency Management Director is responsible for all monitoring, maintenance, coordination, and implementation of the Todd County Hazard Mitigation Plan with the ongoing support of the Todd County Board of Commissioners and Departments. Please direct all inquiries to the office of Todd County Emergency Management.

Emergency Management Director

Bob Blessing

(320) 533-4697

bob.blessing@co.todd.mn.us

The Todd County Hazard Mitigation Plan, on file with the Emergency Management Director, is available as a reference for others researching the same information for future updates of their plans. A copy of the plan is also available at the following Todd County Departments:

- Planning & Zoning
- Highway
- Public Health
- GIS
- Sheriff

2.0 COMMUNITY PROFILE

2.1 General Overview

Todd County's geographic location is approximately in the center of Minnesota. Todd County is approximately 80 miles west of the Twin Cities and 30 miles northwest of St. Cloud, Minnesota. The County is known as being apart of the transitional area in Minnesota where "the eastern forest meets the western prairie". The total spatial area of Todd County is approximately 631,280 acres (980 square miles) with over 27,000 acres of lakes. The county borders are shared between six counties which include: Cass and Wadena to the north, Morrison to the east, Stearns to the south, and Douglas and Ottertail to the west. Todd County is currently composed of 11 incorporated cities and 28 organized townships. A complete listing of the Todd County Cities and townships can be found within section 2.3.

2.2 General County History

In February of 1856, Todd County was established as a Minnesota Territory. The county boundaries were different in 1856 compared to what the current boundaries are. One of the main differences in boundary locations was the eastern boundary extending eastward to the Mississippi River, including what currently is now the town of Fort Ripley (formerly known as Fort Gaines). Todd County's name originated from Captain John Baines Smith Todd, who was in command of Fort Gaines during the time the county became a territory. During the late 1840's to mid - 1850's, Todd County was the main battleground between the Chippewa and Sioux Indians. Because of this, the government decided to bring the Winnebago Indians from Southeastern Minnesota to the area to serve as a buffer between the two conflicting tribes.

On January 1, 1867, Todd County officially became organized. At this time the county was broken down into three main sections (townships) consisting of Hartford, Long Prairie and West Union. These three sections later were broken down more, developing what are known today as the 28 townships and eleven cities that make up Todd County.

In 1872, the first railroad in Todd County was built. It extended across the northern end of the County through the Staples area. Today, the railroad is used by Amtrak and Burlington Northern and SantaFe.

2.3 Local Government Information

The tables below identify all of the local units of government located within Todd County and how each participated with the hazard mitigation planning process at various levels, including direct participation in committee meetings and planning functions or simply through the identification of local projects and the signing of a resolution showing their

support of the planning process. These resolutions are located within Appendix II of this plan.

Table 2-1

City	Participation in the planning process
Bertha	Survey, Resolution
Browerville	Survey, Resolution
Burtrum	Survey
Clarissa	Survey, Resolution
Eagle Bend	Survey, Resolution
Grey Eagle	Resolution
Hewitt	Survey, Resolution
Long Prairie	Survey, Resolution
Osakis *	Survey
Staples *	Survey, Resolution
West Union	Survey, Resolution

** Cities partially located within Todd County*

Table 2-2

Townships	Participation in the planning process
Bartlett	Survey
Bertha	Resolution
Birchdale	Survey
Bruce	Resolution
Burleene	Survey, Resolution
Burnhamville	Survey, Resolution
Eagle Valley	Survey, Resolution
Fawn Lake	Survey, Resolution
Germania	Survey, Resolution
Gordon	Survey, Resolution
Grey Eagle	Survey
Hartford	Survey
Iona	Survey, Resolution
Kandota	Survey
Leslie	
Little Elk	Survey, Resolution
Little Sauk	Resolution
Long Prairie	Survey
Moran	
Reynolds	Survey
Round Prairie	Survey
Staples	
Stowe Prairie	
Turtle Creek	Survey, Resolution
Villard	Survey, Resolution
Ward	Survey
West Union	Survey
Wykeham	Survey

2.4 County characteristics Information

2.4.1 Historic Population

Todd County has experienced a fluctuating population base over the past fifty years. From 1940 to 1970, the population decreased by 5,324 people (from 27,438 to 22,114). This decline amounted to approximately 20 percent of the population. Much of the decrease in population was attributed to out-migration of working age people for opportunities in the metropolitan job markets. In 1960, the population of cities accounted for over 37 percent of the County's overall population. Past trends indicate that the percentage of the County's population living in townships has generally increased, while the percent of city population has decreased. Since 1970, the County has seen a gradual increase in population. The table below indicated the populations of each city within Todd County for the years 1970, 1980, 1990, and 2000. The table also compares overall population of cities within Todd County to the overall population townships.

Table 2-3

Cities	U.S. Census			
	1970	1980	1990	2000
Bertha	512	510	507	407
Browerville	665	693	782	735
Burtrum	135	177	172	146
Clarissa	599	663	637	609
Eagle Bend	557	593	524	595
Grey Eagle	325	338	353	335
Hewitt	198	299	269	267
Long Prairie	2,416	2,859	2,786	3,040
Osakis*	69	88	58	1,567
Staples*	2,657	2,623	2,357	3,104
West Union	71	74	54	87
Total Cities	8,204	8,917	8,499	10,955
Total Townships	13,979	16,074	14,864	15,505
TODD COUNTY	22,114	24,991	23,363	24,426

* Cities partially located within Todd County

2.4.2 Population by Age Group

During the time span of 1970 to 2000, the overall population within Todd County has progressively been getting older. With nearly one-fourth of the overall population classified as Under 18 in 1970. This is not apparent in 2000. This signifies that the overall population is aging with less youth within the county. The table below shows the overall population of the County, broken down by age groups.

Table 2-4

Age Group	U.S. Census			
	1970	1980	1990	2000
Under 18	8,300	8,123	7,131	6,683
Ages 18-24	1,469	2,523	1,627	1,967
Ages 25-44	4,025	5,667	6,126	6,030
Ages 45-64	4,997	4,808	4,502	5,807
65 & Over	3,323	3,870	3,977	3,939
Totals	22,114	24,991	23,363	24,426

2.4.3 Median Age

Another way to document Todd County's aging population is to examine how the population's median age has changed throughout the years. In 1970, the County's median age was 31.7 years. This number increased to 38.5 years in 2000. During the same timeframe, the State's median age increased from 26.8 to 35.4 years.

2.4.4 Households

In 1970, the number of households increased slightly to 6,764. According to the U.S. Census, there were 8,514 and 8,589 households in 1980 and 1990. In the past decade, eight of eleven cities gained households with only very small losses occurring in Bertha, Browerville and Hewitt. Of the 28 townships in the County, 24 had gains in households with four having minor losses including Eagle Valley, Gordon, Round Prairie, and West Union.

Table 2-5

Persons Per Household 1970 - 1998				
	1970	1980	1990	1998
Persons/Household	3.26	2.91	2.69	2.65

2.4.5 Median Housing Values

The 2000 Census reports median housing values for each of the 11 cities and 28 townships in Todd County. This information is displayed in the “Median Building Values” table found in Appendix VI. The map breaks the County into five median property value ranges, and assigns a corresponding color to each city and township. Overall, Todd County’s 2000 median household value was \$64,400, although the map shows these ranges from \$26,300 in the northwestern portion of the County, to \$121,200 in the southeastern portion of the County. Those housing value patterns can be primarily explained by the proximity of southeastern Todd County to Interstate 94 and the City of St. Cloud.

2.4.6 Population and Household Projections

In October 2002, the Minnesota State Demographic Center published population and household projections for Todd County in five-year increments between 2000 and 2030. The results are displayed in Table 2-6. The projections anticipate that Todd County will continue to gain population and households at its historic level of slow but steady growth.

Population and household projections however are only educated estimates based upon historical data. There are a number of variables that directly and indirectly influence population levels; in-migration, out-migration, net births/deaths, and economic conditions. For this reason, the population and household projections should only be used for general planning purposes.

Table 2-6

Todd County Population and Household Projections								
Age Group	2000	2005	2010	2015	2020	2025	2030	+/-
0-4	1,446	1,390	1,530	1,580	1,550	1,500	1,470	24
5-9	1,740	1,660	1,610	1,740	1,780	1,760	1,720	-20
10-14	2,046	1,890	1,810	1,760	1,860	1,910	1,900	-146
15-19	2,267	1,970	1,840	1,750	1,700	1,780	1,830	-437
20-24	1,151	1,570	1,410	1,320	1,250	1,220	1,270	119
25-29	1,122	1,240	1,560	1,450	1,380	1,300	1,270	148
30-34	1,221	1,260	1,360	1,650	1,560	1,480	1,400	179
35-39	1,794	1,350	1,360	1,450	1,730	1,650	1,580	-214
40-44	1,893	1,810	1,410	1,390	1,470	1,720	1,650	-243
45-49	1,823	1,970	1,900	1,480	1,460	1,530	1,780	-43
50-54	1,464	1,850	2,000	1,930	1,530	1,490	1,570	106
55-59	1,341	1,540	1,920	2,080	2,010	1,610	1,570	229
60-64	1,179	1,360	1,580	1,960	2,130	2,070	1,690	511
65-69	1,042	1,110	1,300	1,520	1,870	2,050	2,010	968
70-74	977	930	1,000	1,180	1,400	1,720	1,890	913
75-79	836	810	790	850	1,010	1,200	1,490	654
80-84	552	640	620	620	670	820	990	438
85+	532	560	640	680	710	770	920	388
Total Population	24,426	24,910	25,640	26,390	27,070	27,580	28,000	3,574
Total Households	9,342	9,780	10,340	10,800	11,270	11,660	12,030	2,688

Source: Minnesota State Demographic Center

2.5 Local Community Overview

Todd County is currently made up of 11 municipalities and 28 townships. Long Prairie is the county seat and is one of the largest cities within Todd County. The municipalities within Todd County are: **Bertha, Browerville, Burtrum, Clarissa, Eagle Bend, Grey Eagle, Hewitt, Long Prairie, Osakis, Staples, and West Union.** Maps of each city in Todd County can be found in Appendix IV.

Of the 28 townships within Todd County, Long Prairie Township currently has the highest population consisting of 823 people. This is followed closely by Birchdale Township with an overall population of 819 people. The 28 townships within Todd County include: **Bartlett, Bertha, Birchdale, Bruce, Burleene, Burnhamville, Eagle Valley, Fawn Lake, Germania, Gordon, Grey Eagle, Hartford, Iona, Kandota, Leslie, Little Elk, Little Sauk, Long Prairie, Moran, Reynolds, Round Prairie, Staples, Stowe Prairie, Turtle Creek, Villard, Ward, West Union and Wykeham.** Maps of each township within Todd County can be found in Appendix V of this plan.

Below is summary of each municipality within Todd County.

Bertha:

The City of Bertha is located in the Northwest corner of Todd County, just off US Highway 71 and has an estimated population of 475. Along US Highway 71, the City of Bertha has a campground which offers utility hookups, a picnic area and a shelter for visitors and campers. The city currently operates the city hall, police station and municipal liquor store.

Browerville:

Browerville has a population of 734 and is located between Long Prairie and Clarissa along US Highway 71. Browerville has four public parks, a local community center, the Long Prairie River and churches' that are the landmarks for the community.

Burtrum:

The City of Burtrum has a population of 146. The city is located in the southeastern corner of Todd County and has many lakes nearby for outdoor recreational activities including fishing and boating. The city also has a large community center for social events. Active clubs/organizations within this community are the Lions Club and the 4-H Club.

Clarissa:

Located near the middle of Todd County, the City of Clarissa is nestled between ranges of low lying hills with Eagle Creek making its way to the tributaries of the Mississippi River. The city was officially incorporated in 1897 and in 1997 it celebrated its centennial with events for the public held throughout the year. The community is composed of churches, farms, small businesses and manufacturing throughout the area. It is estimated that in the year 2005 the population of the city was 631 people.

Eagle Bend:

Eagle Bend has a population of 610 people and is located in the western part of the County along US Highway 71. Found within this community is a public library, museum complex, a public school, and many local businesses.

Grey Eagle:

The city of Grey Eagle is located in the southeast corner of Todd County. The northeast side of the City borders Trace Lake, with Bass Lake just outside of the city boundaries to the east. The City of Grey Eagle has an overall population of 335 and is surrounded by Grey Eagle Township.

Hewitt:

The City of Hewitt is a small bedroom community of 268 people. Hewitt is located in the northwest corner of the County adjacent to US Highway 71. The city has many amenities that most of its size is not able to offer in regards to recreational activities. These range from parks, tennis courts, ball diamonds, a museum, and being a close drive to many lakes within Todd County.

Long Prairie:

Long Prairie is a progressive community located in middle area of Todd County with a population of 3,040. Long Prairie is the county seat of Todd County and is located at three major highways: US Highway 71, State Highway 27 and State Highway 287. Long Prairie is known for being a thriving hub of industry and agricultural processing within the area. Key natural resources within the city include the bodies of water of the Long Prairie River in the northern part of the city and Charlotte Lake bordering the city limits to the south.

Osakis:

Though the City of Osakis only partially falls within the boundaries of Todd County, it still brings tourism and a boost to the economy for the county. The city is located along the southern shore of Lake Osakis which is primarily known for its fishing. The economic base for the city is tourism and agriculture, but manufacturing expansion is encouraged with the development of an industrial park. Due to its relatively easy access to Interstate 94, the City of Osakis is a small thriving community with many recreational activities and entrepreneur opportunities.

Staples:

The City of Staples is located in the Northeast corner of Todd County along US Highway 10 and Minnesota State Highway 210. The City lies in both Todd and Wadena Counties and is one of the largest cities in Todd County. This community was throughout the 1900's known as a thriving railroad community. To this day the railroad is still active in Staples with the depot being an obvious landmark within the community. Along with the railroad, the city also has an extensive parks system along with a community center near the downtown area of the City. The overall topography of this city is fairly flat and the nearest bodies of waters to the city are: Dower Lake to the west, Hayden Lake to the east, and the Crow Wing River to the North. Many opportunities are present within the City of Staples due to the presence of the Staples Campus of Central Lakes College and the Lakewood Health Systems Hospital which opened a new main facility during the winter of 2006.

West Union:

The City of West Union is located in the southwestern corner of the County, near Interstate 94. The community is one of the smallest cities within Todd County, but its overall distance to other communities (Osakis and Sauk Center) is only a few miles.

2.6 Physical Characteristics

Todd County has a relatively flat topography with only subtle changes in the southern part of the county. The primary land use found within Todd County is agriculture along with lakes becoming more and more apparent farther west in the county. Throughout section 2.4 different characteristics along with identification of some assets found within Todd County will be discussed more in depth.

2.6.1 Climate and Precipitation

Table 2-7 summarizes temperature data, table 2-8 summarizes precipitation activity, table 2-9 summarizes the growing season, and table 2-11 summarizes snowfall averages for Todd County.

The continental climate of Minnesota is influenced by a variety of air masses. During the winter months, cold, dry continental polar air dominates the region. Hot, dry continental air masses from the desert southwest, along with warm, moist maritime tropical air masses that originate over the Gulf of Mexico, are common during the summer months. The spring and fall months serve as transition periods between summer and winter, composed of alternate intrusions of air from various sources.

The average daily temperature for Todd County is approximately 41 ° Fahrenheit. The average daily maximum temperature for the County is 53 ° Fahrenheit, while the average daily minimum temperature is 32 °F.

Todd County receives approximately 30 inches of precipitation each year. Of this, approximately two thirds fall between the months of May through September. This is considered seasonal precipitation.

Annual snowfall within Todd County is approximately 51 inches. Although this total is seemingly substantial, snowfall represents only a small portion of the County’s total annual precipitation because of the relatively low moisture content of snow.

Table 2-7

Temperature Summary													
1971-2000 NCDC Normals													
Element	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Max °F	19.3	27.1	38.7	56.2	70.4	78.2	82.5	80.4	71.0	58.2	37.9	23.8	53.6
Min °F	-0.4	6.6	19.2	32.9	45.6	54.8	59.4	57.0	47.3	35.8	21.3	6.5	32.2
Mean °F	9.5	16.9	29.0	44.6	58.0	66.5	71.0	68.7	59.2	47.0	29.6	15.2	42.9
HDD base 65	1723	1348	1117	617	262	65	21	38	200	558	1062	1545	8556
CDD base 65	0	0	0	3	46	110	205	153	24	0	0	0	541

Source: <http://mcc.sws.uiuc.edu>

Table 2-8

Precipitation Summary													
1971-2000 NCDC Normals													
Element	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Precip. (in)	1.28	0.85	1.96	2.20	3.20	4.28	4.13	3.47	2.93	2.55	1.71	0.92	29.48

Source: <http://mcc.sws.uiuc.edu>

Table 2-9

Growing Season Summary										
Derived from 1971-2000 Averages										
Base Temp. °F	Date of Last Spring Occurrence					Date of First Fall Occurrence				
	Median	Early	90%	10%	Late	Median	Early	90%	10%	Late
32	5/14	4/16	4/24	5/26	6/21	9/22	9/01	9/15	10/07	10/10
30	5/03	4/11	4/22	5/20	5/26	9/29	9/03	9/17	10/10	10/14
28	4/29	4/11	4/21	5/13	5/19	10/02	9/18	9/22	10/19	11/03
24	4/18	3/24	4/07	5/07	5/15	10/14	9/20	10/03	11/01	11/09
20	4/09	3/18	3/27	4/20	5/08	10/30	9/22	10/11	11/08	11/15
16	3/30	3/04	3/17	4/09	4/14	11/04	10/02	10/19	11/18	11/28

Source: <http://mcc.sws.uiuc.edu>

Table 2-10

Length of Growing Season (Days)						
Derived from 1971-2000 Averages						
Base Temp. °F						
	Median	Shortest	10%	90%	Longest	
32	136	101	112	158	164	
30	147	111	124	163	180	
28	159	128	134	178	201	
24	180	139	149	203	224	
20	205	152	182	222	225	
16	219	189	196	239	261	

Source: <http://mcc.sws.uiuc.edu>

Table 2-11

Snowfall Summary													
1971-2000 Averages													
Element	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Snow (in)	13.3	7.7	9.9	3.0	0.0	0.0	0.0	0.0	0.0	0.7	8.1	8.9	51.6

Source: <http://mcc.sws.uiuc.edu>

2.6.2 *Geology*

Todd County is located in a region of the State where glaciers have advanced and retreated at least four times during 60,000 years of the Wisconsin glaciation. Many of the hills and plains that make up the County's landscapes are the result of several substages of the Wisconsin glaciation with the last advance occurring approximately 10,000 years ago. Today, the landscape of Todd County is dominated by glacial debris, deposited in the form of rolling drumlin hills, steep terminal moraines, ground moraines and level outwash plains.

One of the more pronounced and unique geologic features in Todd County are drumlins. These are long narrow hills, which are typically aligned in a north-south pattern and cover the northern and central portions of the County. The hills were formed by the Wadena Lobe of the Cary Substage Glacier. In between the drumlins are long, linear shaped wetlands. The drumlin fields cover approximately 40 percent of the County and are one of the few drumlin fields found in Minnesota.

Along the eastern one-third of the County is a terminal moraine complex. This area is characterized by hills with short, steep slopes extending in several directions. These hills were formed as a part of the St. Croix Terminal Moraine. In between the hills are many of the County's lakes and streams. The glaciers left a series of lakes along the eastern and southern portion of the County in a "J" shape or pattern.

Ground moraines typify the western side of the County. These features are composed of clayey soil with relatively high clay content and are associated with higher run off rates.

The fourth major landform in the County is the outwash plain. The outwash area is primarily located in the northeastern part of the County. The glacial debris left in the outwash area is composed of brown, sandy materials.

Glacial till in Todd County ranges from a few feet to almost 400 feet in thickness, over granite bedrock. It should be noted that there are a few small areas in the County where there is exposed bedrock, such as Section 15 of Ward Township.

2.6.2.a Soils

Soils are produced by natural processes acting through time on material deposited or accumulated by geologic process. Generally, soil characteristics are determined by several factors including: a) the physical and mineralogical composition of the parent material, b) the climate under which the soil material accumulated c) plant and animal activities and material on and in the soil, and d) relief or topography in the area of soil formation.

Soils with identical or near identical profiles are grouped into a soil series, normally named for a geographic feature where it was initially located. Each series has the same characteristics, regardless of where it is subsequently found.

Soil associations, which are described on a general county soils map, are a distinct pattern of soil series in defined proportions. Most associations contain one or more major soil series and at least one minor series. Associations are names from the major soil series names.

Soil association maps provide an overview of the soils at a county level. These maps can help identify where high runoff or erosion could be expected, or where areas of high or low agricultural potential are likely to be located. These maps are not adequate for detailed planning and site selection of structures or roads or for the development of farm management plans.

Todd County soils have also been mapped by the more detailed soil series. The detailed soils classification can be used to help in organizing and managing farms, individual fields and woodlands, and in engineering work. Only the general soils association map is included in this plan.

There are nine general soil associations in the County as identified in the Todd County Soil Survey. In addition, there are 97 soil series listed. Soil parent material in Todd County ranges from clay in the west to sandy loam in the major river valleys.

Soils have significant interaction with and affect water resources. For example, highly erodible soils can contribute sedimentation to rivers and streams. Conversely, sandy soils with high infiltration and surface permeability characteristics significantly contribute to aquifer recharge.

A soils map for Todd County can be found in Appendix VII of this plan.

2.6.3 Hydrology

Todd County has abundant groundwater resources in surficial and buried aquifers located throughout the County. Surficial aquifers are generally quickly recharged by precipitation and snow melt, primarily in the ice contact sands and gravels where infiltration rates are high and the topography is rolling and hummocky. Much of the recharge in Todd County occurs in geologically sensitive areas. In addition, Todd County serves as the recharge area for its own aquifers, as well as those for neighboring counties.

2.6.3.a Aquifer Systems

There are fourteen principal aquifers in the state and they are categorized into two broad groups – glacial drift aquifers and bedrock aquifers. Glacial drift aquifers are further divided into two categories including surficial drift and buried drift aquifers. Surficial drift aquifers are exposed at the land surface and are found in about one-third of the state. Most of these aquifers consist of sand and gravel deposits called outwash. Wells in these aquifers are typically at a depth of 30 to 240 feet and produce from 100 to 800 gallons of water per minute. These aquifers are a significant source for irrigation in central Minnesota.

Buried drift aquifers are also composed of sand and gravel deposits but because of repeated glaciation in the state, lie beneath layers of confining silt and clay. These aquifers occur in nearly all areas of the state where the depth to bedrock exceeds 100 feet. Their size and extent are not well documented. Wells using these aquifers are commonly at depths of 80 to 280 feet with typical yields of 100 to 600 gallons per minute.

The Long Prairie Sand Plain is the major aquifer in the County and is related to outwash deposits. This surficial aquifer covers a large portion of the northeastern corner of the County and extends southward along the Long Prairie River. A second surficial aquifer, the Swanville spillway/sand plain, also trends north-south, and is located near the Todd-Morrison county line.

Most irrigation and municipal groundwater withdrawals in Todd County are from surficial aquifers that are in direct contact with the ground surface. These aquifers are rapidly recharged and are also very susceptible to contamination. Buried drift or confined aquifers provide groundwater for rural residents and farms as well as some of the smaller municipalities in the County.

Recharge of the major aquifers in Todd County occurs primarily through precipitation in surface areas with sand and gravel where infiltration rates are high and the topography is rolling and hummocky. Most recharge occurs in the spring from snowmelt and rainfall when groundwater demands by growing vegetation are minimal and precipitation can soak through to the water table. Some of the main recharge areas within Todd County include: gravel pits, wetlands and ponds, lakes and rivers, and road ditches. It is also important to note that Todd County is a recharge area for itself and neighboring counties within the region.

More information about aquifers within Todd County can be found within the Todd County Water Plan, and the Todd County Comprehensive Plan. A map of County aquifers can also be found within Appendix VIII of this plan.

2.6.3.b Watersheds

In the 2005 Todd County Comprehensive Local Water Management Plan, six major – minor watersheds were identified within the County. These watersheds include: the Long Prairie River Watershed, the Sauk River Watershed, the Mississippi – Brainerd Watershed, the Crow Wing River Watershed, the Redeye River Watershed, and the Mississippi – Sartell Watershed. For a map of the county watersheds, please refer to Appendix IX of this plan. The following information is from the 2005 Todd County Comprehensive Local Water Management Plan.

The **Long Prairie River Watershed**, mostly located in the central part of the county, is the largest in Todd County covering a total of 305,930 acres and is made up of 50 minor watersheds. The majority of irrigation systems in Todd County are located in this watershed, and use wells that are an average of 80 to 100 feet deep. Ground water impacts to the Long Prairie River have the potential to be significant. The USGS conducted base flow measurements along the Long Prairie River which indicated net gains from ground water of 0.85 to 1.3 cfs per river mile. Ground water yields are typically high within the watershed and average annual recharge to the surficial aquifer has been estimated to be 8.0 inches. The shallow aquifer is susceptible to contamination by unused wells, abandoned agricultural waste pits and other direct access points to the ground water.

The **Sauk River Watershed** is located in the southern part of Todd County and is the second largest watershed in the county with a total of 137,392 acres and is made up of 20 minor watersheds. The surficial aquifer in this part of the county is found in a corridor along the Sauk River approximately 2 to 4 miles in width. Wells are typically at a depth of 30 to 240 feet and are generally of good quality. Most of the watershed contains buried drift aquifers that lie below confining layers of silt and clay.

The **Mississippi – Brainerd Watershed** in Todd County is the third largest with a total of 82,152 acres, most of which are located within the Swan River sub-watershed along the South East side of the county. There are 15 minor watersheds found within this major watershed. Ground water concerns in this watershed are minimal.

The **Crow Wing River Watershed** in Todd County is the fourth in size covering 68,100 acres in the Northern and Northeastern part of the county, in the Partridge River and Hayden Creek areas. There are 13 minor watersheds found within the Crow Wing River Watershed.

The **Redeye River Watershed** is the second smallest of the major watersheds in Todd County with only 29,708 acres, most located within the Wing River sub-watershed in the Northwest corner of the county. There are five minor watersheds found within this major watershed.

The smallest watershed in Todd County is the **Mississippi River – Sartell Watershed**, located in the Southeast corner of the county and totaling only 5,228 acres. Most of this

watershed is located in Stearns and Morrison Counties. There is no dominant river course for Todd County’s portion of this watershed and only one minor watershed present.

Table 2-11

Areas of Major Watersheds in Todd County					
Watershed	Watershed Area in Todd County			Total Watershed Area	
	Acres	Square Miles	Percent of Total	Acres	Square Miles
Crow Wing	68,100	106	5.5	1,245,280	1,946
Long Prairie	305,930	478	53.5	571,673	893
Mississippi – Brainerd	82,152	128	7.6	1,079,925	1,687
Mississippi – Sartell	5,228	8	0.8	652,670	1,020
Redeye	29,708	46	5.2	575,285	899
Sauk River	137,170	214	20.1	667,108	1,042

Source: Land Management Information Center

2.6.3.c Ditches

There are approximately 45 county ditches within Todd County, totaling over 550 miles. Todd County realized the importance of proper ditch management practices for its residents. As a result, Todd County worked with Region Five Development Commission to develop the Todd County Drainage Management Policy. This policy guides the implementation and management process for ditches within Todd County. It also identifies where original ditches were designated during the development of them in the early 1900’s and where the current geographic locations of these ditches are to this date.

2.6.3.d Protected Waters and Control Structures

In Todd County, protected waters cumulatively cover over 32,000 acres. There are 355 bodies of water listed on the Minnesota department of Natural Resources water inventory, including 118 bodies defined as protected lakes. There are 178 defined as protected wetlands and 59 protected rivers and streams. A complete and maintained listing of protected waters in Todd County can be found at the Todd County Soil and Water Conservation District.

2.6.4 Landform Descriptions

“Everything is related to everything else, but near things are more related than distant things.” –Waldo Tobler 1970

Landform patterns are important because they help to explain the relationship between the land and its underlying features with surface and groundwater resources. For example, groundwater resources are more susceptible in sand plain areas than in till or drift plain areas. The till plains have substantial clay deposits that minimize groundwater infiltration. Therefore, it is useful to consider the landform patterns of a given watershed of geopolitical area.

The primary landform patterns found within Todd County were made during the most recent geologic activity. These landform patterns include: sand plains, moraines, till plains, drumlins, and lakes. The general locations of these landform patterns in Todd County follow the descriptions below.

Landcover

Activities occurring on the land within Todd County are inventoried in eight basic categories. The table below indicates these categories, the amount of acres being used for each category and the percent of the total county being used for that given purpose.

Table 2-12

Land Cover	Mid 1800's		1969		1989	
	Acres	Percent	Acres	Percent	Acres	Percent
Urban and rural development	0	0.0	9,037	1.4	14,220	2.3
Cultivated land	0	0.0	267,286	42.5	273,879	43.7
Hay/pasture/grassland	20,990	3.3	161,126	25.6	138,327	22.1
Brushland	161,377	25.8	0	0.0	29,860	4.8
Forested	325,024	51.9	157,521	25.1	134,039	21.4
Water	15,709	2.5	22,358	3.6	20,920	3.3
Bog/marsh/fen	103,571	16.5	10,991	1.7	14,791	2.4
Mining (gravel pits, granite mines)	0	0.0	213	<0.1	644	0.1
Total	626,680	100.0	626,680	100.0	626,680	100.0

Source: Todd County Comprehensive Plan

2.6.5 *Topography and Drainage*

The highest elevation in Todd County appears to be located along its western edge in Wykeham Township according to the U.S.G.S. information available. The elevation of this area exceeds 1,500 feet above sea level. A second high point, as documented in the Todd County Soil Survey, is Tower Love Hill, located in the east-central part of the County. It has a reported elevation of 1,498 feet. A third high point in the county, as identified in the 1990 Todd County Water Plan, is Mt. Nebo. This point is located in the northwest corner of the County and was reported as having an elevation of 1,511 feet above sea level (U.S.G.S. Bertha Quadrangle Map).

Perhaps with somewhat less attention, the lowest elevation in the county is located along the eastern border where the Swan River flows into Morrison County directly north of Swanville. Here, the elevation is reported as being 1,159 feet above sea level.

Approximately 65 percent of the County is above the 1,300 foot elevation. Most of the drumlins and terminal moraine areas are above the 1,300 foot elevation. The outwash plains and the ground moraines tend to be below the 1,300 foot mark.

Land in the county is generally characterized as being level to slightly sloped. As reported in the 1990 Water Plan, 41 percent of the County slopes are 2 percent or less. Areas with steeper slopes, from 6 to 45 percent, are typically located in the eastern third of the County, in the terminal moraine area. There are some steeper slopes in the western portion of the County as well as the southwestern and southern portions. It is interesting to note that most of the steeper sloped areas are located adjacent to many of the County's water resources including lakes, rivers, and wetlands.

Drainage patterns are formed by the topographic features in the County. In addition to the topographic information, Appendix X includes a County Ditch map and Watercourse map. The Long Prairie River is the major drainage feature or watercourse in the County. Its watershed covers almost 50 percent of the County. The Sauk River is the second major watercourse in the County and its watershed covers just over 20 percent of the County's total area. More about watersheds can be found in section 2.4.3.b of this plan.

2.7 Facilities

2.7.1 Emergency Response Facilities

Emergency facilities listed within this plan include law enforcement, ambulance, fire, emergency shelter and gathering places. This information can be found in the tables below.

Table 2-13

	Agency	Address	City	Phone
Sheriff/Police				
	Todd County Sheriff's Department	113 3 rd Ave S.	Long Prairie	(320) 732-2157
	Bertha Police	208 2 nd Ave NE	Bertha	(218) 924-2100
	Browerville Police	544 Main St. W	Browerville	(320) 594-2233
	Clarissa Police	202 Main St. W	Clarissa	(218) 756-2133
	Eagle Bend Police	108 Main St. W	Eagle Bend	(218) 738-3492
	Grey Eagle Police			
	Long Prairie Police	615 Lake St. W	Long Prairie	(320) 732-2156
	Osakis Police		Osakis	(320) 859-2550
	Staples Police	611 Iowa Ave NE	Staples	(800) 794-5733
Fire				
	Bertha Fire			
	Browerville Fire	653 Main St N	Browerville	(320) 594-8200
	Clarissa Fire	Hwy 71	Clarissa	(218) 756-3773
	Eagle Bend Fire			
	Grey Eagle Fire			
	Hewitt Fire			
	Long Prairie Fire	615 Lake St	Lon Prairie	(320) 732-2156
	Melrose Fire			
	Motley Fire			
	Osakis Fire	PO Box P	Osakis	
	Sauk Center Fire			
	Staples Fire	831 4 th St NE	Staples	(218) 894-1550
	Swanville Fire			
	Verndale Fire			
Ambulance	Bertha	127 2 nd Ave NW	Bertha	(218) 924-4452
	Browerville			
	Long Prairie			
	Melrose			
	Osakis			
	Sauk Center			
	Staples			
	Wadena			
	* If needed in an emergency, please call 911 or contact your local Police Department or Sheriff's Office.			

* For departments without a contact

2.7.2 Community Facilities

City Halls

Bertha City Hall	113 2 nd Ave NW	Bertha
Browerville City Hall	544 Main St. S	Browerville
Clarissa City Hall	202 Main St. W	Clarissa
Eagle Bend City Hall	108 Main St. W	Eagle Bend
Grey Eagle City Hall	202 Woodman St. S	Grey Eagle
Hewitt City Hall		Hewitt
Long Prairie City Hall	615 Lake St. S	Long Prairie
Osakis City Hall	PO Box 486	Osakis
Staples City Hall	611 Iowa Ave NE	Staples

County Complexes

County Courthouse	119 3 rd St. S	Long Prairie
Law Enforcement Center	115 3 rd Ave S	Long Prairie
County Public Works Building	44 Riverside Dr	Long Prairie
Social Services Building		Staples
Solid Waste	Hwy 71 South	Browerville
SWCD	607 9 th St NE	Long Prairie

Hospitals/Clinics *

Lakewood Health Systems	49725 County Road 83	Staples
Long Prairie Memorial Hospital	20 SE 9 th Street	Long Prairie

*For clinics, see the Todd County Emergency Operations Plan (EOP)

Schools

ISD-213 (Osakis)	Osakis
ISD-486 (Swanville)	Swanville
ISD-487 (Upsala)	Upsala
ISD-740 (Melrose)	Melrose
ISD-743 (Sauk Center)	Sauk Center
ISD-786 (Bertha-Hewitt)	Bertha
ISD-787 (Browerville)	Browerville
ISD-818 (Verndale)	Verndale
ISD-2155 (Wadena-Deer Creek)	Wadena
ISD-2170 (Staples-Motley)	Staples
ISD-2753 (Long Prairie –Grey Eagle)	Long Prairie
ISD-2759 (Eagle Valley)	Eagle Bend

2.7.3 *Hazardous Material Facilities*

Hazardous wastes include a wide range of household, commercial, industrial products and substances. Some of the more common products that individuals and businesses use include paints, fertilizers, cleaning solvents, acids, lead, heavy metals and other substances. Due to their toxic nature, these products and their containers require special handling, use and disposal.

There are 81 registered hazardous waste generators in Todd County. Most of these generators are found within Long Prairie and Staples. Todd County does not have treatment, storage, or disposal facilities for hazardous waste and ships less than 10 tons of hazardous waste out of the County per year.

2.8 *Infrastructure*

2.8.1 *Pipelines*

Due to the sensitive nature of pipelines, all location and description information is maintained by the Todd County Emergency Management Director. For more information related to pipelines including locations, incident information, and similar information contact the Todd County Emergency Management Director. The following companies all maintain pipelines within Todd County.

Table 2-14

Pipeline Operator(s)
Viking Gas
Minnesota Pipeline Co.

2.8.2 *Solid Waste*

Landfills have generally replaced open dumps as the most common method of waste disposal in Minnesota. The dangers of open dumps as a disposal method have more recently become apparent. Improper site selection, often in areas of groundwater recharge such as abandoned gravel pits, and use of improper materials to cover the waste, has contributed to one of the most significant sources of groundwater contamination in the state. There are 14 solid waste sites in Todd County as indicated in table 2-15 below.

