



PINE ISLAND COMPREHENSIVE PLAN



TITLE PAGE

City of Pine Island Comprehensive Plan Update

Adopted October 19, 2010

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VISION STATEMENT

Our vision is to work together to promote orderly growth of Pine Island. Build a productive atmosphere that preserves all we value as a community, the environment, our historic and collective community values.

The mission of the Pine Island Comprehensive Plan is the maintenance and promotion of the health, safety, and welfare of Pine Island residents, its businesses, and its environment.

This mission will be accomplished through the implementation of adopted policies, goals and objectives.

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CHAPTER 1 - INTRODUCTION

Comprehensive Plan Review and Revision

The Comprehensive Plan is intended to guide the growth of the community. As events and circumstances within the community change, the Comprehensive Plan should be reviewed and updated, as appropriate. Amendments to the Comprehensive Plan should not occur without public notice, a public hearing conducted by the Planning Commission and City Council final review and approval. Amendments to the Comprehensive Plan should be considered if there have been changes within the community or issues which were not anticipated by the Plan.



Pine Island Mural

Recommendations

1. It is recommended the Planning Commission and City Council review and update the Comprehensive Plan at five to ten year intervals to ensure it is a current reflection of the city's growth patterns, community goals and land use needs.
2. The Comprehensive Plan may be amended upon petition from the public, initiation by the Planning Commission or direction from the City Council. No amendment shall be adopted until a public hearing has been conducted by the Planning Commission with recommendation to the City Council. A two thirds affirmative vote of the City Council is required to amend the Plan.
3. It is recommended that on an annual basis the City Administrator or designee report to the Planning Commission and City Council (re) development issues which have occurred as they relate to the Comprehensive Plan, proposed projects which have an impact on the accuracy on the Plan projections, and a list of implementation goals identified within the Plan and the status of implementation.



Flag at sunset

Growth, both demographic and economic, drives all other sectors of a community. By setting out to understand Pine Island's population, its trends and growth rate, we can be better prepared as a community and as a local government to meet the challenges of the future.



Pine Island soccer program

Changes in population drive demand or the lack thereof for basic government services, for growth in local retail, and other areas. Provision of services to meet the needs of a community requires an honest look at the emerging trends, our assets, and the resources needed to preserve the quality of community life and to ensure the health, safety, and welfare of all Pine Island residents.

The City of Pine Island has experienced a stable population growth rate over the past several decades. This trend will likely continue in the future. Such growth is supported by number of factors that are likely to affect future population growth in Pine Island in the short term:

- Pine Island’s location on US Highway 52 and its close proximity to Rochester.
- Continued growth in Rochester’s commercial, industrial, and health sectors.
- School district coverage area and quality K-12 education.
- A strong industrial and commercial base that is likely to grow in size and attract more employees.
- Less restrictive regulatory controls on housing and building permits in general compared to Rochester.
- Availability of planned/platted housing sites in a wide variety of price ranges (entry level to more expensive homes).
- Recent annexations, facilitated by annexation agreement, that offer a large land area ready and available for new housing.
- Other quality of life issues, such as, short commuting time, low crime rate, a sense of community, and ample recreational opportunities.

The Planning Process

The current Pine Island Comprehensive Plan was drafted in the years 2003 and 2004 with the plan being adopted in early 2005. Since that time the City has experienced numerous changes to the physical boundary of the City by annexing large portions of land and in the direction of projected growth of the City with the focus of the growth moving to Olmsted County at the proposed new interchange on US Highway 52 and Olmsted CSAH 5/12. With those changes, Pine Island began the process of updating the current plan to more accurately reflect the direction the City is headed. These updates focused on a more detailed look at the future land use projections, parks and trails facilities and needs and the future transportation system of the City. Once the Pine Island Planning Commission completed review of the updated plan, it was shared with Pine Island and area residents to seek their input and ideas. The input and ideas were incorporated into the context of the plan which then was reviewed by the Pine Island Planning & Zoning Commission through public hearing(s) and then forwarded to the Pine Island City Council for full adoption. The plan then becomes the policy foundation from which zoning and other land use regulation, programs, education efforts, and public expenditures transform the community’s adopted vision into reality.

In addition to documenting historic and future growth trends, this plan creates a foundation for coordinated action by public and private entities including a predictable environment for both public and private investment, creating support among neighboring counties and townships through a shared vision. The plan will enhance our collective return on public and private investments by creating opportunities to work together and realize efficiencies through economies of scale and timing of the various investments.



Bank in Pine Island, 2004

Preview on Policies, Goals and Objectives

A policy is a broad statement articulating the general direction towards which the community wishes to dedicate resources. Within each policy, goals are established to quantify our policy statements into a more measurable action steps. To further clarify the policy, we have identified some objectives that demonstrate specific steps to be completed in order to achieve the adopted policies.

The plan will formulate a set of policies, goals and objectives within the following chapters:

- Chapter 2 - Demographics & Housing
- Chapter 3 - Land Use
- Chapter 4 - Transportation
- Chapter 5 - Parks, Recreation and Open Space
- Chapter 6 - Wastewater Infrastructure
- Chapter 7 - Water Infrastructure
- Chapter 8 - Sustainability
- Chapter 9 - Historic Preservation

Comprehensive Plan Implementation Strategies

To summarize, the Comprehensive Plan:

- Includes a summary of the city's demographic profile.
- Analyzes the past, current and future housing stock.
- Projects future housing and population trends.
- Identifies natural resources and goals for preserving natural amenities.
- Inventories current land uses and projects future land uses with the identification of where appropriate land uses should be located.
- Reviews the current transportation system and includes a future transportation plan and policies.
- Inventories current park land and recreational amenities and includes recommendation for future park and recreational facilities.
- Summarizes the wastewater and water infrastructure with the identification of future needs.
- Addresses historic preservation as it relates to the community.

In order to implement the policies, goals and objectives identified for each of these elements and attempt to retain the positive aspects of the community while addressing the challenges noted, the following implementation strategies have been prepared:



Tower clock gargoyle

1. Education. Continue to support education in the community, meeting periodically with school administration to discuss joint programming of recreational programs and facilities, and timing on municipal and educational capital projects.
2. Sense of Community. Continue to focus on the heritage of the community through design elements and celebrations. Continue community events to assist in retaining the small town feel and sense of community as the population continues to grow and boundaries expand. Provide opportunities for involvement by new residents and long-term residents to come together.
3. Park and Recreation. Obtain land, as a part of the subdivision process, in areas in which community and neighborhood parks have been identified as required to support future growth. Continue to seek donations, grants, and other funding to upgrade existing parks.
4. Housing. Consider adopting code provisions for the on-going and long-term maintenance of the City's housing stock. Inform builders or housing programs to support the various types of life-cycle housing.
5. Zoning and Subdivision Ordinances. As the City continues to grow, update the City's Zoning and Subdivision Ordinances to ensure consistency with the Comprehensive plan, as noted within this chapter.
6. Capital Improvement Plan. Adopt a capital improvement plan which includes major capital expenditures identified in this Plan.
7. Joint Annexation Agreements. Work with Pine Island, New Haven and Oronoco Townships to develop orderly annexation agreements.
8. Transportation. Continue to work with Goodhue and Olmsted County as well as adjacent townships to develop a regional transportation plan. Require the platting of collector streets identified on the transportation plan.
9. Utilities. Address wastewater treatment capacity issues as they become issues and adjust fees and rates to support required expenditures. Continue to monitor capacity of utilities as plats are submitted.
10. Historic Preservation. Continue to identify and preserve historic structures in the community by adopting historic preservation standards for the community.



City hall clock tower at sunset

CHAPTER 2 - DEMOGRAPHICS AND HOUSING

BACKGROUND

Pine Island’s demographic and housing trends shape the issues of development, economics, transportation and natural/cultural resource management. Demographic trends serve as good indicators for needs in all areas and for expected future demands on public services, open space, traffic, and other infrastructure investments.

The Chapter addresses demographic and housing trends and documents Pine Island’s growth. The data comes from a variety of sources including building permit records, Minnesota Planning Office, the State Demographer’s population data, along with U.S Census Bureau among others. Housing data was documented through previous studies and on-going local development plans. Housing is very closely tied to demographics, and growth or decline in one is a direct predictor of trends in the other.

Pine Island has seen a steady population growth in the past as illustrated in the following tables and graph charts. The U.S. Census recorded a 1990 population of 2,125 and a recorded 2000 population of 2,337. This figure has increased quite substantially since 2000. The Minnesota State Demographer Center estimate for 2007 was 3,304 or a 41.4% increase since 2000. Table 1 shows the City of Pine Island’s population since 1940 in ten year increments.

As shown in Table 1 the City’s population has more than tripled since 1940. The fastest growth has occurred in the last decade with 967 people being added since 2000 for a 41.4% growth rate. This growth has dramatically decreased over the last few years from earlier in the decade as a recession has gripped the country.

Historical Trends

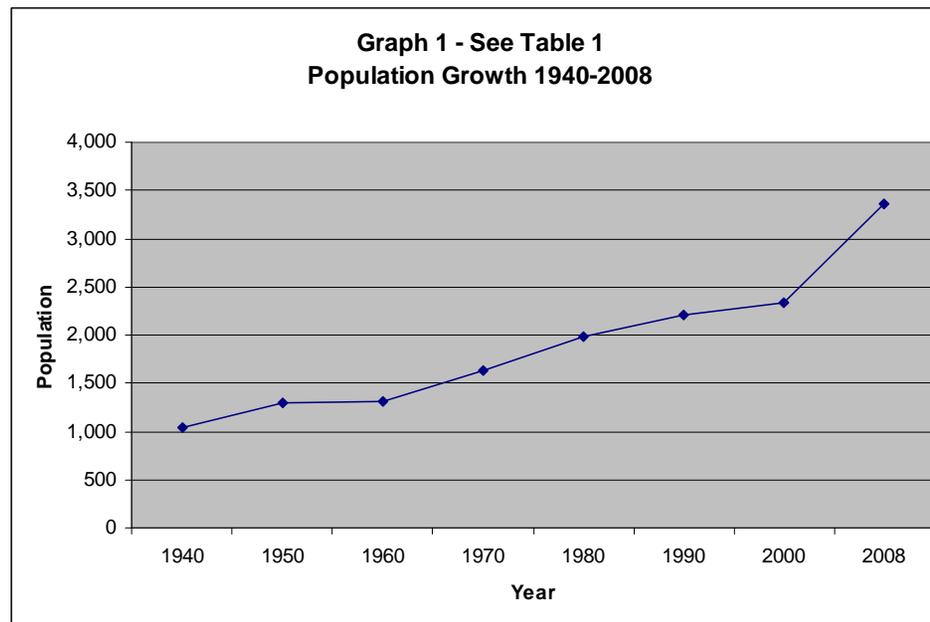
Table 1 – Actual Population Growth and Percent Change Since 1940

| | 1940 | 1950 | 1960 | 1970 | 1980 | 1990 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Total Change |
|---------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------------|
| Population | 1,040 | 1,298 | 1,308 | 1,640 | 1,977 | 2,125 | 2,337 | 2,593 | 2,845 | 3,036 | 3,187 | 3,268 | 3,301 | 3,304 | 3,363 | - |
| Population Increase | - | 258 | 10 | 332 | 337 | 148 | 212 | 256 | 252 | 191 | 151 | 81 | 33 | 3 | 59 | 2,065 |
| Percent Increase | - | 24.9% | 0.8% | 25.4% | 20.5% | 7.5% | 9.6% | 11.0% | 9.7% | 6.7% | 5.0% | 2.5% | 1.0% | 0.1% | 1.8% | 192.9% |
| Goodhue County Population | - | - | - | - | - | - | 2,219 | 2,436 | 2,559 | 2,671 | 2,779 | 2,790 | 2,803 | 2,799 | 2,796 | 577 |
| Olmsted County Population | - | - | - | - | - | - | 118 | 157 | 286 | 365 | 408 | 478 | 498 | 505 | 567 | 449 |

Source: U.S Bureau of the Census and Minnesota State Demographic Center.

Population Growth Projections

When looking at future population projections there are numerous ways to project population growth. The Minnesota State Demographic Center has extrapolated population figures going out to 2035 for Minor Civil Divisions (MCD), cities and townships, located outside the seven-county Twin Cities region. These population extrapolations are based on simple mathematical formulas. They are controlled to county populations published by the Minnesota State Demographic Center in June of 2007. Errors in the county projections will have a major effect on the accuracy of the Minor Civil Division extrapolations. If the county projections are too high, most cities and townships will also be too high. If the county projections are too low, the extrapolations for cities and townships within that county will be low as well. The numbers do not reflect any special knowledge about individual communities such as zoning regulations, land available for development, current development projects, one-time events or any of the myriad other factors that can and do affect future population. The extrapolations are not a substitute for projections based on such detailed local knowledge and development plans.



Population numbers were adjusted for CQR changes. CQR is a U.S. Census Bureau program that allowed local governments to review 2000 census populations and report cases of population placed in the wrong city or township. As far as available information permits, adjustments were made for changes in boundaries since 1990. Data on boundary changes is not complete, and changes occurring in the early 1990s are especially likely to be missing.

There were four extrapolation methods. In each method, Minor Civil Division projections were controlled to the projected county total.

1. **Share of Growth.** Each Minor Civil Division's share of the growth or loss in the county population was calculated for the 1990-2006 period. In counties where every Minor Civil Division was growing or declining, this proportion was held constant. Most counties have a mixture of growing and declining areas. If the county is projected to grow, the growing Minor Civil Division's receive all the growth while declining Minor Civil Division's are kept constant. If the county is projected to decline, the declining Minor Civil Division's share the loss while growing Minor Civil Division's are kept constant.
2. **Constant Share.** Each Minor Civil Division's share of county population in 2006 is kept constant in the future.
3. **Exponential.** The exponential annual growth rate from 1990 to 2006 is kept constant.
4. **Linear.** Average annual numeric change between 1990 and 2002 is carried into the future. Population is not allowed to go below zero.

In many cases, the results of the four methods were similar, but in a substantial number of cases they were drastically different. Rapidly growing

communities grew very fast in the exponential method. In counties with declining population, some communities fell to zero population in the linear method. In the final stage, the high and low values were discarded. The numbers in the final table are the average of the two middle values.

The actual projections from the Minnesota State Demographic Center are shown in Table 2.

Table 2 – Projected Population Growth for Pine Island

| | 2000 | 2008 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | Projected Growth Since 2000 |
|----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------------------------|
| Pine Island Population | 2,337 | 3,363 | 3,621 | 4,017 | 4,408 | 4,741 | 5,019 | 5,261 | 2,924 |
| Percent Annual Growth | - | 5.5% | 3.8% | 2.2% | 1.9% | 1.5% | 1.2% | 1.0% | 125.1% |
| Goodhue County Portion | 2,219 | 2,796 | 3,004 | 3,243 | 3,467 | 3,663 | 3,824 | 3,959 | 1,740 |
| Percent of Total City Population | 95.0% | 83.1% | 83.0% | 80.7% | 78.7% | 77.3% | 77.2% | 75.3% | 78.4% |
| Olmsted County Portion | 118 | 567 | 617 | 774 | 941 | 1,078 | 1,195 | 1,302 | 1,184 |
| Percent of Total City Population | 5.0% | 16.9% | 17.0% | 19.3% | 21.3% | 22.7% | 23.8% | 24.7% | 1,003.4% |

Source: Minnesota State Demographic Center & US Census Bureau

Another way to estimate future population growth would be an examination of local data on the number of new building permits over a specified period of time, and number of available lots on the market (about 175 single family lots and approximately 60 multiple family lots). Using the 2000 census average of 2.7 people per household for the City of Pine Island, this means the current supply of lots in the City will accommodate an additional 635 more people. Based on building permit numbers since 1994, the average number of new homes per year is 35. Based on the 35 homes per year average and the approximately 235 vacant lots within the City, it is projected to take almost 7 years to use up the existing supply of vacant lots. This does not include any vacant land that located within the City and due to the current economic slowdown may take longer than 7 years.

Using the most recent population estimate from 2008 of 3,363 and adding the 635 additional people from the existing lot inventory, the total population of Pine Island would be 3,998. The number of people per household is projected to decline due to smaller family size and an aging population so the actually population may be less when all is said and done.

The Minnesota State Demographic Center projections and those based on our own building permit projections demonstrate that we need to estimate our future population numbers on knowledge about the local economy, housing market, and pending plats and annexations.

As Rochester continues to drive population growth in outlying towns, population growth in Pine Island may depart completely from establish historic trends to exceed the 4,000 mark by the year 2015. This type of thinking about population growth represents certain positive assumptions the economy in general, the housing market, and continued development pressures from Rochester.



Pine Island Senior Citizens

Table 3 – See Graph Number 2

| 2000 Population by Sex & Age | Number | % |
|---|---------------|----------|
| Total Population | 2,337 | 100 |
| Male | 1,097 | 46.9 |
| Female | 1,240 | 53.1 |
| Under 5 years | 150 | 6.4 |
| 5 to 9 | 165 | 7.1 |
| 10 to 14 | 213 | 9.1 |
| 15 to 19 | 201 | 8.6 |
| 20 to 24 | 106 | 4.5 |
| 25 to 34 | 240 | 10.3 |
| 35 to 44 | 416 | 17.8 |
| 45 to 54 | 315 | 13.5 |
| 55 to 59 | 105 | 4.5 |
| 60 to 64 | 71 | 3 |
| 65 to 74 | 136 | 5.8 |
| 75 to 84 | 140 | 6 |
| 85 and over | 79 | 3.4 |
| Median Age | 37.1 | |
| 18 Years & over | 1,670 | 71.5 |
| Male | 768 | 32.9 |
| Female | 902 | 38.6 |
| 21 Years & over | 1,591 | 68.1 |
| 62 years & over | 390 | 16.7 |
| 65 Years & over | 355 | 15.2 |
| Male | 133 | 5.7 |
| Female | 222 | 9.5 |

Source: 2000 US Census

**Graph 2 - See Table 3
Pine Island Population Distribution by Age and Sex**

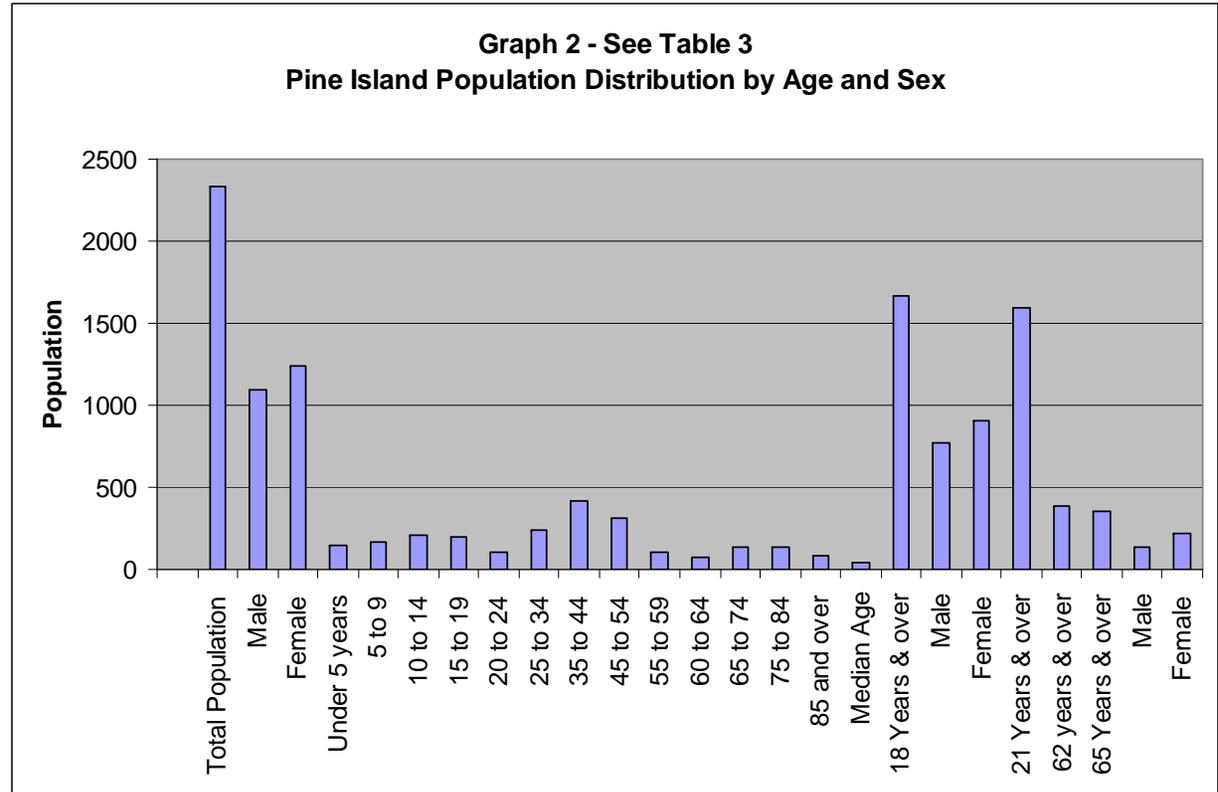


Table 4 – See Graph 3

| 2000 Housing Tenure | Number | Percent |
|--|---------------|----------------|
| Occupied Housing Units | 864 | 100.0 |
| Owner Occupied Housing Units | 698 | 80.8 |
| Renter Occupied | 166 | 19.2 |
| Average Household Size (Owner Occupied) | 2.76 | - |
| Average Household Size (Renter Occupied) | 1.83 | - |

Source: 2000 US Census

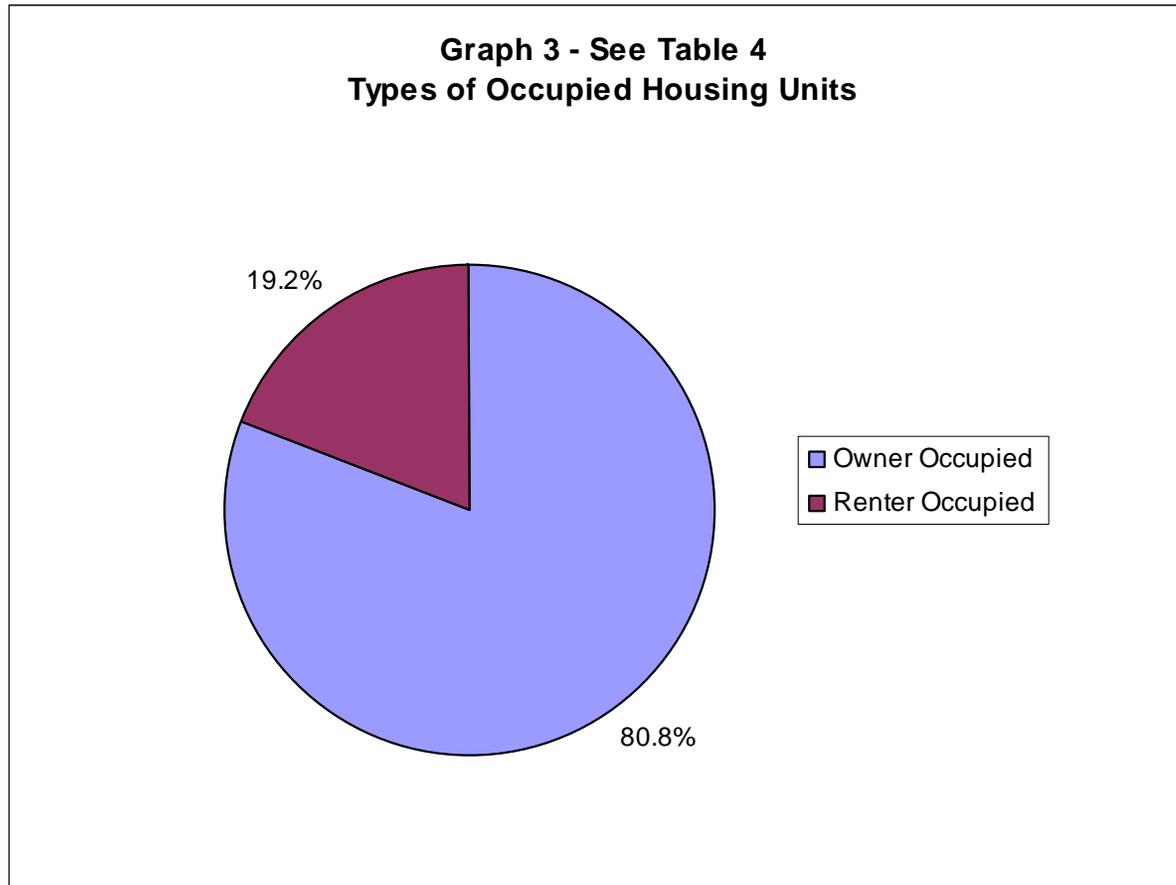


Table 5 – See Graph 4

| 2000 Household by Type | Number | Percent |
|---|---------------|----------------|
| Total Households | 864 | 100 |
| Family Households (Families) | 628 | 72.7 |
| With Own Children Under 18 | 340 | 39.4 |
| Married – Couple Family | 513 | 59.4 |
| With Own Children Under 18 | 254 | 29.4 |
| Female Householder-No Spouse Present | 86 | 10 |
| With Own Children Under 18 | 71 | 8.2 |
| Non-Family Households | 236 | 27.3 |
| Householders Living Alone | 199 | 23 |
| Household 65 & Over | 112 | 13 |
| Household with Individuals Under 18 years | 352 | 40.7 |
| Households with Individuals 65 & Older | 203 | 23.5 |
| Average Household Size | 2.6 | 0 |
| Average Family Size | 3.06 | 0 |

Source: 2000 US Census

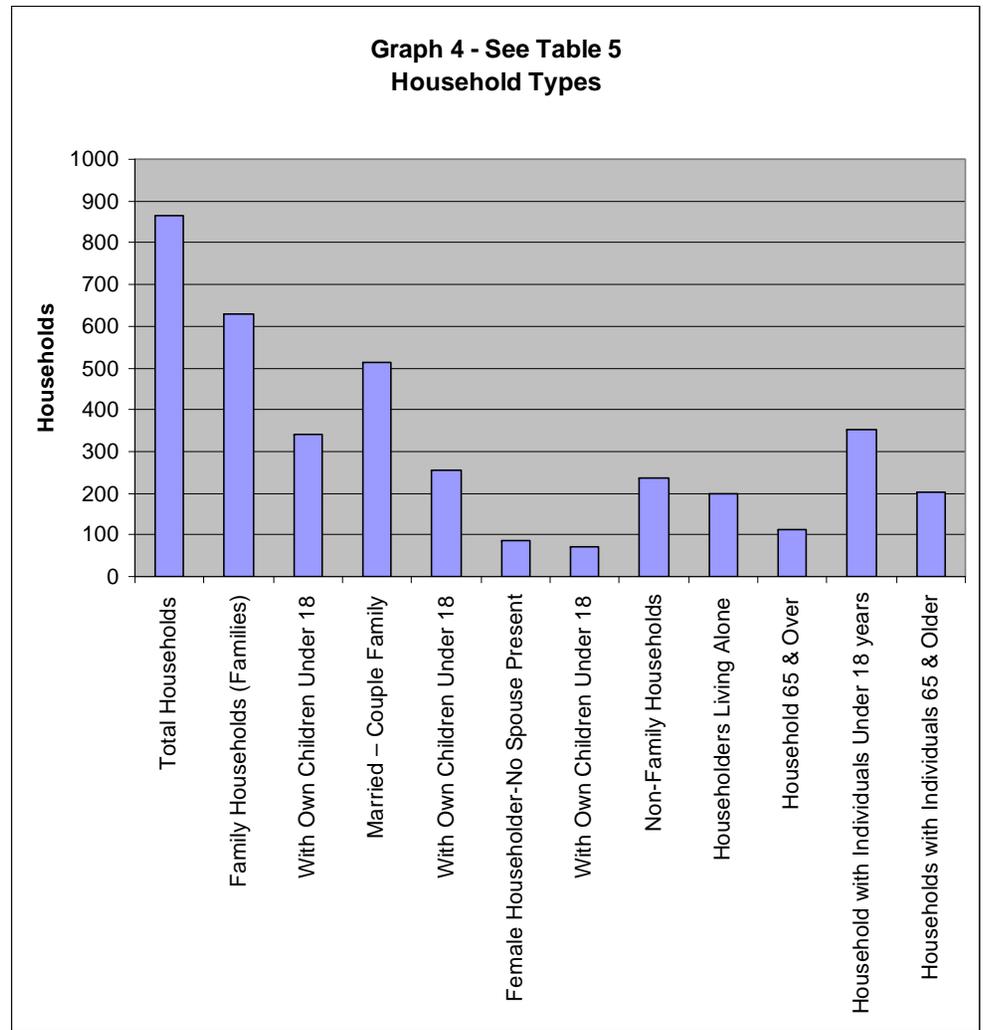
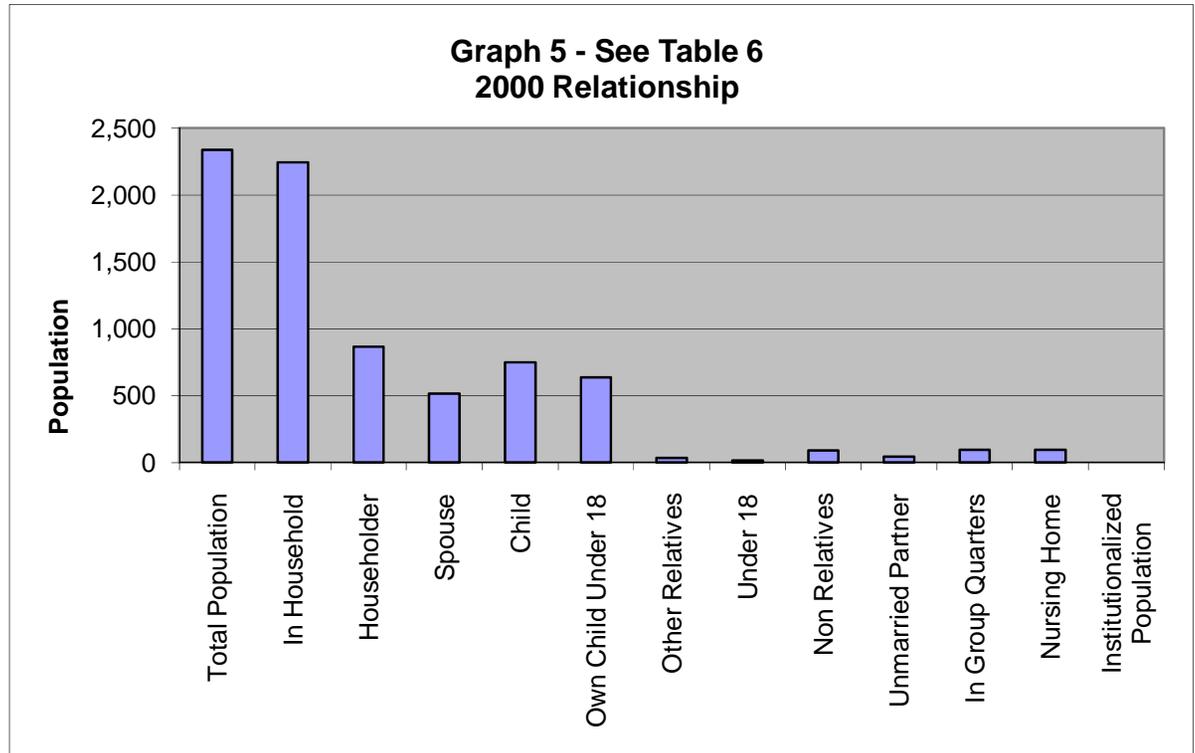


Table 6 – See Graph 5

| 2000 Relationship | Number | Percent |
|------------------------------|--------|---------|
| Total Population | 2,337 | 100 |
| In Household | 2,245 | 96.1 |
| Householder | 864 | 37 |
| Spouse | 513 | 22 |
| Child | 747 | 32 |
| Own Child Under 18 | 638 | 27.3 |
| Other Relatives | 32 | 1.4 |
| Under 18 | 12 | 0.5 |
| Non Relatives | 89 | 3.8 |
| Unmarried Partner | 42 | 1.8 |
| In Group Quarters | 92 | 3.9 |
| Nursing Home | 92 | 3.9 |
| Institutionalized Population | 0 | 0 |

Source: 2000 US Census



Historic & Current Trends

In 1967 a survey was conducted to determine the number, type and condition of residential structures in Pine Island. The survey revealed that there were 499 dwelling units in the village. These units were broken down into the following types:

Table 7 – Dwelling Unit Types

| | |
|------------|----------------------------------|
| 425 | Single family units |
| 28 | Trailers |
| 15 | Apartments above downtown stores |
| 4 | Duplex units |
| 4 | Fourplex units |
| 24 | Nursing home units (48 beds) |
| | |
| 499 | Total |

Source: 1967 City of Pine Island Survey

In 1985 housing discussions centered on the need for multiple housing dwellings developments in Pine Island, both for rental and owner occupied. The Governor’s Design Team, which visited Pine Island in that year, addressed the housing issue by noting the need for rental housing and for the beautification of existing housing stock. The Design Team report also stated the need for local mortgage financing or loan origination outfits.

Early in 1995 (prior to the onset of the construction season) the Southeast Minnesota Multi-County Housing Rehab Agency (SEMMCHRA), reported a total of 795 housing units.

The 18 year increment (1976 – 1985) increase of 296 new housing units represents an almost 37% growth in housing units, closely corresponding to our population growth for the same time period.

Since 1995 new housing starts have continued to show a strong upward trend brought on by overcoming some of the limitations mentioned in the Governor’s Design Team 1985 analysis.

In 1995 the City began what continued to be a strong geographic expansion to the south and east of town in the form of new annexation. Over 97% of all annexations in Pine Island have been dedicated towards single family new dwellings with a small areas dedicated for duplex type townhouse.

In the last few years a dramatic slowdown in the number of new housing starts has changed the outlook of the future. The economic downturn has slowed growth to levels not seen in decades and may continue into the future.

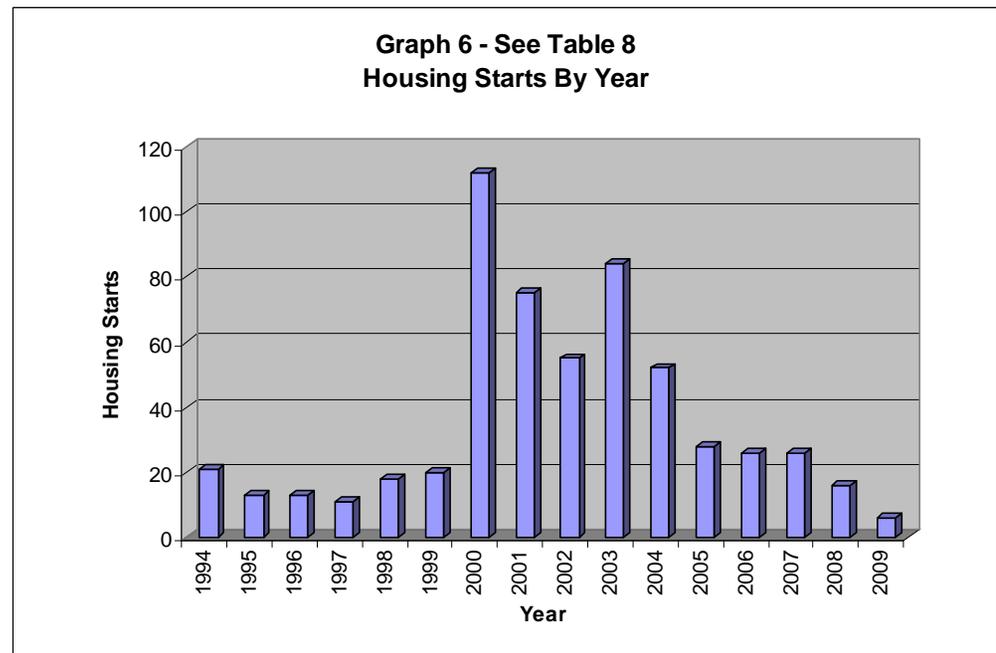


Pine Island senior citizens center

Table 8 and accompanying Graph 6 on the next page show annual housing starts from 1994 through 2009 with a total of 570 new housing units since 1994. The 2000 U.S. Census calculated 864 housing units and from 2000 through 2009 another 474 housing units have been added for a current total of 1,338 housing units. The Minnesota State Demographic Center's household estimate for 2008 was 1,273 which is near the total housing units of 1,338. Using the 2000 US Census average household occupancy rate of 2.7 persons per household and the 1,338 estimated housing units through 2009, a population estimate at the beginning of 2010 is 3,612. This is 249 people higher than the 2008 Minnesota State Demographic Center population estimate of 3,363 which was done in July of that year. Overall these numbers are reasonably close considering the 2009 estimate is a year and a half older than the 2008 Minnesota State Demographic Center population estimate. However, if the 2008 Minnesota State Demographic Center population estimate of 3,363 along with the estimated housing units through the year 2008 of 1,338 (based on the housing starts in Table 8) is used, the household occupancy rate of 2.7 persons per household from the 2000 US Census would decrease to 2.5 persons per household, reflecting a decreasing size of persons per household, which is a trend happening across the state.

Table 8 – Pine Island New Housing Starts and Valuation

| Year | Number of New Homes | Value * |
|--------------|---------------------|---------------------|
| 1994 | 21 | \$2,001,000 |
| 1995 | 13 | \$1,186,000 |
| 1996 | 13 | \$1,147,000 |
| 1997 | 11 | \$1,028,000 |
| 1998 | 18 | \$1,915,000 |
| 1999 | 20 | \$2,593,000 |
| 2000 | 112 | \$10,593,000 ** |
| 2001 | 75 | \$10,301,000 |
| 2002 | 55 | \$7,297,000 |
| 2003 | 84 | \$10,471,475 |
| 2004 | 52 | \$7,576,894 |
| 2005 | 28 | \$4,242,000 |
| 2006 | 26 | \$4,996,000 |
| 2007 | 26 | \$4,427,947 |
| 2008 | 10 | \$1,612,000 |
| 2009 | 6 | \$1,074,500 |
| Total | 570 | \$72,461,816 |



Source: City of Pine Island

* as reported on building permit application

** Includes 32 rental units (Ridgeway Estates)

Actual value is determined by County Assessor's Office

Near Future and Long Term Housing Trends

Finding a reasonable near and long term housing projection has become much harder. Using the historic trend of approximately 35 new housing units per year based on Table 8 is a good start. Projecting 35 homes per year on average through the year 2035 would give Pine Island another 910

housing units or 2,254 total housing units. If you were to use the 2000 US Census, average household occupancy rate of 2.7 people per household, the projected population would be 6,085. If the 2008 estimated average household occupancy rate of 2.5 people per household was used, the population projection would be 5,635, a difference of 450 less people. Both projections are higher than the Minnesota State Demographic Center projection of 5,261 by 824 people and 374 people respectively.

The following Table 9 compares the population projections for Pine Island and the neighboring cities and townships. As the table shows, the rate of growth for the cities was much higher from 2000 to 2008 than is projected for the future. The City of Pine Island’s growth was about double the growth rate of Rochester and Oronoco, the two fastest growing jurisdictions besides Pine Island.

Table 9 – Population Projections

| Year | City of Pine Island | Percent Change | City of Oronoco | Percent Change | City of Rochester | Percent Change | City of Zumbrota | Percent Change | Pine Island Twp. | Percent Change | New Haven Twp. | Percent Change | Oronoco Twp. | Percent Change |
|-----------------------|----------------------------|-----------------------|------------------------|-----------------------|--------------------------|-----------------------|-------------------------|-----------------------|-------------------------|-----------------------|-----------------------|-----------------------|---------------------|-----------------------|
| 2000* | 2,337 | - | 883 | - | 85,806 | - | 2,789 | -- | 628 | - | 1,205 | - | 2,239 | - |
| 2008** | 3,363 | 43.9% | 1,113 | 26.0% | 102,437 | 19.4% | 3,172 | 13.7% | 561 | -10.7% | 1,204 | -0.1% | 2,354 | 5.1% |
| 2010 | 3,621 | 9.6% | 1,037 | -1.1% | 106,591 | 5.7% | 3,365 | 6.3% | 566 | 0.9% | 1,214 | 1.3% | 2,529 | 8.6% |
| 2015 | 4,017 | 10.9% | 1,115 | 7.5% | 115,315 | 8.2% | 3,666 | 8.9% | 560 | -1.1% | 1,220 | 0.5% | 2,660 | 5.2% |
| 2020 | 4,408 | 9.7% | 1,183 | 6.1% | 122,991 | 6.7% | 3,946 | 7.6% | 553 | -1.3% | 1,221 | 0.1% | 2,771 | 4.2% |
| 2025 | 4,741 | 7.6% | 1,239 | 4.7% | 129,598 | 5.4% | 4,195 | 6.3% | 544 | -1.6% | 1,217 | -0.3% | 2,863 | 3.3% |
| 2030 | 5,019 | 5.9% | 1,287 | 3.9% | 135,253 | 4.4% | 4,400 | 4.9% | 534 | -1.8% | 1,210 | -0.6% | 2,938 | 2.6% |
| 2035 | 5,261 | 4.8% | 1,330 | 3.3% | 140,054 | 3.5% | 4,573 | 3.9% | 523 | -2.1% | 1,201 | -0.7% | 3,004 | 2.2% |
| Total Increase | 2,924 | 125.1% | 447 | 50.6% | 54,248 | 63.2% | 1,784 | 64.0% | -105 | -16.7% | -4 | -0.3% | 765 | 34.2% |

Source: Minnesota State Demographers Office

* 2000 is US Census number

** 2008 is State Demographers Office estimate not projection

POLICIES, GOALS AND OBJECTIVES

The background element documents the ongoing population growth in Pine Island and the shifting demographics of an aging population that reflects the nation-wide trend of smaller households and older median age. The City of Pine Island must continue to encourage a diversity of housing types and other housing characteristics by creating the environment to encourage private single family and multifamily developments. As noted in this Plan's background element, the Wazuweeta Woods development currently provides for entry level housing buyers for both rental and owner occupied single family units (first time home buyers). Similar developments will enhance lifecycle housing options, and should be pursued along with more traditional single family move-up homes oriented to middle-class families, senior housing, and the 'empty-nester' market.

Demographics & Housing Policies, Goals and Objectives

The City of Pine Island has adopted the following policies to guide housing development, maintenance, and redevelopment decisions.

Policy 1. Provide the basic elements for a diverse and well-preserved housing stock in Pine Island.

Goal A. Provide for the development of standards for maintaining the health, safety, and welfare of rental housing occupants.

Objective i. Adopt a rental housing code to discourage the rental stock from falling into disrepair.

Objective ii. Include language in the rental housing code to regulate conversions of owner occupied single-family homes to renter occupied single family homes in predominantly owner occupied neighborhoods to maintain housing values and general maintenance of the property.

Goal B. Seek funding from all possible sources to allow renewed investment in older housing stock for residents with limited income.

Objective i. Renovate aging housing stock in the Northwest quadrant of town, utilizing small cities fund, similar to the project completed in 1996-1997.

Objective ii. Investigate applying for State funding to help with renovation.

Goal C. Promote the preservation of existing housing stock and existing housing value.

Goal D. Ensure that Pine Island continues to be the welcoming community that it has always been.

Policy 2. Promote a broad spectrum of owner occupied and rental housing stock within all residential zoning districts and across all price ranges.

Goal A. Conduct a thorough review of residential zoning standards and lot sizes (Planning and Zoning Commission).

Objective i. Enact zoning and subdivision changes necessary to allow for the construction of well designed neighborhoods throughout the



Multi-family rental - Wazuweeta Woods

City.

Objective ii. By basing residential zoning districts on density rather than minimum lot sizes, zoning regulations can be created to help preserve open space and natural features as part of the overall development. The open space and natural features can be incorporated into the overall greenspace of the City and trails can be constructed to connect these areas.

Goal B. Utilize self help housing programs by working with state and area housing agencies.

Policy 3. Encourage clustering of housing development to maximize return on public/private investment.

Goal A. Work with abutting counties and townships to ensure staged development patterns and limit 'leap frog' development in existing urbanizing areas.

Goal B. Develop a framework to allow for the housing development to occur within the defined urban growth boundaries map.

Goal C. Identify specific locations for higher density housing to emerge in the existing and future urban areas.

Policy 4. Ensure that the City has sufficient public/private infrastructure at the time of development.

Goal A. Implement the capital improvement plan to maintain existing levels of public service and to meet anticipated demands.

Goal B. Seek assistance for infrastructure improvements and expansions from existing and new funding sources.

Goal C. Establish and/or maintain capital improvement funds to ensure implementation of Comprehensive Plan policies.

Goal D. Institute a five or three year capital investment projects that lists all infrastructure projects within the City and allocate appropriate funding for the same.

Goal E. Work with expert financial and legal council to develop fees and level of service standards related to off site development impacts.



Established single family neighborhood



Pine Island School

CHAPTER 3 - LAND USE

BACKGROUND

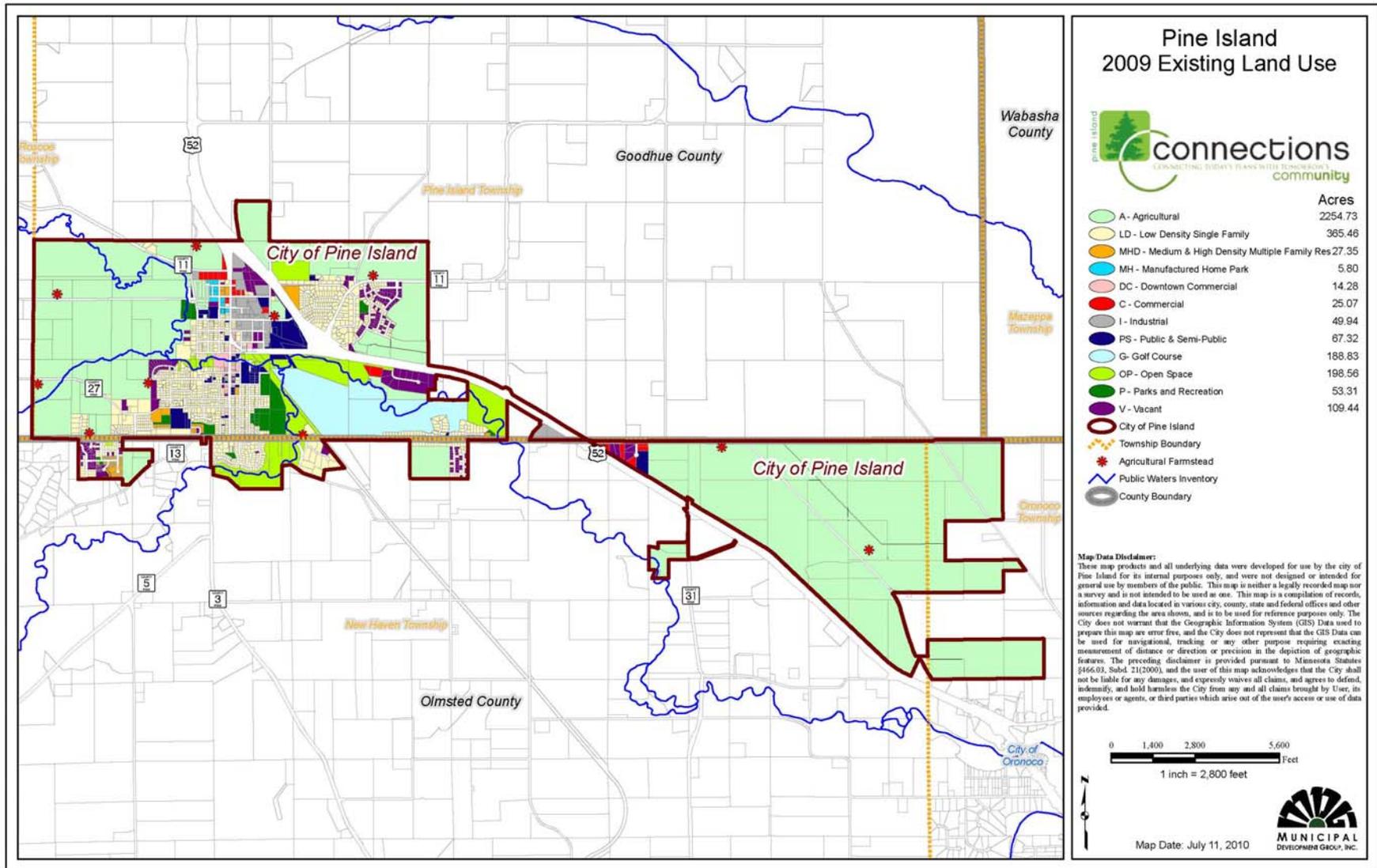
Existing Land Use

The existing land use map, Figure 1, is intended to illustrate the location and distribution of a variety of land uses. The plan includes general categories in order to group certain uses together and still understand the nature of such uses without specifically stating the exact trade or type of use by its common name.

The City of Pine Island consists of fourteen existing land use areas:

- A Agricultural
- LD Low Density Single Family
- MHD Medium and High Density Multiple Family Residential
- MH Manufactured Home Park
- DC Downtown Commercial
- C Commercial
- I Industrial
- PS Public and Semi-Public
- G Golf Course
- O Open Space
- P Parks and Recreation
- V Vacant
- ROW Right-of-Way
- W Water

Figure 1 – Existing Land Use Map



The Existing Land Use map illustrates the different land uses within the City on a parcel by parcel basis. There are a total of ten (10) agricultural farmsteads, which are a single family use, and are highlighted as a red dot in the agricultural areas since many of these parcels are large in nature. The following Table 10 highlights the existing land uses by acreage and percentage of total land volume within the City as of the date of the plan. Table 10 does not include right-of-way or water acreages.

Table 10 – 2010 Existing Land Use Volumes

| LAND USE | 2010 Acres | 2010 Percent |
|---|-------------------|---------------------|
| A Agricultural | 2,255 | 60.7% |
| LD Low Density Single Family Residential | 365 | 9.8% |
| MHD Medium and High Density Multiple Family Residential | 27 | 0.7% |
| MH Manufactured Home Park | 6 | 0.2% |
| DC Downtown Commercial | 14 | 0.4% |
| C Commercial | 25 | 0.7% |
| I Industrial | 50 | 1.3% |
| PS Public and Semi-Public | 67 | 1.8% |
| G Golf Course | 189 | 5.1% |
| O Open Space | 199 | 5.4% |
| P Parks and Recreation | 53 | 1.4% |
| V Vacant | 109 | 2.9% |
| ROW Right-of-way | 354 | 9.5% |
| W Water | 4 | 0.1% |
| TOTAL ALL LAND USES | 3,717 | 100.0% |

The existing zoning map, included as Figure 2, shows where zoning may or may not match the existing land use. It should be a goal of the City to have the zoning map consistent with the future land use map as much as possible to eliminate as many non-conforming uses as possible. Although it is a requirement within the seven county Twin Cities metropolitan area, which is under the jurisdiction of the Metropolitan Council, to rezone all properties to be consistent with the future land use map, it is not a requirement in outstate Minnesota.

Future Land Use

The future land use element addresses specific land uses within the existing City limits, desired future conditions within the urban growth boundary, and policies addressing support for and preservation of agricultural practices.

As part of this plan a future urban growth boundary based on the latest growth trends will be developed. The urban growth boundary will be based on criteria developed by the Task Force from 2002 and staff in relationship to the location of current and future sewer and water treatment facilities and location of other vital infrastructure necessary for supporting future growth. These criteria are summarized below:

1. Urban Service availability: A defined geographic area that could be identified as part of the watershed area that could be serviced with sewer and water lines within the next 5 – 25 years.
2. Development patterns: Existing and near future projected growth patterns in housing, commerce, transportation, Schools, etc.
3. Prime industrial/commercial land: These are areas that are well suited now or in the near future for such developments due to their current or future location near new interchanges, State, County, or local road systems. In addition to their topography and location in relationship to floodplain, wetlands, and other environmental limitations.
4. Development suitability: These are engineering and site specific criteria that do not need to be explored during the update of this plan, but must be addressed as each area is being serviced with infrastructure.
5. Location and distribution of appropriate soil types and prime agricultural land.

The Future Land Use Map, shown as Figure 3, identifies different land uses in the City by using the above criteria. The future land use categories are identified as follows:

- LD Low Density Residential
- MHD Medium and High Density Residential
- DC Downtown Commercial
- C Commercial
- M Mixed Use
- I Industrial
- PS Public and Semi-Public
- R Recreational
- P Parks and Open Space

The Future Land Use map classifications are the land uses that are proposed to guide Pine Island's future growth. Each of the proposed land use classifications should have a corresponding zoning district(s) as shown in Table 11. As you can see not all of these districts currently exist in the zoning ordinance which should contain the regulatory tools to implement the policies, goals and objectives of this plan. To implement the Future Land Use plan the zoning and subdivision ordinance will need to be amended accordingly.

Figure 3 – Future Land Use

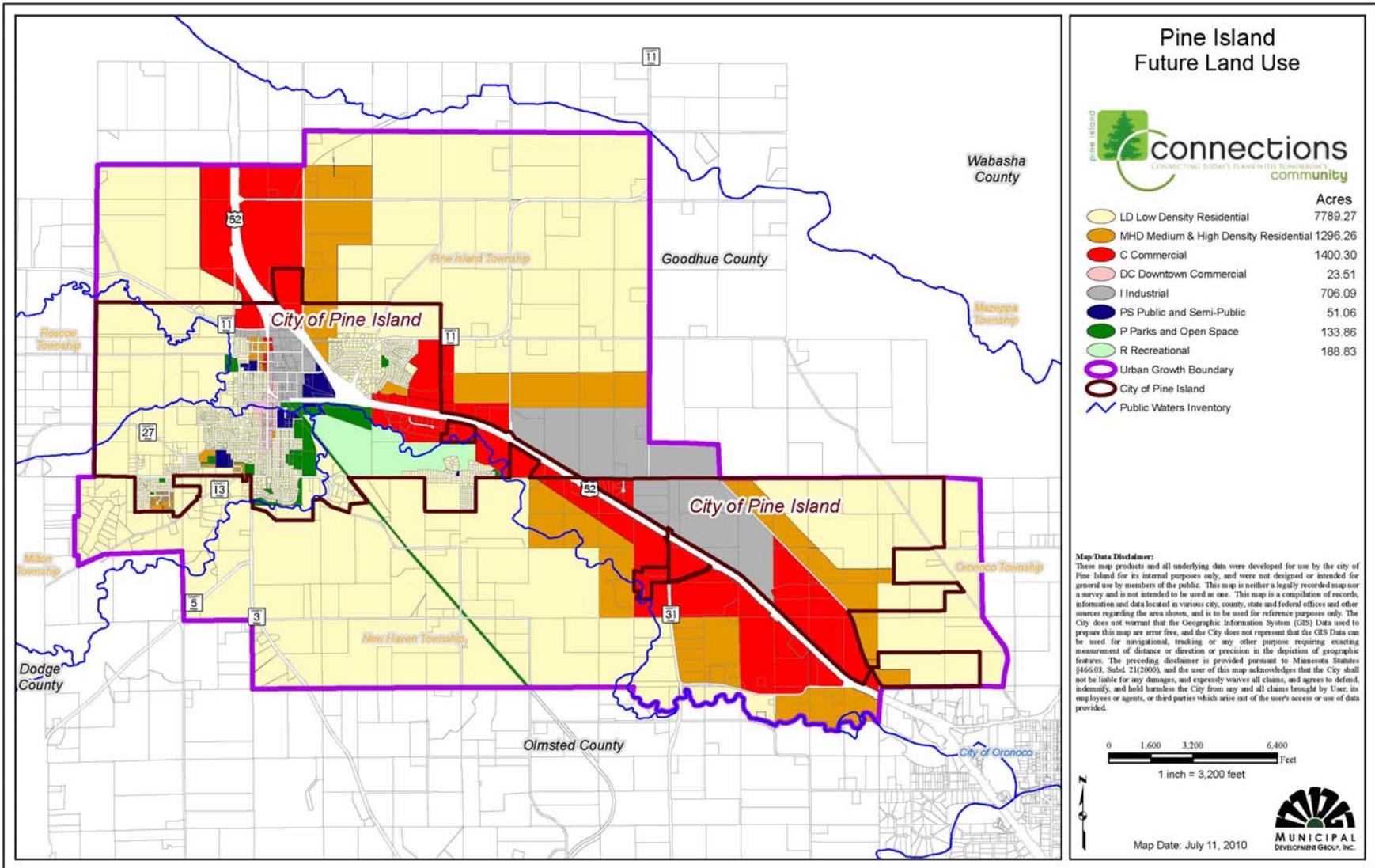


Table 11 – Future Land Use and Zoning Classification Matrix

| Future Land Use Classifications | Zoning Classification |
|---|---|
| LD Low Density Residential | R-1 Suburban Residential District, R-2 Urban Residential & PUD Planned Unit Development |
| MHD Medium and High Density Residential | R-2 Urban Residential, R-3 Multi-Family Residential District & PUD Planned Unit Development |
| DC Downtown Commercial | C-1 Central Business District & PUD Planned Unit Development |
| C Commercial | C-2 Highway Commercial District, C-3 Neighborhood Commercial District (proposed) & PUD Planned Unit Development |
| M Mixed Use | R-2 Urban Residential, R-3 Multi-Family Residential District, C-2 Highway Commercial District, C-3 Neighborhood Commercial District (proposed) & PUD Planned Unit Development |
| I Industrial | I-1 General Industrial District (proposed), I-2 Limited Industrial District (proposed), BP Business Park (proposed) & PUD Planned Unit Development |
| PS Public and Semi-Public | IN Institutional District (proposed) & PUD Planned Unit Development |
| R Recreational | R Recreational District (proposed) & PUD Planned Unit Development |
| P Parks and Open Space | OS Open Space District (proposed) & PUD Planned Unit Development |

Each of the future land use classifications can be further subdivided but in order to simplify the future land use map only nine classifications were used. For instance, MHD Medium and High Density Residential could be further subdivided into a medium density and a high density classification. The underlying zoning of the property shall control the type and density of the use as shown in Table 10. The following descriptions include the purpose, density, minimum development requirements, utility availability and typical uses of each future land use classification.

LD Low Density Residential

This classification provides for a range of lower density housing opportunities. This is the largest land classification in the urban growth boundary with a large portion of the land within the City boundary already being developed. The majority of the future low density residential is currently located within New Haven, Oronoco and Pine Island townships. Single family detached homes, two-family attached homes (duplex and twin homes), manufactured homes and detached townhomes are allowed in this classification. Other uses that relate well to single family are also permitted such as churches, schools and municipal buildings. Land within this category should be served with municipal utilities and low density residential ranges from 0 to 4 units per acre. Mixed use developments with higher density and a mix of housing styles, values and architecture may be realized in planned unit developments (PUD’s).

MHD Medium and High Density Residential

This classification provides for a broader range of housing options but at a higher density and typically acts as a buffer between the low density residential and commercial and industrial classifications. Typical uses include attached housing (townhomes and apartments), small lot detached townhomes, condominiums, and manufactured home parks. Mixed use developments with a mix of housing styles including detached single family and two-family

attached homes (duplex and twin homes), values and architecture may be realized in this classification under planned unit development zoning. Medium density residential uses range from 4 to 8 units per acre and high density residential uses range from 8 units and above per acre. All land within this classification should be served with municipal utilities.

DC Downtown Commercial

Downtown Commercial is typically identified as the “heart of the city” and is a mixed use, pedestrian oriented area. In Pine Island Main Street acts as the main corridor through the downtown commercial area, although other downtown commercial areas can be planned for and developed throughout the city, such as in the Elk Run area. The downtown commercial area should provide a gathering place for community civic events such as cheese fest, provide access and exposure to the public arts and include unique restaurants, niche retail, office space and retail that supports the residential neighborhood. Downtown commercial areas are very intensely developed, usually with no setback or impervious surface coverage requirements and may contain multi-story buildings with housing opportunities on the upper floors and therefore the need to be served with municipal utilities. Residential density is most similar to the high density residential requirements of 8 units or more per acre but can vary depending on the structure the housing is contained in and whether it is newly developed or an existing building. Downtown commercial areas can be marketed as a unique regional amenity not found in other suburban mixed use developments and should focus on pedestrian access as well as mass transit opportunities due to the lack of parking in most of these areas.



