Final

Draft

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Princeton Township

Comprehensive Plan

TABLE OF CONTENTS

Section I. Introduction

Situated in Mille Lacs County of East Central Minnesota, Princeton Township is blessed with an abundance and variety of natural, cultural and economic resources. Located adjacent to the City of Princeton, the township benefits from a vibrant and entrepreneurial local economy that includes a strong employment base in manufacturing, health care, education and service as well as a growing retail sector of the economy. Culturally, the city and surrounding townships provide a strong "small town" and "rural" character that is becoming increasingly attractive to those seeking to escape the traffic congestion, noise, crime, and dense housing of larger urban areas. In addition, the township is part of a broader region containing a variety of natural amenities that include productive agricultural soils, numerous woodlands, prairies, rivers, wetlands and small ponds that provide habitat for waterfowl and other wildlife.

This unique combination of amenities, combined with the increasing accessibility and connectedness of small towns and rural areas to the wider world, has contributed to the growth in the population of the township over the last 10-15 years. While the growth has certainly brought many benefits to the township and surrounding area, it has also challenged leaders to find ways to balance the various infrastructure and service demands with the desire to maintain the scenic and ecological amenities that make the township so desirable in the first place.

The list of factors changing the landscape of the township includes the increasing demand for services in areas near the City of Princeton. Other trends include the rapid subdivision of areas previously viewed as undesirable or impractical for development and the expansion of new residential neighborhoods into agricultural areas where farming has been occurring for generations – raising concerns about topics as broad as water quality, wildlife habitat, groundwater contamination and the ability of farmers to continue operating as they are steadily encroached upon by urban growth.

This Comprehensive Plan is borne out of the recognition of four basic principles:

1. That growth and change affecting Princeton Township is due largely to broader regional, national and global influences over which it has little direct control and that these trends are likely to continue bringing new development and growth to the township and surrounding area;

2. That unplanned, scattered growth without a vision of where the township is heading results in greater conflict, increased taxes and public expenditures, lost opportunities and ultimately less satisfaction;

3. That the township has the responsibility to its residents and landowners to find an appropriate balance in land use issues that makes efficient use of public resources, preserves sensitive natural resources, respects the environmental and social character of an area, provides landowners with reasonable use of their property, and protects property values by minimizing conflict between various land uses, and;

4. That the township has a responsibility to ensure that its land use planning efforts are conducted in a manner that is open, accountable, and consistent so that residents, landowners and others can invest in their properties with a reasonable certainty that those investments will not be negatively affected by what happens around them.

The Planning Process

Recognizing the need to take an active role in addressing the challenges that come with growth and development, the Princeton Township Board began discussing the need to update the 1994 Comprehensive Plan covering the township of Princeton. In early 2008, the Township's Planning Commission began to gather information designed to help the Town Board identify the most important issues to address over the next two decades and a vision of what the Township should look like in 2030. The Planning Commission provided input based on their experience, expertise and ideas as to the goals and policies that the Township should adopt and the steps it should take to achieve those goals. This plan is the culmination of numerous meetings of the Township's Planning Commission and is intended as a guide for future growth and development in Princeton Township. It is an effort to define a vision of what Princeton Township would look like twenty years from now and to formulate goals, policies and implementation strategies that help achieve that vision.

While the plan is intended to plan for growth over a twenty-year timeframe, it is recognized and understood that adaptations will be necessary on a regular basis to accommodate changing conditions and new challenges. Further, it is understood that this plan does not cover all of the possible land use issues facing the Township and that future amendments to the Plan may include completely new sections.

Section II. Historic and Current Trends

Development History

Since Minnesota became a state in 1858, the patterns of growth and change have largely been driven by changes in transportation and communications technology. These various phases of technological innovations have had a significant influence both on which cities and rural areas have been able to succeed as centers of economic activity and growth as well as in the patterns and styles of development that have taken place. Each successive phase was marked by an expansion of the amount of land that was economically and socially feasible to live on or operate a business.

The Railroad Phase (late 1800s – 1920)

Small towns and unincorporated townships in east-central Minnesota, such as those in the Princeton Area, formed and grew largely due to the influence of railroad companies and the rail lines they built. These lines distributed agricultural products grown around towns such as Princeton, Long Siding, and Brickton to larger rail towns such as St. Cloud and Minneapolis/St. Paul. Due to the limited road network in place at the time, Princeton and other towns had to be built in a very compact manner that placed most homes and businesses within walking distance of the rail line running through town. As a result, Princeton Township remained, for the most part, sparsely populated farmsteads during this time period.

Princeton Township was organized May 23, 1857. The village separated from the township on March 3, 1877. Major industries were brick making and a potato starch factory.

Brickton, a village in Princeton Township, section 17, began development in 1889. The five brickyards located in the area had a capacity of 5,000,000 bricks annually. The area became well known for its tan-colored "Brickton" brick and its pinkish-colored “Princeton” brick. Brickton also had a station of the Great Northern Railway and a post office from 1901 to 1928. Its large brick industry ceased in 1929 in part because the clay resources gave out and the transportation costs became too high.

Long Siding, an unincorporated railway village in section 7 of Princeton Township (originally named Long's Siding), was named for Edgar C. Long, a lumberman and landowner. It had a Great Northern Railway station, a creamery built in 1904, a dance hall in 1907, and a number of other businesses; the post office operated from 1903 to 1954 and as a rural branch until 1959.

The ten southern townships of Mille Lacs County, Dailey, Mudgett, Page, Hayland, Milaca, Borgholm, Milo, Bogus Brook, Greenbush, and Princeton, were known as Monroe County until Mille Lacs County was established in 1860. The county was named for the large lake, called Mille Lacs, meaning a thousand lakes. Mille Lacs is the source of the Rum River, the primary waterway in Princeton Township.

The name of Rum River, which Carver, in 1766, and Pike, in 1805, found in use by English-speaking fur traders, was indirectly derived from the Dakota. Their name of Mille Lacs, Mde Wakan, translated into Spirit Lake, was given to its river but was changed by the white men to

the most common spirituous liquor brought into the Northwest, rum. The map of Maj. Stephen H. Long's expedition in 1823 has the names Spirit Lake and Rum River. Nicollet's map, published in 1843, has "Iskode Wabo or Rum R.," this name given by the Ojibwe but derived by them from the white men's perversion of the ancient Dakota name Wakan, being in more exact translation "Spirit Water." More frequently, as noted by Gilfillan, the Ojibwe name for Rum River was taken from their name for the lake and meant simply the Great Lake River.

A major contributory of the Rum River is the West Branch of Rum River, which receives Stony Brook, Estes Brook (named for Jonathan Estes of St. Anthony) and Prairie Brook. Other major bodies of water in the township are Mud Lake (crossed by the north line of section 1), Fogg Lake (at the southeast corner of section 17 – named for Frederick A. Fogg, an early homesteader), and Silver Lake (one mile east of the City of Princeton).

The Early Automobile Phase (1920-1960)
After the invention of the personal automobile, and with steadily improving road networks, the residents of Mille Lacs County and elsewhere in the state began to enter a period of new freedom and mobility. Farmers in the Princeton area became much more connected to the small towns located nearby for their daily needs and social interactions, and the growing population of Princeton and Mille Lacs County were now able to spread out into residential areas further from the railroad lines and the central business district of the city. Rather than being defined exclusively by the rail system, Princeton and its surrounding areas, including Princeton Township, were beginning to be shaped more by roads, with new businesses and residential neighborhoods being constructed in places previously inaccessible by foot or rail.

The Automobile/Highway Phase (1960 – 1980)
The third and largest phase of growth impacting Princeton Township to this point began in the late 1960s with the continued improvements to the roads in the Township. The increased ability of people to move about using personal automobiles and good roads further increased the ability of people to live and work in the Princeton area. Development patterns in the Princeton area, as in other parts of the state, began to reflect this new found freedom as "suburban" areas began to grow that contained new neighborhoods and new styles of commercial development tied to the road and highway system rather than rail lines.

The Satellite/Internet Phase (1980-current)
The Township is now in the midst of a fourth phase of growth and development that began in the 1980s and is continuing through today. Largely the explosion of internet and satellite technology that has allowed people and businesses to locate almost anywhere they like while still having the ability to reach national and international markets is driving this phase. Princeton Township (like many other townships in Central and East-Central Minnesota) began to see rapid changes in development pressures and patterns. Properties that just 20 years before had seemed unfeasible or undesirable for development were now generating significant demand. The closing or consolidation of farming operations that began largely in the 1980s, coupled with increased demand for housing in the Township, resulted in the conversion of more and more agricultural land to new housing developments. The rising cost of property, combined with low interest rates, increased the pace of remodeling projects as well as the construction of new homes.

Looking to the Future (2010-2030)
With each of these successive phases of transportation and technological advances, the pace of change and development that residents and township officials have had to address has increased remarkably. While annexation from the City of Princeton will undoubtedly absorb some of the Township's expected growth, the trend of converting agricultural and rural land to urban uses is expected to continue.

Household Income

The median household income in Princeton Township is $52,083. It is above the state median household income at $47,111. The cost of living in Princeton Township is 102.1% as compared to the National Average. The county average cost of living is 96% of the National Average. Approximately 4.7% of the residents in the Township are below the poverty line.

Table 1: 2000 Census Median Income per Household by Age

2000 CENSUS MEDIAN INCOME PER HOUSEHOLD BY AGE			
	Township	**MN**	**US**
Median household income	52,083	47,111	41,994
Householder under 25	52,917	26,585	22,679
Householder 25-34	58,750	47,442	41,414
Householder 35-44	54,375	56,902	50,654
Householder 45-54	61,875	62,245	56,300
Householder 55-64	45,625	52,450	47,447
Householder 65-74	28,958	33,041	31,368
Householder 75 and older	25,000	21,165	22,259

Employment by Industry and Occupation

Because Princeton Township has only a handful of businesses, the State of Minnesota does not release detailed employment data for the Township due to privacy reasons. However, the Census does track the types of occupations that residents have in the Township. Similar to trends around the state, the entertainment and food services industry was one of the fastest growing professions for people to work in the Township. Agriculture and manufacturing suffered losses, which again follows state and national trends. The professional jobs increased dramatically from 1990 to 2000. This can also be linked to the increased in household income and housing values. More professionally oriented people are likely moving into the Township and working outside of the Township.

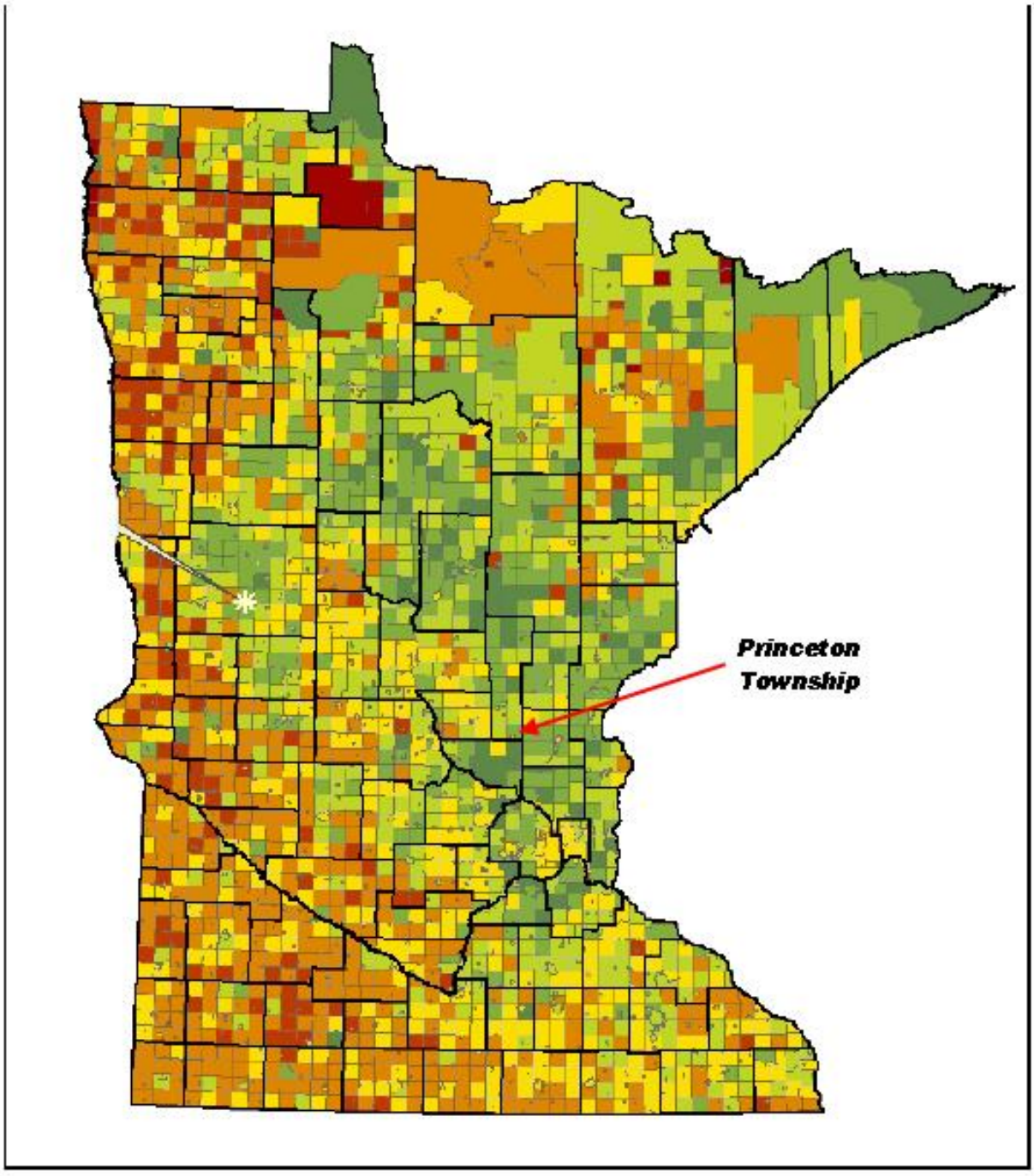
Table 2: Most Common Industries

MOST COMMON INDUSTRIES FOR MALES	
	Pct
Construction	15
Metal and metal products	10
Furniture and related products	5
Agriculture, forestry, fishing and hunting	5
Machinery	5
Educational services	4
Truck transportation	3
MOST COMMON INDUSTRIES FOR FEMALES	
	Pct
Health care	13
Finance and insurance	8
Accommodation and foodservices	8
Educational services	7
Construction	6
Social assistance	5
Professional, scientific, and technical services	4

Table 3: Most Common Occupations

MOST COMMON OCCUPATIONS FOR MALES	
	Pct
Metal workers and plastic workers	
Electrical equipment mechanics and other installation, maintenance, and repair occupations including supervisors	8
Other production occupations including supervisors	7
Other sales and related workers including supervisors	5
Farmers and farm managers	5
Driver/sales workers and truck drivers	5
Vehicle and mobile equipment mechanics, installers, and repairers	5
MOST COMMON OCCUPATIONS FOR FEMALES	
	Pct
Other office and administrative support workers including supervisors	9
Registered nurses	4
Child care workers	4
Secretaries and administrative assistants	4
Information and record clerks except customer service representatives	4
Other sales and related workers including supervisors	4
Cashiers	4

Figure 1: Minnesota Population Change



Minnesota Population Change, 1990-2000

Legend

Population Growth

- Greater than 10% Decrease
- 20% - 10% Decrease
- 5% - 15% Decrease
- 5% Decrease to 5% Increase
- 5% - 20% Increase
- 20% - 50% Increase
- Greater than 50% Increase

Population and Household Growth

Population and household growth has occurred in Princeton Township since 1970. However, household growth has been more pronounced than population growth. There are 2.83 people per household. The median age is 34.9 years.

Table 4: Population and Household Growth

Year	Population	Percent Increase	Population per Square mile	Households	Percent Increase
1970	1294		40	394	
1980	1625	25.8	51	497	26.1
1990	1601	-1.5	50	502	1.0
2000	1947	21.6	61	693	38.0
2005	2198	12.9	68	795	14.7
2010 *	2247	2.2	70	815	2.5
2015 *	2428	8.0	75	890	9.2
2020 *	2607	7.4	81	971	9.1
2025 *	2781	6.8	86	1045	7.6
2030 *	2942	5.8	91	1119	7.1
***projected**					

Housing

Housing in Princeton Township reflects the low-density rural character of the township. Nearly all housing in the Township is single-family. The lack of public wastewater treatment systems makes higher density housing less feasible. In addition, the market for higher density housing is limited by the lack of urban-related services, amenities and economic opportunities commonly associated with higher density housing. The aesthetic value of the rural atmosphere, particularly along the Rum River and West Branch Rum River corridors, has attracted higher value development.

Table 5: Housing Data

HOUSING	Princeton Township	Regional Average	National Average
Median Home Purchase Costs	$105,780	$95,634	$116,300
Median Age of Homes	19.6	31.0	27.8
Percent of Homes Owned vs. Rented	77.68%	68.57%	63.40%

Schools

Princeton Township is part of Independent School District #477. District #477 includes two elementary schools, one middle school and one high school. Each of these schools is located in the City of Princeton.

Table 6: 2000 Census Education and School Enrollment

2000 CENSUS EDUCATION				
EDUCATIONAL ATTAINMENT	**TOWNSHIP**		**MN**	**US**
	Number	**Pct**	**Pct**	**Pct**
Population 25 and older	1,242			
High school graduates (includes equivalency)	509	41.0	28.8	28.6
Some college, or associate's degree	414	33.3	31.7	27.4
Bachelor's degree	103	8.3	19.1	15.5
Master's, professional or doctorate degree	57	4.6	8.3	8.9
SCHOOL ENROLLMENT				
Population 3 years and over enrolled in school	540			
Preschool and kindergarten	55	10.2	11.9	11.9
Grades 1-12	429	79.4	66.3	65.3
College	56	10.4	21.7	22.8

Travel Time to Work

All across the country, people are driving farther and taking more time to get to work. Princeton Township conforms to this trend. In 1990, only one percent of the workforce traveled more than one hour to get to work. By 2000, that number increased to seven percent, which is a significant increase. Moreover, the number of people working close to home, less than five miles, decreased from five percent to less than one percent. As more people retire or simply move to the Township, the travel time to work will rise as people retain their jobs in larger metropolitan areas such as St. Cloud and the Twin Cities.

Table 7: 2000 Census Transportation Data

TO WORK	**TOWNSHIP**		**MN**	**US**
	Number	**Pct**	**Pct**	**Pct**
Workers 16 and over	1,104			
Public transportation	0	0	3.2	4.7
Car, truck, van or motorcycle	985	89.2	88.0	88.0
Walk	43	3.9	3.3	2.9
Work at home	72	6.7	4.6	3.3
COMMUTING TIME (Minutes)	**TOWNSHIP**		**MN**	**US**
Average travel time to work	32		22	26
Average travel time to work using public transportation	0		35	48
Average travel time to work using other transportation	32		21	24

Land Values

Table 8: Princeton Township Estimated Value per Acre

Year	Farmland Value per Acre	Tillable Value per Acre	Timberland Value per Acre	Green Acres Market Value per Acre	Green Acres Taxable Value per Acre
1993	$443	$495			
1998	$717	$2,774	$877		
2003	$1,421	$993	$2,334	$1,560	$1,185
2008	$3,252	$2,774	$4,253	$3,126	$1,836

Geography

Table 9: Princeton Township Geography

PRINCETON TOWNSHIP	
Area	
- Total	32.57 square miles
- Land	32.17 square miles
- Water	0.4 square miles
Elevation	961 feet
Coordinates	45°35′52″N 93°34′5″W

Section III. The Future

Current and Future Trends

As Princeton Township explores the issues and trends that it can expect to have an impact over the next twenty years or more, it is important to consider what has been occurring in the recent past for both in the Township itself and in surrounding communities. Since the trends affecting the township are occurring largely on a regional basis, it is essential that the township's leaders and residents understand that what occurs in Princeton Township is not only affected by what is occurring within its borders, but also beyond its borders. This requires looking at what has been occurring in the City of Princeton, other surrounding townships, and even more broadly in surrounding counties and in nearby metropolitan areas such as St. Cloud, and Minneapolis/St. Paul. Thus, the trends examined in this section look at Princeton Township and compares these to those in surrounding areas.

Three primary demographic characteristics are especially important to consider in helping the township decide how best to plan for its future. These are:

1. How many people will be living in the Township in the future?
2. What type of characteristics will that population have and how will it affect the type and amount of infrastructure and services demanded?
3. What will be the source of employment and income for the population of the township?

Knowing the answers to these questions is not an exact science by any means. It is possible to make reasonable predictions that will help to provide the basic information needed to plan ahead for the various infrastructure and service needs of the township as well as to guide development in ways that preserves the unique cultural, economic and environmental resources within the township.

Annexation and Land Use

The rural character of the Township was repeatedly stated as one of the most important values of Township residents. Residents enjoy the undeveloped, low density, agriculturally based natural appearance of the Township and the many benefits attributed to this setting, which includes privacy, peacefulness, green spaces, and a clean environment. The rural setting, however, is a topic of great concern because of the threat of being annexed from the City of Princeton, the growing population, and the increasing level of small lot developments.

While most of the Township is out of the range of annexation from the City of Princeton, a portion of the Township has already been annexed and the City of Princeton Comprehensive Plan includes a significant portion of the Township as a potential growth area. Although it is unlikely that all of the Township will be annexed anytime soon, annexation is a concern.

While forced annexation may be a possibility, many properties that are annexed by the City of Princeton are done so by request of the property owner or with property owner's consent. Most property owners that request annexation seek to maximize the profit on subdividing

their land. By requesting annexation, property owners can often build at higher densities, because of the availability of municipal utilities, which increases profits.

The problem is less of annexation and more about the development patterns that occur on annexed lands and other lands in the Township. Annexation brings higher density development, more traffic, less vegetation and animal habitat, and makes way for expansive lawns and pavement. These development patterns degrade the rural character of the area, in addition to the natural resources and privacy residents of Princeton Township value. Residents do not want to see these types of development patterns engulf the rest of the township.

The Township is facing development pressure. The challenge for the Township is to employ strategies that maintain the rural character while accommodating a growing population without compromising the underlying rural character of the Township.

Creating a Vision

A township vision is a shared idea of what a township would like to become over a period of years. The vision may include a broad range of issues – including how and where new development occurs, a desire to preserve unique cultural or ecological features, or an attempt to revitalize a township's employment base or housing stock. In essence, a township vision answers the question "What kind of township do we want to create over the next twenty years?"

While the process of developing a shared township vision can be difficult, it is one of the most important factors in determining whether a township is able to address challenges and respond to opportunities in an effective manner. Without defining a vision of where it should be going, township leaders – whether they are in business, government, service organizations, non-profits or simply a group of concerned residents - end up reacting to change or working in an ineffective, disconnected manner.

By contrast, a well-defined vision and plan for achieving that vision puts a township in a position to manage change and coordinate activities throughout the township to achieve much more than they otherwise would. While there are many economic, social and ecological factors over which a township has little control, there is much that a township can do to shape and guide its future.

The following Vision Statement reflects the desired state of Princeton Township in 2030.

PRINCETON TOWNSHIP VISION STATEMENT

Princeton Township, in 2030, will be a vibrant, safe and attractive township that will accommodate residential, commercial and industrial growth in an orderly manner, plan for future growth, and maintain areas where farming and other agricultural uses can continue to be productive. The Township will continue to have an effective, responsive and efficient government that makes decisions in a realistic manner.

Section IV. Goals & Strategies

Through a series of meetings, goals and strategies were developed to address the issues that face Princeton Township and to provide direction to future planning in the Township. The goals and strategies fall into the following categories:

- Township Facilities and Services
- Land Use
- Housing
- Commerce and Industry
- Transportation
- Environment and Water Resources
- Parks, Open Space and Recreation
- Annexation
- Governance
- Miscellaneous

Township Facilities and Services Goals and Strategies

Goals

- Provide efficient and responsive basic services to residents and local businesses.
- Maintain a limited Township budget and prioritize township services.
- Work to make financially sound decisions that do not lead to unplanned tax increases.
- Work with the City of Princeton Fire Department to place a substation in the Township.

Strategies –

- Communicate information and issues to residents in a timely, regular and thorough manner.
- Incorporate and encourage Township resident participation in township newsletters and events.
- Plan for major improvements, where they will be needed, and work to secure the property needed for those improvements.
- Perform a cost-benefit analysis on new developments to ensure that the Township is not taking on a financial burden that it is not equipped to handle.
- Based on available information, anticipate state and federal mandates in the budget.

Land Use Goals and Policies

Goals

- Protect the rural character of the Township through growth management strategies.
- Protect and preserve the Rum River corridor and the West Branch Rum River Area.
- Protect a base of long-term agricultural land, as a source of open space, rural character and economic livelihood.
- Encourage the continuation of commercial farming as a viable land use and significant economic activity.

- Establish land use patterns that preserve and protect the natural qualities and existing character of the landscape.
- Provide opportunities for new residential and commercial development that are consistent with the above Township Comprehensive Plan.
- Maintain and enhance the value of agricultural, residential and commercial property.
- Ensure that any Township land use regulation meets the goals of the Comprehensive Plan and is understandable, fairly applied, and has a clear process for approval.
- Protect and maintain area wetlands as a critical watershed resource.

Strategies – Agriculture

- Designate areas for long-term commercial agricultural use, based upon agricultural land evaluation and site assessment criteria.
- Permit and encourage agricultural uses in areas not specifically designated for long-term agricultural use.
- Educate residents on the potential conflicts or incompatibilities that can arise between development and agricultural uses.
- Encourage the development of a farm interpretive center or other educational opportunities regarding farming in the Township.
- Support the rights of farmers to farm.
- Maintain a system of disclosure for prospective landowners regarding agricultural practices.
- Encourage residents to enroll in the Conservation Easement Program (CEP) to protect open spaces on agricultural lands.

Strategies – General Development

- Allow residential densities to be at levels consistent with the character of existing development.
- Encourage and explore land use options related to preservation of open space.
- Maintain a Township map that identifies existing development.
- Require that all new development proposals consider the impact of new development on existing homes.
- Consider identification of areas in the township where mineral extraction is most appropriate, and which minimize conflicts with commercial, agriculture, residential areas, environmentally sensitive areas, and areas with aesthetic value.
- Encourage and promote land regulations that preserve property values.
- Require buffers of vegetation around developments.
- Upgrade roads in areas likely to develop and likely to have increased traffic flow.
- Ensure that there is a consistent distribution of information to all residents in the Township.
- Enforce codes and educate the residents about land use regulations.
- The Township Staff will evaluate the cost of development, through a cost-benefit analysis, that the Township will face in the future for all proposed developments.
- Require developers to establish a homeowner's association where the proposed development includes private roads or common driveways. The association would be responsible for maintenance of the private roads or common driveways. Require the developer to pay for the construction of public roads in new developments.
- Use the Township's power to increase land use regulation standards where applicable.

- Create natural buffers around wetlands.
- Do not count wetlands as buildable areas when computing minimum lot sizes.
- Require developers to sign a Developers Agreement with the township.

Strategies – River Corridors

- Enforce mandatory river corridor development standards for the Rum River and West Branch Rum River corridors.
- Prevent commercial or industrial uses from negatively impacting the river corridor areas.
- Apply setback and height restrictions and encourage careful site design to maintain the ability to view the river corridors from existing open space and developed areas.

Housing Goals and Policies

Goals

- Retain the low-density, single-family residential and rural character of the Township.

Strategies –

- Enforce all applicable building code standards to ensure housing quality.
- Encourage the rehabilitation of the existing housing stock as a source of affordable housing.
- Participate in programs that will enhance housing opportunities for senior citizens.
- Maintain residential development standards that do not preclude the provision of moderate cost housing.

Commerce and Industry Goals and Strategies

Goals

- Support the economic viability of farms and farm-related businesses.
- Encourage economic opportunities within designated commercial/industrial areas.
- Ensure compatibility between commercial and non-commercial land uses.
- Make the most of the area's assets, including close proximity to medical, cultural, and educational centers, natural beauty, enhance the quality of life for residents and visitors, build up the local workforce, and attract new businesses.
- Attract new businesses that will enhance the township by providing quality jobs and needed services without conflicting with other goals in the comprehensive plan.
- Encourage home-based businesses that are compatible with residential neighborhoods and have minimal environmental impacts in order to provide employment opportunities, promote start-up industries, and provide services to the public.
- Promote infrastructure improvements, such as internet services.

Strategies –

- Require site planning and building design that result in adequate site buffering, screening, landscaping, circulation, parking, and safety.
- Regulate commercial signage so that it does not detract from the rural quality of the Township.

- Limit mineral extraction to designated areas that prevent or minimize environmental and aesthetic impacts on adjacent properties and the Township as a whole.
- Provide brochures at real estate offices and establish an on-line presence to emphasize the Township's economic assets.
- Encourage new businesses that enhance and do not detract from the assets valued by the residents.
- Work to lower costs for new businesses to operate in the Township by providing decreasing infrastructure costs and investigating venture capitalists that support new businesses.
- Establish a local Economic Development Authority (EDA) that actively assesses township needs and pursues new businesses that meet those needs.
- Make sure that the Comprehensive Plan is available to potential business owners.
- Attract young professionals to the area by establishing relationships with area elementary, high-school, college and graduate school career services departments.
- Support the Princeton Area Chamber of Commerce in development of a map of surrounding businesses, services and schools for newcomers.
- Provide clear definitions to determine whether or not a home occupation should relocate to a commercial area and work with local business owners to ensure a smooth transition that is beneficial to both parties.

Transportation Goals and Strategies

Goals

- Maintain a safe, cost-effective, efficient and environmentally sensitive rural road transportation system.
- Accommodate the expansion of transit, rideshare and dial-a-ride programs.
- The Township government should work to keep roads adequately maintained and to make financially sound decisions that do not lead to unplanned tax increases for road maintenance or other services**.**
- Obtain road easements from all property owners on township roads.

Strategies –

- Require that new roads shall meet Township "Standard Specifications for New Roadway Construction", as amended.
- Require direct access to a public road for residential uses in the agricultural area.
- Encourage development designs that minimize the need for new roadways.
- Provide information to residents about transportation alternatives, such as park-and-rides, rideshare programs, and dial-a-ride programs.
- Coordinate transportation planning and system improvements with neighboring jurisdictions and the Minnesota Department of Transportation.
- Develop priorities to improve the existing transportation system.
- Require sufficient escrow with plats to make sure that road work is completed.
- Identify roads that need to have more capacity in the future and build that into the Township's budget and capital improvement plans.
- Plan for more growth where roads are in place, especially along roads that already have higher traffic capacity.
- Enforce and increase road standards so that roads are built to last.

- Charge a fee for the Township's inspection of new roads being constructed.
- Post signs on roads that designate the weight capacity of the road. Enhance enforcement of load limits to prevent excessive road damage.
- Require property owners to sign road easements upon a property change occurrence.

Environment / Water Resources Goals and Strategies

Goals

- Protect environmental systems from harm.
- Protect the environment from air, noise, and light pollution.
- Maintain and enhance the natural amenities of the Township for existing and future residents.
- Protect surface waters and wetland areas to protect natural habitats, ground water quality and aesthetic qualities.

Strategies – Water Resource Management

- Educate residents and commercial landowners about practices that preserve and improve water quality; and encourage their use.
- Restrict or prohibit development on shoreland and floodplain areas, wetlands, and other natural features that serve important environmental functions.
- Enforce development standards consistent with soil suitability, steep slopes, and ground water sensitivity.
- Enforce development standards consistent with the Wetlands Conservation Act.
- Support the Mille Lacs Soil and Water Conservation District where the Township has membership and input on the operation of the district.
- Do not permit mining operations that allow chemicals to enter the groundwater.
- Identify problem septic systems and work to bring all individual sewage treatment systems (ISTS) up to code.
- Develop and implement an ISTS management strategy for all properties.
- Educate citizens about the problems ISTS and private land use practices (like landscaping and fertilizing) pose to watersheds and groundwater.

Strategies – Erosion and Sedimentation Control

- Development should be suited to site, soil conditions and existing drainage patterns.
- Minimize runoff rates and maximize absorption of water.
- Natural erosion control is preferable over structural.
- Erosion and sediment control should take place prior, during and after site construction.
- Preserve quality of surface water runoff and ground water recharge.
- Fill should be stabilized with appropriate plant material.
- Wetlands and other water bodies should not be used as sediment traps.
- Detention ponds for temporary water storage should be used when practical.
- Retaining walls should be no higher than five (5) feet and be constructed of wood or natural stone. If walls are terraced, space between terraces should be at least fifteen (15) feet and heavily planted.

Strategies – Environmental Preservation

- Comply with all local, county, state, and federal regulations for activities occurring in naturally or environmentally sensitive areas.
- Encourage the preservation and restoration of native vegetation in areas not used for agricultural purposes.
- Educate residents on the opportunities for recycling within the Township and the County.
- Encourage growth and development in areas where roads are already in place. This method will help to prevent habitat fragmentation in addition to reducing the need for new road construction and maintenance.
- Maintain a responsive comprehensive plan and accompanying ordinances to protect rural areas.
- Educate residents about the environmental assets that are within the Township and what they can do to help protect those resources.
- Educate residents about the environmental and health impacts of burning household waste. Work to increase enforcement on the illegal burning of household waste.
- Maintain public lands in public ownership. Work to prevent lands from being sold to private owners.
- Encourage re-vegetation and management of areas to restore native habitat and natural aesthetic qualities that contribute to environmental quality.
- Encourage and support tree planting and restoration efforts.
- Encourage through development incentives, the preservation and management of all natural resource amenities.
- Establish and maintain conservation areas for wildlife management and education and scientific purposes.

Parks, Open Space and Recreation Goals and Strategies

Goals

- Provide recreational opportunities for all residents of the Township.
- Enhance park and recreation areas of the Township.
- Work cooperatively with other entities to identify potential trails.
- Work to preserve hunting opportunities within the Township while safeguarding Township residents.

Strategies –

- Require the dedication of park or open space land, or cash in lieu of land, in conjunction with the subdivision of all properties.
- Accept land gifts or require land dedications in areas with potential open space, natural feature or habitat qualities.
- Identify potential trail corridors.
- Encourage developers to provide trails and access to public trails.
- Work with the City of Princeton on a coordinated trail plan that connects the regional trail from Elk River to points within the City of Princeton to extend the trail north through the township.
- Consider the promotion and preservation of contiguous open space including green infrastructure and wildlife corridors.

- Encourage tax-forfeit land to be used for public purposes.

Annexation Goals and Strategies

Goals

- Position the Township so that it is thoroughly involved in annexation decisions by adjacent municipalities.
- Ensure that all annexations are done with the property owner's agreement and that properties are only assessed for improvements where they are requested.

Strategies –

- Work with neighboring townships to work together on annexation and present a united front.
- Support property owners who want to fight being annexed.
- Negotiate payments with the City of Princeton in lieu of lost tax base.
- Establish orderly annexation agreements with City of Princeton.
- Encourage property owners to work with the Township ahead of the annexation process.
- Create a group to meet with the City of Princeton and maintain open lines of communication.
- Support legislation that grants Townships more authority in the annexation process.
- Appoint a liaison to attend city and county meetings to keep up to date on current events in the region.
- Develop a media strategy for politically opposing forced annexation.
- Lobby the County Board for assistance, both personal and with the media.
- Communicate fully with those residing in areas where annexation would likely occur.
- Communicate with officials from the City of Princeton about annexation requests and processes.
- Present the Township's plan to those likely to request annexation and inform them of development options available to them without annexation.
- Increase communication with the County officials.
- Hold a Township public hearing on all annexations.
- Use a mediator to resolve cases of conflict.
- Educate the City of Princeton about sprawl and the costs of annexation.
- Keep detailed records of any annexation discussions or proceedings and make the records available to the public.

Governance Goals and Strategies

Goals

- Explore and implement methods to increase public participation in and/or understanding of Township decision-making.
- Work to establish better communication between the Mille Lacs County government and surrounding townships and city governments to ensure that the Township's concerns are addressed in future planning.

Strategies –

- Consider establishing a regular Township newsletter to inform residents of decisions the Township is facing and how the residents can get involved.
- Explore other options to increase public participation, such as holding certain meetings on Saturdays, e-mail distribution lists, newspaper advertisements, etc….
- Develop educational materials to help inform residents and landowners of the importance of township government.
- Attempt to be as proactive as possible to address land use and other issues before they become problems. When issues generating significant public participation arise, use those opportunities to educate the public about the importance of becoming involved as early as possible.
- Review existing public notice policies to consider expanding the number of landowners notified of land use issues, simplify public notice language, and more clearly explain how they can become involved.
- Work to get the County to adopt the Princeton Township Comprehensive Plan as an official part of the Mille Lacs County Comprehensive Plan.
- Increase the notifying radius for public hearings to compensate for the larger lots in rural areas to ensure that a sufficient number of residents are notified of land use public hearings.
- Keep the Comprehensive Plan updated in a timely manner to ensure that the Plan is addressing pertinent Township needs.
- Request a visit from County, City and other Township personnel on a periodic basis to inform local residents on changes at the various bodies of government and other information that affects Princeton Township.
- Send a representative of the Township to County, City and other Township meetings as needed to ensure a continued Princeton Township influence on decisions made by the various bodies of government.

Miscellaneous Goals and Strategies

Goal

- Work to keep Princeton Township a safe and peaceful place to live.

Strategies –

- Develop ways to control traffic speed and development density to make residential areas safer.
- Educate people on how to report crimes anonymously.
- Improve road connectivity for safety purposes.
- Form a neighborhood watch and coordinate with the Mille Lacs County Sheriff's Department.
- Educate residents about the proliferation of methamphetamine use and production, particularly among teenagers.
- Maintain visibility along roadways, especially at intersections, by regularly trimming vegetation in roadside ditches, especially on high traffic roads.
- Develop signage delineating public lands. Many public properties are not clearly marked and residents either do not know where public lands are or whether they are crossing onto private property.

- Construct small parking areas to provide access to public lands.

Goal

- All properties in the township should maintain a basic level of appearance that is neat and non-offensive.

Strategies –

- Limit the accumulation of trash and other refuse on properties in the Township.
- Institute township garbage pick-up or cleanup days.
- Create a Township ordinance that regulated the maintenance of clean property appearances, focusing mostly on old cars, junk piles, and potential health hazards.
- Create a volunteer cleanup committee to help residents improve the appearance of their properties.
- Create fence and vegetative screening requirements for some uses that may be nuisances to neighbors.
- Partner with the county and other groups to clean up problem properties.
- Inform residents on how to anonymously report visual and other nuisance violations.

Section V. Future Land Use

Land Use Plan

How the land is used, whether for homes, recreation, farming or business, can affect both the natural resources and adjoining landowners. Managing the public and private use of land can help to prevent misuse of the land, while maintaining the rural character of the township. The intent is not to control a person's rights relative to their land, but to promote the general welfare of the public.

Managing land use has been a practice since before the advent of zoning. Local officials have the powers, including zoning, which provide them with the tools to manage land while protecting the health, safety, and general welfare of the public. Zoning is the primary means of implementing plans and affecting change in a community.

In a rural environment where central water and sewer are not available, the need to manage the use of land is critical. Sensitivity to natural constraints, such as poor drainage, will reduce the impact of development on adjoining landowners. The lack of public water and sewer may reduce the range of possible land uses.

Princeton Township will have a land use pattern that:

- Makes efficient use of existing public infrastructure and services
- Separates conflicting land uses into distinct areas of the Township
- Preserves and enhances scenic landscapes and fragile natural resources
- Maintains the Township's rural and small town character while allowing for orderly growth.

The Township intends to build upon the existing character of the township. Land use categories set the stage for plan implementation strategies, including the zoning and subdivision ordinances and any capital improvements. The majority of the land is designated as Agriculture Conservation, while most of the rest of the land is designated as River Conservation. A small portion of the township is designated as Commercial/Industrial. Township land use policies support these designations.

Land Use Categories

- Agricultural Conservation
- R1 Residential
- R2 Residential
- Rural Residential
- River Conservation
- Commercial / Industrial

Table 10: Approximate Land Use Acreage by Zoning Plan

Zone Type	Sub Type	Acres	Acres
Agricultural Conservation		12080	
R1 Residential		200	
R2 Residential		600	
Rural Residential		2760	
River Conservation			
RC 1	Transitional River		1600
RC 2	Wild & Scenic River		2680
River Conservation **Total**		4280	
Commercial / Industrial		660	

Agriculture Conservation Designation

The primary intent of this designation is to preserve and protect the decreasing supply of farmland, and support the continuation of agricultural uses. The low density of residential use in this area (not more than two single-family dwelling per quarter-quarter section) assumes that no township-wide centralized sewer or water facilities are available, and that private wells and septic systems would be required to service residences. Agricultural uses of land allowed in this district include small part-time, hobby, and/or specialized farms, as well as the more traditional crop and livestock farms.

Table 11: Princeton Township Estimated Total Acres

Year	Sum of Farmland Acres	Sum of Tillable Acres	Sum of Timber-land	Sum of Green Acres
1993	17,035	10,433		
1998	15,158	8,364	52	
2003	14,443	5,894	92	207
2008	14,028	4,816	77	6,614

The following uses require a conditional use permit in the areas designated for agriculture conservation:

- Public or Private institutions of an educational, philanthropic or charitable nature,
- Cemeteries and churches,
- Public and private schools,
- Parks, playgrounds, and golf courses,
- Township, private or public school district owned or controlled recreation and community buildings,
- Public utility services,
- Mining,
- Home occupations,
- Dog kennels, and
- Land application of wastewater treatment sludge

All other uses are prohibited.

The Township understands the concerns for public health and safety as it relates to some agricultural operations, such as feedlots. The Township follows the performance standards for animal feedlot operations as set forth in the State of Minnesota statutes and rules.

R1 Residential Designation

The R1 Residential Area is an area of the township that provides opportunities for smaller building lots. The maximum residential density in this area is one home per 1.25 acres of upland. This character of this area is intended to be a mix of single-family dwelling and related accessory uses, gardening, orchards, berry patches, nurseries, and state licensed residential facilities.

The following uses require a conditional use permit in the areas designated for R1 Residential designation and require 2.5 acres except home occupations:

- Public or Private institutions of an educational, philanthropic or charitable nature,
- Cemeteries and churches,
- Public and private schools,
- Parks, playgrounds, and golf courses,
- Public utility stations,
- Home occupations

Pole Barns are permitted with restrictions. Building materials of any accessory structure shall conform to the material of the residential structure existing on the lot. All other uses are prohibited.

R2 Residential Designation

The R2 Residential Area is an area of the township that provides for lower density housing than the R1 Residential designation. The maximum residential density in this area is one home per 2.5 acres. This character of this area is intended to be a mix of single-family dwelling (including duplexes and triplexes) and related accessory uses, gardening, orchards, berry patches, nurseries, and state licensed residential faculties.

The following uses require a conditional use permit in the areas designated for R2 Residential designation:

- Public or Private institutions of an educational, philanthropic or charitable nature,
- Cemeteries and churches,
- Public and private schools,
- Parks, playgrounds, and golf courses,
- Public utility services,
- Duplexes and triplexes,
- Home occupations

All other uses are prohibited.

Rural Residential Designation

The Rural Residential Area is an area of the township that provides opportunities for rural low-density housing in areas less suitable for supporting agriculture. The maximum

residential density in this area is one home per 2.5 acres. This character of this area is intended to be a mix of small-scale farming, hobby farms, gardening, orchards, berry patches, nurseries, and rural residential homesteads, including duplexes and triplexes.

The following uses require a conditional use permit in the areas designated for rural residential designation:

- Public or Private institutions of an educational, philanthropic or charitable nature,
- Cemeteries and churches,
- Public and private schools,
- Parks, playgrounds, and golf courses,
- Township, private or public school district owned or controlled recreation and community buildings,
- Public utility services,
- Home occupations

All other uses are prohibited.

River Conservation Designation

The River Conservation designation was established in order to preserve and protect the Rum River, the West Branch Rum River, and its adjacent lands. The River Conservation area possesses outstanding scenic, recreations, natural, historical, scientific and recreational values. Additional purposes of the designation is to reduce the effects of overcrowding, poorly planned development of adjacent lands, to prevent pollution, and to preserve natural beauty and quietude.

The Rum River in Princeton Township has been given the Recreational River Classification north of the Mille Lacs CSAH 13 bridge and the Scenic River classification south of the Mille Lacs CSAH 13 bridge. The uses and classification of this river and its adjacent lands are designated by land use zoning districts, the boundaries of which are based on the State of Minnesota Rum River rule, parts 6105.1400 -.1500. It is the intention that the provisions of the Minnesota Statutes Sections 103F.301 - 103F.345 and Minnesota Rules, Parts 6105.0010 - .0250 that apply to the Rum River shall also apply to other areas that are designated as River Conservation District.