Table 2-15

MPCA Landfill Inventory			
City	Name	Address	Twp/Range/Sec/QQQQ
Bertha	Bertha Dump	1 mi. E of Hwy 24 & Co Rd 75	132/35/11/A/A
Browerville	Browerville Dump	1 ¼ mi. SE Hwys 14 & 71	130/33/16/A/B
Burtrum	Burtrum Dump	1 mi SW of Hwy 13 & 28	128/32/34/B/D
Clarissa	Clarissa Dump	½ mi SW of Hwy 11 & 71	131/34/28/D/A
Eagle Bend	Eagle Bend Dump	NW of Hwy 22 & Co Rd 78	131/35/12/D/D
Grey Eagle	Grey Eagle Dump	½ mi W of Co Rd 98 & Hwy 28	127/32/7/B/D
Hewitt	Hewitt Dump	1 mi NE of Hwy 71 & 210	133/35/15/D/A
Staples	Killian San. Landfill	6 mi SE of Staples on Co Rd 83	133/32/28/C/B
Little Sauk	Little Sauk Dump	1 ¾ mi W of Hwy 50 & 71	128/34/27/B/D
Long Prairie	L.P. San. Landfill		129/32/18/C/C/A
Osakis	Osakis Dump	1 ¼ mi SE of Hwy 127 & 46	128/35/31/C/D
Round Prairie	Round Prairie	1 ½ mi N of Hwy 6 & 8	128/33/21/A/C
Staples	Staples Dump	½ mi E of Hwy 21 and 210	133/33/12/A/C
* Browerville	Todd Co. Demolition Landfill		130/33/17

Source: Minnesota Pollution Control Agency; Todd County Comprehensive Plan 2000

* Note: The Todd County demolition Landfill in Browerville is open as of September, 2000. All other facilities have been closed.

2.8.3 Public Transit

As of January 2, 2007, Todd County brought forth public transit within the County. The City of Staples currently is serviced by Friendly Rider Transit, based out of Wadena, MN. This is the first time in over thirty years that public transportation is available within Todd County. It has been an expressed concern to in the past and will be looked into further once it's completely established within the City of Staples.

2.8.4 Waterworks

2.8.4.a Drinking Water

The following provides capacity information on the three largest municipal water systems in the County:

Browerville

Water Source:	Wells
Storage Capacity:	300,000 gal./day
Pumping Capacity:	216,000 gal./day
Average Demand:	100,000 gal./day
Peak Demand:	180,000 gal./day
Total Water Hardness:	(NA) ppm
Industrial Water Rate:	\$2.75 per 1,000 gal. or portion of.

Long Prairie

Water Source:	Wells
Storage Capacity:	500,000 gal./day
Pumping Capacity:	1,720,000 gal./day
Average Demand:	700,000 gal./day
Peak Demand:	1,200,000 gal./day
Total Water Hardness:	345 ppm
Industrial Water Rate:	\$7.00/month + \$0.00792/cubic foot

Staples

Water Source:	Wells
Storage Capacity:	700,000 gal.
Pumping Capacity:	332,000 gal./day
Average Demand:	288,000 gal./day
Peak Demand:	520,000 gal./day
Total Water Hardness:	114 ppm
Industrial Water Rate:	Base charge \$1.50/month; \$1.47/1,000 gal.

2.8.4.b Public Sanitary Sewer Systems

Most cities in Todd County provide public sanitary sewer service while some cities have areas within their boundaries that are still on individual septic systems. The following provides capacity information on the three largest systems in the County:

Browerville

Treatment Plant Type:	Stabilization Pond System
Capacity of Plant:	300,000 gal./day
Average Demand:	216,000 gal./day
Peak Demand:	344,000 gal./day
Usage Charge:	\$10.00 -1 st 4,000 gal., \$1.80/1,000 gal. thereafter.

Long Prairie

Treatment Plant Type:	Stabilization Pond System
Capacity of Plant:	736,000 gal./day
Average Demand:	600,000 gal./day
Peak Demand:	1,300,000 gal./day
Usage Charge:	\$7.00/month + \$0.00792/cubic foot

Staples

Treatment Plant Type:	Mechanical Plant
Capacity of Plant:	425,000 gal./day
Average Demand:	250,000 gal./day
Peak Demand:	400,000 gal./day
Usage Charge:	Base Charge \$1.50/month; \$1.47/1,000 gal.

2.8.4.c Wastewater Discharge

Wastewater discharge from municipal sewage treatment systems is controlled by the Minnesota Pollution Control Agency (MPCA). Permits are required for any discharge into waters of the state. Permits are issued for 5 years and any changes in the conditions of a permit require public notice and a public comment period. The permitting process requires self-monitoring reports of discharge, which are reviewed by the MPCA. Greater than 90 percent of major municipal and industrial dischargers within the County are in compliance with permitted conditions. Table 2-16 lists the permitting facilities in Todd County.

Table 2-16

Minnesota Pollution Control Agency Wastewater Discharge Permits		
Permit Number	Facility Name	Discharge/Receiving Waters
MN0022926	Browerville	Long Prairie River
MN0052060	Clarissa	Eagle River
MN0023248	Eagle Bend	Eagle Creek
MN0058076	Glacier Park Co	Ditch to Lagoon
MN0023566	Grey Eagle	Trace Lake
MN0059374	Hewitt	Wing River
MN0000523	Land O' Lakes/Browerville	Long Prairie River
MN0020303	Long Prairie	Long Prairie River
MN0024988	Staples	Lagoon to Hayden Creek

Source: Minnesota Pollution Control Agency; Todd County Comprehensive Plan

2.8.5 Electricity

There are five electric companies that provide electrical services to the residents within Todd County. Table 2-17 identifies these providers. A map of the electrical providers is available with the Emergency Management Director.

Table 2-17

Electric Companies Operating in Todd County
• Lake Region Coop. Elec. Association
• Minnesota Power
• Todd-Wadena Elec. Association
• Runestone Elec. Association
• Stearns Electric Association

2.8.6 Natural Gas

Due to security reasons, information pertaining to the location of natural gas lines is not available in the public version of this plan. For more information about natural gas lines and providers contact the Emergency Management Director or a natural gas provider identified in the table below.

Table 2-18

Natural Gas Provider
Minnegasco
Mn Energy

SECTION 3.0 HAZARD ASSESSMENT AND HISTORICAL DATA

3.1 Hazard Overview

Todd County faces the challenge of several potential natural, human caused and technological hazards. The following is an assessment of the frequency of occurrence, historical impacts, and rankings of real and potential hazards facing Todd County. This assessment is based on the best available information, including information obtained by local, state, and federal sources as well as through local official and citizen participation.

To quantify risk assessment information gathered for each identified hazard, color coding is used according to the following:

<i>Frequency</i>		
Future timeframe event most likely to occur		
	Highly Likely	Near 100% probability in next year
	Likely	At least 1 chance in next 10 years
	Occasional	At least 1 chance in next 100 years
	Unlikely	Less than 1% Probability in next 100 years

<i>Warning</i>		
Amount of warning time prior to hazard event occurring		
	None to Minimal	None to three hours of warning time
	3 to 6 Hours	Three to six hours of warning time
	6 to 12 Hours	Six to twelve hours of warning time
	More than 12 Hrs	More than twelve hours of warning time

<i>Impact</i>		
Measures the perceived level of impact on the entire County		
	Substantial	Widespread injury, loss of life and property damage
	Major	Significant property damage, great injury and loss of life
	Minor	Limited property damage, minimal injury and loss of life
	Limited	Cosmetic property damage, no loss of life, minimal injury

<i>Area</i>		
<i>Total area of Sector effected including all cities and townships</i>		
	Catastrophic	Majority or all of the County effected
	Critical	Twenty-five to fifty percent of County effected
	Limited	Ten to twenty-five percent of County effected
	Negligible	Localized area of County effected

<i>Duration</i>		
Length of duration of hazard event limited to the event itself or length of time the event can cause injury to persons, loss of life, and/or potential property damage		
	More than 24 Hrs	Over 24 hours
	12 to 24 Hours	Twelve to twenty-four hours
	1 to 12 Hours	One to twelve hours
	Less than 1 Hour	Less than one hour

<i>Risk to Life/Injury and Risk to Property</i>		
Measures the perceived risk to bodily harm or injury and/or property damage in the immediate proximity where the specific hazard occurs.		
	Very High	Total loss of life and destruction of property
	High	High loss of life, injury or property damage
	Limited	Small loss of life, injury, and property damage
	Minimal	No loss of life, cosmetic property damage if any

Through surveys and meetings of the Hazard Mitigation Team, numerous hazards were identified. The Hazard Mitigation Team then reviewed and discussed each identified potential hazard and its relationship to other identified potential hazards as well as its relevance to Todd County by using an assessment process that uses thirteen criteria listed in table 3-1.

Table 3-1 Hazard Assessments

Frequency	Warning Time	Impact	Area
Duration	Risk to Citizens & People	Risk to Animals & Livestock	Risk to Housing & Living Quarters
Risk to Critical Facilities & Response Time	Risk to Special Facilities & Community Resources	Risk to Infrastructure & Lifelines	Risk to HazMat Facilities & Public Health Concerns
Risk to Commercial & Industrial Facilities			

Through this process the Hazard Mitigation Team determined that two groups of hazards would be best to classify the results. The two groups include Natural hazards and Human Caused/ Technological hazards (HCT). The following hazards were identified for detailed analysis in table 3-2.

Table 3-2

Natural	Technological/Human Caused
Severe Summer Storms	Structural Fire
Tornadoes	Hazardous Material Transportation
Flooding & Flash Flooding	Hazardous Material (Fixed)
Drought	Groundwater Contamination and Depletion
Wind Storm	Terrorism and Civil Disorder
Extreme Heat	Power Grid Failure
Wildfires	Computer Viruses
Earthquakes	Railroad Interference with Emergency Response
Winter Storms	
Infectious Disease	

This chapter identifies all hazards affecting Todd County. It provides information on the history and extent of hazards, evaluates the possible effects, identifies vulnerable populations and assets (buildings, critical facilities, and essential infrastructure), and estimates potential losses that may occur. This process identifies the most critical problems and issues that require mitigation action.

3.2 Natural Hazards

Natural Hazard refers to all atmospheric, hydrologic, geologic (especially seismic and volcanic), and wildfire phenomena that, because of their location, severity, and frequency, have the potential to affect humans, their structures, or their activities adversely.

3.2.1 Severe Summer Storms

Thunderstorm

A thunderstorm is a common natural occurrence that takes place May through August. Thunderstorms are capable of producing thunder, lightning, straight-lined winds, hail, heavy rain, flooding and even tornadoes. A thunderstorm is considered to be “severe” when it contains either by itself or a combination of hail 3/4 “or greater, winds gusting in excess of 50 knots (57.5 mph), and/or the presence of a tornado.

Thunderstorm History

The National Climatic Data Center lists 53 thunderstorm wind events that have impacted Todd County since 1950. While no injuries have resulted from these storm events, property damage has occurred. On June 11, 2001, a thunderstorm caused \$50,000 worth of property damage in Long Prairie. Two years later, on July 2nd, 2003, a thunderstorm caused the same amount of property damage in Staples.

Lightning

Lightning occurs throughout the year but is commonly associated with summer storms. Lightning is an electrical discharge resulting from the buildup of positive and negative charges within a thunderstorm. When enough energy is gathered, lightning appears as a “bolt”. Nearly 80 percent of all lightning activity occurs within a cloud and never reaches the ground.

Lightning History

Little information is available on lightning activity within Todd County. The table below indicates casualties and reports of damage caused by lightning from 1959 to 1994. Most lightning occurs within the summer months and is most commonly present during afternoon and evening hours.

Table 3-3

Lightning Casualties and Damages in Minnesota (1959-1994)		
Season	Casualties	Damage Reports
Spring	21	95
Summer	123	256
Fall	25	54
Winter	0	1

Hail Storms

Another product of thunderstorms is hail. Hail is formed when water droplets are carried through thunderstorm updrafts to the freezing regions of the cloud. They are then pushed through the updrafts and downdrafts of the clouds mixing with other water droplets until a pellet of ice is formed which can no longer be supported by the updrafts. Most hail is reported to be ranging in size of pea size to golf ball size. However, on rare occasions hail can reach larger sizes.

Hail Storm History

Table 3-4 shows recorded events of hail storm activity within Todd County.

Table 3-4

Hail Storm Activity		
Date	Time	Size of hail (inches)
07/11/1972	9:45 PM	1.75
08/24/1975	2:37 PM	1.75
07/29/1976	6:00 PM	0.75
07/09/1984	3:30 PM	1.75
07/20/1987	5:40 AM	0.75
08/21/1987	1:08 PM	0.75
06/24/1988	8:14 PM	1.00
07/31/1988	3:30 AM	1.75
05/29/1989	10:40 AM	1.75
07/02/1989	9:11 PM	1.00
07/02/1989	9:34 PM	0.75
8/31/1989	9:15 AM	1.75
05/22/1990	1:28 PM	1.75
05/22/1990	2:25 PM	0.75
05/22/1990	2:45 PM	0.75
08/25/1990	11:10 PM	1.75
06/28/1991	6:24 PM	1.75
08/13/1994	2:17 AM	0.75
07/01/1996	6:10 PM	0.75
07/01/1996	6:45 PM	0.88
07/11/1996	6:20 PM	1.00
07/21/1996	6:51 PM	1.00
06/23/1997	12:05 AM	1.00
06/28/1997	4:40 AM	1.00
08/03/1997	8:35 PM	0.75
08/23/1997	8:30 AM	0.75
05/18/1998	7:15 PM	0.75
06/11/1998	12:45 AM	0.88
09/25/1998	9:40 PM	0.88
09/25/1998	9:46 PM	1.75
09/25/1998	9:49 PM	1.00
09/25/1998	9:50 PM	1.75
06/06/1999	2:10 PM	0.75
07/25/1999	4:30 PM	0.75
07/28/1999	10:48 PM	1.00
08/12/1999	2:18 PM	0.75
06/11/2001	1:45 PM	1.75
06/11/2001	9:57 AM	1.25
06/11/2001	10:27 AM	1.75
06/11/2001	10:32 AM	1.00
08/17/2001	6:00 PM	0.75
08/17/2001	6:40 PM	0.75
04/16/2002	7:55 PM	0.88
04/18/2002	2:25 AM	0.75
06/19/2002	8:55 AM	0.75
07/07/2002	2:45 PM	0.75
07/07/2002	8:10 PM	0.75
07/07/2002	8:15 PM	1.75
09/01/2002	1:15 PM	0.75
09/01/2002	12:50 PM	0.75
09/02/2002	7:29 AM	0.75

09/02/2002	7:55 AM	1.00
09/05/2002	9:00 PM	0.75
06/22/2003	6:44 PM	0.75
06/23/2003	1:20 PM	0.88
06/23/2003	12:54 PM	0.75
06/24/2003	4:00 PM	0.75
07/19/2003	2:42 PM	1.00
08/10/2003	4:35 PM	0.88
07/13/2004	12:32 AM	0.75
07/15/2004	5:00 PM	0.88
08/29/2004	6:00 PM	1.00
04/05/2005	7:52 PM	0.75
06/08/2005	1:20 AM	0.88
06/13/2005	7:45 PM	0.75
06/20/2005	10:22 AM	0.75
08/16/2005	4:35 PM	0.75
09/03/2005	2:20 PM	1.75
09/05/2005	10:00 PM	0.75
06/05/2006	3:51 PM	0.75
07/16/2006	1:24 AM	0.75
07/16/2006	1:37 AM	0.75

<http://www4.ncdc.noaa.gov>

Risk & Vulnerabilities for Summer Storms

Table 3-5

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	High Likely	3 to 6 hours	minor	Critical	1-12 hours	Limited	Limited

All people with little or no shelter are susceptible to summer storms. Overall, every community in regard to its geography stands an equal chance of being hit by a summer storm.

Plans, Programs & Policies

- National Weather Service storm monitoring activities
- NOAA Weather Radio, local TV and radio channels
- Sever Weather Shelters
- Sever Weather Alert System
- Infrastructure Improvements

3.2.2 *Tornadoes*

A tornado, according to American Heritage History Dictionary is defined as “A rotating column of air ranging in width from a few yards to more than a mile and whirling at destructively high speeds, usually accompanied by a funnel-shaped downward extension of a cumulonimbus cloud”. Tornadoes are commonly found during severe summer storms and have at times caused great damage to communities within the upper Midwest. Tornadoes are caused by cool air overriding a layer of warm air, forcing the warm air to rise rapidly. Within Minnesota, the typical “tornado season” is during March through August but, these can occur at anytime of the year. Tornadoes most commonly occur during afternoon and evening hours of a day with over 80 percent occurring between noon and midnight.

The magnitude of tornadoes is measured according to the Fujita Scale, commonly known as the “F” Scale. This scale (table 3-6) displays the magnitude of a particular tornado based on several criteria including amount of destruction, wind speeds, and other data collected after the affected area has been assessed. Because of the random nature of tornadoes, there is little ability to predict specifically where they will occur within a region.

Table 3-6

“Old” Fujita Scale

F-Scale	Intensity Phrase	Wind Speed	Type of Damage Done
F0	Gale Tornado	40-72 mph	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
F1	Moderate Tornado	73-112 mph	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
F2	Significant Tornado	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe Tornado	158-206 mph	Roof and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted
F4	Devastating Tornado	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible Tornado	261-318 mph	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-inforced concrete structures badly damaged.
F6	Inconceivable Tornado	319-379 mph	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies

As of February 1st, 2007 a new version of the Fujita Scale will be used to determine and classify the severity of tornadoes. Table 3-7 is a representation of this enhanced Fujita scale.

Table 3-7 “New Fujita Scale”

FUJITA SCALE			DERIVED EF SCALE		OPERATIONAL EF SCALE	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

Source: <http://www.spc.noaa.gov/faq/tornado/ef-scale.html>

History

Tornadoes occur in every county of Minnesota. Since 1957, Todd County has encountered fifteen tornadoes which have caused an estimated \$44,000 in property damage. Of the fifteen tornadoes in Todd County, there have been no deaths and only one injury caused. These tornadoes typically happen during the late afternoon or evening hours. Found in table 3-8 is information on each tornado that has happened within Todd County since 1957. Information on tornado magnitude classification is measured by the Fujita Scale. In table 3-6, is a copy of the scale used prior to February 1st, 2007 is shown. In table 3-7, a copy of the “enhanced” Fujita Scale is shown above.

Table 3-8

Tornado Data Table					
Date	Time	Deaths	Injuries	Magnitude	Property Damage \$
05/21/1957	12:00PM	0	0	F1	25,000
6/22/1965	1:30 PM	0	0	F0	0
07/04/1966	8:50 PM	0	0	F0	3,000
07/05/1971	6:15 PM	0	0	F0	3,000
07/10/1987	8:55 PM	0	0	F0	0
08/03/1990	4:31 PM	0	0	F0	3,000
07/08/2000	8:43 PM	0	1	F2	0
06/11/2001	1:55 PM	0	0	F0	0
06/13/2001	6:15 PM	0	0	F3	10,000
06/13/2001	6:44 PM	0	0	F0	0
06/13/2001	7:32 PM	0	0	F0	0
07/19/2003	2:25 PM	0	0	F0	0
07/19/2003	3:00 PM	0	0	F0	0
08/29/2004	5:47 PM	0	0	F0	0
08/29/2004	6:00 PM	0	0	F0	0
Total	N/A	0	1	N/A	44,000

Source: www.ncdc.noaa.gov

Risk & Vulnerabilities

Table 3-9

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	None to Minimal	Minor	Limited	Less than 1 hour	Limited	Limited

Damage from tornadoes can vary greatly depending on the magnitude. Tornadoes can damage or destroy infrastructure throughout its impact area, cause injuries to humans and livestock and even death in rare situations. Table 3-9 shows the risks identified by Todd County in regards to tornado activity. Areas prone to the most damaging effects of tornadoes within Todd County are mobile home parks and older buildings.

Plans, Programs & Policies

- National Weather Service Storm Monitoring Activities
- NOAA Weather Radio
- Severe Weather Shelters
- Local Warning Sirens
- Local TV/Radio Channels

3.2.3 *Flooding and Flash Flooding*

A flood can be defined as “an overflowing of water onto land that is normally dry”. The area where a flood would take place is considered to be a floodplain. This area is typically found along channels, rivers, streams, lakes, or other water bodies that are susceptible of flooding. A large percentage of floodplains have been identified by FEMA and mapped for floodplain management.

Floods are classified into floodplains by years. Examples of this include a five year floodplain or a 100 year floodplain. This classification may be a misleading term. A five year floodplain means that there is a 20% chance of a flood occurring in a specified area every year. A 100 year floodplain means that there is a 1% chance of a flood occurring in a specified area every year. It is important to note that it is possible for a hundred year flood to happen more than once every hundred years.

Floodplains are also referred to as Special Flood Hazard Areas (SFHA) and are mapped by FEMA and the Minnesota Department of Natural Resources through the National Flood Insurance Program (NFIP). The Flood Insurance Maps (FIRM) are used to determine what areas need flood insurance and are on file with the Todd County Emergency Management Director.

Flooding occurs when water levels exceed riverbanks and encroach into floodplains. This occurs from a combination of late winter snowpack, frozen soil which prevents absorption of water, rapid snow melting, and heavy widespread precipitation which causes flash floods.

A “flash flood” can be defined for this plan as “flooding that occurs in a given area due to localized drainage and is outside the boundaries of the FIRM floodplain”. These floods result from slow moving heavy rains within a given area. Areas without adequate storm sewers and storm drainage systems experience flash flooding more often than those with adequate systems.

Though less common, an identified possible threat within the County to property is slow rising lake levels. Due to the number of lakes found within the County, this threat is a possibility when an area experiences above average precipitation over a long period of time. This is especially a concern for lakes that are land locked basins with poor lake outlets.

History

Floods have occurred within Todd County, but significant records/information is not available. Table 3-10 indicates the occurrences of floods within Todd County and identifies estimated property damage costs.

Table 3-10

Date	Type of Occurrence	Location	Time	Deaths	Injuries	Property Damage \$
04/07/2001	Flood	Countywide	5:00 AM	0	0	200,000
06/13/2001	Flash Flood	Long Prairie	9:30 PM	0	0	100,000
07/07/2002	Flash Flood	North Portion	8:05 PM	0	0	0
07/10/2002	Flash Flood	South Portion	6:30 AM	0	0	0
06/23/2003	Flash Flood	Long Prairie	5:00 PM	0	0	0
Total	N/A	N/A	N/A	0	0	300,000

Risks & Vulnerabilities

Table 3-11

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	3-6 hours	Minor	Limited	More than 24 hours	Limited	Limited

Todd County has identified the odds for flood activity as likely. Though the occurrences are high, the amount of damage to property, impact area and cause to injury or death are minimal. Areas that are prone to flooding in Todd County are identified by FIRM maps for the County.

Plans, Programs & Policies

- 100-year Floodplain Mapping
- Participation in NFIP
- Flood emergency response plan included within the Todd County Emergency Operations Plan (EOP)

3.2.4 Drought

A drought is a normal climatic event that happens throughout the world, but with a variety of features changing its characteristics region by region. There are four main aspects of defining a drought. These include:

- Meteorological – a lack of precipitation due to climatic differences
- Agricultural – refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop
- Hydrological – occurs when surface and subsurface water supplies are below normal
- Socioeconomic – refers to the situation that occurs when physical water shortage begins to affect people

History

Droughts have occurred on average at least once during every decade within the state of Minnesota since 1900. The years most notable for drought occurrences within Todd County are during the 1930’s, 1970’s, and 1980’s. During these events, crop loss was substantial and many monthly records were set, as shown in the table below.

Table 3-12

Historical Occurrences of Drought in Minnesota Involving Todd County		
Year	Location	Remarks
2003	Statewide	Dry weather began in early September and persisted for several days. Above normal temperatures added to dry conditions.
1987-1989	Statewide	Established new “average low precipitation” and “average high temperature” records. Farmers lost most, if not all, of the year’s crop. Drought also affected poor production, the forest products industry, public water supplies and fish and wildlife dependent on adequate surface water. Mississippi River flow levels threatened to drop below the Minneapolis Water Works intake pipes.
1974-1977	Statewide	Began in 1974 in parts of south-central and western MN. Most severely affected areas were the Otter Tail and Lac Qui Parle River basins. Dry conditions caused lower water levels within wells, which are linked to record low stream flows throughout the state. Late summer forest fires broke out. Conflicts arose between domestic well owners and neighboring high capacity well owners.
1931-1942	Statewide	Intensity and duration differed locally.
1911-1914	Statewide	Intensity and duration differed locally.

Risks & Vulnerabilities

Table 3-13

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	More than 12 hours	Major	Critical	More than 24 hours	Limited	High

Areas most prone to the effects of droughts within Todd County consist of: farmland, wells, Amish communities, rivers and lakes.

Plans, Programs & Policies

- Water usage monitoring
- Local water usage limits, bans, and regulations
- US Department of Agriculture
- Local medical centers

3.2.5 Windstorms

Windstorms can occur at any time throughout the year; however these are most commonly experienced during severe thunderstorms in warm weather months. Windstorms most commonly include downbursts, gust front, tornadoes, and straight-lined winds. A windstorm is defined as an event with wind speeds greater than 60 miles per hour.

There are several different types of windstorms. A “downburst” is a rather underrated thunderstorm threat defined as a strong downdraft with an out rush of damaging winds on or near the earths’ surface. When people experience property damage from a downburst, they often do not believe that “just wind” could have caused the damage, and they assume that they were struck by a tornado. Downbursts may have wind gusts to nearly 130 miles per hour and are capable of the same damage as a medium-sized tornado.

A “gust front” is the leading edge of the thunderstorm downdraft air. It is most prominent near the rain-free cloud base and on the leading edge of an approaching thunderstorm and is usually marked by gusty, cool winds, and sometimes a blowing dust. The gust front often precedes the thunderstorm precipitation by several minutes.

“Straight-lined winds”, when associated with a thunderstorm, are most frequently found with the gust front. These winds originate as downdraft air reaches the ground and rapidly spread out, becoming a strong horizontal flow.

The National Weather Service notes the following effects of various wind speeds:

Table 3-14

Effect of Various Wind Speeds	
Wind Speed	Effects
25-31 mph	Large branches in motion, whistling in telephone wires
32-38 mph	Whole trees in motion
39-54 mph	Branches break off of trees, wind impedes walking
55-72 mph	Damage to chimneys and TV antennas, pushes over shallow rooted trees
73-112 mph	Peels surface off roofs, windows broken and trailer houses overturned
113+ mph	Roofs torn off houses, weak buildings and trailer houses destroyed, large trees uprooted

History

Limited information is available on the occurrences of windstorms within Todd County.

Risks & Vulnerabilities

Table 3-15

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	6-12 Hours	Minor	Limited	1-12 hours	Limited	Limited

Todd County has identified the risks of windstorms as a likely occurrence with limited/minimal impacts on the County in regards to property damage, injury and/or loss of life. Areas most prone to wind damage consist of: crops, outdoor recreation areas, mobile home parks, and old structures.

Plans, Programs & Policies

- Windbreaks; Natural Vegetative Cover

3.2.6 Extreme Heat

Extreme heat has a detrimental impact on the human body. In extreme heat and high humidity, evaporation of perspiration is slowed and the body must work harder to maintain a normal temperature. The impacts of heat are determined by relative humidity and air temperature. The combination of these provides a real feel temperature called “heat index”. It is important to note that full exposure to sunshine may increase the heat index by 15 degrees Fahrenheit.

History

Limited information is available on extreme heat occurrences within Todd County. It is identified as a possible hazard. It is also proven that having a high heat index can be very dangerous.

Risk & Vulnerabilities

Table 3-16

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Highly Likely	6-12 hours	Minor	Limited	1-12 Hours	Minimal	Limited

Older adults, young children, and those who are sick or overweight are more prone to be effected by extreme heat.

Plans, Programs & Policies

- National Weather Service
- Local radio and television
- Red Cross
- Center for Disease Control

3.2.7 Wildfire

As defined in the Minnesota State Hazard Mitigation Plan, a wildfire is any fire on wild land (including forest, brush, range, grass, etc.) that is not a prescribed natural fire and thus, requires a suppression response. These fires are not controlled as they spread through vegetative fuels, exposing and possibly consuming structures. While some wildfires start by natural causes like lightning, humans cause four out of every five wildfires. The risk of wildfire depends on the interactions of several factors during the year, including fuel, topography and weather. Both fuels and topography will not change dramatically from year to year; however, weather can fluctuate on a daily basis.

History

Table 3-17 below indicates the four largest wildfires in the state of Minnesota. Highlighted within the table is the Motley fire of 1980 which affected the Northeastern corner of Todd County. The Motley fire consisted of two strings of fire (Motley and Phillbrook string) which make up the overall fire. This fire burned a total of 7,200 acres of land and ten structures. There was a total of 300 head of livestock lost, \$750,000 worth of real estate lost and \$400,000 of standing timber lost. In order to put the fire out, over 100 Minnesota National Guard troops based out of Camp Ripley were deployed.

From 1980 to 1999, there were a total of 305 wildfires reported to the MN DNR occurring in Todd County. Of these wildfires, 4,982 acres of land were burnt with an average suppression cost of being \$365.88. The leading cause of these fires was due to debris and happened during daytime hours.

Table 3-17

Year	Event
2000	Carlos Edge fire burned 8,000 acres, destroyed over 4 structures, and endangered the towns of Linnwood, Stacy, and Wyoming.
1980	Motley fire burned 7,200 acres, destroyed over 10 structures, and endangered the towns of Motley and Phillbrook.
1977	Wildland fires destroyed hundreds of thousands of acres of forestland and millions of dollars in homes and improved property. Suppression costs that year totaled around \$25 million.
1976	Badoura fire burned 23,000 acres and a dozen buildings in just six hours.

Risks & Vulnerabilities

Table 3-18

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	3-6 hours	Major	Limited	More than 24 hours	Limited	High

Areas most prone to wildfire activity include: grasslands, woods, and rural households.

Plans, Programs & Policies

- Local Fire Departments and Associations
- Minnesota Department of Natural Resources
- Rural Fire Assistance Program
- US Forest Service
- Local Fire Wardens
- National Interagency Fire Center

3.2.8 Earthquake

Though seismic activity within Todd County is very rare, it is possible and has happened within the last 100 years. Earthquakes are produced by movement of solid rock masses moving past one another along fracture plans called faults. Earthquakes are measured two ways. The first way is “Intensity” also known as the “Mercalli scale”, which provides a number based on people’s observations. The other way to measure earthquakes is “Magnitude” also known as the “Richter scale”, which describes the overall strength of the earthquake through the use of a seismograph.

History

On August 3rd, 1917 the City of Staples, MN experienced the only recorded earthquake to happen within Todd County. This earthquake is also one of the strongest to happen within Minnesota in the past century that is well documented. The overall magnitude of this earthquake was 4.3 with an overall affected area being 48,000 km².

Risk & Vulnerabilities

Table 3-19

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Unlikely	None to minimal	Minor	Limited	Less than 1 hour	Limited	Limited

Due to the rare occurrence of an earthquake happening within Todd County and the unpredictability of these, no specific area has been identified as being more vulnerable than another.

Plans, Programs & Policies

- National Weather Service

3.2.9 Winter Storms and Events

Winter storms are a common occurrence in Minnesota. These storms consist of blizzards, ice storms, sleet, extreme cold, and heavy snow or snow storms. All of these types of storms are possible within Todd County. Typically residents expect this type of weather at least a few times a year. The following information identifies characteristics of these winter storms:

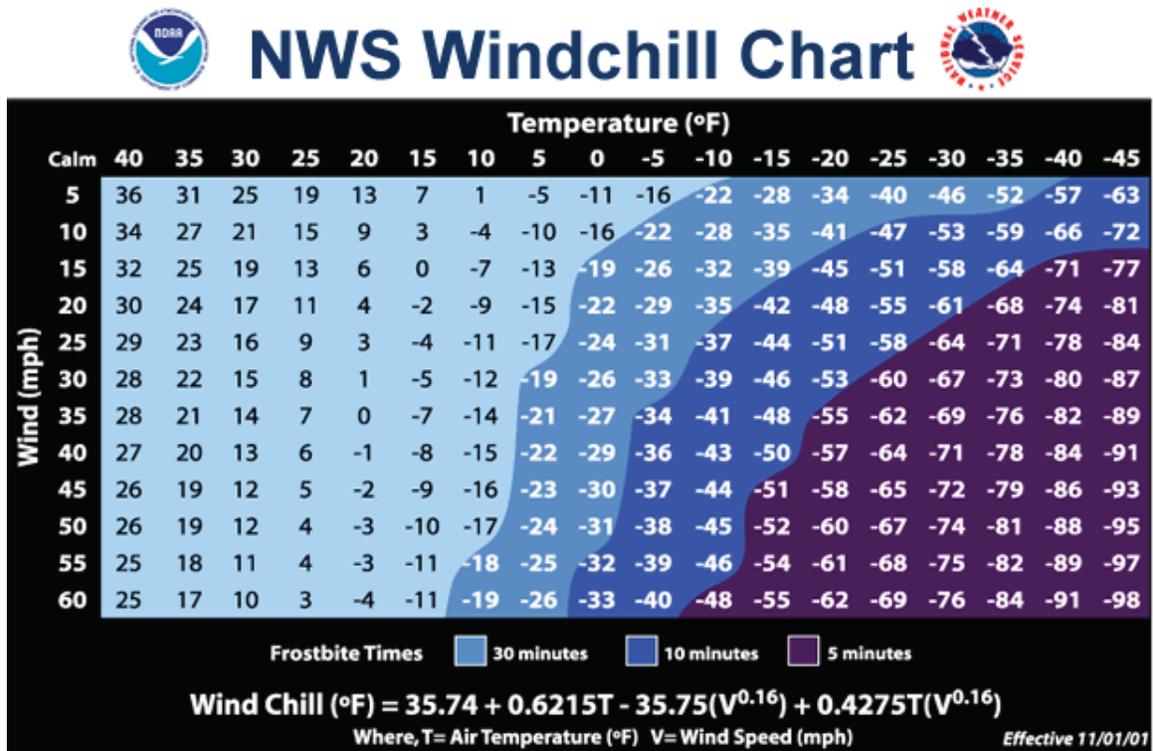
Blizzards consist of strong winds (typically averaging 35 miles per hour or more) and very low visibility due to blowing or falling snow. This type of winter storm is identified as being the most dangerous and can have temperatures below 10 degrees Fahrenheit.

Ice Storms exist when rain occurs and air temperatures exceed 32 degree Fahrenheit, but the surface temperature remains below freezing. When the rain meets the ground surface, ice accumulates. The National Weather Service defines an ice storm as accumulations of ice greater than ¼ of an inch.

Sleet forms when precipitation originating as rain travels through freezing temperatures causing the rain to freeze before reaching the ground. Generally, sleet storm events are shorter in duration than ice storms, and generally create lower impact problems.

Extreme cold is a difficult occurrence to define, but is considered to be when temperatures are well below zero degrees Fahrenheit. Extreme cold can affect not only humans but also infrastructure and automobiles. If proper measures are not taken for handling extreme cold situations frostbite, hypothermia, and even loss of life can occur. Extreme cold is also associated with wind chill. Wind chill can be defined as the rate of heat loss on the human body resulting from a combined effect of low temperature and wind. Table 3-20 indicates wind chill in degrees Fahrenheit.

Table 3-20



History

According to the National Climatic Data Center (NCDC), two blizzards (December 1995 & January 1996) and four ice storms have occurred within Todd County. Both blizzards affected much of central and western Minnesota, closing some roads and several schools. The ice storms which have occurred within Todd County caused several transportation related accidents and overall financial losses due to lost wages and revenue.

Risks & Vulnerabilities

Table 3-21

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	6-12 hours	Major	Critical	More than 24 hours	Limited	Limited

Roads become hazardous to the public during winter storm events. Small children and the elderly are most prone to health problems during these events. Livestock and wildlife are susceptible to winter storms due to the hardship that is caused in finding food and water.