South Main Street businesses

C Commercial

This classification includes a wide range of commerce, entertainment, retail, dining, office and uses that provide services, goods and employment opportunities. The classification is found primarily along US Highway 52 and other arterial and collector roadways. The two main types of commercial activities in this classification are highway commercial and neighborhood commercial. Highway commercial is comprised of highway oriented commercial with some office and light industrial uses mixed in with those that need outdoor storage or sales and display to provide for and limit the establishment of motor vehicle oriented or dependent high intensity commercial and service activities. These types of uses are located along the highest traveled corridors and are dependent upon municipal utilities. Neighborhood commercial provides for low intensity, retail or service outlets which deal directly with the customer for whom the goods or services are furnished. The uses allowed in this area are to provide goods and services on a limited community market scale and located in areas which are well served by collector or arterial street facilities at the edge of residential districts and are to be served by municipal utilities. Neighborhood commercial should be more nodal while highway commercial tends to be more linear. Neighborhood commercial can also be automobile oriented but pedestrian oriented features are used as well.



Pool & Pins building

M Mixed Use

This classification allows a wide variety of land uses in one area which can include a mix of commercial and residential associated with assisted living and senior housing facilities or neighborhood type commercial with multi-family residential and public uses such as multi-story buildings with residential uses on the upper floors. Mixed use areas are typically separate commercial and residential areas and can provide a transition zone from one use to the other. All land under this classification shall be serviced with municipal utilities and residential density in mixed use areas are typically 8 units per acre or more and allows the unique ability to master plan entire areas rather than on a parcel by parcel basis. Elk Run as a whole could be considered a mixed use development due to the master plan and different proposed land uses even though certain uses may develop independent of one another. Transit opportunities and higher residential densities should be an objective of this classification to support the commercial uses within the mixed use area. Planned unit development's should be required for any proposed mixed use development.

I Industrial

The industrial classification, just like the commercial classification, will include different types of industrial uses such as the Bio-business park in Elk Run, the existing industrial area east of Main Street and future industrial areas adjacent to Elk Run and Highway 52. It is proposed that the existing I-1 Industrial District is amended to include three separate zoning districts, the I-1 General Industrial District, the I-2 Limited Industrial District and the BP Business Park District. The I-2 General Industrial District would include all heavy industrial uses that can include mining activities, truck terminals, large scale manufacturing as well as other uses. These uses, because of their nature require either isolation or buffers from other non-compatible land uses. The I-2 Limited Industrial District would be the light industrial district which could include the more typical small manufacturing businesses intended to have an office/warehousing character. Often these uses require large truck volumes so good access to the transportation system is expected. These industrial uses shall be limited so they can compatible exist adjacent to both lower intensity business uses and high intensity manufacturing uses. The BP Business Park District, the third district, would be the Business Park district which will allow for some light manufacturing along side a larger office type development. The objective for this district is to attract high quality industrial development that will provide higher income employment and provide an opportunity for creation and expansion of employment centers, business centers, corporate headquarters and a diverse tax base. These uses should be located in an environment which provides a high level of amenities, including landscaping, preservation of natural features, architectural controls, pedestrian trails, and other features. The Elk Run bio-business park would fit into this category of industrial use. Municipal utilities should be required for all industrial uses under this classification.



Progressive tools and manufacturing

PS Public and Semi-Public

This classification includes all the public and public related uses within Pine Island. It is unique in that the primary objective of uses within this classification is the provision on services, frequently on a nonprofit basis, rather than the sale of goods or services. It is intended that the uses will be compatible with adjoining development, and they normally will be located along arterial or major collector streets with the full availability of municipal utilities. Specific uses can include government facilities, schools, cemeteries, libraries, post office and hospitals. These uses require municipal services and can be located with other types of uses including residential.

R Recreational

This classification which is very similar to parks and open space is reserved for uses such as the golf course. These types of uses are usually large scale and community or regional oriented and can include ski hills, amusement parks and water parks. They are typically privately owned but can be owned by the municipality. While it is assumed that these uses will be around forever, it is not a certainty that is why a zoning district will need to be established to comply with this regulation.

P Parks and Open Space

This classification identifies city owned public parks and recreation lands within the urban growth boundary as well as lands guided for future permanent public or private open space and is intended to provide for the preservation of sensitive natural areas and the protection and enhancement of wildlife habitat and greenway corridors. Both passive and active parks and natural areas are included and depending on what facilities are located at a park, municipal utilities are not required. Parks and open space is different from the recreational classification in that recreational is not guided for a permanent use while parks and open space is. Often these areas are located within the floodplain and shoreland as well as wetlands and storm water ponds which do not allow for any other type of use other than parks or open space. Trails can be incorporated through these areas as a connection from one location to another.

Urban Growth Boundary

Using the Future Land Use map, acreages for the above identified classifications have been calculated. Table 12 on the next page illustrates both gross and net acres and percent of gross acres for each classification shown on the future land use map. These calculations include totals for the entire urban growth boundary which includes the land uses within the current City boundaries and individual totals of the land in the urban growth boundary located within the township areas and individual totals of the land within the City boundary. Gross acres are the overall acres involved while net acres take the overall total acres and subtract out a compilation of FEMA floodplain, National Wetlands Inventory, DNR Public Waters Inventory (basin delineation and watercourse delineation), shoreland areas, steep slopes (greater than 18% using SSURGO soil classifications), MLCCS and the Minnesota County Biological Survey (sites of biodiversity significance and native plant communities). The total gross acreage of the entire urban growth boundary, excluding right-of-way and surface water, is 11,589 acres. Of that acreage, 2,023 acres are constrained, leaving 9,566 unconstrained acres for future development. Of the unconstrained acres, 7,111 acres are located in the urban growth boundary outside of the City boundary within Pine Island Township, New Haven Township and Oronoco Township while 2,455 acres are located within the current City boundary.

Figure 4 highlights the potential development constraints within the City and urban growth boundary while Figure 5 shows the potential development constraints and existing and proposed roadways overlaid on the future land uses. The potential development constraints are approximate boundaries of these environmentally sensitive areas and in many cases overlap each other. Additional regulations and restrictions may be required for development or redevelopment to occur within the development constraint areas and while the potential development constraints do not necessarily mean development is prohibited, it does mean the intensity of development may be restricted by requiring additional setbacks, density, etc by using overlay zoning districts.

Table 12 – Urban Growth Boundary Acreages

| Future Land Use Classifications | Pine Island & Urban Growth Boundary Gross Acres | Pine Island & Urban Growth Boundary % of Gross Acres | Urban Growth Boundary Gross Acres | Urban Growth Boundary % of Gross Acres | Urban Growth Boundary Net Acres | Pine Island Gross Acres | Pine Island % of Gross Acres | Pine Island Net Acres |
|---|--|---|--|---|--|--------------------------------|-------------------------------------|------------------------------|
| LD Low Density Residential | 7,789 | 67.2% | 5,929 | 72.1% | 5,204 | 1,860 | 55.3% | 1,346 |
| MHD Medium and High Density Residential | 1,296 | 11.2% | 1,026 | 12.5% | 808 | 270 | 8.0% | 244 |
| DC Downtown Commercial | 24 | 0.2% | 0 | 0.0% | 0 | 24 | 0.7% | 10 |
| C Commercial | 1,400 | 12.1% | 910 | 11.1% | 762 | 490 | 14.6% | 396 |
| M Mixed Use | 0 | 0.0% | 0 | 0.0% | 0 | 0 | 0.0% | 0 |
| I Industrial | 706 | 6.1% | 339 | 4.1% | 322 | 367 | 11.0% | 348 |
| PS Public and Semi-Public | 51 | 0.4% | 0 | 0.0% | 0 | 51 | 1.5% | 33 |
| R Recreational | 189 | 1.6% | 0 | 0.0% | 0 | 189 | 5.6% | 64 |
| P Parks and Open Space | 134 | 1.2% | 23 | 0.2% | 15 | 111 | 3.3% | 14 |
| Totals | 11,589 | 100.0% | 8,227 | 100.0% | 7,111 | 3,362 | 100.0% | 2,455 |

Note: Acreages do not include right-of-way or surface water.

Figure 4 – Potential Development Constraints

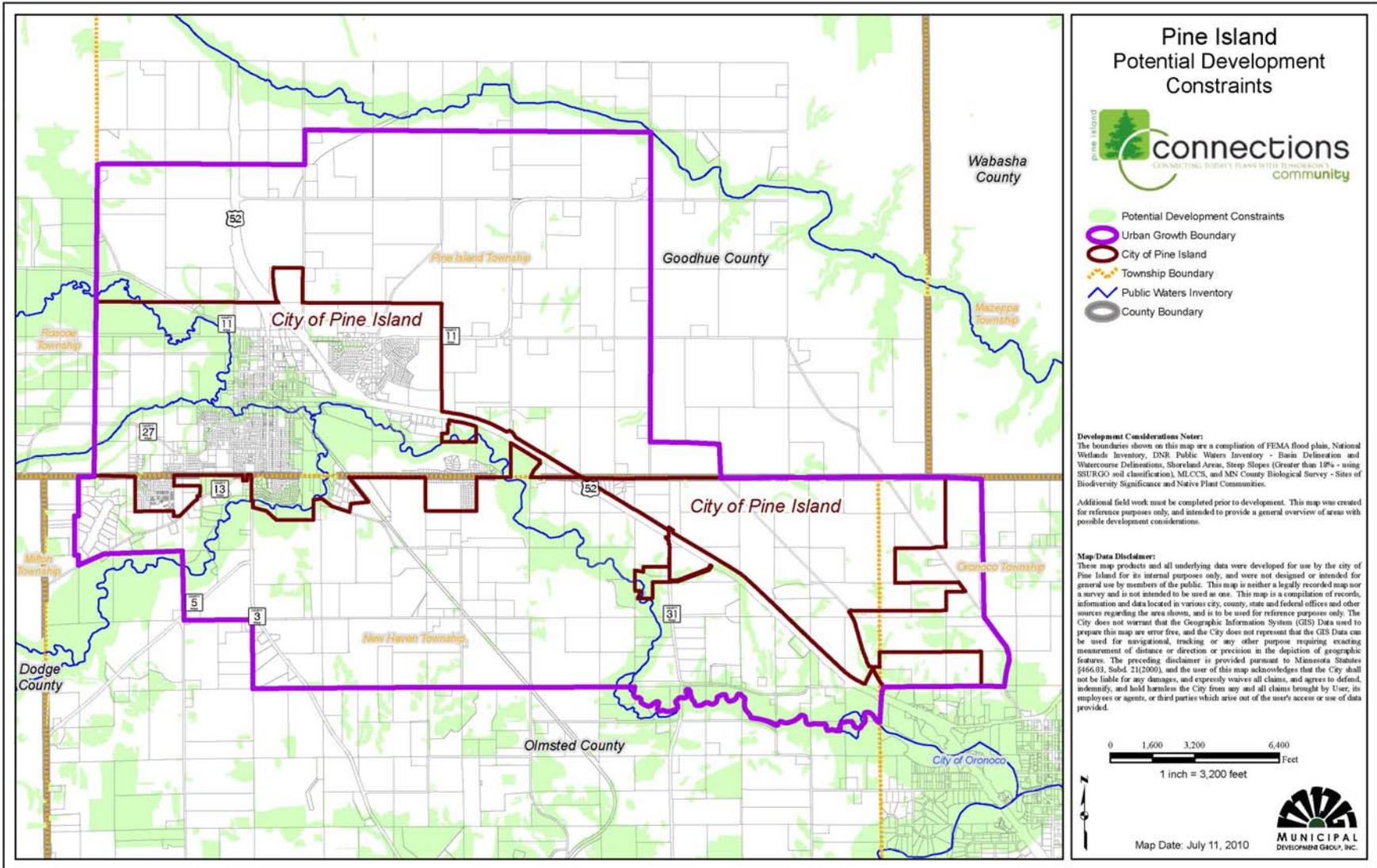
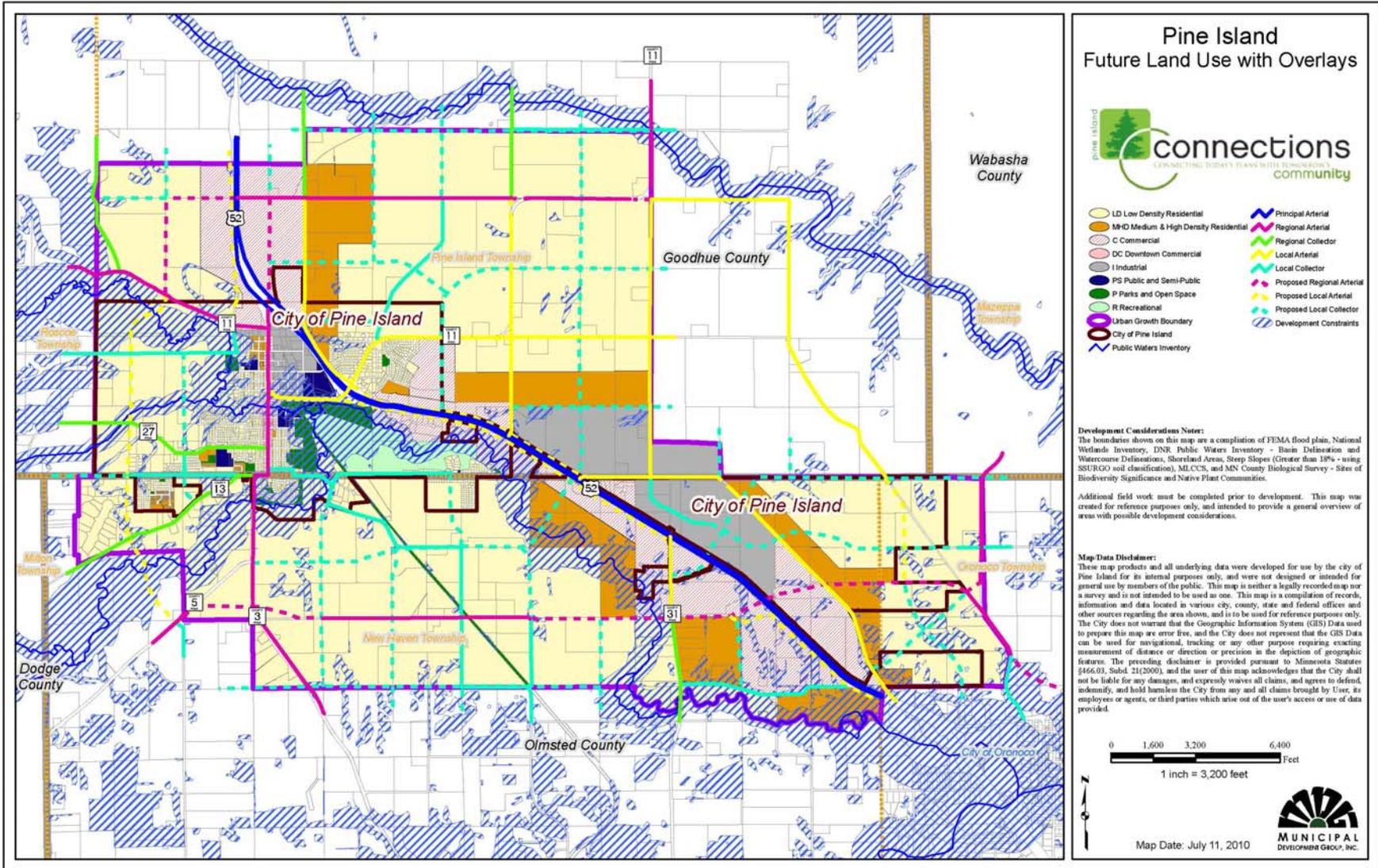


Figure 5 – Future Land Use with Overlays



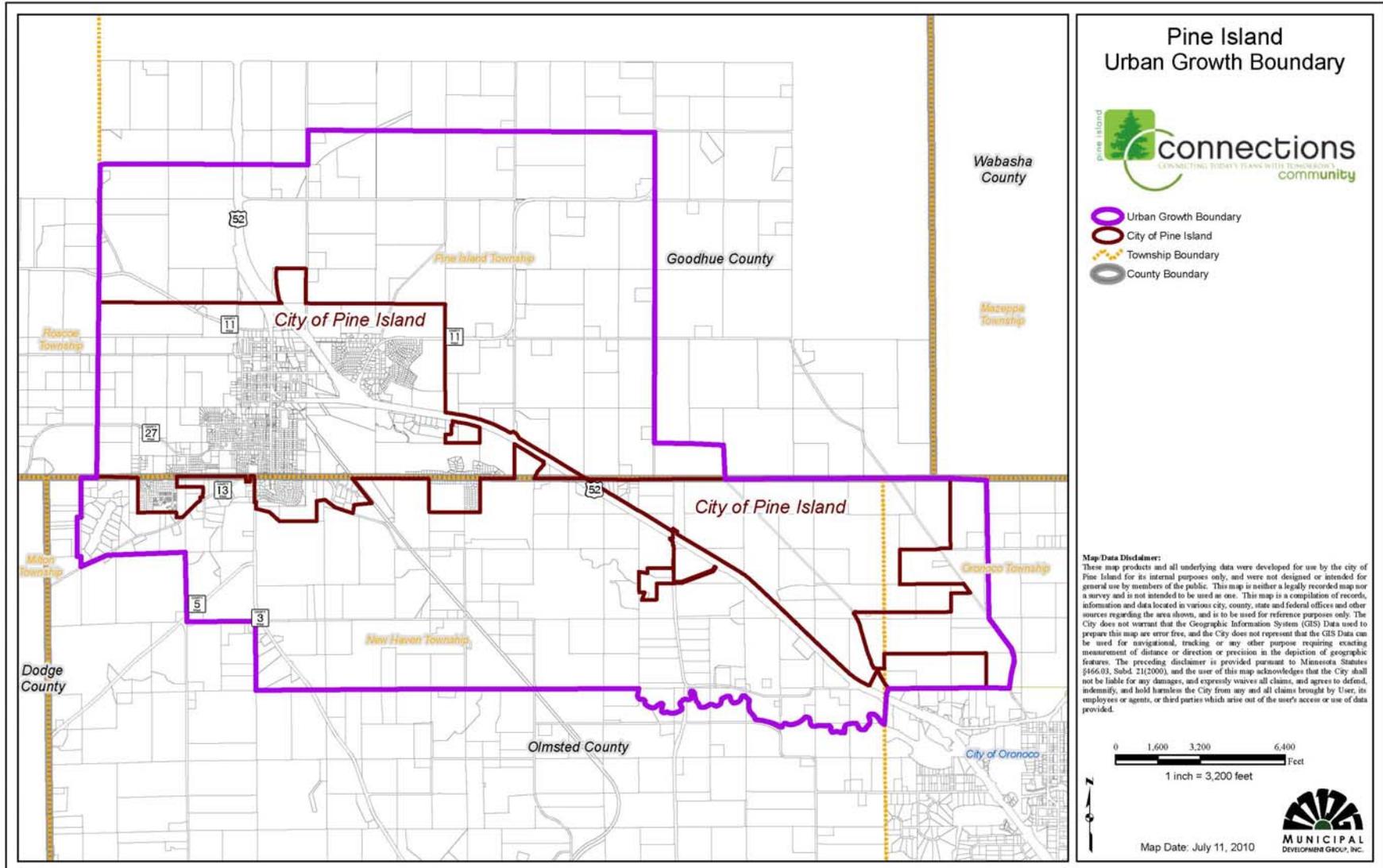
Identifying an Urban Growth Area

The City of Pine Island has legal authority for land use decisions within the urban service area (up to 2 miles from City limits), provided the township(s) have not adopted their own subdivision ordinance. State Statutes 462.358, Subd. 1 states, "A municipality may by resolution extend the application of its subdivision regulations to unincorporated territory located within two miles of its limits in any direction but not in a town which has adopted subdivision regulations; provided that where two or more noncontiguous municipalities have boundaries less than four miles apart, each is authorized to control the subdivision of land equal distance from its boundaries within this area." This would require subdivisions within two miles of the city to require compliance with the City's subdivision ordinance including design standards for streets, storm water drainage, etc. This may cause some rural developments to be financially not feasible or minimize development within the two-mile radius. Pine Island would like to comment on projects proposed within the township in order to protect roadway corridors and ensure the proposed use is consistent with the proposed future land use map. The City does not wish to impose all city zoning and subdivision ordinance requirements on developments in the townships.

The City has identified that annexation agreements and joint powers agreements are the preferred methods for addressing the nature and direction of future land use within the defined Urban Growth Boundary Map. The Urban Growth Boundary map, shown as Figure 6, should guide annexation agreements, subdivision review and approvals, and infrastructure investments within this area into the future. The areas designated within the Urban Growth Boundary are the main growth areas for the City of Pine Island in the next 10 to 20 years. These areas consist of land suitable for development within Pine Island and in the following townships: Pine Island Township in Goodhue County and New Haven and Oronoco Townships in Olmsted County. The Urban Growth Boundary was originally based on the concept map endorsed by the Planning Task Force on November 18, 2002. Since that time annexation of land into Pine Island has expanded this boundary in the areas near the City of Oronoco along US Highway 52 where the new interchange is to be constructed for the development of Elk Run. The new boundary has been enlarged to include these areas and all areas north of the Middle Fork Zumbro River in New Haven Township that were south of the original urban growth boundary. The growth boundary incorporates the following principles:

- Growth should create a compact, continuous settlement pattern.
- Adjacent land uses should be compatible in terms of density and type of land use with both existing and proposed development.
- Buffers must be created to allow for transition between conflicting land uses or development patterns.
- Development should be consistent with open space guidelines to maintain neighborhood character and property values.
- Development occurs where there is availability and capacity of infrastructure (roads, water/sewer lines etc.).
- The land is suitable for development based on natural features (topography, soil, flood plane, wetlands etc.).
- The Urban Growth Boundary will accommodate projected growth in population and business employment.
- Urban growth areas within the boundary will have access to and from major highways (County roads and US Highway 52).

Figure 6 – Urban Growth Boundary



High School Site

The Urban Growth Boundary around Pine Island could also be influenced by the future location of the new high school. The Task Force identified land use issues regarding alternative school sites, as noted below.

Community Education and Future School Growth and its Relationship to the Preservation of Our Land Use Objectives

The following summarizes general comments that came up at the 2002 Economic Development Authority's annual retreat. The retreat was attended by members of the City Council, the Economic Development Authority Board, Planning & Zoning, and other interested residents.

South school location:

1. May help eliminate traffic congestion over existing downtown bridge.
2. Would be within reasonable reach of City's sewer and water services.
3. Would attract residential growth in area already well suited for residential developments.
4. Would be a good fit within the school district's boundaries compared to a north site – Geographically.
5. Would be a catalyst to get Olmsted County to rebuild 125th Street NW. (sooner).
6. Provides good transportation to majority of district. (Access to good highway network and future interchange between Oronoco & Pine Island).
7. Olmsted CSAH 5 is a ten-ton road (better suited to serve heavier traffic volumes).
8. Land is available.
9. Olmsted CR 3 has been rebuilt and ties with Olmsted CSAH 12 nicely.
10. Would allow for commercial/industrial development around North Pine Island US Highway 52 interchange.
11. May reduce traffic for Downtown Pine Island retail businesses.
12. May need to consider an additional or upgraded access to the City of Pine Island.
13. Good land use planning (consistent with established land use trends in area, topography, environmental considerations, access, and land area open for future development).
14. Need to work with Townships for annexation and Planning Commission to maintain area character and minimize land use conflicts.

North school location:

1. May put the school away from the majority of new residential neighborhoods and existing population centers (Oronoco + Pine Island).
2. Land along US Highway 52 is better suited for highway commercial and or industrial development.
3. May create long-term land use conflicts.

4. In light if US Highway 52 long range outlook as a freeway, Mn/DOT may not look favorably on a new school location along or directly near a highway that currently has less than adequate access until the new interchange is built.
5. Existing (non-freeway) road infrastructure not adequate.

Annexation

Since the 2000 census, Pine Island has had its share of annexation by expanding its borders by 1,748.301 acres or approximately 2.73 square miles. These annexations almost doubled the total area of the City, which was 2.95 square miles according to the 2000 US Census. Of that 2.95 square miles in the 2000 US Census, 2.93 square miles was land and 0.02 square miles was water. A large portion of these annexations have come in Olmsted County, mainly the Elk Run area, further demonstrating the influence of Rochester and the City's expansion southward along US Highway 52.

Table 13 below shows the annexations that have taken place since the year 2000 in Pine Island. These annexations have come from three different townships, New Haven in Goodhue County and Pine Island and Oronoco in Olmsted County.

Table 13 – Pine Island Annexations (2000 – Present)

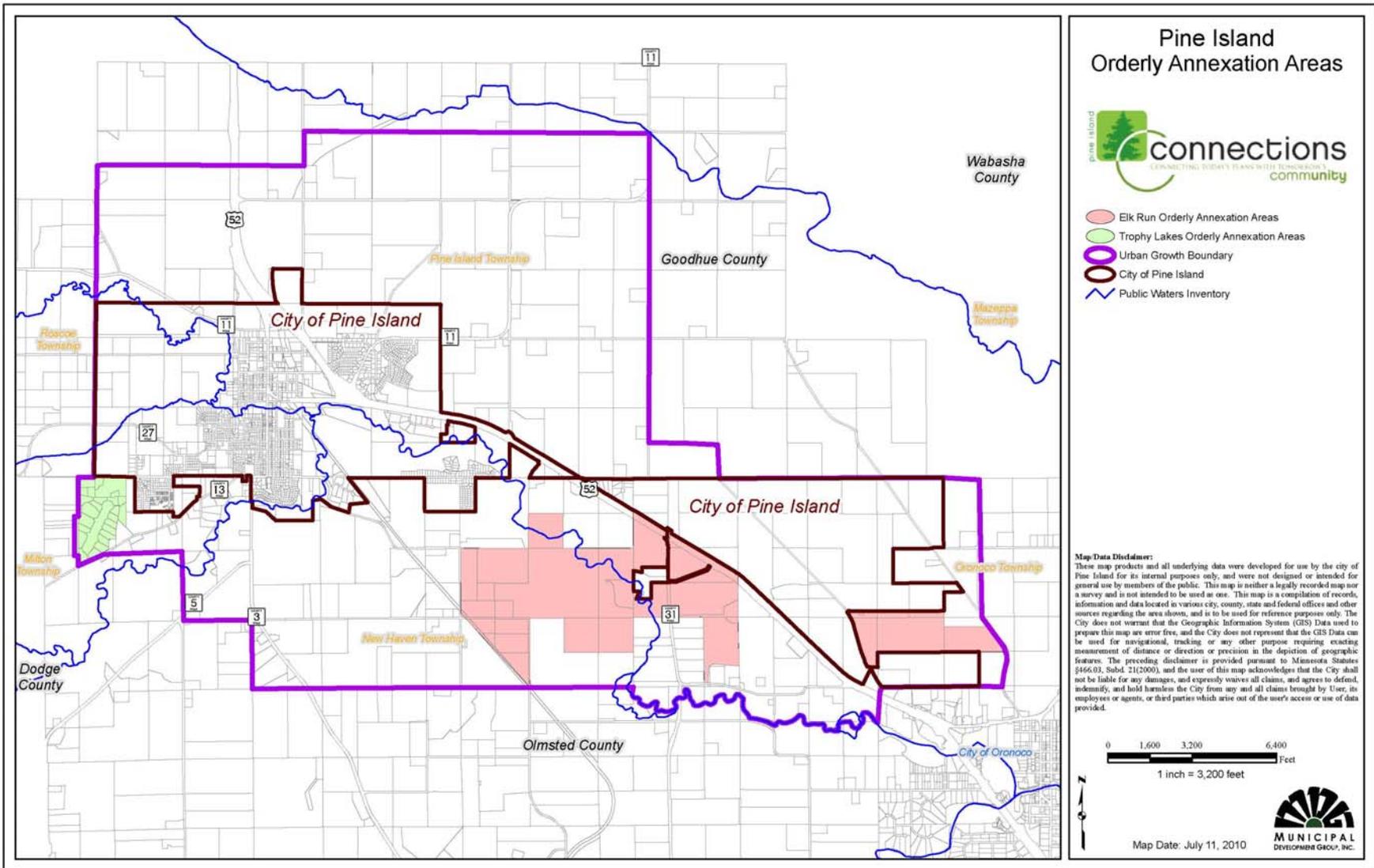
| Docket Number | Acres | Description | Filed Date |
|----------------------|--------------|--|-------------------|
| A-6212 | 60.0 | Annexation by Ordinance from New Haven Twp. | 1-6-00 |
| A-6226 | 0.61 | Annexation by Ordinance from New Haven Twp. | 1-26-00 |
| OA-684-1 | 48.0 | Orderly Annexation from New Haven Twp. | 5-16-00 |
| A-6535 | 10.57 | Annexation by Ordinance from New Haven Twp. | 8-9-01 |
| OA-874-1 | 27.0 | Orderly Annexation from New Haven Twp. | 9-16-02 |
| A-6866 | 21.0 | Annexation by Ordinance from New Haven Twp. | 5-1-03 |
| OA-1047-1 | 4.0 | Orderly Annexation from New Haven Twp. | 5-24-04 |
| A-7173 | 7.0 | Annexation by Ordinance from New Haven Twp. | 9-29-04 |
| OA-1196-1 | 58.27 | Orderly Annexation from Pine Island Twp. | 9-13-05 |
| A-7545 | 70.266 | Annexation by Ordinance from Pine Island Twp. | 4-27-07 |
| A-7571 | 33.0 | Annexation by Ordinance from Pine Island Twp. | 8-3-07 |
| OA-1404-1 | 926.55 | Orderly Annexation from New Haven Twp. | 6-17-08 |
| OA-1404-1 | 355.09 | Orderly Annexation from Oronoco Twp. | 6-17-08 |
| A-7638 | 77.135 | Annexation by Ordinance from Pine Island Twp. | 8-4-08 |
| OA-1396-1 | 26.48 | Orderly Annexation from New Haven Twp. | 1-30-09 |
| A-7710 | 23.33 | Annexation by Ordinance from Pine Island Twp. and New Haven Twp. | 11-24-09 |
| Total Acres | 1,748.301 | | |

Source: State of Minnesota Municipal Boundary Adjustments

The City may wish to begin discussing with the neighboring townships of Pine Island in Goodhue County and New Haven and Oronoco in Olmsted County the possibility of developing Orderly Annexation Agreements for future annexation of land that more than likely will occur in the future. At this time there already are a couple of areas within Olmsted County in both New Haven and Oronoco Townships that are part of approved orderly annexation agreements. The areas proposed to be annexed to Pine Island under the orderly annexation agreements are the Trophy Lake Estates development southwest of Pine Island and the remainder of the Elk Run Development owned by Tower Investments. The City at its discretion may proceed with the annexation of the property in October of 2017 or the City may proceed with annexation of the Trophy Lake Estates prior to that if 1) sewer and water are extended adjacent, or directly to the property and 2) the property is surrounded by 60% or more by the City or a majority of the property owners petition the City for sewer and water services with Township Board consent. The Elk Run property is to be annexed some time in the year 2014.

These areas are included in orderly annexation agreements due to the fact that they are currently using municipal sewer and water or are part of a larger development that will eventually be using municipal sewer or water. Figure 7 on the next page shows the areas under the orderly annexation agreements and how the City boundary will expand in the future.

Figure 7 – Orderly Annexation Areas



POLICIES, GOALS AND OBJECTIVES

In addition to the urban growth boundary and future land use map, the City of Pine Island has adopted the following policies, goals, and objectives to both urban and agricultural area land use decisions.

Urban Area Land Use Policies, Goals and Objectives

The following policies, goals, and objectives are intended to integrate similar or compatible land uses, allow for cost and energy savings, reduce travel time, and prevent the introduction of adverse development impacts on existing and or emerging neighborhoods (commercial, industrial, and residential).

Policy 1. Ensure compatibility between the City’s future vision as described in the Comprehensive Plan and the City’s zoning and subdivision regulations.

Policy 2. Ensure orderly and efficient land use patterns.

Goal A. Work with surrounding townships to establish orderly annexation policies (agreements) within the established urban growth boundaries

Goal B. Enforce existing regulations as they relate to proposed developments and the provision of public utilities

Goal C. Review zoning code and language to strengthen where needed the implementation of a cost-effective provision of public utilities.

Policy 3. Work in concert with our neighbors and partners within abutting townships and counties and with State and regional agencies.

Goal A. Ensure ample supply of open and recreational space.

Goal B. Adopt the urban growth boundary and its proposed general land use designations.

Goal C. Preserve agricultural land use outside the adopted urban growth area.

Policy 4. Establish a clear understanding of the responsibilities and obligations of the City of Pine Island and surrounding Townships as they relate to adopted land use policies and the promotion of future growth while we maintain quality of life.

Goal A. Maintain a healthy (serviceable) supply of land use resources to ensure a balanced and deliberate growth.

Goal B. Work with surrounding Townships to promote preservation of prime agricultural land.

Policy 5. Facilitate land use and developments that are consistent, functional, and progressive.

Goal A. Employ resources to improve the image of the community through development and adoption of urban design standards and beautification initiatives.

Goal B. Facilitate and coordinate economic development and business growth to ensure compliance with adopted Comprehensive Plan policies and objectives.

Goal C. Direct location of business and commercial growth through the implementation of existing and new business incentive programs.

Goal D. Work in concert with the Pine Island Economic Development Authority to further its mission and promote Comprehensive Plan goals.

Policy 6. Update the Comprehensive Plan every 5 years or more frequently as conditions require.

Agriculture Policies, Goals and Objectives

Designated agricultural areas are to be protected by adopting policies that prevent leapfrog development and that discourage land uses in agricultural areas that are incompatible with agricultural practices. The policies must also be based on soil type, existing land use and ownership patterns, and agricultural investment.

- Policy 1. Support the creation of opportunities for economically viable farm-related or agricultural enterprises, and help promote the economic viability of our farm communities and agricultural land use.**
- Policy 2. Preserve agriculture land by adopting existing and future land use policies.**
- Policy 3. Require all new platted housing developments to connect to public infrastructure or formulate a plan to connect, within a reasonable amount of time, to public infrastructure consistent with the City's Capital Improvement Plan.**
- Policy 4. Work with counties and townships to preserve agricultural land outside the adopted Urban Growth Boundary Map.**



Farm Country Co-op



Looking SW from County Road 11 NW

Annexation Policies, Goals and Objectives

The Annexation element addresses the policies that guide the City's annexation actions. The City will work with surrounding townships to outline a framework for future developments and annexation. Cooperative efforts are especially important when evaluating how the City and surrounding area will grow, and what future land uses and land use patterns are preferable. Townships understand the relationships between services, infrastructure, and

development density. The townships also understand the need to create and maintain smart/compact growth policies to further the values jointly held by City and township residents. The Annexation policies pay special attention to the preservation of agricultural land, open space, and environmentally sensitive areas, while at the same time preserving Pine Island's and the area quality of life.

The City will seek agreements with area townships to deal with areas affected by Pine Island's long range land use plan. Such agreements should address not just one proposed development as part of the platting process; rather the agreement should identify short and long term growth scenarios consistent with the future land use element and the adopted urban growth boundaries.

The City of Pine Island has adopted the following policies regarding annexation.

Policy 1. Build on good working relationships with the townships and concerned government agencies: state, county, and local governments.

Policy 2. Build on good working relationships with the surrounding townships to develop long term orderly annexation agreements to cover projected near and long term growth within the future urban growth areas.

Goal A. Land immediately adjacent to the city limits shall be annexed into the corporate limits prior to development.

Goal B. Land should be annexed as the area is about to become urban or suburban in nature or if surrounded by city limits, rather than annexing without urban plans in place.

Policy 3. Plan, guide, and facilitate development to ensure implementation of sound and orderly growth.

Policy 4. Develop a mechanism to work with surrounding townships and counties for review and approval of housing and commercial developments within and near the future urban growth areas.

Goal A. If limited rural residential development is to occur while the land is located within the townships, the preferred density is one home per forty acres. Cluster platting is encouraged to preserve open space for future development, and if cluster platting is utilized it shall be consistent with the Goodhue and Olmsted County Comprehensive Plans and be designed to allow for future connection to municipal infrastructure systems.

IMPLEMENTATION

This chapter will identify methods in which the City may implement the Land Use chapter of the Comprehensive Plan and accomplish the goals and assist in addressing challenges identified by the community. Some of the tools available include:

- Zoning Ordinance
- Subdivision Ordinance
- Orderly Annexation Agreements
- Implementation Strategies for Future Commercial and Industrial Land

A description, implementation information and recommendations for each of the City's local controls follows.

Zoning Ordinance

The current City Zoning Ordinance includes specific regulations governing land use and an official zoning map. The City Council recognizes the Comprehensive Plan as the policy which regulates land use and development in accordance with the policies and purpose set forth within the Zoning Ordinance. The City administers the Zoning Ordinance on an on-going basis.

Purpose

The purpose and intent of the Pine Island Zoning Ordinance is to protect the public health, safety, and general welfare by regulating the use of land, the location and use of buildings and the arrangement of buildings on lots, and the density of the population in the City.

Contents

Local controls provided by the Zoning Ordinance include, but are not limited to, the following:

1. Intent and Purpose
2. Rules and Definitions
3. General Provisions
4. Administration of the Ordinance
5. Zoning Districts and District Provisions
6. Performance Standards
7. Violations

Implementation

The Zoning Ordinance is reviewed and subsequently administered by City staff, the Planning Commission and the City Council. The Zoning Ordinance is subject to periodic review to ensure consistency with the City's Comprehensive Plan and overall policies, goals and objectives as defined by the City. The City Council may amend the Ordinance provided the Council adheres to constitutional, statutory, and other lawful procedures. In order to ensure the Zoning Ordinance is consistent with the goals and objectives of the Comprehensive Plan the Planning Commission and Council may wish to amend the ordinance to address the following:

Recommendations

1. The Planning Commission and Council may wish to establish new zoning districts relating to Neighborhood Commercial, General Industrial, Limited Industrial, Business Park, Open Space, Recreation and an Institutional District to ensure all the proposed uses are regulated in the correct manner separated into the districts envisioned in the comprehensive plan.
2. The Planning Commission and Council may wish to update the existing zoning districts as it relates to the comprehensive plans policies, goals and objectives. This may include zoning by density rather than minimum lot size in residential zoned areas.
3. The Planning Commission and Council may wish to expand building design requirements for the Commercial and Industrial Districts to include a list of prohibited exterior building materials to protect the character and integrity of the commercial districts, especially as corridors adjacent to US Highway 52 develop.
4. The Planning Commission and Council may wish to consider more extensive landscaping requirements in new industrial areas which are visible from arterial and collector roads.
5. Once the DNR finalizes the shoreland rules and regulations, the Planning Commission and Council may want to update the Zoning Ordinance to include these rules and regulations.
6. The Planning Commission and Council may want to update the floodplain rules and regulations within the Zoning Ordinance by working with both Goodhue and Olmsted counties to protect the flood zones within the City.
7. The Planning Commission and Council may want to rezone specific properties within Pine Island to conform to the future land use recommendations of the Comprehensive Plan as well as potential new district that have been established.

Subdivision Ordinance

The City of Pine Island Subdivision Ordinance regulates the division or platting of land within the City's corporate limits for the purpose of creating two or more lots, parcels, or tracts, with minor exceptions.

Purpose

A Subdivision Ordinance has been adopted to safeguard the best interests of the City and to assist the subdivider in harmonizing the subdivider's interests with those of the City at large. The Ordinance is intended to prevent the piecemeal planning of subdivisions which could result in an undesirable, disconnected patchwork or pattern of development or fiscal inefficiency. The Subdivision Ordinance is interconnected to the City's Comprehensive Plan and is consistent with a goal of promoting unified community interests.

Contents

The Subdivision Ordinance includes provisions that:

1. Dictate procedures for filing, submittal and review: including the required contents of and conditions for the sketch plan, preliminary plat and final plat.
2. Establish and ensure design standards including: blocks, lots, streets and alleys, planned unit developments and other standards which promote the public health, safety, and general welfare.
3. Define parks and open space requirements.
4. Require improvements according to City standards for general improvements, streets, sanitary sewer and water distribution and storm water management.
5. Allow for variances from this Ordinance provided unique circumstances exist.
6. Provide for enforcement of and penalties for violation.

Implementation

The Subdivision Ordinance is subject to periodic review to ensure consistency with the City's Comprehensive Plan and overall goals/objectives as defined by the City. The City Council may amend the Ordinance provided the Council adheres to constitutional, statutory, and other lawful procedures. In order to ensure the Subdivision Ordinance is consistent with the goals and objectives of the Comprehensive Plan the Planning Commission and Council may wish to amend the ordinance to address the following:

Recommendations

1. Relating to the preservation of natural features in the community, the City may wish to consider the adoption of additional tree preservation and reforestation requirements.
2. The City should review its current park dedication fees to ensure sufficient dedication requirements are in place to support the Recreation and Open Space plan which is a part of this Comprehensive Plan.
3. Relating to the storm water ponding requirements the City may wish to consider the adoption of a city wide storm water management plan that looks at regional ponding vs. individual ponds.

Growth Areas and Annexation

The City of Pine Island, through its comprehensive planning process, has identified land use needs to accommodate additional residential, commercial and industrial development both within the existing corporate limits as well as in potential annexation areas. The future growth boundary is anticipated to meet the needs of the City to the year 2035, unless market conditions change dramatically. The placement of appropriate land uses, extension of infrastructure; including water, sewer and streets, should be planned for within this area before the growth occurs.

The City of Pine Island does not have Orderly Annexation Agreements with Pine Island, New Haven or Oronoco Townships. The City has not adopted a resolution granting authority to the City to review plats within two miles of the city limits; however if the Planning Commission feels a resolution is needed for review of new development or with applicability only for new industrial and commercial facilities steps should be taken to initiate discussion between all applicable jurisdictions. Joint planning boards have not been established between the City of Pine Island and adjacent townships.

Recommendations for Implementation

1. The City and Townships should continue to work together and strive to develop and adopt Orderly Annexation Agreements.
2. The City of Pine Island should look to incorporate any growth strategies in the Goodhue and Olmsted County Comprehensive Plans as it relates to land uses which may impact Pine Island.

Future Industrial & Commercial Land

Until the late 1980's Pine Island did not have an area specifically dedicated for industrial or commercial use. Industrial land uses were mixed in with housing and other non-compatible land uses. In 1989 the City applied for and received a Small Cities Development Grant to buy residential units along 2nd Street NE and 5th Street NE.

The City for the first time had succeeded in creating its first industrial park development. Since then the City has witnessed constant expansion of local business within this park, and now all that remains are about fifteen acres total, seven acres are still in agricultural production, and the remainder is owned by businesses that occupy the rest of the land.

In 1995 the EDA saw the need for additional industrial land and seized the opportunity when Goodhue CSAH 11 NW was extended straight East to intersect with North Main Street. A seven acres industrial/commercial park was then developed with the help of the City and all lots have been sold to new businesses.

Over the past few years the City has experienced rapid growth as far as annexation of new land into the corporate limits along US Highway 52 in Olmsted County. The development of this property will be spurred by a proposed interchange on US Highway 52 at Olmsted CSAH 12/5. This growth is proposed to be a mixed use with commercial/industrial uses to be



Redevelopment across from City Hall, 2004

focused on the new interchanges and residential uses behind that.

Securing Industrial/Commercial Site

Our experience at the Economic Development Authority had demonstrated that there are number of ways to bring about industrial or commercial activities and they could be summarized in the following:

1. Have available land and a willing land owner who is interested in selling the land to an expanding or new business. The City will then come in with improvements, and assess the cost to benefiting property owners. This option could result in forced development in the case of some landowners.
2. A public improvement project that sometimes extends public services through property to service a new public or private development will create pressure on adjoining property owners to sell land for development. We have a good example of this type of development when we extended Goodhue CSAH 11 NW. At times the outcome of such improvements could be immediate industrial or commercial development, or the price of the land may be set too high by the seller to allow for development to occur.
3. The City or the Economic Development Authority could buy land from a willing seller at a reasonable price, and extend improvements as new businesses build there.
4. The City could use public condemnation to proceed with an industrial or commercial park development to ensure the economic viability and future of the town. In this instance the City and the Economic Development Authority must have done a complete review of all possible sites, and come up with a plan to finance, serve, and market the land to existing and new businesses.



Land O' Lakes

In light of the options mentioned above, we could utilize the proposed changes to US Highway 52 to push for locating future industrial or commercial land. The challenge here is that the highway plan implementation schedule is not yet clear.

Site Selection Criteria

Before we look at a certain land for future industrial or commercial development, we should work to develop land use criteria. These criteria must take into consideration the following issues:

- Growth Trends. Direction of growth, time frame, types of businesses that are attracted to Pine Island. Etc.
- Provision of Public Utilities. Water, and sewer lines, power, and related services.
- Access. Site location in relationship to local streets, collector roads, and major highways, and nearby markets.

- Land. Topography soils type, elevation, visibility, relative location to existing or planned future land uses, and zoning.
- Environmental Concerns. Floodplain, wetlands, endangered species, and waterways among others.
- Existing and Future Economic Trends. What are the current economic conditions? How much land do we need? And who are the potential users of our industrial park?
- Regulatory Concerns. We will continue to see, as Rochester’s regulatory controls increase and it continues to concentrate on larger employers, that we will keep receiving inquires from small business concerns. What is the status of current State annexation laws? How are we going to approach the Townships regarding future developments?
- Land Price. Initial cost and the cost of serving the land and owning it over time.



Industrial uses along Goodhue CSAH 11

CHAPTER 4 - TRANSPORTATION

BACKGROUND

At this time, Pine Island does not have an official transportation plan however, the transportation chapter of this Comprehensive Plan, along with the transportation related maps, can be used as a guide for the development and expansion of the future transportation system of Pine Island. The transportation maps included in this plan, in conjunction with the future land use plan, the parks and trails plan and other infrastructure plans, will provide a guide for which growth can be accommodated in a reasonable fashion and existing transportation issues can be addressed.

This chapter of the Comprehensive Plan includes an overview of various transportation system components within the City of Pine Island and Urban Growth Boundary. The principal components of this chapter include:

- Transportation Needs and Issues
- Jurisdictional Classification
- Existing Roadway Functional Classification
- Recommended Functional Classification Changes
- Future Roadway Functional Classification
- Land Use Impact on Future Traffic Volumes
- Multi-Modal/Inter-Modal Opportunities

The traffic element of this plan is based on the proposed locations of the new interchanges and existing roadways, furthermore, it takes into consideration the type and location of future land use as illustrated in the future land use map. It is intended to provide guidance for the development of a transportation system that serves the access and mobility needs of the City in a safe, efficient and cost-effective manner. It is important the local transportation system is coordinated with respect to county, regional and state plans and that the system enhances quality economic and residential development within the City.

This element was developed to achieve and maintain basic transportation infrastructure and related services to accomplish the following:

1. The city road networks must be developed in cohesive well connected manner that serves all segments of the Pine Island population.
2. Provide safe transportation means to serve motorized and non-motorized traffic.
 - A. Work with area cities, counties, townships, and Mn/DOT to ensure proper connectivity over all classifications of roadways and across various jurisdictions.
3. Implement the future land use map to ensure a workable road network and minimize potential land use conflicts.
4. Ensure an adequate level of service for all roads serving Pine Island and the surrounding areas
5. Ensure the provision of safe, clean, and appealing road designs to minimize maintenance costs and maximize safety.
6. Provide an integrated, safe, convenient, and efficient multi-modal transportation network to accommodate the movement of people and goods within and through the community.

Transportation Needs and Issues

The transportation system needs and issues are based on both an evaluation of the existing transportation system and an understanding of how the traffic will likely grow in the future. Existing and the future transportation system needs and issues in the Pine Island area were compiled during the comprehensive planning process when the original Comprehensive Plan was approved and were based on input from the Pine Island Comprehensive Planning Task Force, Goodhue County, Olmsted County, neighboring townships, and Mn/DOT. During that planning process, the City's Planning Task Force held several meetings to identify and discuss transportation needs and issues. The issues identified at the meetings are listed below.

Safety

- Speeding is a perceived problem on many City streets with 4th, 5th, and 8th Streets SW were called out specifically.
- Pedestrian crossing especially in the downtown and school areas, and between either side of US Highway 52.
- Existing Goodhue CSAH 11/US Highway 52 intersection.
- The City needs improved street lighting.
- The City needs improved traffic control devices, such as traffic lights, signs, etc., if warranted.



Looking north to Goodhue CSAH 11 interchange

Operations

- Main Street will need improvements to accommodate future traffic levels.
- The City needs better connectivity (vehicular and pedestrian) between different areas of the City.
- Olmsted County Roads 3, 5, and 13 need improvements to accommodate increasing traffic.
- Main Street/8th Street SW/CR 3 area is confusing and will become more problematic as traffic increases.
- The City needs to consider additional river crossing(s).
- The proposed Olmsted CSAH 5/12 interchange on US Highway 52 will require a new road connection to the City.
- The City needs to ensure development of a transportation collector network that provides access to, through, and within future development areas.

Other

- Any transportation improvements need to maintain Main Street's viability and vitality.
- New investments should maximize use of existing investments (CR 31 bridge).
- The City should identify specific measures to address immediate traffic concerns until the US Highway 52 interchanges and related road connections/extensions are built. Measures can include delaying the actual median closings until the west side frontage roads are constructed

which can provide convenient access to residents and businesses along US Highway 52 between the Goodhue CSAH 11 interchange and the Olmsted CSAH 5/12 interchange.

Since that time some of these items have been addressed such as the reconstruction of Main Street and the Main Street bridge while other items such as the construction of the new interchange at Olmsted CSAH 5/12 and US Highway 52 and the frontage road system, will be addressed in the near future.

During this time period a US Highway 52 study was completed which resulted in the preferred US Highway 52 interchange and frontage road plan. Since that time an Environmental Assessment (EA) update and an Areawide Urban Assessment Review (AUAR) has been completed. With the completion of these two documents, the City has become better prepared for the future transportation system by having a more detailed plan such as the AUAR which describes in detail the future land use of a large area within Olmsted County. This area includes the majority of the Urban Growth Boundary within Olmsted County and at this time the Mn/DOT, in coordination with Pine Island, Oronoco, Olmsted and Goodhue counties and the neighboring townships is pursuing substantial improvements to US Highway 52 and adjacent roadway and frontage road system. These improvements include:

- CR 12/CR 112 (100th Street NW) (south side of Oronoco).
- 125th Street NW (proposed County Road 5/County Road 12) between Oronoco and Pine Island.
- Main Street Interchange (proposed County Road 11) (north side of Pine Island).
- Frontage Roads along US Highway 52.
- 17th Avenue NE from the East Frontage Road to Goodhue CSAH 11.

Jurisdictional Classification

Roadways are classified on the basis of which level of government owns and maintains the road. Four levels of government share jurisdiction over the existing transportation system within the City of Pine Island and Pine Island Urban Growth Boundary. Mn/DOT maintains the State Trunk Highway system or US Highway 52, Goodhue County and Olmsted County maintain the County State Aid Highways (CSAH) and County Roads (CR), Pine Island Township, New Haven Township and Oronoco Township maintains all local and neighborhood roadways within the urban growth area not yet annexed into Pine Island and the City of Pine Island maintains all local and neighborhood roadways within the City. Typically, a roadway's jurisdiction is determined by several factors, including the following:

- Length of road/length of trip.
- Connections to roadways of similar jurisdiction level.
- Functional classification.
- Average Daily Traffic (ADT).

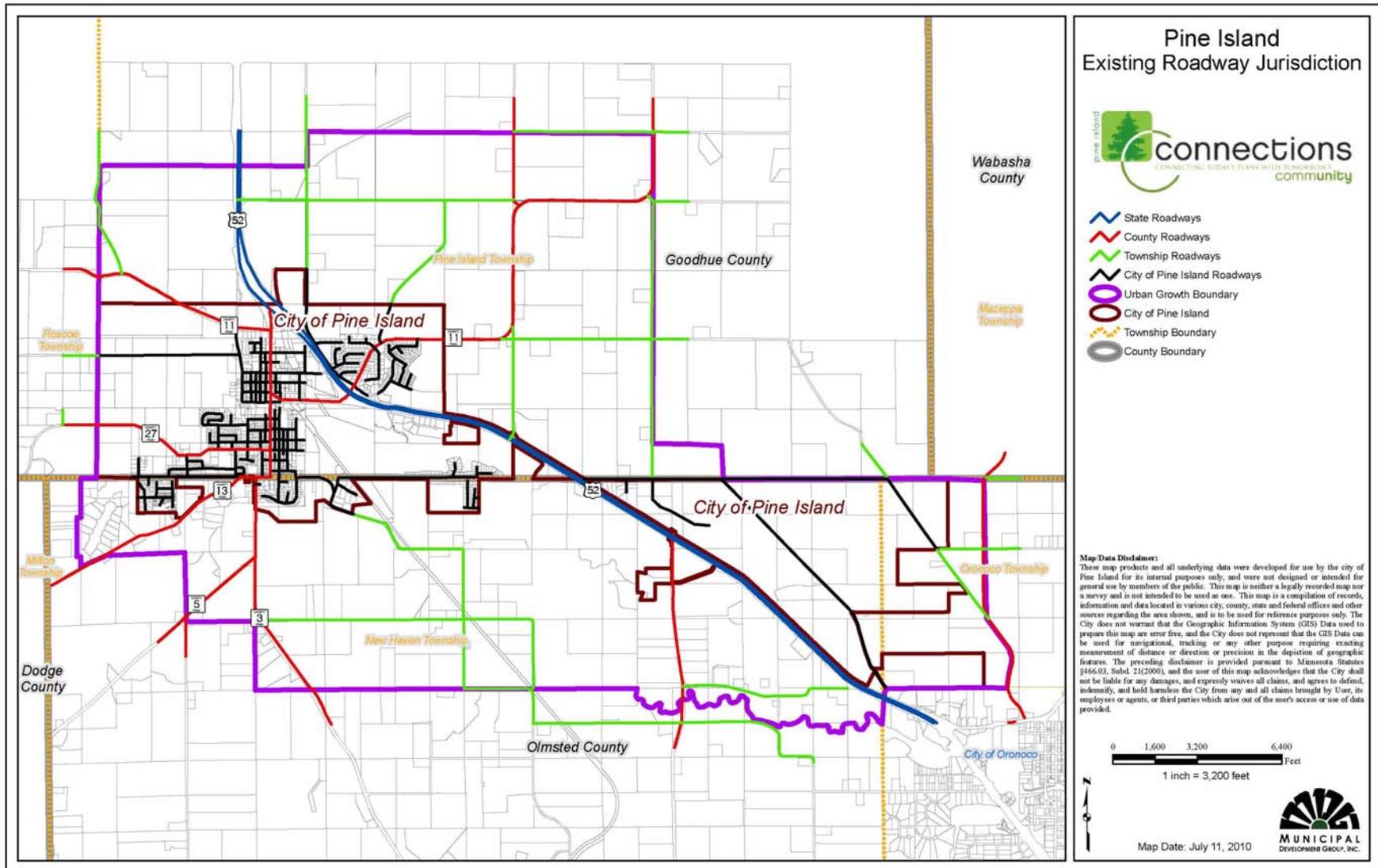


3rd Street SW looking west

- Purpose of trips being served.
- Special facilities served.
- Design type of the roadway.

Cities and townships generally own roadways that solely serve local property access and transportation needs. Roadways, such as trunk highways, which serve regional, inter-county, or statewide transportation needs, are owned by the state. Goodhue County and Olmsted County own the roads that serve intermediate level functions and generally provide intra-county connections to locations within and adjacent to the County. As the City of Pine Island continues to develop and new roads are built or reconstructed, it is appropriate to examine the jurisdictional responsibility for roadways and to consider if jurisdictional transfers are appropriate. Typically, the majority of new roadway mileage constructed to serve new development will be placed under the jurisdiction of the City. Figure 8 shows the existing roadway jurisdiction.

Figure 8 – Existing Roadway Jurisdiction

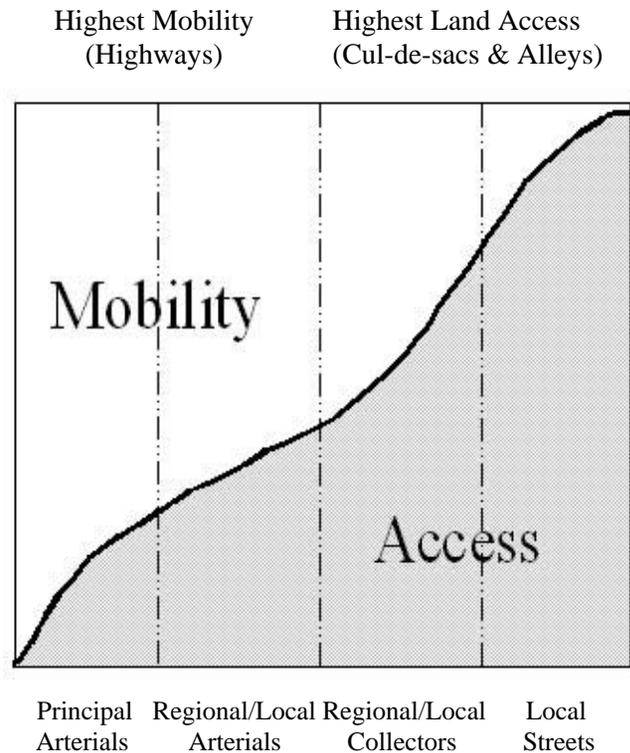


Existing Roadway Functional Classification

Functional classification is a system by which streets and highways are grouped according to the character of traffic they are intended to serve. Basic to this process is the recognition that individual roadways do not function independently. Most travel involves movement along a network of different types of roads. The functional class of the roadway should be an important consideration in the development of local regulations for land development.

Functional classifications are partially defined by two important transportation concepts – access and mobility. Mobility refers to how smoothly the traffic flows on the road. Access refers to how easily traffic can get onto and off of the road. The higher the functional classification, the more emphasis is on mobility and less access can be permitted. A principal arterial's (i.e., US Highway 52) access is limited to the extent possible to maximize mobility along the roadway. On regional and local arterials, more access and more conflicts can be tolerated; however, mobility is still the primary function. Regional and local collectors are intended to accommodate both mobility and access depending on the function of the particular roadway and anticipated traffic volume. Local/neighborhood streets clearly have more emphasis on access rather than mobility. Typically, travelers will use a combination of different roads to serve their travel needs. Figure 9 illustrates the direct correlation between increasing mobility and decreasing access and conversely decreasing mobility and increasing access.

Figure 9
Mobility – Access
Relationship of Roadways



Relationship of functionally classified highway systems in serving traffic mobility and land access.

- Arterial Roadways
 - higher mobility
 - low degree of access
- Collector Streets
 - balance mobility/access
- Local Streets
 - lower mobility
 - increased land access

surrounding land uses on the roadway. For the purposes of this Section, the four basic functional classification categories (principal arterials, minor arterials, collectors, and local roadways) have been expanded to respond to the conditions and needs in the Pine Island area. US Highway 52 remains the only principal arterial roadway in the study area, and all other roadways have been classified in the following categories: regional arterial, local arterial, regional collector, local collector, local/neighborhood roadway, alleys and private roadways. The functional classification categories used in this plan are described below while Figure 10 illustrates the existing functional roadway classifications within Pine Island and the Urban Growth Boundary.

Principal Arterials

Principal arterials have the highest volume capacity and provide the highest level of service at the greatest speed for the longest uninterrupted distance. This type of roadway is intended to connect larger cities with one another and connect major business concentrations. US Highway 52 is the only roadway classified as a principal arterial within the Pine Island Urban Growth Boundary.

Regional Arterials

Regional arterials connect important locations inside and outside of different regions. They connect the City of Pine Island with other cities and important locations within the region. Goodhue and Olmsted county roads that connect communities, gather traffic from collectors and access principal arterials, have been classified as regional arterials. Regional arterials emphasize mobility rather than providing access. Access on regional arterials needs to be more carefully managed to avoid capacity and safety problems although there would be more access to regional arterials than to principal arterials. Regional arterials located in Pine Island and the Urban Growth Boundary include Goodhue CSAH 11, Goodhue CSAH 62 (Main Street), Olmsted CSAH 3, Olmsted CSAH 18 and Olmsted CSAH 5.

