

**Farmland
Preservation
Plan**

Green Lake County

**Adopted
February 16, 2016**



**Green Lake County
Farmland Preservation Plan
Acknowledgements**

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GREEN LAKE COUNTY FARMLAND PRESERVATION PLAN

TABLE OF CONTENTS

THE PLAN

Acknowledgment Page

Farmland Preservation Plan

1.0 Introduction

1.1 Wisconsin Working Lands Initiative.....	1
1.2 Agricultural Development Policy	2
1.3 Regional Location.....	2
1.4 Planning Process.....	2
1.5 Public Participation Efforts.....	3

2.0 Farmland Preservation and Agricultural Development Trends, Plans or Needs

2.1 Population	6
2.2 Economic Growth	7
2.3 Housing	8
2.4 Transportation	9
2.5 Utilities and Energy.....	12
2.6 Communications.....	13
2.7 Business Development.....	13
2.8 Community Facilities and Services	16
2.9 Waste Management	17
2.10 Municipal Expansion.....	17
2.11 Environmental Preservation.....	18
2.12 Potential Weather Cycle Impacts.....	19

3.0 Land Use, Natural Resources & Physical Features

3.1 Existing Land Use.....	23
3.2 Land, Soil, and Water Resources	23
3.3 Agricultural Infrastructure.....	33
3.4 Farmland Preservation and Agricultural Development Land Use Issues.....	36

4.0 Agricultural Trends

4.1 Agricultural Land Use	41
4.2 Agricultural Production and Enterprises.....	41
4.3 Conversion of Agricultural Lands to Other Uses	46
4.4 Anticipated Changes in Agricultural Production, Processing, Supply, & Distribution	51

5.0 Farmland Preservation Areas

5.1 Rationale Used to Determine Preservation Areas.....	54
5.2 Farmland Preservation Map Category Descriptions.....	55

6.0 Implementation

6.1 Goals, Objectives and Policies for Agricultural Development.....	58
6.2 Goals, Policies, Strategies and Proposed Actions to increase housing density in areas that are not identified as farmland preservation areas.....	62
6.3 Farmland Preservation Programs	64
6.4 Green Lake County Comprehensive Plan Consistency.....	69
6.5 County Actions & Strategies to Preserve Farmland and Promote Agricultural Development	70
6.6 County Actions to Address Land Use Issues affecting Farmland Preservation and Agricultural Development.....	70

TABLES & FIGURES

Tables 100-128 Located in Appendix A

Table 100 Historical Population Change	
Table 101 Population Race/Ethnicity	
Table 102 Population Age and Median Age	
Table 103 Population Projections	
Table 104 Household Projections	
Table 105 Municipal Population Projections	
Table 106 Median Income	
Table 107 Household Income	
Table 108 Per Capita Income	
Table 109 Poverty Status	
Table 110 Labor Force	
Table 111 Employment of Residents by Type of Industry	
Table 112 Employment of Residents by Type of Occupation	
Table 113 Industry of Employed Persons	
Table 114 Fox Valley Wisconsin Workforce Development Area Industry Employment Projections, 2006-2016	
Table 115 Average Weekly Wages	
Table 116 Travel Time to Work	
Table 117 Educational Attainment	
Table 118 Age of Housing	
Table 119 Median Housing Values	
Table 120 Housing Values	
Table 121 Types of Housing Units	
Table 122 Housing Occupancy and Tenure	
Table 123 Vacancy Status	
Table 124 Household Types	
Table 125 Persons Per Household	
Table 126 Household Size	
Table 127 Owner Affordability	
Table 128 Renter Affordability	

Farmland Preservation and Agriculture Development Trends, Plans or Needs

Figure 2-1 Green Lake County Population Historic and Projected7
Table 2-1 Direct Impacts on Agricultural – Positive20
Table 2-2 Direct Impacts on Agricultural – Negative21
Table 2-3 Indirect Impacts on Agricultural22

Land Use

Table 3-1 Watersheds in Green Lake County31
Table 3-2 Green Lake County Agricultural Providers34
Table 3-3 Green Lake County Agricultural Supply Facilities35

Agricultural Trends

Figure 4-1 Total Farms42
Figure 4-2 Farms by Average Size42
Figure 4-3 Green Lake County Farm Sizes in Acres43
Figure 4-4 Total Dairy Farms43
Figure 4-5 Total Beef Farms44
Figure 4-6 Dairy Herd Cows44
Figure 4-7 Beef Herd Animals45
Figure 4-8 Green Lake County Dairy/Beef Farms45
Figure 4-9 Green Lake County Dairy/Beef Herd46
Figure 4-10 Oilseed and Grain Farms46
Table 4-1 Acres of Agricultural Land by Community, 2007-201249
Table 4-2 CSM lots and Plat lots by Town, in Acres, 2005-201450
Figure 4-11 Acres Converted into CSM and Plat Lots, 2005-201451

Farmland Preservation Areas

Table 5-1 Farmland Preservation Acres and Prime Agricultural Soils, Green Lake County57

MAPS

Map 1 Project Location Map4
Map 2 Elevation Map (Source: Green Lake County Planning & Zoning Department)25
Map 3 Prime Soils Map (Source: Green Lake County Planning & Zoning Department)28
Map 4 Farmland Preservation Plan Map56

Maps 4A-4J Located in Appendix G

- Map 4A Town of Berlin
- Map 4B Town of Brooklyn
- Map 4C Town of Green Lake
- Map 4D Town of Kingston
- Map 4E Town of Mackford
- Map 4F Town of Manchester
- Map 4G Town of Marquette
- Map 4H Town of Princeton
- Map 4I Town of Saint Marie
- Map 4J Town of Seneca

APPENDICES

- Appendix A – Population, Economic & Housing Tables 100 through 128
- Appendix B – Green Lake County Agriculture: Value & Economic Impact 2011
- Appendix C – Prime Agricultural Soils
- Appendix D – “Contribution of Agriculture to the Wisconsin Economy (2012)”
- Appendix E – DATCP Certification Order
- Appendix F – Green Lake County Board of Supervisors Approval Resolution
- Appendix G - Farmland Preservation Plan Maps by Town (Maps 4A- 4J)

1.0 Introduction

1.1 Wisconsin Working Lands Initiative

The Wisconsin Working Lands Initiative was developed to achieve preservation of areas significant for current and future agricultural use. This initiative was signed into law in 2009 (Chapter 91) and is comprised of the following three programs:

- Updated Farmland Preservation Program (FPP)
- Agricultural Enterprise Area (AEA) Program
- Purchase of Agricultural Conservation Easement (PACE) Program

Counties are scheduled to revise their farmland preservation plans to meet these new requirements designed to better protect farmland. These plans, once certified by Department of Agricultural, Trade and Consumer Protection (DATCP), ensure access to program benefits such as landowner eligibility for FPP tax credits.

The Agricultural Enterprise Area program is a tool that can help individuals and communities meet locally identified goals for preserving agricultural land and encouraging agricultural economic development. An AEA is an area of contiguous land primarily in agricultural use that has been designated by the DATCP in response to a locally developed petition. The designation of an AEA does not, by itself, control or limit land use within the designated area. This program is a voluntary program that provides tax credits to eligible participants and does not require a Farmland Preservation Zoning District.

The Working Lands Initiative has new tax credits available to farmers. The tax credits are based on a tiered system. Farmers with a farmland preservation agreement signed after July 1, 2009 and located in an agricultural enterprise area are eligible for \$5.00 an acre credit. Farmers in an area zoned for farmland preservation are eligible for a \$7.50 an acre credit. This requires there to be a DATCP certified county plan in place. The final tier earns \$10.00 per acre credit and requires the farmers to be in an area zoned for farmland preservation and in an agricultural enterprise area, with a farmland preservation agreement signed after July 1, 2009.

In order to participate in the Working Lands Initiative, there are eligibility requirements that need to be met. Acres claimed in the program must be located in a farmland preservation area identified in a certified county farmland preservation plan. Eligible land includes agricultural land or permanent undeveloped natural resource areas or open space land that is in an area certified for farmland preservation zoning, and/or located in a designated AEA and under a farmland preservation agreement. Claimants must have \$6,000 in gross farm revenue in the past year or \$18,000 in the past three years. Gross revenue produced by the renter on the landowner's farm can be used to meet this requirement. Rental receipts of farm acres do not count toward gross farm revenue. Claimants must also be able to certify that all property taxes owed from previous years have been paid and must comply with soil and water conservation standards and submit certification of compliance.

In order to comply with the soil and water conservation standards, the claimant would work with Land Conservation Department (LCD) staff to develop a conservation plan. The Conservation Plan Agreement is signed by both the claimant and renter if applicable. The conservation plan requires the claimant to meet all standards and prohibitions of NR 151, as well as develop a Nutrient Management Plan (NMP) for all cropland. The NMP is updated yearly and an NMP 590

checklist and annual certification is submitted to LCD to remain in compliance. LCD staff will need to complete farm site evaluation for conservation requirements at least once every four years. The claimant is to include the certificate of compliance with conservation standards with FC-A tax form and turn in annual certification for the applicable tax year.

1.2 Agricultural Development Policy

Green Lake County has a strong history of preserving agricultural land and natural resources in order to maintain a high quality of life and a strong economy. Due to the importance of agriculture within the local and regional economy, it is necessary to encourage farmland preservation, protect natural resources, and minimize conflicts between farm and nonfarm land uses.

Agricultural related business and infrastructure that support agriculture will be encouraged in order to maintain a strong agricultural component of the County's economy.

1.3 Regional Location

Green Lake County is located in East Central Wisconsin. More specifically, Green Lake County is bordered by Waushara County to the north, Marquette County to the west, Dodge and Columbia Counties to the south and Winnebago and Fond du Lac Counties to the east. Green Lake is a relatively small county. At 355 square miles in size, it ranks 65th out of the 72 Wisconsin Counties. Map 1 shows the regional location of the County and associated governmental units. Green Lake County is home to 10 towns, two (2) villages and four (4) cities. The County is also home to Green Lake, more commonly known as "Big Green Lake". This lake is centrally located in the County and is respectively known as the deepest lake in the State of Wisconsin. The protection of Big Green Lake's water quality is paramount to agriculture preservation efforts.

1.4 Planning Process

This plan was prepared in accordance with the Farmland Preservation Chapter of the Wisconsin Statutes (Chapter 91). It establishes public policy in support of farmland preservation, agricultural development and the encouragement of a healthy agricultural economy. The legislation requires a county to develop and adopt a Farmland Preservation Plan in order for landowners in the County to be eligible for the farmland preservation programs offered by the state.

The Farmland Preservation Program has been in existence since 1977 and in force in Green Lake County since 1984. Green Lake County developed the original Farmland Preservation Plan in 1983. The 2015 Farmland Preservation Plan will serve as the first update. The goal of the program is to aid local governments in farmland preservation and agricultural development through planning and the provision of tax credits to those who participate.

This plan is part of a continuing effort by Green Lake County to participate in the State's Farmland Preservation Program in order to encourage a progressive yet sustainable agricultural economy. It is the intent of this plan to guide county decision-makers to make the best decisions for the benefit of the agricultural economy in Green Lake County.

This plan represents much research, study, and effort on the part of the Green Lake County Planning & Zoning Staff, the Farmland Preservation Ad-Hoc Steering Committee, UW Extension, the Green Lake County Land Use Planning & Zoning Committee and the Green Lake County Board.

A project schedule and cost estimate was prepared by Green Lake County Planning & Zoning Staff in order to complete the planning process. After making a grant application to the Department of Trade, Agriculture and Consumer Protection (DATCP), Green Lake County was awarded a grant of \$30,000.00 to help offset the cost of producing the new Farmland Preservation Plan.

The *Green Lake County Farmland Preservation Plan* process was designed to meet the requirements of Chapter 91.10 of the Wisconsin State Statutes (Wis. Stats.).

Goals, objectives and recommendations stated in this plan reflect the deliberations among Green Lake County Planning & Zoning Staff, the Farmland Preservation Ad-Hoc Steering Committee, the Consultant, UW Extension, and the Green Lake County Land Use Planning & Zoning Committee. Comments and opinions expressed by the people within the County were reviewed at various stages of the planning process. References made to specific state, county, and other governmental programs do not imply endorsement but are presented for background and reference only.

1.5 Public Participation Efforts

The farmland preservation planning process included five (5) meetings with the Farmland Preservation Ad-Hoc Steering Committee, six (6) meetings with the Green Lake County Land Use Planning & Zoning Committee, two meetings before the Green Lake County WTA Town Unit and a public hearing with the Green Lake County Board. In addition, special meetings were held with individual towns to obtain input on the Farmland Preservation Plan. The project also included a Public Informational Meeting held April 23, 2014 to introduce the farmland preservation planning effort to the public.

The following core efforts were identified to foster public participation throughout the Farmland Preservation Planning process:

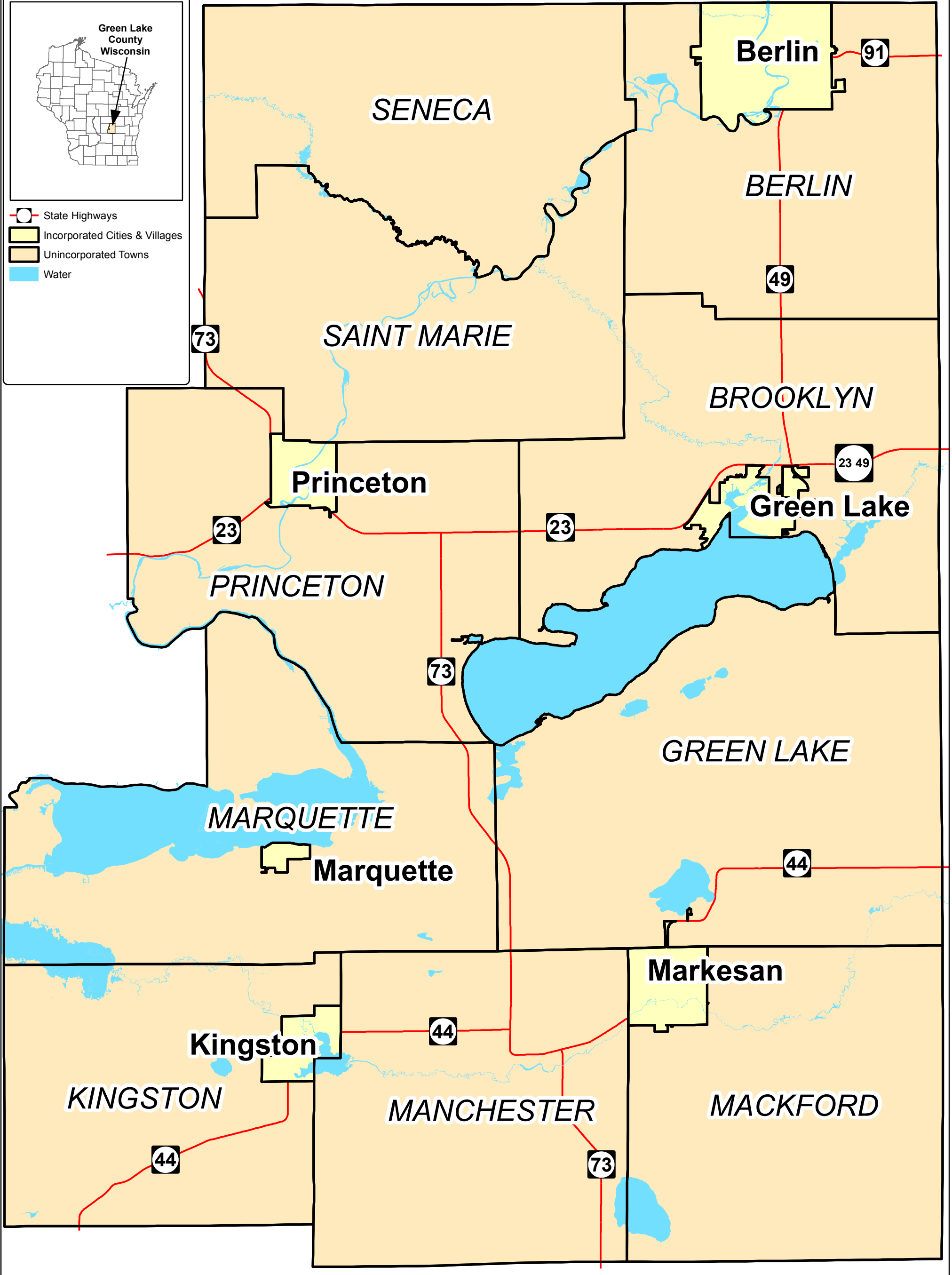
- All meetings properly noticed and open to the public.
- Notices sent to local media outlets identifying the time and location of public informational meetings and public hearings.
- Information about meetings, the Farmland Preservation Plan, and related materials were made available at the Green Lake County Government Center in the City of Green Lake for review by local residents and interested persons.
- Information about meetings, the Farmland Preservation Plan, and related materials were made available on the Green Lake County website for review by interested persons.
- Input from town officials was sought to create the farmland preservation plan maps.

In addition, an address to forward written comments was provided in all meeting notices. The Green Lake County Planning & Zoning Staff responded to written comments. Department Staff, along with the consultant, gave a presentation on the farmland preservation program and planning process at the Green Lake County Town Unit Meeting on July 17, 2014 and on April 16, 2015. Both meetings were coordinated by the Wisconsin Towns Association.

Map 1
Location Map



- State Highways
- Incorporated Cities & Villages
- Unincorporated Towns
- Water



The planning process included two key meeting functions:

Green Lake County Farmland Preservation Ad-Hoc Steering Committee: This Committee was comprised of 11 individuals who represented key county agricultural interests such as dairy, vegetable and grain producers, plus the organic, co-op and aerial applicator industries. In addition, the Committee was supported by four (4) professional members including the Planning and Zoning Department Director, The Green Lake County Conservationist, the UW Extension Agricultural Agent and the consultant, Martenson & Eisele, Inc. This group worked to refine goals and objectives, review agricultural and housing trends, and assisted in the rationale used to determine what farmland should be preserved. The Steering Committee met five (5) times throughout the course of the planning process.

Town Meetings: In an effort to encourage town involvement in the planning process, County staff met with individual as requested. The Towns provided input on the following:

1. Identified what areas (farmland and other resource lands) should be preserved by assessing land preservation criteria and any other information relevant to agricultural and forestry activity.
2. Identified which areas are planned for non-agricultural development within the next 15 years.

2.0 Farmland Preservation and Agricultural Development Trends, Plans, or Needs

2.1 Population

Growth for a county is primarily tracked by the population within that county. Population can also serve as a baseline to determine a county's trends and needs. County needs can consist of community, recreational, housing, utility, and educational. Table 100 illustrates the population trends for Green Lake County over the last five decades, as well as surrounding counties and the State of Wisconsin. Please note that referenced Tables 100-128 are located in Appendix A. Population trends can be further broke down by race and ethnicity as well as median age. This information can be found in Tables 101 and 102.

Green Lake County had a population of 19,051 persons in 2010. This was a 0.3% decrease from 19,105 of the previous decade. An increase of 2.4% was experienced from 1990 to 2000 showing growth throughout the 1990s with a trend of decline in population in the 2000s. Green Lake County closely follows growth trends experienced by the State of Wisconsin. Wisconsin's rate of growth in the 1990s was 1.6 percent higher than that of Green Lake County. Even with this declining rate of growth for Green Lake County it is still important to monitor development pressure on agricultural lands within rural areas. Guidance can help alleviate conflicts between residential and agricultural uses.

Population Estimates

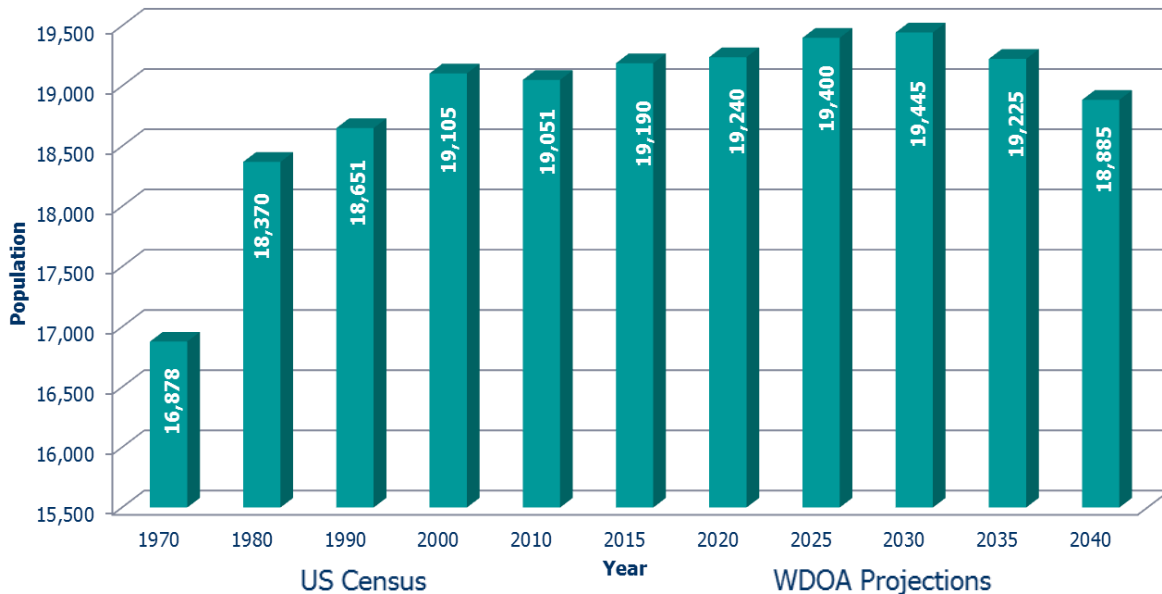
Population estimates are updated every year for all municipalities within Wisconsin by the Wisconsin Department of Administration Demographic Services Center and should be utilized as the primary source of population information during non-census years. The 2014 population estimate for Green Lake County was 19,114, a 0.3% increase from 2010. Many surrounding counties experienced a population decrease or like Green Lake County an extremely small increase from 2010 to 2014. Marquette County was estimated as having a 0.03% decrease. Wisconsin overall had an increase of 0.8% from 2010 to 2014. Estimates predicted in 2014 continued the trend of decrease from the previous decade for a lot of counties. For those counties that did have growth, the increase was not substantial. Green Lake County experienced a 0.3% decrease in the ten year period from 2000 to 2010. With the current estimated decrease in population growth, it is anticipated that there will be less pressure placed on agricultural lands during this downturn in growth. However, historical population estimates indicate that there will be a cycle of increased growth. In order to prevent an increased pressure on the agricultural industry, methods should be considered to direct population growth toward urban areas, consisting of cities and villages.

Population Projections

Projected populations from the Wisconsin Department of Administration Demographic Services Center for Green Lake County can be found in Table 103. Projections show a plateau of approximately a 0.5% increase in population over the next 20 years. The Wisconsin Department of Administration predicts Green Lake County will have a population of 19,445 persons in 2030, an increase of 394 persons (See Figure 2-1). Based on predictions for surrounding counties Green Lake lags behind the predicted growths for the adjacent counties over the next 20 years. Waushara County is predicted to have the greatest percentage of growth over this time period. The average household size for Green Lake County in 2010 was 2.38, with a predicted size of 2.20 persons in 2040. Based on the projected population increase and household size, it is es-

timated that there will be a need for 489 new dwelling units to house the additional population for the County. These new housing units, depending on their location and rate of density, will potentially have an effect on the amount agricultural land remaining in the County.

**Figure 2-1
Green Lake County Population
Historic and Projected**



Source: US Census, Wisconsin Department of Administration

2.2 Economic Growth

Economic growth can be measured by a variety of ways including unemployment rates, household income, labor force, average wages, poverty status, employment trends, or principal employers. These trends can be found in Tables 106-113. Green Lake County residents have seen an increase in income over the last decade, a slightly greater increase than the State of Wisconsin. Even though Green Lake County falls slightly above the 8% unemployment rate, they do have a lower amount of persons below poverty status than the State. However it should be noted that unemployment rates have dropped substantially since the 2010 Census and have ranged on average from 5% to 6% statewide in late 2014. The drop in the State’s unemployment rate is viewed as a sign of a recovering economy. Employment for the County is greatly dominated by services and manufacturing. However, agricultural-related business is an important facet within the County as it generates thousands of jobs and millions of dollars in economic activity. Additional information regarding Green Lake County Agriculture can be found in Appendix B, “Green Lake County Agriculture: Value & Economic Impact 2011”.

Agriculture is a cornerstone for Green Lake County, and is quite diverse in the agricultural products and practices. Green Lake County offers organic dairy and vegetables, rotational grazing, conventional dairies of all sizes, and a variety of vegetable crops. Not only does agriculture provide for 15% of the County’s jobs, but it accounts for \$320 million in business sales. Agricultural business is a significant anchor for the County as it generates 27% of the County’s total business sales and pays \$7.4 million in taxes annually. As agriculture is a vital component in

Green Lake County's economy, economic development trends and policies will have to help maintain agriculture as a major component of the economy.

2.3 Housing

Housing trends and analysis information can be found in Tables 118-128. Information within these tables is provided on age of housing, housing values, types of housing, occupancy, household size, and affordability.

There can be discrepancies between the rate of increase in population and the rate of increase in housing, as trends have shown a decrease in the average number of persons residing in a household. Because of the decline in persons per household, there typically is a greater increase in the number of households compared to the increase in the population. According to population projections and average persons per household for 2040, there will be a need for 489 new households by 2040. The location of these new households has the potential to have an effect on the amount of agricultural land available in the County.

Existing Housing Units

Table 124 outlines the types and number of households for the County. There has been an increase of 2.8% total households from 2000 to 2010, with a decrease in population of 0.3% from 2000 to 2010. Green Lake County's increase in the number of households was less than Wisconsin by 6.6%. These statistics follow the trend of the need of more homes being used to house fewer people, thus having the housing growing at a faster rate than the population in the County.

Tables 125 and 126 outline the trend in the decrease of persons per household from 2000 to 2010. There has been a progressive decline in the average persons per household from 2.59 persons per household in 1990, 2.48 persons in 2000 and 2.41 persons in 2010. Wisconsin has seen a similar decline with 2.68 persons per household in 1990, 2.57 persons in 2000, and 2.49 persons in 2010.

Housing Forecasts

Household forecasts are essential in preparing a farmland preservation plan for a county, as they aid in determining the amount of land that will be required to accommodate future residential needs. As with all projections, these projections are based on past statistics and current trends. Housing projections are obtained from the Wisconsin Department of Administration Demographics Service Center. The total number of households for Green Lake County is projected to be 8,408 by 2040, an increase of approximately 302 households from 2015. This constitutes a 3.7% increase for the 25-year period. The density and location of these 302 housing units will dictate the impact to agricultural resources within Green Lake County. The more densely these additional housing units are planned, the less impact there will be to the agricultural land in the County. Villages and cities will play an important role in accommodating new housing growth while reducing land fragmentation in towns.

2.4 Transportation

Existing Road System

Green Lake County contains a networked system of highways that makes commerce to and from Minneapolis/St. Paul, La Crosse, Dubuque, Madison, Wausau, the Fox Cities and all points beyond, accessible to agricultural markets. State Highway 23 is the most heavily used road in the County averaging up to 9400 vehicles per day on eastern portions. This highway provides the primary east/west route through the County. State Highways 49 and 73 are the major north/south routes through the County. All state and county trunk highways provide vital service to the agricultural industry. In total, there are 703 miles of roadways within the County owned as follows: State Highway-70 miles, County Highway-229 miles and local roads-404 miles.

The Green Lake County Highway Commission is responsible for the year-round maintenance of County Trunk Highways and State Highways. The Highway Commissioner directs the department employees. Operations of the department are quartered in two locations: the main facility is located in the City of Green Lake with the second facility located in the Town of Manchester.

Local roads are maintained by the local unit of government. Recent challenges have surfaced over the size of agricultural equipment using the roadways and the potential damage the farm equipment and their representative weights can cause to the roadways. To address this growing concern while meeting the needs of agricultural industry, Wis. Act 377 (commonly referred to as the Implement of Husbandry IOH law) was signed in April ,2014.

The new act defined various types of equipment plus height, length, width and weight criteria. The law further establishes a “No Fee” permit system approach in which units of government are given options on how they can administer the no fee program. Although it is still early in establishing the administrative functions of the program, it appears many local units of government (especially towns) are working closely with the county highway departments in administering the selected details of the program. This cooperation and coordination appears the most administratively efficient approach while being fair to agricultural equipment owners and operators.

Additional Modes of Transport

Rail Transportation

There are 12 freight carriers in Wisconsin, two of which operate within Green Lake County. The Union Pacific and the Wisconsin & Southern Railroad Co. operate service in central Wisconsin and connect to national points, east and west. The adjacent County of Fond du Lac, specifically the Village of North Fond du Lac, is home to the largest rail switching yard in the State of Wisconsin. Rail carriers in Wisconsin operate over 3,400 miles of track and carry over 160 million tons annually. Rail will continue to be a major means of moving bulk agricultural products to markets and providing essential fuel and fertilizer supplies to farmers.

Air Transportation

Of Wisconsin’s eight commercial airports, five are within 90 minutes of Green Lake County. International flight service is available at General Mitchell International Airport in Milwaukee and at Austin Straubel International Airport in Green Bay. National and international access is available from several airports within an hour’s drive, and a two and a half-hour jaunt to Chicago (with its three international airports) affords you the opportunity to fly directly to your global destination. There are also 3 Private Airports within Green Lake County.

Ports

Four of Wisconsin’s eight ports are located within two hours of Green Lake County, three within ninety minutes. These modern port facilities serve as multi-modal distribution centers—linking cargo vessels with land based transportation of both highways and rail.

Transportation Plans and Projects

Maintaining a sound transportation infrastructure is vital to supporting agriculture and the State’s overall economy. The following road projects are planned for Green Lake County.

State Highway Projects

According to The Wisconsin Department of Transportation (WisDOT) Six Year Highway Improvement Plan, Green Lake County has two scheduled projects as follows:

2015

Mill and Overlay Asphalt Pavement:

Hwy 44	3.78 Miles	Manchester-Ripon. School Road to Grand River Bridge
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2019

Resurface Roadway:

Hwy 49	7.38 Miles	Ripon – Auroraville. STH 23 in the City of Green Lake to South Street in the City of Berlin.
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County Highway Projects

In a county heavily influenced by agricultural activity, all county trunk highways play an important role in the movement of agricultural products and services. These roads must be maintained to a level of service adequate to meet road standards. The following county highway projects are proposed by the Green Lake County Highway Department over the next several years for improvements:

2015

Reconstruction:

CTH Y	1.0 Miles	STH 73 – Black Creek Rd.	Town of Princeton
CTH A	0.8 Miles	CTH I – Tichora Rd.	Town of Mackford
TOTAL	1.8 Miles		

Surface:

CTH PP	3.0 Miles	CTH F – FDL Co.	Town of Brooklyn
CTH H	1.7 Miles	Puckaway Rd. – Town Line	Town of Marquette
CTH B	2.0 Miles	Hilltop Rd. – CTH H	Town of Green Lake /Town of Marquette
TOTAL	6.7 Miles		

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Chip Seal:

CTH X	6.5 Miles	STH 73 – CTH Q	Town of Mackford
CTH X	6.0 Miles	STH 44 – STH 73	Town of Manchester
TOTAL	12.5 Miles		

2016

Reconstruction:

CTH DD	2.0 Miles	CTH D – Marquette Co. Line	Town of Saint Marie
CTH Y	0.2 Miles	STH 73 – Losinski Rd.	Town of Princeton
TOTAL	2.2 Miles		

Overlay

CTH I	0.88 Miles	CTH U – CTH O	Town of Mackford
CTH Q	2.5 Miles	STH 44 – CTH S	Town of Green Lake/ Town of Mackford
CTH Q		LRIP – CHID Approved	
TOTAL	3.38 Miles		

Chip Seal:

CTH B	2.4 Miles	STH 44 – CTH H	Town of Kingston
CTH B	2.6 Miles	CTH N – CTH O	Town of Green Lake
CTH H	3.8 Miles	STH 73 – CTH B	Town of Marquette
CTH H	1.8 Miles	STH 44 – CTH HH	Town of Kingston
CTH FF	0.6 Miles	STH 44 – CTH HH	Town of Kingston
TOTAL	11.2 Miles		

2017

Reconstruction:

CTH M	3.5 Miles	County Line – CTH X	Town of Manchester
TOTAL	3.5 Miles		

Chip Seal:

CTH A	4.5 Miles	STH 44 – CTH K east	Town of Green Lake
CTH A	3.1 Miles	STH 44 – Tichora Rd.	Town of Green Lake/ Town of Mackford
CTH H	3.1 Miles	STH 73 – STH 44	Town of Green Lake
TOTAL	10.7 Miles		

2018

Reconstruction:

CTH U	1.25 Miles	Zink Rd. – CTH I	Town of Mackford
CTH O	0.5 Miles	Center Rd. – CTH K	Town of Green Lake
CTH S	1.2 Miles	RR Spur – CTH Q	Town of Mackford
TOTAL	2.95 Miles		

Surface:

CTH O	2.0 Miles	CTH B – CTH H	Town of Green Lake
TOTAL	2.0 Miles		

Chip Seal:

CTH T	3.5 Miles	STH 73 – Bend Rd.	Town of Princeton
CTH A	2.7 Miles	South St. – CTH K	Town of Brooklyn
CTH EE	0.7 Miles	STH 44 – Barry Rd.	Town of Kingston
CTH W	2.8 Miles	STH 23/73 – CTH D	Town of Princeton
TOTAL	9.7 Miles		

2019

Reconstruction:

CTH D	2.25 Miles	City of Princeton - White River Rd.	Town of St. Marie
CTH D	0.9 Miles	STH 23 – N. City of Princeton	City of Princeton
CTH D		STP Rural ~ Estimate	
TOTAL	2 Miles		

Chip Seal:

CTH I	2.5 Miles	STH 73/44 – CTH H	Town of Manchester
CTH B	2.7 Miles	CTH O – STH 73	Town of Green Lake
CTH A	3.6 Miles	CTH J – CTH AA	Town of Brooklyn/ Town of Berlin
TOTAL	8.8 Miles		

2020

Reconstruction:

CTH AW	3.5 Miles	Columbia Co. Line – Dodge Co. Line	Town of Mackford
TOTAL	3.5 Miles		

Chip Seal

CTH K	6.0 Miles	CTH N – STH 73	Town of Green Lake
CTH K	2.0 Miles	CTH A – FDL Co. Line	Town of Green Lake
TOTAL	8.0 Miles		

2.5 Utilities and Energy

Existing Utilities and Energy Sources

Electricity

There are three electricity providers within the County that serve residential and commercial users. In general, residents and commerce located in the western portions of the County are served by Adams-Columbia Electric Cooperative. Eastern electric users are served by Alliant Energy. There is one municipal and electric service cooperative around the City of Princeton, Princeton Municipal Water and Electric Utility, within Green Lake County.

Natural Gas

There are two natural gas companies that serve users in Green Lake County. The primary provider is Wisconsin Gas. This utility serves the western and central portions of the County. Service to the eastern portion of the County (the towns of Brooklyn, St. Marie, Berlin and City of Berlin) is provided by Alliant Energy. The Town of Seneca, is not served by either of these two companies.

2.6 Communications

Cellular telephone service is available throughout the County as well as emergency 911 services. Strength of the signal will vary depending on tower locations and topography.

2.7 Business Development

Business development can benefit a community in a variety of ways including, enhancing quality of life through increasing wages and better worker training, create new jobs, encourage sustainable development, and allow a community to be more competitive for attracting residents and labor force.

Labor Force

Green Lake County's labor force has experienced a 7.1% decrease from 2000 to 2010, whereas Wisconsin has experienced a 2.2% increase in the labor force. However unemployment rates in 2010 for both Green Lake County and Wisconsin are relatively aligned at 9.4% and 8.3% respectively. Most recently, the May, 2015 unemployment rates for the State and County were 4.4% and 5.3% respectively. Of those residents of Green Lake County employed in the labor force in 2012, 52% of the residents both reside and work within the County and 47% commute outside of the County. In regards to all employees within the County in 2010 there are 54.0% working and residing in the County and 45.0% commuting into the County but residing outside of Green Lake County. For those residing and working in Green Lake County their per capita income in 2010 was \$24,973, slightly less than Wisconsin's per capita income of \$25,458.

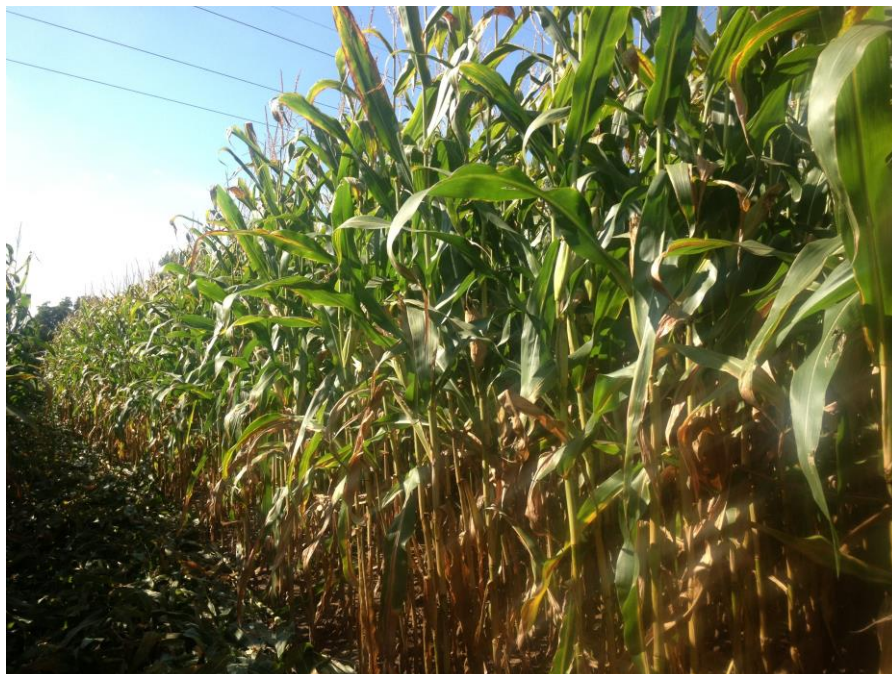
Economic Base

The foundation of the economic base for Green Lake County is education and health services at 25.6% of total employment within the County followed closely by trade, transportation, and utilities with 19.3%, and manufacturing at 19.0%. Likewise, the State of Wisconsin's top three industries consisted of education and health services, employing 22.6% of the workforce, and trade, transportation and utilities at 19.7%, followed by manufacturing at 16.3%, and agriculture at 12.9% as displayed in Table 111. Education and health services, as well as trade, transportation, and utilities, and manufacturing are the basic employment areas for the County.

In regards to employment of residents by their type of industry, Green Lake County in 2010 had a higher percentage of total employed in the agriculture, forestry, fishing, and mining at 6.3% than the state which had a total percentage of 2.5. Green Lake County experienced a slight decrease of 3.6% in those employed in agriculture, forestry, fishing, and mining, whereas Wisconsin experienced an overall loss of 6.4% from 2000 to 2010.

Dairy farms are a key County industry. On-farm milk production generates \$31.9 million in sales and accounts for approximately 208 jobs county wide. It is estimated by the Green Lake County Land Conservation Department that approximately 17 employees work directly on dairy farms. At a county level each dairy cow generates \$3,152 in on-farm sales to producers. At a state level, each dairy cow generates more than \$34,000 in economic activity annually. Dairy is Green Lake County's top commodity in sales, followed by grains, vegetables, cattle and calves, and other crops and hay.

It is likely that much of the agricultural commodities produced in Green Lake County are utilized in adjacent counties, such as Fond du Lac and Columbia County.



According to 2011 data obtained from the UW Cooperative Extension Office, Green Lake County agriculture:

- Provides 1,463 jobs throughout the County (15% of the County total of 9,769)
- Pumps \$320 million into the economy (almost 27% of the County's total business sales)
- Contributes \$88 million to County sales income (accounting for 16% of the County's total) and
- Pays \$7.4 million in taxes
 - Sales tax \$1.6 million
 - Property tax \$2.0 million
 - Income tax \$0.8 million
 - Note: The \$7.4 million does not include all property taxes paid to support local schools. If it did the number would be much higher.

Outside of agriculture, the three largest private employers in Green Lake County are Berlin Memorial Hospital, Grede, Green Lake Conference Center and the Heidel House Resort & Spa.

Business Development Trends and Outlook

The promotion of business and economic development falls under the responsibility of the Green Lake County Economic Development Corporation (GLCEDC). This Corporation's mission is to: "Promote, Attract, Stimulate, Rehabilitate and Revitalize Commerce, Industry, and Manufacturing in Green Lake County". The GLCEDC was established in 1990 as a non-profit separate corporation to apply for and administer grants and loans for the purpose of economic development in Green Lake County. The primary purpose of the Corporation is to promote industrial, tourism and other economic development in the County that will create jobs.

The GLCEDC has not performed any specific studies on the outlook or future trends of the County's agricultural economy, but the County was included in a regional assessment that was

led by the neighboring Fond du Lac County Economic Development Corporation. There is a strong agricultural connection between Western Fond du Lac and Eastern Green Lake Counties so the study's results are very relevant to the future of Green Lake County agriculture businesses.

According to the Fond du Lac County Economic Development Corporation, the regions pursuit of a diverse economy starts with expanding existing business and attracting new business. Targeting specific industry sectors to expand or start fresh in the region will always be an ongoing effort.

To create a balanced industry mix, seven targeted industry clusters were selected. These industries were as follows (in no priority order):

1. Advanced Manufacturing: Machinery & Metal
2. Advanced Material Manufacturing
3. Agribusiness, Food Processing & Technology
4. Biomedical/Biotechnical (Life Sciences)
5. Energy (Fossil and Renewable)
6. Printing and Publishing
7. Transportation & Logistics

Within the seven industries, an in-depth study revealed market opportunities for existing businesses to expand or for new businesses to locate in Fond du Lac County or within the 7-county region (Fond du Lac, Calumet, Dodge, Green Lake, Sheboygan, Washington and Winnebago counties).

The in-depth study (available on-line from the Fond du Lac Economic Development Corporation at <http://www.fcedc.com/sft386/summaryagwithmarketopptsvfinal.pdf>), identified the following unmet needs associated with agriculture:

- **Crop and animal production**
- **Ag chemicals (pesticides) and fertilizer**
- **Fluid milk manufacturing (manufacturing processed milk products or fluid milk dairy substitutes)**
- **Wholesale trade agents and brokers**
- **Alternative energy to replace petroleum and natural gas imports**
- **Dry, condensed and evaporated dairy products**
- **Soybean processing**
- **Plastic bottle manufacturing**
- **Flavoring syrup and concentrate manufacturing**
- **Commercial banking**

These identified opportunities suggest a void in local services (Fond du Lac County) spawned by the existing agricultural economy. However, some of these needs can be addressed region-

ally by other adjacent counties (Green Lake for example). Nonetheless, the study reveals the “spin –off” economic effects agricultural activity can generate to the local and regional economy.

Identified strengths of the region in which includes Green Lake County include the following:

- The region has very strong support in: crop and animal production; veterinary services; farm supplies and equipment; food processing and transportation equipment; transportation (trucking and rail); warehousing; and printing and packaging (paper, cardboard, metal, plastic).
- The region and state have very strong education, research, and support organizations for the industry cluster such as: Moraine Park Technical College; University of Wisconsin and UW-Extension; Wisconsin Department of Commerce; Wisconsin Department of Agriculture; Trade, and Consumer Protection.
- The region is centrally located with excellent highway access to major markets in Green Bay, Madison, Milwaukee, Chicago and Minneapolis.

2.8 Community Facilities and Services

Existing Services

Local features such as parks, schools, and protective services help define a community's character. In Green Lake County, many of the smaller incorporated communities provide necessary support services for the outlying agricultural towns. These services require substantial investment supported by local tax bases or user fees. Industry and business which are supportive to agriculture rely heavily on fundamental services like public water and sewer to operate their businesses.

Sanitary Sewer and Public Water Facilities

Sanitary sewer and public water facilities are provided by the individual village and city (incorporated) communities. These systems accommodate concentrated development which makes the system cost effective. System infrastructure needs such as municipal wells, wastewater treatment plants and service lines are monitored by their respective municipal departments with water quality oversight provided by the Wisconsin Department of Natural Resources.

Private Onsite Wastewater Treatment System (POWTS) Facilities

POWTS facilities, more commonly known as septic systems are primarily located within unincorporated areas of the County that do not have accessibility to public sanitary sewer. POWTS systems, which are installed by licensed plumbers, are required to abide by the POWTS Maintenance Program administered by Green Lake County Code Enforcement Office. Depending on the size of the POWTS system, pumping is required every three years, unless pumping is required at a shorter interval. Notices are sent to the property owner at the appropriate pumping interval.

Future Needs

Wisconsin's comprehensive planning legislation requires that the Utilities and Community Facilities element of the comprehensive plan include an approximate timetable that forecasts the need to expand or rehabilitate existing utilities or to create new utilities. Each community in Green Lake County that developed a comprehensive plan identified major public facility projects for implementation. The recommendations are based on system condition, performance and the need for expansion due to population and industrial growth.

Collaboration between towns, villages and cities is very important in providing necessary support infrastructure to the agricultural business industry. Not only do the incorporated villages and cities provide many of the food processing and services industries but they provide housing opportunities for much of the labor required to fill job opportunities within these industries.

2.9 Waste Management

Green Lake County does not provide services in regards to residential and commercial solid waste or recycling pick up. Solid waste and recycling is primarily provided by private companies hired by municipalities to provide the service. The type of service typically consists of curbside collection. The County does participate in the Clean Sweep Program that allows for Green Lake County citizens to have a way to dispose of hazardous materials. Cities, villages, and towns typically organize their own municipal waste pick up and disposal using commercial haulers. The Valley Trail licensed landfill currently operates in the Town of Berlin and is managed by Waste Management.

There are 16 responsible units for recycling within the County. Each city, village or town indicated is responsible for complying with recycling regulations.

2.10 Municipal Expansion

Green Lake County is home to 16 municipalities (4 cities, 2 villages, and 10 towns). Incorporated community expansion is going to be an issue for towns in Green Lake County, as cities and villages can expand into town territory. Municipal expansion occurs through annexation and often results in the loss of agricultural land. Cooperative boundary agreements between a town and a city or village present an alternative to annexation.

Cooperative Boundary Agreements

Cooperative boundary agreements can reduce some of the conflict regarding boundary issues, including annexation, that often arise between towns and their incorporated neighbors (cities and villages). The Legislature has provided express enabling authority for these agreements. The communities involved in such agreements undertake cooperative preparation of a plan for the areas concerned. The plan for changing or maintaining boundaries, and for controlling land use and services is sent to the Department of Administration. If the plan is approved, a contract binding the parties to it is put into effect

Cooperative boundary plans or agreements involve decisions regarding the maintenance or change of municipal boundaries for a period of 10 years or more. The cooperative plan must include a plan for the physical development of the territory covered by the plan, a schedule for changes to the boundary, plans for the delivery of services, an evaluation of environmental features and a description of any adverse environmental consequences that may result from the implementation of the plan, and it must address the need for safe and affordable housing. The

participating communities must hold a public hearing prior to its adoption.

In Green Lake County, there is one good example of intergovernmental cooperation. The City of Berlin and Town of Berlin administer Extraterritorial Zoning for an area around the city. Land use decisions are reviewed by this joint committee comprised of representation from both communities. The Extraterritorial Zoning Committee provided guidance in the development of this farmland preservation plan.

Annexation

Cities and villages have the power to annex given to them by the state. The power to extend municipal boundaries into adjacent unincorporated (town) lands allows a community to control development on its periphery. Contrary to popular belief, annexation occurs at the request of town residents, not at the request of the incorporated municipality. Petitions for annexation are filed by the town landowners and the village or city acts upon the annexation petition.

Wisconsin Statute, 66.021, Annexation of Territory, provides three petition methods by which annexation may occur. Annexation involves the transfer of one or more tax parcels from a town to a city or village. Cities and villages cannot annex property without the consent of landowners as required by the following petition procedures:

1. Unanimous approval - A petition is signed by all of the electors residing in the territory and the owners of all of the real property included within the petition.
2. Notice of intent to circulate petition (direct petition for annexation) - The petition must be signed by a majority of electors in the territory and the owners of one-half of the real property either in value or in land area. If no electors reside in the territory, then only the landowners need sign the petition.
3. Annexation by referendum - A petition requesting a referendum election on the question of annexation may be filed with the city or village when signed by at least 20 percent of the electors in the territory.

Wisconsin Act 317 — Revisions to Annexation Procedures

Under this Act which was enacted in April of 2004, no city or village may annex any territory if none of the city's or village's territory is in the same county as the territory to be annexed. The Act also requires cities and villages to make payments for five years to towns that lose territory due to annexations. Cities and villages will have to pay to the town from which the land is annexed the amount of the town tax for the annexed property. The Act gives an exemption from this payment for cities and villages that have boundary agreements with the neighboring towns. Although Wisconsin Act 317 helps towns financially when land is annexed by a city or village, it does not stop the loss of agricultural land that may occur.

2.11 Environmental Preservation

Being stewards of the environment is important in order to preserve the natural resources relied upon by all. Natural resources are continually facing significant pressure as populations are growing and expanding. With this growth and expansion there has been increased demand for groundwater, land, and raw materials. Planned development patterns can be a vital aspect in preserving and regulating the use of the natural resources within Green Lake County. During times of economic prosperity, there was a demand for country living which put growing stress on

agricultural operations. Migration of persons from urban areas to more rural type suburbs, can have a potential for negative impact on the natural resources.

Many sensitive areas have state and federal regulations protecting them, such as wetlands, floodplains, and shore lands. Many of the state laws establish protective area setbacks for such resources, as well as minimized use requirements. Unlike wetlands, shore lands, and floodplains, not all resources are protected by state law. Municipalities have the ability to choose to protect additional natural resources that they value within their community. Local ordinances help set standards and deal with any issues or conflicts that may arise during land use or development, and in turn provide protection for valued natural resources in the County.

Environmental Preservation Tools

Green Lake County Land and Water Conservation Department promotes environmental preservation through supplying financial, technical, and land planning assistance to landowners in the County. Programs administered by the Department, consist of the Farmland Preservation Program, the Land and Water Resource Management Plan, Crop Damage Program, Information and Education Programs, Environmental Quality Incentives Program (EQIP) Agriculture Conservation Easement Program (ACEP), and Lakes Streams and Ponds Program, Conservation Reserve Enhancement Program (CREP). The Land and Water Resource Management Plan primary purpose is to maintain funding levels needed to implement the conservation practices and programs in order to make a positive impact on resources in the County. The County also implements a Shoreland Ordinance in order to prevent water pollution and maintain stable and healthy conditions. In doing so the district protects fish spawning grounds and aquatic life by preserving shore cover within the County.

The Green Lake Conservancy Foundation (GLCF) is a non-profit origination that works to protect and enhance the greater Big Green Lake Watershed. The Conservancy identifies lands that are environmentally sensitive and work with land owners to acquire qualifying natural areas, or help the landowners establish conservation easements.

2.12 Potential Weather Cycle Impacts

As summarized in Tables 2-2 and 2-3, weather cycles have the potential to impact agriculture in Wisconsin directly in both positive and negative ways, as summarized in Tables 2-2 and 2-3. These direct impacts typically consist of changes in temperature and precipitation amounts. Besides direct impacts to agriculture there are also indirect situational changes that will affect Wisconsin agriculture (Table 2-4). These variable weather cycles are likely to continue in the future and agricultural activities will need to adapt to the resultant conditions. There is increased pressure to increase current yields of agricultural crops, in order to continue to provide ecosystem goods as well as support the growth in bioenergy. The response by agricultural producers to these variable weather cycles contains plenty of uncertainty, as different climate scenarios require different responses in planting times and herbaceous and pest management practices in order to maximize crop yields.

With agriculture being a major economic component in Green Lake County and Wisconsin, it will be important for agricultural producers and policy-makers to have the best available information on weather cycles and the effects on agricultural production. Weather cycles will continue to have an effect on production and yields. It will be essential for policy-makers and agricultural producers to work together in order to continue to keep agricultural a strong and growing aspect of the economy and culture of Green Lake County.