Plans, Programs & Policies

- Infrastructure Improvements
- Snow fencing and windbreaks including natural vegetation
- Cold weather awareness and public education
- Snow removal (salt, sand, etc.)
- Local TV and radio channels

3.2.10 Infectious Diseases

Infectious diseases occur in humans and/or animals and can cause sickness and death. In the mid-twentieth century, antibiotics cured many of the diseases that were life-threatening. Eradicating the specter of debilitating and fatal diseases, people were optimistic about a world without infectious diseases. Since then, new diseases emerged that temper that optimism, such as AIDS and new strains of influenza. In recent years, the increasing mobility of people throughout the world brought the recurrence of diseases that were thought to be eradicated such as monkey pox.

Source: Minnesota State Hazard Mitigation Plan; Centers for Disease Control

History

Bacteria existed long before humans evolved, and bacterial diseases probably co-evolved with each species. Many bacterial diseases that we see today have been around for as long as we have, others may have developed later.

Between the middle of 1918 and the middle of 1919, the worldwide Spanish Influenza epidemic killed at least 21 million people – well over twice the number of combat deaths in World War I. The “Spanish” flu had first appeared in America during the spring of 1918.

All over the world, Spanish Influenza ravaged civilian populations. One-quarter of all Americans suffered bouts of influenza. More than 600,000 Americans died, 10,000 of them were Minnesotans. The city of St. Paul saw more than 1,000 deaths; while the City of Minneapolis, more than 1,300.

In recent years, the State of Minnesota has not had an infectious disease outbreak that reached epidemic proportion.

Table 3-22

Time Course of Common Infections (all in days)			
Disease	Incubation period	Latency period	Infectious period
Measles	8-13	6-9	6-7
Mumps	12-26	12-18	4-8
Pertussis	6-10	21-23	7-10
Rubella	14-21	7-14	10-12
Diphtheria	2-5	14-21	2-5
Varicella	13-17	8-12	10-11
Hepatitis B	50-110	13-17	19-22
Poliomyelitis	7-12	1-3	14-20
Influenza	1-3	1-3	2-3

Source: <http://uhavax.hartford.edu/bugl/histepi.htm>

The tables on the next two pages list several common source and host-to-host epidemics, the causative agent (followed by V for virus, B for bacteria, and P for protozoa), sources of infection, and the reservoirs of the infection. Current knowledge tells us that humans are the only reservoirs for sexually transmitted diseases.

Table 3-23

Common Source Epidemic Diseases			
Disease	Causative Agent	Infection Sources	Reservoirs
Anthrax	<i>Bacillus anthracis</i> (B)	Milk or meat from infected animals	Cattle, swine, goats, sheep, horses
Bacillary Dysentery	<i>Shigella dysenteriae</i> (B)	Fecal contamination of food and water	Humans
Botulism	<i>Clostridium botulinum</i> (B)	Soil-contaminated food	Soil
Brucellosis	<i>Brucella melitensis</i> (B)	Milk or meat from infected animals	Cattle, swine, goats, sheep, horses
Cholera	<i>Vibrio cholerae</i> (B)	Fecal contamination of food and water	Humans
Giardiasis	<i>Giardia</i> spp. (P)	Fecal contamination of water	Wild mammals
Hepatitis	Hepatitis A,B,C,D,E (V)	Infected humans	Humans
Paratyphoid	<i>Salmonella paratyphi</i> (B)	Fecal contamination of food and water	Humans
Typhoid Fever	<i>Salmonella typhi</i> (B)	Fecal contamination of food and water	Humans
Host-to-host Epidemics			
Disease	Causative Agent	Infection Sources	Reservoirs
Respiratory Diseases			
Diphtheria	<i>Corynebacterium diphtheriae</i> (B)	Human cases and carriers; infected food and fomites	Humans
Hantavirus pulmonary syndrome	Hantavirus (V)	Inhalation of contaminated fecal material	Rodents
Meningococcal meningitis	<i>Neisseria meningitidis</i> (B)	Human cases and carriers	Humans
Pneumonococcal pneumonia	<i>Streptococcus pneumonia</i> (B)	Human carriers	Humans
Tuberculosis	<i>Mycobacterium tuberculosis</i> (B)	Sputum from human cases; contaminated milk	Humans, cattle
Whooping cough	<i>Bordetella pertussis</i> (B)	Human cases	Humans
German measles	Rubella virus (V)	Human cases	Humans
Influenza	Influenza virus (V)	Human cases	Humans, animals
Measles	Measles virus (V)	Human cases	Humans

Disease	Causative Agent	Infection Sources	Reservoirs
<i>Sexually Transmitted Diseases</i>			
HIV-Disease	HIV (V)	Infected body fluids, blood, semen, etc.	Humans
Chlamydia	<i>Chlamydia trachomatis</i> (B)	Urethral, vaginal, and anal secretions	Humans
Gonorrhea	<i>Neisseria gonorrhoeae</i> (B)	Urethral and vaginal secretions	Humans
Syphilis	<i>Treponema pallidum</i> (B)	Infected exudate or blood	Humans
Trichomoniasis	<i>Trichomonas vaginalis</i> (P)	Urethral, vaginal, prostate secretions	Humans
<i>Vector-borne diseases</i>			
Epidemic typhus	<i>Rickettsia prowazekii</i> (B)	Bite by infected louse	Humans, lice
Lyme disease	<i>Borrelia burgdorferi</i> (B)	Bite from infected tick	Rodents, deer, ticks
Malaria	<i>Plasmodium</i> spp. (P)	Bite from infected Anopheles mosquito	Humans, mosquitoes
Plague	<i>Yersinia pestis</i> (B)	Bite by infected flea	Wild rodents
Rocky Mountain spotted Fever	<i>Rickettsia rickettsii</i> (B)	Bite by infected tick	Ticks, rabbits, mice
<i>Direct-contact diseases</i>			
Psittacosis	<i>Chlamydia psittaci</i> (B)	Contact with birds or bird excrement	Wild and domestic birds
Rabies	Rabies virus (V)	Bite by carnivore	Wild and domestic carnivores
Tularemia	<i>Franciscella tularensis</i> (B)	Contact with rabbits	Rabbits

Source: <http://uhavax.hartford.edu/bugl/histepi.htm>

Risks & Vulnerabilities

Table 3-24

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	More than 12 hours	Minor	Limited	More than 24 hours	Limited	Minimal

Small children, the elderly, and individuals that have not been vaccinated are most prone to infectious diseases. Individuals that have been exposed to many others on a continuous basis are also highly susceptible to infectious diseases.

Plans, Programs & Policies

- Center for Disease Control
- Center for Infectious Disease Research & Policy
- Minnesota Department of Health

3.3 Human Caused/Technological Hazards

3.3.1 Structural Fire

Structural fires can be defined as “a fire that takes place within infrastructure”. These fires are capable of limited damage to a given area of the County, but are capable of having a significant impact on a community.

History

There is limited information on the occurrences of structural fires on a countywide level for Todd County. For more information about this type of identified hazard, contact the local Emergency Management Director or the local fire department for the area of interest.

Risks & Vulnerabilities

Table 3-24

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Highly likely	None to minimal	Minor	Negligible	1-12 hours	Limited	High

Older buildings have been identified as being the most susceptible to structural fires within Todd County.

Plans, Programs & Policies

- Todd County Emergency Operations Plan

3.3.2 Hazardous Material Transportation

Hazardous materials are transported throughout Todd County in a variety of modes (air, roads, railway & pipelines). Each mode of transportation presents different risks to the County. The majority of transportation of hazardous materials in Todd County consists of moving materials from producers to users, producers to distributors, between storage and use facilities, and hazardous waste materials moving from use to disposal facilities.

Air

Hazardous materials are transported within Todd County by air for a variety of reasons. The most common occurrence of hazardous materials being transported by air includes fertilizers and chemicals for agricultural purposes.

Roads

Todd County has some major roadways in the area that see heavy usage for transportation of materials in general, this includes hazardous waste. These roadways consist of Interstate-94 in the southwestern part of the County, US Hwy 71 which runs throughout the County north to south and US Hwy 10 which passes through Todd County in the northern section of the County. The degree of impact of hazardous spills related to transportation in Todd County is dependent upon the location of the spill and its relative location to concentrated developments and environmentally sensitive areas.

Rail

This type of hazard is of concern to the northeastern section of the County where heavy rail traffic is apparent. Types of potential hazardous material releases along the County's rail corridors includes, but is not limited to valve leakage, safety valve releases, which carries the potential of releasing hazardous material in the form of liquid or gases in addition to release or spill due to derailment, collision, or similar accidents. Such accidents carry the potential of releasing hundreds to thousands of gallons of material within areas along rail corridors.

Pipelines

Todd County has a series of pipelines which run through the County. Due to the sensitivity of pipeline data, the pipeline maps are removed from all public copies of this plan, however the Minnesota Office of Pipeline Safety is one of nine state offices to be a state repository for the National Pipeline Mapping System. All inquires as to the viewing of this map can also be directed to the Todd County Emergency Management Director.

History

Incidents related to the transportation of hazardous materials have occurred. For information on a specific event, contact the local Emergency Management Director for the area of concern.

Risks & Vulnerabilities

Table 3-25

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	None to minimal	Minor	Negligible	12-24 hours	Limited	Limited

Hazardous materials accidents can and have occurred everywhere. Communities that are along the corridors of Interstate-94, US Hwy 10, and US Hwy 71 are particularly at risk. However, hazardous materials are transported on a daily basis within the County, so any area is at risk of this potential hazard.

Plans, Programs & Policies

- MPCA
- Minnesota Emergency Response Commission
- Individual site plans

3.3.4 *Hazardous Material (Fixed)*

There are many facilities that hold hazardous materials within Todd County. These materials include but are not limited to: flammable liquids, fuels, acids, and corrosive materials. Each of these facilities must file a Risk Management Plan with the County Emergency Management Office, the State Emergency Response Commission, and the Environmental Protection Agency.

History

Todd County has had a history of hazardous material spills, accidents, and similar events within the County. This is largely associated with major roadways and railway transportation corridors, pipelines, and fixed facilities. The following is an inventory of hazardous material related to events as reported from 1990 to 2007 by the National Response Center:

Table 3-26

NRC Report#	Incident Date	Street	Location County	City	Type Of Incident	Medium Affected	Material Name
15184	03/27/1990	423 THIRD AVE SW	TODD	LONG PRARIE	FIXED	LAND	OIL, MISC: MOTOR
88396	09/15/1991	SHIRLY'S GAS & GROCERY	TODD	EAGLE BEND	MOBILE	LAND	GASOLINE: AUTOMOTIVE (4.23G PB/G)
204337	10/22/1993	660 CREAMERY STREET	TODD	BROWERVILLE	FIXED	WATER	CAUSTIC
269982	11/12/1994	TODD COUNTY ROAD NO.37NATURE'S LAKEVIEW ED.	TODD	OSAKIS	FIXED	WATER	OIL, MISC: MOTOR
269982	11/12/1994	TODD COUNTY ROAD NO.37NATURE'S LAKEVIEW ED.	TODD	OSAKIS	FIXED	WATER	OTHER OIL
269982	11/12/1994	TODD COUNTY ROAD NO.37NATURE'S LAKEVIEW ED.	TODD	OSAKIS	FIXED	WATER	PAINT

269982	11/12/1994	TODD COUNTY ROAD NO.37NATURE'S LAKEVIEW ED.	TODD	OSAKIS	FIXED	WATER	SOLVENTS
457211	08/25/1998	(null)	TODD	CLARISSA	FIXED	WATER	UNKNOWN MATERIAL
479748	04/08/1999	JUNTION OF ST HWY 28 AND287	TODD	GREY EAGLE	MOBILE	LAND	HYDRAULIC OIL
571790	07/02/2001	HAY FIELDRTE 2 BOX 36	TODD	BROWERVILLE	FIXED	LAND	UNKNOWN MATERIAL
615787	07/06/2002	US HWY 71 FROM 8 MILES SOUTH OF LONG PRAIRIE TO A 1 1/2 NORTH OF LONG PRAIRIE	TODD	LONG PRAIRIE	MOBILE	LAND	TURKEY MANURE
624757	10/03/2002	VIKING GAS CUSHING FACILITYRURAL ROUTE 1 BOX 72C	TODD	CUSHING	CONTINUOUS	AIR	ACROLEIN
624956	10/04/2002	134.02	TODD	PHILBROOK	RAILROAD NON-RELEASE	(null)	(null)
716817	03/23/2004	10 RIVERSIDE DRIVE	TODD	LONG PRARIES	STORAGE TANK	AIR	AMMONIA, ANHYDROUS
758255	05/10/2005	25498 US HWY 71	TODD	LONG PRAIRIE	CONTINUOUS	AIR	AMMONIA
792334	03/29/2006	25498 US HWY 71	TODD	LONG PRAIRIE	CONTINUOUS	AIR	AMMONIA, ANHYDROUS
824305	01/21/2007	ORTON OILHIGHWAY 10	TODD	STAPLES	MOBILE	WATER	GASOLINE: AUTOMOTIVE (UNLEADED)

Source: <http://www.nrc.uscg.mil/foia.html>

Risks & Vulnerabilities

Table 3-27

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	None to Minimal	Minor	Negligible	More than 24 hours	Limited	Limited

Areas identified in table 3-16 have been identified by the County as being susceptible to fixed location hazardous material accidents.

Plans, Programs & Policies

- MPCA
- Individual Site Plans

3.3.4 Groundwater Contamination and Depletion

Groundwater contamination includes the introduction of both point and non-point source pollutants into groundwater. Point source means any discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. Non-point source is a land management activity or land use activity that contributes or may contribute to ground and surface water pollution as a result of runoff, seepage, or percolation and that is not defined as a point source. This contamination also can be extended to include surface waters. For most of the county, individual wells draw from groundwater, however the cities of Menahga, Sebeka, Verndale, Staples, and Wadena maintain municipal drinking water systems monitored by each municipal operator.

Groundwater contamination in Todd County has occurred with limited events or releases. Groundwater depletion is the withdrawal of water from a ground water source at a rate greater than its rate of recharge.

History

There is no recorded event within Todd County of groundwater depletion. There are little to no records identifying contamination events, but these events are a possibility that could happen in the future.

Risks & Vulnerabilities

Table 3-28

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	None to minimal	Minor	Limited	More than 24 hours	Limited	Limited

Groundwater depletion would affect local communities, rural residents, area livestock, and local wildlife in the County. If groundwater contamination was to occur, Todd County residents are the most vulnerable, along with local livestock.

Plans, Programs & Policies

- Wellhead Protection Program
- Minnesota Department of Health
- Environmental Protection Agency (EPA)
- Minnesota Pollution Control Agency (MPCA)

3.3.5 *Terrorism and Civil Disorder*

Human caused hazards, including terrorism, are intentional, malicious, and often time criminal use of force and violence to perpetrate disasters against persons and/or property. Terrorism, including domestic terrorism, is actions intended to intimidate or coerce a government or civilian population to unwanted political or social objectives. These actions can be either domestic or international depending on the origin, base and objectives of the terrorist organizations or individuals perpetrated for personal reasons.

Terrorism hazards include, but are not limited to the use of weapons of mass destruction, including biological, chemical, and nuclear or radiological weaponry; arson, use of incendiary or explosive devices and armed attacks; industrial sabotage and intentional release of hazardous materials; and attacks on technology including computers through viruses or by other means commonly known as “cyberterrorism”.

History

Though terrorism is not a likely event within Todd County, the County has identified this as an event that could possibly happen. Terrorism since September 11, 2001, has brought forth concern to residents along with impacts of such events reaching Todd County.

Risks & Vulnerabilities

Table 3-29

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	None to minimal	Minor	Limited	12-24 hours	Limited	Limited

Though the likeliness of terrorism happening in Todd County is rare, local government buildings are most prone to terrorist attacks within the County.

Plans, Programs & Policies

- Department of Homeland Security
- Minnesota Homeland Security and Emergency Management (HSEM)
- Public education & awareness
- Local police, fire, emergency medical
- Individual public and private facilities

3.3.6 Power Grid Failure

A power grid failure in the context of this plan would include any electrical power outage for a period greater than 24 hours.

History

Though limited specific information is available about power failures in Todd County, they have occurred and are likely to occur in the future. The general cause is the result of a severe weather event such as thunderstorms that have associated high winds and lightning, ice storms, and winter storms with heavy snow.

The table below identifies the eight largest power grid failures to happen within the US:

Table 3-30

Date	Description
11/9/1965	More than 80,000 square miles in seven states and two Canadian provinces go dark and an estimated 30 million people are affected. Six days later, investigators find a single fault relay switch in Ontario caused the outage.
7/13/1977	In New York City, 9 million people are without power for 25 hours after lightning strikes upstate power lines. Police arrest 3,700 in widespread looting and lawlessness.
5/19/1986	A switching problem in an electrical substation at Grand Central Terminal in New York city caused a 12-hour blackout in a four-block area of midtown Manhattan.
8/10/1996	Power goes out for up to 10 hours in a region stretching from Oregon to San Diego and as far east as Texas
10/23/1997	In downtown San Francisco, about 230,000 people in a five-mile long area are affected by a blackout that is later determined by the FBI to have been caused intentionally.
12/8/1998	A construction crew's mistake caused a blackout across a 49-square mile area of the San Francisco peninsula. The outage lasts seven hours and affects more than 940,000 people.
7/6/1999	After three days of scorching heat, power lines give way and cause a 19-hour blackout in sections of New York City.
8/14/2003	The largest power outage in U.S. History sweeps across a vast swath of the northern United States, spreading as far west as Ohio and Michigan, and parts of neighboring Canada. More than 50 Million people are affected.

Source: <http://abcnews.go.com>

Risks & Vulnerabilities

Table 3-31

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	None to Minimal	Minor	Catastrophic	More than 24 hours	Limited	Limited

No specific area can be identified as being more likely to having a power grid failure occurring with the County. Schools, government centers, hospitals, and areas with higher concentrations of the elderly populations are more susceptible to the effects of power loss.

Plans, Programs & Policies

- Electric service providers

3.3.7 Computer Viruses

A computer virus is a program or piece of code that is loaded into your computer without your knowledge and runs against your wishes. Viruses can also replicate themselves. All computer viruses are manmade. A simple virus can copy itself over and over, and is relatively easy to produce. Even a simple virus is dangerous because it will quickly use all available memory and bring the system to a halt. An even more dangerous type of virus is one capable of transmitting itself across networks and bypassing security systems.

Some people distinguish between general viruses and worms. A worm is a special type of virus that can replicate itself and use memory, but cannot attach itself to other programs.

Source: <http://www.actlab.utexas.edu/~aviva/compsex/virus/whatis.html>

History

With the advent of the Apple and IBM Personal Computer in the early eighties came the first modern day computer virus. As these computers became more and more popular a phenomenon known as a computer virus, became evident in 1986. In 1986, the first IBM PC virus “Brain” pandemic began. Each year since then, there has been a significant virus attack as well an increase in attacks. In 1989, the first anti-virus software became available. Today it is a must for all computers.

In January of 2003, the relatively benign “Slammer” (Sapphire) worm becomes the fastest spreading worm to date, infecting 75,000 computers in approximately ten minutes, doubling its numbers every 8.5 seconds in its first minute of infection. The Sobig worm becomes one of the first to join the spam community. Infected computer systems have the potential to become spam relay points and spamming techniques are used to mass-mail copies of the worm to potential victims.

To this date, Todd County has been able to avoid any major attack on their system.

Risks & Vulnerabilities

Table 3-32

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Highly Likely	None to Minimal	Limited	Negligible	More than 24 hours	Minimal	Limited

Local residents, schools, areas businesses, government facilities and medical facilities are most prone to the effects of computer viruses occurring within the County.

Plans, Programs & Policies

- Todd County MIS
- Back-up Strategies

3.3.8 Railroad Interference with Emergency Response

Found within the City of Staples is a rail line that splits the city in half. This is a concern that has been identified by Todd County as an existing hazard. The main hazard identified by the County is that emergency response vehicles may not be able to respond as quickly as needed for the section of the city, south of the railroad tracks.

History

To this date, there is no documented history of loss of life due to emergency response vehicles being restricted access to an emergency scene from train activity.

Risks & Vulnerabilities

Table 3-33

	Frequency	Warning Time	Impact	Area	Duration	Life/Injury	Property
Todd County	Likely	None to Minimal	Limited	Negligible	Less than 1 hour	Minimal	Minimal

The City of Staples has been identified as being the most prone to this occurrence within Todd County.

Plans, Programs & Policies

- Mn/DOT
- BNSF
- County Highway Department
- Transportation Planning
- Local police, fire, emergency medical

4.0 ACTION PLAN [GOALS, OBJECTIVES, AND STRATEGIES]

Eliminating or reducing the risks to persons, property, and the environment is the focus of the Todd County Hazard Mitigation Plan. The goals and objectives presented within this section are intended to address natural, human-caused and technological hazards within the County before they occur through the use of local, state, and federal resources. To clarify the following action the following terms are defined:

GOAL: the overall desired effect including both long term and ongoing and terminal effects. For the purpose of this Section, goals are identified with a number.

COSTS: The estimated cost to achieve the corresponding objective. The costs are identified by using the following table:

Description	Approximate Low	Approximate High
Low	\$0.00	\$5,000.00
Moderate	\$5,001.00	\$50,000.00
High	\$50,001.00	\$250,000.00
Very High	\$250,001.00	And up

OBJECTIVE: Actions or steps that will be taken to achieve the goal or desired effect. For the purpose of this plan, objectives are identified with a letter.

TASK LEADER: Is an individual or collective responsible agency, department, organization, group, or person that will carry out the corresponding objective. Contact information for all Task Leaders is as follows:

Emergency Management Director Bob Blessing (320) 533-4697	Highway Department Engineer Loren Fellbaum (320) 732-2722
Planning & Zoning Administrator Andrew Dahlgren (320) 732-4420	Public Health Director Cheryl Schneider (320) 732-4444
Sheriff Department Sheriff Pete Mikkelson (320) 732-2157	Soil and Water Conservation District (SWCD) Sandy Rohr, Manager (320) 732-2644
Geographic Information Systems (GIS) Gloria Stevens (320) 732-4248	

TIMELINE: Date or timeframe the objective will be achieved. If an objective is ongoing or no specific date can be set to carry out the objective then it is labeled as “ongoing”.

Prioritization of Action Items

Assigned Value

This section outlines the prioritization of the action items presented within this plan. Each action item or objective contained within this plan is assigned a prioritization value based on the following table. These values are ranked 1 to 6 with 1 being the “highest priority” value and 6 being the “least priority” value.

Priority	Category
1.	Policy Improvements: Includes making changes to any policy(ies) maintained by Todd County.
2.	Process Improvements: Includes making changes to any programs or processes conducted by Todd County.
3.	Physical Improvements: Includes any projects related to improvement of structures or physical terrain to minimize or eliminate hazards.
4.	Information Gathering: Includes any action related to the inventorying or gathering of information.
5.	Outreach Projects: Includes the dissemination of information to the public.
6.	Communication Efforts: Includes ongoing cooperation and communication with organizations/agencies external to Todd County.

Prioritization by Time Schedule

Each action item presented within this section is scheduled for completion according to a specified timeline. All items of the same assigned value will be implemented according to the time schedule provided depending on the prioritization by costs.

Prioritization by Costs

Each action item is assigned an estimated cost. This estimate is purely a figure used to assess potential costs associated with the action item to be carried out and is not intended to represent an exact value or project cost. Cost benefit estimates were made on all action items during the development of this action plan. All action items of the same assigned value will be implemented contingent upon Todd County securing necessary funding. This means that if an action item is a #1 priority, it is scheduled to be completed in 2007, but funding cannot be secured until 2009, the item must be held until 2009 to be completed.

A thorough cost benefit analysis to determine the cost benefit ratio will be conducted by the implementing agency prior to the implementation of each project derived from this plan.

4.1 Natural Hazard Goals, Objectives and Strategies

Natural hazard mitigation measures presented throughout this planning process have been divided into the following groups:

- Tornado 4.1.1
- Winter Storms 4.1.3
- Severe Summer Storms 4.1.5
- Extreme Heat 4.1.7
- Infectious Disease 4.1.9
- Flooding and Flash Flooding 4.1.2
- Drought 4.1.4
- Sustained Wind Storm 4.1.6
- Wildfire 4.1.8

4.1.1 Tornado Mitigation

Goal: To adequately be prepared for and minimize the damage caused by tornado activity.

Resources: USDA Storm Resources & Info

Objective 1: Minimize the impacts of tornadoes on life and property

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Require storm shelters for all mobile home parks and multiple family dwellings Task Leaders: Planning & Zoning Administrator	County, Long Prairie, Osakis, Browerville, Staples	1							x	Moderate
Continue to upgrade and improve Emergency Warning Systems Task Leaders: Emergency Management Director	Countywide	3							X	High
Require all warning systems to be radio activated by dispatch and have battery back-up Task Leader: Emergency Management Director	Countywide	3			x					Moderate
Seek supplementary warning systems i.e. NWS weather radio, TV, etc... Task Leader: Emergency Management Director	Countywide	6							x	Low

Objective 2: Proactively work towards an educated, informed and responsive public on how to protect themselves during tornado activity.

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Continue to provide Posters, brochures, and media materials Task Leader: Emergency Management Director	Countywide	5							x	Low
Distribute educational materials with County mailings Task Leader: Emergency Management Director	Countywide	5							X	Low

4.1.2 *Flooding and Flash Flooding*

Goal: To adequately be prepared for and minimize the damage caused by floods.

Resources:

Minnesota Department of Natural Resources
Federal Emergency Management Agency (FEMA)

Objective 1: To reduce the number of structures located in the 100-year flood plain, including critical public infrastructure such as wastewater and water treatment plants.

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Encourage development of parks and open space areas along floodplain areas that consistently flood Task Leader: Planning & Zoning Administrator, Planning & Zoning Administrator or Commission for cities identified in jurisdiction column	Countywide, Clarissa, Browerville, Long prairie, Hewitt	5							X	Moderate
Restrict building in floodplain areas that consistently flood – Includes cities Task Leader: Planning & Zoning Administrator, Planning & Zoning Administrator or Commission for cities identified in jurisdiction column	Countywide, Clarissa, Browerville, Long prairie, Hewitt	1							X	Low
Explore possible opportunities to purchase land within the flood plain in more populated areas of Todd County. Task Leaders: County Engineer, Planning and Zoning Administrator, County Commissioners	Countywide	4							x	Low

Objective 2: Protection of life and property from flood events.

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Encourage municipalities to require the development of new storm sewer infrastructure capable of handling a ten to twenty year rain event in new subdivisions Task Leaders: Planning & Zoning Administrator, Emergency Management Director	Bertha, Browerville, Burtrum, Clarissa, Eagle Bend, Grey Eagle, Hewitt, Long Prairie, Osakis, Staples, West Union	1				x				High
Maintain county ditches, keep free of debris, and culverts well maintained Task Leader: County Ditch Inspector, County Engineer, City Public Works Departments, and Townships	Countywide	2							x	Moderate
Construct a listing of high and medium priority ditch projects within the County. Implementation of these projects in a timely manner after being identified Task Leader: County Ditch Inspector, Planning & Zoning Administrator	Countywide	2			x					Moderate

Objective 3: Promote an educated, informed and responsive public on how to prevent damage during a flood event.

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Continue to update the Emergency Operations Plan yearly Task Leader: Emergency Management Director	Countywide	1							X	Low
Encourage early participation of individual landowners in the FEMA National Flood Insurance Program by persons within floodplain areas Task Leader: Planning & Zoning Administrator, Emergency Management Director	Countywide	1							X	Low
Provide public education on dangers of flash flooding Task Leader: Emergency Management Director	Countywide	5							x	Low
Educate property owners on landscaping methods Task Leader: Planning & Zoning Administrator, County SWCD	Countywide	5			x					Low

4.1.3 Winter Storms

Goal: To adequately be prepared for and minimize the damage caused by winter storms throughout the County.

Resources:
NOAA

Objective 1: Minimize the impact of winter storm activity and cold weather events on life and property.

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Encourage through education, event preparedness; i.e. Furnace inspection Task Leader: Public Health Director, Emergency Management Director	Countywide	5							x	Low
Continue to promote the need for emergency supplies and blankets in traveling vehicles Task Leader: Emergency Management Director, Public Health Director, Sheriff	Countywide	5							X	Low
Encourage the elderly and those that care for the elderly, to keep an ample supply of medication Task Leader: Emergency Management Director, Public Health Director	Countywide	5							X	Low
Draw upon local and hazard mitigation funding to ensure power infrastructure can withstand ice storm conditions Task Leader: Emergency Management Director	Countywide	2							x	Low

Objective 2: Prevent or minimize the impacts of winter storm activity and cold weather events on infrastructure including individual septic treatment systems

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Provide information on building materials and practices that increase structural safety, and increase energy conservation in cold weather conditions Task Leader: Planning & Zoning Administrator	Countywide	5							X	Low
Encourage the planting of trees and natural vegetation and/or snow fencing in new developments to minimize snow accumulation Task Leader: Planning & Zoning Administrator, Todd County SWCD	Countywide	5							X	Moderate
Provide information to landowners with Individual Septic Treatment Systems on ways to protect their systems from extreme cold Task Leader: Planning & Zoning Administrator	Countywide	5							X	Low

Objective 3: Minimize the impacts of winter storm activity and cold weather events on roadways

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Encourage the review of winter driving techniques Task Leader: Emergency Management Director, Public Health Director, Sheriff	Countywide	5							x	Low
Continue to provide exceptional snow removal, salting, and sanding to minimize the impacts of snow/ice accumulations on roadways Task Leader: Highway Engineer	Countywide	3							X	Moderate

4.1.4 Drought

Goal: To adequately be prepared for and minimize the damage caused by droughts.

Resources:

NOAA Drought Info Center
 National Drought Mitigation Center
 U.S. Drought Monitor
 USDA Drought Resources & Info

Objective 1: Minimize the impacts of drought on agriculture

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Encourage the wise utilization of water resources regardless of time of year Task Leader: Todd County SWCD	Countywide	5							x	Low
Encourage crop rotation and planting crops according to water needs Task Leader: Todd County SWCD	Countywide	5							X	Low

Objective 2: Minimize the stress that drought causes to farmers

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Promote area support groups Task Leader: Public Health Director	Countywide	5							x	Low

Objectives 3: Minimize the impact of drought on livestock

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Promote shelter belts Task Leader: Todd County SWCD	Countywide	5							x	Low
Recommend sprinklers to cool animals Task Leader: Todd County SWCD	Countywide	5							X	Moderate

4.1.5 Severe Summer Storms

Goal: To adequately prepare for and minimize the damage from severe summer storms.

Resources: USDA Storm Resources & Info

Objective 1: Minimize the impact of severe summer storms on life and property

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Continue to provide Posters, brochures, and media materials Task Leader: Emergency Management Director	Countywide	5							x	Low
Provide information on making structures safer; materials, building storm shelters, etc. Task Leader: Planning & Zoning Administrator, Emergency Management Director, Planning & Zoning Administrator or Commission for the jurisdictions identified in the next column	County, All Cities (Bertha, Browerville, Burtrum, Clarissa, Eagle Bend, Grey Eagle, Hewitt, Long Prairie, Osakis, Staples, West Union)	5							x	Low

Require storm shelters for all mobile home parks and multiple family dwellings Task Leader: County Planning & Zoning Administrator, Planning & Zoning Administrator or Commission for the jurisdictions identifies in next column	Countywide, Browerville, Clarissa, Long Prairie, Staples	1									x	Moderate
Encourage NWS weather radio use Task Leader: Emergency Management Director	Countywide	5									x	Low
Continue to upgrade and improve Emergency Warning Systems Task Leader: Emergency Management Director	Countywide	3									x	Moderate
Encourage cities to participate in state programs Task Leader: Emergency Management Director	Countywide	6									x	Low
Provide education on causes storm damage Task Leader: Emergency Management Director	Countywide	5									x	Low
Recommend the use of windbreaks in all new development where natural or man-made windbreaks do no exist Task Leader: Todd County SWCD	Countywide	5									x	Moderate

Objective 2: Minimize the impacts of severe summer storms on roadways

Strategies	Jurisdiction	Timeframe							Cost		
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing	
Identify and improve potential and historical areas of road washout Task Leader: Highway Engineer, Township Boards	Countywide, Townships	4								x	Moderate

4.1.6 Windstorms

Goal: To adequately prepare for and minimize the damage caused by violent wind storm(s).

Resources:
National Weather Service

Objective 1: Minimize the impact of sustained wind storms on property

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Encourage property owners to trim trees that are near buildings Task Leader: County Planning & Zoning Administrator, Planning & Zoning Administrator or Commission for the jurisdictions identified in the next column	Countywide	5							x	Low
Encourage property owners to remove dead and diseased trees Task Leader: County Planning & Zoning Administrator, Planning & Zoning Administrator or Commission for the jurisdictions identified in the next column	Countywide	5							X	Low

Objective 2: Minimize the impact of sustained wind storms on lakeshores

Strategies	Jurisdiction	Timeframe								Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012	Ongoing		
Encourage the preservation and enhancements of natural lake vegetation, examples: bulrush, weed lines, etc... Task Leader: Planning & Zoning Administrator	Countywide	5								x	Low

4.1.7 Extreme Heat

Goal: To adequately be prepared for and minimize the effects of extreme heat throughout the County.

Resources:

Federal Emergency Management Agency (FEMA)

Objective 1: Lessen the impact of extremely high temperature on the people of Todd County

Strategies	Jurisdiction	Timeframe								Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012	Ongoing		
Publish a special section with emergency information on extreme heat; include the phone numbers of emergency services offices and hospitals Task Leader: Emergency Management Director, Public Health Director	Countywide	5								x	Low

4.1.8 Wildfire

Goal: To adequately be prepared for and minimize the damage caused by wildfires.

Resource:
 National Interagency Fire Center
 FEMA Wildfire Information
 Minnesota DNR Wildfire
 USDA Fire Resources & Information

Objective 1: Minimize the risk of wildfires starting or spreading

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Continue to provide public education materials related to the prevention of forest fires and wildfires Task Leader: Local Fire Warden, Emergency Management Director	Countywide	5							x	Low
Continue to conduct controlled burns as necessary to prevent the spread of wildfires Task Leader: Local Fire Warden, Emergency Management Director	Countywide	3							x	Low
Ensure the strong coordination between local fire departments and associations as well as those from outside areas to provide fire protection, which will reduce the spread of wildfires Task Leader: Local Fire Warden, Emergency Management Director	Countywide	6							x	Low

Objective 2: Work to promote preventative measures to reduce risk of wildfires

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Promote positive forestry management techniques including the removal of dead, dry vegetation and trees which may ignite as a result of lightning or human related causes Task Leader: Local Fire Warden, Emergency Management Director	Countywide	5							X	Low
Encourage the use of landscape design that will minimize the risk of wildfire Task Leader: Local Fire Warden, Emergency Management Director	Countywide	5							X	Low
Continue to monitor the removal of trees and vegetation around electrical lines and if possible bury electrical lines Task Leader: Emergency Management Director, Electric Service Providers	Countywide	6							x	Moderate

4.1.9 *Infectious Disease*

Goal: To be prepared for and minimize the outbreak of infectious diseases.

Resources:

Minnesota Department of Health
 Infectious Disease Epidemiology
 Prevention and Control Division
 Centers for Disease Control
 Emergency Preparedness and Response

Objective 1: Foster and support health related programs related to the mitigation or planning for infectious disease

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Encourage the continued cooperation between Todd County Public Health Department and the Minnesota Department of Health Task Leader: Public Health Director	Countywide	6							x	Low
Provide public education materials related to the prevention/treatment of infectious disease(s). Task Leaders: Todd County Public Health Department, School Administrators, local community centers	Countywide	5							x	Low

4.2 Human Cause/Technological Goals, Objectives, and Strategies

Human caused and technological hazard mitigation measures presented throughout this planning process have been divided into the following groups:

- Groundwater Depletion
- Groundwater Contamination
- Hazardous Material (Transport and Train)
- Hazardous Material (Fixed facilities)
- Power Grid Failure
- Computer Viruses
- Terrorism
- Railroad Interference with Emergency Response

4.2.1 Groundwater Depletion

Goal: To adequately be prepared for and minimize the impact of ground water depletion.