Strict standards apply to the River Conservation district including:

- Conserving and protecting the natural scenic values and resources of rivers in the Township,
- Maintain a high standard of environmental quality,
- Regulate the area of a lot, and the length of bluff land and water frontage suitable for building sites to reduce the effects of overcrowding and provide ample space on lots for sanitary facilities,
- Regulate the setback of structures and sewage treatment systems from bluff lines and shorelines,
- Regulate alterations of the natural vegetation and topography,
- Maintain property values and prevent poorly planned development,
- Preserve natural beauty and quietude,
- Prevent pollution,
- Comply with Minnesota Rules, Parts 6105.1400 -.1500 as required for the Rum River,

- One dwelling per lot,
- Any supply of water for domestic purposes must meet or exceed standards for water quality of the Minnesota Department of Health and the Minnesota Pollution Control Agency. Private wells must meet or exceed standards in accordance with the Water Well Construction Code of the Minnesota Department of Health,
- Any premises intended for human occupancy must be provided with an adequate method of sewage treatment. All private sewage treatment systems must meet or exceed applicable rules of the Minnesota Department of Health, and the Minnesota Pollution Control Agency, specifically Chapter 7080 for individual sewage treatment systems.
- Excavation of material from or filling in a Wild, Scenic or Recreational River, or construction of any permanent structures or navigational obstructions therein is prohibited unless authorized by a permit from the Commissioner pursuant to Minnesota Statutes, Section 103G.245. Section 103G.245 requires a permit from the Commissioner before any change is made in the course, current, or cross-section of public waters.
- All utility crossings of the Rum River state lands within the Rum River land use district require a license from the Commissioner pursuant to Minnesota Statutes, Section 84.415.
- All utility transmission crossings constructed within the Rum River land use district shall require a conditional use permit. The construction of such transmission services shall be subject to Minnesota Rules, Parts 6105.0170 and 6105.0180. No conditional use permit shall be required for high voltage transmission lines under control of the Environmental Quality Board pursuant to Minnesota Statutes, Section 116C.61.
- In addition to such permits as may be required by Minnesota Statutes, Section 103G.245, a conditional use permit shall be required for any construction or reconstruction of public roads within the Rum River land use district. Such construction or reconstruction shall be subject to Minnesota Rules, Parts 6105.0190 and 6105.0200.

Table 12: Permitted and Conditional Uses in the River Conservation District

P= Permitted C=Conditional Use Permit Required.	Scenic River District	Recreational River District and Other Conservation District Land
Governmental campgrounds, subject to management plan specifications.	P	P
Public accesses, road access types with boat launching facilities subject to management plan specifications	P	P
Public accesses, trail access type, subject to management plan specifications	P	P
Docks	C	C
Other governmental open space recreational uses subject to management plan specifications and approval by the Commissioner	P	P
Agricultural uses	P	P
Single family residential uses	P	P
Forestry uses	P	P
Essential services	P	P
Sewage treatment systems	P	P
Private roads and minor public streets	P	P
Signs approved by federal, state, or local government which are necessary for public health and safety and signs indicating areas that are available or not available for public use	P	P
Signs not visible from the river that are not specified in (12)	P	P
Governmental resource management for improving fish and wildlife habitat; wildlife management areas; nature areas; accessory roads	P	P
Underground mining that does not involve surface excavation in the land use district	C	C
Utility transmission power lines and pipelines, subject to the provisions of Secs. 300:066 to 300:0664	C	C
Public roads, subject to the provisions of Secs. 300:066 to 300:0664	C	C
Home Occupations	C	C
Churches and Cemeteries	C	C
Public and Private Schools	C	C
Public Utilities Excluding Communication Towers	C	C

No uses not listed as permitted or conditional uses shall be allowed.

The River Conservation district if further divided into two sub districts, RC1 and RC2. RC1 is primarily the West Branch Rum River. RC2 is primarily the Rum River. In the RC1 district, the minimum lot size above ordinary high water level is four contiguous buildable acres. In the RC2 district, the minimum lot size above ordinary high water level is ten acres with four contiguous buildable acres.

Commercial/Industrial Designation

The purpose of a planned Commercial/Industrial area is to encourage the development of manufacturing establishments that are clean, quiet, and free of elements which would create a nuisance or are hazardous (such as noise, vibration, smoke, gas, fumes or other obnoxious conditions). They should also have reasonable access to arterial thoroughfares and have adequate utilities.

A small Commercial/Industrial area lies adjacent to the either side of U.S. Highway 169 where the highway enters Princeton Township and extends to the northern border of the township. This area is ideally suited for commercial and industrial uses, given its location along a high traffic corridor. This district is intended to provide a mix of business, including light industrial, office, service commercial, restaurant and retail that can be adequately served with individual sewage treatment systems and private wells. The growing of agricultural crops, farm buildings, nurseries and greenhouses for the propagation, cultivation, and growing of plants is also permitted in the Commercial/Industrial area. Minimum lot size is 1.25 acres for platted lots and 2.50 acres for unplatted lots.

The following uses require a conditional use permit in the areas designated for Commercial/Industrial designation:

- Hospitals and medical clinics, nursing or extended care facilities, congregate care facilities and licensed day care facilities,
- Restaurants, cafes, refreshment parlors, and taverns,
- Parks, playgrounds, golf courses, recreation and community buildings owned and/or controlled by the Township or by a private school or public school district or other municipal authority,
- Drive up or drive through facilities, transient sales and beauty and barber shops,
- Wholesale businesses and any business that requests outside storage, display, sales or servicing,
- Auto, truck, boat, and farm sales and/or service,
- Hotels and motels,
- Apartments and other multi-family dwellings,
- Theaters
- Bowling alleys, skating rinks and other similar recreational facilities,
- Gasoline service stations and convenience stores,
- Manufacturing, assembly, processing, research, warehousing, and storage facilities occurring within an enclosed building; and Mini-Storage Buildings,
- Public utility services, including stations, communication towers or antennas, distribution plants, etc., but not including warehouses for the storage of bulky material, and not including factories for the manufacture of any commodity,
- Agriculture and farm buildings,
- Mining,
- Salvage Yards,

- Other uses similar in nature to uses that meet standards as set forth by the Township Board of Supervisors.

All other uses are prohibited.

Current Businesses (as of April 2009) in the Commercial/Industrial area include:

- Excel Fixtures
- e-ride Industries
- Schroer Bolts
- Wayne Pike's Auctions
- Andrew's Saab and Subaru
- Midwest Machinery Co.
- A to Z Restaurant Equipment
- Sylva Corporation
- Aircraft Exhaust
- Central Fleet Service Truck Parts and Service
- Mini-Storage
- North Memorial Ambulance
- Whitcomb Nursery and Archery
- Patten's Custom RV
- Beaudry Propane
- Federated Coop & Country Store
- Old Log Liquor

Aviation

There are no airports, proposed airport sites, search areas or other related facilities in Princeton Township. Part of the Township is, however, located within the aircraft approach area of the Princeton Municipal Airport.

An **Airport Approach Protection Overlay District** is established in order to control the use and development of land to provide protection for aircraft operations and protect the public from noise and safety hazards on the ground. The restrictions of this Overlay District are in addition to the regulations and restrictions of the underlying districts.

The boundaries of the Airport Approach Protection Overlay District form a fan-shaped area beginning at the end of the runway five-hundred (500) feet on either side of the centerline, and extending along that centerline for a distance of two (2) miles at which point the width is three-thousand (3,000) feet on either side.

All uses within an Airport Approach Protection Overlay District are conditional and must follow Conditional Use Permit procedures.

The Airport Approach Protection Overlay Zone is intended to prohibit:

- Uses that may result in employment, dwelling, or an assembly of more than twenty-five (25) persons
- The manufacture, storage, or use of explosives or flammable materials

- Electrical or electronic generation or transmission that would interfere with radio or navigation communications
- Lighting that may confuse or mislead pilots.
- Such other uses or development that the Township Board of Supervisors may consider dangerous to airplane operations or ground activate or which may otherwise be inconsistent with airport operations.

Housing

Princeton Township's housing policies recognize the need for a range of housing choices for the township and will work to implement policies relating to housing affordability. Given the rural nature of the Township and the predominance of single-family homes, the Township has a limited number of options to address housing affordability. Given the lack of central wastewater treatment systems, the Township cannot undertake strategies to address affordability through increased densities. Principal strategies to ensure housing affordability include rehabilitation of the existing housing stock, and assistance with targeting and marketing of vacant housing units.

Historic Preservation

Princeton Township is committed to preserving the rural quality of life in the Township as it grows. This includes preserving sites related to the Township's history. Currently, the only known site is the historical marker for Brickton, located at 4412 Baxter Road. The monument is in need of repair. Many of the bricks are crumbling.

Figure 2: Brickton Monument

One of the older buildings in the township is the bank building in Long Siding. It is also constructed from bricks made in Brickton. In addition, there are some Century Farmsteads in the township. While none of these structures or sites are on the National Register of Historic Places, some may become eligible. The Township encourages consultation with groups that may have additional information about the history of sites.

Many historic structures have been lost because of neglect, demolition and/or reconstruction. The Township government cannot afford to purchase and maintain historic buildings and sites. However, the Township, through this Plan and other possible means, will educate residents and developers as to the social value of historic buildings and sites. The Township will encourage the creative re-use of historic structures by individuals and organizations, the identification and marking of historic sites, and the purchase of structures and sites by government agencies and private organizations and individuals interested in historic preservation. The Township will use the site plan review process prevent or minimize impacts on natural, historic and cultural resources and consult other agencies to assist in the review of development plans.

Parks, Recreation, Trails, and Open Spaces

In order to protect the public health, safety, and welfare, an adequate amount of land should be developed for parks, recreation, trails and open space purposes. Township ordinances should require all developers of subdivisions to pay a fee to the park dedication fund.

The opportunities for trail connections, new open spaces, and public access to the river may be limited in Princeton Township due to existing development, and site constraints. However, the Township is committed to working with the County, State agencies, and the National Park Service to explore the feasibility of public trails. The Township will consider this and other potential trail connections.

The Parks, Trails and Open Spaces section of the Comprehensive Plan describes in detail opportunities for improvements to parks, recreation, trails and open space resources.

Parks and Recreation

Princeton Township does not currently have any parks. The City of Princeton offers many recreational resources including six parks. The parks offer a variety of activities from baseball and softball fields, outdoor ice-skating rink, picnicking, swimming, various outdoor sports, and camping. Other facilities available in the city or adjoining townships include an ice arena, roller rink, swimming pool, water park, golf course, organized hockey, fairgrounds, stock car racing track, bowling lanes, historical museum, and a library. Duplication by the Township of these parks and recreational activities would not be a wise capital expenditure.

Other recreational activities available in the township include hunting (deer, bear, small game, forest game birds, pheasant, and waterfowl), wildlife viewing of wetland wildlife, prairie wildlife, and forest wildlife. The rivers offer excellent canoeing and the local snowmobile clubs have many marked snowmobile trails.

Open Space

Open Space is a designation for the preservation of environmentally sensitive areas, unique resources, and other designated non-developable lands. Areas such as wetlands, lakes, bluffs, threatened and endangered species habitat, historic sites, government owned land, and land set aside as part of the development process is Open Space.

Princeton Township has three named lakes; Silver Lake (designated as recreation development, Fogg Lake and Mud Lake (both designated as natural environment). The largest Open Space in the Township is its two rivers, the Rum River and the West Branch Rum River. The Rum River is designated as a recreational river north the Mille Lacs Co. Rd. 13 bridge and scenic river south of the bridge. The West Branch Rum River is classified as a transitional river.

Two additional open spaces exist in township. The first is Bolger WMA. It consists of 79 acres located north of Princeton on Co. Rd. 4, and east about 1 mile on Co. Rd. 13 (located at the Rum River crossing).

The Bolger WMA consists of silver maple, elm and box elder along the Rum River with grassy field uplands. A unique wet prairie plant community is located in the northeast corner of the Bolger WMA. A red cedar winter cover planting is located in one of the fields.

Management emphasis for the Bolger WMA is on stream bank protection, native prairie restoration, public hunting and canoe camping. It is managed in cooperation with DNR-Trails and Waterways.

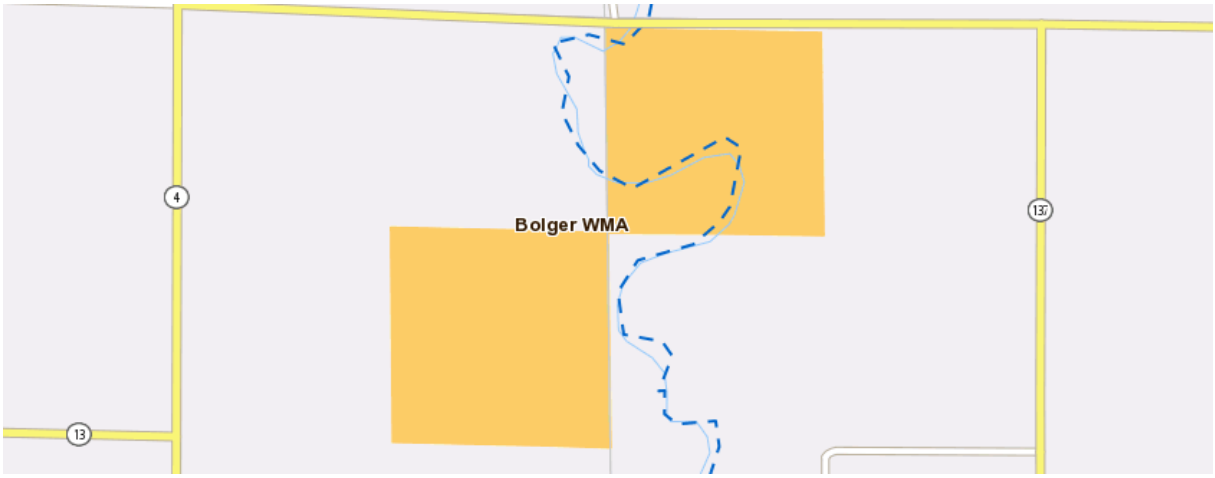


Figure 3: Bolger WMA

The newest open space resulted in a land split by Rayford Davis. It is located in Section 3 and consists of 47.6 acres donated to the State of Minnesota by Mr. Davis.

Trails

Princeton Township does not have any existing trails. A study should be conducted to determine if it is feasible to extend the Regional Trail from Elk River north through the township. The City of Princeton is currently planning to connect to the trail on the south side of the city and extend it north to the city limits.

The Township Supervisors should appoint a resident to work with the City's Park and Recreation Committee to determine the feasibility of such a trail that could eventually connect to the State Trail system in Onamia. The township has limited funds available in the park dedication fund for such a purpose. The township should also research the availability of grants from various governmental agencies to assist in the building of the trail. Detailed information on trail planning, design and development is available in the State of Minnesota, Department of Natural Resources, 2007, "Trail Planning, Design, and Development Guidelines" document.

Transportation Plan

The transportation system in Princeton Township consists principally of roadways, but this plan also considers other aspects of the regional transportation system.

Roadway Functional Classification

Roads, as well as other transportation elements, have different functions and are under the jurisdiction of different levels of government, including the State of Minnesota, the County and the Township. Functional classification involves the designation of roadways for particular roles, whether it is speed, traffic volume, intersection control, long-distance travel, or access to local destinations. Roadway functional classification includes principal arterials, minor arterials, collectors and local roads. Collector roadways are often broken down into further subclasses. Functional classification ensures that non-transportation factors, such as land use and development, are taken into account in planning and design of streets and highways. Once function is established, appropriate or desirable design and operational characteristics can be used as further guidelines for implementation. The roadways are the publicly provided elements of a land transportation system.

Principal Arterials

These roadways have the highest traffic volumes and longest trip lengths. They are intended to connect regional centers and provide high mobility and low access. Typical facility spacing is 2 to 6 miles apart with access being spaced at least one mile apart. U.S. Highway 169 and State Highway 95 are principal arterials in Princeton Township.

Minor Arterials

These roadways provide for moderate trip lengths and at a lower level of mobility than principal arterials. They are intended to connect important locations within the Township and provide access points to the Highway System and there is some emphasis on land access. Typical spacing is one mile between minor arterials. County State Aid Highways and County Roads are minor arterials in Princeton Township.

Collector Roads

The collector system provides for both land access and traffic circulation. They collect traffic from areas within the township and distributes it to other areas and the arterial roads. This plan further breaks down the collector system into Major Collectors and Minor Collectors. The difference being that major collectors focus more on mobility and distributing traffic to

the arterial roads, where minor collectors focus more on access and provide connection between neighborhoods. Facility spacing for Major Collector Roads should be ¼ mile intervals and 1/6 mile intervals for Minor Collector Roads to allow for collecting of traffic without restrictions. Township roads classified as collector roads are listed in Table 13.

Local Roads

Local roads provide direct driveway access to adjacent properties. Generally, local roads have low volume and lows speeds. The local road system is not identified in this plan, providing the township the opportunity to protect various land uses.

Table 13: Roadway Functional Classification

Roadway Functional Classification		
Name of Roadway	Jurisdiction	Functional Classification
U.S. Highway 169	MnDOT	Principal Arterial
State Highway 95	MnDOT	Principal Arterial
CSAH 1	Mille Lacs County	Minor Arterial
CSAH 3	Mille Lacs County	Minor Arterial
CSAH 4	Mille Lacs County	Minor Arterial
CSAH 13	Mille Lacs County	Minor Arterial
CSAH 29	Mille Lacs County	Minor Arterial
CSAH 40	Mille Lacs County	Minor Arterial
County Road 102	Mille Lacs County	Minor Arterial
County Road 122	Mille Lacs County	Minor Arterial
County Road 135	Mille Lacs County	Minor Arterial
County Road 137	Mille Lacs County	Minor Arterial
County Road 149	Mille Lacs County	Minor Arterial
50th Street	Princeton Township	Major Collector
50th Avenue	Princeton Township	Major Collector
40th Street (Sections 19 and 20)	Princeton Township	Major Collector
100th Avenue	Princeton Township	Minor Collector
40th Street (Section 13)	Princeton Township	Minor Collector
35th Street	Princeton Township	Minor Collector
55th Avenue (Section 36)	Princeton Township	Minor Collector
17th Street	Princeton Township	Minor Collector
All other Township Roads	Princeton Township	Local Roads

Princeton Township maintains 37.97 miles of Collector and Local Roads, of which 15.7 miles are paved. Each year, the Township Board of Supervisors conducts a road tour of the township roads. Upon completion of the tour, a plan is devised based upon the condition of the roads and budget availability as to which roads receive needed repairs.

Access Management

MnDOT conducted a survey in 2001 to determine the potential for additional access points along the 101 / 169 corridors, between I-94 in Rogers and TH 27 in Onamia. Mn/DOT right-of-way maps were reviewed to compare the number of potential access points with the number currently in existence. As described above, 267 access points exist along the corridor from Rogers to Onamia. However, 37 additional potential (currently unused) access points have been identified. One of the identified growth area segments with the greatest access risk was between Baxter Road and 122nd Street (Princeton Bypass to Milaca). The segment accounts for 20 of 37 granted access points currently not in use.

MnDOT has determined in its publication 101 /169 Corridor Management Plan of 2002 that the intersection at CSAH 13 is under project consideration as a secondary development node. Thirteen projects have been identified on MnDOT's 101 / 169 Corridor Plan. None of the projects include the CSAH 13 diamond exchange. The CSAH 13 diamond exchange is classified as medium priority and included in the next six projects following the thirteen high priority projects. The six projects are estimated to cost $76 million.

Traffic levels on U.S. Highway 169 between TH 95 in Princeton to TH 23 in Milaca were 13,800 vehicles per day in 1998. It is projected in 2015, the volume will rise to 23,700 vehicles, and 29,500 in 2025. That is an increase of 114% between 1998 and 2025.

As of 2001, the Baptist Road-CSAH 29 interchange averaged 1450 vehicles per day and the crossroad at CSAH 13 (55th Street) averaged 580 cars per day. It is projected that the level of service for both interchanges will remain at a level A or B service (level A is the best, level F the worst).

Under all of the freeway alternatives discussed by MnDOT, it is MnDOT's plan that the portion of the corridor from Princeton to Onamia would be maintained as a four-lane rural expressway. The forecasted traffic volumes can be adequately accommodated by the lane additions constructed on TH 169 over the past 20 years. Interchanges should be constructed at key crossroads to preclude traffic signals and improve safety. In addition, at-grade access points should be consolidated. It is also MnDOT's recommendation that planning should be focused on primary and secondary development nodes.

The Township will work with MnDOT to regulate the number of access points to County roads. In expectation of the limited access, Princeton Township has developed a service road access plan along the U.S. Highway 169 Commercial / Industrial Zone. Details of the service road access plans are located in Appendix A.

In addition, in order to promote a safe and efficient transportation system, spacing and access requirements, the Township will utilize the County's spacing guidelines to the maximum extent possible.

Transit / Park and Ride Facilities

The Princeton Township area is within the "rural" zone of the metropolitan area, an area that is impossible to serve cost-effectively with regular transit due to low population and employment densities.

Two regional transit agencies (the Heartland Express and the River Rider) provide on-demand city bus service. The Heartland Express serves the cities of Princeton, Milaca, and Onamia with door-to-door on-demand bus service. The Heartland Express also makes one or two scheduled trips each month from Princeton to Elk River, Brainerd, and St. Cloud. In August 2001, the Heartland Express had a monthly ridership of 1,245 passengers.

Services in the Township are also restricted because the area is not located within the metropolitan "transit taxing district".

Surface Water Management Plan

The Environment/Water Resources policies listed in the Goals and Policies section are directed at the protection and preservation of natural resources in areas that will be considered for future growth. The Township will comply with all federal, state and watershed regulations regarding activities that may affect these resources.

Physical Resources

Soils, Surface Geology and Groundwater Resources

Groundwater is a particularly important natural resource for Princeton Township since there are no public wells or water distribution systems in the Township. The increasing use of groundwater by residential, commercial, and industrial uses, as well as for agricultural irrigation, can raise concerns with regard to the potential for contamination.

The County Soil Conservation Service conducted a survey of county soils. The soil survey indicates, among other things, the type of soil, the soil gradient, the suitability of the soil as material, and the degree and kind of limitations the soil has for particular uses of the land. This information is useful as a planning tool and for indicating the kind of problems that might occur in a particular area. Soils surveys have a reasonable level of accuracy, but do not eliminate the need for sampling and testing for particular sites. The Township and other interested parties should consult Appendix B for detailed maps of soil units and a description of the specific limitations of these soils. This information is available from the Mille Lacs County Soil and Water Conservation District.

Surface and sub-surface geologic features are also important factors that need to be considered in order to understand the occurrence and movement of groundwater in the Township. Major potential sources of groundwater contaminants include individual sewage treatment systems (septic systems) and surface water runoff from developed land and farmland. Susceptibility to contamination of groundwater depends on the ability of the soil to absorb, transform, and dilute contaminants from the surface.

Soils in the Township consist of mainly of nine types. The soil types are listed in table 14 by section number. These soils are generally used for farming, particularly for corn, soybeans, small grains, and alfalfa. Steeper slopes are often used for permanent pasture or woodland.

Table 14: Township Soil Types

SOIL TABLE (in rounded acres)												
Sec. Nbr.	Complex Soils	Complex Stony Soil	Silty Clay Loam Soil	Loam Soil	Silty Loam Soil	Seelye-ville & Markey Soils	Seelye-ville & Cathro Soils	Loamy Fine Sand	Fine Sand	Gravel Pits	Misc. Soils	Water
1	220		6	35			102	192	72		4	5
2	89			216	172		151	36				
3	115	15	1	184	334							32
4	183	30	11		429		39				6	
5	185	109	41		304		49	8			8	1
6	120	79	12	90	264		24				38	15
7	129		11	97	353							16
8	243		34		252		87				22	
9	193			84	344		18					15
10	18		51	88	352		44	16	14			
11	93		48	205	8		16	203	57			
12	164		9			20		199	180	33		8
13	141		9			103	52	193	115	1		26
14	332		19					280	5			
15	185		7	72	206		6	150			10	6
16	56		12	143	389	5	12	1			2	36
17	97		12		423	1	52				49	13
18	94		12	52	385		16			51		13
19	38		8		135	52		75	341			4
20	13				111	98		25	307		68	20
21	11		2	41	186	18		40	325			
22	51		7	140	244		21	116	37			22
23	74		12	102	1	14	2	129	298			7
24						156		112	363			6
25						85		123	435			2
26						116		100	352			67
27	55					3		105	445			27
28	119							78	395		9	35
29	99					12		32	338		140	17
30	100					5		52	473			12
31						23		241	379			3
32						39		68	395		119	9
33	64							118	420		8	19
34	94					25		175	294			47
35						46		127	428			34
36								193	445			2
Total	3375	233	324	1549	4892	821	691	3187	6913	85	483	519

Table 15: Particle Size

Particle Size Family	
Class	**Criteria**
Sandy	Sand or loamy sand
Loamy	less than 35% clay
Coarse-loamy	more than 15% sand, less than 18% clay
Fine-loamy	more than 15% sand, 18-35% clay
Coarse-silty	less than 15% sand, less than 18% clay
Fine-silty	less than 15% sand, 18-35% clay
Fine	35-60% clay
Very Fine	more than 60% clay

Portions of the Township have limitations for the use of individual sewage treatment systems. The use and functioning of these systems may be affected by types of soils near the land surface; steep slopes, wet or periodically flooded areas, and/or slow percolation rates of soils. These factors influence the ability of the soil to remove chemical and bacteriological contaminants from effluent before it enters underground water supplies. In the case of soils with high water saturation and/or slow percolation rates, sewage may backup either through individual homes or through the ground. Soils with slow percolation rates are scattered throughout the Township.

The Minnesota Geologic Survey has established ratings for the sensitivity of groundwater systems to pollution, which relate to the ability of soil and subsurface materials to absorb contaminants, transform them into inert substances, and dilute them to make them inactive before releasing them into the groundwater system. This ability is related to the travel time for surface water to infiltrate groundwater systems. The geologic sensitivity rating ranges from very high (hours to months) to low (decades to a century). The majority of Princeton Township is within areas rated as "high" or "very high". It should be noted, however, that high sensitivity does not indicate that water quality has or will be degraded, and low sensitivity does not guarantee that water is or will remain pristine.

Surface Water, Wetlands, and Shoreland Resources

The Rum River and West Branch Rum Rivers are predominant parts of the landscape of Princeton Township. Lakes and rivers have important aesthetic, recreational and ecological qualities that are relatively well understood, but wetland areas also provide many practical, aesthetic and ecological benefits as well. These include acting as storage areas for water during flooding; the filtering of sediments, nutrients and toxic substances before they enter lakes, rivers, and streams; providing habitat for fish and other wildlife; and the replenishing of groundwater sources. Princeton Township has relatively few wetland areas.

A "watershed" refers to a particular area of land over which precipitation drains. They are named for the associated rivers and streams that eventually carry these waters. These large areas generally cross the boundaries of local jurisdictions. State legislation established organizations (watershed management organizations and watershed districts) to research, plan, and manage water resources within each respective watershed district. Princeton Township is located within the Rum River Watershed.

The upland topography of the Township results in a few areas that are at risk of flooding. Figures 17-22 also delineates areas identified by the Federal Emergency Management Agency (FEMA) that could potentially flood during a "100-year flood". This term defines the occurrence of a storm and/or period of snowmelt that is severe enough to occur, on average, once every 100 years. Structural development is restricted in these areas due to severe potential for flooding. In addition to storing water during storms or periods of snowmelt, floodplain areas also share many of the ecological and environmental functions that wetlands possess.

Protection Strategies

Groundwater Protection

The Township recognizes the importance of groundwater sensitivity and has established environmental protection policies that will enhance protection of the groundwater. Princeton Township will ensure protection of local groundwater through implementation of this Surface Water Management Plan, ordinances regarding individual sewage treatment systems (ISTS), and wetland, floodplain and shoreland ordinances.

The Township's Ordinances and the Minnesota Pollution Control Agency Individual Sewage Treatment Systems Standards, Chapter 7080 et. Seq. (referred to as Chapter 7080) regulates individual sewage treatment systems in Princeton Township. Chapter 7080 outlines restrictions and requirements for the evaluation of treatment sites and the installation, construction, and maintenance of individual sewage treatment systems. A principal component of these requirements is testing of on-site soils to determine how sewage would percolate through the soil. Inspections to determine compliance with these regulations are required at the time of system design, during times of structure remodeling, alteration or addition, and for all new ISTS construction or replacement. Chapter 7080 also requires septic tank pumping or inspection at a minimum of three-year intervals.

Stormwater Drainage and Surface Water Quality Protection

Developed land generally increases the volume of stormwater runoff, as well as the concentration of pollutants in the runoff. Stormwater Drainage and Surface Water Quality Protection are regulated in the Mille Lacs County's Local Water Resource Management Plan, January 1, 2006-December 31, 2016.

Wetlands, Shoreland and Floodplain Protection

Wetlands and floodplains are valuable resources that provide many benefits, including groundwater recharge, filtration of sediments and nutrients, flood control, and scenic value. Wetlands and floodplains also provide excellent habitat for wildlife and are home to a variety of aquatic and upland vegetation species.

Wetlands and floodplain are relatively limited in the Township. Nevertheless, wetlands zoning regulations are included in County and Township ordinances and identify responsibility for enforcement of the Minnesota Wetlands Conservation Act, as amended, and as regulated by the Board of Water and Soil Resources Wetland Conservation Act Rules. Drainage or filling in of wetlands is not allowed within the land use districts

The consequences of uncontrolled and unplanned development can involve the degradation of water quality and the destruction of natural vegetation and scenic beauty. The Minnesota Department of Natural Resources (DNR) has established minimum statewide development standards for shoreland, floodplain and "wild and scenic river" areas. These standards apply to land adjacent to all lakes greater than 25 acres in size and rivers with drainage areas two square miles or greater. Development standards for a lake or river depend upon a specific classification that reflects the characteristics of the lake and its environment. Specifically, development standards apply to land within 1,000 feet of the shoreline of a classified lake and to land within 300 feet of a classified river and its associated floodplain.

The Minnesota DNR has also established the Wild, Scenic and Recreational Rivers Program. This program is intended to preserve and protect rivers with "outstanding scenic, recreational, natural, historical, and scientific values." The Rum River is part of this program.

Erosion and Sedimentation Control

Surface water quality can be compromised as a result of land uses and development practices that increase the amount of surface water flow. In addition, surface water quality can be compromised when the increased runoff causes erosion and sedimentation. Careful planning and regulation related to conservation of soils, water and natural vegetation, can reduce erosion, runoff and sedimentation. The Township will encourage the continuing education of landowners and farmers by the Mille Lacs County Soil and Water Conservation Service.

Mineral extraction sites, in particular, may potentially result in erosion, sedimentation and groundwater problems if they are not adequately planned and regulated. Extraction site operations are limited in the Township and will be identified where most appropriate to prevent or minimize environmental and aesthetic impacts on adjacent properties and sensitive areas.

Potential Limitations on Water Supply

Potential water supply limitations stem from several factors, including:

- Lack of access to the Prairie du Chien-Jordan aquifer in certain areas, some of which are projected for significant population growth
- Competing demand between groundwater withdrawals and surface water features or other groundwater users in the area
- Reduced recharge caused by land-use changes and climate variations.
- Aquifer contamination

Protecting Water Supplies

Protection of the region's water supply is vital to the township's continued growth and economic prosperity. The protection of drinking water sources is both a land planning and a pollution management effort. Land uses with potential to contaminate runoff or cause infiltration that affects a drinking water source need to avoid areas that contribute directly to the water supply. In addition, best management practices should be employed to avoid release of contaminants.

Land management practices that could affect water supplies include:

- animal feedlots,
- individual sewage treatment systems,

- excessive use of fertilizer on agricultural land,
- facilities that handle or store hazardous materials,
- highway lines that carry toxic materials

Effort is needed to control the use of contaminating materials near water supply sources so that spills, seepage, or similar accidents do not render a water source unusable.

The Township should promote the use of best management practices for stormwater runoff to protect and improve water quality and maximize groundwater recharge. Groundwater recharge is necessary to ensure that the region has an adequate long-term water supply. A potential problem in this area relates to the ability of the groundwater system to recharge as land continues to be covered with impervious surfaces. It makes sense that increasing impervious surface will decrease the amount of water that can soak through soils to recharge the groundwater aquifers.

Developments that use progressive stormwater management practices can help to offset the reduction of water reaching the aquifer system caused by increased impervious surface. The Council will encourage development techniques that promote infiltration, such as rain gardens, as part of a low-impact development approach to surface water management.

The township should also adopt the portions of the Mille Lacs County's Local Water Resource Management Plan, January 1, 2006-December 31, 2016, as it applies to the township.

Water Efficient Plumbing Fixtures

The 1992 Federal Energy Policy Act established manufacturing standards for water efficient plumbing fixtures, including toilets, urinals, faucets, and aerators. The township encourages residents to use water efficient plumbing fixtures when replacing or retrofitting current fixtures.

Environmental Quality and Natural Resources

Ecological Sustainability

The Ecological Classification System (ECS) as the Framework for Managing Natural Resources

The ECS scientifically delineates and describes meaningful units of the natural landscape to form a basic framework for research and management. It identifies interrelationships and interactions among ecological components, such as climate, geomorphology, soil, topography, vegetation, hydrology, animals, and land history.

Importance of the Ecological Classification System

A basic understanding of the ECS is essential for effective management of natural resources, as well as understanding their relationship to the surrounding landscape. The ECS can also help in understanding the interrelationships among plant communities, wildlife habitat, and water quality, thereby helping in recognizing the potential impact of activities on natural

resources. In addition, the ECS serves as a framework for planning and development and for the management and restoration of natural plant communities on existing sites.

As a framework for sustainable natural resource management, the ECS:

- Provides a common means of communication among resource managers, as well as with the public.
- Improves predictions about how vegetation will change over time in response to various influences.
- Improves our understanding of the interrelationships among plant communities, wildlife habitat, water quality, and human needs.

The Minnesota ECS identifies six ecological units. It follows the methodology used by the U.S. Forest Service and is part of the Great Lakes Region ECS.

The classification is hierarchic, with smaller ecological units contained within larger ones. The following defines the six levels of ecological units.

Level 1: Province

Minnesota has four ECS provinces, defined by climate (temperature and moisture), geology, and associated major vegetation patterns:

- Prairie Parkland Province covers about 16 million acres of southern and southwestern Minnesota. Before settlement, this area was primarily covered by tallgrass prairie. Its topography is mostly level to gently rolling; major landforms include lake plains and ground moraines.
- Tallgrass Aspen Parklands Province covers about 3 million acres in northwestern Minnesota. Part of an extensive lake plain, it is level in the western portion with small dunes and a series of low beach ridges and swales to the east. Before settlement, the vegetation consisted of aspen savanna, tallgrass prairie, wet prairie, gravel prairie, and floodplain forest along rivers.
- Eastern Broadleaf Forest Province3 covers 12 million acres through the heart of the state. It forms a transitional zone between the prairie to the west and the boreal forest (conifer-hardwood mix, or hardwood forest) to the Paleozoic plateau of the southeast. Major landforms include lake plains, outwash plains, moraines, and drumlin fields.
- Laurentian Mixed Forest Province covers the northeastern 23 million acres of Minnesota. It is the boreal forest region of our state. Before settlement, this area consisted primarily of coniferous forest, coniferous-hardwood mix, or northern hardwood forest. Topography is variable. Landforms range from lake plains and outwash plains to ground and end-moraines.

The southern one-fourth of Princeton Township is Eastern Broadleaf Forest Province. The remaining part of the township is Laurentian Mixed Forest Province.

Level 2: Section

Provinces are subdivided into sections. Sections are defined by the origin of glacial deposits, regional elevation, distribution of plants and regional climate. Minnesota has 10 sections:

- Lake Agassiz Aspen Parklands

- Red River Valley
- North Minnesota and Ontario Peatlands
- Northern Superior Uplands
- North Minnesota Drift and Lake Plains
- South Superior Uplands
- Western Superior Uplands
- Minnesota and Northeast Iowa Morainal
- North Central Glaciated Plains
- Paleozoic Plateau

The lower portion of Princeton Township is in section Minnesota and Northeast Iowa Morainal. The upper three-fourths of the township are in the Western Superior Uplands.

Level 3: Subsection

Sections are further divided into subsections. Glacial land-forming processes, bedrock formations, local climate, topographic relief, and distribution of plants define these areas within sections. Minnesota has 25 subsections.

The lower one-fourth of Princeton Township is in the Anoka Sand Plain Subsection. The balance of the township is in the Mille Lacs Uplands.

Level 4: Land Type Association

Land type associations are landscapes within subsections. Glacial formations, bedrock types, topographic roughness, lake and stream patterns, depth to the groundwater table, and soil material characterize Land type associations.

Level 5: Land Type

Land types are the individual elements of a Land Type Association. Land types are defined by recurring patterns of uplands and wetlands, soil types, plant communities, and fire history.

Level 6: Land Type Phase

Land Type Phase or habitat type is a unique combination of plants and soils within a Land Type. Land type phases are defined by characteristic trees, shrubs, and forbs; by landscape position, and by soil texture and moisture.

Solar Access Planning

The purpose of solar access planning is to encourage energy conservation and the use of solar energy in order to help alleviate the growing energy shortage and lessen dependence on increasingly uncertain energy sources. Natural resource information can be used to develop strategies for protecting solar access. Using topographic and land cover information, a map can be created showing the best and poorest locations for solar access. Solar access will be best where houses can be southerly-oriented without obstructions such as wooded areas. South facing rises and slopes will provide the best access. Directing development to these areas and encouraging roadway and structure orientation that maximizes solar access are specific strategies that can be adopted in a land use plan.

Aggregate Resources Planning

Planning for aggregate resources means planning to allow this resource to be extracted. Placing structures on top of aggregate resource areas prevents access to the resource or at least makes access difficult and very expensive. The Township Board of Supervisors may determine specific regulations and requirements to fit each specific site. In addition to the requirements and standards imposed by Ordinance, Mining and Land Alteration shall also meet the following minimum requirements:

- Control dust, odor, noise, and noxious weeds.
- Avoid unsanitary, dangerous, polluting, or other activities inimical to the health, safety or general welfare.
- Not engage in any manufacturing or processing except as specifically approved in the permit.
- Not permit any other person or organization to operate the mining or alteration without the written consent of the Township Board of Supervisors.
- Assure that the terms and conditions of the permit can be and are being met.
- Operate within the days and hours of operation established by the Township Board of Supervisors as part of the permit conditions.
- The operations must be adequately screened from occupied structures, and all areas where mining operations have been completed must be restored to conditions outlined in the permit.
- Comply with all applicable state laws, rules and regulations relating to Mining or Land Alteration.

What is a future land use map?

A future land use map is intended to guide the decision-making process for the Township on development and subdivision proposals. While the Township can administer zoning, a future land use map is not a zoning map.

The future land use map shows how the residents prefer to see the Township developed in the future. A primary function of the future land use map is to help the Town Board make recommendations to approve or deny rezoning proposals. Rezoning requests are often made in order to replace the existing zoning classification with a new zoning classification that allows smaller lot sizes. Smaller lot sizes allow subdivisions with more lots and may lead to a development style that is not compatible with the rural character of the Township.

The bridge between the Comprehensive Plan and the local ordinances is the Future Land Use Map. The Future Land Use Map lays out in a graphic format the long-range vision of the community.

Township zoning classifications should be kept as they currently are unless there is a request by the landowner to change them. In light of such request, properties should only be rezoned to fit development patterns outlined in the Future Land Use Plan.

A future land use map will be prepared as part of implementing the policies and strategies identified earlier in this Comprehensive Plan.

Section VI. Implementation

Implementation is perhaps the most important step within a Comprehensive Plan process. Extensive time and effort was put into developing a vision statement for the Township as well as in identifying the goals and policies of the Township. However, if nothing is done to move toward accomplishing these goals and vision, there is little value to the Plan. The Township's official controls, such as the zoning ordinance and subdivision regulations, will ensure day-to-day monitoring and enforcement of the Plan. The regulatory provisions of these ordinances, as revised, will provide a means of managing development in the Township in a manner consistent with the Comprehensive Plan.

Preparing the Princeton Township Comprehensive Plan document has accomplished two important aspects for planning the township's future. First, it serves as an organizing tool that says who the citizens of the township are and expresses their passion on the issues and challenges affecting the quality of life in the township. It provides background information on Princeton Township's environmental, social and economic assets as the basis for future policy and decisions.

Second, it provides a township vision, a look into the future at the kind of township citizens seek, focusing on what kinds of improvements need to be made, and providing a framework for how and where these improvements should occur.

A third piece of this plan that is crucial to its ultimate success is the implementation system. Implementation of the plan is going to take hard work and commitment, not just from elected leaders, but also from appointed officials, township staff, other government units (including the City of Princeton, Mille Lacs County and the State of Minnesota), local citizens, and a wide variety of volunteers and interest groups. Because there are too many strategies in this plan for the Township Board of Supervisors to implement all on their own, cooperation among these stakeholders must happen to implement the plan and make the township vision a reality.

To do this, the Township Board of Supervisors should utilize or create the following boards/committees to assist in implementing the strategies of the Comprehensive Plan:

- Planning Commission/Board of Adjustment
- Long Range Planning Committee
- Park and Recreation Commission
- Infrastructure Committee
- Economic Development Authority
- Historical Society

The Township Board of Supervisors should delegate implementation of specific strategies in this plan to each group, with township staff providing support to these committees and reporting to the Township Board of Supervisors. Each committee should prepare an annual report detailing their progress in accomplishing the goals and implementing the assigned strategies of this plan.

With a growing number of retired and semi-retired individuals in the township, there is a lot of wisdom and knowledge available. There are also quite a few working-age people who have a vested interest in the area. The township needs to organize these people, and mobilize and support them to do great things.

Once a long-term planning and implementation committee is created, that committee would set priorities and direct the overall implementation of the Comprehensive Plan. The next step is to review the goals in the plan and set priorities amongst the goals and strategies. While many of the goals and strategies are ongoing, the committee should select a goal that can be at least partially completed in a short period of time. To keep people involved, it is important to show results both in the short-term and in the long-term. The costs and benefits of each goal vary; however, each goal is important toward maintaining the rural character of the Township and providing a high quality of life within the Township.

The plan, once adopted, becomes the guiding document for Township policy. Although the Township Board of Supervisors is ultimately responsible for implementing the vision of the plan, the only way to make sure that the plan is implemented is for concerned citizens to stay involved.

Official Controls

As part of the planning process, the Township will evaluate its land use controls and consider amendments to existing ordinances that eliminate inconsistencies with the Comprehensive Plan, enhance performance standards, protect public and private investments, conform to mandatory State and Federal regulations and make it an understandable document. The principal official controls used to implement the Comprehensive Plan include the following:

- Zoning Ordinance
- Subdivision Ordinance
- Shoreland Management Regulations
- Floodplain Regulations
- Mining Regulations

The plan identifies a number of specific changes to the ordinances that need to be considered by the Township. Some of these changes include:

- Amendments to the Township's subdivision regulations to better protect natural resources and amenities, and provide for appropriate land dedication and funding for improvement of the Township's park system.
- A review of the commercial district provisions to promote development, ensures appropriate use and regulation, and prevents land use or environmental incompatibility.

Capital Improvements

The Township does not have a formal capital improvement program, as capital expenditures are infrequent. The Township budgets for any capital improvements on an ongoing basis. The Township will annually review capital expenditures that may arise over a five-year period because of implementing the comprehensive plan. This may include public and private

investments in infrastructure, park expenditures, infrastructure repair and replacement, building maintenance and repair, and other planned capital expenditures. Like the Comprehensive Plan, the capital improvements planning process is ongoing and subject to modification, as appropriate.

The preservation of natural resources in the Rum River Area will likely occur through processes that do not depend on capital expenditures by the Township alone. Preservation will result from the ongoing implementation of this and other plans. This includes ordinances that protect natural resources, land dedications through open space development; and the acquisition of trails, corridors, or sensitive areas because of the planning and implementation of County and State agencies.

Not all actions can be funded by the capital improvements budget, so the Township must also identify and prioritize projects to be funded through other options such as grants, revolving loans, and private-public partnerships. The Township should build relationships with surrounding cities and townships and Mille Lacs County to seek funding for projects from regional, state and federal agencies.

The Township should also collaborate with outside experts from both private and non-profit organizations to improve opportunities for obtaining grants, engage in training, and secure other resources. Key partnership projects should include:

- Restoring and protecting natural features and wildlife habitat.
- Attracting commercial growth and cottage industries that enhance the township's assets.
- Connecting residents and visitors to local and regional parks and recreational facilities.
- Developing social and civic programs that build on Princeton Township's heritage.

Review & Update Land Use Ordinances

An important step in implementing this Comprehensive Plan will entail close review and updating of the City's current Land Usage Ordinances to ensure that all shoreland management regulations, subdivision controls, zoning codes, and zoning maps are consistent with the Comprehensive Plan. Components of the updated Ordinance should include:

- A rural/urban transition zone targeted for future residential and commercial growth and the expansion of infrastructure to support it.
- Natural vegetation buffers around lakes and other significant natural resources.
- Requiring open space dedications, exactions, or impact fees in all new developments.
- Ensuring interconnected natural and recreational systems in all new developments.

New land use ordinances can be strengthened through an integrated system of voluntary guidelines, best management practices, development rights programs, and conservation easements.

Additional Land Use implementation includes:

- Adopt Ordinances related to Tree Preservation and Stormwater Management.
- Study options for facilitating orderly growth.