Table 2-1
Direct Impacts on Agriculture - Positive

<u>Aspects of Weather Cycles</u>	<u>Impact on Agricultural Production</u>
Longer frost-free periods	Use of higher-yielding genetics
More freeze/thaw cycles in winter	Increased soil tilth and water infiltration
More summer precipitation	Reduced plant stress
Higher dew point temperatures	Reduced moisture stress
More diffuse light (increased cloudiness)	Reduced plant stress
Higher water-use efficiency	Higher yields
Warmer spring soil temperatures	Use of higher-yielding genetics
Reduced risk of late spring or early fall frosts	Use of higher-yielding genetics
Increased atmospheric CO ₂ levels	Increased photosynthesis and yields

Source: "Agriculture and the Soil Resource", Wisconsin Initiative on Climate Change Impacts

Table 2-2
Direct Impacts on Agriculture - Negative

<u>Aspects of Weather Cycles</u>	<u>Impact on Agricultural Production</u>
More spring precipitation causes water-logging of soils	Delayed planting, reduced yields, compaction, change to lower-yielding genetics
Higher humidity promotes disease and fungus	Yield loss, increased remediation costs
Higher nighttime temperatures in summer	Plant stress and yield loss
More intense rain events at beginning of crop cycle	Replanting and field maintenance costs; loss of soil productivity and soil carbon; Increased soil erosion and runoff;
More droughts	Yield loss, stress on livestock, increase in irrigation costs, increased costs to bring feed and water to livestock
More floods	Replanting costs, loss of soil productivity and soil carbon; damage to transportation infrastructure may reduce delivery to milk processing plants
More over-wintering of pests due to warmer winter low temperatures	Yield loss, increased remediation costs
More vigorous weed growth due to temperature, precipitation and CO ₂ changes	Yield loss, increased remediation costs
Summertime heat stress on livestock	Productivity loss, increase in miscarriages, may restrict cows on pasture
Temperature and precipitation effects on pollinators	Losses to cropping (forage, fruits, vegetables) systems
New diseases or the re-emergence of diseases that had been eradicated or under control	Enlarged spread pattern, diffusion range, and amplification of animal diseases

Source: "Agriculture and the Soil Resource", Wisconsin Initiative on Climate Change Impacts

Table 2-3
Indirect Impacts on Agriculture

<u>Situational Change</u>	<u>Impact on Wisconsin Agriculture</u>
Regulation involving greenhouse gas emissions	Potential increased costs to meet new regulations; opportunities to participate in new carbon markets and increase profits
Litigation from damages due to extreme events or management of carbon markets	Legal costs may increase
New weed and pest species moving into Wisconsin	Control strategies will have to be developed; increased pest management costs and crop losses
Vigorous weed growth results in increased herbicide use	Increase in resistance or reduction in time for development of resistance; regulatory compliance costs or litigation over off-site damages from pesticides
Possibility of increased inter-annual variability of weather patterns	Increased risk in crop rotation, genetic selection, and marketing decisions
Increased global demand for food production due to weather cycles and demographic changes	New markets; increase in intensification of production; increase in absentee ownership
Increased period for forage production	Decreased need for large forage storage across winter for livestock operations
Increased taxes or regulations on energy-dependent inputs to agriculture (for example- nitrogen fertilizer)	Profitability impacts on producers; loss of small-scale farm supply dealers

Source: "Agriculture and the Soil Resource", Wisconsin Initiative on Climate Change Impacts

3.0 Land Use, Natural Resources & Physical Features

3.1 Existing Land Use

The majority of the land use in Green Lake County is in agricultural use with residential developments primarily clustered within the incorporated areas and around the lakes. Agriculture has traditionally been the predominant land use in Green Lake County. Generally speaking, the largest tracts of agricultural land are featured in the flatter topographic region of eastern Green Lake County often referred to as the plateau (See Map 2). This area also features the best agricultural soils so the opportunity to grow vegetable crops such as green snap beans and sweet corn and grain crops such as corn, soybean and winter wheat is greatest in this region. As the topography transitions into more wetlands and irregular soils found in the western portion of the County, land use becomes more diversified. However, agricultural land use is still the top land use type in all of the 10 Green Lake County towns.

The two largest open space land use types are state managed wildlife areas. These areas include the White River Marsh (north west – Towns of Seneca and St Marie) and the Grand River Marsh (south west – Towns of Kingston and Marquette).

The White River Marsh Wildlife Area contains 12,000 acres consisting of open marsh/wet meadow, swamp hardwoods/tamarack swamp, upland prairie/oak savannah and shrub carr. Grand River Marsh Wildlife Area is a 7,000 acre property.

Small cities and villages are scattered throughout the County. The cities of Berlin, Green Lake, Markesan and Princeton contain the most intensive development. Although, the cities and villages do not contain much agricultural land, they provide an important function to the surrounding agricultural towns relative to support materials and services. The interconnected function between town and incorporated communities is as evident and important in Green Lake County than as anywhere in the State of Wisconsin.

Residential development around Green Lake and other water features such as the Fox River and Lake Puckaway are both year round and seasonal. These uses will continue and even expand throughout the planning period.

A more detailed existing land use analysis will be completed as part of the County's comprehensive plan update scheduled to be completed in 2015.

3.2 Land, Soil, and Water Resources

In order to preserve and protect the natural resources in the County, it is important to understand the land, soil, and water resources within the County.

Geology

The northwest portion of Green Lake County is located within the Central Plain of Wisconsin and the southeast portion is located within the Eastern Ridges and Lowlands. The majority of the County consists of Potsdam sandstone. Located within the County are hills of igneous rock of Archean age. The sandstone within the western part of the County is primarily covered by loose material or soil, and marsh deposits, whereas the eastern part of the County the sandstone is covered by rock formations that were formed after the sandstone. The Potsdam sandstone can be seen at Lucas Bluff on the south shore of Green Lake.

Following the creation of Potsdam sandstone, there was a deposit of Magnesian limestone, known as the Lower Magnesian limestone. The limestone commonly underlies all the upland areas of the County. It also formed caps on some of the hills in the County, for instance Mt. Moriah in the Town of Kingston and Mt. Tom in the Town of St. Marie.

Within the eastern portion of the County, formations of the St. Peter sandstone can be found. This formation can be seen at Mitchell's Glen, one-half mile southeast of the east end of Green Lake.

The major influences on the topography of the County from the ice age and the recession of the Green Bay Lobe. Located east of Princeton, west of Green Lake and north of Lake Maria, is a well-developed recessional moraine. The effects of the advancing and retreat of the glacier can be seen through the many knolls and kettles that make the surface very uneven between Green Lake, the Fox River, and Lake Puckaway. Green Lake was created through the blocking of a river valley with a glacier moraine. Lake Puckaway was formed similarly due to blocking of an old valley with deposits near Montello.

Topography

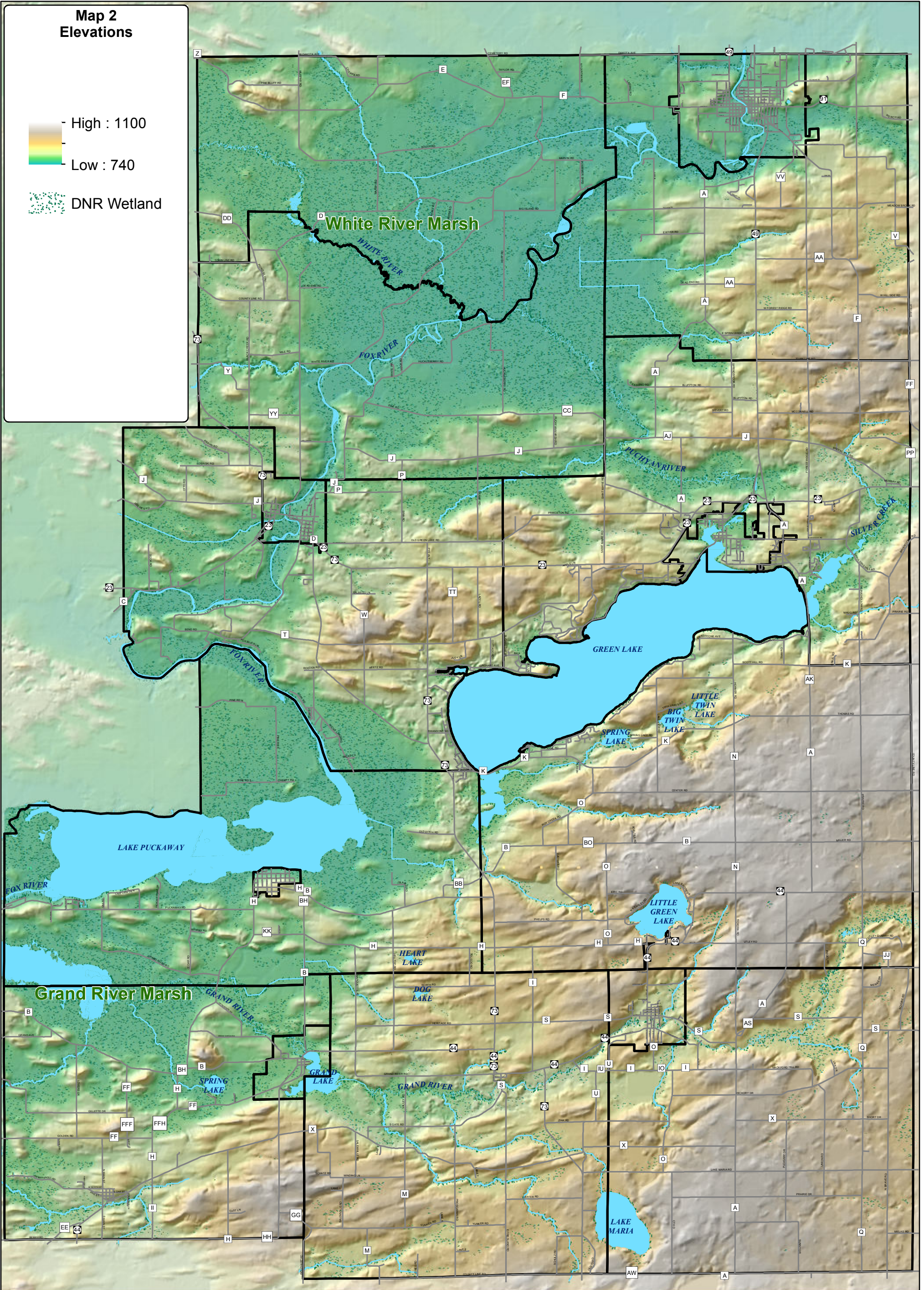
The topography of the land in Green Lake County determines the movement and drainage of water towards streams, rivers, lakes, wetlands and general lowlands. An area's watersheds, drainage basins and drainage corridors guide water movement.

Land relief within the County is approximately 360 total feet, ranging in elevation from approximately 740 feet near the Fox River to approximately 1,100 feet in the Town of Green Lake. Map 2; Elevations, graphically shows the general topography throughout the County. Please note in Green Lake County, there is a direct correlation between the higher elevations and the amount of tillable working farmland. In addition, comparing the higher elevations with the Map 3; Prime Agriculture Soils, one can see the direct relationship between the higher elevations and prime agriculture soils.

Map 2 Elevations

High : 1100
Low : 740

DNR Wetland



Soil

“Soil is a natural, three-dimensional body at the earth’s surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief (varying elevations of the land surface) over periods of time” (Green Lake County Soil Survey 1977). Plant and animal life have a symbiotic relationship with soil. Vegetative cover and organic matter accumulation from living organisms contributes to the formation of soil while the existing soil provides the nutrients and shelter required by organisms living within and on top of the soil. Soils also act as a natural filter for waters infiltrating the surface into the groundwater below. Some soils are not well suited for this filtration process. Soils that are very porous, located on steep slopes or in low-lying areas where the water table is high are at risk for groundwater pollution. For this reason, State and County regulations regarding the placement of septic systems are enforced. Good groundwater supplies are currently abundant. It should be the County’s goal to maintain this supply, as it might become a more vital resource in the future.

According to the Green Lake County Soil Survey (1977) there are six general soil associations (types) found within Green Lake County: Plano-Mendota-St. Charles, Kidder-Rotamer-Grellton, Lapeer-Mecan-Okee, Boyer-Oshtemo-Gotham, Oakville-Brems-Grandby, Adrian-Houghton, and Willette-Poy-Poygan Associations (Map 3).

Plano-Mendota-St. Charles Association

This association is the most predominant type of soil in the County, located primarily in the southeast corner of the County and is the soil type that makes up the high quality farm lands commonly referred to as the ‘Mackford Prairie’. Plano-Mendota-St. Charles is generally of higher elevation; it is moderately to well-drained and ranges from almost level to sloping. This association has a subsoil mainly of silt loam and silty clay loam. Most of the acreage in this soil type can be used for cultivated crops such as corn, small grains or even used for canning crops such as sweet corn and peas. There are very few limitations for using sites in these areas for housing, sanitary leach fields, roads or landfills.

Kidder-Rotamer-Grellton Association

This association is located in an irregular band running from the northeast to the southwest corners of the County. It is found within and around the City of Berlin, along the north shore of Big Green Lake and is the predominant soil type in the Town of Kingston and the western half of the Town of Manchester. This soil type is moderately to well-drained and ranges from nearly level to steeply sloping. The subsoil consists of mainly loam, clay loam, and sandy clay loam. This soil is generally suitable for row crops with some concern for erosion. It is similar to Plano-Mendota-St. Charles in that there are few limitations for man-made developments.

Lapeer-Mecan-Okee Association

This association can be found throughout the County. Most commonly it is found adjacent to the Kidder-Rotamer-Grellton Association. It is described as ranging from well drained to excessively well drained and gently sloping to steeply sloping. It has a subsoil of sandy loam underlain by gravelly sandy loam. This Association has no serious limitations for use as sites for housing, septic absorption fields, roads and streets or sanitary landfills. The soils in this association are suited to all the general farm crops grown in the County, but in an average year crop yields are limited by the available water capacity. As with the Kidder-Rotamer-Grellton Association, this association also has concerns for erosion and soil blowing, which can affect the level of organic matter and fertility for crops.

Boyer-Oshtemo-Gotham Association

This association is the least common soil type in the County. Generally located 'down-hill' from the previous associations it can be described as generally well drained and ranges from nearly level to steep slopes. This association has a subsoil mainly of loamy fine sand, sandy loam and loamy sand underlain by sand or stratified sand and gravel. It is similar to Kidder-Rotamer-Grellton in that there are few limitations for man-made developments. However, it has severe limitations for use as sanitary landfills. This association has the same crop potential as the La-peer-Mecan-Okee Association.

Oakville-Brems-Grandby Association

This soil association is commonly found on each side of the Fox & White Rivers as well as Lake Puckaway. Large portions of the northwestern corner of the County are made up of this soil type. This soil type ranges from moderately to well-drained to poorly-drained and from nearly level to steep slopes. It has subsoils of fine sand underlain by fine and medium sand. Where the land is relatively flat this soil type can have slight limitations for buildings, roads and streets. The soils of this association are better suited for pasture, woodland, or wildlife habitat than to cultivated crops.

Adrian-Houghton Association

Like the Oakville-Brems-Grandby soil type, this association is most commonly found adjacent to the Fox & White Rivers and Lake Puckaway. This soil is very poorly drained and is nearly level with organic soils underlain by sandy, loamy, or clayey material. The soils in this association are too wet to cultivate crops, unless drained.

Willette-Poy-Poygan Association

This soil association is a lowland/wetland soil type. The largest concentration of this soil type can be found along the Puchyan River and within the White River Marsh area. This soil type is described as ranging from poorly drained to very poorly drained, nearly level organic soils and can have a subsoil of silty clay. Unless drained, groundwater is usually at or near the surface most of the year. Generally this soil type has severe limitations for use as sites for housing, septic tank absorption fields, roads and landfills. The areas with this soil type are also generally referred to as 'marsh', wetlands and floodplains. The major soils of this association are too wet for cultivated crops, unless drained. This soil association is primarily used for woodland, pastures, and wildlife habitat.

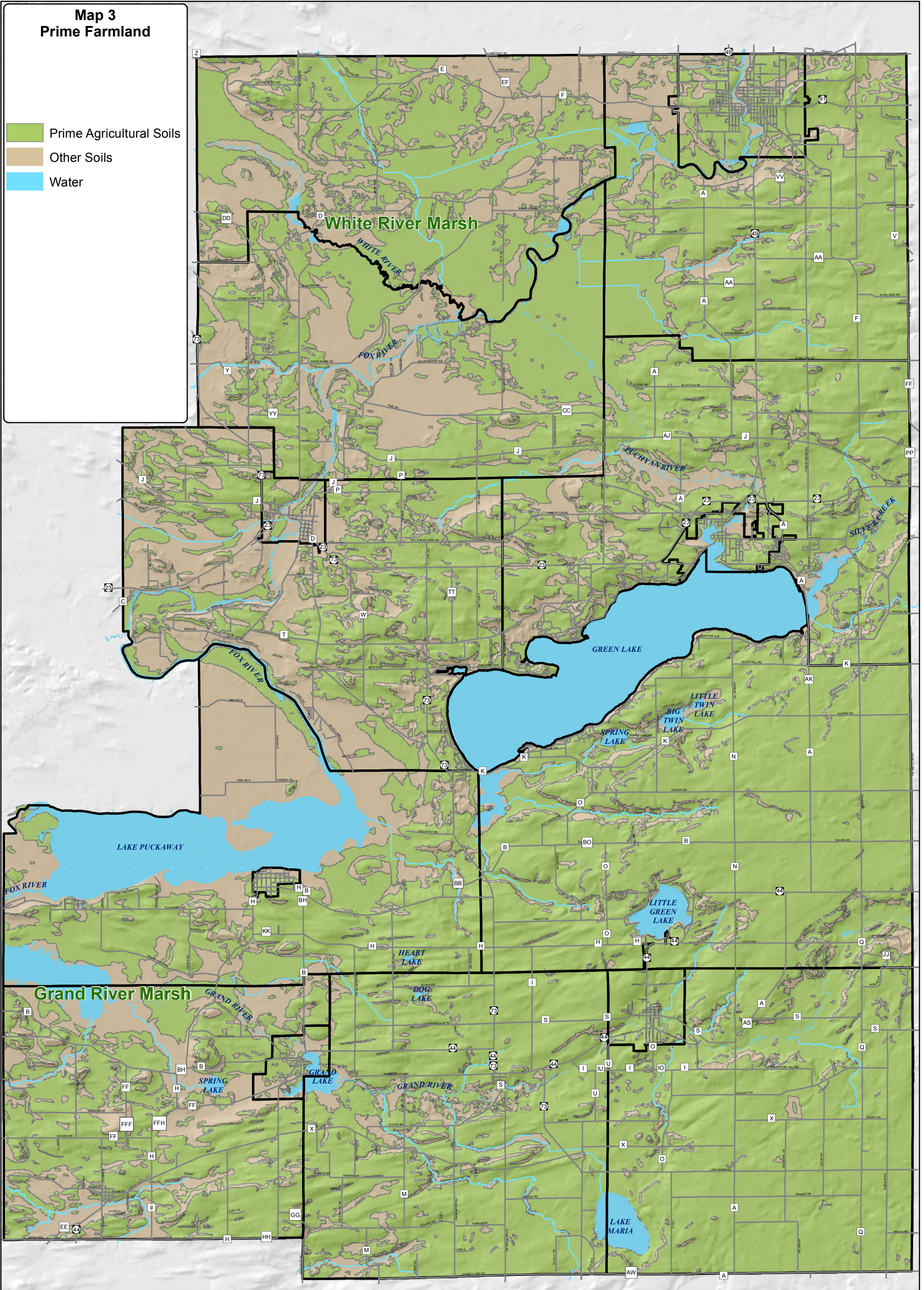
It must be noted that the above general soil associations are just that, "general". There are often several other minor soil series that exist within these associations that may or may not be suitable for development. To obtain detailed soil maps and descriptions for a specific area to ensure proper land uses, refer to the *Soil Survey of Green Lake County, Wisconsin, 1977* (On file at with NRCS, Green Lake County office).

Prime Agricultural Soils

In an effort to further correlate the targeted areas for farmland preservation with productive agricultural soil types, Map 3 was developed. This map indicates the location of all 'Prime Agricultural Soils' as classified by the Green Lake Soil Survey. For the purpose of this plan, prime agricultural soils are defined as Soil Conservation Service capability classes I, II and III. Appendix C indicates all the soil names that comprise the 'Prime Agricultural Soils' definition in Green Lake County. Please note that location of these soils do not automatically represent agricultural use. Some of these soils support woodlands and other open space uses. Some have been converted to non-farm development. Best management practices can overcome class ratings of soils. Thus, a key resource becomes large, undisturbed tracts of farmland over soil type.

Map 3
Prime Farmland

- Prime Agricultural Soils
- Other Soils
- Water



Metallic and Non-Metallic Mineral Resources

There are eighteen active non-metallic operations in Green Lake County. Green Lake County requires all operators who conduct or plan to conduct non-metallic mining operations to develop a mining reclamation plan.

The Wisconsin Department of Natural Resources has principal regulating authority for metallic mining activities in the State. Further information regarding metallic mining in Wisconsin can be viewed at <http://dnr.wi.gov/topic/Mines/Metallic.html>.

Further information about non-metallic mines in Green Lake County can be obtained from Green Lake Land Development Office.

Mining will have an impact on farmland loss. However, the materials derived from mining such as crushed stone and gravel are important materials in supporting local economic development, agricultural infrastructure included. In addition, mining reclamation projects on occasion are converted into agricultural uses. In Green Lake County, most mines are non-metallic and must be reclaimed to the standards established by NR 135 of the Wisconsin Administrative Code.

Surface Water Features

An important part of Green Lake County is the 19,630 acres of open water consisting of lakes and rivers. Surface waters in the County make up approximately 7.5 percent of the total area. There are 36 lakes and 58 streams within the County. Green Lake is the largest lake and the Fox River is the largest stream. The Fox River covers approximately 800 acres and accounts for 75 percent to the total stream area. On average the Fox River is 160 feet wide. Streams within the County cover 217 miles, or approximately 1,070 acres.

Lakes are not well distributed throughout the County. The majority of the lakes are located within the eastern ridges and lowlands in the southeastern portion of the County. With the exception of Lake Puckaway and a few smaller potholes, the Central Plains in the northwestern portion of the County does not contain a significant number of lakes. This area is primarily dominated by large wetland complexes.

The largest surface water within the County is Big Green Lake. Along with several smaller lakes and lesser streams and rivers these surface waters not only serve the purpose of draining watersheds in which they exist, but also provide links to adjacent wetlands. In spring, these wetlands provide additional water storage capacity needed during spring runoff to prevent flooding. They also assist in filtering excess nutrients and debris out of the surface waters to improve the water quality of the receiving streams and rivers. Good water quality throughout the area is important to the fisheries in the lakes and streams, especially as the streams connect and grow larger downstream, as there are many species that use the rivers and its tributaries for spawning. Within the County there are three Exceptional Resource Waters (ERW) listed. The Snake Creek, White Creek, and Assembly Creek are classified as an ERW due to their listing as a Class I Trout Stream, and having little impact by human activities.

The link below is to WDNR's Surface Water Data Viewer, an interactive GIS site that allows users to identify the locations of water features such as navigable streams and wetlands.

<http://dnrmaps.wisconsin.gov/imf/imf.jsp?site=SurfaceWaterViewer.deswaters>

Natural Wildlife Areas

Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are areas within a landscape that encompass especially valuable natural resource features that should be protected from development.

The following areas within the County should be considered environmentally sensitive:

- Navigable waters with a 75 foot buffer
- WDNR wetlands with a 50 foot buffer
- FEMA floodplains
- Moderately steep to steep areas (>12% slopes)
- Areas that provide habitat for threatened and endangered species.

State Natural Areas

State Natural Areas (SNAs) protect significant landscape features, geological formations, and archeological sites throughout Wisconsin. These areas are valued primarily for research and educational purposes, while providing rare safe havens for scarce plants and animals. Site protection is provided by land acquisition, donations, conservation easements, and cooperative agreements.

Green Lake County has 7 SNAs. State Natural Areas include Fountain Creek Wet Prairie, Puchyan Prairie, Berlin Fen, Snake Creek Fen, Princeton Prairie, White River Sedge Meadow, and White River Prairie/Tamarack. For more information on SNAs go to <http://dnr.wi.gov/topic/Lands/NaturalAreas/county.html>.

Public Wildlife Recreation Land

The White River Marsh Wildlife Area contains 12,000 acres consisting of open marsh/wet meadow, swamp hardwoods/tamarack swamp, upland prairie/oak savannah and shrub carr. There is a No Entry Wildlife Refuge located on the southwest corner of the White River Marsh Wildlife Area for the training and releasing of whooping cranes. The No Entry Wildlife Refuge is closed to all public access from June 15 through October 15.

Grand River Marsh Wildlife Area is a 7,000 acre property located in southwest Green Lake County and southeast Marquette County. Grand River Marsh Wildlife Area provides excellent habitat for a variety of wildlife and migratory waterfowl. The property consists of open marsh/emergent cattail wetland, upland prairie/oak savannah and shrub carr/wet meadow.

Each area has unique wildlife, recreational opportunities, and physical features. Likewise, each area has special rules and terms of use that require strict adherence to. For more information go to <http://dnr.wi.gov/topic/lands/WildlifeAreas/>

Wildlife Habitat and Threatened and Endangered Species

Federal and state records provide general information on wildlife habitat and threatened and endangered species, and should be consulted as part of the review process for new development projects. Township-wide occurrences of terrestrial, threatened or endangered species are indicated in the County. Information on wildlife habitat and threatened and endangered species is available from the Wisconsin Department of Natural Resources at:

<http://dnr.wi.gov/topic/NHI/CountyData.html>.

Quality of wildlife habitat can be a challenge due to increased pressures caused by cultivation, pasture mowing, stream bank pasturing, urban development and invasion of exotic species. Protection of wildlife habitat can be addressed through education of the importance of environmental buffer zones for wetlands and water bodies and control of invasive species.

Watersheds and Drainage

A watershed is an area of land that collects and concentrates precipitation and other water, and delivers it to a common outflow. This same process of collection and concentration applies to the sediment and contaminants carried by water. Therefore, maintaining the health and integrity of the watershed by limiting sediment and contaminants becomes critical. Land use and development decisions made every day can have an impact on watershed health.

Green Lake County lies in two basins. The majority of the County is located within the Upper Fox River Basin and contributes to the Great Lakes watershed, whereas a very small SE portion of the County lies in the Upper Rock River Basin which contributes to the Mississippi watershed.

Surface waters in the County belong to 11 different watersheds as listed below in Table 3-1:

Table 3-1
Watersheds in Green Lake County

Watershed	Acres	Floodplain Acres	% Floodplain
Beaver Dam River	1871	0	0.00%
Big Green Lake	38191	9187	24.05%
Lower Grand River	44082	6093	13.82%
Mecan River	440	0	0.00%
Puchyan River-Fox River	85532	16056	18.77%
Puckaway Lake-Fox River	21988	9425	42.86%
Rush Creek	2071	0	0.00%
Swan Lake-Fox River	4315	0	0.00%
Upper Grand River	27974	2153	7.70%
West Branch Rock River-Rock River	4642	0	0.00%
White River	12194	3183	26.11%

Source: Green Lake County Land Use Planning and Zoning

The Beaver Dam and Rock River watersheds represents a sub-continental divide which is important if sewer or water systems are contemplated in the area of the divide because of the legal problems involved in transferring water between major basins.

The Big Green Lake Watershed was selected as priority watershed in 1980 due to the high sediment and nutrient load discharges into lake. Streams that are part of this watershed include Silver Creek, Dankin Creek, Spring Creek, Roy Creek and their tributaries.

Floodplains

Portions of the County are susceptible to flooding. According to the FEMA flood rate maps produced for the County, these areas are located primarily along the navigable waterways within the County. Future development in and around these areas will be restricted. Building can occur between the floodway and flood fringe (between the 10 and 100-year flood event) in these areas if the lowest first floor elevation is two feet above the 100-year flood elevation, or the basement is flood-proofed.

Groundwater

Groundwater in Green Lake County is available within the glacial deposits and bedrock aquifers.

It is hard and contains excessive iron in some places but otherwise it is satisfactory for most uses. According to the state's Groundwater Susceptibility Map (see the link below), most of the southwest portion of the County is located in an area deemed to be moderately to highly susceptible to groundwater contamination, whereas the northeast portion of the County is less susceptible to groundwater contamination. The reasons for this designation are determined by depths to bedrock, type of bedrock, depth to water table, and soil permeability:

<http://wi.water.usgs.gov/gwcomp/find/greenlake/susceptibility.html>

The protection of groundwater is especially important to the residents of the County as many rely on private wells for their primary source of water. Protection of this limited resource through means practical must be the focus of County leaders. It is critical that the quality of the potable water be monitored to identify any contamination. Septic tanks can be a major source of local contamination, particularly when situated on soils unsuitable for this purpose.

More information about arsenic, including treatment options, can be found at the following web site: <http://www.dnr.state.wi.us/org/water/dwg/arsenic/recommend.htm>

More information regarding groundwater that is specific to Green Lake County can be found at the following web site: <http://wi.water.usgs.gov/gwcomp/find/greenlake/index.html>

The Wisconsin Groundwater Coordinating Council (GCC) is an interagency group whose purpose is to serve as a means of increasing the efficiency and facilitating the effective functioning of state agencies in activities related to groundwater management. More information about the council's responsibilities, actions, activities, and coordination efforts with local officials can be viewed at this web site: www.dnr.wi.gov/org/water/dwg/gcc/index.htm

In addition to the above, the following water quality facts and trends that will impact agricultural activities in the Green Lake County region:

- High iron and some sulfur have been identified as water quality concerns. However, it was felt that these issues can be managed and overcome for farming purposes.
- Abandoned wells are a water concern due to lack of proper abandonment procedures. Most abandoned wells occur around old farmsteads.
- While most people associate groundwater problems with the presence of livestock, grain farming can also negatively affect groundwater if not managed correctly.
- Water is generally not an issue – quality or quantity. UWEX has a water quality program for testing well water.

Wetlands

Development in wetlands can destroy important environmental benefits, including the filtering of storm water runoff, the provision of wildlife habitat, and natural flood control. Wetlands are the gateway to the recharge of groundwater aquifers. The DNR and Corps of Engineers have regulating authority over all wetlands, including the placement of fill materials within a wetland. In general, the most restrictive regulations apply to proposed development projects. The U.S. Department of Agriculture incorporates wetland preservation criteria into its crop price support program.

Wetlands contain some of the most unique and important ecosystems found on the planet. According to the State of Wisconsin, "the term 'wetlands' means an area where water is at, near or

above the land surface long enough to be capable of supporting aquatic or hydrophilic vegetation and which has soils indicative of wet conditions” (Wisconsin Stats 23.32(1)). Wetlands generally include swamps, marshes, bogs, sedge meadows, and similar areas.

There are a large number of mapped wetlands within the County. Approximately 23% of the County consists of mapped wetlands. Most of the wetlands are associated with the waterways or depressions. The majority of the wetland acreage located in the County is in the west and northwest portions of the County and associated either directly or indirectly with the Fox River. These wetlands have water tables that are located at or just below the soil surface and are dependent on the water level of the lake. The high water tables along with surface water runoff from the surrounding landscape keep the wetland soils saturated or inundated throughout most of the year.

Three important wetland complexes located within Green Lake County consist of the calcareous fen near Berlin, a rare and ecologically important wetland type for fauna and flora. The County also contains portions of two large wetland complexes; the White-Puchyan wetland and the Grand River Marsh. Collectively these two wetland complexes encompass over 15,000 acres. Large tracts of wetlands are especially important for habitat sources for wildlife that require large undisturbed portions of land for their survival.

This link (www.dnr.wi.gov/org/water/fhp/wetlands/programs.shtml) is a useful point of reference for community officials, developers, and/or interested persons to gain direction with wetland questions related to development projects or protection issues. The page provides links to specific administrative rules, discussions on wetland laws and programs, as well as other wetland issues.

3.3 Agricultural Infrastructure

Agricultural infrastructure is essential for maintaining a viable and productive agricultural network. This agricultural infrastructure consists of a network of businesses that are needed to keep agricultural day to day operations running smoothly. Without this infrastructure network it would be impossible for the agricultural community to be successful. Services provided by many of these businesses consist of supply, transportation, processing, and storage. Table 3-2 is a summary of the agricultural infrastructure network within Green Lake County. This list may not be all conclusive.

**Table 3-2
Green Lake County Agricultural Providers**

Activity	Green Lake County Agricultural Provider
Licensed Milk Producers	Proc-Sur Farm, Robert Mace, Mike Eagen, Rodney Zietlow, Roy Creek Dairy LLC, Arnold or Barb Zuehls, James Janes, Steven L Jones, Terrance or Annette Wargula, Matthew A Jahnke, Richard Wielgosh, Harley Bontrager, Homer Schlabach, Ronals Bogucke, Milo Bontrager, Henry Miller, NorDor Farms LLC, Schurecrest Farms Inc., William Mast Jr., Prideview Dairy LLC, Vernon A Bontrager, Richard Swanke, Toby Petersheim, Daniel Bontrager, David Bogucke, David E. Kohn, Floyd M Bontrager, Louis H Smith, Hilltop Dairy LLC, Alvin A Schwartz, Grams Farms LLC, Wayne Berg, Schrock Farms Partnership, Dennis or Diane Floeter, Ervin A Bontrager, Melvin Bender, Omer Schwartz, Samuel S Schrock, Harley J Yoder, Richard Schlabach, Daniel A Bontrager, Gerald H Hochstetler, Kurt Kasuboski, Damerow Bothers (Partnership), Ronald R Kelm, Siewert Farms Inc., Perry O Miller, Abe J Troyer, Daniel I Schmucker, Doug Kastenschmidt, Janette Kohn, David E Bontrager, Barry Van Buren, Carl E Nehm, Kirk Pretz, Abe Schmucker, Terry A or Linda Froehlich, Nathaniel Drews, Green Lake County Fair, MAM Farms LLC, Ezra E or Minerva J Petersheim, Joseph A or Marilyn D Miller, David L Bruss, Alan Afeldt, Keith M or Joan M Frederick, Jamest Stellmacher, Richard A or Roseanna Mace, John T Kearns, David Kohn, Jacob Schrock, Mervin A Bontrager, Wilber A Bontrager, David or Julie Jones, Busy Bee Acres LLC, Harley Mast, Gran Prairie Farms Inc, Daniel P otto, Toby Troyer, Calvin G or Sarah P Miller, Cotterill Farms Inc.
Licensed Dairy Plants	Salemville Cheese Co-Op of Cambria, M&S Services
Licensed Food Processing	Del Monte Corporation, Wisconsin Spice Inc, Grand River Distribution, Grandma's Kitchen, Marcia's Confections, Troyer Bakery, Countryside Mixes, Courthouse Kitchens, Renard's European Bakeshop, Bauman's Natural Meats & Pheasants, Lenz's Green Lake Meadow, Bear Crossing Foods, Cake Crafted For You, Wisconsin Hickory Products Inc.
Licensed Food Warehouse	Frito-Lay Inc
Food Processors	Del monte Corp, Ran's Meat Processing, Darling Intl Inc, Wisconsin Spice Inc
Veterinary	Vet Clinics Berlin-Ripon SC, Markesan Veterinary Clinic SC, TKJ Corp, CLR Inc
Farm Wholesale	Berlin Feed Inc
Licensed Livestock Transport	Mullowney Livestock, V&J Trucking, KVB Transport LLC
Licensed Bulk Milk Tanker	Stellmacher Trucking Inc, Matt Boelter Milk Hauling Inc, Brian Retzlaff Trucking, Neubauer Trucking, Steve Beulen Transport, Richard Swanke
Licensed Meat Plant	Ran's Meat Processing
National Organic Prog. Farmers	Lonnie Kauffman Farm, Perry & Jerry Otto, Happy Acres, Boreron Farm, Thundering Hoof Ranch LLC

Source: University of Wisconsin Extension.

Please note that the agricultural provider list above and below may not be comprehensive and/or complete as business names, business startups and business closings occur occasionally.

**Table 3-3
Green Lake County Agricultural Supply Facilities**

Activity	Green Lake County Agricultural Supply Facilities
Feed Dealers	Landmark Services Cooperative, Landmark Country Store, Berlin Feed Inc., Manchester Feed Mill, Do It Best, Country Visions Cooperative, United Co-op, Frontier Servco FS, Jasters Ag Supply, ADM(Archer Daniels Midland)
Farm Equipment Dealer and Supplies	Landmark Country Store, Do it Best, Tractor Supply Co., Bohn Implement, The Farm Shop, Markesan Bancshars Inc., Orrin Luedke, Country Visions Cooperative, United Co-op, Frontier Servco FS, Jasters Ag Supply, ADM (Archer Daniels Midland)
Fuel Supply	Condon Oil Companies, Ferrellgas, L&L Sales & Service, Cole Distributing

Source: Green Lake County Planning & Zoning Department, Green Lake County Land Conservation Department.

In addition to the agriculture provider list, the following agriculture infrastructure facts and trends will impact the growth, transportation and processing of commodities in the Green Lake and Western Fond du Lac County region:

- Canning and processing plants are located in Markesan, Ripon, Mayville and in Fairwater. They are key processing locations for commodities grown in Green Lake County. It is likely vegetable processing facilities will become even larger.
- Expect to see the expansion of grain storage facilities and field irrigation.
- Expect to see the consolidation of farm support business such as fertilizer, chemical and machinery suppliers. Due to consolidation, agriculture support businesses will likely become even larger.
- State Highways 23, 44, 73, 49 and 91 provide the core infrastructure to move product by truck through the County. Significant County Trunk Highways include A, H, J, and K. Typical product movement goes from the local town or county road system, to highway to rail. Most farm products are shipped to locations south of the County.
- The ability of the town road system to accommodate weight loads presented by agriculture especially around the farm hubs is a concern. Dairy centers, in particular, contain the most vehicular and farm equipment traffic in a “hub” location.
- Farmers are naturally consolidating trucking because of costs (fewer but larger loads).
- The size of trucks and other equipment serving the farms is increasing, causing premature wear of town roads. Controls over the size of farm equipment is unlikely.

3.4 Farmland Preservation and Agricultural Development Land Use Issues

There are various natural and human activities affecting the rural areas of the County. Many of these activities are responsible for emerging land use trends. These emerging land use trends and the changing demographics can have an effect on the County's farmland preservation and agricultural development activities. Below is a list of land use issues affecting rural land in Green Lake County:

- Land values will likely increase as the pressure to convert open space/farmland to other non-agricultural land uses increases after the recent recession. This trend could be compounded due to the increased competition for agricultural land.
- Interest in land preservation programs will fluctuate by landowner, as some seek to maximize land sale profits by developing land, while others will seek to preserve as much land as possible.
- Due to a stronger agriculture economy, the interest in dairy, cash cropping and specialty farming will increase, thereby increasing demand for more agricultural land.
- Interest in "value-added" businesses to complement small dairy and general farming operations may increase.
- The gap between the values of land for agriculture versus development is narrowing. Demographic changes along with associated housing preferences have reduced the market for rural residential lots and subdivisions.

In addition to the general trends noted above, the Green Lake County Farmland Preservation Ad Hoc Steering Committee identified the following agriculture facts, trends and general concerns and opportunities that may impact the agricultural economy in the Green Lake County region:

Key Agricultural Resources

- Green Lake County has some of the best and most reliable farming soils in the State. These soils can grow a variety of crops.
- The term "reliable soils" was further defined to mean a natural tolerance to weather extremes. The soils can tolerate periods of drought and wet conditions in given years still producing very acceptable yields.
- In addition to area soils possessing a tolerance to weather extremes, area topography seems to further protect crops from extreme weather losses.
- Field size has enlarged over the years improving cropping efficiencies and pest control success. For these reasons, this trend will likely continue. Thus, a key resource becomes large, undisturbed tracts of farmland for agricultural production.
- Urban/rural interface will continue.
- Green Lake County is home to the largest Fresh Market Auction House in the State.

GREEN LAKE COUNTY FARMLAND PRESERVATION PLAN

- Green Lake Counties low rural population density appears to be an asset in attracting outside agricultural interest. This interest ranges from outside crop growers to Amish and/or Mennonite cultures.
- Some people simply do not understand farming and how it works.
- Regulation by non-farmers for farmers; that doesn't seem right.
- Railroad infrastructure is in place to move agricultural product and increased investment in railroad is likely. The Fairwater to Markesan rail line was mentioned specifically.
- Improved highway systems may lead to barriers for farmers to access land.
- Transportation (primarily highways) will impact future development patterns. If the highway systems stay the same (two-lane) on 23, 44, 73 & 49, development patterns will likely stay similar.
- Expect large farm equipment to place pressure on support infrastructure, especially town and county roads. Will local budgets be able keep up and support agriculture to the extent required?
- Green Lake itself (the water body) has a long history of water quality initiatives & programs designed to improve water quality. These programs may have been the catalyst for increased conservation practices elsewhere in the County.
- Green Lake County has a high percentage of family owned farms devoted to agriculture. Family owned farms generate a strong "caretaker" attitude.
- Green Lake County farmers and land owners have a history of acceptance to conservation efforts. Many engage in conservation practices without any program assistance.
- Green Lake County's Land Conservation Department is very active and engaging with area land owners and is highly respected.
- Wisconsin and the United States as a whole, contain an infrastructure advantage over other global countries and their producers in that the time to transport products is significantly quicker in connecting producers to buyers/users.
- Land values will continue to increase due to the global demands for food both in volume and quality. Developing third world countries will play a big factor in increased food demand.

Trends in Agricultural Land Use

- No till practices have increased throughout the County and due to its acceptance and success will likely continue and even increase in the future.
- Good land management practices still need to focus on erosion loss along with the need to preserve farmland.
- Over time crop production has increased, doing so while minimizing soil disturbance.

GREEN LAKE COUNTY FARMLAND PRESERVATION PLAN

- Best management practices (BMP's), can overcome class ratings of soils. Expect to see more "marginal" lands being put into production. With this, expect to see the definition of "marginal" land change over time as BMP's improve and barriers are overcome.
- High corn and protein cost were factors in seeing a reduction in mid-size dairy farms (defined currently as 150-300 cows). There was a loss of land base available to dairy farmer because of a shift of land into corn or soybean production, limiting dairies ability to grow or acquire needed feed at a cost effective price.
- Grain farmers are not always local and will travel to rent property impacting the local dairy farmer's ability to pay land rent cost or purchase land.
- Technology changes will improve efficiencies. Increased efficiencies will likely lead to farm consolidation to take advantage of economies of scale.
- Expect to see more innovation in computer software and hardware designs working together to assist in agriculture management.
- Expect an influx of grain and cash crop operators renting land in the region. Crop farmers are not always local and will travel to rent property.
- Future renters of agricultural land must abide by the same farmland preservation and conservation standards of farmland owners ensuring protection of the resource.
- Unfortunately the "battle" between farmers and non-farmers will likely continue over certain land use compatibility issues as the connection with the land becomes more distant with a majority of the populous.
- Continued growth is likely in the organic market.
- The Fresh Market in Green Lake County will need to target more urbanized locations so its growth can continue. There is a limited local population to support the Fresh Market. Growers must understand buyer demographics and improve the supply chain into new markets.
- The Green Lake County region has experienced an increase in agricultural service providers spawned by reliable agricultural production and farmer commitment in the Green Lake County area.
- The gap between the value of land for agriculture versus development has narrowed significantly. Historically, high gas prices along with a slow housing economy have reduced the market for rural residential lots and subdivisions. The result is more land available for agricultural use and less farmer/non-farmer conflict.

Key Land Use Issues and Trends Related to Preserving Farmland

- Some development will need to be accommodated in farmland preservation areas.
- Housing generates more local tax dollars and must be accommodated as well.
- Buyers of non-farm land that is housing or seasonal related, are geared to outdoor lifestyles, not necessarily farming.

- In Green Lake County, the transformation of seasonal to permanent housing has had a positive impact on local tax revenue. Reinvestment in existing structures is occurring.
- Land that is coming out of the Conservation Reserve Program, is not being renewed due to the increased value agricultural land for crop production. Land is being put back into agricultural service.
- The commitment to Ag Preservation Zoning can be an emotional decision when presented to the County. This has led to small and scattered rezones out of A-1 Agriculture which is not conducive to long term agriculture and its preservation. Decisions don't always follow farmland preservation protocol.

Forestry as a Component of Agriculture

- Some reforestation and habitat work is occurring on good farmland due to land owner values.
- Hardwood forestry is an important local economical resource. It creates spin-off job opportunities.
- Forest provides recreational opportunities as well attributing to the County's rural character.
- Unlike adjacent counties to the north and west, Green Lake County has good soils for hardwood production (cherry, walnut, maple and oak).
- There appears to be a need for more private forest management consulting. Over harvest, especially hardwoods, maybe a growing issue.
- Can sustainable forestry, reforestation and tree farms economically compete with grain crops on an acre by acre profit standpoint? Is it truly the highest and best economical use?
- Forest management must prepare for the impact of invasive species. Emerald Ash Borer mentioned specifically.

Accommodating Future Housing (Densities, Preferred Locations, Compatibility)

- Non-farm residential development is a big barrier to progressive agriculture.
- Low residential densities are more advantageous to farming. Keep ratio low. A one acre to 80 acre ratio of non-farm development to preserved farmland is not too bold.
- Accommodating non-farm residential development in rural areas needs to be balanced. Residential development pays the bills. Locations need to be identified.
- Government leaders should always look for residential clustering opportunities.
- Towns should look toward "land use planning" as means to accommodate other uses.

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- There is a big difference in the non-farm development pattern north vs. south of Green Lake (Water Body).
- Non-farm development (all types) should be directed to public systems (sewer & water) most of which are provided by cities and villages.
- By making buyer amenities available and affordable in cities and villages, future non-farm development maybe attracted to those locations thereby improving land use compatibility.
- Urban offered amenities must be affordable because there is a big cost difference between city/village vs. town land.
- Crime, high city taxes and a perceived better quality life push development to rural areas.
- Lenders are less willing to borrow \$\$ to young home buyers. Unsure what this will mean to future development patterns. It may make the rental market more active.
- The new generation of farmers may meet financial barriers to expansion due to limited financing. As the cost of land, equipment and technology rise, new farmers will only be able to absorb a limited amount debt.
- How to accommodate high capacity wells and windmills?
- It takes a special person to want to live in a rural area (i.e. increased travel cost, less services, more inconveniences, etc.) all in exchange for a better quality of life.

Combined, all these trends, opportunities and general concerns have an effect on farmland preservation and agricultural development. Of all these statements, nonfarm type development in rural areas is the largest issue. Nonfarm type development in agricultural areas will make farmland preservation more difficult creating obstacles for agricultural expansion. Nonfarm development is and will continue to be a key land use issue in rural areas. Community leaders and officials must develop tools to deal with development pressures, demographic changes and land preservation in order to balance growth and farmland preservation.

4.0 Agricultural Trends

4.1 Agricultural Land Use

Outside the Cities of Berlin, Green Lake and Princeton, Green Lake County is largely a rural agricultural area. Historically, there has always been some pressure to convert agricultural land to other nonagricultural uses, especially nonfarm residential development. However, development pressure has not been uniform throughout the County as some towns receive more pressure than others. Farmland adjacent to water features such as Big Green Lake or incorporated cities and villages also receive more development interest. Often, these lands are annexed, developed and farmland is lost. However, it should be noted that recent non-farm residential development has slowed substantially since the Great Recession. The County must accommodate some population growth in order to maintain a viable work force and economy. As long as growth is planned and controlled to ensure an efficient development pattern, the impacts of farmland conversion can be lessened significantly. Commodity prices play a huge role as well. Strong farm markets will keep farmers working the land and lessen the desire to convert land to other uses.

Since the agricultural economy fared better than most industries during the Great Recession, the perceived value of farmland to the local economy has increased. This increased value should equate to further protection of farmland during future planning efforts. The development, adoption and certification of the *2015 Green Lake County Farmland Preservation Plan* should create the foundation for future local planning efforts, especially in the Green Lake County Comprehensive Plan update.

4.2 Agricultural Production and Enterprises

Green Lake County is a strong player in the state's agricultural economy. Green Lake County is a highly diverse county in agricultural products. Agriculture production highlights for Green Lake County include the following:

Total number of farms: 608

Average farm size: 254 acres

Net cash farm income average per farm: \$42,329

Cows: 8,014 on 140 farms

Market value of products sold: \$102.5 million

- Livestock, poultry and their products: \$41.4 million
- Crops: \$61.1 million

Top 5 products:

- Milk and other dairy products from cows - \$30.1 million
- Grains - \$24.86 million
- Vegetables - \$8.8 million
- Cattle & calves - \$8.5 million
- Other crops & hay - \$0.77 million

Data Sources: National Agricultural Statistics Service (NASS) Census of Agriculture; County Data 2012 USDA NASS

Additional information regarding Green Lake County agriculture production and growing enterprises can be found in Appendix B, “Green Lake County Agriculture: Value & Economic Impact-2011”

Figure 4-1

Total Farms

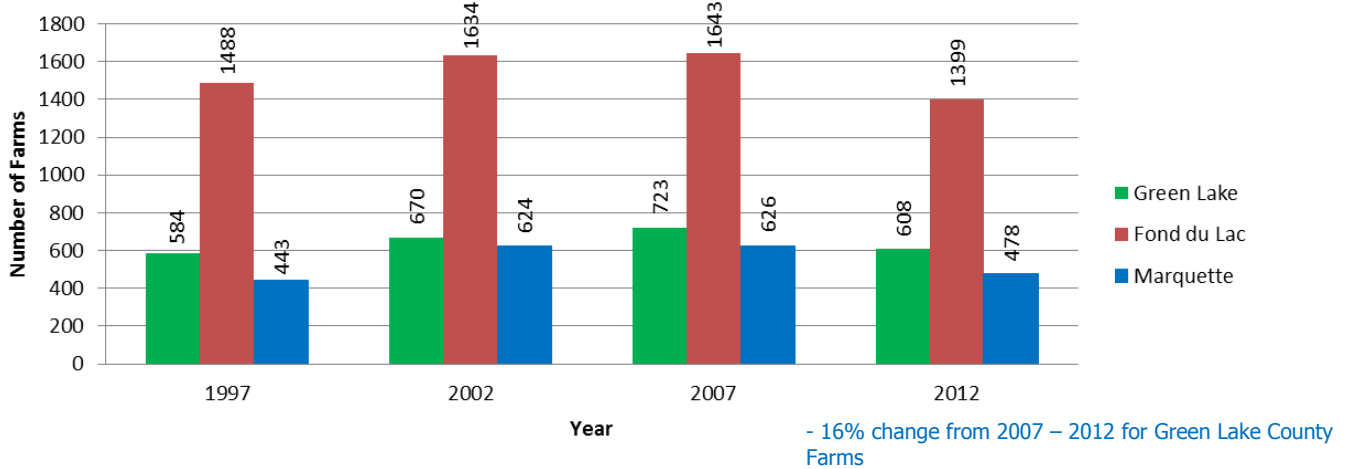
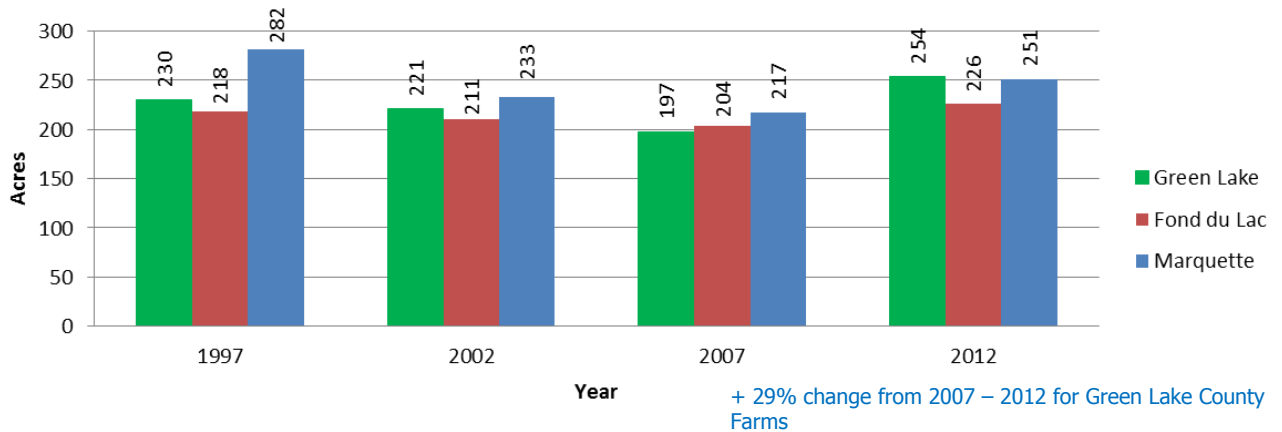


Figure 4-1 illustrates the trend in the amount of total farms located in Green Lake County and neighboring counties. A growth in the number of farms was experienced in Green Lake County until 2007. From 2007 to 2012 there has been a 16% decline, bringing Green Lake County’s farm totals close to the 1997 figures.

Figure 4-2

Farms by Average Size



As the number of farms within Green Lake County decreased, the size of the farms has seen an increase. As with the decrease in the number of farms illustrated in Figure 4-1, Figure 4-2 shows that the remaining farms are generally larger in size by 29 percent. Figure 4-3 reconfirms the trend in the growth in the number of larger farms from 2007 to 2012.