Resources:

Todd County Comprehensive Local Water Plan
USGS Water-Resources Investigations Report

Objective 1: Avoid depletion of Todd County's groundwater aquifers

Strategies	Jurisdiction	Timeframe								Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012	Ongoing		
Support Goals and Objectives of the Todd County Comprehensive Local Water Plan Task Leader: Todd County SWCD, Planning & Zoning Administrator	Countywide	6								x	Low
Continues to Monitor levels on Lakes and Rivers in the County Task Leader: Todd County SWCD	Countywide	6								X	Moderate
Distribute information on how to reduce water consumption Task Leader: Todd County SWCD	Countywide	5								X	Low
Establish irrigation scheduling program and promote water mark blocks Task Leader: Todd County SWCD	Countywide	5			x						Low

4.2.2 *Groundwater Contamination*

Goal: To adequately be prepared for and minimize the impact of groundwater contamination.

Resources:

- Environmental Protection Agency
- Minnesota Pollution Control Agency
- Minnesota Department of Agriculture
- Minnesota Department of Health

Objective 1: Eliminate or reduce as much as feasible, risks associated with groundwater contamination

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Encourage the development of local wellhead protection plans with the assistance of the Minnesota Department of Health Task Leader: Todd County SWCD	Countywide	6							x	Moderate
Support by providing public education and assistance to existing programs designed to provide support and education to landowners for individual well testing Task Leader: Todd County SWCD	Countywide	6							X	Low

Objective 2: Eliminate or reduce as much as feasible, risks associated with surface water contamination

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Provide support and assistance to local governments, property associations, lakes associations or similar groups in the development and implementation of local surface water management plans and in water quality related public education Task Leader: Todd County SWCD	Countywide	6							x	Moderate
Implement the goals, objectives, and policies of the Todd County Water Plan Task Leader: Todd County SWCD	Countywide	6							X	Moderate

4.2.3 Hazardous Material Transportation

Goal: To be prepared for and minimize the damage caused by hazardous material spills during transportation.

Resources:

National Response Center
 Department of Transportation
 Disaster Help
 Minnesota Emergency Planning and Community
 Right-to-Know Act Program

Objective 1: Ensure safe transportation of materials through pipelines in Todd County

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Educate and encourage the use of Gopher State One Call. "Call before you dig" Task Leader: Emergency Management Director, Planning & Zoning Administrator or Commission for the jurisdictions identified in the next column	Countywide	5							X	Low
Ensure that proper measures pertaining to pipeline integrity are being followed Task Leader: Emergency Management Director, Pipeline Companies	Countywide	6							X	Low
Encourage pipeline companies to maintain an unobstructed right-of-way Task Leader: Emergency Management Director	Countywide	6							x	Low

Objective 2: Ensure the safe transportation of hazardous materials on roadways within Todd County

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Enforce laws regarding the transporting of hazardous materials Task Leader: Sheriff, City Police	Countywide, All cities	6							x	Low
Support effort to increase funding for rural road safety programs Task Leader: Highway Engineer	Countywide	6							X	Low
Ensure that the roadways within Todd County can safely accommodate the vehicles hauling hazardous material Task Leader: Highway Engineer	Countywide	2							x	High

4.2.4 Hazardous Material (Fixed)

Goal: To prepare for and minimize the damage caused by hazardous material spills within fixed facilities.

Resources:

National Response Center
 Department of Transportation
 Disaster Help
 Minnesota Emergency Planning and Community
 Right-to-Know Act Program

Objective 1: Ensure the safe operation, storage, and maintenance of facilities holding, distributing, or using hazardous material substances

Strategies	Jurisdiction	Timeframe								Cost
		PRIORITY	2007	2008	2009	2010	2011	2012	Ongoing	
Maintain an updated list of all hazardous materials sites as required by the Minnesota Emergency Response Commission Task Leader: Emergency Management Director	Countywide	4							x	Low
Ensure all fire, police, and medical emergency response professionals are trained and equipped to respond to hazardous material incidents Task Leader: Emergency Management Director	Countywide	2							x	High
Provide public education on hazardous material incidents in the form of media releases, articles, Todd County Website, etc... Task Leader: Emergency Management Director	Countywide	5							x	Low
Encourage local businesses with hazardous materials to have/develop an emergency response plan. Task Leader: Emergency Management Director,	Countywide	4							x	Low

4.2.5 Power Grid Failure

Goal: To prepare for and minimize the impacts of a power grid failure.

Resources:
Local power companies

Objective 1: Eliminate or reduce as much as feasible, the threat of a power loss in Todd County

Strategies	Jurisdiction	Timeframe								Cost
		PRIORITY	2007	2008	2009	2010	2011	2012	Ongoing	
Encourage the building of generation sources within Todd County Task Leader: Electrical Service Providers, Emergency Management Director	Countywide	6							x	Very High
Continue with power management programs where there is a voluntary control of electrical use by individual users Task Leader: Electrical Service Providers, Emergency Management Director	Countywide	6							x	Low
Continue education efforts focused on conservation Task Leader: Electrical Service Providers, Emergency Management Director	Countywide	6							X	Low

Objective 2: Eliminate or reduce as much as feasible, the impact of a power failure in Todd County

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Encourage critical facilities to install back-up generators Task Leader: Emergency Management Director	Countywide	3							x	Moderate
Educate citizens on steps to take in case of failure Task Leader: Emergency Management Director, Electrical Service Provider	Countywide	5							X	Low

4.2.6 *Computer Viruses*

Goal: To prepare for and minimize the damaging effects of computer viruses within the County.

Resources:
Todd County MIS

Objective 1: Decrease the impact of computer viruses on response facilities, public health facilities, transportation industry, HAZMAT facilities, schools, etc...

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Encourage all agencies to regularly update virus protection software Task Leader: Todd County MIS	Countywide	3							X	Moderate
Support efforts to ensure that emergency response departments are adequately funded for technology updates and upgrades Task Leader: Emergency Management Director, Todd County MIS	Countywide	6							X	Moderate
Continue strategies for comprehensive back-up of electronic data and systems Task Leader: Todd County MIS	Countywide	2							x	Low

4.2.7 *Terrorism*

Goal: To prepare for and minimize the loss of life associated with terrorism.

Resources:
Todd County Sheriff's Department
Local Law Enforcement throughout the County

Objective 1: Eliminate or reduce the crime and terrorism threat

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Continue to support local, state and federal anti-terrorism programs Task Leader: Sheriff, Emergency Management Director	Countywide	6							x	Moderate
Continue to provide educational information on what to be aware of Task Leader: Sheriff, Emergency Management Director	Countywide	5							X	Low

4.2.8 Railroad Interference with Emergency Response

Goal: To prepare for and minimize the impact of railroad interference during emergencies within the County.

Resources:
Burlington Northern Santa Fe (BNSF)
Todd County Sheriff's Department

Objective 1: Eliminate or reduce the threat of death or injury due to delayed emergency vehicles

Strategies	Jurisdiction	Timeframe							Cost	
		PRIORITY	2007	2008	2009	2010	2011	2012		Ongoing
Promote duplicated emergency services in both sides of the railroad tracks Task Leader: City Emergency Management Director	Staples	2							x	High
Increase and maintain communication with railroad during an emergency Task Leader: Police Department, City Emergency Management Director	Staples	6							X	Low
Examine the feasibility of building an under or over pass Task Leader: Highway Engineer	Staples	3							X	Very High

4.3 Potential Funding Sources

Implementation of the mitigation strategies is often dependent on funding assistance from Federal and State sources. FEMA provides funding for structural projects through hazard mitigation grant programs, such as the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Assistance Program, and the Flood Mitigation Assistance Program. Strategies that qualify for FEMA assistance include structural improvements to dams, bridges, culvert replacement, as well as emergency generators and warning sirens. Financial support for other mitigation strategies proposed in this plan may be sought through alternative funding sources. Projects may be implemented with the assistance of non-profit organizations or funds secured from Community Foundations. There are many State and Federal programs, in addition to private funding sources, that are available.

Many communities believe they are unable to take steps in preventing damage from hazards due to lack of funding. Appendix XI is intended to provide some examples of funding options. This list is not comprehensive and should be added to, when new funding programs are created and recognized.

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- I- Abbreviations, Acronyms and Definitions
- II- Resolutions
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- IX- County Watershed Map
- X- County Ditch Map & County Watercourse Map
- XI- Potential Funding Sources
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Appendix I

Abbreviations, Acronyms and Definitions

Abbreviations, Acronyms and Definitions

The following are abbreviations, acronyms and definitions that may be used throughout this plan and during emergency management activities.

AFSCME -	American Federation of State, County and Municipal Employees
APCO -	Association of Public Safety Communications Officials
AST -	Above ground Storage Tank
ATF -	Bureau of Alcohol, Tobacco, and Firearms
BCA -	Bureau of Criminal Apprehension
BNSF -	Burlington Northern Santa Fa
CAMEO -	Computer Aided Management of Emergency Operations
CAP -	Civil Air Patrol
CAT -	Chemical Assessment Team
Cfs -	Cubic Feet Per Second
COE -	United States Army Corps of Engineers
CST -	National Guard Civil Support
DHS -	Department of Homeland Security
DNR -	Department of Natural Resources
DO -	Minnesota Duty Officer
DOT -	United States Department of Transportation
DPS -	Department of Public Safety
DRO -	Diesel Range Organics
EAL -	Emergency Action Level
EAS -	Emergency Alert System
ELT -	Emergency Locator Transmitter
EMAC -	Emergency Management Assistance Compact
EMD -	Emergency Management Director
EMS -	Emergency Medical Services
EMWIN -	Emergency Management Weather Information Network
EPA -	Environmental Protection Agency
ERT -	Emergency Response Team
FBI -	Federal Bureau of Investigation
FEMA -	Federal Emergency Management Agency
FIRM -	Flood Insurance Rate Map
FM -	State Fire Marshal
Hazmat -	Hazardous Materials
HMGP -	Hazard Mitigation Grant Program
HSEM -	Division of Homeland Security and Emergency Management
MDA -	Minnesota Department of Agriculture
MDH -	Minnesota Department of Health
MIFC -	Minnesota Interagency Fire Center
MnDOT -	Minnesota Department of Transportation
MNVOAD -	Minnesota Volunteer Organizations Active in Disaster
MPCA -	Minnesota Pollution Control Agency
MPR -	Minnesota Public Radio
NAWAS -	National Warning System
NCDC -	National Climatic Data Center
NFIP -	National Flood Insurance Plan
NG -	National Guard
NIFC -	National Interagency Fire Center
NOAA -	National Oceanographic Atmospheric Administration
NWS -	National Weather Service
ODP -	Office of Domestic Preparedness
OPS -	Office of Pipeline Safety

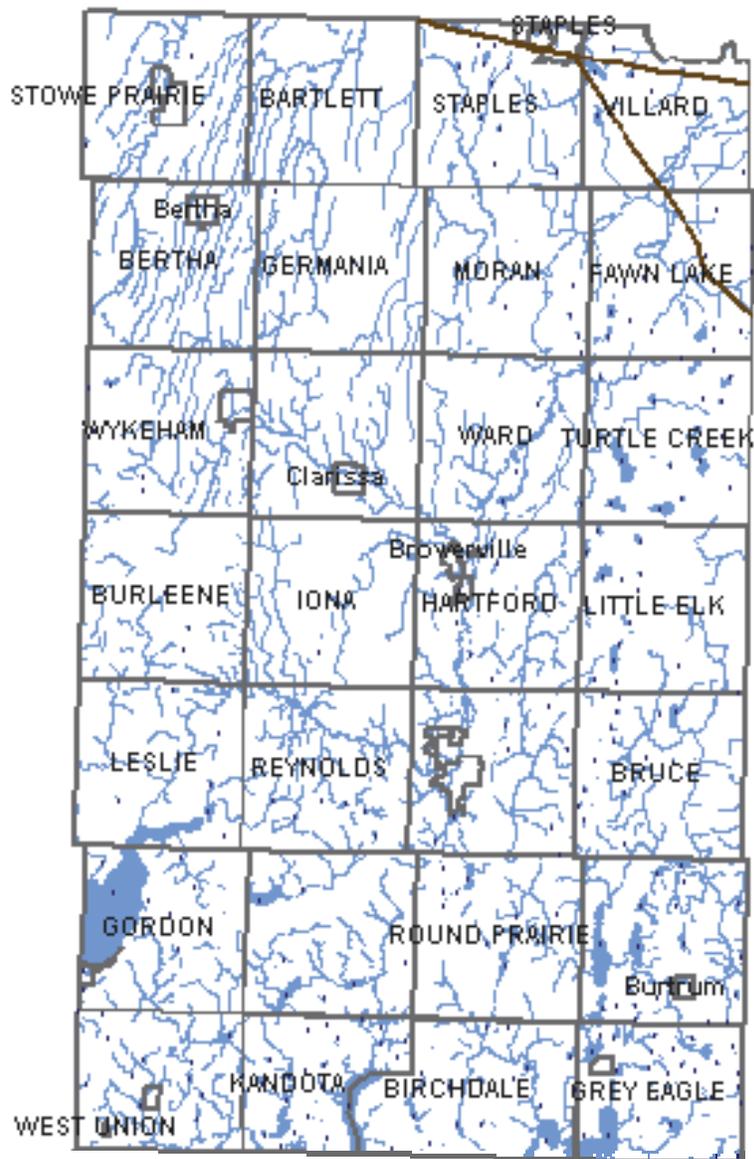
PDM -	Pre-Disaster Mitigation Grant Program
SAE -	Site Area Emergency
SAR -	Search and Rescue
SFHA -	Special Flood Hazard Area
SP -	State Patrol
SWCD -	Soil and Water Conservation District
USDA -	United States Department of Agriculture
USGS -	United States Geological Service

Appendix II

Resolutions

Appendix III

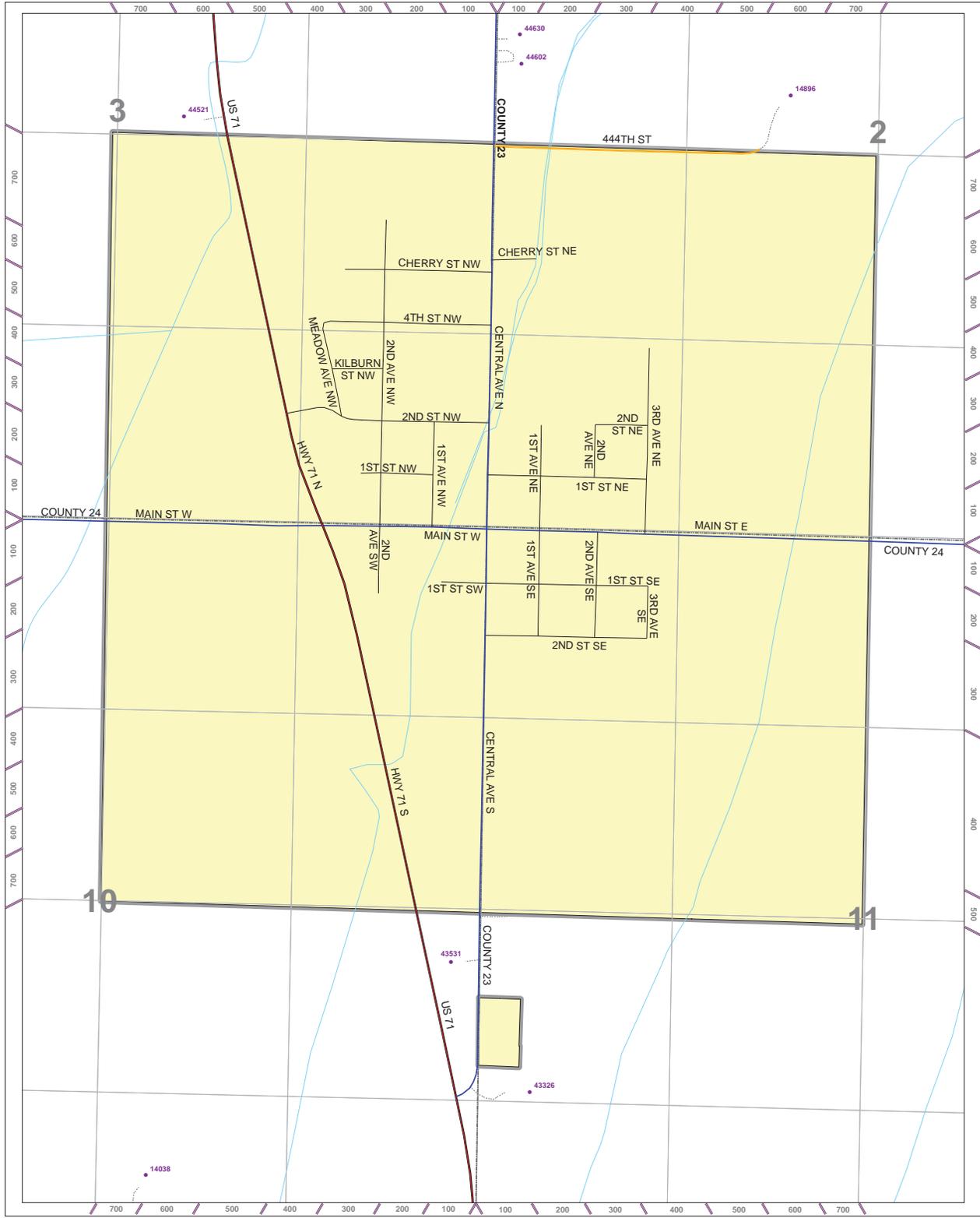
County Map



Appendix IV

City Maps

CITY OF BERTHA ROAD MAP TODD COUNTY, MINNESOTA



LEGEND

- Driveways
- Interstate
- US-Paved
- State Highway
- County Road-Paved
- County Road-Gravel
- CSAM-Paved
- CSAM-Gravel
- TWP-Paved
- TWP-Gravel
- TWP-Min. Maint.
- Municipal
- Private Road
- County addressed sites
- Section lines
- PLS 40
- Streams
- Lakes
- City
- Township



MAP RESOURCES

Buildings, Driveways, & Roads: Todd County E911 Project
 Section lines & PLS 40: MNDOT State of Minnesota Basemap
 Lakes & Streams: Minnesota DNR & Todd County GIS

1:4,000

0 165 330 660 990 1,320 1,650 Feet

The Todd County GIS & Land Services Department has made every effort to provide the most accurate and up-to-date information available in this publication and cannot be held responsible for any unforeseen errors or omissions.

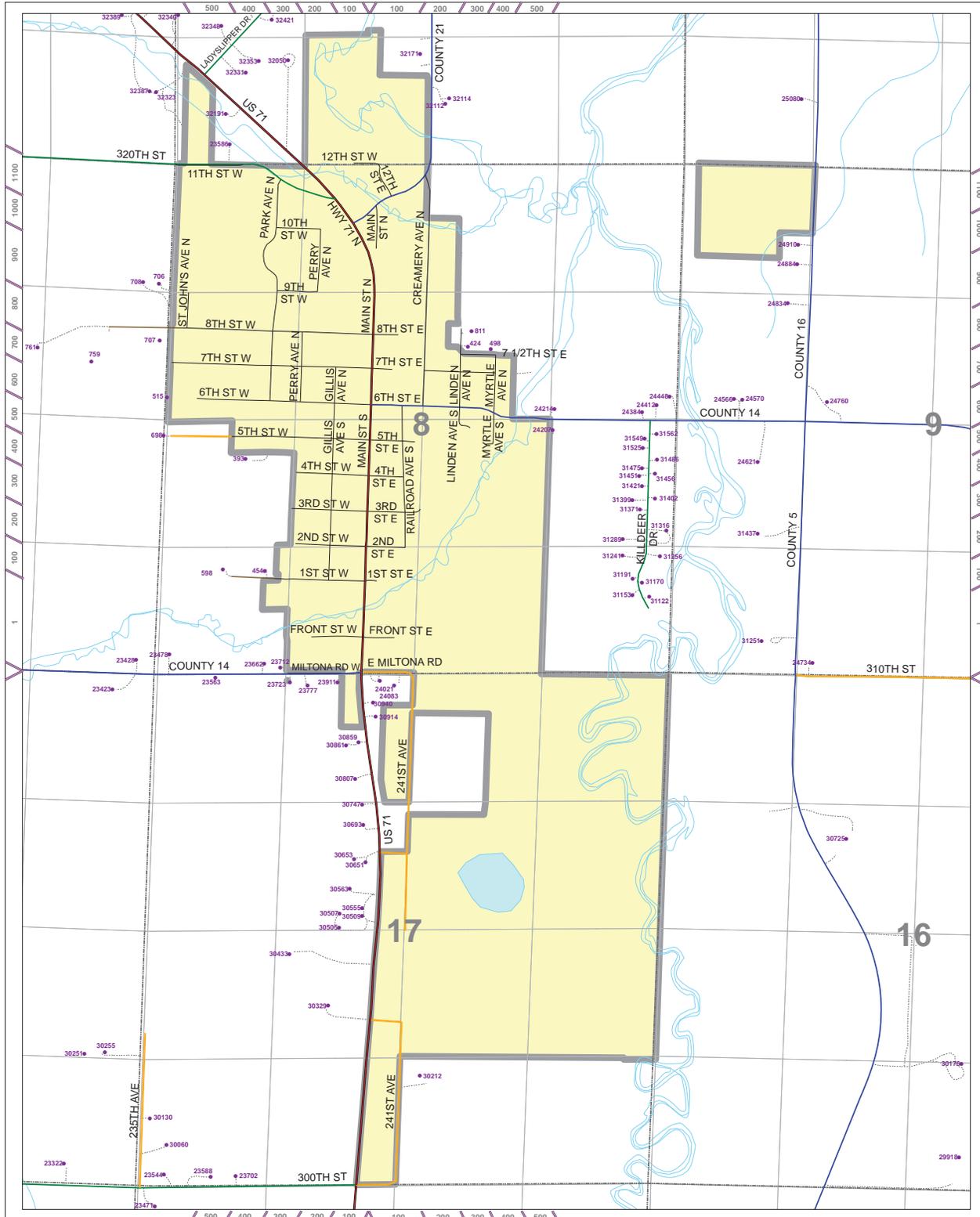
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 WHERE THE FOREST MEETS THE PRAIRIE
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April 2006

CITY OF BROWERVILLE ROAD MAP TODD COUNTY, MINNESOTA



LEGEND

- Driveways
- Interstate
- US-Paved
- State Highway
- County Road-Paved
- County Road-Gravel
- CSAN-Paved
- CSAN-Gravel
- TWP-Paved
- TWP-Gravel
- TWP-Min. Maint.
- Municipal
- Private Road
- County addressed sites
- Section lines
- PLS 40
- Streams
- Lakes
- City
- Township



MAP RESOURCES

Buildings, Driveways, & Roads: Todd County E911 Project
 Section lines & PLS 40: MNDOT State of Minnesota Basemap
 Lakes & Streams: Minnesota DNR & Todd County GIS

1:6,000
 0 660 1,320 2,640
 Feet

The Todd County GIS & Land Services Department has made every effort to provide the most accurate and up-to-date information available in this publication and cannot be held responsible for any unforeseen errors or omissions.

TODD COUNTY
 WHERE THE FOREST MEETS THE PRAIRIE
 EST. 1855

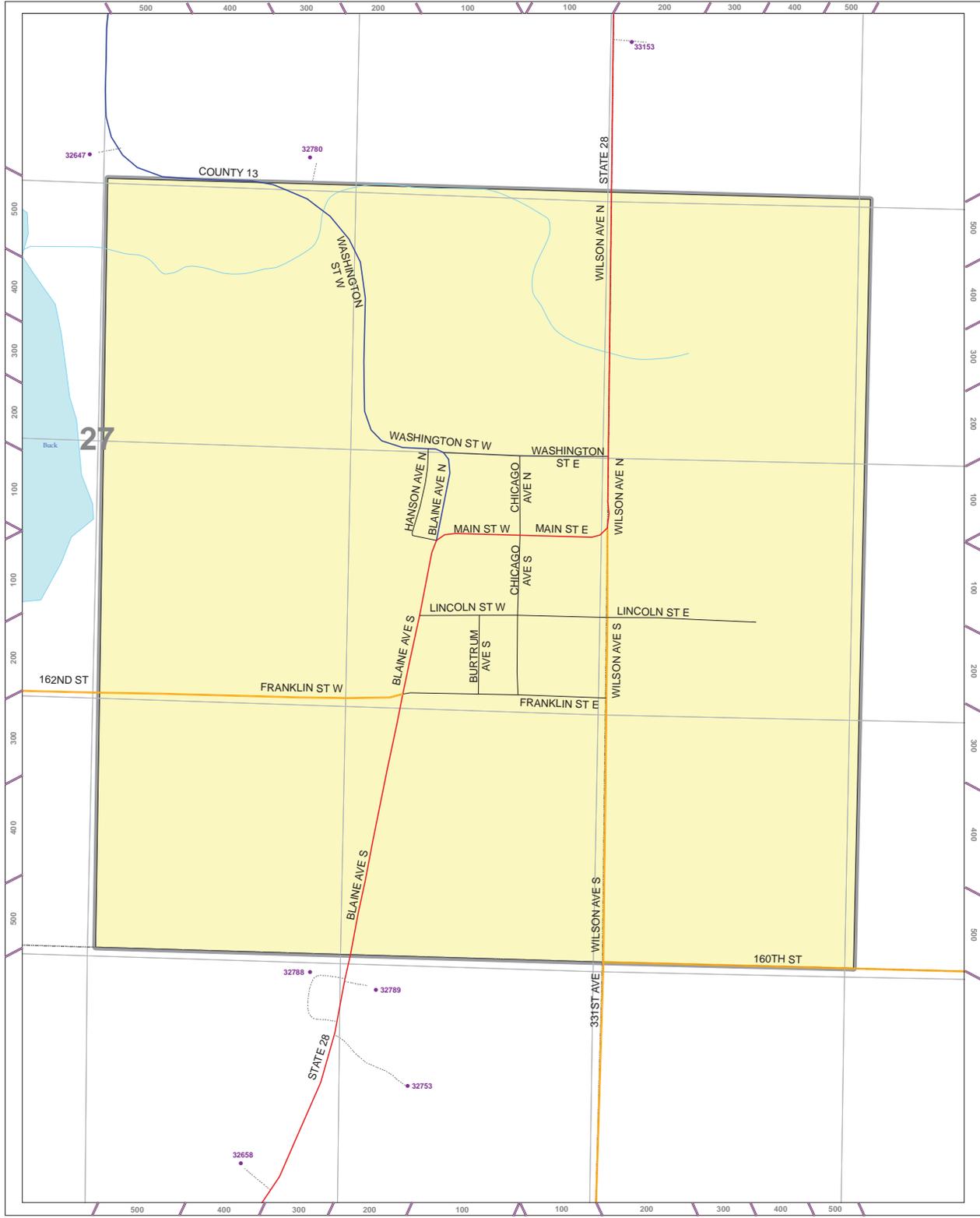
GIS & LAND SERVICES
 215 1ST AVE S - SUITE 202
 LONG PRAIRIE, MN 56347

phone: 320-732-4248
 fax: 320-732-6345
 email: toddgis@co.todd.mn.us
 web: www.co.todd.mn.us

May 2006

gis2data\g11\targets\map\cities\brov_road.mxd

CITY OF BURTRUM ROAD MAP TODD COUNTY, MINNESOTA



LEGEND

..... Driveways	● County addressed sites
— Interstate	— Section lines
— US-Paved	— PLS 40
— State Highway	— Streams
— County Road-Paved	— Lakes
— County Road-Gravel	— City
— CSAH-Paved	— Township
— CSAH-Gravel	
— TWP-Paved	
— TWP-Gravel	
— TWP-Min. Maint.	
— Municipal	
— Private Road	



MAP RESOURCES

Buildings, Driveways, & Roads: Todd County E911 Project
 Section lines & PLS 40: MNDOT State of Minnesota Basemap
 Lakes & Streams: Minnesota DNR & Todd County GIS

0 165 330 660 990 1,320
 Feet

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**TODD COUNTY
MINNESOTA**

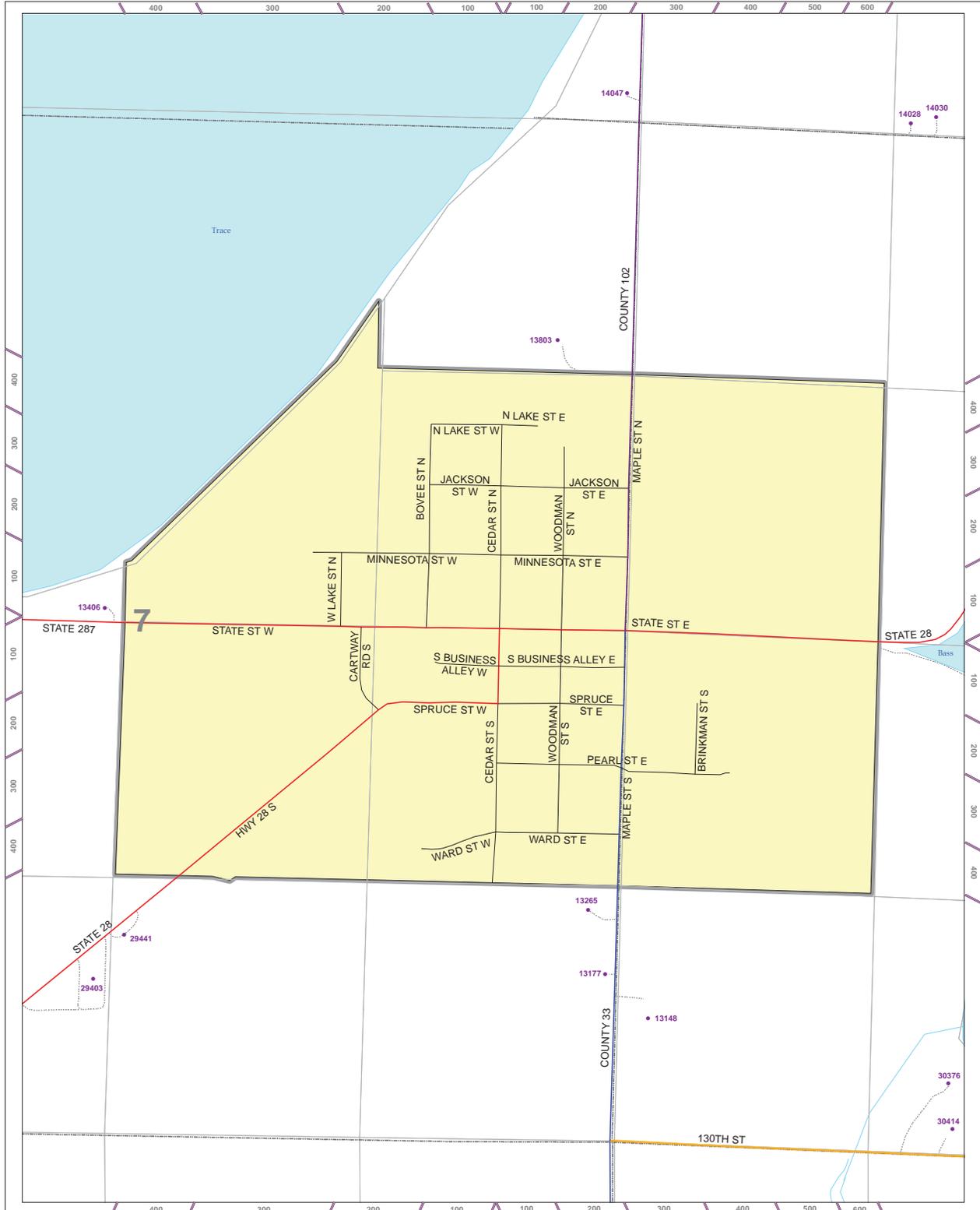
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LAND SERVICES DEPARTMENT**

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phone: 320-732-4248
 fax: 320-732-6345
 email: toddgis@co.todd.mn.us
 web: www.co.todd.mn.us/gis/gis.htm

June 2005

CITY OF GREY EAGLE ROAD MAP TODD COUNTY, MINNESOTA



LEGEND

..... Driveways Section lines
— Interstate	— PLS 40
— US-Paved	— Streams
— State Highway	— Lakes
— County Road-Paved	— City
— County Road-Gravel	— Township
— CSAH-Paved	
— CSAH-Gravel	
— TWP-Paved	
— TWP-Gravel	
— TWP-Min. Maint.	
— Municipal	
— Private Road	

● County addressed sites



MAP RESOURCES

Buildings, Driveways, & Roads: Todd County E911 Project
 Section lines & PLS 40: MNDOT State of Minnesota Basemap
 Lakes & Streams: Minnesota DNR & Todd County GIS

1:3,000

0 165 330 660 990 1,320 Feet

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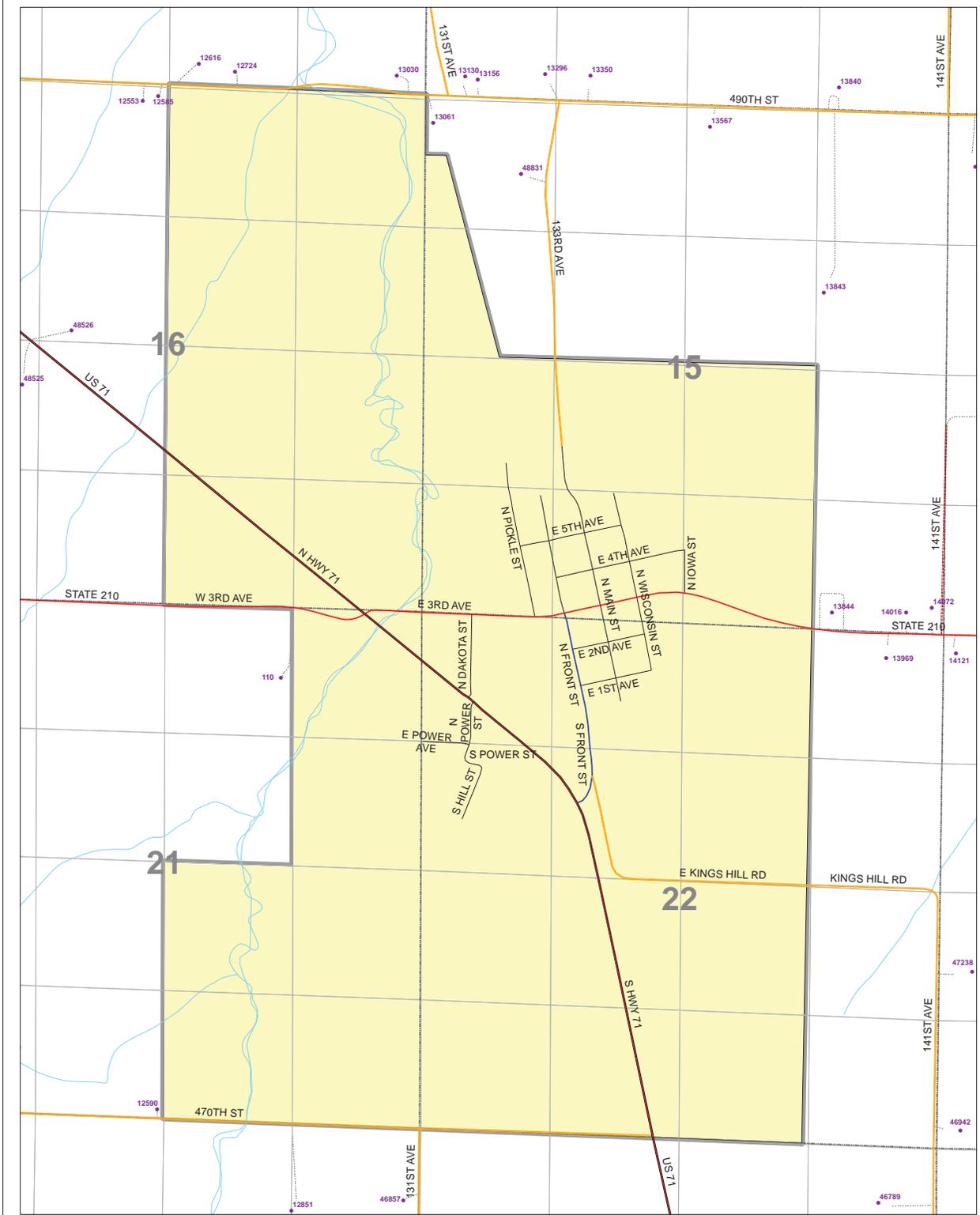
**TODD COUNTY
MINNESOTA**