Local Arterials

Local arterials connect important locations within the Pine Island area such as retail shopping nodes with other commercial/industrial nodes and typically serve local trips. Local arterials also connect to regional and principal arterials and gather traffic from local collectors. They serve both as mobility corridors and as primary roads for accessibility; however, local arterials still emphasize mobility rather than providing access to local properties. In fully developed urban areas they tend to carry high volumes of traffic and provide a high degree of access to adjacent properties and generally connect to regional arterials and regional collectors. Examples of local arterial roadways in Pine Island and the Urban Growth Boundary include 500th Street (between Goodhue CSAH 11 and US Highway 52), 210th Avenue (between Goodhue CSAH 11 and US Highway 52), 520th Street (between US Highway 52 and Ash Road NW) and Ash Road NW (Between 520th Street and Olmsted CSAH 18).

Regional Collectors

Regional collectors are designated to serve slightly shorter trips than regional arterial roadways. Regional collectors supplement the arterial system and in general, regional collectors emphasize mobility over access. Regional collectors consist of mostly county roads that provide connectivity between the regional and local arterial and local roadway system. Examples of regional collectors in Pine Island and the Urban Growth Boundary include Goodhue CR 55, Goodhue CSAH 27 (5th Street SE), 195th Avenue, 180th Avenue, Olmsted CSAH 13 and Olmsted CSAH 31.

Local Collectors

Local collectors primary function is to provide access to the adjacent land by serving as a connection between the local street network and the arterial

roadways and regional collectors. Also, they connect local streets within residential neighborhoods and connect residential neighborhoods with adjacent residential neighborhoods. In urban and urbanizing areas, they are typically spaced at intervals consistent with population density to gather traffic from local streets and bring all developed areas within a reasonable distance of a collector road. Spacing in urban areas may be every half mile, while in more rural developed areas 1 mile spacing may be adequate. Examples of local collector roadways in Pine Island and the Urban Growth Boundary include 495th Street, 500th Street (east of Goodhue CR 11), 510th Street (east of Goodhue CR 11), 220th Avenue (south of Goodhue CSAH 11), 203rd Avenue, 3rd Avenue NW (from CR 11 to 511th Street), 511th Street, 8th Street SW (west of Olmsted CSAH 13), 7th Street SE (from Main street to 3rd Avenue SE), 3rd Avenue SE (from 7th Street SE to 8th Street SE), 8th Street SE (from 3rd Avenue SE to New Haven Road NW), New Haven Road NW, 125th Street NW, 85th Avenue NW, 120th Street NW, 59th Avenue NW, 130th Street NW and Bio Science Drive.

Local/Neighborhood Roadways

Local/neighborhood roadways interconnect residential neighborhoods, commercial, agricultural, and industrial developments and connect to local and regional collectors. Local roads generally serve short trips and provide high levels of access. Most city streets are typically classified as local or neighborhood roadways.

Alleys

Alleys are public right-of-way which affords a secondary means of access to the abutting property usually thirty (30) feet or less in width. Existing alleys were used primarily during the platting and development of the original townsite of Pine Island where they typically divided a standard city block in two and gave rear access to the individual lots. Although less common today, alleys can be incorporated into new developments by providing rear access as a way to reduce front yard setbacks and create a pedestrian friendly neighborhoods rather than focusing on the automobile by placing garages as the dominate feature in the front of the house. This type of development is called New Urbanism and is another option to the typical suburban development. When alleys are proposed as part of new developments, they should be planned as private roadways due to ownership and maintenance issues.

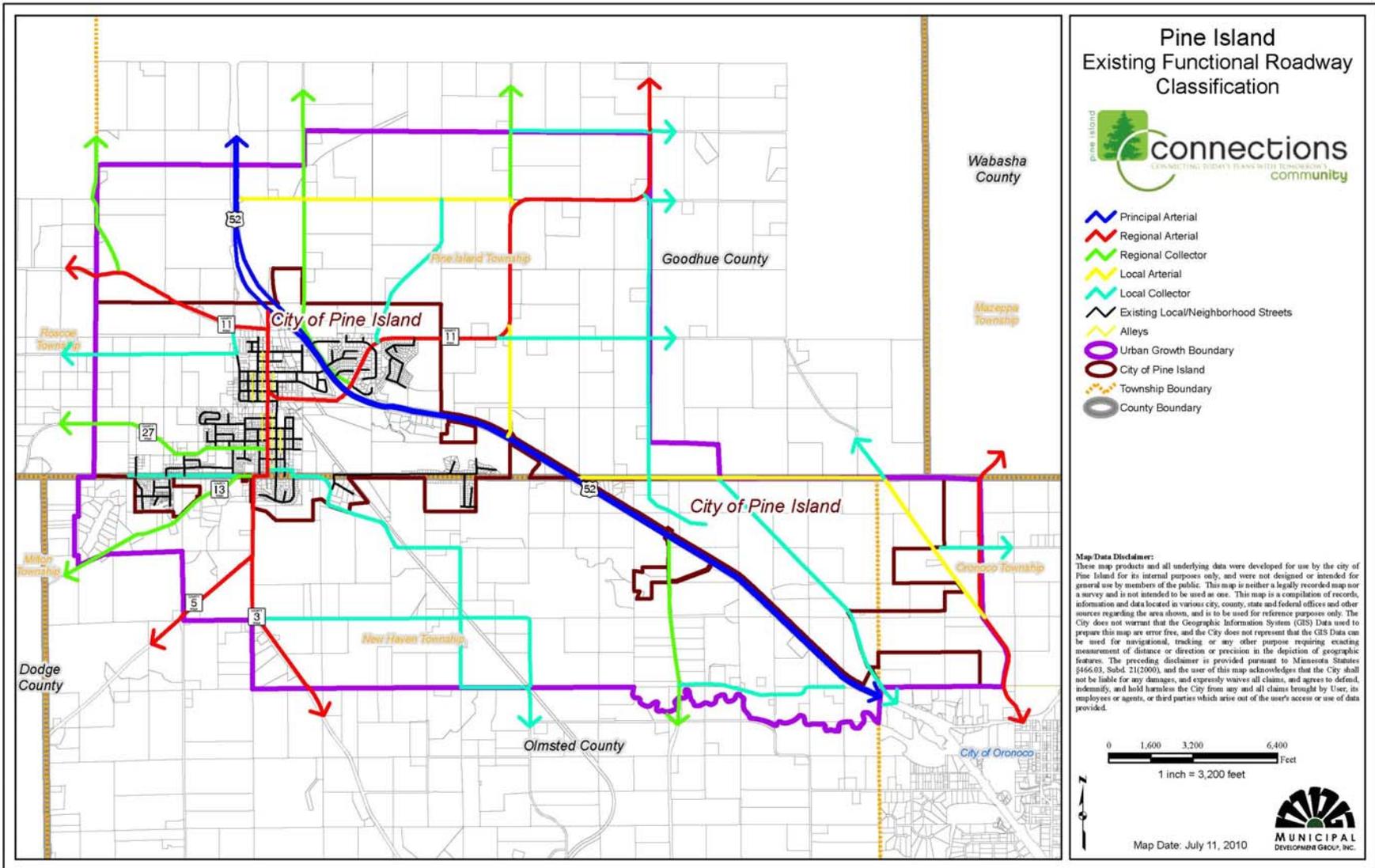
At this time approximately twenty-two (22) alleys exist within platted right-of-way within Pine Island. All of these alleys are located in the vicinity of Main Street in the original platted portions of the City.

Private Roadways

Private roadways serve as vehicular access to one or more parcels of land which is not dedicated to the public but is owned by one or more private parties. At this time private roadways are not permitted according to the current Subdivision Ordinance however, language exists under the planned unit development section of the Zoning Ordinance that theoretically would allow private roadways within the City. Private roadways should be permitted but only under the Planned Unit Development guidelines, which could require City approved homeowners associations to be responsible for ownership and maintenance of the private roadways as part of the approval. Language within both the Zoning and Subdivision Ordinance should be clarified and consistent in regards to private roadways and streets.

Private roadways should be required to be platted as outlots with drainage and utility easements in favor of the City, and should be designed and constructed in the same manner as public streets; provided the street pavement may be contained within the outlot and the balance of the street right-of-way may be contained within adjacent easements, provided that the combined width of the outlots and easements shall not be less than the right-of-way, pavement width and easement requirements for public streets within right-of-way. Very few private roadways exist within Pine Island but for those that do exist the City should look to implement a private street maintenance policy as part of the overall street maintenance policy of the City.

Figure 10 – Existing Functional Roadway Classification



Recommended Functional Classification Changes

Due to the recent collaboration with Mn/DOT in regards to a new Olmsted CSAH 5/12 and US Highway 52 interchange, major changes to the existing functional classification system will take place over the next few years. Along with the new interchange, a frontage road system and east/west regional arterial (Olmsted CSAH 5/12) will be constructed. With these new improvements comes the chance to connect newly developing areas of Pine Island with already developed areas. As this happens, the function of existing roadways will change because the new roadways tend to increase traffic in areas that have seen very little traffic in the past or decrease traffic in areas that are no longer as an important roadway with the new roadways that were constructed.

Functional classification changes that affect existing roadways within Pine Island and the Urban Growth Boundary are listed as follows and shown on Figure 11.

Regional Arterials

- *125th Street NW (from Olmsted CR 3 to 85th Avenue NW)* - This roadway is recommend to be upgraded from a local collector to a regional arterial. With the construction of the Olmsted CSAH 5/12 and US Highway 52 interchange, Olmsted County has planned to construct a new east/west corridor which 125th Street NW would become part of. This roadway will becomes Olmsted CSAH 5 west of US Highway 52 and Olmsted CSAH 12 east of US Highway 52 and will serve as the primary east/west connecting roadway in the southern portion of Pine Island.
- *500th Street (from Goodhue CSAH 11 to US Highway 52)* - This roadway is recommended to be upgraded from a local arterial to a regional arterial. As part of the overall roadway plan for the proposed interchanges along US Highway 52, Goodhue CSAH 11 is proposed to be realigned from its existing location to a new location along the northern edge of Pine Island and will serve as the primary east/west corridor in the northern portion of Pine Island. This route would require additional study and eventually a new overpass over US Highway 52.

Local Arterials

- *Goodhue CSAH 11 (from Goodhue CSAH 62 (Main Street) to 500th Street)* - Due to the proposed realignment of Goodhue CSAH 11 to 500th Street, this section of the existing Goodhue CSAH 11 will be downgraded from a regional arterial to a local arterial. By connecting neighborhoods and businesses east of US Highway 52 with downtown Pine Island, this roadway will continue to be highly traveled. Although a very important local roadway due to the existing overpass on US Highway 52, the roadway will generate less regional trips once the new alignment of Goodhue CSAH 11 is completed.
- *500th Street (from Goodhue CSAH 11 east to Urban Growth Boundary edge)* - It is recommended that this roadway be upgraded from a local collector to a local arterial. Due to the proposed realignment of Goodhue CSAH 11 to the north edge of the Urban Growth Area and the downgrading of existing Goodhue CSAH 11 to a local arterial south of 500th Street, this corridor with its direct east/west orientation with the new Goodhue CSAH 11 should be reclassified as a local arterial.
- *195th Avenue (from Goodhue CSAH 11 to 500th Street)* - Since this portion of the roadway is proposed to become part of the frontage road system for US Highway 52, it is recommended that this roadway is changed from a regional collector to a local arterial. Since this frontage road system is designed to connect important locations within Pine Island, such as commercial destinations, this roadway should be designed as a local arterial, while 195th Avenue north of 500th Street will remain a regional collector.
- *59th Avenue NW* - It is recommended to upgrade this roadway from a local collector to a local arterial. With the construction of the new interchange on US Highway 52 and the creation of a frontage road system, 59th Avenue NW will be made part of the East Frontage Road that is designed to connect important locations within Pine Island, in this case commercial destinations.

- *Olmsted CSAH 31 (from US Highway 52 to Future Olmsted CSAH 5)* - It is recommended that this roadway is upgraded from a regional collector to a local arterial. With the construction of the Olmsted CSAH5/12 and US Highway 52 interchange and the creation of a frontage road system, Olmsted CSAH 31 north of the future Olmsted CSAH 5 will be made part of the West Frontage Road that is designed to connect important locations within Pine Island. This connection will extend northwest along the west side US Highway 52 and create an important connection with Goodhue CSAH 11.
- *510th Street (from Goodhue CSAH 11 to the east edge of the Urban Growth Boundary)* - It is recommended that this roadway is upgraded from a local collector to a local arterial. By changing the classification of 510th Street which sits one mile in between 500th Street and 520th Street, which are also designated as future local collectors, to a local collector, spacing of one mile would exist between the east/west local collectors.
- *220th Avenue (from Goodhue CSAH 11 to 520th Street)* - It is recommended that this roadway is upgraded from a local collector to a local arterial which would create a spacing of one mile between 210th Avenue, which is also designated as a local arterial.
- *230th Avenue* - Although this area is not located in the Urban Growth Boundary of Pine Island it is viewed as an important long term connection. It currently is classified as a local collector and is proposed to be designated as a local arterial because it connects Ash Road NW, a future local arterial with 500th Street another future local arterial that directly connects with the future alignment of Goodhue CSAH 11.

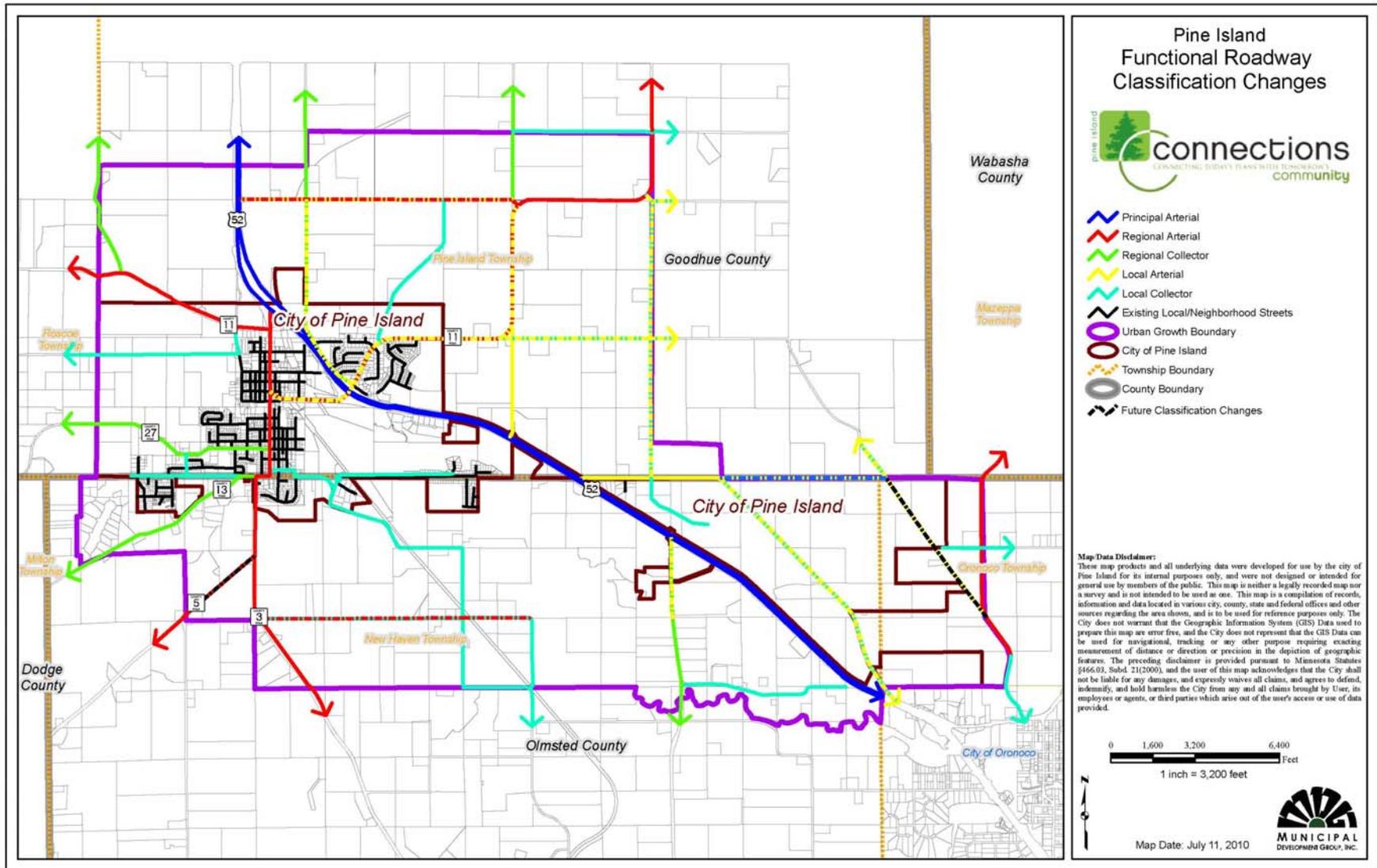
Local Collectors

- *520th Street (from 59th Avenue NW to Ash Road NW)* - With the construction of the new interchange at Olmsted CSAH 5/12 and US Highway 52 and the frontage road system, the realignment of 520th Street west of this location with 59th Avenue, this road way will decrease in importance in this area of the community and therefore it is recommended to be downgraded from a local arterial to a local collector.
- *6th Avenue SW (from Goodhue CSAH 27 (5th Street SW) to 8th Street SW)* - It is recommended that this roadway is upgraded from a local/neighborhood street to a local collector. With no north/south corridor on the west side of Pine Island, this connection which now serves as a local street will be upgraded and extended to the north to connect with 511th Street. This connection will become a north/south connecting roadway between all the future residential neighborhoods in this area.
- *8th Street SE* - It is recommended that this roadway is upgraded from a local/neighborhood street to a local collector. As the only current road access to the residential neighborhoods southeast of the Pine Island Golf Course and the golf course itself, this roadway will see increased traffic as more house are built in this area until such time that connecting roads to the south are developed. The Middle Fork Zumbro River also borders this area to the north and east and acts as a natural barrier by not allowing additional roadway connections in this direction.
- *Olmsted CSAH 18 (from the City of Oronoco boundary to the new alignment of Olmsted CSAH 12)* - As part of the realignment of this roadway into the new Olmsted CSAH 12, the southern portion of this road will become less traveled and is recommended to be downgraded from a regional arterial to a local collector.

Local/Neighborhood Streets

- *Ash Road NW* - As part of the realignment of the southern portion of Ash Road NW withwith the proposed Olmsted CSAH 12, the northern portion is recommended to be downgraded from a local arterial to either a local/neighborhood street or even vacated and redeveloped due to revised configuration of the streets in the area.
- *Olmsted CSAH 5 (connection with Olmsted CR 3)* - With the realignment of 125th Street NW and Olmsted CSAH 5 the north section of Olmsted CSAH 5 connecting with Olmsted CR 3 will become a local/neighborhood roadway since CSAH 5 will have a new alignment.

Figure 11 – Functional Roadway Classification Changes



Jurisdictional Transfers

Changes such as jurisdictional transfers (turnbacks) are a very important element in a transportation plan. Jurisdictional ownership affects many organizational functions and obligations such as regulatory, maintenance, construction and financial. The primary goal of the reviewing jurisdiction is to match the roadway's function with the organizational level best suited to handle the route's function.

The following list is the potential jurisdictional transfers as listed in the Goodhue County Transportation Plan 2004-2025 and potential jurisdictional transfers in Olmsted County due to the proposed interchange at Olmsted CSAH 5/12 and US Highway 52 and construction of a frontage road system.

- *Goodhue CR 55 (north of Goodhue CSAH 11)* - This turnback is a swap for 195th Avenue. This turnback will not result in a classification change of the roadway and Goodhue County needs to fix a bridge on Goodhue CR 55 before the turnback takes place.
- *195th Avenue (from Pine Island to Zumbrota)* - This turnback is part of the swap involving 195th Avenue for Goodhue CR 55. With Goodhue County taking jurisdictional control over 195th Avenue, it will provide a north/south route from Pine Island to Zumbrota other than US Highway 52. This turnback will not result in a classification change of the roadway.
- *500th Street (from Goodhue CSAH 11 to US Highway 52)* - This turnback to Goodhue County will become part of the new alignment of Goodhue CSAH 11 once the 2003 EA Additional Improvements are constructed. This turnback will result in 500th Street becoming a regional arterial from a local arterial.
- *180th Avenue (from Goodhue CSAH 11 to Zumbrota)* - This turnback to Goodhue County is part of a swap for Goodhue CR 43 in Roscoe Township. This swap will not result in a classification change to the roadway and will provide a parallel north/south corridor with US Highway 52 between Pine Island and Zumbrota.
- *125th Street (from Olmsted CR 3 to 85th Avenue NW)* - This turnback from a local roadway to county roadway would take place as part of the Olmsted CSAH 5 realignment at Olmsted CR 3. This turnback would result in 125th Street (Olmsted CSAH 5) becoming a regional arterial from a local collector.
- *Olmsted CSAH 31 (from US Highway 52 to the south line of the Urban Growth Boundary)* - This turnback from Olmsted County to the local jurisdiction (City of Pine Island/New Haven Township) would occur after the construction of the Olmsted CSAH 5/12 and US Highway 52 interchange and Olmsted CSAH 5/12 corridor and realignment. After the turnback the section of CSAH 31 north of Olmsted CSAH 5 would become part of the West Frontage Road and change in classification from a regional collector to local arterial and the classification section of CSAH 31 south of Olmsted CSAH 5 would remain as a regional collector.

Future Roadway Functional Classification

The future transportation system illustrated in Figure 12 is built on the guiding principle that the most efficient and effective roadway system for a community is one based on a grid of primary (arterial) roads spaced one mile apart and a grid of secondary (collector) roads spaced on ~~the~~ one half mile intervals between each primary road. The ability to attain this basic framework is dependent on natural barriers (rivers, hills, lakes), existing roadways and existing development. Furthermore, the proposed roadway improvements and future functional classification assignments reflected on Figure 12 are based on expected capacity needs, safety and traffic operations, preserving roadway corridors, and the potential need for future river crossings to enhance connectivity between community facilities and neighborhoods. These transportation elements are discussed below in further detail.

Capacity Improvements

Generally, two-lane urban collectors and arterials can accommodate up to 7,500 vehicles per day comfortably. Volumes on streets within Pine Island are generally expected to fall below this threshold, and thus, almost all streets should operate adequately as two-lane streets. Additional capacity is expected to be needed on Main Street from the proposed North Interchange to the south end of downtown, and on Goodhue CSAH 11 (Center Drive) between US Highway 52 and Main Street (Goodhue CSAH 62). There may be other locations where for capacity purposes intersections may require the addition of separate turn lanes to facilitate traffic flow, but this should be able to be accommodated within existing rights-of-way.

Safety and Operation Improvements

The Future Functional Roadway Classifications provides a guide to the planning and engineering processes for obtaining efficient and effective movement of people in the City of Pine Island. Solutions to specific safety and operational problems are difficult to identify at the system planning level. However, as county and City roadways with safety and operational problems are scheduled for maintenance improvements, design measures to remedy any safety and operational problems should be implemented.

Historical crash statistics should be reviewed on an ongoing basis to determine if specific locations display higher than average crash rates, which may qualify these locations as candidates for a traffic control change or geometric safety improvement.

Proper initial construction is the easiest and least expensive method of preventing operational or safety problems. The City should consequently establish guidelines that will help prevent future issues from arising, including adopting street design standards in the subdivision regulations. Sample design standards are included in the implementation section of this chapter. Additionally, access management guidelines should be adopted to guide proper access spacing and the number and type of access points allowed on different roadways. Access management guidelines and recommendations are also outlined in the implementation section of this chapter.

Pedestrian and bicyclist needs must be addressed when planning for future road improvements through downtown and in and around the existing and potential new school sites. Also, the confluence of Main Street (Goodhue CSAH 62), 8th Street SW, and Olmsted CR 5 at the border of Goodhue and Olmsted Counties is a complex problem. The City, along with Goodhue and Olmsted Counties, should pursue a special study to address this issue and determine a preferred solution.

Preservation

Over the next twenty plus years, especially closer to existing and expected short term growth areas, some roads will require improvements to address safety and/or capacity issues. However, several county roadways that are currently two-lane facilities, especially in undeveloped areas, will continue to be



Main Street reconstruction

adequate as two-lane facilities, but may need spot improvements to accommodate future needs. For example, it may be necessary to preserve the current and efficient traffic carrying capacity of these roadways through access modifications or adding turn lanes at key intersections.

Coordination with Other Jurisdictions

The City of Pine Island should coordinate with adjacent jurisdictions (i.e., City of Oronoco and Pine Island, New Haven, Oronoco and Roscoe Townships) as well as Goodhue and Olmsted Counties and Mn/DOT when planning future improvements. Coordination among jurisdictions may provide opportunities for collaboration that could benefit all agencies and the public. This may result in financial and time savings through economies of scale as well as potentially reducing construction impacts to residents through the coordination of projects. As mentioned earlier in this section, jurisdictional transfers, one of the ways to coordinate between jurisdictions, can allow the jurisdiction with the best ability to operate and maintain a roadway for the betterment of the entire region.

Planned Roadway Improvements

Various roadway projects are planned for construction over the next few years or proceeding through the planning process. This can include State, county or local roadways. These planned improvements can include resurfacing, bridge replacement or construction, new construction or realignment and reconstruction. The majority of these improvements will be facilitated by the new interchange on US Highway 52.

Pine Island Ring Route

As Pine Island continues to grow into the future, the City should explore the concept of a continuous route around the entire Pine Island area. For the purposes of this plan this route will be called the Pine Island Ring Route. This ring route would include future river crossings and overpasses on US Highway 52 which are discussed in more detail below. The purpose of the ring route is to provide access to all areas of the City by utilizing existing or proposed roads and making those connections. To distinguish the ring route from other roadways within the community, a parkway design could be used that increases the amount of green space within the medians and boulevards. This route may have intersections that contain right or left turns due to the regional importance of the roadways proposed to make up the ring route such as Goodhue CSAH 11 and Olmsted CSAH 5 and 12.

The proposed functional classification of the roadways that make up the ring route would include both regional and local arterials and therefore the need to include the parkway design as part of the roadway. The proposed ring route is shown in Figure 12 as having a parkway design highlighted on the roadways contained within the ring route. Since the jurisdiction of the roadways includes both Goodhue and Olmsted counties, neighboring townships and the City of Pine Island, items such as funding and design would need to be agreed upon through further discussion. Although it may take decades to complete the ring route it is important to plan for the route at this time and this planning most likely will require further study of not just the river crossings and US Highway 52 overpasses but the overall feasibility of the ring route and parkway concept.



Looking west to downtown from Goodhue CSAH 11

River Crossings

Currently, Main Street (Goodhue CSAH 62), Olmsted County Road 3, 511th Avenue and 8th Street SE represent the only crossings of the branches of the Zumbro River within the City. One additional river crossing is located on Olmsted CSAH 31 on the very south edge of the Urban Growth Boundary and Goodhue CSAH 27 crosses an unnamed tributary in the western part of Pine Island. While the construction of any new river crossings will certainly be challenging, they should be pursued if and when it is determined to be critical toward providing an efficient and effective transportation system. The City has had ongoing discussions about the need and possible locations of new crossings.

With this background in mind, the potential for new river crossings was addressed in the development of the Future Functional Roadway Classifications Map. Further study will be needed for any future river crossings including existing and future traffic volumes, the type, location, and intensity of anticipated development, and considering existing natural and built constraints (i.e. wetlands, floodplain, existing development, Highway 52, etc.). With this in mind the following has been concluded relative to new river crossings.

- A new crossing of the Middle Fork Zumbro River will be required with the construction the proposed Olmsted CSAH 5 west of Olmsted CSAH 31 to 85th Avenue NW the US Highway 52 interchange.
- A new river crossing should be considered between Olmsted CSAH 5 and Olmsted CR 13. This section of roadway would be part of the proposed ring route and would provide a double benefit of relieving some traffic demand at the Goodhue CSAH 62 (Main Street), Olmsted CR 3, 8th Street SW intersection and would also serve to link three county road routes at the edge of the community and enhance access to US Highway 52.
- A new river crossing corridor should be considered somewhere east of the Main Street bridge and north of the proposed Olmsted CSAH 5 (125th Street) river crossing. As part of the US Highway 52 upgrade a feasibility study to further define the need for a new crossing which identifies and analyzes different location options. It is expected the study would conclude, after considering factors, such as cost, environmental impacts, and consistency with planned land use, the preferred location for and timing of a new crossing. It will be essential that if and when a preferred location is identified that the corridor be further delineated and preserved to protect the necessary land for future construction. A direct result will be a new river crossing and an overpass of US Highway 52. If it is concluded on the basis of a feasibility study that a site for this river crossing can be identified and protected, it may also from a local circulation perspective be advantageous to plan for another US Highway 52 overpass that would functionally link the northeast section of the City with the southern section (via the potential new river crossing). The feasibility and location of a US Highway 52 crossing is also an issue requiring further study. The approximate preferred location of this river crossing as well as the US Highway 52 overpass is illustrated on Figure 10.
- A new river crossing of the North Branch Middle Fork Zumbro River should be considered as part of a possible ring route that would connect the Goodhue CSAH 11 with Olmsted CR 13. This corridor would serve as a north/south route connecting the arterial and collector roadways in this area.
- When bridges are upgraded accommodations need to be made for all modes of traffic including bicycles and pedestrians.

US Highway 52 Crossings

At this time the only overpasses over US Highway 52 in the Pine Island area are the overpass at the Goodhue CSAH 11 interchange and the overpass in Oronoco. Both of these overpasses are used as interchanges and over time both of these interchanges with US Highway 52 are planned to be closed leaving the bridges to function only as overpasses. Mn/DOT's long term plan for the section of US Highway 52 in the Pine Island area is to eliminate all at grade crossings and access points so US Highway 52 can function as an freeway type roadway with no cross traffic.

US Highway 52 does act as a physical barrier to the City of Pine Island in a very similar way as the Zumbro River. It is very important that Pine Island looks to minimize this barrier as much as possible by utilizing the existing overpasses and planning for new interchanges and overpasses in the future. These overpasses are very critical toward providing an efficient and effective transportation system, not only for automobile oriented traffic but pedestrian and bicycle traffic as well.

Interchanges are even more important to the community in that they provide direct access and act as a gateway to the commercial and residential neighborhoods. Often times high intensity land uses are concentrated at these interchanges such as highway commercial uses. With the EA update, current plans call for a new interchange to be located at Olmsted CSAH 5/12 and US Highway 52. Eventually a second interchange will be constructed at Main Street and US Highway 52. At that time the current interchange at Goodhue CSAH 11 will be closed and act as an overpass. The interchange in Oronoco is also planned on being closed and only used as an overpass.

With the planning for these new interchanges already underway and future overpasses viewed as an integral part of the overall long term Pine Island transportation plan the future functional roadway classifications were developed with this in mind. Proposed overpasses are listed as follows:

- With the extension of 500th Street as the future Goodhue CSAH 11, an overpass is proposed at this location. This roadway would be extended west then south to the existing Goodhue CSAH 11 and become part of the ring route around Pine Island. Further study will be required to determine if this is a feasible location for an overpass.
- The current Main Street intersection with US Highway 52 will be reconfigured and upgraded to include an overpass and new interchange and at that time Main Street will be extended north to the future Goodhue CSAH 11. It is anticipated that the land around this intersection will be developed mostly as highway commercial uses.
- The current Goodhue CSAH 11 intersection will be closed and will be used as an overpass to connect downtown Pine Island with neighborhoods on the east side of US Highway 52. This is an important location for an overpass since it will help the vitality of the downtown business district by allowing access directly to the downtown from the east side of US Highway 52.
- As a result of a potential river crossing east of Main Street (Goodhue CSAH 62) and north of the proposed 125th Street (Olmsted CSAH 5), a overpass will be needed in order to facilitate traffic through this area and connect areas east of US Highway 52 with areas on the west side. The feasibility study used for the potential river crossing should also take into account the feasibility of the overpass.
- A potential overpass north of the new interchange in Olmsted County, which will be developer driven, would be used to reduce traffic on the new Olmsted CSAH 12 corridor that is accessing the Olmsted CSAH 5/12 and US Highway 52 interchange by providing a second option to access the interchange from east of US Highway 52.
- A new interchange at Olmsted CSAH 5/12 and US Highway 52 will allow for an east/west corridor in the southern portion of the City and will become part of the ring route around Pine Island. This will serve not only the Pine Island area but the entire northern portion of Olmsted County demonstrating its importance.
- With the construction of the new interchange at Olmsted CSAH 5/12 and Us Highway 52, the interchange in Oronoco would be closed and



Looking north on Main Street across Zumbro River bridge

become an overpass. While this is located outside of the Pine Island Urban Growth Boundary, the frontage road system that would feed this interchange would larger be used by traffic from Pine Island and therefore serve as an important crossing on US Highway 52.

With the above mentioned transportation items, several new roadways are planned within the City and Urban Growth Boundary as part of this Comprehensive Plan. However, these improvements are largely driven by development and many of these roadways will not need to be constructed until such time that the landowner or developer has petitioned the City for annexation and requested development approval. However, at this time some of these future roadways are planned to be constructed over the next few years but most of the future roadways listed below could take years before they are realized. The following list illustrates all of the proposed future roadways as shown on Figure 12.

Regional Arterials

- Extending the proposed Olmsted CSAH 5 (125th Street NW) west from Olmsted CR 3 to the existing Olmsted CR 5 and east at the east end of the existing 125th Street NW across the Middle Fork Zumbro River and US Highway 52 to Ash Road NW then southeast to Olmsted CSAH 18 with a new section connection to the existing Olmsted CSAH 12. This section of roadway would be part of the Pine Island ring route.
- A new roadway extending north from Goodhue CSAH 11 then east to US Highway 52 and connecting with the proposed new alignment of Goodhue CSAH 11. This section of roadway would become part of the Pine Island ring route (proposed Goodhue CSAH 11 or north/south portion is 185th Avenue and east/west portion is 500th Street).
- A new north/south road by extending Main Street to 500th Street across US Highway 52 (Main Street).

Local Arterials

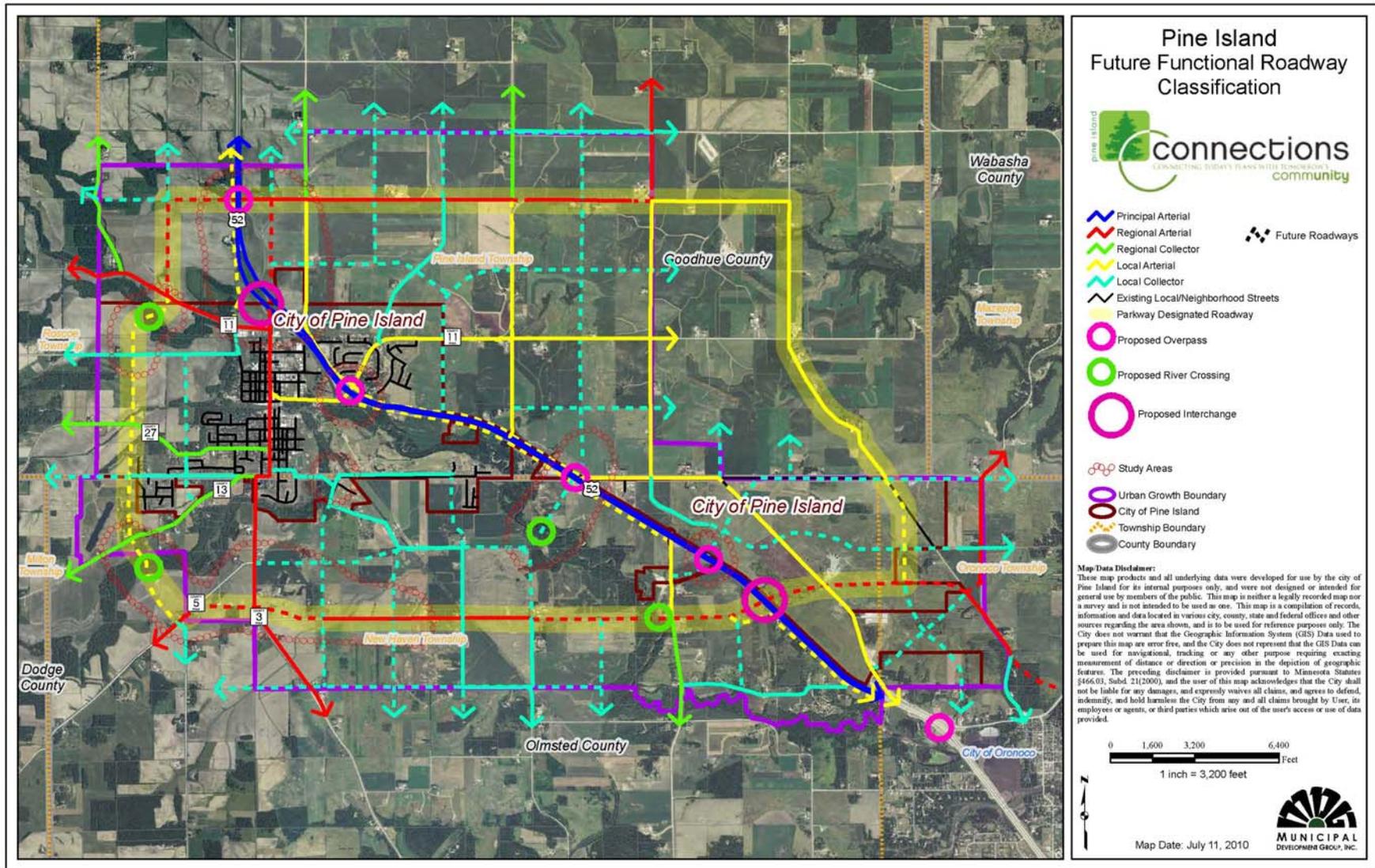
- A new north/south road from Goodhue CSAH 11 south across the Middle Fork Zumbro River to Olmsted CSAH 5. This section of roadway would become part of the Pine Island ring route.
- A new north/south road at 3rd Avenue NW from Goodhue CSAH 11 north to Urban Growth Boundary line. This section of roadway will be included as part of the US Highway 52 frontage road system.
- The realignment of Ash Road NW as a north/south road from the proposed Olmsted CSAH 12 to the Urban Growth Boundary line where 230th Street connects. This section of roadway would be part of the Pine Island ring route.
- A new roadway from the existing Goodhue CSAH 11 to 520th Street along the north side of US Highway 52. This section of roadway will be included as part of West Frontage Road.
- A new section of roadway from the existing Goodhue CSAH 11 to Goodhue CSAH 31 along the south side of US Highway 52. This section of roadway will be included as part of West Frontage Road.
- A new section of roadway from the proposed Olmsted CSAH 5 to the municipal boundary of the City of Oronoco along the south side of US Highway 52. This section of roadway will be included as part of the West Frontage Road.

Local Collectors

- A new road running southwest to northeast from 59th Avenue NW to the intersection of the proposed Olmsted CSAH 12 and Olmsted CSAH 18.
- A new north/south road extending south from the proposed realignment of the Ash Road NW and Olmsted CSAH 12 intersection to the south to the Urban Growth Area Boundary.

- A new road from Olmsted CSAH 31 northeast across US Highway 52 to connect with 520th Street.
- An extension of Bio Science Drive across 59th Avenue NW to the east to 130th Street NW.
- A new east/west road from 210th Avenue to 220th Avenue (515th Street).
- A new north/south road from the intersection of 520th Street and 59th Avenue NW north along the Urban Growth Boundary line (225th Avenue).
- A new east/west road and north/south road heading west from the east boundary of the Urban Growth Area at 220th Avenue then turning south to the proposed East Frontage Road along the north side of US Highway 52 (505th Street & 17th Avenue NE).
- A new north/south road from the north line of the Urban Growth Boundary south to US Highway 52 where a proposed overpass is to be constructed and connect with the proposed 130th Street NW (215th Avenue).
- A new east/west road from the future extension of Main Street past 203rd Avenue to the proposed 17th Avenue NE. (505th Street).
- A new east/west road between 195th Avenue and 203rd Avenue (509th Street).
- A new north/south extension of 203rd Avenue from 500th Street to the north line of the Urban Growth Boundary (205th Avenue).
- A new north/south road from the extension of 495th Street to the south to the proposed 505th Avenue (200th Avenue).
- A new east/west extension of 495th Street to the west to the Urban Growth Boundary line (495th Street).
- A new north/south road from 500th Street and Main Street to the Urban Growth Boundary line (Main Street).
- A new north/south road from the intersection of the future alignments of 500th Street and 185th Avenue, north to the Urban Growth Boundary line (185th Avenue).
- A new east/west road from the intersection of the future alignments of 500th Street and 185th Avenue, west to the Urban Growth Boundary line (500th Street).
- Extending 8th Street SW west to the Urban Growth Boundary line.
- Extending 6th Avenue SW from 8th Street SW southeast to Olmsted CR 13 and extending 6th Avenue SW north to 511th Street from Goodhue CSAH 27 (5th Street SW).
- Extending 19th Avenue SE southerly to New Haven Drive (90th Street NW).
- A new north/south road from New Haven Road NW to the 125th Street NW and south to Urban Growth Boundary line (95th Street NW).
- A new north/south road from New Haven Drive just south of the 8th Street SE river crossing to the 125th Street NW (Olmsted CSAH 5) and south to Urban Growth Boundary line (100th Street NW).
- A new east/west road from the intersection of Olmsted CR 3 and Olmsted CR 5 east to the existing New Haven Road NW then extending New Haven Road NW east before it turns northeast to cross the Middle Fork Zumbro River and US Highway 52 at a proposed overpass (130th Street NW).
- A new east/west road along the southern boundary of the Urban Growth area from west of Olmsted CR 3 east to the existing New Haven Road NW then extending New Haven Road NW east one half mile (120th Street NW).
- A new north/south road from Olmsted CSAH 5 (125th Street NW) north to the future 130th Street (85th Street NW).
- A new north/south road from Olmsted CSAH 5 (125th Street NW) south to the Urban Growth Boundary line (80th Street NW).
- A new north/south road from 120th Street NW to the West Frontage Road south of the new Olmsted CSAH 5/12 and US Highway 52 interchange (69th Street NW).

Figure 12 – Future Functional Roadway Classifications



Land Use Impact on Future Traffic Volumes

With this comprehensive plan in place and substantial changes to the regional highway system imminent, the need to focus on the local transportation needs of the community becomes evident. When the first Comprehensive Plan was approved in 2005, the Local Solutions Alliance (LSA), a collaborative planning initiative comprised of Mn/DOT and Minnesota Planning, targeted funding to develop a local circulation plan for Pine Island in response to this need. This cooperative planning study served as a supplement document to the Pine Island Comprehensive Plan.

Since that time, the expansion of Pine Island along with the proposed new interchange and roadway improvements has furthered the need to plan for the local transportation system. The original study area included the existing city limits of Pine Island and properties adjacent to the City, which was identified during the US Highway 52 planning study, on the previous Pine Island Land Use Plan Map. The future land use area within the City and Urban Growth Boundary, shown as Figure 3 in the Land Use Section, has been enlarged creating the need to look at the future roadway alignments, classifications and intersections in this area.

The City of Pine Island is both a service center for the surrounding agricultural area, a new housing center for economic growth based in Rochester and potentially a regional center for bio-business development and businesses which will also stimulate housing growth within the City. Due to the anticipated growth in residential, commercial, and light industrial development, the transportation system within and around the City will be challenged to keep pace to accommodate increase transportation needs and demands.

Primary Objectives of the future transportation system is to provide a high-level assessment of the major transportation issues and assemble recommendations for both short- and long-term transportation improvements. This future transportation system includes planning and analysis of added pressure and demand for transportation facilities that are expected to result from anticipated growth within the City of Pine Island over the next 20 plus years.

Integrating land use development and transportation planning recognizes the interdependence between the regional and local transportation network and the adjoining land uses. The relationship between land use development and transportation planning includes, but is not limited to, the following:

- The number of vehicle trips generated on any given parcel of land can vary tremendously depending on the type and density of land uses that the City chooses to allow, consistent with its vision for growth.
- The anticipated growth within the community requires planning to determine how well the roadway network will serve the needs of residents, businesses, commuters, commercial transporters, and others traveling within the City, as well as along US Highway 52.
- Transportation planning assists in determining what types of future land use planning guidelines should be established to help ensure that essential roadway elements, such as capacity and safety improvements, do not fall short of travel demands and that land use conflicts are minimized.
- Replacing at grade access on US Highway 52 requires development of complete service road network or frontage road system.

Growth within the City of Pine Island and within the region will continue to have an impact on the existing transportation system both in terms of increased traffic volumes and safety concerns. The future land use map suggests that future commercial development will be focused on US Highway 52 and the proposed new interchanges. Industrial areas, while not entirely dependent on the proposed interchanges, also is focused near these areas. New residential neighborhoods will be connected primarily by local collectors that access the larger arterial roadways throughout the City and Urban Growth Area. At the current time, Pine Island has large areas of undeveloped land in the south and east portion of the City in Olmsted County that is very disconnected from the traditional center of Pine Island. The proposed Olmsted CSAH 5/12 and proposed interchange on US Highway 52 in this area is a

very important corridor since it will create a direct transportation link between the traditional center of Pine Island and the newly developing areas along US Highway 52 other than the indirect links that currently exist like New Haven Road NW to 117th Street NW to CSAH 31. As other areas develop further away from US Highway 52 as primarily lower density residential it is very important to continue to plan for these transportation corridors to connect the new neighborhoods with the developed portions of the City not only by automobile but by pedestrian means such as trails or sidewalks. Furthermore, an increase in demand for access to regional corridors, such as US Highway 52, may develop as Rochester and the Twin Cities continue to expand.

Multi-Modal/Inter-Modal Opportunities

Travel modes that are alternatives to private use of the automobile are growing in importance in all urban and urbanizing areas throughout the state and nation. It is now recognized that due to economic, social, and environmental constraints, we cannot build our way out of congestion caused by increased travel demand. Alternative modes of transportation must be pursued. Transit, bicycles, and pedestrian facilities must be planned, supported, and enhanced in the future.

Transit

Outside the City of Rochester, there are limited public transit services currently available. Currently, there is a private commuter bus service supported by the Mayo Clinic that serves communities along the US Highway 52 corridor as far north as Zumbrota. As Pine Island grows in the future, express bus service to and from Rochester may become an option to serve some traffic demand along US Highway 52. Future transit stations could be co-located with park-and-ride facilities to enhance the convenience of transit services.

Park-and-Ride Facilities

With continued growth in commuter traffic to Rochester, additional park and ride provisions will be needed into the future. The new US Highway 52 interchanges will become focal points for access to the regional highway system. Providing for park and ride accommodations in proximity to the interchanges would enhance carpooling activities. Pine Island should look to partner with Mn/DOT and private property owners so guidelines for the preservation of potential sites that can accommodate park and ride facilities are established. To ensure these sites and facilities are utilized to their fullest extent, they should be designed with convenience of the user in mind. Quick and easy access may be the most important design element to promote the use of a park-and-ride facility.

Bicycling and Pedestrian Facilities

In recent years, increased attention has been given to bicycles not only as a means of recreation, but also as a means of practical transportation. Although the trips have many similarities, people biking for recreation often value different facility characteristics than those biking to an employment or shopping destination. Two basic needs for improving bicycling/pedestrian facilities for all purposes are:

1. The need for continuous facilities that connect important origin and destination points. This includes removing physical barriers and ensuring system continuity is maintained across political boundaries; and
2. The need to provide facilities with increased safety for the user.

Though a bike/pedestrian trail system can serve some commuter transportation demand, the facilities typically service recreational needs. The concepts developed as part of this planning process could serve both user types. As illustrated on Figure 13, Future Trails, the proposed trail system would enhance connections through the community, across US Highway 52 and the rivers, and to recreational amenities within Pine Island.

The development of the proposed trail system indicated on Figure 11 will primarily be a local responsibility. The development of the local trail system would likely follow one of the three following scenarios:

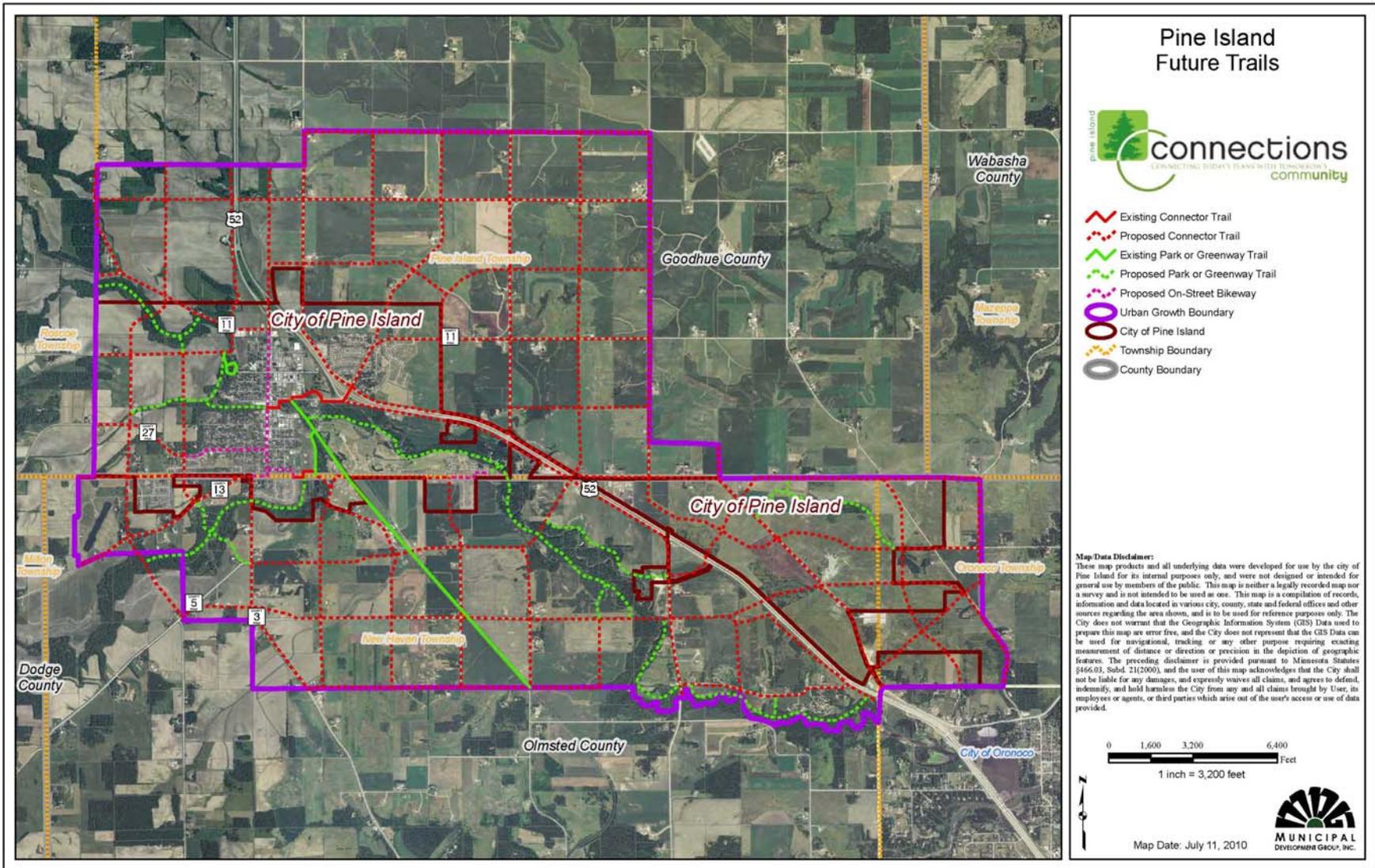
1. For trails built at the time of road construction or reconstruction, Pine Island would most likely need to participate in funding of additional right-of-way or easements for the trail and will need to provide funding through local sources or grant revenue for grading and surfacing.
2. The City can also pursue trail development on a parcel by parcel basis, securing easements at the time of development until such a time when enough easements have been acquired for a logical trail section to be constructed.
3. As new development occurs, trails located on the future trails map can be required to be constructed and the appropriate easements or right-of-way dedicated by the developer as part of the development approval. New development approved under the Planned Unit Development process may require additional trails not shown on the future trails map that would also be the responsibility of the developer.

A more detailed look at the design and location of the proposed trail system can be found in the Parks, Recreation and Open Space chapter of this plan. The four trail designations are park trails, connector trails, on-street bikeways and special use trails.



View along Douglas Trail

Figure 13 – Future Trails



POLICIES, GOALS AND OBJECTIVES

The proposed Olmsted CSAH 5/12 and US Highway 52 interchange and consequent realignments will have a substantial impact on both motorized and non-motorized transportation alternatives in Pine Island. As the City grows, the characteristics of the local and regional transportation infrastructure will affect where housing is built, whether businesses locate or expand in Pine Island, and whether residents perceive their quality of life to be high. Transportation policies must acknowledge the inter-connectedness of land use, infrastructure, open space, and transportation.

Transportation Policies, Goals and Objectives

The following transportation goals and policies reflect the City’s vision of its future transportation system. The policies below should be applied when considering potential transportation improvements throughout the City.



Goodhue CSAH 11



Main Street bridge



Douglas Trail near Pine Island School

Policy 1. The transportation system in the City of Pine Island shall facilitate the safe and efficient movement of its citizens within the City and to and from regional highway facilities.

- Goal A. Develop a functional classification system of existing and future roads within the City and surrounding Urban Growth Area to promote orderly development and convenient access for people and goods.
- Goal B. Prepare and annually update a five-year Capital Improvement Program (CIP) that plans infrastructure improvement, maintenance, and replacement programs that maintains the existing roadways, trails, and sidewalks, while promoting orderly development in new areas.
- Goal C. Promote the development of a comprehensive street and highway system that defines the design standards and location of collectors and arterials consistent with this plan.

Policy 2. The planned transportation system should provide for the vehicular and non-motorized mobility needs of citizens and businesses in the City as one system to be coordinated and related on a comprehensive basis.

- Goal A. Require new development to provide an adequate system of local streets while limiting direct access to arterials and collectors ensuring adequate distance between intersections and utilization of appropriate traffic control methods and devices in order to insure the safe and efficient functioning of the arterial and collector roadway system.
- Goal B. Adopt site development performance standards that minimize impacts to the supporting road network including standards that address the following: off-street parking for any new or expanding land use; internal traffic circulation and separation of parking maneuvering areas from driveways; stacking spaces for drive-thru facilities; maneuvering space for delivery and service vehicles; and driveway widths and off-site turn lanes.
- Goal C. Require the dedication or preservation of transportation right-of-ways when property is platted or

subdivided, and use the site planning and platting process to create safe and efficient roadway design.

- Goal D. Encourage design of all local/neighborhood residential streets to prevent penetration by through traffic, and properly direct traffic to collector or arterial streets.

Policy 3. The future transportation system shall provide for a connected, coordinated, and affordable network of transportation facilities within and through the City of Pine Island.

- Goal A. Establish a local transportation network that preserves neighborhood identity but links neighborhoods together to community facilities, such as schools and activity centers.
- Goal B. Require sidewalks along both sides of local/neighborhood streets and provide pathways/trails along at least one side of regional and local arterials and regional and local collectors.

Policy 4. The US Highway 52 Plan will support the creation of infrastructure to encourage alternatives to single occupant motor vehicles.

- Goal A. Work with Mn/DOT to preserve the function, enhance the safety, and implement the future upgrading of US Highway 52.
- Goal B. Preserve and improve access to and from US Highway 52 in a manner that enhances local access, safety, and mobility.
- Goal C. Partner with Mn/DOT to plan for the future establishment of a park and ride facility by establishing guidelines on how to preserve potentially viable sites.
- Goal D. Require adequate transitions and buffers to mitigate the undesirable impact of high volume roadways, including but not limited to earth berms, walls, landscaping and distance.

Policy 5. The future transportation system shall balance transportation needs with significant environmental factors and the desired land uses as identified in the Land Use chapter of the Comprehensive Plan.

- Goal A. Plan, design, and construct both public and private transportation related transportation improvements that respect the natural environment and reflect the aesthetic character, historical and cultural context, and values of the citizens of Pine Island, while managing and shaping growth consistent with the land use policies of the Comprehensive Plan.
- Goal B. Control the placement of off-site advertising signage along the US Highway 52 corridor and standardize sign requirements. Increase the minimum distance between billboards from the current requirement of 1,500.
- Goal C. Plan transportation facilities to function in a manner compatible with adjacent land uses; in those instances where the function of a transportation facility has changed over time and has become incompatible with adjacent land uses, establish a program to eliminate this incompatibility.
- Goal D. Include appropriate urban design treatments as part of the roadway development to enhance the aesthetic amenities provided within the community.



Newly installed sidewalks looking east on 5th St. SW

Policy 6. Transportation planning shall be a collaborative effort between the City of Pine Island and surrounding jurisdictions: Goodhue and Olmsted counties; the City of Oronoco; New Haven, Pine Island, and Oronoco Townships; and Mn/DOT.

- Goal A. Continue ongoing communication between the City of Pine Island, Goodhue County, Olmsted County, and Mn/DOT in the review of rezoning, conditional use permit, variances and plat requests that may affect roadways under the jurisdiction of these other entities and coordinate transportation planning and implementation with neighboring and affected jurisdictions.
- Goal B. Coordinate and plan road improvements with appropriate road authorities including identification of jurisdictional responsibilities and collaborative financing mechanisms.
- Goal C. Plan, design and develop a roadway system in areas where incomplete street facilities and connections exist that reflects the highest standards and relates land use to transportation needs and policies. Action should be taken as soon as possible to preserve required right-of-way to prevent additional costs and difficulties.

IMPLEMENTATION

To meet its transportation policies and goals the City of Pine Island should adopt management and planning systems for transportation design and performance measurement. These systems include reviewing the City of Pine Island Roadway Design Guidelines, right-of-way dedication and preservation standards and access management strategies, all of which are explained in more detail below. In addition to these standards the City should consider a number of other recommended transportation improvements and implementation steps that are summarized in this section. Finally, the City should consider its Funding and Financing Options for transportation projects, including federal, state, county, and local sources of funding which are also identified below.

City of Pine Island Roadway Design Guidelines

Roadway Design Elements

Most cities typically undergo considerable discussions relative to roadway design, including widths, access spacing, speed limit, classifications, etc. in conjunction with development proposals or reconstruction plans. At this time the City has adopted roadway design guidelines with the design criteria that should be used as guidance for the development of the roadway system in the City of Pine Island. Each segment of roadway within the City of Pine Island should be reviewed in greater detail at the time of design and/or construction in order to provide the necessary design elements to accommodate the specific amount and type of traffic projected.

The design guidelines include criteria and discussion on functional classifications and access control, level of service and capacity, and design considerations for medians; width and cross slope; shoulders and curbs; turn lanes; right-of-way; design speed; structural design; roundabouts; typical sections; and record drawings. After the Comprehensive Plan adoption, the current roadway design guidelines should be reviewed and revised accordingly to ensure they are consistent with the recommendations of this Comprehensive Plan.



County Road 11 along Pine Island Cemetery

Access Management Strategies

What is Access Management?

Access management is a tool for providing access to land development, while preserving the safety, capacity, and operation of the transportation system. Access management consist of carefully controlling the number, location, design, and operation of all driveway and street intersections, which also helps preserve community character, promote economic development, and protect the public investment in the road system. The City has identified access management as a primary tool for meeting its adopted transportation policies and goals.

Benefits of Access Management

Access management systems recognize that different roads serve different purposes. The implementation of access strategies can have significant benefits on the traffic operations of a roadway and help address some of the issues associated with conflicts between through traffic and local traffic. Several of these benefits are listed below.

- Reduce congestion and crashes.
- Preserves roadway capacity and postpones the need for additional travel lanes.
- Reduces travel time for efficient delivery of goods and services.
- Provides easy movement to destinations for the traveling public.
- Promotes sustainable and orderly community development.