    - Require that urban infrastructure (roads, curbing, etc…) be constructed at the time of development to prepare for expansion of these services.
    - Ghost Platting.
- Adopt/Create a Conservation Subdivision Ordinance.
- Develop a Sensitive Areas Map of the Township.
- Work with Mille Lacs County and the State of Minnesota to identify areas likely to have significant gravel deposits.
    - Review existing County Ordinances related to mining and extraction to ensure they are adequate to protect neighboring properties. Conditional Use Permits will be used to control commercial secondary uses of gravel pits, and ensure proper reclamation of existing and new pits.
    - Consider requiring subdivision applicants to show whether there are gravel deposits in the land proposed for development to help ensure that dwindling gravel resources remain available.
- Identify types of businesses that would be appropriate for the commercial/industrial areas identified on the Future Land Use Map.
- Review existing Township Ordinances related to adult use businesses to ensure that these types of businesses are appropriately located. If necessary, work to have these ordinance revised.

Infrastructure and Public Services

Review existing studies and research and consider the feasibility of implementing new policies to ensure that proposed subdivisions and other developments pay their share of new infrastructure and public services.

Establish a process within the Subdivision Ordinance or other appropriate means to solicit comments from local service providers and help ensure that adequate infrastructure and services are available to serve the increased population as development occurs.

Parks and Recreation

Develop a Parks and Recreation Plan for the Township to identify where parks may be needed based on current and projected residential areas based on the Future Land Use Map.

Governance

Explore and implement methods to increase public participation in and/or understanding of Township decision-making.

- Consider re-establishing a regular Township newsletter to inform residents of decisions the Township is facing and how the residents can get involved.
- Explore other options to increase public participation, such as holding certain meetings on Saturdays, e-mail distribution lists, newspaper advertisements, etc….
- Develop educational materials to help inform residents and landowners of the importance of township government.
- Attempt to be as proactive as possible to address land use and other issues before they become problems. When issues generating significant public participation arise, use those opportunities to educate the public about the importance of becoming involved as early as possible.

- Review existing public notice policies to consider expanding the number of landowners notified of land use issues, simplify public notice language, and more clearly explain how they can become involved.

Plan Amendment Process

The Comprehensive and Critical Area Plans are intended to be general and flexible; however, formal amendments to the Plan will be required when land use elements or growth policies are revised. Periodically, the Township should undertake a formal review of the plan to determine if amendments are needed to address changing factors or events in the township. While a plan amendment can be initiated at any time, the Township should carefully consider the implications of the proposed changes before their adoption.

When considering amendments to this plan, the Township will use the following procedure:

1. Landowners, the Planning Commission or the Town Board may initiate amendments.
2. Upon a request for an amendment, the Town Board will review the amendment request and direct the staff or the planning consultant to prepare a thorough analysis of the proposed amendment.
3. Staff or a planning consultant will present to the Planning Commission a report analyzing the proposed changes, including their findings and recommendations regarding the proposed plan amendment. The Planning Commission will make a recommendation to the board as to whether or not the Town Board should proceed with the plan amendment.
4. The Town Board will decide whether to proceed with the proposed amendment. If a decision is made to proceed, a formal public hearing will be held before the Planning Commission on the proposed amendment.
5. Following the public hearing, the Planning Commission will make a recommendation to the Town Board.
6. The Town Board will receive the recommendation from the Planning Commission and make a final decision on whether to adopt the amendment.

Long-Term Planning Efforts

The Town Board must monitor the implementation of the Comprehensive Plan and work to update it periodically when aspects of the plan no longer reflect the will of the township. It is important for the township to remember that this Comprehensive Plan provides a long-term vision and framework for action based on broad township input and support, and local and regional trends. All future planning should involve members of the township and other regional stakeholders. All changes will require public hearings. A township-wide review of the Comprehensive Plan should be done every ten years starting July 2011.

Concluding Statement

Change is difficult. Any time that change is made, even if it is broadly accepted as being necessary, some will feel disenfranchised. Indeed, it is the very fact that Princeton Township is changing that prompted many to engage in this planning process in the first place.

Once ideas are put on paper, they quickly become a target. The goals and strategies in this document will be no different. The participants in this process have laid out a bold vision for

the future of the township. There are major changes being proposed in some areas of the plan. The plan will not be adopted or implemented without controversy.

The Township recognizes that this Comprehensive Plan relies on implementation. It will take involvement and dedication from the Town Board and residents to implement this plan. Parts of the plan will be implemented in the short-term while other parts will take time and effort to fully implement. One of the products of a comprehensive planning process is the creation of social capital. Social capital is a product of residents' excitement, enthusiasm, and the group desire to make the Township a better place. Moving forward with implementation sooner rather than later will keep residents involved and take advantage of the social capital that was created.

Finally, a comprehensive plan is not a static document. This Comprehensive Plan will require periodic review to make certain that the goals and the strategies are achieving the overall vision of the Township. As conditions in the Township change, the plan must be evaluated.

This plan will only be as effective as the people it serves.

APPENDIX A: Service Road Access Plans

Figure 4: Preliminary Frontage Road Improvements Index

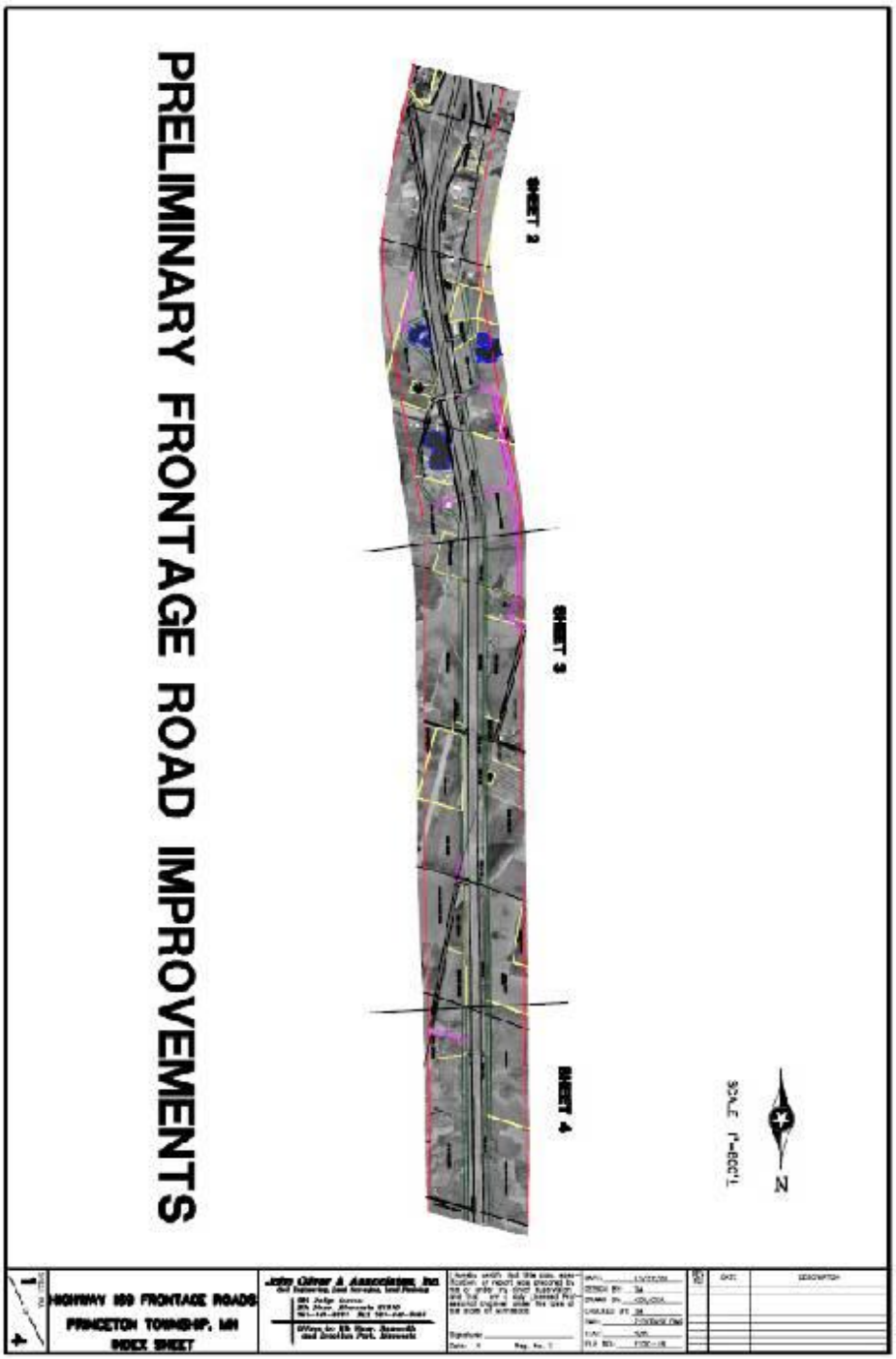


Figure 5: Preliminary Frontage Road Improvements Sheet 2

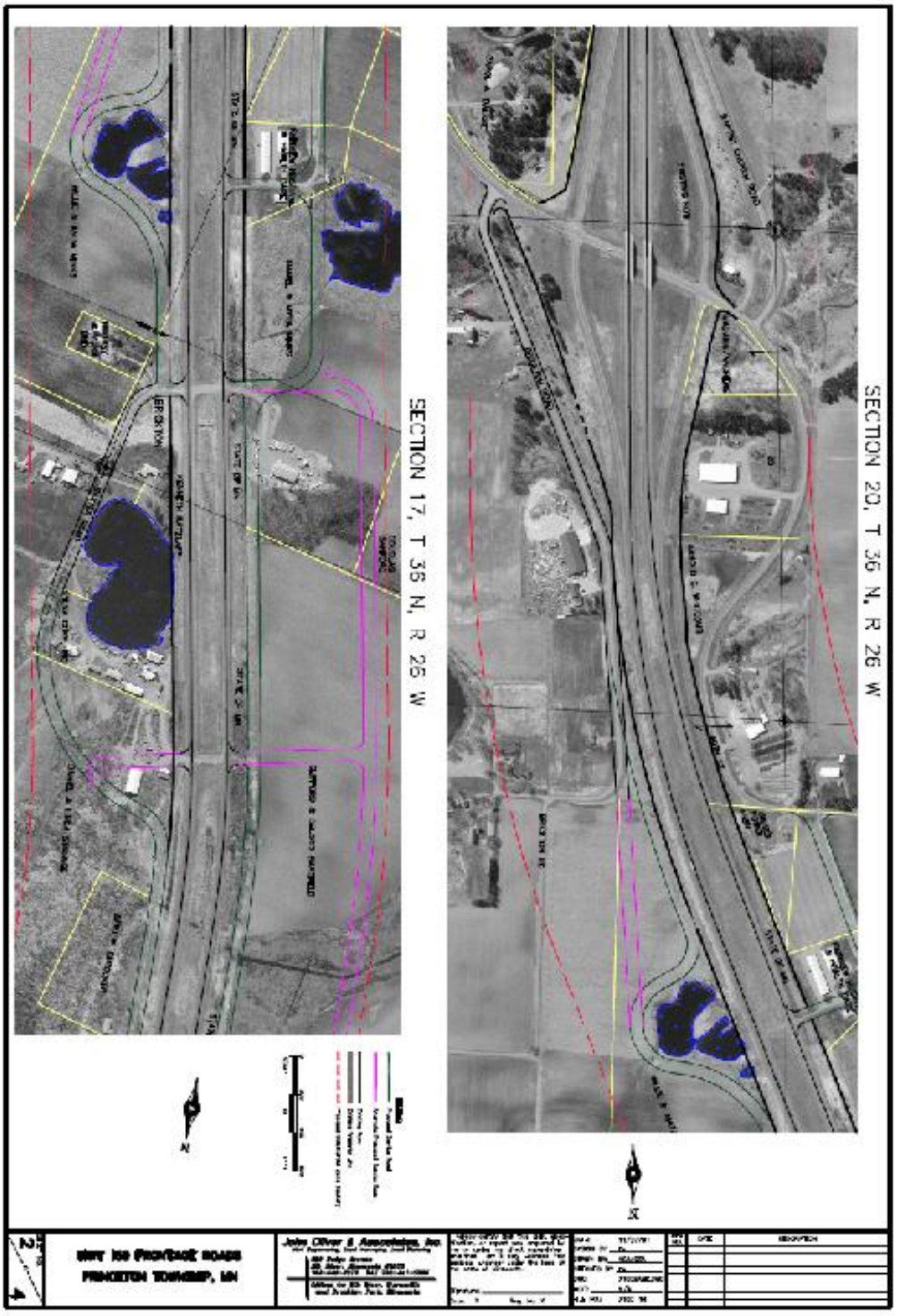


Figure 6: Preliminary Frontage Road Improvements Sheet 3

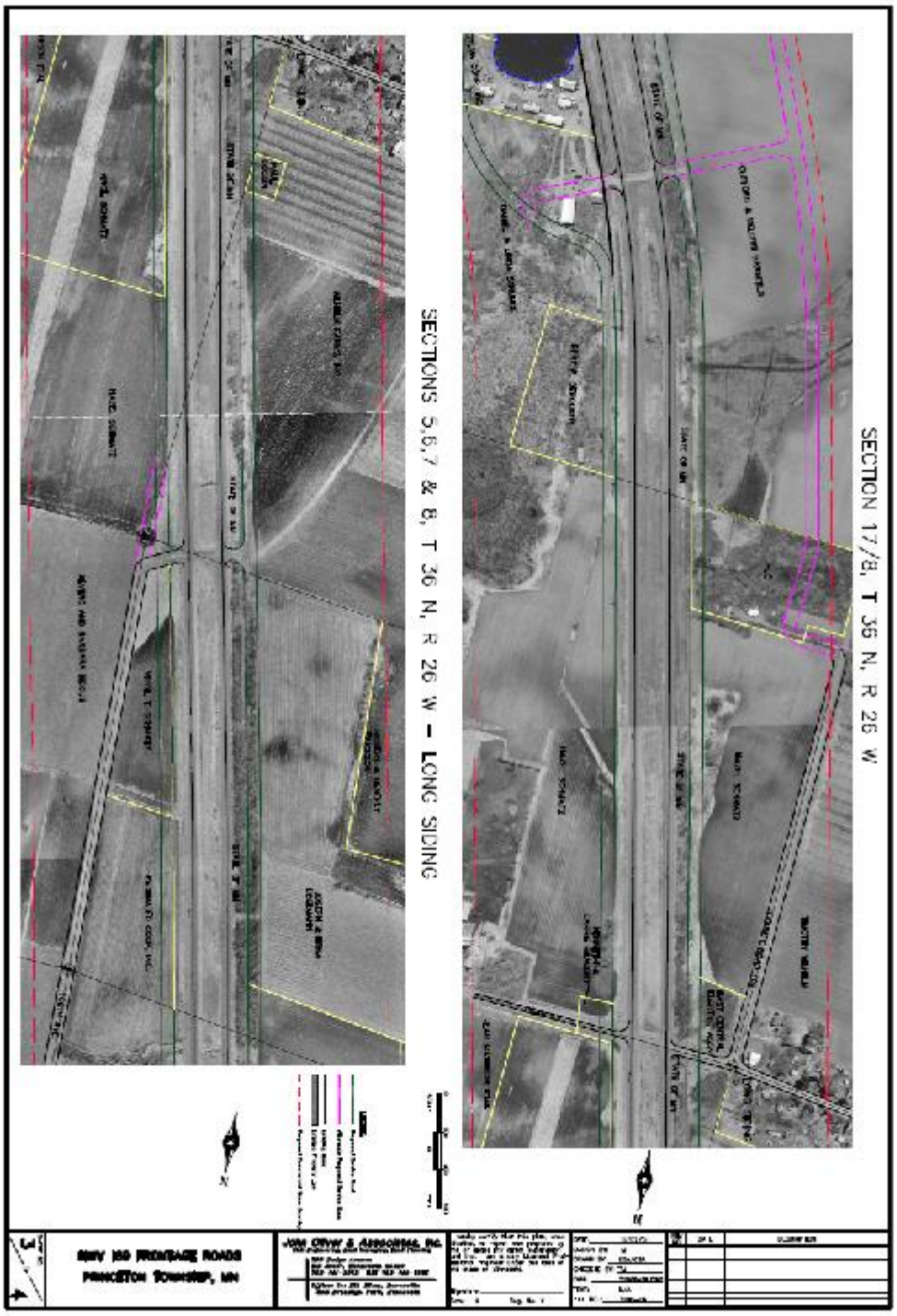
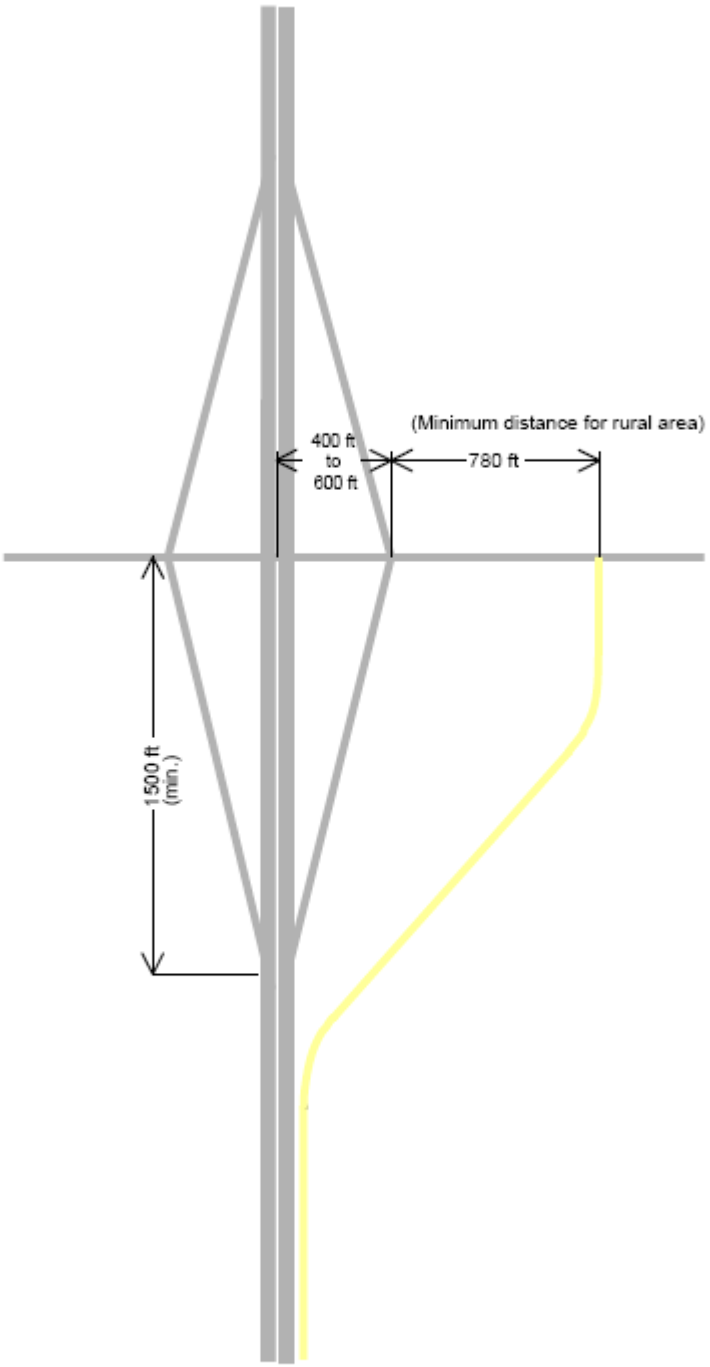


Figure 7: Preliminary Frontage Road Improvements Sheet 4

Figure 8: Conventional Diamond Interchange for Rural Areas



The graphics are representative of a typical cross section of the roadway. The distances recommended are for general planning purposes only and may need to be revised for each individual project.

Conventional Diamond Interchange for Rural Areas

Figure 9: Potential Rum River Crossing

from MnDOT 101 / 169 Corridor Management Plan

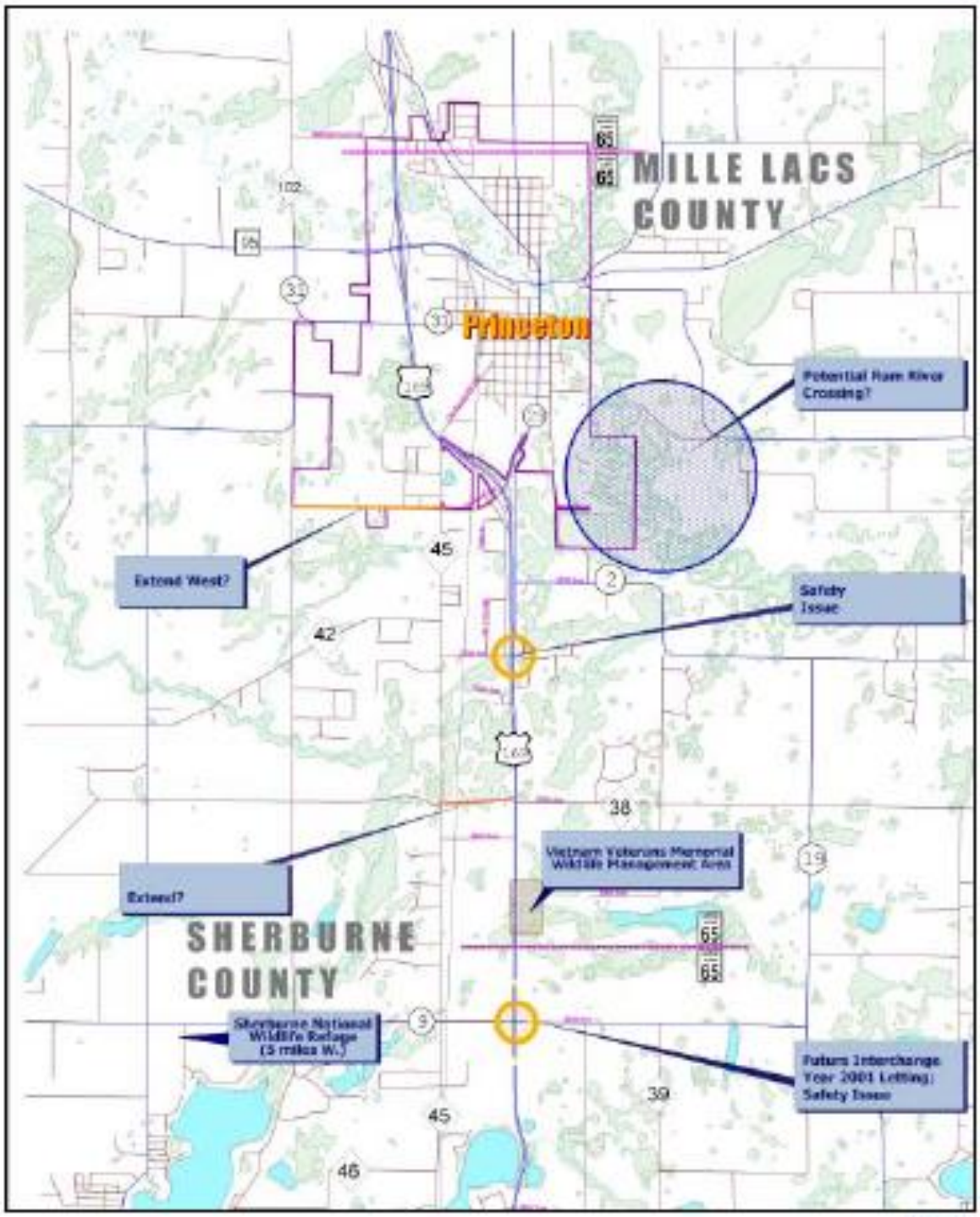
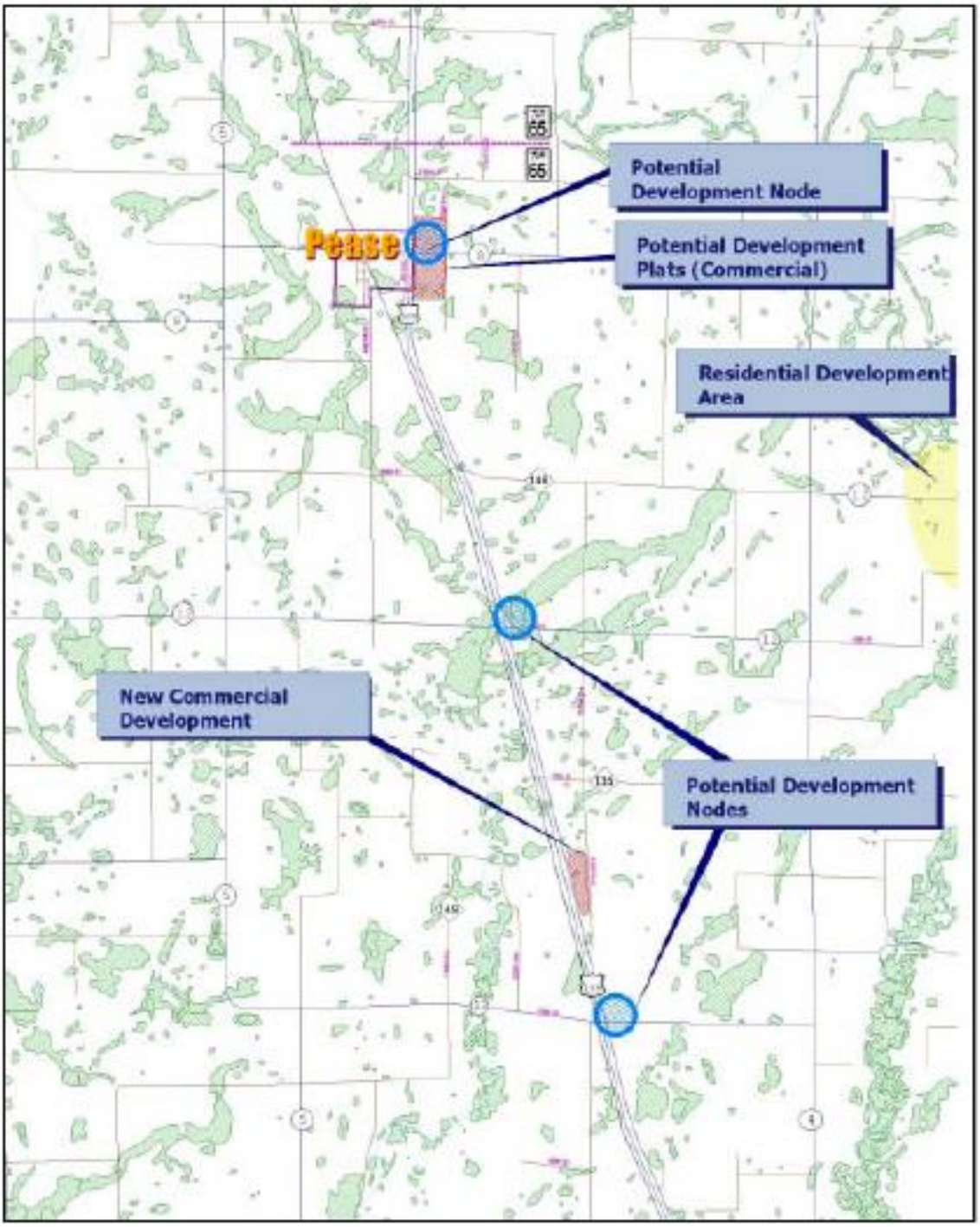


Figure 10: Potential Secondary Development Node at CSAH 13

from MnDOT 101 / 169 Corridor Management Plan



APPENDIX B: Soil Classification

Soil Definitions

To understand and communicate about soils, a standard system of classes or categories was developed. These classes are based on the presence or absence of certain soil properties. Soils can also be categorized by their location (northern versus southern soils), the kind of vegetation growing on them (forest soils versus prairie soils), their topographic position (hilltop soils versus valley soils), or other distinguishing features. The system used to classify soils based on their properties is called Soil Taxonomy. The U.S. Department of Agriculture developed it.

In Soil Taxonomy, all soils are arranged into one of twelve major soil orders. The twelve orders are defined largely on the basis of having certain kinds of diagnostic horizons or diagnostic materials. The location of the soil orders depends mainly on climate and organisms. Minnesota has seven of the eleven orders.

The lowest level recognized is the soil series. Soils comprising an individual series are nearly homogeneous and their range of properties is limited. Soil series are separated based on observable and map able properties such as color, structure, texture, and horizon arrangement. A soil series is named for the location where the soil was first identified. The series is the level that is generally used to name mapping units of detailed soil surveys. There are over 1,000 soil series recognized in Minnesota.

The following soil series have been identified in Princeton Township:

Alstad Series

The Alstad series consists of very deep, somewhat poorly drained fine-loamy soils that formed in loamy calcareous till on moraines. Permeability is moderate in the upper part of the solum and moderately slow or moderate in the lower part of the solum and in the substratum. Somewhat poorly drained. Mean annual precipitation is about 30 inches. Mean annual air temperature is about 42 degrees F. Frost-free period: 90 to 140 days.

Most areas are used for cropland. Common crops are corn, small grain, and hay. Native vegetation is deciduous forest. Common trees are American basswood, American elm, red maple, quaking aspen, and northern red oak.

Balmlake Series

The Balmlake series consists of very deep, well drained, fine sandy loam, moderately permeable soils. Mean annual precipitation is about 23 inches. Mean annual air temperature is about 40 degrees F. Frost-free days range from 90 to 140 days. Permeability is moderate.

Most areas are forested. Common trees are sugar maple, white oak, quaking aspen, paper birch, red pine, and jack pine. Some areas are used for hay, pasture, small grain, and corn production.

Bluffton Series

The Bluffton series consists of very deep, very poorly drained, fine-loamy soils that formed in a mantle of loamy alluvium from glacial till and in underlying loamy glacial till on glacial moraines. These soils have moderately rapid or moderate permeability in the upper part and moderate or moderately slow permeability in the lower part. Mean annual precipitation is about 28 inches. Mean annual air temperature is about 44 degrees F. Frost-free days range from 90 to 145.

Some of these soils are in native vegetation; some are used for pasture; and some are drained and used for small grain, corn and soybeans. Native vegetation is a mixture of water-tolerant grasses, deciduous trees and coniferous trees. Principal species are alder, black ash, black spruce, willow, and sedges.

Branstad Series

The Branstad series consists of very deep, moderately well drained fine-loamy soils formed in loamy calcareous till on moraines. Permeability is moderate in the upper part of the solum and moderately slow or moderate in the lower part of the solum and in the substratum. Mean annual precipitation is about 30 inches. Mean annual air temperature is about 42 degrees F. Frost-free period: range from 90 to 140 days.

Most areas are used for cropland. Common crops are corn, small grain, and hay. Some areas are used for pastureland. Native vegetation is deciduous forest. Common trees are sugar maple, red maple, northern red oak, and American basswood.

Brennyville Series

The Brennyville series consists of very deep, somewhat poorly drained coarse-loamy soils. Mean annual precipitation is about 28 inches. Mean annual air temperature is about 43 degrees F. Frost-free days range from 90 to 145.

About half of this soil is cleared and used for pasture or cropped to corn and hay. The remainder is in woodland or wooded pasture. Native vegetation is deciduous forest or mixed deciduous and coniferous forest.

Cantlin Series

The Cantlin series consists of very deep, well drained loamy fine sand soils formed in sandy eolian or glaciofluvial sediments on outwash plains. These soils have rapid permeability. Mean annual precipitation is about 26 inches. Mean annual air temperature is about 42 degrees F. Frost-free period is 90 to 150 days.

These soils are used to grow small grain, soybeans, corn, and forage. Other areas are in the forest. Native vegetation primarily is savanna with forest species such as northern red oak, bur oak, and aspens.

Cathro Series

The Cathro series consists of very deep, very poorly drained organic soils moderately deep to loamy materials. Permeability is moderately slow to moderately rapid in the organic material and moderately slow or moderate in the loamy material. Mean annual precipitation is about

32 inches. Mean annual air temperature is about 43 degrees F. Frost-free days range from 70 to 145.

Most of these soils are in woodland; however some are in sedge and cattails. Vegetation includes white cedar, alder, and balsam fir. A few areas are cleared and are used for pasture.

Cebana Series

The Cebana series consists of very deep, poorly and very poorly drained coarse-loamy soils which have a densic contact. Mean annual precipitation is about 28 inches. Mean annual air temperature is about 43 degrees F. Frost-free days: 90 to 145 days.

Most of this soil is forested or used as hayland or pasture. A few areas are used as cropland. Native vegetation is mixed deciduous forest or mixed deciduous-coniferous forest.

Chetek Series

The Chetek series consists of very deep, somewhat excessively drained coarse-loamy soils which are shallow to sandy outwash. Permeability is moderate or moderately rapid in the loamy mantle and rapid or very rapid in the sandy outwash. Mean annual precipitation is about 30 inches. Mean annual temperature is about 42 degrees F. The frost-free period ranges from about 120 to 135 days.

Many areas are cleared and are used for cropland or pastureland. Common crops are corn, small grains, and hay. Many areas remain in woodland particularly where slopes are irregular and exceed 5 percent. The native vegetation is mixed deciduous and coniferous forest.

Coin Series

The Coin series consists of very deep, somewhat poorly drained fine silt loam soils. Slopes range from 0 to 2 percent. Mean annual precipitation is about 28 inches. Mean annual air temperature is about 43 degrees F. Frost-free days range from 90 to 145.

Most areas of this soil are cultivated. Common crops grown include corn, soybeans, oats, and legume hay. The remaining areas are forested. Native vegetation is deciduous forest; ash, aspen, basswood, and elm were the dominant species.

Culver Series

The Culver series consists of very deep, moderately well drained fine-loamy soils. Mean annual air temperature is about 39 degrees F. Mean annual precipitation is about 28 inches. Frost-free period ranges from 90 to 145 days.

Most areas are forested. Common trees are quaking aspen, paper birch, American basswood, sugar maple, northern red oak, eastern white pine, balsam fir and white spruce. Some is used for agricultural cropland. Hay, pasture and small grains are the most common crops.

Cushing Series

The Cushing series consists of very deep, well drained fine loamy soils. Mean annual precipitation is about 30 inches. Mean annual air temperature is about 43 degrees F. Frost-free period: short 17 days and long 159 days; median 89 to 130 days.

Most areas have been cleared and are being used for general farming and pasture. Corn, small grains, and forages are the major crops grown. Native vegetation is grass, mixed deciduous and coniferous forests with northern red oak, maple, elm, American basswood, eastern white pine, and red pine predominating.

Debs Series

The Debs series consists of very deep, well drained fine-silty soils. Permeability is moderate. Mean annual temperature is about 41 degrees F. Mean annual precipitation is about 24 inches. Frost-free days range from 90 to 130.

Most of this soil is forested. The main trees are quaking aspen, paper birch, American basswood, and sugar maple. Some areas are used for pasture, hay, corn, and small grain production. Native vegetation is mixed forest species.

Dusler Series

The Dusler series consists of very deep, somewhat poorly drained fine-loamy soils. Permeability is moderate in the mantle and slow in the underlying material. Mean annual air temperature is about 38 degrees F. Mean annual precipitation is about 28 inches. Frost-free days range from 90 to 145.

Most of this soil is forested. A minor acreage is cropped to small grains and forage crops. Native vegetation was mixed deciduous-coniferous forest with elm, basswood, trembling aspen and balsam fir being dominant.

Elkriver Series

The Elkriver series consists of very deep, somewhat poorly and moderately well drained fine sandy loam soils. These soils have moderate and moderately rapid permeability in the upper part and rapid permeability in the underlying material. Mean annual precipitation is about 30 inches. Mean annual air temperature is about 43 degrees F.

Almost all areas of Elkriver soils are cultivated. Corn, soybeans and small grains are the principal crops; however, some areas are in hay and pasture. Native vegetation is mixed prairie grasses and mixed deciduous forest.

Fluvaquents

The Fluvaquents series consists of very deep, poorly drained soils. These soils have slow permeability and are found on floodplains.

Foglake Series

The Foglake series consists of very deep, poorly drained fine silt loam soils. Mean annual precipitation is about 26 inches. Mean annual air temperature is about 40 degrees F. Frost free days range from 90 to 140.

The main use is cropland. Common crops grown include corn, soybeans, oats, and legume hay. A few areas are forested. Native vegetation is deciduous forest; ash, aspen, basswood, and elm were the dominant species.

Fordum Series

The Fordum series consists of very deep, poorly drained soils that are moderately deep to sand. Fordum soils are on the lowest part of the flood plain adjacent to stream or river channels. Mean annual precipitation is about 28 inches. Mean annual temperature is about 41 degrees F. The frost-free period ranges from about 70 to 135 days. Permeability is moderate or moderately rapid in the upper loamy alluvium and rapid or very rapid in the lower sandy alluvium.

Most areas are in woodland. Common trees are silver maple, red maple, quaking aspen, big tooth aspen, paper birch, American elm, white spruce, and yellow birch. Tag alder is common in many places. Some areas are in marsh vegetation of grasses, seeds, sedges and shrubs. Some areas are used for pastureland and some small areas are used for harvesting marsh hay.

Giese Series

The Giese series consists of very deep, very poorly drained coarse-loamy soils in low lying areas on moraines. Permeability is moderate in the upper mantle and very slow in the dense till. Mean annual precipitation is about 27 inches. Mean annual air temperature is about 40 degrees F. The frost free season ranges from 90 to 145 days.

Most areas have a native vegetation of lowland hardwoods and aspen or have a cover of sedges and willows. Some are in pasture.

Grasston Series

The Grasston series consists of very deep, moderately well drained fine silt loam soils. Mean annual precipitation is about 26 inches. Mean annual air temperature is about 40 degrees F. Frost free days range from 90 to 140.

The main use is cropland. Common crops grown include corn, soybeans, oats, and legume hay. A few areas are forested. Native vegetation is deciduous forest; ash, maple, basswood, and elm were the dominant species.

Graycalm Series

The Graycalm series consists of deep, somewhat excessively drained sandy soils. These soils have rapid permeability. Mean annual precipitation is about 30 inches, and mean annual temperature is about 44 degrees F. The frost-free period is 90 to 140 days.

A large part is in forestland. Forest vegetation consists chiefly of northern red oak with some white pine in the southern extent of the soil, and jack pine and scrub oak in the northern extent. A small part is cropped to small grains, corn, or hay.

Grayling Series

The Grayling series consists of very deep, excessively drained soils. Saturated hydraulic conductivity is high. Mean annual precipitation is 30 inches and mean annual temperature is about 43 degrees F.

Used for woodland. Ground cover includes blueberries, lichens, mosses, sweet fern, and wintergreen.

Haybrook Series

The Haybrook series consists of very deep, poorly drained fine sandy loam soils. Mean annual precipitation is about 28 inches. Mean annual air temperature is about 43 degrees F. Frost-free days range from 90 to 145.

Most areas of this soil is forested or used for hay land or pasture. Some areas are used for cropland. The original vegetation is a mix of water tolerant grasses and deciduous trees.

Hillview Series

The Hillview series consists of very deep, poorly drained fine sandy loam soils. Permeability is moderately rapid. Mean annual air temperature is about 42 degrees F. Mean annual precipitation is about 25 inches. These soils have 100 to 140 frost-free days.

Most areas of the soil are cultivated. The principal crops are corn, small grains and hay. Some areas are forested or are in pasture. Native vegetation is hardwoods dominated by aspen and mixed conifers.

Isanti Series

The Isanti series consists of very deep, poorly and very poorly drained fine sandy loam soils. These soils have moderately rapid or rapid permeability. Mean annual precipitation is about 26 inches. Mean annual air temperature is about 44 degrees F. Frost-free days range from 90 to 150.

Mostly idle or in pasture, some areas are drained and cropped to corn, soybeans, potatoes, or sod. Native vegetation was primarily grasses, sedges, and willow.

Lewis Lake Series

The Lewis Lake series consists of very deep, moderately well drained fine silt loam soils. These soils have moderately slow and slow permeability. Mean annual precipitation is about 28 inches. Mean annual air temperature is about 43 degrees F. Frost-free days range from 90 to 145.

Most areas of these soils are cultivated. Common crops grown include corn, soybeans, oats, and legume hay. The remaining areas are forested. Native vegetation is deciduous forest; ash, maple, basswood, and elm were the dominant species.

Lino Series

The Lino series consists of very deep, somewhat poorly drained loamy fine sand soils. These soils have rapid permeability. Mean annual precipitation is about 26 inches. Mean annual air temperature is about 44 degrees F. Frost-free days range from 90 to 150.

Approximately 50 percent of these soils are cropped to soybeans and corn. The remaining areas are in pasture, forested pasture, or forest. Native vegetation was deciduous forest with red and bur oak, aspen, and some water tolerant grasses being the dominant plants.

Longsiding Series

The Longsiding series consists of very deep, somewhat poorly drained fine silt loam soils. Mean annual precipitation is about 26 inches. Mean annual air temperature is about 40 degrees F. Frost-free days range from 90 to 140.

The main use is cropland. Common crops grown include corn, soybeans, oats, and legume hay. A few areas are forested. Native vegetation is deciduous forest; ash, maple, basswood, and elm were the dominant species.

Mahtomedi Series

The Mahtomedi series consists of very deep, excessively drained, rapidly permeable loamy sand soils. Mean annual temperature is about 41 degrees F. Mean annual precipitation is about 28 inches. Frost-free days range from 88 to 142.

Mostly in forest and some is pastured. Native vegetation was mixed hardwood-coniferous forest.

Markey Series

The Markey series consists of very deep, very poorly drained sandy soils. Saturated hydraulic conductivity is moderately slow to moderately rapid in the organic layers and rapid or very rapid in the sandy material. Mean annual precipitation is about 30 inches. Mean annual air temperature is about 43 degrees F. Frost-free period is 70 to 145 days.

Most of this soil is in native vegetation. Most areas are forested. Some areas are in cattails, marsh grasses, reeds, and sedges. A small part is used for permanent pasture.

Milaca Series

The Milaca series consists of very deep, moderately well drained fine sandy loam soils. Mean annual precipitation is about 28 inches. Mean annual air temperature is about 43 degrees F. Frost-free period ranges from 90 to 145 days.

Approximately half of this soil is cultivated. Crops commonly grown are corn, oats, and hay. The remaining areas are pastured or forested. Native vegetation is mixed deciduous forest or mixed deciduous-coniferous forest.

Minocqua Series

The Minocqua series consists of very deep poorly drained and very poorly drained silt loam soils which are moderately deep to stratified sandy outwash. Permeability is moderate in the silty and loamy alluvium and rapid or very rapid in the sandy outwash. Mean annual precipitation is about 30 inches. Mean annual air temperature is about 39 degrees F. The frost-free period ranges from about 70 to 125 days.

Most areas of this soil are used for woodland. Native vegetation is deciduous forest and mixed deciduous-coniferous forest. Major species of trees include American elm, balsam fir, black ash, black spruce, eastern hemlock, northern white cedar, quaking aspen, red maple, tamarack, and white ash. A few areas have been cleared and used for cropland or pastureland.

Mora Series

The Mora series consists of very deep, somewhat poorly drained fine sandy loam soils that formed in loamy till on drumlins and moraines. Mean annual precipitation is about 28 inches. Mean annual air temperature is about 43 degrees F. Frost-free period ranges from 90 to 145 days.

About one-half of these soil areas are forested. The remaining areas are cleared and used for pasture or are cropped to corn, oats, and hay. Native vegetation is mixed deciduous forest or mixed deciduous-coniferous forest.

Quam Series

The Quam series consists of very deep, poorly and very poorly drained silty clay loam soils. These soils have moderately slow permeability. Mean annual precipitation is about 25 inches. Mean annual air temperature is about 44 degrees F. Frost-free days range from 120 to 160.

These soils are used to grow corn, soybeans, and small grains where drained. Native vegetation is grasses, rushes, sedges, and reeds.

Rosy Series

The Rosy series consists of very deep, moderately well drained very fine sandy loam soils. These soils have moderate permeability. Mean annual precipitation is about 25 inches. Mean annual air temperature is about 39 degrees F.

Most acreage is forested. Common trees are basswood, paper birch, quaking aspen, and sugar maple. Some acreage is cleared for production of hay, pasture and small grain.

Seelyeville Series

The Seelyeville series consists of very deep, very poorly drained soils. These soils have moderately rapid to moderately slow permeability. Mean annual precipitation is about 24 inches. Mean annual temperature is about 46 degrees F. Frost-free days range from 88 to 150. These soils are frozen from December to mid-April.

Most of these soils are in native vegetation. Some areas are used for pasture or for hay. A few areas are drained and cropped to specialty crops. Native vegetation primarily is sedges and grasses. Some areas have scattered alders, willow, tamarack, and bog birch.

Soderville Series

The Soderville series consists of very deep, moderately well drained loamy fine sand soils. Mean annual precipitation is about 28 inches. Mean annual air temperature is about 41 degrees F.

Most areas of this soil are used for cropland. Common crops are corn, small grain, and hay. Some areas are used as woodland. Common trees are jack pine, eastern white pine, red pine, and northern red oak.