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 215 1ST AVE S - SUITE 202
 LONG PRAIRIE, MN 56347

phone: 320-732-4248
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 web: www.co.todd.mn.us/gis/gis.htm

June 2005

CITY OF HEWITT ROAD MAP TODD COUNTY, MINNESOTA



LEGEND

- Driveways
- Interstate
- US-Paved
- State Highway
- County Road-Paved
- County Road-Gravel
- CSAN-Paved
- CSAN-Gravel
- TWP-Paved
- TWP-Gravel
- TWP-Min. Maint.
- Municipal
- Private Road
- County address sites
- Section lines
- PLS 40
- Streams
- Lakes
- City
- Township



MAP RESOURCES

Buildings, Driveways, & Roads: Todd County E911 Project
 Section lines & PLS 40: MNDOT State of Minnesota Basemap
 Lakes & Streams: Minnesota DNR & Todd County GIS

1:6,000



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TODD COUNTY
 WHERE THE FINEST MEETS THE PRAIRIE
 EST. 1855

GIS & LAND SERVICES DEPT
 215 1ST AVE S - SUITE 202
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 fax: 320-732-6345
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 web: www.co.todd.mn.us

April 2006

CITY OF LONG PRAIRIE

TODD COUNTY, MINNESOTA

TODD COUNTY TODD COUNTY GIS & LAND SERVICES
 215 First Avenue South - Suite 202
 Long Prairie, MN 56347
 phone: 320-732-4248
 email address: toddgis@co.todd.mn.us

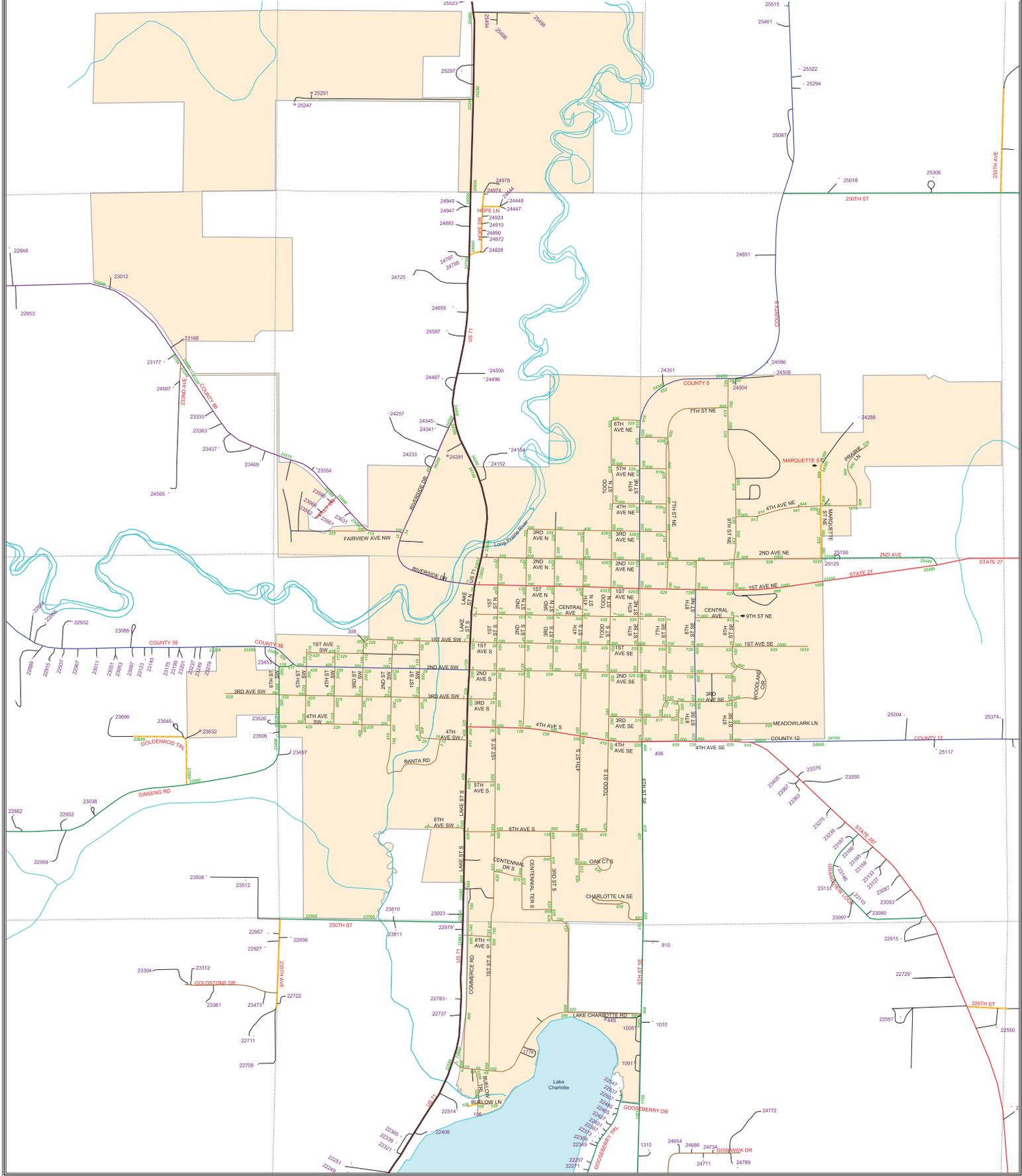
• Building Sites
 • Buildings Addressed for City
 Road Network
 - Interstate
 - US Road
 - State Road
 - County Road Paved
 - County Road Gravel
 - CS&M Paved
 - CS&M Gravel
 - TWP Paved
 - TWP Gravel
 - TWP Main Maint.
 - Municipal
 - Private Road
 - Railroads
 - Streams
 - Section Lines
 - Lakes
 - Municipality

Map Resources
 Buildings, Driveways, & Road Network
 Todd County GIS Project
 Section Lines
 MNDOT State of Minnesota Basemap
 Lakes & Streams
 Minnesota DNR & Todd County GIS Dept

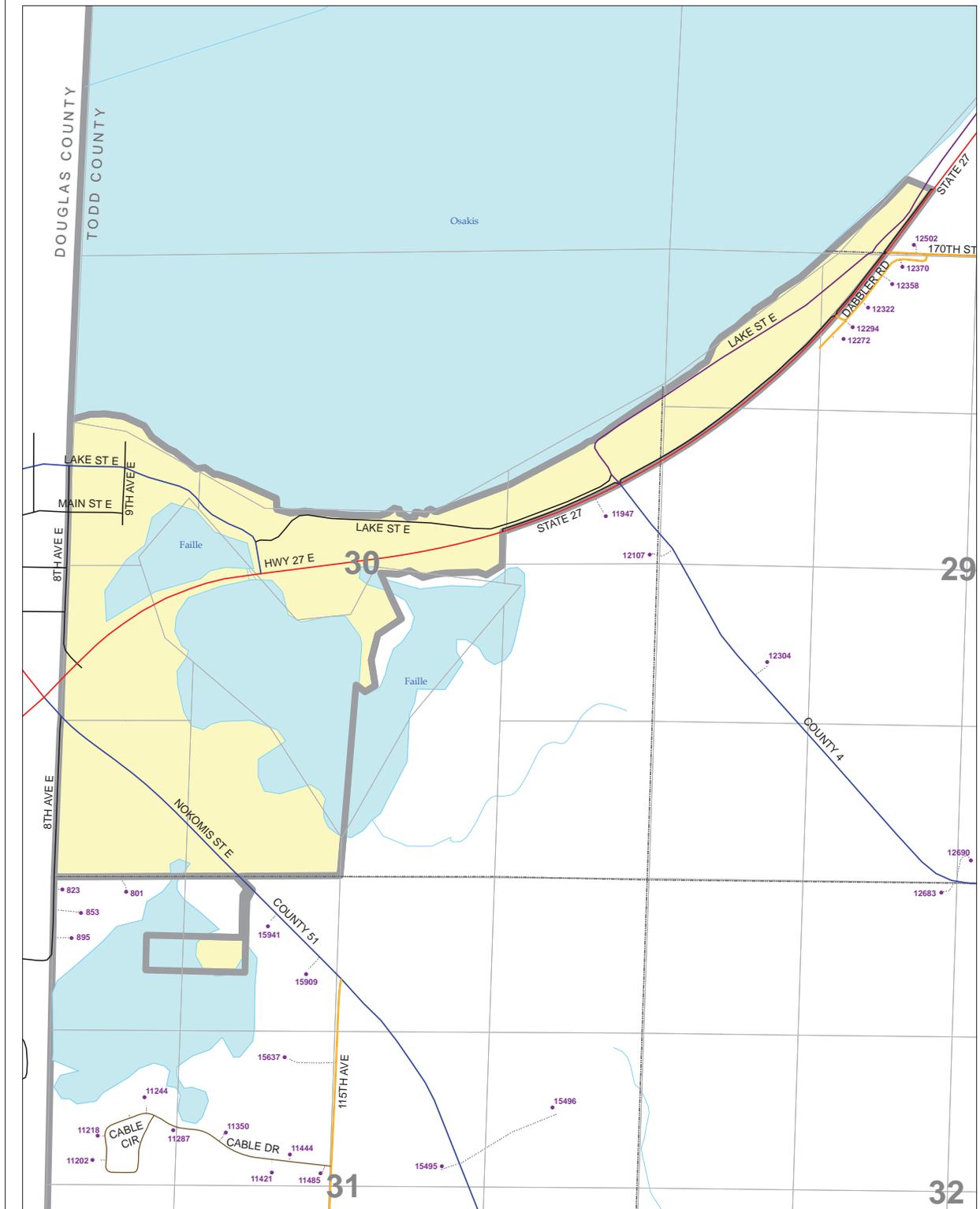
Each road segment labelled with its
 from - to range of address numbers.

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printed 10/2005



CITY OF OSAKIS ROAD MAP TODD COUNTY, MINNESOTA



LEGEND

..... Driveways	● County address sites
— Interstate	— Section lines
— US-Paved	— PLS 40
— State Highway	— Streams
— County Road-Paved	— Lakes
— County Road-Gravel	— City
— CSAM-Paved	— Township
— CSAM-Gravel	
— TWP-Paved	
— TWP-Gravel	
— TWP-Min. Maint.	
— Municipal	
— Private Road	



MAP RESOURCES

Buildings, Driveways, & Roads: Todd County E911 Project
 Section lines & PLS 40: MNDOT State of Minnesota Basemap
 Lakes & Streams: Minnesota DNR & Todd County GIS

1:5,000

0 165 330 660 990 1,320 1,650 1,980
 Feet

TODD COUNTY
 WHERE THE FOREST MEETS THE PRAIRIE
 EST. 1835

GIS & LAND SERVICES DEPT

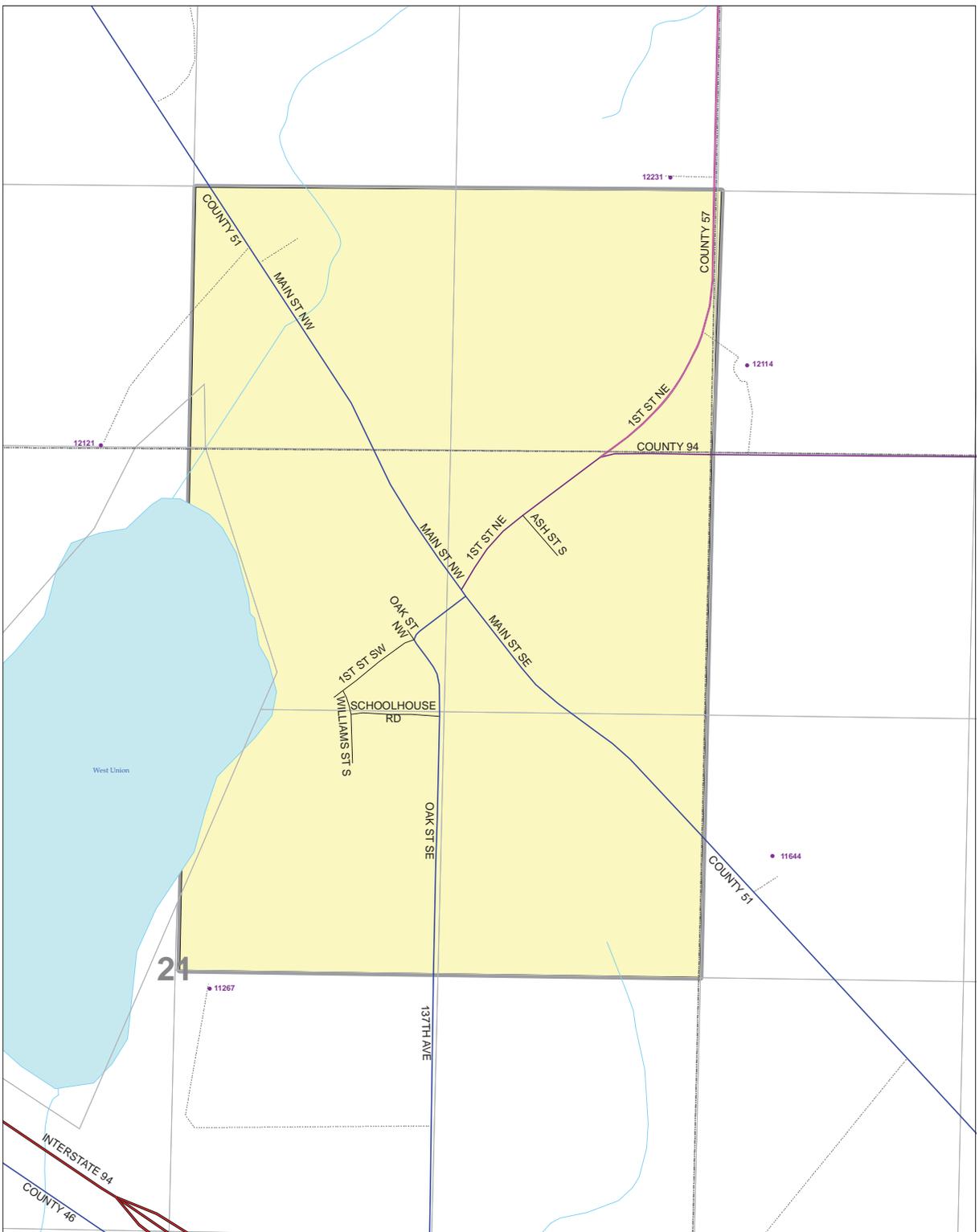
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phone: 320-732-4248
 fax: 320-732-6345
 email: toddgis@co.todd.mn.us
 web: www.co.todd.mn.us

October 2006

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CITY OF WEST UNION ROAD MAP TODD COUNTY, MINNESOTA



LEGEND

..... Driveways Section lines
— Interstate	— PLS 40
— US-Paved	— Streams
— State Highway	— Lakes
— County Road-Paved	— City
— County Road-Gravel	— Township
— CSAH-Paved	
— CSAH-Gravel	
— TWP-Paved	
— TWP-Gravel	
— TWP-Min. Maint.	
— Municipal	
— Private Road	
● County addressed sites	



MAP RESOURCES

Buildings, Driveways, & Roads: Todd County E911 Project
 Section lines & PLS 40: MNDOT State of Minnesota Basemap
 Lakes & Streams: Minnesota DNR & Todd County GIS

1:3,000

0 165 330 660 990 1,320
Feet

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**TODD COUNTY
MINNESOTA**

**TODD COUNTY GIS &
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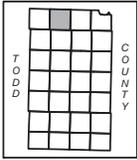
215 1ST AVE S - SUITE 202
LONG PRAIRIE, MN 56347

phone: 320-732-4248
 fax: 320-732-4345
 email: toddgis@co.todd.mn.us
 web: www.co.todd.mn.us/gis/gis.htm

June 2005

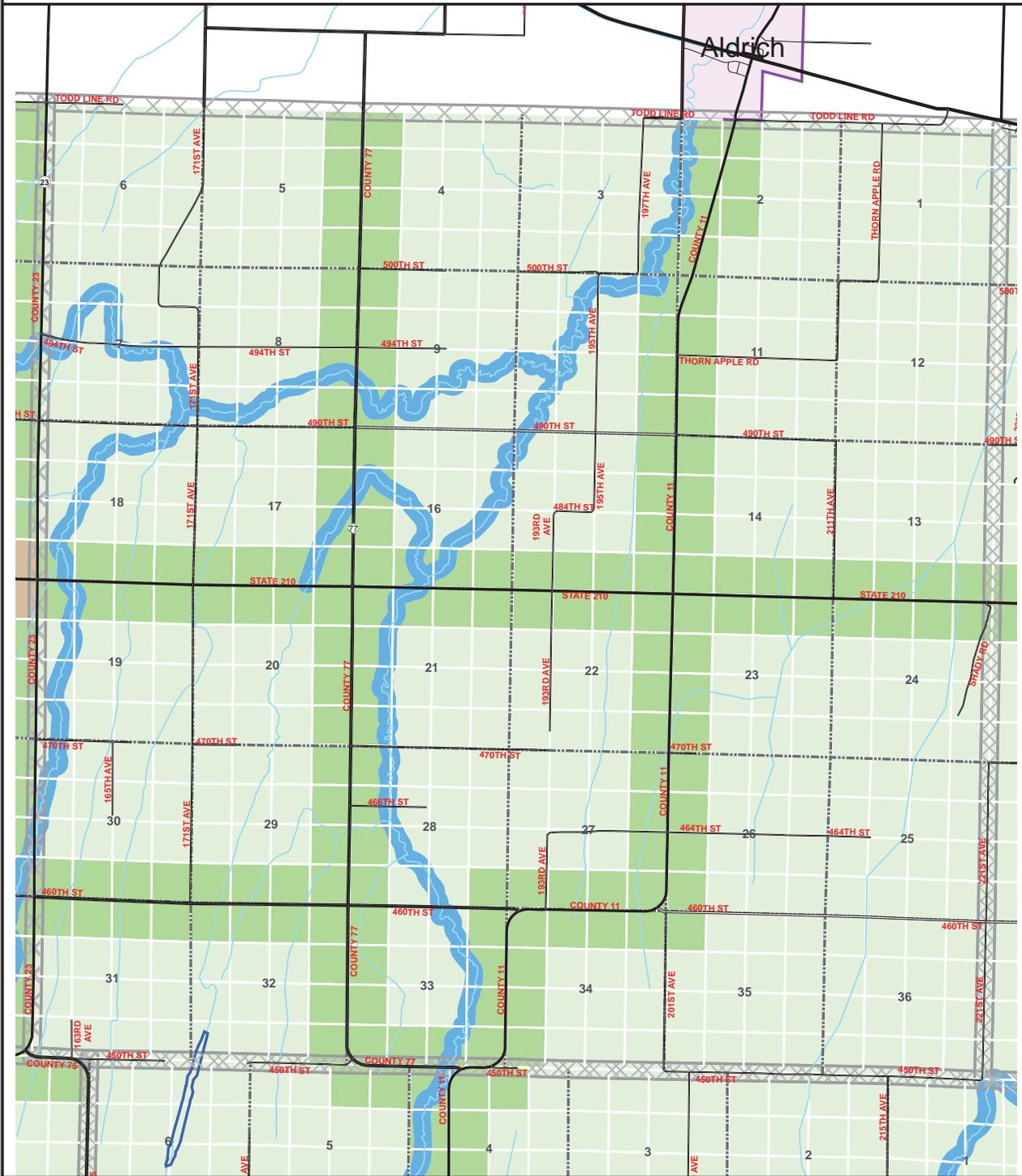
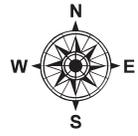
Appendix V

Township Maps



TOWNSHIP NAME: BARTLETT T133N R34 W

TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Townsite	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
(AF-2) Agriculture/Forestry - 2	(LMI) Limited Manufacturing/Industry	Recreational Development
(R-10) Residential - 10	(S) Shoreland	Section Line
(R-2) Residential - 2	(M) Municipality	City Boundary
(UG) Urban Growth	(RDL) Recreational Development Limited	Township Boundary

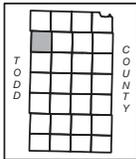
Zoning information provided by Todd County Planning & Zoning Department.

1:40,000

TODD COUNTY
WHERE THE PRAIRIE MEETS THE PRAIRIE
EST. 1855

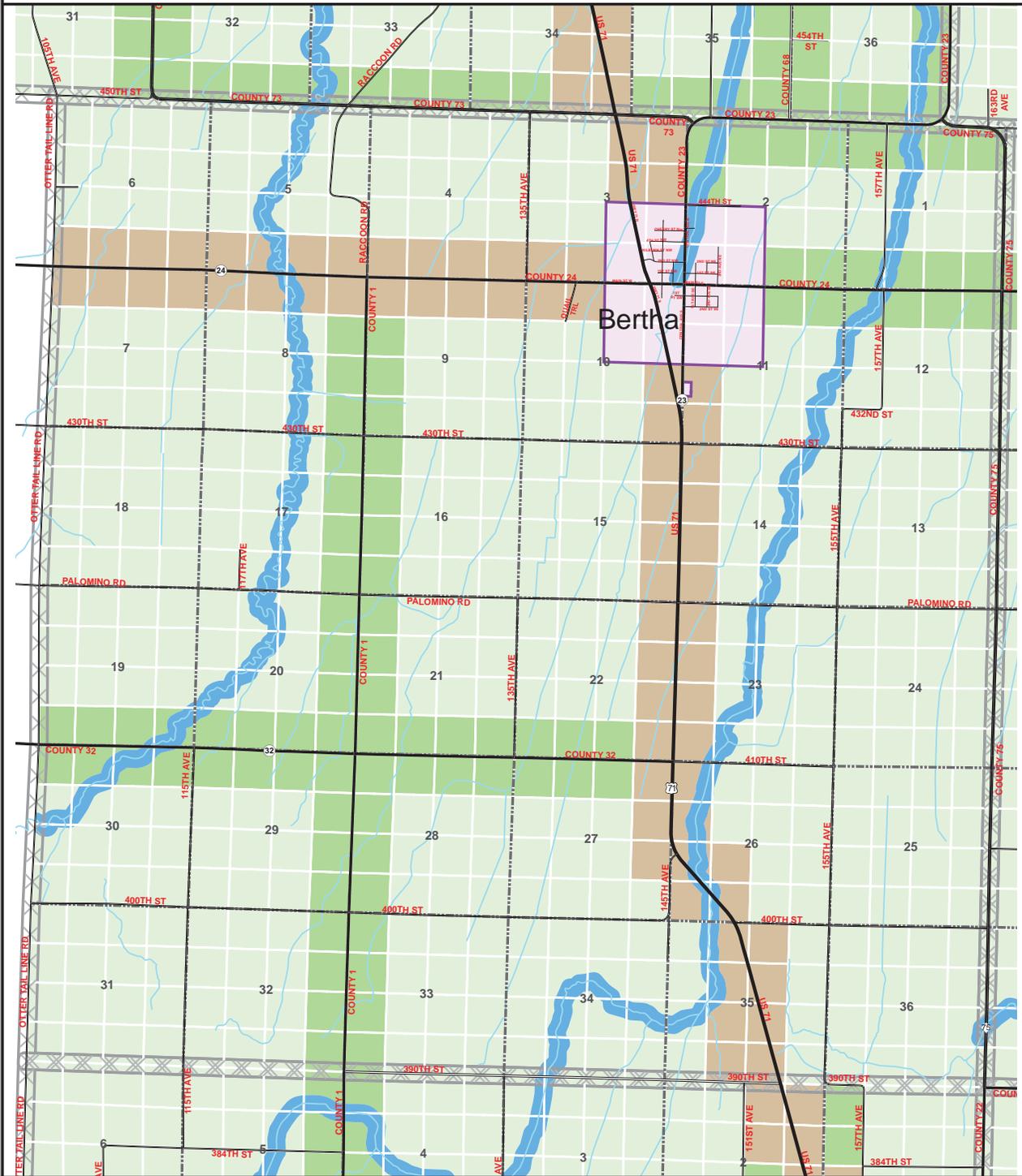
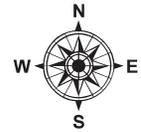
GIS & Land Services
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Long Prairie, MN 56347
(Phone) 320-732-6245
(Fax) 320-732-6345
www.co.todd.mn.us/gis/gis.htm

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TOWNSHIP NAME: BERTHA T132N R35 W

TODD COUNTY ZONING



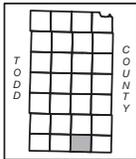
- Legend**
- | | | |
|---|--|--------------------------|
| (AF-1) Agriculture/Forestry - 1 | (RT) Rural Townsite | General Development |
| (AF-1-OL) Agriculture/Forestry - 1 - Outlot | (C) Commercial | Natural Environment |
| (AF-2) Agriculture/Forestry - 2 | (LMI) Limited Manufacturing/Industry | Recreational Development |
| (R-10) Residential - 10 | (S) Shoreland | Section Line |
| (R-2) Residential - 2 | (M) Municipality | City Boundary |
| (UG) Urban Growth | (RDL) Recreational Development Limited | Township Boundary |

Zoning information provided by Todd County Planning & Zoning Department.

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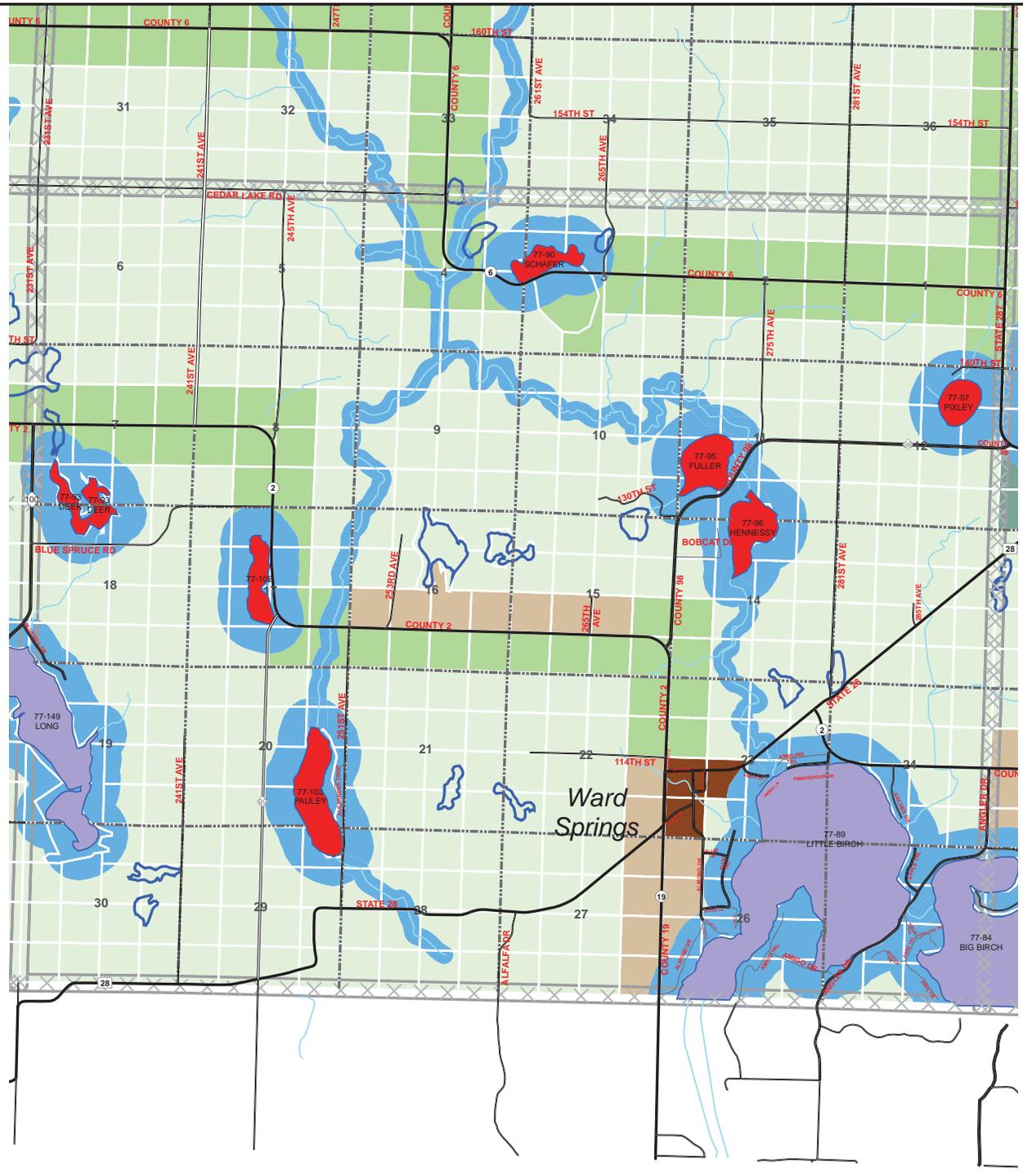
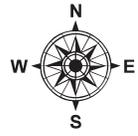
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(fax) 320-732-6345
www.co.todd.mn.us/gis/plan.htm

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TOWNSHIP NAME: BIRCHDALE T127N R33 W

TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Township	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
(AF-2) Agriculture/Forestry - 2	(LMI) Limited Manufacturing/Industry	Recreational Development
(R-10) Residential - 10	(S) Shoreland	Section Line
(R-2) Residential - 2	(M) Municipality	City Boundary
(UG) Urban Growth	(RDL) Recreational Development Limited	Township Boundary

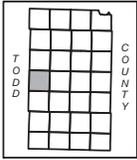
Zoning information provided by Todd County Planning & Zoning Department.

1:40,000

TODD COUNTY
WHERE THE PRAIRIE MEETS THE PRAIRIE
EST. 1855

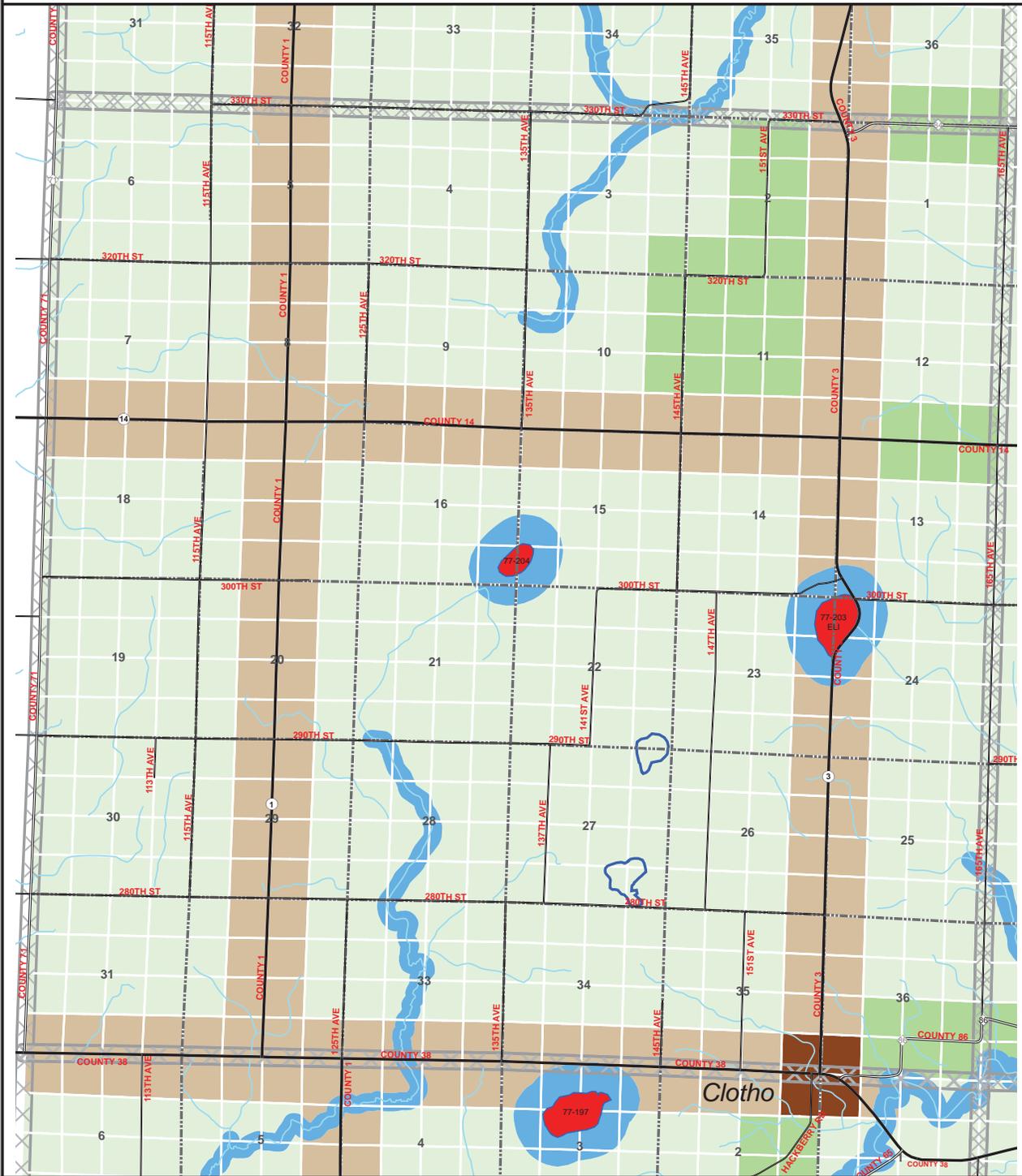
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Long Prairie, MN 56347
(phone) 320-732-6245
(fax) 320-732-6345
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TOWNSHIP NAME: BURLEENE T130N R35 W

TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Township	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
(AF-2) Agriculture/Forestry - 2	(LMI) Limited Manufacturing/Industry	Recreational Development
(R-10) Residential - 10	(S) Shoreland	Section Line
(R-2) Residential - 2	(M) Municipality	City Boundary
(UG) Urban Growth	(RDL) Recreational Development Limited	Township Boundary

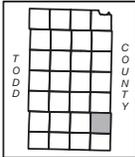
Zoning information provided by Todd County Planning & Zoning Department.