Implementing effective access management involves recognition of five key principles that can be applied through a number of techniques to achieve the desired benefits. These principles are:

- Limit the number of conflict points that occur along sections of arterial and collector roadways.
Discussion: This could include restricting the level of access at any given location (i.e., closing a median to restrict turning movements)
- Separate conflicting movements where possible when the number of conflicting vehicle movements reaches certain thresholds.
Discussion: Research has indicated that there is relationship between crash rates and access density on all categories of major roads that does not appear to be related to volume or speed. Minimizing access and conflict along sections of major roads has a positive impact on safety of the roadway.
- Reduce interference of through traffic by turning traffic.
- Provide sufficient spacing between intersection or access points.
Discussion: In addition to the safety issues associated with the conflict created by turning vehicles at an intersection or driveway, there is also an impact to through traffic capacity and safety resulting from the speed differentials created by turning vehicles. When volumes reach certain thresholds, it is desirable to separate turning and through traffic to maximize capacity and minimize conflict.
- Provide adequate onsite circulation and vehicle storage areas for commercial and industrial developments to prevent queuing or delay from affecting the traffic flow on public streets.
Discussion: Inadequate design of driveways, access drives, or parking lots can create impacts to the traffic on the public street if it creates queuing, delay, or the spillback of traffic onto public streets.
- Provide greater driveway setback distances from public intersections on corner lots as opposed to interior lots.
Discussion: Corner clearance provides adequate space for vehicle queuing at the intersection, and allows persons making a turn at an intersection the ability to get oriented to traffic conditions on the street they are turning onto before encountering the first driveway location.

Access Management Toolbox

Access management is achieved through the systematic application of planning and design strategies to manage the number, location, design, and

operation of access features, such as driveways and new street connections. Access management needs to be a consideration throughout the development review and approval process, from the earliest site development planning, through the platting stage, and culminating at the time a zoning or building permit is reviewed for an individual site.

Effective access management begins with thoughtful community development and roadway design. Development practices that promote effective access management include avoiding strip or linear commercial development along arterials and collectors where each individual use needs to be served by its own individual driveway to the roadway, and by providing an adequate supporting network of local streets that can consolidate access traffic to public street intersections along arterials and collectors. Effective site and road development practices include consideration to driveway design and spacing, development of turn lanes, and treatment of the median area on abutting roadways.

Driveway access on City Streets, no matter the functional classification, contribute to accidents and reduced traffic flow because they add to the number of locations where vehicle conflicts can occur. There are a host of access management techniques that can be used to achieve the benefits of access management. Techniques that should be utilized or local policies and ordinances should include the following:

- Requiring adequate space between street or driveway connections to major roadways based on the type of development and speed of travel.
- Sharing of access points along major roads between adjacent properties and with properties located across the road from the site under consideration.
- Limiting the number of access points to those that are actually needed to safely accommodate the traffic generated by each development or individual properties.
- Requiring direct property access to be provided via lower lever collector streets or local/neighborhood streets.
- Ensure proper roadway design to accommodate driveway traffic and minimize vehicle conflicts without significantly reducing roadway capacity such as providing left and right turn deceleration or acceleration lanes.
- Giving consideration to offsetting driveways if adequate spacing can be provided to minimize the number of conflict points between driveway traffic and through traffic.
- In the case of high volume access driveways and high volume through street traffic, using median barriers to restrict or limit the turning movements that can occur. The ability to implement these techniques is dependent in large part on the land development conditions. Some techniques are more applicable in areas with existing development, while others are more applicable in advance of land development. The two access consolidation applications described below address this issue.



Main Street looking south from bridge

Occasionally, topographic features or a particular site or the needs of a particular land use may require special access features in a proposed development. The City may wish to withhold approval of these individual developments or access points until a study has been made of the potential impacts on the affected roadways and the adequacy of the proposed access design is determined.

Access Management with Existing Development

Access consolidation techniques are most applicable in situations where there has already been a substantial amount of land development. Consolidation simply reduces the number of access points from driveways directly to a roadway thereby decreasing the number of potential conflict points. Consolidation of access can be accomplished at the time of redevelopment of a parcel(s). As part of the redevelopment process, the local government can work with the property owner(s) to encourage reducing the number of direct access points by consolidating access to a single point or potentially by providing alternative access from a secondary roadway. Consolidation of access can be required as a condition of redevelopment approval. Cross-access easements are another form of access consolidation. This technique involves agreements between adjacent property owners to maintain a joint access point serving multiple properties. It can be especially applicable along sections of roadway where a number of adjacent individual residential/commercial lots have been developed, but there are currently too few lots to make construction of a public street feasible.

Access Management with New Development

The optimal time to implement access management techniques is at the time a parcel(s) is first developed. When a property owner(s) submits a development request to the governmental unit, specific access management techniques can be required of the development prior to granting development approval. As a condition of development approval, a landowner or developer may be required to dedicate and/or set aside right-of-way to accommodate future construction of supporting roads or a corner lot may have to shift their access from an arterial or collector roadway to a local/neighborhood street.

Recommended Access Management Standards

Access spacing standards are established to reflect the categories of major roads, the character of the area under development, and whether the proposed connection is for a public street or private access. Table 14 and Table 15 on the next page, outlines the recommended access spacing guidelines by major roadway classification. The guidelines, which are derived from Mn/DOT's Access Category System and Spacing Guidelines, have been tailored to reflect the recommended functional classification system for Pine Island.

Application

The access management standards are intended to be guidelines for the City to utilize as new development or redevelopment occurs. The intent is that over time as lands are fully developed or redeveloped, the access to different classes of roadways will meet these guidelines. If there are existing problems or a major road reconstruction project is proposed, the techniques in the toolbox and these standards can also be applied as a guide to retrofit existing roadways.



Goodhue CSAH 11

Table 14 – Pine Island Access Management Guidelines

| Functional Classification | Area Type | Intersection and Access Point Spacing | | Private Access |
|---------------------------|------------------|--|--------------------|--|
| | | Full Median Opening | Right-In/Right-out | |
| Regional Arterials | Urban Core | 300-660 feet dependent upon block length | | Only if there are not other alternatives |
| | Urban/Urbanizing | 1/4 mile | 1/8 mile | |
| | Rural | 1/2 mile | 1/4 mile | |
| Local Arterials | Urban Core | 300-660 feet dependent upon block length | | |
| | Urban/Urbanizing | 1/4 mile | 1/8 mile | |
| | Rural | 1/2 mile | 1/4 mile | |
| Regional Collectors | Urban Core | 300-660 feet dependent upon block length | | 200 feet and subject to intersection functional area |
| | Urban/Urbanizing | Per Table 15 | | |
| | Rural | | | |
| Local Collectors | Urban Core | 300-660 feet dependent upon block length | | |
| | Urban/Urbanizing | Per Table 15 | | |
| | Rural | | | |

Source: City of Pine Island Roadway Design Guidelines, 05/2009

Table 15 – Minimum Spacing and Sight Distance Requirements for Intersections and Access Points

| Speed Limit (mph) | Standard (feet) | Minimum (feet) |
|-------------------|-----------------|----------------|
| 30 | 325 | 200 |
| 35 | 400 | 250 |
| 40 | 475 | 325 |
| 45 | 550 | 400 |
| 50 | 650 | 475 |
| 55 | 725 | 550 |

Source: City of Pine Island Roadway Design Guidelines, 05/2009

Right-of-way

Right-of-way is a valuable public asset and needs to be protected and managed in a way that respects the roadway's intended function and classification. With Pine Island's recent and anticipated growth, the City will need to reconstruct, widen and construct new roadway segments to meet future capacity and connectivity demands. Such improvements will require that adequate right-of-way be maintained or secured and to ensure consistency a set of right-of-way guidelines have been established and included in this plan. Use of these guidelines during the right-of-way acquisition or corridor preservation process will, over time, reduce cost and streamline project development. These guidelines are shown in Table 16 on the next page.

Table 16 – City of Pine Island Right-of-way Guidelines

| Functional Class | ROW Widths * |
|--|--------------|
| Local/Neighborhood | 66 FT |
| Local/Neighborhood Commercial and Industrial | 80 FT |
| Local Collector | 80 FT |
| Regional Collector | 100 FT |
| Local Arterial | 100 FT |
| Regional Arterial | 150 FT |
| Parkway | 120 FT |

Note: Due to certain development conditions, physical features or traffic counts of the site or highway, the City may require additional right-of-way width greater than shown in the right-of-way guidelines. In addition, right-of-way needs may be greater at intersections in order to accommodate additional geometric configurations (i.e., signals, turn lanes, roundabouts, etc.).



Pine Island entrance sign

Right-of-way Preservation

When future expansion or realignment of a roadway is proposed, but not immediately programmed, the City will consider right-of-way preservation strategies to reduce costs and maintain the feasibility of the proposed improvement. Several different strategies will be used to preserve right-of-way for future construction, including advance purchase, zoning and subdivision dedication techniques and official mapping. Before implementing any right-of-way preservation programs, Pine Island should weigh the risks of proceeding with ROW preservation without environmental documentation including wetland delineations, river crossing feasibility reports or a natural resources inventory. (Note: Mn/DOT policy requires environmental documentation prior to purchase.) If environmental documentation is not completed, the City risks preserving right-of-way for a corridor or parcel that has associated environmental issues.

Direct Purchase is one of the best ways to preserve right-of-way. Unfortunately, agencies rarely have the necessary funds to purchase right-of-way in advance, and the public benefit of purchasing right-of-way is not realized until a roadway or transportation facility is built. Most typically, local jurisdictions utilize various corridor preservation methods prior to roadway construction and then purchase the right-of-way if it is not dedicated, at the time of design and construction. However, because of the proposed development in the City the majority of new right-of-way for local roads will be dedicated through the development process, while the right-of-way for county roads will most likely be a combination of dedication through the development process and direct purchase.

Recommended Transportation Improvements

The following recommended improvements to the City of Pine Island and Urban Growth Boundary transportation system will help the City meet its adopted policies, goals, and objectives over the next twenty plus years. The recommendations have been grouped into the following categories:

- Policy/Administration Activities
- Studies
- Projects

The recommendations range from roadway improvements, to safety solutions, to functional classification systems, access management, and pedestrian/bicyclist improvements. The specific recommendations are detailed below.

Policy/Administration Activities

- Review and adopt the suggested jurisdictional classification guidelines, the functional classification guidelines, the access management guidelines, the right-of-way guidelines and the minimum driveway distances from intersecting streets, all discussed in this chapter, as part of the Subdivision Ordinance and/or City of Pine Island Roadway Design Guidelines.
- Review and amend the City of Pine Island Roadway Design Guidelines as needed to be consistent with the Comprehensive Plan and City ordinances.
- Implement the functional classification changes recommended in this chapter of the Comprehensive Plan as traffic volumes, jurisdictional transfers, reconstruction of the roadways or new development requires the classification changes to be made.
- Adopt provisions that require sidewalks along both sides of all streets within the traditional lot and block area of the original Pine Island Townsite except industrial zoned areas where one side is sufficient, sidewalks along one side of all local/neighborhood streets outside the traditional lot and block area of the original Pine Island Townsite and trails along one side and sidewalks along the opposite side of the trails on all collectors and arterials excluding principal arterials.
- Work with Goodhue and Olmsted Counties to identify and discuss potential solutions for enhancing local and county patrol services to address ongoing traffic speeding concerns.
- Adopt site performance standards to minimize adverse impacts of land development on the supporting road network. Revise off-site signage regulations to increase the minimum distance of 1,500 feet between billboards on US Highway 52.
- Continue to coordinate with Olmsted and Goodhue Counties to address county road concerns in the community (i.e., Olmsted CR 3).
- Work with Pine Island, New Haven and Oronoco townships to coordinate jurisdictional transfers of roadways and as annexation occurs, agree upon a maintenance schedule or cost sharing agreement of roadways under the jurisdiction of both the City and townships.
- After the adoption of this plan, administer the standards proposed in the plan and use the future functional roadway classification map as a guide for future development of the transportation system in both alignments and functional classifications.
- Review and amend the private street requirements as to whether they will be permitted and the standards they will follow. These standards will need to be incorporated into the City ordinances to ensure consistency with this plan.
- Adopt a private street maintenance policy as part of the overall street maintenance policy to ensure clarity between the differences of private and public streets. Items to be addressed include maintenance, design standards and ownership.

Studies

- Conduct a study to determine the feasibility, preferred location, and timing for a new river crossing of the Middle Fork Zumbro River east of the Main Street bridge in downtown Pine Island and north of the proposed Olmsted CSAH 5 river crossing. This study should include consideration of a potential new overpass of US Highway 52 somewhere in the vicinity of 520th Street intersection with US Highway 52 between the existing Goodhue CR 11 interchange and the planned new interchange at Olmsted CSAH 5/12.
- Conduct a study to analyze and identify a preferred concept for reconstructing/realigning the Main Street, 8th Street SW, Olmsted CR 3 intersection.
- Conduct a study to determine the feasibility, preferred location, and timing for a new river crossing in the southwest section of the Urban Growth Boundary to link Olmsted CR 13 with Olmsted CSAH 5.
- Pursue a study or partnership with Mn/DOT, Olmsted County, and Goodhue County to evaluate the need for and possible locations of park and ride facilities in proximity to the two proposed US Highway 52 interchanges.
- Conduct a study in cooperation with Olmsted County in relation to the Olmsted CSAH 5 realignment at Olmsted CR 3 and connection with 125th Street NW.
- Conduct a study to analyze the preferred alternative in the realignment of the intersection of 8th Street SE, New Haven Road NW and Trail View Lane SE.
- Conduct a study in cooperation with the land owners/developers to determine the feasibility of a US Highway 52 overpass north of the proposed Olmsted CSAH 5/12 and US Highway 52 interchange. This roadway would connect Olmsted CSAH 31 with the future extension of Bio Science Drive and 59th Avenue NW.
- Conduct a study in cooperation with Mn/DOT and Goodhue County to determine the appropriateness of the current 2003 Additional Environmental Assessments improvements and ultimate alignment of Goodhue CSAH 11. This study should include the Main Street extension, proposed north interchange and proposed overpass at 500th Street and US Highway 52. This study would also determine the appropriateness of closing the existing Goodhue CSAH 11 interchange.
- Conduct a study to determine the feasibility, preferred location of a river crossing of the North Branch Middle Fork Zumbro River just south of Goodhue CSAH 11 in the northwest portion of Pine Island. This river crossing would be part of a north/south corridor connecting Goodhue CSAH 11 to Olmsted CR 13.
- Conduct a study to determine the feasibility and preferred location of the Pine Island Ring Route. This study should include potential costs and environmental factors such as river crossings.

Projects

- Construct 17th Avenue NE contingent upon the successful start of the Elk Run interchange Design-Build project and Mn/DOT's extension of an East Frontage Road from 210th Avenue to 17th Avenue NE as part of the project.
- Construct the related pedestrian and bicyclist improvements included with the Olmsted CSAH 5/12 and US Highway 52 interchange and frontage road system.
- Construct the related pedestrian and bicyclist improvements included with the Olmsted CSAH 5 extension west from Olmsted CSAH 31 to 125th Street NW as part of the 2003 Environmental Assessments additional improvements.
- Construct the related pedestrian and bicyclist improvements included with the Olmsted CSAH 5 realignment at Olmsted CR 3.
- As new development occurs, continue to coordinate construction related items with the developer at the time of construction such as infrastructure

oversizing and related pedestrian and bicyclist improvements that may be over and above the requirements of the developer in order to provide a costs savings to the public.

Implementation Plan

An important aspect of the planning process is to recognize the financial constraints that restrict the ability to follow through on the policy/administrative activities, studies and projects that are included in this plan. Given this, an overriding assumption has been made that the relative priority for implementation of the recommendations should follow the future land criteria set forth in the Land Use chapter of this plan. Logic dictates that, for the most part, the transportation system improvements will only be required if and when the land development occurs. For example, the development of the proposed local collector road network in any given section of the community should not, and likely will not, take place until land development is imminent. Indeed, the means to pay for most of the proposed local road improvements will in large part come from the surrounding land development. One exception to development funding local collector road construction would be the future construction of 17th Avenue NE from the proposed East Frontage Road to Goodhue CSAH 11 that the City has agreed to construct contingent upon the successful start of the US Highway 52 and Olmsted CSAH 5/12 interchange Design-Build project and Mn/DOT's extension of an East Frontage Road from 210th Avenue to 17th Avenue NE as part of the project. The approach of development financing roadway construction along with several other potential transportation financing mechanisms are detailed below.

Funding and Financing Options

This section focuses on the financial mechanisms that are traditionally used to finance transportation improvements. Transportation improvements can be implemented using federal, state, county, local, and private funding sources. Historically, federal and state funding programs have been used almost exclusively to construct and upgrade major roads, such as trunk highways and county state aid roads.

The availability of federal, state, and local monies will have a significant impact on the ability to fund proposed projects. The following information briefly describes the federal and state funding programs that are available along with local funding options that need to be considered. A description of each potential funding source is provided including, for state and federal funds, guidelines on required matching dollars and a description of the process used to select projects for funding.

Federal and State Funding

This section describes the level of federal and state funding that is available annually and the process developed for the distribution of these funds. Federal and State transportation projects in Minnesota can be funded from various funding sources and a majority of the funding comes from the federal government through either the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) or from the Minnesota state trunk highway fund. Special funding packages are also provided through both the federal and state governments to augment transportation funding but these are not dedicated sources of funding over the long term.

Minnesota receives federal highway formula funding that is distributed to all states based on a formula. A majority of the federal formula funds provided to Minnesota are distributed by formula to the eight Area Transportation Partnerships (ATP) for programming priority transportation projects in their area of the state and in Pine Island's case that is District 6. An Area Transportation Partnership is a group of traditional and non-traditional transportation partners including representatives from Mn/DOT, Metropolitan Planning Organizations such as Rochester-Olmsted Council of Governments (ROCOG), Regional Development Commissions, counties, cities, tribal governments, special interests, and the public that have the responsibility of developing a

regional transportation improvement program for their area of the state. The Area Transportation Partnership solicits for projects that are eligible for federal funding. The resulting project lists are reviewed and integrated into the Area Transportation Improvement Program which is then sent to Mn/DOT's Office of Investment Management to be included in the State Transportation Improvement Program. The final State Transportation Improvement Program is forwarded to the Federal Highway Administration/Federal Transit Administration for approval. No federal projects can be started until this approval is received.

Funding includes federal funds Mn/DOT received under the Safe Accountable, Flexible, Efficient Transportation Act: A Legacy for Users (SAFETEA-LU) which authorized \$286 billion in spending for a six year period from 2004-2009 for numerous surface transportation programs such as highways, transit, freight, safety and research and state funds Mn/DOT receives a Motor Fuel Tax (MVST) and vehicle registration fees which feed the Highway User Tax Distribution Fund (HUTDF).

Ninety-five percent of the Highway User Tax Distribution Fund is divided by legislative mandate between Minnesota's municipal state-aid roadway system, county state-aid roadway system, and the State trunk highway system (9%, 29% and 62% respectively). The 62% going to the state trunk highway system is deposited into the State Trunk Highway Fund and is used for both the operations and construction sides of Mn/DOT. The construction program is referred to as the State Road Construction Program (SRC). These funds can only be spent on transportation projects within state trunk highway rights-of-way. Mn/DOT uses these funds to match federal funds on projects, buy right-of-way, or to fund non-federal highway construction projects.

Other funding sources that have augmented transportation funding in the past includes special bonding programs such as the 2000 Interregional Corridor, Bottleneck and Partnership Program 2003 Bond Advance Program (BPA) and the 2008 Transportation Funding Bill. Another special funding source is the Transportation Revolving Loan Fund (TRLF) which provides low interest loans for transportation projects through a periodic application process.

County Road Funding

County Funding of roads and bridges primarily is provided by two sources, county state aid funding and county tax levy funding. Roads that are part of the CSAH system, such as CSAH 11 in Goodhue County and CSAH 5 in Olmsted County, are roadways where the counties have the discretion to use county state aid funding. Counties receive an allocation from the Minnesota Highway Users Tax Distribution Fund annually, forty percent of which must be used for maintenance of the existing system and sixty percent that may be used for construction or reconstruction.

Local Funding Sources

Local governments have the ability to generate revenue through a variety of funding mechanisms. Typically, several local programs related to transportation exist for budgeting purposes and to disperse revenues. These programs may be tailored to fulfill specific transportation functions or provide particular services. The majority of local funding comes from local tax payers and development requirements.

CHAPTER 5 - PARKS, RECREATION AND OPEN SPACE

BACKGROUND

The Parks, Recreation and Natural Resources element documents the natural resource background for the Pine Island area, and the existing recreation areas, parks, trails, and open space within the City. The City of Pine Island intends this information to guide recreation and open space design, preservation, and maintenance for the use and enjoyment of current and future residents of Pine Island.

Geologic and Vegetative Environment

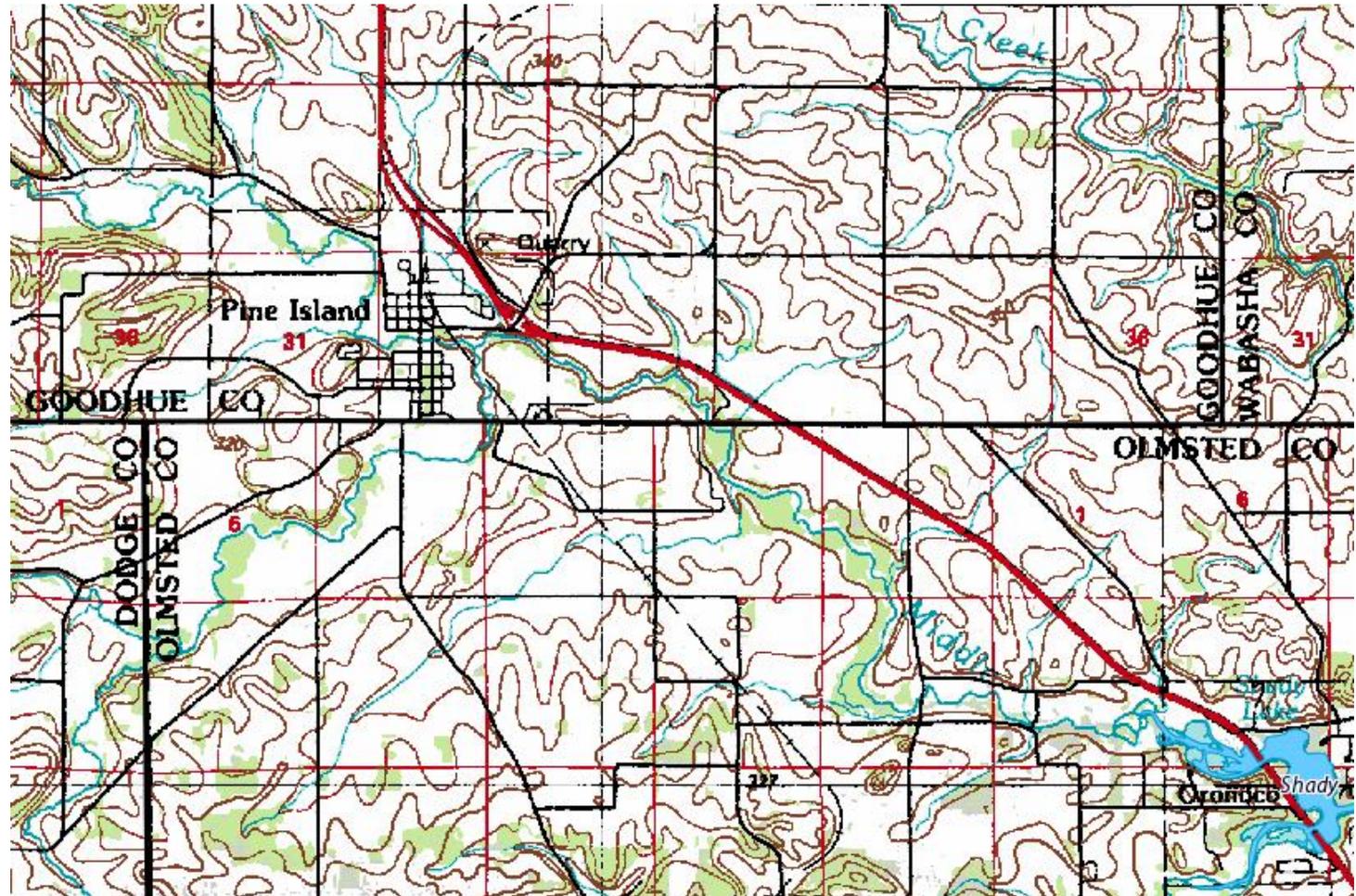
The City commissioned a study, *Pine Island Historic Contexts: A Comprehensive Planning Approach*, which documented the City's natural resource context. The following information is drawn from that study.

The City of Pine Island is located in Sections 28 through 34 in Township 109 North, Range 15 West (Pine Island Township) of Goodhue County, Sections 6 and 7 in Township 108 North, Range 14 West (Oronoco Township) of Olmsted County and Sections 1 through 6 and 12 in Township 108 North, Range 15 West (New Haven Township) of Olmsted County on the North Branch of the Middle Fork of the Zumbro River. Pine Island is fifteen miles northwest of Rochester and sixty miles south of downtown Minneapolis.¹

Situated near the northwestern margin of the Blufflands physiographic region (sometimes referred to by geographers as the “Driftless Area”), Pine Island is located in a highly eroded, unglaciated, loess-capped landscape characterized by dissected upland terrain and the relatively flat alluvial valley of the Zumbro River. The highest elevation is about 1,100 feet above sea level, with the surface of the river at about 980 feet; much of the urbanized landscape has an undulating surface and local relief rarely exceeds ten to fifteen feet. The underlying bedrock consists of flat-lying Paleozoic sedimentary strata and deep loess deposits mantle older glacial till on the uplands. The Zumbro River flows through a deep narrow valley and the floodplain is covered with thick alluvial deposits. The area has very fertile soils (predominantly Udalfs, with Aquents along the river) and much of Pine Island Township, except for the steepest hillsides, was under cultivation at one time. There are no important mineral or stone deposits in the immediate vicinity, though historically, local clay deposits were used to make good-quality bricks and gravel for construction purposes was obtained from quarries along the Zumbro.

The regional climate is humid continental, characterized by wide variations in temperature, scanty winter precipitation, normally ample summer rainfall, and changeable weather. Goodhue County receives on average about 28 inches of annual precipitation (70% of which falls as rain between the months of April and September) and has a growing season of about 140 days. Vegetation is dormant during seven months of the year. Thunderstorms are the principal source of rainfall during the spring and summer months and crop failures due to drought occur about once every ten years. Winter snowfall averages about 40 inches per year and topsoil occasionally freezes to a depth of several feet whenever very cold weather occurs before the ground is snow covered. Severe storms, including tornadoes, blizzards, and ice storms, are an occasional hazard and can cause extensive damage to buildings and trees. Normally a shallow, muddy stream, the Zumbro River is subject to flash flooding after heavy rainstorms.

Figure 14 – Excerpt from the Pine Island Quadrangle, Minnesota, 7.5 minute series (topographic) United States Geological Service



A conspicuous vegetation anomaly was present in the form of a several hundred acre stand of white pine, an evergreen species normally associated with the northern pine forest biome. This concentration of old-growth pine trees, which was obliterated during the 1890s, gave the locality its name. The most likely explanation for the presence of this relict forest is that the Pine Island area provided a refuge for the species, which migrated from south to north across Minnesota during the Recent Holocene (the climatic period that began around 5000 B.C.). Fire was the most important agent in controlling the distribution of natural communities: current thinking in archeology and ecology suggests that periodic fires set by American Indians probably altered the “natural” vegetation to some extent by restricting the spread of the fire-sensitive maple-basswood forest onto the upland surfaces. Fires were also common throughout the settlement period. Historically, nearly all of the prairie and oak savanna was farmed during the nineteenth century and most of the native forest has been cut down for lumber or fuel; the composition and distribution of plant communities was also profoundly changed by urban development and fire suppression. The present-day urban forest is predominantly oak, maple, cottonwood, box elder, aspen, and willow, with some spruce, cedar, and pine trees planted as ornamentals.

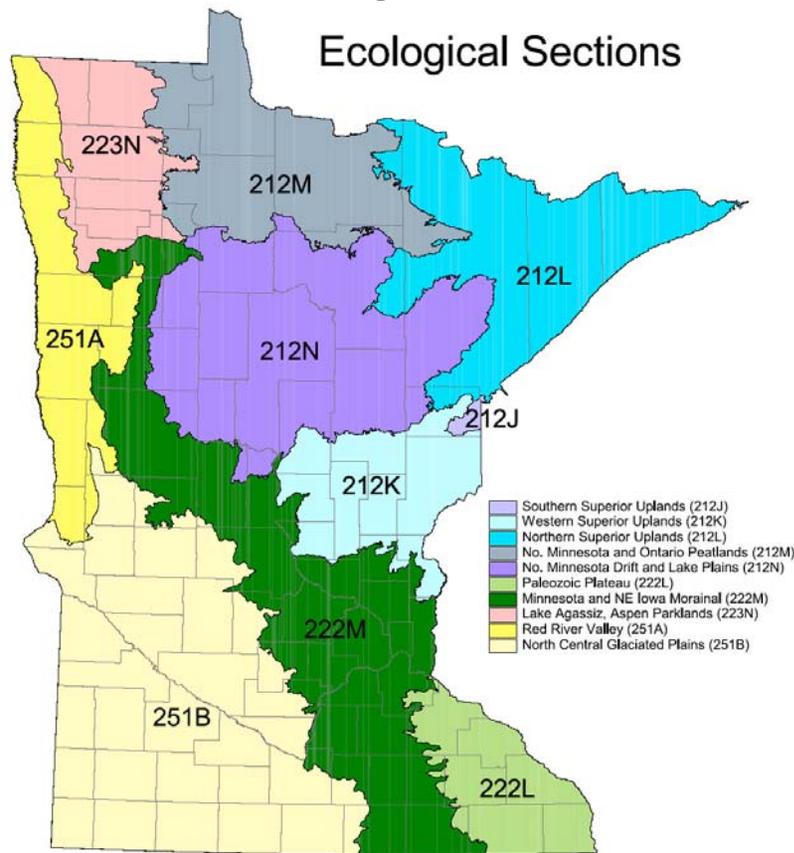
Ecological Classification System (ECS)

Pine Island is part of the Eastern Broadleaf Forest Province, which is one of four located in Minnesota. The other three Provinces are the Laurentian Mixed Forest, the Tallgrass Aspen Parklands, and the Prairie Parklands. The Eastern Broadleaf Forest (EBF) Province traverses Minnesota, Iowa, Wisconsin, Michigan, Ohio, New York, Illinois, Indiana, Kentucky, Tennessee, Missouri, and Arkansas. In Minnesota, the EBF Province covers nearly 12 million acres of the central and southeastern parts of the state and serves as a transition between semiarid portions of the state that were historically prairie and semi-humid mixed

conifer-deciduous forests to the northeast. The western boundary of the province in Minnesota is sharply defined along much of its length as an abrupt transition from forest and woodland to open grassland. The northeastern boundary is more diffuse, with a gradual transition between eastern deciduous forests and the mixed conifer-hardwood forests of northern Minnesota.

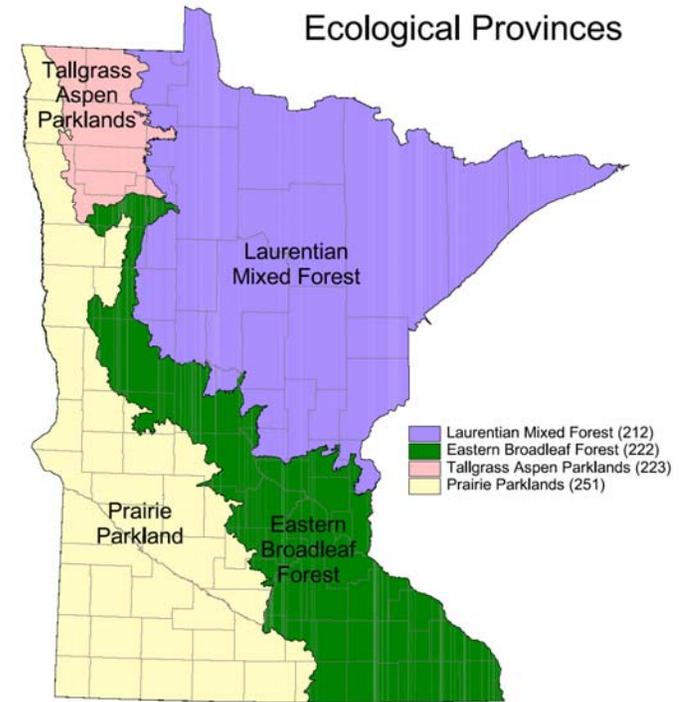
The land surface of the province is largely the product of Pleistocene glacial processes. The northwestern and central portions of the province were covered by ice in the last glaciation and are characterized by thick (100–300 feet) deposits of glacial drift that is highly calcareous and of Wisconsin Age at its surface. Glacial lakes associated with the last glacial advance contributed large volumes of melt water to rivers that cut deep valleys along the present course of the Minnesota, St. Croix, and lower Mississippi rivers. In the southeastern part of the province, which was not covered by ice in the last glaciation, headward erosion of streams draining into the deepening Mississippi valley dissected the flanking uplands, exposing Paleozoic bedrock and pre-Wisconsin drift. The waning stages of the glacial lakes contributed massive amounts of sediment to

Figure 16
Ecological Sections



Source: Minnesota DNR

Figure 15
Ecological Provinces



Source: Minnesota DNR

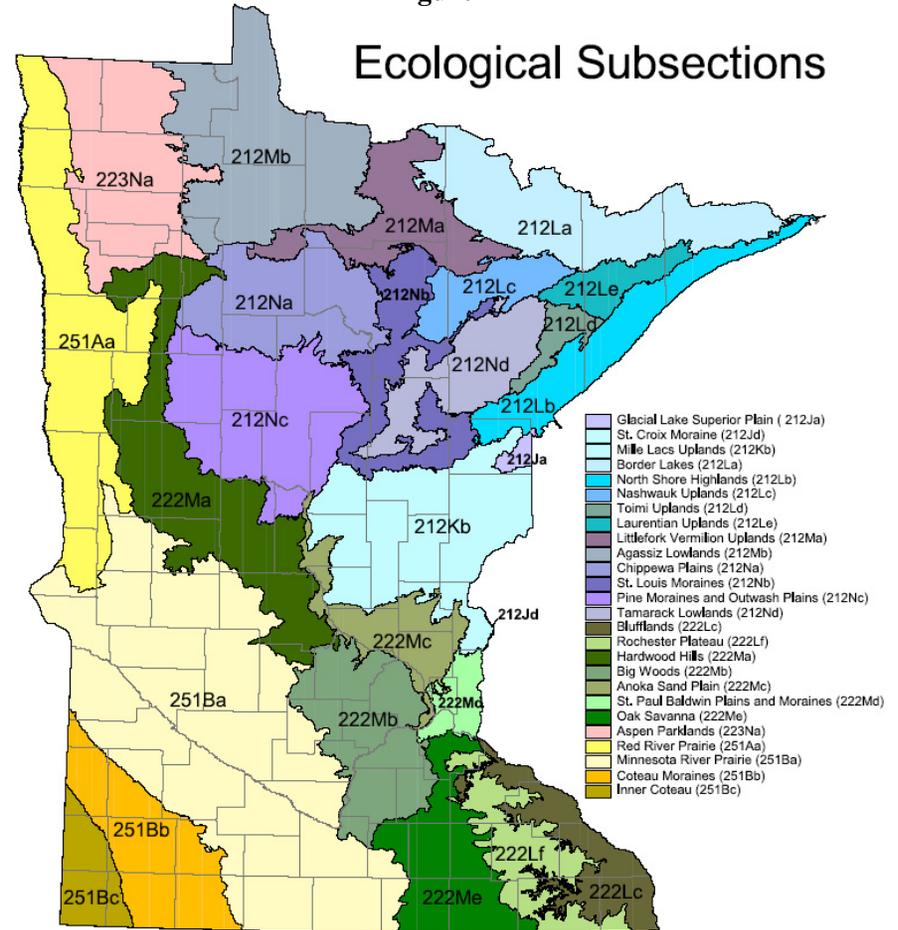
the river valleys and provided a source of silt that was redeposited by wind as a mantle of loess over the eroded lands in the southeastern part of the province.

The provinces are further broken down to Sections and then subsections. The section Pine Island is located in is the Paleozoic Plateau Section, a rugged region of bluffs and valleys that is quite different from the rest of the state. Although originally a plateau underlain by rather flat-lying sedimentary rocks of the Paleozoic Era, in the past 10,000 years the landscape has been highly eroded and dissected by streams and rivers tributary to the Mississippi River, such as the Root, Whitewater, Zumbro, and Cannon rivers and their predecessors. The remains of the plateau are most evident on interfluves along the western edge of the section; there is little evidence of the former plateau on the eastern edge of the section near the Mississippi River, where dissection is complete. Much of the section is blanketed with loess. The loess is thickest along the Mississippi River and thins to the west, where it becomes discontinuous, exposing eroded pre-Wisconsin till at the surface.

The most important factors influencing the pattern of vegetation in the historical landscape were slope, aspect, flooding, and the likelihood of burning; variation in substrate was important only locally, with most of the section covered by rather uniform deposits of loess or alluvium. Prairies occupied the flat, fire-prone remnants of the plateau in the western part of the section. Steep slopes in dissected areas were sufficiently protected from fire for woody vegetation to develop, although dry prairies were common at the tops of southwest-facing bluffs, with oak woodland developing downslope and northward and eastward along these slopes. Mesic forests were prevalent on north- and east-facing slopes, usually dominated by oak on the upper slopes, with basswood and then sugar maple increasing in importance downslope. Wet-mesic forests of basswood, sugar maple, black maple, elm, bur oak, black ash, and walnut were present on level, silty valley bottoms in dissected terrain. Sandy valley bottoms supported dry prairies, black oak woodlands, and, rarely, jack pine savannas and woodlands. The alluvial bottomlands of broad valleys such as that of the Mississippi River were covered with floodplain forests of silver maple and river birch and terrace forests of silver maple, elm, green ash, hackberry, cottonwood, basswood, and swamp white oak. River shore communities were present on sand bars and shorelines. Steep rock walls and rocky colluvium provided habitat for development of cliff and talus communities. Peatlands were nearly absent in the section, mostly limited to local areas where seeps and springs maintained sufficiently saturated conditions for accumulation of peat.

Figure 17

Ecological Subsections



Source: Minnesota DNR

Pine Island is located on the eastern side of the Rochester Plateau subsection. The west boundary of this subsection consists of a series of Des Moines lobe end moraines (Bemis Moraine). The eastern boundary with The Blufflands subsection is an area of transition between a level to rolling plateau and dissected landscapes. Another gradient is the depth of wind-blown silts (loess). Which grades from thinner deposits in this subsection to much thicker deposits in The Blufflands Subsection. The northern boundary coincides with the northern extent of loess deposits.

There is also small outwash plain marking the northern boundary. This unit consists of an old plateau covered by loess (windblown silt) along the eastern border and pre-Wisconsin age glacial till in the central and western parts. The western portion is a gently rolling glacial till plain that is covered by loess in places.

Depth of drift over bedrock varies from 100 to 200 feet in the west to 10 to 100 feet in the east. Bedrock exposures are common. In general, sediment thickness varies by landscape position. Large exposures of bedrock occur in the steep ravines. These exposures are primarily Ordovician dolomite, limestone, and sandstone, with Cambrian sandstone, shale, and dolomite exposed along the valley walls of the Mississippi River. Devonian dolomite and limestone are more locally exposed along the western edge of the subsection.

Loess thickness is variable; loess deposits range from 30 feet thick on broad ridgetops, to less than a foot on valley walls. The predominant soils are Udalfs, with localized Aquents along the floodplains of major rivers. Cambrian siltstones, sandstones, and shales influence soil properties.

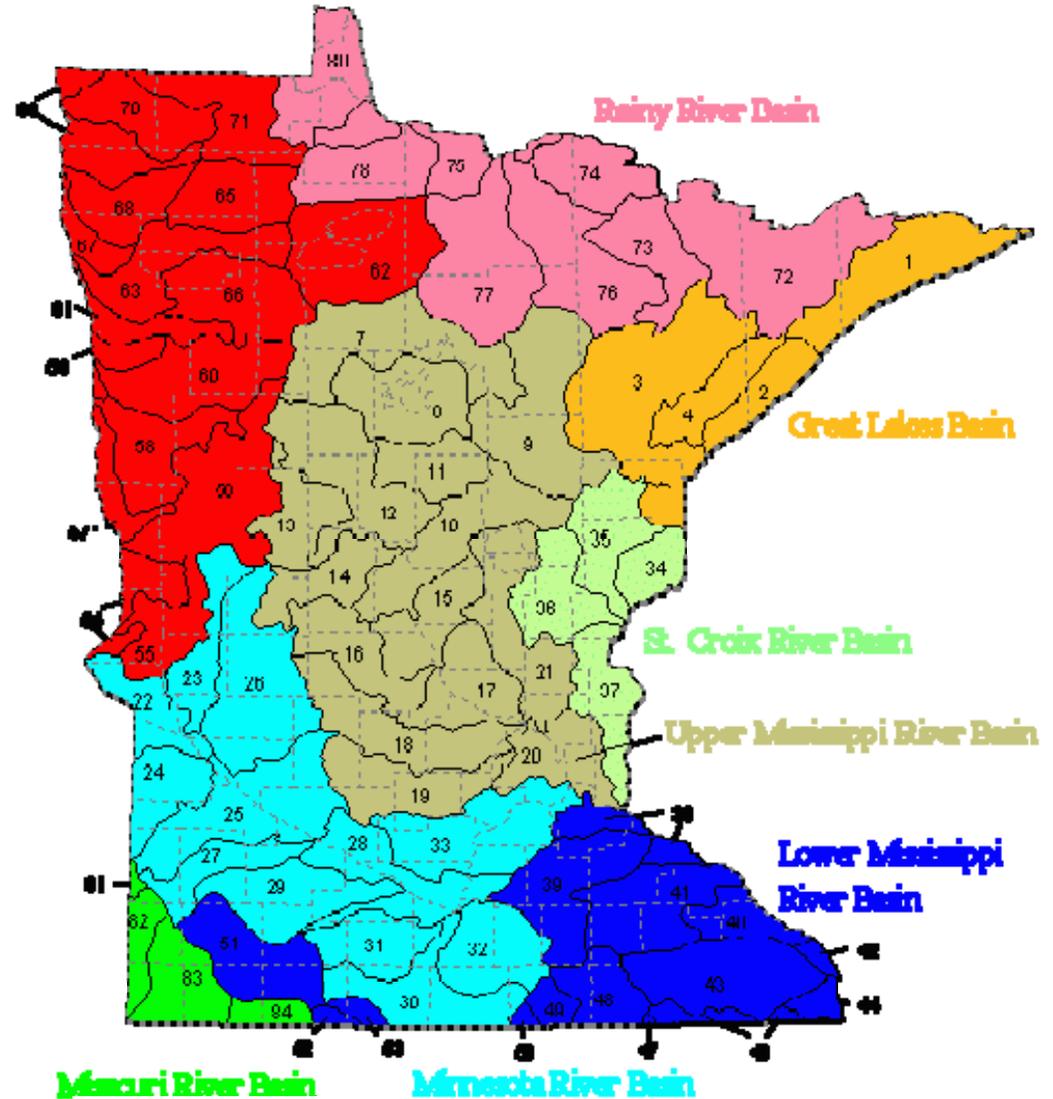
Lakes, Rivers and Streams

Pine Island is located in the Zumbro River major watershed which consists of three major branches (designated the North, Middle, and South). The watershed drains over 1,400 square miles in Olmsted, Dodge, Steele, Rice, Wabasha, and Goodhue counties and is located in the Lower Mississippi River Basin. The three branches come together near Mazeppa, and from that place the lower reach of the

Figure 18

MAJOR BASINS AND WATERSHEDS OF MINNESOTA

Red River of the North Basin



Source: MNDNR

river flows through a deep gorge before debouching into the Mississippi River near Wabasha. The Middle Fork, which runs through Pine Island, rises in eastern Steele County and flows in a generally easterly direction about forty miles to join the South Fork north of Rochester. During the nineteenth century, the turbid Middle Fork was dammed in several places to provide water-power for mills and some of the mill dams survive to the present day. The City of Pine Island itself lies in four minor watersheds within the Zumbro River major watershed that drain a combined area of 83.43 square miles. Figure 8 shows the river basins and major watersheds of Minnesota and Table 17 identifies the major watersheds.

Table 17 – Major Watersheds of Minnesota

| | | |
|-------------------------------------|-------------------------------------|------------------------------|
| 1. Lake Superior - North | 29. Cottonwood River | 57. Red River of the North |
| 2. Lake Superior - South | 30. Blue Earth River | 58. Buffalo River |
| 3. St. Louis River | 31. Watonwan River | 59. Marsh River |
| 4. Cloquet River | 32. Le Sueur River | 60. Wild Rice River |
| 5. Nemadji River | 33. Minnesota River - Shakopee | 61. Sandhill River |
| 7. Mississippi River - Headwaters | 34. St. Croix River - Upper | 62. Upper/Lower Red Lake |
| 8. Leech Lake River | 35. Kettle River | 63. Red Lake River |
| 9. Mississippi River - Grand Rapids | 36. Snake River | 65. Thief River |
| 10. Mississippi River - Brainerd | 37. St. Croix River - Stillwater | 66. Clearwater River |
| 11. Pine River | 38. Mississippi River & Lake Pepin | 67. Grand Marais Creek |
| 12. Crow Wing River | 39. Cannon River | 68. Snake River |
| 13. Redeye River | 40. Mississippi River - Winona | 69. Tamarac / Joe Rivers |
| 14. Long Prairie River | 41. ZUMBRO RIVER | 70. Two River |
| 15. Mississippi River - Sartell | 42. Mississippi River - La Crescent | 71. Roseau River |
| 16. Sauk River | 43. Root River | 72. Rainy River - Headwaters |
| 17. Mississippi River - St. Cloud | 44. Mississippi River - Reno | 73. Vermilion River |
| 18. North Fork Crow River | 46. Upper Iowa River | 74. Rainy River - Rainy Lake |
| 19. South Fork Crow River | 47. Wapsipinican River | 75. Rainy River - Manitou |
| 20. Mississippi River | 48. Cedar River | 76. Little Fork River |
| 21. Rum River | 49. Shell Rock River | 77. Big Fork River |
| 22. Minnesota River - Headwaters | 50. Winnebago River | 78. Rapid River |
| 23. Pomme de Terre River | 51. West Fork Des Moines - Head | 79. Rainy River - Baudette |
| 24. Lac qui Parle River | 52. West Fork Des Moines - Lower | 80. Lake of the Woods |
| 25. Minnesota River - Granite Falls | 53. East Fork Des Moines | 81. Big Sioux - Medary Creek |
| 26. Chippewa River | 54. Bois de Sioux River | 82. Big Sioux - Pipestone |
| 27. Redwood River | 55. Mustinka River | 83. Rock River |
| 28. Minnesota River - Mankato | 56. Otter Tail River | 84. Little Sioux River |

Source: MNDNR

According to the Minnesota Department of Natural Resources (MNDNR), Pine Island does not have any protected lakes or wetlands within the City or urban growth boundary; however that does not mean no wetlands exist. The closest protected lakes or wetlands to Pine Island are Zumbro Lake and Shady Lake both located in Olmsted County. Numerous rivers and creeks located in Pine Island and the urban growth boundary are protected waters. Surface waters classified by the MNDNR are subject to shoreland regulations. Table 18 illustrates the protected surface waters whose shoreland areas are located within Pine Island and the urban growth boundary and Figure 19 illustrates the shoreland areas for these protected waters.

Table 18 – Protected Surface Waters

| Waterbody | Surface Water Classification |
|---|-------------------------------------|
| North Branch Middle Fork Zumbro River | Agriculture River |
| Middle Fork Zumbro River (extending from Dodge/Olmsted County line to North Branch Middle Fork Zumbro River to Goodhue Olmsted county line) | Agriculture River |
| Middle Fork Zumbro River (extending from Goodhue/Olmsted county line to Shady Lake) | Transition River |
| A Unnamed Watercourse (extending from Section 36 in Roscoe Township to the North Branch Middle Fork Zumbro River) | Tributary River |
| Pine Island Creek | Tributary River |
| Shady Lake | Natural Environment |

Source: MNDNR

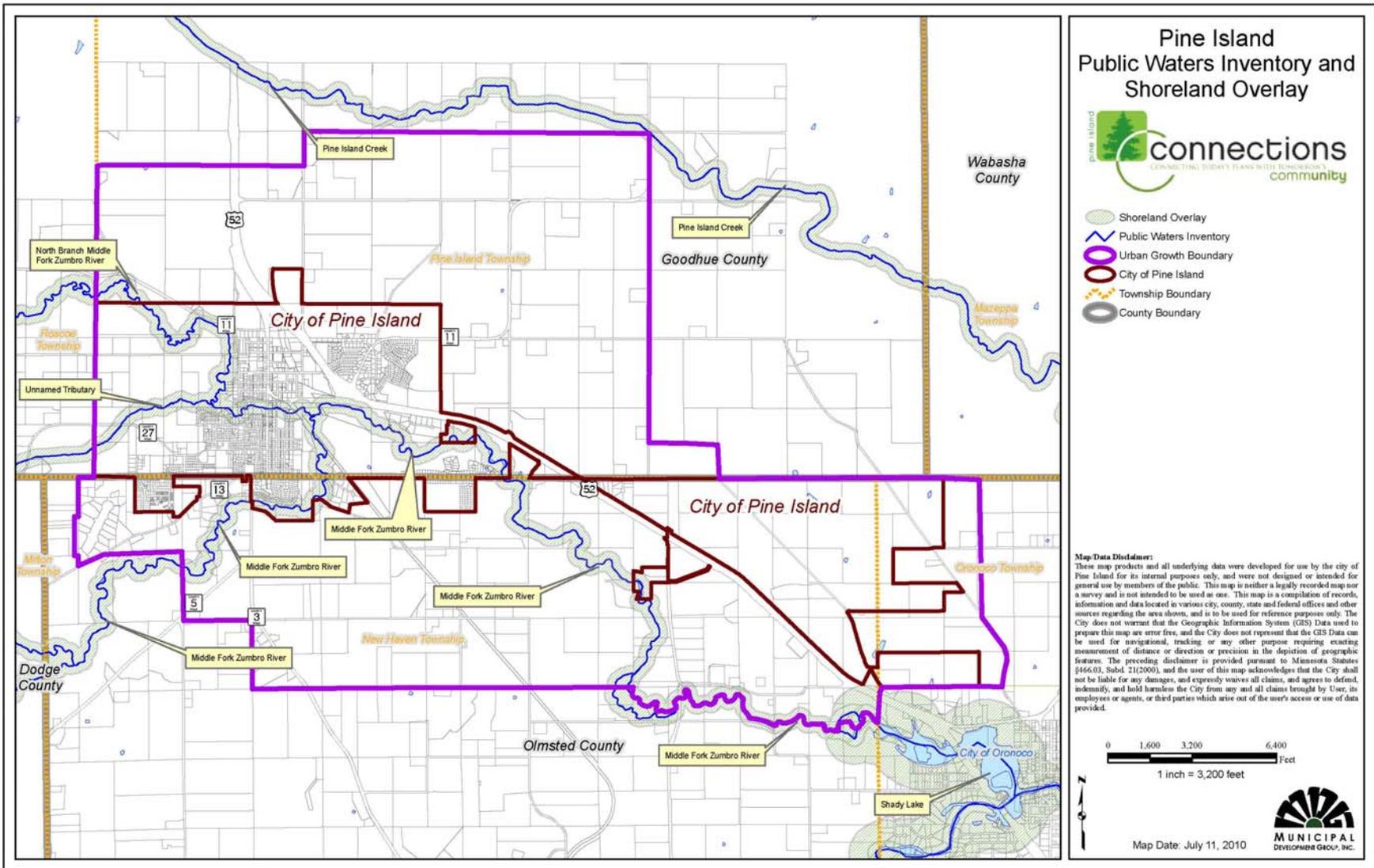
The Clean Water Act requires states to publish, every two years, an updated list of streams and lakes that are not meeting their designated uses because of excess pollutants. The list, known as the 303(d) list, is based on violations of water quality standards and is organized by river basin. A Total Maximum Daily Load (TMDL) study identifies both point and non-point sources of each pollutant that fails to meet water quality standards. Water quality sampling and computer modeling determine how much each pollutant source must reduce its contribution to assure the water quality standard is met. Rivers and streams may have several Total Maximum Daily Load's, each one determining the limit for a different pollutant. The Minnesota Pollution Control Agency is the state agency responsible for protecting Minnesota's water quality.

Within the City of Pine Island and Urban Growth Boundary, the Middle Fork Zumbro River was the only river or stream classified as impaired in the most recent inventory dated June 10, 2008 from the Headwaters to the North Branch Middle Fork Zumbro River. Aquatic life was the affected use and turbidity was the pollutant or stressor. The Middle Fork Zumbro River was assigned a 5C classification which means impaired by one pollutant and no Total Maximum Daily Load study plan is approved by the Environmental Protection Agency. The pollutant sampled was mercury and because of this pollutant an aquatic consumption advisory was issued.



North Branch Middle Fork Zumbro River, looking west from Main Street bridge

Figure 19 – Public Waters Inventory and Shoreland Overlay Map



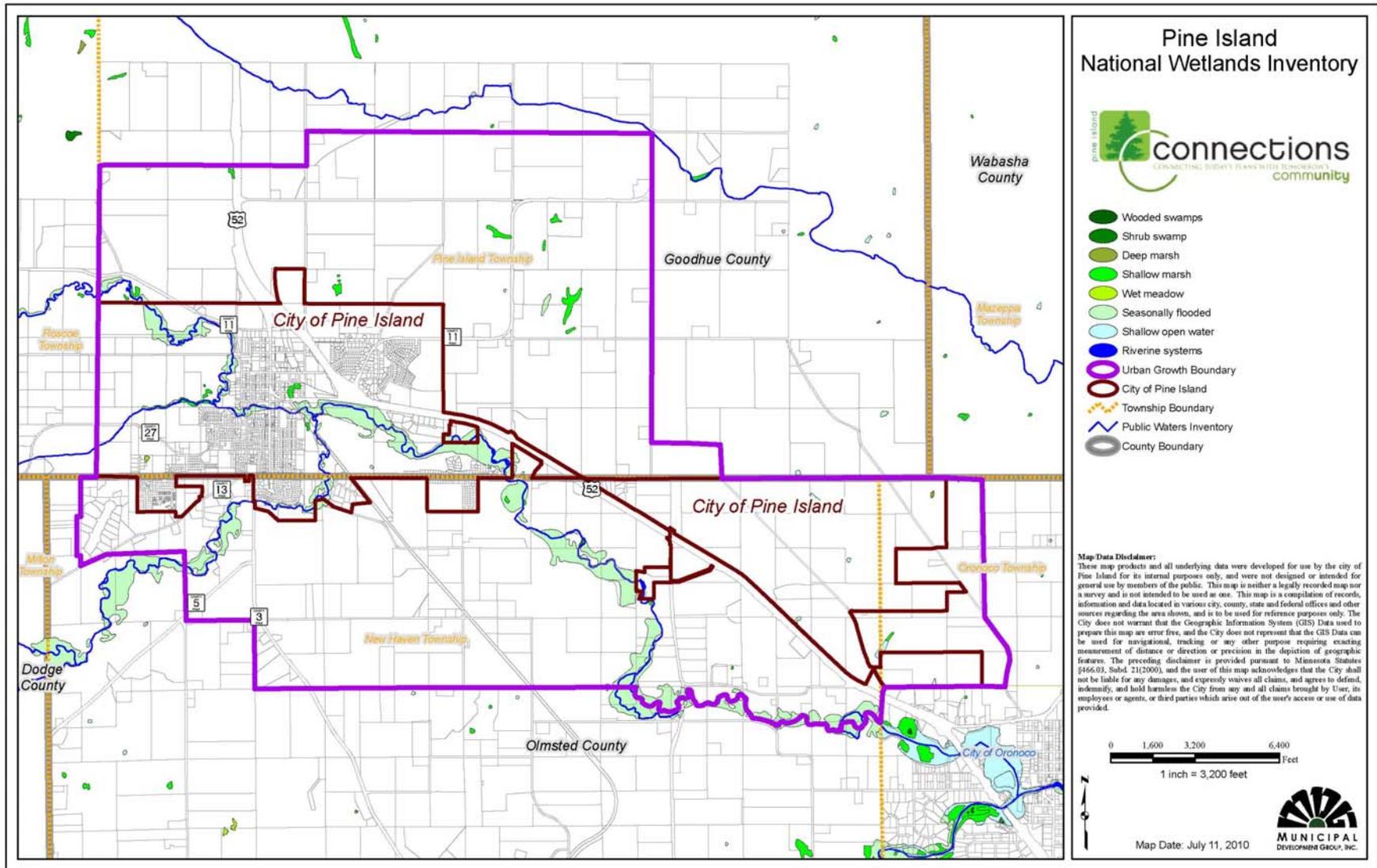
Wetlands

Wetlands have historically been regarded as obstacles to development rather than areas of intrinsic value. However, it is now generally accepted that wetlands are valuable for storing essential surface waters, stabilizing surface waters to minimize the danger of droughts of floods and supporting wildlife habitat. Wetlands are also the primary method of recharging aquifers ensuring a continued water supply. Wetlands cleanse and purify surface water by removing nutrients and other contaminants from storm water runoff.

Wetlands are illustrated on Figure 20. The source for this data is the National Wetland Inventory. Wetlands represent approximately 5.6% of the surface cover in the Pine Island city limits or 209 acres out of the 3,753 total acres within the City of Pine Island and 3.7% of the surface cover in the urban growth boundary or 300 acres out of the 8,190 total urban growth boundary acres.

The Army Corps of Engineers and the Department of Natural Resources are ultimately responsible for the overall protection of wetland; however, the City is the local governmental unit responsible for implementing wetland protection measures and administers the Wetland Conservation Act (WCA). Proper implementation of wetland buffers in new developments is critical to maintain wetland functions within the City.

Figure 20 – National Wetlands Inventory



Flood Plains

In 1969, the Minnesota Legislature enacted the State Flood Plain Management Act (Minnesota Statutes, Chapter 103F). This Act stresses the need for a comprehensive approach to solving flood problems by emphasizing nonstructural measures, such as floodplain zoning regulations, flood insurance, flood proofing and flood warning and response planning. By law, Minnesota flood prone communities are required to: 1) adopt floodplain management regulations when adequate technical information is available to identify floodplain areas, and 2) to enroll and maintain eligibility in the National Floodplain Insurance Program (NFIP) so that people may insure themselves from future losses through the purchase of flood insurance. The Department of Natural Resources (DNR) is the state agency with the overall responsibility for implementation of the State Flood Plain Management Act.

The City of Pine Island has quite a bit of area within designated floodplains. The areas that are designated floodplains are located along the shores of Rivers and streams that are located within Pine Island and the urban growth area. Figure 21 identifies all the floodplain areas within Pine Island and surrounding area.