Talmoon Series

The Talmoon series consists of very deep, very poorly drained and poorly fine silt loam drained soils. These soils have moderate permeability in the upper part and moderately slow permeability in the lower part. Mean annual precipitation is about 24 inches. Mean annual air temperature is about 40 degrees F. Frost-free days range from 88 to 150.

Most areas grow native vegetation of lowland hardwoods or aspen or a cover of sedges and willows. Some areas are pastured. Significant areas of Talmoon, poorly drained are used to grow cultivated crops.

Twig Series

The Twig series consists of very deep, very poorly drained loamy soils on moraines and drumlins. Mean annual precipitation is about 27 inches. Mean annual air temperature is about 40 degrees F. Frost-free days range from 90 to 135.

Most areas have a native vegetation of lowland hardwoods and aspen or have a cover of sedges and willows. Some are in pasture.

Udifluvents Series

The Udifluvents series consists of very deep, somewhat poorly drained and poorly drained soils. These soils have rapid permeability. Mean annual precipitation is about 24 inches. Mean annual air temperature is about 40 degrees F. Frost-free days range from 88 to 150. Udifluvents occur on forested bar and channel topography within the floodplain. Mean annual air temperature: 47 to 50 degrees F. Frost-free season: 150 to 180 days

Principal tree species: big leaf maple, western hemlock, western red cedar, grand fir, and vine maple. Major understory species: western sword fern, deer fern, red huckleberry, and three leaf foamflower

Udorthents, loamy

These soils are in areas of cut and fill. Where soil material has been removed, the material is typically similar in the subsoil or substratum of adjacent soils. In fill or disposal areas, the soil material has more variable characteristics because it usually consists of varying amounts of material from the subsoil and substratum of nearby soils. Typically, the upper part 60 inches is silty clay loam, clay loam or silt loam. Some of the areas on terraces and flood plains have sandy and gravelly material. The available water capacity is variable, but it is dominantly low or very low in the root zone. Permeability is generally slow. Glacial pebbles and fragments of shale and sandstone are commonly on the soil surface. The soil is firm and dense. Reaction of the root zone ranges from medium acid to mildly alkaline.

In most areas, these soils are at sites of new construction. Other areas consist of borrow pits and other excavations. About one-half of the areas do not have any vegetative cover or have only very sparse cover. A few areas are in hay or pasture. Erosion is a severe hazard in areas where the surface is bare. Suitable plant cover is needed to control erosion.

The suitability of the soils as a site for buildings and sanitary facilities varies. Onsite investigation is needed to determine the potential and limitation for any proposed use.

Whited Series
The Whited series consists of very deep, poorly drained fine silt loam soils. Mean annual precipitation is about 28 inches. Mean annual air temperature is about 43 degrees F. Frost-free days range from 90 to 145.

Most areas of these soils are cultivated. Common crops are corn, soybeans, oats, and legume hay. The remaining areas are forested. The native vegetation is a mix of water tolerant grasses and deciduous trees.

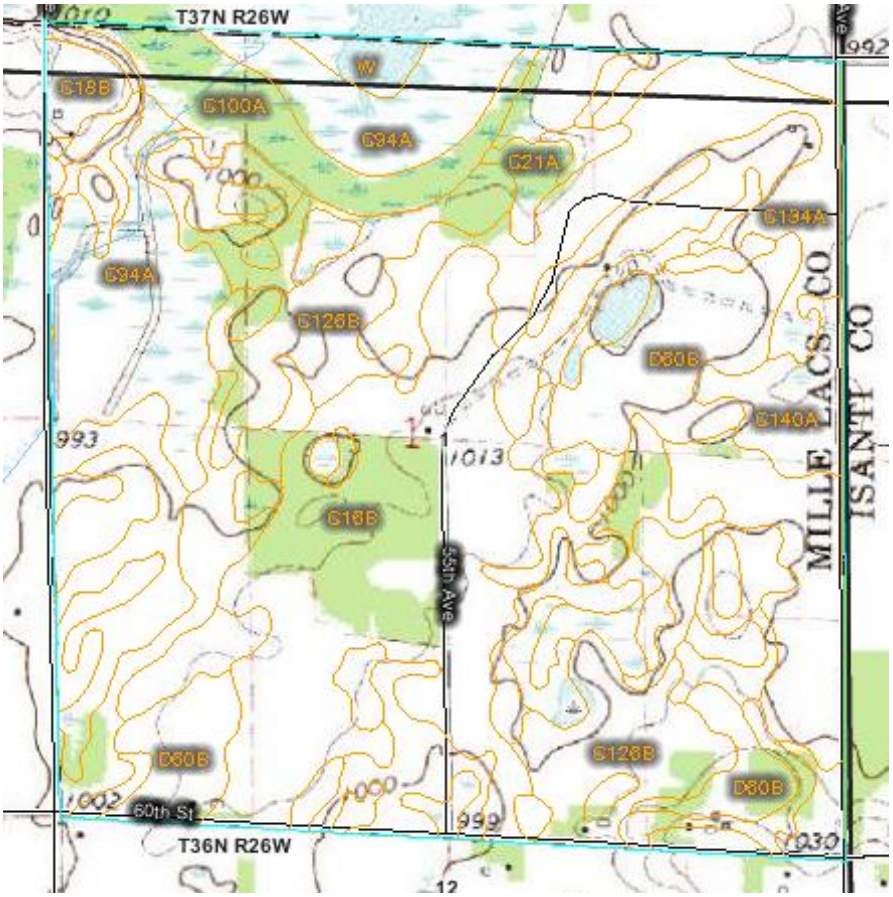
Winterfield Series
The Winterfield series consists of very deep, somewhat poorly drained sandy soils. These soils have rapid permeability. Mean annual precipitation is about 30 inches. Mean annual temperature is about 44 degrees F. Frost free days range from 90 to 140.

Practically all areas are in woodland. Elm, red maple, swamp white oak, and quaking aspen are the principal trees.

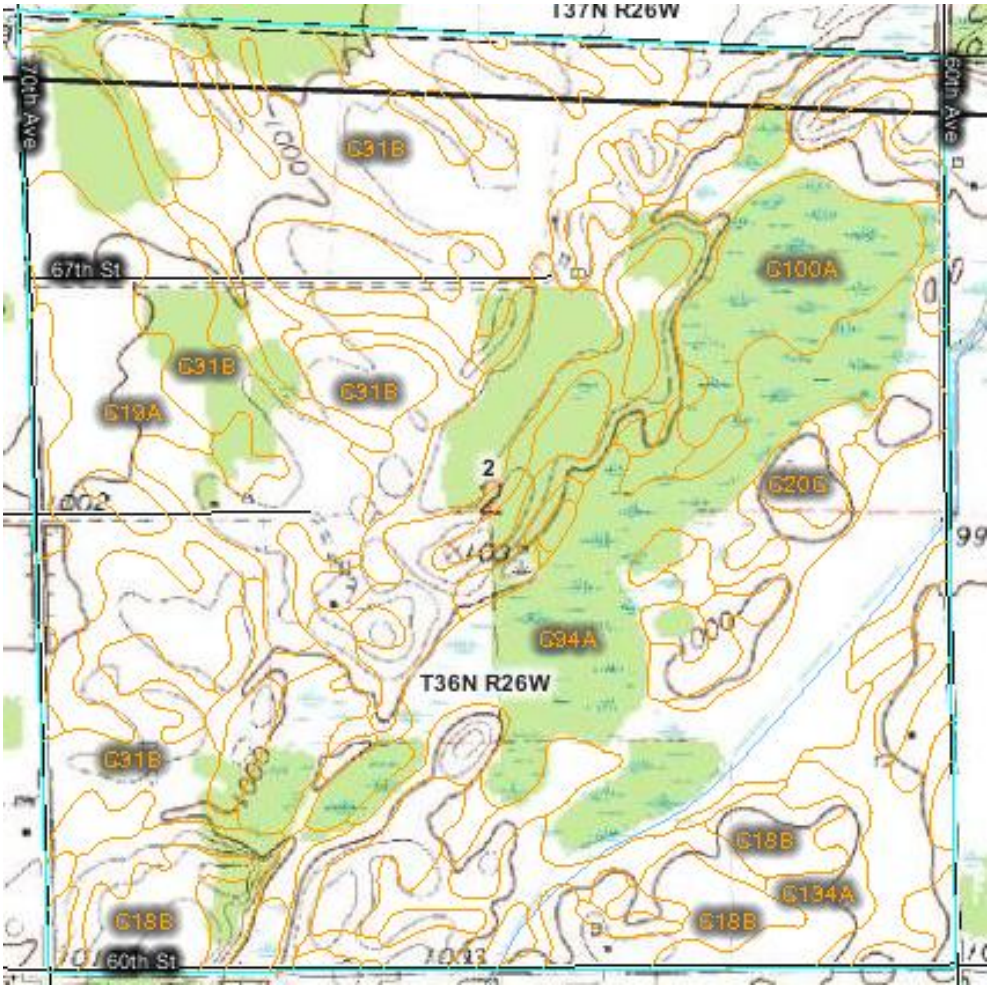
Zimmerman Series
The Zimmerman series consists of very deep, excessively drained soils. These soils have rapid permeability. Mean annual precipitation is about 28 inches. Mean annual air temperature is about 41 degrees F. Frost-free days range from 88 to 150.

Most of the acreage in southern part is used to grow alfalfa, corn, and soybeans. Most in northern areas remain in forest. Native vegetation was primarily mixed oak forest or jack pine and red pine.

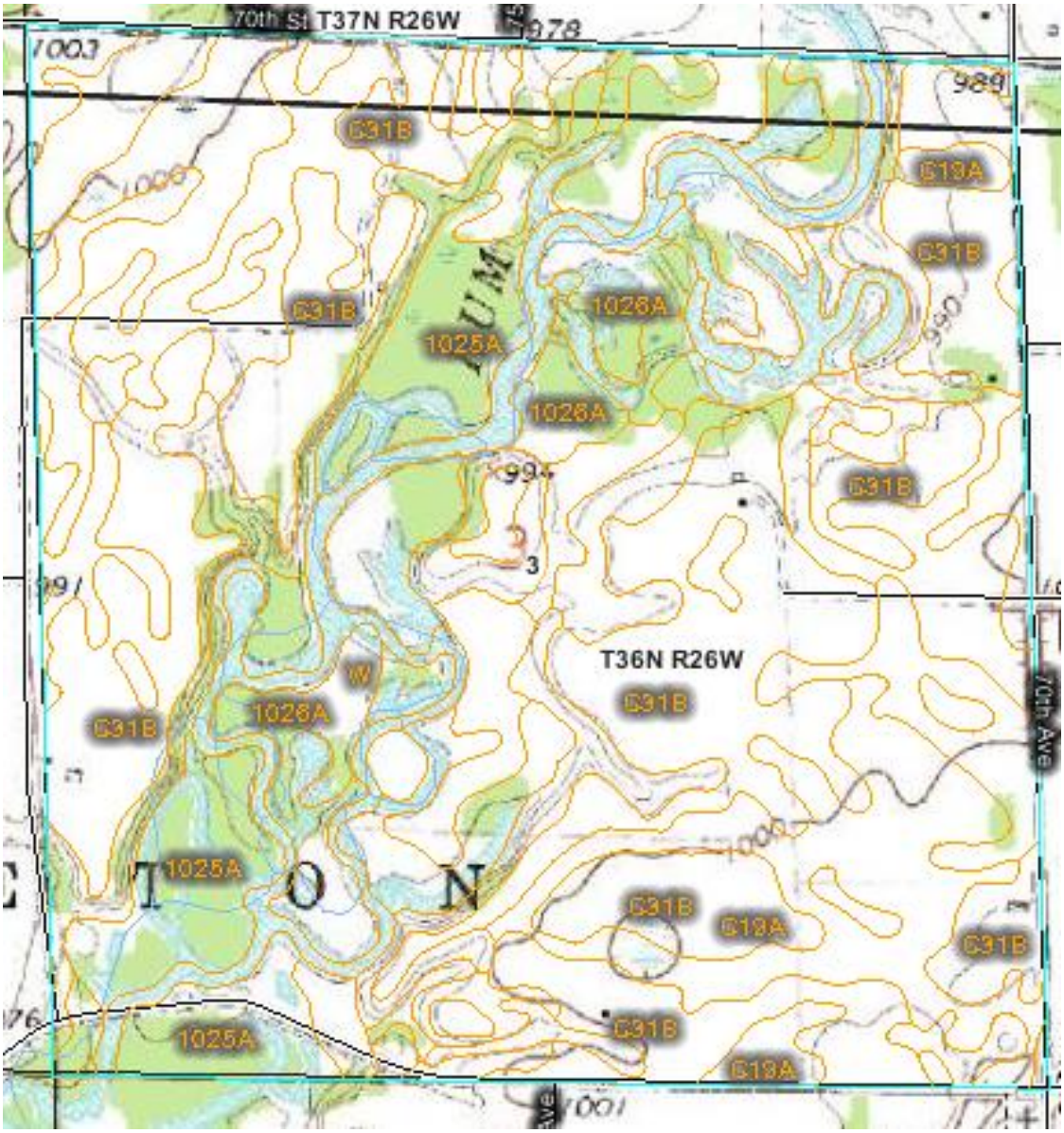
Township Section Soil Maps



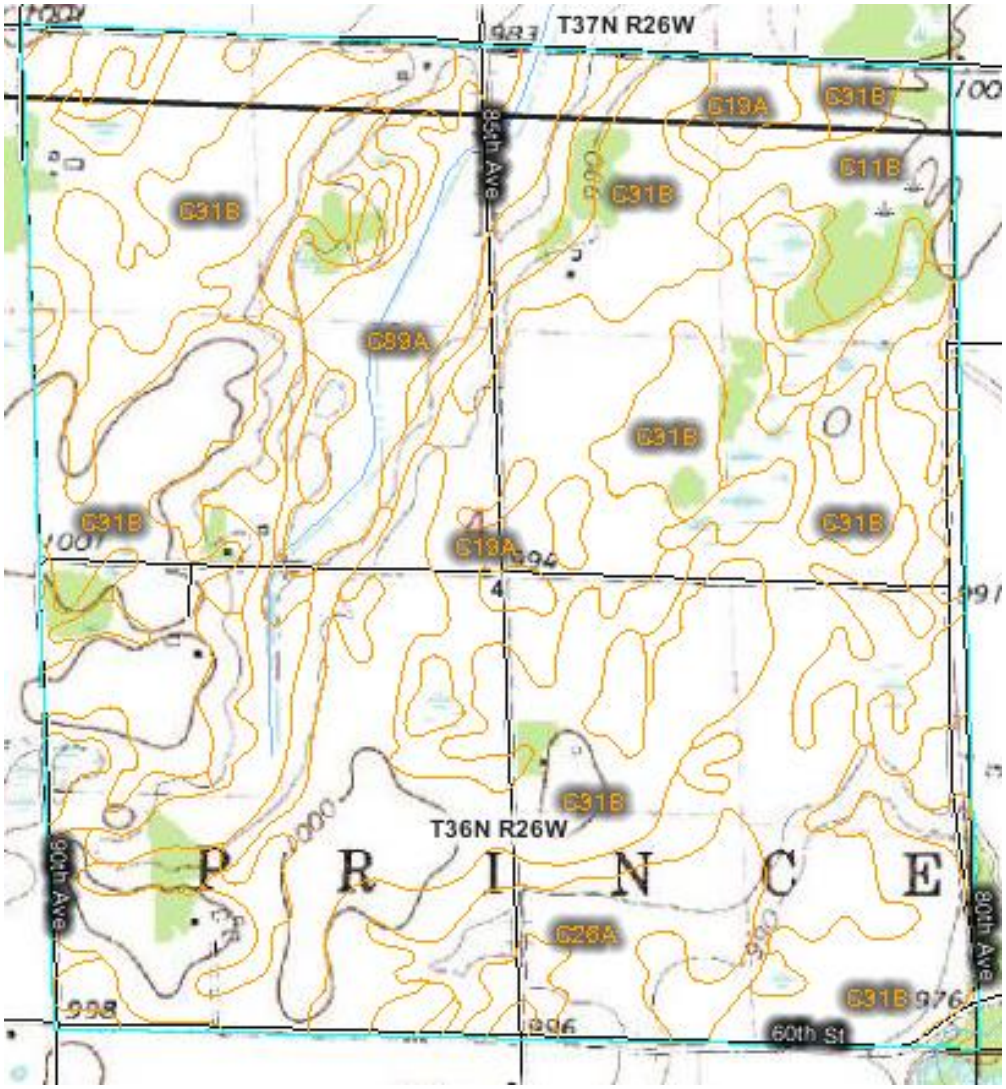
Princeton Township Section 1		
Map Unit Symbol	Map Unit Name	Acres
1008B	Udipsamments (cut and fill land)	4.0
C13A	Bluffton loam, depressional, 0 to 1 percent slopes	1.0
C16B/C	Mahtomedi-Chetek complex	128.6
C18B	Branstad loam, 2 to 6 percent slopes	8.0
C20C/E	Cushing loam, 6 to 12 percent slopes	15.5
C21A	Quam mucky silty clay loam, depressional, MLRA 90	6.4
C30A	Talmoon loam, 0 to 2 percent slopes	10.5
C50B	Culver-Dusler complex, 1 to 8 percent slopes	2.9
C75A	Seelyeville and Cathro soils, Milaca catena, depressional	12.7
C94A	Seelyeville and Cathro (Cushing catena) soils, depressional	61.8
C97A	Cathro, sandy substratum, and Seelyeville soils, depressional	1.6
C100A	Seelyeville and Cathro (Cushing catena) soils, wooded	25.8
C112B/C	Graycalm-Grayling complex, 2 to 8 percent slopes	26.8
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	71.9
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	133.6
C140A	Hillview fine sandy loam, 0 to 2 percent slopes	50.1
D46A	Lino loamy fine sand, 0 to 2 percent slopes	1.8
D60B/C/E	Zimmerman fine sand	72.2
W	Water	5.3



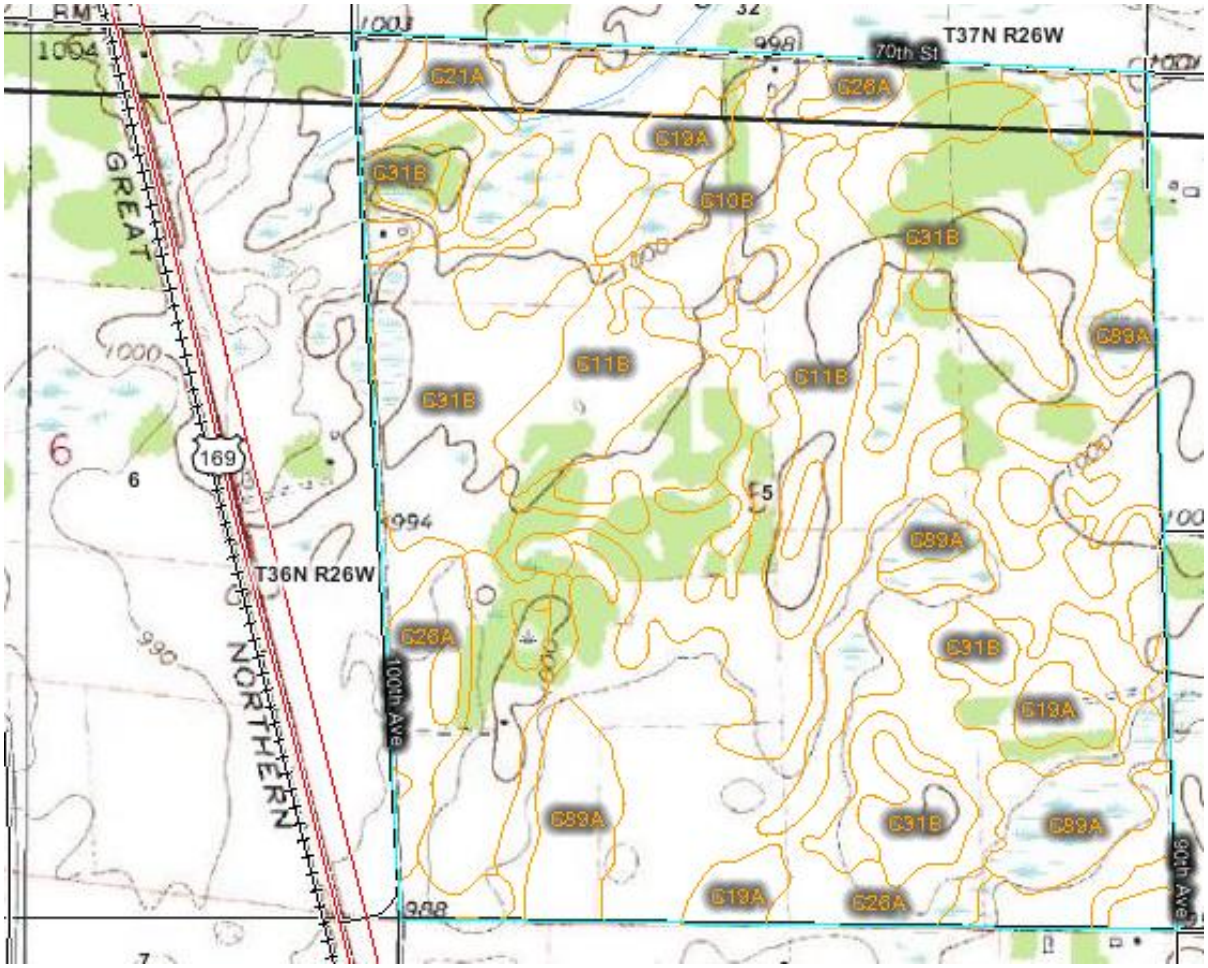
Princeton Township Section 2		
Map Unit Symbol	Map Unit Name	Acres
1025A	Fluvaquents and Udifluvents, loamy, frequently flooded	1.0
C13A	Bluffton loam, depressional, 0 to 1 percent slopes	5.0
C18B	Branstad loam, 2 to 6 percent slopes	62.6
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	75.1
C20C/D/E	Cushing loam	98.2
C25A	Alstad loam, 1 to 3 percent slopes	34.2
C26A	Foglake silt loam, 0 to 2 percent slopes	21.6
C29E	Debs silt loam, 18 to 25 percent slopes	5.7
C30A	Talmoon loam, 0 to 2 percent slopes	14.8
C31B/C2	Grasston silt loam	145.4
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	10.1
C94A	Seelyeville and Cathro (Cushing catena) soils, depressional	114.1
C100A	Seelyeville and Cathro (Cushing catena) soils, wooded	28.2
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	3.9
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	20.6
C140A	Hillview fine sandy loam, 0 to 2 percent slopes	15.3



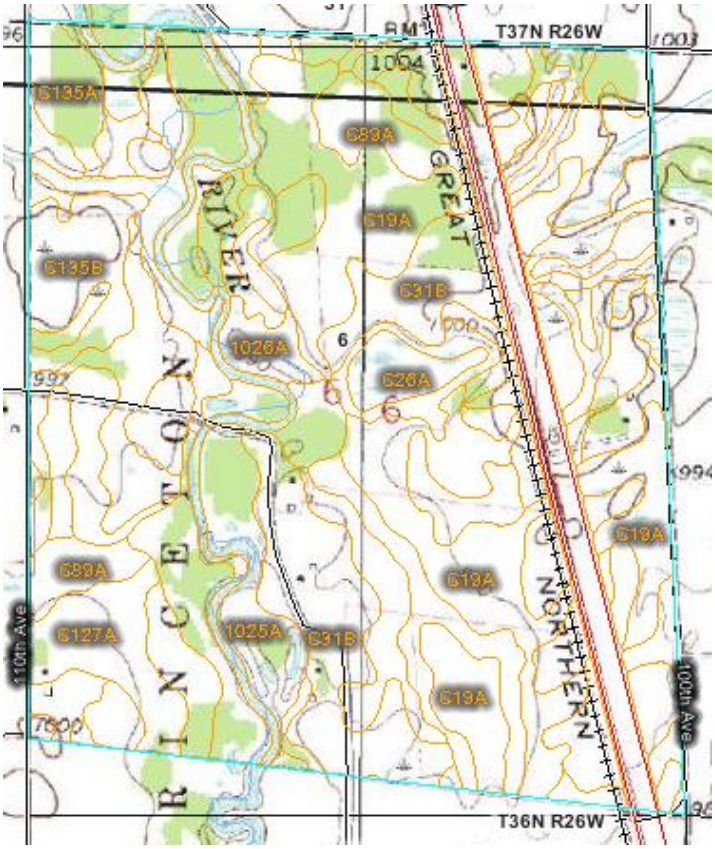
Princeton Township Section 3		
Map Unit Symbol	Map Unit Name	Acres
1025A	Fluvaquents and Udifluvents, loamy, frequently flooded	118.8
1026A	Udifluvents and Fluvaquents, loamy, occasionally flooded	65.6
C11B	Mora-Brennyville, wet, complex, 1 to 6 percent slopes, stony	4.5
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	115.0
C21A	Quam mucky silty clay loam, depressional, MLRA 90	1.0
C26A	Foglake silt loam, 0 to 2 percent slopes	44.5
C29D2/E	Debs silt loam	54.1
C31B/C2	Grasston silt loam	234.6
C91C	Milaca, stony-Chetek complex, 8 to 15 percent slopes	10.3
W	Water	32.2



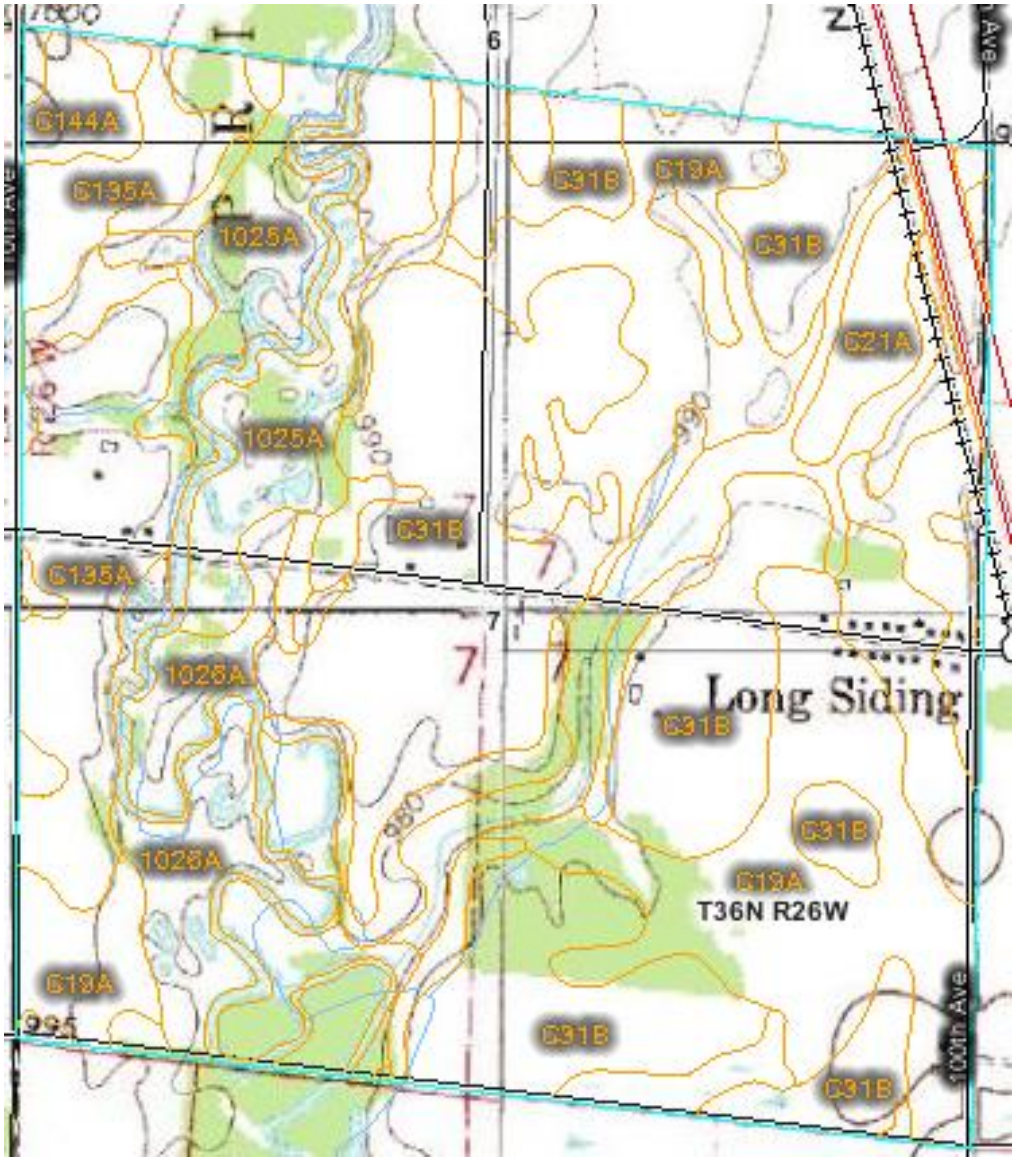
Princeton Township Section 4		
Map Unit Symbol	Map Unit Name	Acres
1026A	Udifluvents and Fluvaquents, loamy, occasionally flooded	0.2
C1B	Milaca-Brennyville complex, 3 to 8 percent slopes, stony	3.2
C9A	Mora, wet-Cebana complex, 0 to 3 percent slopes, stony	4.8
C11B	Mora-Brennyville, wet, complex, 1 to 6 percent slopes, stony	21.3
C12A	Brennyville, wet-Cebana complex, 0 to 4 percent slopes, stony	4.0
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	182.5
C21A	Quam mucky silty clay loam, depressional, MLRA 90	11.2
C26A	Foglake silt loam, 0 to 2 percent slopes	120.1
C29D2/E	Debs silt loam	26.7
C31B/C2	Grasston silt loam	282.3
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	38.6
C91C	Milaca, stony-Chetek complex, 8 to 15 percent slopes	1.1
C96A	Cathro, Twig, and Giese, stony, soils, depressional	1.6



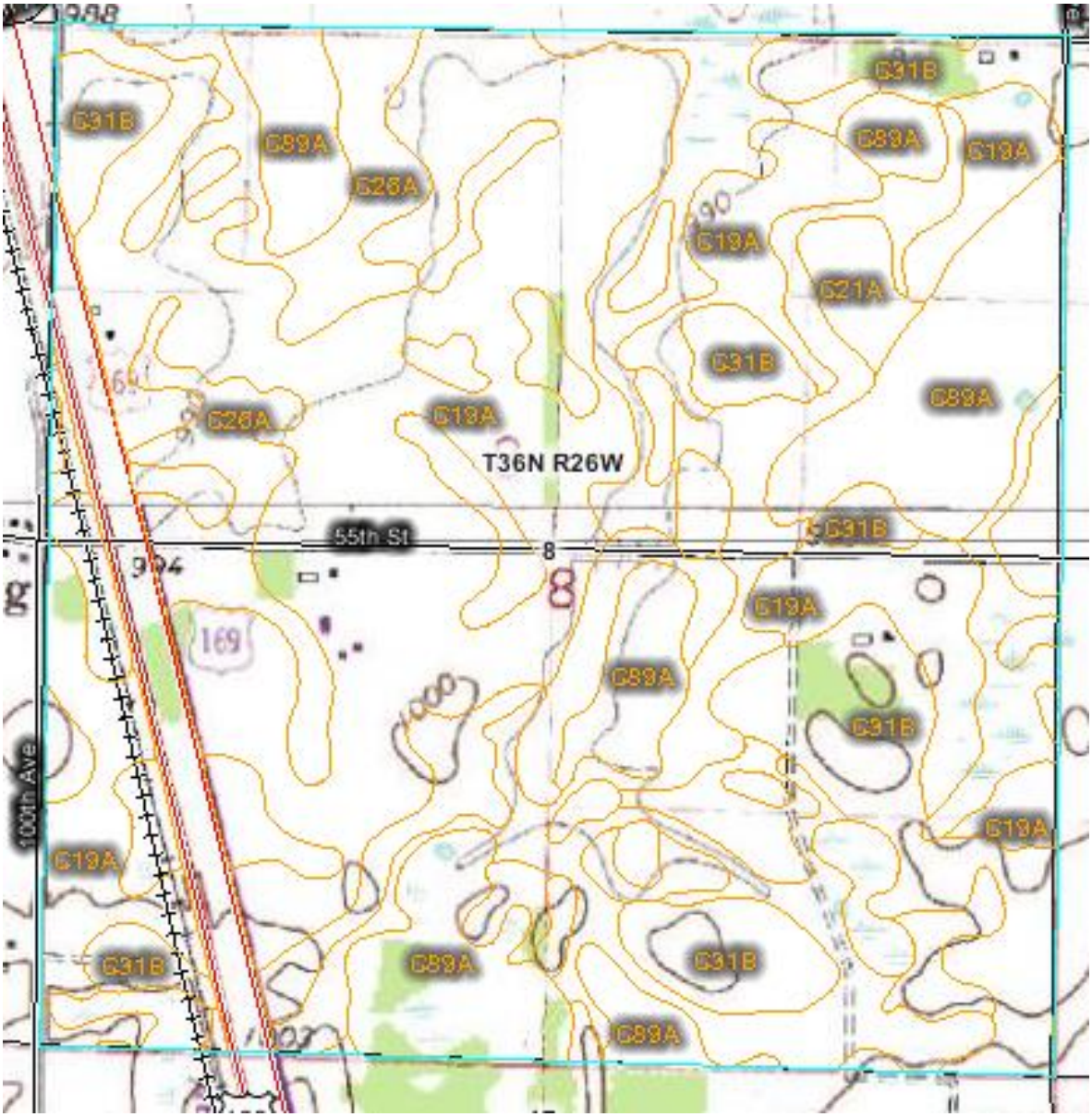
Princeton Township Section 5		
Map Unit Symbol	Map Unit Name	Acres
C5C	Milaca fine sandy loam, 8 to 15 percent slopes, stony	4.1
C6A	Cebana silt loam, 0 to 2 percent slopes, stony	0.5
C9A	Mora, wet-Cebana complex, 0 to 3 percent slopes, stony	7.7
C10B	Brennyville complex, 1 to 6 percent slopes, stony	16.6
C11B	Mora-Brennyville, wet, complex, 1 to 6 percent slopes, stony	82.3
C12A	Brennyville, wet-Cebana complex, 0 to 4 percent slopes, stony	7.3
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	184.6
C21A	Quam mucky silty clay loam, depressional, MLRA 90	40.8
C26A	Foglake silt loam, 0 to 2 percent slopes	165
C31B/C2	Grasston silt loam	138.5
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	49.0
C91B/E	Milaca, stony-Chetek complex	3.6
C146A	Haybrook fine sandy loam, 0 to 2 percent slopes, stony	3.4
W	Water	1.3



Princeton Township Section 6		
Map Unit Symbol	Map Unit Name	Acres
1003B	Udorthents, loamy (cut and fill land), 0 to 6 percent slopes	33.9
1017A	Fluvaquents, ponded, frequently flooded	2.4
1025A	Fluvaquents and Udifluvents, loamy, frequently flooded	75.2
1026A	Udifluvents and Fluvaquents, loamy, occasionally flooded	14.1
C6A	Cebana silt loam, 0 to 2 percent slopes, stony	0.1
C10B	Brennyville complex, 1 to 6 percent slopes, stony	1.4
C11B	Mora-Brennyville, wet, complex, stony	40.3
C12A	Brennyville, wet-Cebana complex, stony	6.4
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	119.6
C21A	Quam mucky silty clay loam, depressional, MLRA 90	11.9
C26A	Foglake silt loam, 0 to 2 percent slopes	37.3
C29E	Debs silt loam, 18 to 25 percent slopes	1.6
C31B/C2	Grasston silt loam	99.9
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	19.3
C91B/C/E	Milaca, stony-Chetek complex	30.7
C96A	Cathro, Twig, and Giese, stony, soils, depressional	1.8
C97A	Cathro, sandy substratum, and Seelyeville soils, depressional	4.8
C127A	Whited silt loam, 0 to 2 percent slopes	37.0
C135A/B	Lewis Lake silt loam	54.1
C139A	Minocqua silt loam, depressional, thick solum	2.6
C144A	Coin silt loam, 0 to 2 percent slopes	30.9
W	Water	15.2

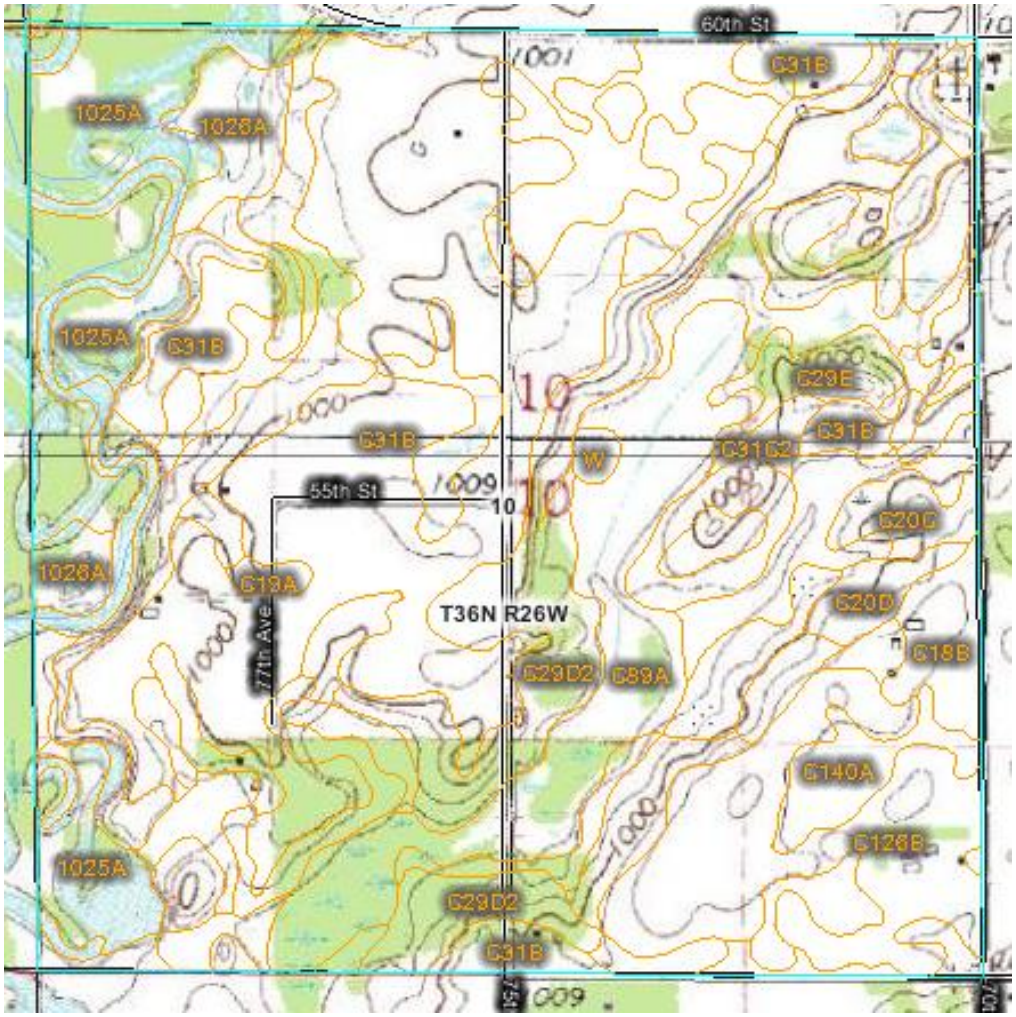


Princeton Township Section 7		
Map Unit Symbol	Map Unit Name	Acres
1003B	Udorthents, loamy (cut and fill land), 0 to 6 percent slopes	6.9
1025A	Fluvaquents and Udifluvents, loamy, frequently flooded	44.9
1026A	Udifluvents and Fluvaquents, loamy, occasionally flooded	52.0
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	129.5
C21A	Quam mucky silty clay loam, depressional, MLRA 90	10.6
C26A	Foglake silt loam, 0 to 2 percent slopes	39.2
C29E	Debs silt loam, 18 to 25 percent slopes	5.0
C31B/C2	Grasston silt loam	224.5
C127A	Whited silt loam, 0 to 2 percent slopes	8.1
C135A/C2	Lewis Lake silt loam	63.2
C144A	Coin silt loam, 0 to 2 percent slopes	12.7
W	Water	16.4

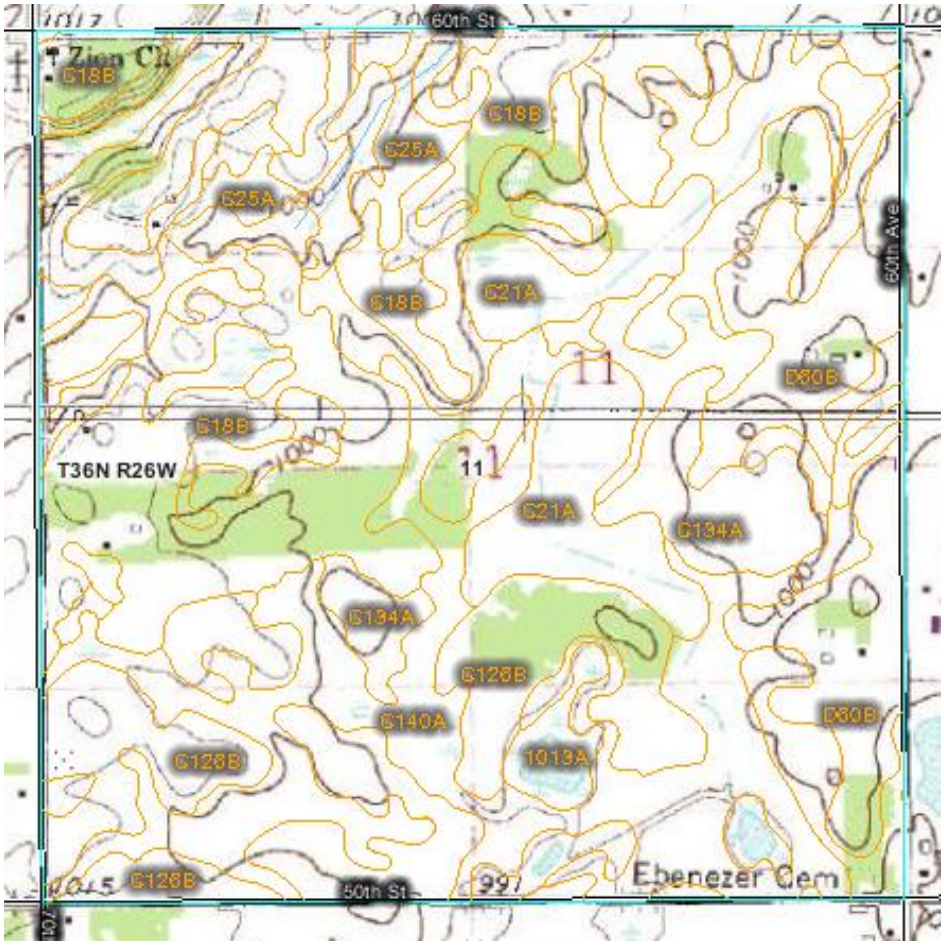


Princeton Township Section 8		
Map Unit Symbol	Map Unit Name	Acres
1003B	Udorthents, loamy (cut and fill land), 0 to 6 percent slopes	21.8
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	243.5
C21A	Quam mucky silty clay loam, depressional, MLRA 90	34.0
C26A	Foglake silt loam, 0 to 2 percent slopes	145.5
C31B	Grasston silt loam, 2 to 6 percent slopes	102.3
C31C2	Grasston silt loam, 6 to 12 percent slopes, eroded	3.9
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	86.6

Princeton Township Section 9		
Map Unit Symbol	Map Unit Name	Acres
1025A	Fluvaquents and Udifluvents, loamy, frequently flooded	36.3
1026A	Udifluvents and Fluvaquents, loamy, occasionally flooded	48.3
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	194.4
C21A	Quam mucky silty clay loam, depressional, MLRA 90	0.3
C26A	Foglake silt loam, 0 to 2 percent slopes	116.8
C29D2	Debs silt loam, 12 to 18 percent slopes, eroded	14.6
C29E	Debs silt loam, 18 to 25 percent slopes	5.6
C31B	Grasston silt loam, 2 to 6 percent slopes	188.1
C31C2	Grasston silt loam, 6 to 12 percent slopes, eroded	18.4
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	18.0
W	Water	14.7