Figure 4-3
Green Lake County Farm Sizes in Acres

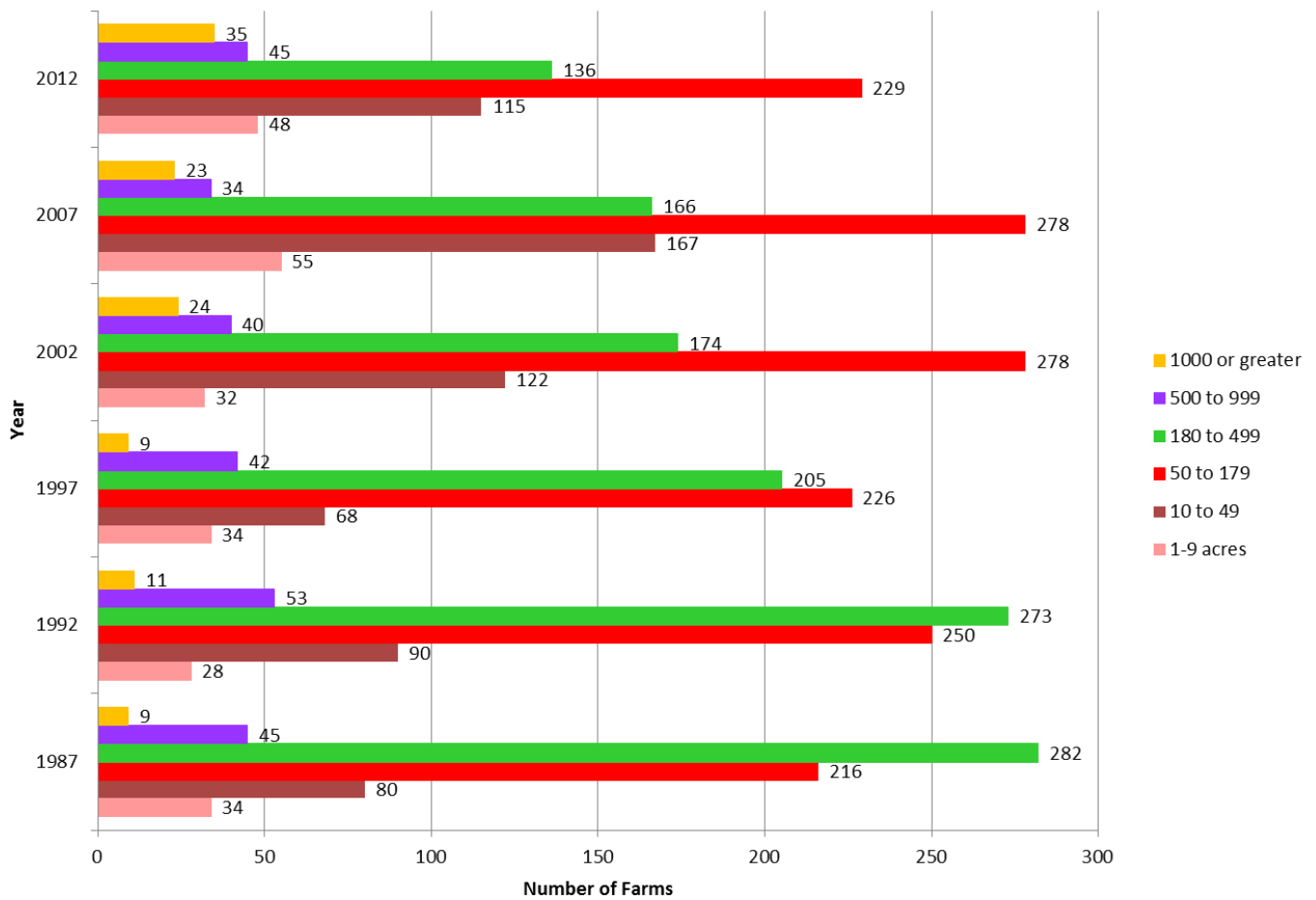


Figure 4-4

Total Dairy Farms

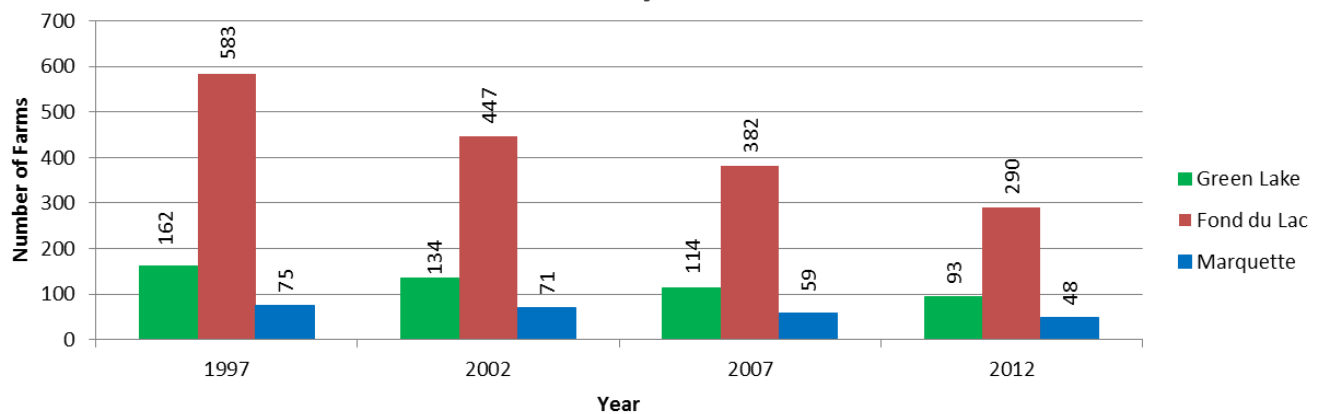


Figure 4-4 shows how all areas, not only Green Lake County are experiencing a steady decline in the number of dairy farms. The number of beef farms in the area, as shown in Figure 4-5 has also declined, however beef farms remained a bit more stable than the dairy farms. This trend in dairy is likely from the higher number of larger commercialized dairy farms (consolidation) and

the lack of younger generations taking over the smaller family farms. It may also reflect an increased competition for land between dairy and cash crop farming. Dairy farming is more profitable if the crop land base is closer to the actual dairy operation were in cash cropping close proximity is less of a profit factor. The decrease in beef farming maybe a reflection of strong grain prices during this period meaning that grain didn't have to be fed to beef cows to gain a profit.

Figure 4-5
Total Beef Farms

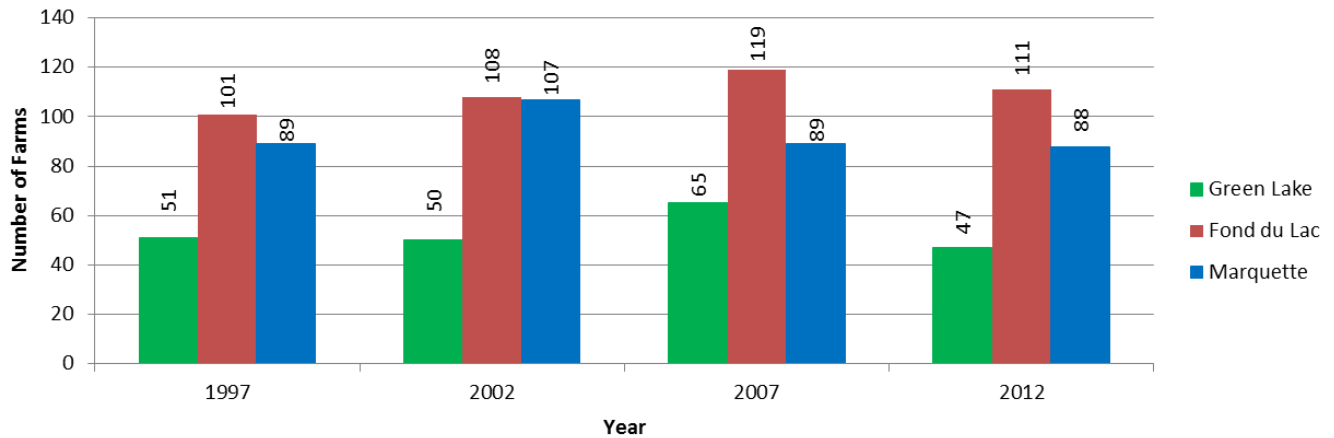
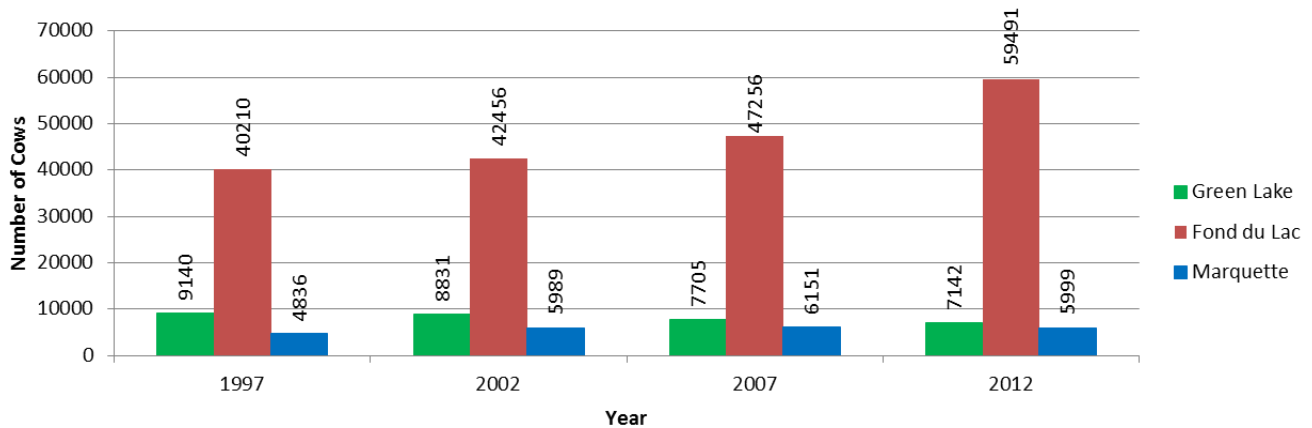


Figure 4-6
Dairy Herd Cows



Green Lake County, like Marquette County, has experienced declining numbers in their dairy herd since 1997. Fond du Lac County has had an increase in dairy herd cows, likely due to the increase in larger commercialized dairies. This does not say that Green Lake County may see larger commercialized dairies move into the County in the future. Beef herd animals as shown in Figure 4-7 seem to fluctuate more frequently, which may be from a fluctuating meat market and/or grain prices. The comparison in the number of dairy and beef farms since 1997 can be seen in figure 4-8. Figure 4-9 shows the trend in the number of dairy and beef cows within the County since 1997.

Figure 4-7
Beef Herd Animals

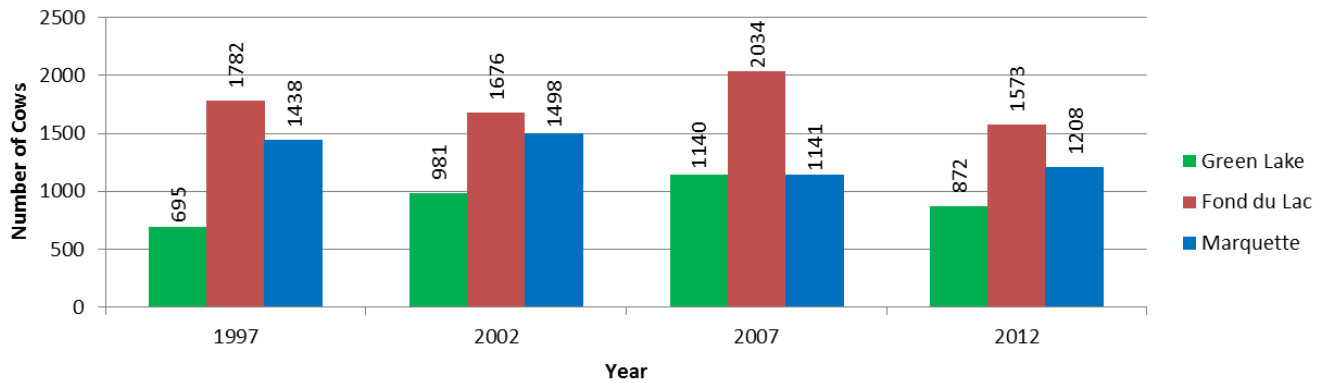


Figure 4-8
Green Lake County Dairy/Beef Farms

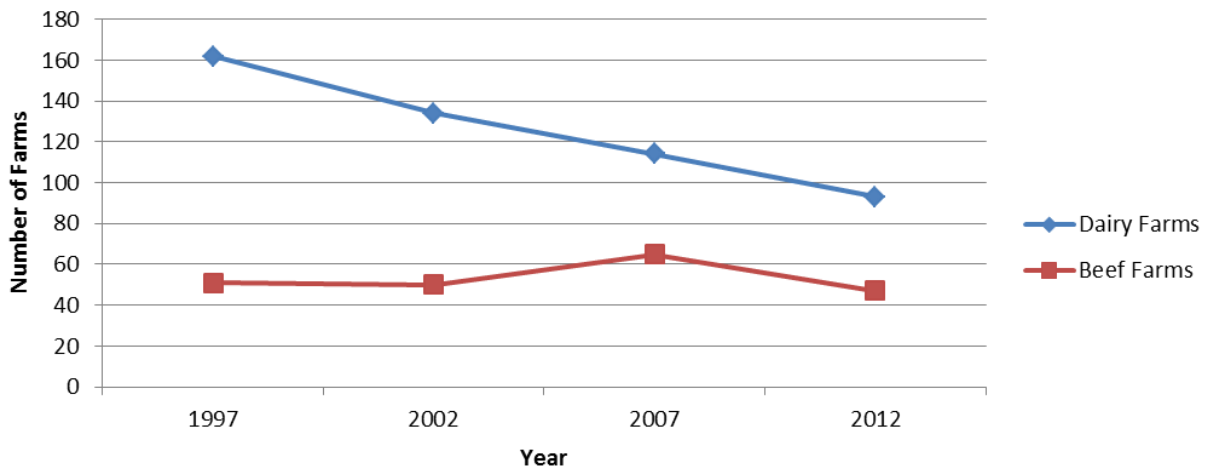


Figure 4-9

Green Lake County Dairy/Beef Herd

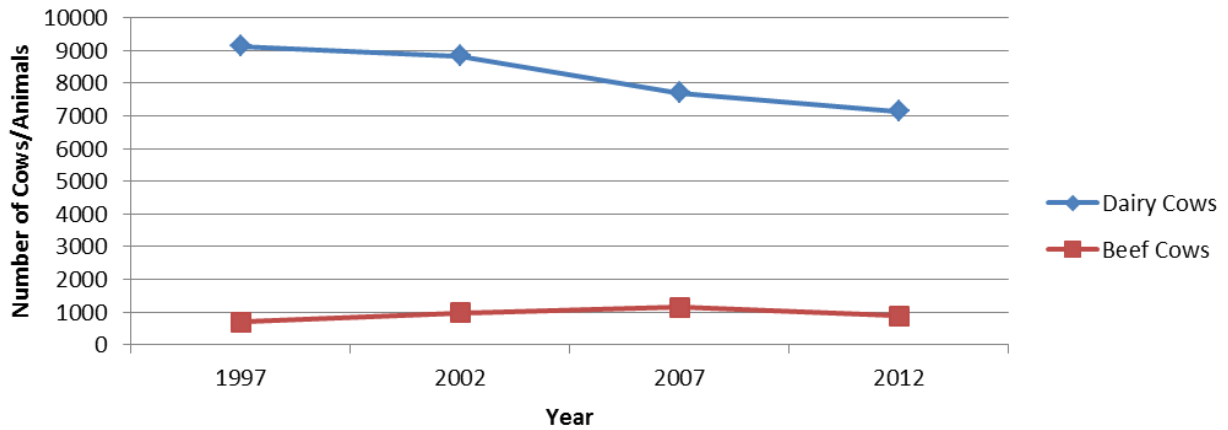
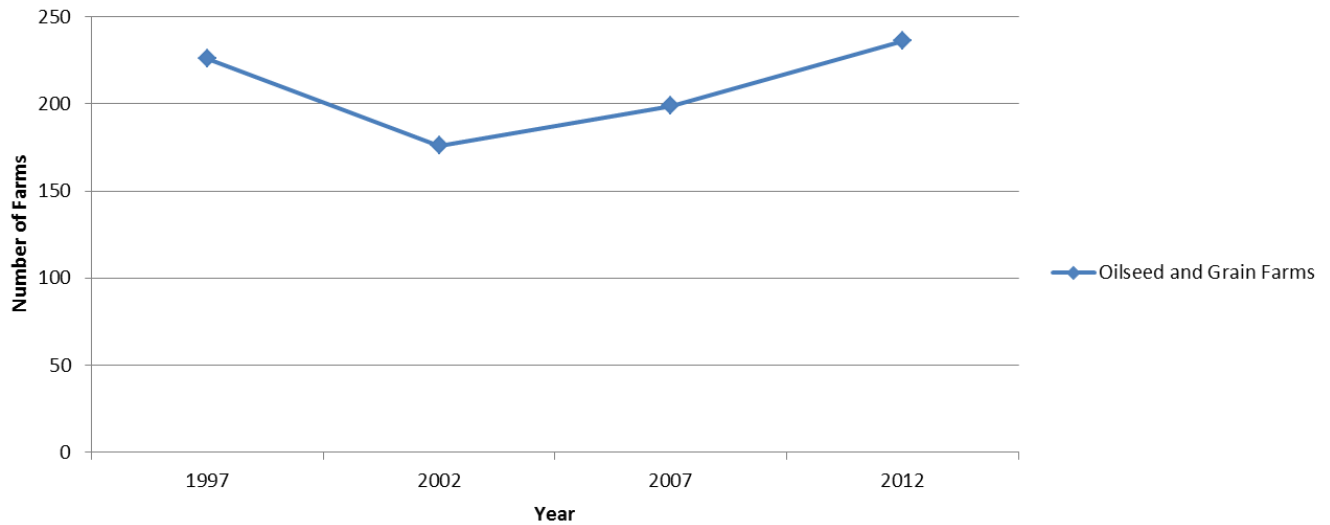


Figure 4-10

Oilseed and Grain Farms



Over the decade spanning from 2002 to 2012 there has been a steady increase in the number of grain farms (See Figure 4-10). These grain farms, often referred to as “cash croppers”, produce grains for sale on the market instead of feeding through livestock. Often dairy farms convert to grain farms with the sale of the dairy herd. The decision to feed the grain to beef fluctuates with the profit margins in both areas. If grain prices are high, beef production reflected in the number of animals will likely drop.

4.3 Conversion of Agricultural Lands to Other Uses

There are various methods that can be used to show development pressure on agricultural land. One source is the Wisconsin Department of Revenue (WDOR). Acres of agricultural land are computed by WDOR on an annual basis. These acres are based on assessment records. This is valuable information when tracking the amount of agricultural land in use each year. It also

shows the trend in conversion of agricultural land to other uses. Table 4-1 shows the amount of existing agricultural acreage in each community within the County in 2007 and 2012.

According to 2012 statement assessments, Green Lake County had 114,853 acres of agricultural land. This is a 3.69% decrease from the amount of agricultural land available in 2007. Slightly less than 4,500 acres have been converted to other uses within the County over the 5 year time span. The Towns of Green Lake and Seneca have primarily followed the same trend of a decrease of 2.03% to 3.30% in agricultural land from 2007 to 2012. The greatest losses were experienced by the Towns of Berlin and Brooklyn, with a decrease of 14.67% and 14.10% respectively. The Town of Berlin experienced the greatest acreage loss of 1,791 acres, which was over 40% of all acreage lost by the townships within Green Lake County. The Towns of Kingston, Mackford, and Saint Marie experienced slight growth in agricultural land. The Towns of Manchester, Marquette, and Princeton lost very little agricultural land over the 5 year period.

Due to annexations and development, it varied whether the villages or cities gained or lost agricultural land over the 5 year period. Villages within the County had a net loss of 4 acres, whereas the cities within the County had a net loss of 18 acres.

The loss in farmland does not appear to be excessive. However, once lost, the acreage is hard to revert to its original agricultural use. In some cases, land can be converted from an idle state back into production, but typically those acreages are marginal land for farming.

The best approach to maintaining farmland continues to be minimizing the conversion to other uses. Although land use planning and zoning play major roles, commodity prices play a huge factor in maintaining farmland. If markets are strong, farmers will stay in farming creating a demand for farmland. The result is the desire to convert farmland to other uses is reduced.

Another method used to assess land conversion is to track the number of land divisions occurring in the County. Since most land divisions require County approval, the number of land division applications by community is a good indicator of the growth pressure within the County. Table 4-2 and Figure 4-11 summarize land division activity by town, village and city over the last 10 years. This data set incorporates the years of economic prosperity (mid 2000's) in conjunction with the more recent economic recession (2008 -2011). Although Green Lake County contains a strong agricultural land use presence, the County is not immune to the transition of farmland to other uses. During this period of time, 1060 lots were created consuming 2,356 acres of land. The average loss of land to lot creation during this 10 year period was 235.6 acres annually. On average, each lot created in Green Lake County, consumed 2.2 acres during this time period.

However, 302 lots within this total (437 acres) occurred in cities and villages where one would expect land division activity of this nature to occur. So it's improper to technically classify these divisions as a non-planned agricultural land loss. The average lot size within incorporated communities was 1.48 acres.

If tracking land division activity on towns exclusively in Green Lake County, Table 2 reveals that 758 lots were created consuming 1919 acres of land. The average size of lot created increases to 2.2 acres.

Please note that all lots created are not for residential type uses only. Lots created for commercial, industrial and institutional type uses also utilize land for development and often require larger parcel acreage. In addition, not all land utilized for lot creation may have been farmland. Also, one cannot assume all the acreage utilized to create lots and parcels, has been lost entirely to the practice of farming although the fragmentation of land is never conducive to the long

GREEN LAKE COUNTY FARMLAND PRESERVATION PLAN

range benefit of agricultural activity. Tracking land division activity is a useful barometer in gauging non-farm development activity.

From a general perspective, towns in Green Lake County located adjacent incorporated communities (i.e. Cities of Green Lake, Princeton & Berlin), lost more acres to lot creation than those more rural in nature. Again, this could be classified as an expected occurrence.

There appears to be a large discrepancy in the amount of farmland lost or converted to other uses between the two methods. The WDOR numbers, Table 1, are defensible strictly from a land use (assessment) stand point. But the figures can change annually without any impact of land division activity. Thus, tracking land division activity, Table 2 and Figure 4-11, includes a number of land use assumptions that may or may not occur (i.e. a lot created is not farmed) but the numbers do represent a perceived change in land use. It also measures the assumption that land divided is less conducive to future agricultural activity.



**Table 4-1
Acres of Agricultural Land by Community, 2007-2012**

Community		Acres		5 Year Change	
		2007	2012	Number Change	Percent Change
Towns	T. Berlin	12,210	10,419	-1,791	-14.67%
	T. Brooklyn	12,007	10,314	-1,693	-14.10%
	T. Green Lake	23,489	22,715	-774	-3.30%
	T. Kingston	8,406	8,428	22	0.26%
	T. Mackford	16,150	16,177	27	0.17%
	T. Manchester	16,630	16,525	-105	-0.63%
	T. Marquette	7,329	7,293	-36	-0.49%
	T. Princeton	9,287	9,266	-21	-0.23%
	T. Saint Marie	5,950	6,071	121	2.03%
	T. Seneca	6,120	5,990	-130	-2.12%
Subtotal		117,578	113,198	-4,380	-3.73%
Villages	V. Kingston	234	235	1	0.42%
	V. Marquette	65	60	-5	-7.69%
Subtotal		299	295	-4	-1.34%
Cities	C. Berlin	483	435	-48	-9.94%
	C. Green Lake	165	195	30	18.18%
	C. Markesan	617	617	0	----
	C. Princeton	113	113	0	----
Subtotal		1,378	1,360	-18	-1.31%
Green Lake County Total		119,255	114,853	-4,402	-3.69%

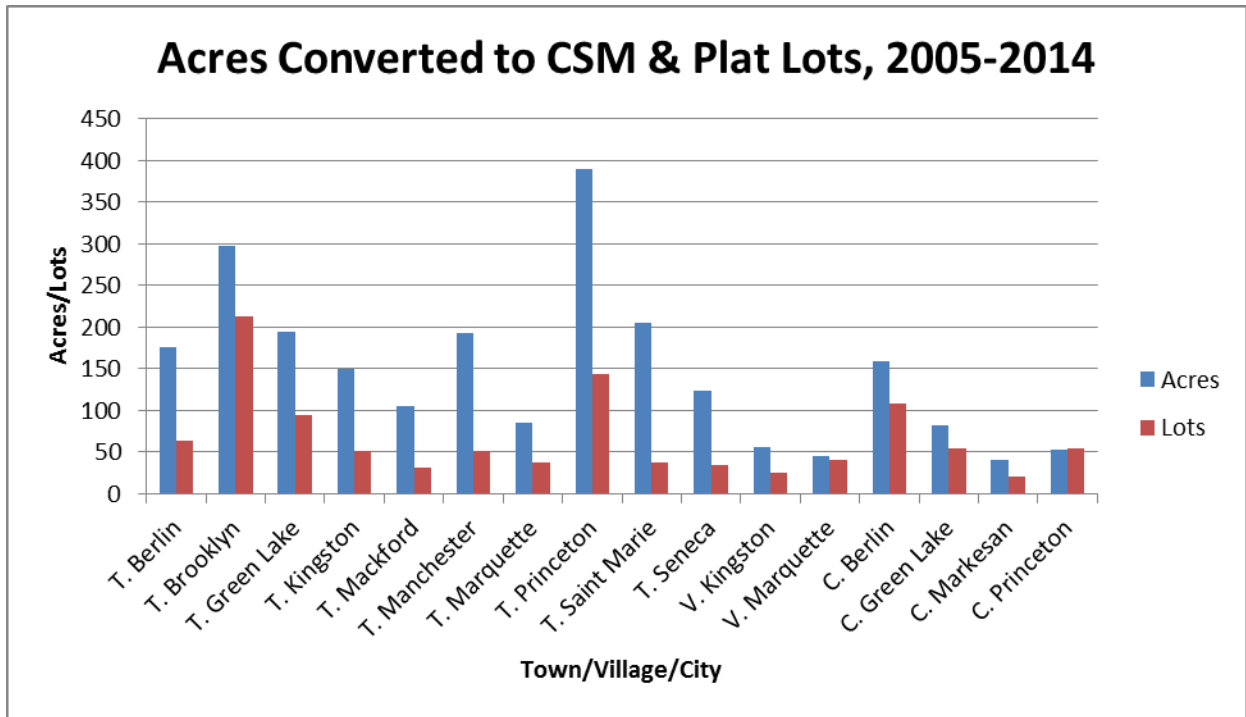
Source: Wisconsin Department of Revenue, 2007 and 2012

Table 4-2
CSM lots and Plat lots by Town, in Acres, 2005-2014

<u>Town</u>	<u>Acres</u>	<u>% of Total</u>	<u>No. of Lots</u>
Berlin	175	7.43%	64
Brooklyn	297	12.61%	213
Green Lake	194	8.23%	95
Kingston	151	6.41%	52
Mackford	105	4.46%	31
Manchester	193	8.19%	52
Marquette	85	3.61%	37
Princeton	390	16.55%	143
Saint Marie	205	8.70%	37
Seneca	<u>124</u>	<u>5.26%</u>	<u>34</u>
Subtotal	1,919	81.45%	758
<u>Village/City</u>			
V. Kingston	57	2.42%	26
V. Marquette	45	1.91%	40
C. Berlin	159	6.75%	108
C. Green Lake	83	3.52%	54
C. Markesan	40	1.70%	20
C. Princeton	<u>53</u>	<u>2.25%</u>	<u>54</u>
Subtotal	437	18.54%	302
Grand Total	2,356		1,060

Source: Green Lake County Planning and Zoning Department, 2015

Figure 4-11



Source: University of Wisconsin Extension

4.4 Anticipated Changes in Agricultural Production, Processing, Supply, and Distribution

From a state perspective, agriculture remains an important part of the Wisconsin Economy. One of the best analysis and publication to document the agricultural impact to Wisconsin's economy is a report titled: *Contribution of Agriculture to the Wisconsin Economy (2012)* developed by the University of Wisconsin-Madison Department of Agricultural & Applied Economics. Support for this work was provided in part by the University of Wisconsin- Cooperative Extension, DATCP and the Wisconsin Milk Marketing Board.

Using the data from 2012, this study updated a prior analysis of the contribution of agriculture to the Wisconsin economy (Deller 2004; Deller and Williams 2009). For consistency with prior analyses, agriculture is defined as on-farm production and value added food processing. The study is composed of three parts: (1) general historical trends (1998 to 2012) of various measures of economic activity for Wisconsin compared to a national average and averages for the Great Lake States; (2) an economic cluster analysis of various components of Wisconsin agriculture; and (3) an update of the contribution of agriculture to the Wisconsin economy. In addition to examining the contribution of agriculture to the Wisconsin economy in 2012 overall, the study explores nine (9) sub-regions of Wisconsin as defined by the Wisconsin Agricultural Statistics (NASS regions). It is important to note Green Lake County is located in the "Central" sub-region

In the most recent study, Deller and Williams (2009) found that Wisconsin agriculture contributes \$59.16 billion to total business sales/revenue (about 12.5% of Wisconsin's total business sales); 353,991 jobs (10% of total Wisconsin employment) and \$20.2 billion of total income (about 9% of Wisconsin's total income).

- In 2012 on-farm activity contributed 153,900 jobs, \$5.7 billion to labor income (wages, salaries and proprietor income), \$8.9 billion to total income, and \$20.5 billion to industrial sales.
- Food processing activity contributed 259,600 jobs, \$12.9 billion to labor income (wages, salaries and proprietor income), \$21.2 billion to total income, and \$67.8 billion to industrial sales.
- Total agricultural activity contributed 413,500 jobs, \$18.6 billion to labor income (wages, salaries and proprietor income), \$30.1 billion to total income, and \$88.3 billion to industrial sales.
- Dairy remains a strong cluster industry for Wisconsin with growing strength in dried-condensed-evaporated milk and butter production. Cheese remains a strength but the sector is growing more slowly than national production. Dairy in aggregate (farming and processing) contributes 78,900 jobs, \$3.9 billion to labor income, \$7.2 billion to total income, and \$43.4 billion to industrial sales.
- Drought conditions for many parts of Wisconsin in 2012, the study period, caused a downward tick in grain farm activity further complicating the dairy and other livestock feeding challenge. For the analysis here the contribution estimates for farming may be conservative.
- The lingering effects of the Great Recession also placed downward pressure on agricultural processing not only in Wisconsin, but across the nation.

Despite the combined effects of the drought of 2012 and lingering effects of the Great Recession, agriculture has risen in importance for the Wisconsin economy accounting for 11.9% of employment, 10.9% of labor income, 10.9% of total income, and 16.1% of industrial sales.

A full copy of the *Contribution of Agriculture to the Wisconsin Economy (2012)* report can be found in Appendix D.

According to data obtained from the UW Cooperative Extension Office, Green Lake County agriculture:

- Provides 1,463 jobs throughout the County (15% of the county total of 9,769)
- Pumps \$320 million into the economy (almost 27% of the County's total business sales)
- Contributes \$88 million to county income (accounting for 16% of the County's total)

Every dollar of sales from agricultural products generates an additional \$.40 of business sales in other parts of the County's economy.

For example, this includes business-to-business purchases of fuel, seed, fertilizer, feed and farm machinery, as well as veterinary services, crop and livestock consultants and financial services. This business-to-business activity then generates sales when people who work in agriculture-related business spend their earnings in the local economy.

From a regional perspective, the anticipated changes for agriculture production, processing, supply and distribution look very favorable. Green Lake County is home to high quality farms which produce high quality milk that is in demand. This milk is processed and packaged locally and in the region. The south east portion of the County contains some of the best farmland and soils in the entire state. Green Lake County provides a well-established transportation network and support infrastructure that allows for product to move in and out of the County easily and efficiently. Finally, due to agricultural roots, workers in Green Lake County are known for their strong work ethic, making them attractive to local business and industry.

ORGANIC FARMING AND ECONOMIC IMPACTS:

Wisconsin has seen dramatic growth as the number of certified organic farms has grown from 422 in 2002 to 1,202 in 2007, an increase of 285%. Green Lake County should expect an increase in organic activity similar to the state. Here are some key facts on organic farming:

- From 2002 to 2011, organic acreage in Wisconsin has increased from 81,026 acres to 195,603 acres, a 241% increase.
- About 250 farmers raise and sell organic vegetables on about 1,750 acres in Wisconsin. With per acre income levels averaging \$3,741, these farms generate about 70% more income per acre than their non-organic counterparts. With existing vegetable growing expertise and processing infrastructure in the state, and the proven strength in organic produce sales (about 38% of total organic sales nationally), there is great potential for growth in this sector in future years, including Green Lake County
- Based on data from the University of Wisconsin Center for Dairy Profitability, even in the current economic downturn, Wisconsin organic farms generated nearly \$1,000 in net profit per cow in 2009 while farmers receiving conventional prices for their milk lost \$147 per cow. The organic farms in the study averaged \$65,000 in net farm income in 2009.

For more information and to download the report please visit:

<http://datcp.wi.gov/uploads/Farms/pdf/OrganicAdvisoryCouncilNewsletter.pdf>

Continued growth in agriculture production, processing, supply and distribution can be expected county-wide and regionally. According to UW Extension data, Green Lake County has four Nationally Certified Organic Producers. Growth in the organic market appears very favorable.

5.0 Farmland Preservation Areas

This chapter provides detail on how the Farmland Preservation Maps were developed.

5.1 Rationale Used to Determine Preservation Areas

The *Green Lake County Farmland Preservation Plan* Map (Map 4) identifies two areas: "Farmland Preservation Areas" and "Nonagricultural Development Areas". The "Areas of Agricultural Use and Agriculture Related Use" are considered to be within the Farmland Preservation Area and the "Areas of Nonagricultural Development" are within the Nonagricultural Development Area. The rationale and criteria used to determine the Farmland Preservation Areas and Areas of Nonagricultural Development were as follows:

Farmland Preservation Areas (Areas of Agricultural Use and Agriculture Related Use)

Please note that land designated as a farmland preservation area only needs to meet one of the following criteria.

- Working farmland defined as: Parcels greater than eight (8) acres that have 50% or more of working (managed) farmland.
- Additional agriculture, forest and open space land within the contiguous ownership border of identified working farmland parcels (those identified above).
- Additional agriculture, forest and open space land on parcels greater than 8 acres that were not captured by the prior two criteria.
- Farmland currently zoned A-1 "Exclusive Agriculture". The current A-1 zoning district includes large contiguous tracts of working farmland, pasture, forestry and open space areas.
- State and federal owned property managed for forestry, habitat conservation and recreation purposes.

Areas of Nonagricultural Development (Excluded)

- Land within incorporated municipalities (villages & cities)
- Land planned for uses other than agriculture and open space over the next 15 years.
- Land within a defined Sewer Service Area Planning boundary of a city, village or town sanitary district.
- Land zoned for intensive uses other than agriculture.

As town leaders participated in the Green Lake County farmland preservation planning process, it provided them a new opportunity to reconsider and adjust land use goals. Much has changed relative to land demand for development purposes since the Great Recession of 2008. Contrary to the economic slowdown in the development industry, the agricultural economy remained stable to strong and agricultural land prices rose throughout the County. The demand for farmland has increased.

In addition, the provisions of the Working Land Initiative, Wis. Chap. 91, now provided the opportunity to accommodate some non-farm residential development within the designated farmland preservation areas through farmland preservation zoning. This was not an option prior to the Working Lands Initiative when many of the plans were developed and often low density residential areas were planned to accommodate this type of use. Hence, the Green Lake County

farmland preservation process has provided a new opportunity to adjust land use goals based on changing economic conditions. The resultant adjustments via this planning effort will provide town leaders a more accurate picture of how land use will likely occur and how it should be planned.

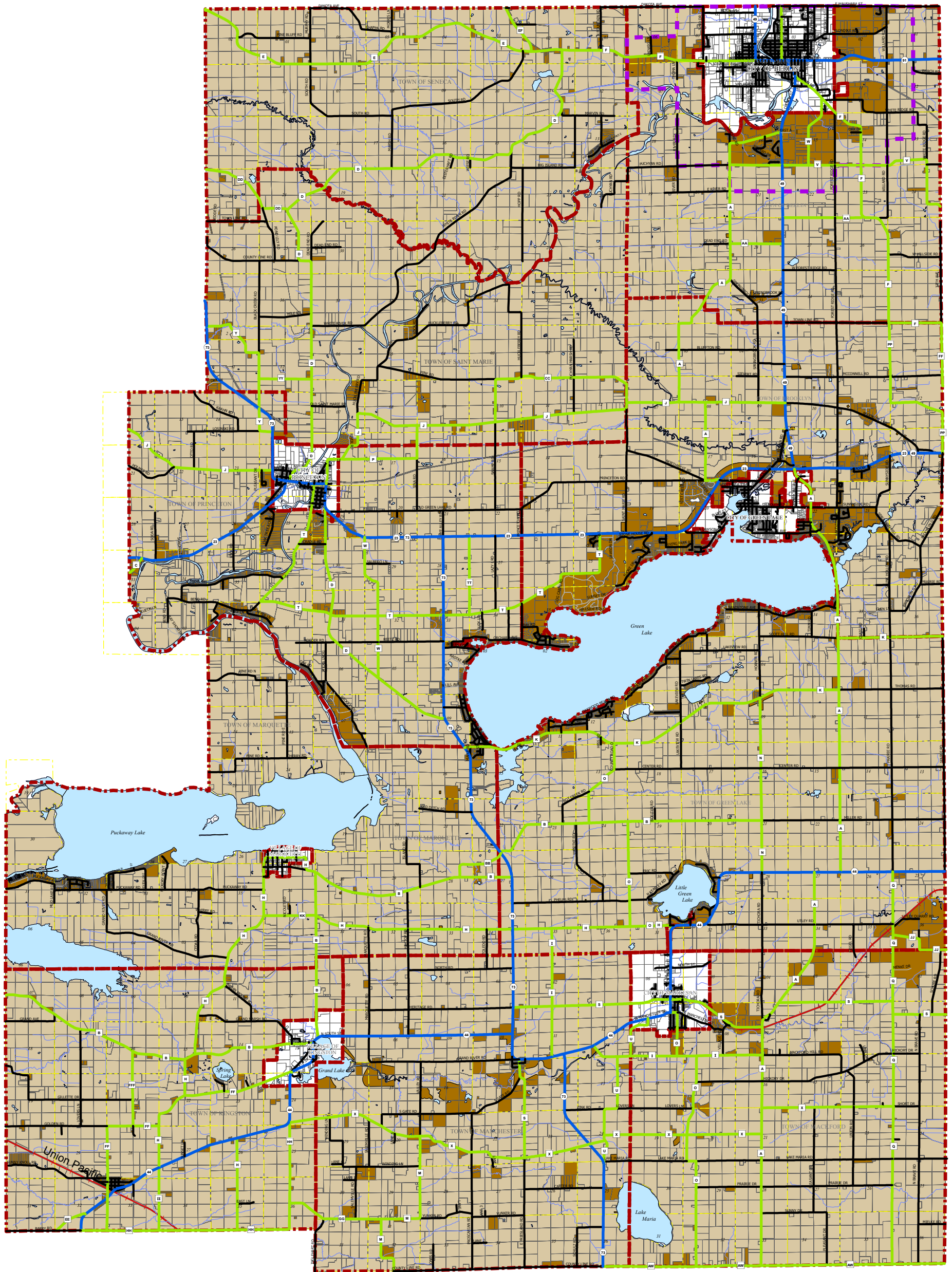
Amendments to local comprehensive plans should also occur to reflect the farmland preservation areas noted as part of this *Green Lake County Farmland Preservation Plan*. This effort will ensure consistency between the local comprehensive plans, the *Green Lake County Farmland Preservation Plan* and ultimately the Green Lake County Comprehensive Plan.

5.2 Farmland Preservation Map Category Description

There are only two description categories on the Farmland Preservation Plan Map: Farmland Preservation Areas and Nonagricultural Development Areas. The Farmland Preservation Areas include those areas of Agricultural Use and Agriculture Related Use (Light Brown Color) in accordance with the rationale described in section 5.1.

The Nonagricultural Development Areas include all other land uses and are placed within the Areas of Nonagricultural Development on the Map (Dark Brown Color). The Farmland Preservation Map and Map Legend include highways, town roads, railroads, town boundaries, section lines, parcel boundaries, incorporated areas, water bodies, and rivers and streams. The Farmland Preservation Map is done for the entire county excluding incorporated areas. However, in order to provide the necessary detail, the maps provided in the Farmland Preservation Plan are shown on a town by town basis in Appendix G. Table 5-1 includes the acreage totals of the Farmland Preservation Areas within each town.

For comparison purposes, those acreages are compared against the prime soil acreage totals for each town. As indicated by Table 5-1, the farmland preservation planning process has been very successful capturing prime agricultural soils within the Farmland Preservation Areas. A total of 199,931 acres have been designated as farmland preservation areas, accounting for 92.5% of the County's unincorporated area. Of the 159,650 acres of prime agriculture soils in the County, 149,291 acres (93.5%) are captured within the designated Farmland Preservation Areas.



0 0.45 0.9 1.8 2.7 3.6 Miles

The base map was created with data from Green Lake County Land Use Planning and Zoning Department who in no event assumes any liability regarding fitness of use of the information and any application by others, is the responsibility of the user.

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arcgis10444001fpp.mxd_Adopted February 16, 2016

Farmland Preservation Areas

-  Areas of Agricultural Use and Agriculture Related Use
-  Nonagricultural Development Areas
-  Areas of Nonagricultural Development

Map Features

-  State Highway
-  County Highway
-  TOWN ROAD Town Road
-  Railroad

-  Extraterritorial Zoning Boundary
-  Municipal Boundary
-  Section Line
-  Parcel Line
-  Waterline
-  Waterbody



Green Lake County
Wisconsin

Farmland Preservation Plan

DATCP Submitted June 25, 2015
DATCP Certification July 10, 2015
Green Lake County Adopted February 16, 2016

Note: The Farmland Preservation Maps supersede the Future Land Use Maps of the Green Lake County Comprehensive Plan when inconsistencies exist regarding non-agricultural development.

**Table 5-1
Farmland Preservation Acres and Prime Agricultural Soils, Green Lake County**

<u>Township</u>	<u>Town Acres</u>	<u>Prime Ag Soil Acres</u>	<u>% Prime Ag Soils</u>	<u>Farmland Preservation Acres</u>	<u>% Farmland Preservation</u>	<u>Acres in FP & Prime Ag Soils</u>	<u>% FP & Prime Ag Soils</u>
Berlin	18,943	15,713	82.9%	16,066	84.8%	13,830	73.0%
Brooklyn	22,071	17,476	79.2%	18,070	81.9%	14,651	66.4%
Green Lake	29,568	27,066	91.5%	27,287	92.3%	25,466	86.1%
Kingston	18,382	11,618	63.2%	17,884	97.3%	11,317	61.6%
Mackford	21,298	20,406	95.8%	20,052	94.2%	19,274	90.5%
Manchester	22,392	19,492	87.0%	20,718	92.5%	18,247	81.5%
Marquette	20,075	11,065	55.1%	19,314	96.2%	10,722	53.4%
Princeton	21,556	12,052	55.9%	19,950	92.5%	11,520	53.4%
Saint Marie	20,911	12,317	58.9%	20,134	96.3%	11,971	57.2%
Seneca	20,827	12,445	59.8%	20,456	98.2%	12,293	59.0%

Notes: (1) Cities/Villages and road right-of ways have been excluded from all calculations
 (2) Sorted by % designated prime ag soils and farmland preservation



6.0 Implementation

6.1 Goals, Objectives and Policies for Agricultural Development

In addition to discussing agricultural trends, the Green Lake County Farmland Preservation Plan Ad-Hoc Steering Committee discussed changes to the Goals, Objectives and Policies listed in the initial *Green Lake County Farmland Preservation Plan* (1983). These changes were recommended in addition to new goal and policy changes that sprouted out of the discussion topics covered as part of the Ad-Hoc Committee meetings.

Wisconsin Statutes 91.10 requires the plan must state the County's policy and goals related to farmland preservation and agricultural development, including the development of enterprises related to agriculture. For clarification, goals are general statements, whereas the policies build on the goals by providing more detailed actions to the goals. Policies that direct action using the words "will" or "shall" are advised to be mandatory and regulatory aspects of implementation.

In contrast, those policies that direct action using the words "should", "could", or "may" are advisory and intended to serve as a guide. Policies are used to assist the future decisions makers in the towns and the county.

The revised and new goals and policies for agricultural and enterprise related agricultural developments are as follows:

Overall Farmland Preservation Goal

It is the goal of the Green Lake County to maintain the integrity and viability of county agriculture. This should be accomplished without damaging the economic and social environment or the natural resources which provide a high quality of life for residents of this county.

Overall Policies

Prepare, in cooperation with applicable state agency (s), municipal, town, village and other intra-governmental bodies, a ten (10) year plan to sustain agriculture as an essential part of the economic and social structure of Green Lake County.

Build the Green Lake County Farmland Preservation Program on the concept that maintaining undisturbed tracts of farmland for agricultural production creates cropping efficiencies, improves pest control success and reduces land use conflicts with non-farm residences.

Recognize that a strong and profitable local agricultural economy provides the best growth management program to reduce sprawl and incompatible land use situations in designated agricultural areas.

Promote agricultural programs and educational efforts that are designed to create a stronger connection to the land and an understanding of agricultural systems, especially within younger generations and law makers.

Recognize that Green Lake County agriculture is impacted by regional, national and global policies, markets and initiatives and, where appropriate, engage in local support to move agriculture in a positive direction.

GREEN LAKE COUNTY FARMLAND PRESERVATION PLAN

Continue to maintain a reliable county agricultural environment in order to maintain existing financial investment and spawn the expansion of agricultural related businesses.

Support and compliment local, regional and state efforts to preserve farmland.

Maintain and promote programs, efforts and initiatives that lead to a diversified agricultural base as diversity leads to sustainability.

Address and analyze the status of county and town agriculture, characteristics of natural resources, population statistics, and the need for urban growth, housing, and public facilities.

Prepare the farmland preservation plan in accordance with Chapter 91, ATCP 49 & ATCP 51 of the Wisconsin Statutes.

Provide flexibility for change by establishing a systematic and continuous procedure to ascertain preference and suggestions by citizens and to establish procedures whereby additions, deletions and other changes in the plan may be made as deemed necessary.

Continue to support Green Lake County farmers in their willingness to engage in innovation.

Support the expansion of technology, creativity and innovation to improve cost efficiencies and "economies of scale" in agriculture.

Understand that although the regional influence of agricultural players can improve the local agriculture economy, it can also create some stress within local types of farming which may cause transition. Attempts to balance agricultural interests should be acknowledged.

Maintain, support and enhance the opportunity for unique farm market niches like organics and specialty farming. Use these unique farming niches to further "brand" the areas rich agricultural traditions.

Target and expand opportunities to utilize locally grown and processed products in an effort to reduce transportation distances between producer and consumer.

Provide continuous information to farmers pertaining to the financial advantages and long-range benefits for the farmland preservation program and the use of best management practices.

Protect identified agricultural land through an integrated application of land use regulations, local planning, farm conservation plans and the use of Agricultural Enterprise Areas (AEA's).

Support a farmers "Right to Farm" through established farming activities.

Conduct informational meetings for agricultural organizations and the general public.

Maintain, and where required, expand the commitment to county departments, agencies and other agricultural partners in enhancing area agricultural programs, efforts and initiatives.

Goal 1

It is a goal of the Green Lake County to preserve its farmland and unique natural resources by protecting those lands from encroaching incompatible land uses and by using appropriate best management practices.

Supporting Policies

Identify those lands most suitable for agriculture by using objectives criteria.

Map farmland preservation areas to be recommended for preservation.

Preserve and enhance the ability of the land to provide agricultural products.

Recognize forestry as an important component of the local agricultural economy and incorporate these forests as part of the farmland preservation planning areas.

Promote the utilization of forest management professionals to develop private forest management plans that will assist in maintaining this resource as a sustainable component of the local agriculture landscape.

All farmers, whether owner or renter, are to abide by the same farmland preservation and conservation standards ensuring resource protection.

Recognize the most unique and productive soils occur in the SE corner of the Green Lake County where prairie soils are common. This is an area where the most intensive farmland preservation efforts should occur.

Support responsive, quality and environment friendly management techniques that further enhance soil productivity.

Recognize, support and enhance conservation and land management practices that minimize soil disturbance while increasing crop production.

Encourage all farmers to utilize applicable best management practices in accordance with ATCP 50 to preserve the quality of their farmland.

Coordinate efforts with agencies involved with farmland preservation and soil and water conservation.

Provide information about cost sharing programs available to assist in the application of best management practices.

Assist local governments who desire more involvement in agricultural land use planning.

Partner with land preservation organizations. The County may establish a dialogue with and invite educational offerings from organizations that work with private landowners to protect natural resources and preserve open space, such as land trusts and conservancy organizations.

Promote field trips, exhibitions and other outreach activities that exhibits the areas a strong conservation and land management ethic.

Provide educational opportunities that inform farm and non-farm users of land about non-compatibility issues that occur when these uses are in close proximity to each other.

Goal 2

It is a goal of the Green Lake County to accommodate future non-farm and recreational growth in a manner which will not strain the natural or financial resources of the county or its towns.

Supporting Policies

Recognize that rural Green Lake County must accommodate some residential development to maintain a local tax base. Utilize the farmland preservation planning process and local comprehensive planning efforts to direct non-farm related development into compatible and service oriented locations.

Recognize that Green Lake County Villages and Cities play an important role in preserving farmland as well by creating healthy, sustainable and affordable housing opportunities, markets for local products and hosting agricultural related business.

Increase efforts to secure larger allocations of local road aids and other agriculture infrastructure funding by the State to support and enhance the transportation of agricultural products.

Seek opportunities to work with the WDOT to improve county highway systems in a way that will not create barriers to the farmer's ability to adequately service their farmland.

Recognize the need to maintain and expand the county and regional agricultural infrastructure so that products can move efficiently and safely from producers to processors to buyers.

Encourage growth in areas where it will not conflict with other land uses and is compatible with local comprehensive planning efforts

Provide for growth by identifying those areas that are presently in agricultural use but which may have characteristics which predicate future development.

Adhere to the policies established within the Working Lands Initiative and the revised farmland preservation program to manage and or accommodate non-farm development within established farmland preservation areas.

Delineate areas capable of accommodating non-farm growth by using the County and town comprehensive plans.

Encourage a coordinated planning program among the county, cities, villages and towns.

Encourage the implementation of county agricultural land use regulations in towns under county zoning, and town agricultural land use regulations in towns that have not adopted zoning.

Minimize rural and urban land use conflicts by coordinating county and town land use planning and regulations.

Encourage development allowed in agricultural areas to minimize the amount of land removed from production and the impact the development may have on surrounding farm operation through land use planning and the use of applicable land use regulations.

6.2 Goals, policies, strategies and proposed actions to increase housing density in areas that are not identified as farmland preservation areas

The need for housing units will increase in Green Lake County. Table 104, Household Projections, show there will be a need for 377 additional housing units in the next 15 years (2015 to 2030).

The County will need to prepare for the some new housing demand. Maintaining higher housing density in areas suitable for housing development has been a long-time goal for the County. In addition, it is assumed a large majority of new non-farm related housing development will be directed to incorporated areas (cities and villages) or area mapped for Non-Agricultural activity as shown on Map 4.

There are many benefits to increasing housing density in properly planned locations. Such benefits include: the need for fewer acres per housing unit, reduced local government expenses as shorter/narrower streets cost less to maintain and fewer miles of sewer/water piping are needed, reduced storm-water runoff can reduce utility costs, public transit systems are more cost effective and higher housing density encourages healthier life styles (walk-able communities).

It should be noted that housing development regulations are not uniform throughout the County. Four (4) of the ten towns do not have any zoning. The six (6) towns that do have zoning, practice such through the Green Lake County Zoning Ordinance. All six towns also practice farmland preservation through Green Lake County zoning. By continuation in the farmland preservation program, the County will need to recertify their zoning ordinance in order for land owners to receive credits. The revised County Zoning Ordinance will need to address non-farm residential development within the farmland preservation zoned districts. At this time specific densities will be discussed. All Green Lake County cities and villages have zoning ordinances which address residential development.

Below are goals, policies and strategies and/or proposed actions the County may implement to achieve higher housing densities in areas outside the mapped farmland preservation areas. In addition, the Green Lake County Comprehensive Plan update which is also scheduled for adoption in 2015, will include additional discussion on housing demands, need, densities and planned locations.

However, Wisconsin Statutes 91.10 (c)(7m) requires a statement of policies, goals, strategies, and proposed actions to increase housing density in areas that are not identified as farmland preservation areas per Wisconsin Statutes 91.10(d). Goals are general statements, whereas the policies build on the goals by providing more detailed actions to the goals. Policies that direct action using the words “will” or “shall” are advised to be mandatory and regulatory aspects of implementation.

In contrast, those policies that direct action using the words “should”, “could”, or “may” are advisory and intended to serve as a guide. Policies are used to assist the future decisions makers in the towns and the County.

Strategies and/or proposed actions are specific actions that the County should be prepared to complete. The completion of the strategies and proposed actions are consistent with the policies, and therefore will help fulfill the goals of the Farmland Preservation Plan.

Increase Housing Density Goal

Encourage higher housing density in incorporated communities and areas designated for non-agricultural development consistent with the *Green Lake County Farmland Preservation Plan*.

Policies

1. Residential development in farmland preservation zoned areas, shall not exceed the density ratio standard established in Chapter 91 of the Wisconsin Statutes.
2. Infill development and new housing developments shall always be encouraged within areas served by public facilities (city and village sanitary districts).
3. Cluster residential development should be promoted to minimize land use impacts and increase housing density.

Strategies

1. The County will closely coordinate the DATCP Certified *Green Lake County Farmland Preservation Plan* with updating the Green Lake County Comprehensive Plan, specifically the Future Land Use Map. This will ensure consistency between mapping and implementation so that future non-farm residential development is directed to areas of non-farm activity.
2. The County should identify and provide sources of assistance that could provide funds to repair and maintain existing housing stock. This program will enable existing residential neighborhood to be strong and attractive places for new home buyers.
3. Green Lake County towns, villages and cities should also consult *the Green Lake County Farmland Preservation Plan* to accurately located future residential development when updating their individual comprehensive plans.

Strategies and Proposed Actions to achieve Goals, Policies and Strategies

County Planning Staff will continue to be a resource to towns wishing to update their existing comprehensive plans. This cooperation should ensure consistency between local planning, zoning and the *Green Lake County Farmland Preservation Plan*. Specifically, staff can work with communities to identify areas that are available for infill development. Identifying areas that are available for new housing development will provide a readily usable database (map) for developers to reference. Developers are encouraged to develop underutilized areas, prior to developing in to open space and/or agricultural areas.

The County should also deny land division requests to create major subdivisions (5 or more lots) within agricultural zoned areas. This may result in more development occurring in areas planned for residential growth.

County staff should also assist with the development of any Agricultural Enterprise Areas (AEA's) through DATCP should the interest occur. The establishment of an AEA will further document and implement the County's commitment to farmland preservation.

As indicated earlier, a strong regional agricultural economy and support infrastructure is vital to

further industry growth. As agriculture grows and prospers in the region, the momentum to preserve farmland will increase beyond the need to rely on regulations. Agricultural resources such as prime farmland, already is essential to the area economy. In order to promote a strong economic base for agriculture, business marketing and recruitment efforts must be supported by the County. Further investment in agriculture systems will anchor preservation efforts.

6.3 Farmland Preservation Programs

There are many farmland preservation programs available to landowners in Green Lake County. Programs are available on the county, state and federal levels. The principle effort of farmland preservation and rural land preservation programs is to implement agricultural conservation practices and natural resource protection. Both farmland and natural resource protection programs are listed below, as these programs often work in combination.

Landowners can get program information from the Green Lake County Planning & Zoning Department, Green Lake County Land Conservation Department, Natural Resource Conservation Service, USDA Farm Service Agency and the Wisconsin Department of Natural Resources. Agricultural related programs available to County landowners are listed below.