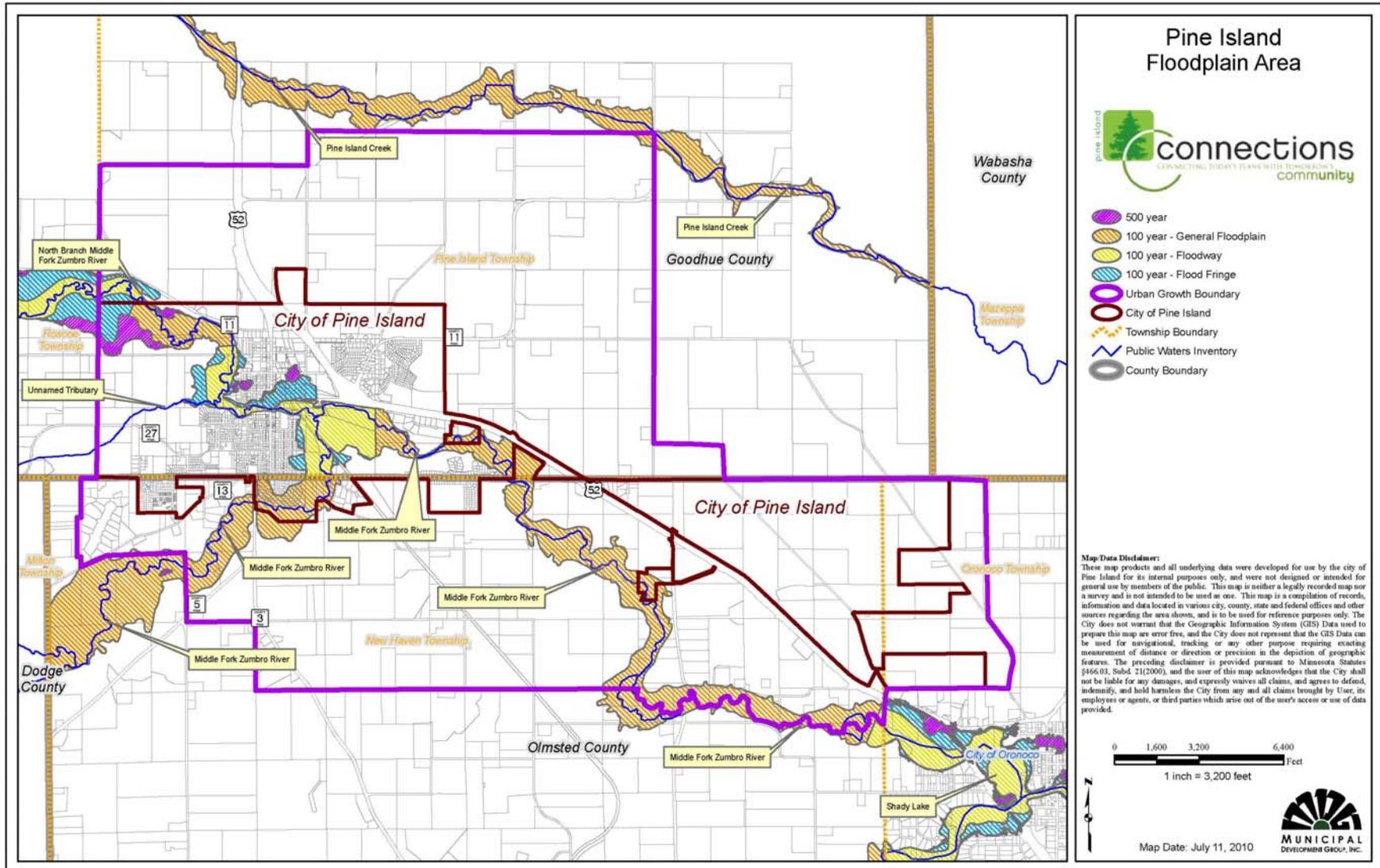


Trail trestle in 2010 flood



Looking north on Main Street during the 2010 flood

Figure 21 – Floodplain Area



Ecology

The ecology of the Pine Island area has produced a tremendous diversity of wild animal life. At one time, the Zumbro river valley provided habitat for elk and bison, species that were driven to extinction before the settlement period. The whitetail deer was very common throughout southern Minnesota during the early settlement period, but by the 1900's the species had been hunted to extinction in the Pine Island area, and deer did not become plentiful again until the 1940's. The timber wolf was also found in the area until the early 1900's, and today its niche is filled by the coyote. Mammals which can still be found in the urban landscape include whitetail deer, red fox, gray squirrel, raccoon, coyote, and skunk. Pine Island lies within the migration corridors for a wide range of waterbirds, shorebirds, songbirds, and raptors, including ducks, geese, hawks, meadowlarks, and warblers. Increased development activities has altered the ecological balance and reduced habitat availability for some species, while increasing habitat for others. The Zumbro has historically been a good fishing river with abundant catfish, smallmouth bass, bullhead, and white sucker.

Much of the land surface within the city limits has been altered by urban development. Outside the City limits, agricultural practices the current and historic predominant land use, has also altered many of the natural features, particularly wetland areas. The uplands bordering the Zumbro River and its tributaries, which remained lightly developed until recently, have become increasingly important as homesites for the expanding suburban population around Rochester. Habitat areas and ecological systems continue to become more fragmented, although some preservation and restoration efforts have protected some high quality areas.

Tomorrow's Habitat for the Wild and Rare

Tomorrow's Habitat for the Wild and Rare is a strategic plan focused on managing Minnesota's populations of "species in greatest conservation need". Minnesota's Comprehensive Wildlife Conservation Strategy includes an action plan for species most in need of conservation within the Rochester Plateau Subsection of the Ecological Classification System. The Rochester Plateau Subsection profile illustrates 94 Species in Greatest Conservation Need (SGCN) that are known or predicted to occur within the subsection. Those Species in Greatest Conservation Need include 36 species that are federal or state endangered, threatened, or of special concern.

Table 19 – Species in Greatest Conservation Need by Taxonomic Group Rochester Plateau Ecological Classification System Subsection

| Taxonomic Group | Number of Species in Greatest Conservation Need | Percent of Species in Greatest Conservation Need Set by Taxonomic Group |
|------------------------|--|--|
| Amphibians | 3 | 50.0% |
| Birds | 46 | 47.4% |
| Fish | 11 | 23.4% |
| Insects | 7 | 12.5% |
| Mammals | 6 | 27.3% |
| Mollusks | 9 | 23.1% |
| Reptiles | 12 | 70.6% |
| Spiders | 0 | 0.0% |

Source: MNDNR

Table 19 illustrates the number of Species in Greatest Conservation Need in each taxonomic group found or predicted to be found in the Rochester Plateau Ecological Classification System Subsection. The Table also illustrates the percentage of the total Species in Greatest Conservation Need set found in each taxonomic group within each Subsection. For example 46 birds in greatest conservation need are expected to be found in the Rochester Plateau Subsection, that's 47.4% of all birds in greatest conservation need in the state.

Species problem analysis included in the Subsection profiles provides information on factors influencing the vulnerability or decline of Species in Greatest Conservation Need. Table 20 lists the nine problems or factors used in species problem analysis and the percentage of Species in Greatest Conservation Need in each subsection for which each factor influences species vulnerability or decline.

Table 20 – Species Problem Analysis Rochester Plateau Ecological Classification System Subsection

| Problem/Factor | Rochester Plateau Subsection Percentage of Species in Greatest Conservation Need Affected |
|---|--|
| Habitat loss within MN | 86% |
| Habitat degradation within MN | 90% |
| Habitat loss/degradation outside MN | 32% |
| Invasive species and competition | 29% |
| Pollution | 30% |
| Social tolerance/persecution/exploitation | 21% |
| Disease | 1% |
| Food source limitations | 2% |
| Other | 18% |

Source: MNDNR

Factors related most to species decline or vulnerability are habitat loss and habitat degradation within the Rochester Plateau Subsection. Tomorrow's Habitat identifies habitat loss and degradation as the primary problem facing species in greatest conservation need in all of Minnesota and recommends a simple and direct approach to this problem: conserve key habitats used by Minnesota's Species in Greatest Conservation Need in order to conserve the majority of Minnesota's wildlife.

Tomorrow's Habitat has three goals to address the needs of Minnesota's species in greatest conservation need:

1. Stabilize and increase populations of species in greatest conservation need populations.
2. Improve knowledge about species in greatest conservation need.
3. Enhance people's appreciation and enjoyment of species in greatest conservation need.



Minnesota County Biological Survey (MCBS)

The Minnesota County Biological Survey is a systematic survey of rare biological features. The goal of the Survey is to identify significant natural areas and to collect and interpret data on the distribution and ecology of rare plants, rare animals, and native plant communities. Native plant communities are groups of native plants that interact with each other and with their environment in ways not greatly altered by modern human activity or by introduced organisms. These groups of native species form recognizable units, such as an oak forest, a prairie, or a marsh, that tend to repeat over space and time. Native plant communities are generally classified and described by considering vegetation, hydrology, landforms, soils, and natural disturbance regimes.

The Minnesota County Biological Survey completed in 1995 for Goodhue County and 1997 for Olmsted County, used aerial photo interpretation followed by field surveys of selected sites. A review of Minnesota County Biological Survey data for both Goodhue and Olmsted counties reveals that native plant communities of Floodplain Forest (lowland forests on seasonally flooded river bottoms; canopy dominated by silver maple or a mix of silver maple, cottonwood and black willow, often with green ash, bur oak, American elm and red elm) were located along the North Branch Middle Fork Zumbro River and the Middle Fork Zumbro River in Goodhue County. Two locations of rare plant species were documented in Pine Island and five locations of rare animals were documented in Pine Island and the urban growth area.

Park Classifications

Cities used to and occasionally still do evaluate adequacy of parks on an acreage-to-population ratio or scale (e.g. 10 acres of parkland for each 1,000 residents). The ratio or scale is still a valuable measure and will be used here; however, since parkland needs can vary greatly and change over time, every city needs to choose what system best works for them when it comes to comparing the supply of park and recreation facilities with the demand for these facilities on the part of residents and other users.

Park classifications provide a systematic way of categorizing park land so decisions regarding design, capital improvements, and maintenance/operation are based on the types of functions of parks. This classification system allows the level of service for each park type to be determined by analyzing the service area and identifying any gaps or duplications throughout the City. The following terms and descriptions shall be used to classify existing and future park and recreational facilities within the City of Pine Island.

Mini Park (a.k.a. urban/pocket park)

Examples of this type of park include town squares, urban plazas, landscaped courtyards, promenades, and village greens. Mini parks address limited, isolated, or unique needs within a limited and concentrated service area. Mini parks may be used for active, passive, or a combination of active and passive purposes. These types of parks sometimes meet the neighborhood park needs of surrounding residents. They can also provide opportunities for community events and enhance the identity of urban core and mixed-use districts.

Mini parks may be located in a variety of areas depending on the specific recreational need or the type of opportunity present. These parks are very small in geographic size typically ranging from 2,500 square feet to one acre. Site selection criteria should include access from the surrounding area and linkage to community pathways. There are no specific criteria for the development of mini-park facilities. Parking is typically not required; however, site lighting for safety/security should be investigated.

Neighborhood Park

Neighborhood parks are the basic unit of the park system providing informal activity or passive recreation for an adjacent neighborhood. This type of park serves as the focal point for recreational and social needs of a neighborhood. Neighborhood parks should be developed to service the active and passive recreational activities of the area it serves, including different age and income levels.

Neighborhood parks are usually designed primarily for spontaneous, non-organized recreation activities and/or to enhance neighborhood identity or preserve open space. Generally speaking, programmed activities usually do not take place in neighborhood parks and site development typically includes sidewalk, benches, landscaping, and play features for preschoolers. Neighborhood parks/playgrounds should connect with trails, which connect to other parks and neighborhoods.

The service area for neighborhood parks is generally one quarter to one half (1/4 to 1/2) mile with the park located in the center of the area intended to be served. Since the primary means of getting to a neighborhood park is walking or biking, ease of access (interconnected trail, sidewalk, low volume local streets) and walking distance are priority factors in determining location. Neighborhood parks generally range from five to ten acres in size with the population density and demographic characteristics of the neighborhood it serves being important considerations. A balance of passive recreational opportunities (ornamentation, conservation, passive activities) and active recreational facilities (fields, courts, skating, splash pool, etc. primarily used informally in an unstructured manner) is needed. In addition, a pleasant outdoor environment will enhance use and draw residents to the park and, therefore, is an important design element.

Limited off-street parking (e.g. seven to ten spaces) is needed for those who must drive to the site. Park lighting should be used for security and safety with limited lighting on recreational facilities.

Community Park

Community parks are larger in size and serve more wide-ranging purposes than neighborhood parks. Community parks focus on group activities and meeting community-wide recreation needs, retaining open space, and/or preserving unique landscapes.

Like neighborhood parks, community parks should strive to balance active and passive recreational opportunities. Community parks should serve more than one neighborhood with a service area of generally a third of a mile to three miles. Since most people arrive a community parks by automobile or bicycle, the site should be serviced by arterial and collector streets and be easily accessible from throughout the service area by trail or sidewalk.

The size of a community park is usually 20 to 50 acres, but can vary if open space or landscape preservation is the purpose of the park. Actual size of community parks should be based on neighborhood demographics, population density, resource availability, and recreation demand.



Kispert's Farm neighborhood park



Pine Island park shelters

The National Recreation and Park Association suggests site selection guidelines include the site's natural area, preserving unique landscapes within the community, and/or providing recreational opportunities not otherwise available. When possible, community parks should be adjacent to natural resource areas and greenways.

Potential active recreational opportunities include large play structures, game courts, informal ball fields, tennis courts, volleyball courts, horseshoe areas, skating areas, swimming pools, archery ranges, and disc golf areas. Active recreational facilities may be used for programmed activities on an occasional basis with most facilities used in an informal, unstructured manner. Potential passive recreational opportunities include internal trails, individual/group picnic and sitting areas, nature study areas, band shells, and ornamental gardens.

Off-street parking is essential; lighting for security, safety and facilities should be as appropriate.

Natural Resource Areas

Natural areas have a great deal in common with natural greenways in that they are land set aside for preservation of significant natural resources, remnant landscapes, open space, and visual aesthetics/buffering. As defined within the National Recreation and Park Association system, natural areas usually consist of individual sites exhibiting natural resources, protected lands (wetlands, public waters, shoreland), or lands unsuitable for development (steep slopes, ravines, ponding areas, utility easements, etc). Specific lot size standards do not apply to natural areas.

The employment of this type of park facility is based on availability of areas and need for preservation, so size is highly variable. Location considerations are primarily limited to sites that exhibit unique natural resources or remnant landscapes of the region. Undevelopable/protected lands are usually selected on the basis of enhancing the character of the community, buffering, and providing linkages with other park components. Natural resource areas are resource based as opposed to user based but can provide some passive recreational opportunities providing such use does not negatively impact the resource to be preserved.



North Branch Middle Fork Zumbro River
looking east

Greenway

Greenways are lineal park system components that serve several functions under National Recreation and Park Association guidelines: tie park components together to form a continuous park environment; emphasize harmony with the natural environment; allow for safe and uninterrupted pedestrian movement between parks and throughout the community; provide people with a resource-based outdoor recreation opportunity and experience; and, they can increase property value. Greenways emphasize park use/trails more than natural resource areas.

Criteria for locating greenways are primarily land availability and opportunity to secure right-of-way. Greenways may follow suitable natural resource areas (preferred) or, if designed properly, revitalized riverfronts, abandoned railroad beds, boulevards, etc. In addition, proximity to parks and connector trails are important considerations.

Potential recreation activities within greenways include hiking, walking, jogging, bicycling, in-line skating, cross-country skiing, horseback riding, etc. Greenway width is highly variable and per National Recreation and Park Association standards can be as little as 25 to 50 feet with widths greater than 200 feet being considered best.

Special Use Park

Special use parks cover a broad range of park and recreation facilities oriented toward a single purpose. National Recreation and Park Association classifies special use parks as one of three types: historic/cultural/social sites, recreation facilities, and outdoor recreation facilities. Historic/cultural/social sites showcase unique resources and may include historic downtown areas, performing arts parks, arboretums, ornamental gardens, performing arts facilities, indoor theaters, churches, public buildings, and amphitheaters. Recreation facilities may include community centers, senior centers, hockey arenas, marinas, boat landings, golf courses, and aquatic parks. Outdoor recreation facilities include tennis centers, softball complexes, and sports stadiums.

National Recreation and Park Association suggests special use parks be strategically located in a community-wide context and conveniently accessible from arterial and collector streets along with pathways. Other primary location considerations are: recreation need, community interests, the type of facility, and land availability. Special use park acreage needs vary widely with facility space being the primary determinant. Since there are a variety of potential special use parks, specific standards for site selection and development parameters are not defined. Most specialized recreation areas have limited active recreation value, are not developed as multi-purpose recreation areas, or are not always available for use by the public. Specialized areas are an important adjunct to a community and its park and open space program.

Regional Park

Regional parks may include but are not limited to conservancy areas, trails, floodplains, hiking and riding trails, recreational fields, spectator sports, and fishing. Regional parks serve people of all ages and serve a regional population and are typically maintained by Counties or States. Typically regional parks are natural resource based that include features such as bodies of water, fauna, woodlands, rivers/streams and topography. Regional parks are large parks and draw people from farther distances.

Private Park

These are park and recreation facilities that are privately owned yet contribute to the public park and recreation system. The location, size and type of park can vary depending upon the specific type of use. These types of parks can consist of a neighborhood swimming pool maintained by a homeowners association, facilities owned by a church, playground equipment and fields located on school property or private facilities at a housing complex.

Existing Park & Trail Facilities

The City of Pine Island has a number of parks, trails, and recreation areas that contribute to the quality of life of its residents and visitors. A list of Pine Island parks, trails and recreation areas is listed below and shown on Figure 20.

Parks, Trails and Recreation Areas

In addition to the facilities and areas listed below, City residents have access to other recreational opportunities such as school owned and maintained sports facilities. On the following pages a map of the existing parks and open space is shown in Figure 22, an inventory of all the parks within the City of Pine Island is located in Table 21 and Table 22, with its ranking key, is a park assessment of those parks. It is important to use this information in

determining what park amenities are deficient and what areas need improving.

1. Douglas Trail Park
2. Collins Park
3. Main Street Park and Bandshell
4. Swimming Pool
5. Tennis Courts
6. Local Trail Network:
 - A. Douglas Trail (owned and managed by the State of Minnesota)
 - B. Creamery Trail Extension
 - C. County Bridge Trail Extension
7. Recreation area and overlook (8th Street SE-wetland area)
8. A 27-acre natural wooded area between the Pine Island Golf course and US Highway 52.
9. Neighborhood Parks:
 - A. Custer Park
 - B. Kispert's
 - C. Wazuweeta Woods
 - D. Ridgeway Estates



Douglas Trail bridge across the Zumbro River

Figure 22 – Existing Parks, Recreation and Open Space

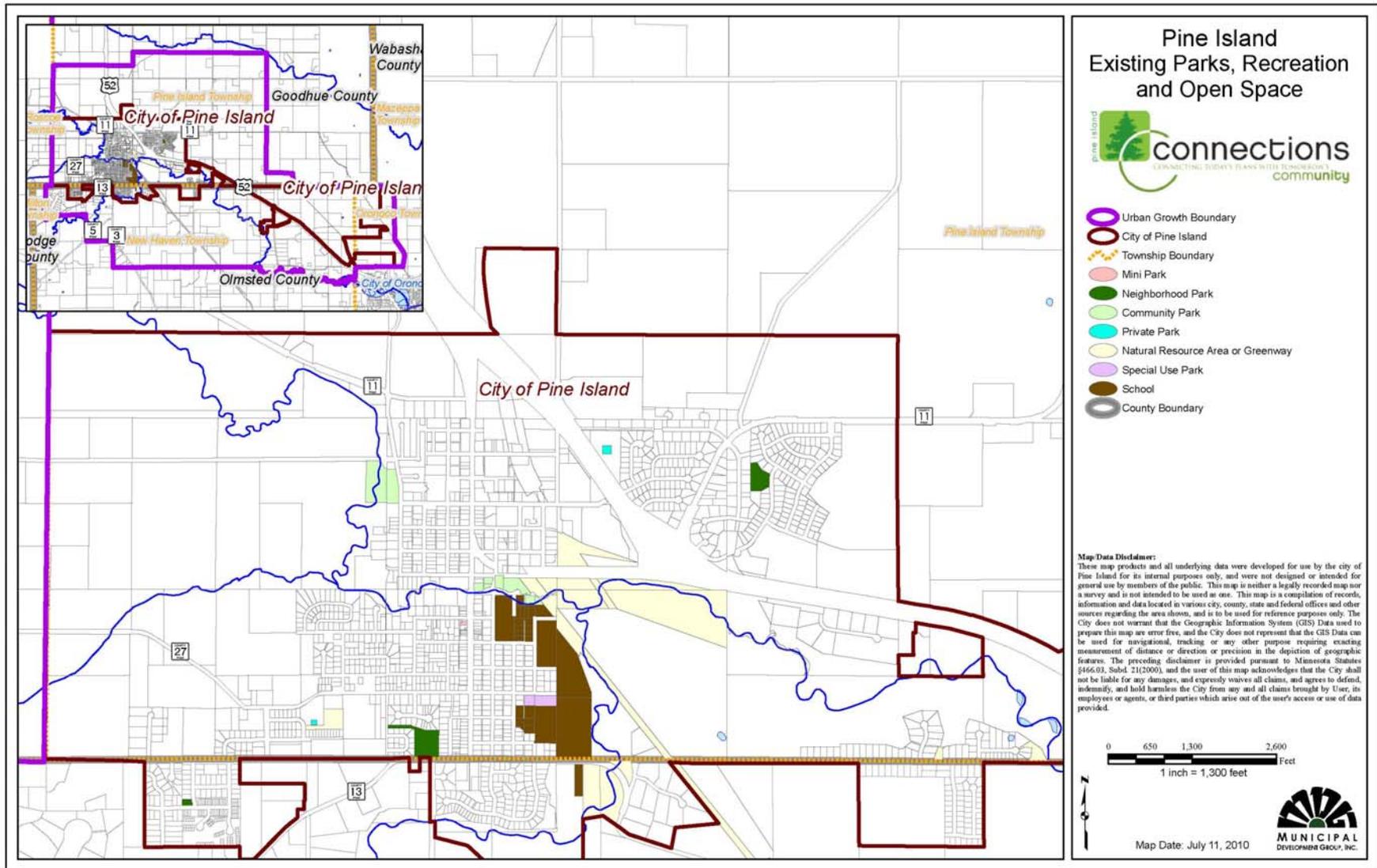


Table 21 – Park Inventory

| Park Name | Park Classification | Trail/Sidewalk Areas | Baseball/Softball | Nature Areas | Horseshoe Pits | Tennis Courts | Soccer Fields | Basketball Courts | Football Field(s) | Volleyball Courts | Playground | Swimming | Pleasure Skating Rink | Hockey Rink | Warming House | Archery Range | Skateboarding | Restroom facilities | Handicap Access | Picnic Area | Parking (off-Street) |
|---|------------------------|------------------------|-------------------|-------------------------|----------------|--------------------------|---------------|-------------------|-------------------|-------------------|------------|----------|-----------------------|-------------|---------------|---------------|---------------|---------------------|-----------------|-------------|----------------------|
| Douglas Trail Park | CP | Y | N | Y | Y, 6 | N | N | N | N | N | Y | N | N | N | N | N | N | Y, IND | Y | Y | Y |
| Collins Park | CP | Y | N | Y | N | N | N | N | N | N | Y | N | N | N | N | N | N | Y, IND | Y | Y | Y |
| Main Street Park & Bandshell | MP | Y | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | Y | Y | N |
| Swimming Pool | SUP | Y | N | N | N | N | N | N | N | N | N | Y | N | N | N | N | N | Y, IND | Y | N | Y |
| Tennis Courts | SUP | N | N | N | N | Y | N | N | N | N | N | N | N | N | N | N | N | N | Y | N | Y |
| Recreation Area & Overlook (8th Street SE-wetland area) | NR | N | N | Y | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| 27-acre Natural wooded area (between Pine Island Golf Course and US Hwy 52) | NR | N | N | Y | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| Custer Park | NP | N | N | N | N | N | N | N | N | N | Y | N | N | N | N | N | N | N | n | N | N |
| Kispert's Park | NP | N | N | N | N | N | N | N | N | N | Y | N | N | N | N | N | N | N | N | N | N |
| Wazuweeta Woods Park | PP | Y | N | N | N | N | N | N | N | N | Y | N | N | N | N | N | N | N | N | N | N |
| Ridgeway Estates Park | PP | N | N | N | N | N | N | N | N | N | Y | N | N | N | N | N | N | N | N | N | N |
| School Playground & Athletic Fields | PP | Y | Y | N | N | N | Y | Y | Y | N | Y | N | N | N | N | N | N | N | Y | N | Y |
| Greens View Development Parkland | NR | N | N | Y | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| MP = Mini Park | NP = Neighborhood Park | CP = Community Park | | RP = Regional Park | | BB = Baseball Field | | | | | | | | | | | | | | | |
| NR = Natural Resource Area | G = Greenway | SUP = Special Use Park | | PP = Private Park | | SB = Softball Field | | | | | | | | | | | | | | | |
| IND = Indoor Restroom | PR = Portable Restroom | SW = Sidewalk | | PT = Picnic Tables Only | | LL = Little League Field | | | | | | | | | | | | | | | |

Source: MDG, Inc. Inventory of Parks 8-3-09

Table 22 – Park Assessment

| Park Name | Turf | Irrigation System | Plantings/ Trees | Drainage System | Handicapped Accessible | Parking Availability | Parking | Sidewalks/ Trails | Playground Equipment |
|---|-------------|--------------------------|-----------------------------|------------------------|-------------------------------|-----------------------------|----------------|------------------------------|-----------------------------|
| Douglas Trail Park | 0 | NA | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| Collins Park | 0 | NA | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Main Street Park & Bandshell | 0 | NA | 2 | 0 | 0 | NA | NA | 0 | NA |
| Swimming Pool | 0 | NA | 2 | 0 | 1 | 1 | 1 | 0 | NA |
| Tennis Courts | 0 | NA | 2 | 0 | 1 | 0 | 1 | 0 | NA |
| Recreation Area & Overlook (8th Street SE-wetland area) | NA | NA | 0 | 0 | 2 | NA | NA | NA | NA |
| 27-acre Natural wooded area (between Pine Island Golf Course and US Hwy 52) | NA | NA | 0 | 0 | 2 | NA | NA | NA | NA |
| Custer Park | 3 | NA | 2 | 0 | 1 | 0 | NA | NA | 2 |
| Kispert's Park | 0 | NA | 0 | 0 | 2 | 0 | NA | NA | 2 |
| Wazuweeta Woods Park | 0 | NA | 2 | 0 | 2 | 0 | NA | 0 | 2 |
| Ridgeway Estates Park | 0 | NA | 0 | 0 | 2 | NA | NA | NA | 2 |
| School Playground & Athletic Fields | 0 | NA | 2 | 0 | 1 | 2 | 1 | 0 | 0 |
| Greens View Development Parkland | 0 | NA | 0 | 0 | 2 | NA | NA | NA | NA |

Source: MDG, Inc. Inventory of Parks 8-3-09

Ranking Key for Table 22 Park Assessment

| | | | | | |
|---------------------------|--|----------------------------------|--|--------------------------------|---|
| 1. Turf Condition | | 2. Irrigation System | | 3. Plantings/Trees | |
| NA | Not Applicable | NA | Not Applicable | 0 | No Problems |
| 0 | No Problems. | 0 | No Problems. | 1 | Plantings/trees are in good condition with few minor problems. |
| 1 | Turf is in good conditions with some bare areas. | 1 | System is in good condition with minor adjustment problems. | 2 | Some bare areas that need additional plant materials. |
| 2 | Turf has a few problems that need some work (aeration and over-seeding). | 2 | System is in fair condition, needs frequent work. | 3 | Several areas have problems that need work. |
| 3 | Turf is in poor condition and needs renovation. | 3 | System doesn't do the job and needs to be expanded (poor coverage). | 4 | Plantings/trees in very poor condition & should be completely removed. |
| 4 | Turf is in very poor condition and should be completely redone. | 4 | System is in very poor condition or no system at all. | 5 | Condition of trees present dangerous safety situation. |
| 4. Drainage System | | 5. Handicapped Accessible | | 6. Parking Availability | |
| 0 | No Problems | 0 | Entire park is accessible to handicapped | NA | Not Applicable. |
| 1 | Some saturation/standing water-minor improvements needed. | 1 | Portions of the park are accessible to handicapped individuals. | 0 | No Problems. |
| 2 | Very poor drainage-system needs renovation. | 2 | None of the park is accessible to handicapped individuals. | 1 | Not enough parking mainly during peak-use periods or only occasionally. |
| 3 | Dangerous system/conditions exist. | | | 2 | Not enough parking most of the time. |
| 7. Parking | | 8. Sidewalks/Trails | | 9. Playground Equipment | |
| NA | Not Applicable | NA | Not Applicable. | NA | Not Applicable. |
| 0 | No problems. | 0 | No Problems. | 0 | No Problems. |
| 1 | Good condition – needs regular routine maintenance. | 1 | Sidewalks/trails are in fair condition and require minor repairs. | 1 | Equipment is old but can still be used. |
| 2 | Surface in fair condition- spot repairs are necessary. | 2 | Sidewalks/trails are in poor condition and require extensive repair or renovation. | 2 | Equipment requires regular routine maintenance. |
| 3 | Surface in poor condition, several areas need major repairs. | 3 | Dangerous conditions exist. | 3 | Equipment is in poor condition and requires major repair or renovation. |
| 4 | Very poor condition, parking area needs complete renovation. | | | 4 | Equipment is in very poor condition and should be replaced. |
| 5 | Dangerous conditions exist. | | | 5 | Dangerous conditions exist. |

Pathways

Pathways within communities and connections to larger regional pathways are often classified by their purpose, type of improvement and location. The following Table 23 includes a description of seven types of pathways and identification of the pathways within Pine Island which are included in each category.

Table 23 – Pathway Classifications

| Classification | General Description | Description of Each Type | Existing Facilities |
|---|--|--|--|
| Park Trail | Multi-purpose trails located within greenways, parks and natural resource areas. Focus in on recreational value and harmony with the natural environment. | <u>Type I:</u> Separate/single purpose hard surfaced trails for pedestrians or bicyclists/in-line skaters. <u>Type II:</u> Multi-purpose hard-surfaced trails for pedestrians and bicyclists/in-line skaters. <u>Type III:</u> Nature trails for pedestrians. May be hard or soft surfaced. | Type I: None Type II: Collins Park, Douglas Trail Park, Wazuweeta Woods Park, Type III: None |
| Connector Trails | Multi-purpose trails that emphasize safe travel for pedestrians to and from parks and around the community. Focus is as much on transportation as it is on recreation. | <u>Type I:</u> Separate/single-purpose hard-surfaced trails for pedestrians or bicyclists/in-line skaters located in independent R.O.W (e.g. old railroad R.O.W). <u>Type II:</u> Separate/single-purpose hard-surfaced trails for pedestrian or bicyclists/in-line skaters. Typically located within road R.O.W. | Type I: Douglas Trail Type II: |
| On-Street Bikeways | Paved segments of roadways that serve as a means to safely separate bicyclists from vehicular traffic. | <u>Bike Route:</u> Designated portions of the roadway for the preferential or exclusive use of bicyclists. <u>Bike Lane:</u> Shared portions of the roadway that provide separation between motor vehicles and bicyclists, such as paved shoulders. | Bike Route: None Bike Lane: None |
| All-Terrain Bike Trail (Special Use Trail) | Off-road trail for all-terrain (mountain) bikes | Single-purpose loop trails usually located in larger parks and natural resource areas. | None |
| Cross Country Ski Trail (Special Use Trail) | Trails developed for traditional and skate-style cross-country skiing. | Loop trails usually located in larger parks and natural resource areas. | None |
| Equestrian Trail (Special Use Trail) | Trails developed for horseback riding. | Loop trails usually located in larger parks and natural resource areas. Sometimes developed as multi-purpose with hiking and all-terrain biking. These trails are developed so conflict can be controlled. | None |
| Snowmobile Trail (Special Use Trail) | Trails for winter snowmobile use. | Single purpose trails that are regional in nature and cover large distances due to the speed of travel. Usually developed and maintained by private groups of clubs. | Located throughout the area |

The City's Subdivision Ordinance contains language that states the following under Section 12.30, Subd. 2, Letter O:

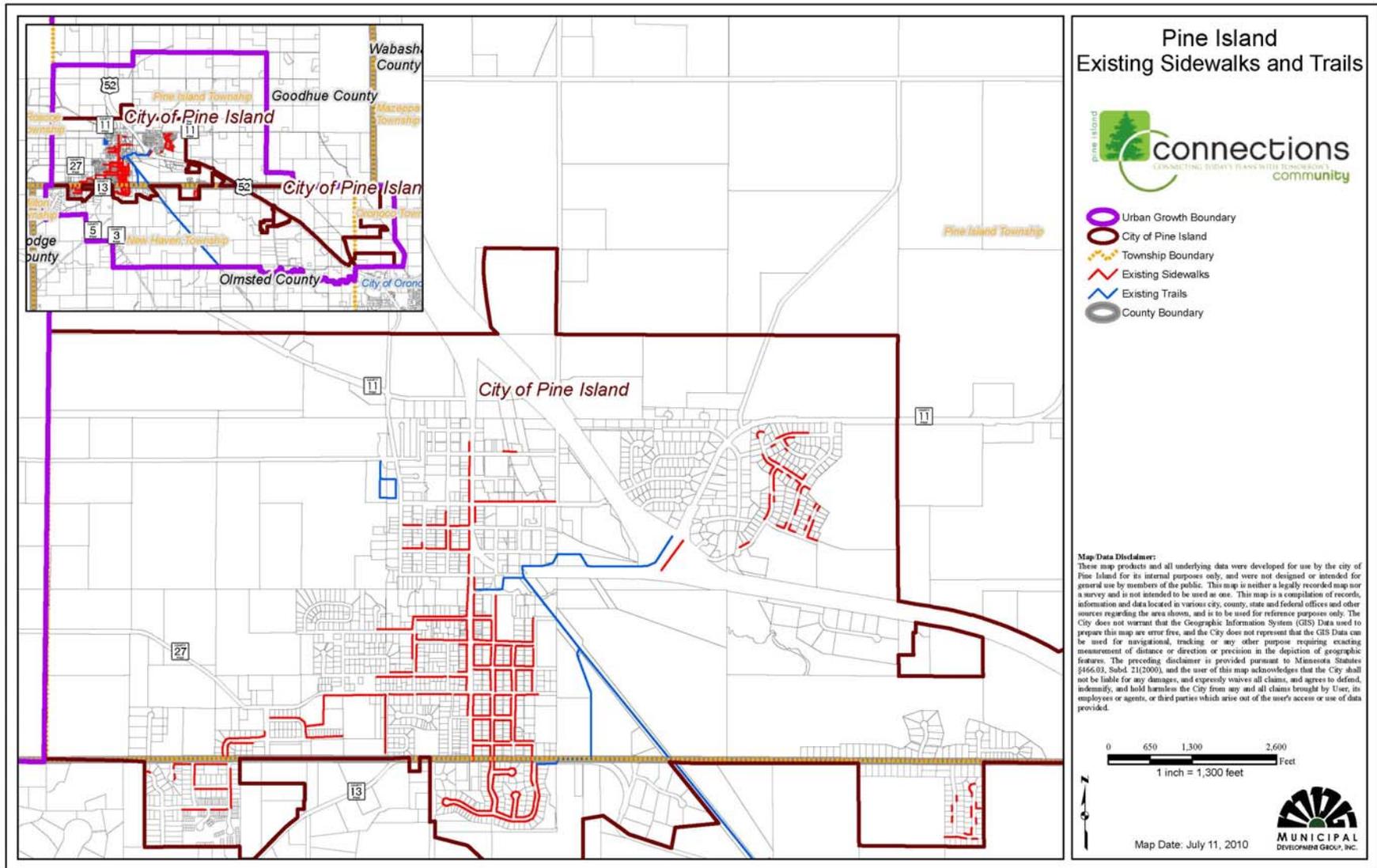
"Pedestrian Walkways: The Planning Commission and/or the Council may require the provision of pedestrian ways in proximity to public service areas such as parks, schools, shopping facilities or in other appropriate locations of a similar nature. The design of the pedestrian walkways shall be considered in their relation to existing and planned pedestrian walkways, to reasonable circulation of traffic, to topographic conditions, to run-off of storm water and to the proposed uses of the area to be served. Pedestrian rights-of-way shall be at least ten feet wide."

The language in the Subdivision Ordinance is very vague in what, when and where pedestrian walkways, which includes trails and sidewalks, can be or should be located and the standards of how they should be built and maintained. It is the intent of the City of Pine Island to be able to connect the existing developed areas with the newly developed or still undeveloped areas within the recently annexed parts of Pine Island (especially in the southeast area of the City along US Highway 52) and the urban growth boundary through pedestrian walkways along major transportation corridors shown in the future transportation maps and natural resource areas and greenways. Specific standards as to the future locations, the design standards and the long term maintenance of trail and sidewalks need to be developed. Figure 23 shows all the existing sidewalks and trails within Pine Island.



Pine Island trail end at park

Figure 23 – Existing Sidewalks and Trails Map



POLICIES, GOALS AND OBJECTIVES

The Parks, Recreation and Open Space Background element describes integrating parks, recreational facilities, and open space into future development. Trails are also identified as an important component to the connectivity to the park system. The City of Pine Island has adopted the following policies goals and objectives regarding Parks, Recreation and Open Space in the City.

Parks, Recreation and Open Space Policies, Goals, and Objectives

Policy 1. Provide the environment, resources, and specific requirements to ensure an adequate, healthy, and well-maintained supply of recreational opportunities for the use and enjoyment of the residents of City of Pine Island.

- Goal A. Develop and implement a Park and Recreation plan to meet current and near future needs.
- Goal B. Designate specific areas to be used as open space, recreation, and trail facilities.
- Goal C. Modify the City Zoning & Subdivision Code as necessary to implement Park, Recreation and Open Space policies.
- Goal D. Allocate and seek funding from the available resources on regular basis to implement the adopted Park Board annual park and recreation plan.
- Goal E. Amend the current park dedication policy to require park land dedication for commercial and industrial development and to review the requirements for the residential park land dedication.

Policy 2. Provide neighborhood based facilities to maintain easy and safe access to open space and park facilities.

- Goal A. The Park Board should examine existing facilities, project future needs, and plan for budget expenditures that take into account the new open spaces being dedicated for the public parks systems as part of new housing developments (neighborhood parks).

Policy 3. Specify the type, location, and the manner within which open spaces, trails and recreation areas will be provided throughout the city.

- Goal A. Ensure access, safety and availability of useable open space and recreation areas to all residents and others who could utilize such facilities.
- Goal B. Work with neighborhood groups, developers, and other public and private agencies to design, locate and construct park and open space facilities
- Goal C. Designate the type of park, recreation and open space to be provided in the following categories: Mini Park, Neighborhood Park, Community Park, Regional Park, Private Park, Natural Resource Area, Greenway and Special Use Park.
- Goal D. Designate the location and type of trails to be added to the trail system on the parks and trails map to address connectivity throughout the community.



Community gathering downtown Pine Island

Policy 4. Cooperate with other governments, agencies and communities to encourage a regional park and trail system.

Policy 5. Use trails, sidewalks and greenways as a way to connect and integrate undeveloped and developing areas of the City with the developed areas of Pine Island.

Goal A. To connect all the parks, recreation and open space areas in the City together with a trail system throughout the entire City. In areas where trails are not feasible greenway corridors or sidewalks should be used if possible.

Goal B. Develop standards as to the future location of trails and sidewalks. These standards should include design and maintenance standards as to the size, type and right-of-way required as well as who owns and maintains the trails and sidewalks.

Environmental Policies, Goals, and Objectives

As described in the Land Use background section of this Plan, the City of Pine Island has designated nine general land use areas to define future land use preferences:

- LD Low Density Residential
- MHD Medium and High Density Residential
- DC Downtown Commercial
- C Commercial
- M Mixed Use
- I Industrial
- PS Public and Semi-Public
- R Recreational
- P Parks and Open Space

Growth and development must occur in a manner that minimizes risk to the health and safety of current and future residents, and maximizes the sustainability of public and private investment in housing, businesses, and infrastructure. The City of Pine Island has determined that specific policies addressing environmental risks, particularly flood control, management, and mitigation, can minimize risk and make investment more sustainable.



Old Creamery looking north, September, 2004
Higher water levels due to a late season rain storm

As shown in the background section of this chapter, the City includes significant areas of floodplain, shoreland and wetland areas as well as unstable soils, and environmentally sensitive lands. The Plan identifies areas that are less suitable for development than others, or may require expensive remedial action in order to develop. The City proposes the use of environmental and flood management policies and standards to determine the suitability of proposed developments. The policies will ensure orderly development and minimize adverse development impacts on the land, the development itself, and neighboring areas.

Prior to official presentation of a particular development for review by the Planning and Zoning Commission, developers must use the adopted flood plain management, shoreland, wetland and soils maps showing the environmental constraints to determine compliance with the existing flood plan management

ordinance, whether or not shoreland rules and regulations apply, the type and suitability of soils for basement and footings construction, and the limitations posed by land topography and wetlands. The City also needs to use this information to direct development approvals early in the land development process, not just for housing or commercial but also for infrastructure, streets and other utilities.

Floodplain, Shoreland and Wetlands Policies, Goals and Objectives

The designated floodplain areas, shoreland areas and wetlands can be used as overlays to the future land use map and development shall be restricted as much as possible in the floodplain and wetland areas according to the ordinances and policies of the City. Development within these areas can be city infrastructure and public utilities as well as park facilities and trails. The intensity of development within the shoreland areas outside the floodplain along the rivers within the City and urban growth boundary is limited to protect the surface water quality and runoff. The City of Pine Island has adopted the following environmental policies.

Policy 1. Limit Pine Island’s flood damage liability as well as private investors’ liability by adopting and enforcing the urban growth boundary.

- Goal A. Require submittal of development plans to expressly address the environmental and flood area limitation consistent with City ordinance.
- Goal B. Ensure that Planning and Zoning Commission review encourages meaningful mitigation of risk early in the review process.

Policy 2. Develop an understanding of State and Federal rules guiding development and land uses in floodplain areas beyond the current boundaries of the City of Pine Island.

- Goal A. Update the current flood plain management regulations in the Zoning Ordinance to address the requirements for the current boundaries of the City and the urban growth boundary.

Policy 3. Restrict development in primary flood areas or flood fringe areas consistent with the adopted City Flood Plain Management Ordinance.

- Goal A. Direct growth away from flood hazard areas and other high risk environmental landscapes through the adopted future land use map and overlays.

Policy 4. Adopt buffer land protection areas around flood ways and wetland areas as defined by existing floodway and wetland maps.

Policy 5. Where possible seek dedication of proposed development areas falling within buffer land protection for the purposes of trail and nature area preserve developments.

Policy 6. Limit the intensity of development within the shoreland areas along the protected rivers within the City.

- Goal A. Adopt shoreland rules and regulations as part of the zoning ordinance to address development within the shoreland areas of the City.



Park buildings in 2010 flood



Lumber yard office in 2010 flood

- Goal B. Identify and classify all protected surface waters within the City and include as protected waters in the shoreland rules and regulations in the zoning ordinance.

Natural Resource Areas Policies, Goals and Objectives

The City of Pine Island will identify resource protection areas and a system to prioritize resource protection areas based on state, regional, and local criteria. Natural resource areas will be preserved with minimal, if any encroachment from new development or surrounding land uses. The land uses permitted in these areas should be limited to resource-related economic types of uses.

The Natural Resources areas could serve to meet open space requirements, minimize development cost, and allow for natural water filtration, and mitigate the risk of flood damage.



Flood stage at wastewater treatment facility

Policy 1. Dedicate natural resource areas throughout the City and urban growth boundary to preserve open space and promote and maintain cultural activities, parks and recreation facilities.

- Goal A. Develop a resource identification system to help prioritize open space, park and sensitive areas not already designated as floodplain or wetlands such as rock outcroppings and large stands of trees.

Policy 2. Manage and enhance the natural and manmade environments through natural resource protection to ensure continued use, enjoyment, and access for present and future generations.

- Goal A. Create active programs associated with cultural, park and recreation assets to meet the needs of all residents and visitors.
- Goal B. Strive to acquire public access to natural and manmade environments through dedication or the use of easements for trail purposes to connect these natural resources to the trails system.
- Goal C. Reduce the amount of salt and chemicals used during snow removal to limit the amount entering the water resources within the City.

Policy 3. Encourage developments that incorporate and work with their natural surroundings while they preserve the various functions and integrity of our natural environment.

- Goal A. Link the City’s natural resource identification system to the development approval process.
- Goal B. Adopt zoning or performance standards for open space preservation as necessary to preserve natural features that meet the City’s natural resource identification process.
- Goal C. Promote the use of planned unit developments during the approval process in order to ensure concentration of open space into more useable areas and the preservation of the natural resources of the site including wetlands, woodlands, steep slopes and scenic views.



Panoramic view of Pine Island

IMPLEMENTATION

During the past few years the City adopted a park dedication ordinance. The ordinance requires that new developments make a parkland dedication or pay cash in lieu of land in an amount equivalent to the fair market value of the land which would otherwise be required to be dedicated. As new development happens and the City expands, Pine Island needs to be able to continue to provide its residents with sufficient park land and recreational opportunities. Planning for where this park land is to be located is an important part of the future development of Pine Island and can be accomplished by providing a map that highlights areas for future parks and what kind of parks these should be.

Figure 24 illustrates the service areas for existing parks and looks at search areas for future parks. The existing parks service areas are shown quarter mile service area for mini parks and private parks, a half mile service area for neighborhood parks and a mile service area for community parks. The future parks are spaced accordingly throughout the Urban Growth Area of Pine Island so as these areas develop in the future, it will be expected that park land will need to be dedicated within these search areas.



Pine Island golf course

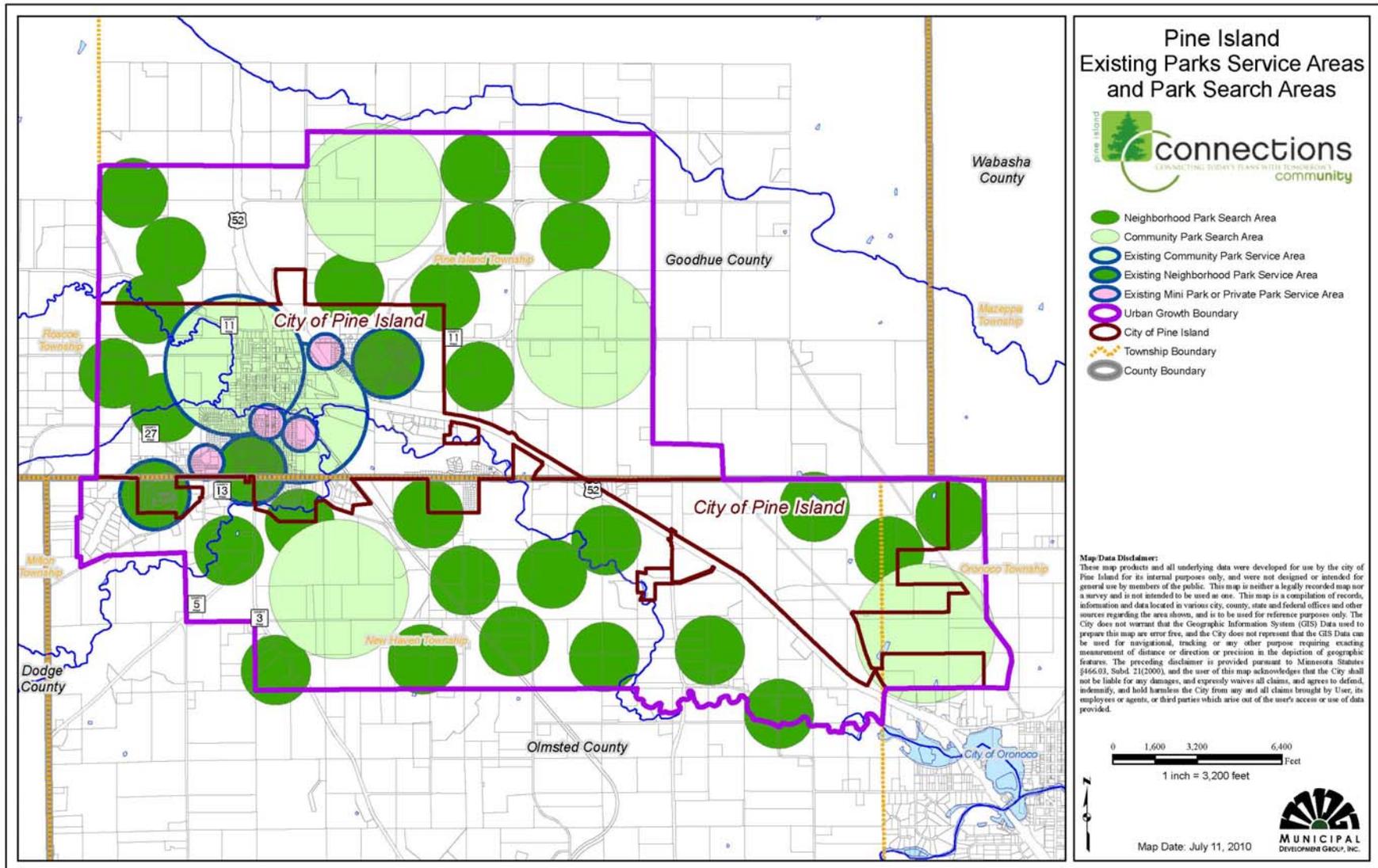
When planning for these park search areas, other planning elements were reviewed such as the future land use, the future transportation system, the future trails map, as well as looking at the natural resources in the area which should be preserved for public use such as wetlands, floodplains, wooded areas and greenway corridors.

Preservation of Open Space

The City of Pine Island has determined that public and neighborhood parks and open space areas shall be maintained so that their use and enjoyment for recreational opportunities are not diminished. Such facilities could be owned, maintained, and operated through any of the following mechanisms:

1. Dedication of open space to the City of Pine Island or any public agency willing to accept such dedication.
2. Payment to the City of Pine Island in lieu of park land or open space dedication as the City sees fit and in accordance with applicable City ordinances.
3. Common ownership of neighborhood parks and open spaces by a homeowners association which assumes the full responsibilities of owning, operating and maintaining such facilities. These parks would be considered private parks and may not be available for use by the general public.
4. Dedication of development rights of certain open space may be made to an appropriate local, County or state agency, while ownership of open space could remain with the developer, the homeowners association, or the City.

Figure 24 – Existing Parks Service Areas and Park Search Areas



Financial Resources

Several resources are available to assist the City of Pine Island in providing adequate parks, trails and facilities for residents. Following is a list of typical sources.

1. Park Dedication/Fee In-Lieu of Parkland Dedication Requirements for land acquisition.
2. User Fees (rental of park facilities, etc).
3. Volunteer hours/labor.
4. Donations by private individuals, civic organizations, organized groups, etc.
5. Grants available through the Minnesota Department of Natural Resources.
6. Property taxes.

The City budgets for operational expenses through its annual budget process. The City currently utilizes user fees, donations from organizations and individuals, grant programs, park dedication land and fees and the general tax levy to cover expenses relating to parks. The City does not have a specific capital improvement plan for long-range capital improvements to the park system. Maintenance of parks is included in the general fund budget, while park dedication fees are tracked in a park dedication fund. The City should consider developing a capital improvement plan for future park development/updates and trail extensions.

Pathway Design and Location

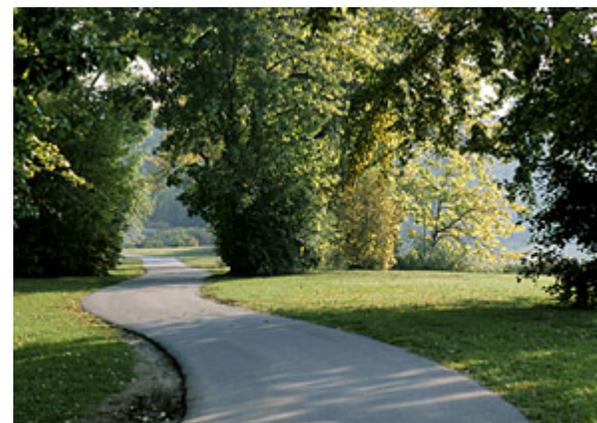
Pathways or trails should be designed with the following goals in mind (1) Safety – protect non-motorized and motorized users (depending on the type of trail) from adjacent or crossing vehicular traffic, (2) Linkages – provide links between local parks and recreational areas and regional trail systems, (3) Natural Environment – when designing the trail system protect the natural environment and natural features, and (4) Continuity – provide continuous trail systems with as few interruptions in user movement as possible.

Following are design guidelines suggested by the National Recreation and Park Association for the various types of pathways.

Park Trails

Type I. These separate or single purpose trails are typically ten feet wide and hard surfaced for pedestrians, bicyclists and/or in-line skaters.

Type II. These multi-purpose trails typically include a natural buffer; such as shrubs, trees or changes in topography, from adjacent uses on either side of the trail. A 50-foot right-of-way to accommodate the buffers is common with a ten foot paved surface.



Example of a paved bike trail

Type III. Nature trails are generally six to eight feet wide and are soft surfaced. Trail grades vary depending on the topography of the area in which they are located. Interpretive signage is common along nature trails.

Connector Trails

Type I and II. These separate or single-purpose hard surfaced trails are designed for pedestrians or bicyclists/in line skaters. If designed for pedestrians only, a six to eight foot width is common. If designed for bicyclists/in-line skaters, a ten foot paved surface is recommended. The trails may be developed on one or both sides of the roadway and may include one or two-way traffic. The trail is typically separated from the roadway with a boulevard, grass and/or plantings.

On-Street Bikeways

On Street Bike Lane. Bike Lanes are typically designed as a five-foot lane adjacent to the driving lane. On-street parking may occur between the on-street bike lane and the curb or edge of the road. In essence each side of the roadway is divided into three sections (1) driving lane, (2) on-street bikeway and (3) on-street parking.

On Street Bike Route. This bicycle route is typically designated so with signage. On Street Bike Routes are typically paved shoulders along roadways.

Special Use Trails

All Terrain Bike Trails. Design and length vary depending on the topography in the area. These trails are generally a part of a larger regional park or natural resource area.

Cross Country Ski Trails. The design of the cross-country ski trail is dependent upon its intended use. The traditional diagonal skiing typically includes a packed groomed trail with set tracks. Skate-skiing designs include a wider packed and groomed surface. The length of the trails may vary. Cross-country ski trails may be designed to be used as equestrian trails during summer months.

Equestrian Trails. These trails, designed for horseback riding, typically are designed with woodchips or grass as a surface. They are located in larger parks and natural resource areas where conflict with other trail users may be avoided. The length of an equestrian trail varies but is generally looped.

Snowmobile Trails. Unlike other trails, snowmobiling trails should be designed to cross steep contours at right angles, but select routes with grades less than 25 percent. Avoid hillside locations where the slope could cause a snowmobile to roll over. Two-way traffic is not recommended except on access trails. If two-way snowmobile traffic is required, provide a separate uphill and downhill section on slopes exceeding 8 percent. Avoid routes that cross or border sensitive plant or wildlife habitats. Snowmobile cruising speeds range from 30 to 40 miles per hour, with 50 miles per hour being the maximum. Day-use trails often are 50 to 80 miles in length and obtaining these trail lengths often requires close coordination with other landowners, including government agencies. Clearing width should range from 12 to 16 feet depending on the amount of use with a minimum 8 foot clearing height above the



Old Butter Factory used for borrow-a-bike

expected snow depth. Attempt to maintain a smooth, compacted snow base of 2 to 3 inches and grooming may be required on heavily used trails. On the trail base, favor a smooth, natural surface free of stumps, roots, rocks, and other projections. Curves should be as gradual as possible and longer turning radii not only protect user safety, but also help reduce erosion and trail maintenance problems. Sight distance varies with the maximum speed of the trail user so post warning signs at least 100 feet prior to any potential hazards, including motorized roadway crossings, trail intersections, and steep drop-offs. It is recommended to double the trail clearing width at a distance of 20 to 30 feet prior to the hazard.

Requirements as to location and size of future trails and sidewalks should also be addressed and it is recommended that trail and sidewalk location comply with the following standards.

Commercial Areas: Five (5) foot wide concrete sidewalks shall be located on at least one side of all local streets with additional requirements for collector and arterial streets in commercial areas. In the traditional lot and block area of the original Pine Island Townsite, it is recommended sidewalks are located on both sides of local streets in the commercial areas.

Industrial Areas: Five (5) foot wide concrete sidewalks shall be located on at least one side of all local streets with additional requirements for collector and arterial streets in industrial areas.

Residential Areas: Five (5) foot wide concrete sidewalks shall be located on at least one side of all local streets, except cul-de-sacs, with additional requirements for collector and arterial streets in residential areas. In the traditional lot and block area of the original Pine Island Townsite, it is recommended sidewalks are located on both sides of local streets in the residential areas.

Collector and Arterial Streets: Five (5) foot wide concrete sidewalks shall be located on one side and a ten (10) foot wide bituminous trail shall be located on one side opposite of the concrete sidewalk on all collector and arterial streets no matter the type of land use adjacent to the collector or arterial streets.

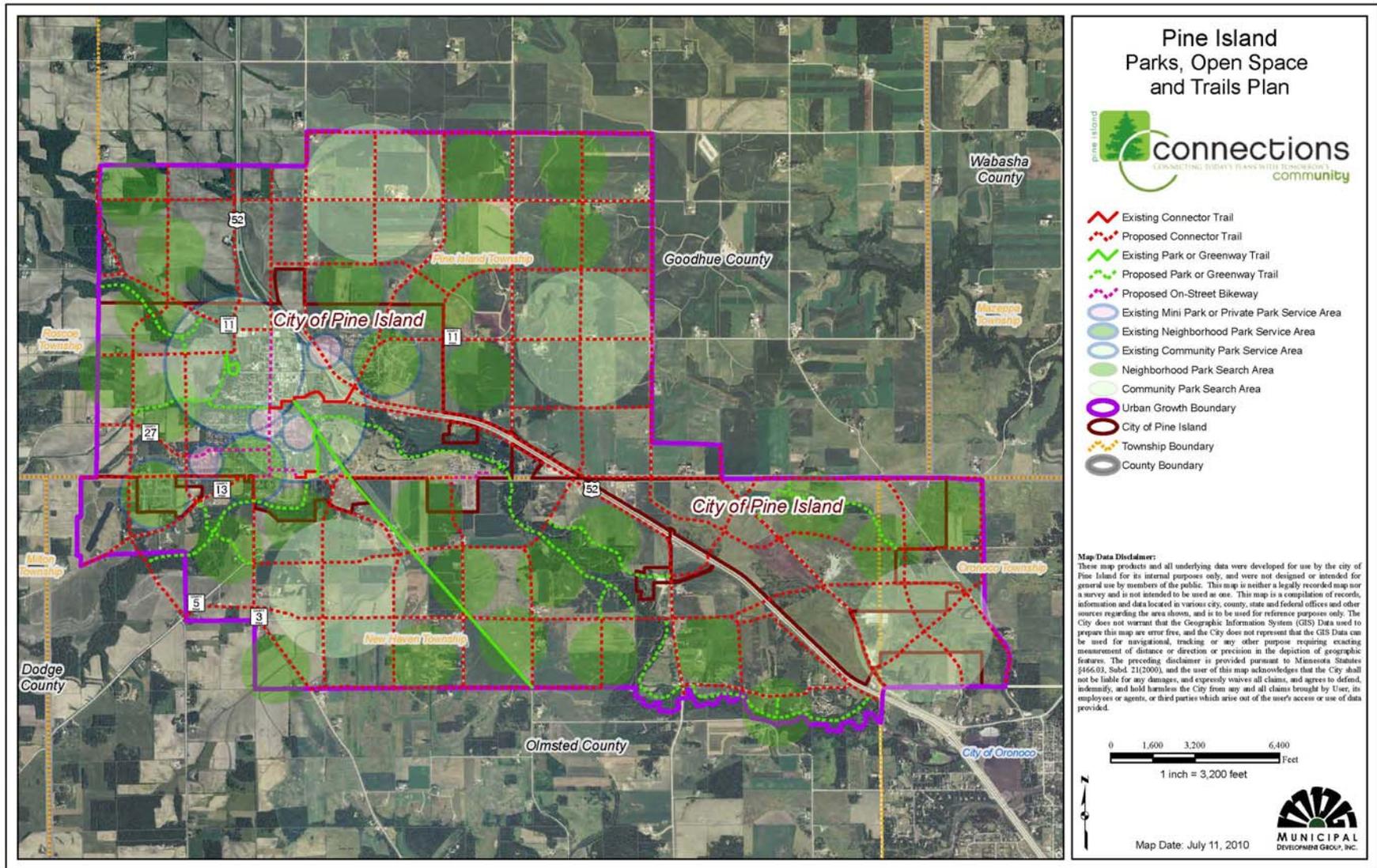
Local Streets: All local streets located in areas other than commercial, industrial and residential areas shall be required to have five (5) foot wide concrete sidewalks located on at least one side of the local street. In the traditional lot and block area of the original Pine Island Townsite, it is recommended sidewalks are located on both sides of local streets. Sidewalks requirements on cul-de-sacs may be waived by the City Council at the recommendation of the Planning Commission.