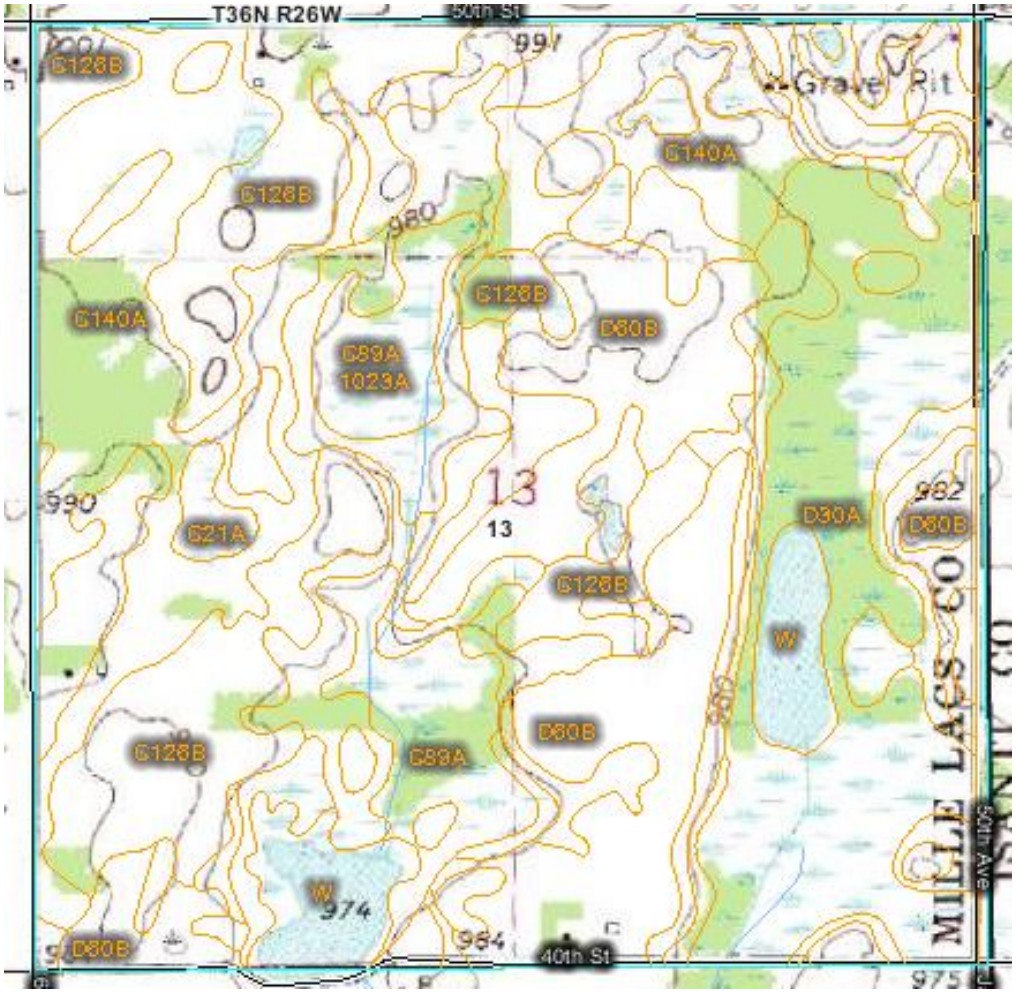


Princeton Township Section 10		
Map Unit Symbol	Map Unit Name	Acres
1025A	Fluvaquents and Udifluvents, frequently flooded	59.2
1026A	Udifluvents and Fluvaquents, occasionally flooded	19.0
C13A	Bluffton loam, depressional, 0 to 1 percent slopes	2.0
C18B	Branstad loam, 2 to 6 percent slopes	10.2
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	34.8
C20C/D/E	Cushing loam	29.3
C21A	Quam mucky silty clay loam, depressional, MLRA 90	5.9
C26A	Foglake silt loam, 0 to 2 percent slopes	51.9
C29D2/E	Debs silt loam	110.1
C31B/C2	Grasston silt loam	188.4
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	53.8
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	44.2
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	4.1
C140A	Hillview fine sandy loam, 0 to 2 percent slopes	12.9
D60E	Zimmerman fine sand, 12 to 30 percent slopes	3.5
W	Water	13.6

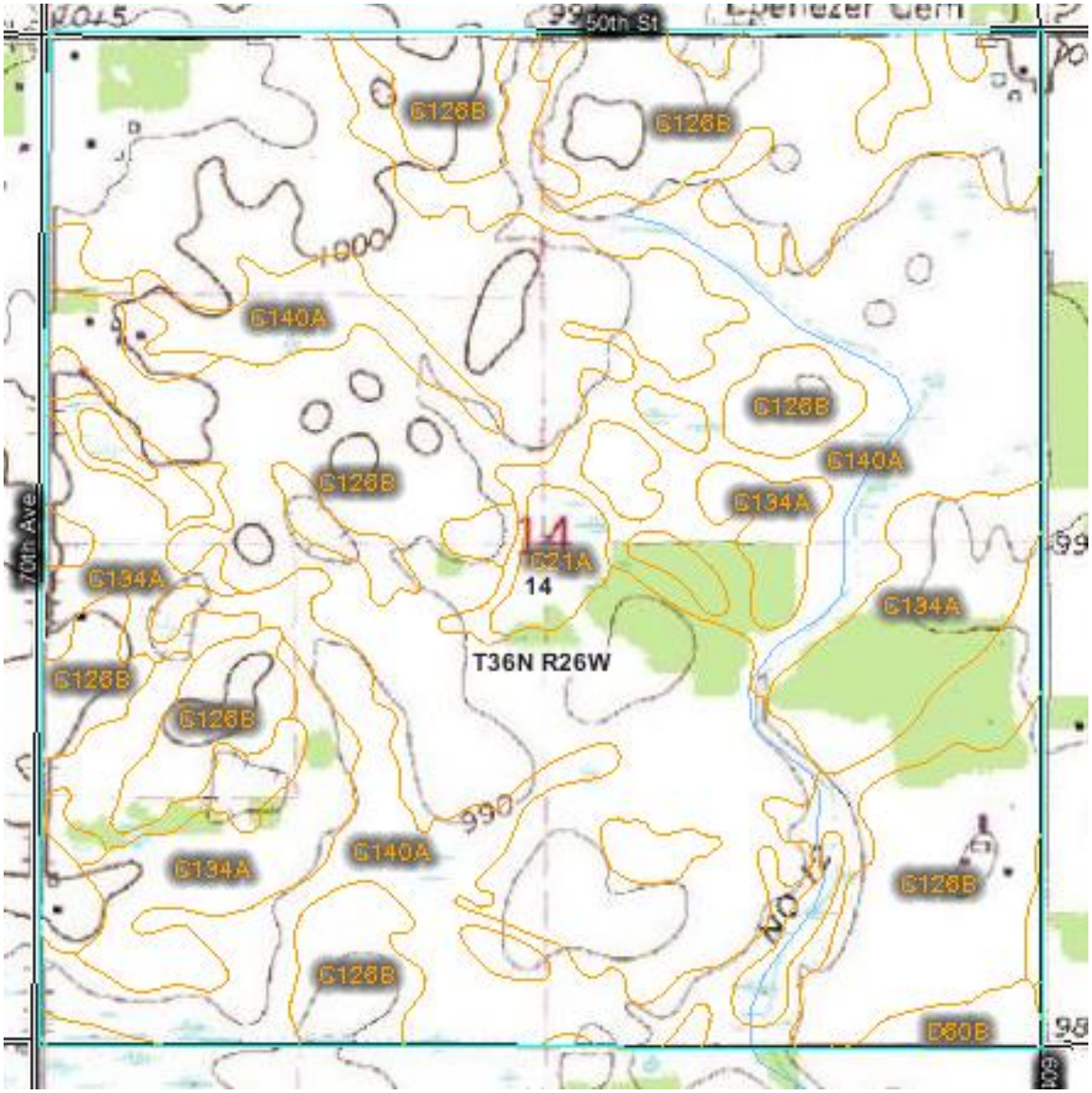


Princeton Township Section 11		
Map Unit Symbol	Map Unit Name	Acres
1013A	Seelyeville and Cathro soils, ponded, 0 to 1 percent slopes	9.9
C13A	Bluffton loam, depressional, 0 to 1 percent slopes	8.3
C18B	Branstad loam, 2 to 6 percent slopes	108.2
C20C/D/E	Cushing loam	33.6
C21A	Quam mucky silty clay loam, depressional, MLRA 90	48.5
C25A	Alstad loam, 1 to 3 percent slopes	35.0
C26A	Foglake silt loam, 0 to 2 percent slopes	6.7
C30A	Talmoon loam, 0 to 2 percent slopes	19.7
C31B	Grasston silt loam, 2 to 6 percent slopes	1.5
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	5.6
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	93.3
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	63.8
C140A	Hillview fine sandy loam, 0 to 2 percent slopes	124.8
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	1.0
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	5.2
D46A	Lino loamy fine sand, 0 to 2 percent slopes	7.1
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	1.3
D60B/C	Zimmerman fine sand	57.3

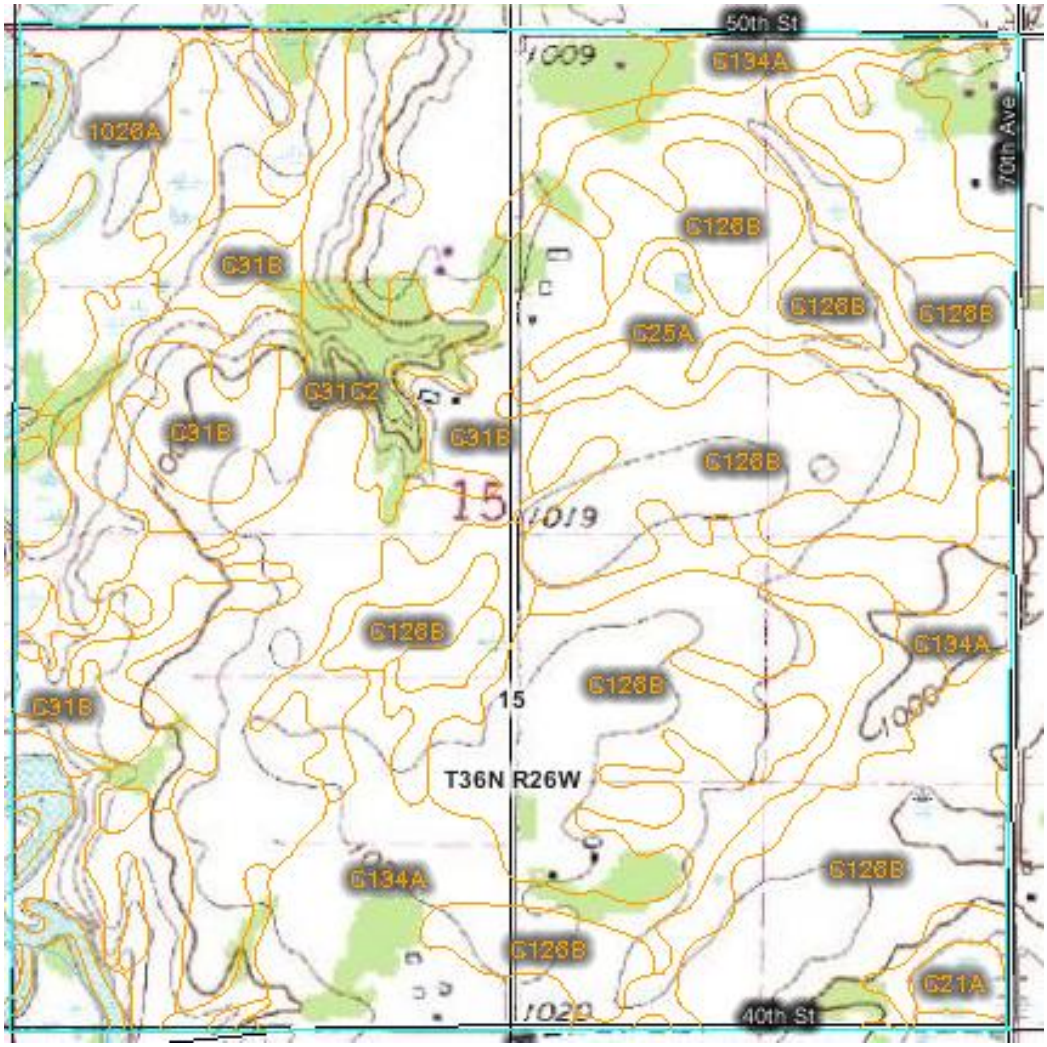
Princeton Township Section 12		
Map Unit Symbol	Map Unit Name	Acres
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	2.8
C16B/C/E	Mahtomedi-Chetek complex	99.2
C21A	Quam mucky silty clay loam, depressional, MLRA 90	8.6
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	65.2
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	35.9
C140A	Hillview fine sandy loam, 0 to 2 percent slopes	17.7
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	17.5
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	22.0
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	95.6
D46A	Lino loamy fine sand, 0 to 2 percent slopes	27.0
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	1.4
D60B/C/E	Zimmerman fine sand	179.8
GP	Pits, gravel-Udipsamments complex	32.4
W	Water	7.5



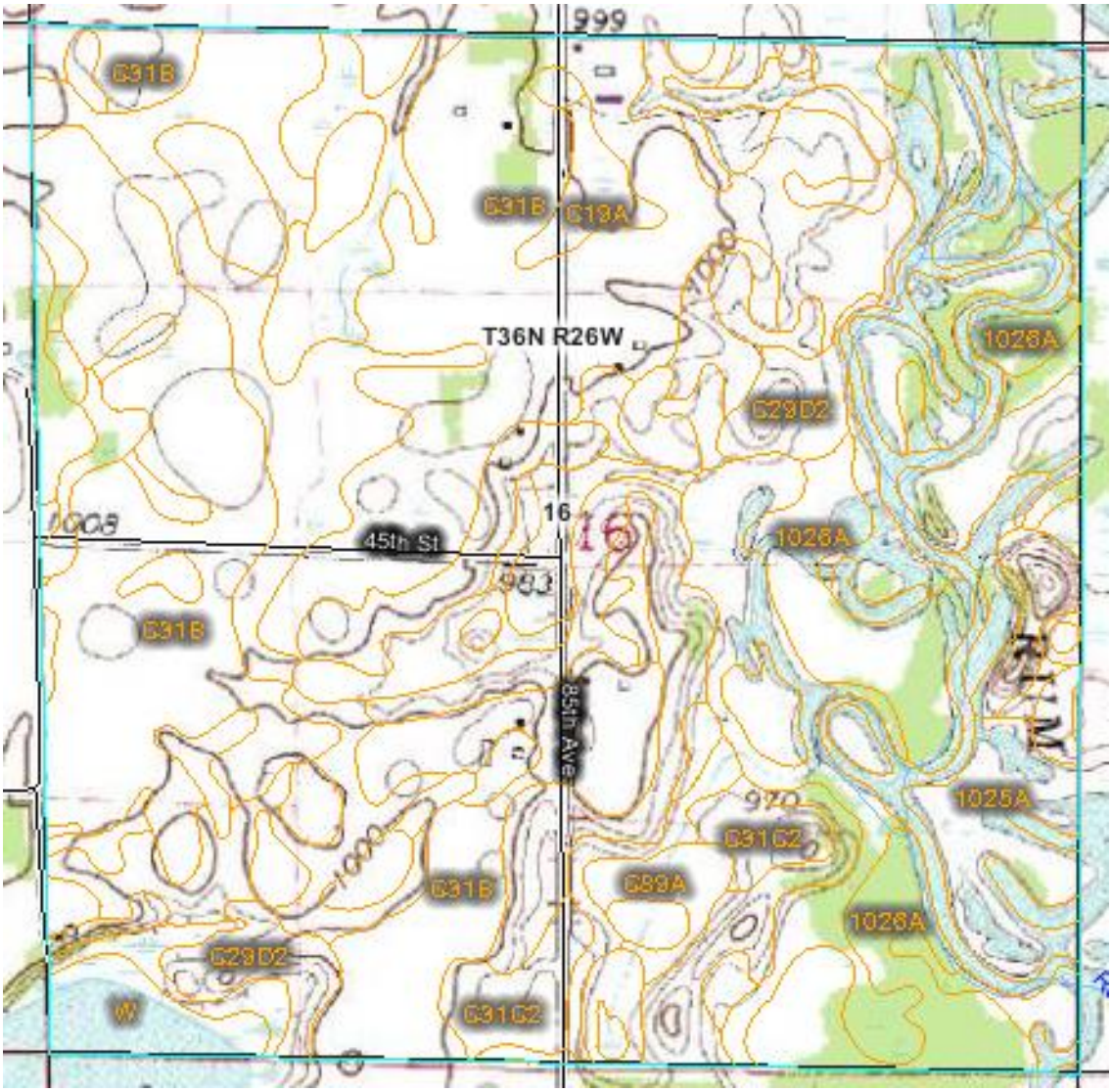
Princeton Township Section 13		
Map Unit Symbol	Map Unit Name	Acres
1013A	Seelyeville and Cathro soils, ponded, 0 to 1 percent slopes	5.2
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	15.0
C16B/C	Mahtomedi-Chetek complex, 1 to 8 percent slopes	12.7
C21A	Quam mucky silty clay loam, depressional, MLRA 90	8.8
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	46.7
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	128.5
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	2.0
C140A	Hillview fine sandy loam, 0 to 2 percent slopes	130.8
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	87.7
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	9.7
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	30.9
D46A	Lino loamy fine sand, 0 to 2 percent slopes	14.0
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	6.2
D60B/C	Zimmerman fine sand	115.1
GP	Pits, gravel-Udipsamments complex	1.0
W	Water	25.5



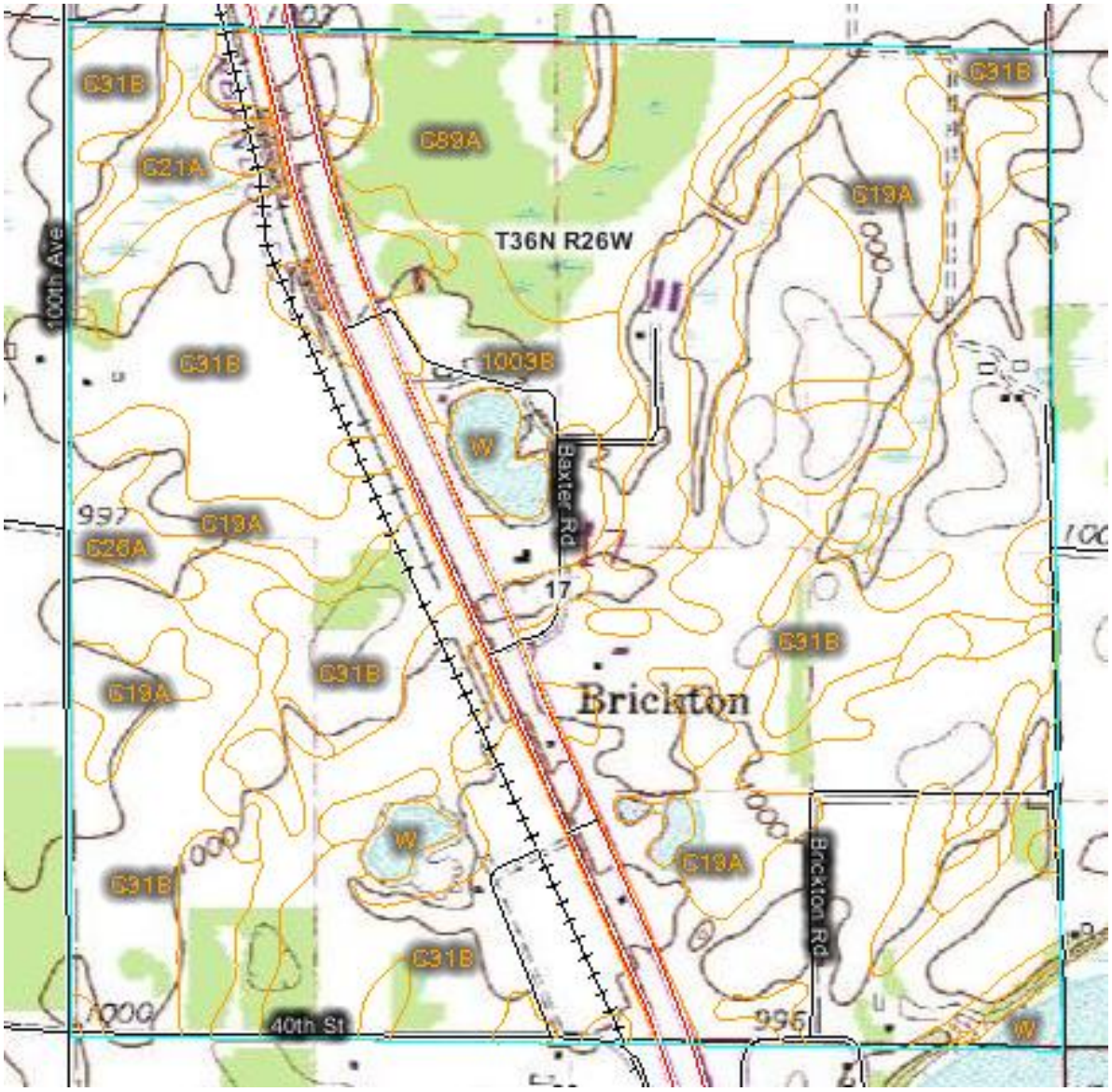
Princeton Township Section 14		
Map Unit Symbol	Map Unit Name	Acres
C21A	Quam mucky silty clay loam, depressional, MLRA 90	19.0
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	332.6
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	76.3
C140A	Hillview fine sandy loam, 0 to 2 percent slopes	203.2
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	0.1
D60B	Zimmerman fine sand, 3 to 6 percent slopes	5.0



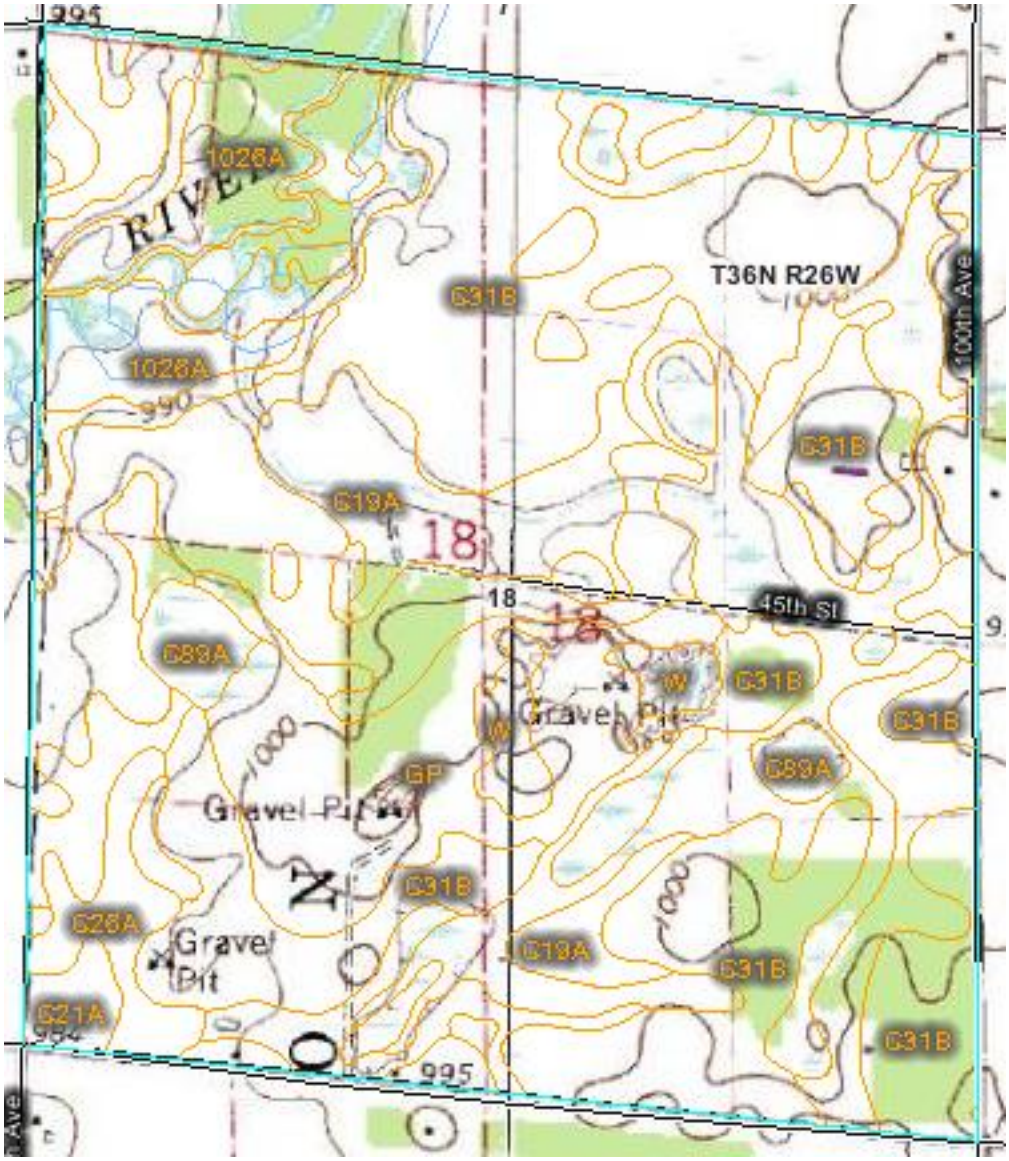
Princeton Township Section 15		
Map Unit Symbol	Map Unit Name	Acres
1013A	Seelyeville and Cathro soils, ponded, 0 to 1 percent slopes	0.9
1017A	Fluvaquents, ponded, 0 to 1 percent slopes, frequently flooded	9.6
1025A	Fluvaquents and Udifluvents, loamy, frequently flooded	20.3
1026A	Udifluvents and Fluvaquents, loamy, occasionally flooded	25.7
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	1.3
C21A	Quam mucky silty clay loam, depressional, MLRA 90	6.7
C25A	Alstad loam, 1 to 3 percent slopes	26.1
C26A	Foglake silt loam, 0 to 2 percent slopes	22.1
C29D2	Debs silt loam, 12 to 18 percent slopes, eroded	21.9
C31B/C2	Grasston silt loam	162.4
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	5.4
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	183.5
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	86.4
C140A	Hillview fine sandy loam, 0 to 2 percent slopes	62.8
W	Water	6.0



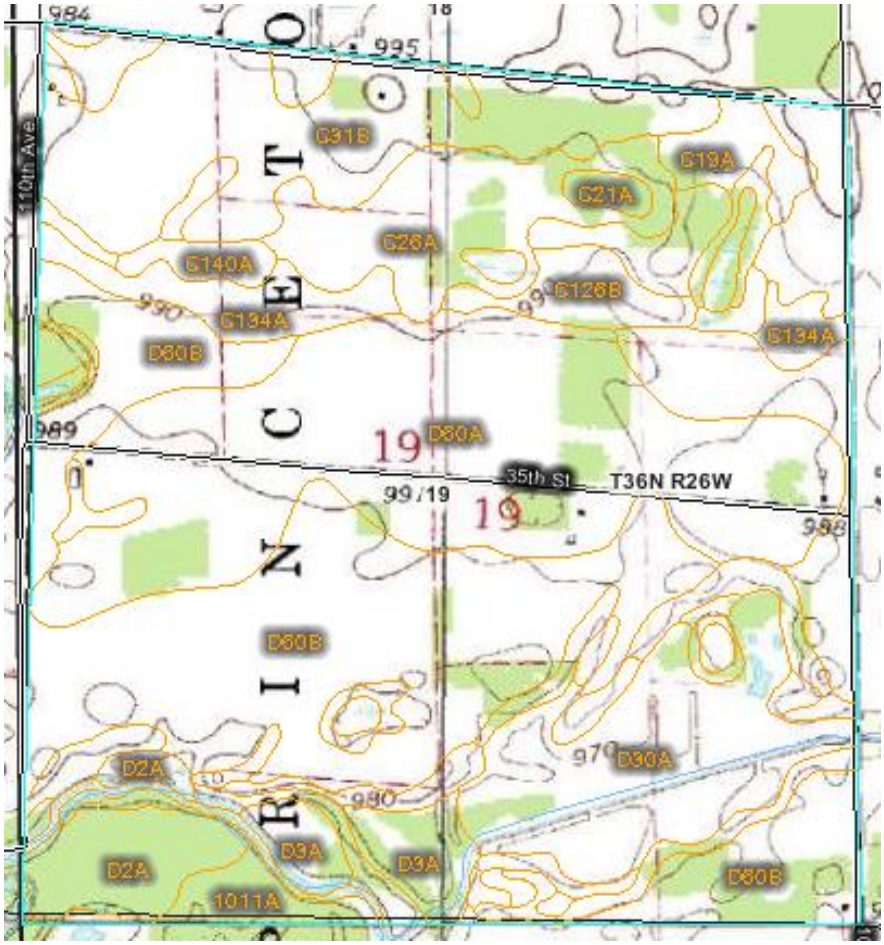
Princeton Township Section 16		
Map Unit Symbol	Map Unit Name	Acres
1013A	Seelyeville and Cathro soils, ponded, 0 to 1 percent slopes	5.1
1017A	Fluvaquents, ponded, 0 to 1 percent slopes, frequently flooded	1.7
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	4.8
1025A	Fluvaquents and Udifluvents, loamy, frequently flooded	67.1
1026A	Udifluvents and Fluvaquents, loamy, occasionally flooded	76.6
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	55.6
C21A	Quam mucky silty clay loam, depressional, MLRA 90	12.3
C26A	Foglake silt loam, 0 to 2 percent slopes	36.1
C29D2/E	Debs silt loam	74.9
C31B/C2	Grasston silt loam	277.7
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	6.4
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	0.7
W	Water	35.5



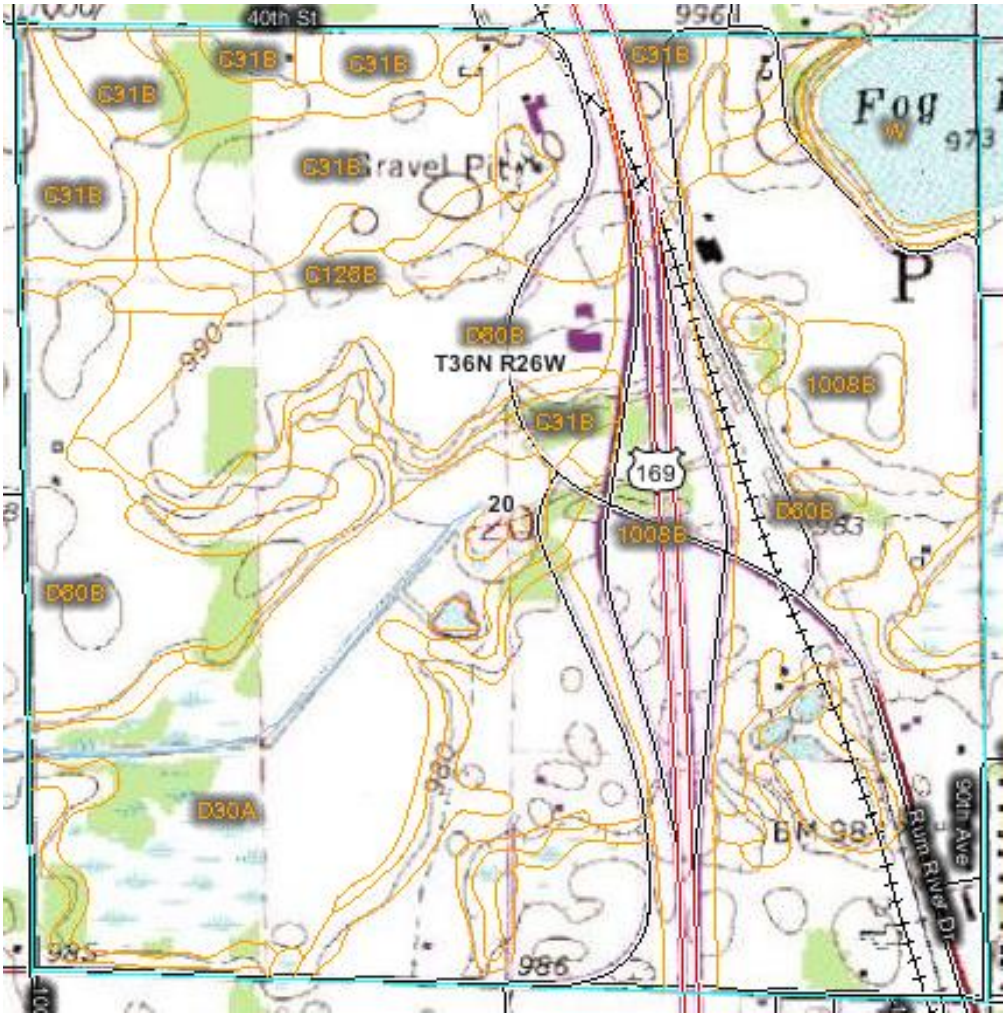
Princeton Township Section 17		
Map Unit Symbol	Map Unit Name	Acres
1003B	Udorthents, loamy (cut and fill land), 0 to 6 percent slopes	49.4
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	1.1
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	96.6
C21A	Quam mucky silty clay loam, depressional, MLRA 90	11.8
C26A	Foglake silt loam, 0 to 2 percent slopes	91.5
C29D2	Debs silt loam, 12 to 18 percent slopes, eroded	1.6
C31B	Grasston silt loam, 2 to 6 percent slopes	320.0
C31C2	Grasston silt loam, 6 to 12 percent slopes, eroded	10.9
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	51.5
W	Water	12.6



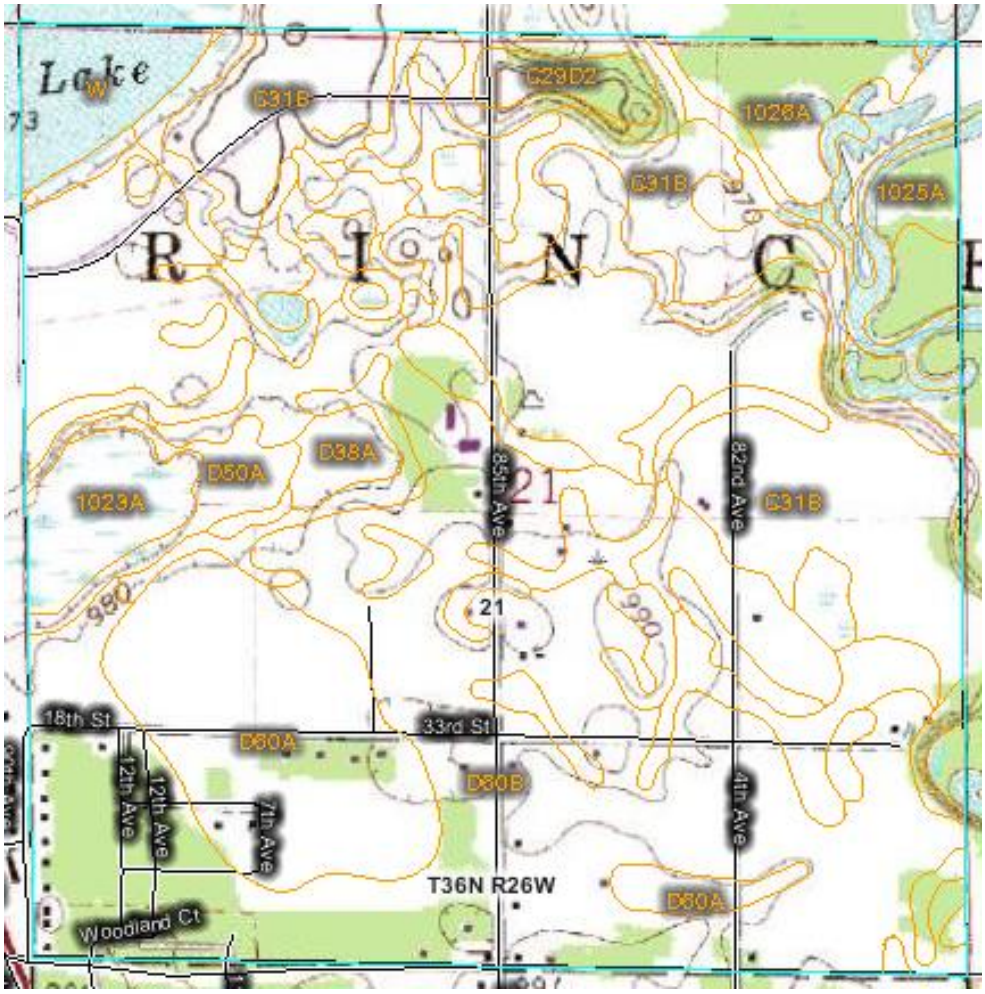
Princeton Township Section 18		
Map Unit Symbol	Map Unit Name	Acres
1013A	Seelyeville and Cathro soils, ponded, 0 to 1 percent slopes	4.5
1025A	Fluvaquents and Udifluvents, loamy, frequently flooded	11.1
1026A	Udifluvents and Fluvaquents, loamy, occasionally flooded	41.1
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	93.7
C21A	Quam mucky silty clay loam, depressional, MLRA 90	12.3
C26A	Foglake silt loam, 0 to 2 percent slopes	97.2
C29D2	Debs silt loam, 12 to 18 percent slopes, eroded	3.9
C31B	Grasston silt loam, 2 to 6 percent slopes	271.6
C31C2	Grasston silt loam, 6 to 12 percent slopes, eroded	12.6
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	11.9
GP	Pits, gravel-Udipsamments complex	51.4
W	Water	13.4



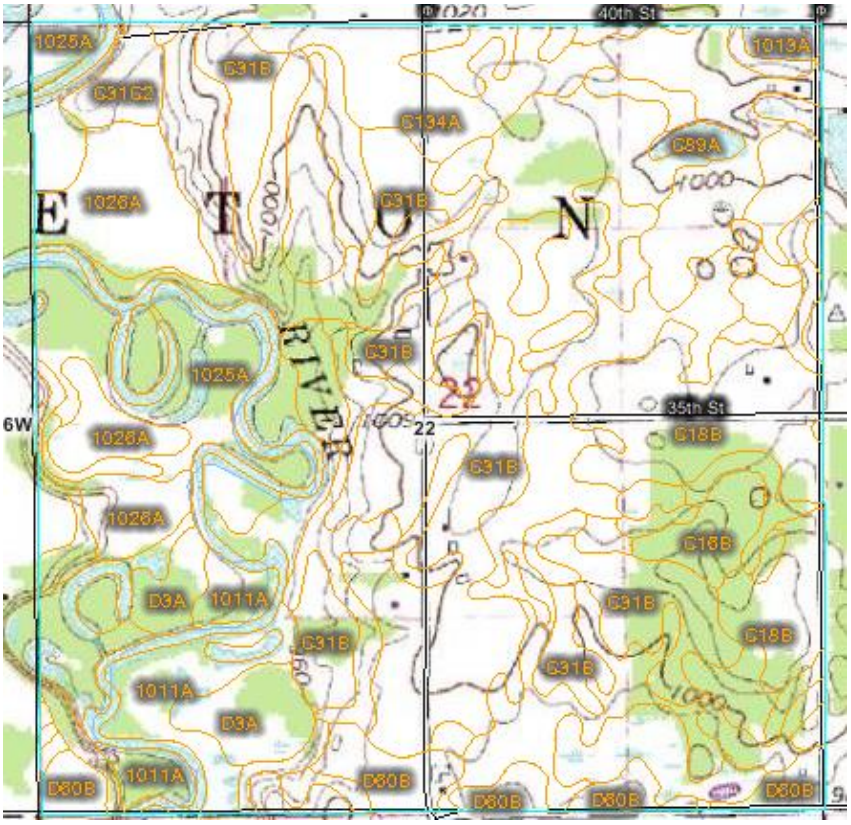
Princeton Township Section 19		
Map Unit Symbol	Map Unit Name	Acres
1011A	Fordum-Winterfield complex, frequently flooded	13.6
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	13.8
C21A	Quam mucky silty clay loam, depressional, MLRA 90	7.8
C26A	Foglake silt loam, 0 to 2 percent slopes	45.4
C31B	Grasston silt loam, 2 to 6 percent slopes	89.3
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	10.5
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	18.7
C140A	Hillview fine sandy loam, 0 to 2 percent slopes	7.1
D2A	Elkriver fine sandy loam, 0 to 2 percent slopes, rarely flooded	20.3
D3A	Elkriver fine sandy loam, 0 to 2 percent slopes, occasionally flooded	20.2
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	51.9
D38A	Cantlin loamy fine sand, 0 to 3 percent slopes	4.5
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	3.3
D46A	Lino loamy fine sand, 0 to 2 percent slopes	0.5
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	1.3
D60A/B/C/E	Zimmerman fine sand, 0 to 3 percent slopes	341.2
W	Water	3.7



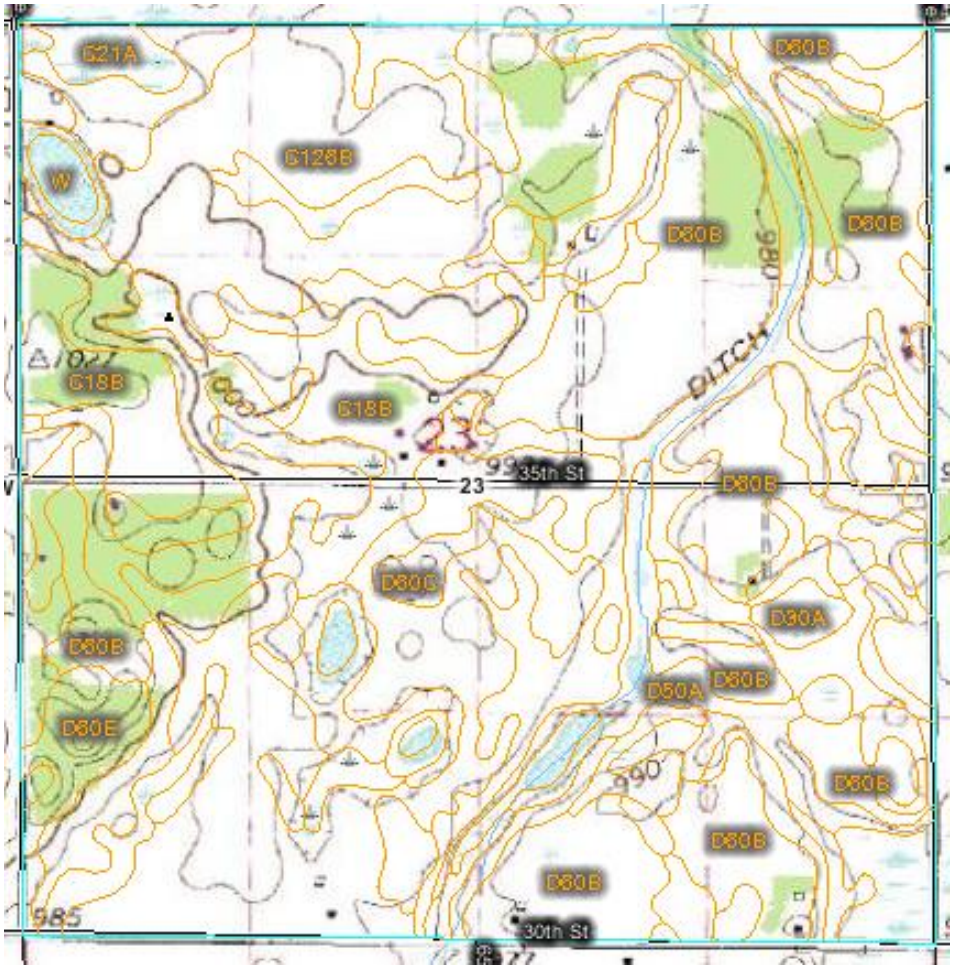
Princeton Township Section 20		
Map Unit Symbol	Map Unit Name	Acres
1003B	Udorthents, loamy (cut and fill land), 0 to 6 percent slopes	7.8
1008B	Udipsamments (cut and fill land)	59.9
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	13.2
C19A	Longsiding-Grasston complex, 0 to 3 percent slopes	3.3
C26A	Foglake silt loam, 0 to 2 percent slopes	17.6
C31B/C2	Grasston silt loam, 2 to 6 percent slopes	93.0
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	9.3
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	2.0
C140A	Hillview fine sandy loam, 0 to 2 percent slopes	2.8
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	84.5
D38A	Cantlin loamy fine sand, 0 to 3 percent slopes	4.5
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	3.6
D46A	Lino loamy fine sand, 0 to 2 percent slopes	9.4
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	3.5
D60A/B/C/E	Zimmerman fine sand	306.6
W	Water	19.5