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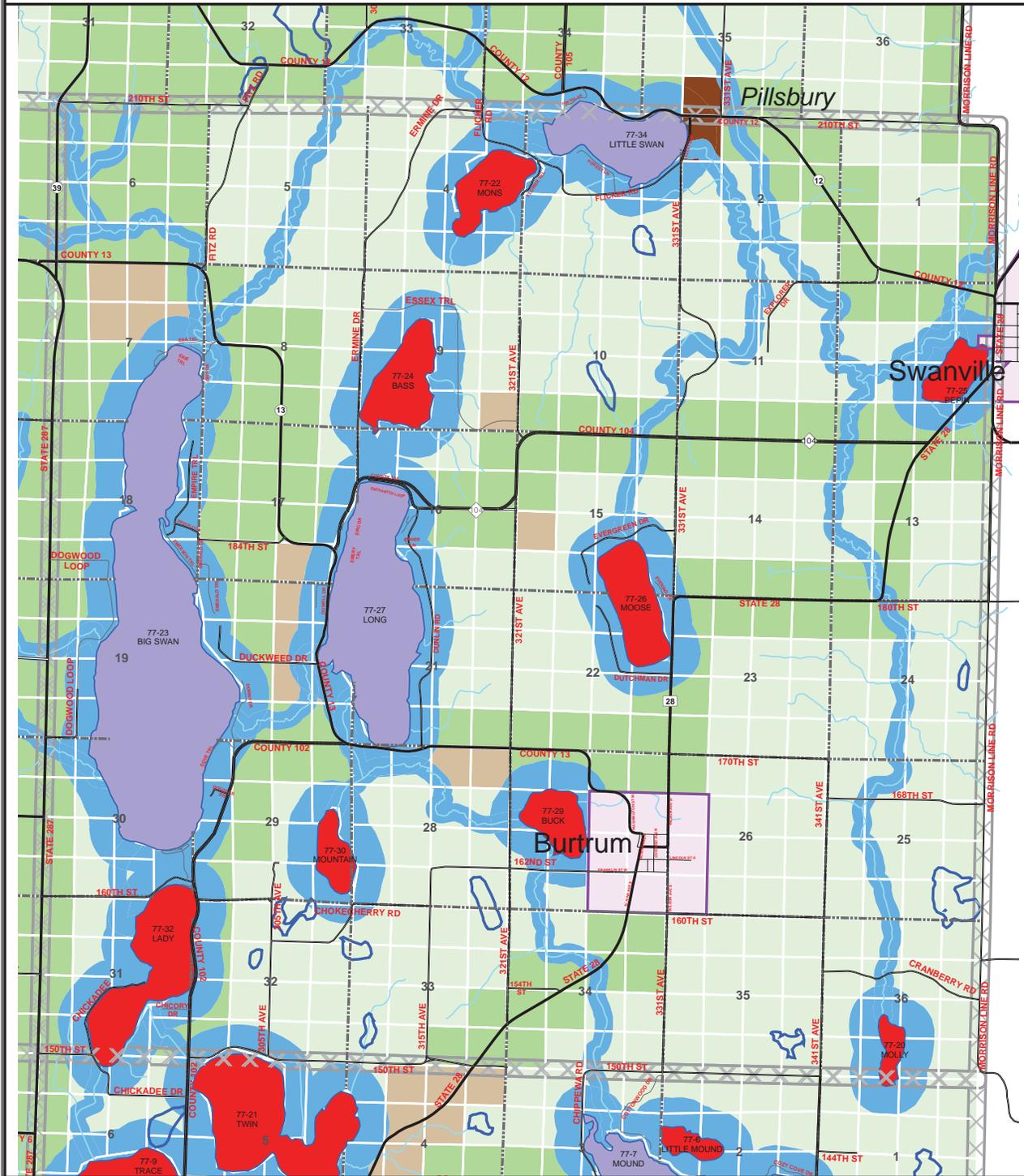
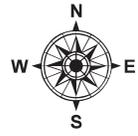
TODD COUNTY
WHERE THE PLEASANT MEETS THE PRAIRIE
EST. 1855

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Long Prairie, MN 56347
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TOWNSHIP NAME: BURNHAMVILLE T128N R32 W
 TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Township	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
(AF-2) Agriculture/Forestry - 2	(LMI) Limited Manufacturing/Industry	Recreational Development
(R-10) Residential - 10	(S) Shoreland	Section Line
(R-2) Residential - 2	(M) Municipality	City Boundary
(UG) Urban Growth	(RDL) Recreational Development Limited	Township Boundary

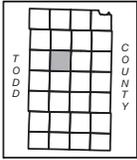
Zoning information provided by Todd County Planning & Zoning Department.

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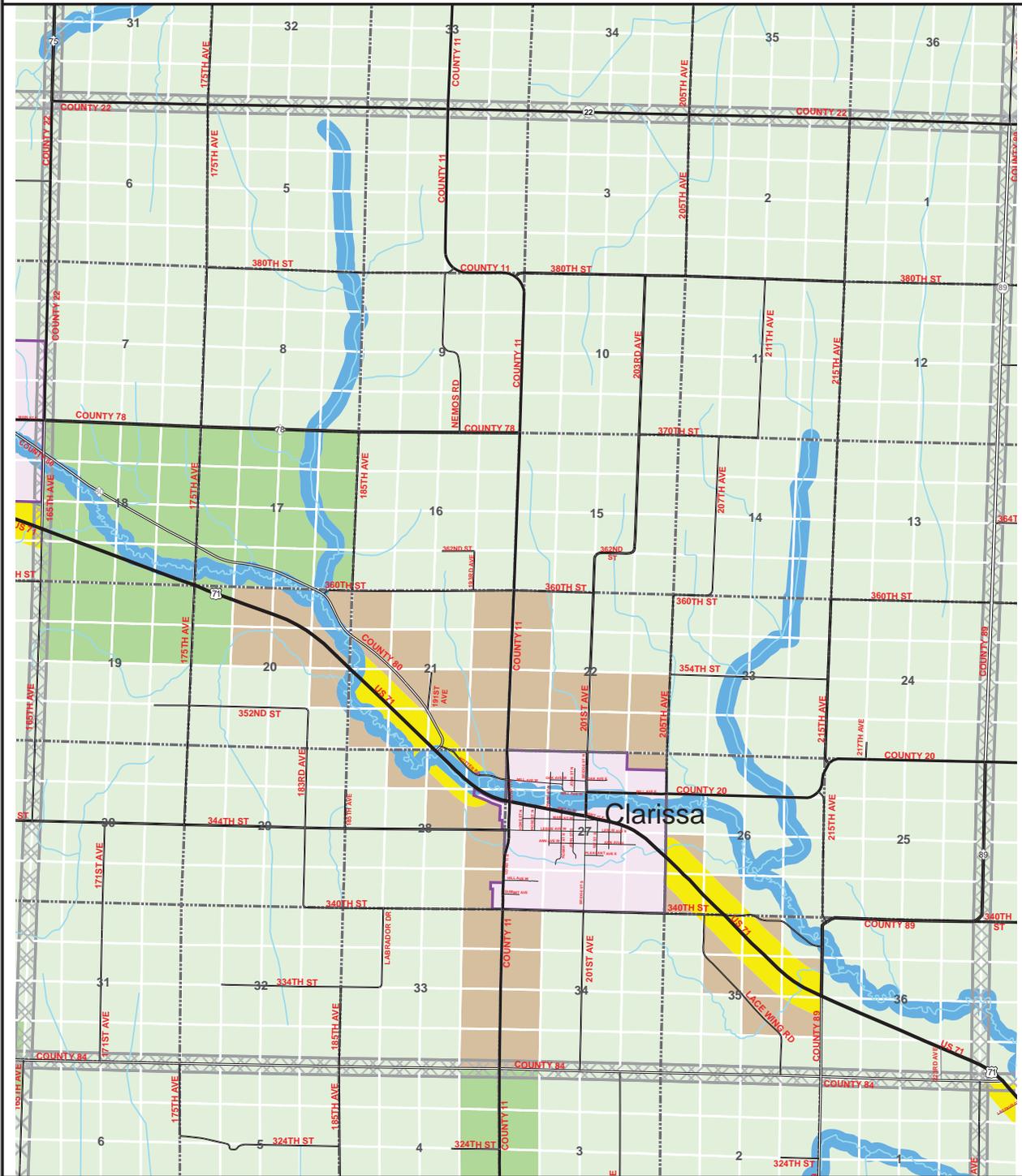
TODD COUNTY
 WHERE THE PRAIRIE MEETS THE PRAIRIE
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 Long Prairie, MN 56347
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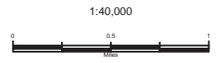


TOWNSHIP NAME: EAGLE VALLEY T131N R34 W
 TODD COUNTY ZONING



- Legend**
- (AF-1) Agriculture/Forestry - 1
 - (RT) Rural Townsite
 - General Development
 - (AF-1-OL) Agriculture/Forestry - 1 - Outlot
 - (C) Commercial
 - Natural Environment
 - (AF-2) Agriculture/Forestry - 2
 - (LMI) Limited Manufacturing/Industry
 - Recreational Development
 - (R-10) Residential - 10
 - (S) Shoreland
 - Section Line
 - (R-2) Residential - 2
 - (M) Municipality
 - City Boundary
 - (UG) Urban Growth
 - (RDL) Recreational Development Limited
 - Township Boundary

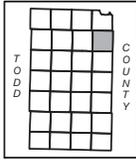
Zoning information provided by Todd County Planning & Zoning Department.



TODD COUNTY
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 EST. 1855

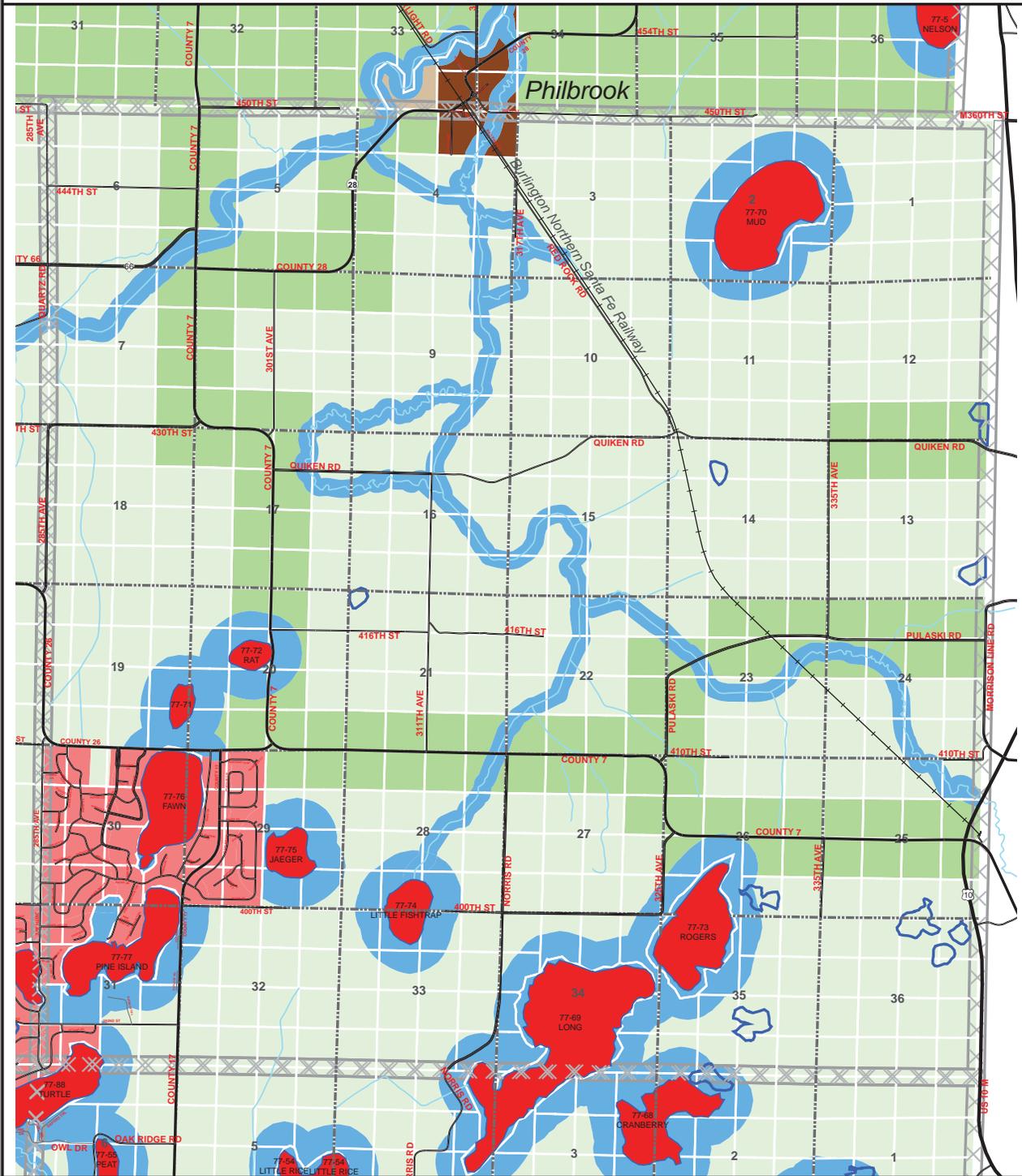
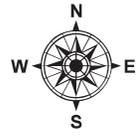
GIS & Land Services
 215 1st Ave SE - Suite 202
 Long Prairie, MN 56347
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TOWNSHIP NAME: FAWN LAKE T132N R32 W

TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Township	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
(AF-2) Agriculture/Forestry - 2	(LMI) Limited Manufacturing/Industry	Recreational Development
(R-10) Residential - 10	(S) Shoreland	Section Line
(R-2) Residential - 2	(M) Municipality	City Boundary
(UG) Urban Growth	(RDL) Recreational Development Limited	Township Boundary

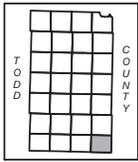
Zoning information provided by Todd County Planning & Zoning Department.

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TODD COUNTY
 WHERE THE PRAIRIE MEETS THE PRAIRIE
 EST. 1855

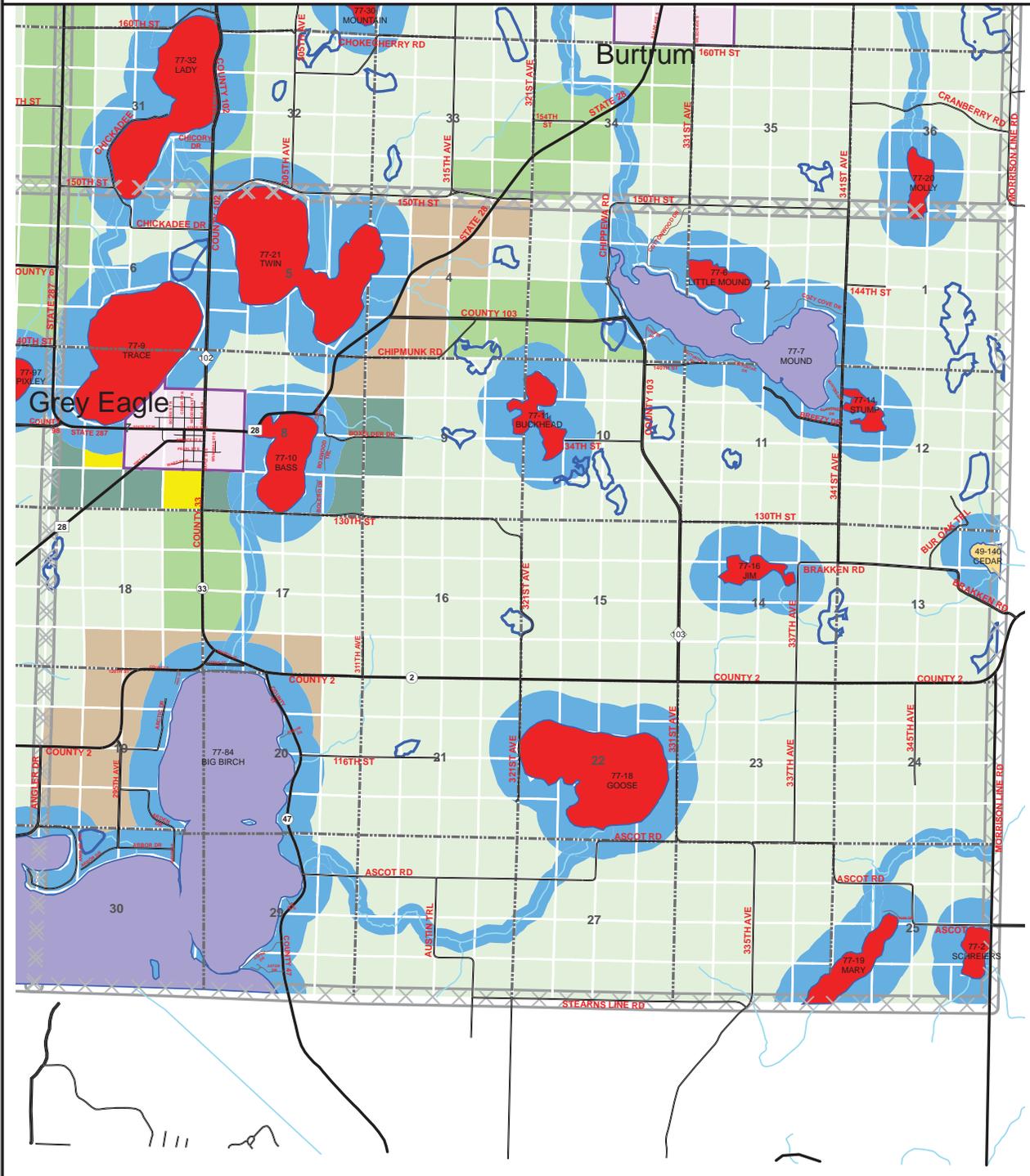
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TOWNSHIP NAME: GREY EAGLE T127N R32 W

TODD COUNTY ZONING



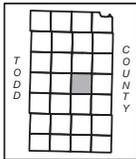
Legend					
	(AF-1) Agriculture/Forestry - 1		(RT) Rural Township		General Development
	(AF-1-OL) Agriculture/Forestry - 1 - Outlot		(C) Commercial		Natural Environment
	(AF-2) Agriculture/Forestry - 2		(LMI) Limited Manufacturing/Industry		Recreational Development
	(R-10) Residential - 10		(S) Shoreland		Section Line
	(R-2) Residential - 2		(M) Municipality		City Boundary
	(UG) Urban Growth		(RDL) Recreational Development Limited		Township Boundary

Zoning information provided by Todd County Planning & Zoning Department.

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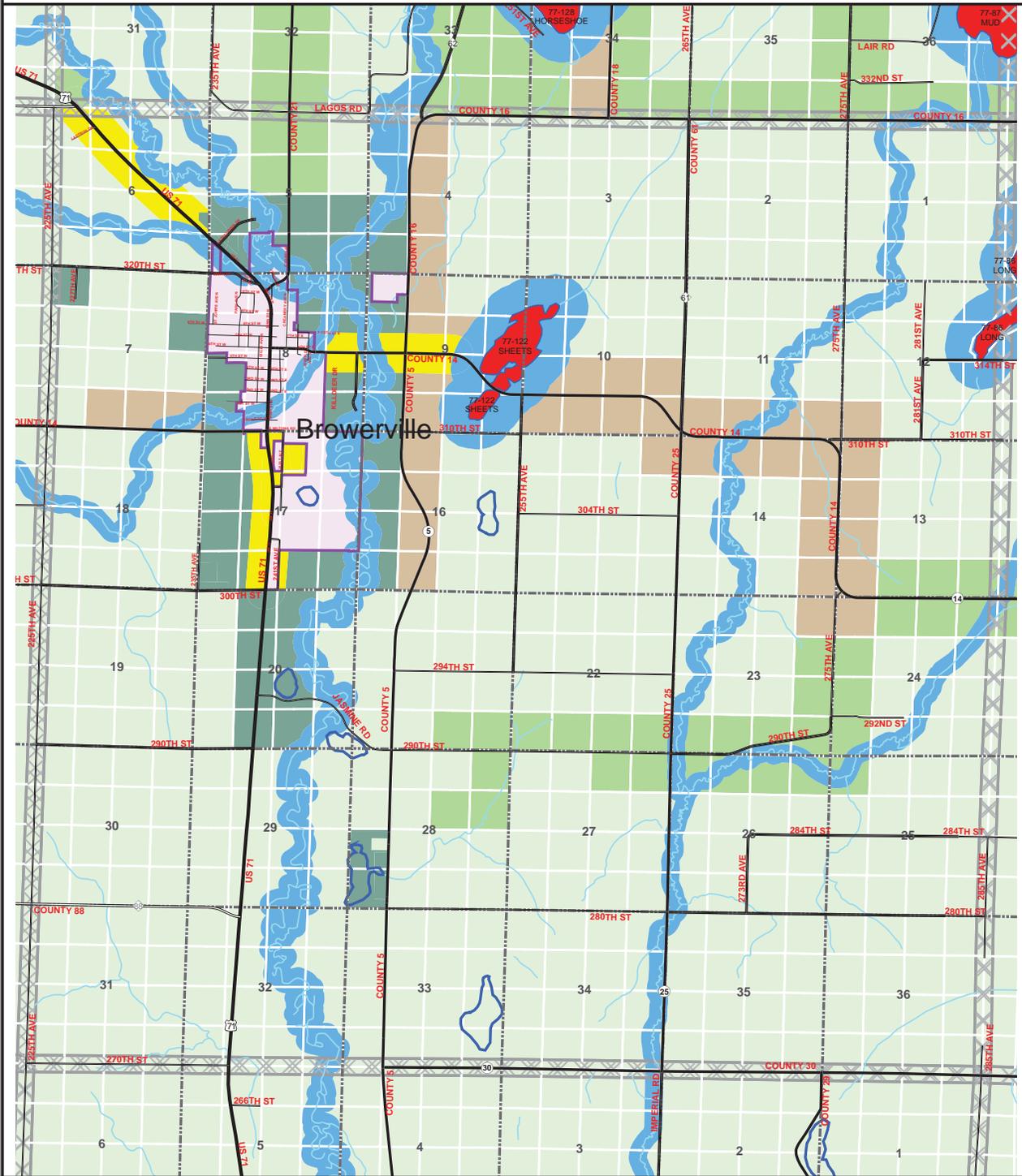
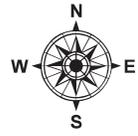
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TOWNSHIP NAME: HARTFORD T130N R33 W

TODD COUNTY ZONING



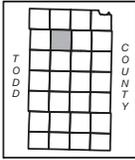
Zoning information provided by Todd County Planning & Zoning Department.

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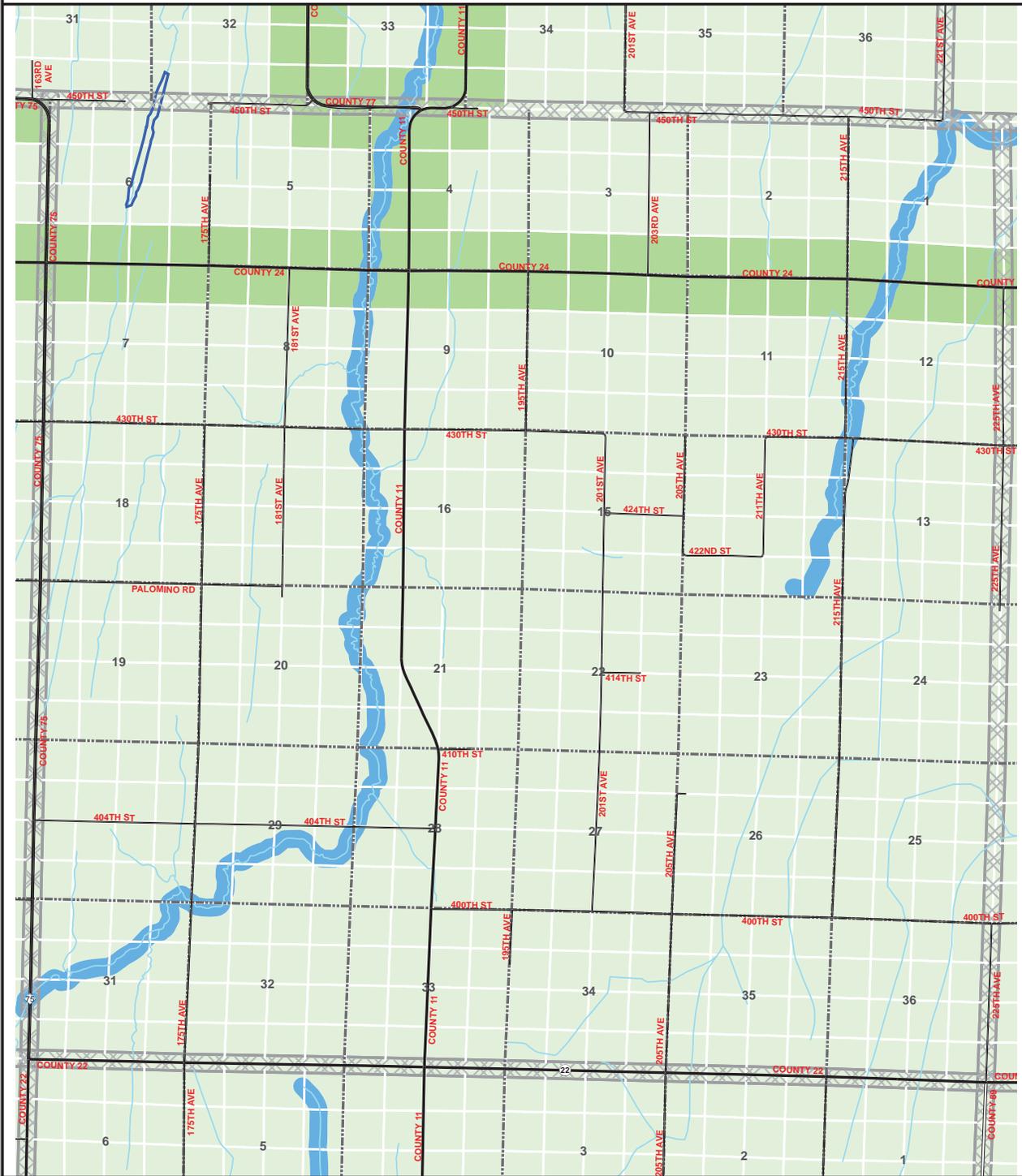
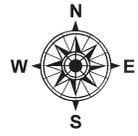
TODD COUNTY
WHERE THE FIELDS MEET THE PRAIRIE
EST. 1855

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TOWNSHIP NAME: GERMANIA T132N R34 W
 TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Township	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
(AF-2) Agriculture/Forestry - 2	(LMI) Limited Manufacturing/Industry	Recreational Development
(R-10) Residential - 10	(S) Shoreland	Section Line
(R-2) Residential - 2	(M) Municipality	City Boundary
(UG) Urban Growth	(RDL) Recreational Development Limited	Township Boundary

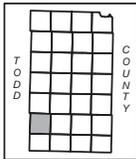
Zoning information provided by Todd County Planning & Zoning Department.

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TODD COUNTY
 WHERE THE PRAIRIE MEETS THE PRAIRIE
 EST. 1855

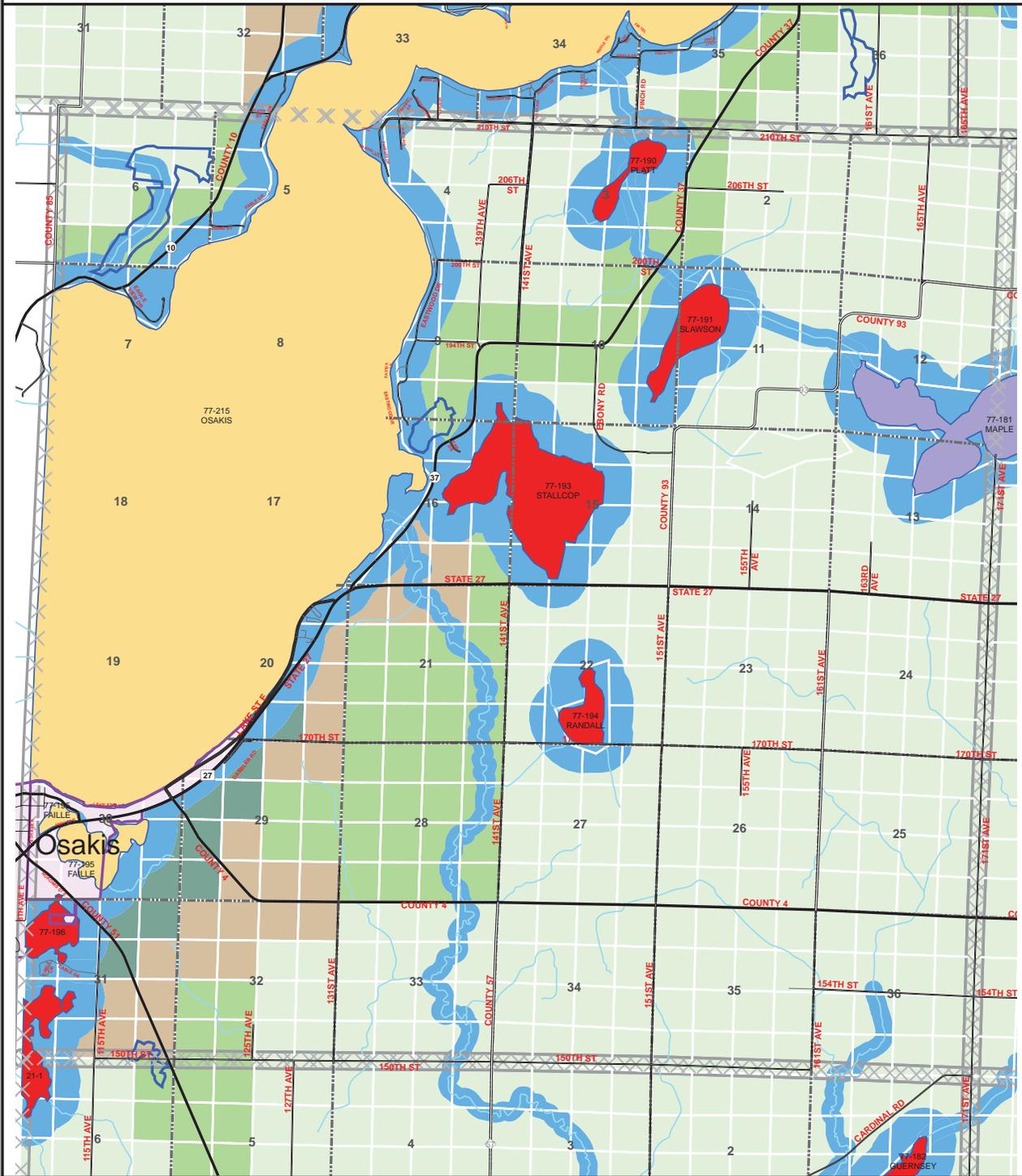
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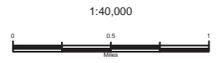
TOWNSHIP NAME: GORDON T128N R35 W

TODD COUNTY ZONING



Legend					
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	(AF-1-OL) Agriculture/Forestry - 1 - Outlot		(C) Commercial		Natural Environment
	(AF-2) Agriculture/Forestry - 2		(LMI) Limited Manufacturing/Industry		Recreational Development
	(R-10) Residential - 10		(S) Shoreland		Section Line
	(R-2) Residential - 2		(M) Municipality		City Boundary
	(UG) Urban Growth		(RDL) Recreational Development Limited		Township Boundary

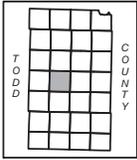
Zoning information provided by Todd County Planning & Zoning Department.



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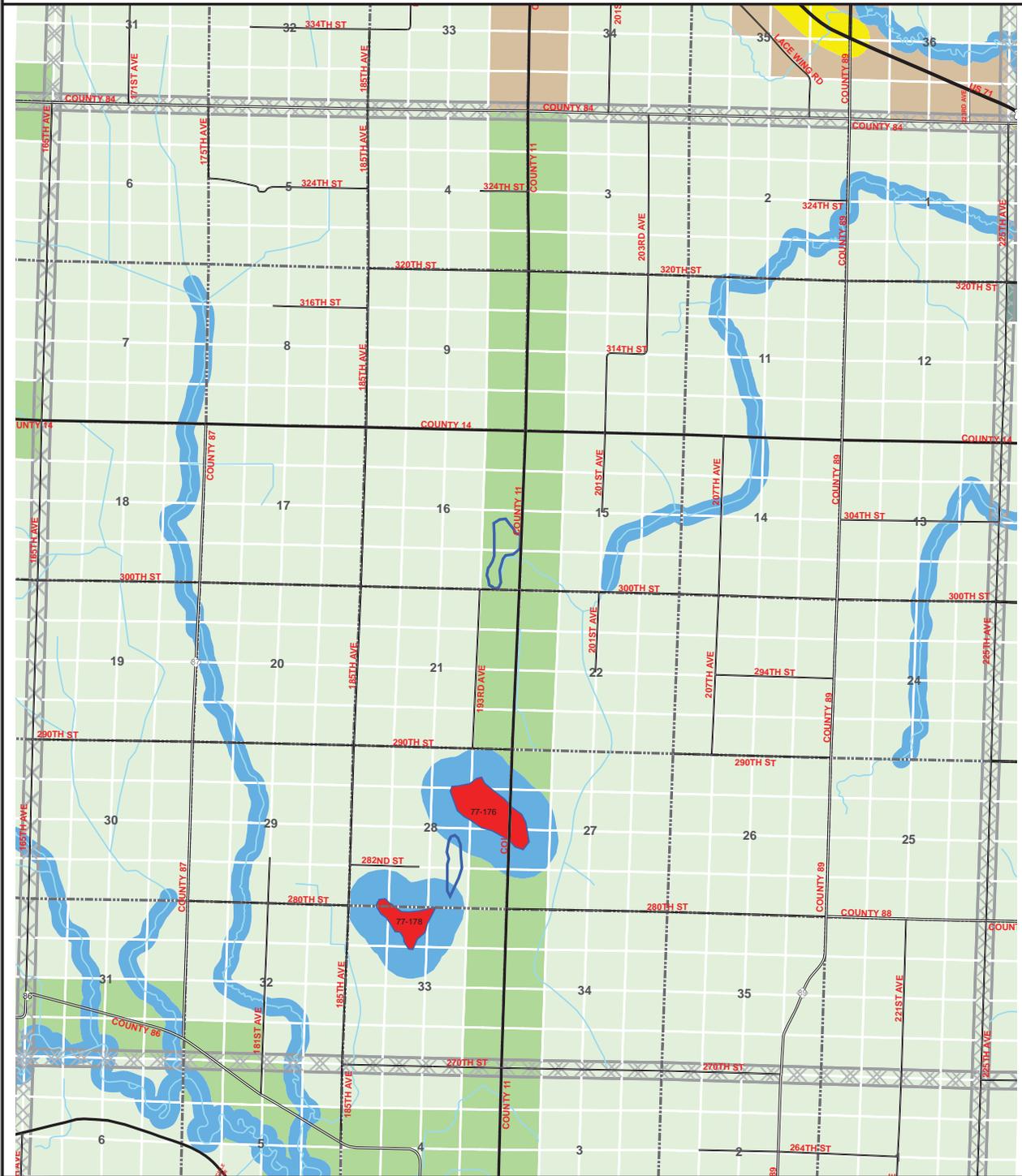
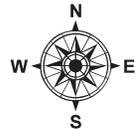
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TOWNSHIP NAME: IONA T130N R34 W

TODD COUNTY ZONING



- Legend**
- | | | |
|---|--|--------------------------|
| (AF-1) Agriculture/Forestry - 1 | (RT) Rural Township | General Development |
| (AF-1-OL) Agriculture/Forestry - 1 - Outlot | (C) Commercial | Natural Environment |
| (AF-2) Agriculture/Forestry - 2 | (LMI) Limited Manufacturing/Industry | Recreational Development |
| (R-10) Residential - 10 | (S) Shoreland | Section Line |
| (R-2) Residential - 2 | (M) Municipality | City Boundary |
| (UG) Urban Growth | (RDL) Recreational Development Limited | Township Boundary |

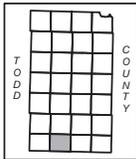
Zoning information provided by Todd County Planning & Zoning Department.