Trails located within open space, natural areas, greenways and parks shall be at the discretion of the Planning Commission and City Council; however, at a minimum trails should be located in the general vicinity of the future trails map shown on Figure 11 in the transportation section.

Parks, Open Space and Trails Plan

A community's comprehensive plan for parks, trails and open space should be diverse. The comprehensive plan should be used as the guiding document that inventories the existing parks and open space, designates the park search areas by type and location, and plans the future trail system by connections throughout the community for both a recreational purpose and a transit purpose. It is important to remember that issues and priorities can change with time, but with that in mind Figure 25 illustrates Pine Island's Park, Open Space and Trail Plan map. This map combines the existing parks trails and open space with the future trails and park search areas. While this map is meant to provide a guide for the future development of parks, open space and trails within the City, a more detailed approach as to the specific property or acreage required for the future parks or the exact trail location through a greenway corridor should be determined at the time of development since the City will continue to have opportunities in the future to assess the direction that it wants to proceed.

Figure 25 – Parks, Open Space and Trails Plan



CHAPTER 6 - WASTEWATER INFRASTRUCTURE

BACKGROUND

This section of this chapter discusses information regarding the recent history of the wastewater infrastructure, the existing sanitary sewer system, sanitary sewer rates and fees, subsurface sewage treatment systems (SSTS), future policies and goals and implementation which includes costs estimates. This chapter references information included in the Pine Island Wastewater Treatment Plant Study completed in 2002, the Pine Island Sewer System Financial Projections completed in 2007 and the Elk Run Alternative Urban Areawide Review (AUAR) completed in October, 2007.

Recent Wastewater Infrastructure History

The City of Pine Island owns and operates its own wastewater treatment facility and conducted an analysis of its existing wastewater treatment capacity in 2002. The study assessed existing capacity of the system, potential shortfalls in existing infrastructure as the City continues to grow both in housing and in commercial/industrial wastewater load, and options for addressing potential shortfalls. The purpose of the study was to:

1. To forecast future capacity needs of the wastewater treatment plant based on expected population and industrial growth.
2. To predict the year in which the existing treatment plant will reach its current capacity and needs to be upgraded.
3. To estimate the year in which the existing treatment plant, with a capacity upgrade, will reach the maximum capacity that can be provided by the site space.
4. To develop and evaluate alternatives for meeting future capacity needs.
5. To recommend an alternative based on estimated costs and other factors.
6. To prepare a document that can be used to seek funding assistance from the Minnesota Public Facilities Authority (PFA).

Based on data provided by the Pine Island Economic Development Authority and the Comprehensive Planning Task Force in 2002, assumptions were made so conclusions and recommendations could be formed to quantify future demands in this area. The conclusions and recommendations that were made at that time are listed below.

1. Growth was assumed in the study to be 80 new residential units per year. Since that time it has been demonstrated that 80 new residential units per year is very aggressive and as stated later in this chapter, 23 new residential units per year is being used. Land 'O Lakes future capacity needs were the same as the industry's current permitted limits, with the qualification that Land 'O Lakes would remain at its current levels for the next several years and will not reach its full capacity for approximately ten years. The 20-year wastewater treatment capacity needs are:
 - (a) Current flow and loading = 250,000 gallons per day, 420 lb/day Biochemical Oxygen Demand.
 - (b) Current plant capacity = a permitted design flow of 705,000 gallons per day.
 - (c) 2022 Flow and Loading = 1,250,000 gallons per day and 1,630 lb/day Biochemical Oxygen Demand.
2. The existing plant is currently exceeding its peak hydraulic flow capacity, but with minimal risks. The plant will reach its capacity to effectively treat and store sludge in 2005. At this time it has not reached its capacity to effectively treat and store sludge.

3. With an upgrade to expand its current capacity, the existing site has sufficient space to meet capacity needs only until 2010, after which either a replacement plant or a second plant must be constructed on a different site. With off-site treatment and storage of sludge, the existing plant can serve beyond 2022. The study did not forecast capacity needs beyond 2022.
4. Alternatives evaluated in the study were:
 - (a) Expand existing plant for continued use until 2010, then build a new plant on a different site, and either abandon or continue to use the existing plant.
 - (b) Abandon the existing plant now and build a replacement plant, with consideration to regionalizing with other communities.
 - (c) Construct off-site sludge treatment and storage facilities, with consideration to regionalizing with other communities.
 - (d) Contract with another community for off-site sludge treatment and storage.
 - (e) Upgrade the existing plant for continued use to 2022, in combination with off-site sludge treatment and storage.
5. Recommendations:
 - (a) Monitor the plant performance, especially how it performs under peak hydraulic flows, for the next ten (10) months.
 - (b) Continue to monitor flow and loading from Land 'O Lakes for the next ten (10) months.
 - (c) Next February, confirm (1) growth forecasts, (2) Land 'O Lakes flow and loading, and (3) timetable for future capacity needs.
 - (d) Complete Facilities Plan in March, 2003, (which has not been completed) and submit for funding assistance, with the following technical recommendation:
 - (1) Expand the liquid treatment capacity of the existing plant to meet 2022 needs, in either 1 or 2 phases.
 - (2) Pursue off-site sludge treatment and storage options, either with the existing regional facility in Ellsworth, WI or with a new regional facility in southeast Minnesota.

The growth assumptions of 80 new residential units per year, has proved to be on the extreme high end. New Housing starts since 1994 have averaged 35 new units per year with only two of the years surpassing 80 units and a third year just below 80 units at 75. If you were to subtract those three years from the total, the average would be 23 new residential units per year. In addition to this Land 'O Lakes has not used the entire amount of there reserved capacity.

As development occurred and the City annexed additional land into its corporate boundaries for new development, it was clear additional studies would be needed to adjust the initial conclusions on the wastewater capacity needs. As part of a proposed large development in the southeast part of the City, which

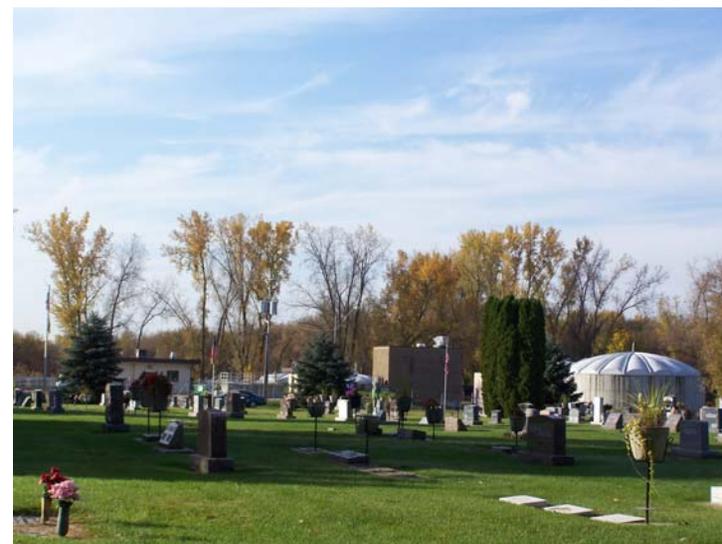
was contained entirely within Olmsted County, an Alternative Urban Areawide Review was completed. Called the Elk Run Alternative Urban Areawide Review, it encompassed the entire development as well as a large portion of the New Haven and Oronoco townships outside the development. A sewer feasibility study was completed for this area as part of the Alternative Urban Areawide Review, which further addressed the future wastewater needs of Pine Island.

Additionally the City completed a Sewer System Financial Projections update in 2007 that projected new residential, commercial and industrial properties through the year 2030. This study used different numbers for new residential housing units and commercial and industrial properties on a yearly basis but overall averaged 59 new residential units per year for a total of 1,365 new residential units by 2030. This projection, just like in the Wastewater Treatment Plant Study completed in 2002, is substantially higher than the household projection of 910 new residential housing units by the year 2035 in the Demographics and Housing chapter which projected 35 new residential housing units per year which is the historic average from 1994 through 2009.

Existing Sanitary Sewer System

The wastewater treatment system itself consists of a mechanical plant located on the south side of Center Drive East (Goodhue CSAH 11) just west of the interchange at US Highway 52. Five lift stations are part of the overall system.

A memo dated March 16, 2010 from the City Engineer analyzed the current situation at the wastewater treatment plant. It was estimated that the current wastewater treatment facility has an estimated base wet weather flow of 440,000 gallons per day without Land O' Lakes. With the 250,000 gallons per day Land O' Lakes contract the existing wastewater flow for design purposes is 690,000 gallons per day. It should be noted however, Land O' Lakes is only using a small portion of the 250,000 gallons per day but the wastewater it is generating is very intense. At this time the permitted design flow of the wastewater treatment facility is only 705,000 gallons per day, which would allow for 15,000 gallons per day of capacity for growth. If the anticipated growth included 25 new homes per year and 40,000 square feet of office building space per year an annual flow increase of 10,500 gallons per day could be projected. If this growth becomes a reality it would exceed the remaining capacity of the plant in less than two years. Figure 26 on the next page illustrates the existing municipal wastewater treatment system within Pine Island.



Pine Island wastewater treatment facility behind cemetery

Sanitary Sewer Rates and Fees

Sewer rates effective as of 2010 were \$20.00 per month as a base charge and \$3.19 per 1,000 gallons plus three percent (3%) inflation annually. The sewer connection charge was \$1,733.44 plus seven and one half percent (7.5%) inflation annually and the sewer access fee (sometimes called a trunk area charge) is \$4,044.69 per acre plus seven and one half percent (7.5%) inflation annually. The per acre sewer access fee does exempt items from the total acreage such as wetlands and other undevelopable property. These fees and charges are reviewed and amended on a yearly basis as needed, including adding the inflation percentage every year, as part of the City's fee schedule. Due to the recent slowdown in development activity, a cap on the yearly inflation rates may be needed to let development catch up with cost projections.

Subsurface Sewage Treatment Systems (SSTS)

Minnesota Rules Chapter 7080 governs construction and abandonment of subsurface sewage treatment systems. At this time the City does not administer on its own or contract with either Goodhue or Olmsted County to implement MN Rules 7080 locally. There are approximately seventy-eight (78) subsurface sewage treatment systems within the City and according to the City of Pine Island Wellhead Protection Plan there were three subsurface sewage treatment systems within the Drinking Water Supply Management Area, which requires special protection to limit threats to the water supply for the City. Management and inspection of these systems should be a priority of the City, not only for preventing infiltration into the drinking water supply but to ensure systems are in compliance with the Minnesota Rules 7080 and do not need to be replaced or in some cases abandoned and the property connected to the Pine Island wastewater treatment system.

The current City code states that sanitary sewer facilities adequate to serve the subdivision shall be installed in accordance with City plans and specifications and all new construction shall be connected to the City sewer system. The code does not have a requirement or policy for properties with an existing ISTS that has failed or may fail to connect to the Pine Island wastewater treatment system or a set time or distance that is reasonable once the property has been annexed. Some properties and developments within the City with existing subsurface sewage treatment systems do have agreements in place that state they are required to hook-up or pay sanitary sewer assessments within ten years after sanitary sewer service is within reach, however in some cases the ten years has passed and hook-ups were not required. These agreements should be reviewed and a policy agreed upon as how to handle these situations and ones like it in the future.

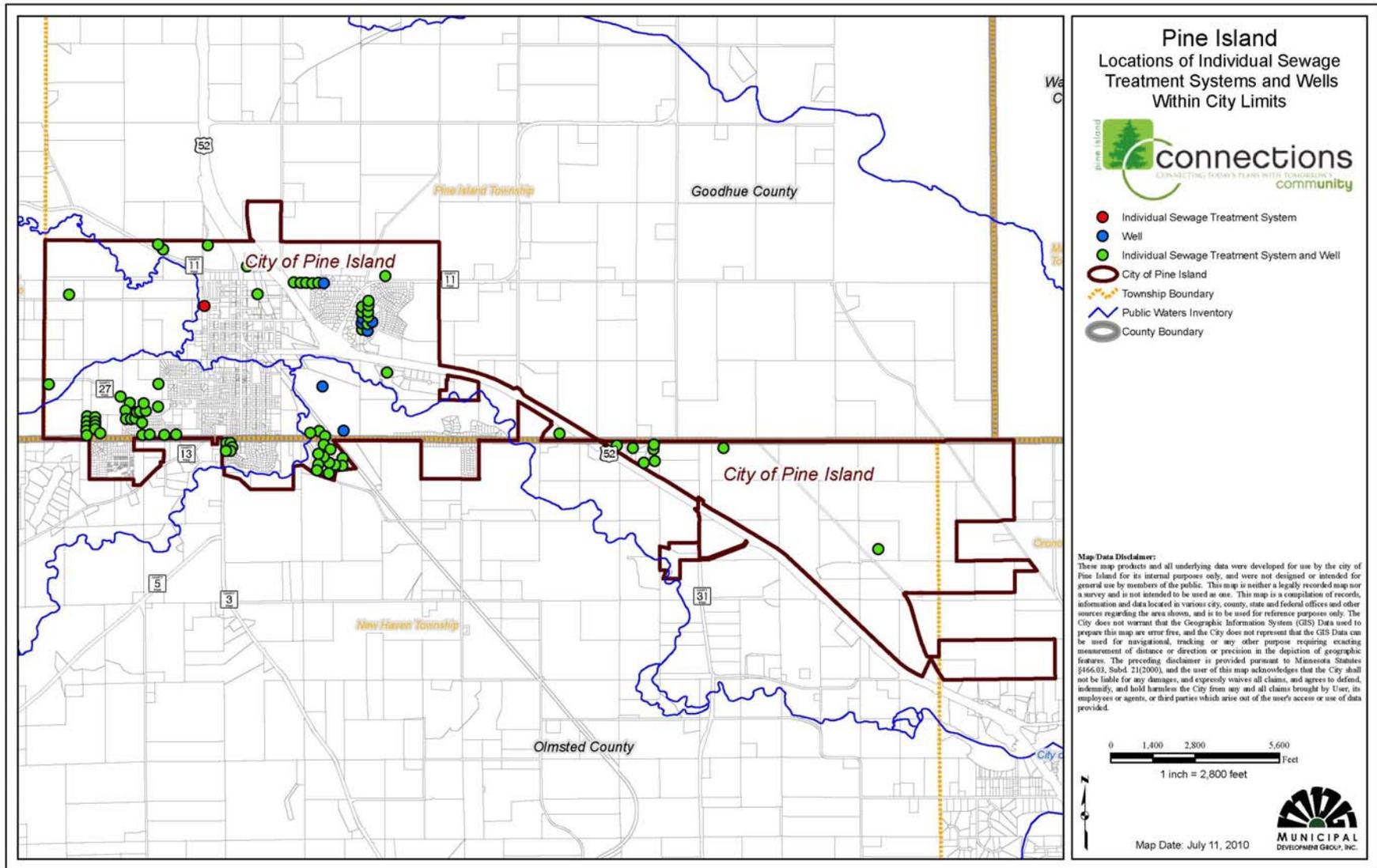
As more land is annexed into the community, additional properties with existing subsurface sewage treatment systems will fall under Pine Island jurisdiction so a strategy should be developed by the City for extension of sanitary sewer, along with water utilities into existing rural areas to respond to the need to replace subsurface sewage treatment systems in these areas with municipal sanitary sewer. This policy should be based on set period of time the property has before connection to the wastewater treatment system is required along with a distance requirement that is feasible for the connection. Table 24 on the next page lists all the subsurface sewage treatment systems within the City of Pine Island while Figure 27 illustrates the locations of the known subsurface sewage treatment systems and wells within Pine Island.

Table 24 Locations of Subsurface Septic Systems within Pine Island

| Address | Address | Address |
|----------------------------|-----------------------|--------------------------|
| 1208 511th Street NW | 706 5th Street SW | 740 Campbell Court SW |
| 520 3rd Avenue NW | 712 5th Street SW | 745 Campbell Court SW |
| 710 County Road 11 NW | 715 5th Street SW | 110 Willow Circle SW |
| 720 County Road 11 NW | 721 5th Street SW | 111 Willow Circle SW |
| 312 County Road 11 NW | 727 5th Street SW | 112 Willow Circle SW |
| 780 North Main Street | 760 5th Street SW | 113 Willow Circle SW |
| 212 5th Street NE | 805 5th Street SW | 114 Willow Circle SW |
| 8 Oak Lane NE | 810 5th Street SW | 800 Trails View Lane SE |
| 12 Oak Lane NE | 1231 5th Street SW | 801 Trails View Lane SE |
| 22 Oak Lane NE | 416 6th Avenue SW | 900 Trails View Lane SE |
| 26 Oak Lane NE | 604 6th Avenue SW | 901 Trails View Lane SE |
| 28 Oak Lane NE | 612 6th Avenue SW | 1001 Trails View Lane SE |
| 20183 County 11 Boulevard | 721 6th Avenue SW | 1100 Trails View Lane SE |
| 51124 200th Avenue | 824 8th Street SE | 1101 Trails View Lane SE |
| 51159 200th Avenue | 860 8th Street SE | 1151 Trails View Lane SE |
| 51162 200th Avenue | 900 8th Street SE | 800 New Haven Road NW |
| 51187 200th Avenue | 510 8th Street SW | 900 New Haven Road NW |
| 51200 200th Avenue | 600 8th Street SW | 1001 New Haven Road NW |
| 51242 200th Avenue | 700 8th Street SW | 2877 520th Street |
| 51270 200th Avenue | 800 8th Street SW | 2907 520th Street |
| 27 Elmwood Drive NE | 710 Campbell Court SW | 22199 520th Street |
| 51146 Highway 52 Boulevard | 715 Campbell Court SW | 829 Rolling View Lane |
| 8340 135th Street NW | 720 Campbell Court SW | 837 Rolling View Lane |
| 601 2nd Street SW | 725 Campbell Court SW | 857 Rolling View Lane |
| 564 5th Street SW | 730 Campbell Court SW | 888 Rolling View Lane |
| 602 5th Street SW | 735 Campbell Court SW | 12708 59th Avenue NW |

Source: City of Pine Island

Figure 27 – Locations of Subsurface Sewage Treatment Systems and Wells within City Limits



POLICIES, GOALS AND OBJECTIVES

Pine Island has completed the Pine Island Wastewater Treatment Plant Study in 2002, the Pine Island Sewer System Financial Projections in 2007 and the Elk Run Alternative Urban Areawide Review in 2007. These studies provided the background to establish policies and goals for the Wastewater Infrastructure chapter of this plan.

The City of Pine Island has identified the following general policies and goals to direct decision-making, capital decisions and plan for the future in regard to wastewater infrastructure.

Wastewater Infrastructure Policies, Goals, and Objectives

The City of Pine Island has adopted the following policies and goals regarding investment, planning and maintenance of wastewater infrastructure.

Policy 1. Maintain an adequate level of service to meet existing needs.

- Goal A. Continue to evaluate future capacity expansions in light of the ongoing housing, commercial and industrial growth.
- Goal B. During annexations and preliminary plat review and/or concept plan review and prior to approval of a preliminary plat, the City should review and calculate the impact of all the proposed development and land subdivision on the capacity of the existing wastewater infrastructure.
- Goal C. Evaluate wastewater plant options and alternatives for expanding capacity of the existing plant and associated disposal of biosolids.

- Objective i. Create a policy prohibiting private septic system dumping at the wastewater treatment plant. By limiting the dumping at the plant, the useable capacity will be able to be reserved for additional hook-ups to the system.

- Objective ii. To reduce the amount of chemicals dumped in the wastewater treatment system for treatment purposes.

- Goal D. Evaluate the potential limits to surface discharge.

- Goal E. Create a mechanism to implement Minnesota Rules Chapter 7080 in relation to the installation, inspection and abandonment of subsurface sewage treatment systems and inventory all existing subsurface sewage treatment systems within Pine Island and the urban growth boundary.

Policy 2. Ensure adequate resources to meet projected City growth for the next 3 to 5 years.

- Goal A. Seek funding on ongoing basis.

- Goal B. Continue to plan for future wastewater infrastructure needs by structuring rates, connection charges and access fees to ensure future development pays for infrastructure costs needed to support the future growth of the City.

- Objective i. A facilities management plan should be developed and adopted as a guide to future management and development of the



Pine Island wastewater treatment facility

wastewater treatment system with updates taking place every three to five years.

Goal C. Continue to provide quality sanitary sewer services to Pine Island residents and businesses at cost effective rates.

Objective i. A mechanism or policy needs to be developed to allow for inspection of industries by the City of Pine Island to prevent unauthorized discharge to the wastewater treatment system.

Objective ii. The City of Pine Island shall implement an incentive based program promoting the reduction of sanitary sewer usage.

Goal D. Follow recommendations of the Sewer System Financial Projections.

Goal E. Link wastewater infrastructure policies and goals to the City Capital Improvement element and infrastructure plan.

Goal F. The City should review assessment policies relative to development review and financing, including but not limited to cost-sharing in conjunction with extension of wastewater collection mains and lift stations in newly developing areas (i.e. The City's financial responsibility for over-sizing of sanitary sewer mains).

Policy 3. The City should emphasize redevelopment or infill in existing developed areas to maximize existing wastewater infrastructure.

Goal A. The City should plan for the future servicing of parcels currently surrounded by City limits which are currently in the township and served with Subsurface Sewage Treatment Systems.

Goal B. Continue to upgrade existing wastewater infrastructure that needs replacing as street reconstruction projects take place and coordinate future street construction with needed wastewater infrastructure improvements to avoid duplicate costs.

Policy 4. Continue to plan for the expansion and upkeep of wastewater infrastructure to meet the projected growth of the City through the year 2035 and beyond.

Goal A. Update the Subdivision Regulations to include language on various impacts on system capacity and provides the right the right to deny development permits if the wastewater infrastructure is unable to meet the needs of the proposed development. In addition, the Subdivision Regulations should be updated to address design standards for wastewater infrastructure as needed.

Goal B. To plan for the future sanitary sewer system the City should consider the completion of a Comprehensive Sanitary Sewer Plan to determine the location of sanitary sewer districts and trunk mains and limit the need for lift stations by maximizing the use of gravity flow when new sanitary sewer lines are constructed.

Goal C. Continue to review and update the City's current Capital Improvement Plan in relation to the sanitary sewer system as needs arise and projects are completed.

Goal D. As new industrial developments are submitted for review, "wet industries" or manufacturers which use high levels of water should be encouraged to recycle water, as the remaining capacity for may not be able to service the community or the user may consume a large portion of the city's remaining capacity.

Goal E. The City may wish to consider a policy to reserve a portion of sewer system capacity specifically for the purpose of commercial and industrial development (e.g. 20% of overall capacity reserved for future commercial and industrial development).

Goal F. Develop a policy regarding the requirements of when existing subsurface sewage treatment systems within Pine Island shall be hooked up to the municipal sanitary sewer system which is based on a time frame as to how long the property has before it needs to be hooked-up and a minimum distance requirement which is feasible to allow the hook-up.

IMPLEMENTATION

The implementation portion of the wastewater infrastructure section, reviews planning for the future expansion of the wastewater treatment facility and illustrates the costs to achieve this. Previously the wastewater infrastructure chapter of the Comprehensive Plan reviewed the options and costs estimates for expanding the capacity of the wastewater treatment facility.

Pine Island Wastewater Treatment Plant Options

Options and cost estimates were presented as part of the study as follows:

1. Upgrade the existing plant for an approximate 8-year life, which is the ultimate capacity of the existing plant site (ultimate capacity of the existing site will serve the capacity needs of (1) the current number of users, (2) Land 'O Lakes at its maximum capacity, and (3) growth of 80 new units per year for 8 years). Estimated capital cost of existing plant upgrade = \$4.8 million. In 2010, construct a second treatment plant in the southeast region of the City with capacity to serve 80 new units per year from 2010 to 2022. Estimated capital cost of second plant = \$4.9 million.
2. Abandon the existing plant and construct a new plant in the southeast region of the City with 2022 capacity. Estimated capital cost of new plant = \$10 million.

The two options included new plants, but with different years of use. In Option #1, the new plant is small and is used only 10 years before it runs out of capacity. In Option #2, the larger plant is used 20 years before running out of capacity. The salvage values and converted salvage values were estimated to present worth of that year so that apples to apples comparisons of costs could be made. Both options are similar in that they provide capacity out to the year 2022.

More recently a memo from the City Engineer dated March 16, 2010 explained the options of increasing the wastewater treatment plant capacity from the current permitted flow of 705,000 gallons per day to either 850,000 gallons per day or 1,200,000 gallons per day. The 850,000 gallon per day alternative would be projected to handle growth for about 10 to 15 years while the 1,200,000 gallon per day alternative would serve the City for over 20 years. Both of these options assumed the existing clarifiers would require rehabilitation. Along with the clarifier rehabilitation, additional items would need to be repaired or replaced such as the aeration piping, check valves in the control building, nurse truck for hauling, variable frequency drives, change the chemical fee system to phosphorus removal, a new bar screen and new grit removal system.

The City should maintain a facilities management plan that is updated every three to five years in order to keep up to date the above mentioned options and other maintenance items required by the wastewater treatment system. A facility plan would investigate the Wastewater treatment plant for deficiencies, identify future flows and loadings, identify alternatives to meet future requirements and presents cost estimates for alternatives.

Additional Wastewater Treatment Options for the City.

At the time of the study in 2002, additional options pertained to ways the City could upgrade the existing plant for twenty (20) year capacity needs and



Sign at Pine Island wastewater treatment facility

continue using it until the year 2022, without the need to build a second or new plant on a different site. The City could have upgraded the existing plant for twenty (20) year capacity needs and continue its operation until 2022 if a plan to treat and store waste biosolids (i.e., sludge) off-site was developed. One such off-site plan was to haul untreated biosolids to the West Central Wisconsin Biosolids Facility (WCWBF) in Ellsworth, Wisconsin. The cost-effectiveness of off-site biosolids treatment, as compared to upgrading the existing plant was also established. Without off-site biosolids treatment, space at the plant would not allow capacity for 2022 to be built.

Two other off-site options including cost estimates were reviewed at that time and are as follows:

1. The City constructs its own remote biosolids treatment and storage facility by upgrading to a dewatering treatment facility.
2. The City enters into a regional biosolids facility with other surrounding cities which is very difficult and would cost a lot of money.

Option 1 - City-Owned Remote Facility

In this option, the City would build new treatment and storage facilities on a site outside City limits. Although an exact site for the facility is currently unknown, costs were estimated assuming a site within three miles of the existing plant could be found. The estimated costs of this option at that time were:

Table 25 – Estimated Costs of City-Owned Remote Facility

| | |
|---|-------------|
| Capital Cost (including land purchase) | \$2,726,000 |
| Annual Capital Cost (5%, 20-years) | \$219,000 |
| Annual Operation and Maintenance Costs at 2002 biosolids quantities | \$86,000 |
| Annual Operation and Maintenance Cost at 2022 biosolids quantities | \$147,000 |
| Total Annual Cost at 2002 biosolids quantities | \$305,000 |
| Total Annual Cost at 2022 biosolids quantities | \$366,000 |
| Average Annual Cost | \$335,500 |

Option 2 - Local Regional Facility

This alternative was developed assuming that several other cities would participate in a local regional biosolids facility. The exact cities, the amount of biosolids relative to Pine Island they would contribute, and a site for the regional facility are unknown. For estimating purposes it was assumed that participation sufficient enough to make Pine Island a twenty-five percent (25%) partner could be generated. Thus, the capacity of the facility would be four times that of Option 1 above. The estimate costs of this option were:

Table 26 – Estimated Costs of Local Regional Biosolids Facility

| Item | Cost | Pine Island Share |
|---|-------------|-------------------|
| Capital Cost (including land purchase) | \$5,800,000 | \$1,450,000 |
| Annual Capital Cost (@5%, 20 years) | \$465,000 | \$116,000 |
| Annual Operation and Maintenance at 2002 biosolids quantities | \$320,000 | \$80,000 |
| Annual Operation and Maintenance at 2022 biosolids quantities | \$480,000 | \$120,000 |
| Total Annual Cost at 2002 biosolids quantities | \$785,000 | \$196,000 |
| Total Annual Cost at 2022 biosolids quantities | \$945,000 | \$236,000 |
| 20-Year Average Annual Cost | \$865,000 | \$216,000 |

Table 27 – Summary of Off-Site Biosolids Options

| Option | Annual Average Pine Island Cost Share Between 2002 and 2022 |
|---|---|
| Haul to West Central Wisconsin Biosolids Facility | \$175,000 |
| City Owned Remote Facility | \$335,500 |
| Local Regional Facility | \$216,000 |

A cost recovery plan for recommended improvements at the wastewater treatment plant was also described. After a January 31, 2002 meeting, it was decided to further develop the alternative of upgrading the existing treatment plant for future capacity in a way that gives the City sufficient time to pursue a regional solution for biosolids treatment and disposal. The cost impacts of that plan would need to be evaluated. The recommended plan and the cost recovery for the plan is as follows.

Recommended Plan

The recommended plan consisted of phased improvements, as follows:

Table 28 – Phased Upgrade of Existing Wastewater Treatment Plant

| Phase | Year | Description | Capital Cost |
|-------|------|---|--------------|
| 1 | 2003 | Upgrade the liquid treatment processes at the plant for 1,000,000 gallons per day capacity (this capacity will serve growth until 2012). Install a sludge thickener. With the thickener, the existing digester can provide sludge capacity until 2007 | \$3,750,000 |
| 2 | 2007 | Upgrade raw sewage pumps at the plant; implement a regional bio-solids solution, either at the existing facility in Ellsworth, WI or a new facility in southeast Minnesota | \$ 470,000 |
| 3 | 2012 | Upgrade the liquid treatment processes at the plant for 1,250,000 gallons per day capacity (this capacity will serve growth until 2022) | \$ 1,100,000 |

Description of Phase 1

- Construct new 55' diameter clarifier to provide peak flow capacity until 2012.
- Construct additional 260,000 gallon aeration tank to provide flow and Biochemical Oxygen Demand capacity until 2012.
- Abandon primary clarifiers (which are overloaded hydraulically) and install static fine screens.
- Convert existing rectangular final clarifiers to chlorine contact basin with capacity to serve until 2022.
- Install gravity belt thickener to increase solids content of raw biosolids to >4%.
- Perform other miscellaneous improvements, repairs, replacements, etc. due to age and wear.

Assumptions of the Recommended Plan

- It was assumed residential growth in the service area would will be 80 residential equivalent unit's per year. As mentioned earlier the historical average from 1994 to the current year was 35 residential equivalent unit's per year and if the three highest years are not included the historical average would be 23 residential equivalent unit's per year. (A residential equivalent unit is a customer discharging wastewater at the volume and strength of a typical residence)
- Land 'O Lakes maintains its wastewater discharge at a current rate with the option to double its wastewater discharge by 2013. This has not happened to date and currently their wastewater discharge numbers are down dramatically since 2002.
- Minnesota Pollution Control Agency imposes an effluent ammonia limit on the next upgrade. (If ammonia removal is not required, costs are reduced)
- Continued use of pickle liquor for chemical phosphorus removal.

Cost Recovery

There were various options for cost recovery described as follows:

1. The capital costs of the Phase 1 treatment plant upgrade were split as follows: (1) sixty percent (60%) was associated with the construction of new capacity, (2) Twenty percent (20%) was associated with replacement and repairs, i.e., the "maintenance" of existing capacity, and (3) twenty percent (20%) was associated with additional treatment necessary to meet more stringent effluent limits, i.e., ammonia. These percentages were based on an itemization of construction items, their costs, and their purpose.
2. The recovery of capital costs of the treatment plant upgrade was split as follows: (1) new capacity costs are recovered through new connection fees, (2) repair and replacement costs are recovered through user charges, and (3) costs to meet more stringent standards are recovered through user charges.
3. Land 'O Lakes pays a user charge based on actual usage, and does not pay for additional capacity in the upgrade. At that time, Land 'O Lakes discharged a wastewater volume equivalent to 600 residential equivalent unit's. When discharging at its full permitted capacity, Land 'O Lakes will be equivalent to 1,000 residential equivalent unit's. The user charge for Land 'O Lakes was calculated on the basis of (1) Land 'O Lakes's

residential equivalent unit's compared to total residential equivalent unit's in the City, and (2) the intent of Land 'O Lakes charge to recover the industry's percentage share of operation and maintenance, replacement, and stringent standards costs. At this time the numbers do not support this increase.

4. In 2007, operation and maintenance costs were to increase significantly due to the City joining or implementing its own regional biosolids facility. The costs were based on Ellsworth, WI rates.
5. Cash flow or cash reserves were not taken into account and the required connection fee and user charge were calculated to meet the revenue requirements in any particular year.
6. Inflation was not included.

Description of Data

- Capital Debt for the Phase 1 upgrade was split according to new capacity (\$158,000 per year), replacement (\$53,000 per year), and treatment to meet new standards (\$53,000 per year). In 2007 and 2012, Phases 2 and 3 were to create additional debt for capacity.
- Operation and maintenance costs were the annual operation and maintenance costs of the plant, including an estimate of the O&M costs starting in 2007 to participate in a regional biosolids facility.
- Land 'O Lakes residential equivalent unit's were a measure of Land 'O Lakes's wastewater contribution to the system each year.
- New residential residential equivalent unit's were the new connections each year.
- Total Residential residential equivalent unit's were the total residential equivalent unit's on the system each year, without Land 'O Lakes. The current figure of 1,280 was an assumed level for 2003 based on population.
- Total residential equivalent unit's with Land 'O Lakes were the total residential equivalent unit's on the system each year including Land 'O Lakes.
- Land 'O Lakes user charge was the calculated charge to Land 'O Lakes to recover Land 'O Lakes's percentage charge of operation and maintenance, replacement, and standards costs.
- New connection fees was based on the calculated connection fee based on the capital debt for capacity each year divided by 80 new residential equivalent unit's.
- User charge per residential equivalent unit was the calculated annual charge to a typical residential user to recover operation and maintenance, replacement, and standards costs, after Land 'O Lakes's share has been considered.

On February 25, 2002, a meeting with representatives of Land 'O Lakes took place to discuss the Wastewater Facilities Plan. During the meeting, Land 'O Lakes indicated a high probability that its discharge of wastewater and high-strength waste to the City's treatment plant could remain at current levels for the next two to five years. At that time the wastewater study had assumed that Land 'O Lakes would increase its wastewater loading at a constant rate over approximately the next ten years until it reached its permitted capacity in 2012. Due to that assumption, capacity needs at the plant were to be urgently addressed. With Land 'O Lakes revised loadings, the timetable for capacity needs was relaxed to some degree. The relaxed timetable was then used as follows.

Land 'O Lakes's current loadings and permitted loadings were as follows:

Table 29 – Comparison of Current and Permitted Land 'O Lakes Loadings

| Parameter | Current Maximum 30-Day Average | Permitted Maximum 30-Day Average |
|---------------------------|---------------------------------------|---|
| Flow | 160,000 gallons per day | 250,000 gallons per day |
| Biochemical Oxygen Demand | 76 pounds per day | 625 pounds per day |

Land 'O Lakes was and still is permitted for other parameters, but flow and Biochemical Oxygen Demand were the only parameters cited in the analysis because of their great significance in capacity determinations. The reason maximum 30-day levels were important in capacity determinations is that the treatment plant must meet its effluent standards on a monthly basis.

Revised Analysis

The following growth assumptions were made in this revised analysis:

- Land 'O Lakes would remain at current levels until 2006, or, for four years.
- Growth in the service area would occur at eighty (80) new residential units per year. (this was unchanged from the previous analysis)
- The existing north digester would continue in use to treat Land 'O Lakes high strength waste.

Based on those assumptions, the conclusions indicated in Table 31 below were made. The table estimated the year in which the plant capacity in four separate categories is likely to be exceeded. The estimate of sludge handling capacity is based on the plant needing to provide at least 150 days of sludge storage.

Table 30 – Estimated Year in Which Plant Capacity is Exceeded

| Parameter | Current Plant Capacity for the Parameter | Current Level for the Parameter | Year in Which Plant Capacity for Parameter is Exceeded |
|-----------------------------|---|--|---|
| Maximum 30-Day Average Flow | 1,060,000 gallons per day (see note 1) | 757,000 gallons per day | 2016 |
| Peak Flow | 2,000,000 gallons per day (see note 2) | 2,190,000 per day (see note 4) | 2002 |
| Biochemical Oxygen Demand | 1,361 pounds per day | 401 pounds per day | 2015 |
| Sludge Storage | 469 pounds per day Biochemical Oxygen Demand (see note 3) | 401 pounds per day | 2005 |

Notes:

1. Although the rated plant capacity for maximum 30-day flow was 705,000 gallons per day, the aeration tanks will still provide sufficient detention time at 1,060,000 gallons per day to provide proper treatment, providing that (1) Biochemical Oxygen Demand capacity was not exceeded, (2) plant effluent discharge limits remained the same, and (3) the aerated WAS storage tank continued in use as an aeration tank for wastewater.
2. Based on a maximum surface overflow rate of 1,200 gallons per day/sq.ft., the existing final clarifiers could handle 2,000,000 gallons per day. At 2,000,000 gallons per day, the primary clarifiers would be overloaded hydraulically, but as long as the final clarifiers were not overloaded effluent limits should still be attainable. If loaded greater than 1,200 gallons per day/sq.ft., the risk of effluent violations and process upsets increased.
3. The analysis made a correlation between influent Biochemical Oxygen Demand loading and sludge production. The capacity of the sludge handling system, including storage, was expressed in terms of an allowable Biochemical Oxygen Demand loading in the plant influent wastewater. At 503 pounds per day Biochemical Oxygen Demand loading, the estimated sludge production would result in less than 150 days of storage at the plant. Storage for 180 days is needed. With only 150 days, sites for summer and winter application would have been may be needed which may not be possible. It was not desirable to provide less than 150 days of storage.
4. The estimated current peak flow of 2,190,000 gallons per day was based on a calculation in which measured peak flows at the plant less than this amount were extrapolated based on five year rainfall events.

Most Urgent Needs at the Plant in 2002

The table above indicates that peak flow and sludge storage capacity were to be exceeded in 2002 and 2005, respectively. Exceeding the plant's peak flow capacity does not necessarily mean effluent violations would occur, rather, that the risks of effluent violations and process upsets are greatly increased. The solution would be to construct an additional final clarifier. In the previous analysis, the recommendation was to construct one additional circular final clarifier. However, the delay in proceeding with the wastewater study for another year would most likely not create problems with peak flow at the plant at that time. The risks associated with peak flow would depend greatly on the severity of rainfall events.

Comprehensive Sanitary Sewer Plan

A comprehensive sanitary sewer plan is primarily intended to serve as a guide to completing the remaining sections of the trunk sanitary sewer system which can include lift stations, treatment plant expansion and trunk lines serving individual districts or service areas. At this time a comprehensive sanitary sewer plan has not been developed for Pine Island. A comprehensive sanitary sewer plan could assist the City in proactively determining sanitary sewer collection and treatment system issues and needs as the City grows as well as assist in planning for future capital expenditures.

As shown in the Land Use chapter of this plan, a large portion of the urban growth area is located outside the current City limits and as land is annexed and development proposed, plans need to be in place to allow for proper sizing of the sanitary sewer mains, correct locations for lift stations and proper maintenance of the existing system. A comprehensive sanitary sewer plan can achieve these items. If these plans are not in place trunk lines could be installed in locations which do not utilize the topography to the fullest extent creating the need for additional lift stations or trunk lines could be installed that are undersized meaning capacity in that line could be limited to a smaller area creating a need to add secondary trunk lines to service the same area.

Other items that could be included within the plan are as follows:

1. **Sanitary Sewer Districts:** For the purpose of sanitary sewer planning, these districts are created to plan for gravity drainage without exceeding the capacity of the trunk lines. The districts try to achieve as much gravity flow as possible to limit the use of lift stations. Each district can be

further divided into subdistricts which contributes sanitary sewage flow to the collections system. The amount of flow that each subdistrict contributes depends on a variety of parameters such as land, population density, wastewater generations rates, development restrictions and others.

2. **Projected Sanitary Sewer Flows:** An approach that can be used consists of modeling these sanitary sewer parameters in a Geographic Information System (GIS) format for the purpose of calculating sanitary sewer flows. Since the focus of this study is ultimate development within Pine Island and the urban growth boundary, ultimate sewer flow projections should be based on the future land uses for ultimate development in this plan.
3. **Ultimate Trunk Sanitary Sewer Map:** To develop this map the topography of undeveloped areas has to be studied to estimate the most cost effective locations for future trunk facilities. Adjustments in routing, size, grade, etc. of trunk facilities can be expected as determined by the particular conditions at the time of final design and construction, but it is recommended that the map show the general concepts for an economical and adequate ultimate system.
4. **Twenty Year Sanitary Sewer Capital Improvement Plan:** This plan could include construction cost estimates for the completion of the ultimate sanitary sewer trunk system over a twenty year period. This plan should be updated on a yearly basis if possible and include all sanitary sewer trunk facilities including mains 10 inches and over.

Maintenance of Wastewater Infrastructure

Generally improvements have been done on an as needed basis to maintain the wastewater infrastructure. Problem areas within the system are addressed annually with maintenance completed by the Public Works Department. Replacement of mains and lines are coordinated with street and other utility projects and it has also been noted that there are very few if any infiltration problems within the system.

One area of concern in regards to ongoing maintenance and upgrades is the wastewater treatment facility. Multiple items need to be completed to keep the facility operating under its permitted guidelines. Projects as for the wastewater treatment facility, as reported by the Public Works Department are as follows:

| Project | Cost |
|---|-------------------|
| Upgrade the four primary clarifiers | \$140,000.00 |
| Replace all air lines | None available |
| Replace all check valves in the main control building basement | \$6,000.00 |
| Nurse truck for the spring and fall biosolids hauling (Another option would be to contract the work out) | None available |
| Switch the plant over from Ferrous Sulfate to Ferric Chloride for chemical Bio Phosphorus removal | \$3,500 per month |
| Install Variable Flow Drive's for influent lift station | \$35,000.00 |
| Install a new barscreen | \$300,000.00 |
| Install a grit removal and dewatering system | \$80,000.00 |
| <u>Change chlorine system at pool from gas to pellets</u> | <u>\$5,000.00</u> |
| Total costs | \$608,000.00 |

CHAPTER 7 - WATER INFRASTRUCTURE

BACKGROUND

Pine Island's water infrastructure is discussed in this chapter of the Comprehensive Plan. Pine Island conducted a study of its drinking water infrastructure in 2002 to assess existing capacity, need for new investment, and options for expanding the system to accommodate growth. Other items discussed in this chapter include the components of the existing water system, the Wellhead Protection Plan, water rates and fees, individual wells, proposed facilities, policies, goals and objectives, and the implementation of this section.

Water Infrastructure Study

This report, completed in 2002, represented a Comprehensive Water Supply, Storage and Distribution Plan for the needs of the City of Pine Island for the next twenty years.

Scope

The purpose of the water study is was to provide the City of Pine Island with a short and long term tool for use in planning and implementing new and ongoing improvements to the water system. The City's zoning and land use plans were utilized in the formation of this study. With the amount of land that has been annexed to the City and the updating of the land use plan, items within the study are now outdated and will need to be either updated or a new study completed. Some of the specific items completed and addressed as part of the study included the following:

1. Analyze the existing and future systems to determine weak areas and to plan for future improvements to ensure an adequate system in the future.
2. Determine the supply and storage requirements of the city to address current and future needs for upgrading these areas.
3. Evaluate proposed development to determine the potential future demands on the system and the effects this will have on the water supply, storage and distribution requirements.
4. Develop a plan for optimization of the supply, storage and distribution components of the water system into the future.
5. Provide preliminary estimated costs for supply, storage and distribution components for use in planning for future improvements by the City.
6. Provide possible locations and capacities of possible new facilities to be incorporated into the system.



Pine Island Public Works building

Background

Pine Island had experienced steady growth over the last 10 years. The 2000 census indicates a population of 2,337, which is a 9.6% increase over the 1990 census population of 2,125. This growth was not expected to slow down, but thought to most likely increase with the increase in the development being completed and the number of lots available for new homes.

With this increase in population also comes an increase in the amount of water being consumed by the system. The City of Pine Island was at that time pumping approximately 101,000,000 gallons of water into the system each year, or an average of approximately 280,000 gallons per day. The city's peak

day usage at that time occurred on May 21, 2001, at 690,000 gallons per day. With the increase in the water demand by the community, it is imperative that the city plans for the future to sustain a well maintained water supply and distribution system.

Methodical development and planning are the backbone to a water system that can supply potable water to all points of that ever-changing system. A strong network of trunk water mains is used to supply water from the water supply and storage facilities within the system. It is important to review all pertinent data when planning for upgrades to a system to best complement both existing facilities as well as provide service to new growth areas.

The purpose of this study is to provide the City of Pine Island with a water system analysis and plan to aid in the planning of future expansions to the system in an economical and efficient manner.

The City's water system was divided into three main categories for the purposes of the study: Supply and treatment, Storage and the Distribution System.

Supply and Treatment

The supply and treatment category includes all the necessary components to supply and treat the water used in the system including wells, pumps, pump houses, controls, and treatment equipment. At this time there are two wells operating, one with on-site back-up power generation.

Storage

The storage category includes all the facilities used to store water for use by the system and to regulate pressures within the system. The City of Pine Island has two elevated water storage tanks that provides water to the system. Both towers were inspected in 2009. Other forms of storage include ground storage placed at high elevations in or near the community and can still utilize gravity to feed back into the system or ground storage that require booster pumps to pump water into the system at required pressures.

Distribution System

The distribution system category includes all of the trunk water mains, which are usually 8 inches or larger in diameter, service piping, valves, hydrants and anything else used by the system to convey water through the system to points of demand.

The construction of the Pine Island water distribution system, following construction of the initial system in the central portion of town, has been completed as the need has arisen and as development has occurred radiating from the central area of town. As developments were completed, the water mains to serve them have been installed and may not have taken into account how the developments as well as the areas between the development and the rest of the community are affected by these additions to the water system. Many times these developments are more or less dead ends on the end of the system and do not facilitate looping of the system. Looping provides more than one way for water to get to an area, which is beneficial, both at times of needed repairs and shutdowns of areas in the system and also to provide greater flow to an area for fighting fires. One of the purposes of this study is to determine water pressure and supply problems created by the increase in development in the community and solutions to these problems.



Pine Island water tower

Water Demands

Demands

The water demands placed on the system are affected by many factors including population and its placement within the community, commercial and industrial activities, climate, soil conditions, water rates, water pressures and the condition of the water system. Records indicated that Pine Island's average daily demand is approximately 487,000 gallons per day and the maximum day demand to date of 659,000 gallons per day occurred on October 8, 2009.

Population Forecasts

The Water System Study and Plan was based on the information included in the City's draft of the Comprehensive Plan that was in place before the current update and discussions with City staff. The facilities described in this plan were based on serving an approximate population of 4,000 persons in the year 2023. This came from a moderate population projection based on past census populations and population studies completed locally by the City and the Economic Development Authority at that time. Again, this was a moderate growth figure and the variation in the actual growth will affect the timing of the planned improvements.

Water Usage

The rate of water usage was varied over periods of the year at that time, as well as throughout the course of each day and different days of the weeks. There were a number of benchmarks that are used to determine the capacities of a water system's components.

The average day demand was the total yearly pumping divided by the 365 days in a year. This is used to aid in estimating the maximum day and maximum hour demands of the system. The average day demand can also help in estimating the projected operational costs of the water system and revenue to be generated by the system. As stated previously, the City of Pine Island's average daily water use is 487,000 gallons per day.

The maximum day demand is the basis for design of the City's water supply and storage facilities. All components of the water system must work together to supply the maximum day demand of the system. Also to be taken into account, are reserves for both residential, commercial and industrial development, as well as fire protection. As stated previously, the City of Pine Island's maximum day demand was recorded on October 8, 2009, at 659,000 gallons per day.

The maximum hour demands are those times of extreme consumption in the system. These times of maximum consumption are relatively short with both the reservoirs and the pumping facilities joining in providing the needed flows. For this reason, it is necessary to strategically locate the wells and storage reservoirs throughout the entire water system to minimize the effect on the entire system when a local event occurs, such as main breaks or fires.

The per capita water use was also determined for use in estimating the future system. The per capita water use on the maximum day at that time was 196 gallons per person per capita demand.

Peak demands on a system vary greatly due to the land use of the area. The greatest effect comes from lawn watering in residential areas on hot days. The water use in commercial and industrial areas may be high, but are more stable and do not vary like residential areas, which seem to dictate the times of peak usage. By implementing water restrictions the City can reduce water usage for both the per person capita demand and the average daily water use. It should be a requirement for the City to have a plan in place by the year 2013.

Projected Water Usage

Estimated water use is based on population, land use and water use trends. Again, peak demands vary with land use. The total projected water use was determined for use in the hydraulic analysis and planning of the future system. This was accomplished by estimating that the future per capita water demand will be similar to the existing per capita demand and adding water uses expected for planned development of industrial and commercial areas designated in the draft comprehensive land use plan at that time. Based on this analysis, the projected maximum day demand in 2023 was approximately 3,300,000 gallons per day as shown in the Table 32 below.

Table 31 – Projected Water Demand

| Year | Population Served | Gallons Per Person Per Capita Demand | Maximum Gallons Per Day Demand | Average Gallons Per Day Demand |
|------|-------------------------|--------------------------------------|--------------------------------|--------------------------------|
| 2000 | 2,337 | 295 | 690,000 | 280,000 |
| 2023 | 4,000 | 300 | 1,200,000 | 480,000 |
| | 1,050 acres Comm/Ind | 1000 gallons per acre per day | 2,100,000 3,300,000 | 1,050,000 1,530,000 |

Fire Demand

Water used for fire is another consideration in the design of a water system. Fires require extreme amounts of water, but only over a relatively short period of time. The total amount of water used to fight fires is very little when compared to the overall system use throughout the year, but with the need for extreme flows during the emergency situation the fire demands frequently govern the system design.



Pine Island Fire Hall



Pine Island Fire Department truck

At that time the recommended fire flows set by the Insurance Services Office, which determines a community’s fire insurance rating level, are between 1,000 gallons per minute and 3,500 gallons per minute for a community the size of Pine Island. The Insurance Services Office uses the fire demand as one third of the formula for rating the community, with the others being the ability to receive and handle fire alarms and the characteristics of the Fire Department. The Insurance Services Office recommended fire flows are as follows:

Table 32 – Insurance Services Office Recommended Fire Flows

| Land Use | Required Fire Flow (gallons per minute) | Duration (Hours) | Storage Volume Required (Gallons) |
|-----------------------|--|-------------------------|--|
| Commercial/Industrial | Desired – 3,500 | 3 | 630,000 |
| | Minimum – 2,000 | 2 | 240,000 |
| Institutional/Public | Desired – 3,500 | 3 | 630,000 |
| | Minimum – 2,000 | 2 | 240,000 |
| Residential | Multi-Family – 1,500 | 2 | 180,000 |
| | Single Family – 1,000 | 2 | 120,000 |

Water Supply

Existing Wells

The City of Pine Island is currently utilizing both wells with a pumping capacity of approximately 1,850 gallons per minute (2,664,000 gallons per day). This well was ~~is~~ set up on a peak use arrangement by People Service with the power company, which limits the normal use during odd numbered days that are considered peak use times. This means that if there is a need to use the well to supply more water than is being stored on these days, People Service must use a tractor power take off connected to an angle drive to pump water to the system. This well was included, the total supply capacity of the city’s wells would have been 3,000,000 gallons per day. The firm supply capacity is that which can be supplied with the largest well out of service, thus the City of Pine Island has a firm capacity of 1,850 gallons per minute (2,664,000 gallons per day)

A firm well capacity of 3,300,000 gallons per day is required to meet Pine Island’s projected water demand in the year 2023 according to the 2002 study. Considering the “backup” well #2 as a normal part of the system, the city’s firm capacity of 1,500,000 gallons per day was adequate to meet the increase in residential demand through that time, but will fall short of providing the increased demands when including the commercial and industrial development that is expected. Building a firm capacity equal to the maximum day demand ~~is~~ would have been desirable so that the City’s demand requirements can still be met in the event that the largest well is out of service. It would have also ensured that the system can operate more efficiently for filling the storage reservoirs in off peak times and would have provided greater flows in fire emergency situations.

Well Water Quality

The US Environmental Protection Agency (EPA) has established maximum contaminant level (MCL) standards for substances known to be hazardous to public health and commonly or possibly found in drinking water. The primary standards are those that directly affect the health of individuals, while the secondary standards are those that cause objectionable aesthetic qualities in the water such as taste and odor.

Water Storage

The storage of the water system is used to regulate pressure throughout the day and allow for more efficient use of the pumping portion of the system. The elevated storage reservoir is filled during the night, at the times of lower demand, and drained throughout the day as the system demands. The storage is also a benefit during emergency situations such as a fire. The water is stored at an elevation to provide pressure and additional flow when the pumps are not able to provide the demand of the system. At that time the City of Pine Island's elevated tower provides its entire current total of 600,000 gallons of storage in the system. The high water elevation of that tower is 1,196.

Distribution System

The City of Pine Island's existing distribution system at the time consisted of approximately seventeen miles of piping of various sizes and material. The main line piping ranged in size from 3 inch to 12-inch diameter and is made of materials such as ductile iron, cast iron and polyvinyl chloride (PVC). PeopleService had indicated that there are a few areas that currently experience some low pressures at times that were described as high demand times.

City and PeopleService staffs provided mapping and information that they had to create the best picture of the system, as it existed. This information was used to create a computer model of the system for use in analyzing both the existing system for problems and used as a foundation for modeling the future system.

Adequacy of the Existing Facilities

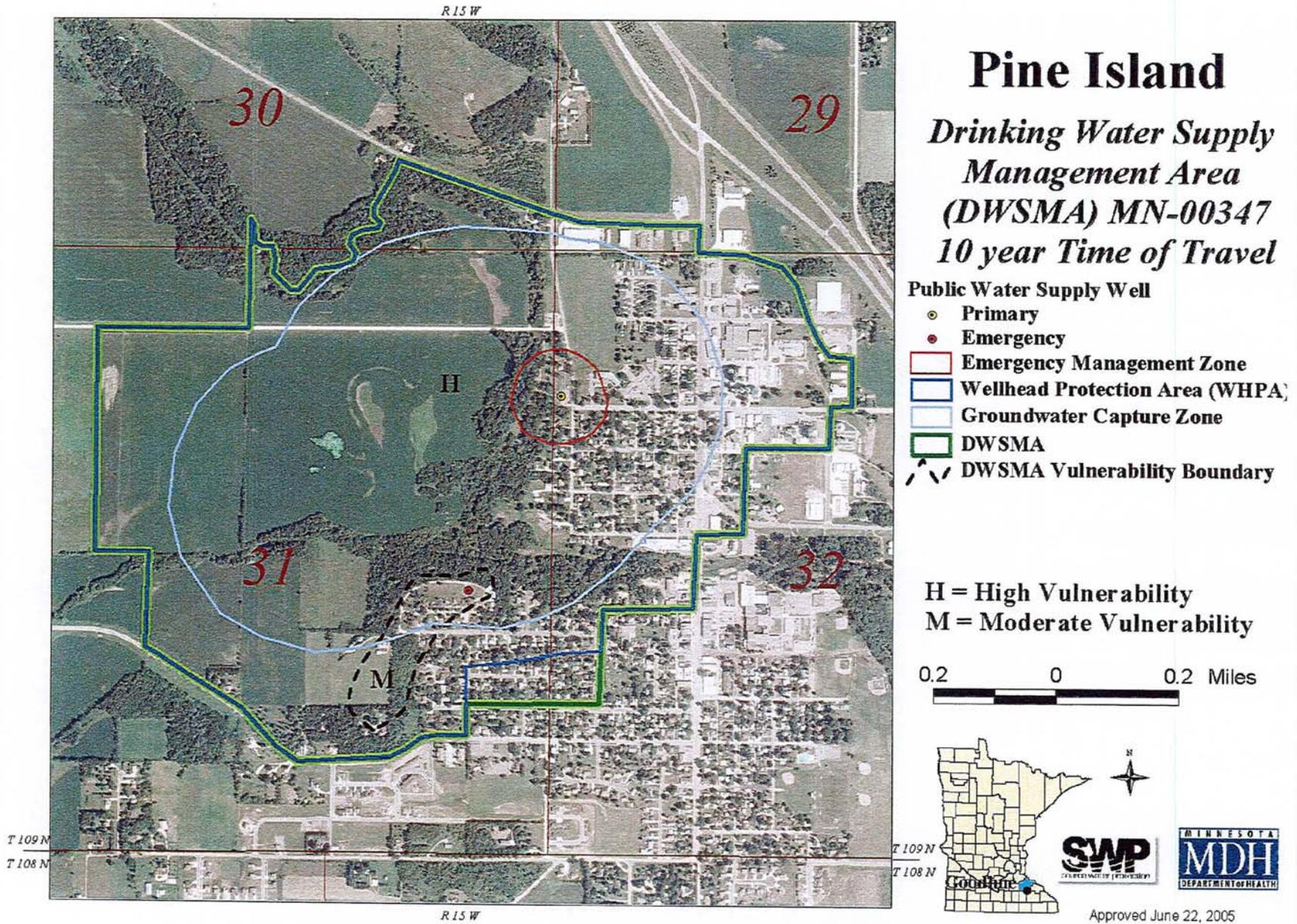
The City of Pine Island's water supply and distribution system generally met the demands placed on it at that time. The supply firm capacity of the existing wells was 2,664,000 gallons per day, which was greater than the peak demand day of 659,000 gallons per day at that time. The City's 600,000 gallon storage facility in place at that time generally provided satisfactory static pressures throughout the city and the volume requirements. The Minnesota Department of Health recommends that a community have storage at least equal to the average day use, which was is currently 487,000 gallons for Pine Island. Hourly water demand volumes in excess of the well pumping capacity must come from storage and is typically estimated at thirty percent (30%) of the maximum day demand, or 146,100 gallons, which again is less than the 600,000 gallons available at that time. Fire protection must also come from storage, and as discussed in Table 33 - Insurance Services Office Recommended Fire Flows, the existing 600,000-gallon tank is greater than the 146,100 gallons required to provide 2,000 gallons per minute for 2 hours.

The existing distribution system was not capable of providing the minimum fire flows to many areas of the city. There were residential areas of the system that were not able to deliver the required 1,000 gallons per minute. Fire flows were also low at the School, the Central Business District and many of the commercial and industrial areas.

Wellhead Protection Plan

In 2005 the City of Pine Island completed a Wellhead Protection Plan. Part I of this plan delineated the wellhead protection area (WHPA) and drinking water supply management area (DWSMA), shown as Figure 28 on the next page, and assessed the vulnerability of the system's wells and aquifer within the drinking water supply management area while Part II provided the results of the potential contaminant source inventory, developed a potential contaminant source management strategy, developed a plan of action to protect the aquifer and developed a water supply contingency plan.

Figure 28 – Pine Island Drinking Water Supply Management Area



The vulnerability assessment for the aquifer within the drinking water supply management area indicated that the aquifer for Pine Island is considered to be moderately to highly vulnerable because of the geology above the aquifer in the drinking water supply management area. Consequently, the principal potential sources of contamination to the aquifer are land uses occurring within the boundaries of the drinking water supply management area.

In order to make the above vulnerability assessment the following data elements were reviewed and assessed:

1. Physical environment data elements such as precipitation, geology, soils and water resources.
2. Land use data elements such as land use and public utility services.
3. Water quantity data elements such as surface water quantity, groundwater quantity and water conservation.
4. Water Quality Data Elements such as surface water quality and groundwater quality.