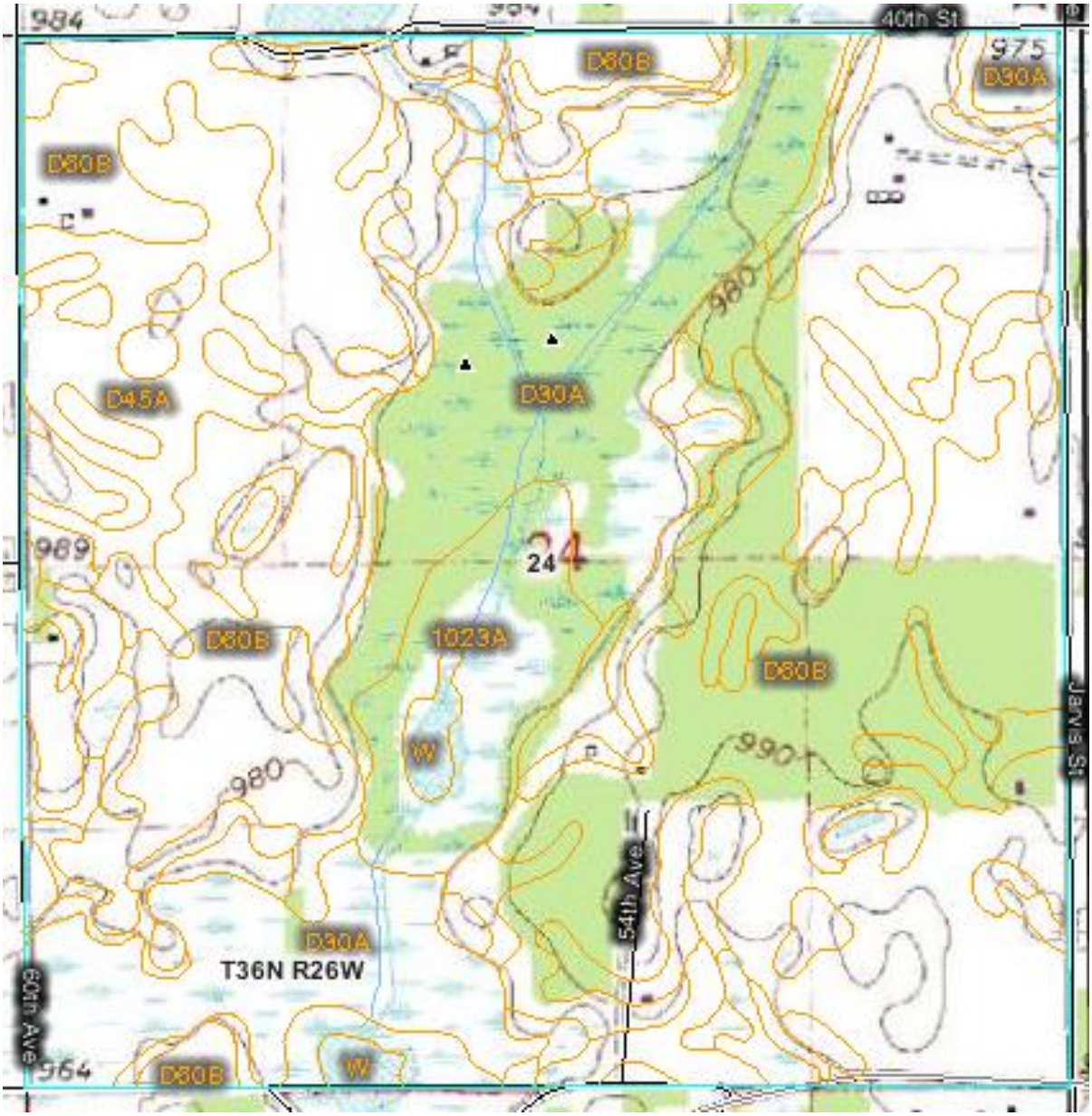
Princeton Township Section 21		
Map Unit Symbol	Map Unit Name	Acres
1011A	Fordum-Winterfield complex, frequently flooded	1.9
1013A	Seelyeville and Cathro soils, ponded, 0 to 1 percent slopes	0.2
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	17.7
1025A	Fluvaquents and Udifluvents, loamy, frequently flooded	20.8
1026A	Udifluvents and Fluvaquents, loamy, occasionally flooded	20.6
C21A	Quam mucky silty clay loam, depressional, MLRA 90	1.6
C26A	Foglake silt loam, 0 to 2 percent slopes	16.4
C29D2	Debs silt loam, 12 to 18 percent slopes, eroded	33.6
C31B/C2	Grasston silt loam, 2 to 6 percent slopes	135.5
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	9.3
D38A	Cantlin loamy fine sand, 0 to 3 percent slopes	26.7
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	1.3
D46A	Lino loamy fine sand, 0 to 2 percent slopes	2.4
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	9.2
D60A/B/C/E	Zimmerman fine sand	325.3
W	Water	22.9



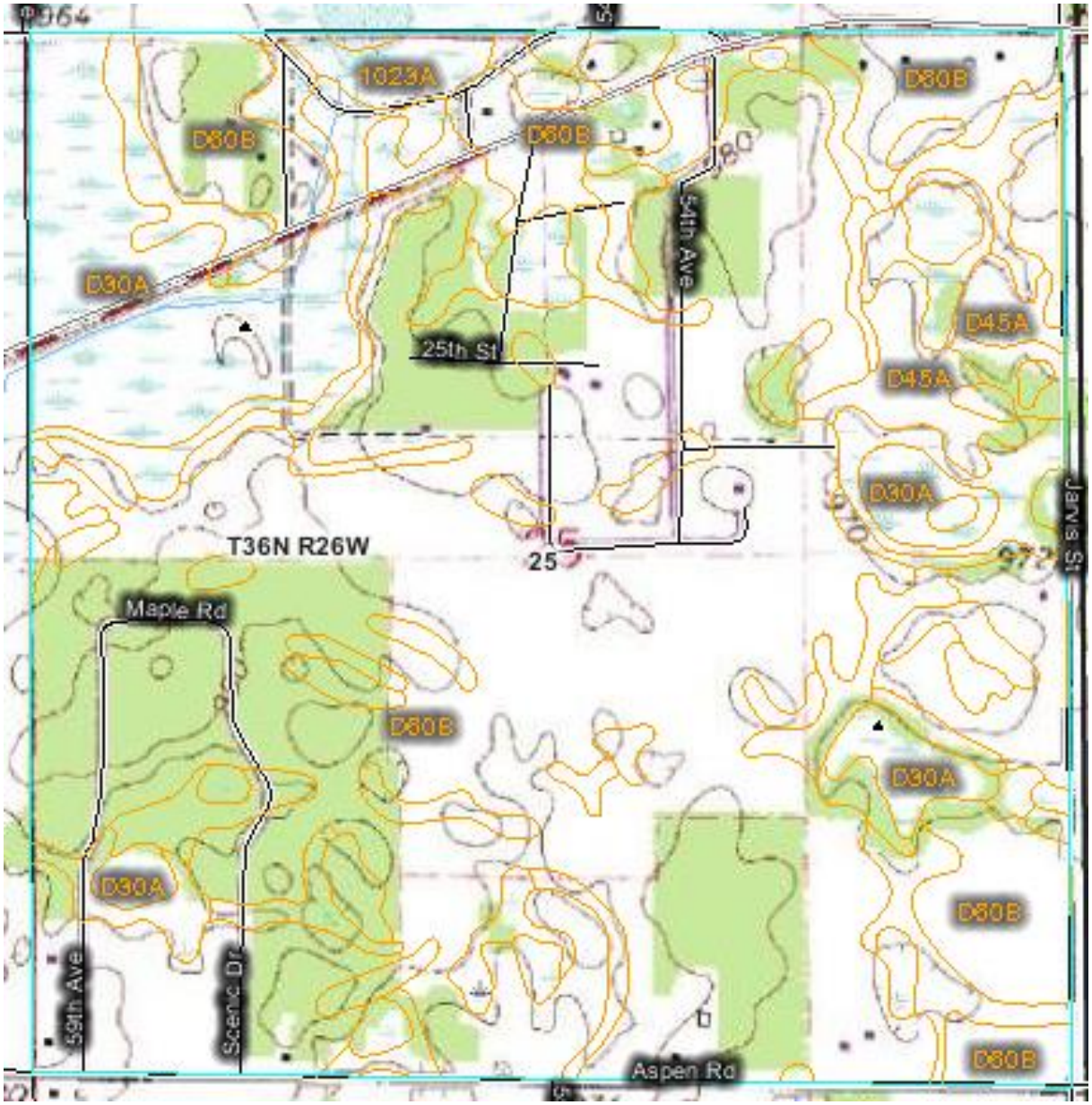
Princeton Township Section 22		
Map Unit Symbol	Map Unit Name	Acres
1011A	Fordum-Winterfield complex, frequently flooded	32.7
1013A	Seelyeville and Cathro soils, ponded, 0 to 1 percent slopes	2.7
1025A	Fluvaquents and Udifluvents, loamy, frequently flooded	46.7
1026A	Udifluvents and Fluvaquents, loamy, occasionally flooded	42.8
C16B/C	Mahtomedi-Chetek complex, 1 to 8 percent slopes	9.6
C18B	Branstad loam, 2 to 6 percent slopes	45.1
C20C/D/E	Cushing loam	4.5
C21A	Quam mucky silty clay loam, depressional, MLRA 90	6.8
C26A	Foglake silt loam, 0 to 2 percent slopes	27.3
C29D2	Debs silt loam, 12 to 18 percent slopes, eroded	32.8
C30A	Talmoon loam, 0 to 2 percent slopes	5.5
C31B/C2	Grasston silt loam	179.4
C89A	Cathro (Grasston catena) and Seelyeville soils, depressional	16.4
C94A	Seelyeville and Cathro (Cushing catena) soils, depressional	1.9
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	8.9
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	46.5
C140A	Hillview fine sandy loam, 0 to 2 percent slopes	6.0
D3A	Elkriver fine sandy loam, 0 to 2 percent slopes, occasionally flooded	17.3
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	45.9
D60B/C/E	Zimmerman fine sand	36.6
W	Water	22.2



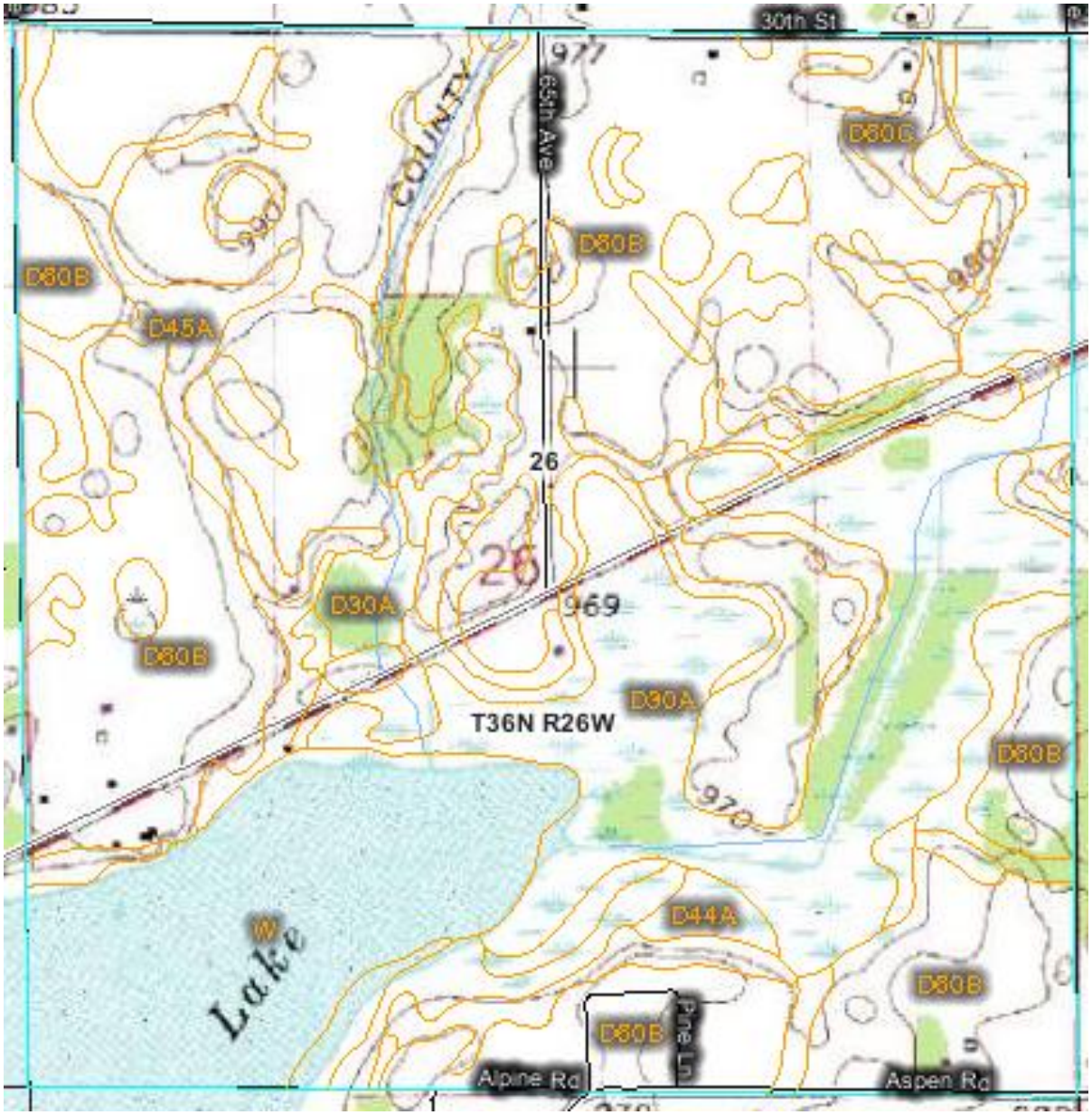
Princeton Township Section 23		
Map Unit Symbol	Map Unit Name	Acres
1013A	Seelyeville and Cathro soils, ponded, 0 to 1 percent slopes	2.1
C18B	Branstad loam, 2 to 6 percent slopes	57.6
C20C/D	Cushing loam	35.8
C21A	Quam mucky silty clay loam, depressional, MLRA 90	11.7
C25A	Alstad loam, 1 to 3 percent slopes	4.4
C30A	Talmoon loam, 0 to 2 percent slopes	3.8
C31B	Grasston silt loam, 2 to 6 percent slopes	0.7
C126B	Balmlake-Rosy complex, 1 to 6 percent slopes	74.3
C134A	Rosy very fine sandy loam, 0 to 4 percent slopes	1.8
C140A	Hillview fine sandy loam, 0 to 2 percent slopes	27.1
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	14.1
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	3.5
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	73.8
D46A	Lino loamy fine sand, 0 to 2 percent slopes	5.3
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	17.5
D60B/C/E	Zimmerman fine sand	298.3
W	Water	7.4



Princeton Township Section 24		
Map Unit Symbol	Map Unit Name	Acres
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	35.5
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	121.5
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	4.9
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	82.9
D46A	Lino loamy fine sand, 0 to 2 percent slopes	17.6
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	6.9
D60B	Zimmerman fine sand, 3 to 6 percent slopes	287.4
D60C	Zimmerman fine sand, 6 to 12 percent slopes	74.3
D60E	Zimmerman fine sand, 12 to 30 percent slopes	1.2
W	Water	5.9

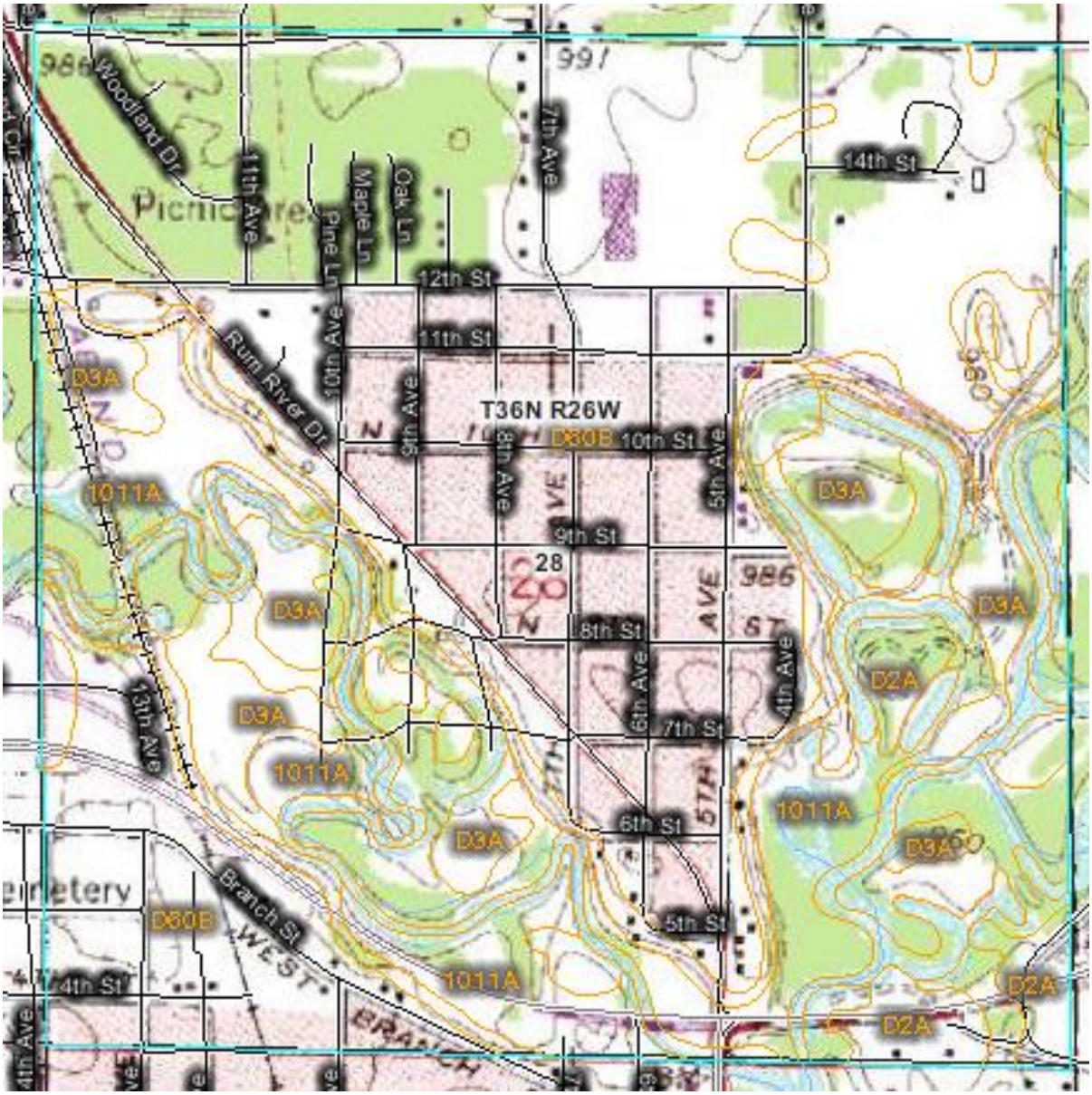


Princeton Township Section 25		
Map Unit Symbol	Map Unit Name	Acres
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	11.9
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	73.1
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	7.8
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	65.8
D46A	Lino loamy fine sand, 0 to 2 percent slopes	28.4
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	20.9
D60B	Zimmerman fine sand, 3 to 6 percent slopes	404.1
D60C	Zimmerman fine sand, 6 to 12 percent slopes	31.3
W	Water	2.2



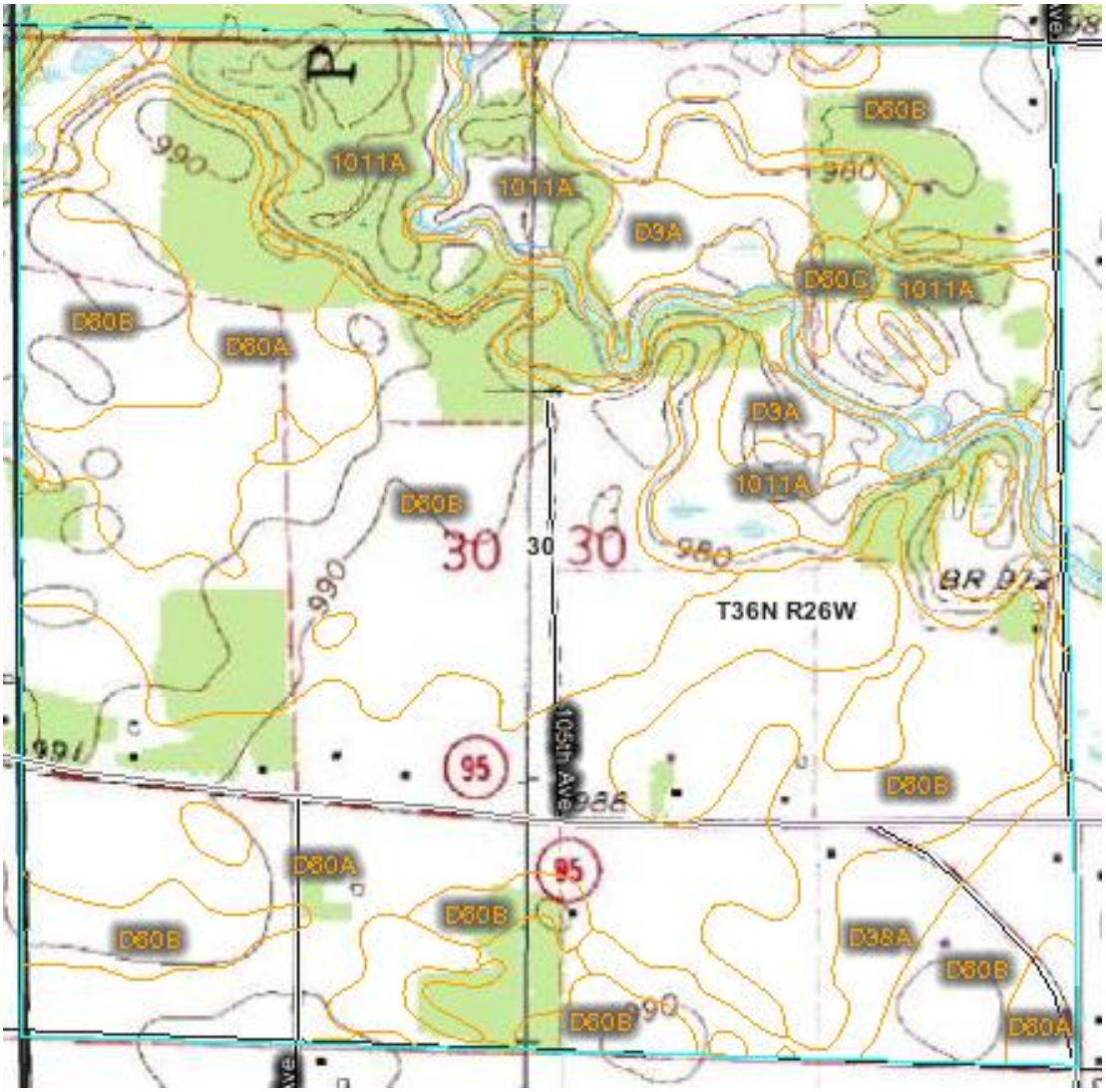
Princeton Township Section 26		
Map Unit Symbol	Map Unit Name	Acres
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	4.9
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	111.5
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	9.0
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	50.0
D46A	Lino loamy fine sand, 0 to 2 percent slopes	25.8
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	14.6
D60B	Zimmerman fine sand, 3 to 6 percent slopes	297.4
D60C	Zimmerman fine sand, 6 to 12 percent slopes	53.0
D60E	Zimmerman fine sand, 12 to 30 percent slopes	1.8
W	Water	68.0

Princeton Township Section 27		
Map Unit Symbol	Map Unit Name	Acres
1011A	Fordum-Winterfield complex, frequently flooded	54.8
D2A	Elkriver fine sandy loam, 0 to 2 percent slopes, rarely flooded	2.9
D3A	Elkriver fine sandy loam, 0 to 2 percent slopes, occasionally flooded	13.6
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	2.9
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	86.9
D46A	Lino loamy fine sand, 0 to 2 percent slopes	6.4
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	2.1
D60B	Zimmerman fine sand, 3 to 6 percent slopes	402.5
D60C	Zimmerman fine sand, 6 to 12 percent slopes	26.2
D60E	Zimmerman fine sand, 12 to 30 percent slopes	16.2
W	Water	26.8

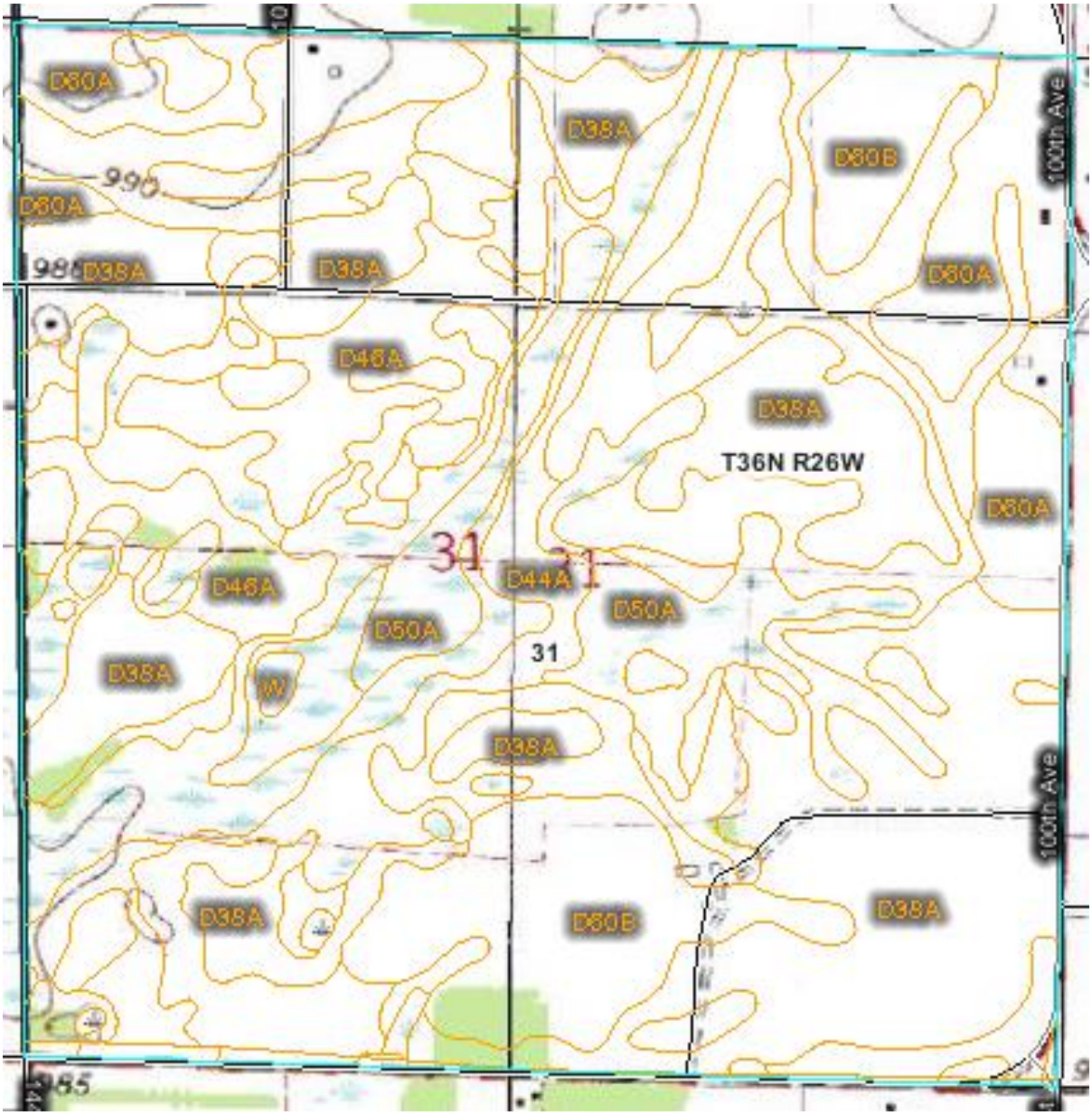


Princeton Township Section 28		
Map Unit Symbol	Map Unit Name	Acres
1008B	Udipsamments (cut and fill land)	8.6
1011A	Fordum-Winterfield complex, frequently flooded	120.0
D2A	Elkriver fine sandy loam, 0 to 2 percent slopes, rarely flooded	21.1
D3A	Elkriver fine sandy loam, 0 to 2 percent slopes, occasionally flooded	53.9
D38A	Cantlin loamy fine sand, 0 to 3 percent slopes	1.8
D60B	Zimmerman fine sand, 3 to 6 percent slopes	360.4
D60C	Zimmerman fine sand, 6 to 12 percent slopes	3.2
D60E	Zimmerman fine sand, 12 to 30 percent slopes	31.8
W	Water	34.6

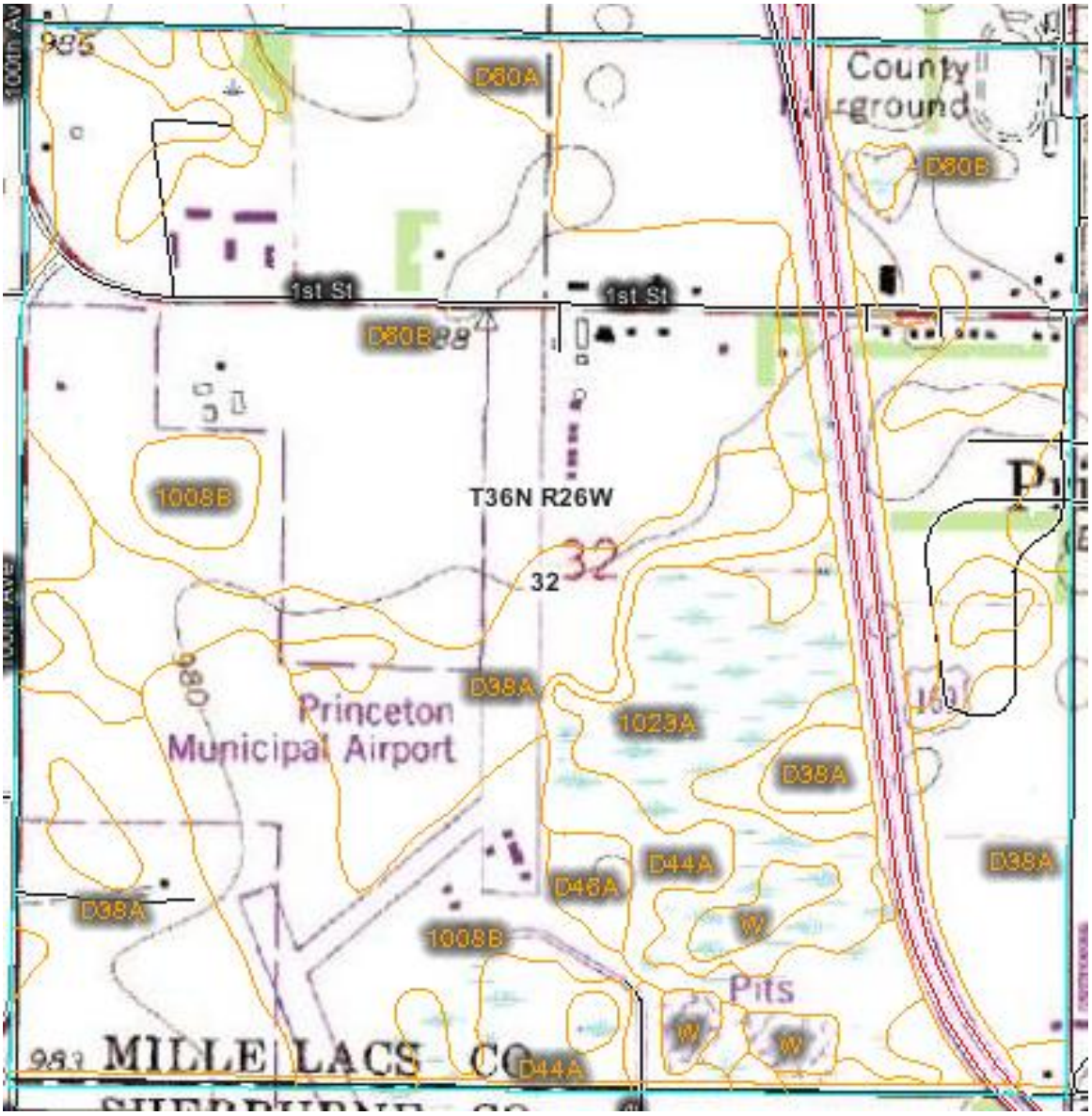
Princeton Township Section 29		
Map Unit Symbol	Map Unit Name	Acres
1008B	Udipsamments (cut and fill land)	140.0
1011A	Fordum-Winterfield complex, frequently flooded	98.5
D2A	Elkriver fine sandy loam, 0 to 2 percent slopes, rarely flooded	17.6
D3A	Elkriver fine sandy loam, 0 to 2 percent slopes, occasionally flooded	10.1
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	11.8
D46A	Lino loamy fine sand, 0 to 2 percent slopes	3.9
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	0.1
D60A	Zimmerman fine sand, 0 to 3 percent slopes	43.8
D60B	Zimmerman fine sand, 3 to 6 percent slopes	263.2
D60C	Zimmerman fine sand, 6 to 12 percent slopes	1.3
D60E	Zimmerman fine sand, 12 to 30 percent slopes	30.0
W	Water	16.7



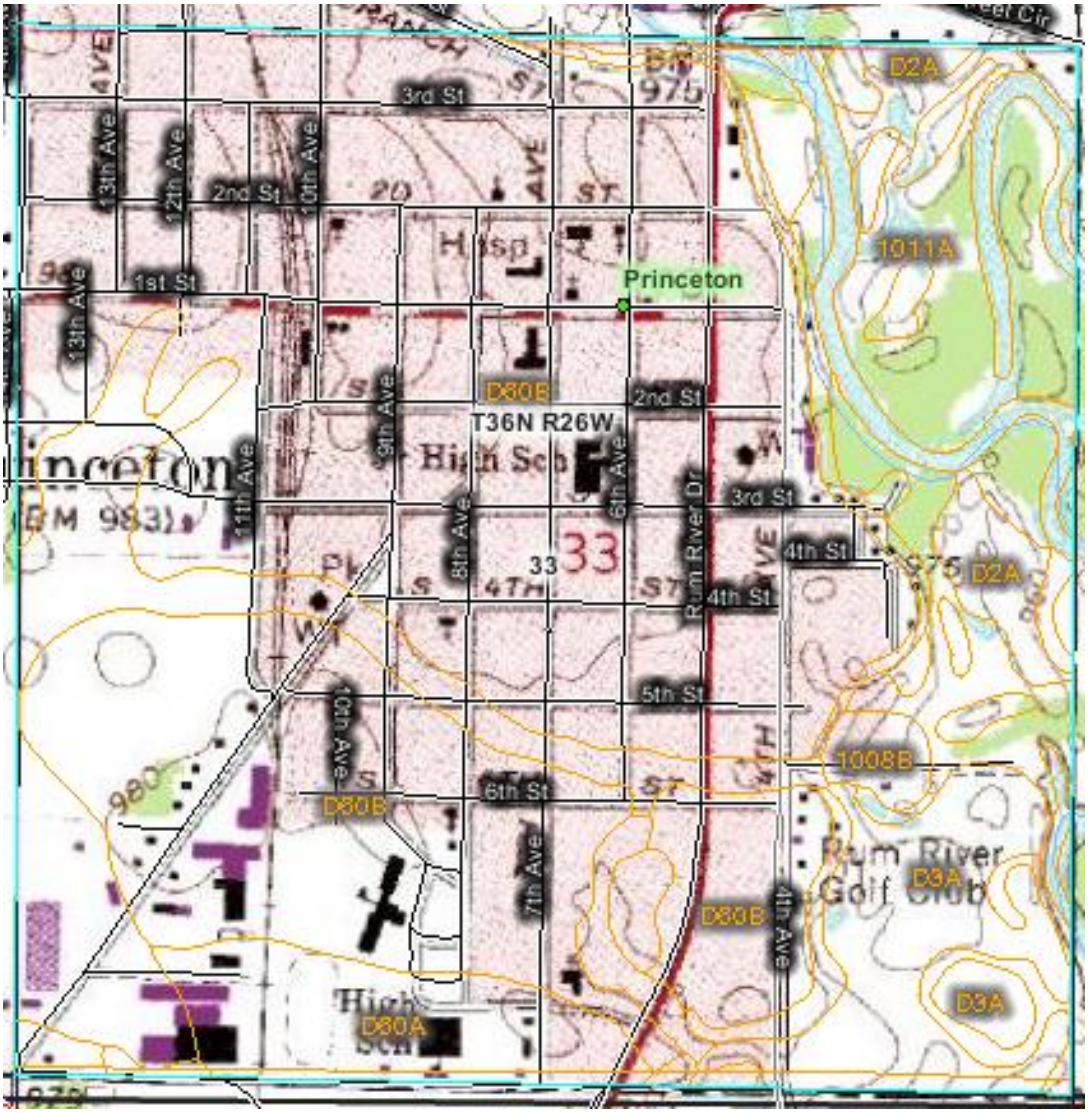
Princeton Township Section 30		
Map Unit Symbol	Map Unit Name	Acres
1008B	Udipsamments (cut and fill land)	0.2
1011A	Fordum-Winterfield complex, frequently flooded	100.4
D2A	Elkriver fine sandy loam, 0 to 2 percent slopes, rarely flooded	4.3
D3A	Elkriver fine sandy loam, 0 to 2 percent slopes, occasionally flooded	19.1
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	5.1
D38A	Cantlin loamy fine sand, 0 to 3 percent slopes	24.6
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	0.4
D46A	Lino loamy fine sand, 0 to 2 percent slopes	0.1
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	3.0
D60A	Zimmerman fine sand, 0 to 3 percent slopes	184.1
D60B	Zimmerman fine sand, 3 to 6 percent slopes	250.6
D60C	Zimmerman fine sand, 6 to 12 percent slopes	7.8
D60E	Zimmerman fine sand, 12 to 30 percent slopes	30.5
W	Water	12.4



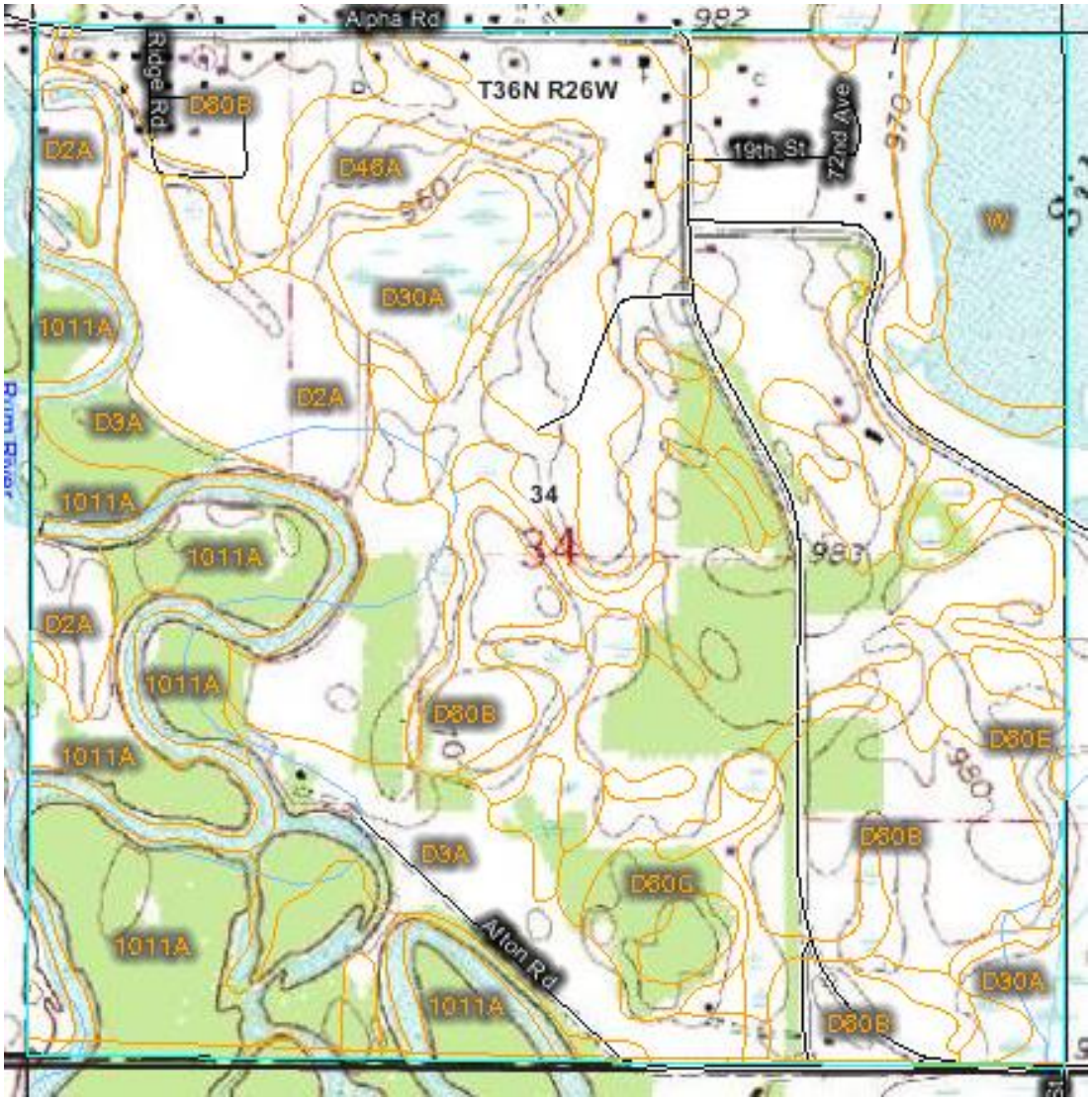
Princeton Township Section 31		
Map Unit Symbol	Map Unit Name	Acres
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	13.9
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	9.3
D38A	Cantlin loamy fine sand, 0 to 3 percent slopes	206.8
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	59.0
D46A	Lino loamy fine sand, 0 to 2 percent slopes	111.7
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	69.1
D60A	Zimmerman fine sand, 0 to 3 percent slopes	68.4
D60B	Zimmerman fine sand, 3 to 6 percent slopes	104.7
W	Water	3.0



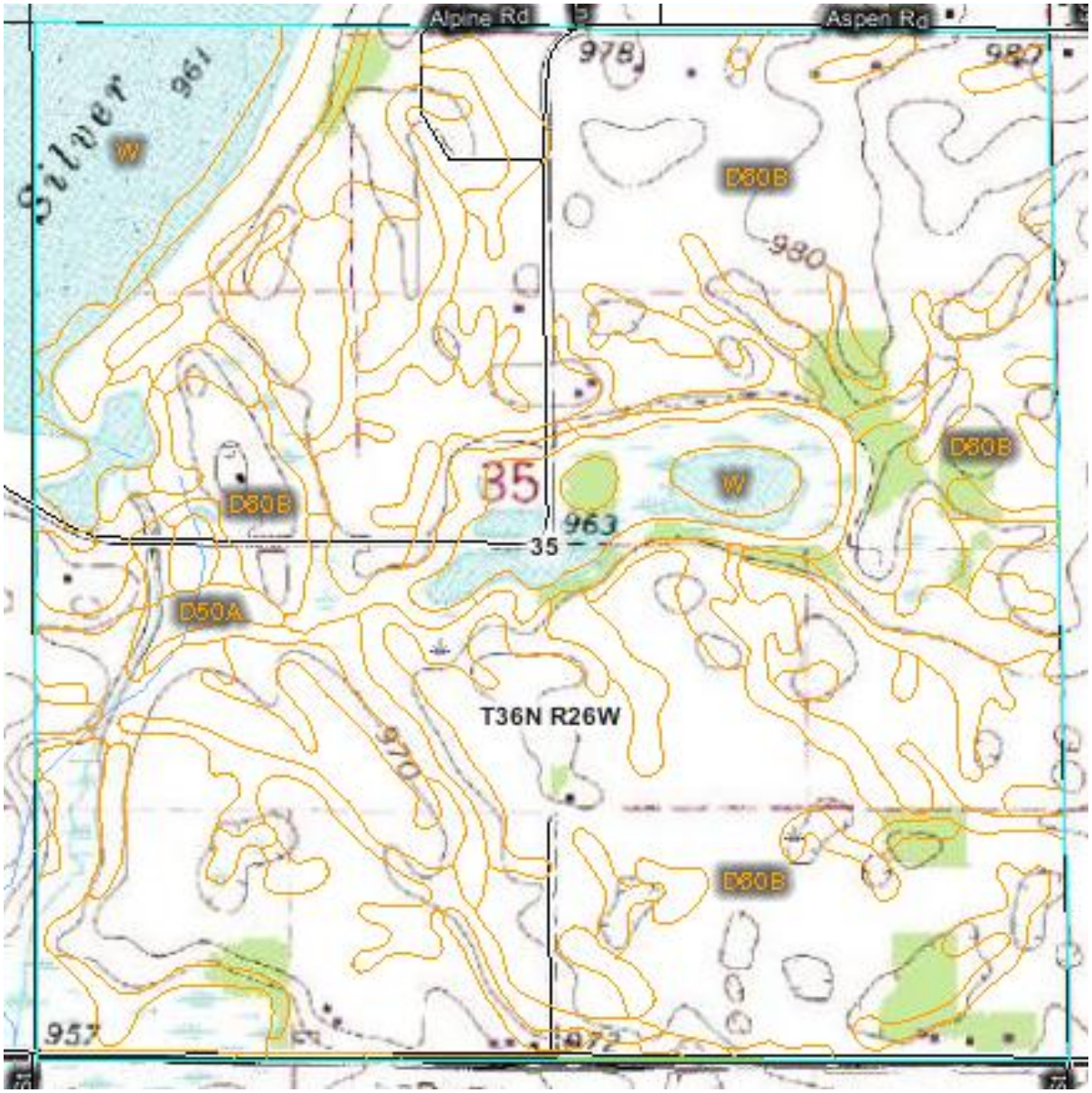
Princeton Township Section 32		
Map Unit Symbol	Map Unit Name	Acres
1008B	Udipsamments (cut and fill land)	119.2
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	37.4
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	1.4
D38A	Cantlin loamy fine sand, 0 to 3 percent slopes	151.6
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	36.5
D46A	Lino loamy fine sand, 0 to 2 percent slopes	27.8
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	4.1
D60A	Zimmerman fine sand, 0 to 3 percent slopes	13.9
D60B	Zimmerman fine sand, 3 to 6 percent slopes	227.6
D60E	Zimmerman fine sand, 12 to 30 percent slopes	1.4
W	Water	9.1