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TODD COUNTY
WHERE THE PRAIRIE MEETS THE PRAIRIE
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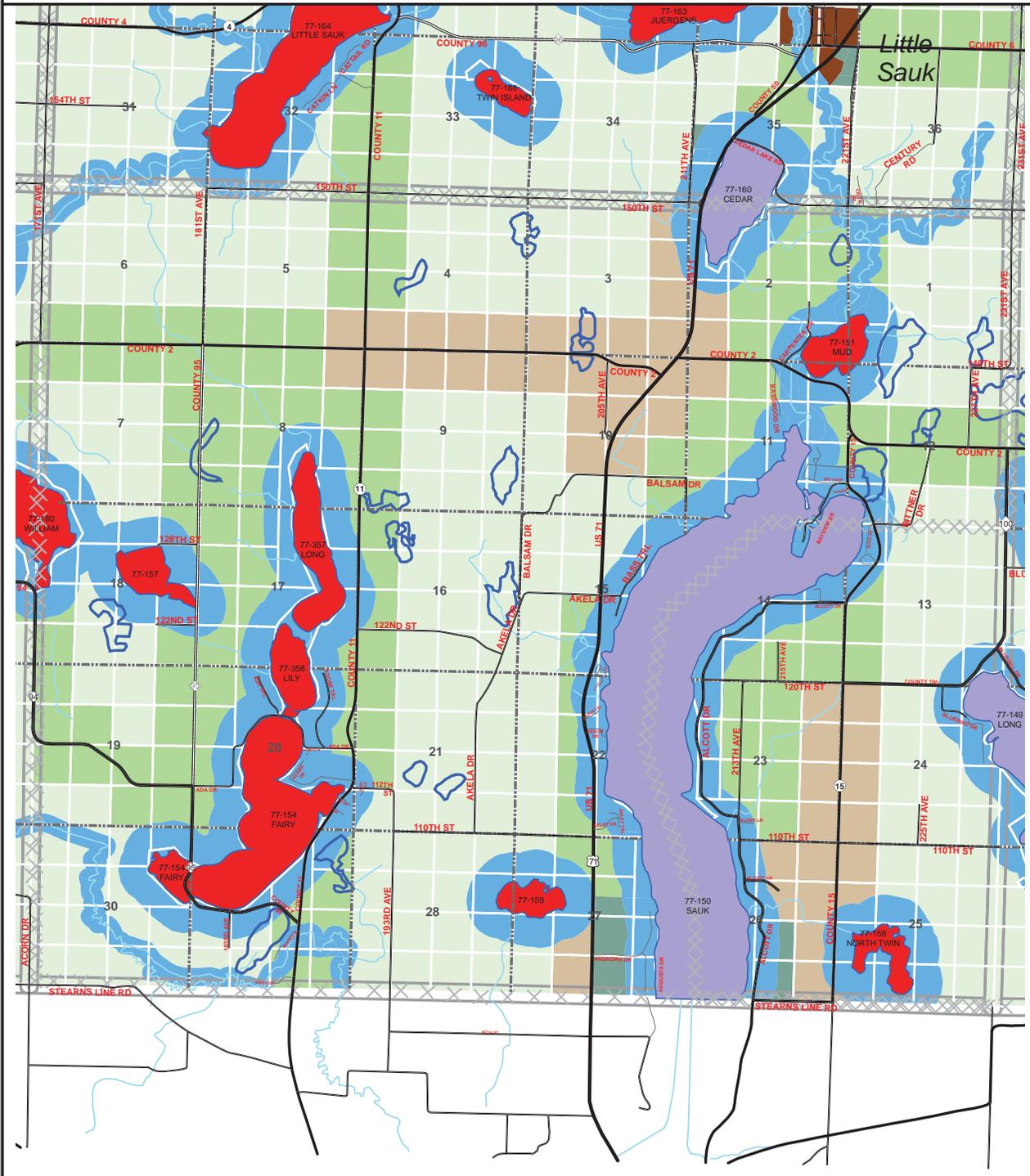
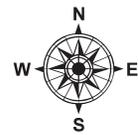
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TOWNSHIP NAME: KANDOTA T127N R34 W

TODD COUNTY ZONING



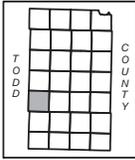
Zoning information provided by Todd County Planning & Zoning Department.

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TODD COUNTY
WHERE THE PEARL OF MINNESOTA BEGINS
EST. 1855

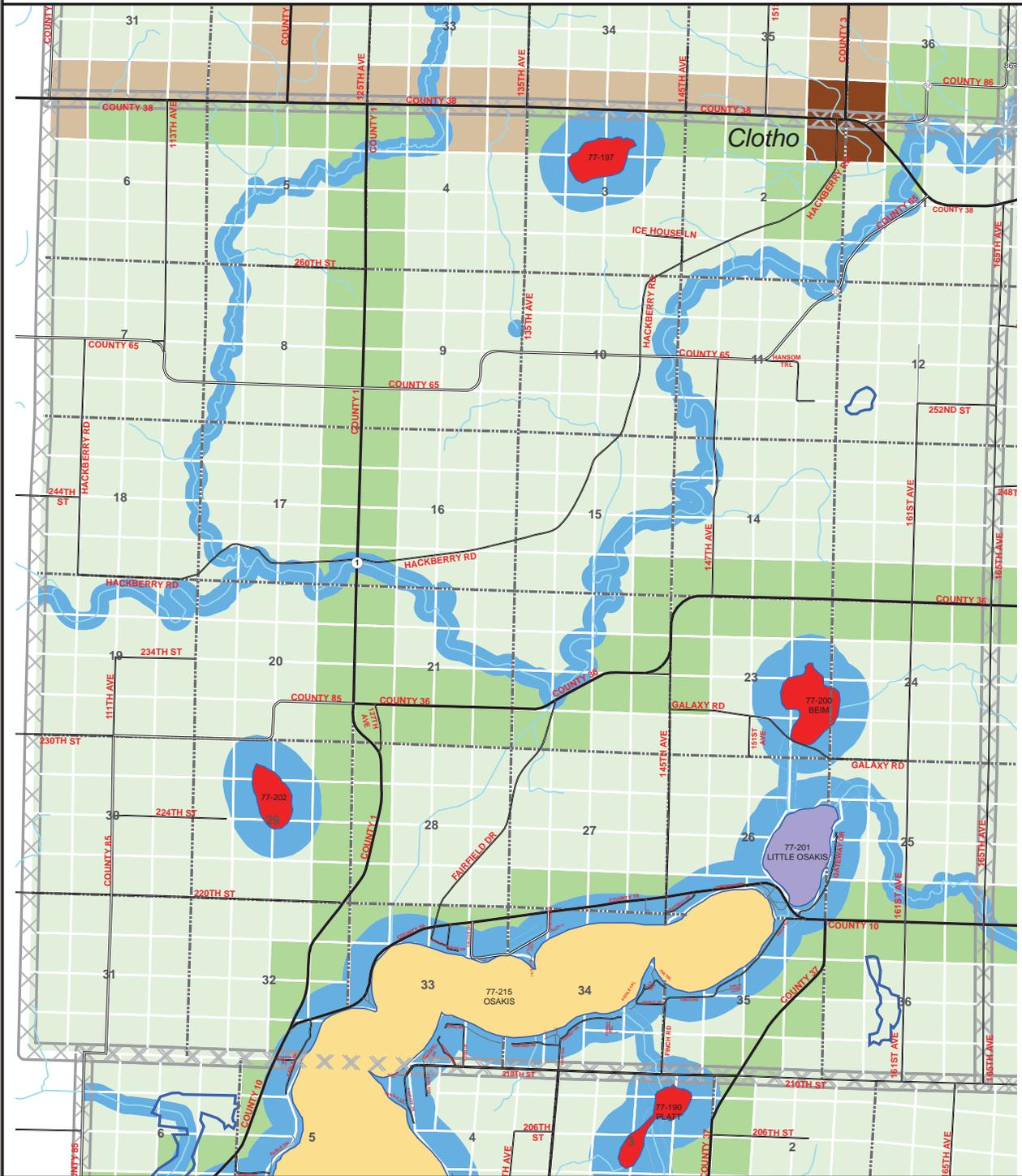
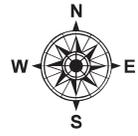
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TOWNSHIP NAME: LESLIE T129N R35 W

TODD COUNTY ZONING

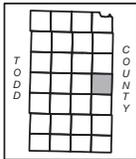


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TODD COUNTY
WHERE THE PRAIRIE MEETS THE PRAIRIE
EST. 1855

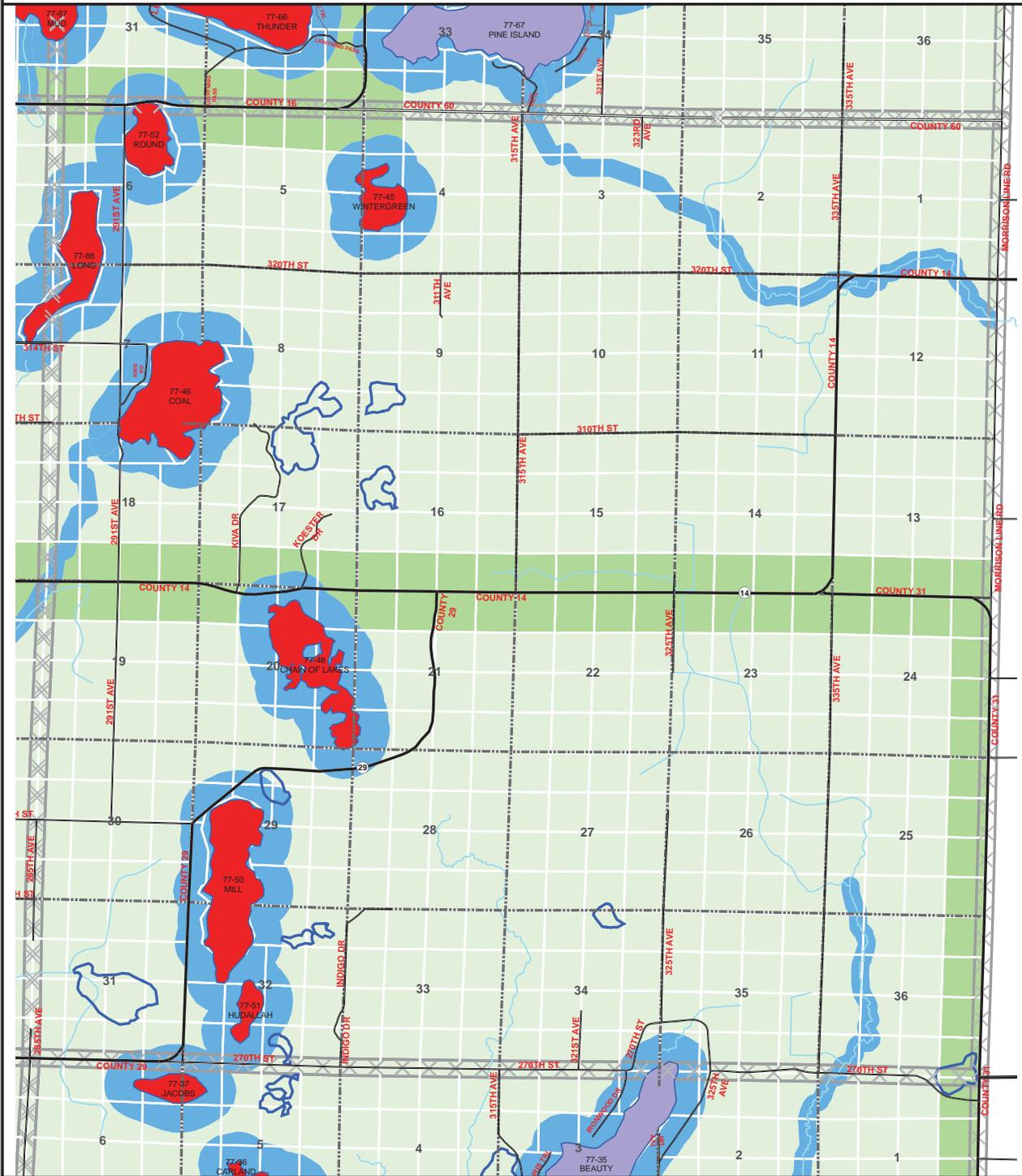
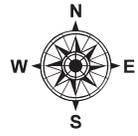
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TOWNSHIP NAME: LITTLE ELK T130N R32 W

TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Township	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
(AF-2) Agriculture/Forestry - 2	(LMI) Limited Manufacturing/Industry	Recreational Development
(R-10) Residential - 10	(S) Shoreland	Section Line
(R-2) Residential - 2	(M) Municipality	City Boundary
(UG) Urban Growth	(RDL) Recreational Development Limited	Township Boundary

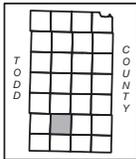
Zoning information provided by Todd County Planning & Zoning Department.

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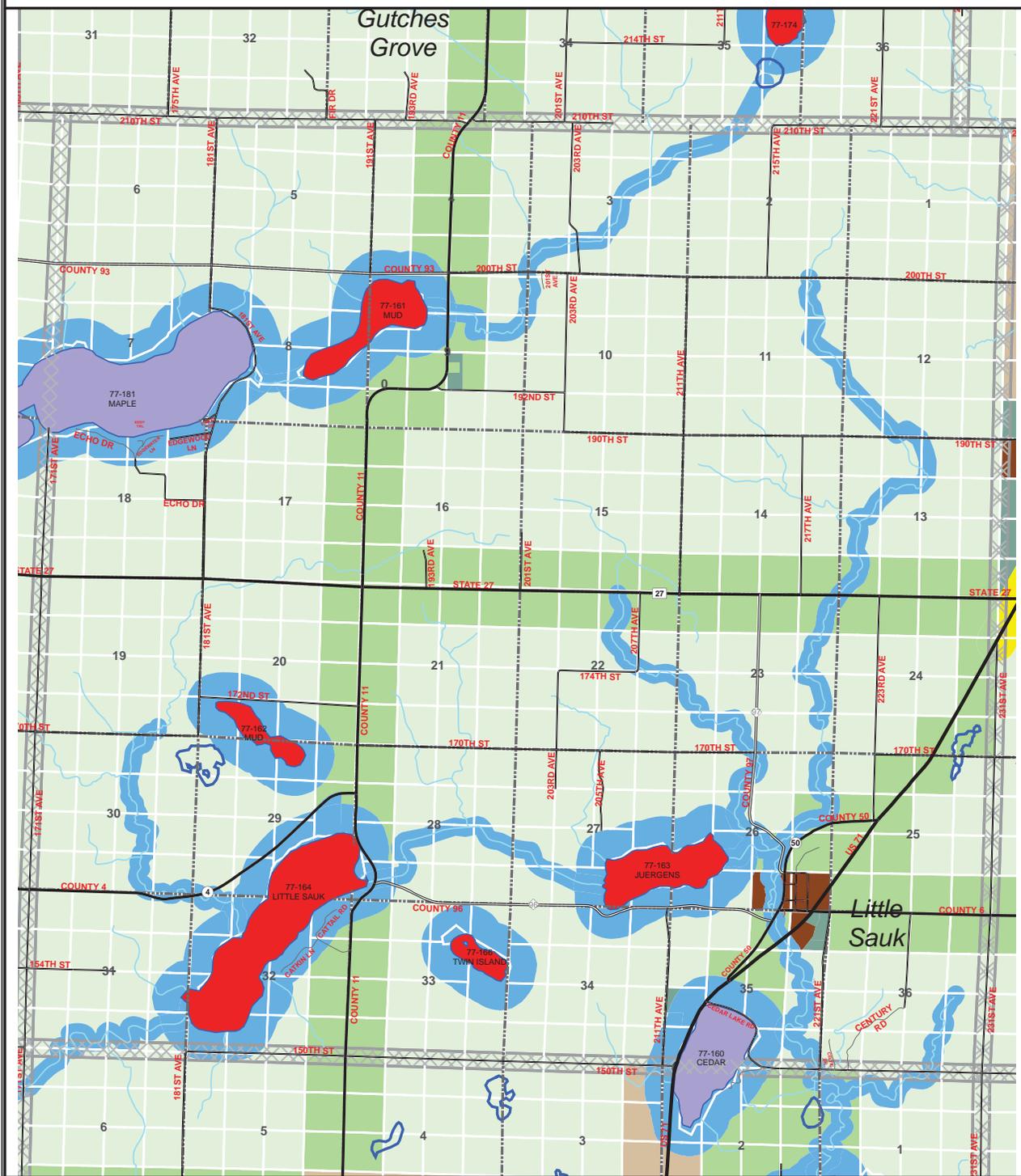
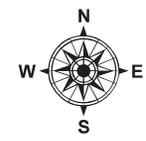
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TOWNSHIP NAME: LITTLE SAUK T128N R34 W
 TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Township	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
(AF-2) Agriculture/Forestry - 2	(LMI) Limited Manufacturing/Industry	Recreational Development
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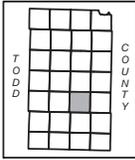
Zoning information provided by Todd County Planning & Zoning Department.

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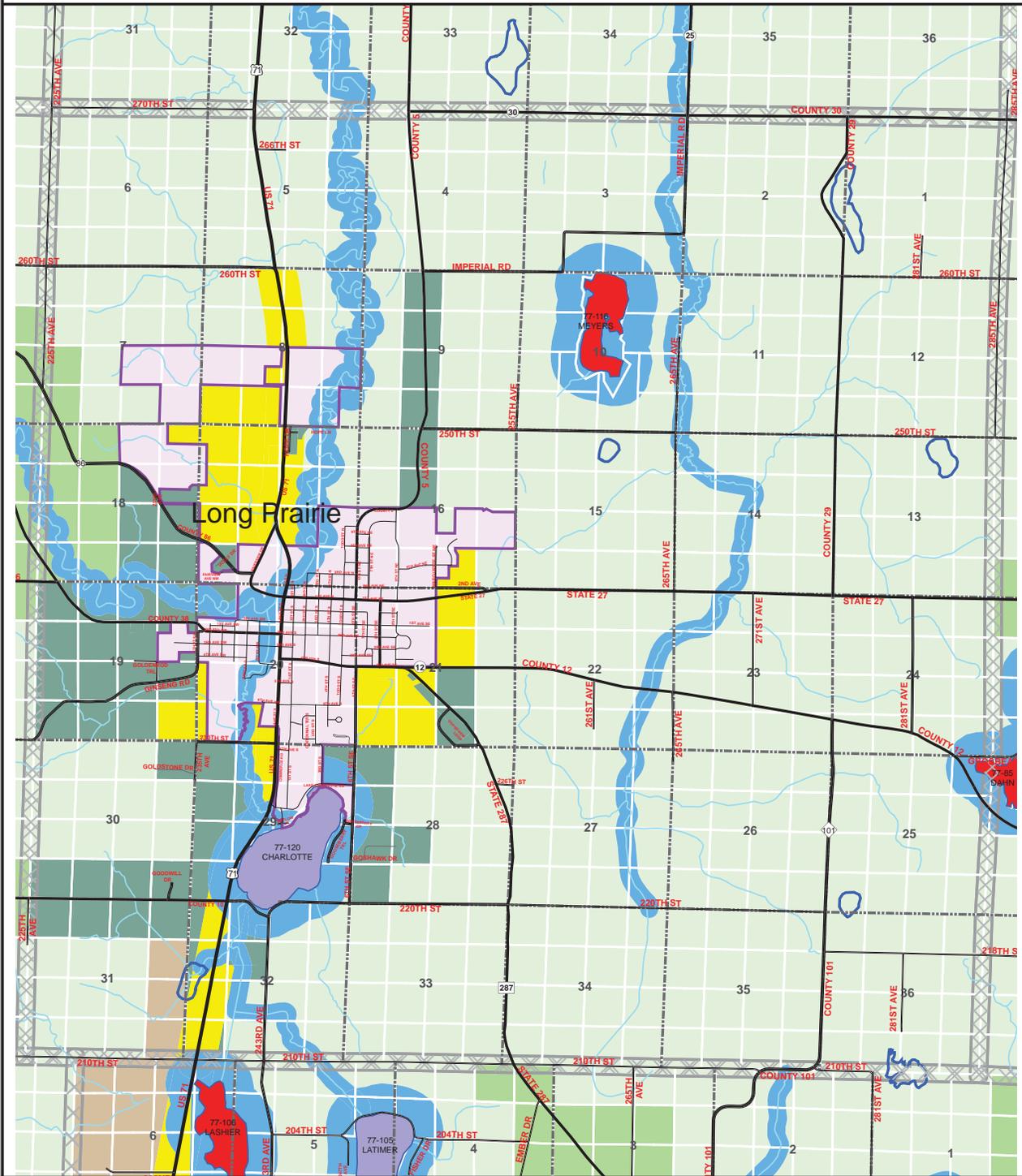
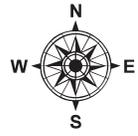
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TOWNSHIP NAME: LONG PRAIRIE T129N R33 W

TODD COUNTY ZONING

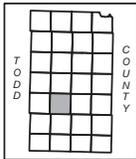


Zoning information provided by Todd County Planning & Zoning Department.

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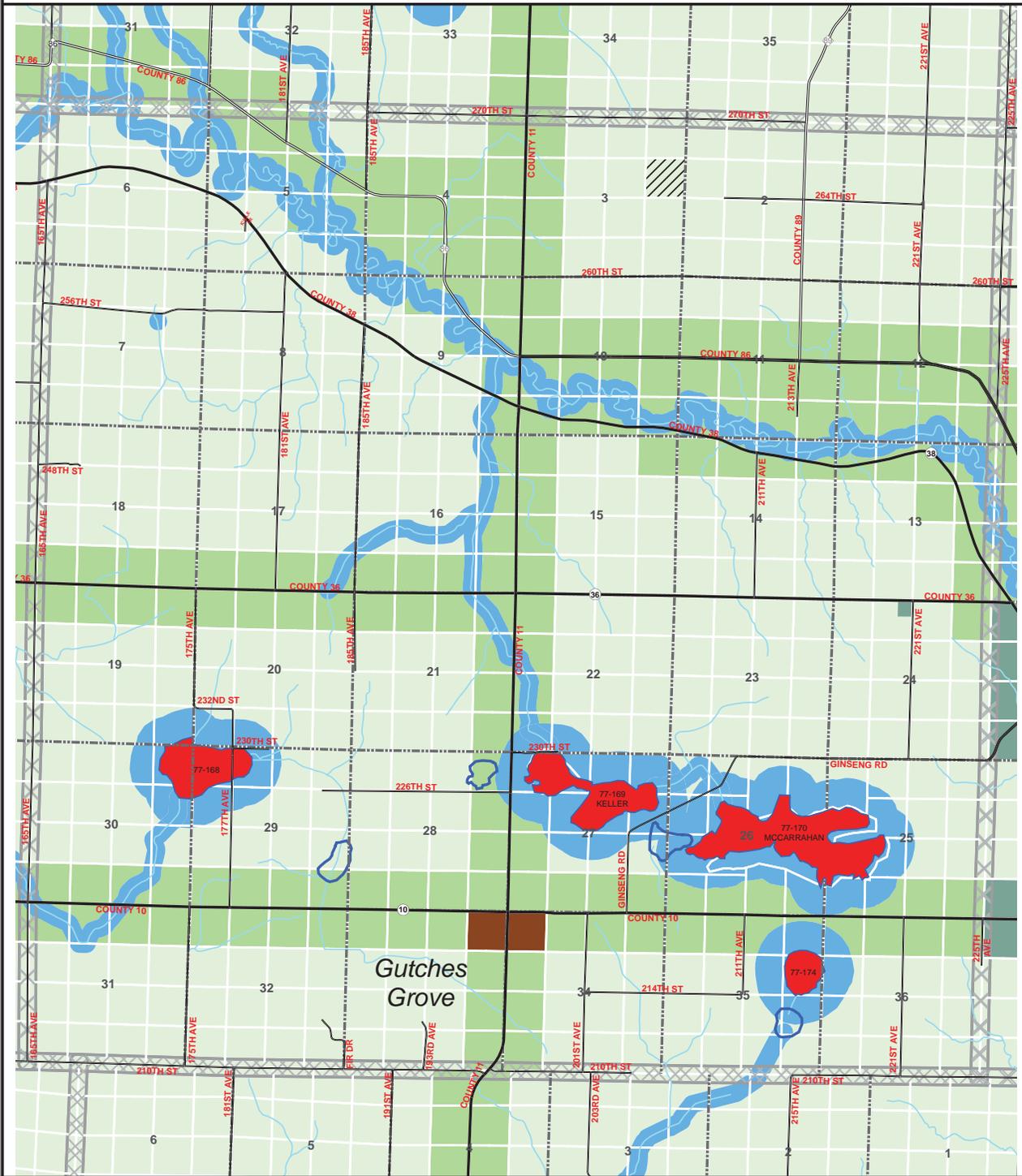
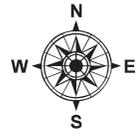
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TOWNSHIP NAME: REYNOLDS T129N R34 W

TODD COUNTY ZONING



Legend

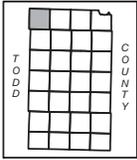
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(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
(AF-2) Agriculture/Forestry - 2	(LMI) Limited Manufacturing/Industry	Recreational Development
(R-10) Residential - 10	(S) Shoreland	Section Line
(R-2) Residential - 2	(M) Municipality	City Boundary
(UG) Urban Growth	(RDL) Recreational Development Limited	Township Boundary

Zoning information provided by Todd County Planning & Zoning Department.

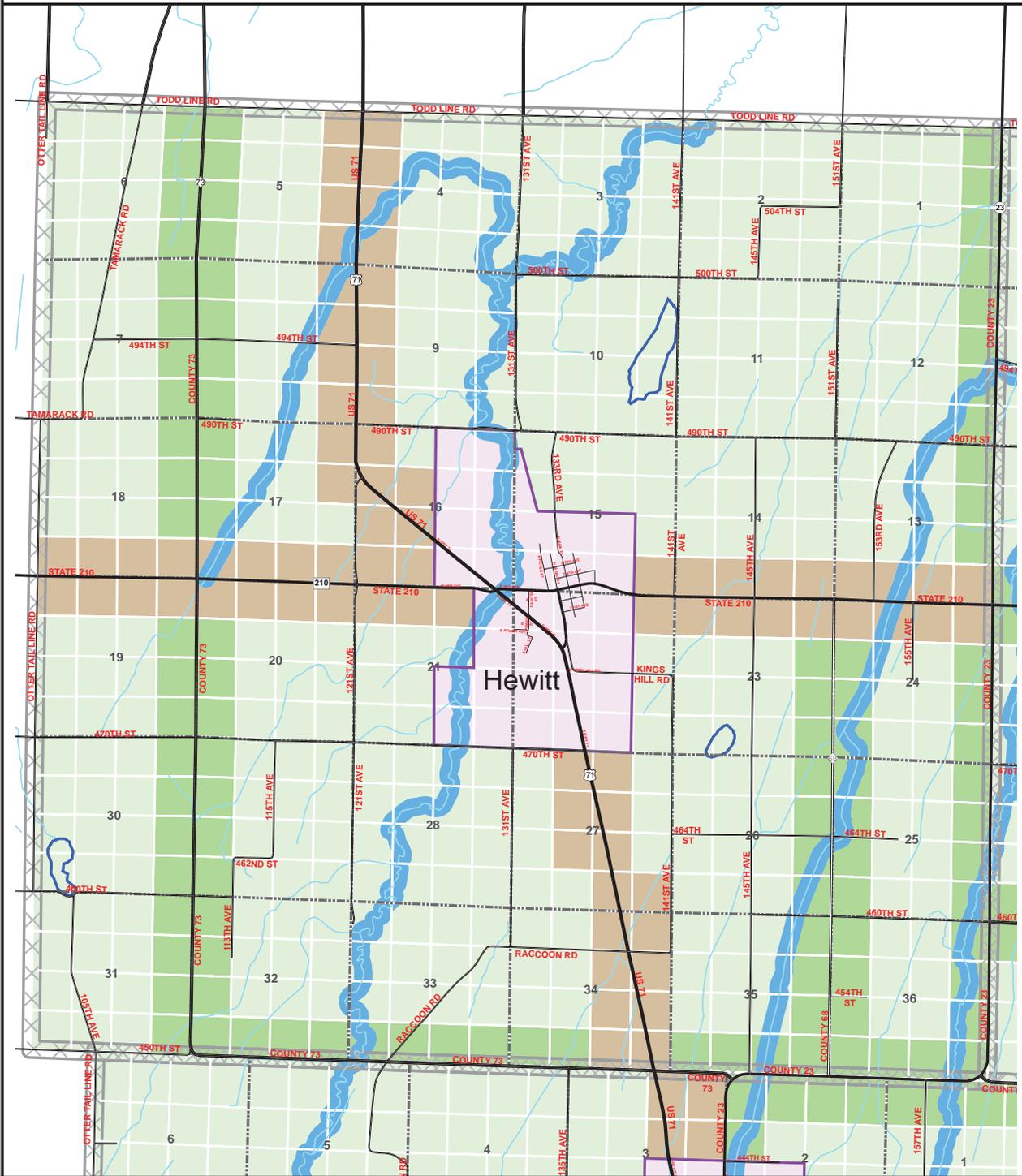
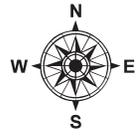
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TOWNSHIP NAME: STOWE PRAIRIE T133N R35 W
 TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Township	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
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(R-10) Residential - 10	(S) Shoreland	Section Line
(R-2) Residential - 2	(M) Municipality	City Boundary
(UG) Urban Growth	(RDL) Recreational Development Limited	Township Boundary

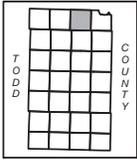
Zoning information provided by Todd County Planning & Zoning Department.

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 EST. 1855

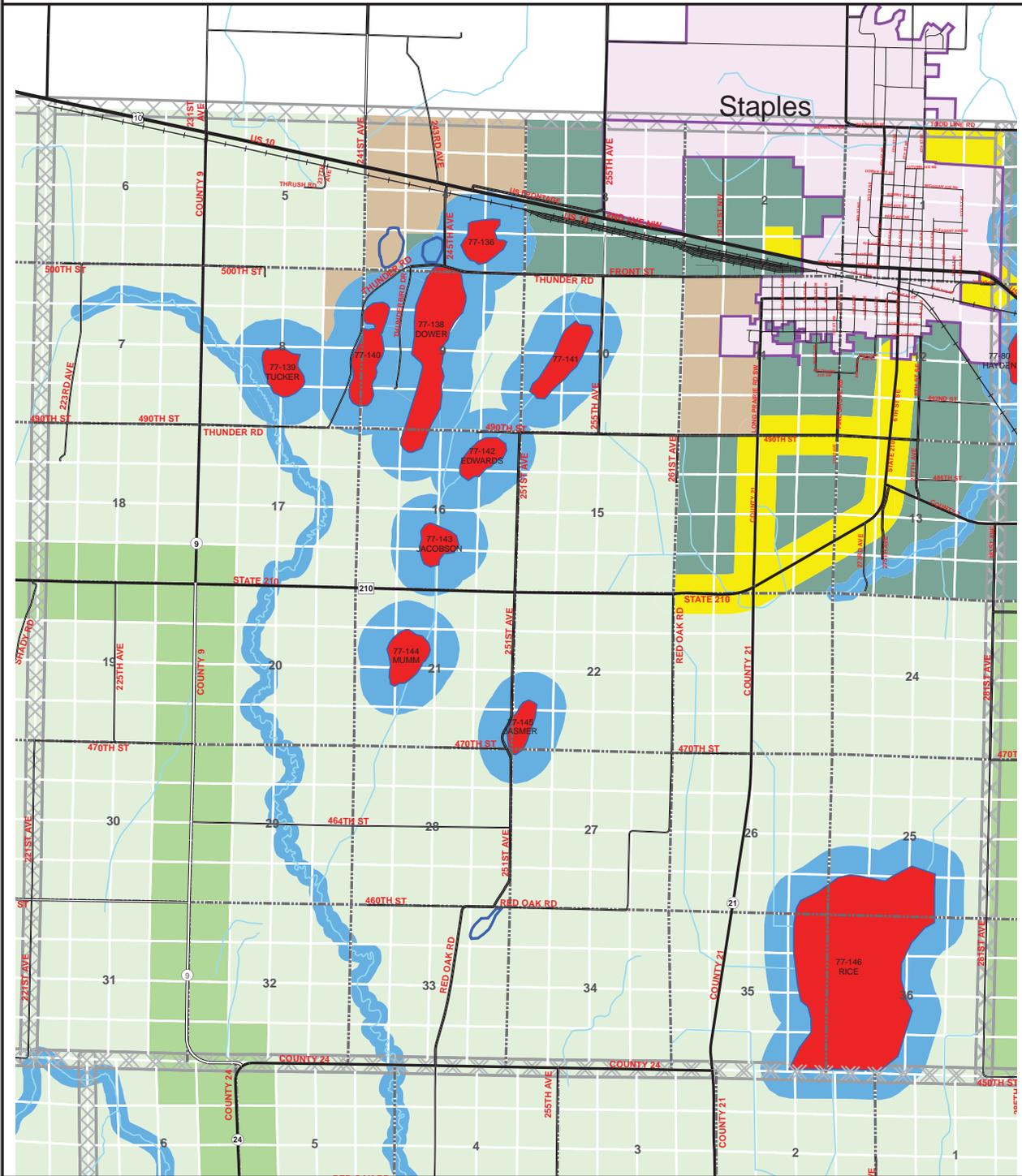
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 (fax) 320-732-6345
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TOWNSHIP NAME: STAPLES T133N R33 W

TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Townsite	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
(AF-2) Agriculture/Forestry - 2	(LMI) Limited Manufacturing/Industry	Recreational Development
(R-10) Residential - 10	(S) Shoreland	Section Line
(R-2) Residential - 2	(M) Municipality	City Boundary
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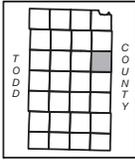
Zoning information provided by Todd County Planning & Zoning Department.

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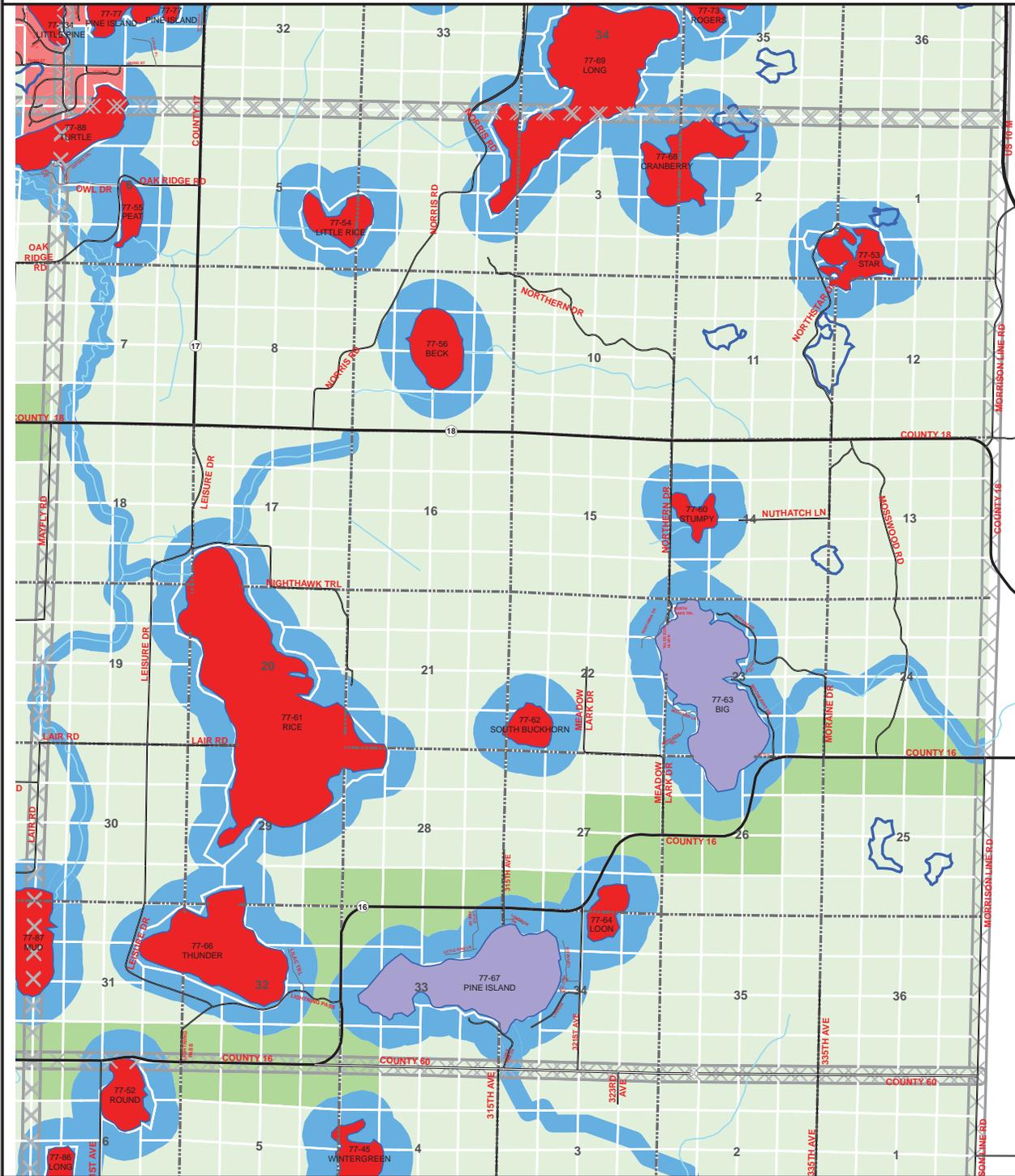
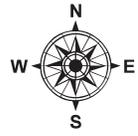
TODD COUNTY
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TOWNSHIP NAME: TURTLE CREEK T131N R32 W
 TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Township	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
(AF-2) Agriculture/Forestry - 2	(LMI) Limited Manufacturing/Industry	Recreational Development
(R-10) Residential - 10	(S) Shoreland	Section Line
(R-2) Residential - 2	(M) Municipality	City Boundary
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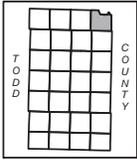
Zoning information provided by Todd County Planning & Zoning Department.