Once the elements were assessed, expected changes were identified and described. These changes were within the physical environment, land use changes, surface water changes and groundwater changes. Of these changes, land use was anticipated to change the most and have the most impacts. Issues, problems and opportunities were then identified in order to develop the goal of the Wellhead Protection Plan. The overall goal of the Wellhead Protection Plan and the City of Pine Island was to protect its water source now and into the future. The City water supply is located underground and is classified as vulnerable. Consequently the objectives found in the Wellhead Protection Plan focus on education, management strategies and activities relative to informing the public as to the identified potential well contaminant sources in order to prevent possible contamination of the aquifer the well draws from.

The City has historically enjoyed a sufficient and safe water supply and proposes, through the implementation of the Wellhead Protection Plan, to continue supplying safe, potable water for its residents into the future. If additional water supplies are needed and well number 2 is activated the Well Head Protection program will be amended.

The Wellhead Protection Plan planned to achieve the above stated goals through:

- Public Education and Information.
- Promotion and Voluntary Adoption of Best Management Practices.
- Coordination and Cooperation with State and County Resource Staffs.
- Existing Programs, Processes and Land Use Controls.
- Emergency and Contingency Planning.

Priorities were then established for the Plan of Action and since the aquifer from which well number 3, the well Pine Island was using at that time, is classified as vulnerable to contamination from land use activities and other potential sources, a number of factors were considered such as:

- Contamination of the public water supply wells by substances that exceed federal drinking water standards.
- Quantifiable levels of contamination resulting from human activity.
- The location of potential contaminant sources relative to the wells.

- The number potential contaminant sources identified and the nature of the potential contaminant associated with each source.
- The capability of the geologic material to absorb a contaminant.
- The effectiveness of existing controls on contaminant sources.
- The time required to get cooperation from other agencies and pertinent entities.
- The resources needed: staff, money, time, legal, technical and political.

Based on the above factors, management efforts were concentrated on the following categories and strategies to create awareness about groundwater protection and to help prevent future contamination of the aquifer. Objectives and measures were created for each of these categories as well as a source of action, cooperator groups, a time frame, estimated cost and goals achieved.

- WHP Education & Awareness
- Agricultural Land Use Best Management Practices
- Rural Residential/Farm Site Land Use Practices
- Industrial/Commercial Management Practices
- Transportation Corridor & Spills
- Wellhead Protection Recognition, Planning & Land Use Controls

Once the goals and objectives were finalized a strategy to evaluate the progress of the plan of action was adopted. An identity evaluation approach will be used, where the City will track the objectives that were identified in the Wellhead Protection Plan. The tracking will determine the effectiveness of specific strategies utilized to protect the public water supply. Possible changes to these strategies that may improve their effectiveness will be identified and implemented. The adequacy of financial resources and staff availability will be researched to make sure the Wellhead Protection Plan protection procedures for the next year can be carried out.

The frequency and submittal of the evaluation process was also determined. The program was to be evaluated and submitted annually. The effectiveness of the program will be evaluated first of all by the condition of the drinking water extracted from the ground by the City Well. Effectiveness will also be measured by the report of activities generated by the Wellhead Protection Team and Manager. This report is supposed to be published in the local newspaper.

A contingency plan was also developed to establish, provide and keep updated certain emergency response procedures and information for the City of Pine Island, which may become vital in the event of a partial or total loss of public water supply services.

Existing Facilities

The City currently pumps all of its water supply from one well with a capacity of approximately 1,850 gallons per minute or 2,664,000 gallons per day. Another “backup” well exists with similar capacity, but is not currently used because of electrical surcharges associated with its use. The existing system has a single pressure zone area served by one elevated storage tower, with a high water elevation of 1,196 feet above mean sea level. The elevated storage towers, have a storage capacity of 600,000 gallons and is used to provide normal water pressure during the day, stabilize the pressure during peak demands and provide water in the event of a fire. Figure 29 on the next page shows the existing municipal water system within Pine Island.

Water Rates and Fees

Water rates effective as of 2010 were \$3.51 per 1,000 gallons plus three percent (3%) inflation annually. The state surcharge for water was an annual fee of \$6.36. The water connection charge was \$1,081.60 plus four percent (4%) inflation annually and the water access fee (sometimes called a trunk area charge) is \$2,163.20 per acre plus four percent (4%) inflation annually. The per acre water access fee does exempt items from the total acreage such as wetlands and other undevelopable property. For those that need to purchase water meters the cost is \$250.00 for a 3/4 inch and \$350.00 for a 1 inch. A water main tap is \$100.00 for a 3/4 inch and \$125.00 for a 1 inch. These fees and charges are reviewed and amended on a yearly basis as needed, including adding the inflation percentage every year, as part of the City's fee schedule. Due to the recent slowdown in development activity, a cap on the yearly inflation rates may be needed to let development catch up with cost projections.

Individual Wells

At this time there are multiple private individual wells located throughout the City. Approximately eighty-four (84) wells, which have existed for years on properties within the City, have been installed with newly constructed homes that did not have municipal water available at the time they were constructed or have been located on properties that have been recently annexed into the community, need to be inventoried and monitored to prevent contamination of the City's water supply. The Wellhead Protection Plan the City currently has in place identified fifteen (15) wells within the Drinking Water Supply Management Area, which particularly vulnerable to land uses contaminated the aquifer.

The current City code states that water facilities adequate to serve the subdivision shall be installed in accordance with City plans and specifications and all new construction shall be connected to the City water system. The code does not have a requirement or policy for properties with an existing well to connect to the Pine Island water system or a set time or distance that is reasonable once the property has been annexed. Some properties and developments within the City with existing wells do have agreements in place that state they are required to hook-up or pay water assessments within ten years after water service is within reach. These agreements should be reviewed and a policy agreed upon as how to handle these situations and ones like it in the future.

As more land is annexed into the community, additional properties with existing wells will fall under Pine Island jurisdiction so a strategy should be developed by the City for extension of water lines, along with sanitary sewer utilities into existing rural areas. This policy should be based on set period of time the property has before connection to the water system is required along with a distance requirement that is feasible for the connection.

Table 34 on the next page lists the individual wells located within Pine Island and Figure 27 in Chapter 6 - Wastewater Infrastructure, shows the location of these wells.

Table 33 Locations of Individual Wells within Pine Island

| Address | Address | Address |
|----------------------------|------------------------|--------------------------|
| 1208 511th Street NW | 564 5th Street SW | 730 Campbell Court SW |
| 710 County Road 11 NW | 602 5th Street SW | 735 Campbell Court SW |
| 720 County Road 11 NW | 706 5th Street SW | 740 Campbell Court SW |
| 312 County Road 11 NW | 712 5th Street SW | 745 Campbell Court SW |
| 780 North Main Street | 715 5th Street SW | 110 Willow Circle SW |
| 212 5th Street NE | 721 5th Street SW | 111 Willow Circle SW |
| 8 Oak Lane NE | 727 5th Street SW | 112 Willow Circle SW |
| 12 Oak Lane NE | 760 5th Street SW | 113 Willow Circle SW |
| 22 Oak Lane NE | 805 5th Street SW | 114 Willow Circle SW |
| 26 Oak Lane NE | 810 5th Street SW | 800 Trails View Lane SE |
| 28 Oak Lane NE | 1231 5th Street SW | 801 Trails View Lane SE |
| 32 Oak Lane NE | 416 6th Avenue SW | 900 Trails View Lane SE |
| 20183 County 11 Boulevard | 604 6th Avenue SW | 901 Trails View Lane SE |
| 51124 200th Avenue | 612 6th Avenue SW | 1001 Trails View Lane SE |
| 51159 200th Avenue | 721 6th Avenue SW | 1100 Trails View Lane SE |
| 51162 200th Avenue | 824 8th Street SE | 1101 Trails View Lane SE |
| 51187 200th Avenue | 860 8th Street SE | 1151 Trails View Lane SE |
| 51200 200th Avenue | 900 8th Street SE | 800 New Haven Road NW |
| 51219 200th Avenue | 2000 8th Street SE (1) | 900 New Haven Road NW |
| 51242 200th Avenue | 2000 8th Street SE (2) | 1001 New Haven Road NW |
| 51270 200th Avenue | 510 8th Street SW | 2877 520th Street |
| 12 Elmwood Drive NE | 600 8th Street SW | 2907 520th Street |
| 27 Elmwood Drive NE | 700 8th Street SW | 22199 520th Street |
| 29 Elmwood Drive NE | 800 8th Street SW | 829 Rolling View Lane |
| 32 Elmwood Drive NE | 710 Campbell Court SW | 837 Rolling View Lane |
| 51146 Highway 52 Boulevard | 715 Campbell Court SW | 857 Rolling View Lane |
| 8340 135th Street NW | 720 Campbell Court SW | 888 Rolling View Lane |
| 601 2nd Street SW | 725 Campbell Court SW | 12708 59th Avenue NW |

Source: City of Pine Island

POLICIES, GOALS AND OBJECTIVES

The City of Pine Island conducted a study of its water supply infrastructure in 2001 and 2002 and completed a Wellhead Protection Plan in 2005. The report and Wellhead Protection Plan evaluated the existing system's capacity in light of on going and potential growth, made specific recommendations for addressing forecast needs and potential problems and developed objections and plans to monitor and prevent contamination of the City's water supply. This information lays the groundwork for the water infrastructure policies and goals.

Water Infrastructure Policies, Goals and Objectives

The City of Pine Island adopts the following policies in regard to its water infrastructure.

Policy 1. Maintain an adequate level of service to meet existing needs.

Goal A. Continue to follow the recommendation and objectives as stated within the Pine Island Wellhead Protection Plan.

Objective i. Continue to concentrate management efforts on the categories and strategies in the Wellhead Protection Plan to create awareness about groundwater protection and help prevent future contamination of the aquifer.

Objective ii. Continue to evaluate on a yearly basis and publish in the local newspaper the effectiveness of the efforts towards management efforts and groundwater protection according to the Wellhead Protection Plan.

Goal B. Continue to evaluate future capacity expansions in light of the ongoing housing, commercial and industrial growth.

Goal C. During annexations and preliminary plat review and/or concept plan review and prior to approval of a preliminary plat, the City should review and calculate the impact of all the proposed development and land subdivision on the capacity of the existing water infrastructure.

Goal D. Create a mechanism to inspect and monitor the existing wells with the City and inventory all existing wells within Pine Island and the urban growth boundary.

Policy 2. Ensure adequate resources to meet projected City growth for the next 3 to 5 years.

Goal A. Seek funding on ongoing basis.

Goal B. Continue to plan for future water infrastructure needs by structuring rates, connection charges and access fees to ensure future development pays for infrastructure costs needed to support the future growth of the City.

Goal C. Continue to provide quality water services to Pine Island residents and businesses at cost effective rates.

Objective i. The City of Pine Island shall implement an incentive based program promoting the reduction of water usage.

Objective ii. Sumer water restrictions shall be developed and adopted to reduce the amount of water usage during peak usage times.



Zumbro River

- Goal D. Link water infrastructure policies and goals to the City Capital Improvement element and infrastructure plan.
- Goal E. The City should review assessment policies relative to development review and financing, including but not limited to cost-sharing in conjunction with extension of water mains in newly developing areas (i.e. The City's financial responsibility for over-sizing of water mains).

Policy 3. The City should emphasize redevelopment or infill in existing developed areas to maximize existing wastewater infrastructure.

- Goal A. The City should plan for the future servicing of parcels currently surrounded by City limits which are currently in the township and served with individual wells.
- Goal B. Continue to upgrade existing water infrastructure that needs replacing as street reconstruction projects take place and coordinate future street construction with needed water infrastructure improvements to avoid duplicate costs.

Policy 4. Continue to plan for the expansion of water infrastructure to meet the projected growth of the City through the year 2035 and beyond.

- Goal A. Update the Subdivision Regulations to include language on “Premature Subdivisions”, which addresses the right to deny development if the water infrastructure is unable to meet the needs of the proposed development. In addition, the Subdivision Regulations should be updated to address design standards for water infrastructure as needed.
- Goal B. To plan for the future water system the City should consider the completion of a Comprehensive Water Plan to determine the location of trunk mains and necessary looping of main to prevent stagnation of the water within the system.
- Goal C. Continue to review and update the City's current Capital Improvement Plan in relation to the water system as needs arise and projects are completed.
- Goal D. As new industrial developments are submitted for review, “wet industries” or manufacturers which use high levels of water should be reviewed to ensure the water usage does not limit the supply to the rest of the community at peak flow or during a fire demand event.
- Goal E. Develop a policy regarding the requirements of when existing wells within Pine Island shall be hooked up to the municipal water system which is based on a time frame as to how long the property has before it needs to be hooked-up and a minimum distance requirement which is feasible to allow the hook-up.
- Goal F. Adopt the Water System Study and Plan as a guide for the development of the City’s water system.

IMPLEMENTATION

2002 Water Infrastructure Study Proposed Water System Improvements

According to the water infrastructure study completed in 2002, the 2023 water system is dependent on actual development within and around the City of Pine Island, but would consist of the following additions:

1. One or more supply wells for a total new capacity of approximately 1,000 gallons per minute. This has been accomplished and the currently 1,850 gallons per minute can be pumped.
2. New elevated water storage tanks with a capacity of approximately 1,500,000 gallons. Currently 600,000 gallons of storage is in place.
3. Approximately six miles of new water mains.

The short-term improvements to be completed included:

1. One new elevated water storage tank which has been completed.
2. Proposed water mains in conjunction with the planned street improvement projects over the next few years.

Cost Estimate

The total estimated cost of construction for the Pine Island 2023 water supply, storage and distribution system is \$5,070,000 based on the 2002 study. This cost is further broken down in Table 34 by system component. Distribution system improvement costs in the area of the multi-year street improvement projects are similar to those used when estimating the water piping portion of those projects.

Table 34 – System Component Cost Estimate

| System Component | Short Term Cost | Long Term Cost | Total System Improvement Cost |
|-------------------------|------------------------|-----------------------|--------------------------------------|
| Supply | \$0 | \$720,000 | \$720,000 |
| Storage | \$710,000 | \$1,800,000 | \$2,510,000 |
| Distribution | \$594,000 | \$1,246,000 | \$1,840,000 |
| Total Cost | \$1,304,000 | \$3,766,000 | \$5,070,000 |

Short-term improvements

The City, began a multi-year street reconstruction improvement plan in which many smaller pipes throughout the system would be replaced with larger pipes thus increasing the flows throughout the system. Additional piping would also be installed near the southwest portion of the system to create looping to increase fire flows and eliminate areas of possible stagnant water. The addition of a new water tower should be addressed quite soon to allow that to come on-line in conjunction with the average day use approaching the existing 600,000 gallons of elevated storage.

Long-term improvements

Additional trunk line piping should be installed to create looping of the water system and increase the ability of the system to provide fire flows and service to new developments. As the street improvement plan continues into the future small and old, deteriorated piping should continue to be replaced.

Estimated Costs

One of the purposes of the 2002 Water Infrastructure Study was to determine the costs associated with upgrading the Pine Island water system as improvements become necessary. The cost estimates presented in the study are based on current construction costs for projects of similar size and scope. These estimates were projected to meet the current estimate based on the Engineering News Record (ENR) Construction Cost Index. Those estimates were completed at a time when the ENR Construction Cost Index had a value of approximately 6,627 (March 2003). Table 35 below summarizes the total construction costs of future water supply, storage and trunk distribution facilities outlined in the study. More detailed cost estimates were included in the full study.

Table 35 – Water Supply Cost Summary

| System Component | Estimated Cost |
|----------------------------|-----------------------|
| Supply | \$720,000 |
| Storage | \$2,510,000 |
| Distribution | \$1,840,000 |
| Total of Planned Additions | \$5,070,000 |

Water Supply Strategies

At that time the City should evaluate the following actions to address the future water supply needs:

- Continue to monitor the maximum day water use on a yearly basis. As the maximum day demand approaches 1,350,000 gallons per day, construction of a new well should be planned.
- Include the average day and peak day water use in discussions with all perspective commercial and industrial developers to insure that their needs fall within the capacity of the City’s existing wells to provide those demands. Keep in mind that it takes approximately two years to site and construct a new well. The City should start planning for and saving for a new well at this time.
- Control existing well sites to maintain the groundwater quality. A wellhead protection plan was adopted for the City’s well, in accordance with the rules announced by the Minnesota Department of Health in 1997.

Storage

The existing and potential storage sites for the City of Pine Island water system were shown on maps in the study. The existing 600,000 gallon storage will continue to be utilized and as the system demands warrant, new storage facilities will need to be constructed. The areas shown on the maps in the study are given to determine only approximate locations for future elevated storage reservoirs. The following factors are used in determining adequate placement of an elevated water storage reservoir:

- High ground is preferable to minimize the construction costs.
- Soils must be able to provide support for the weight of the water tower foundation.
- Spacing of the tank in respect to other tanks and the wells to complement their utilization during both normal use as well as fire flow conditions.
- Ability of the city to acquire a site of adequate size for the tank at a reasonable price.

Distribution System

The proposed distribution system for the City of Pine Island was ~~is~~ included in the map at the back of the report. This map showed the existing, as well as, the proposed changes to be made to the system by the year 2023. Where feasible, trunk water mains were extended from the wells and the proposed tank locations.

The city's topography ranges from elevation 980 to 1,100. The system has only one pressure zone with a high water elevation of 1,196, providing a static pressure range of approximately 40 to 95 pounds per square inch (psi) throughout the system. The static pressure is the pressure at street level when the tanks are full with no water use in the system.

Static pressures within the system should normally be maintained between 50 and 90 pounds per square inch, with 30 pounds per square inch being maintained under peak conditions and 20 pounds per square inch being the minimum system pressure allowed in an emergency situation. In some instances where an area has low ground elevations, static pressures may exceed pounds per square inch. It is desirable to install individual pressure reducing valves in homes where the static pressure could be greater than 80 pounds per square inch. This was not a problem at that time, but should be addressed in any future changes in the system.

Hydraulic Analysis

A computer analysis was used to preliminarily design and analyze the future water system, with the improvement options shown on the maps at the back of the Water Infrastructure Study.

Comprehensive Water Plan

A comprehensive water plan is very similar to a comprehensive sanitary sewer plan in that it can serve as a guide to the future installation of the water system. At this time a comprehensive water plan has not been developed for Pine Island but a water infrastructure study was completed in 2002 that touched on some of the problem areas within the community where trunks lines were not sized accordingly, effectively creating dead ends within the developments due to the lines being too small in size to serve additional property. Because of this, additional trunk lines will be needed to serve areas beyond these developments. With these additional lines come the additional costs that in some cases may be the responsibility of the City. If proper sizing of lines can be planned for within a document like the Comprehensive Water Plan, a cost and time savings can be accomplished. A comprehensive water plan could assist the City in proactively determining water system issues and needs as the City grows as well as assist in planning for future capital expenditures.

A comprehensive water plan would be similar to the water infrastructure study completed in 2002 in that it would describe and evaluate the existing water system. In addition to that, emergency response procedures could be established like in the Wellhead Protection Plan and water conservation planning would be promoted.

Water conservation planning is intended to reduce demand for water, improve the efficiency in use and reduce losses and waste of water. Long term conservation measures that improve overall water use efficiencies can help reduce the need for short-term conservation measures. Water conservation is an important part of water resource management and can also help utility managers satisfy the ever-increasing demands being placed on water resources.

Some solutions for achieving the goals of water conservation planning could include:

1. Accounting for unaccounted water. (The American Water Works Association recommends that unaccounted water not exceed ten percent and in 2009 Pine Island exceeds this amount.)
 - Installation of automatic meter reading technologies to better monitor and trend water use.
 - Conduct regular water audits to ensure accountability. (Water audits are intended to identify, quantify and verify water and revenue losses)
2. Reduce the overall residential demand or the average gallons per person per capita demand and the peak gallons per person per capita demand. (At the time of the water infrastructure study in 2002 the peak gallons per person per capita demand was 295 gallons per day)
 - Installation of pressure reducing valves on residential services.
 - A City ordinance detailing odd/even and time of day water use restrictions.
 - A tiered water rate structure with higher rates for higher water users.
 - Direct notification to residents or businesses in violation does generally result in compliance.
 - An accumulative surcharge for violations.
 - Water conservation videos on government access cable channel.
 - Make education a centerpiece of its efforts to reduce high water use through weekly water conservation reminders in the local newspaper city website.
3. Retrofitting programs which can be education or incentive based programs aimed at replacing inefficient plumbing fixtures and appliances.
 - Develop a long range plan to retrofit public buildings with water efficient plumbing fixtures.
 - Enforce any current state code requirements for water conserving fixtures.

Maintenance of Water Infrastructure

Generally improvements have been done on an as needed basis to maintain the water infrastructure. Problem areas within the system are addressed annually with maintenance completed by the Public Works Department. Replacement of mains and lines are coordinated with street and other utility projects.

CHAPTER 8 - HISTORIC PRESERVATION

BACKGROUND

Historic contexts have been called the cornerstone of the historic preservation planning process. “The significance of a historic property can be judged and explained only when it is evaluated within its historic context,” states one of the standard references for the National Register of Historic Places. The same source goes on to define historic contexts as “those patterns or trends in history by which a specific occurrence, property, or site is understood and its meaning (and ultimately its significance) within history or prehistory is made clear. Historians, architectural historians, folklorists, archeologists, and anthropologists use different words to describe this phenomena, such as trend, pattern, theme, or cultural affiliation, but ultimately the concept is the same.” The Secretary of the Interior’s Standards for Archaeology and Historic Preservation, which are the template for historic preservation planning at the federal, state, and local levels, give highest priority to establishing historic contexts and using them to develop goals for identifying, evaluating, registering, and treating historic properties.²

The City commissioned a study, *Pine Island Historic Contexts: A Comprehensive Planning Approach*, with the intent of providing guidance to the Pine Island Heritage Preservation Commission, although some of the information presented was also more broadly applicable to decision making in other areas of community planning such as economic development, tourism, housing, downtown revitalization, and education. The following background material includes considerable historical context for Pine Island, although it is not, and was never intended to be, a comprehensive history of Pine Island aimed at a general audience. Perhaps more importantly, it is not, and was never intended to be, the Pine Island historic context study, but rather it should be looked upon as the initial draft of an evolving, flexible document that will be refined, modified, added to, and elaborated on as the city identifies, evaluates, registers, and protects its historic resources. Historic contexts are part of a dynamic planning process that, like history itself, is always in motion.

Purpose of Background Material

Pine Island has a rich heritage that is reflected in its historic buildings, sites, and neighborhoods. The City has made the preservation of significant historic resources a priority for community development and intends to use a special form of overlay zoning to provide protection for resources that meet established criteria. The philosophy behind this policy is that historic properties worthy of consideration in community planning are those that can be determined significant within the context of local history.



Old Pine Island sawmill built in 1856

The purpose of the historic context study was to define the historic character of the community in terms of events, themes, patterns, and trends, and their relationship to various types of historic properties, and to map out an integrated program of policies, priorities, and strategies for preserving and protecting significant resources. From the beginning, it was anticipated that the context study would also provide the basis for a historic preservation element to be included in this plan.

Historic Preservation in the City of Pine Island

Private citizens and local groups, inspired by the rising tide of the preservation movement began to actively promote the value of individual historic landmarks in Pine Island during the 1970s. However, it was not until the start of the new millennium that preservation became city policy. The City's Heritage Preservation Commission (HPC) was established by ordinance in 2000 and attained Certified Local Government (CLG) status in 2002. The focus of the Commission is on the registration of significant historic properties, either by listing in the National Register of Historic Places or by local designation as Heritage Landmarks. The latter is similar to regulations adopted by more than thirty other Minnesota municipalities since the 1970's.

Previous to the establishment of the Historic Preservation Commission, Pine Island was included in the 1979 survey of historic resources in Goodhue County. The City was also the focus of a 1985 Governor's Design Team study. Three historic buildings in the City (the City Hall, Opera House and Bringghold House) and one outside the city limits (the Roscoe General Store) were listed in the National Register of Historic Places in 1980. The Roscoe General Store property was subsequently razed and de-listed, but the other properties have attracted considerable attention from preservationists and historians. The positive effect of the local preservation movement has also been felt on Main Street and in the City's older neighborhoods, where private investment in historic building rehabilitation has produced some outstanding results.³

Historic contexts have already been developed at a variety of scales in Minnesota as part of the preservation planning work done by federal, state, and local government agencies. As part of its statewide planning process, for example, the Minnesota State Historic Preservation Office (SHPO) has established a three-tiered framework of study units based on geographical area, chronological period, and theme. Some of these are reflected in the historic context for archeological and architectural resources in Pine Island. Several National Register multiple property studies have also been completed that are indirectly applicable to understanding local resources.

Research Design and Methods

Historic context development for the Pine Island study involved four separate but related tasks:

1. Collection and analysis of documentary information on the history of the Pine Island area.
2. Review of existing historic property inventory data on Pine Island architectural and archeological resources that was recorded by previous historic preservation studies.
3. Synthesis of the documentary and inventory data to produce a historic context narrative.
4. Integration of historic context information with other planning data to develop a preservation strategy that deals with historic resource management issues within the framework of this plan.

Historic context research was carefully planned to meet the City's planning needs, its legal obligations as a member of the federal-state-local government preservation partnership, time and funding limits imposed by the Certified Local Government grant, the nature of the city's historic resources, and the

interests of its citizens. Archival research focused on identifying and describing important events and patterns of events that shaped the physical development of the community, and on delineating certain broad themes that characterize the architectural, historical, archeological, and cultural significance of diverse groups of resources. Research utilized a wide range of primary and secondary source materials.

While a cursory “windshield” reconnaissance of the City was undertaken to gain an understanding of the general character of Pine Island’s physical setting and built environment, the historic context study was not intended to generate large amounts of data relating to the histories of specific buildings and sites. In other words, it was not designed as a historic properties survey. Nevertheless, every effort was made to assemble previously recorded information on local historic properties that was on file with the Minnesota State Historic Preservation Office.⁴

Basic standards and guidelines for historic context studies have been published by the United States Department of the Interior and the Minnesota Historical Society as the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation, Guidelines for Minnesota State Historic Preservation Office Architecture/History Projects, and the Minnesota State Historic Preservation Office Manual for Archaeological Projects in Minnesota. The National Park Service has also developed several National Register Bulletins that provide guidance for crafting historic contexts as part of historic resource survey, evaluation, and registration activities. In addition, the historic preservation and public history movements have generated a fairly substantial body of literature devoted to “grassroots history” that provided part of the conceptual underpinnings for the Pine Island historic context study.⁵

Organization

The following historic background includes much of the background information from the City’s Historic study. The recommendations of the study provides the basis for the historic preservation policies, goals and objectives, while the implementation steps of the study forms the basis for the implementation section of this chapter.

The study included a background section that includes the following subsections:

- overview of local history
- historic context narratives
- historic property types

The original study included extensive bibliographic references and discursive notes, as well as a bibliography of sources.

Overview of Local History

An understanding of the physical environment and knowledge of the broad outline of local history are fundamental to the concept of historic context. Natural resources determine to a great extent the local patterns of settlement and economic development, the design and materials used in the structures built to shelter human activities, and the routes over which people and goods have been moved. The chronology of important events and patterns of events bearing upon Pine Island history is also critical to delineating historic contexts.

Pine Island history may be roughly divided into four periods or phases:

- Pre-contact (also referred to as prehistoric), circa 9,500 B.C. to A.D. 1650
- Pre-settlement, circa 1650 to 1850's
- Settlement, 1850's to 1910's
- Post-settlement, 1920's to 1950's

Prior to European contact, the Pine Island area was occupied by American Indians for thousands of years and through several successive cultural traditions.⁶ At the dawn of the pre-settlement period in the mid-seventeenth century, most of what is now southeastern Minnesota formed part of the tribal homeland of the Mdewakanton branch of the Eastern Dakota or Sioux nation. The locality at the junction of the North Branch with the Middle Fork of the Zumbro River was known to the Dakota as Wa-zu-wee-ta, “island of pines,” in allusion to the conspicuous stand of white pine growing at that place, and was a favorite winter camp site until native sovereignty was extinguished by Treaty of Mendota in 1851.



Pine Island's 6,000 pound cheese, 1911

The French claim to Louisiana, which included what is now Minnesota, was based on discovery and exploration. The missionary Father Hennepin is believed to have been the first European to have seen the mouth of the Zumbro River on his way up from Lake Pepin in 1680. In 1762, at the end of the French and Indian War, France ceded the territory west of the Mississippi River to Spain, while Louisiana east of the Mississippi was transferred to Great Britain in 1763 and later formed the Northwest Territory of the United States. Spanish Louisiana was retroceded to France in 1800 and subsequently sold to the United States in 1803. After the Louisiana Purchase, Minnesota formed part of the territories of Michigan, Iowa, and Wisconsin, and except for the Fort Snelling military reservation, the region was wholly in the possession of Indian tribes until the late 1830s. In 1849, when Congress approved the organization of Minnesota Territory, the Pine Island locality was part of Wabasha County (which then extended westward to the Missouri River and included all of southern Minnesota). Goodhue County, named in honor of newspaperman James Madison Goodhue (1810-1852), was established on March 5, 1853 with its seat of government at Red Wing.

The first settlers at Pine Island were Josiah Haggard and H. B. Powers, who made claims along the Zumbro River in 1854. Wood, water, and cheap land appear to have been the prime elements in their selection of the site, where a sawmill and post office were established in 1856. The nucleus of a settlement having been provided, four enterprising City of Pine Island landowners – Erastus Denison, John Chance, Moses Jewell, and M. Woodley – had the townsite surveyed and laid out in lots by William Rock during the winter of 1856-57. In the fall of 1857 North Pine Island was platted by William Wilcox and Joel Lindsay. The townsite assumed the name of the ancient Dakota Indian landmark and grew slowly with the addition of a store, blacksmith shop, boarding house, schoolhouse, and a cluster of dwellings. The Panic of 1857 (a severe nation-wide economic depression) stifled local development until the mid 1860's, when the rise of commercial agriculture stimulated urban growth and brought prosperity to the town.

Agriculture was the area's main attraction to settlers and it remained the dominant economic enterprise in Pine Island for the next hundred years. Wheat was the chief cash crop during the settlement period, but its importance diminished after 1880 as farming became more diversified. Nineteenth and early-twentieth century farm output consisted chiefly of small grains and feed crops, livestock, and specialty crops, which attracted investment in local establishments devoted to agricultural product processing, storage, shipping, and marketing, and related farm services. Technological innovations and the accessibility of good markets favored the development of the dairy industry and by the beginning of the twentieth century Pine Island was an important center of butter and cheese making, with more than forty commercial dairies operating within a twenty-mile radius. In 1920, twenty-eight of the local co-operatives merged to form the Minnesota Cheese Producers Association and built a factory in Pine Island in 1947 that is today operated by Land O' Lakes.

Pine Island grew rapidly as a locus of commerce and industry after 1878, when the Rochester & Northern Minnesota Railway (subsequently acquired by the Chicago & Northwestern) linked the town with the regional railroad system. A second railroad, a branch line of the Chicago Great Western, connected Pine Island with Rochester in 1902. The railroads quickened the pace of both rural settlement and urban development, and the resulting increase in population created new and larger local markets, which made it possible for businesses to specialize in a wider range of products and services. The town had several important merchandising and manufacturing enterprises, mostly concentrated along Main St., and several substantial brick and frame residences were erected, reflecting the refinements, prosperity, and fashions of the Late Victorian era. In large part because of its rail connections, Pine Island was able to support a high school, a local newspaper, several mainstream denomination churches, a modern public library, and an opera house.

The first half of the twentieth century witnessed dramatic social, economic, technological, and political changes that re-shaped the everyday lives of Pine Island residents. Watershed events of the post-settlement period include the First World War (1917-18), Prohibition (1918-33), the Great Depression (1929-35), the establishment of Social Security (1935), and the Second World War (1941-45). Electricity, indoor plumbing, central heating, telephones, refrigerators, radios, and moving pictures changed forever the basic patterns of everyday life. The automobile changed Pine Island from a pedestrian to a vehicular landscape and its material culture had an enormous impact on both land use and architecture.

Pine's Island's metamorphosis from a rural village to a bedroom community was accelerated by the rapid influx of people during the decades following the Second World War. Well-to-do Pine Island residents were among the first Minnesotans to own personal automobiles and by the end of the First World War local people were using their cars and trucks (made affordable by mass-production and advertising) for shopping, social trips, and commuting to work. The popular desire for better roads culminated in the establishment of U.S. Highway 52, one of the first roadways in the state designed and constructed for motorized use, in 1921. The increased use of cars, trucks, and buses (aided and abetted by the publicly-subsidized highway



Opera House Block on Main Street



Grace Episcopal Church, 1894, on North Main Street

system) led to the abandonment of the Chicago & Northwestern railway through Pine Island in the 1930's.

Land Use Planning

The regulation of land development by local government through control of subdivisions (the process by which tracts of land are split into smaller parcels for purposes of sale) has been in place since the nineteenth century and was the principal method of town planning until late in the twentieth century. By law, Pine Island landowners were prevented from dividing and selling their land until a plat of survey was approved by the local governing body. Historically, these subdivision regulations represented an important form of urban planning based on traditional land surveying practices and determined the broad pattern of development within the original town and its platted additions. Modern subdivision regulations are essentially an outgrowth of nineteenth-century laws intended to provide for the orderly layout of towns. By the end of the twentieth century, subdivision regulation had expanded beyond planning for public infrastructure (streets, sewer and water, etc.) to include the wide range of urban design issues typically found in suburban communities.

Until recently, most of the urban planning in Pine Island was done from the proprietary point of view. When it was platted in 1856-57 the townsite was designed to facilitate the sale of lots owned by the original proprietors, and for the next hundred years community planning decisions emphasized the supreme right of property owners to use their estates as they saw fit. The sanctity of property rights notwithstanding, under state law incorporated villages like Pine Island were authorized to regulate the location of certain industries in the interest of public health and safety, and from time to time the village council adopted gentle measures to restrain landowners from using their property in ways that would cause unreasonable danger or annoyance to others. Local officials also traditionally showed a keen interest in the improvement and use of public streets and bridges. However, little or no effort was made to guide urban expansion, regulate density, or to limit the height and size of buildings. Local adoption of building codes and land use planning had to wait until after the Second World War, and Pine Island published its first zoning map in 1984.

The exercise of the city's inherent police power to regulate land use through zoning may be a fairly recent phenomenon, but it has already altered the character of some historic buildings and neighborhoods. Changes in taxation and economic incentives for certain kinds of development have had a direct influence (positive and negative) on investment in commercial and residential property. In 1989, Pine Island created its first area zoned specifically for industrial and commercial expansion in the northeastern part of the city; and a second industrial park was created along Goodhue CSAH 11 in 1995. More recently, the city has embarked upon a program of comprehensive planning based on strategic community development goals, which include annexation of land in surrounding rural townships. The city, through its elected council and appointed planning commission, exercises its legal authority over land use within an urban service area that extends up to two miles outside the city limits. The cornerstone of the city's "smart growth" development concept is the vision of a compact, continuous urbanized area. However, the current draft comprehensive plan does not address preservation issues and the Historic Preservation Commission's role in planning for community development is minimal.⁷

Historic Context Narrative

This chapter presents in narrative form an outline of the local historic contexts that describe the broad pattern of Pine Island history represented by buildings, sites, structures, objects, and districts. The level of detail is matched to the stated goals of the historic context study, which call for identifying and describing general trends and events in local history and relating these themes to important historic preservation planning objectives. It does not pretend to be a complete, full documented, comprehensive history of the community. On the other hand, it is designed to be immediately useful to local government officials responsible for implementing the historic preservation program in the City of Pine Island.

Like almost every other local historic context study, the present work is based in large part on secondary source materials.⁸ Published histories of Pine Island are not particularly voluminous and much of the information presented in local history writings has been drawn from a few county narrative histories. Nevertheless, every effort has been made to utilize primary source materials relating to Pine Island as well as the data, theoretical models, and interpretations contained in the relevant scholarly literature dealing with the history, architecture, archeology, geography, and ecology of the surrounding region.

The American Indian Presence

Archeological evidence places humans in the New World as early as 18,000 years ago, but Pine Island area history begins about 9,500 B.C., shortly after the end of the last ice age, when the ancestors of today's American Indian communities migrated into the Upper Mississippi Valley. North American archeologists divide the culture history of the continent's indigenous peoples into a series of broad cultural traditions or periods. The archeological sequence for the pre-contact (i.e., prehistoric) period in southeastern Minnesota is fairly well developed. The major divisions are:

- Paleo-Indian Tradition, 9500 to 6000 B.C.
- Archaic Tradition, 6000 to 500 B.C.
- Woodland Tradition, 500 B.C. to A.D. 1400
- Upper Mississippian (Oneota) Tradition, A.D. 1000 to 1650⁹

The extent to which ancient native peoples inhabited and utilized the natural resources from the Pine Island area is difficult to determine with precision, as no prehistoric archeological sites have yet been recorded within the city limits. Numerous sites, however, have been excavated elsewhere in southeastern Minnesota, which suggest that the Zumbro river valley's patterns of settlement and subsistence were probably not markedly different from that evidenced in the nearby Cannon River drainage.¹⁰

When the Upper Mississippi Valley was first explored by Europeans, what is now southern Minnesota was part of the tribal estate of the Ioway, Oto, and other tribes who spoke a Siouan dialect known as Chiwere. The consensus among archeologists is that the Chiwere Sioux represent the historical manifestation of the prehistoric Oneota cultural tradition, which had a strong presence in the Cannon and Root river valleys. It is also generally agreed that corn agriculture originated in Minnesota with the Oneota and that present-day Red Wing was an important locus of Mississippian-Oneota interaction between A.D. 900 and 1400. The historical geography of the Dakota Sioux during the pre-contact period, on the other hand, can be only dimly seen in the sketchy archeological record. Ethnohistorians and archeologists depict the Eastern Dakota as "forest fringe dwellers" with an unmistakably Woodland material culture. When they were first contacted by Europeans, the council fires of the Mdewakanton were located in central Minnesota, around Lake Mille Lacs, but during the middle eighteenth-century they began migrating southward. By 1800, the Mdewakanton territorial core was focused on the confluence of the Minnesota and Mississippi rivers, where they remained until the beginning of the reservation era in the 1850's.

The Zumbro River (Wa-zi o-zu-wa-kpa in Dakota) was well known by the Sioux and the wooded point of land between the two branches of the Middle Fork was used by one or more of the Mdewakanton bands as a winter bivouac. "This spot was one of the favorite resorts of the Dakota Indians," writes Hancock in his history of Goodhue County. "They called it Wa-zee-wee-ta, Pine Island, and here in their skin tents they used to pass the cold winter months, sheltered from the winds and storms by the thick branches of lofty pines. The chief of Red Wing's village (Wacouta) told the commissioners of the United States, when asked to sign the treaty that would require his people to relinquish their home on the Mississippi river, that he was willing to sign it if he could have his future home at Pine Island."¹¹

It would be erroneous to picture the nineteenth-century Mdewakanton as simple nomads and hunters. Their traditional lifeway was based on a seasonal pattern of congregation and dispersal, with semi-permanent summer villages along major streams and dispersed winter camps in protected valleys. While characterized generally as hunters and gatherers, they were also active farmers and cultivated crops played an important part in their traditional pattern of subsistence. Pine Island was a winter bivouac, but the earliest literate visitors to the Mdewakanton summer villages reported extensive gardens of maize, beans, pumpkins, and tobacco as well as bark lodges fitted with special platforms for drying corn that was stored for winter use.¹²

The European “discovery” of the Minnesota region was brought about by a train of circumstances extending back to the beginning of the colonial period in North America and culminating in the travels of French, English, and American explorers, fur traders, and missionaries through the Upper Mississippi Valley. The creation of the French colony of Louisiana, embracing the entire Mississippi watershed, was the turning point in Dakota history, although except for a scattering of fur trading posts there were no permanent Euro-American presence within the Sioux homeland until 1819. It is not known when the first French Canadian fur traders paddled up the Zumbro River, which they named Rivière des Embarras because of its log jams and snags – embarras being the old Mississippi Valley French term for those kinds of riparian obstructions.¹³ Despite the hazards to navigation, the Zumbro was a useful canoe route between the trading posts along the Mississippi and the Dakota winter camps where the traders bartered firearms, ammunition, hardware, beads, and liquor for beaver and muskrat pelts, deerskins, and buffalo robes. Though not substantiated by archeological data or documentary evidence, it is altogether likely that some French Canadian trader visited the “island of pines” to do business with one of the Mdewakanton bands encamped there well in advance of the first Euro-American settlers.



Main Street in Pine Island, 1910

By the 1830s the Mdewakanton had been greatly reduced in numbers and their principal villages were clustered around the junction of the Minnesota and Mississippi rivers. The encroachment of settlers and the collapse of the regional fur trade brought about the tribe’s removal to reservations on the upper Minnesota River in 1851 and by 1854 there would have been no more than a handful of Indian hunters along the Zumbro. Once the Indian barrier was removed, the “Suland” west of the Mississippi was opened to unrestricted settlement, a process that was hastened by the government’s granting to pioneers the right of pre-emption (i.e. “squatter’s rights”) to secure title to unsurveyed portions of the public domain.

The lack of Indians on the ground in the Pine Island area after 1854 has made it easy for writers to underestimate the importance of native heritage in local history. In a very real sense, they prepared the way for Euro-American settlers by creating a humanized landscape (“softened wilderness”) characterized

by trail systems, named geographical landmarks, frequently used camp sites, and natural communities modified by burning and other activities. Eastern Dakota land cessions dictated the sequence of settling the land and security concerns arising from the perceived dangers posed by roving bands of Indians may have even encouraged a more agglomerated pattern of settlement. The Dakota War of 1862, one of the bloodiest Indian wars in American history was certainly a watershed event in Minnesota and the conflict resonated in pioneer communities.

Agriculture and Related Industries

Farming has been the leading economic enterprise and the dominant land use in the area around Pine Island since the 1850s. Once the region was opened to unrestricted Euro-American settlement, pioneer farmers rapidly cleared fields for Indian corn, Irish potatoes, spring wheat, barley, oats, and sorghum, and let their hardy cattle, horses, and swine to graze and forage in the mingled tracts of prairie and woodland. Pioneer farmers were self-sufficient; their holdings were generally large but improved acreage was comparatively small; and their lack of access to good markets hampered the growth of commercial agriculture until the construction of the first railroads. Farmers were hit hard by the financial depression caused by the Panic of 1857 but conditions improved during the Civil War. Even while many local farmers were away on military service during 1861-65, Pine Island experienced a revival of prosperity because of the influx of immigrants and the introduction of new labor-saving farm machinery. Production of small grains and livestock showed a remarkable increase throughout southeastern Minnesota in the 1860's.¹⁴

The great importance attached to growing wheat as a cash crop is mentioned in all of the early immigrant guides and pioneer histories. By 1870, southeastern Minnesota was well established as part of the expanding western wheat belt, with both Goodhue and Olmstead counties ranking high in the production of all kinds of cereal grains through the late-nineteenth century. In Pine Island Township, where the upland prairie soil was considered especially well adapted to grain farming, the early settlers turned their attention almost exclusively to wheat as a money crop. Cattle, hogs, and sheep were also kept and corn, barley, oats, and other crops were raised, but these were considered to be of minor importance. One reason for the popularity of wheat farming was the cost of transporting wheat to market was less in proportion to its weight and value, in comparison with shelled corn or dressed pork, a critical factor in a farm economy where produce had to be transported 30-50 miles to market in wagons pulled by teams of horses. The advent of railway transport after the Civil War provided a far more efficient means of transporting grain and at the same time opened up new markets for other farm produce.¹⁵

The development of agriculture in the area around Pine Island depended largely upon the expansion of markets and transportation systems. By the late-nineteenth century, the Industrial Revolution and massive foreign immigration was turning the United States into an urban nation with a consumer-based economy. This brought an increased demand for foodstuffs and as a consequence southeastern Minnesota rapidly developed into one of the world's great meat and cereal-producing regions. The extension of commercial agriculture into the Pine Island area after 1860 was a continuation of the settlement process in the older settled regions of the Middle West, with essentially the same products and markets. The development of commercial agriculture went hand in hand with the extension of the regional railroad network – and later with the development of automotive transportation and highways.

The second half of the nineteenth and the first half of the twentieth century was a period of revolutionary change in American agriculture, particularly with respect to the application of new labor-saving farm machinery. Important technological benchmarks include: gang plows (1860's), steam tractors and threshers (1870's), silos (1870's), barbed wire (1874), twine binders (1880), cream separators (1880's), and light farm tractors (1926). Simultaneously with the invention of new kinds of farming implements came improvements in crops and livestock breeds that increased productivity. Commodity prices and land values rose sharply between 1896 and 1920 (an era often referred to as the “golden age of farming” in America) and the rural standard of living also improved with better roads, automobiles, and farm machinery. A distinguishing feature of farming in the Pine Island area was the local interest in scientific farming methods, as reflected in the popularity of agricultural societies and fairs, subscription to farm periodicals, and the promotion of agricultural education. The latter included special instruction in Pine Island schools as well as local farmers' attendance in classes offered by the state

agricultural college in Saint Paul.¹⁶ Commercial agriculture was dependent upon mass quantities of durable, affordable construction materials for building homes, barns, outbuildings, and fences, and as early as 1856, the water power of the Zumbro River was harnessed to run a sawmill. Oak, basswood, elm, and cottonwood were obtained from the local hardwood forests and milled into boards, shingles, lathe, and framing timbers. The river was also used to power a grist mill to supply local demand for cornmeal and flour. After the 1870's, motive power derived from steam surpassed water power in milling (a shift that was due chiefly to the substitution of coal for wood fuel made possible by the railroad).

Agricultural products were the basis upon which many of Pine Island's most important industries were built. The leading field crops during the post-settlement period were corn, oats, and hay, and from the 1890s on most of the crops raised on area farms were fed to livestock. The hills and prairies bordering the Zumbro River included some excellent pasture lands for cattle, sheep, and horses – in spite of the rapid substitution of motor power for animal power, oxen and draft horses were an integral part of farming throughout southern Minnesota until the 1940's (statewide, the number of work horses on farms actually increased between 1920 and 1930). Orchards were planted on many farms and local apple production was a source of considerable pride, as indicated in the annual reports of the state and local agricultural societies. Until the rise of butter and cheese factories in the late-nineteenth century, however, the Pine Island area was not an important center for milk production, being too far from the major centers of population.

Butter and cheese making began as a cottage industry in Pine Island, where many of the early settlers brought with them the traditional New England predisposition to dairy farming. The first cheese factory in the United States opened in Oneida County, New York, in 1851 and commercial creameries sprang up in southeastern Minnesota after the Civil War. Most of the early establishments were farmers' cooperatives and it was under this system that cheese making took hold in the Pine Island area in the 1880's. The earliest butter and cheese factories received milk direct from the farmers, but after about 1880 it became common for farmers to skim their milk and deliver only the cream, which was shipped to the creamery in metal cans.

The rise of the dairy industry was the result of numerous technological innovations. A major milestone in cheesemaking was reached when the DeLaval cream separator was introduced in the United States from Sweden in 1879. This machine used centrifugal force to separate fresh whole milk into cream and skim milk, which enabled dairies to control the amount of butterfat and thereby produce and market a wider assortment of consistently high-quality products. The dairy industry received a tremendous impetus in 1890 from the invention of the Babcock Test for determining the butter fat content of cream. The improvements in butter and cheesemaking which led to increased production were followed by major shifts in marketing and distribution. Railroads began using refrigerator cars in the 1880s and the development of motor transportation after 1900 significantly improved the competitive position of rural dairies. Large factories arose to meet the rising urban demand for creamery butter and cheese and state associations were organized to establish uniform grading systems and marketing procedures. By the early 1900's there were several hundred commercial butter and cheese factories in the state, mostly small independent farmers' co-operatives.¹⁸



Old Creamery before restoration

Pine Island area farmers and local entrepreneurs enthusiastically took up the ideas of Wisconsin cheesemakers and Minnesota food scientists. Dairy farming was generally more profitable than general farming, though it was somewhat more labor- and capital-intensive, and a majority of local farms were involved in the business to some extent, either by selling milk and cream, producing milk for butter or cheese making, or by raising pure-bred dairy cows for sale as breeders. A number of small co-operative factories were started in and around Pine Island in the 1880's and these became the foundation for the factory built next to the Zumbro River in 1920. The Minnesota Cheese Producers Association factory was established in Pine Island in 1920 and was engaged in the production of creamery butter as well as cheese. Pine Island eventually came to be known as the "cheese capital of Minnesota" because of its reputation for the best quality

cheese. Later, production shifted to condensed milk and other manufactured dairy products and in 1971 the factory was sold to Land O' Lakes.¹⁹

The importance of agriculture in the economic life of Pine Island is reflected in many of the commercial buildings erected on Main Street. Banks, hotels, feed stores, farm implement dealers, wagon and carriage shops, general stores, hardware stores, newspapers, gasoline service stations, and lumber yards were essential adjuncts to the economic life of the family farm. Pine Island also provided farm families with schools, churches, and the lodge halls of fraternal organizations that augmented the social infrastructure available in the rural townships.

The pattern of local agricultural development was influenced somewhat by the ethnic make-up of the farming community. Though the population was more or less heterogeneous, to some extent Yankee, German, Scandinavian, and Swiss immigrants farmed with their own methods and raised their favorite crops. Their cultural baggage also included various folk architecture traditions, though by the late-nineteenth century the built environment in Pine Island was overwhelmingly American and Middle Western in character.²⁰

As agriculture became increasingly mechanized and production more diversified, farms became larger and the number of family farms around Pine Island declined. At the same time, the proportion of the local population employed full-time in farming and other agriculture-related work also declined precipitously. Minnesota's remarkable twentieth century transition from a predominantly rural to an urban society, in full swing during the decades between the first and second World Wars, is reflected in the Pine Island census returns.²¹

Transportation and Communication

Physical geography was the most potent influence in the development of transportation and communication networks. During the pre-settlement period, travel was largely dependent upon waterways. Indians used dugout log canoes to make long journeys on the Mississippi and its major tributaries and the Zumbro River was certainly navigable by birchbark canoe. The first routes of overland travel were the narrow pathways used by Indians, which probably followed the trails made by migrating herds of bison and other large animals and were later worn deeper and wider by the wagons of the Euro-American pioneers. Road building officially began during the territorial period when the federal government directed the Army Corps of Topographical Engineers to lay out a system of so-called military roads connecting the frontier with older settled areas. An important territorial era stagecoach and mail route between Dubuque, Iowa, and Saint Paul ran through Pine Island. Even though the stage lines provided connections to towns along the Mississippi that were served by railroads, they went out of business when the rail network spread inland. A number of territorial and county roads were constructed during the 1850s and some of these later developed into important highways.²² Most of the nineteenth century roads were execrably bad and travel over them often required arduous labor and hardship. The local news pages of the Pine Island Journal are filled with items similar to the following, printed on 16 March 1883: "Mr. Cutshall went with team to Henry Ahneman's on Wednesday, but could not get back until the next morning on the count of the impassable roads." Contrary to myth, fancy carriages and other pleasure vehicles were a rare sight on rural roads before the turn of the century.

The importance of the railroad in local history during the settlement period can hardly be overestimated. The first steam railway in Minnesota came into operation in 1862 but there was no rail system anywhere in the southeastern part of the state until after the Civil War. The railroads were initially built to supplement the river steamboats, consequently river towns like Red Wing and Winona were the first to enjoy the benefits of links to the expanding network of regional trunk lines. The Panic of 1873 did little to dim the enthusiasm for railroads to connect Red Wing, Rochester, and Zumbrota, and grading for the Rochester & Northern Minnesota Railroad, later operated as a branch line of the Chicago & Northwestern (C&NW), began in 1878. The tracks reached Pine Island from Rochester in October 1878, an event that led directly to the incorporation of the village. The Rochester & Northern Minnesota carried passengers and freight, and as a feeder line to the Chicago & Northwestern it linked Pine Island to the great transcontinental lines. In 1902 a branch line of the Chicago Great Western Railway (CGW) was built parallel to the existing Chicago & Northwestern tracks. In those days, railroads were by far the most desirable form of long-distance transportation: shipping rates and passenger fares declined until the early 1900s and the

railroads themselves played a major role in the economic development of the towns along their routes. Most significantly, the Chicago & Northwestern and the Chicago Great Western Railway made possible the kind of large scale commercial cheese and butter making that made Pine Island prosper after the turn of the century. However, by the 1930's Pine Island was no longer a railroad town.²³

There were several causes for the decline of the Chicago & Northwestern and the Chicago Great Western Railway. After 1910, many of the railroad's cost and speed advantages were lost to cars, trucks, and buses, though they held their own in shipping freight. As automotive transportation improved and the highway system was enlarged, however, much of the traffic in bulky commodities (grain, lumber, petroleum, etc.) was diverted to trucks. Trucks and tractor-pulled wagons also moved farm commodities to local markets, which siphoned off railroad trade but generated increased business for small-town elevators and creameries. Furthermore, as the economic fortunes of the railroads steadily declined, they invested less in service and facilities on minor routes. The Northwestern shut down service to Pine Island in the 1930's and the Great Western rails were pulled up in 1964. The rail corridor between Rochester and Pine Island was subsequently acquired by the state and converted to recreational use as the Douglas State Trail in 1972.

Cars and trucks have produced the most rapid and far-reaching changes of any technological innovation in transportation. The first practical gasoline-powered automobiles appeared in the 1890's and by the 1910's "horseless carriages" were no longer mere curiosities. The great expansion of automotive transportation came between 1915 and 1930, when the United States became "a nation on wheels." (Statewide registration of private motor vehicles jumped from 920 in 1903 to 324,166 in 1920.) Under the strain of motor traffic the old dirt streets and truss bridges were found to be inadequate, and one of the most important effects of the automobile on Pine Island had been an abiding interest in road and bridge building. The reliance upon railroad transportation had effectively suppressed any comprehensive movement for rural road modernization, though within the corporate limits of Pine Island there was considerable interest in providing for the needs of local traffic. Bridge building and maintenance seems to have taken priority over street work until the early 1900's, though there was investment in public sidewalks beginning in the 1880s. The bicycle craze and rural free delivery in the 1890's seem to have given impetus to a local "good roads movement" in Pine Island, reflecting the nationwide trend toward road reform. The state started making small contributions to the village street and bridge fund in 1911 and license and fuel tax revenues gradually increased the size of the appropriations. Outside the urbanized area, Pine Island Township served as the administrative unit for road and bridge projects until local highway work came under county control. Once the state assumed responsibility for farm-to-market roads and interstate highways in the 1920s, local roads were designed by professional engineers and constructed with modern machinery.



Citizens State Bank (now security State bank), 1915

In 1917, the state legislature created the Department of Highways (forerunner of the Minnesota Department of Transportation) and in 1921 Minnesota adopted a statewide trunk highway plan based on the program of federal-state highways authorized by Congress under the Federal Highway Act of 1921. Trunk Highway 20, one of the original state "constitutional route" highways authorized under the Babcock Amendment in 1921, passed through Pine Island. It was designated Route 55 when the U.S. highway system was overlaid on the existing state trunk highway system in 1927, and renumbered U.S. Highway 52 in 1934. The highway between Rochester and Minneapolis was hard-surfaced in the 1930's and realigned in the 1950's. The flexibility of the privately owned automobile opened up vast areas for suburban development and signaled the decline of Pine Island as a trade center.²⁴

The late-nineteenth century saw rapid expansion in the use of the telephone, which had been invented in 1876 but was little used outside the larger cities before 1900. Local telephone service dates from 1896 and by 1909 the Pine Island Telephone Company had more than three hundred subscribers. Telegraphy also made important advances after the first lines were strung to Pine Island in the late 1870's. Radios appeared in the 1900's and listeners could pick up commercial stations in the Twin Cities and Rochester by the 1920's. According to the 1940 census, nine of ten households in Pine Island owned radios; and in outlying rural areas, only a slightly smaller proportion of the population was tuning in for news and entertainment.²⁵

Commercial and Industrial Development

Pine Island has a small central business district with a long history. The first permanent Euro-American settlement at this location was largely a business venture engineered by the townsite's original proprietors, who had it surveyed and laid out in lots, which they sold to settlers or consigned to speculators. Here and elsewhere, speculation in real estate dominated early economic activity, reflecting the mania for dealing in Minnesota land, especially town lots, which were easily transferable and convertible. Trading on the progress of the country, most of the original owners of Pine Island lots were prepared to sell out quickly in order to take advantage of the rising property values.

Speculation handicapped urban development generally because it discouraged investment in buildings and other improvements. Eventually, however, the lots were taken up by actual residents who devoted themselves to building homes and businesses.²⁶

During the initial phase of urban development (circa 1856 to 1878), the profile of the local business community was dominated by agriculture: mills, blacksmiths, livery stables, hotels, and retail outlets catering to the needs of farm families. Labor was scarce, therefore wages were high, and this, combined with the general shortage of capital available for investment, hampered the growth of even small-scale enterprises engaged in the production of finished goods. Before the advent of the railroad, poor transportation facilities also hindered the town's development as a trade center, though Andreas' famous atlas described it as enjoying "an enviable degree of prosperity" in the early 1870's.²⁷

More than any other factor, the railroad stimulated the rapid growth of the central business district. In addition to businesses that marketed agricultural commodities and supplied the needs of farmers, stores and offices were built to house an ever-expanding range of wholesale, retail, financial, and service functions. Some idea of the variety and extent of the town's business sector can be gained from old directories and the advertisements printed in the local newspaper. By the turn of the century the village had



West side of Main Street, where the streetscape is dominated by the three-story Opera House Block, built in 1895 by Loomis F. Irish and listed in the National Register

two state banks of discount and deposit, as well as doctors and lawyers' offices, realtors, and a department store. In addition to the businesses already mentioned there were, of course, many other small enterprises that catered to local needs. For example, the great boom in construction, which lasted from the 1880's through the 1920's, led to the development of brick making and created work for a growing body of local carpenters, painters, and tanners. Much of the demand for home and business furnishings was met by Pine Island stores. An almost universal business in towns across America was the sale of liquor in saloons, grocery stores, and other establishments – though ostensibly a Temperance town, it was by no means hard to find strong drink in Pine Island, even during Prohibition.²⁸

The period from 1878 to 1929 as a whole showed a continued and healthy increase in commercial development commensurate with the growth in Pine Island's urban population.²⁹ Unbridled competition and laissez-faire dominated business planning. The earliest center of commercial activity was located along Washington Avenue now called 3rd Street N, but later development was concentrated farther south along Main Street. The central business district bustled with activity, such as that described by the Pine Island Journal in its 1 February 1884 issue, wherein the editor observed that on the previous Monday, "[t]here was not room on Main Street to hitch half the teams that came in." The 1890's-1910's were especially prosperous and witnessed the creation of the characteristic Main Street built environment, dominated by multi-story brick-front facades and storefronts.³⁰

Pine Island's business community severely felt the ravages of the Great Depression of 1929-35, a period characterized by uncertainty and hard times. As usually happens after a major economic crisis, the stock market crash in 1929 was followed by a period of business reorganization, including the failure of local banks and other financial institutions.³¹ Businesses related to agriculture were hit particularly hard. The farm crisis of the 1920's had been only slightly mitigated by improvements in marketing and production and depressed commodity prices impoverished many of the farm families upon whom many local businesses depended. Other business shifts were also underway that produced fundamental changes in the town's economic life. For example, low prices offered by chain stores in nearby cities, readily accessible by automobile, eventually ruined many venerable Pine Island businesses. The crisis on Main Street notwithstanding, a number of new business enterprises sprang in the late 1930's and business activity in general brightened during the 1940's.³²

Social and Cultural Institutions

Traditionally, small towns have served the needs of both urban and rural residents with institutions dedicated to maintaining the welfare of society and enhancing community life. Buildings used for government, education, recreation, and cultural purposes have always been important landmarks in Pine Island. Not surprisingly, the growth of social and cultural institutions corresponded closely with the levels of population growth and economic prosperity, and with the general historical trend toward urbanization.³³

Even the most cursory examination of the census schedules leads the historian to quickly discard the old theory that Minnesota was settled primarily by people of Old World peasant stock. Historical geographer Ralph Brown stated flatly that "[t]he bulk of the settlers who came to Minnesota during the Territorial days were of native stock, or, if foreign-born, had lived for a time in some other state."³⁴ According to census returns, the ranks of the immigrants who came to Pine Island during the settlement period included transplanted Europeans, but the majority of the settlers were American-born, including a large contingent from New England and upstate New York. In terms of weight of numbers, while Yankees and Yorkers deserve much of the credit for founding Pine Island, most of the settlers who arrived after 1870 came from elsewhere. The area



Historic Main Street, Pine Island

received major accessions from the older settled regions of the Middle West and Great Lakes, as well as second-generation Minnesotans. The most numerous foreign born emigrant group who took up lands in Roscoe and Pine Island townships were the Irish, followed by the Swiss, the Norwegians and the Germans.³⁵



Pine Island City Hall, based on a popular design inspired by the City Beautiful Movement, built in 1909 and listed in the National Register.