Princeton Township Section 33		
Map Unit Symbol	Map Unit Name	Acres
1008B	Udipsamments (cut and fill land)	7.9
1011A	Fordum-Winterfield complex, frequently flooded	63.7
D2A	Elkriver fine sandy loam, 0 to 2 percent slopes, rarely flooded	13.7
D3A	Elkriver fine sandy loam, 0 to 2 percent slopes, occasionally flooded	47.1
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	0.2
D38A	Cantlin loamy fine sand, 0 to 3 percent slopes	51.8
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	0.5
D46A	Lino loamy fine sand, 0 to 2 percent slopes	4.9
D60A	Zimmerman fine sand, 0 to 3 percent slopes	28.0
D60B	Zimmerman fine sand, 3 to 6 percent slopes	380.4
D60C	Zimmerman fine sand, 6 to 12 percent slopes	4.3
D60E	Zimmerman fine sand, 12 to 30 percent slopes	7.7
W	Water	19.3



Princeton Township Section 34		
Map Unit Symbol	Map Unit Name	Acres
1011A	Fordum-Winterfield complex, frequently flooded	93.6
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	3.6
D2A	Elkriver fine sandy loam, 0 to 2 percent slopes, rarely flooded	59.9
D3A	Elkriver fine sandy loam, 0 to 2 percent slopes, occasionally flooded	43.3
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	20.5
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	13.8
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	11.3
D46A	Lino loamy fine sand, 0 to 2 percent slopes	31.9
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	14.4
D60B	Zimmerman fine sand, 3 to 6 percent slopes	209.8
D60C	Zimmerman fine sand, 6 to 12 percent slopes	73.1
D60E	Zimmerman fine sand, 12 to 30 percent slopes	11.4
W	Water	46.9

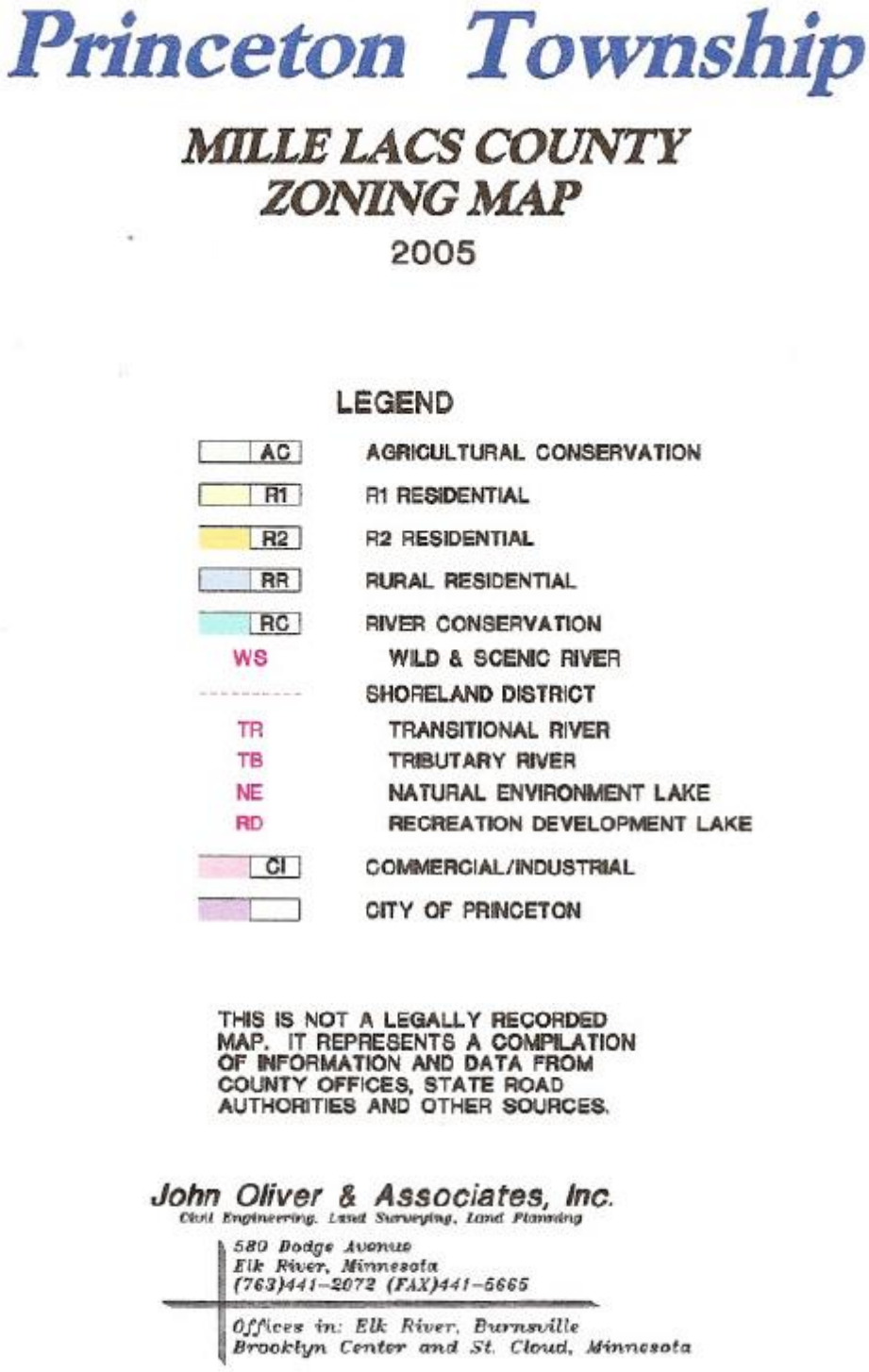


Princeton Township Section 35		
Map Unit Symbol	Map Unit Name	Acres
1023A	Seelyeville and Markey soils, ponded, 0 to 1 percent slopes	32.8
D30A	Seelyeville and Markey soils, depressional, 0 to 1 percent slopes	13.5
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	16.5
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	62.9
D46A	Lino loamy fine sand, 0 to 2 percent slopes	32.6
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	15.2
D60B	Zimmerman fine sand, 3 to 6 percent slopes	351.5
D60C	Zimmerman fine sand, 6 to 12 percent slopes	67.3
D60E	Zimmerman fine sand, 12 to 30 percent slopes	8.8
W	Water	34.2

Princeton Township Section 36		
Map Unit Symbol	Map Unit Name	Acres
D44A	Isanti loamy fine sand, 0 to 2 percent slopes	13.2
D45A	Soderville loamy fine sand, 0 to 3 percent slopes	133.5
D46A	Lino loamy fine sand, 0 to 2 percent slopes	28.2
D50A	Isanti fine sandy loam, depressional, 0 to 1 percent slopes	17.4
D60B	Zimmerman fine sand, 3 to 6 percent slopes	403.3
D60C	Zimmerman fine sand, 6 to 12 percent slopes	42.0
D60E	Zimmerman fine sand, 12 to 30 percent slopes	0.1
W	Water	1.6

Appendix C: Additional Planning Maps

Figure 11: Township Zoning Map



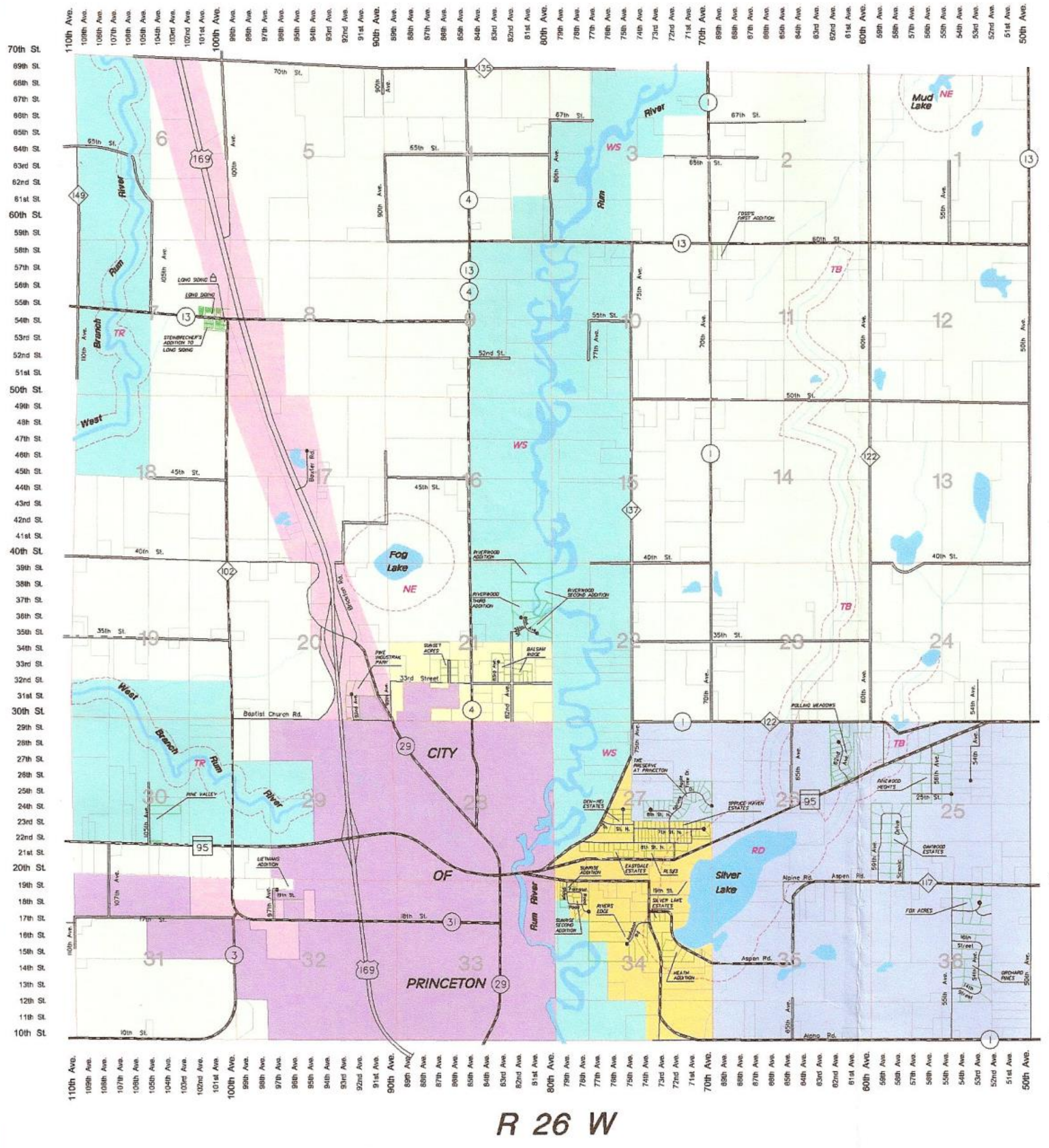
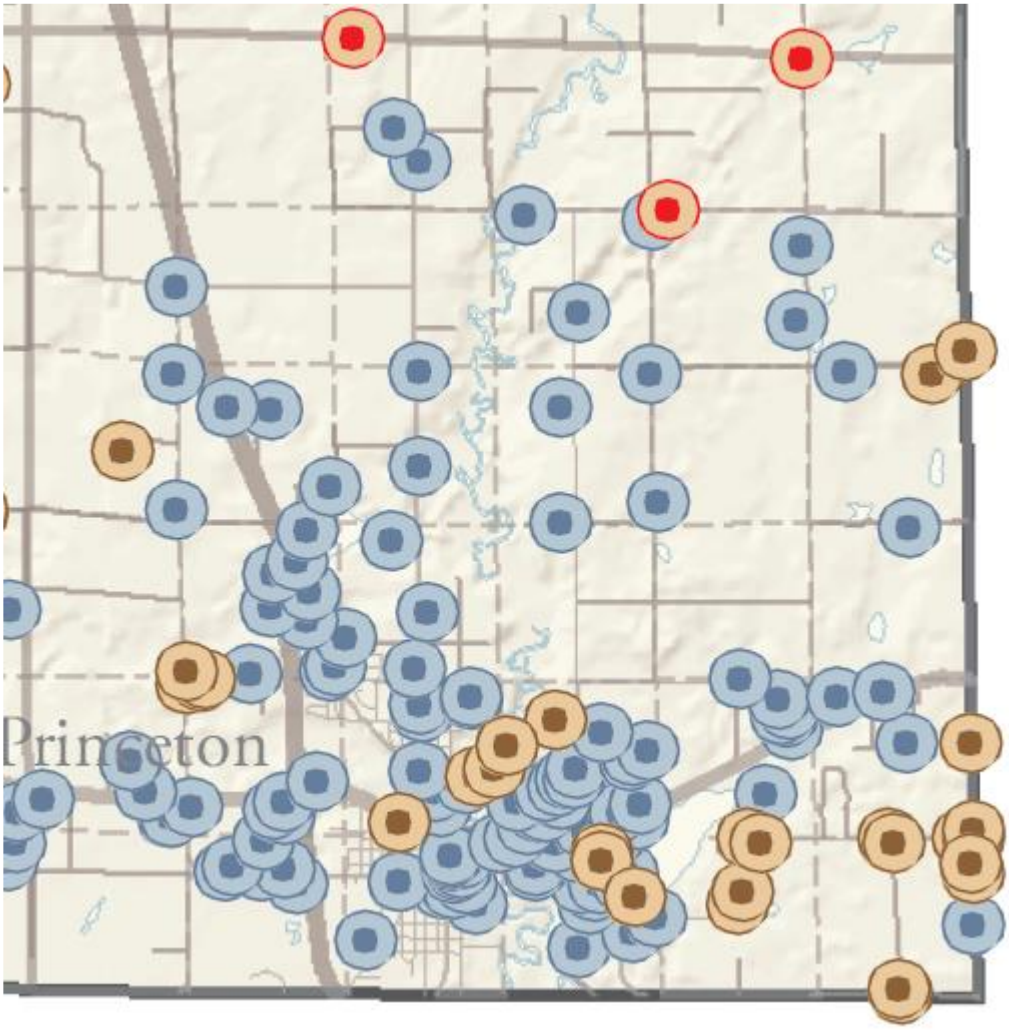

CITY
OF
PRINCETON
Fog Lake
Silver Lake
Mud Lake
Rum River
West Branch Rum River
R 26 W

Figure 12: Test Holes and County Wells



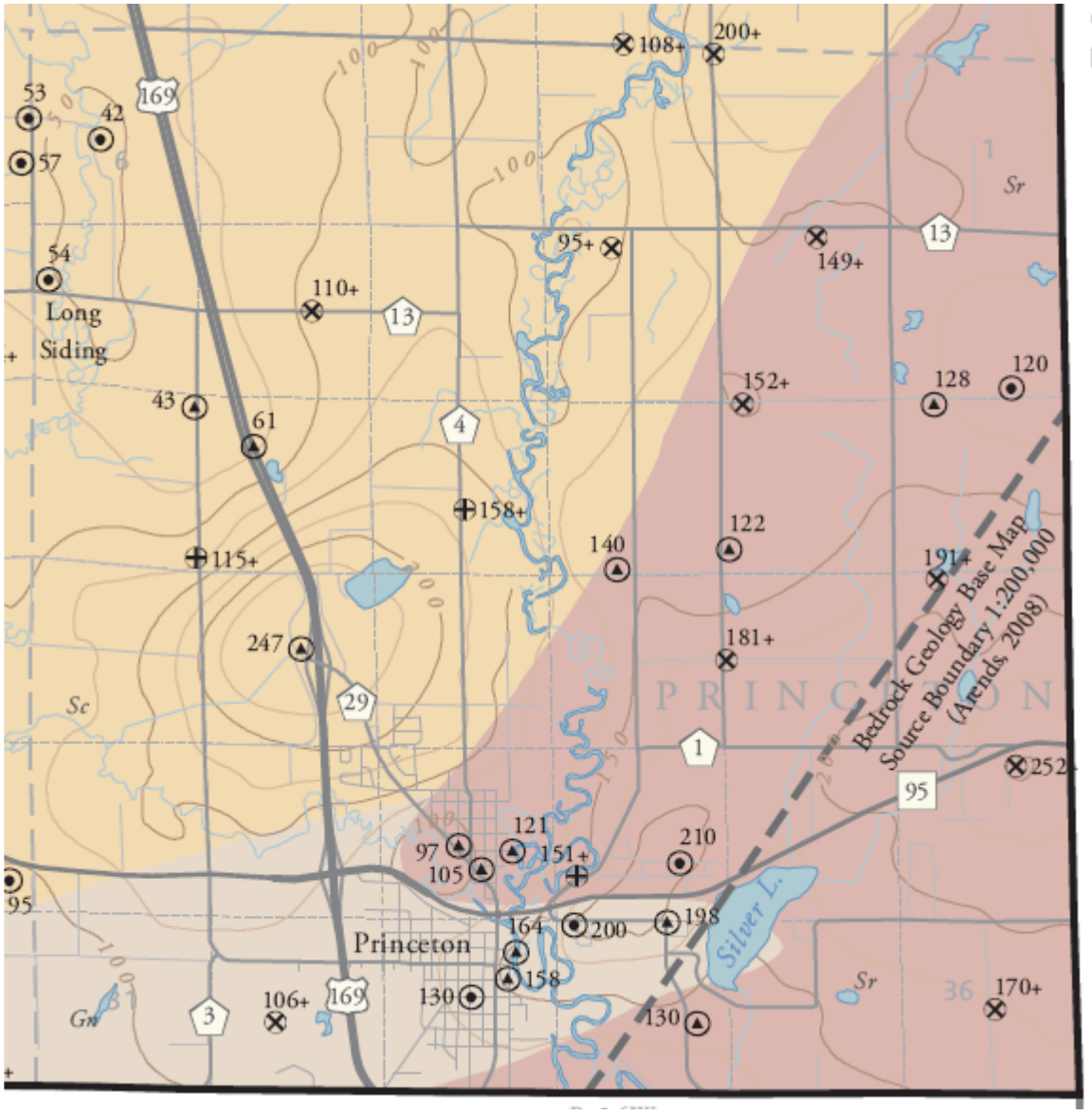
Field Observations, Test Holes, & the County Well Index (CWI)

A total of 322 field observations, including 40 test holes and 218 gravel pits, were logged during the fall of 2004 and spring of 2007. Surficial geologic sediment, glacial stratigraphy, and bedrock formations were observed in road cuts, stream exposures, excavations, such as basements, judicial ditches, construction projects, trenches (cable, pipe, tiling), and even animal holes. The County Well Index (CWI) is an online database maintained by the Minnesota Geological Survey containing approximately 905 (as of 2004) wells located in Mille Lacs County. Almost two-thirds of the wells have geological descriptions.

Data Sources

- MN DNR Test Holes
- Field Observations
- County Well Index Data With Aggregate Information

Figure 13: Potential Crushed Stone Resources



POTENTIAL CRUSHED STONE RESOURCES: Granite and other crystalline bedrock formations (e.g., gneiss, monzonite, gabbro, and basalt) suitable for crushing. These units are inferred to be relatively thick (greater than 100 feet), with overburden thicknesses ranging from 0 to 50 feet. Quarries located within these units are classified as identified resources.

High Potential for Crushed Stone Resources: Granite and other crystalline bedrock formations exposed at the land surface or buried by less than 15 feet of overburden. Based on the rock types shown on existing bedrock geologic maps, these units have a moderate to high probability of providing material suitable for crushed stone aggregates.

Moderate Potential for Crushed Stone Resources: Granite and other crystalline bedrock buried beneath 15 to 30 feet of overburden. Based on the rock types shown on existing bedrock geologic maps, these units have a moderately low to high probability of providing material suitable for crushed stone aggregates.

Low Potential for Crushed Stone Resources: Granite and other crystalline bedrock buried beneath 30 to 50 feet of overburden. Based on the rock types shown on existing bedrock geologic maps, these units have a low to moderately low probability of providing material suitable for crushed stone aggregates.

BEDROCK GEOLOGY: Most of the bedrock geology shown on this plate is compiled and derived from two Minnesota Geological Survey (MGS) Miscellaneous Map Series published at 1:100,000 scale (Boerboom and others, 1999) and 1:200,000 scale (Jirsa and others, 2003). A small portion of the county not mapped by MGS was delineated for this evaluation using aeromagnetic and County Well Index (CWI) data. For the purposes of mapping crushed stone resources, those bedrock maps are merged and reinterpreted with respect to aggregate potential to produce a generalized bedrock map of the county displayed at a scale of 1:100,000. Therefore, it is important to note that the southern portion of the bedrock geology is displayed at an enlarged scale from the original dataset.

The bedrock units are summarized in terms of rock type, durability, general quality, and overall crushed stone potential. For more detailed geologic descriptions and delineations of bedrock units, refer to the original MGS bedrock maps.

Gr

Granitic Rock: Durable coarse-grained, crystalline rock. This bedrock unit combines several granitic, tonalitic, and granodioritic rock formations, which vary in color, composition, and physical properties. The quality is interpreted as high for crushed stone resources. Local occurrences of preferred orientation of larger minerals, large crystal size, shearing, foliation, and elongation of minerals may lower the quality and durability of this unit in some areas. Specific gravity typically ranges from 2.5 to 2.7. This unit combines MGS bedrock map units Pbm, Pfm, Pgr, Phm, Phmu, Piw, Piwu, and Pwi.

Gn

Gneiss: Durable medium to coarse-grained, crystalline, metamorphic rock. This bedrock is pinkish-gray that is variably sheared and foliated. However, the quality is broadly interpreted as high for crushed stone resources. Quality and durability are affected by the local extent and degree of metamorphism, which is observed by the orientation of larger mineral grains, shearing, foliation, and mineral elongation. Specific gravity typically ranges from 2.5 to 2.9. This unit combines MGS bedrock map units Apg, Amc, and Amcu.

Mi **Mafic to Ultramafic Intrusive Rocks:** Contains a variety of minerals and rock types, typically serpentinized peridotite, pyroxenite, hornblendite, diorite, and gabbro with some granodiorite. This quality of this rock is variable depending on dominant lithology; however, quality is broadly interpreted be moderate. Quality and durability improve with larger intrusions, distance from contacts of other rock units, and degree of fracturing within rock. Specific gravity typically ranges from 2.6 to 3.0. This unit combines MGS bedrock map units Pmi, Pp, and Ppu.

Mr **Metamorphosed Sedimentary Rocks:** Predominantly schist and interpreted to have limited crushed stone potential. Variability of composition and degree of metamorphism all contribute to non-durability and low quality of these rocks. This unit combines MGS bedrock map units Pps and Ppsu.

Sc **Schist:** Predominantly consists of schist derived from volcanic and sedimentary rocks and is unsound and non-durable rock that is characterized by a high degree of metamorphism. The minerals in schist tend be elongated and easily fractured into flakes and slabs, which contribute to non-durability and low quality. This unit combines MGS bedrock map units Pdam, Psm, and Psv.

Sr **Sedimentary Rocks:** Poorly lithified sedimentary rocks, which include sandstone, siltstone, and shale. These rocks are friable, commonly contain high clay content, and cleave along bedding planes, which contribute to non-durability and low quality. This unit consists of MGS bedrock map unit C.

Sz **Shear Zone:** Highly fractured and deformed granitic rock, cut by numerous northeast-trending mafic dikes. The aggregate potential of this unit is limited due to the extent of alteration and shearing. This unit consists of MGS bedrock map unit Psz.

IDENTIFIED CRUSHED STONE RESOURCES: Geographic areas where crushed stone resources have been or are currently being mined. The quarry locations were gathered from topographic maps, aerial photographs, and fieldwork. There were two quarries active in Mille Lacs County during the time of mapping. One quarry is currently mined for dimension stone, the other quarry is currently mined for aggregate. Both quarries are larger than 15 acres.

Crushed Stone Quarry **Dimension Stone Quarry**

OVERBURDEN MODELING DATA SOURCES: Several data sets are used to model the thickness of overburden in Mille Lacs County: County Well Index (CWI), exploratory drilling, MGS bedrock outcrops from MGS datasets M-100 & M-132, MN DNR field observations of bedrock outcrops, & NRCS-USDA SSURGO bedrock outcrops soil survey data. Located CWI is a published dataset by the Department of Health where the location of the wells have been verified. **Unlocated* CWI is obtained by the DNR and approximately placed to a corresponding address. "Minima" are wells that do not hit bedrock, but help to identify areas where the bedrock is buried by thick overburden.

50 **CWI-Located:** Depth to Bedrock Label

50 **CWI-DNR Located*:** Depth to Bedrock Label

50+ **CWI-Located Minima:** Well Depth Label

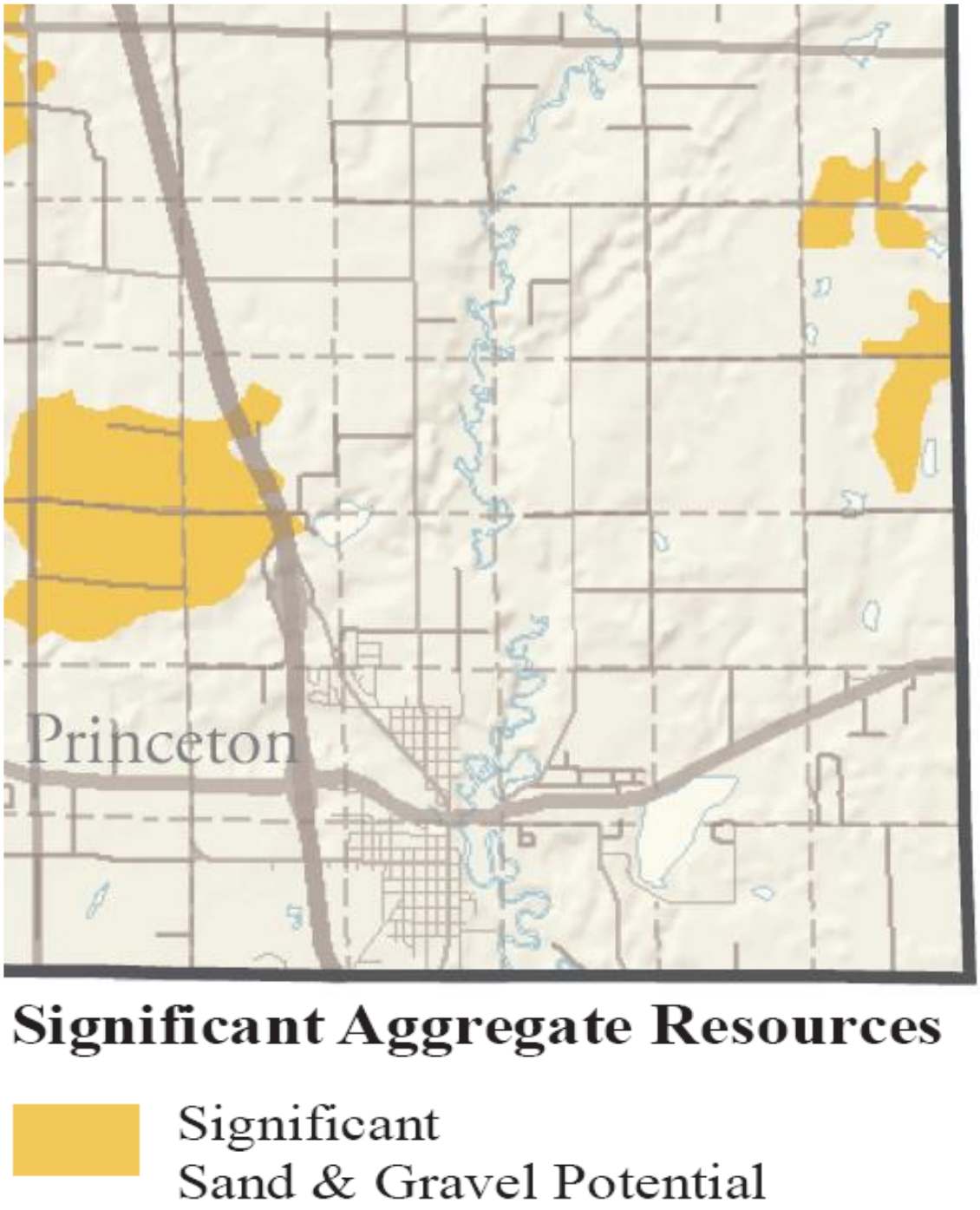
50+ **CWI-DNR Located* Minima:** Well Depth Label

50 **Exploratory Drilling:** Depth to Bedrock Label

Bedrock Outcrops

Overburden Data Source Labels are in Feet.

Figure 14: Significant Aggregate Resources

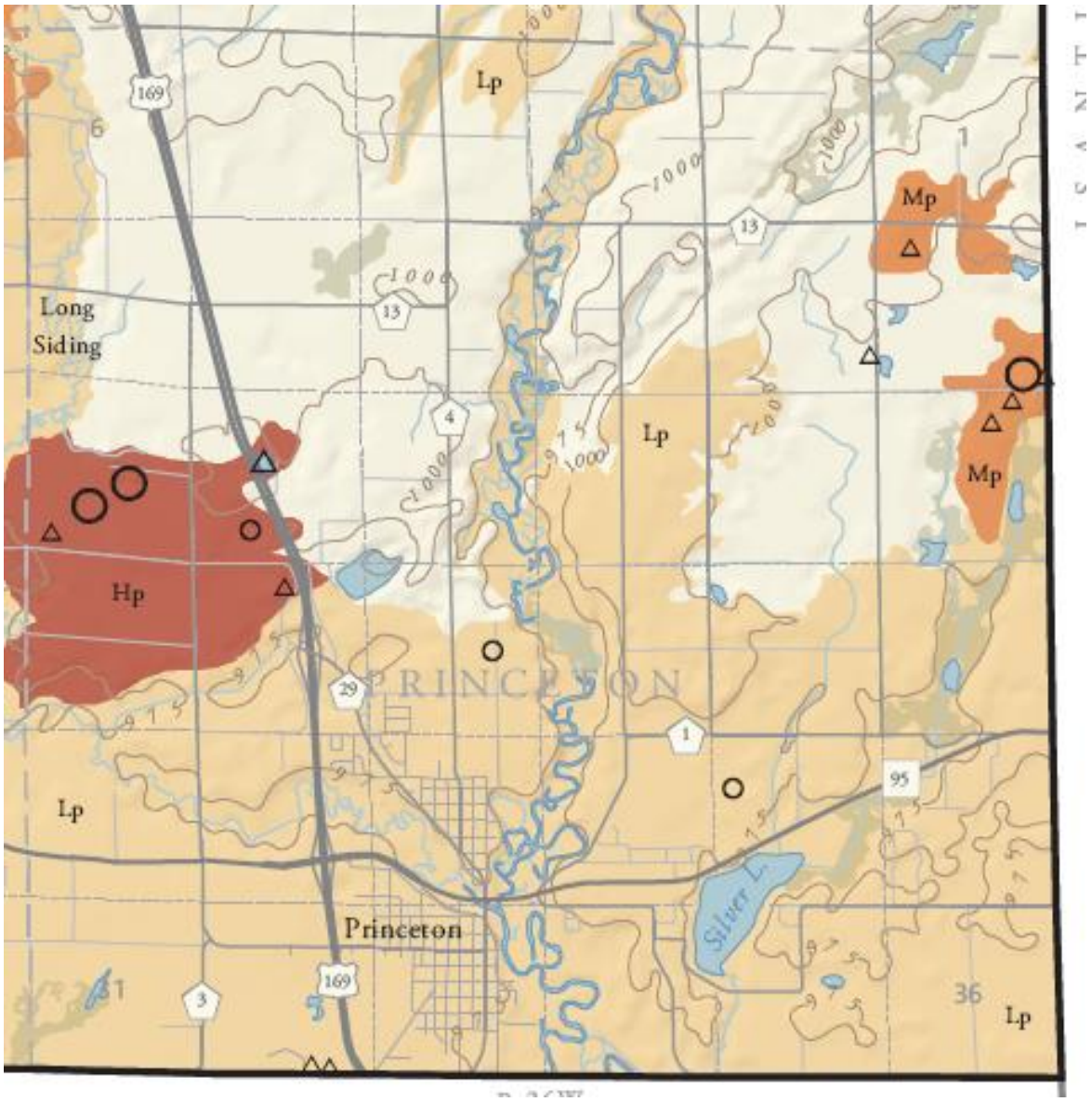


The Significant Aggregate Resources are defined as those resources most likely to be explored and evaluated for future commercial use. They include moderate to high potential sand, gravel, and crushed stone resources.

Table 1: Classification Matrix of Sand and Gravel Potential Used for Mille Lacs County

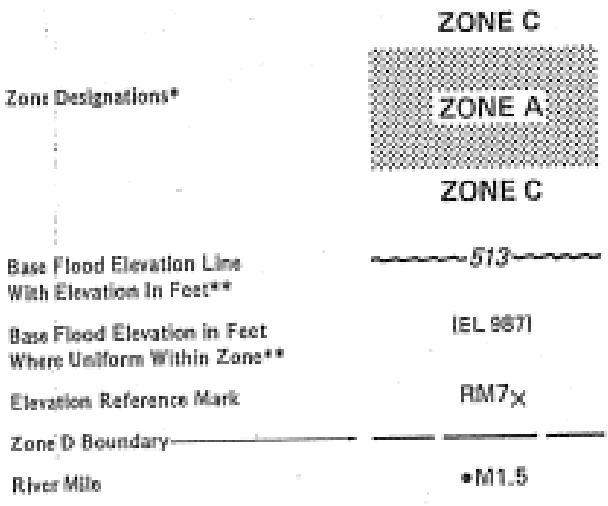
Characteristics	Potential Rating			
	High	Moderate	Low	Limited
Surficial Geology Features	Glaciofluvial outwash channels and ice contact features	Outwash channels and terraces; kames and eskers; alluvial terraces, fans, bars	Outwash channels and terraces; kames and eskers; alluvial terraces, fans, bars	Moraines; collapsed channels; glacial lake beds; colluvial slopes: alluvial features
Predominant Sediment Description	Sand and gravel	Sand with gravel to sand and gravel	Sand to sand with gravel	Clay/silt/sand/ sand and gravel
Probability[1]	Moderately high to very high	Moderate to very high	Low to moderately low	Very low to low
Sand and Gravel Thickness (in feet)	15-40+	10-40+	5-40+	0-30+
Overburden Thickness (in feet)	0-15	0-20	0-50+	0-100+
Sand and Gravel Deposit Size (areal extext[2])	Moderately large to very large (30-50+ acres)	Moderate to large (10-40 acres)	Small to moderate (10-50+ acres)	Very small to moderately small (0-10 acres)
Sand and Gravel Textural Characteristics[3]	Moderatley good to very good	Moderate to very good	Moderately poor to good	Very poor to moderately good
Sand and Gravel Quality[4]	Moderately high to very high	Moderate to high	Low to high	Very low to moderately low