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TODD COUNTY
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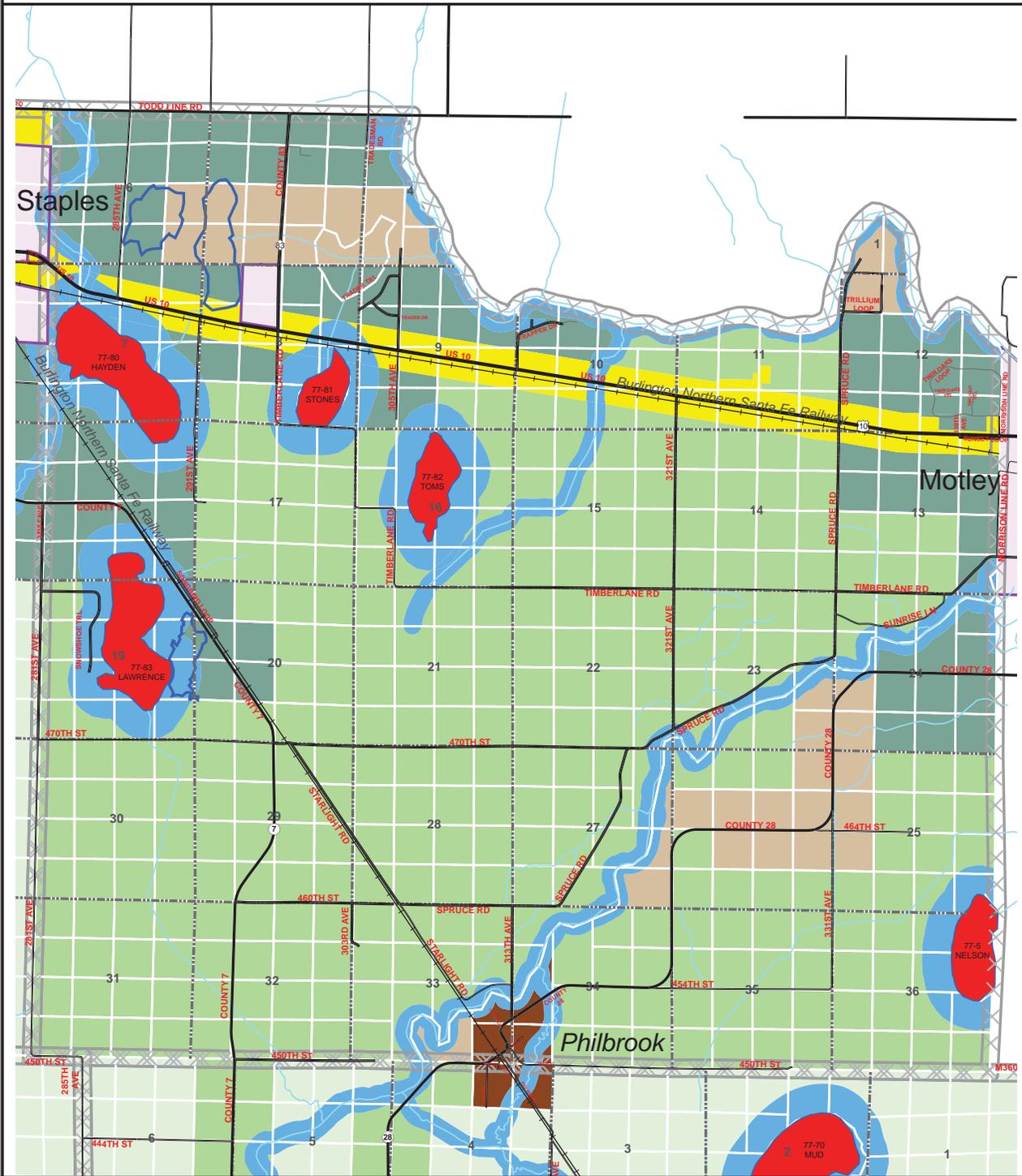
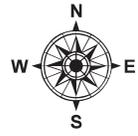
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TOWNSHIP NAME: VILLARD T133N R32 W

TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Townsite	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
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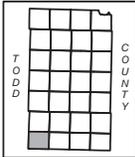
Zoning information provided by Todd County Planning & Zoning Department.

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EST. 1855

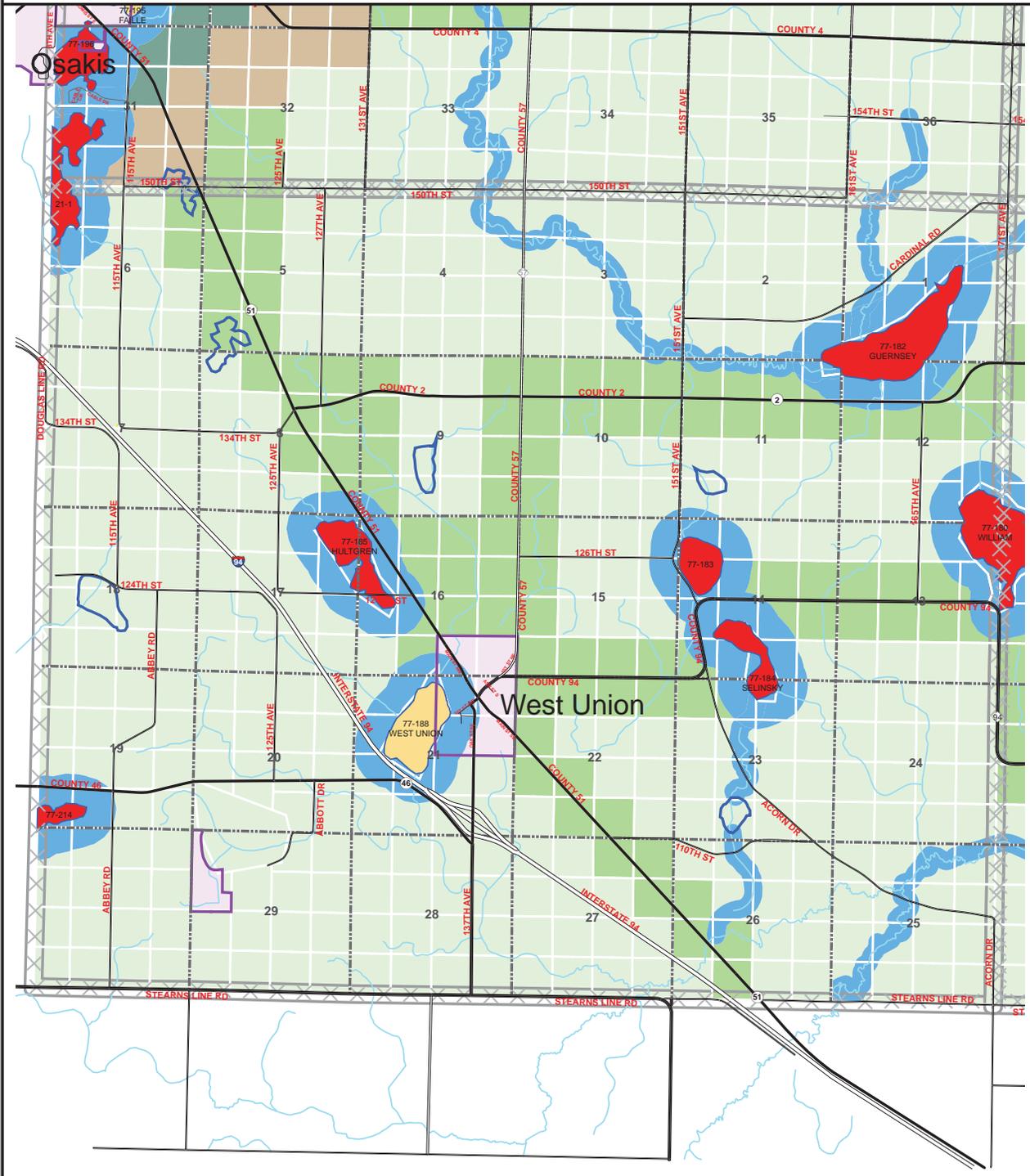
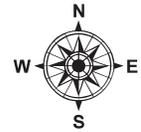
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TOWNSHIP NAME: WEST UNION T127N R35 W

TODD COUNTY ZONING



Legend

(AF-1) Agriculture/Forestry - 1	(RT) Rural Townsite	General Development
(AF-1-OL) Agriculture/Forestry - 1 - Outlot	(C) Commercial	Natural Environment
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Zoning information provided by Todd County Planning & Zoning Department.

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TODD COUNTY
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Appendix VI

Building Values Table

Todd County Building Values Table

City/Township	2005 Building Values	2005 Total Market Values
City of Bertha	\$9,177,200	\$10,932,200
City of Browerville	\$19,491,200	\$23,061,300
City of Burtrum	\$1,838,700	\$2,331,700
City of Clarissa	\$15,023,000	\$17,549,000
City of Eagle Bend	\$12,094,300	\$14,580,800
City of Grey Eagle	\$9,598,300	\$11,824,700
City of Hewitt	\$3,451,600	\$4,930,400
City of Long Prairie	\$89,588,600	\$109,739,700
City of Osakis	\$9,364,300	\$15,320,600
City of Staples	\$47,563,100	\$55,006,700
City of West Union	\$2,064,500	\$2,582,800
Bartlett Township	\$6,943,300	\$21,696,100
Bertha Township	\$5,704,400	\$21,381,500
Birchdale Township	\$41,767,100	\$84,378,100
Bruce Township	\$16,511,000	\$35,428,300
Burleene Township	\$7,373,700	\$21,772,000
Burnhamville Township	\$32,370,800	\$62,935,800
Eagle Valley Township	\$11,789,800	\$27,937,900
Fawn Lake Township	\$16,102,400	\$36,924,500
Germania Township	\$6,587,700	\$21,186,200
Gordon Township	\$21,672,600	\$49,988,100
Grey Eagle Township	\$36,770,600	\$79,726,900
Hartford Township	\$17,055,900	\$33,031,000
Iona Township	\$8,808,000	\$23,561,000
Kandota Township	\$30,786,500	\$54,187,700
Leslie Township	\$29,422,100	\$71,229,300
Little Elk Township	\$9,404,600	\$24,006,900
Little Sauk Township	\$20,224,900	\$42,136,600
Long Prairie Township	\$31,171,800	\$55,050,400
Moran Township	\$11,282,900	\$29,433,600
Reynolds Township	\$17,653,500	\$35,701,300
Round Prairie Township	\$18,383,600	\$37,128,100
Staples Township	\$14,438,300	\$30,676,500
Stowe Prairie Township	\$8,807,000	\$23,196,300
Turtle Creek Township	\$14,809,800	\$33,918,300
Villard Township	\$16,954,000	\$31,617,700
Ward Township	\$13,320,300	\$30,023,800
West Union Township	\$9,481,400	\$23,304,800
Wykeham Township	\$8,698,100	\$23,375,300

Appendix VII

County Soils Map

General Soils



TODD COUNTY

MINNESOTA

Community - Based Comprehensive Plan

General Soil Association

- 1**
Rockwood-Blowers-Paddock
- 2**
Kadota-Wykeham-Runeberg
- 3**
Roliss-Gonvick-Waukon
- 4**
Ves-Roliss-Normanina
- 5**
Flak-Rifle
- 6**
Cushing-DeMontreville-Rifle
- 7**
Forada-Dorset-Arvilla
- 8**
Menahga-Hubbard-Bowstring
- 9**
Roscommon-Meehan-Markey

Map Resources:
 Soils - USDA, Soil Conservation Service, Minn Ag. Experiment Station
 Road Network - Todd County 911/Rural Addressing Basemap
 Lakes - Todd County GIS
 Township and Section Lines - MnDOT, Minnesota Basemap

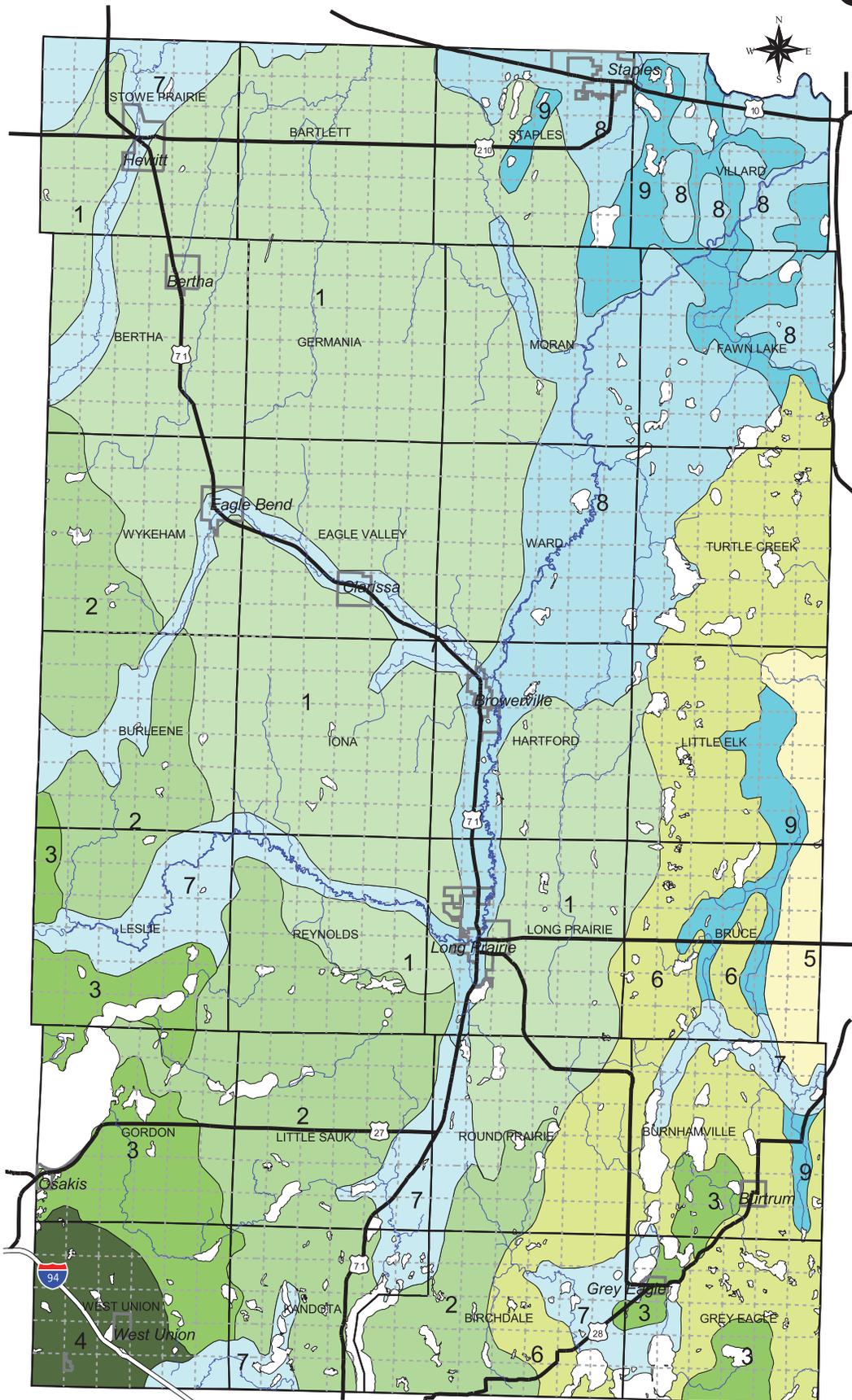


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October, 2001

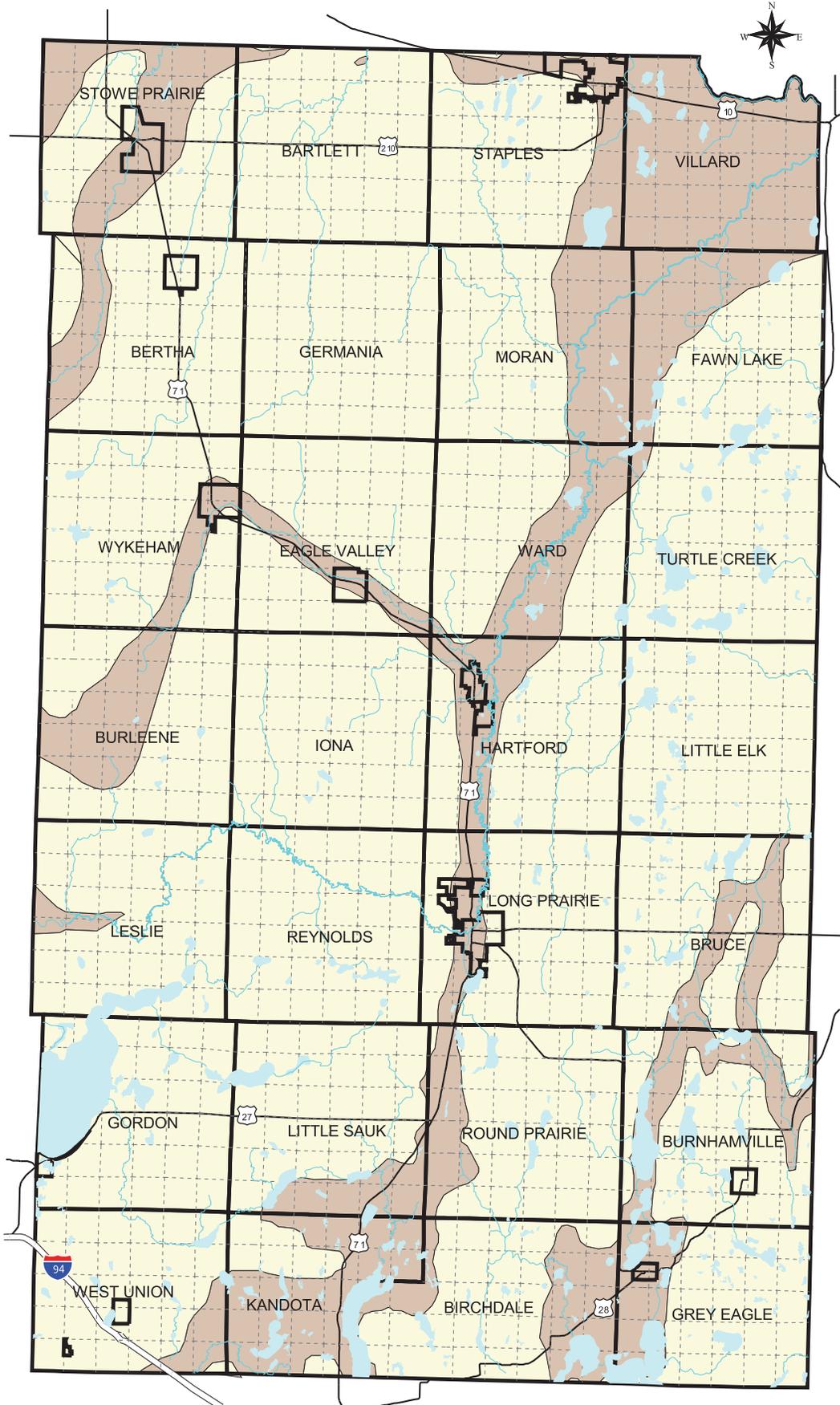


Todd County GIS Dept. has made every effort to provide the most up-to-date information available in this publication and cannot be held responsible for any unforeseen errors.

Appendix VIII

County Aquifers Map

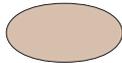
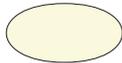
Principal Aquifers

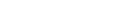



TODD COUNTY
MINNESOTA

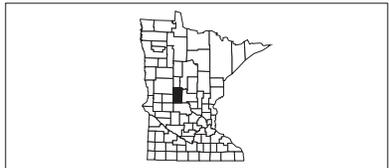
**Community - Based
Comprehensive Plan**

Principal Aquifers

-  Surficial outwash
-  Till drift plain

-  Lakes
-  Streams

Map Resources:
Principal Aquifers - USGS, Hydrologic Investigations Atlas HA-380 (sheet 2) 1972, HA-534 (sheet 2) 1975
Road Network - Todd County 911/Rural Addressing Basemap
Township and Section Lines - MnDOT, Minnesota Basemap



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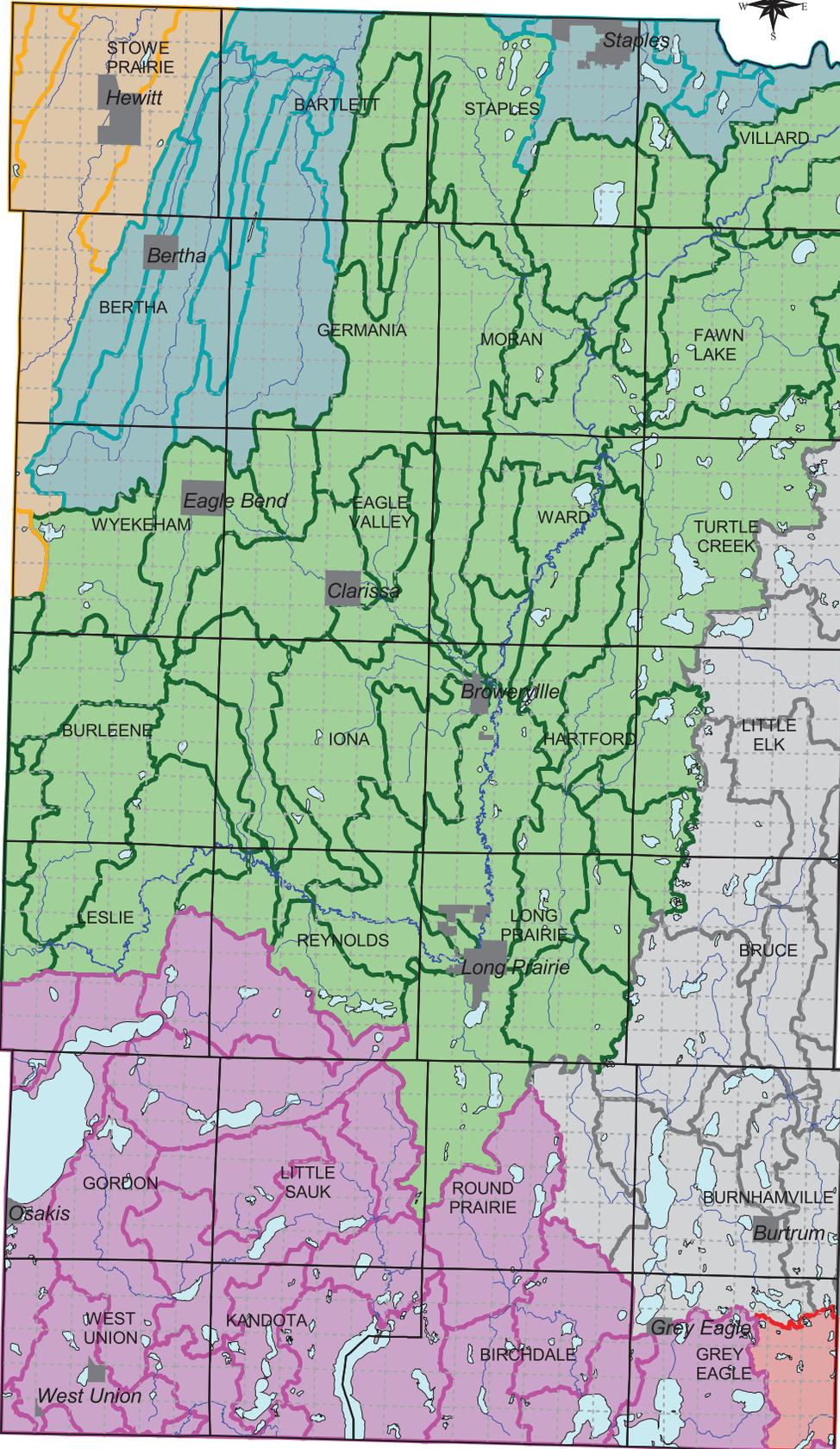


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Appendix IX

County Watershed Map

Watershed Boundaries Major & Minor



TODD COUNTY
MINNESOTA

**Community - Based
Comprehensive Plan**

Major Watershed Boundaries

- Mississippi River - Brainerd
- Crow Wing River
- Redeye River
- Long Prairie River
- Mississippi River - Sartell
- Sauk River

Minor Watershed Boundaries

- Mississippi River - Brainerd
- Crow Wing River
- Redeye River
- Long Prairie River
- Mississippi River - Sartell
- Sauk River

Map Resources:
 Watershed Boundaries - Minnesota DNR
 Lakes - Todd County GIS
 Streams - Minnesota DNR
 Township and Section Lines - MnDOT, Minnesota Basemap

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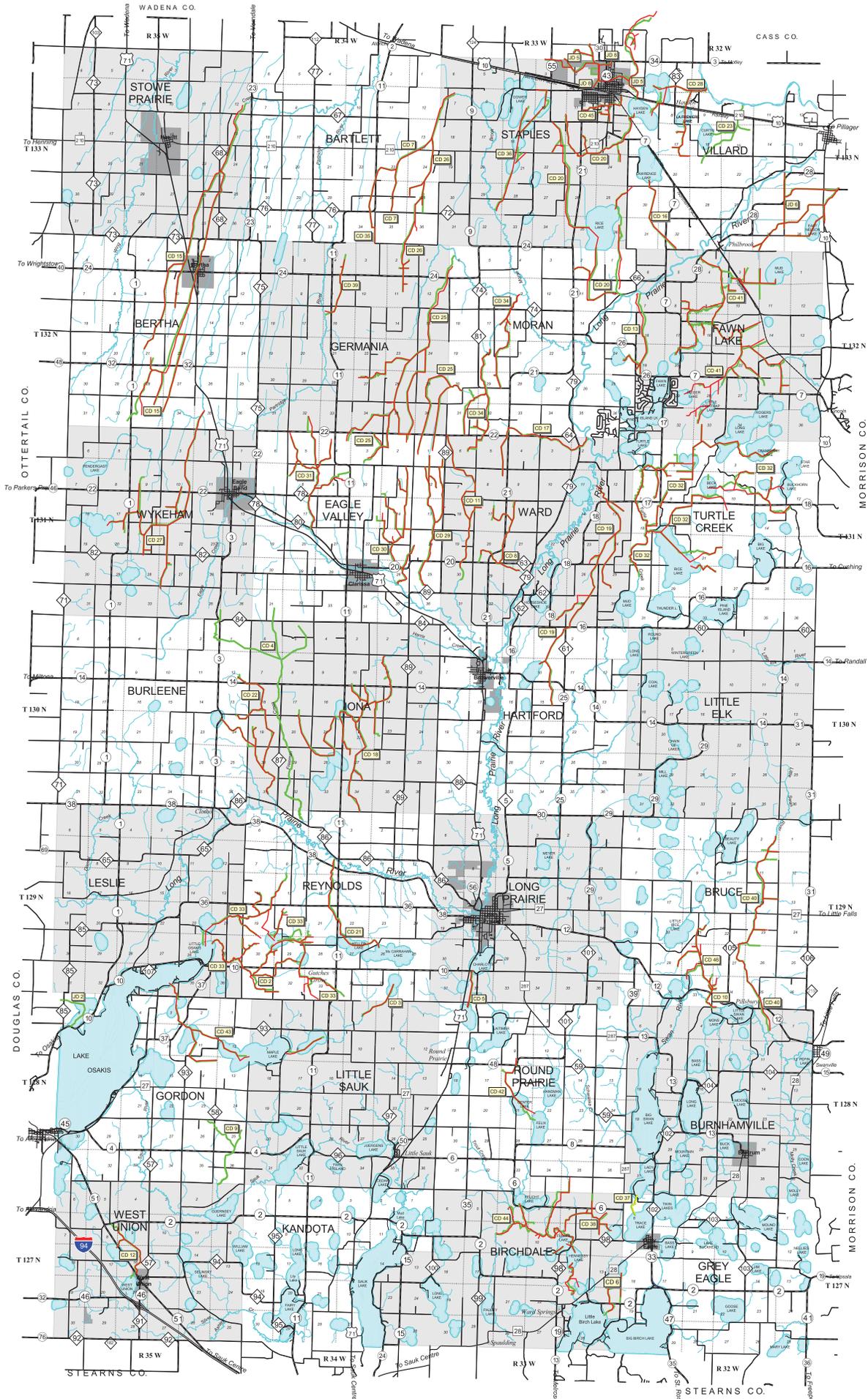


Appendix X

County Ditch Map & County Watercourse Map

TODD COUNTY PUBLIC DITCHES

*Map is to be used as a reference for the general locations of public ditches in Todd County.
Not to be used as a legal document.*



-  Ditches - as built
-  Ditches - from original design
-  Streams
- Roads**
-  Interstate
-  US-Paved
-  State Highway
-  CSAH-Paved
-  CSAH-Gravel
-  County Road-Paved
-  County Road-Gravel
-  TWP-Paved
-  TWP-Gravel
-  TWP-Min. Maint.
-  Municipal
-  Lakes
-  Municipalities



Ditches as built: Digitized from the 1992 USGS air photos by the Todd County GIS & Land Services Dept.

Ditches from design: Constructed from the original county ditch maps by the Todd County GIS & Land Services Dept. (Original design of ditches 2, 4, 9, and 23 could not be digitized due to missing information)

This map represents approx. location of the Todd County Public Ditches based on interpretation of the original ditch maps and the 1992 aerial DOQ.

Road Network: Todd County 911/ Rural Addressing Basemap.
Streams: MN DNR
Lakes: MN DNR/ Todd County GIS & Land Services Dept.

Map is to be used as a reference for the general locations of public ditches in Todd County.

Not to be used as a legal document.

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April 2005



Protected Waters



TODD COUNTY

MINNESOTA

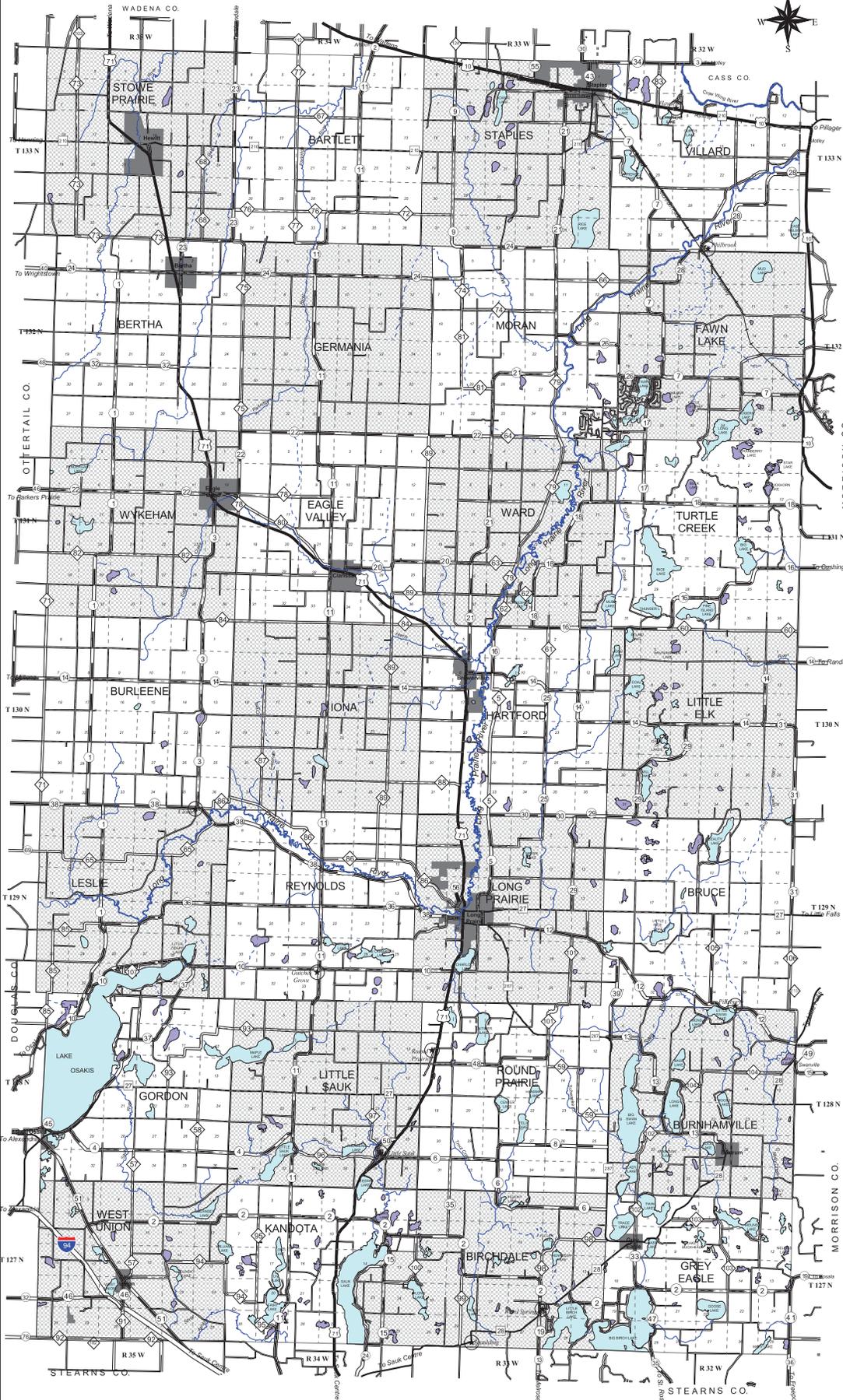
Community - Based Comprehensive Plan

Protected Waters

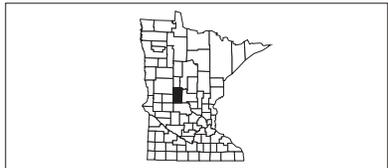
-  Basins
PWI Class "P"
-  Wetlands
PWI Class "W"

Protected Watercourses

-  Streams & Rivers
-  Ditches



Map Resources:
 Waters & Watercourses - Todd County GIS Department
 Road Network - Todd County 911/Rural Addressing Basemap
 Township and Section Lines - MnDOT, Minnesota Basemap



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Appendix XI

Potential Funding Sources

Funding Source		Tornado	Flooding	Winter Storms	Drought	Severe Summer Storms	Wind Storm	Extreme Temp	Wildfire	Infectious Disease	Groundwater Depletion	Groundwater Contamination	Hazardous Material Accident (Transportation)	Hazardous Material Accident (Fixed Facilities)	Power Grid Failure	Computer Viruses	Terrorism	Railroad Interference with Emergency Response	Financial Assistance	Technical Assistance	
FEDERAL SOURCES																					
Planning Grants (HazMat Emergency Preparedness Grant)																			X		
Motor Carrier Safety																				X	
National Dam Safety Program																				X	
National Pollutant Discharge Elimination System												X							X		
National Urban Search and Rescue Response System		X																	X		
North American Wetlands Conservation Fund											X								X		
Planning(Land and Water Conservation Fund Grants)											X								X		
Physical Disaster Loans		X	X	X		X	X	X											X		
Pipeline Safety												X							X		
Project Impact: Building Disaster - Resistant Communities		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Protection Clearing and Straightening Channels			X																X		
Public Assistance Grant Program		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Public Health and Social Services Emergency Fund										X									X		
Railroad Safety																					
Resource Conservation and Development			X		X															X	
River, Trails, and Conservation Assistance			X								X									X	
Rural Business Opportunity Grants			X																X		
Rural Development Grants			X																X		
Rural Electrification Loans		X	X	X		X	X	X											X		
Rural Housing and Economic Development		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rural Housing Site Loans and Self - Help Housing and Development Loans			X																X		
Snagging and Clearing for Flood Control			X																X		
Soil and Water Conservation			X		X							X							X		X

Appendix XII

Future Revisions