County Programs

County Zoning

Green Lake County administers zoning in six (6) of the counties' 10 towns. These towns include Berlin, Brooklyn, Green Lake, Mackford, Manchester, and Marquette. There are four (4) towns that do not have any zoning including Kingston, Princeton, Saint Marie and Seneca. However, all 10 towns are covered under the Green Lake County Shoreland Ordinance. The Green Lake County Zoning Ordinance has traditionally included a farmland preservation zoning district designed to meet the requirements of the state's farmland preservation program.

In addition Green Lake County Land Conservation Department is responsible for administering many State and Federal Programs discussed below.

State and Federal Conservation Programs

Farmland Preservation Program

Administered by the Department of Agriculture Trade and Consumer Protection, (DATCP), the purpose of this program is to help preserve farmland and promote soil and water conservation practices through local planning and zoning. Landowners that participate in the program are eligible for state tax credits. In order to be eligible for the program, land must be identified as a farmland preservation area in a DATCP certified farmland preservation plan and be zoned farmland preservation in a DATCP certified farmland preservation zoning district. Land must also be in compliance with the State's soil & water conservation standards. In towns without zoning, tax credits can be obtained by landowners if the area has been approved by as an "Agriculture Enterprise Area" (AEA) by DATCP. All land eligible for credits must be identified as a farmland preservation area in the *Green Lake County Farmland Preservation Plan*, certified by DATCP. Additional information can be found at <http://workinglands.wi.gov>.

Land and Water Resource Management Plan

The purpose of this program is to control soil erosion and reduce nonpoint source water pollution. The program provides a cost share and technical assistance to landowners to install soil and water conservation practices. The following agricultural conservation practices may be utilized; grass waterways, diversions, critical area stabilization, terraces, grade stabilization

structure, sediment basin, barnyard runoff control practices, rural well abandonment, manure storage abandonment and roof runoff system. The Land and Water Resource Management Plan is required through Wisconsin Statutes Chapter 92.10.

Crop Damage Program

The purpose of this program is to provide Federal leadership and expertise to resolve wildlife conflicts to allow people and wildlife to coexist. Also known as the Wildlife Damage Abatement and Claims Program (WDACP). This program provides damage prevention assistance and partial compensation to farmers when wild deer, elk, bear, geese and turkeys damage their agricultural crops.

Dairy 30X20 Initiative

The purpose of this program is to improve the long-term viability of Wisconsin's dairy industry through services to achieve an annual milk production of 30 billion pounds by 2020. This program is organized by DATCP. Additional information can be found at http://datcp.wi.gov/Farms/Dairy_Farming/

AgrAbility of Wisconsin

The purpose of the AgrAbility program is to promote success in agriculture for people with disabilities through the development of a customized assistance plan based on the type of farm operation, type of disability, and the needs of the individual with a disability and their family. This plan could include: equipment and worksite modification, farm job restructuring, community and health care coordination, peer support involvement, etc. The Wisconsin AgrAbility Project is a cooperative effort of the University of Wisconsin Extension Service, University of Wisconsin Biological Systems Engineering and Easter Seals Wisconsin.

Center for Dairy Profitability

The purpose of the Center for Dairy Profitability is to develop, coordinate and conduct effective interdisciplinary educational and applied research programs, emphasizing business management, human resource management, production systems, and finance and marketing systems that enhance dairy profitability. In keeping with this mission statement, the Center's website has a variety of software programs, spreadsheets, and CDROMS to improve production efficiency and profitability. The Center also has a real-time internet financial benchmarking site.

Milk Money

The Milk Money program is a UW-Extension outreach program of the University of Wisconsin Department of Dairy Science supported by the Wisconsin Milk Marketing Board and offered to all Wisconsin dairy producers. Milk Money uses the 'team management concept to help producers improve milk quality.

Wisconsin Farmer's Resource Guide

The Wisconsin Farmer's Resource Guide is a directory for farmers and rural citizens to find helpful information and services offered by public and private agencies across the state. Whether you need legal aid or want to apply for a loan, seek job training or financial counseling, this guide will help you find the right person to talk to.

Farm Link

The Wisconsin Department of Agriculture, Trade and Consumer Protection Farm Link Program provides farm succession information and assistance linking farmers with other farmers and beginning farmers. The program is a coordinated network of resources available to assist new dairy farmers and also assists retiring farmers. The mission is to "develop and sus-

tain a coordinated network of resources and policies to assist dairy farm entry and transfer in Wisconsin.

Wisconsin Farm Bureau Federation Young Farmer Program

The Wisconsin Farm Bureau Federation Young Farmer Program is a leadership program for farmers under the age of 35. The Young Farmer Program provides leadership and skills development opportunities, along with the chance for young farmers to meet and network with other young farmers.

Discovery Farms

Discovery Farms is a University of Wisconsin program designed to address the environmental research needs of agricultural producers. Through addressing those needs, Discovery Farms is working to assure a healthy environment and a healthy farm economy. Discovery Farms is part of UW-Extension and the College of Agriculture and Life Sciences at UW-Madison, and have a relationship with the Wisconsin Agriculture Stewardship Initiative.

Wisconsin Focus on Energy

Focus on Energy works with eligible Wisconsin residents and businesses to install cost effective energy efficiency and renewable energy projects. Focus information, resources and financial incentives help to implement projects that otherwise would not be completed, or to complete projects sooner than scheduled. Its efforts help Wisconsin residents and businesses.

WHEDA: Beginning Farmer Bonds

The purpose of the Wisconsin Housing and Economic Development Authority (WHEDA) Beginning Farmer Bond program, uses bond funds to be used for the purchase a first farm including land, equipment, livestock, or buildings. Bonds can be used for transactions between related persons.

WHEDA: Credit Relief Outreach Program (CROP)

The purpose of the Wisconsin Housing and Economic Development Authority (WHEDA) — Crop program is to make loans to farmers, which can be used to buy animal feed, seed, fertilizer, pesticides, or to pay land rent, custom hire, crop insurance, feeder animals, tillage services, equipment rental and repair, or utilities for commodity production.

WHEDA: Farm Asset Reinvestment Management (FARM)

The purpose of the Wisconsin Housing and Economic Development Authority (WHEDA) — Farm program is to make loans to farmers, which can be used for a farm expansion or for the modernize an existing operation. The loan can be used to purchase agricultural assets including machinery, equipment, buildings, land, and livestock. The money can also be used to make improvements to farm buildings and land for agricultural purposes or refinance existing debt if the farmer is expanding their existing farm operation. The refinanced debt must not exceed 75% of the WHEDA guaranteed loan.

WHEDA: Agribusiness Guarantee Program

The purpose of the Wisconsin Housing and Economic Development Authority (WHEDA) — Agribusiness Guarantee program is to make loans to farmers for projects developing products, markets, method of processing or marketing for a Wisconsin-grown commodity. The maximum guarantee of 80% on loans can be used for equipment, land, buildings, working capital, inventory and marketing expenses.

Dairy grazing Apprenticeship Program

This program is for the training of new farmers to the trade in dairy and growing crops. Program received a \$750,000 grant in the 2014 Farm Bill to continue this service to new farmers.

Growing Power

This program serves as a training source for all types of individuals, ranging from students to farmers, or government personnel. Training areas include the following: acid-digestion, anaerobic digestion for food waste, bio-phyto remediation and soil health, aquaculture closed-loop systems, vermiculture, small and large scale composting, urban agriculture, permaculture, food distribution, marketing, value-added product development, youth education, community engagement, participatory leadership development, and project planning.

An all-inclusive summary of Federal programs can be found in the publication: *“Building Sustainable Farms, Ranches and Communities – A Guide to Federal Programs for Sustainable Agriculture, Forestry, Entrepreneurship, Conservation, Food Systems, and Community Development”*, October 2014. Below is the Introduction to this guide.

This guide is written for anyone seeking help from federal programs to foster sustainable and innovative initiatives in this country associated with agriculture and forestry. Sustainability is commonly understood to embrace the triple concepts of economic environmental and social viability. Specifically, the guide provides information about program resources pertaining to economic development, farm loans, insurance and risk management, natural resources conservation and management; nutrition and consumer food access, renewable energy and energy conservation, research and outreach and value added and marketing innovations. The guide can help farmers, entrepreneurs, community developers, private landowners, conservationists, and other individuals, as well as private and public businesses and organizations. The guide describes program resources ranging from grants and loans to technical assistance and information resources.

The guide can also help USDA and other agency employees become aware and take better advantage of the enormous array of federal programs and resources available to their clients in supporting sustainable innovations in agriculture and forestry. This edition is the guide’s sixth printing and fourth complete update, incorporating programs from the 2014 Farm Bill.

A list of the programs by category within the guide are below.

Economic Development for Farms, Small Businesses and Communities

- Rural Business Development Grants (RBDG)
- Rural Business Enterprise Grants (see RBDG)
- Rural Business Opportunity Grants (see RBDG)
- Rural Cooperative Development Grant Program (RCDG)
- Rural Microentrepreneur Assistance Program (RMAP)
- Small Business Innovation Research Program (SBIR)

Farm Loans

- Beginning Farmer and Rancher Individual Development Accounts
- Direct Farm Ownership and Operating Loans
- Downpayment Farm Ownership Loan Program
- Guaranteed Farm Ownership and Operating Loans

Intermediary Relending Loan Program (IRP)
Land Contract Guarantee Program
Microloan Program
Program Priority for Beginning, Socially Disadvantaged and Veteran Farmers and Ranchers

Insurance and Risk Management

Crop Insurance Education in Targeted States
Crop Insurance for Organic Producers
Risk Management Education (RME)
Risk management Partnership Agreements (RMA)
Whole Farm Revenue Protection for Diversified Farms

Natural Resources Conservation and Management

Agricultural Conservation Easement Program (ACEP)
Conservation Innovation Grants (CIG)
Conservation Loan and Loan Guarantee Program
Conservation Reserve Program (CRP)
CRP Transitions Incentives Program (CRP-TIP)
Conservation Stewardship Program (CSP)
Environmental Quality Incentives Program (EQIP)
Farm and Ranch Lands Protection Program (see ACEP)
Forest Legacy Program
Forest Service Urban and Community Forestry Program
Forest Stewardship Program
Grassland Reserve Program (see ACEP)
Regional Conservation Partnership Program (RCPP)
Wetlands Reserve Program (see ACEP)
Wood Utilization Assistance Program

Nutrition and Consumer Food Access

Local and Regional Food Enterprise Guaranteed Loans
Community Food Projects Competitive Grants Program
Farm to School Grant Program
Food Insecurity Nutrition Incentive Program (FINI)
Senior Farmers' market Nutrition Program (SFMNP)
WIC Farmers' Market Nutrition Program (FMNP)

Renewable Energy and Energy Conservation

Advanced Biofuels Payment Program
Bioenergy Program for Advanced Biofuels (See Advanced Biofuels Payment Program)
Biomass Crop Assistance Program (BCAP)
Biomass Research and Development Program
Rural Energy for America Program (REAP)

Research and Outreach

Agriculture and Food Research Initiative (AFRI)
ATTRA (A National Sustainable Agriculture Information Service)

GREEN LAKE COUNTY FARMLAND PRESERVATION PLAN

Beginning Farmer and Rancher Development Program (BFRDP)
Cooperative Extension System (CES)
Forest Products Laboratory (FPL)
Forestry Products Advanced Utilization Research Program
Organic Initiative (See EQIP)
Organic Agriculture Research and Extension Initiative (OREI)
Organic Transitions Program
Outreach & Assistance for Socially Disadvantaged & Veteran Farmers & Ranchers (“2501” Program)
Regional Integrated Pest Management Program
Small Farm Program
Specialty Crop Research Initiative
Sustainable Agriculture Research and Education (SARE)

Value Added and Marketing Innovations

Farm Storage Facility Loans
Farmers Market and Local Food Promotion Program (FMLFPP)
Farmers Market Promotion Program (see FMLFPP)
Federal-State Marketing Improvement Program (FSMIP)
GAP/GHP Verification Audit Program
Local Food Promotion Program (see FMLFPP)
National Organic Program
Organic Certification Cost-Share Programs
Specialty Crop Block Grants Program
Value Added Producer Grants (VAPG)

6.4 Green Lake County Comprehensive Plan Consistency

Green Lake County developed and adopted a county wide comprehensive plan under Stats 66.1001 in 2003. The Comprehensive Plan is being updated after this farmland preservation planning effort to ensure future land use mapping is coordinated properly.

Since a majority of Green Lake County is rural in nature, the decision to update the farmland preservation plan in conjunction with updating the comprehensive plan made sense both logistically and financially to county leaders.

Identifying areas of agricultural use first allows the County to achieve consistency between both documents as the farmland preservation areas will be incorporated as a future land use as part of the comprehensive plan. Likewise areas identified as non-farm development areas will be assigned a more appropriate future land use.

In addition, the *Green Lake County Farmland Preservation Plan* will be incorporated as a component within the County Comprehensive Plan and adopted as such achieving consistency between the two planning documents.

6.5 County Actions & Strategies to Preserve Farmland and Promote Agricultural Development

Strategies and/or proposed actions are specific tasks that the county should be prepared to complete. The completion of strategies and proposed actions are consistent with the policies, and therefore will help fulfill the goals of the Farmland Preservation Plan.

1. Develop and adopt a Farmland Preservation Plan in accordance with state statutes in order to allow all interested towns to be eligible for farmland preservation programs.
2. Develop Farmland Preservation Plan Maps for each town and encourage towns to provide input into the map development process.
3. Encourage towns, villages and cities to maintain consistency with the Farmland Preservation Plan when developing local comprehensive plans.
4. Share with towns, villages, cities, the general public, and other interested groups on the benefits of the *Green Lake County Farmland Preservation Plan*.
4. Update the Farmland Preservation Plan at least once every 10 years or sooner as the need for amendments occur.
5. Pursue the development of Agriculture Enterprise Areas where desired and consistent with the Farmland Preservation Plan to further support and market agricultural products and increase tax credits.
6. Utilize state and federal easement programs as recommended by the Green Lake County Land Conservation Department.

6.6 County Actions to Address Land Use Issues affecting Farmland Preservation and Agricultural Development

1. County Planning Staff should support and facilitate planning services to towns to update their comprehensive plans.
2. County Planning Staff shall also provide assistance to the four un-zoned towns within their shoreland and floodplain zones. Should the four towns someday consider “general zoning”, county staff could assist with the establishment efforts.
3. In order to maintain or obtain eligibility for the Farmland Preservation Program, the County will need to amend and re-certify their County zoning ordinance text and map consistent with Chapter 91 requirements. This action should ensure planning and zoning consistency with the Farmland Preservation Plan.
4. Continue to support the business marketing and recruitment efforts by the Green Lake County Economic Development Corporation and area Chambers of Commerce to promote a strong economic base for regional agriculture.
5. The County should deny any request for a major subdivision (5 or more lots) in areas designated as a Farmland Preservation Area unless an amendment to the local comprehensive plan identifying the change has occurred.

GREEN LAKE COUNTY FARMLAND PRESERVATION PLAN

6. The County Highway Department should work cooperatively with local towns interested in the “Implements of Husbandry” permit program.
7. Implement the strategies and actions proposed in Section 6.2 of this Plan in order to increase housing density in the County.

Please note that many of the actions noted in Section 6.5 apply to Section 6.6 as well.

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APPENDIX A

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Table 100 Historical Population Change

	Green Lake County	Fond du Lac County	Marquette County	Waushara County	Wisconsin
1970	16,878	84,567	8,865	14,795	4,417,821
1980	18,370	88,964	11,672	18,526	4,705,642
1990	18,651	90,083	12,321	19,385	4,891,769
2000	19,105	97,296	15,832	23,154	5,363,675
2010	19,051	101,633	15,404	24,496	5,686,986
2012 (est.)	19,039	101,843	15,205	24,461	5,708,612
% Change					
1970 to 1980	8.8%	5.2%	31.7%	25.2%	6.5%
1980 to 1990	1.5%	1.3%	5.6%	4.6%	4.0%
1990 to 2000	2.4%	8.0%	28.5%	19.4%	9.6%
2000 to 2010	-0.3%	4.0%	-2.7%	5.8%	6.0%
2010 to 2012	-0.1%	0.2%	-1.3%	-0.1%	0.4%

Source: Wisconsin Department of Administration

Table 101 Population Race and Ethnicity

	Green Lake County				Wisconsin			
	2000		2010		2000		2010	
	No.	%	No.	%	No.	%	No.	%
Total Persons	19,105		19,051		5,363,675		5,686,968	
White (not incl. Hispanic)	18,687	97.8%	18,428	96.7%	4,681,630	87.3%	4,738,411	83.3%
Hispanics of All Origin	393	2.1%	743	3.9%	192,921	3.6%	336,056	5.9%
Black or African American	29	0.2%	88	0.5%	300,245	5.6%	350,898	6.2%
American Indian & Alaska Native	38	0.2%	52	0.3%	43,980	0.8%	48,511	0.9%
Asian and Pacific Islander	66	0.3%	91	0.5%	89,341	1.7%	129,617	2.3%
Some Other Race	170	0.9%	268	1.4%	3,637	0.1%	4,095	0.1%
Two or More Races	115	0.6%	124	0.7%	51,921	1.0%	79,398	1.4%

Source: US Census Bureau, American FactFinder

Table 102 Population Age and Median Age

	Green Lake County				Wisconsin			
	2000		2010		2000		2010	
	No.	%	No.	%	No.	%	No.	%
< 10 years old	2,256	11.8%	2,375	12.5%	721,824	13.5%	727,060	12.8%
10 - 19	2,811	14.7%	2,407	12.6%	810,269	15.1%	775,136	13.6%
20 - 29	1,701	8.9%	1,747	9.2%	691,205	12.9%	758,899	13.3%
30 - 39	2,529	13.2%	1,991	10.5%	807,510	15.1%	694,675	12.2%
40 - 49	3,038	15.9%	2,589	13.6%	837,960	15.6%	817,965	14.4%
50 - 59	2,312	12.1%	2,988	15.7%	587,355	11.0%	822,112	14.5%
60 - 69	1,721	9.0%	2,330	12.2%	387,118	7.2%	540,854	9.5%
70 - 79	1,657	8.7%	1,483	7.8%	319,863	6.0%	314,719	5.5%
80 - 84	540	2.8%	577	3.0%	104,946	2.0%	117,061	2.1%
> 85 years old	540	2.8%	564	3.0%	95,625	1.8%	118,505	2.1%
Total Population	19,105		19,051		5,363,675		5,686,986	
Median Age	41		46		36		39	

Source: US Census Bureau, GetFacts, The Applied Population Laboratory, University of Wisconsin - Madison, University of Wisconsin - Extension

Table 103 Population Projections

	Green Lake County	Fond du Lac County	Marquette County	Waushara County	Wisconsin
2010 Actual	19,051	101,633	15,404	24,496	5,686,986
2015	19,190	102,885	16,000	24,705	5,783,015
2020	19,240	105,755	16,315	25,860	6,005,080
2025	19,400	108,485	16,970	27,180	6,203,850
2030	19,445	110,590	17,325	28,230	6,375,910
2035	19,225	111,040	17,305	28,385	6,476,270
2040	18,885	110,250	17,015	27,990	6,491,635
% Change					
2010 to 2015	0.7%	1.2%	3.9%	0.9%	1.7%
2015 to 2020	0.3%	2.8%	2.0%	4.7%	3.8%
2020 to 2025	0.8%	2.6%	4.0%	5.1%	3.3%
2025 to 2030	0.2%	1.9%	2.1%	3.9%	2.8%
2030 to 2035	-1.1%	0.4%	-0.1%	0.5%	1.6%
2035 to 2040	-1.8%	-0.7%	-1.7%	-1.4%	0.2%

Source: Wisconsin Department of Administration Demographic Services Center Data

Table 104 Household Projections

	Green Lake County	Fond du Lac County	Marquette County	Waushara County	Wisconsin
No. of Households					
2010 Actual	7,919	40,697	6,571	9,949	2,279,768
2015	8,106	42,423	7,073	10,315	2,371,815
2020	8,194	44,308	7,330	10,899	2,491,984
2025	8,360	46,020	7,770	11,550	2,600,538
2030	8,483	47,419	8,058	12,095	2,697,884
2035	8,474	48,079	8,201	12,263	2,764,498
2040	8,408	48,076	8,219	12,240	2,790,322
Persons per Household					
2010 Actual	2.38	2.41	2.32	2.34	2.43
2015	2.34	2.34	2.24	2.28	2.38
2020	2.32	2.31	2.20	2.26	2.35
2025	2.29	2.28	2.16	2.24	2.32
2030	2.26	2.25	2.13	2.22	2.30
2035	2.23	2.22	2.08	2.20	2.28
2040	2.20	2.20	2.04	2.17	2.26

Source: Wisconsin Department of Administration Demographic Services Center Data

Table 105 Municipal Population Projections

	City of Berlin	City of Green Lake	City of Markesan	City of Princeton	Village of Kingston	Village of Marquette
1990	5,304	1,064	1,496	1,458	346	182
2000	5,222	1,100	1,396	1,504	288	169
2010	5,524	960	1,476	1,214	326	150
2015	5,600	980	1,455	1,170	330	150
2020	5,655	970	1,450	1,120	330	145
2025	5,755	965	1,450	1,075	335	140
2030	5,800	955	1,440	1,025	340	135
2035	5,780	930	1,410	960	340	130
2040	5,720	900	1,370	895	335	125
% Change						
1990 to 2000	-1.5%	3.4%	-6.7%	3.2%	-16.8%	-7.1%
2000 to 2010	5.8%	-12.7%	5.7%	-19.3%	13.2%	-11.2%
2010 to 2015	1.4%	2.1%	-1.4%	-3.6%	1.2%	0.0%
2015 to 2020	1.0%	-1.0%	-0.3%	-4.3%	0.0%	-3.3%
2020 to 2025	1.8%	-0.5%	0.0%	-4.0%	1.5%	-3.4%
2025 to 2030	0.8%	-1.0%	-0.7%	-4.7%	1.5%	-3.6%
2030 to 2035	-0.3%	-2.6%	-2.1%	-6.3%	0.0%	-3.7%
2035 to 2040	-1.0%	-3.2%	-2.8%	-6.8%	-1.5%	-3.8%

Source: Wisconsin Department of Administration Demographic Services Center Data

	Town of Berlin	Town of Brooklyn	Town of Green Lake	Town of Kingston	Town of Mackford	Town of Manchester	Town of Marquette	Town of Princeton	Town of Saint Marie	Town of Seneca
1990	996	1,798	1,335	776	616	774	400	1,363	348	395
2000	1,145	1,904	1,258	900	585	848	481	1,540	341	424
2010	1,140	1,826	1,154	1,064	560	1,022	531	1,434	351	408
2015	1,145	1,840	1,135	1,100	555	1,065	555	1,440	355	405
2020	1,150	1,840	1,105	1,145	550	1,110	580	1,430	355	400
2025	1,160	1,855	1,075	1,200	540	1,160	605	1,430	360	400
2030	1,170	1,850	1,045	1,245	535	1,205	630	1,425	360	395
2035	1,160	1,825	995	1,275	515	1,235	645	1,395	360	385
2040	1,140	1,785	945	1,295	500	1,250	650	1,360	355	375
% Change										
1990 to 2000	15.0%	5.9%	-5.8%	16.0%	-5.0%	9.6%	20.3%	13.0%	-2.0%	7.3%
2000 to 2010	-0.4%	-4.1%	-8.3%	18.2%	-4.3%	20.5%	10.4%	-6.9%	2.9%	-3.8%
2010 to 2015	0.4%	0.8%	-1.6%	3.4%	-0.9%	4.2%	4.5%	0.4%	1.1%	-0.7%
2015 to 2020	0.4%	0.0%	-2.6%	4.1%	-0.9%	4.2%	4.5%	-0.7%	0.0%	-1.2%
2020 to 2025	0.9%	0.8%	-2.7%	4.8%	-1.8%	4.5%	4.3%	0.0%	1.4%	0.0%
2025 to 2030	0.9%	-0.3%	-2.8%	3.8%	-0.9%	3.9%	4.1%	-0.3%	0.0%	-1.3%
2030 to 2035	-0.9%	-1.4%	-4.8%	2.4%	-3.7%	2.5%	2.4%	-2.1%	0.0%	-2.5%
2035 to 2040	-1.7%	-2.2%	-5.0%	1.6%	-2.9%	1.2%	0.8%	-2.5%	-1.4%	-2.6%

Source: Wisconsin Department of Administration Demographic Services Center Data

Table 106 Median Income

	Green Lake County		Wisconsin	
	1999	2009	1999	2009
Median Household Income	\$39,462	\$47,624	\$43,791	\$49,001
% Change		20.7%		11.9%
Median Family Income	\$46,969	\$61,232	\$52,911	\$62,088
% Change		30.4%		17.3%

Source: US Census Bureau, American FactFinder

Table 107 Household Income

	Green Lake County				Wisconsin			
	1999		2009		1999		2009	
	No.	%	No.	%	No.	%	No.	%
< \$10,000	636	8.3%	283	3.6%	148,964	7.1%	143,642	6.3%
\$10,000 to \$14,999	459	6.0%	567	7.1%	121,366	5.8%	131,222	5.8%
\$15,000 to \$24,999	945	12.3%	1,077	13.6%	264,897	12.7%	275,041	12.1%
\$25,000 to \$34,999	1,197	15.6%	992	12.5%	276,033	13.2%	261,412	11.5%
\$35,000 to \$49,999	1,670	21.8%	1,243	15.7%	377,749	18.1%	347,038	15.2%
\$50,000 to \$74,999	1,809	23.6%	1,726	21.7%	474,299	22.7%	456,952	20.0%
\$75,000 to \$99,999	546	7.1%	1,029	13.0%	226,374	10.9%	292,914	12.8%
\$100,000 to \$149,999	258	3.4%	690	8.7%	133,719	6.4%	251,263	11.0%
\$150,000 or more	132	1.7%	333	4.2%	62,903	0.03015	120,048	5.3%

Source: US Census Bureau, American FactFinder

Table 108 Per Capita Income

	Per Capita Income		
	2000	2010	% Change
Green Lake County	\$ 19,024	\$ 24,973	31.3%
State of Wisconsin	\$ 21,271	\$ 25,458	19.7%

Source: US Census Bureau, American FactFinder

Table 109 Poverty Status

	Green Lake County		Wisconsin	
	1999	2009	1999	2009
Total Persons	19,105	19,051	5,211,603	5,495,845
Total Persons Below Poverty	1,317	1,962	451,538	683,408
% Below Poverty	6.9%	10.3%	8.7%	12.4%
Total Families	5,316	5311	1,395,037	1,476,615
Total Families Below Poverty	204	351	78,188	121,082
% Below Poverty	3.8%	6.6%	5.6%	8.2%

Source: US Census Bureau, American FactFinder

Table 110 Labor Force

	1990	2000	2010	% Change 1990 to 2000	% Change 2000 to 2010
Green Lake County					
Labor Force	9,466	10,775	10,008	13.8%	-7.1%
Employed	8,882	10,354	9,071	16.6%	-12.4%
Unemployed	584	421	937	-27.9%	122.6%
Unemployment Rate	6.2%	3.9%	9.4%		
State of Wisconsin					
Labor Force	2,598,898	2,996,091	3,062,636	15.3%	2.2%
Employed	2,486,129	2,894,884	2,807,301	16.4%	-3.0%
Unemployed	112,769	101,207	255,335	-10.3%	152.3%
Unemployment Rate	4.3%	3.4%	8.3%		

Source: Wisconsin Department of Workforce Development, Wisconsin's Worknet

Table 111 Employment of Residents by Type of Industry

	2000		2010		Change 2000-2010	
	No.	%	No.	%	No.	%
Green Lake County						
Agriculture, Forestry, Fishing, and Mining	641	6.6%	618	6.3%	-23	-3.6%
Construction	795	8.2%	791	8.1%	-4	-0.5%
Manufacturing	2,467	25.6%	2,320	23.7%	-147	-6.0%
Transportation and Utilities	350	3.6%	431	4.4%	81	23.1%
Wholesale Trade	271	2.8%	167	1.7%	-104	-38.4%
Retail Trade	1,089	11.3%	1,010	10.3%	-79	-7.3%
Finance, Insurance, and Real Estate	435	4.5%	518	5.3%	83	19.1%
Services	3,164	32.8%	3,569	36.5%	405	12.8%
Public Administration	433	4.5%	356	3.6%	-77	-17.8%
All Industries	9,645		9,780		135	1.4%
Wisconsin						
Agriculture, Forestry, Fishing, and Mining	75,418	2.8%	70,599	2.5%	-4,819	-6.4%
Construction	161,625	5.9%	150,622	5.4%	-11,003	-6.8%
Manufacturing	606,845	22.2%	501,176	17.9%	-105,669	-17.4%
Transportation and Utilities	123,657	4.5%	124,762	4.4%	1,105	0.9%
Wholesale Trade	87,979	3.2%	80,592	2.9%	-7,387	-8.4%
Retail Trade	317,881	11.6%	324,308	11.6%	6,427	2.0%
Finance, Insurance, and Real Estate	168,060	6.1%	169,750	6.1%	1,690	1.0%
Services	1,097,312	40.1%	1,281,441	45.7%	184,129	16.8%
Government	96,148	3.5%	101,852	3.6%	5,704	5.9%
All Industries	2,734,925		2,805,102		70,177	2.6%

Source: US Census Bureau, American FactFinder

Table 112 Employment of Residents by Type of Occupation

	Green Lake County		Wisconsin	
	No.	%	No.	%
2000				
Management, professional, and related	2,327	24.1%	857,205	31.3%
Service	1,386	14.4%	383,619	14.0%
Sales and office	2,242	23.2%	690,360	25.2%
Farming, fishing, and forestry	193	2.0%	25,725	0.9%
Construction, extraction, and maintenance	1,092	11.3%	237,086	8.7%
Production, transportation, and material moving	2,405	24.9%	540,930	19.8%
2010				
Management, professional, and related	2,452	25.1%	943,330	33.6%
Service	1,597	16.3%	479,222	17.1%
Sales and office	2,212	22.6%	681,229	24.3%
Natural resources, construction, and maintenance	1,315	13.4%	236,713	8.4%
Production, transportation, and material moving	2,204	22.5%	464,608	16.6%

Source: US Census Bureau, American FactFinder

Table 113 Industry of Employed Persons

	2000		2010		Change 2000-2010	
	No.	%	No.	%	No.	%
Green Lake County						
Natural Resources & Mining	139	1.9%	123	1.9%	-16	-11.5%
Construction	463	6.5%	280	4.4%	-183	-39.5%
Manufacturing	1,765	24.6%	1,202	19.0%	-563	-31.9%
Trade, Transportation, Utilities	1,461	20.4%	1,226	19.3%	-235	-16.1%
Information	Suppressed	N/A	Suppressed	N/A	N/A	N/A
Financial Activities	262	3.7%	288	4.5%	26	9.9%
Professional & Business Services	226	3.2%	218	3.4%	-8	-3.5%
Education & Health Services	1,566	21.9%	1,621	25.6%	55	3.5%
Leisure & Hospitality	825	11.5%	691	10.9%	-134	-16.2%
Other Services	153	2.1%	158	2.5%	5	3.3%
Public Administration	506	7.1%	530	8.4%	24	4.7%
Unclassified	Suppressed	N/A	Suppressed	N/A	N/A	N/A
All Industries	7,166	100.0%	6,337	100.0%	-829	-11.6%
Wisconsin						
Natural Resources & Mining	19,326	0.7%	24,450	0.9%	5,124	26.5%
Construction	127,846	4.7%	96,649	3.7%	-31,197	-24.4%
Manufacturing	594,389	21.7%	429,454	16.3%	-164,935	-27.7%
Trade, Transportation, Utilities	570,186	20.8%	517,412	19.7%	-52,774	-9.3%
Information	55,196	2.0%	48,229	1.8%	-6,967	-12.6%
Financial Activities	146,844	5.4%	151,290	5.8%	4,446	3.0%
Professional & Business Services	247,504	9.0%	271,014	10.3%	23,510	9.5%
Education & Health Services	502,749	18.4%	595,546	22.6%	92,797	18.5%
Leisure & Hospitality	246,327	9.0%	261,057	9.9%	14,730	6.0%
Other Services	81,794	3.0%	86,359	3.3%	4,565	5.6%
Public Administration	144,024	5.3%	142,534	5.4%	-1,490	-1.0%
Unclassified	1,197	0.0%	6,250	0.2%	5,053	422.1%
All Industries	2,737,382	100.0%	2,630,244	100.0%	-107,138	-3.9%

Source: Wisconsin Department of Workforce Development; Employment and Wages Covered by Wisconsin's U.I. Law, Table 202, First Qtr., 1990, 2000, 2001.

Table 114 Fox Valley Wisconsin Workforce Development Area Industry Employment Projections, 2006-2016
(Calumet, Fond du Lac, Green Lake, Outagamie, Waupaca, Waushara, and Winnebago counties)

NAICS	Industry Title	Estimated Employment ⁽¹⁾			
		2006	2016	Change	% Change
	Total, All Nonfarm Industries	281,240	299,800	18,560	6.6%
1133, 21, 23	Construction/Mining/Natural Resources	16,530	18,140	1,610	9.7%
31-33	Manufacturing	59,490	57,270	-2,220	-3.7%
322	Paper Manufacturing	11,830	11,070	-760	-6.4%
332	Fabricated Metal Product Manufacturing	4,790	4,850	60	1.3%
336	Transportation Equipment Manufacturing	5,530	5,490	-40	-0.7%
42, 44-45	Trade	38,560	39,420	860	2.2%
452	General Merchandise Stores	6,300	6,530	230	3.7%
48-49, 22	Transportation and Utilities (Including US Postal)	9,890	10,950	1,060	10.7%
52-53	Financial Activities	13,520	15,080	1,560	11.5%
61-62	Education and Health Services (Including State and Local Government)	42,860	49,280	6,420	15.0%
611	Educational Services (Including State and Local Government)	16,230	16,920	690	4.3%
621	Ambulatory Health Care Services	8,280	10,530	2,250	27.2%
71-72	Leisure and Hospitality	22,610	25,190	2,580	11.4%
51, 54-56, 81	Information/Prof. Services/Other Services ⁽²⁾	42,930	48,560	5,630	13.1%
	Government (Excluding US Postal, State and Local Education and Hospitals) ⁽³⁾	34,860	35,910	1,050	3.0%

Source: Office of Economic Advisors, Wisconsin Department of Workforce Development, November 2008

Notes:

(1) Employment is a count of jobs rather than people, and includes all part- and full-time nonfarm jobs. Employment does not include jobs among self-employed, unpaid family, or railroad workers. Employment is rounded to the nearest ten, with employment less than five rounded to zero. Totals may not add due to rounding.

(2) An estimate of non-covered employment is included in NAICS 8131 (Religious Organizations), but not in any other industries.

(3) Government employment includes tribal owned operations, which are part of Local Government employment.

Information is derived using 2006 CES and 2006 QCEW data. Unpublished data from the US Bureau of Labor Statistics and the US Census Bureau is also used.

To the extent possible, the projections take into account anticipated changes in Wisconsin's economy from 2006 to 2016. It is important to note that unanticipated events may affect the accuracy of the projections.

Table 115 Average Weekly Wages

	Actual 2000	2010	Difference	% Change 2000-2010
Green Lake County				
Natural Resources & Mining	\$460	\$769	\$309	67.2%
Construction	\$690	\$1,007	\$317	45.9%
Manufacturing	\$511	\$694	\$183	35.8%
Trade, Transportation, Utilities	\$403	\$543	\$140	34.7%
Information	Suppressed	Suppressed	N/A	N/A
Financial Activities	\$533	\$779	\$246	46.2%
Professional & Business Services	\$730	\$990	\$260	35.6%
Education & Health Services	\$486	\$680	\$194	39.9%
Leisure & Hospitality	\$178	\$223	\$45	25.3%
Other Services	\$269	\$417	\$148	55.0%
Public Administration	\$358	\$492	\$134	37.4%
Unclassified	Suppressed	Suppressed	N/A	N/A
Wisconsin				
Natural Resources & Mining	\$466	\$589	\$123	26.4%
Construction	\$729	\$945	\$216	29.6%
Manufacturing	\$743	\$965	\$222	29.9%
Trade, Transportation, Utilities	\$525	\$656	\$131	25.0%
Information	\$705	\$995	\$290	41.1%
Financial Activities	\$727	\$1,026	\$299	41.1%
Professional & Business Services	\$616	\$895	\$279	45.3%
Education & Health Services	\$606	\$817	\$211	34.8%
Leisure & Hospitality	\$214	\$281	\$67	31.3%
Other Services	\$356	\$436	\$80	22.5%
Public Administration	\$607	\$801	\$194	32.0%
Unclassified	\$682	\$901	\$219	32.1%

Source: Wisconsin Department of Workforce Development; Employment and Wages Covered by Wisconsin's U.I. Law, Table 202, First Qtr. 2000, 2010

Table 116 Travel Time to Work

Minutes	Green Lake County				Wisconsin			
	2000		2010		2000		2010	
	No.	%	No.	%	No.	%	No.	%
Less than 10	2,423	27.4%	2,163	22.7%	533,891	20.7%	494,170	18.7%
10 to 14	1,296	14.7%	1,328	21.3%	476,569	18.4%	457,174	17.3%
15 to 19	989	11.2%	1,328	15.0%	440,637	17.0%	443,961	16.8%
20 to 29	1,618	18.3%	1,570	16.9%	531,628	20.6%	562,879	21.3%
30 to 34	948	10.7%	835	9.4%	248,714	9.6%	277,475	10.5%
35 to 44	539	6.1%	494	5.1%	120,661	4.7%	142,702	5.4%
45 to 59	527	6.0%	628	4.7%	120,028	4.6%	142,702	5.4%
60 or more	495	5.6%	637	4.8%	113,181	4.4%	121,560	4.6%
Worked at home:	630	6.7%	613	4.6%	105,395	3.9%	115,359	4.2%
Total:	9,465		9,596		2,690,704		2,757,982	
Did not work at home:	8,835	93.3%	8,983	95.4%	2,585,309	96.1%	2,642,623	95.8%

Source: US Census Bureau, American FactFinder

Table 117 Educational Attainment

	Green Lake County				Wisconsin			
	2000		2010		2000		2010	
	No.	%	No.	%	No.	%	No.	%
Less than 9th Grade	998	7.5%	616	4.6%	186,125	5.4%	133,010	3.5%
9th - 12th Grade	1,396	10.6%	1,136	8.4%	332,292	9.6%	243,219	6.4%
High School Graduate	5,547	41.9%	5,672	42.2%	1,201,813	34.6%	1,265,498	33.3%
1 - 3 Years of College	3,372	25.5%	3,799	28.3%	976,375	28.1%	1,155,290	30.4%
4 Years or More	1,916	14.5%	2,222	16.5%	779,273	22.4%	1,003,278	26.4%
Total Age 25 or Older	13,229		13,445		3,475,878		3,800,295	

Source: US Census Bureau, American FactFinder

Table 118 Age of Housing

	Green Lake County		Wisconsin	
	No.	%	No.	%
< 10 years	888	8.4%	345,814	13.2%
11 to 20 years	1,528	14.5%	364,456	13.9%
21 to 30 years	955	9.1%	258,722	9.9%
31 to 40 years	1,445	13.7%	386,054	14.7%
> 40 years	5,696	54.2%	1,270,431	48.4%
Total	10,512		2,625,477	

Source: US Census Bureau, American FactFinder, 2010

Table 119 Median Housing Values

	Green Lake County	Wisconsin
2000 Actual	\$90,100	\$112,200
2010 Actual	\$137,500	\$169,400
Percent Change		
2000-2010 Actual	52.6%	51.0%

Source: US Census Bureau, American FactFinder

Table 120 Housing Values

	Green Lake County				Wisconsin			
	2000		2010		2000		2010	
	No.	%	No.	%	No.	%	No.	%
Less than \$50,000	430	9.6%	280	4.6%	142,047	10.0%	79,716	5.1%
\$50,000 to \$99,999	2,291	51.0%	1,629	26.9%	482,614	33.8%	213,097	13.6%
\$100,000 to \$149,999	980	21.8%	1,465	24.2%	410,673	28.8%	336,426	21.5%
\$150,000 to \$199,999	394	8.8%	968	16.0%	210,917	14.8%	337,190	21.5%
\$200,000 to \$299,999	204	4.5%	904	14.9%	123,606	8.7%	363,355	23.2%
\$300,000 or More	189	4.2%	811	13.4%	56,803	4.0%	236,255	15.1%
Total Units	4,488		6,057		1,426,660		1,566,039	

Source: US Census Bureau, American FactFinder

Table 121 Types of Housing Units

	Green Lake County				Wisconsin			
	2000		2010		2000		2010	
	No.	%	No.	%	No.	%	No.	%
Single Family	8,053	81.9%	8,688	82.6%	1,609,407	69.3%	1,854,787	70.7%
2 to 4 Units	601	6.1%	590	5.6%	281,936	12.1%	278,935	10.6%
5 or more Units	612	6.2%	712	6.8%	325,633	14.0%	393,405	15.0%
Mobile Home or Other	565	5.7%	522	5.0%	104,168	4.5%	97,906	3.7%
Total Units	9,831		10,512		2,321,144		2,625,033	

Source: US Census Bureau, American FactFinder

Table 122 Housing Occupancy and Tenure

	Green Lake County				Wisconsin			
	2000		2010		2000		2010	
	No.	%	No.	%	No.	%	No.	%
Owner Occupied	5,950	77%	6,019	76%	1,426,361	68%	1,566,039	69%
Renter Occupied	1,753	23%	1,900	24%	658,183	32%	713,493	31%
Total Occupied Units	7,703		7,919		2,084,544		2,279,532	
Vacant Units	706		796		236,600		345,945	
Seasonal Units	1,422		1,901		142,313		193,046	
Total Units	9,831		10,616		2,463,457		2,818,523	

Source: US Census Bureau, American FactFinder

Table 123 Vacancy Status

	Green Lake County				Wisconsin			
	2000		2010		2000		2010	
	No.	%	No.	%	No.	%	No.	%
For Sale	135	6.3%	212	7.9%	17,172	7.3%	34,219	9.9%
For Rent	185	8.7%	254	9.4%	38,714	16.4%	63,268	18.4%
Seasonal Units	1,422	66.8%	1,901	70.5%	142,313	60.1%	193,046	56.0%
Other Units	386	18.1%	330	12.2%	38,401	16.2%	54,057	15.7%
Total Vacant Units	2,128		2,697		236,600		344,590	
Owner Vacancy Rate	2.2%		3.4%		1.2%		2.2%	
Renter Vacancy Rate	9.5%		11.7%		5.5%		8.0%	

Source: US Census Bureau, American FactFinder

Table 124 Household Types

	Green Lake County				Wisconsin			
	2000		2010		2000		2010	
	No.	%	No.	%	No.	%	No.	%
Total Households	7,703		7,919		2,084,544		2,279,768	
Total Family	5,322	69.1%	5,257	66.4%	1,386,815	66.5%	1,468,917	64.4%
Total Nonfamily	2,381	30.9%	2,662	33.6%	697,729	33.5%	810,851	35.6%
With Children	2,389	31.0%	2,127	26.9%	706,399	33.9%	647,472	28.4%
Without Children	5,314	69.0%	5,792	73.1%	1,378,145	66.1%	1,632,296	71.6%
With Married Couple	4,510	58.5%	4,290	54.2%	1,108,597	53.2%	1,131,344	49.6%
Living Alone	2,079	27.0%	2,294	29.0%	557,875	26.8%	642,507	28.2%
Female Headed	533	6.9%	623	7.9%	569,317	27.3%	583,376	25.6%
With Occupant(s) 65+	2,409	31.3%	2,546	32.2%	479,787	23.0%	547,650	24.0%

Source: US Census Bureau, American FactFinder

Table 125 Persons Per Household

	Green Lake County		Wisconsin	
	No.	Persons per HH	No.	Persons per HH
1990	18,651	2.59	4,891,769	2.68
2000	19,105	2.48	5,363,675	2.57
2010	19,051	2.41	5,686,986	2.49

Source: Wisconsin Department of Administration and US Census Bureau, American FactFinder

Table 126 Household Size

	Green Lake County				Wisconsin			
	2000		2010		2000		2010	
	No.	%	No.	%	No.	%	No.	%
1 Person	2,079	27.0%	2,294	29.0%	557,875	26.8%	642,507	28.2%
2 Person	2,889	37.5%	3,082	38.9%	721,452	34.6%	817,250	35.8%
3 Person	1,111	14.4%	1,054	13.3%	320,561	15.4%	339,536	14.9%
4 Person	978	12.7%	872	11.0%	290,716	13.9%	284,532	12.5%
5 Person	420	5.5%	346	4.4%	127,921	6.1%	124,387	5.5%
6 or More Person	226	2.9%	271	3.4%	66,019	3.2%	71,556	3.1%
Total Households	7,703		7,919		2,084,544		2,279,768	

Source: US Census Bureau, American FactFinder

Table 127 Owner Affordability

% of Income	Green Lake County				Wisconsin			
	2000		2010		2000		2010	
	No.	%	No.	%	No.	%	No.	%
< 20%	2,606	58.1%	2,975	49.1%	634,277	56.5%	696,379	44.5%
20% to 24%	647	14.4%	818	13.5%	173,620	15.5%	244,266	15.6%
25% to 29%	398	8.9%	700	11.6%	109,833	9.8%	175,319	11.2%
30% to 34%	248	5.5%	319	5.3%	64,892	5.8%	111,459	7.1%
> 34%	571	12.7%	1,223	20.2%	135,075	12.0%	331,754	21.2%
Not Computed	18	0.4%	22	0.4%	4,770	0.4%	6,862	0.4%
Total Households	4,488		6,057		1,122,467		1,566,039	
% Not Affordable	18.2%		25.5%		17.8%		28.3%	

Source: US Census Bureau, American FactFinder

Table 128 Renter Affordability

% of Income	Green Lake County				Wisconsin			
	2000		2010		2000		2010	
	No.	%	No.	%	No.	%	No.	%
< 20%	639	39.5%	548	29.1%	242,345	37.8%	170,604	23.9%
20% to 24%	182	11.3%	320	17.0%	90,934	14.2%	89,920	12.6%
25% to 29%	185	11.4%	189	10.0%	67,926	10.6%	79,133	11.1%
30% to 34%	93	5.8%	191	10.1%	44,573	6.9%	61,319	8.6%
> 34%	324	20.0%	431	22.9%	162,669	25.4%	270,591	37.9%
Not Computed	194	12.0%	204	10.8%	33,225	5.2%	41,926	5.9%
Total Households	1,617		1,883		641,672		713,493	
% Not Affordable	25.8%		33.0%		32.3%		46.5%	

Source: US Census Bureau, American FactFinder

APPENDIX B

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USDA Peggy Greb

Horticulture contributes to Green Lake County diversity

Green Lake County sales of Christmas trees, fruits and vegetables, greenhouse, nursery and floriculture products add up to \$9.4 million. Landscape, grounds maintenance and tree-care businesses create additional full-time jobs and many seasonal jobs.

Direct-marketing sales add \$210,000 to economy

More and more Green Lake County farmers sell directly to consumers through roadside stands, farmers' markets, auctions, pick-your-own operations and community supported agriculture (CSA). In all, 49 farms generate \$210,000 in direct-marketing sales.

Farmers are stewards of 64% of the county's land

Green Lake County farmers own and manage 142,757 acres, or 64 percent, of the county's land. This includes cropland, pasture, tree farms, farm forests and wetlands. As stewards of the land, farmers use conservation practices, such as crop rotation, nutrient management and integrated pest management, to protect environmental resources and provide habitat for wildlife.

LW Extension Cooperative Extension

Produced in 2011 by:
University of Wisconsin-Extension,
Cooperative Extension

Economic data (2008) provided by:
Steven C. Deller, professor of agricultural and applied economics, College of Agricultural and Life Sciences, University of Wisconsin-Madison; and community development specialist, University of Wisconsin-Extension, Cooperative Extension.

Other economic data from:
USDA 2007 Census of Agriculture

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AGRICULTURE – WORKING EVERY DAY FOR WISCONSIN

Green Lake County Agriculture: Value & Economic Impact



©Wisconsin Milk Marketing Board

Agriculture works hard for Green Lake County every day. Family-owned farms, food processors and agriculture-related businesses generate thousands of jobs and millions of dollars of economic activity while contributing to local income and tax revenues.

Green Lake County offers an array of agricultural products and practices, including organic dairy and vegetables, rotational grazing, conventional dairies of all sizes, corn, soybeans, snap beans and sweet corn. This diversity makes agriculture a mainstay in the county's economy.

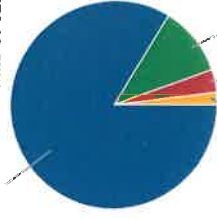
Green Lake County's rolling hills and rural charm, surrounding the state's deepest lake, also make it a popular tourist spot. Home to a large Amish community, the Tri-County Produce Auction Co-op and many value-added farms, Green Lake County is also an agri-tourism destination.

How important is agriculture?

- Agriculture provides 1,463 jobs in Green Lake County.
- Agriculture accounts for \$320 million in business sales.
- Agriculture contributes \$88 million to county income.
- Agriculture pays \$7 million in taxes.

Who owns the farms?

83.7% Individuals or families



1.8% Non-family corporations and other

10.8% Family partnerships

3.7% Family corporations



Agriculture provides 15% of county's jobs

Green Lake County agriculture provides 1,463 jobs, or 15 percent, of the county's workforce of 9,769. Jobs include farm owners and managers, farm employees, veterinarians, crop and livestock consultants, feed, fuel and other crop input suppliers, farm machinery dealers, barn builders, agricultural lenders and other professionals, to name a few. It also includes those employed in food processing and other value-added industries. Every job in agriculture generates an additional 0.48 jobs in the county.

Agriculture pumps \$320 million into economy

Green Lake County agriculture generates \$320 million, almost 27 percent, of the county's total business sales. Every dollar of sales from agricultural products generates an additional \$0.27 of business sales in other parts of the county's economy.

Here's how agriculture stimulates business activity:

- The direct effect of agriculture equals \$252.2 million and includes the sale of farm products, processed and other value-added products.
- Purchases of agricultural and food-processing inputs, services and equipment add another \$52.3 million in business sales. For example, this includes business-to-business purchases of fuel, seed, fertilizer, feed and farm machinery, as well as veterinary services, crop and livestock consultants, and financial services.
- This business-to-business activity then generates another \$15.5 million in business sales when people who work in agriculture-related businesses spend their earnings in the local economy.

Agriculture contributes \$88 million to income

Green Lake County agriculture accounts for \$88.2 million, about 16 percent, of the county's total income. This includes wages, salaries, benefits and profits of farmers and workers in agriculture-related businesses. Every dollar of agricultural income generates an additional \$0.62 of county income.

Agriculture pays \$7 million in taxes

Economic activity associated with Green Lake County farms and agriculture-related businesses generates \$7.4 million in local and state taxes. This figure does not include all property taxes paid to support local schools. If it did, the number would be much higher.

Table 1. Taxes generated by agriculture

Sales tax	\$1.6 million
Property tax	\$2.0 million
Income tax	\$0.8 million
Other	\$3.0 million
Total	\$7.4 million

Table 2. Green Lake County's top commodities (sales by dollar value, 2007)

1. Milk	\$30.1 million
2. Grains	\$24.8 million
3. Vegetables	\$8.8 million
4. Cattle & calves	\$8.5 million
5. Other crops & hay	\$0.77 million



Dairy is a key Green Lake County industry

Dairy farming is the major agricultural industry in Green Lake County. On-farm milk production generates \$31.9 million in business sales.

- On-farm milk production accounts for 208 jobs.
- At the county level, each dairy cow generates \$3,132 in on-farm sales to producers.
- At the state level, each dairy cow generates about \$21,000 in total sales.

2011

APPENDIX C

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Appendix C
Prime Agricultural Soils
Green Lake County, Wisconsin

Bb	Barry loam
BpB	Boyer loamy fine sand
BpC2	Boyer loamy fine sand
BsA	Briggsville silt loam
BsB	Briggsville silt loam
Co	Colwood silt loam
DdB	Dodge silt loam
DdC2	Dodge silt loam
FoA	Friesland loam
FoB	Friesland loam
GnA	Grellton fine sandy loam
GnB	Grellton fine sandy loam
GnC2	Grellton fine sandy loam
GrA	Griswold silt loam
GrB	Griswold silt loam
GrC2	Griswold silt loam
Ho	Houghton muck
JoA	Joy silt loam
KbA	Kibbie loam
KdA	Kidder fine sandy loam
KdB	Kidder fine sandy loam
KdC2	Kidder fine sandy loam
KeA	Kidder loam
KeB	Kidder loam
KeC2	Kidder loam
KwA	Knowles silt loam
KwB	Knowles silt loam
KwC2	Knowles silt loam
LaB	Lapeer loamy fine sand
LaC2	Lapeer loamy fine sand
Lb	Lapeer fine sandy loam
LrC2	LeRoy silt loam
LvB	Lomira silt loam
LvC2	Lomira silt loam
MaA	Manawa silt loam
McA	Marcellon loam
MdB2	Markesan silt loam
MdC2	Markesan silt loam
Mh	Marshan silt loam
MnB	Mecan loamy fine sand
MnC2	Mecan loamy fine sand
MsA	Mendota silt loam
MsB	Mendota silt loam
MsC2	Mendota silt loam
OkB	Okee loamy fine sand
OkC	Okee loamy fine sand

OmB	Oshtemo loamy fine sand
OmC2	Oshtemo loamy fine sand
Os	Ossian silt loam
Pa	Palms muck
PnA	Plano silt loam, till substratum
PnB	Plano silt loam, till substratum
Pr	Poy silty clay loam
Py	Poygan silty clay loam
RaB	Richford loamy sand
RaC	Richford loamy sand
ReB	Ripon silt loam
RhB2	Ritchey silt loam
RtB2	Rotamer sandy loam
RtC2	Rotamer sandy loam
ScA	St. Charles silt loam
ScB	St. Charles silt loam
ScC2	St. Charles silt loam
SnB	Sisson loam
SnC2	Sisson loam
TuB	Tustin loamy fine sand
UrB	Urne loamy fine sand
UrC2	Urne loamy fine sand
We	Willette muck
ZtA	Zittau silty clay loam

APPENDIX D

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Contribution of Agriculture to the Wisconsin Economy:

UPDATED FOR 2012



Steven Deller

UNIVERSITY OF WISCONSIN – MADISON/EXTENSION | DEPARTMENT OF AGRICULTURAL & APPLIED ECONOMICS

CONTRIBUTION OF AGRICULTURE TO THE WISCONSIN ECONOMY: UPDATED FOR 2012 VERSION 2.6¹

Contents

Executive Summary.....	2
Introduction.....	3
General Agricultural Trends.....	4
Agricultural Cluster Analysis	10
Contribution of Agricultural to the Wisconsin Economy.....	18
A Simple Review of Methods and Definitions of Terms.....	19
Results of Contribution Analysis	20
Summary.....	24
Appendix A.....	42
Input-Output Modeling.....	42
Basics of Input-Output Modeling.....	42
Transactions Table	42
Direct Requirements Table.....	43
Total Requirements Table	45
Input-Output Multipliers.....	45
Basics of Input-Output Multipliers.....	45
Initial, Indirect and Induced Effects	47
Appendix B:.....	49
Misuses and Evaluation of Economic Multipliers.....	49
Misuse of Multipliers.....	49
Evaluating Multipliers	50

¹ *Support for this work was provided in part by the Office of the Dean, University of Wisconsin-Extension, Cooperative Extension, Office of the Secretary, Wisconsin Department of Agriculture, Trade and Consumer Protection, and the Wisconsin Milk Marketing Board. This study benefited from invaluable comments and assistance from Maureen Stickel and David Williams. All errors are the responsibility of the author.*

Executive Summary

Agriculture remains an important part of the Wisconsin economy. Using the data from 2012, this study updates prior analysis of the contribution of agriculture to the Wisconsin economy (Deller 2004; Deller and Williams 2009). For consistency with prior analyses, agriculture is defined as on-farm production and value added food processing. This study is composed of three parts: (1) general historical trends (1998 to 2012) of various measures of economic activity for Wisconsin compared to a national average and averages for the Great Lake States; (2) an economic cluster analysis of various components of Wisconsin agriculture; and (3) an update of the contribution of agriculture to the Wisconsin economy. In addition to examining the contribution of agriculture to the Wisconsin economy in 2012 overall, we also explore the nine (9) sub-regions of Wisconsin as defined by the Wisconsin Agricultural Statistics (NASS regions).