Figure 15: Township Sand and Gravel Resources



Flood Plains

Figure 16: Flood Plain: Key



**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Map Index.

Figure 17: Flood Plain: Sections 1, 2, 11, 12, 13, & 14

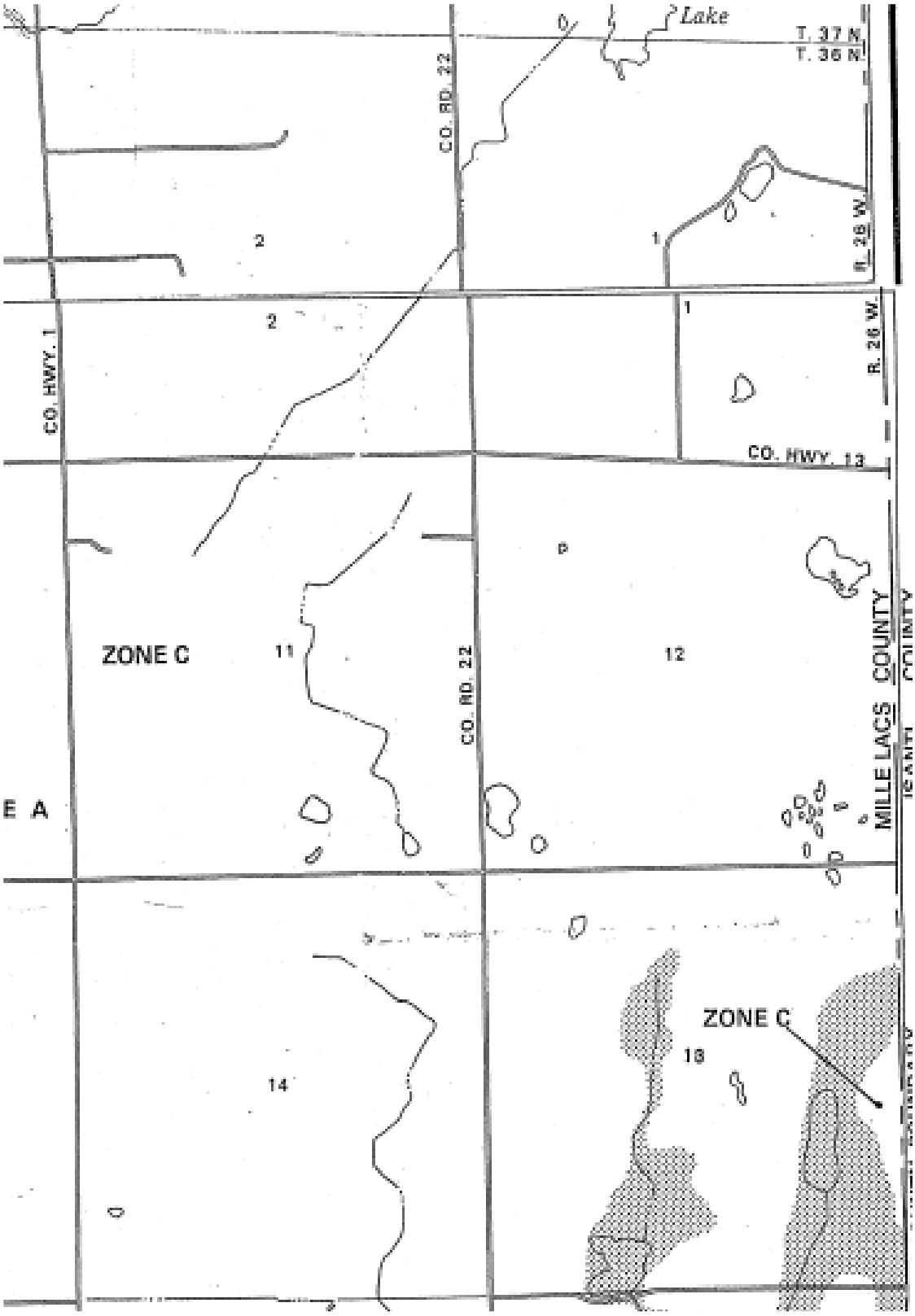


Figure 18: Flood Plain: Sections 3, 4, 9, 10, 15, & 16

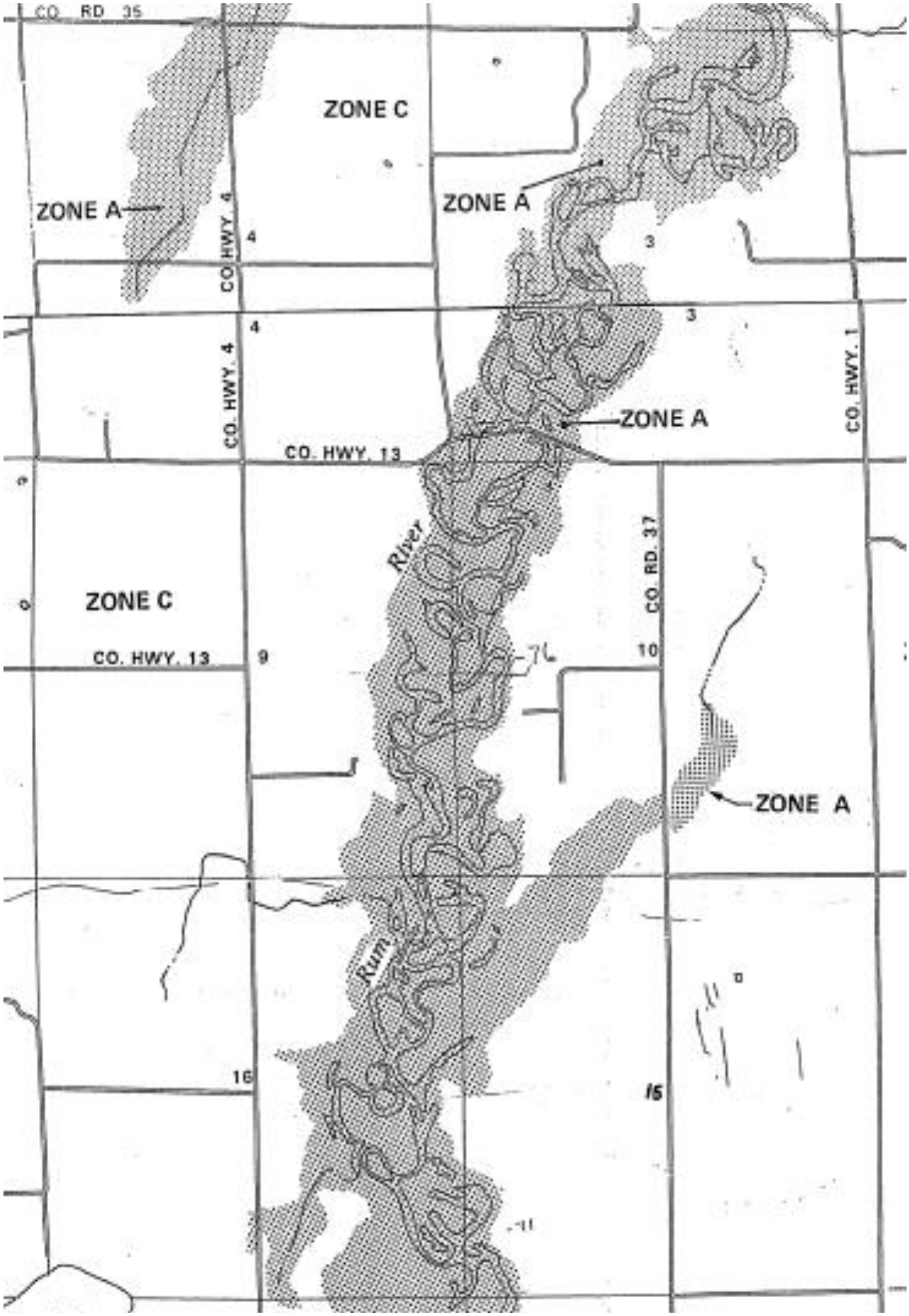


Figure 19: Flood Plain: Sections: 5, 6, 7, 8, 17, & 18

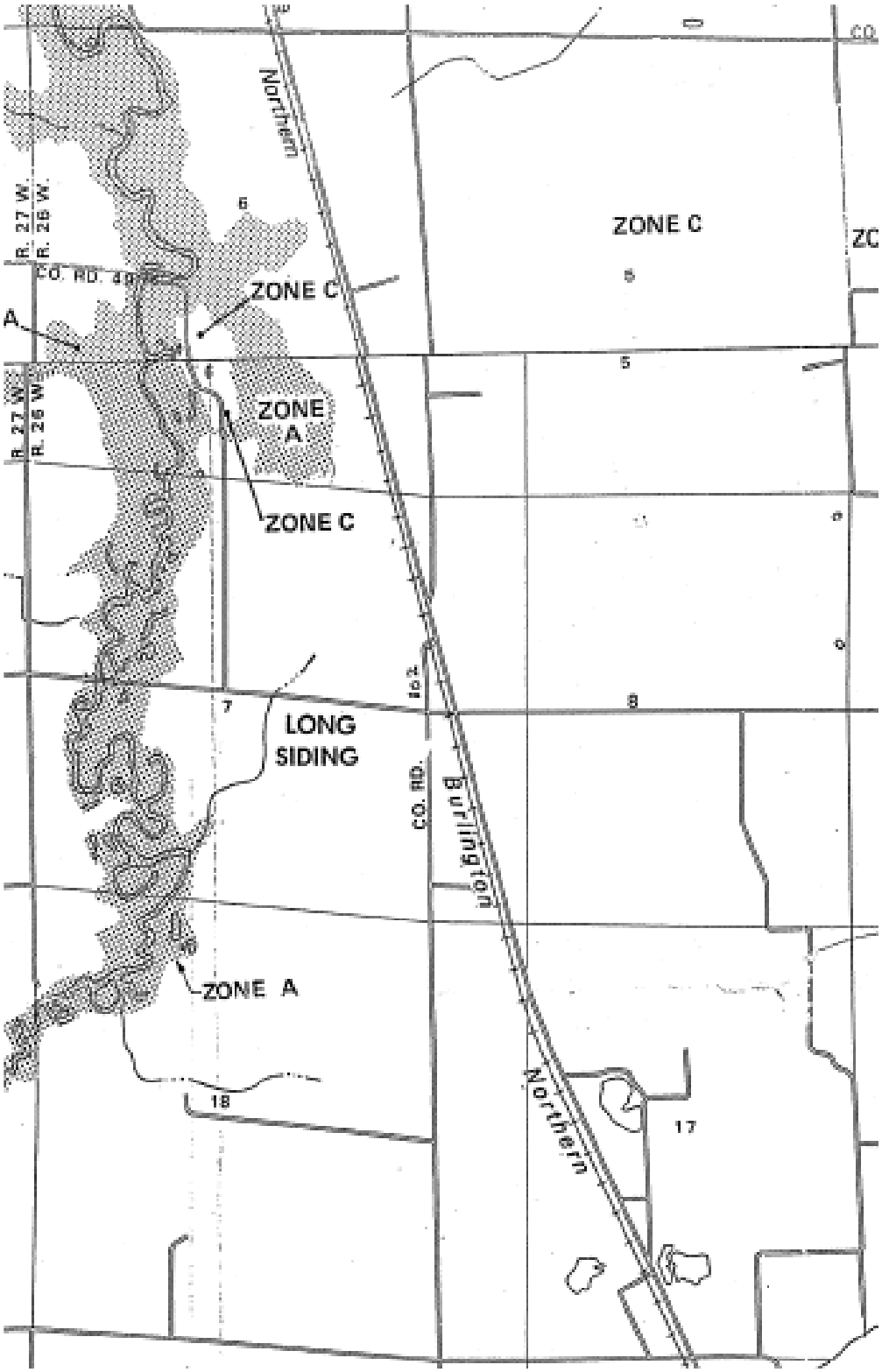


Figure 20: Flood Plain: Sections 19, 20, 29, 30, 31, & 32

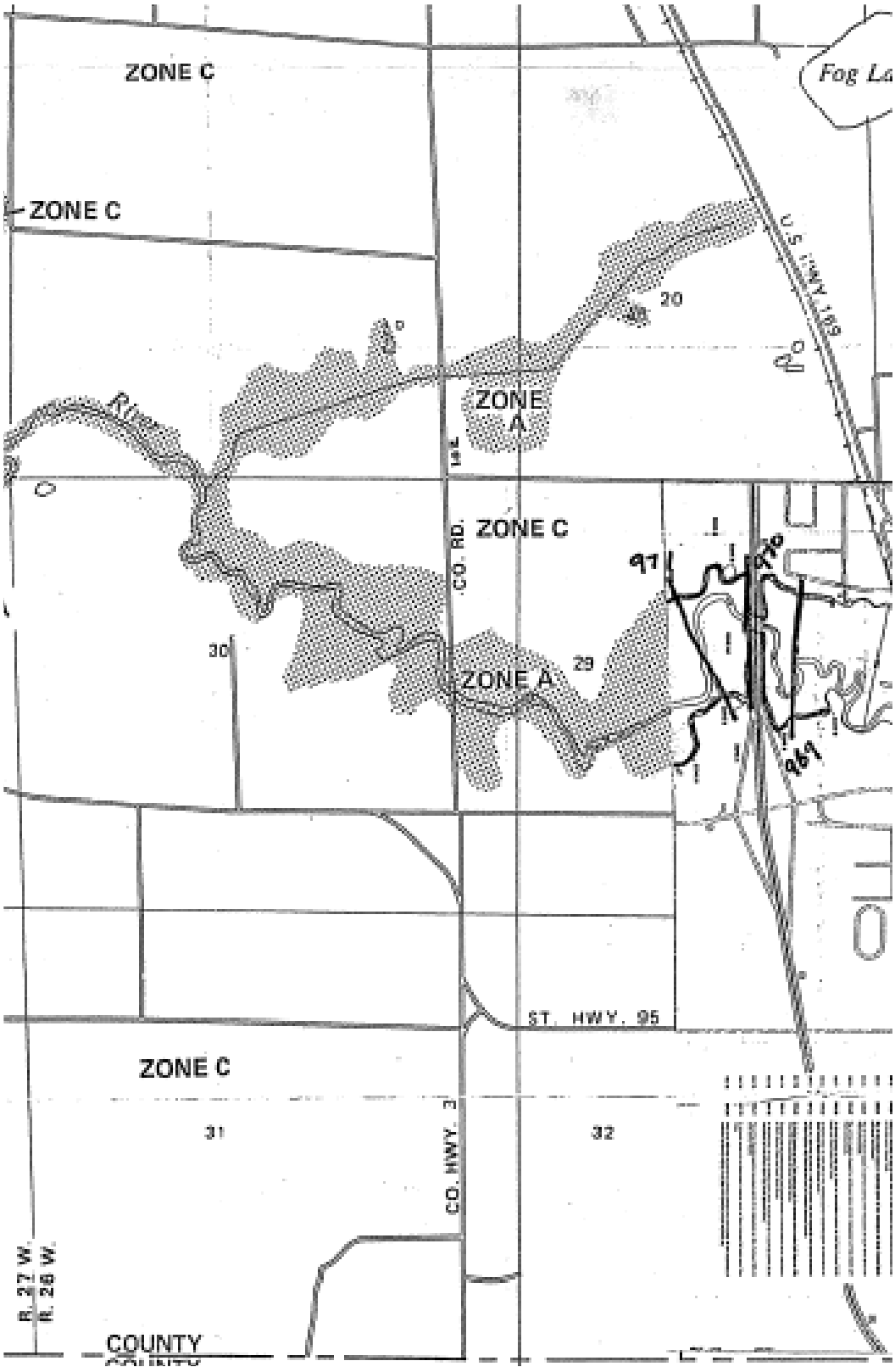


Figure 21: Flood Plain: Sections 21, 22, 27, 28, 33, & 34

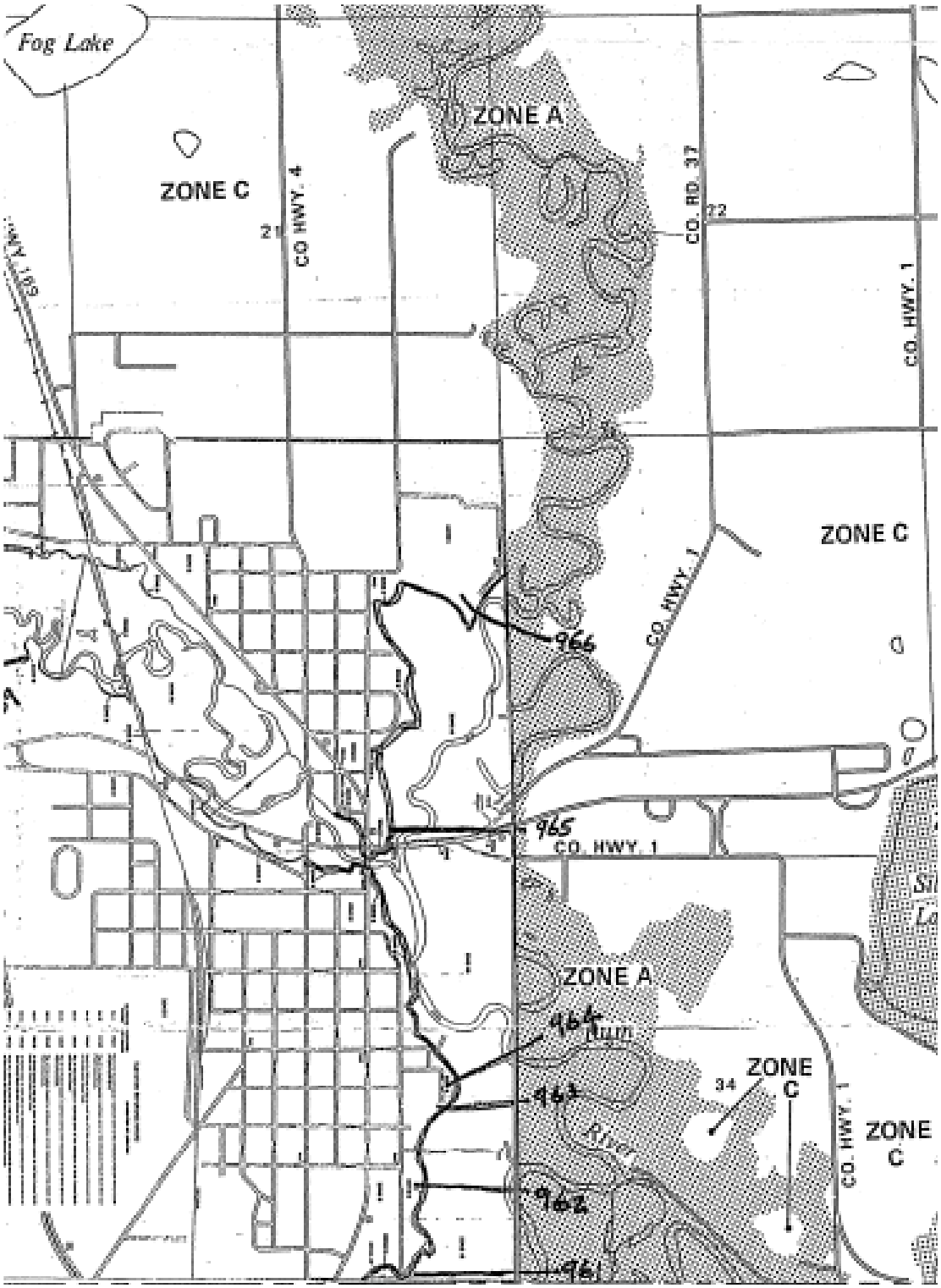
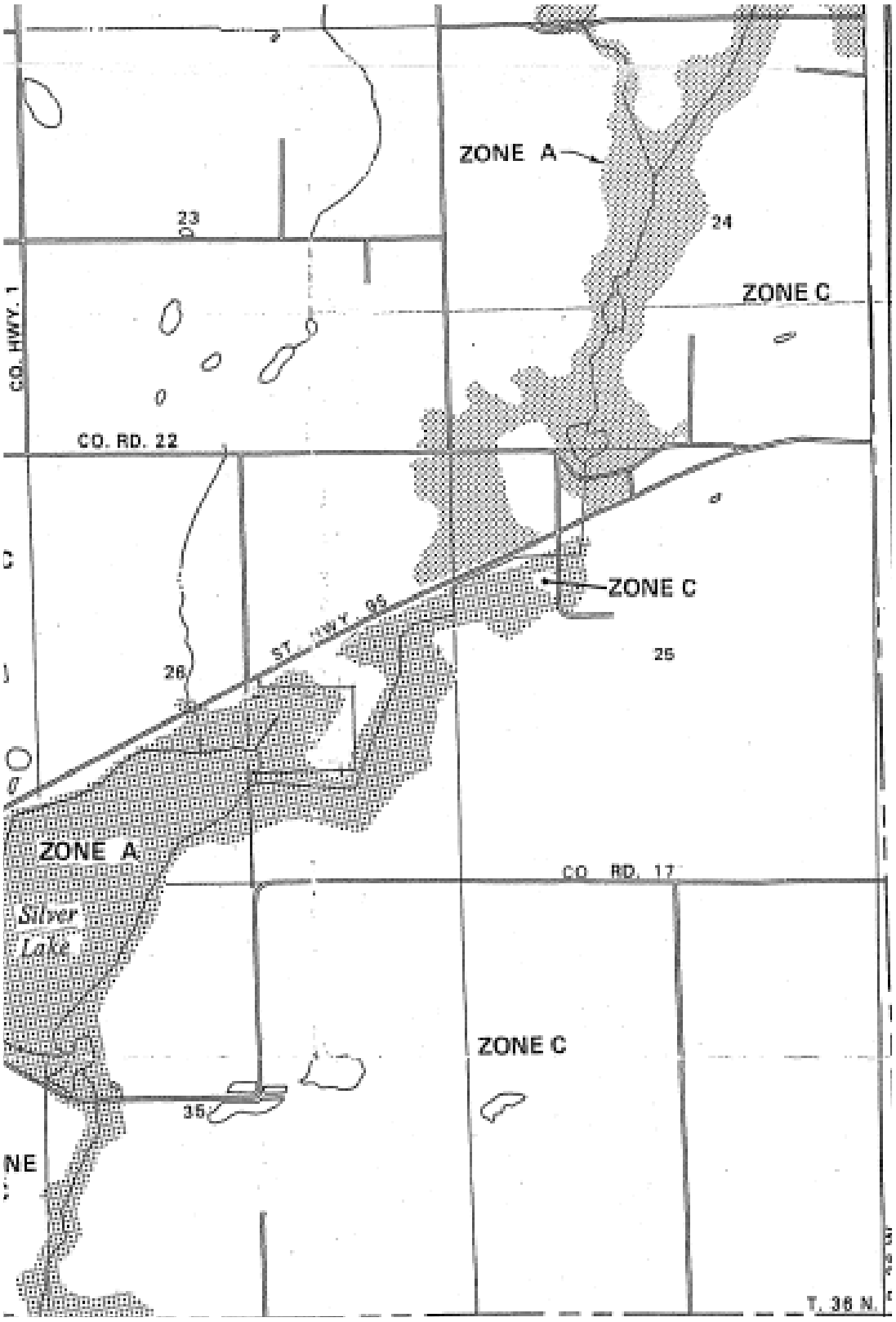


Figure 22: Flood Plain: Sections 23, 24, 25, 26, 35, & 36



Water and Wetlands

Figure 23: Water and Wetlands: Sections 1, 2, 11, 12, 13, & 14

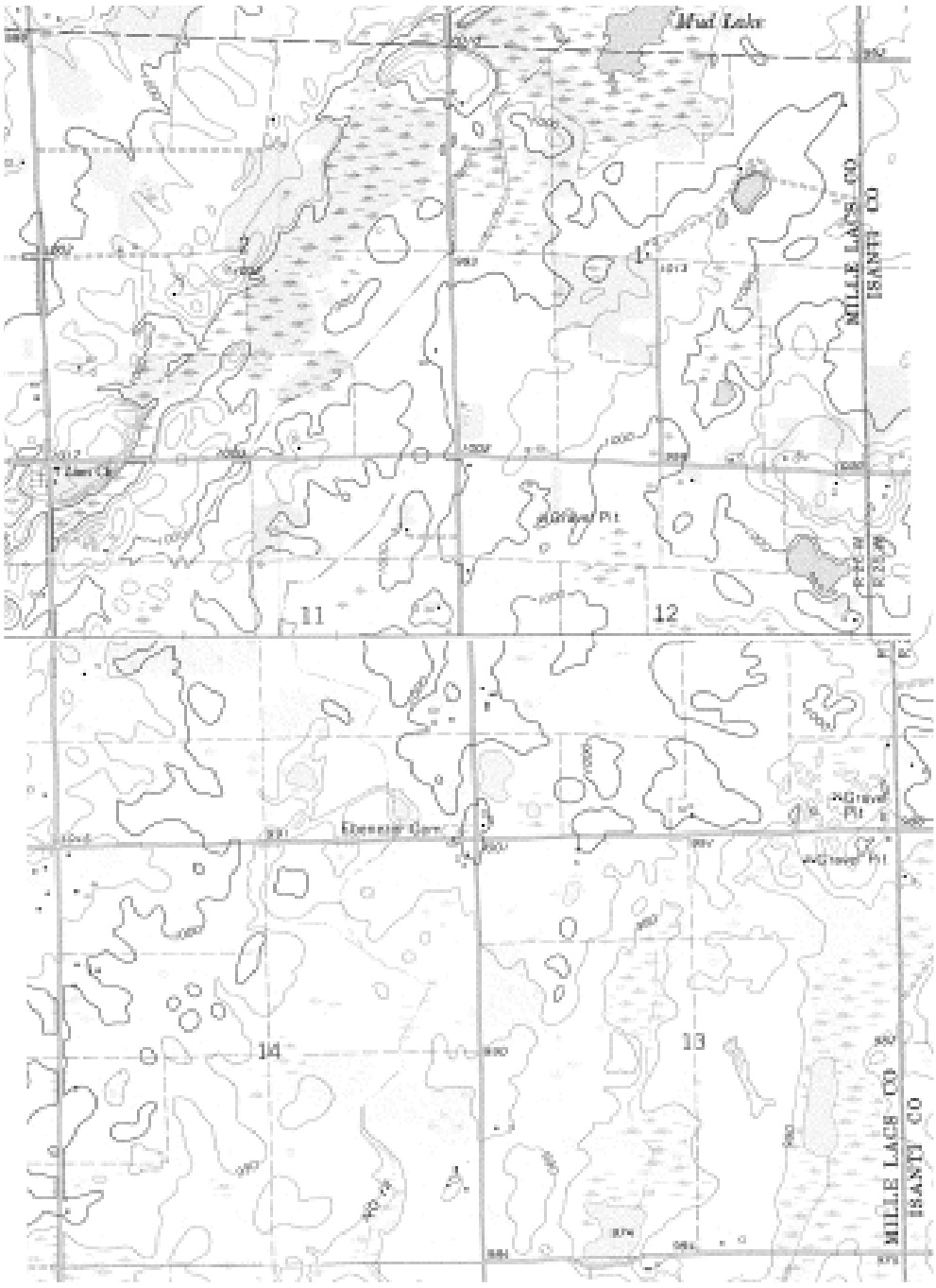


Figure 24: Water and Wetlands: Sections 3, 4, 9, 10, 15, & 16

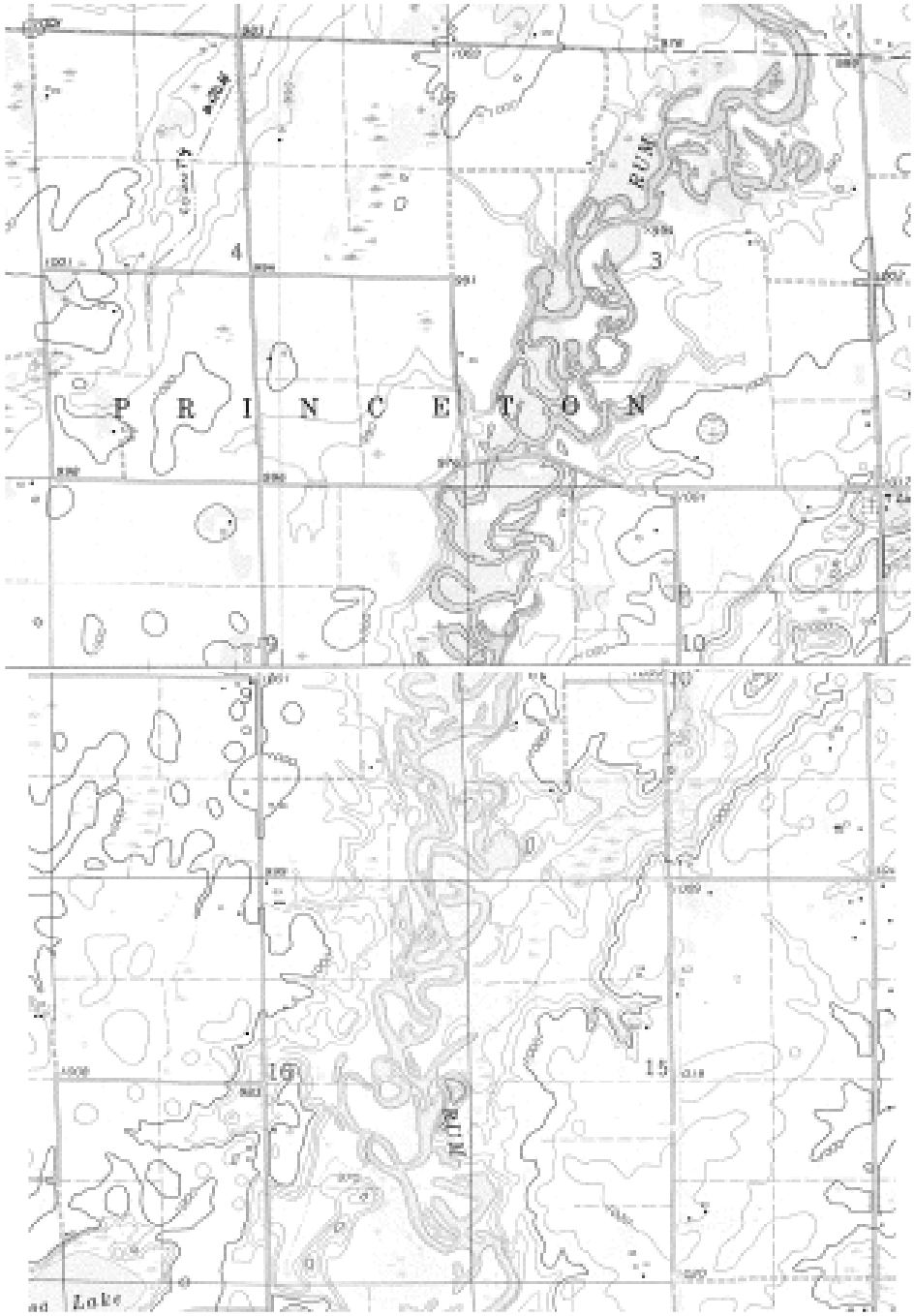


Figure 25: Water and Wetlands: Sections 5, 6, 7, 8, 17, & 18

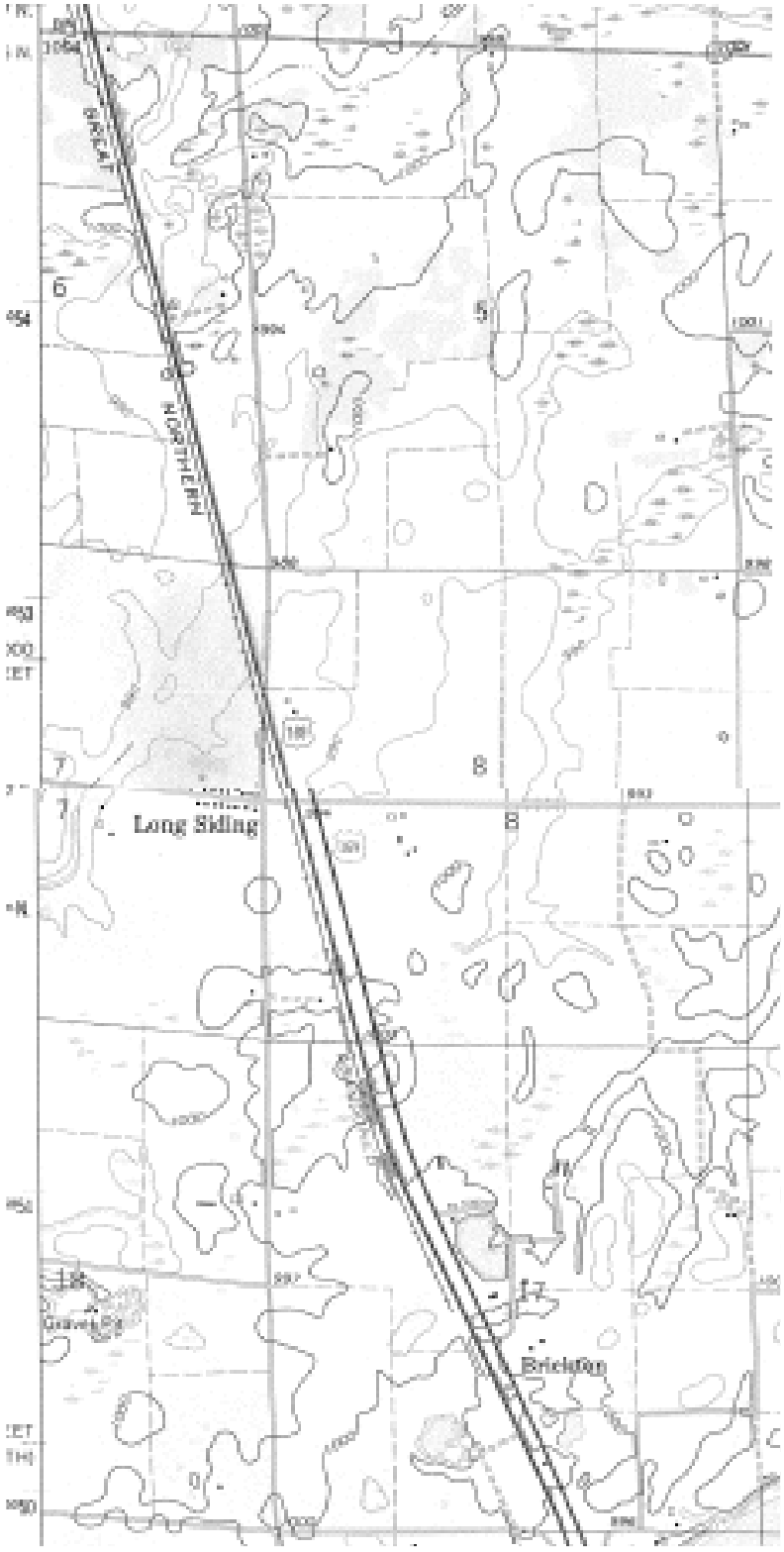


Figure 26: Water and Wetlands: Sections 19, 20, 29, 30, 31, & 32

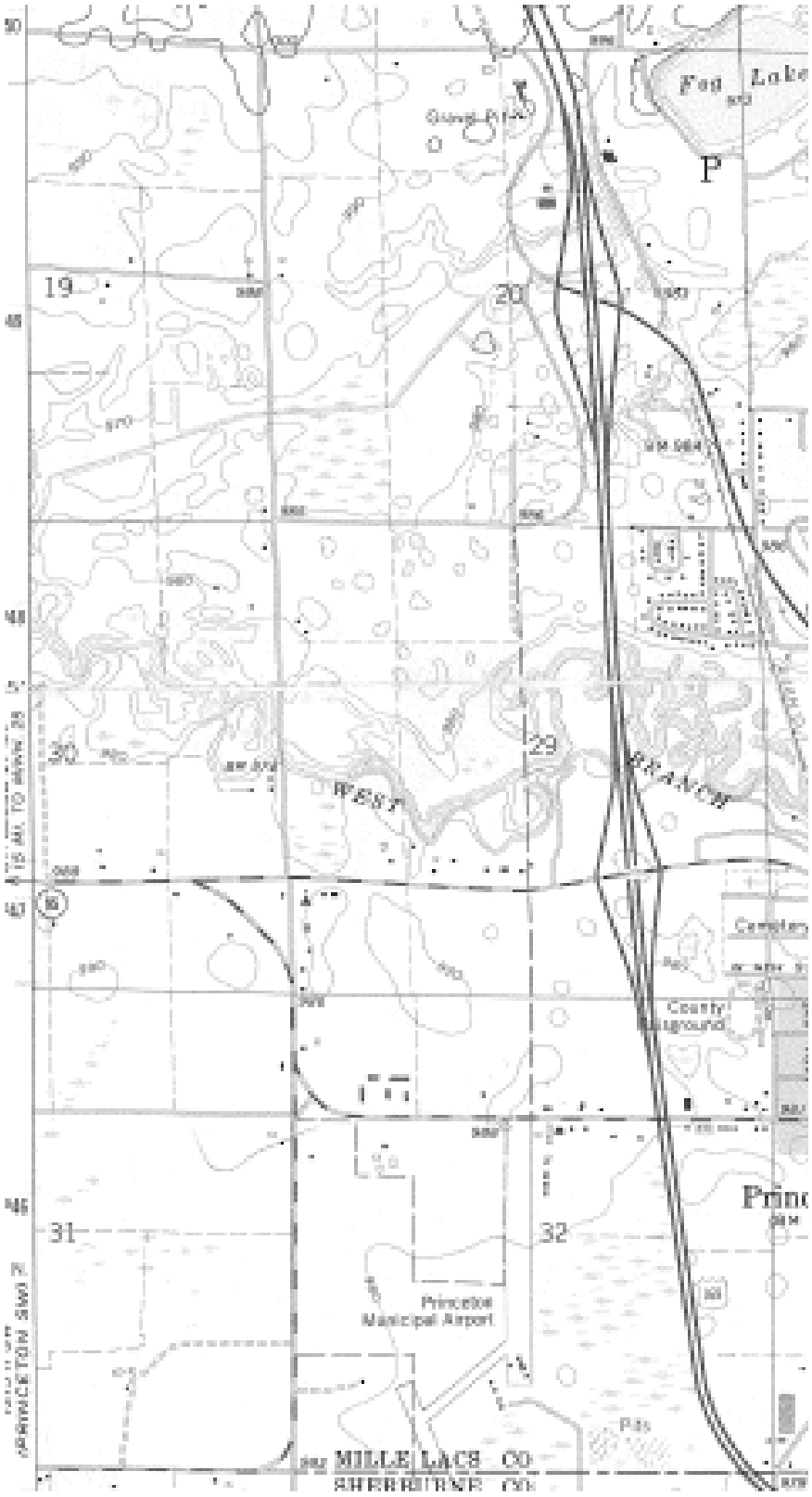


Figure 27: Water and Wetlands: Sections 21, 22, 27, 28, 33, & 34

Figure 28: Water and Wetlands: Sections 23, 24, 25, 26, 35, & 36

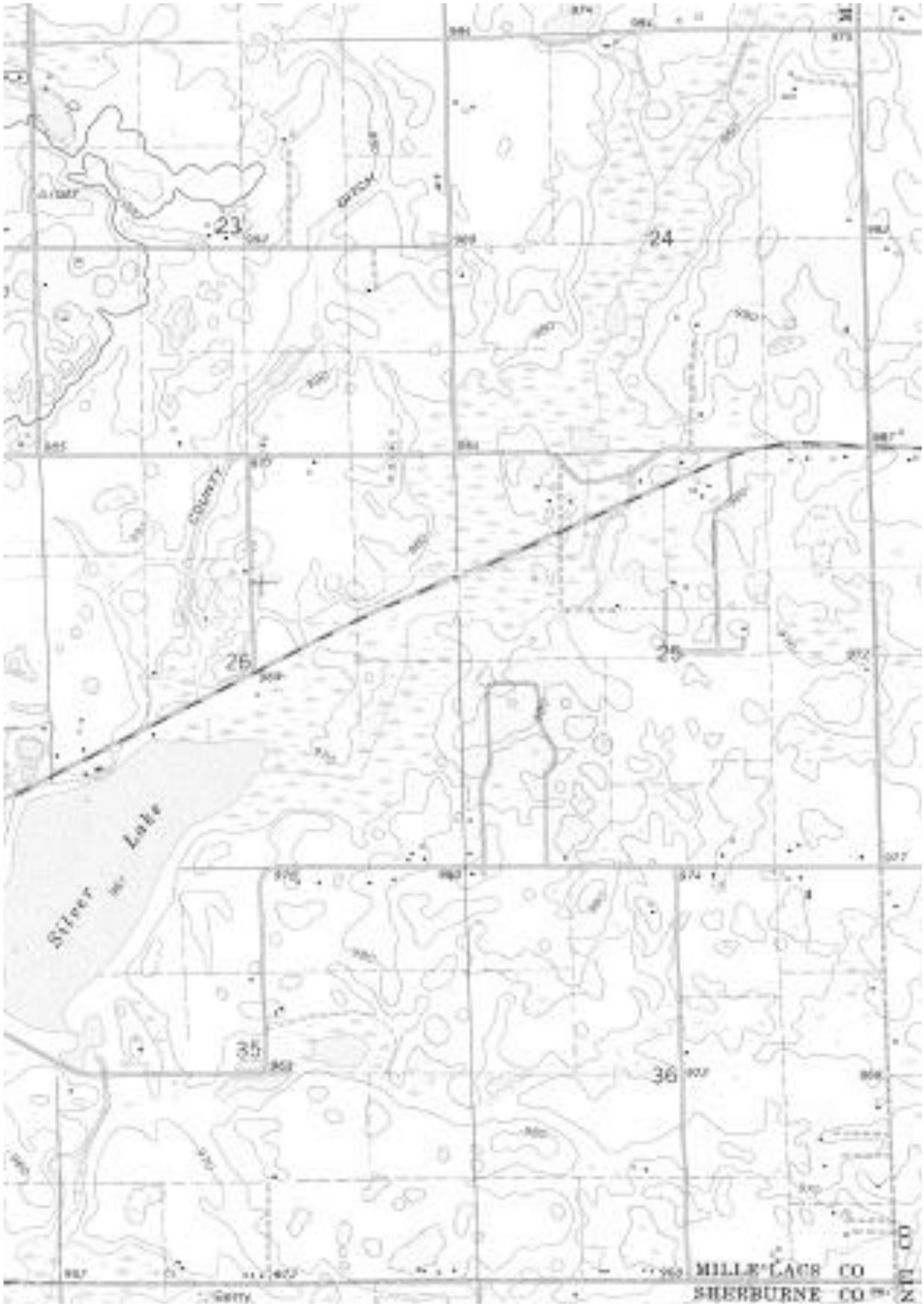
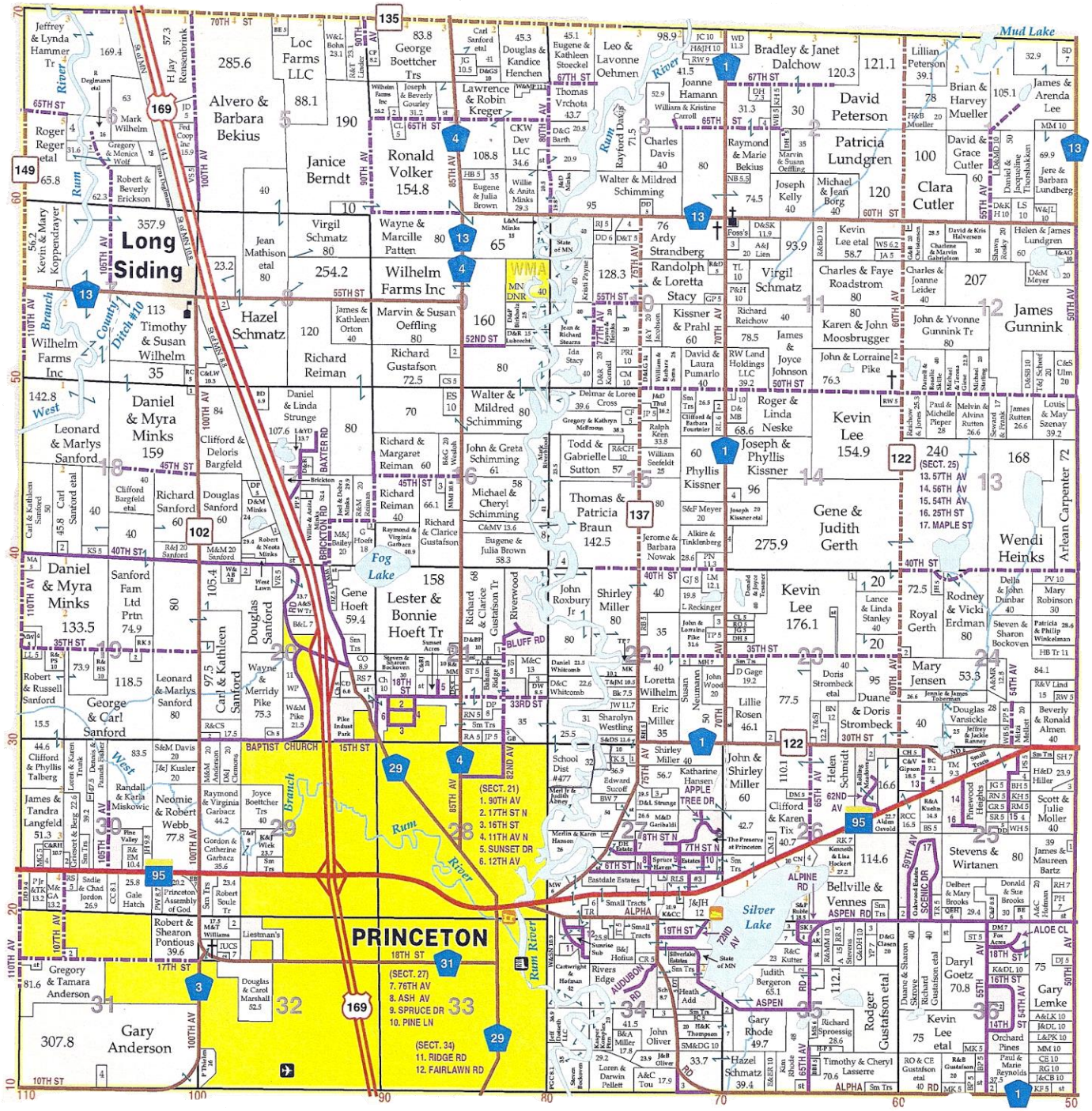


Figure 29: Township Plat Map



Appendix D: History of Brickton

In 1902, Princeton entertained the third annual meeting of the Northwestern Brickmaker's Association. Princeton was selected because at that time Brickton, two miles north, was one of the largest brick manufacturing towns in the state. At the 1902 meeting, E.M. Farnham of Princeton was elected president of the association.

Firms operating in 1902 included Woodcock and Oakes, producing 5,000,000 bricks per year, Princeton Brick Company, Cream Brick and Farnham Brothers, each with a capacity of 4,000,000 bricks, and Kuhn Brothers, with a 2,000,000 brick potential. The combined capacity was close to 20,000,000 brick per year requiring 47 trainloads of 40 cars per train to transport.

For many years, clay deposits were known to exist north of Princeton but it was not until railroad transportation was established that an industry developed. According to Wm. S. (Stillman) Oakes, born in Princeton in 1896, the first brickyard was established in 1886 at the southern limits of the clay deposits, near a small lake just south and east of Brickton by a man named Duncan.

In 1889, A.W. Woodcock and Frank Campbell are said to have opened the next yard with William H. Oakes as foreman. Oakes had learned brick making from his ancestors in Nova Scotia. Princeton Brick started in 1892, Kuhn Brothers in 1896, and Cream Brick and Farnham Brothers in 1900.

Each yard employed 40 to 50 men and for many years, the brickyard payrolls were the backbone of Princeton's economy. Wages were $1.50 to $1.75 a day.

When the original owners wished to sell out, there were others on hand to take their place. Ernest Sellhorn acquired the interest of W.H. Oakes about 1920. Rufus P. Morton took over the Cream Brick Company and operated it until 1929 when it was still producing 4,000,000 bricks a year and the last surviving yard. Clarence Young was another successor manager of a brickyard. The last bricks were made in the 1929 season.

Several reasons have been given for the gradual decline and passing of both the industry and the town of Brickton. Some say the quality clay gave out, some say transportation costs became prohibitive, and others conclude that new competition in the Minneapolis-St. Paul area captured the market. Whatever the reasons, the industry did decline and after 36 years of production totaling 800,000,000 brick, manufacturing ceased.

For years after Brickton ceased to produce brick, its product was the standard of quality and Princeton Brick was mentioned in many specifications for public buildings.

Princeton's railroad depot, now the home of the Princeton Community Library and the Mille Lacs County Historical Society was built of brick from Brickton. For many years nearly all the business establishments in Princeton and many of the better homes in the village and surrounding farming community were built of Princeton brick. The largest of the buildings in which the brick was used that is still standing is what was known as the Odd Fellows

building. When the building was finished in January 1902, the following description appeared:

"It is a three-story brick structure, imposing in appearance, substantial and enduring, higher than any other building between Minneapolis and Duluth. It is made from the famous cream-colored Princeton brick. The foundation is sandstone granite; the basement is ten feet deep.

"The store on the north is being occupied by the hardware conducted by B.D. Grant. The Princeton Roller Mill Company occupies the store on the south. On the second floor, M.S. Rutherford has his real estate offices. In addition, there are the offices of Judge C.A. Dickey, County Attorney J.A. Ross, Guy Ewing, insurance agent, and the dental offices of C.F. Walker. On the third floor are the lodge rooms for the Odd Fellows and Rebekahs. The building is steam heated."

The building was dedicated on April 18, 1902.

Horses were the important power in moving materials and finished products around. They worked in the yards during the brick season and in the winter were taken north to the woods for logging operations.

The post office at Brickton was established May 6, 1901. It was discontinued January 15, 1919; reestablished March 15, 1919 and finally discontinued August 14, 1928. Those who served as postmasters were:

- Rufus P. Morton, May 6, 1901 to 1912
- Horace M. Farnham, February 5, 1912 to 1919
- Clarence E. Young, March 15, 1919 to 1928

Brickton also boasted a flourishing school for a number of years. The first schoolhouse was sold to Horace Farnham. He added on to it for a home. It is located directly east of the Brickton Historic marker. The second schoolhouse was sold to Lee Sanford. He used material from it to build the home on North Third Street in Princeton.

Stillman Oakes and Walter Kuhn first suggested that a Brickton historical marker should be erected. Mr. Kuhn passed away and Mr. Oakes moved to California. Oakes sent the first contribution to Helen Snow. Others became interested and contributed and a fund of $650 was obtained. Willis Young wrote the inscription. A firm in Cincinnati was awarded the contract and erection was completed in November 1976. A dedication ceremony was held May 29, 1977 with Mayor Richard Anderson of Princeton, as the main speaker. (See Figure 2). The inscription reads:

1889 BRICKTON MINNESOTA 1929

HERE IN A QUARTER MILE RADIUS THRIVED A VILLAGE OF 400 PEOPLE. BRICKTON HAD TWO STORES, A TWO-ROOM SCHOOL, POST OFFICE, RAILROAD DEPOT, SAWMILL, THREE BOARDING HOUSES AND FIVE BRICK YARDS WHICH MANUFACTURED TWENTY MILLION BRICKS ANNUALLY. THE YARDS WERE OPERATED BY FARNHAM BROS., KUHN BROS., WOODCOCK & OAKES, AND RUFUS MORTON & CLARENCE YOUNG.

ERECTED BY MILLE LACS COUNTY HISTORICAL SOCIETY 1976

Woodcock and Campbell Brickyard - 1900

Brickton Teacher and Students

Brickton School Teachers – 1915

Appendix E: References

Brickton (Appendix D)

The Princeton Union-Eagle, Printed May 1977, Princeton, Minnesota

Photos

Library Collections of the Minnesota Historical Society

Bricks

Adam Reichow, Bricklayer, Princeton, MN.

Comprehensive Planning

State of Minnesota Statute 473.859 Comprehensive Plan Content

Conservation Easements

Minnesota Board of Water and Soil Resources
Web Site: http://www.bwsr.state.mn.us/easements/handbook/index.html
Minnesota Land Trust
Web Site: http://www.mnland.org
Private Land Owner Network
Web Site: http://www.privatelandownernetwork.org/plnlo/conease.asp

Employment by Industry and Occupation
Geography
Household Income
Housing
Population and Household Growth

United States Census Bureau
Web Site:
http://factfinder.census.gov/servlet/QTTable?_bm=n&_lang=en&qr_name=DEC_2000_SF1_U_DP1&ds_name=DEC_2000_SF1_U&geo_id=06000US2709552540

Ground Water Protection

Minnesota Pollution Control Agency Individual Sewage Treatment Systems Standards

Historic Preservation

Minnesota Historical Society
Web Site: http://www.mnhs.org/index.htm

Land Management

Department of Administration / Office of Geographic and Demographic Analysis / Land Management Information Center
Web Site: http://www.lmic.state.mn.us

Land Values

University of Minnesota
Web Site: http://www.cffm.umn.edu/landeconomics/landdata/LandValue/RunReport.aspx?RI=545506

Soils

United States Department of Agriculture Natural Resources Conservation Service
Web Site: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx
Web Site: http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdnamequery.cgi

Aggregate / Gravel

Minnesota Department of Natural Resources
Web Site: http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/index.html

Stormwater Drainage and Surface Water Quality Protection

Mille Lacs Soil and Water Conservation District
Web Site: http://www.millelacsswcd.org
Mille Lacs County's Local Water Resource Management Plan, January 1, 2006-December 31, 2016.

Trails

State of Minnesota, Department of Natural Resources, 2007. "Trail Planning, Design, and Development Guidelines." Trails & Waterways Division, 500 Lafayette Road, St. Paul, MN 55155-4052. 306 pages.

Transportation

Travel Time to Work

Minnesota Department of Transportation 101 /169 Corridor Management Plan of 2002
Web Site: http://projects.dot.state.mn.us/srf/169elkriver/documents.html

Well Water Construction Code

Minnesota Department of Health
Web Site: http://www.health.state.mn.us/divs/eh/wells/construction/index.html
Water Well Construction Code Handbook

Wildlife Management Areas

Minnesota Department of Natural Resources
Web Site: http://www.dnr.state.mn.us/wmas/index.html

Princeton Township Supervisors

Greg Anderson, Chairman
Daniel Minks, Vice Chairman
Mark Riverblood
John Roxbury, Jr.
Eugene Stoeckel

Princeton Township Planning Commission

Tom Braun, Chairman
Carl Sanford, Vice Chairman
Eric D. Minks
Cindy Bodger
Kathy Stoeckel
Larry G. Ziebarth

Princeton Township Clerk / Treasurer – Connie Wubben
Princeton Township Engineer – Todd McLouth, Oliver Surveying & Engineering, Inc.
Princeton Township Zoning Administrator – Loren Kohnen, Metro West Inspections, Inc.