In the most recent study, Deller and Williams (2009) found that Wisconsin agriculture contributes \$59.16 billion to total business sales/revenue (about 12.5% of Wisconsin's total business sales); 353,991 jobs (10% of total Wisconsin employment) and \$20.2 billion of total income (about 9% of Wisconsin's total income).

- In 2012 on-farm activity contributed 153,900 jobs, \$5.7 billion to labor income (wages, salaries and proprietor income), \$8.9 billion to total income, and \$20.5 billion to industrial sales.
- Food processing activity contributed 259,600 jobs, \$12.9 billion to labor income (wages, salaries and proprietor income), \$21.2 billion to total income, and \$67.8 billion to industrial sales.
- Total agricultural activity contributed 413,500 jobs, \$18.6 billion to labor income (wages, salaries and proprietor income), \$30.1 billion to total income, and \$88.3 billion to industrial sales.
- Dairy remains a strong cluster industry for Wisconsin with growing strength in dried-condensed-evaporated milk and butter production. Cheese remains a strength but the sector is growing more slowly than national production. Dairy in aggregate (farming and processing) contributes 78,900 jobs, \$3.9 billion to labor income, \$7.2 billion to total income, and \$43.4 billion to industrial sales.
- Drought conditions for many parts of Wisconsin in 2012, the study period, caused a downward tick in grain farm activity further complicating the dairy and other livestock feeding challenge. For the analysis here the contribution estimates for farming may be conservative.
- The lingering effects of the Great Recession also placed downward pressure on agricultural processing not only in Wisconsin, but across the nation.

Despite the combined effects of the drought of 2012 and lingering effects of the Great Recession, agriculture has risen in importance for the Wisconsin economy accounting for 11.9% of employment, 10.9% of labor income, 10.9% of total income, and 16.1% of industrial sales.

Introduction

Policy makers throughout Wisconsin are exploring ways to stimulate the private sector to grow the economy, with an emphasis on job creation. Historically, agriculture has been an important part of the Wisconsin economy. Over the past several decades, the relative importance of agriculture to the economy has diminished as service sector employment, such as recreation-tourism and financial services (e.g. insurance and business services), have become more prominent. With the loss of many manufacturing jobs and the recent Great Recession, there is renewed interest in agriculture as a potential source of new employment opportunities. This renewed interest includes both traditional and alternative agriculture such as local foods.² A key question to ask in light of this renewed interest is if the interest is justified: is the agricultural sector one that can have a larger or simulative role in the Wisconsin economy? How should local and state policy makers approach an “old” industry that is re-gaining relevance?

The original study by Deller (2004)³ examined and documented the contributions of agriculture to the Wisconsin economy. These themes were more recently re-examined by Deller and Williams (2009)⁴. In both of these studies agriculture was defined to include on-farm production and food processing. Ethanol production is not considered as part of this analysis due to the lack of comparable data. Using 2007 data, Deller and Williams (2009) found that Wisconsin agriculture contributed \$59.16 billion to total business sales (about 12.5 percent of Wisconsin total business sales); 353,991 jobs (10 percent of total Wisconsin employment) and \$20.2 billion of total income (about nine percent of Wisconsin total income).

This study builds on the earlier analysis of agriculture’s contribution to the Wisconsin economy. The study proceeds in three parts: first, we look at general trends in on-farm and agricultural processing in terms of employment, income and output as measured by gross domestic product. We look across the period 1998 to 2012 and compare Wisconsin to a national U.S. average and to the Great Lakes States. Next, we update the cluster analysis of Wisconsin agriculture first introduced in Deller and Williams (2009). Here we compare the relative strength of Wisconsin agriculture, in terms of employment, to a national average. We use a simple indicator of relative strength, a location quotient, and examine patterns from 2003 to 2013. Finally, we use an input-output model to document the contribution of agriculture to the Wisconsin economy overall and to each of the nine sub state regions as defined by the National Agricultural Statistical Service (NASS). We use 2012 data in our analysis which corresponds to the most recent U.S. Census of Agriculture.

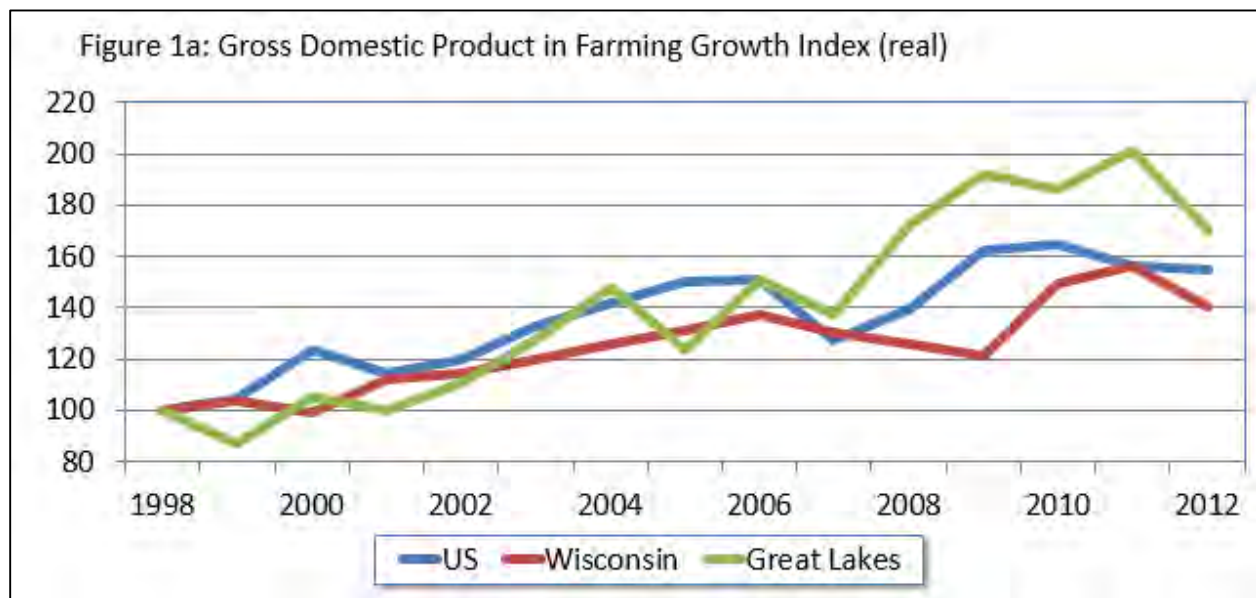
² Local food is a difficult market to define and measure. While we have reasonable data on direct sales to consumers, we lack data on sales of local farmers directly to local institutions such as restaurants or grocery stores. It is also unclear how much of food processing that is targeted toward local markets should be considered “local foods” or the local market is just part of a larger regional, national or even international product market. Consider a Wisconsin located dairy bottling plant that markets to several states including Wisconsin; should the milk marketed in Wisconsin be considered “local foods”?

³ Deller, Steven C. 2004. “Wisconsin and the Agricultural Economy.” Department of Agricultural and Applied Economics Staff Paper Series No. 471, University of Wisconsin-Madison/Extension. (March). <http://www.aae.wisc.edu/pubs/sps/pdf/stpap471.pdf>

⁴ Deller, Steven C. and Williams, David. 2009. “The Contribution of Agriculture to the Wisconsin Economy.” Department of Agricultural and Applied Economics Staff Paper No. 541. University of Wisconsin-Madison/Extension.(August) <http://www.aae.wisc.edu/pubs/sps/pdf/stpap541.pdf>

General Agricultural Trends

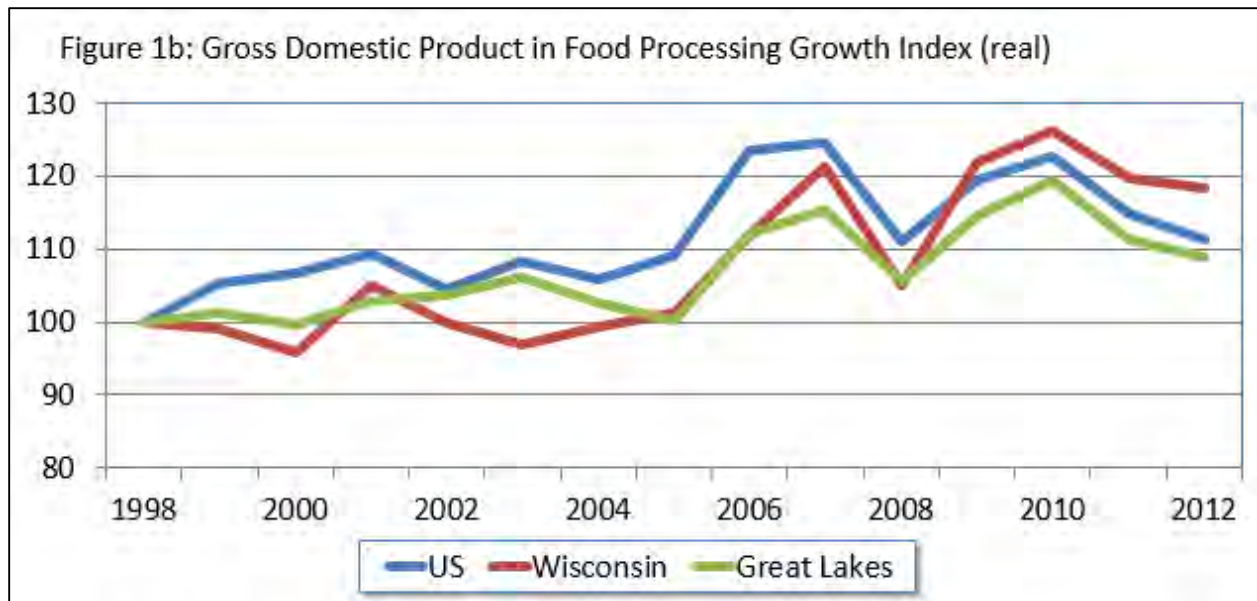
There are numerous ways in which to measure the size of the agricultural economy. A few examples include jobs, wages and salaries, industry or business sales, and gross domestic product.⁵ Given the current economic climate and frustratingly high unemployment rates not reflective of the economic recovery, job creation receives considerable attention. In addition, because of its very nature, agricultural sales and labor income tend to be highly sensitive to what are at times wide swings in commodity prices making these measures fairly unstable. This relationship holds for the price of milk, a dynamic particularly important to Wisconsin's agricultural economy. Production, also subject to sensitivity to growing conditions, likely contributed to increased instability as a result of the 2012 drought in the southern part of the state.



Between 1998 and 2012 (Figure 1a) Wisconsin agricultural production, as measured by gross domestic product (GDP), increased by approximately 40.7 percent and peaked in 2011. After accounting for inflation, this growth represents an average annual increase about 2.9%. The decline in GDP from 2011 to 2012 is likely due to drought conditions in the southern part of the state. As highlighted in Figure 1a this decline is comparable to that experienced across the Great Lake States.

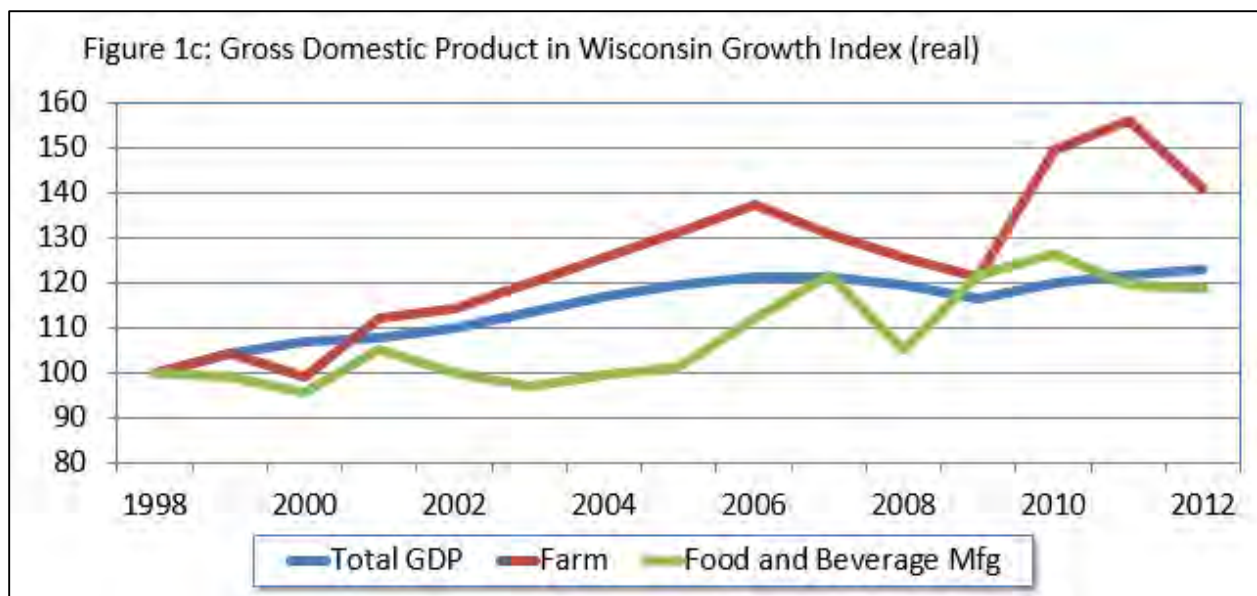
The drought conditions cannot be over looked. Corn for silage yield rates fell from 19.5 tons per acre in 2011 to 14.4 tons per acre in 2012, a decline in yields of nearly 25.6%. Soybeans for beans declined from 46.5 bushels per acre in 2011 to 41.5 bushels, a decline of 10.7% and alfalfa declined to 2.30 tons per acre in the drought year from 2.80 tons per acre in 2011, a decline of 17.8%. These declines impacted not only the ability to export commodities out of the state, thus injecting money into the Wisconsin economy, but also Wisconsin dairy and livestock operations by forcing farmers to pay higher prices for feed and import feed into the state. This substitution of regionally produced feed with imported feed represented a leakage of money out of the Wisconsin economy and thus dampening the impact of dairy and livestock. An assessment of the economic impact of the drought conditions in 2012 is beyond the scope of this study but interpretation of the analysis presented here must take the drought into consideration. At a minimum, the analysis

⁵ Gross domestic product (GDP) is the market value of all officially recognized final goods and services produced within a country or region in a year.



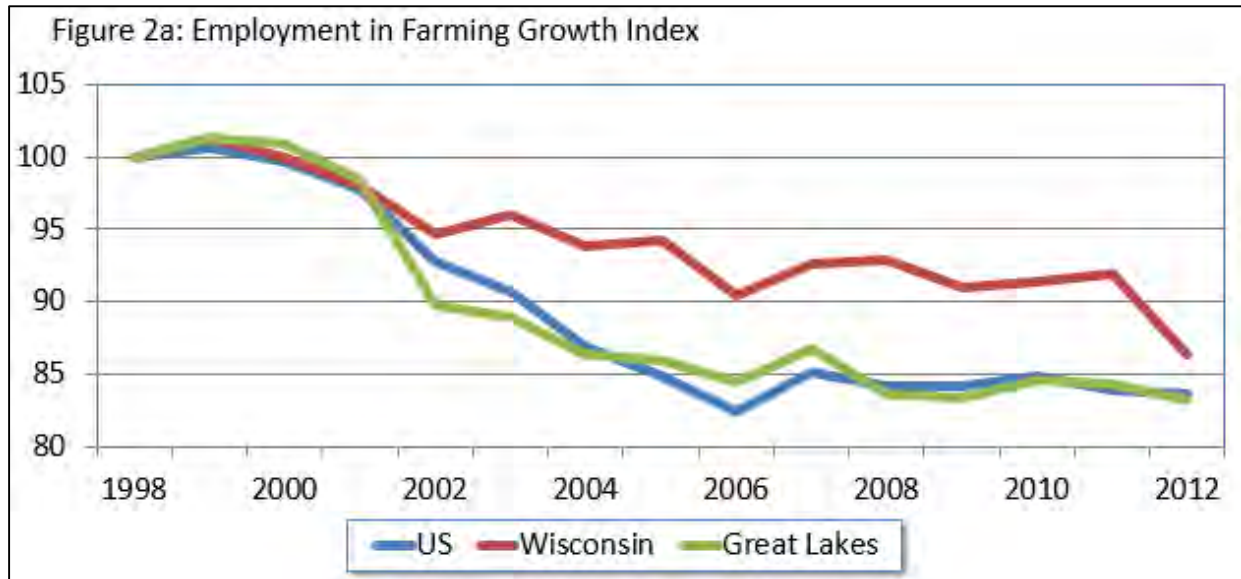
presented in this report should be considered conservative.

Food processing, another important element of the Wisconsin agricultural industry, experienced a more modest increase of 18.5% over the same 1998 to 2012 period (Figure 1b). The more modest growth in food processing is likely a reflection of both industry maturity and greater stability in product pricing. This trend is consistent with national patterns as well as those of the food processing industry across the Great Lake States.

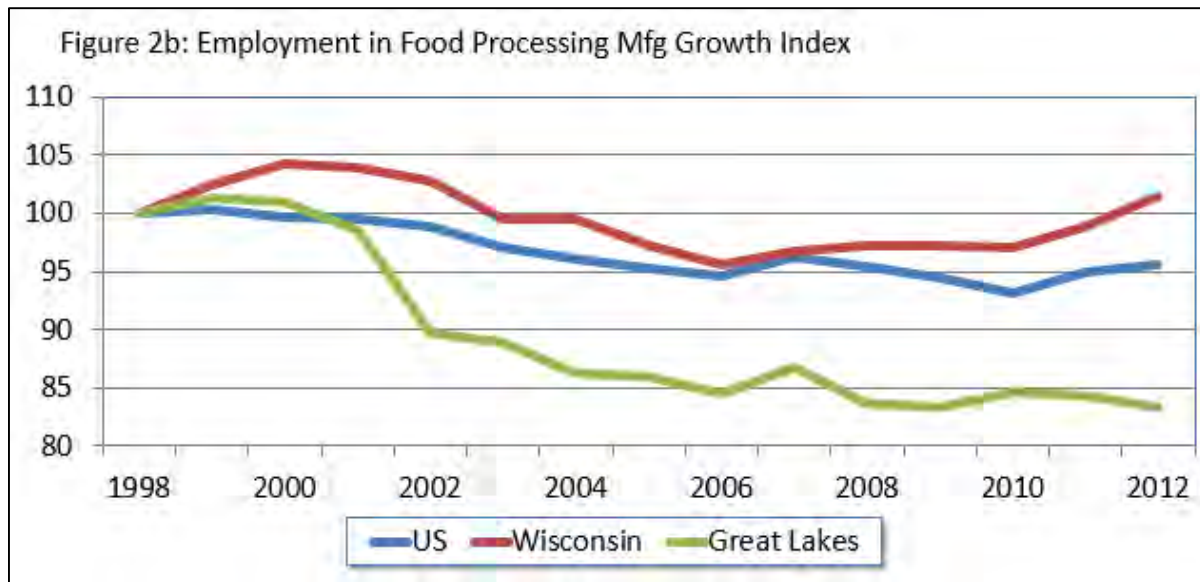


A more important question is how growth in the agriculture sector compares to the growth of the overall Wisconsin economy. Gross domestic product for the Wisconsin economy overall grew by 23% from 1998 to 2012 (Figure 1c). This growth rate is lower than that of on-farm production, but greater than that of food processing. While the Great Recession dampened much of the growth from 2007 through 2009, Wisconsin’s gross domestic product has recovered: in 2012 it was slightly above its pre-Great Recession level.

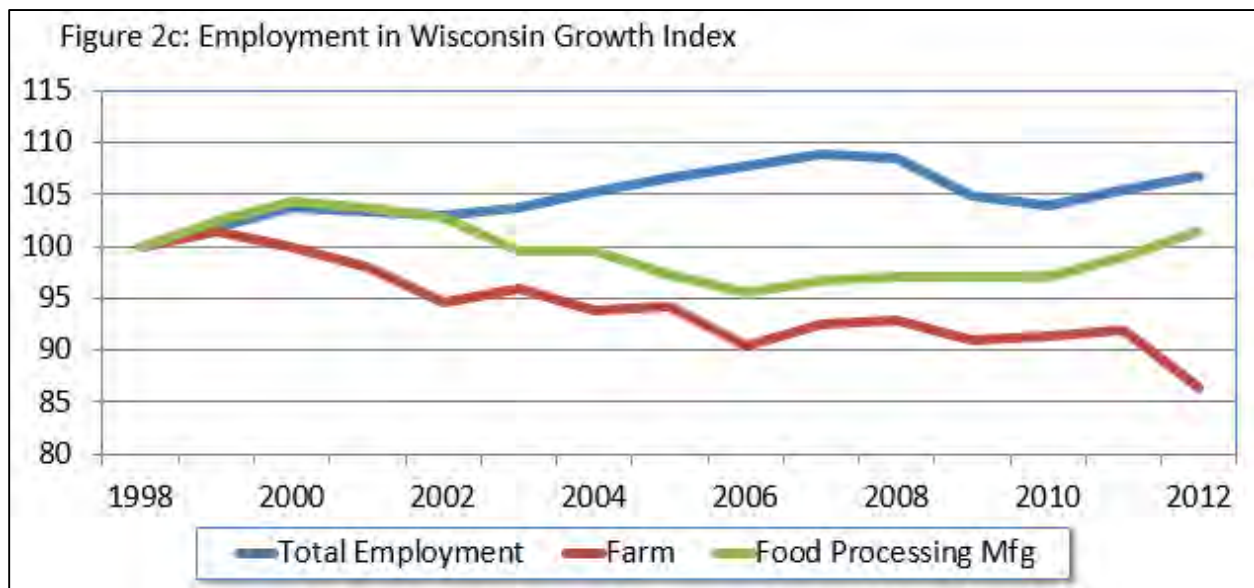
Another widely used metric of economic performance is employment. As the economy has struggled to recover from the Great Recession, job growth has been frustratingly slow not only in Wisconsin, but across the nation. Employment measures over time for farming reflect significant increases in economies of scale. This is driven by advances in capital (machinery) equipment. Many of these advances have resulted in a shift away from labor, and jobs, towards capital equipment. This shift is highlighted in Figure 2a as there has been a noticeable decline in on-farm employment.



A key observation is that there was a stabilization in farm employment levels beginning in 2006. This stabilization is the subject of continued research. One research avenue, for example, is focused on the movement to smaller scale production associated with local foods. Overall, though, it is not clear if the stabilization in farm employment is a short-term phenomenon or the beginning of a longer-term trend. The marked decline in 2012 for Wisconsin farm employment is likely due to the effects of drought conditions. Employment in food processing (Figure 2b) has experienced modest growth over the past few years. This could be partially explained by modest expansion of smaller scale food processors which tend to be more labor intensive than larger food processors.

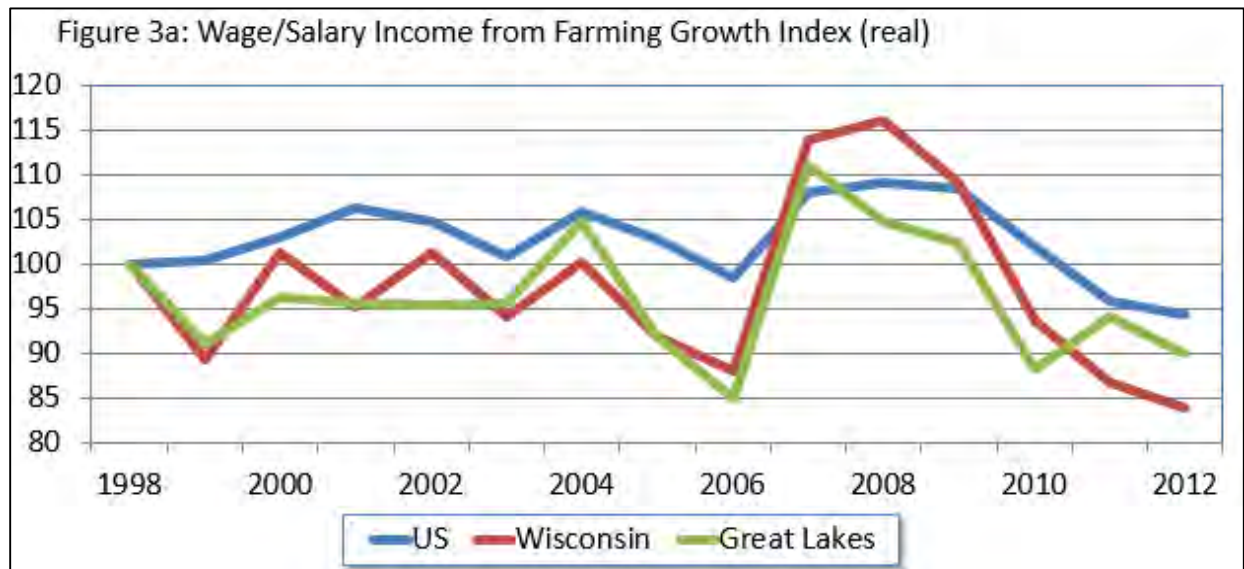


If we compare the employment growth of farm and food processing employment to the whole of Wisconsin, we can clearly see the impact of the Great Recession as well as the slow employment recovery for Wisconsin (Figure 2c). One should note that there is little evidence that the Great Recession had a negative impact on-farm or food processing employment. While one would not think of agriculture to be a stabilizing force in the economy, agriculture did help blunt the impact in Wisconsin throughout the period of the Great Recession. One must be careful not to draw too strong of a policy inference from this observation, though, because of the impact of the drought conditions in 2012.



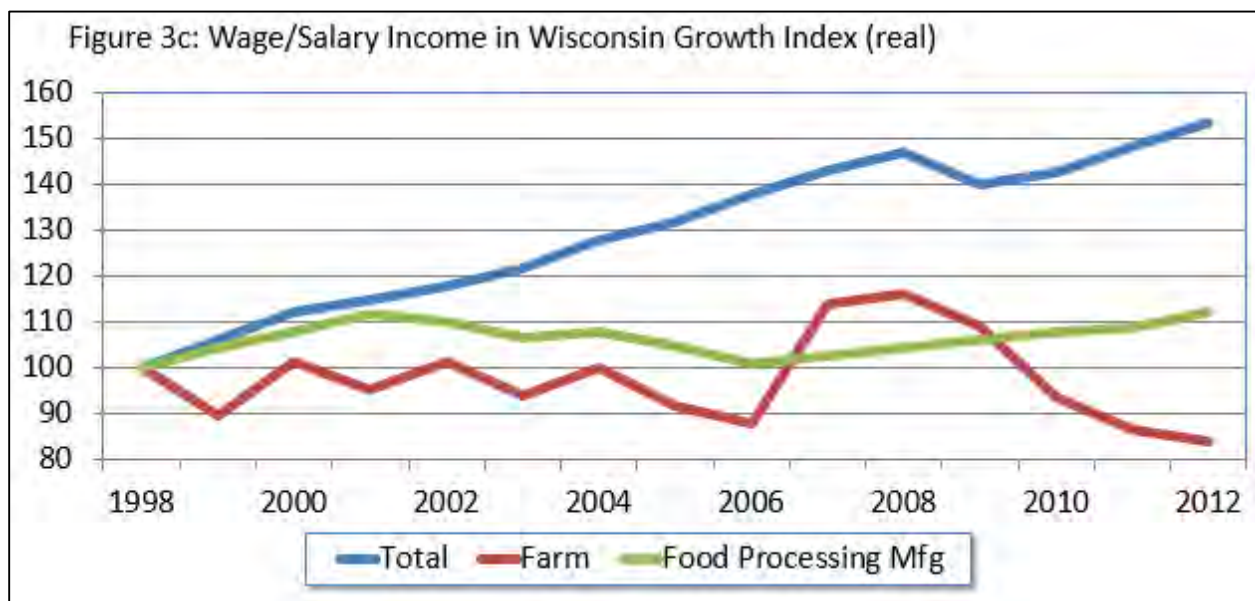
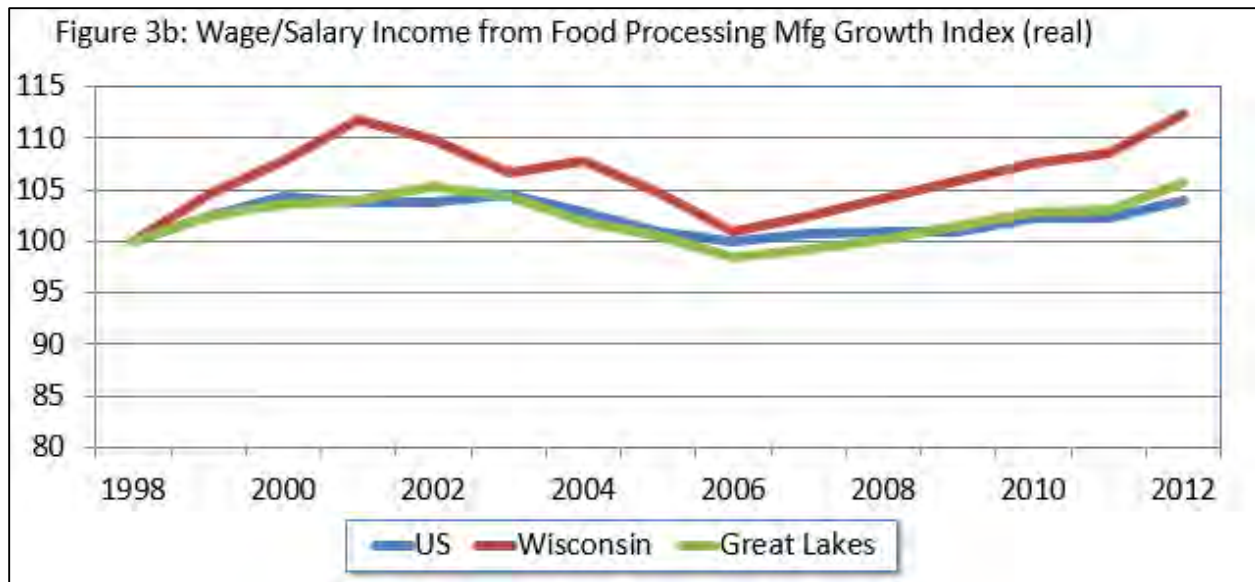
The third metric of economic activity that we trace over time is wage and salary income. Now some care must be taken with this metric as it pertains to farming because the income to farmers is commonly in the form of proprietor income. For food processing, as for most sectors of the economy, proprietor income is a much smaller share of returns to work. For comparison purposes, this means we must limit farm labor

income to wages and salaries.⁶ Other than a unique period in 2007-2009, wage and salary income for farming has been relatively flat. The decline in 2012 is again reflective of drought conditions in the southern part of Wisconsin. Because farmer income is generally from proprietor income, however, one should not place too much weight on the insights gained by examining farm wage and salary income.



Wage and salary income from food processing (Figure 3b) experienced overall growth between 1998 and 2012 within Wisconsin, but there was a noticeable decline from 2001 to 2006, but a recovery from 2006 to 2012. This growth, however, was somewhat modest increasing only about 13% over the whole period (1998 to 2012). This growth does not appear to have been affected by the Great Recession. These trends are not unique to Wisconsin, but reflect patterns evident in the data for the whole U.S. and the Great Lake States. When farm and food processing wage and salary income growth are compared to overall growth in the Wisconsin economy, it becomes clear that the growth in agriculture has been much more modest (Figure 3c).

⁶ There are some farms in Wisconsin where the business model is structured such that the owner-farmer is a paid employee and may or may not take income in the form of proprietor income. For these farms, the labor related income to farmers is reflected in the wage and salary data. Most farmers, however, structure their businesses as a proprietorship and take labor income in the form of proprietor income. As a result, this income is not reflected in the wage and salary data.



Looking at these three economic metrics in totality, some general conclusions can be offered. First, growth in Wisconsin agriculture has been positive, but somewhat modest when compared to the whole of the Wisconsin economy. While Wisconsin agriculture has been showing signs of strength, particular since about 2006, other parts of the economy have experienced stronger growth. Second, the negative impacts of the Great Recession seem to have bypassed agriculture. Indeed, though one might not commonly consider agriculture as a source of stability, agriculture served as a counter balancing force during the Great Recession. We are reminded of agriculture’s instability given the downturn in 2012 that is most likely tied to drought conditions in southern Wisconsin. Third, despite the poorer overall conditions of 2012, agriculture appears to be experiencing modest growth. Finally, modest but continued growth food processing demonstrates how the continued promotion of food processing is an important part of the overall agricultural economy. In essence, on-farm activity and food processing are two parts to a complex agricultural economic cluster.

Continued growth of food processing not only may be a continued source of economic growth within itself, but it might also spur continued robustness of on-farm activity.

Agricultural Cluster Analysis

In 2003, the Wisconsin Office of the Governor and each ensuing governor has embraced the notion of cluster development as the foundation of economic development policies. Forward Wisconsin defines clusters as:

...geographic concentrations of interconnected companies, specialized suppliers, service providers and associated institutions in a particular field. Clusters develop because they increase the productivity with which companies can compete in an increasingly more competitive global market, and they are the source of jobs, income and export growth. The philosophy behind clusters is that large and small companies in a similar industry achieve more by working together than they would individually. Clusters give businesses an advantage by providing access to more suppliers and customized support services, skilled and experienced labor pools, and knowledge transfer through informal social exchanges. In other words, clusters enhance competitiveness.

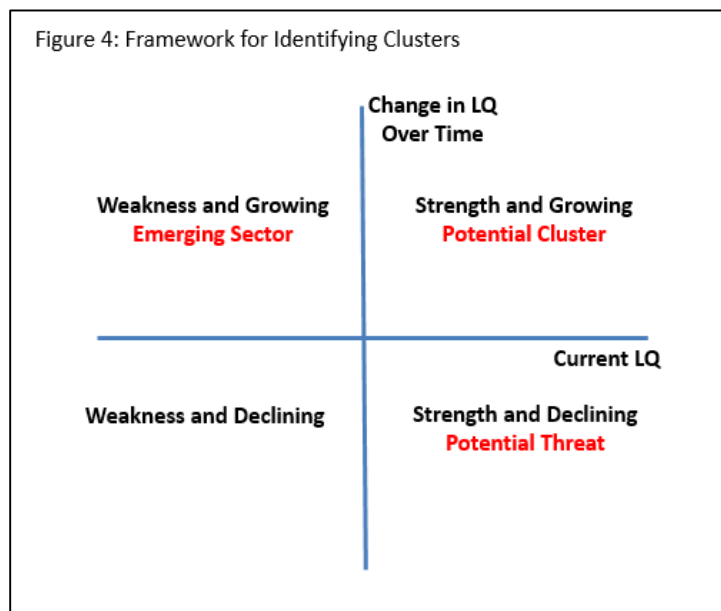
The state initially identified 10 existing and potential clusters. These clusters included dairy food processing, paper and wood products, biotechnology, plastics, medical devices, information technology and wind energy.

While there is a wide variation in methodologies to identify economic clusters, an approach suggested by Harvard business economist Michael Porter is currently growing in popularity. The approach is built on the notion of location quotients. The location quotient (LQ) is an indicator of the self-sufficiency, or relative strength, of a particular industry.⁷ The LQ is computed as:

$$LQ_i = \frac{\text{Percent of local economic activity in sector } i}{\text{Percent of national economic activity in sector } i}$$

The proportion of national economic activity in sector i located in the region (state or community) measures the region's production of product i , assuming equal labor productivity. The proportion of national economic activity in the region is a proxy for local consumption, assuming equal consumption per worker. The difference between local production and consumption is an estimate of production for export (i.e. production > consumption).

⁷ The key underlying assumptions of the location quotient approach is that regional production technology is identical to national production technology (i.e. equal labor productivity) and that local tastes and preferences are identical to national tastes and preferences (i.e. equal consumption per worker). Assuming the national economy is self-sufficient, the comparison between the community and the national benchmark gives an indication of specialization or self-sufficiency.



As constructed, the location quotient is centered on a value of one where a LQ equal to one means the region has the same proportion of economic activity in sector i as the nation. This indicates that the region just meets local consumption requirements through local production of the specified good or service. If the location quotient is less than one (1), the region is not producing enough to meet local needs. If the location quotient is greater than one, the region has a larger proportion of its economy in sector i than does the nation.

Porters' method for identifying clusters uses current location quotient values, changes in location quotients over time,

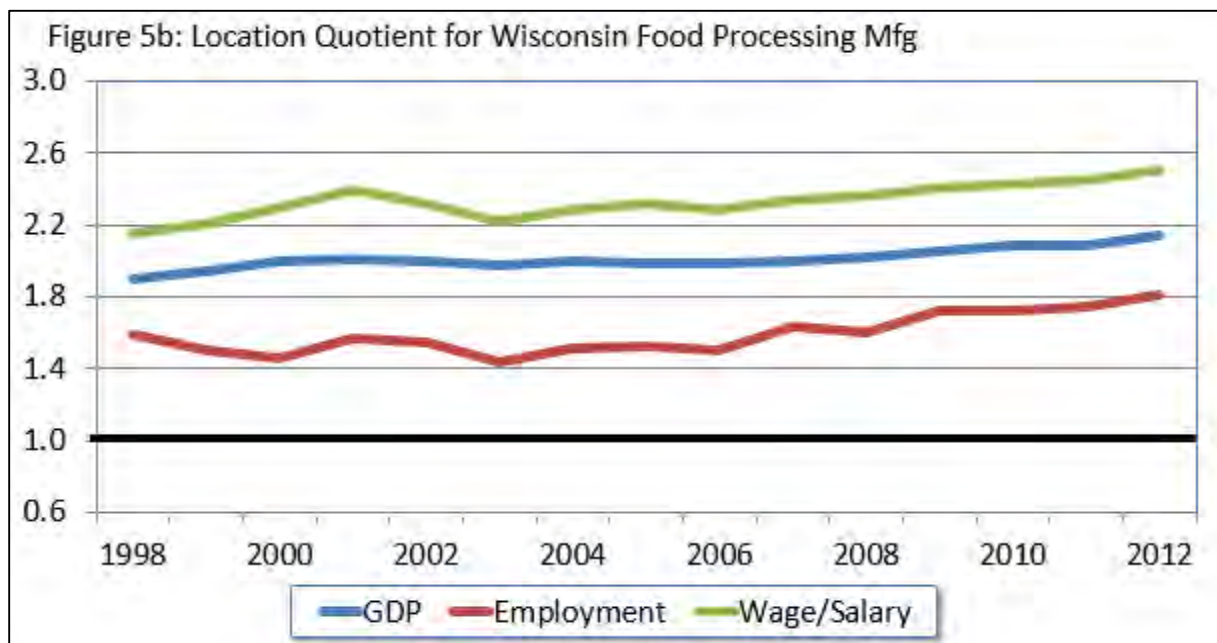
and relative size of the industry. These metrics, coupled with other industry characteristics and local context, work in tandem to identify cluster. Consider a simple mapping of the level and change of the LQ as outlined in Figure 4. There are four potential combinations.

- First, if the industry has a LQ less than one and is decreasing over time, this industry is considered a “weakness and declining” industry and generally should not be considered a potential cluster.
- Second, if the LQ is less than one but increasing, the industry can be considered a “weakness and growing” and may be a possible industry of focus for economic development.
- Third, if the LQ is greater than one but is declining over time, the industry is considered a “strength and declining.” Industries in this category might be considered at risk and deserving of special consideration to understand why a strong industry (i.e. $LQ > 1$) is weakening (i.e. $\Delta LQ < 0$). In particular, does the decline of these industries present a potential risk to the regional economy?
- Fourth, if the LQ is greater than one and growing over time, it is considered a “strength and growing.” Porter suggests that industries in this category might be considered potential clusters for economic growth and development. These industries have self-identified the region as having a comparative advantage over other regions and may have further growth potential.

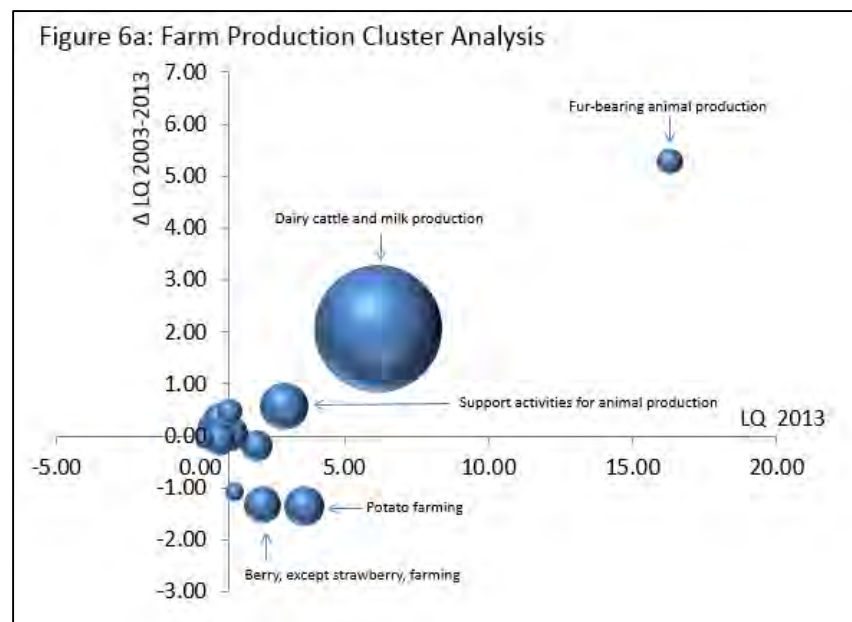
Before populating Figure 4 with the data for Wisconsin agricultural sectors, consider the overall trends in the location quotient for on-farm activity and food processing. For consistency with the trend analysis presented in the previous section of this study, we measure economic activity using gross domestic product, employment and wage/salary income. For the more detailed analysis where we populate Figure 4, we are limited to employment data because GDP and income data are not available in sufficient industry detail.



For on-farm activity (Figure 5a), regardless of the economic metric used, the LQ fluctuates around 1.8 indicating that farming is a strength for the Wisconsin economy when compared to the U.S. There does not appear to be any specific trend, however, either strengthening or weakening. Using employment, there is a modest upward trend from 2002 to 2005 but from 2005 to 2011 the LQ has been relatively flat. The decline in 2012 is again reflective of the significant drop in farm employment (Figure 2a) most likely due to the drought conditions in the southern part of Wisconsin. Food processing (Figure 5b) is also a strength for Wisconsin with the LQ ranging between 1.8 and about 2.6 depending on the metric of economic activity. More important is the upward trend in the set of LQs particularly since 2003. In the spirit of Porter (Figure 4), the LQ for food processing is greater than one and is increasing in size over time indicating that food processing is a potential cluster industry for Wisconsin.



Using employment from 2003 and 2013 we are able to calculate the LQ at a more refined level of industrial detail.⁸ A cluster plot of each industry of the detailed farming sector for Wisconsin is provided in Figure 6a. The data behind the figure is provided in Table 1. Three sectors are clearly located in the strength and growing quadrant, Quadrant IV: fur-bearing animal production, support activities for animal production, and dairy (cattle-milk) production.



Based on the absolute size of these three industries, fur-bearing animal production could be considered an outlier and too small to draw significant attention. In addition, given the nature of animal production in Wisconsin, support activity for animal production is likely tied closely to the dairy industry. Thus, the one farm based sector that stands out is dairy (cattle-milk) production.

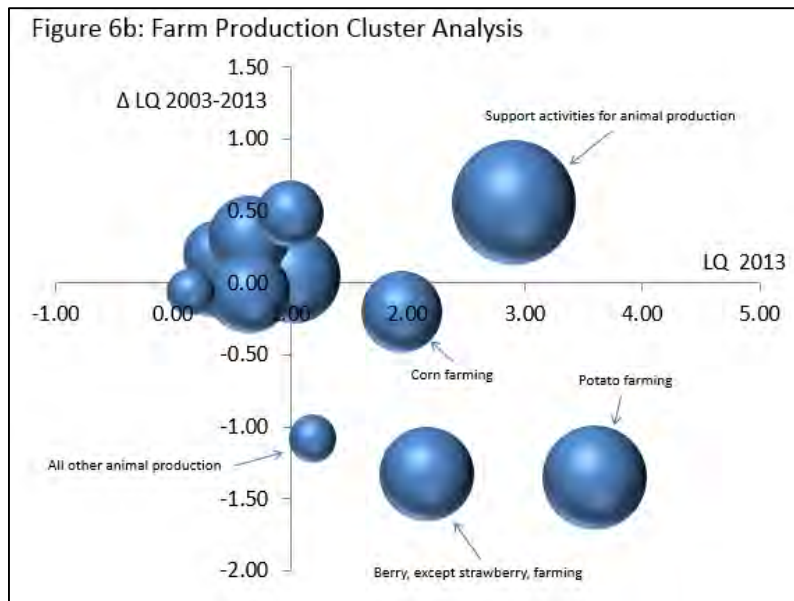
To help with the clarity of the figure, we remove dairy and fur-bearing animal production (Figure 6b). Four farming sectors can be identified as strengths (i.e., $LQ > 1$) but declining (i.e., change in LQ is negative): corn, potato, berry (except strawberry) and all other animal production. Given the growth in ethanol production, the decline in the relative strength of corn production is somewhat surprising. This is likely due to stronger growth in corn production in other parts of the U.S. The same observation could be also applied to potato farming.

⁸ Employment data is used for populating Figure 4 for two reasons. First, employment data is available for 2013 whereas detailed GDP and wage/salary data is currently available up to 2012. Second, employment data is available at much finer industrial detail when compared to GDP and wage/salary data at the state level. Thus, for the trend analysis presented in the first section of the report we look at 1998 to 2012, but for the detailed cluster analysis we use data from 2003 and 2013.

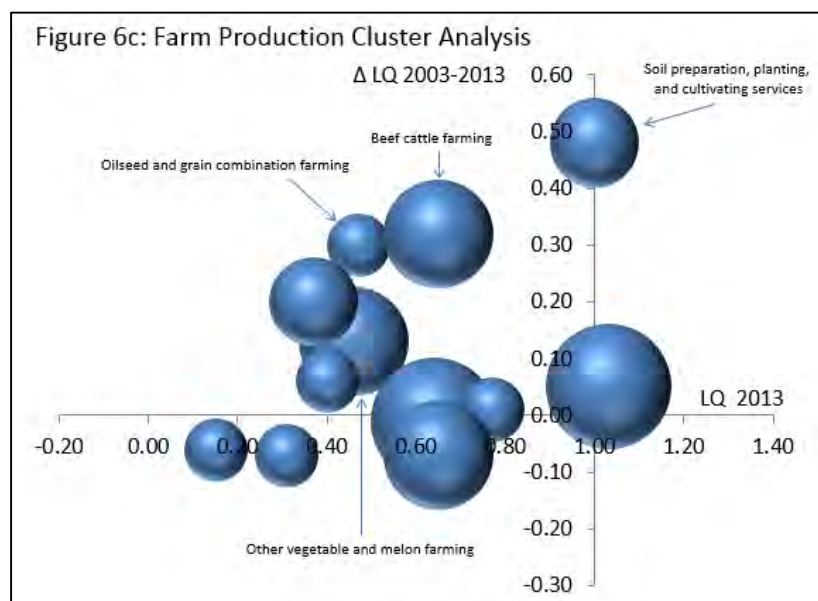
Table 1. Potential Clusters Wisconsin Farm Production

	LQ 2013	Change LQ 03- 13	Share of Employment 2013
Strength & Growing (Potential Cluster?)			
Fur-bearing animal & rabbit production	16.30	5.28	0.02%
Dairy cattle & milk production	6.17	2.07	0.52%
Other poultry production	2.58	1.03	0.00%
Support activities for animal production	2.90	0.56	0.07%
Soil preparation, planting, & cultivating	1.00	0.48	0.02%
Hunting & trapping	1.11	0.30	0.00%
Floriculture production	1.03	0.05	0.04%
Strength & Declining (Potential Threat?)			
Corn farming	1.95	-0.20	0.03%
All other animal production	1.19	-1.08	0.01%
Berry, except strawberry, farming	2.16	-1.33	0.04%
Potato farming	3.59	-1.35	0.05%
Weakness but Growing (Potential Opportunity?)			
Beef cattle ranching, farming, & feedlots	0.65	0.32	0.03%
Oilseed & grain combination farming	0.47	0.30	0.01%
Other crop farming	0.37	0.20	0.02%
Other vegetable & melon farming	0.46	0.13	0.03%
Mushroom production	0.30	0.11	0.00%
All other grain farming	0.72	0.09	0.00%
Apple orchards	0.40	0.06	0.01%
Support activities for forestry	0.34	0.06	0.00%
Fishing	0.33	0.06	0.00%
Chicken egg production	0.77	0.01	0.01%
Weakness & Declining			
Nursery & tree production	0.64	-0.01	0.04%
Other postharvest crop activities	0.15	-0.06	0.01%
Logging	0.65	-0.07	0.03%
Hog & pig farming	0.31	-0.07	0.01%
Other food crops grown under cover	0.21	-0.17	0.00%

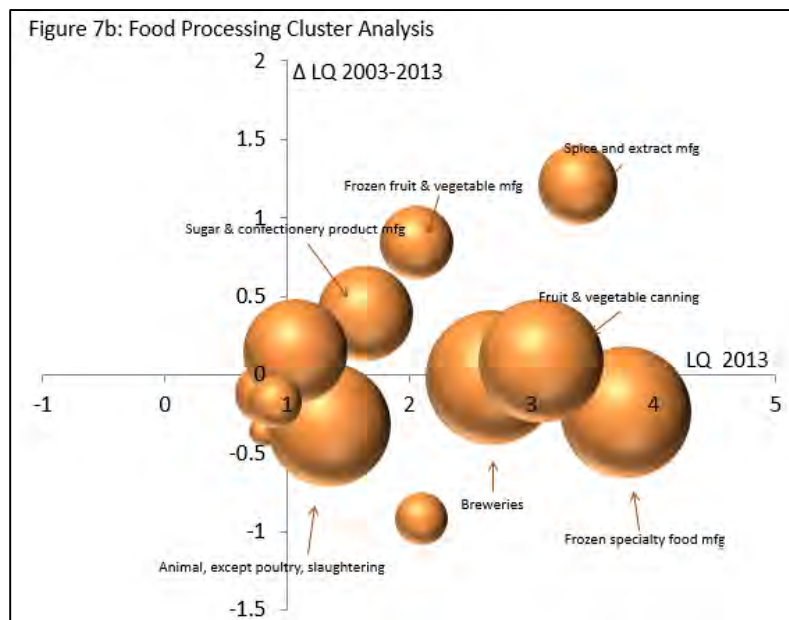
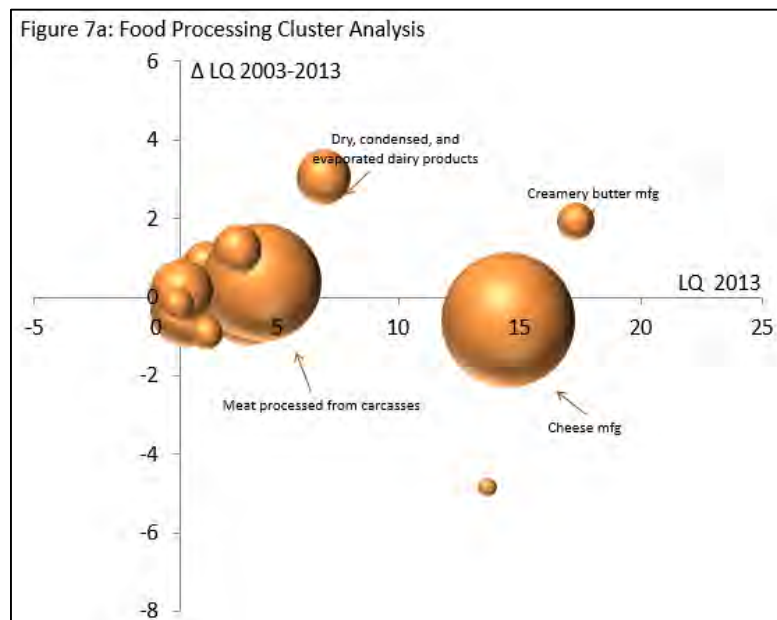
Based on employment.



To explore the cluster of industries closer to center of the chart, we removed support activity for animal production, potato, corn and berry activity, and all other animal production (Figure 6c). Here we find several farming sectors that are in the weak but growing quadrant. These industries represent potential opportunities and include beef cattle, oilseed and grain (non-corn), other crop production (which includes such crops as hay, hops and spices among others), vegetable and melon production, and perhaps apple orchards. When compared to dairy farming, these sectors are relatively small in absolute size, but point to the diversity of farm production in Wisconsin. Sectors that are weaknesses and declining include nursery and tree production, logging, hog and pig farming and crops that are grown under cover. It is important to note that these weak and declining sectors could represent viable business opportunities for some farmers. Indeed, there is some evidence that these narrower specialty crops (e.g., hops) could present viable opportunities for some farmers. From a state-wide perspective, though, these industries may not grow large enough to draw the same level of attention as larger on-farm industries such as dairy, corn, beef, potato and/or vegetable production.



We conducted an identical cluster analysis for the food processing sector (Figures 7a, 7b and Table 2).⁹ Given our industrial groupings, there are 25 different food processing sectors ranging from butter production to ice manufacturing and bottled water.



There are 11 sectors that are in the strength and growing quadrant and thus are candidates for potential cluster development. Three of these industries are directly or closely tied to the dairy industry: creamery butter, dry, condensed and evaporated dairy products and meat processing from carcasses. While the last industry is also tied to the beef industry, a significant portion of the meat flowing into the meat processing industry is from culled dairy cows. Although not explored in this study, if one examines the foreign export

⁹ For additional information see: <http://wp.aae.wisc.edu/wfp/foodprocessinginwisconsin/>

data for Wisconsin, much of the growth for dry, condensed and evaporated dairy products appears to be via export channel. By one estimate, of the \$1.7 billion in dry, condensed and evaporated dairy products production, some 25% is exported out of the U.S. Because these types of dairy products are more easily transported, growth in the export component has strong potential.

Table 2. Potential Clusters Wisconsin Food Processing Mfg

	LQ 2013	Change LQ 03- 13	Share of Employment 2013
Strength and Growing (Potential Cluster?)			
Creamery butter mfg	17.29	1.94	0.04%
Dry, condensed, & evaporated dairy products	6.92	3.05	0.09%
Meat processed from carcasses	4.35	0.38	0.43%
All other miscellaneous food mfg	4.29	2.15	0.11%
Spice & extract mfg	3.38	1.21	0.07%
Fruit & vegetable canning	3.08	0.09	0.17%
Breweries	2.86	0.47	0.09%
All other food mfg	2.32	0.72	0.13%
Frozen fruit & vegetable mfg	2.06	0.84	0.06%
Sugar & confectionery product mfg	1.64	0.39	0.10%
Commercial bakeries	1.07	0.15	0.12%
Strength & Declining (Potential Threat?)			
Cheese mfg	14.53	-0.59	0.55%
Malt mfg	13.66	-4.84	0.01%
Frozen specialty food mfg	3.77	-0.24	0.19%
Fruit & vegetable canning & drying	2.68	-0.02	0.20%
Mayonnaise, dressing, & sauce mfg	2.10	-0.92	0.03%
Animal, except poultry, slaughtering	1.34	-0.32	0.17%
Weakness but Growing (Potential Opportunity?)			
Ice mfg	0.81	0.45	0.01%
Bottled water mfg	0.88	0.09	0.01%
Seafood product preparation & packaging	0.12	0.04	0.00%
Weakness & Declining			
Fluid milk mfg	0.82	-0.12	0.04%
Cookie & cracker mfg	0.90	-0.17	0.03%
Perishable prepared food mfg	0.79	-0.25	0.03%
Soft drink mfg	0.26	-0.26	0.02%
Ice cream & frozen dessert mfg	0.82	-0.36	0.01%

Based on employment.

The sectors that fall into the strength and growing quadrant of Figure 4 include spice and extract processing, fruit and vegetable canning and frozen processing, breweries, sugar and confectionery products and to a lesser extent commercial bakeries. In terms of established size (measured by employment), meat processing appears to be the largest.

There are three food processing sectors in the strength but declining quadrant that warrant attention: cheese manufacturing, frozen specialty food and malt manufacturing. The growing strength of the brewery industry coupled with the decline in malt manufacturing is somewhat surprising. The overall size of the malt industry in Wisconsin, though, is relatively modest. The bigger concern is the weakening of the cheese industry. While the 2013 LQ remains very large (14.53), it nevertheless declined by 0.59 over the recent ten year period, 2003 to 2013. This is not to say that the cheese industry in Wisconsin is in an overall decline. There is indeed evidence that the cheese industry is growing. This growth is slower, though, relative to growth in the rest of the U.S. Further, serious drought conditions in parts of the western U.S. (e.g., California) may have dampened national growth in dairy and cheese suggesting that we as a state should reexamine the Wisconsin cheese industry.

There are three food processing industries in the weak but growing quadrant: ice manufacturing, bottled water and seafood processing. These industries are generally small and the market potential within Wisconsin is not clear. Given Wisconsin's water resources, bottled water may be worth exploring, but recent attempts to build water bottling plants have faced significant local opposition.

This cluster analysis has documented that agriculture, both on-farm production and food processing, remains a strength for the Wisconsin economy. Based on employment dairy production and processing remains the single largest industry within agriculture but there are other equally important and indeed growing elements of agriculture. Vegetable production and processing remain important. Breweries, a historically strong sector for Wisconsin, are also regaining a strong foothold. The analysis suggests that we must continue our focus on the core elements of Wisconsin agriculture. At the same time, we should not limit our attention to only those core elements. Agriculture in Wisconsin is extremely diverse and policies must accommodate that diversity.

Contribution of Agricultural to the Wisconsin Economy

In this study, we mimic our previous examinations of the contribution of agriculture to the Wisconsin economy (Deller 2004; Deller and Williams 2009, 2011).¹⁰ We use input-output analysis to construct a set of economic multipliers custom to the Wisconsin economy and nine sub-regions which correspond to the

¹⁰ Deller, Steven C. 2004. "Wisconsin and the Agricultural Economy." Department of Agricultural and Applied Economics Staff Paper Series No. 471, University of Wisconsin-Madison/Extension. (March). <http://www.aae.wisc.edu/pubs/sps/pdf/stpap471.pdf>

Deller, Steven C. and Williams, David. 2009. "The Contribution of Agriculture to the Wisconsin Economy." Department of Agricultural and Applied Economics Staff Paper No. 541. University of Wisconsin-Madison/Extension. (August). <http://www.aae.wisc.edu/pubs/sps/pdf/stpap541.pdf>

Deller, Steven C. and Williams, David. 2011. "The Economic Impacts of Agriculture in Wisconsin Counties." Department of Agricultural and Applied Economics Miscellaneous Publications (March). <http://www.aae.wisc.edu/pubs/misc/docs/deller.economic%20impacts.03.24.pdf>

National Agricultural Statistics Service's (NASS) grouping of counties. We use data from 2012 which corresponds with the 2012 Census of Agriculture. Because of the drought conditions in some parts of Wisconsin during 2012, some caution must be used when interpreting the on-farm contribution analysis.

A Simple Review of Methods and Definitions of Terms

As discussed in more detail in Appendix A, the power of input-output analysis is in the ability to use the tool to track how small changes in one part of the economy resonate throughout the entire economy. For example, the expansion of dairy farms in the local economy introduces new or additional levels of spending in the local economy. This new spending causes a ripple, or multiplier effect, throughout the economy. Using input-output analysis, we can track and measure this ripple effect.

To continue with the dairy farms example, the impact of an expansion of dairy farms is composed of three parts: the *direct*, *indirect*, and *induced*. The *direct* or *initial* effect captures the event that caused the initial change in the economy: for example, a new dairy beginning its operations or an existing dairy expanding operation. The dairy farm contributes directly to the local economy by selling farm products, paying employees' wages and salaries (generating income) and proprietor income to the farmer. Our new dairy farm has two types of expenditures that can be used to better understand the second two parts of the impact or multiplier. The first are business-to-business transactions, such as the purchase of feed from other farms or feed suppliers, fertilizer, seed and chemicals, veterinary services, trucking services to haul milk and livestock, electric and other utilities, insurance, interest and other financial services, land rent, farm and equipment repairs and maintenance, and many others. These business-to-business transactions are captured in the model through the *indirect* effect. In this situation, a grain farmer uses the proceeds from feed sales to dairy farmers to pay his or her own farm's operating expenses, make investments, or buy new equipment.

The second type of expenditure dairy farms introduce into the local economy are wages and salaries paid to employees as well as to the farmer themselves. Spending this income in the local economy is captured by the *induced* effect. Dairy farmers and their employees spend their income at local grocery stores, movie theaters, restaurants and other retail outlets. The theater owner, then, could use part of the money spent on tickets by dairy farmers to pay theater employees, and the cycle continues.

The combination of the *direct*, *indirect* and *induced* tells us what the complete impact or contribution of any particular industry has on the whole of the economy. By looking at the *indirect* and *induced* impacts, we can gain insights into how the industry of interest is connected or linked into the local economy. For example, industries that tend to be labor intensive and offer high wages tend to have larger *induced* effects on the local economy. Industries that are more capital intensive or offer lower wages tend to have larger *indirect* effects. We can also gain additional insights into the make-up of the local economy by examining the relative size of the multiplier effects. Smaller economies tend to have smaller multiplier or ripple effects than larger economies. This is because the "leakages" out of the local economy occurs faster in smaller economies. Larger economies have greater opportunities to keep those dollars within the local economy for a longer period of time, hence larger multiplier effects. Some smaller, more rural communities that have pursued tourism development have used multiplier analysis to better understand that simply bringing more tourists to the community is not sufficient: there must be someplace for those tourists to spend their money.

For this study, we use four measures of economic activity: employment, labor income, total income, and industrial revenues/sales. Employment here is simply jobs and is *not* a full-time equivalent. For example, two part-time jobs created in the any sector is considered two jobs while one full-time job in any sector is

considered one job. Labor income is the return to labor and includes wages, salaries and proprietor income. As noted in the trend analysis above, most labor income comes in the form of wages and salaries. Within agriculture, though, many farmers take income in the form of proprietor income. This proprietor income is the farmer's return on their labor input into the farm. Total income includes labor income and other sources of income such as dividends, interest and rental payments as well as transfer payments such as social security payments. For our purposes, total income is akin to gross domestic product, explored in the trend analysis. Industry sales or revenues are simply total revenues flowing to an industry.

Consider a dairy farmer that has \$1 million in sales/revenues, two hired workers who are each paid \$25,000. The farmer has structured the business to draw a \$50,000 salary. Also suppose that the farm turns a \$10,000 "profit" which the farmer takes as proprietor income. In this example, industry sales/revenue is \$1 million, employment is three (two workers plus the farmer) and labor income is \$110,000. Suppose that this farmer has crop acreage that is rented to a neighboring farmer for which the farmer receives \$5,000 in rental income. Here, total income would be \$115,000.

Results of Contribution Analysis

A summary of the total contributions of agriculture and its separate components are provided in Tables 3 through 6. These total contributions include the direct, indirect and total effects and as such include the multiplier effects. Detailed results for the whole of Wisconsin and the nine sub-regions the direct, indirect, induced and total effects are reported and provided in supplemental tables. By comparing the indirect and induced some insights into the nature of the multiplier effect can be gained. For example, if the induced effect is significantly larger than the indirect this implies that the industry is more labor intensive and/or pays higher wages. We also provide a series of maps which provide a visualization of the contribution of agriculture as a percent of the total economy across the nine sub-regions. These sub-regions correspond to the NASS sub-regions.

In summary, on-farm related activities contributed a total of 153,900 jobs to the Wisconsin economy, about 4.4% of total employment in Wisconsin (Table 3). Food processing contributed 259,600 jobs, 7.5% of total employment in Wisconsin. Taken together, agriculture (on-farm and food processing combined) contributed 413,500 jobs which is more than one out of every ten jobs (11.9%) in Wisconsin. In southwestern Wisconsin, agriculture accounts for 18.1% of total employment, the vast majority of that coming from on-farm activities. The region with lowest share of employment associated with agriculture is southeastern Wisconsin where agriculture contributes 4.3% of total employment. This is not surprising as southeastern Wisconsin is the most urban part of the state; yet agriculture still contributed 50,900 jobs, the majority of which is in food processing.

Agriculture contributed \$18.6 billion to labor income (wages, salaries and proprietor income) to the Wisconsin economy, or 10.9% of the state's total (Table 4). On-farm activity accounts for \$5.7 billion (3.3% of state total) while food processing accounts for \$12.9 billion (7.5% of state total). The largest absolute size of contribution is in the east-central region where agriculture contributes \$3.8 billion in labor income (12.1% of total), the majority of which comes from food processing. Agriculture contributes the lowest share to total labor income in south-eastern Wisconsin (3.0%), but it is the second largest in absolute dollars (\$2.8 billion). Despite the relative size of the overall economy in south-eastern Wisconsin, food processing has a major presence. In terms of total income, agriculture contributes \$30.1 billion or 10.9%, of which on-farm production accounts for \$8.9 billion and food processing \$21.1 billion. South-western Wisconsin is most dependent on agriculture (13.5%) with the majority of this total coming from on-farm activity.

The final metric of economic activity, total industrial sales or revenue, is the one metric that tends to be mostly widely cited in the popular press. As found in the Deller and Williams (2009) study of Wisconsin agriculture using data from 2007 (to correspond with the 2007 Census of Agriculture), agriculture was just over a \$59 billion dollar industry in 2007. For 2012, agriculture contributed \$88.3 billion to industrial sales/revenue, or about 16% of the state's total. As with the earlier study, food processing accounts for the majority of that contribution at \$67.8 billion (of which \$35.1 billion comes from dairy processing) and on-farm activity accounting for \$20.5 billion. In nominal terms (i.e., not adjusted for inflation) the \$88.3 billion represents a 49.3% increase over the \$59 billion for 2007.

Across the nine sub-regions, agriculture accounts for at least 20% of total industrial sales/revenue in five regions. In southwestern Wisconsin, this figure grows to 31.2% of industrial sales/revenue. Even in southeastern Wisconsin a predominately urban region, agricultural production, accounts for 18.5% of industrial sales/revenue. Food processing accounts for a large proportion of these sales.

Table 3: Total Contribution 2012: Employment

	Wisconsin	(%)	North West	North Central	North East	West Central
All On-Farm	153,878	4.4%	11,223	14,801	7,867	18,905
Dairy Farming	43,915	1.3%	3,438	5,522	2,487	5,383
Floriculture	3,799	0.1%	135	325	80	227
Forestry	5,115	0.1%	1,238	1,157	839	327
Dairy Processing	35,039	1.0%	1,362	3,262	1,314	3,502
All Food Processing	259,635	7.5%	11,453	14,807	4,438	18,380
All Agriculture (No Forestry)	413,513	11.9%	22,676	29,608	12,304	37,284
	Central		East Central	South West	South Central	South East
All On-Farm	12,878	7.7%	22,196	20,716	24,903	9,750
Dairy Farming	2,630	1.6%	8,326	5,572	4,776	1,442
Floriculture	146	0.1%	538	82	747	1,174
Forestry	221	0.1%	198	319	142	35
Dairy Processing	1,416	0.9%	9,458	3,132	3,955	1,269
All Food Processing	10,915	6.6%	57,143	3,515	33,030	41,144
All Agriculture (No Forestry)	23,793	14.3%	79,339	24,231	57,933	50,893

Table 4: Total Contribution 2012: Labor Income (\$MM)

	Wisconsin	(%)	North West	North Central	North East	West Central
All On-Farm	\$5,714.6	3.3%	\$324.3	\$471.7	\$255.5	\$611.4
Dairy Farming	\$1,633.3	1.0%	\$89.9	\$174.7	\$74.8	\$157.0
Floriculture	\$386.7	0.2%	\$11.2	\$31.2	\$7.8	\$22.8
Forestry	\$213.6	0.1%	\$54.5	\$42.3	\$32.0	\$13.6
Dairy Processing	\$2,294.2	1.3%	\$77.3	\$207.8	\$60.1	\$221.9
All Food Processing	\$12,891.0	7.5%	\$444.9	\$591.0	\$159.9	\$835.2
All Agriculture (No Forestry)	\$18,605.6	10.9%	\$769.2	\$1,062.7	\$415.3	\$1,446.5
	Central		East Central	South West	South Central	South East
All On-Farm	\$671.7	8.8%	\$937.8	\$579.4	\$1,006.9	\$460.2
Dairy Farming	\$84.7	1.1%	\$356.7	\$171.6	\$206.1	\$62.1
Floriculture	\$16.6	0.2%	\$60.4	\$8.2	\$87.2	\$128.1
Forestry	\$8.9	0.1%	\$6.8	\$6.3	\$8.7	\$5.3
Dairy Processing	\$74.1	1.0%	\$726.3	\$164.8	\$270.9	\$90.3
All Food Processing	\$494.4	6.5%	\$2,914.5	\$179.9	\$1,776.5	\$2,393.2
All Agriculture (No Forestry)	\$1,166.1	15.3%	\$3,852.3	\$759.4	\$2,783.4	\$2,853.4

Table 5: Total Contribution 2012: Total Income (\$MM)

	Wisconsin (%)		North West		North Central		North East		West Central	
All On-Farm	\$8,951.2	3.2%	\$502.2	5.3%	\$787.7	5.7%	\$376.1	7.7%	\$923.7	4.7%
Dairy Farming	\$3,785.5	1.4%	\$234.3	2.5%	\$434.4	3.2%	\$184.7	3.8%	\$397.7	2.0%
Floriculture	\$340.9	0.1%	\$9.3	0.1%	\$25.2	0.2%	\$6.0	0.1%	\$18.3	0.1%
Forestry	\$227.3	0.1%	\$54.3	0.6%	\$40.4	0.3%	\$30.1	0.6%	\$13.6	0.1%
Dairy Processing	\$3,458.0	1.3%	\$115.6	1.2%	\$328.1	2.4%	\$99.3	2.0%	\$324.7	1.6%
All Food Processing	\$21,155.1	7.7%	\$750.4	8.0%	\$1,071.9	7.8%	\$301.9	6.2%	\$1,483.1	7.5%
All Agriculture (No Forestry)	\$30,106.4	10.9%	\$1,252.6	13.3%	\$1,859.7	13.5%	\$678.0	13.9%	\$2,406.8	12.2%
			East Central		South West		South Central		South East	
All On-Farm	\$783.5	6.2%	\$1,526.0	2.9%	\$1,015.8	11.6%	\$1,496.7	2.9%	\$626.8	0.6%
Dairy Farming	\$216.3	1.7%	\$819.6	1.6%	\$457.4	5.2%	\$483.3	1.0%	\$140.7	0.1%
Floriculture	\$13.1	0.1%	\$50.7	0.1%	\$6.9	0.1%	\$73.3	0.1%	\$114.7	0.1%
Forestry	\$12.4	0.1%	\$7.1	0.0%	\$5.0	0.1%	\$10.1	0.0%	\$6.4	0.0%
Dairy Processing	\$113.3	0.9%	\$1,010.7	2.0%	\$296.4	3.4%	\$386.2	0.8%	\$170.3	0.1%
All Food Processing	\$806.4	6.4%	\$4,671.5	9.0%	\$321.9	3.7%	\$2,836.4	5.6%	\$3,689.4	1.9%
All Agriculture (No Forestry)	\$1,589.9	12.6%	\$6,197.5	11.9%	\$1,337.7	15.3%	\$4,333.1	8.5%	\$4,316.2	2.5%

Table 6: Total Contribution 2012: Total Industrial Sales (\$MM)

	Wisconsin (%)		North West		North Central		North East		West Central	
All On-Farm	\$20,484.5	3.7%	\$1,222.5	5.6%	\$1,748.1	6.0%	\$810.9	7.4%	\$2,248.6	5.7%
Dairy Farming	\$8,387.2	1.5%	\$495.2	2.3%	\$919.6	3.2%	\$378.1	3.4%	\$877.3	2.2%
Floriculture	\$537.9	0.1%	\$14.9	0.1%	\$39.4	0.1%	\$9.4	0.1%	\$28.6	0.1%
Forestry	\$482.9	0.1%	\$112.1	0.5%	\$93.6	0.3%	\$68.5	0.6%	\$29.6	0.1%
Dairy Processing	\$35,067.2	6.4%	\$1,337.5	6.1%	\$3,362.1	11.5%	\$1,291.7	11.8%	\$3,370.8	8.6%
All Food Processing	\$67,822.1	12.3%	\$3,195.9	14.7%	\$4,209.1	14.5%	\$1,451.9	13.2%	\$5,679.0	14.5%
All Agriculture (No Forestry)	\$88,306.6	16.0%	\$4,418.4	20.3%	\$5,957.2	20.5%	\$2,262.8	20.6%	\$7,927.6	20.2%
			East Central		South West		South Central		South East	
All On-Farm	\$1,696.7	6.6%	\$3,474.2	3.0%	\$2,415.8	12.9%	\$3,406.1	3.6%	\$1,308.5	1.7%
Dairy Farming	\$476.0	1.9%	\$1,839.7	1.6%	\$988.6	5.3%	\$1,064.1	1.1%	\$300.7	0.5%
Floriculture	\$20.4	0.1%	\$79.2	0.1%	\$10.7	0.1%	\$112.9	0.1%	\$177.9	0.3%
Forestry	\$25.6	0.1%	\$19.2	0.0%	\$21.2	0.1%	\$19.6	0.0%	\$12.1	0.0%
Dairy Processing	\$1,341.4	5.2%	\$9,556.8	8.3%	\$3,270.6	17.5%	\$3,739.4	4.0%	\$1,511.3	2.3%
All Food Processing	\$3,300.0	12.9%	\$16,282.6	14.2%	\$3,428.5	18.3%	\$9,581.8	10.2%	\$11,221.2	16.8%
All Agriculture (No Forestry)	\$4,996.7	19.5%	\$19,756.7	17.2%	\$5,844.2	31.2%	\$12,987.9	13.8%	\$12,529.7	18.5%

A comparison of the 2009 study which used data from 2007 with the analysis reported here shows that, despite drought conditions in the southern part of Wisconsin, the contribution of agriculture grew over the five year period (2007 to 2012). Some care must be taken when making these comparisons because of differences in how forestry and logging is treated across the two studies. In addition, labor income was not considered in the earlier study. As already noted, total industrial sales or revenue increased from \$59.2 billion in 2007 to \$88.3 billion in 2012, an increase in nominal terms of 49.3%. On-farm related activity increased from \$12.6 billion to \$20.5 billion. In terms of total industrial revenues or sales, this is a nominal increase of 62.7%. Food processing's contribution to industrial sales or revenue increased by 35.6% from just under \$50 billion in 2007 to \$67.8 billion in 2012.

In 2007, on-farm activity contributed 132,100 jobs and in 2012, the number of jobs increased by 16.5% to 153,900 jobs. Agricultural processing also increased, but by a more modest amount from approximately 252,000 to 259,600 jobs. Looking at the agricultural industry overall, agriculture contributed almost 354,000 in 2007 and increased by 16.8% to 413,500 jobs in 2012. Again, despite the impacts of the drought, most of the job increase over the five year period came from on-farm related activities.

Looking at total income, on-farm related activities contributed \$5.4 billion in 2007 and increased to \$8.9 billion in 2012, a nominal increase of 66.2%. Note that a nominal increase does not reflect changes due to inflation. Food processing contributed \$15.5 billion to total income in 2007 and in 2012 it increased by 35.9% to \$21.1 billion. Together, all of agriculture, including on-farm and food processing, contributed \$20.2 billion in 2007 and \$30.1 billion in 2012, a nominal increase of 49.2 percent.

Summary

Agriculture remains an important part of the Wisconsin economy. Throughout this study, we defined agriculture as on-farm operations and food processing. In 2012, agriculture contributed a total (i.e., direct, indirect and induced combined) of 413,500 jobs (11.9% of state total employment) to the Wisconsin economy. This is a 16.8% increase from 354,000 in 2007. Agriculture represents \$30.1 billion in total income (10.9% of state total) and \$88.3 billion to total industrial sales/revenue (16% of total total). Some parts of Wisconsin, such as the south-western region, are more dependent upon agriculture than others. Even in the most urban parts of the state, though, agriculture's contribution is notable. When directly compared, it is clear that food processing, contributes more to the state's economy than on-farm activity. This is mostly because of the strength and size of the processing related to dairy and meat. When we think of Wisconsin agriculture, we must move beyond focusing within farm gate and consider food processing as an important part of the Wisconsin agricultural economic cluster.

The core of Wisconsin agriculture is generally thought to be dairy and although there is some evidence that cheese manufacturing is slowly lagging behind the rest of the U.S., the dairy industry as a whole remains strong. Key to note, though, is that other parts of Wisconsin agriculture such as the beef industry, vegetables, breweries and more specialized activities like hops, grapes, and wineries, are growing in size and importance. Although one may traditionally think of Wisconsin as the "Dairy State," the truth is that agriculture is diverse and is likely becoming more diversified across the state.

Contribution of Agriculture 2012: Wisconsin (\$MM)

	Employment	Labor Income	Total Income	Industrial Sales
<u>On Farm</u>				
Direct Effect	105,624	\$ 3,588	\$ 4,749	\$ 12,350
Indirect Effect	16,678	\$ 846	\$ 1,860	\$ 4,353
Induced Effect	31,574	\$ 1,281	\$ 2,342	\$ 3,782
Total Effect	153,878	\$ 5,715	\$ 8,951	\$ 20,484
Multiplier	1.457	1.593	1.885	1.659
Share of State Total	4.4%	3.3%	3.2%	3.7%
<u>Dairy Farms</u>				
Direct Effect	26,947	\$ 890	\$ 2,462	\$ 5,229
Indirect Effect	8,439	\$ 397	\$ 692	\$ 2,136
Induced Effect	8,526	\$ 347	\$ 632	\$ 1,022
Total Effect	43,915	\$ 1,633	\$ 3,785	\$ 8,387
Multiplier	1.630	1.835	1.538	1.604
Share of State Total	1.3%	1.0%	1.4%	1.5%
<u>Floriculture</u>				
Direct Effect	1,386	\$ 289	\$ 168	\$ 255
Indirect Effect	374	\$ 15	\$ 22	\$ 39
Induced Effect	2,036	\$ 83	\$ 151	\$ 244
Total Effect	3,799	\$ 387	\$ 341	\$ 538
Multiplier	2.741	1.338	2.024	2.108
Share of State Total	0.1%	0.2%	0.1%	0.1%
<u>Forestry</u>				
Direct Effect	3,242	\$ 135	\$ 107	\$ 278
Indirect Effect	719	\$ 32	\$ 35	\$ 67
Induced Effect	1,153	\$ 47	\$ 85	\$ 138
Total Effect	5,115	\$ 214	\$ 227	\$ 483
Multiplier	1.578	1.585	2.135	1.738
Share of State Total	0.1%	0.1%	0.1%	0.1%
<u>Dairy Processing</u>				
Direct Effect	17,211	\$ 1,127	\$ 1,699	\$ 17,225
Indirect Effect	13,758	\$ 901	\$ 1,358	\$ 13,769
Induced Effect	4,070	\$ 266	\$ 402	\$ 4,073
Total Effect	35,039	\$ 2,294	\$ 3,458	\$ 35,067
Multiplier	2.036	2.036	2.036	2.036
Share of State Total	1.0%	1.3%	1.3%	6.4%
<u>Agricultural or Food Processing</u>				
Direct Effect	62,441	\$ 3,730	\$ 5,196	\$ 36,916
Indirect Effect	125,621	\$ 6,256	\$ 10,651	\$ 22,552
Induced Effect	71,573	\$ 2,904	\$ 5,308	\$ 8,354
Total Effect	259,635	\$ 12,891	\$ 21,155	\$ 67,822
Multiplier	4.158	3.456	4.072	1.837
Share of State Total	7.5%	7.5%	7.7%	12.3%
<u>All Agriculture (no forestry)</u>				
Direct Effect	168,065	\$ 7,319	\$ 9,945	\$ 49,265
Indirect Effect	142,299	\$ 7,102	\$ 12,511	\$ 26,905
Induced Effect	103,147	\$ 4,185	\$ 7,650	\$ 12,136
Total Effect	413,513	\$ 18,606	\$ 30,106	\$ 88,307
Multiplier	2.460	2.542	3.027	1.792
Share of State Total	11.9%	10.9%	10.9%	16.1%

Contribution of Agriculture 2012: North West Region (\$MM)				
	Employment	Labor Income	Total Income	Industry Sales
<u>On Farm</u>				
Direct Effect	9,085	\$ 255.5	\$ 340.4	\$ 928.7
Indirect Effect	708	\$ 26.4	\$ 70.7	\$ 143.0
Induced Effect	1,430	\$ 42.4	\$ 91.1	\$ 150.9
Total Effect	11,223	\$ 324.3	\$ 502.2	\$ 1,222.5
Multiplier	1.235	1.269	1.475	1.316
Share of Region	7.6%	5.9%	5.3%	5.6%
<u>Dairy Farm</u>				
Direct Effect	2,564	\$ 65.8	\$ 186.5	\$ 396.2
Indirect Effect	497	\$ 12.9	\$ 23.8	\$ 59.2
Induced Effect	377	\$ 11.2	\$ 24.0	\$ 39.8
Total Effect	3,438	\$ 89.9	\$ 234.3	\$ 495.2
Multiplier	1.341	1.366	1.256	1.250
Share of Region	2.3%	1.6%	2.5%	2.3%
<u>Floriculture</u>				
Direct Effect	73	\$ 9.3	\$ 5.8	\$ 8.8
Indirect Effect	15	\$ 0.4	\$ 0.5	\$ 1.1
Induced Effect	47	\$ 1.4	\$ 3.0	\$ 5.0
Total Effect	135	\$ 11.2	\$ 9.3	\$ 14.9
Multiplier	1.849	1.196	1.601	1.695
Share of Region	0.1%	0.2%	0.1%	0.1%
<u>Forestry</u>				
Direct Effect	870	\$ 43.6	\$ 34.9	\$ 77.1
Indirect Effect	126	\$ 3.7	\$ 4.1	\$ 9.4
Induced Effect	242	\$ 7.2	\$ 15.4	\$ 25.5
Total Effect	1,238	\$ 54.5	\$ 54.3	\$ 112.1
Multiplier	1.423	1.250	1.559	1.454
Share of Region	0.8%	1.0%	0.6%	0.5%
<u>Dairy Processing</u>				
Direct Effect	888	\$ 50.4	\$ 75.4	\$ 871.8
Indirect Effect	402	\$ 22.8	\$ 34.1	\$ 394.9
Induced Effect	72	\$ 4.1	\$ 6.1	\$ 70.8
Total Effect	1,362	\$ 77.3	\$ 115.6	\$ 1,337.5
Multiplier	1.534	1.534	1.534	1.534
Share of Region	0.9%	1.4%	1.2%	6.1%
<u>Agricultural or Food Processing</u>				
Direct Effect	4,167	\$ 206.4	\$ 288.8	\$ 2,250.7
Indirect Effect	5,347	\$ 180.7	\$ 337.9	\$ 744.1
Induced Effect	1,937	\$ 57.8	\$ 123.7	\$ 201.1
Total Effect	11,453	\$ 444.9	\$ 750.4	\$ 3,195.9
Multiplier	2.748	2.156	2.598	1.420
Share of Region	7.8%	8.1%	8.0%	14.7%
<u>All Agriculture (no forestry)</u>				
Direct Effect	13,252	\$ 461.9	\$ 629.2	\$ 3,179.4
Indirect Effect	6,056	\$ 207.1	\$ 408.6	\$ 887.1
Induced Effect	3,367	\$ 100.1	\$ 214.8	\$ 352.0
Total Effect	22,676	\$ 769.2	\$ 1,252.6	\$ 4,418.4
Multiplier	1.711	1.665	1.991	1.390
Share of State Total	15.4%	14.1%	13.3%	20.3%

Contribution of Agriculture 2012: North Central Region (\$MM)					
	Employment	Labor Income	Total Income	Industry Sales	
<u>On Farm</u>					
Direct Effect	11,443	\$ 351.5	\$ 526.3	\$ 1,280.1	
Indirect Effect	1,110	\$ 44.2	\$ 109.9	\$ 225.2	
Induced Effect	2,246	\$ 76.0	\$ 151.5	\$ 242.8	
Total Effect	14,801	\$ 471.7	\$ 787.7	\$ 1,748.1	
Multiplier	1.293	1.342	1.497	1.366	
Share of Region	7.6%	5.9%	5.7%	6.0%	
<u>Dairy Farm</u>					
Direct Effect	3,723	\$ 116.3	\$ 328.1	\$ 696.8	
Indirect Effect	1,025	\$ 32.2	\$ 54.2	\$ 139.2	
Induced Effect	774	\$ 26.2	\$ 52.1	\$ 83.6	
Total Effect	5,522	\$ 174.7	\$ 434.4	\$ 919.6	
Multiplier	1.483	1.503	1.324	1.320	
Share of Region	2.8%	2.2%	3.2%	3.2%	
<u>Floriculture</u>					
Direct Effect	144	\$ 25.3	\$ 14.5	\$ 22.0	
Indirect Effect	43	\$ 1.2	\$ 1.4	\$ 2.5	
Induced Effect	138	\$ 4.7	\$ 9.3	\$ 14.9	
Total Effect	325	\$ 31.2	\$ 25.2	\$ 39.4	
Multiplier	2.253	1.234	1.737	1.794	
Share of Region	0.2%	0.4%	0.2%	0.1%	
<u>Forestry</u>					
Direct Effect	835	\$ 31.1	\$ 22.2	\$ 62.4	
Indirect Effect	129	\$ 4.6	\$ 5.2	\$ 10.3	
Induced Effect	193	\$ 6.6	\$ 13.0	\$ 20.9	
Total Effect	1,157	\$ 42.3	\$ 40.4	\$ 93.6	
Multiplier	1.386	1.359	1.819	1.499	
Share of Region	0.6%	0.5%	0.3%	0.3%	
<u>Dairy Processing</u>					
Direct Effect	1,995	\$ 127.1	\$ 200.7	\$ 2,056.4	
Indirect Effect	1,054	\$ 67.2	\$ 106.1	\$ 1,087.0	
Induced Effect	212	\$ 13.5	\$ 21.3	\$ 218.7	
Total Effect	3,262	\$ 207.8	\$ 328.1	\$ 3,362.1	
Multiplier	1.635	1.635	1.635	1.635	
Share of Region	1.7%	2.6%	2.4%	11.5%	
<u>Agricultural or Food Processing</u>					
Direct Effect	3,725	\$ 205.3	\$ 282.7	\$ 2,626.4	
Indirect Effect	8,380	\$ 293.8	\$ 606.7	\$ 1,292.7	
Induced Effect	2,702	\$ 91.8	\$ 182.5	\$ 289.9	
Total Effect	14,807	\$ 591.0	\$ 1,071.9	\$ 4,209.1	
Multiplier	3.975	2.878	3.791	1.603	
Share of Region	7.6%	7.4%	7.8%	14.5%	
<u>All Agriculture (no forestry)</u>					
Direct Effect	15,168	\$ 556.9	\$ 809.1	\$ 3,906.6	
Indirect Effect	9,490	\$ 338.0	\$ 716.6	\$ 1,518.0	
Induced Effect	4,948	\$ 167.8	\$ 334.0	\$ 532.7	
Total Effect	29,608	\$ 1,062.7	\$ 1,859.7	\$ 5,957.2	
Multiplier	1.952	1.908	2.299	1.525	
Share of State Total	15.1%	13.2%	13.5%	20.5%	

Contribution of Agriculture 2012: North East Region (\$MM)				
	Employment	Labor Income	Total Income	Industry Sales
<u>On Farm</u>				
Direct Effect	6,455	\$ 212.1	\$ 270.8	\$ 641.2
Indirect Effect	404	\$ 13.6	\$ 39.2	\$ 63.8
Induced Effect	1,007	\$ 29.7	\$ 66.0	\$ 106.0
Total Effect	7,867	\$ 255.5	\$ 376.1	\$ 810.9
Multiplier	1.219	1.204	1.389	1.265
Share of Region	9.9%	8.6%	7.7%	7.4%
<u>Dairy Farm</u>				
Direct Effect	1,857	\$ 55.9	\$ 150.2	\$ 319.0
Indirect Effect	359	\$ 10.8	\$ 16.8	\$ 30.5
Induced Effect	272	\$ 8.1	\$ 17.8	\$ 28.6
Total Effect	2,487	\$ 74.8	\$ 184.7	\$ 378.1
Multiplier	1.339	1.338	1.230	1.185
Share of Region	3.1%	2.5%	3.8%	3.4%
<u>Floriculture</u>				
Direct Effect	42	\$ 6.7	\$ 3.8	\$ 5.8
Indirect Effect	10	\$ 0.3	\$ 0.3	\$ 0.6
Induced Effect	29	\$ 0.8	\$ 1.9	\$ 3.0
Total Effect	80	\$ 7.8	\$ 6.0	\$ 9.4
Multiplier	1.907	1.174	1.572	1.614
Share of Region	0.1%	0.3%	0.1%	0.1%
<u>Forestry</u>				
Direct Effect	620	\$ 25.1	\$ 19.0	\$ 49.8
Indirect Effect	97	\$ 3.3	\$ 3.2	\$ 5.9
Induced Effect	121	\$ 3.6	\$ 7.9	\$ 12.8
Total Effect	839	\$ 32.0	\$ 30.1	\$ 68.5
Multiplier	1.353	1.274	1.586	1.375
Share of Region	1.1%	1.1%	0.6%	0.6%
<u>Dairy Processing</u>				
Direct Effect	917	\$ 41.9	\$ 69.3	\$ 901.6
Indirect Effect	344	\$ 15.7	\$ 26.0	\$ 338.2
Induced Effect	53	\$ 2.4	\$ 4.0	\$ 51.9
Total Effect	1,314	\$ 60.1	\$ 99.3	\$ 1,291.7
Multiplier	1.433	1.433	1.433	1.433
Share of Region	1.6%	2.0%	2.0%	11.8%
<u>Agricultural or Food Processing</u>				
Direct Effect	1,260	\$ 58.0	\$ 85.0	\$ 1,019.5
Indirect Effect	2,587	\$ 84.4	\$ 178.2	\$ 370.6
Induced Effect	590	\$ 17.5	\$ 38.7	\$ 61.8
Total Effect	4,438	\$ 159.9	\$ 301.9	\$ 1,451.9
Multiplier	3.522	2.759	3.553	1.424
Share of Region	5.6%	5.4%	6.2%	13.2%
<u>All Agriculture (no forestry)</u>				
Direct Effect	7,715	\$ 270.1	\$ 355.8	\$ 1,660.6
Indirect Effect	2,991	\$ 98.0	\$ 217.4	\$ 434.4
Induced Effect	1,597	\$ 47.2	\$ 104.8	\$ 167.8
Total Effect	12,304	\$ 415.3	\$ 678.0	\$ 2,262.8
Multiplier	1.5949	1.5380	1.9055	1.3626
Share of State Total	15.4%	14.0%	13.9%	20.6%

Contribution of Agriculture 2012: West Central Region (\$MM)					
	Employment	Labor Income	Total Income	Industry Sales	
<u>On Farm</u>					
Direct Effect	14,560	\$ 449.8	\$ 583.8	\$ 1,595.2	
Indirect Effect	1,469	\$ 63.1	\$ 151.0	\$ 351.2	
Induced Effect	2,874	\$ 98.5	\$ 189.0	\$ 302.2	
Total Effect	18,905	\$ 611.4	\$ 923.7	\$ 2,248.6	
Multiplier	1.298	1.359	1.582	1.410	
Share of Region	6.5%	5.0%	4.7%	5.7%	
<u>Dairy Farm</u>					
Direct Effect	3,930	\$ 106.1	\$ 300.2	\$ 637.7	
Indirect Effect	751	\$ 26.7	\$ 51.3	\$ 165.7	
Induced Effect	702	\$ 24.2	\$ 46.2	\$ 73.9	
Total Effect	5,383	\$ 157.0	\$ 397.7	\$ 877.3	
Multiplier	1.370	1.479	1.325	1.376	
Share of Region	1.9%	1.3%	2.0%	2.2%	
<u>Floriculture</u>					
Direct Effect	108	\$ 18.6	\$ 10.7	\$ 16.2	
Indirect Effect	18	\$ 0.7	\$ 1.0	\$ 1.7	
Induced Effect	102	\$ 3.5	\$ 6.7	\$ 10.7	
Total Effect	227	\$ 22.8	\$ 18.3	\$ 28.6	
Multiplier	2.106	1.228	1.715	1.766	
Share of Region	0.1%	0.2%	0.1%	0.1%	
<u>Forestry</u>					
Direct Effect	231	\$ 10.1	\$ 7.9	\$ 19.8	
Indirect Effect	36	\$ 1.5	\$ 1.6	\$ 3.4	
Induced Effect	61	\$ 2.1	\$ 4.0	\$ 6.4	
Total Effect	327	\$ 13.6	\$ 13.6	\$ 29.6	
Multiplier	1.417	1.352	1.710	1.493	
Share of Region	0.1%	0.1%	0.1%	0.1%	
<u>Dairy Processing</u>					
Direct Effect	2,200	\$ 139.4	\$ 204.0	\$ 2,117.6	
Indirect Effect	1,074	\$ 68.1	\$ 99.6	\$ 1,034.2	
Induced Effect	228	\$ 14.4	\$ 21.1	\$ 219.1	
Total Effect	3,502	\$ 221.9	\$ 324.7	\$ 3,370.8	
Multiplier	1.592	1.592	1.592	1.592	
Share of Region	1.2%	1.8%	1.6%	8.6%	
<u>Agricultural or Food Processing</u>					
Direct Effect	5,454	\$ 341.9	\$ 551.2	\$ 3,840.3	
Indirect Effect	9,075	\$ 360.8	\$ 678.5	\$ 1,439.4	
Induced Effect	3,851	\$ 132.5	\$ 253.4	\$ 399.3	
Total Effect	18,380	\$ 835.2	\$ 1,483.1	\$ 5,679.0	
Multiplier	3.370	2.443	2.690	1.479	
Share of Region	6.4%	6.8%	7.5%	14.5%	
<u>All Agriculture (no forestry)</u>					
Direct Effect	20,014	\$ 791.7	\$ 1,135.0	\$ 5,435.5	
Indirect Effect	10,544	\$ 423.9	\$ 829.4	\$ 1,790.6	
Induced Effect	6,725	\$ 230.9	\$ 442.4	\$ 701.5	
Total Effect	37,284	\$ 1,446.5	\$ 2,406.8	\$ 7,927.6	
Multiplier	1.863	1.827	2.121	1.458	
Share of State Total	12.9%	11.8%	12.2%	20.2%	

Contribution of Agriculture 2012: Central Region (\$MM)					
	Employment	Labor Income	Total Income	Industry Sales	
<u>On Farm</u>					
Direct Effect	9,127	\$ 542.6	\$ 499.2	\$ 1,197.3	
Indirect Effect	971	\$ 36.2	\$ 95.7	\$ 196.5	
Induced Effect	2,780	\$ 92.9	\$ 188.6	\$ 302.9	
Total Effect	12,878	\$ 671.7	\$ 783.5	\$ 1,696.7	
Multiplier	1.411	1.238	1.570	1.417	
Share of Region	7.7%	8.8%	6.2%	6.6%	
<u>Dairy Farm</u>					
Direct Effect	1,959	\$ 61.3	\$ 169.6	\$ 360.2	
Indirect Effect	334	\$ 12.0	\$ 23.8	\$ 78.9	
Induced Effect	338	\$ 11.4	\$ 22.9	\$ 36.9	
Total Effect	2,630	\$ 84.7	\$ 216.3	\$ 476.0	
Multiplier	1.343	1.381	1.276	1.321	
Share of Region	1.6%	1.1%	1.7%	1.9%	
<u>Floriculture</u>					
Direct Effect	70	\$ 14.0	\$ 8.0	\$ 12.2	
Indirect Effect	10	\$ 0.4	\$ 0.6	\$ 1.0	
Induced Effect	66	\$ 2.2	\$ 4.5	\$ 7.2	
Total Effect	146	\$ 16.6	\$ 13.1	\$ 20.4	
Multiplier	2.090	1.191	1.633	1.678	
Share of Region	0.1%	0.2%	0.1%	0.1%	
<u>Forestry</u>					
Direct Effect	149	\$ 6.3	\$ 8.1	\$ 18.0	
Indirect Effect	36	\$ 1.4	\$ 1.9	\$ 3.7	
Induced Effect	35	\$ 1.2	\$ 2.4	\$ 3.9	
Total Effect	221	\$ 8.9	\$ 12.4	\$ 25.6	
Multiplier	1.481	1.416	1.526	1.419	
Share of Region	0.1%	0.1%	0.1%	0.1%	
<u>Dairy Processing</u>					
Direct Effect	960	\$ 50.2	\$ 76.9	\$ 909.7	
Indirect Effect	385	\$ 20.1	\$ 30.8	\$ 364.7	
Induced Effect	71	\$ 3.7	\$ 5.7	\$ 66.9	
Total Effect	1,416	\$ 74.1	\$ 113.3	\$ 1,341.4	
Multiplier	1.475	1.475	1.475	1.475	
Share of Region	0.9%	1.0%	0.9%	5.2%	
<u>Agricultural or Food Processing</u>					
Direct Effect	4,681	\$ 234.8	\$ 344.9	\$ 2,406.1	
Indirect Effect	4,208	\$ 191.2	\$ 323.6	\$ 675.0	
Induced Effect	2,026	\$ 68.4	\$ 137.9	\$ 218.8	
Total Effect	10,915	\$ 494.4	\$ 806.4	\$ 3,300.0	
Multiplier	2.332	2.106	2.338	1.371	
Share of Region	6.6%	6.5%	6.4%	12.9%	
<u>All Agriculure (no forestry)</u>					
Direct Effect	13,808	\$ 777.4	\$ 844.1	\$ 3,603.4	
Indirect Effect	5,179	\$ 227.4	\$ 419.4	\$ 871.5	
Induced Effect	4,805	\$ 161.3	\$ 326.5	\$ 521.7	
Total Effect	23,793	\$ 1,166.1	\$ 1,589.9	\$ 4,996.7	
Multiplier	1.723	1.500	1.884	1.387	
Share of State Total	14.3%	15.3%	12.7%	19.5%	

Contribution of Agriculture 2012: East Central Region (\$MM)					
	Employment	Labor Income	Total Income	Industry Sales	
<u>On Farm</u>					
Direct Effect	14,955	\$ 635.2	\$ 914.8	\$ 2,241.3	
Indirect Effect	2,524	\$ 123.4	\$ 274.8	\$ 694.6	
Induced Effect	4,715	\$ 179.3	\$ 336.5	\$ 538.3	
Total Effect	22,196	\$ 937.8	\$ 1,526.0	\$ 3,474.2	
Multiplier	1.484	1.476	1.668	1.550	
Share of Region	3.4%	2.9%	2.9%	3.0%	
<u>Dairy Farm</u>					
Direct Effect	4,971	\$ 213.4	\$ 558.6	\$ 1,186.4	
Indirect Effect	1,646	\$ 78.2	\$ 139.0	\$ 457.9	
Induced Effect	1,709	\$ 65.1	\$ 122.0	\$ 195.4	
Total Effect	8,326	\$ 356.7	\$ 819.6	\$ 1,839.7	
Multiplier	1.675	1.672	1.467	1.551	
Share of Region	1.3%	1.1%	1.6%	1.6%	
<u>Floriculture</u>					
Direct Effect	196	\$ 47.0	\$ 27.0	\$ 40.9	
Indirect Effect	52	\$ 2.3	\$ 3.1	\$ 5.3	
Induced Effect	290	\$ 11.0	\$ 20.7	\$ 33.1	
Total Effect	538	\$ 60.4	\$ 50.7	\$ 79.2	
Multiplier	2.744	1.285	1.881	1.939	
Share of Region	0.1%	0.2%	0.1%	0.1%	
<u>Forestry</u>					
Direct Effect	110	\$ 3.2	\$ 2.5	\$ 10.9	
Indirect Effect	56	\$ 2.4	\$ 2.3	\$ 4.6	
Induced Effect	33	\$ 1.2	\$ 2.3	\$ 3.7	
Total Effect	198	\$ 6.8	\$ 7.1	\$ 19.2	
Multiplier	1.800	2.130	2.852	1.761	
Share of Region	0.0%	0.0%	0.0%	0.0%	
<u>Dairy Processing</u>					
Direct Effect	5,298	\$ 406.8	\$ 566.2	\$ 5,353.6	
Indirect Effect	3,269	\$ 251.1	\$ 349.4	\$ 3,303.5	
Induced Effect	890	\$ 68.4	\$ 95.1	\$ 899.7	
Total Effect	9,458	\$ 726.3	\$ 1,010.7	\$ 9,556.8	
Multiplier	1.785	1.785	1.785	1.785	
Share of Region	1.5%	2.3%	2.0%	8.3%	
<u>Agricultural or Food Processing</u>					
Direct Effect	16,902	\$ 1,032.4	\$ 1,312.0	\$ 9,819.1	
Indirect Effect	25,663	\$ 1,327.3	\$ 2,316.5	\$ 4,825.2	
Induced Effect	14,578	\$ 554.7	\$ 1,043.0	\$ 1,638.3	
Total Effect	57,143	\$ 2,914.5	\$ 4,671.5	\$ 16,282.6	
Multiplier	3.381	2.823	3.560	1.658	
Share of Region	8.9%	9.2%	9.0%	14.2%	
<u>All Agriculture (no forestry)</u>					
Direct Effect	31,857	\$ 1,667.7	\$ 2,226.8	\$ 12,060.4	
Indirect Effect	28,187	\$ 1,450.7	\$ 2,591.2	\$ 5,519.8	
Induced Effect	19,293	\$ 734.0	\$ 1,379.5	\$ 2,176.6	
Total Effect	79,339	\$ 3,852.3	\$ 6,197.5	\$ 19,756.7	
Multiplier	2.490	2.310	2.783	1.638	
Share of State Total	12.3%	12.1%	12.0%	17.2%	

Contribution of Agriculture 2012: South West Region (\$MM)					
	Employment	Labor Income	Total Income	Industry Sales	
<u>On Farm</u>					
Direct Effect	16,575	\$ 435.0	\$ 666.6	\$ 1,794.2	
Indirect Effect	1,616	\$ 61.4	\$ 175.9	\$ 344.1	
Induced Effect	2,525	\$ 83.0	\$ 173.4	\$ 277.5	
Total Effect	20,716	\$ 579.4	\$ 1,015.8	\$ 2,415.8	
Multiplier	1.250	1.332	1.524	1.346	
Share of Region	15.5%	11.6%	11.6%	12.9%	
<u>Dairy Farm</u>					
Direct Effect	3,992	\$ 117.9	\$ 349.1	\$ 741.4	
Indirect Effect	896	\$ 31.1	\$ 61.4	\$ 171.9	
Induced Effect	683	\$ 22.6	\$ 46.9	\$ 75.2	
Total Effect	5,572	\$ 171.6	\$ 457.4	\$ 988.6	
Multiplier	1.396	1.456	1.310	1.333	
Share of Region	4.2%	3.4%	5.2%	5.3%	
<u>Floriculture</u>					
Direct Effect	42	\$ 6.7	\$ 4.2	\$ 6.3	
Indirect Effect	8	\$ 0.4	\$ 0.5	\$ 0.8	
Induced Effect	33	\$ 1.1	\$ 2.2	\$ 3.6	
Total Effect	82	\$ 8.2	\$ 6.9	\$ 10.7	
Multiplier	1.960	1.217	1.643	1.686	
Share of Region	0.1%	0.2%	0.1%	0.1%	
<u>Forestry</u>					
Direct Effect	244.0	\$ 3.2	\$ 0.7	\$ 13.0	
Indirect Effect	48.0	\$ 2.2	\$ 2.5	\$ 5.2	
Induced Effect	26.9	\$ 0.9	\$ 1.8	\$ 3.0	
Total Effect	318.9	\$ 6.3	\$ 5.0	\$ 21.2	
Multiplier	1.307	1.976	7.585	1.631	
Share of Region	0.2%	0.1%	0.1%	0.1%	
<u>Dairy Processing</u>					
Direct Effect	1,904	\$ 100.2	\$ 180.2	\$ 1,988.3	
Indirect Effect	1,063	\$ 55.9	\$ 100.6	\$ 1,109.8	
Induced Effect	165	\$ 8.7	\$ 15.6	\$ 172.4	
Total Effect	3,132	\$ 164.8	\$ 296.4	\$ 3,270.6	
Multiplier	1.645	1.645	1.645	1.645	
Share of Region	2.3%	3.3%	3.4%	17.5%	
<u>Agricultural or Food Processing</u>					
Direct Effect	2,154	\$ 110.3	\$ 197.3	\$ 2,101.3	
Indirect Effect	1,175	\$ 60.1	\$ 107.6	\$ 1,145.9	
Induced Effect	186	\$ 9.5	\$ 17.0	\$ 181.3	
Total Effect	3,515	\$ 179.9	\$ 321.9	\$ 3,428.5	
Multiplier	1.632	1.632	1.632	1.632	
Share of Region	2.6%	3.6%	3.7%	18.3%	
<u>All Agriculture (no forestry)</u>					
Direct Effect	18,729	\$ 545.3	\$ 863.9	\$ 3,895.4	
Indirect Effect	2,791	\$ 121.6	\$ 283.5	\$ 1,490.0	
Induced Effect	2,711	\$ 92.5	\$ 190.4	\$ 458.8	
Total Effect	24,231	\$ 759.4	\$ 1,337.7	\$ 5,844.2	
Multiplier	1.294	1.393	1.549	1.500	
Share of State Total	18.1%	15.1%	15.3%	31.2%	

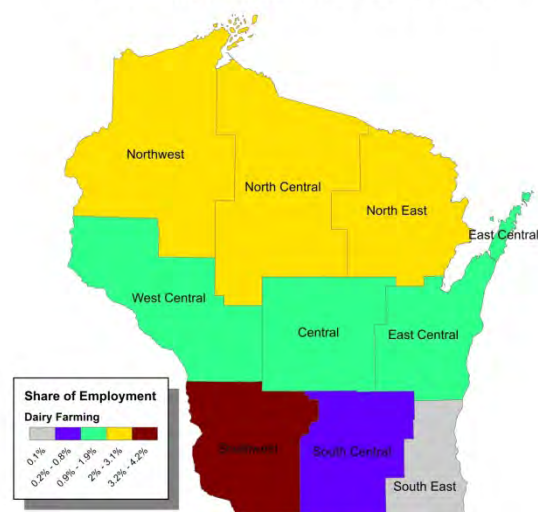
Contribution of Agriculture 2012: South Central Region (\$MM)					
	Employment	Labor Income	Total Income	Industry Sales	
<u>On Farm</u>					
Direct Effect	17,136	\$ 681.6	\$ 801.0	\$ 2,129.6	
Indirect Effect	2,782	\$ 130.5	\$ 323.2	\$ 696.5	
Induced Effect	4,983	\$ 194.9	\$ 372.5	\$ 579.9	
Total Effect	24,903	\$ 1,006.9	\$ 1,496.7	\$ 3,406.1	
Multiplier	1.453	1.477	1.868	1.599	
Share of Region	4.0%	3.3%	2.9%	3.6%	
<u>Dairy Farm</u>					
Direct Effect	2,862	\$ 117.9	\$ 323.1	\$ 686.3	
Indirect Effect	972	\$ 51.3	\$ 89.9	\$ 268.1	
Induced Effect	942	\$ 36.9	\$ 70.4	\$ 109.7	
Total Effect	4,776	\$ 206.1	\$ 483.3	\$ 1,064.1	
Multiplier	1.669	1.749	1.496	1.551	
Share of Region	0.8%	0.7%	1.0%	1.1%	
<u>Floriculture</u>					
Direct Effect	272	\$ 67.5	\$ 38.2	\$ 57.8	
Indirect Effect	78	\$ 4.2	\$ 5.5	\$ 8.9	
Induced Effect	397	\$ 15.5	\$ 29.6	\$ 46.2	
Total Effect	747	\$ 87.2	\$ 73.3	\$ 112.9	
Multiplier	2.744	1.293	1.921	1.952	
Share of Region	0.1%	0.3%	0.1%	0.1%	
<u>Forestry</u>					
Direct Effect	44	\$ 4.2	\$ 4.4	\$ 10.6	
Indirect Effect	58	\$ 3.0	\$ 2.8	\$ 4.4	
Induced Effect	40	\$ 1.6	\$ 3.0	\$ 4.6	
Total Effect	142	\$ 8.7	\$ 10.1	\$ 19.6	
Multiplier	3.230	2.087	2.316	1.853	
Share of Region	0.0%	0.0%	0.0%	0.0%	
<u>Dairy Processing</u>					
Direct Effect	2,278	\$ 156.0	\$ 222.4	\$ 2,153.9	
Indirect Effect	1,335	\$ 91.5	\$ 130.4	\$ 1,262.6	
Induced Effect	342	\$ 23.4	\$ 33.3	\$ 322.9	
Total Effect	3,955	\$ 270.9	\$ 386.2	\$ 3,739.4	
Multiplier	1.7361	1.7361	1.7361	1.7361	
Share of Region	0.6%	0.9%	0.8%	4.0%	
<u>Agricultural or Food Processing</u>					
Direct Effect	11,177	\$ 747.6	\$ 991.2	\$ 6,193.0	
Indirect Effect	13,476	\$ 701.4	\$ 1,217.7	\$ 2,425.4	
Induced Effect	8,376	\$ 327.5	\$ 627.5	\$ 963.3	
Total Effect	33,030	\$ 1,776.5	\$ 2,836.4	\$ 9,581.8	
Multiplier	2.955	2.376	2.862	1.547	
Share of Region	5.3%	5.8%	5.6%	10.2%	
<u>All Agriculture (no forestry)</u>					
Direct Effect	28,313	\$ 1,429.2	\$ 1,792.2	\$ 8,322.7	
Indirect Effect	16,258	\$ 831.8	\$ 1,540.9	\$ 3,122.0	
Induced Effect	13,359	\$ 522.4	\$ 999.9	\$ 1,543.2	
Total Effect	57,933	\$ 2,783.4	\$ 4,333.1	\$ 12,987.9	
Multiplier	2.046	1.948	2.418	1.561	
Share of State Total	9.3%	9.1%	8.5%	13.8%	

Contribution of Agriculture 2012: South East Region (\$MM)					
	Employment	Labor Income	Total Income	Industry Sales	
<u>On Farm</u>					
Direct Effect	6,170	\$ 301.9	\$ 299.5	\$ 747.5	
Indirect Effect	1,092	\$ 60.6	\$ 132.9	\$ 257.3	
Induced Effect	2,486	\$ 111.7	\$ 194.4	\$ 303.8	
Total Effect	9,750	\$ 460.2	\$ 626.8	\$ 1,308.5	
Multiplier	1.580	1.525	2.093	1.751	
Share of Region	0.8%	0.7%	0.6%	0.7%	
<u>Dairy Farm</u>					
Direct Effect	869	\$ 33.3	\$ 90.2	\$ 191.7	
Indirect Effect	256	\$ 14.5	\$ 25.6	\$ 70.4	
Induced Effect	317	\$ 14.2	\$ 24.8	\$ 38.7	
Total Effect	1,442	\$ 62.1	\$ 140.7	\$ 300.7	
Multiplier	1.659	1.863	1.559	1.569	
Share of Region	0.1%	0.1%	0.1%	0.5%	
<u>Floriculture</u>					
Direct Effect	422	\$ 92.9	\$ 55.6	\$ 84.2	
Indirect Effect	102	\$ 6.0	\$ 8.3	\$ 14.3	
Induced Effect	650	\$ 29.2	\$ 50.8	\$ 79.4	
Total Effect	1,174	\$ 128.1	\$ 114.7	\$ 177.9	
Multiplier	2.7822	1.3785	2.0636	2.1127	
Share of Region	0.1%	0.1%	0.1%	0.3%	
<u>Forestry</u>					
Direct Effect	20	\$ 3.0	\$ 3.3	\$ 7.0	
Indirect Effect	5	\$ 1.0	\$ 1.0	\$ 1.8	
Induced Effect	9	\$ 1.2	\$ 2.1	\$ 3.3	
Total Effect	35	\$ 5.3	\$ 6.4	\$ 12.1	
Multiplier	1.734	1.736	1.955	1.734	
Share of Region	0.0%	0.0%	0.0%	0.0%	
<u>Dairy Processing</u>					
Direct Effect	773	\$ 55.0	\$ 103.8	\$ 873.9	
Indirect Effect	416	\$ 29.6	\$ 55.9	\$ 470.5	
Induced Effect	79	\$ 5.7	\$ 10.7	\$ 166.9	
Total Effect	1,269	\$ 90.3	\$ 170.3	\$ 1,511.3	
Multiplier	1.641	1.641	1.641	1.729	
Share of Region	0.1%	0.1%	0.1%	2.3%	
<u>Agricultural or Food Processing</u>					
Direct Effect	13,908	\$ 857.2	\$ 1,234.9	\$ 7,067.6	
Indirect Effect	14,637	\$ 969.8	\$ 1,467.2	\$ 2,631.7	
Induced Effect	12,597	\$ 566.2	\$ 987.2	\$ 1,521.9	
Total Effect	41,144	\$ 2,393.2	\$ 3,689.4	\$ 11,221.2	
Multiplier	2.958	2.792	2.987	1.588	
Share of Region	3.4%	2.3%	1.9%	16.8%	
<u>All Agriculture (no forestry)</u>					
Direct Effect	20,500	\$ 1,252.0	\$ 1,590.0	\$ 7,899.3	
Indirect Effect	14,429	\$ 984.3	\$ 1,515.6	\$ 2,687.7	
Induced Effect	15,708	\$ 705.2	\$ 1,230.2	\$ 1,896.1	
Total Effect	50,638	\$ 2,941.6	\$ 4,335.9	\$ 12,483.1	
Multiplier	2.470	2.349	2.727	1.580	
Share of State Total	4.2%	2.8%	2.2%	18.7%	

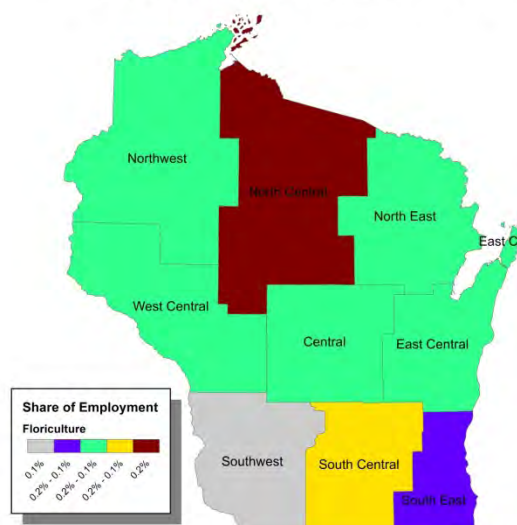
Share of Employment from All On-Farm Activity



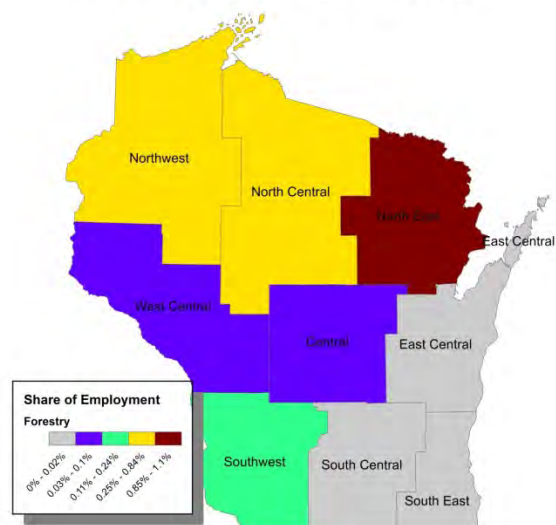
Share of Employment from Dairy Farming



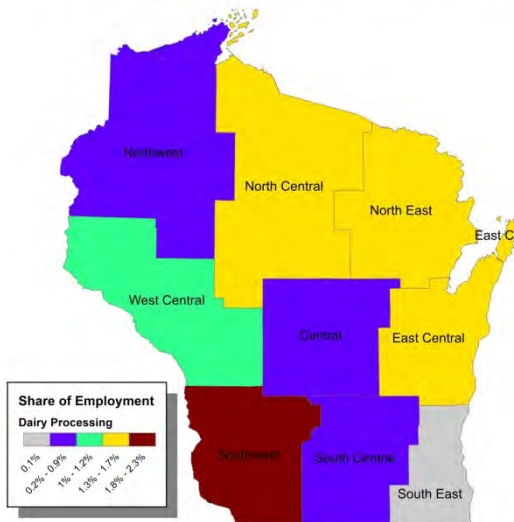
Share of Employment from Floriculture



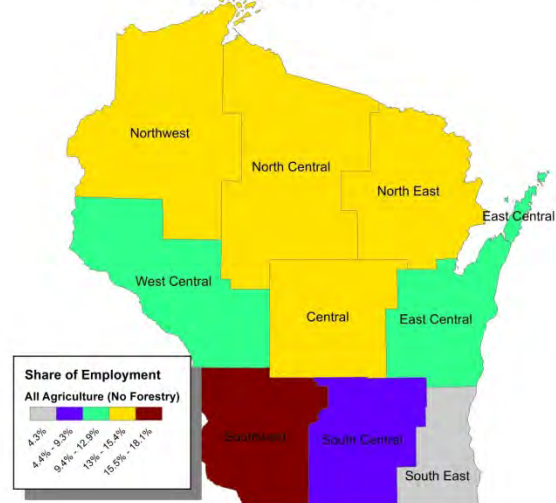
Share of Employment from Forestry



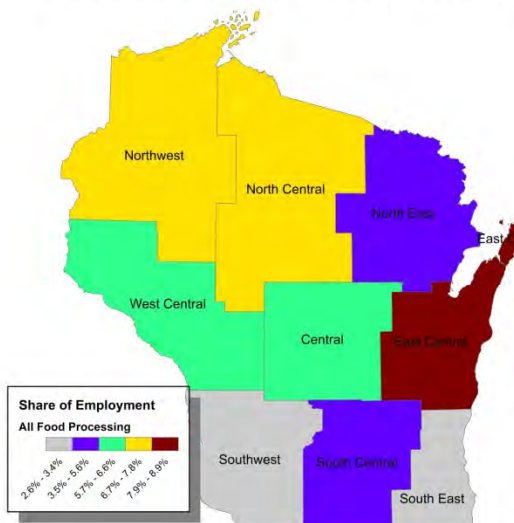
Share of Employment from Dairy Processing



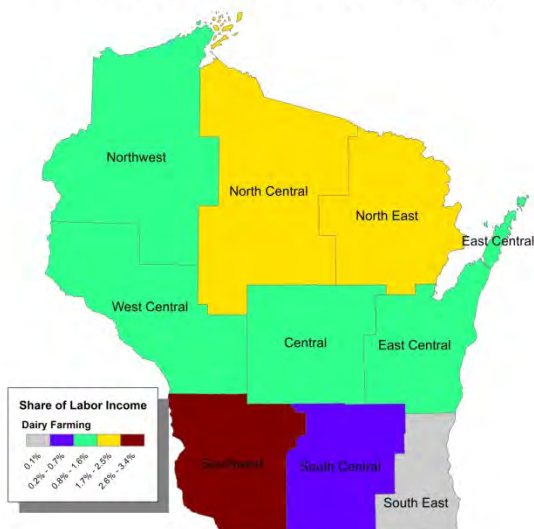
Share of Employment from All Agriculture (excluding forestry)



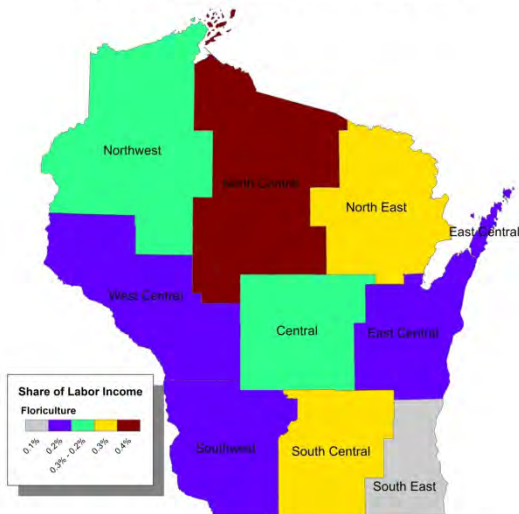
Share of Employment from Food Processing



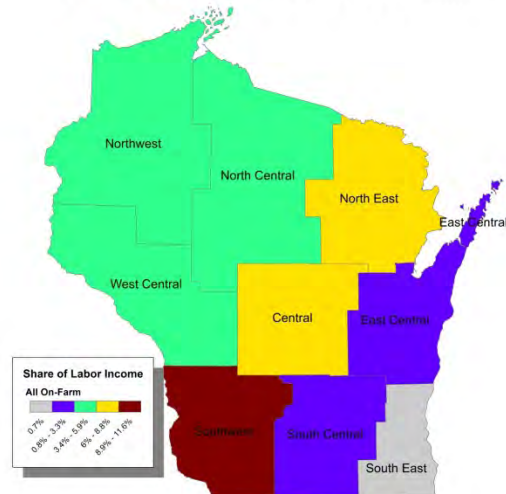
Share of Labor Income from Dairy Farming



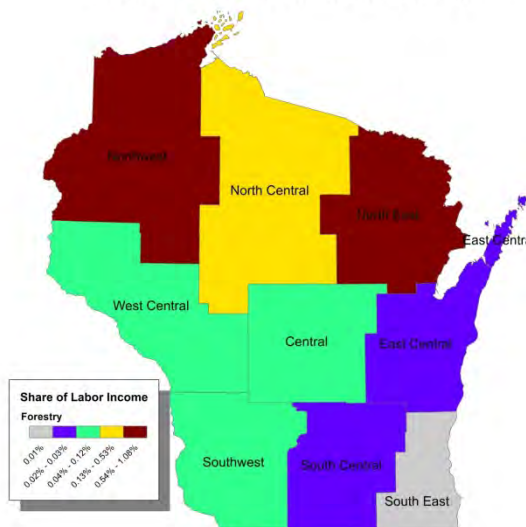
Share of Labor Income from Floriculture



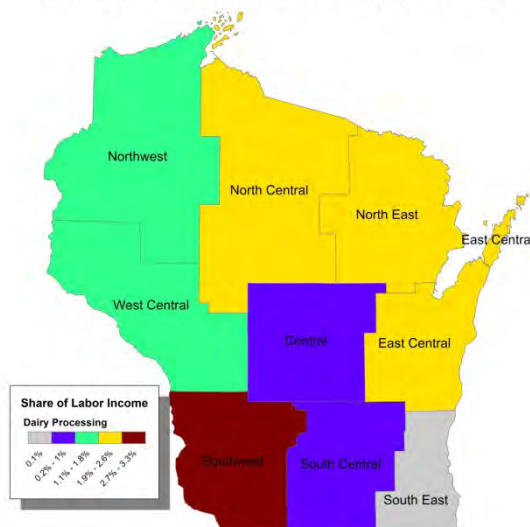
Share of Labor Income from All On-Farm



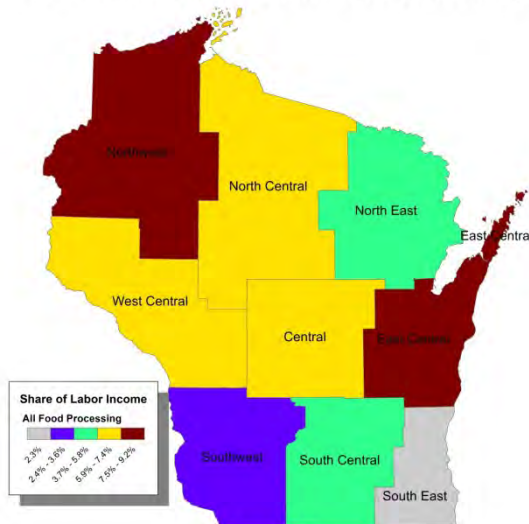
Share of Labor Income from Forestry



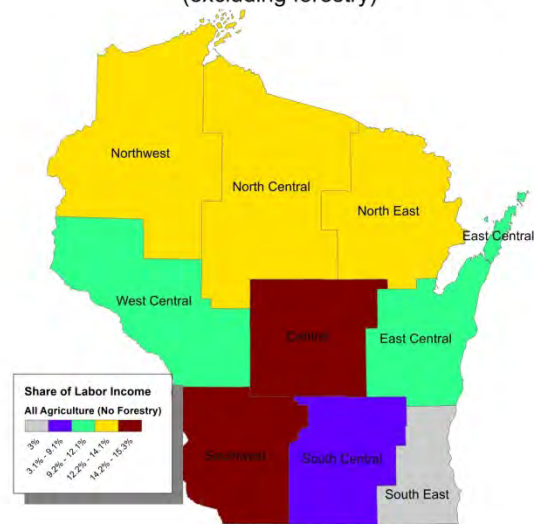
Share of Labor Income from Dairy Processing



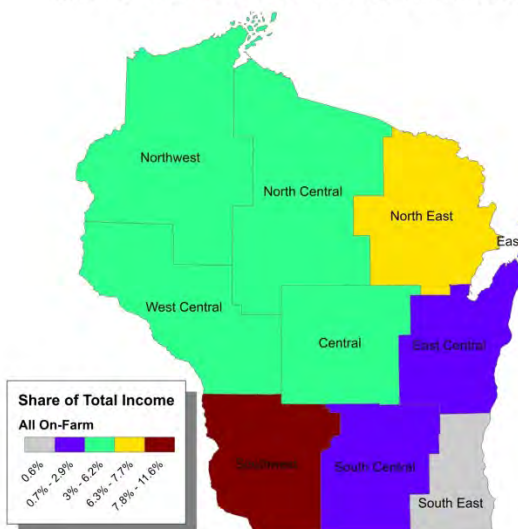
Share of Labor Income from All Food Processing



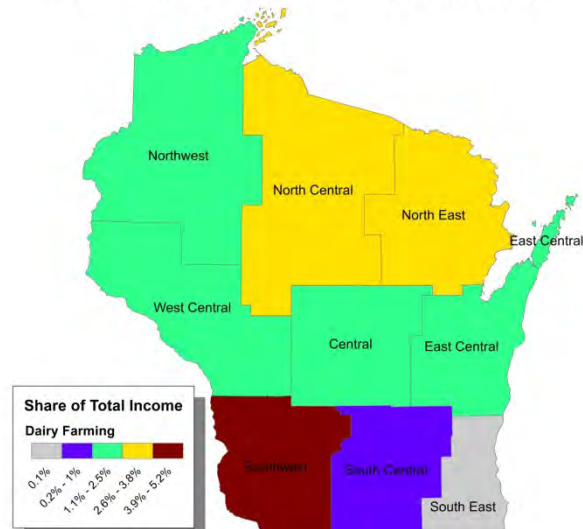
Share of Labor Income from All Agriculture (excluding forestry)



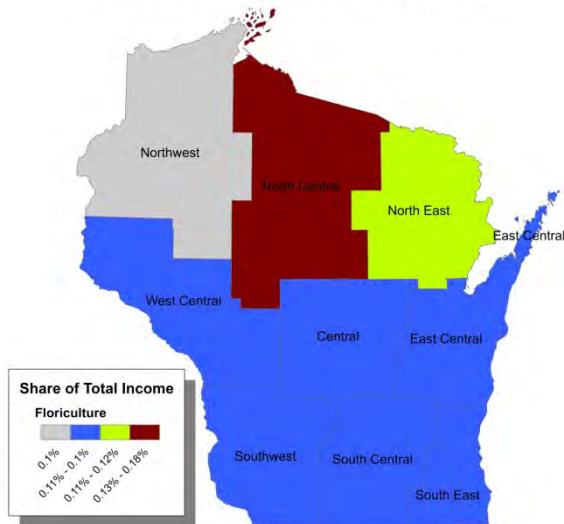
Share of Total Income from All On-Farm Activity



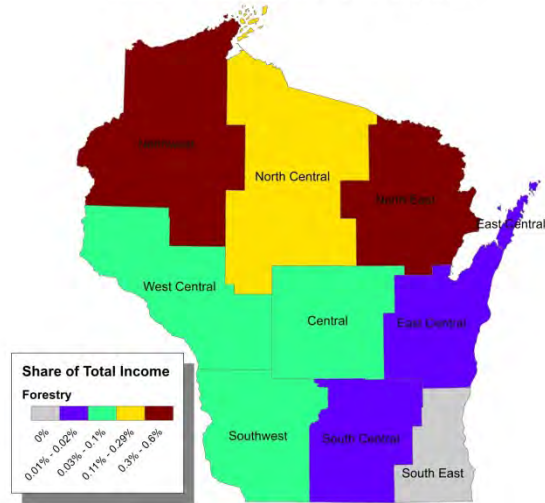
Share of Total Income from Dairy Farm Activity



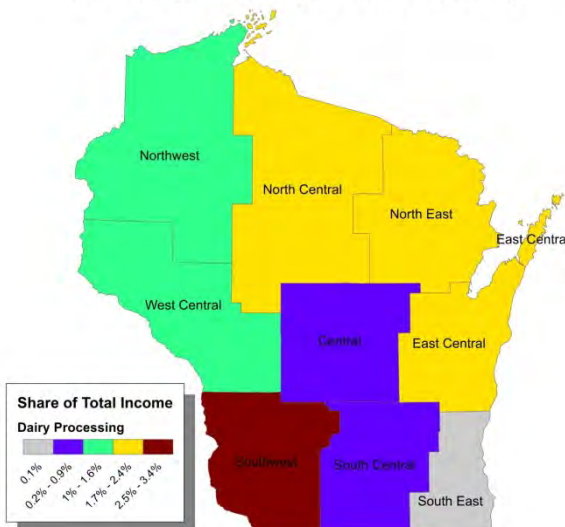
Share of Total Income from Floriculture



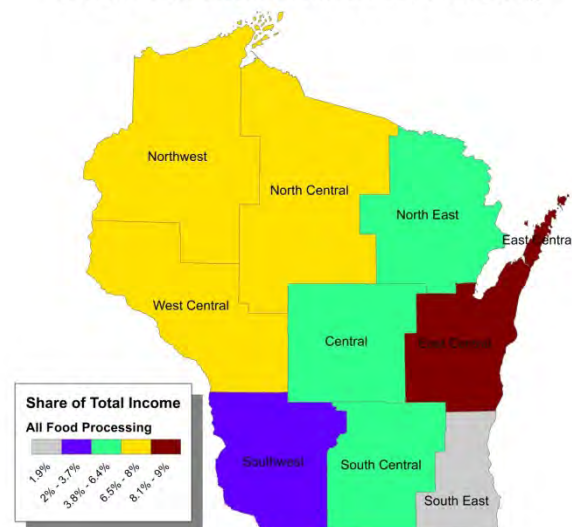
Share of Total Income from Forestry



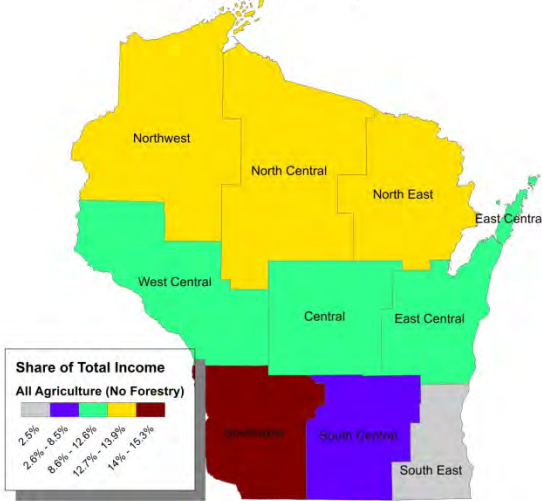
Share of Total Income from Dairy Processing



Share of Total Income from All Food Processing



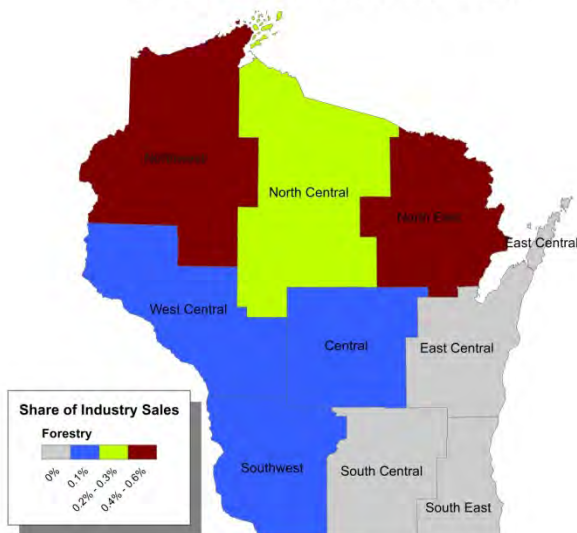
Share of Total Income from All Agriculture (excluding forestry)



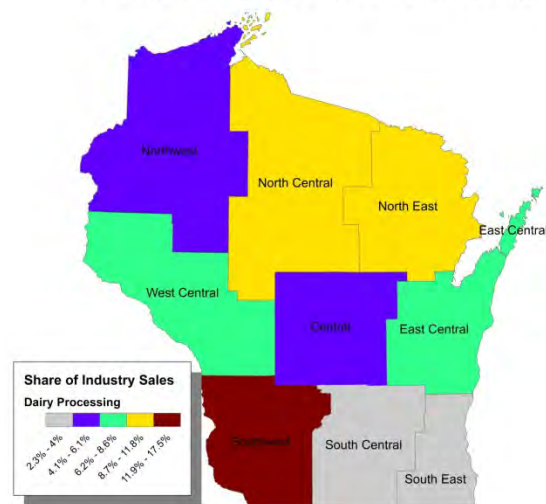
Share of Industry Sales from Floriculture



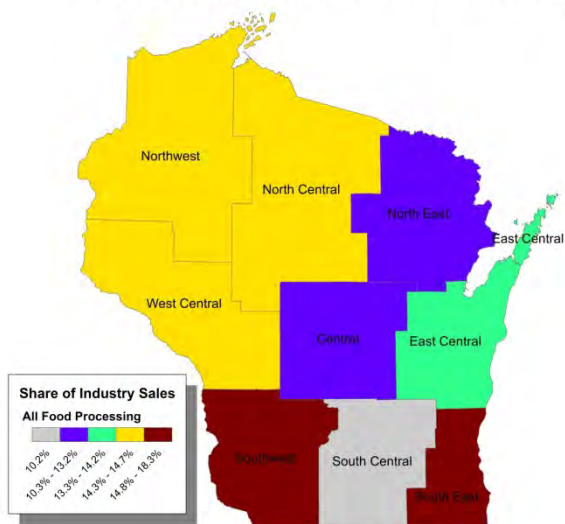
Share of Industry Sales from Forestry



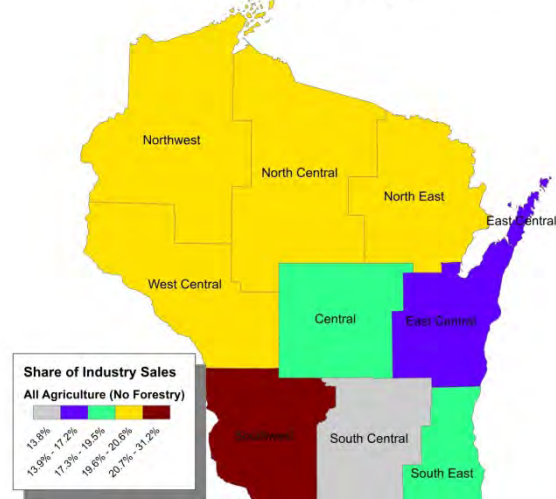
Share of Industry Sales from Dairy Processing



Share of Industry Sales from All Food Processing



Share of Industry Sales from All Agriculture (excluding forestry)



Appendix A

Input-Output Modeling

Basics of Input-Output Modeling

We present a simple non-technical discussion of the formulation of input-output (IO) modeling in this section. An example of similar descriptive treatments would be Shaffer, Deller and Marcouiller (2004). An example of a more advanced discussion of input-output would be Miernyk (1965), and Miller and Blair (1985). As a descriptive tool, IO analysis represents a method for expressing the economy as a series of accounting transactions within and between the producing and consuming sectors. As an analytical tool, IO analysis expresses the economy as an interaction between the supply and demand for commodities. Given these interpretations, the IO model may be used to assess the impacts of alternative scenarios on the region's economy.

Transactions Table

A central concept of IO modeling is the interrelationship between the producing sectors of the region (e.g., manufacturing firms), the consuming sectors (e.g., households) and the rest of the world (i.e., regional imports and exports). The simplest way to express this interaction is through a regional transactions table (Table A1). The transactions table shows the flow of all goods and services produced (or purchased) by sectors in the region. The key to understanding this table is realizing that one firm's purchases are another firm's sales and that producing more of one output requires the production or purchase of more of the inputs needed to produce that product.

Table A1: Illustrative Transaction Table

Processing Sectors (Sellers/Supply)	Purchasing Sectors (Buyers/Demand)			Final Demand		Output
	Agr	Mfg	Serv	HH (labor)	Exports	
Agr	10	6	2	20	12	50
Mfg	4	4	3	24	14	49
Serv	6	2	1	34	10	53
HH (labor)	16	25	38	1	52	132
Imports	14	12	9	53	0	88
Inputs	50	49	53	132	88	372

The transactions table may be read from two perspectives: reading down a column gives the purchases by the sector named at the top of the column from each of the sectors named at the left. Reading across a row gives the sales of the sector named at the left of the row to those named at the top. In the illustrative transaction table for a fictitious regional economy (Table 1), reading down the first column shows that the agricultural firms buy \$10 worth of their inputs from other agricultural firms. The sector also buys \$4 worth of inputs from manufacturing firms and \$6 worth from the service industry. Note that agricultural firms also made purchases from non-processing sectors of the economy, such as the household sector (\$16) and imports from other regions (\$14). Purchases from the household sector represent value added, or income to people in the form of wages and investment returns. In this example, agricultural firms purchased a total of \$50 worth of inputs.

Reading across the first row shows that agriculture sold \$10 worth of its output to agriculture, \$6 worth to manufacturing, \$2 worth to the service sector. The remaining \$32 worth of agricultural output was sold to households or exported out of the region. In this case \$20 worth of agricultural output was sold to households within the region and the remaining \$12 was sold to firms or households outside the region. In the terminology of IO modeling, \$18 ($=\$10+\$6+\2) worth of agricultural output was sold for intermediate consumption, and the remaining \$32 ($=\$20+\12) worth was sold to final demand. Note that the transactions table is balanced: total agricultural output (the sum of the row) is exactly equal to agricultural purchases (the sum of the column). In an economic sense, total outlays (column sum, \$50) equal total income (row sum, \$50), or supply exactly equals supply. This is true for each sector.

The transactions table is important because it provides a comprehensive picture of the region's economy. Not only does it show the total output of each sector, but it also shows the interdependencies between sectors. It also indicates the sectors from which the region's residents earn income as well as the degree of openness of the region through imports and exports. In this example, households' total income, or value added for the region is \$132 (note total household income equals total household expenditure), and total regional imports is \$88 (note regional imports equals regional exports). More open economies will have a larger percentage of total expenditures devoted to imports. As discussed below, the “openness” of the economy has a direct and important impact on the size of economic multipliers. Specifically, more open economies have a greater share of purchases, both intermediate and final consumption purchases, taking the form of imports. As new dollars are introduced (injected from exports) into the economy they leave the economy more rapidly through leakages (imports).

Direct Requirements Table

Important production relationships in the regional economy can be further examined if the patterns of expenditures made by a sector are stated in terms of proportions. This means that the proportions of all inputs needed to produce one dollar of output in a given sector can be used to identify linear production relationships. This is accomplished by dividing the dollar value of inputs purchased from each sector by total expenditures. Or, each transaction in a column is divided by the column sum. The resulting table is called the direct requirements table (Table A2).

The direct requirements table, as opposed to the transactions table, can only be read down each column. Each cell represents the dollar amount of inputs required from the industry named at the left to produce one dollar's worth of output from the sector named at the top. Each column essentially represents a 'production recipe' for a dollar's worth of output. Given this latter interpretation, the upper part of the table (above households) is often referred to as the matrix of technical coefficients. In this example, for every dollar of sales by the agricultural sector, 20 cents worth of additional output from itself, 8 cents of output from manufacturing, 12 cents of output from services, and 32 cents from households will be required.

In the example region, an additional dollar of output by the agricultural sector requires firms in agriculture to purchase a total of 40 cents from other firms located in the region. If a product or service required in the production process is not available from within the region, the product must be imported. In the agricultural sector, 28 cents worth of inputs are imported for each dollar of output. It is important to note that in IO analysis, this production formula, or technology (the column of direct requirement coefficients), is assumed to be constant and the same for all establishments within a sector. This assumption holds regardless of input prices or production levels.

Table A2: Illustrative Direct Requirements Table

Processing Sectors (Sellers/Supply)	Purchasing Sectors (Buyers/Demand)		
	Agr	Mfg	Serv
Agr	0.20	0.12	0.04
Mfg	0.08	0.08	0.06
Serv	0.12	0.04	0.02
HH (labor)	0.32	0.51	0.72
Imports	0.28	0.24	0.02
Inputs	1.00	1.00	1.00

Assuming the direct requirements table also represents spending patterns necessary for additional production, the effects of a change in final demand of the output on the other of sectors can be predicted. For example, assume that export demand for the region's agricultural products increases by \$100,000. From Table 2, it can be seen that any new final demand for agriculture will require purchases from the other sectors in the economy. The amounts shown in the first column are multiplied by the change in final demand to give the following figures: \$20,000 from agriculture, \$8,000 from manufacturing, and \$12,000 from services. These are called the direct effects and, in this example, they amount to a total impact on the economy of \$140,000 (the initial change [\$100,000] plus the total direct effects [\$40,000]). For many studies of economic impact the direct and initial effects are treated as the same although there are subtle differences.

The strength of input-output modeling is that it does not stop at this point, but also measures the indirect effects of an increase in agricultural exports. In this example, the agricultural sector increased purchases of manufactured goods by \$8,000. To supply agriculture's new need for manufacturing products, the manufacturing sector must increase production. To accomplish this, manufacturing firms must purchase additional inputs from the other regional sectors.

Continuing our \$100,000 increase in export demand for a region's agricultural products, for every dollar increase in output, manufacturing must purchase an additional 12 cents of agricultural goods ($\$8,000 \times .12 = \960), 8 cents from itself ($\$8,000 \times .08 = \640), and 4 cents from the service sector ($\$8,000 \times .04 = \320). Thus, the impact on the economy from an increase in agricultural exports will be more than the \$140,000 identified previously. The total impact will be \$140,000 plus the indirect effect on manufacturing totaling \$1,920 ($\$960 + \$640 + \320), or \$141,920. A similar process examining the service sector increases the total impact yet again by \$1,440 ($[\$12,000 \times .04] + [\$12,000 \times .06] + [\$12,000 \times .02] = \$1,440$).

The cycle does not stop, however, after only two rounds of impacts. To supply the manufacturing sectors with the newly required inputs, agriculture must increase output again, leading to an increase in manufacturing and service sector outputs. This process continues until the additional increases drop to an insignificant amount. The total impact on the regional economy, then, is the sum of a series of direct and indirect impacts. Fortunately, the sum of these direct and indirect effects can be more efficiently calculated by mathematical methods. The methodology was developed by the Noble winning economist Wassily Leontief and is easily accomplished using computerized models.

Total Requirements Table

Typically, the result of the direct and indirect effects is presented as a total requirements table, or the Leontief inverse table (Table A3). Each cell in Table 3 indicates the dollar value of output from the sector named at the left that will be required in total (i.e., direct plus indirect) for a one dollar increase in final demand for the output from the sector named at the top of the column. For example, the element in the first row of the first column indicates the total dollar increase in output of agricultural production that results from a \$1 increase in final demand for agricultural products is \$1.28. Here the agricultural multiplier is 1.28: for every dollar of direct agricultural sales there will be an additional 28 cents of economic activity as measured by industry sales.

Table A3: Illustrative Total Requirements Table

Processing Sectors (Sellers/Supply)	Purchasing Sectors (Buyers/Demand)		
	Agr	Mfg	Serv
Agr	1.28	0.17	0.06
Mfg	0.12	1.11	0.07
Serv	0.16	0.07	1.03
Inputs	1.56	1.35	1.16

An additional interpretation of the transactions table, as well as the direct requirements and total requirements tables, is the measure of economic linkages within the economy. For example, the element in the second row of the first column indicates the total increase in manufacturing output due to a dollar increase in the demand for agricultural products is 12 cents. This allows the analyst to not only estimate the total economic impact but also provide insights into which sectors will be impacted and to what level.

Highly linked regional economies tend to be more self-sufficient in production and rely less on outside sources for inputs. More open economies, however, are often faced with the requirement of importing production inputs into the region. The degree of openness can be obtained from the direct requirements table (Table 2) by reading across the imports row. The higher these proportions are, the more open the economy. As imports increase, the values of the direct requirement coefficients must, by definition, decline. It follows then that the values making up the total requirements table, or the multipliers, will be smaller. In other words, more open economies have smaller multipliers due to larger imports. The degree of linkage can be obtained by analyzing the values of the off-diagonal elements (those elements in the table with a value of less than one) in the total requirements table. Generally, larger values indicate a tightly linked economy, whereas smaller values indicate a looser or more open economy.

Input-Output Multipliers

Basics of Input-Output Multipliers

Through the discussion of the total requirements table, the notion of external changes in final demand rippling throughout the economy was introduced. The total requirements table can be used to compute the total impact a change in final demand for one sector will have on the entire economy. Specifically, the sum of each column shows the total increase in regional output resulting from a \$1 increase in final demand for the column heading sector. Retaining the agricultural example, an increase of \$1 in the demand for agricultural output will yield a total increase in regional output equal to \$1.56 (Table 3). This figure represents the initial dollar increase plus 56 cents in direct and indirect effects. The column totals are often referred to as output multipliers.

The use of these multipliers for policy analysis can prove insightful. These multipliers can be used in preliminary policy analysis to estimate the economic impact of alternative policies or changes in the local economy. In addition, the multipliers can be used to identify the degree of structural interdependence between each sector and the rest of the economy. For example, in the illustrative region, a change in the agriculture sector would influence the local economy to the greatest extent, while changes in the service sector would produce the smallest change. The output multiplier described here is perhaps the simplest input-output multiplier available. The construction of the transactions table and its associated direct and total requirements tables creates a set of multipliers ranging from output to employment multipliers. Input-output analysis specifies this economic change, most commonly, as a change in final demand for some product. Economists sometimes might refer to this as the "exogenous shock" applied to the system. Simply stated, this is the manner in which we attempt to introduce an economic change.

The complete set includes:

Type Definition

- | | |
|--------------------------|---|
| 1. Output Multiplier | The output multiplier for industry i measures the sum of direct and indirect requirements from all sectors needed to deliver one additional dollar unit of output of i to final demand. |
| 2. Income Multiplier | The income multiplier measures the total change in income throughout the economy from a dollar unit change in final demand for any given sector. |
| 3. Employment Multiplier | The employment multiplier measures the total change in employment due to a one unit change in the employed labor force of a particular sector. |

The income multiplier represents a change in total income (employee compensation plus proprietary income plus other property income plus indirect business taxes) for every dollar change in income for any given sector. The employment multiplier represents the total change in employment resulting from the change in employment in any given sector. Thus, we have three ways that we can describe the change in final demand.

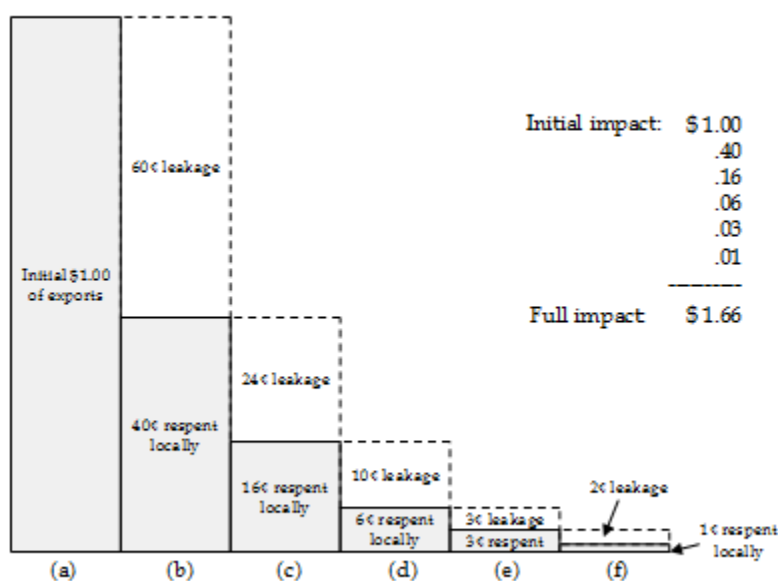
Consider, for example, a dairy farm that has \$1 million in sales (industry output), pays labor \$100,000 inclusive of wages, salaries and retained profits, and that employs three workers, including the farm proprietor. Suppose that demand for milk produced at these farm increases 10 percent, or \$100,000 dollars. We could use the traditional output multiplier to determine what the total impact on output would be. Alternatively, to produce this additional output the farmer may find that they need to hire a part-time worker. We could use the employment multiplier to examine the impact of this new hire on total employment in the economy. In addition, the income paid to labor will increase by some amount and we can use the income multiplier to see what the total impact of this additional income will have on the larger economy.

How are these income and employment multipliers derived if the IO model only looks at the flow of industry expenditures (output)? In the strictest sense, the IO does not understand changes in employment or income, only changes in final demand (sales or output). To do this we use the fact that the IO model is a "fixed proportion" representation of the underlying production technologies. This is most clear by reexamining the direct requirements table (Table 2). For every dollar of output (sales) inputs are purchased in a fixed proportion according to the production technology described by the direct requirements table. For every dollar of output there is a fixed proportion of employment required as well as income paid. In our simple dairy farm example, for every dollar of output there are $.000003 (= 1,000,000 \div 3)$ jobs and $$.10 (= 1,000,000$

÷ 100,000) in income. We can use these fixed proportions to convert changes in output (sales) into changes in employment and income.

Graphically, we can illustrate the round-by-round relationships modeled using input-output analysis. This is found in Figure 1. The direct effect of change is shown in the far left-hand side of the figure (the first bar (a)). For simplification, the direct effect of a \$1.00 change in the level of exports, the indirect effects will spill over into other sectors and create an additional 66 cents of activity. In this example, the simple output multiplier is 1.66. A variety of multipliers can be calculated using input-output analysis.

While multipliers may be used to assess the impact of changes on the economy, it is important to note that such a practice leads to limited impact information. A more complete analysis is not based on a single multiplier, but rather, on the complete total requirements table. A general discussion of the proper and inappropriate uses of multipliers is presented in the next appendix to this text.



Initial, Indirect and Induced Effects

The input-output model and resulting multipliers described up to this point presents only part of the story. In this construction of the total requirements table (Table 3) and the resulting multipliers, the production technology does not include labor. In the terminology of IO modeling, this is an “open” model. In this case, the multiplier captures only the initial effect (initial change in final demand or the initial shock) and the impact of industry to industry sales. This latter effect is called the indirect effect and results in a Type I multiplier. A more complete picture would include labor in the total requirements table. In the terminology of IO modeling, the model should be “closed” with respect to labor. If this is done, we have a different type of multiplier, specifically a Type II multiplier, which is composed of the initial and indirect effects as well as what is called the induced effects.

The Type II multiplier is a more comprehensive measure of economic impact because it captures industry to industry transactions (indirect) as well as the impact of labor spending income in the economy (induced effect). In the terminology of IO analysis, an “open” model where the induced effect is not captured, any labor or proprietor income that may be gained (positive shock) or lost (negative shock) is assumed to be lost to the economy. In our simple dairy farm example, any additional income (wages, salaries and profits) derived from the change in output (sales) is pocketed by labor and is not re-spent in the economy. This clearly is not the case: any additional income resulting from more labor being hired (or fired) will be spent in the economy thus generating an additional round of impacts. This second round of impacts is referred to as the induced impact.

Insights can be gained by comparing and contrasting the indirect and induced effects. For example, industries that are more labor intensive will tend to have larger induced impacts relative to indirect. In addition, industries that tend to pay higher wages and salaries will also tend to have larger induced effects. By decomposing the Type II multiplier into its induced and indirect effects, one can gain a better understanding of the industry under examination and its relationship to the larger economy.

Appendix B:

Misuses and Evaluation of Economic Multipliers

Multipliers are often misused or misunderstood. Problems frequently encountered in applying multipliers to community change include: (1) using different multipliers interchangeably; (2) double counting; (3) pyramiding; and (4) confusing multipliers with other economic measurements such as turnover and value added. Please note that if IMPLAN is used to generate the multipliers used in the analysis, many of the concerns outlined in this appendix are resolved.

Misuse of Multipliers

(1) Interchanging Multipliers. As mentioned earlier, multipliers can be estimated for changes in business output, household income, and employment. These different multipliers are sometimes mistakenly used interchangeably. This should not be done because the sizes of the multipliers are different and because they measure completely different types of activity.

(2) Double Counting. Unless otherwise specified, the direct effect or initial change is included in all multiplier calculations. Consider, for example, a mining business multiplier of 2.20. The 2.20 represents 1.00 for the direct effect, and 1.20 for the indirect effects. The direct effect is thus accounted for by the multiplier and should not be added into the computation (double counted). A \$440,000 total impact resulting from an increase of \$200,000 in outside income (using the above 2.20 multiplier) includes \$200,000 direct spending, plus \$240,000 for the indirect effects. The multiplier effect is sometimes thought to refer only to the indirect effect. In this case, the initial impact is added to the multiplier effect, and is thereby counted twice—yielding an inflated estimate of change.

(3) Pyramiding. A more complicated error in using multipliers is pyramiding. This occurs when a multiplier for a non-basic sector is used in addition to the appropriate basic sector multiplier.

For example, sugar beet processing has been a major contributor to exports in many western rural counties. Assume the local sugar beet processing plant was closed and local officials wanted to determine the economic effect of the closing as well as the subsequent effect upon local farmers. The multiplier for the sugar beet processing sector includes the effect upon farms raising sugar beets because the sugar beet crop is sold to local processors and not exported. Therefore, the processing multiplier should be used to measure the impact of changes in the sugar industry on the total economy. The impact estimate would be pyramided if the multiplier for farms, whose effects had already been counted, were added to processing.

Double counting and pyramiding are particularly serious errors because they result in greatly inflated impact estimates. If inflated estimates are used in making decisions about such things as school rooms or other new facilities, the results can be very expensive, indeed.

(4) Turnover and Value Added. Economic measurements incorrectly used for multipliers also result in misleading analysis. Two such examples are turnover and value added. Turnover refers to the number of times money changes hands within the community. In Figure 1, the initial dollar "turns over" five times; however, only part of the initial dollar is re-spent each time it changes hands. Someone confusing turnover with a multiplier might say the multiplier is 5, when the multiplier is actually only 1.66.

Value added reflects the portion of a product's total value or price that was provided within the local community. The value added would consider the value of a local raw product—like wheat delivered to the

mill—and subtract that from the total wholesale value of the flour, then figure the ratio between the two. With cleaning losses, labor, bagging, milling, etc., the wholesale value may represent several times the value of the raw product and may be a fairly large number.

Evaluating Multipliers

The determination of whether a multiplier is accurate can be a complicated procedure requiring time, extensive research, and the assistance of a trained economist. On the other hand, there are several questions that anyone who uses multipliers should ask. The test of accuracy for a multiple is captured in this question: How closely does that multiplier estimate economic relationships in the community (or region) being considered?

(1) Is the multiplier based on local data, or is it an overlay? Often, multipliers are used that were not developed specifically from data for that area. These multipliers are overlaid onto the area on the assumption that they will adequately reflect relationships in the economy. An example would be using the mining multiplier from a county in northwestern Wyoming to estimate a mining impact in northeastern Nevada.

A multiplier is affected by the economy's geographic location in relation to major trade centers. Areas where the trade center is outside the local economy have smaller multipliers than similar areas containing trade centers. Geographic obstacles en route to trade centers also affect a local economy. Multipliers for small plains towns are smaller than those for apparently comparable mountain towns, since plains residents usually do not face the same travel obstacles as mountain residents. More services will characteristically develop in the mountain area because of the difficulty in importing services; the larger services base will lead to a larger multiplier effect.

The size of the economy will also influence multiplier size. A larger area generally has more businesses. This means that a given dollar is able to circulate more times before leaking than would be the case in a smaller area. Two economies with similar population and geographic size may have quite different multipliers depending on their respective economic structures. For example, if two areas have similar manufacturing plants, but one imports raw materials and the other buys materials locally, then the manufacturing multiplier for the two areas would be quite different.

The overlaying practice, when used appropriately, can save money and time and produce very acceptable results. It is often difficult to find a similar area where impact studies have been completed so that multipliers can be borrowed readily. An area's dollar flow patterns may be so unique, for example, that overlaying will not work.

(2) Is the multiplier based on primary or secondary data? Usually, there is more confidence in a multiplier estimated from data gathered in the community than in published or already-collected data. Primary data collection, though, is expensive and time consuming. Recent research has indicated that in some cases, there is little difference between multipliers estimated by primary or secondary data. In fact, primary data multipliers are not necessarily better than secondary data multipliers. While the type of secondary data needed for estimating multipliers may be available from existing sources, the format and/or units of measurement may not permit some multipliers to be estimated. The resulting adjustments made to use the existing data may cause errors. If secondary data is used, it may be advisable to consult individuals familiar with the data regarding its use.

(3) Aggregate versus disaggregate multipliers. As mentioned earlier in this publication, disaggregate multipliers are much more specific and therefore generally more trustworthy than aggregate multipliers. The accuracy required, and the time and money available most likely will determine whether the model will be aggregate or disaggregate. In many cases, an aggregated rough estimate may be sufficient.

(4) If you are dealing with an employment multiplier, is it based on number of jobs or full-time equivalent (FTE)? Employment multipliers are often considered to be the most important multipliers used in impact analysis. This is because changes in employment can be transmitted to changes in population, which in turn affect social service needs and tax base requirements. Employment multipliers can be calculated on the basis of number of jobs or on FTE. One FTE equals one person working full-time for one year. When multipliers are calculated on a number-of-jobs basis, comparisons between industries are difficult because of different definitions of part-time workers. For example, part-time work in one industry might be four hours per day, while in another it might be ten hours per week. If calculations were based on number of jobs, a comparison of multipliers would be misleading. The conversion of jobs to FTE also helps adjust for seasonal employment in industries such as agriculture, recreation, and forestry.

(5) What is the base year on which the economic model was formulated? Inflation can affect multipliers in two ways: (1) through changes in the prices of industry inputs, and (2) through changes in the purchasing patterns produced by inflation. Each input-output multiplier assumes that price relationships between sectors remain constant over time (at least for the period under consideration). In other words, the studies estimating multipliers assume that costs change proportionally: utility prices change at nearly the same rate as the cost of food, steel, and other commodities. If some prices change drastically in relation to others, then purchasing patterns and multipliers will likely change.

Marketing patterns change slowly, however, and while they must be considered, they usually do not present a major problem unless the multiplier is several years old. The rate of growth in the local area will influence the period of use for the multipliers.

(6) What can a multiplier do? As are most multipliers encountered by local decision makers, the multipliers discussed here are static in nature. Static means that a multiplier can be used in "if/then" situations; they do not project the future. For example, if a new mine that employs 500 people comes into the country, then the total employment increase would be the employment multiplier times 500. A static model cannot be used to make projections about the time needed for an impact to run its course, or about the distribution of the impact over time. Static multipliers only indicate that if X happens, then Y will eventually occur.

(7) How large is the impact in relation to the size of the affected industry on which the multiplier is based? Dramatic changes in an industry's scale will usually alter markets, service requirements, and other components of an industry's spending patterns. Assume a mining sector employment multiplier of 2.0 had been developed in a rural economy having 132 FTE. If a mine were proposed several years later with an estimated 300 FTE, the multiplier of 2.0 would probably not accurately reflect the change in employment because of the scale of the project relative to the industry existing when the multiplier was developed. In essence, the new industry would probably change the existing economic structure in the local area.

(8) Who calculated the multiplier—and did the person or agency doing the calculation have a vested interest in the result? Multipliers are calculated by people using statistics, and as such, there is always the opportunity to adjust the size of the multiplier intentionally. Before accepting the results of a given multiplier,

take time to assess the origin of the data. Studies conducted by individuals or firms having a vested interest in the study's results deserve careful examination.

(9) Is household income included as a sector similar to the business sectors in the local economic model? The decision to include household income in the model depends upon whether or not the household sector is expected to react similarly to other sectors when the economy changes, or whether personal income is largely produced by outside forces. Discussion of this issue is too lengthy for this publication, but the important point is that multipliers from models that include household sectors are likely to be larger than those from models without household sectors.

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Appendix E

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State of Wisconsin
Governor Scott Walker

Department of Agriculture, Trade and Consumer Protection
Ben Brancel, Secretary

July 10, 2015

Alan Shute, Land Development Director
Green Lake County
PO Box 3188
Green Lake, WI 54941

Dear Alan:

Re: Certification of the Green Lake County Farmland Preservation Plan

Attached is a department order certifying Green Lake County's Farmland Preservation Plan under s. 91.16, Wis. Stats. Please send confirmation of the plan's adoption by the county board.

We look forward to working with you in the future on farmland preservation in Green Lake County. If you have any questions, feel free to contact me.

Sincerely,

Alison Volk
Land Management Section
608-224-4634

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**STATE OF WISCONSIN
DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER PROTECTION**

GREEN LAKE COUNTY FARMLAND PRESERVATION PLAN	DATCP DOCKET NO. 15-F-27-24-PCA DARM DOCKET NO. 047-00000-P-15 F-0715 ORDER CERTIFYING PLAN THROUGH DECEMBER 31, 2025.
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INTRODUCTION

Green Lake County has asked the Department of Agriculture, Trade and Consumer Protection (“DATCP”) to certify a proposed comprehensively revised county farmland preservation plan pursuant to s. 91.16, Wis. Stats. DATCP has considered the request and adopts the following decision:

FINDINGS OF FACT

- (1) DATCP is an agency of the State of Wisconsin, and is responsible for administering Wisconsin’s farmland preservation law under ch. 91, Wis. Stats., as repealed and recreated by 2009 Wis. Act 28.
- (2) Green Lake County is a county of the State of Wisconsin.
- (3) In order for a county and its residents to participate in the farmland preservation program, a county must have a state-certified farmland preservation plan. Among other things, the certified plan must clearly designate farmland preservation areas that the county plans to preserve for agricultural use.
- (4) Green Lake County has a state-certified farmland preservation plan that expires on December 31, 2015.
- (5) Under s. 91.16(8), Wis. Stats., the certification of a farmland preservation plan does not cover any subsequent plan revision (adopted after July 1, 2009) unless DATCP certifies that plan revision.
- (6) On June 11, 2015, DATCP received from Green Lake County a request to certify a comprehensively revised county farmland preservation plan under s. 91.16, Wis. Stats. The county submitted the application in the form required under s. 91.20, Wis. Stats. The application included the certifications required under s. 91.20(3), Wis. Stats.
- (7) Under s. 91.16(3)(a), Wis. Stats., DATCP may certify a county plan based on the county’s certification under s. 91.20(3), Wis. Stats., that the plan meets applicable certification standards under s. 91.18, Wis. Stats.
- (8) DATCP may certify a farmland preservation plan if the plan meets applicable statutory standards under s. 91.18, Wis. Stats. DATCP may certify based on the representations contained in the county’s application, but may conduct its own review and verification as it deems appropriate.
- (9) Under s. 91.10(2), Wis. Stats., the farmland preservation plan must be consistent with the Green Lake County Comprehensive Plan, and the County must include the farmland preservation plan in the County Comprehensive Plan.

(10) Under s. 91.16(2)(a), Wis. Stats., DATCP may certify a county farmland preservation plan for a specified period of up to 10 years. Under s. 91.16(6), Wis. Stats., DATCP may make its certification contingent upon the county adoption of the certified plan text and maps, in the form certified.

(11) Under s. 91.16(9), Wis. Stats., DATCP may withdraw its certification at any time if DATCP finds that the certified plan materially fails to meet applicable certification standards under s. 91.18, Wis. Stats.

CONCLUSIONS OF LAW

(1) Based on Green Lake County's certification that the attached county farmland preservation plan meets applicable certification requirements under s. 91.18, Wis. Stats., DATCP may certify that plan for up to 10 years.

(2) DATCP may make its certification contingent upon the county adoption of the certified plan text and maps, in the form certified, and contingent upon its adoption as part of the County comprehensive plan.

(3) Certification does not apply to plan amendments made after the certification date, unless DATCP certifies those amendments.

(4) DATCP may withdraw its certification at any time if DATCP finds that the certified plan text and maps materially fail to meet applicable certification standards under s. 91.18, Wis. Stats.

ORDER

NOW, THEREFORE, IT IS ORDERED THAT:

(1) The attached Green Lake County Farmland Preservation Plan text (dated June 4, 2015) and maps (dated June 25, 2015) are hereby certified under s. 91.16, Wis. Stats., contingent upon county adoption of the plan, included as part of the County comprehensive plan, in the form submitted, before December 31, 2015.

(2) The certified farmland preservation plan area for Green Lake County is titled "Farmland Preservation Areas."

(3) This order takes effect on the date on which the county adoption of the plan text and maps, in the form submitted, takes effect.

(4) This certification expires at the end of the day on December 31, 2025.

Dated this 10th day of july, 2015.

STATE OF WISCONSIN,
DEPARTMENT OF AGRICULTURE,
TRADE AND CONSUMER PROTECTION

By 
Ben Brancel, Secretary

Parties for Purposes of Review Under s. 227.53, Wis. Stats.:

Alan Shute, Land Development Director
Green Lake County
PO Box 3188
Green Lake, WI 54941

Appendix F

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GREEN LAKE COUNTY BOARD PROCEEDINGS

Providing the Green Lake County area readers with the information they have the right to know

GREEN LAKE COUNTY BOARD PROCEEDINGS

January 19, 2016

The Green Lake County Board of Supervisors met in special session, Tuesday, January 19, 2016, at 6:00 PM in the County Board Room, Green Lake, Wisconsin.

Roll Called, Supervisors present – Jack Meyers-District 1, Vicki Bernhagen-District 2, Rich Slate-District 3, Paul Schwandt-District 4, Ben Moderow-District 5, Joy Waterbury-District 6, Michael Starshak-District 7, Patii Garro-Absent, David Richter-District 9, Sue Wendt-District 10, Harley Reabe-District 11, Maureen Schweder-District 12, Nicholas Toney-District 13, Debra Schubert-District 14, Michael Stoddard-District 15, Joe Gonyo-District 16, Joanne Guden-District 17, Richard Trochinski-District 18, Gene Thom-District 19

READING OF THE CALL - Clerk Bostelmann read the call
PLEDGE OF ALLEGIANCE - The Pledge of Allegiance to the Flag was recited.
MINUTES

Minutes of December 15, 2015 were reviewed by the Board. *Motion/second (Stoddard/Trochinski)* to approve the minutes from December 15, 2015. All ayes. Motion carried

ANNOUNCEMENTS

The next County Board meeting will take place on February 16, 2016 at 6:00 PM. Chairman Meyers informed the Board of the updated mileage rates for 2016. Bill Hutchison, IT Director, will be contacting all Supervisors currently using personal e-mail accounts to switch to County e-mail accounts.

PUBLIC COMMENTS (3 minute limit) - None

CORRESPONDENCE - None

APPEARANCES

Andrew Phillips of von Briesen & Roper, s.c. gave a presentation on Different Administrative Structures of Counties and the role of County Boards in Each One. Discussion and questions followed the presentation.

OUT OF STATE TRAVEL – Nav Ghimire, UWEX Agricultural Agent

Nav Ghimire, UWEX Agricultural Agent, is requesting approval for out of state travel for three occasions. The first is February 2-3, 2016 in Iowa for a Soil Health Conference, the second on March 21-23, 2016 in Nebraska for the North Central Region Water Network Conference, and the last is March 30-31, 2016 in Starkville, Mississippi for the Board of Directors for the Journal of Extension.

Motion/second (Schwandt/Guden) to approve the out of state travel request. *Motion/second (Starshak/Gonyo)* to amend the motion to include the 3rd day of travel which was not included in the original motion. All ayes. Motion carried. Voice vote taken on original motion as amended – all ayes. Motion carried.

COMMITTEES TO REPORT ON February 16, 2016 - To be determined

FUTURE AGENDA ITEMS FOR ACTION & DISCUSSION - None

SUCH OTHER BUSINESS AS MAY PROPERLY COME BEFORE THE BOARD OF SUPERVISORS - None

ADJOURN

Motion/second (Schubert/Richter) to adjourn. All ayes. Motion carried. Meeting adjourned at 7:25 PM.

Respectfully Submitted, Liz Otto, Deputy County Clerk

STATE OF WISCONSIN)

COUNTY OF GREEN LAKE)

Margaret R. Bostelmann, County Clerk, In and For the County of Green Lake, do hereby certify that the foregoing is a true and correct copy of the Green Lake County Board Proceedings together with the reports as set forth at the County Board meeting held on the 15th day of December, 2015.

In witness thereof, I have hereunto set my hand and official seal of the County Board of Supervisors of Green Lake County, Wisconsin, this 20th day of January, 2016.

/s/ Margaret R. Bostelmann - County Clerk

ORDINANCE NUMBER 01-2016

Relating to: Rezone in the Town of Mackford

Owner: Dennis J. Cotterill

The County Board of Supervisors of Green Lake County, Green Lake, Wisconsin, duly assembled at its regular meeting on the 16th day of February, 2016, does ordain as follows:

That Green Lake County Zoning Ordinance, Chapter 350 as amended, Article IV Zoning Districts (Official Map M-5 Ordinance No. 297-84) as relates to the Town of Mackford, be amended from A-1 Exclusive Agriculture District to R-4 Rural Residential District.

Parcel #010-00197-0000, W1202 Mackford Hill Rd., A part of the SW¼ of Section 10, T14N, R13E, Town of Mackford, ±3.7835 acres. To be determined by Certified Survey Map.

BE IT FURTHER ORDAINED that, in all other respects, said Zoning Ordinance, Chapter 350 as amended, Article IV Zoning Districts (Official Map M-5 Ordinance No. 297-84) be ratified.

Land Use Planning and Zoning Committee Recommends Approval

Submitted by Land Use Planning & Zoning Committee

Roll Call on Ordinance 01-2016

Aye 17, Nay 0, Absent 2, Abstain 0

Passed and Enacted this 16th day of February, 2016

ORDINANCE NUMBER 02-2016

Relating to: Rezone in the Town of Manchester

Owner: Rene A. Gellings

Applicant: Steve Elsenga

The County Board of Supervisors of Green Lake County, Green Lake, Wisconsin, duly assembled at its regular meeting on the 16th day of February, 2016, does ordain as follows:

That Green Lake County Zoning Ordinance, Chapter 350 as amended, Article IV Zoning Districts (Official Map M-6 Ordinance No. 297-84) as relates to the Town of Manchester, be amended rezone request from A-1 Exclusive Agriculture District to R-4 Rural Residential District (±3.37 acres) and A-2 General Agriculture District (±30.26 acres)

Parcel #012-00398-0000, W3877 County Road X, A part of the SW¼ of Section 21, T14N, R12E, Town of Manchester, ±33.63 acres. Request. Rezone request from A-1 Exclusive Agriculture District to R-4 Rural Residential District (±3.37 acres) and A-2 General Agriculture

District (±30.26 acres). To be determined by Certified Survey Map.

BE IT FURTHER ORDAINED that, in all other respects, said Zoning Ordinance, Chapter 350 as amended, Article IV Zoning Districts (Official Map M-6 Ordinance No. 297-84) be ratified.

Land Use Planning and Zoning Committee Recommends Approval

Submitted by Land Use Planning & Zoning Committee

Roll Call on Ordinance 02-2016

Aye 17, Nay 0, Absent 2, Abstain 0

Passed and Enacted this 16th day of February, 2016

ORDINANCE NUMBER 03-2016

Relating to the Adoption of the

Green Lake County Comprehensive Plan 2015

The County Board of Supervisors of Green Lake County, Green Lake, Wisconsin, duly assembled at its regular meeting begun on the 16th day of February 2016, does ordain as follows:

NOW, THEREFORE, BE IT HEREBY ORDAINED:

SECTION 1: The Green Lake County Board of Supervisors of Green Lake County, Wisconsin, does, by enactment of this ordinance, formally adopts the document entitled "Green Lake County Comprehensive Plan 2015," pursuant to Wis. Stat. 66.1001(4)(c).

Document available in its entirety from Land Use Planning & Zoning Department

SECTION 2: All ordinances or parts of ordinances inconsistent with or in contradiction of the provisions of this Ordinance are hereby repealed.

SECTION 3: A copy of the Comprehensive Plan shall be distributed according to Wis. Stat. §66.1001(4)(b).

SECTION 4: This ordinance shall take effect upon passage by a majority vote of the members-elect of the Green Lake County Board of Supervisors and publication as required by law.

Land Use Planning and Zoning Committee Recommends Approval

Submitted by Land Use Planning & Zoning Committee

Roll Call on Ordinance 03-2016

Aye 17, Nay 0, Absent 2, Abstain 0

Passed and Enacted this 16th day of February, 2016

ORDINANCE NUMBER 04-2016

Relating to the Adoption of the

Green Lake County Farmland Preservation Plan

The County Board of Supervisors of Green Lake County, Green Lake, Wisconsin, duly assembled at its regular meeting begun on the 16th day of February 2016, does ordain as follows:

NOW, THEREFORE, BE IT HEREBY ORDAINED:

SECTION 1: The Green Lake County Board of Supervisors of Green Lake County, Wisconsin, does, by enactment of this ordinance, formally adopts the document entitled "Green Lake County Farmland Preservation Plan" as an addendum to the Green Lake County Comprehensive Plan 2015. Said plan is incorporated by reference herein and may be obtained upon request to the Green Lake County Land Use Planning and Zoning Department.

SECTION 2: All ordinances or parts of ordinances inconsistent with or in contradiction of the provisions of this Ordinance are hereby repealed.

SECTION 3: A copy of the Farmland Preservation Plan shall be distributed according to Wis. Stat. §66.1001(4)(b).

SECTION 4: This ordinance shall take effect upon passage by a majority vote of the members-elect of the Green Lake County Board of Supervisors and publication as required by law.

Land Use Planning and Zoning Committee Recommends Approval

Submitted by Land Use Planning & Zoning Committee

Roll Call on Ordinance 04-2016

Aye 17, Nay 0, Absent 2, Abstain 0

Passed and Enacted this 16th day of February, 2016

ORDINANCE NO. 05-2016

Relating to Ordinance amending the Code of Green Lake County

Chapter 159 Highways

The County Board of Supervisors of Green Lake County, Green Lake, Wisconsin, duly assembled at its regular meeting begun on the 15th day of February, 2016, does ordain as follows:

The Code of Green Lake County is hereby amended by creating Article X, §159-29 to Chapter 159 Highways:

Article X – Miscellaneous Highway Regulations

§159-29 Obstructing Highways and Right-of-Ways with snow.

A. It shall be unlawful for any person to leave or place any snow removed from private property in piles or rows upon the traveled portion of any highway open to public travel.

B. It shall be unlawful for any person to leave or place any snow removed from private property in piles or rows in the highway right-of-way of any highway open to public travel.

C. All costs associated with Green Lake County removing snow that is left or placed in piles or rows in the highway right-of-way from private property, or damage to Highway equipment for removing snow that is left or placed in piles or rows in the highway right-of-way from property, will be billed to the property owner responsible.

Highway Committee Recommends Approval

Submitted by Highway Committee

Roll Call on Ordinance 05-2016

Aye 14, Nay 2, Absent 2, Abstain 1

Passed and Enacted this 16th day of February, 2016

Publish February 25, 2016

Appendix G

Town of Berlin Green Lake County, Wisconsin Farmland Preservation Plan

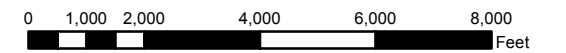
DATCP Submitted June 25, 2015
DATCP Certification July 10, 2015
Green Lake County Adoption February 16, 2016

- Farmland Preservation Areas**
- Areas of Agricultural Use and Agriculture Related Use
 - Areas of Nonagricultural Development

Note: The Farmland Preservation Maps supersede the Future Land Use Map of Green Lake County Comprehensive Plan when inconsistencies exist regarding nonagricultural development.

Map Features

- State Highway
- County Highway
- Town Road
- Railroad
- Extraterritorial Zoning Boundary
- Municipal Boundary
- Section Line
- Parcel Line
- Waterline
- Waterbody

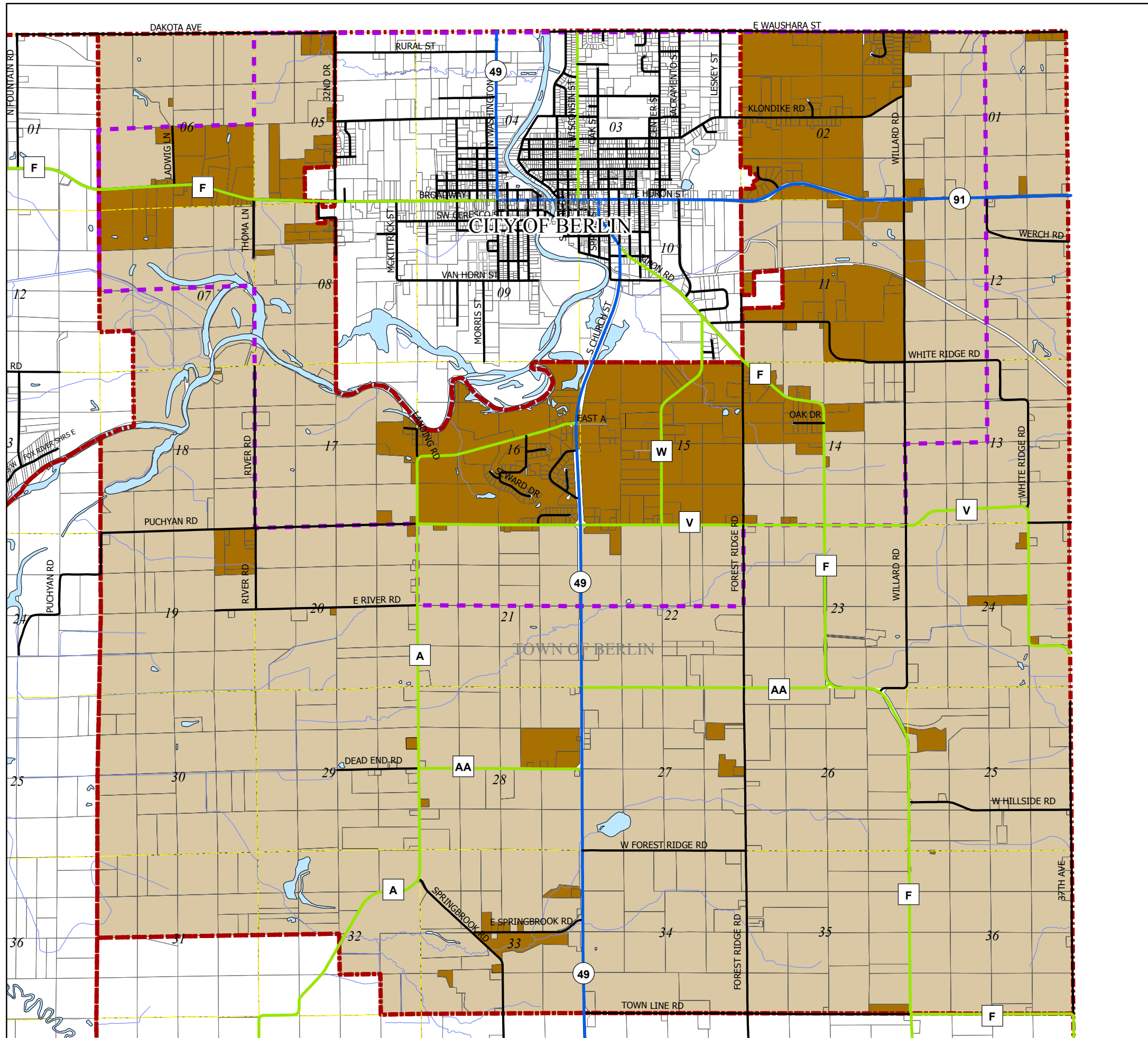


The base map was created with data from Green Lake County Land Use Planning and Zoning Department who in no event assumes any liability regarding fitness of use of the information and any application by others, is the responsibility of the user.

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arcgis10444001fpp.mxd_Adopted February 16, 2016

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Town of Brooklyn Green Lake County, Wisconsin Farmland Preservation Plan

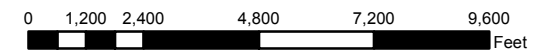
DATCP Submitted June 25, 2015
DATCP Certification July 10, 2015
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- Areas of Nonagricultural Development

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Map Features

- State Highway
- County Highway
- Town Road
- Railroad
- Municipal Boundary
- Section Line
- Parcel Line
- Waterline
- Waterbody

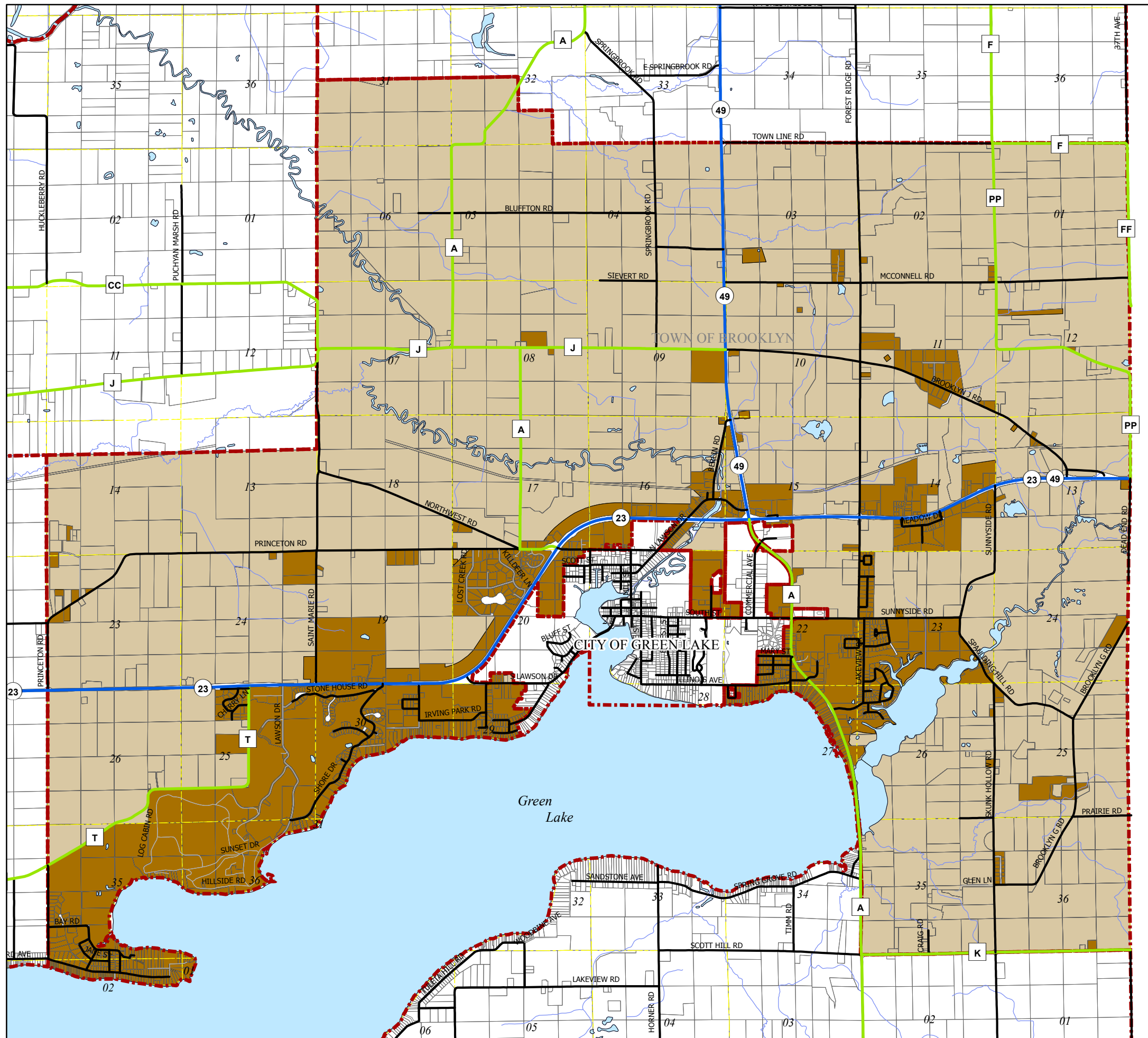


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Town of Green Lake Green Lake County, Wisconsin

Farmland Preservation Plan

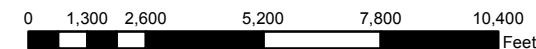
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Map Features

- State Highway
- County Highway
- Town Road
- Railroad
- Municipal Boundary
- Section Line
- Parcel Line
- Waterline
- Waterbody



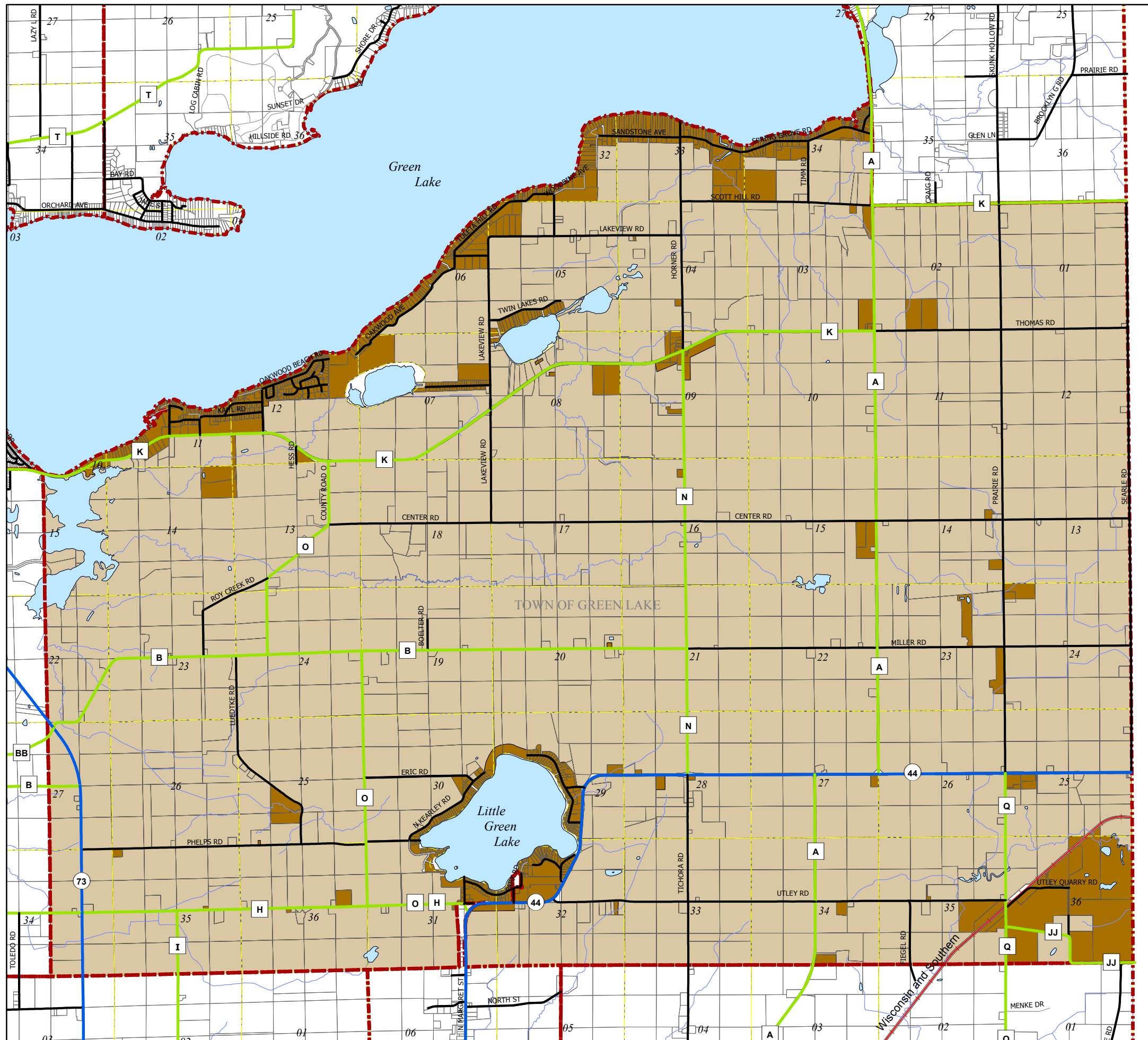
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Town of Kingston Green Lake County, Wisconsin Farmland Preservation Plan

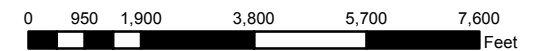
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Map Features

- State Highway
- County Highway
- Town Road
- Railroad
- Municipal Boundary
- Section Line
- Parcel Line
- Waterline
- Waterbody



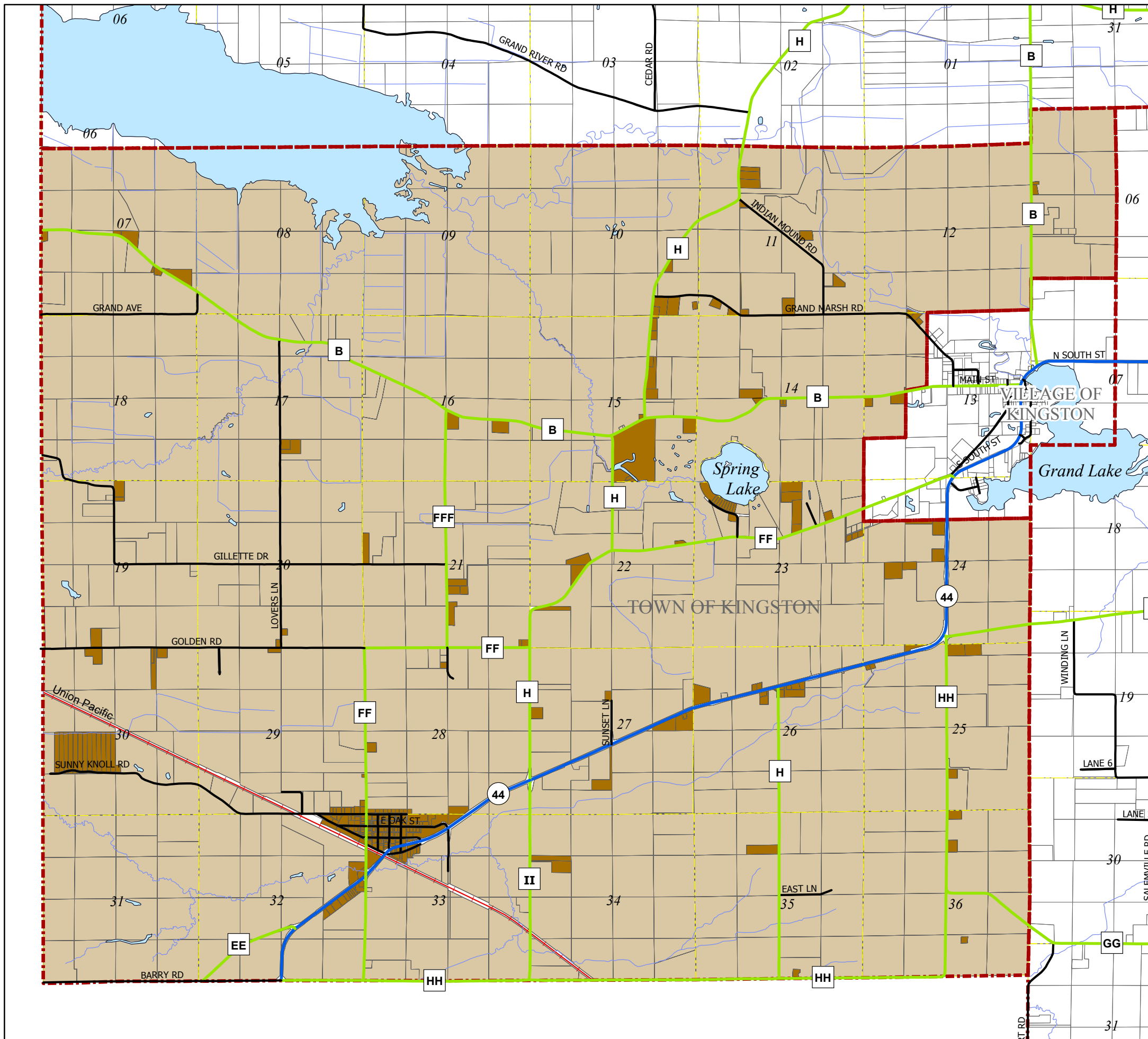
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Town of Mackford

Green Lake County, Wisconsin

Farmland Preservation Plan

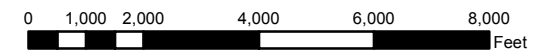
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Map Features

- State Highway
- County Highway
- Town Road
- Railroad
- Municipal Boundary
- Section Line
- Parcel Line
- Waterline
- Waterbody



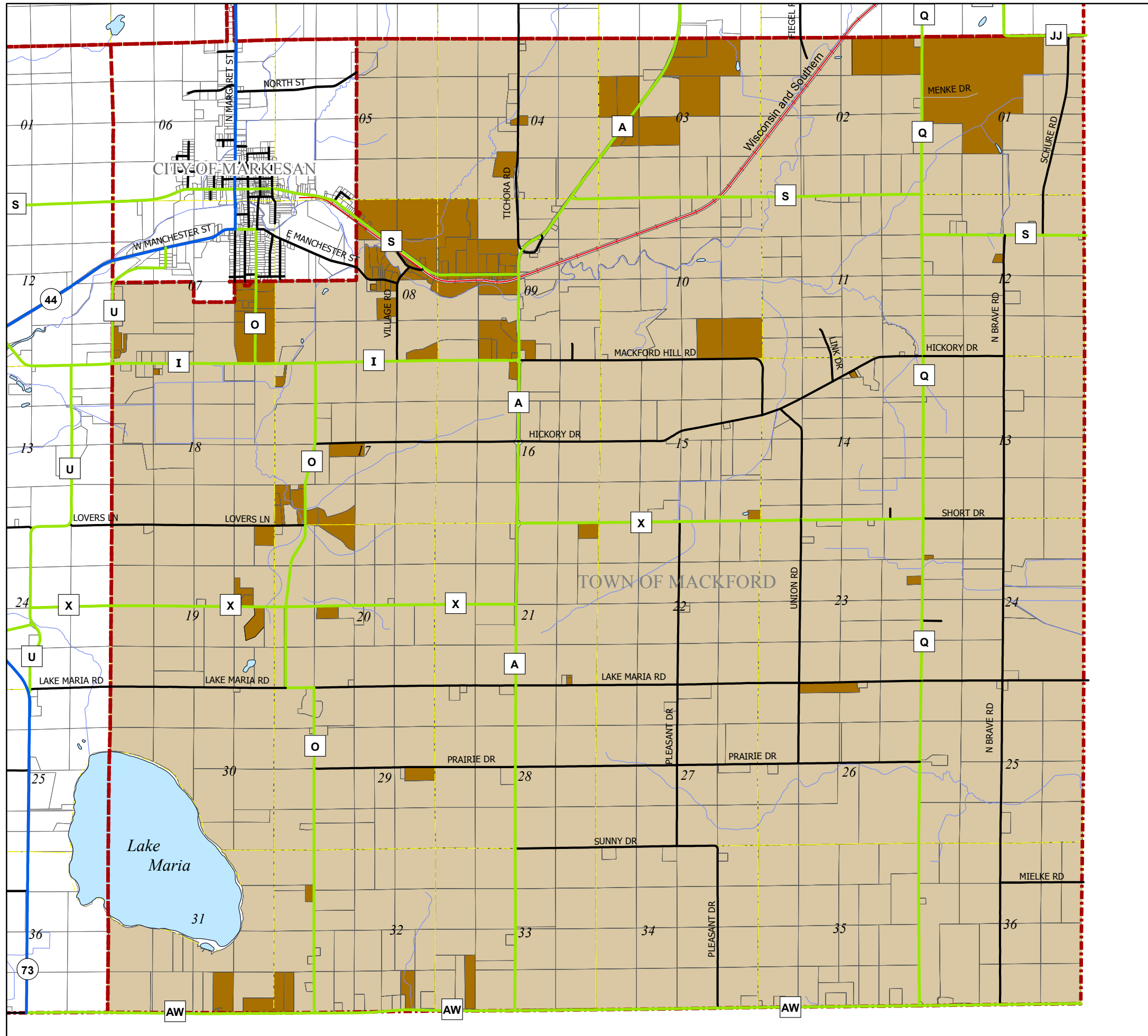
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Town of Manchester

Green Lake County, Wisconsin

Farmland Preservation Plan

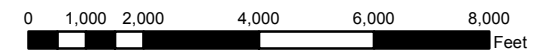
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Map Features

- (44) State Highway
- (H) County Highway
- TOWN ROAD Town Road
- Railroad
- Municipal Boundary
- Section Line
- Parcel Line
- Waterline
- Waterbody



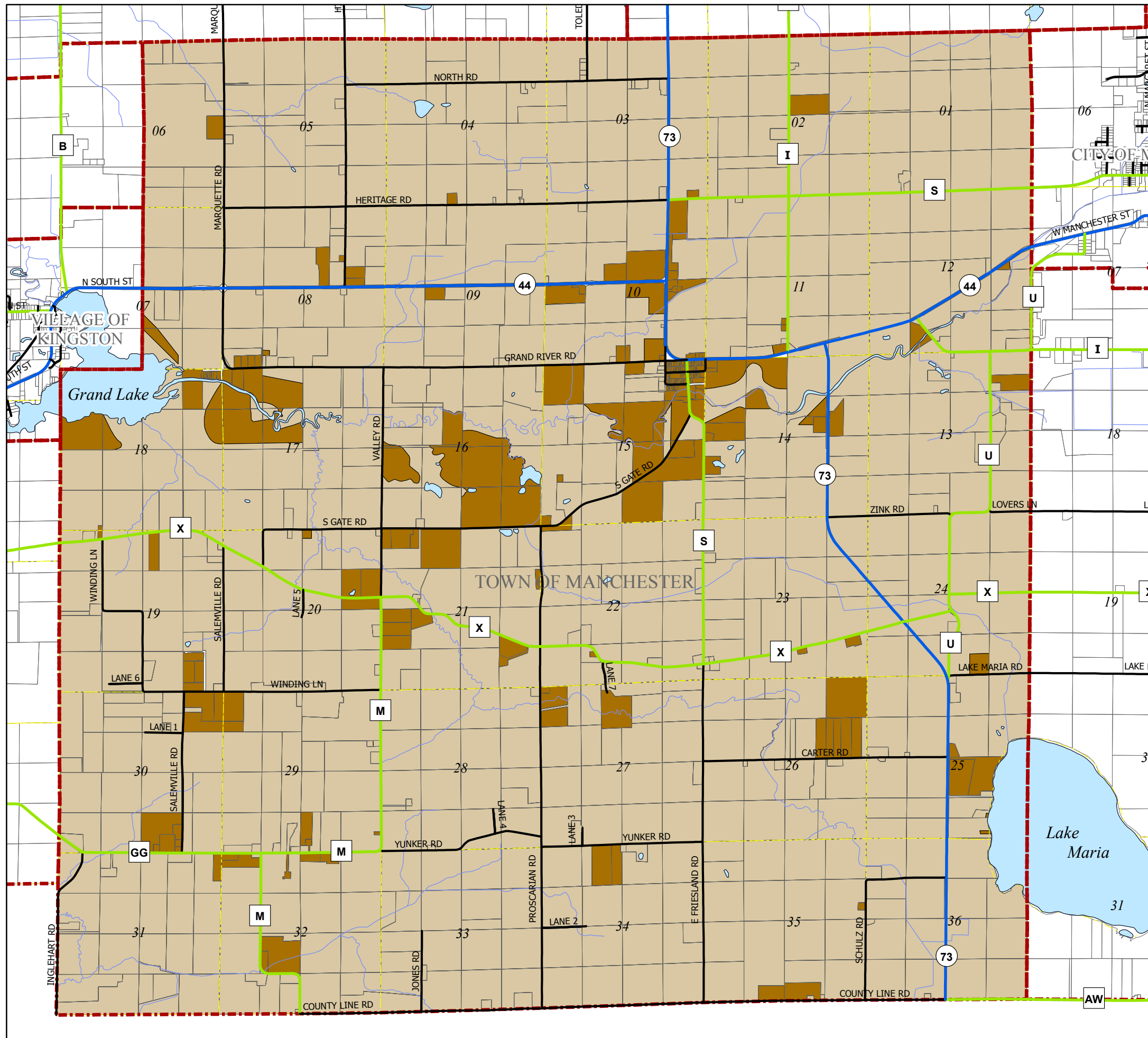
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Town of Marquette Green Lake County, Wisconsin

Farmland Preservation Plan

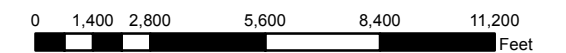
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- Railroad
- Municipal Boundary
- Section Line
- Parcel Line
- Waterline
- Waterbody

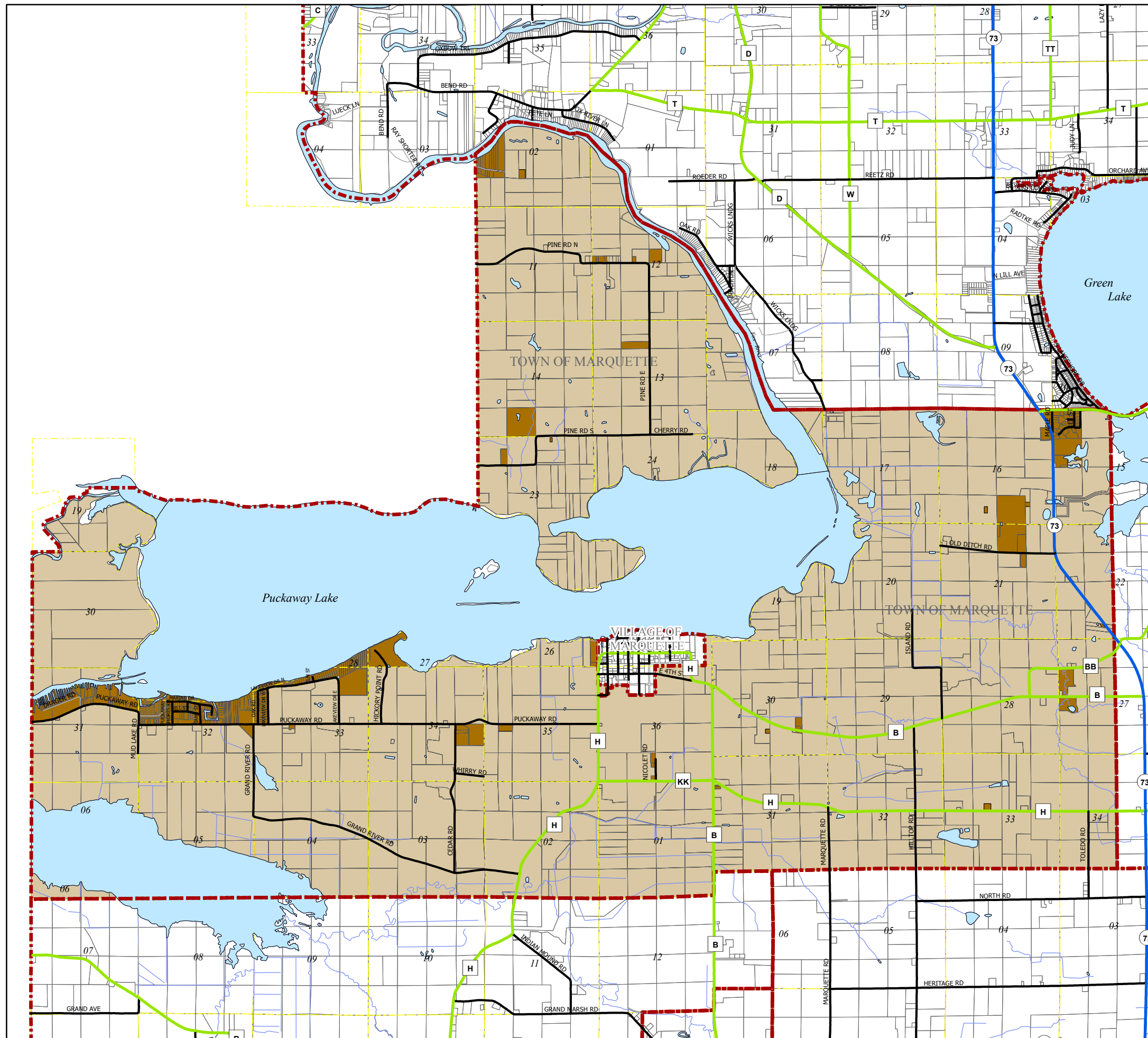


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Town of Princeton Green Lake County, Wisconsin

Farmland Preservation Plan

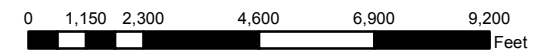
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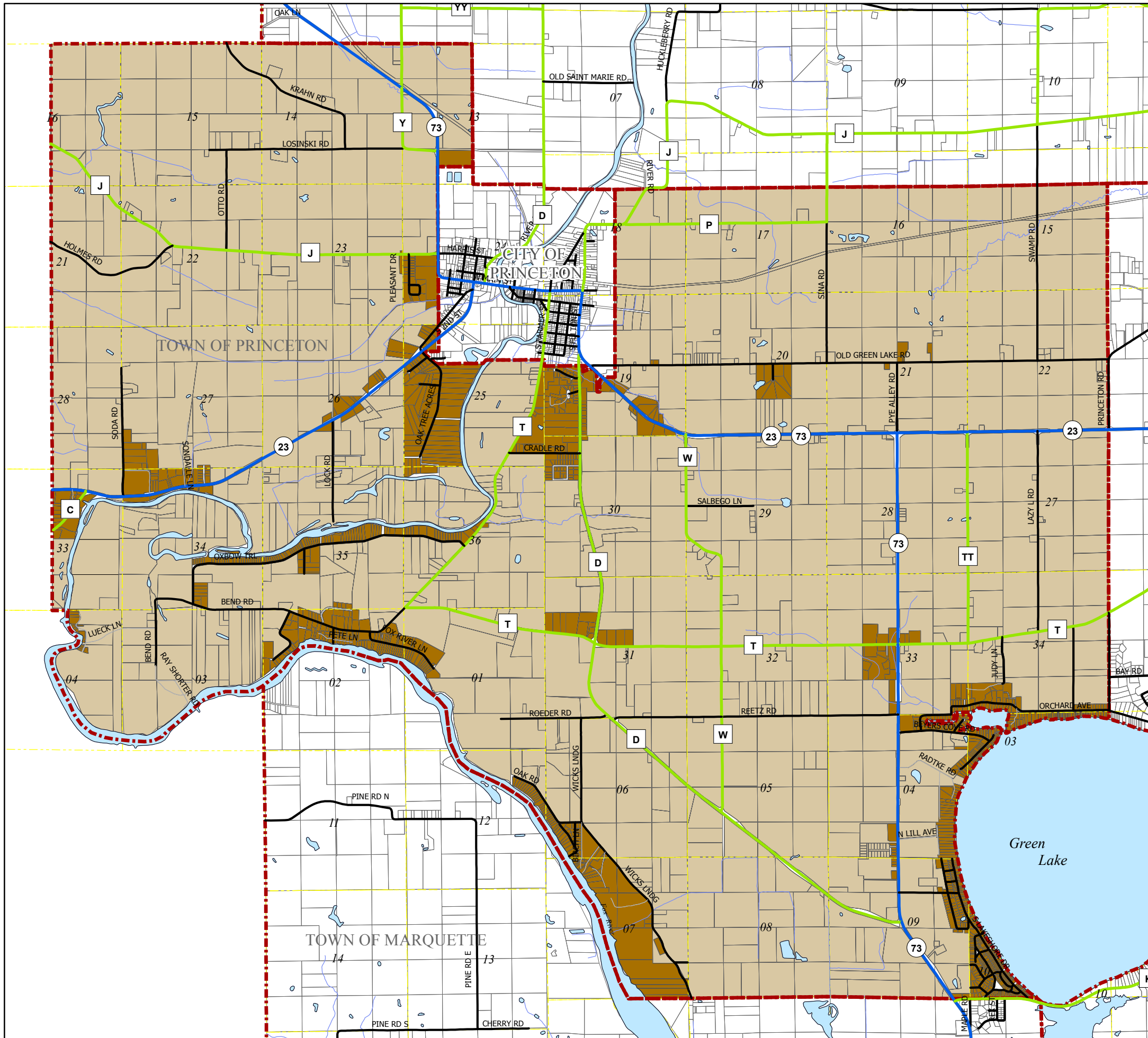


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Town of Saint Marie Green Lake County, Wisconsin

Farmland Preservation Plan

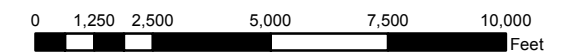
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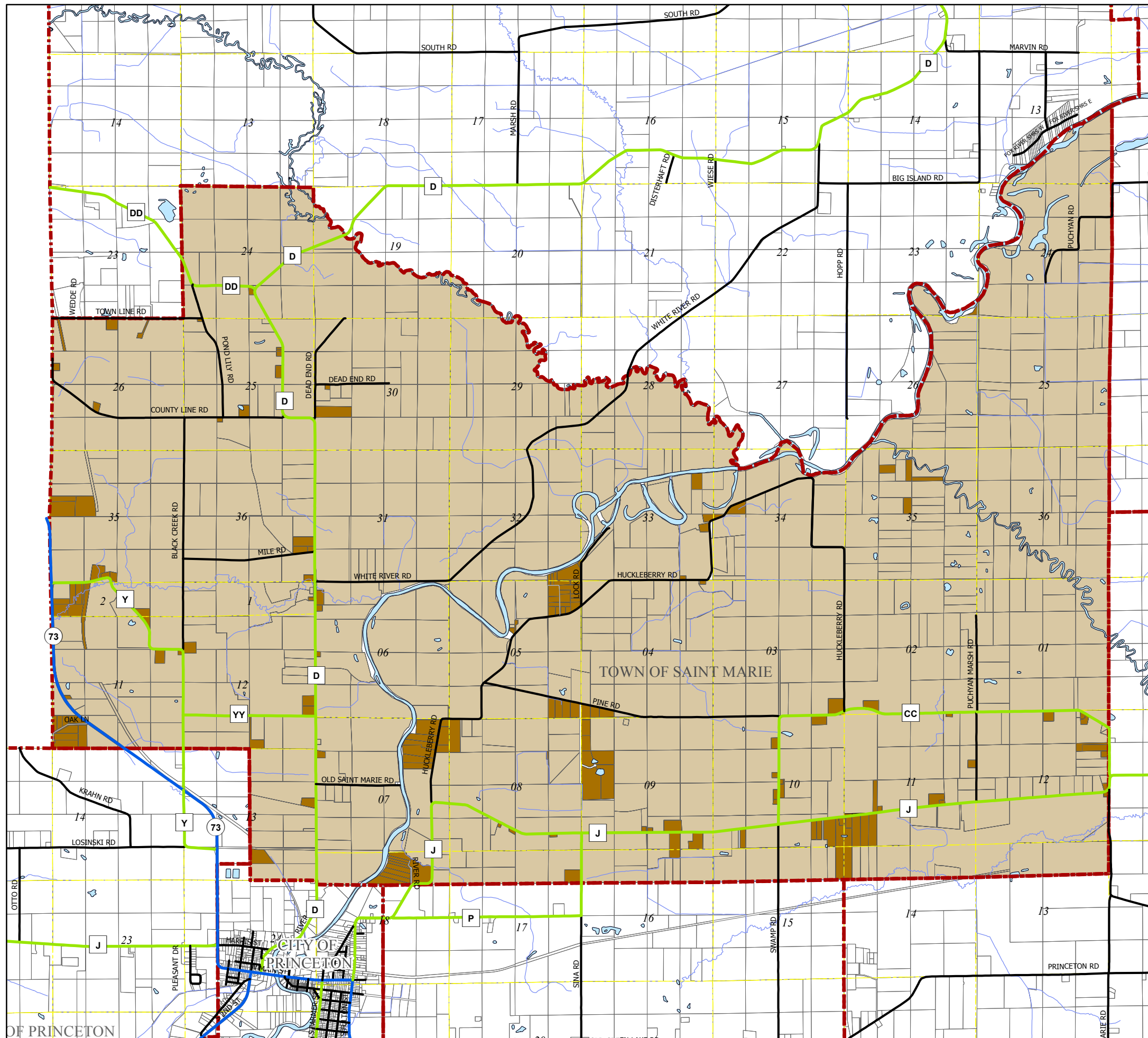


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Town of Seneca

Green Lake County, Wisconsin

Farmland Preservation Plan

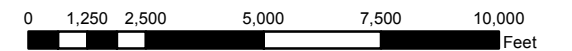
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