A base for financing public education was set forth in the laws governing the disposition of public lands in newly settled areas. When Congress admitted Minnesota to the Union, the proceeds from land sales in two sections (numbers 16 and 36) in every township was earmarked for the use of common schools and other educational institutions. The earliest local schools were ungraded common (i.e., elementary) schools operated by three-member school boards under the supervision of the county superintendent of education. Pine Island later created its own school district with a six-member board of education and a superintendent. School operating and construction costs were met by a direct tax on personal property in the district, augmented by small appropriations from the state school fund.

It is important to remember that while the great majority of Minnesota’s citizens appreciated the need for taxpayer supported elementary schools open to all, there were many who believed that public education need not be extended to secondary schools. Due in no small part to its New England heritage, Pine Island was one of the first rural communities in the state to embrace the idea of establishing a public high school where students could learn history, algebra, geometry, bookkeeping, and rhetoric. (The public high school or “people’s college” did not become universal in rural Minnesota until the 1900s.) In addition to academic and vocational training, Pine Island’s high school also offered a teacher’s institute for training rural elementary school instructors. Outside the sphere of public education, there was considerable activity in Pine Island with respect to other forms of learning: early newspapers contain advertisements for dance and music schools, business and agricultural courses, and language classes. A free public library was established in 1918.

Although Pine Island’s civic leaders tended to be well-to-do businessmen or professionals, the great strength of the community’s social and cultural institutions came from the middle and working classes. No reliable statistical data are available before the mid-twentiethcentury, but it is clear that Pine Island was neither a wealthy nor a poor town, and that the majority of its residents probably maintained a decent standard of living during good economic times although there was, of course, widespread and in some cases extreme poverty during hard times. From the 1890’s onward, it would be safe to say that Pine Island residents generally aspired to the refinements of middle-class culture. High-living was largely confined to a few elite families.



Pine Island Cheese Festival parade

600 seat Pine Island Opera House were very popular. The first silent movies were shown at the Opera House in the 1910's and there was a freestanding movie house on Main Street by 1930. Organized athletics, a late Victorian era cultural phenomenon, were enthusiastically patronized. The game of baseball probably arrived with returning Civil War veterans and for generations the community supported amateur and school teams. Home court for the local high school basketball team was in the opera house until 1909, when the games moved into the new city hall and eventually into the new gymnasium that was built in 1934 at the new school.

Politics and government were integral parts of the settlement process. Governance was taken care of by the county until civil townships were organized in 1858. The significance of democratic ideology and political institutions is, of course, obvious. One should also note that women were stakeholders to some extent in nearly all of the important community institutions, particularly in the areas of education and religion. Under state law, women who were citizens voted in school board elections and could serve on library boards and only their right to vote in state and federal elections was delayed until 1920. Faint beginnings of the modern women's movement can be seen in the activities of Pine Island club women, though the history of women's organizations in Pine Island and their role in shaping community life is unexplored territory and a topic that warrants much more careful study.

Economic, political, religious, and social influences compelled Pine Island men and women to join clubs, literally in droves. "Pine Island is quite a place for society meetings," observed the editor of the Journal on 1 February, 1884, noting that there had been two lodge meetings, two dances, two prayer meetings, a band meeting, and a writing school class going on nearly simultaneously the previous Thursday. As regards the most important fraternal and civic organizations, it is possible to speak only in general terms. At the end of the nineteenth century, the town had lodges of masons, Odd Fellows, Good Templars, and other societies as well as a Grand Army of the Republic post. On the whole, Pine Island's civic and fraternal organizations were much given to amusements, which ranged from "box socials" to elaborate Fourth of July celebrations. Parties, dances, baseball games, and political meetings afforded numerous opportunities for social life.

The cultural life of the community was further enriched by the fine arts. Nineteenth-century newspapers record local performances by visiting troupes of actors and musicians, as well as plays, pageants, and concerts put on by local amateurs. The public's interest in exhibitions and lectures on all kinds of subjects was highly developed and there were several local dramatic and literary clubs. The early decades of the twentieth century was the golden age of vaudeville and shows at the



Pine Island Cheese Festival

Residential Development

The 1870 federal census of Pine Island Township recorded 1,140 men, women, and children residing within what was at that time one of Minnesota's more thickly settled agricultural districts. Pine Island, a mere rural hamlet in 1860, was a bustling village of 656 inhabitants by the time of the 1880 census, and the last federal census of the nineteenth century found 832 residents within the village limits, with another 691 residing in the unincorporated township. The 1940 census enumerated 1,040 Pine Island residents, a number that rose to 1,298 in 1950 and 1,640 in 1970. Most of this twentieth-century growth is attributable to natural increase but immigration from surrounding rural areas (part of the nation-wide exodus from farms to cities) was also a factor. The second half of the last century marked the period in which Pine Island passed from a rural village to a suburban bedroom community. It was also an era characterized by sweeping changes in lifestyles and material culture.³⁶

Single-family housing has played a crucial role in the development of the physical structure of Pine Island's built environment since the mid-nineteenth century. The early settlers built their homes on lots near the Zumbro River, and from there residential development fanned outward onto higher ground.



Pine Island Cemetery

The original town plat, with its gridiron of commodious lots organized in symmetrical rectangular blocks, was particularly well adapted to the dispersed pattern of early home building. Though the physical pattern of settlement was rather haphazard, the Victorian concept of home as a plot of ground for a dwelling, outbuildings, and a small enclosure for raising table food or animals, prevailed. Outside of the downtown core, open spaces consisting of unbuilt lots were a common feature of the neighborhood landscape.³⁷

One of the most striking aspects of the post-settlement period was the extraordinary building boom, probably the greatest in American history, that reached its peak in Pine Island between 1914 and 1929. By this time, modern improvements had made many old houses functionally obsolete and encouraged new construction. After the 1880's, heating with wood fuel quickly gave way to coal, and after the 1910's to oil. Fireplaces were closed up and summer kitchens were razed. Electric lighting was delayed by the difficulties of transmission and the expense of installing a coal-fired generating plant. The problem of domestic water supplies was a pressing one – until a municipal waterworks was built in 1912, townspeople obtained drinking water for human and animal consumption from cisterns and various community pumps scattered throughout the village. The pumping and distribution system was improved and extended several times. The problem of urban sewerage was attacked during the 1920's and as the outdoor privy gave way to the indoor toilet room, outhouses soon

vanished from the urban landscape. Economic prosperity also led to a steady increase in home ownership. The 1940 census of housing (the first detailed profile of the local housing stock) identified a total of 322 dwelling units in Pine Island village, of which 191 were owner-occupied. Rental units cost on average \$17.92 per month, a figure on the high side of average for small-town Minnesota (the census report did not differentiate between rented houses, rented rooms in houses, or apartments located above downtown storefronts). It is also worth noting that more than half of the detached dwellings reporting to the census were in need of major repairs or lacked indoor plumbing.³⁸

Churches and Cemeteries

Ordinarily, religious buildings and burial grounds are not considered eligible for the National Register, except in cases of extraordinary architectural or historical significance. Local designation allows for much greater flexibility, however, and it is assumed that churches and cemeteries will qualify for Protection within the City.³⁹ Leaving aside theological issues and technical considerations, it is worthwhile to focus on some basic themes that connect churches and cemeteries to important broad patterns in community history.

Small towns like Pine Island have traditionally functioned as convenient locations for churches. The religious life of the village was centered around a few mainstream church organizations, each with deep roots in the community's history. Their gravitational pull extended for several miles outside the corporate limits. There were also a number of smaller churches and sects. The last half of the nineteenth century was marked by church building: as congregations became more prosperous, they invested more in new churches and rectories, added onto existing church buildings, and provided expanded facilities for social and educational activities. The histories of the individual churches afford interesting opportunities for research relating to church architecture as well as such cultural themes as the impact of the "new liberalism" in nineteenth-century religious thinking, the rise of the "social gospel," missionary activities, and the ecumenical movement.⁴⁰

The earliest settlers buried their dead in small family plots or communal graveyards established by churches or secular groups, but by the late-nineteenth century even the smallest rural communities had landscaped public burying grounds.⁴¹ When Pine Island was first settled, cemeteries unconnected with churches were still a fairly new concept, one that reflected emerging Victorian social attitudes toward death, sanitation, and gardening. Contemporary plan books and gardening manuals provided detailed instructions on the laying out, planting, and care of cemeteries – although, as indicated by the reports printed in the journals of agricultural and horticultural societies, there was considerable divergence of opinion regarding the particulars. The oldest community burying ground was located on the north bank of the Zumbro, but the site was cramped and subject to flooding. The Pine Island Cemetery was formally laid out in blocks and lots on the village periphery in accordance with the prevailing notions of what a rural cemetery was supposed to look like. The organization of the cemetery association in 1885 was a major civic occasion. One gets the impression, reading old newspaper accounts, that the local citizenry were keenly aware of Benjamin Franklin's dictum (seconded by Carlisle and many others) that one could judge the social status of a community by the condition of its cemetery. Over time, the Pine Island Cemetery accumulated plantings, driveways, and ornamental landscaping and evolved into what is today a landscaped park. Custom and tradition dictated the shapes, materials, inscriptions, and placement of grave markers, which became a microcosm of local history.



Painting the Pine Island Cemetery fence

Geographic Features of Historical Interest

Physical geography shapes historical events and provides the setting in which buildings, sites, and districts are constructed, used, and preserved. The topography of the city was shaped entirely by running water and no single physical feature distinguishes Pine Island more than the Zumbro River, called Wa-zi-o-zu-wa-kpa by the Dakota Sioux and Rivière des Embarras by the French Canadians.⁴² In its natural condition the Middle Fork of the Zumbro meandered in a floodplain about one mile wide and the channel was frequently obstructed by sandbars and snags caused by fallen trees. The lower reach of the river's main stem was so filled with log jams that it made travel by canoe difficult and hazardous, though during high water it was navigable by small craft as far as present-day Rochester. Modern day canoeists regard the Middle Fork as too shallow and "generally prefer the reach downstream from the

forks.” In 1858, gold was discovered along the banks of the Middle Fork downriver from Pine Island, but the Oronoco Gold Rush was short-lived and had no measurable effect on local development.⁴³

Channel depth at Pine Island ranges from three to six feet over a coarse sandy bed. The Zumbro is susceptible to spring flooding whenever heavy snow and ice accumulates and the hazard varies from year to year. Localized overflows are also caused by ice jams that back up meltwater in the river channel. Summer flash-flooding is caused by thunderstorms and the severity of these floods have probably increased due to agricultural practices that have increased surface run-off throughout the watershed. Historically, floods have caused severe damage to property (primarily buildings and bridges), disrupted transportation, and occasionally resulted in loss of life in the Pine Island area. Low flows are common during the late summer and fall, and particularly during the winter, when the river is usually frozen over, with ice typically forming in late November and often present well into March. Although the city has no flood control structures, attempts to mitigate the effects of seasonal flooding has resulted in a succession of modifications to the pattern of development along the river.

Forest originally covered about half of the land within the modern city limits while the rest was mostly prairie or savanna and early settlers must have been greatly impressed by the area’s timber resources. Several native tree species have important cultural associations.⁴⁴ Although the eastern white pine (*Pinus strobus*) forest that gave Pine Island its name has been obliterated, under natural conditions this large conifer could attain a height of 80 feet and had a lifespan of more than 450 years. Commonly known as soft pine, it was highly prized as a timber species (for many years it was Minnesota’s official state tree) and most of the Pine Island stand was probably logged off and sawed into boards at the local mill before the turn of the century. Also nearly extinct is the American elm (*Ulmus americana*), an important component of the Big Woods forest community and formerly a widespread urban shade tree. However, since the 1960’s most of Pine Island’s elms have been lost to Dutch elm disease, a vascular wilt caused by a fungus introduced to the United States around 1930 on logs brought over from the Netherlands. The native sugar maple (*Acer saccharum*) is still seen around town, though most of the old sugarbushes have disappeared. Historically, Indians and settlers tapped mature trees for their sap, which was boiled down to make syrup and sugar. Newspaper accounts suggest that early settlers tapped hundreds of trees in and around Pine Island and had a ready market for maple syrup and sugar. The sugar maple was also an important source of hardwood lumber used for furniture and flooring. American basswood or linden (*Tilia americana*) was also tapped for syrup (it yields less than half the sugar content of the maple), but ranked behind oak, maple, and ash in its usefulness as a source of lumber, though it was widely used for cheese boxes and other containers. The Dakota wove the inner bark of the basswood into ropes and mats. Another little-known forest product was black willow (*Salix nigra*), which grows on the banks of the Zumbro and was traditionally used by American Indians for basket-making.



2nd Street residence built by Finn Jewel in 1895

Historic Property Types

Historic contexts are linked to historic properties that are present in the community through the concept of property type. Like the contexts themselves, historic property types “are artificial constructs which may be revised as necessary” as more information becomes available to preservation planners.⁴⁵ At the present time, it is feasible to define historic property types in Pine Island in broad, general terms.

As defined by the National Park Service for use in the National Register of Historic Places, historic resources are classified within five broad categories: building, site, structure, object, and district. As a matter of practice, the term “structure” is used to for constructions that are made for the purpose other than creating human shelter. Common examples of structures are bridges, dams, silos, grain elevators and highways. The term “object” is used for constructions that are small or primarily artistic in nature, such as outdoor sculpture and monuments. As used in historic preservation, “district” is used to describe an area containing multiple resources linked by function or association, such as a residential neighborhood or downtown business district. Historic districts may also be created for large historic resources like highway corridors and parks. While this classification system is useful for categorizing historic resources when they are officially designated for preservation, it is not detailed enough for use in evaluating the significance (i.e., preservation value) of individual historic properties, which relies upon comparing related resources in the perspective of their historic context.

Historic Buildings

Architectural resources more than fifty years old represent the most abundant type of historic property in Pine Island.⁴⁶ Buildings that possess historic significance would need to be evaluated within the following local historic contexts:

- Agriculture and Related Industries
- Transportation and Communication
- Commercial Development
- Social and Cultural Institutions
- Residential Development
- Churches and Cemeteries

This general category of properties includes houses, garages, stores, schools, and factories that are of historical interest because of their connections with historical events or patterns of events. One of these “patterns of events” is architecture, which is usually defined as the art of designing and constructing buildings to serve human needs. Architectural historians have developed the concept of style as a means of classifying buildings on the basis of shared design characteristics. The styles are also related to specific time periods and, occasionally, to specific geographic areas that provide a convenient framework for viewing architecture as a progression of ideas, tastes, and philosophies within the broader context of the history of art, economics, culture, and technology.⁴⁷



Pine Island Cheese and Butter Factory about 1920

Pine Island contains examples of many of the architectural styles that were popular in Minnesota between 1850 and 1950. Of particular interest are the

buildings that show the influence of the Italian Villa, Gothic Revival, Victorian Italianate, Queen Anne, Colonial Revival, and Craftsman styles. High-style period buildings designed by professional architects are rare, however most of the specimens in the inventory are amalgams of different styles, patternbook houses based on standardized plans, or unstyled houses embellished with some period-inspired detailing. Indeed, domestic as well as commercial architecture in Pine Island is overwhelmingly vernacular in design.⁴⁸

The following historic building property types seem to best characterize the architectural heritage of the city: period style houses, vernacular houses, stores, churches, agricultural outbuildings, factories, warehouses, garages. Pine Island also contains some noteworthy buildings that are sole or rare surviving examples of an important architectural style or type, as well as few one-of-a-kind properties. Their architectural significance will need to be studied from a statewide or national perspective.⁴⁹

Historic Sites

In historic preservation planning, a site is the location of an event or activity that makes the location itself worthy of historical interest. Archeologists have traditionally referred to any location where buried cultural remains are present as an archeological site, regardless of the presence of ruins or other surface features. Landscape historians use the term more broadly to encompass cultural features such as cemeteries, trails, and natural features.⁵⁰



Opera House block



Partially restored Main Street block – Fangman’s Surveying, right, with 3 restored arches

Historic resources may occur as sites within all of the local historic contexts. As regards vestiges of the American Indian presence, the range of potential archeology sites would reflect the archeological record of southeastern Minnesota, where the most common property types are habitation sites (temporary and seasonal camps, single and multiple occupation bivouacs, villages), resource procurement sites (hunting, fishing, maple sugar, wild plant processing, stone tool and pottery making) and burial sites (individual graves, cemeteries, mounds). Archeology sites affiliated with the Dakota or Sioux would be

essentially the same as prehistoric sites, but with different artifact assemblages and distribution patterns. Potential settlement period archeological sites with high research value associated with the Agriculture and Related Industries theme would include pioneer homesites and farmsteads, the ruins of mills and mill dams, and trails. Cemeteries are also classed as historic sites.

Historic Structures

Historic structures are an integral part of the Pine Island built environment and generally share the same historic contexts as buildings. The study unit Transportation and Communication encompasses the widest range of property types: bridges, grain elevators, highways, railroad grades, and a number of farm structures such as silos, corncribs, and fences. For planning purposes, to be considered historic a structure would need to preserve its original configuration or design while buried, deteriorated, or demolished structures are categorized as archeological sites.

Historic Objects

Objects are usually artistic in nature, or small in scale when compared to structures and buildings. Though objects may be movable they are generally associated with a specific setting or environment. Examples of objects include monuments, sculptures and fountains. Objects considered for historic relevance, individually or as part of districts, should be designed for a specific setting, location or environment. Objects such as a transportable sculpture, furniture and other decorative arts that lack a specific place are discouraged. Fixed outdoor sculpture, an example of public art, would be a good object for inclusion on the Register and the setting of an object is important in relation to the Register. It should be appropriate to their significant historical use, roles, or character. In addition, objects that have been relocated to a museum are not considered for inclusion on the Register.⁵¹

Historic Districts

Historic districts are groups of buildings, structures, or sites that physically and spatially comprise a specific environment. As a general rule, the visual relationships between the components of a district are most important, although all of the elements within a district do not necessarily have to be contiguous. In Pine Island there are a number of potential historic districts that derive their significance from the concentration of individually significant buildings, and from the architectural and aesthetic relationships between them. The central business district on Main Street is one such district, the applicable historic context would be Commercial Development. Within the context of residential development, it may be possible to delineate additional urban districts in residential neighborhoods that possess a distinctive identity of time and place. The possibility also exists for cohesive urban streetscapes, cemeteries, natural features, rural farmsteads, and transportation corridors.⁵²

National Register of Historic Places



Main Street business district



Pine Island City Hall about 1910

Many properties within Pine Island may qualify as historic and worthy of preservation, but at this time only three properties are currently listed on the National Register of Historic Places. Two of the properties are located within the downtown area and the third, a residential home is located just outside the downtown in a residential area. Although some would argue the downtown itself is a historic district worthy of preservation, it currently does not receive that status, however the Minnesota State Historic Preservation Office considers the South Main Street commercial district to be National register eligible. Table 36 lists the properties listed on the National Register of Historic Places.

Table 36 - Pine Island Properties on the National Register of Historic Places

| Property | Address | Listing Date | Significance Level | Year Built | Theme | Historic Functions |
|-----------------------|-----------------------------|---------------------|---------------------------|-------------------|---------------------------|--|
| City Hall | 250 South Main Street | February 12, 1980 | Local | 1909 | Politics/Government | City Hall, Correctional Facility, Fire Station |
| Jacob Bringgold House | 314 Southwest Second Street | February 12, 1980 | Local | 1906 | Agricultural, Industry | Single Family Dwelling |
| Opera House | 222 South Main Street | February 12, 1980 | Local | 1895 | Commerce, Performing Arts | Financial Institution, Theater |

Source: <http://nrhp.mnhs.org/NRSearch.cfm>

Heritage Preservation Commission

In 2008 the City Council adopted an ordinance related to the purpose and functions of the Heritage Preservation Commission which repealed the City's original preservation ordinance that was adopted in 2001. The City Council declared as a matter of public policy that the preservation, protection, perpetuation, promotion and use of areas, places, buildings, structures, lands, districts and other objects having a special historical, community or aesthetic interest or value is a public necessity and is required in the interest of the health, prosperity, safety and welfare of the community. The Heritage Preservation Commission is to advise City policy makers on matters relating to the preservation, protection and use of significant heritage resources. Other purposes of the Heritage Preservation Commission are to:

1. Safeguard the heritage of the City of Pine Island by preserving properties which reflect elements of the City's cultural, social, economic, political, visual, or architectural history.
2. Protect and enhance the City of Pine Island's appeal and attraction to residents, visitors, and tourists, while enhancing its economic viability through the protection and promotion of its unique character as related to its history and heritage.
3. Enhance the visual and aesthetic character, diversity and interest of the City of Pine Island.
4. Foster civic pride in the beauty and notable accomplishments of the past.
5. Promote the preservation and continued use of historic properties for the education and general welfare of the people of the City of Pine Island.

The Heritage Preservation Commission consists of seven voting members to be appointed by the Mayor with the advice and consent of the City Council. One voting member may be a student and no more than one member may be an area resident residing outside the City limits. One City Council member shall be appointed as well by the Mayor with the consent of the City Council as an ex-officio, non-voting member. Terms for the HPC shall be for three

years and members may be reappointed for consecutive terms. The Heritage Preservation Commission is required to meet at least four times throughout the year.

Functions

Pine Island Heritage Landmark Designation. One of the functions of the Heritage Preservation Commission is to facilitate and recommend the designation of properties as Heritage Landmarks. Heritage Landmarks are defined in the City code as "Any building, site, structure, district, or object which has been duly designated by the Heritage Preservation Commission and City Council as a Heritage Landmark." Criteria for designation of properties as Heritage Landmarks are as follows:

1. Its association with events or patterns of events that have made a significant contribution to the broad patterns of local, state and national history.
2. Its association with the lives of persons who have made a significant contribution to state or local history.
3. Its architectural, engineering, artistic, or landscape qualities in relation to an important style, type, period, or method of construction.
4. Its scientific or informational value in prehistory or history.
5. Its identify as an historic district, neighborhood, or environment comprised of heritage resources united historically or aesthetically by plan or physical development, including features that lack individual distinction.

If a property meets one or more of the above mentioned criteria the Heritage Preservation Commission by majority vote may issue a finding of historical significance. Once a finding of historical significance has been issued the owner is notified and a nomination report is prepared and forwarded to the Planning Commission for review and comment prior to designation. The City Council shall then hold a public hearing on the nomination of the property and at that time may designate the property as a Heritage Landmark.

Heritage Landmark Designated Properties. One building has been designated as a Pine Island Heritage Landmarks since the inception of the designation process located in the City code. That building is the Main Street Dentistry building at 232 South Main Street. Its historic name was the George Dickman & Son Clothing Store and was designated in late 2008.

Review of Permits. Properties eligible for permit review by the HPC must be designated a Heritage Landmark or determined eligible for designation as a Heritage Landmark. No City permit for the types of work mentioned below may be issues until a Certificate of Appropriateness is approved by the Heritage Preservation Commission. The Certificate of Appropriateness is a certificate issued by the City and attached to a City permit evidencing compliance with the City's policies regarding the preservation, protection and use of heritage resources. The following types of work eligible for review are as follows:

1. Remodeling or alteration of any part of the street facade of a building.
2. Demolition of any building or structure, in whole or in part.

3. Moving a building or structure to another location.
4. Excavation of archaeological features, grading or earth moving in areas believed to contain significant prehistoric or historic archaeological sites.
5. New construction, including additions, garages, and landscape structures.

To assure compliance with policies, goals and objectives of this plan, the Heritage Preservation Commission also reviews every application for a preliminary plat, conditional use permit, variance, rezoning, or development plan in relation to any property designated or determined eligible for designation as a Pine Island Heritage Landmark. The City Planning Commission and Economic Development Authority are required to give the Heritage Preservation Commission a reasonable opportunity to comment on such projects before making its recommendation to the City Council.

Additional Powers and Duties of the Heritage Preservation Commission. In addition to permit review and Heritage Landmark designation, the Heritage Preservation Commission shall also ensure that an annual report is prepared for submission to the Minnesota State Historic Preservation Office and City Council, an updated list of all areas, places, buildings, structure, land, districts, or other objects which have been designated as Pine Island Heritage Landmarks is made available to the public and an updated catalog of all known publications, articles, books, pamphlets, policies, or other materials having a direct bearing on the heritage preservation program for Pine Island are prepared, compiled, and made available to the City staff and the general public.

Additional powers and duties of the Heritage Preservation Commission consist of:

1. Carrying out a comprehensive survey of historic properties and maintain an inventory of such properties.
2. Nominating properties to the National Register of Historic Places when authorized by the City Council.
3. Prepare, implement, and periodically review a comprehensive heritage preservation plan for the City of Pine Island.
4. Seek grants, gifts, and donations that can further the work of the City's heritage preservation program. Any contributions or gifts will be managed by the City of Pine Island in the manner provided through the fiscal policy of the City.
5. Work with the Pine Island Economic Development Authority to ensure that historic properties are taken into consideration when planning development projects.
6. Provide City officials and the general public with information, education, and training in heritage preservation.
7. Cooperate with the Pine Island Area Historical Society, the Goodhue and Olmsted County Historical Societies, the Minnesota Historical Society, and other organizations in the development of public education and information programs relating to the City of Pine Island's heritage.
8. Perform all other functions authorized or delegated to it by the City Council of the City of Pine Island.

POLICIES, GOALS AND OBJECTIVES

A few years ago, the citizens of Pine Island began to explore the possibility of an expanded role for city government in historic preservation. The completion of the historic context study, which is referenced in the background section of this plan, marks a critical milestone in the development of an effective, comprehensive, and sustainable municipal heritage preservation program. With the historic context document in hand, City officials will be able to establish clearly defined policy goals and planning objectives, effectively prioritize important historic resource management tasks, and make informed decisions with respect to the identification, evaluation, registration, and treatment of significant historic resources.

Historic Preservation Policies, Goals and Objectives

To effectively manage its historic resources the City of Pine Island adopts the following historic preservation policies.

Policy 1. Continue to treat the preservation, protection, and use of historic resources as a legitimate public need.

- Goal A. The preservation, protection and use of significant historic resources will be a priority goal in community development planning.
- Goal B. Respect Pine Island’s heritage and enhance preservation efforts in community development activities.
- Goal C. Support the creation of a Heritage Preservation Plan which contains strategic goals and policies for the Heritage Preservation Commission to follow and implement. The Heritage Preservation Plan should also include a vision statement with specific actions which are intended to produce measureable outcomes within a reasonable period of time using available program resources.
- Goal D. The Heritage Preservation Commission and City Council shall conduct on an annual basis a joint workshop which will include input from the Heritage Preservation Commission, the preservation community and the development community. At that time, staff will present a report concerning the activities of the Heritage Preservation Commission during the past year, including the identification of known historic and archaeological resources lost during the past year and recommendations for improvements to the City's preservation efforts.



Historic D. Callahan house, 2004

Policy 2. Identify and evaluate historic resources that give Pine Island its special character.

- Goal A. Establish criteria based on federal and state guidelines for determining historical, architectural, archeological, and cultural significance in existing building, places, and landscapes.
- Goal B. Direct the Heritage Preservation Commission to establish specific criteria to prioritize local resources.
- Goal C. Establish a Historic Preservation overlay zoning district for the historic downtown area and any adjacent residential properties by defining specific boundaries and establishing special regulations and architectural requirements for the preservation, rehabilitation, restoration and reconstruction of existing structures and for the development of new buildings within this district.

Policy 3. Develop integrated organizational, regulatory, and incentive mechanisms to facilitate preservation of historic resources and provide the leadership to make them work.

Goal A. Capitalize on the historic value of significant historic properties by creating revitalization strategies for neighborhoods and districts.

Goal B. Demand excellence in design for new construction in historic areas and in the stewardship of historic resources throughout Pine Island.

Policy 4. Promote community identity and civic pride through heritage education programs directed toward citizens of all ages and backgrounds.

Goal A. The City will provide assistance to individuals and/or groups applying for grant funding for historic programs and related projects when approved by the City Council

Policy 5. Recognize the diversity of interests within the “preservation community” and empower a diverse constituency for the preservation, protection, and use of Pine Island’s historic resources.

Goal A. Recognizing that there are conflicts between downtown development goals and objectives and the goals and objectives of historic preservation, the City and preservation community, in conjunction with the downtown property owners and business community will conduct a workshop on at least an annual basis, to identify ways to minimize conflicts between historic preservation and downtown development and redevelopment.

Goal B. The preservation community and the City will work together to promote the City's heritage and commitment to preservation by making programs concerning the historic resources of the City and the preservation program available to the general public.

Policy 6. Continue to promote the preservation of resources through the commitment to conduct historic resource surveys and the continued development of ordinances, guidelines and/or databases.

Goal A. The City shall produce a map which identifies heritage landmarks, properties eligible for heritage landmark designation and properties on the National Register of Historic Places in order to better promote the preservation of these properties.

Goal B. The City will continue to review its land use, zoning and land development regulations and consider initiating amendments to such regulations to remove unnecessary disincentives to the reuse and redevelopment of historic landmarks. The City will solicit input from appropriate local and state organizations and interest groups.

Policy 7. To support programs and incentives provided by local, state and national preservation organizations.

Goal A. The City will investigate and when appropriate pursue grant and/or other funds that will assist in funding rehabilitation or restoration of historic properties on an on-going basis.

Goal B. The City will continue to monitor and appropriate support from state and national incentive programs related to historic preservation.



City Hall and downtown

IMPLEMENTATION

Historic Contexts for Preservation Planning

The historic context study identified eight broad, general, theme-based planning units for identification, evaluation, preservation, and treatment of historic resources in Pine Island. They are:

- The American Indian Presence
- Agriculture and Related Industries
- Transportation and Communication
- Commercial and Industrial Development
- Social and Cultural Institutions
- Residential Development
- Churches and Cemeteries
- Geographic Features of Historical Interest

All of the context units are city-wide in their geographic scope. With the exception of the American Indian historic context, which covers the period from circa 9,500 B.C. to A.D. 1854, all of the context chronologies overlap between 1855 and 1952.



Pine Island area history center

Information Gaps

“Local history’s topics are innumerable in their combinations.”⁵³ As a consequence, no historic context is ever complete. The following research questions are posed in response to information needs that could not be addressed by the initial historic context study:

1. The most critical data gap relating to the American Indian Presence study unit is the lack of documentation on local archeological resources. While no sites have been recorded within the city limits, amateur archeologists and casual collectors frequently recover prehistoric and historic artifacts from plowed fields, stream banks, and even on land that has been cleared for development.
2. Detailed information that would connect existing historic properties to individual family farms and agriculture-related businesses, social and cultural institutions, and local industries is lacking.
3. Across all of the local historic contexts, knowledge of the heritage of women and children needs to be expanded and refined. Women, for example, comprised at least 50% of the population of Pine Island and played important roles in education, the arts, commerce, and other areas, yet their story is not told in detail in existing histories.

The most serious information gap that will impede historic preservation in Pine Island is the lack of a complete, fully documented inventory of historic commercial buildings and dwellings. Existing inventory data are incomplete, out of date, and biased toward high-style buildings.

The underlying premise behind historic preservation is that historic resources represent a set of scarce, non-renewable community assets, the preservation of which will provide cultural and economic benefits to the citizens of Pine Island. To this end, historic contexts will only be useful when they are integrated with other planning for historic preservation, and when preservation planning is integrated with other community planning. This section of the historic preservation chapter provides the underpinnings and rationale for a municipal historic preservation plan that uses historic contexts to establish goals and policies for a comprehensive program of historic preservation.

Planning for Historic Preservation

Historic preservation has long been recognized as a legitimate function of local government in the United States. Today, it is estimated that upwards of three thousand communities across the nation are involved in some kind of preservation activity that is carried out under the auspices of local government, with more than 1,500 municipal and county programs participating in the Certified Local Government program under the National Historic Preservation Act. Most preservation experts agree that an official preservation plan is critical to the success of any local government preservation program. Although municipal preservation plans take many forms, the better ones integrate historic preservation into community development planning by establishing goals, policies, and priorities as part of the city's comprehensive plan.

Historic contexts are, first and foremost, a tool for preservation planning. Even when delineated only in broad, general terms, historic contexts enable government officials, city planners, architects, engineers, developers, and property owners to make plans for the wise use of historic properties. Therefore, it is essential that any City of Pine Island historic preservation plan must include information about local historic contexts. Because historic contexts (like other forms of planning) are part of a dynamic process, they are never complete. Therefore, the city preservation plan only needs to present an outline of the local study units, along with a detailed explanation of their role in identifying and evaluating historic resources.

Identifying and Evaluating Historic Properties

One of the basic tenets of historic preservation planning is: the more decision makers know about the number, type, distribution, and condition of significant historic resources, the better they can plan for the wise use of these resources. Historic resource identification involves the process commonly known as survey, which is the physical search for the recording of information about historic buildings, sites, structures, objects and districts. Surveys are conducted at either the reconnaissance or the intensive level. Reconnaissance surveys are “once over lightly” inspections of an area to characterize its historic resources in general, while intensive surveys are directed toward identifying and documenting individual historic properties for the purpose of evaluating their preservation value. Reconnaissance and intensive surveys are often carried out in sequence and may also be focused on a particular type of historic resource. Surveys designed to identify properties associated with a particular historic context are usually referred to as thematic studies.⁵⁴



Restoration work completed in 2003 – Loomis F. Irish building on Main Street

Conducting surveys involves historical research, field survey, and recording of data about historic resources. “Together with the community’s planning and development priorities, and its available personnel and financial resources, historic contexts are the most influential factors in defining the structure of



Winding Pine Island's City Hall clock

a survey effort,” states an oft-cited primer on historic preservation surveys, which goes on to declare: “The importance of taking historic contexts into account cannot be overemphasized. Failure to do so can lead to the application of survey methods that are not cost-effective, that fail to identify significant resources, or that contain controlled biases.”⁵⁴

Surveys generate information about historic resources that is compiled in the form of an inventory. The basic historic resources inventory is a collection of files with each inventory file containing a written description of a specific resource, with maps, plans, sketches, and photographs that document its historical associations and significance. The inventory files provide the baseline of data on which evaluations of the significance of individual historic properties are made. At present, the only inventory of Pine Island historic resources is the one maintained by the Minnesota State Historic Preservation Office at the Minnesota History Center in St. Paul. This statewide history/architecture inventory consists of a “hard data” filing system organized by county and subdivision, with information on more than 45,000 historic properties stored in vertical files. The inventory files contain survey forms, National Register

registration forms, reports of preservation surveys, and review and compliance files. The Minnesota State Historic Preservation Office also maintains a statewide archeological site inventory with data on more than 15,000 properties. The information contained in the fifty or so Pine Island inventory files is very uneven. The great majority of the files consist of nothing more than an abbreviated field survey form with a black-and-white contact print and all of the Pine Island data is more than twenty years old. Several of the recorded historic properties no longer exist, others are misidentified, and many of the inventory forms lack detailed location information. Updating and expanding this inventory will be a high priority task when the historic context study is implemented.

Evaluation uses historic contexts to determine whether a given historic property meets defined criteria of historical, architectural, archeological, or cultural significance. Because only significant historic properties are eligible for listing in the National Register (and for preservation zoning under local ordinance), this task is of critical importance.

Registering Historic Properties

National Register of Historic Places and Pine Island Heritage Landmark designation form the twin pivots around which preservation in the City turns. For a property to qualify for National Register or Heritage Landmark designation, it must meet established criteria for significance by being associated with an important historic context and by retaining historic integrity of those features necessary to convey its significance. Local historic contexts provide the basic framework for evaluation by delineating important themes, property types, and preservation priorities.



Restored facade, downtown Pine Island

property, explain how it meets one or more of the eligibility criteria, and make the case for historic significance and integrity. The registration document must relate the historical, architectural, archeological, and cultural significance of the nominated property to its appropriate historic context. This is usually done in the form of a narrative statement of significance that references the appropriate historic context study.⁵⁵

While a given historic property is required to be significant in one historic context to be judged eligible for registration, some historic properties in Pine Island may be significant within more than one historic context. It should also be noted that properties in Pine Island may represent an aspect of state or regional history. The Minnesota State Historic Preservation Office has developed historic contexts as part of its statewide preservation plan that can be used to evaluate properties that are significant to the state as a whole or locally significant representations of statewide themes.⁵⁶

Design Review and Compliance with Preservation Standards

The City’s Heritage Preservation Commission's function provides the legal framework for reviewing changes to the appearance and use of significant historic resources. While it is true that historic resource protection strategies are not based on historic contexts (a property is either historically significant, and therefore worthy of preservation, or it is not), it stands to reason that an understanding of the important events, patterns, trends, and themes in Pine Island history will provide decision makers with the information needed to plan for the wise use of significant historic properties. Indeed, historic contexts can aid in the preservation and treatment of individual properties by illustrating the historic, economic, cultural, aesthetic, and visual links between that particular building or site and other community resources.

Public Participation

Historic preservation in Pine Island is a public enterprise and one of the keys to its success will be the level of effective partnership between City officials, other preservation groups, and the owners of historic properties. As a municipal service, historic preservation will also need to develop a broad base of community support.

Historic context studies generate data and fresh interpretations about local history that is often not available in any other form. This information must be transmitted in usable form to those responsible for managing historic preservation in the City. To maximize the general public’s access to this material, preservation organizations often distill the technical and planning data into publications aimed at various audiences.



Historic Butter Factory

Endnotes

¹ This section is based on information bearing upon the physical geography of the Pine Island area contained in the following publications: H. W. Anderson, et al., *Water Resources of the Zumbro River Watershed, Southeastern Minnesota* (Reston, Va.: U.S. Geological Survey, 1975); Roger Harrison Cowie, “Geology of the Zumbro River Valley Region,” unpublished Ph.D. thesis (University of Minnesota, 1941); and George A. Poch, *Soil Survey of Goodhue County, Minnesota* (Washington: U.S. Soil Conservation Service, 1976). Information was also obtained from contacts with the U.S. Natural Resources Conservation Service; U.S. Geological Survey; and the Ecological Services division of the Minnesota Department of Natural Resources.

² *How to Apply the National Register Criteria for Evaluation* (Washington: National Park Service, 1998), p. 7; “Archeology and Historic Preservation; Secretary of the Interior’s Standards and Guidelines,” *Federal Register* vol. 48 no. 190 (1983), p. 44717.

³ The National Register properties in Pine Island were nominated as part of a multiple property study prepared by B. Michael Zuckerman, “Rural Goodhue County Multiple Resource Area,” unpublished document (Minnesota Historical Society, 1978); the project was undertaken in 1978 under the auspices of the Minnesota Historical Society as part of its county-by-county National Register survey of the state conducted between 1977 and 1988. Zuckerman’s 1978 report forms the basis of the National Register multiple property nomination accepted by the National Park Service in 1980. The nomination forms and survey documents are on file in the architecture/history inventory files maintained by the Minnesota State Historic Preservation Office at the Minnesota History Center, St. Paul.

⁴ The Minnesota State Historic Preservation Office architecture/history inventory has files on 54 Pine Island buildings and sites, including those listed in the National Register.

⁵ Examples of this genre include Joseph A. Amato, *Rethinking Home: A Case for Writing Local History* (Berkeley: University of California Press, 2002); David Kyvig and Myron Marty, *Nearby History: Exploring the Past Around You* (Nashville: American Association for State and Local History, 1982); and the essays in *The Interpretation of Ordinary Landscapes*, D. W. Meinig, ed. (New York: Oxford University Press, 1979).

⁶ Our use of the term “American Indian” rather than the perceived-to-be politically correct “Native American” follows the preference of the Minnesota Indian Affairs Council.

⁷ State laws on the subdividing of land, local government regulation of land use, zoning authority, and comprehensive plans are found in Minnesota Statutes. Information on planning in Pine Island has been assembled by the Comprehensive Planning Task Force in the draft “Pine Island Comprehensive Plan” (2003).

⁸ The standard historical works are: Franklyn Curtiss-Wedge, ed., *History of Goodhue County, Minnesota* (Chicago: H. C. Cooper, Jr., 1909); Joseph W. Hancock, *Goodhue County, Minnesota, Past and Present* (Red Wing: Red Wing Printing Co., 1893); *History of Goodhue County: Including a Sketch of the Territory and the State of Minnesota* (Red Wing: Wood, Alley & Co., 1878); Frederick L. Johnson, *Goodhue County, Minnesota: A Narrative History* (Red Wing: Goodhue County Historical Society Press, 2000); W. H. Mitchell, *Geographical and Statistical Sketch of the Past and Present of Goodhue County* (Minneapolis: O. S. King, 1869); and Christian A. Rasmussen, *A History of Goodhue County, Minnesota* (Red Wing: privately printed, 1935). Statistical data are from the published reports of the U.S. Census for 1860-1950. To avoid peppering the endnotes with numerous *ibid.*’s and *op. cit.*’s, the author has left out references to these works, except to attribute specific facts or interpretations unique to one source, and for direct quotations.

⁹ This chronology is based on the Minnesota State Historic Preservation Office Pre-Contact Period Historic Contexts; and on Minnesota Department of Transportation, *A Predictive Model of Precontact Archaeological Site Location for the State of Minnesota* (on-line at www.mnmodel.dot.state.mn.us).

¹⁰ See Clark A. Dobbs, *The Archaeology of the Cannon Valley Trail: Goodhue County, Minnesota* (Minneapolis: Institute for Minnesota Archaeology, 1989).

¹¹ Hancock, *Goodhue County*, p. 288; cf. Mitchell, *Past and Present*, p. 188. The origin and meaning of the various names for the Zumbro and Pine Island are discussed in Warren Upham, *Minnesota Geographic Names: Their Origin and Significance*, reprint ed. (St. Paul: Minnesota Historical Society, 1969), pp. 11, 207, 210; see also Paul Durand, *Where the Waters Gather and the Rivers Meet: An Atlas of the Eastern Sioux* (Prior Lake: privately printed, 1994), p. 108. The story about an island in the Zumbro at Pine Island is a bit of local folklore that occasionally creeps into historical accounts, e.g., Rasmussen, *History of Goodhue County*, p. 176.

¹² The best modern works on the ethnology and history of the Dakota Sioux are Gary C. Anderson, *Kinsmen of Another Kind* (Lincoln: University of Nebraska Press, 1984) and Guy E. Gibbon, *The Sioux: The Dakota and Lakota Nations* (Malden, Mass.: Blackwell Publishing, 2003); for an excellent summary of their traditional lifeways, see Alan R. Woolworth and Nancy L. Woolworth, “Eastern Dakota Settlement and Subsistence Patterns Prior to 1851,” in *The Minnesota Archaeologist*, vol. 39 (May 1980), pp. 70-89.

¹³ Sometimes written “Rivière aux Embarras,” its name has been incompetently translated as the “river of embarrssments.” The standard authority on Mississippi Valley French defines embarras as an obstruction in a river, and gives the American English equivalent as “raft”; John Francis McDermott, *A Glossary of Mississippi Valley French 1673-1850*, Washington University Studies, Language and Literature no. 12 (St. Louis, 1941), p. 72. The term “raft” is still in common usage in Louisiana, where it refers to a naturally occurring logjam; “floodwood” is probably the Yankee/Midwestern colloquialism (see Upham, *Minnesota Geographic Names*, p. 483).

¹⁴ The basic secondary sources on Minnesota agriculture history are: Merrill E. Jarchow, *The Earth Brought Forth: A History of Minnesota Agriculture to 1885* (St. Paul: Minnesota Historical Society, 1949) and Edward V. D. Robinson, *Early Economic Conditions and the Development of Agriculture in Minnesota*, University of Minnesota Studies in the Social Sciences vol. 3 (Minneapolis, 1915). A useful summary of local agriculture is included in William G. Smith, H. L. Westover, B. D. Gilbert, and N. M. Kirk, *Soil Survey of Goodhue County, Minnesota* (Washington: Government Printing Office, 1915).

¹⁵ The market news section printed in the *Pine Island Record* during the mid-1880s lists prices current for wheat, oats, rye, barley, flour, corn, potatoes, apples, butter, eggs, firewood, beans, onions, cattle, hogs, hay, dressed pork, and timothy seed. The paper began printing regular notices of dairy prices before 1900, about the time it stopped quoting local market prices for other agricultural commodities.

¹⁶ See Patrice Avon Marvin and Nicholas Curchin Vrooman, *Till the Cows Come Home: Being a Story of the Goodhue County Agricultural Society and Mechanics' Institute Annual Fair* (Zumbrota: Wings/Hands & Co., 1985).

¹⁷ According to the county histories, there was a waterpowered sawmill at Pine Island as early as 1855; this property was subsequently acquired by W. W. Cutshall and was not town down until 1902. A steam grist mill was operating by the mid-1880s. There was also a flour mill on the Zumbro; it burned in 1884 but was rebuilt and operated for many years by Loomis F. Irish (1856-1937) as the Pine Island Roller Mill. Newspaper advertisements from the 1880s identified Cutshall as a dealer in “native lumber,” suggesting that his mill cut hardwood sawlogs rather than pine.

¹⁸ For background, see Merrill E. Jarchow, “The Beginnings of Minnesota Dairying,” in *Minnesota History* 27 (1946), pp. 107-124; and Steven J. Keillor, *Cooperative Commonwealth: Co-Ops in Rural Minnesota, 1859-1939* (St. Paul: Minnesota Historical Society Press, 2000).

¹⁹ Information on the cheese industry in Pine Island comes from the paper by Mrs. C. T. (Ruth) Mondale, “The Cheese Industry in Minnesota,” unpublished typescript (1955), Minnesota Historical Society, which forms the basis of her article, “Pine Island Cheese Industry,” in *Goodhue County Historical News*, vol. 2 (November 1969). Early Pine Island cheese and butter producers are listed in *Minnesota Dairy and Food Dept., Official State Creamery and Cheese Factory Directory and Dairy Map of Minnesota* (St. Paul, 1898). For the history of Land O’Lakes, see Kenneth D. Ruble, *Land O’Lakes: Farmers Make It Happen* (privately printed, 1973).

²⁰ There is little documentary evidence to support the contention that Pine Island’s cheesemaking heritage owes a special debt to the talents and energies of Swiss emigrants. Census data suggest that the great majority of nineteenth-century cheese makers were native Minnesotans or transplanted Yankees from New England or upstate New York, a region long known for its dairy production.

²¹ According to the reports of the 1910 federal census, the urban population of the United States (i.e., those persons living in towns of more than 2,500 people) was 45.8% of the total; this figure increased to 51.4% by the time of the 1920 census. Pine Island has followed the pattern of other rural villages in southern Minnesota, where agriculture-related employment has steadily lost ground in the percentage of gainfully employed workers.

²² James H. Baker, “History of Transportation in Minnesota,” in *Minnesota Historical Society Collections* vol. 9 (1901), pp. 1-34; Arthur J. Larson, *Roads and the Settlement of Minnesota*, in *Minnesota History* vol. 21 (September 1940), pp. 225-244. See also Robert Hybben and Jeffrey A. Hess, “Overland Staging Industry in Minnesota, 1849-1880,” National Register of Historic Places Multiple Property Documentation Form (July 1990), Section E, on file at the Minnesota State Historic Preservation Office.

²³ Roy W. Meyer, “The Railroads of Goodhue County,” unpublished typescript (1984), Goodhue County Historical Society, Red Wing; John C. Luecke, *The Chicago and Northwestern in Minnesota* (Eagan: Grenadier Publications, 1990); and Roger Bee, Gary Browne, and John Luecke, *The Chicago Great Western in Minnesota* (Anoka: Blue River Publications, 1984).

²⁴ See Minnesota Department of Highways, *Map of Trunk Highway System, State of Minnesota, Showing Conditions as of April 1, 1926* (St. Paul, 1926); and the Goodhue County map in the atlas, *Minnesota County Highway Maps* (St. Paul: Department of Highways, 1936), Vol. 3. The impacts of the expanding road and highway systems on the built environment in the Pine Island area are clearly shown in the 1938 and 1951 aerial surveys of Goodhue County.

²⁵ Christine M. Kirstukas and Jennifer H. Rooney, eds., *Connecting the North Star State: A Century of Telephony in Minnesota* (St. Paul: Minnesota Telephone Association, 1988); Bob Williams and Chuck Hartley, *Good Neighbor to the Northwest, 1924-1974* (Minneapolis: WCCO, 1974). A history of the Pine Island Telephone Company is available on-line (www.hectorcom.com).

²⁶ The original plat of survey, entitled “Map of Pine Island, M.T.,” is preserved in the archives of the Goodhue County Recorder, Red Wing, along with the 1857 “Map of North Pine Island” and the registered plats of subsequent additions. Deed records document the transfer of lots.

²⁷ Alfred T. Andreas, *An Illustrated Historical Atlas of the State of Minnesota* (Chicago: Andreas, 1874), p. 236. The editor of the *Pine Island Journal* declared (15 June 1883) that “Pine Island has the best market in twenty miles around.” Warner and Foote’s *Map of Goodhue County, Minnesota* (Philadelphia, 1877) includes a business directory for Pine Island (pp. 45-46).

²⁸ The *Pine Island Journal* frequently printed advertisements for saloons and liquor sales, of which the following (dated 29 December 1882) is typical – “DON’T DRINK WHISKEY, but if you must have it, go to Wm. Elick’s, cor. Main and White streets, and get that which is pure.” Pine Island’s WCTU club was founded in 1883 and reorganized in 1902; the Minnesota Historical Society holds some of the records of the Pine Island Temple of Honor and the Pine Island Prohibition Club, dating from 1880-1909; see also Bessie L. Scovell, *A Brief History of the Minnesota Woman’s Christian Temperance Union from Its Organization, September 6, 1877, to 1939* (privately printed 1939).

²⁹ Information on Pine Island businesses was found scattered through census schedules and newspapers. Early village plats printed in commercial atlases and the fire insurance map of Pine island (New York: Sanborn Map Co., 1957) also identify specific downtown properties.

³⁰ Both the Goodhue County Historical Society in Red Wing and the Minnesota Historical Society in St. Paul hold numerous archival photographs of Pine Island commercial properties in their collections; some of these images have been posted on the Pine Island Area Historical Society’s website.

³¹ Economic conditions in Pine Island, as in the county as a whole, were influenced by a recurrence of irregularly separated boom and bust cycles, with disastrous “panics” or depressions in 1857, 1873, 1884, 1893, 1907, 1920, and 1929.

³² Pine Island businesses are listed in the Red Wing and Goodhue County city directories for 1907 and 1938.

³³ The basic sources on Pine Island social and cultural history are the county histories, which contain detailed descriptions of churches, lodges, and other institutions, and contemporary newspapers. For a local perspective on the twentieth century, see Frank D. Alexander and Lowry Nelson, *Rural Social Organization: Goodhue County*, Agricultural Experiment Station Bulletin no. 401 (St. Paul: University of Minnesota, 1949); and Lowry Nelson and George Donohue, *Social Change in Goodhue County, 1940-65*, Agricultural Experiment Station Bulletin no. 482 (St. Paul: University of Minnesota, 1965).

³⁴ Brown, *Historical Geography of the United States*, p. 339. The best secondary source for Minnesota’s ethnic heritage is June Drenning Holmquist, ed., *They Chose Minnesota: A Survey of the State’s Ethnic Groups* (St. Paul: Minnesota Historical Society Press, 1981).

- ³⁵ The basic source for ethnic population data is the U.S. census. Louis M. deGryste, writing on the Swiss in Holmquist, ed., *They Chose Minnesota*, notes the concentration of late-nineteenth century Swiss emigrants settling in Pine Island Township (p. 215).
- ³⁶ See Alan Gowans, *The Comfortable House: North American Suburban Architecture, 1890-1930* (Cambridge: MIT Press, 1986).
- ³⁷ See the Pine Island village maps in Andreas, *Atlas*, p.; and C. M. Foote and J. W. Henion, *Plat Book of Goodhue County, Minnesota* (Minneapolis: C. M. Foote & Co., 1894), pp. 44-45.
- ³⁸ U.S. Bureau of the Census, *Sixteenth Census of the United States: 1940: Housing*, vol. 1, pt. 2 (Washington: Government Printing Office, 1943).
- ³⁹ The National Register generally excludes religious properties, graves, and cemeteries unless they also possess “exceptional” historical, architectural, or cultural significance. See Elisabeth Walton Potter and Beth M. Boland, *Guidelines for Evaluating and Registering Cemeteries and Burial Places* (Washington: National Park Service, 1992).
- ⁴⁰ Historical sketches of the various Pine Island churches are given in the county histories; see also Rose Ellis Berg and Beverly Forrest Jeanson, *St. Michael’s Catholic Church, Pine Island, Minnesota, 1878-1978* (Pine Island: privately printed, 1978).
- ⁴¹ For information on the Rural Cemetery Movement in America see Stanley French, “The Cemetery as Cultural Institution: The Establishment of Mount Auburn and the ‘Rural Cemetery’ Movement,” *American Quarterly* vol. 26 (1974), pp. 37-59; Kenneth T. Jackson and Camilo Jose Vergara, *Silent Cities: The Evolution of the American Cemetery* (New York: Princeton Architectural Press, 1989); and David Charles Sloan, *The Last Great Necessity: Cemeteries in American History* (Baltimore: Johns Hopkins University Press, 1991).
- ⁴² Durand notes that the Anglicization of “des embarras” was accomplished by adding an “o” to the French pronunciation; he makes the point that the name Zumbrota was created by adding the Dakota suffix “ta,” meaning “at, to, or on, that is, the town (implied) on the Zumbro – a combination of Dakota, French and English” (*Where the Waters Gather*, p. 108).
- ⁴³ Thomas F. Waters, *The Streams and Rivers of Minnesota* (Minneapolis: University of Minnesota Press, 1977), pp. 257-258; see also the Minnesota Department of Natural Resources map, *Zumbro River Canoe Route* (St. Paul, 1989).
- ⁴⁴ The “natural” or pre-settlement vegetation cover within the Pine Island city limits can be reconstructed from the records of the public land survey, which subdivided Pine Island Township in 1854; the field notes and plats are in the records of the Minnesota Secretary of State, now part of the State Archives held by the Minnesota Historical Society. F. J. Marshner, an employee of the U.S. Department of Agriculture, used these materials to prepare a map, entitled *The Original Vegetation of Minnesota*, in 1930; this map has been revised and reprinted by the Minnesota DNR’s Natural Heritage Program, with text by Keith M. Wendt and Barbara A. Coffin, as *Natural Vegetation of Minnesota At the Time of the Public Land Survey 1847-1907*, Biological Report no. 1 (St. Paul: Department of Natural Resources, 1988).
- ⁴⁵ “Secretary of the Interior’s Standards,” p. 44718.
- ⁴⁶ It has become common practice to consider as ineligible for official protection buildings and sites that are less than 50 years old, though the National Register does provide for listing properties of “exceptional importance” that have achieved significance after the cut-off date.
- ⁴⁷ Among the many standard works in American architectural history, the sources most applicable to identifying and evaluating local buildings are: Virginia and Lee McAlester, *A Field Guide to American Houses* (New York: Alfred A. Knopf, 1984); Allen G. Noble, *Wood, Brick, and Stone: The North American Settlement Landscape*, 2 vols. (Amherst: University of Massachusetts Press, 1984); and Marcus Whiffen, *American Architecture Since 1780: A Guide to Architectural Styles* (Cambridge, Mass.: MIT Press, 1969).

⁴⁸ The basic source materials for American vernacular architecture with an emphasis on the Midwest are: Midwest Vernacular Architecture Committee, “Surveying and Evaluating Vernacular Architecture,” National Register Bulletin 31 [draft] (Washington: National Park Service, 1984). See also Dell Upton and John Michael Vlach, eds., *Common Places: Readings in American Vernacular Architecture* (Athens: University of Georgia Press, 1986); and the relevant sections in McAlester, *Field Guide to American Houses*, and Noble, *Wood, Brick, and Stone*.

⁴⁹ See David Gebhard and Tom Martinson, *A Guide to the Architecture of Minnesota* (Minneapolis: University of Minnesota Press, 1977); the authors discuss Pine Island buildings on pp. 304-305.

⁵⁰ For background on historic landscapes, see the two technical bulletins published by the National Park Service (and now available on-line): J. Timothy Keller and Genevieve P. Keller, *How to Evaluate and Nominate Designed Historic Landscapes* (formerly National Register Bulletin no. 18); and Linda Flint McClelland, J. Timothy Keller, Genevieve P. Keller, and Robert Z. Melnick, *Guidelines for Evaluating and Documenting Rural Historic Landscapes* (formerly National Register Bulletin no. 30).

⁵¹ How to Apply the National Register Criteria for Evaluation, National Register Bulletins, *National Park Service*. Retrieved March 22, 2007.

⁵² There is a growing literature on the preservation of transportation corridors; see, e.g., the thematic issue of the journal *CRM*, vol. 16 no. 11 (1993), which reprints several papers from the Historic Transportation Corridors Conference held in 1992. The Minnesota State Historic Preservation Office has funded National Register multiple property studies of government roads, stage lines, and portage trails.

⁵³ The basic primer on historic preservation surveys is Anne Derry, H. Ward Jandl, Carol D. Shull, Jan Thorman, and Patricia L. Parker, *Guidelines for Local Surveys: A Basis for Preservation Planning*, National Register Bulletin 24, revised (Washington: National Park Service, 1985).

⁵⁴ Derry et. al, *Guidelines for Local Surveys*, pp. 14-15. The Minnesota State Historic Preservation Office guidelines for architecture/history and archeological surveys also emphasize the importance of historic contexts.

⁵⁵ See the National Register Bulletin (formerly no. 16 and now available on-line), *How to Complete the National Register Registration Form*.

⁵⁶ The statewide historic contexts are filed in three-ring binders under the general title *Historic Context Notebooks*, in the Minnesota SHPO office at the Minnesota History Center.

CHAPTER 9 - SUSTAINABILITY

BACKGROUND

Introduction

Pine Island seeks to assure its residents a safe, healthy, inviting and affordable environment in which to live and work and demonstrate that it can do so over time. This can include changes in the internal operations of the City as well as exploring ways to encourage or regulate private development and residents to make more sustainable choices. The concept of "sustainability" involves the ability of a community and society to plan for the needs of the present population while ensuring that future generations have the same or better opportunities. In fact the above sustainability concept is derived from a United Nations Bruntland report issued in 1987 that defines sustainability as: "A sustainable society meets the needs of the present generation without sacrificing the ability of future generations to meet their own needs." Pine Island has adopted this definition which has become the most frequently and universally quoted expression of sustainability. However, it is not the only definition.

Additional definitions of sustainability come from the US Environmental Protection Agency (EPA) and State of Minnesota. The US Environmental Protection Agency's definition is: "Balancing a growing economy, protection for the environment, and social responsibility, so they together lead to an improved quality of life for ourselves and future generations." The State of Minnesota defines sustainability as: "Development that maintains or enhances economic opportunity and community well-being while protecting and restoring the natural environment upon which people and economies depend."

A common element in all of the above definitions is the consideration of long-term effects and impacts on future generations. The intentional long-term community functionality can be referred to as sustainability and a sustainable community makes choices and commitments that it can reasonable expect to maintain through current and future generations for as long as its commitments are considered relevant. By balancing production and consumption (living within limits), taking a holistic approach to decision making (understanding interconnectedness), and recognizing the ethical component of our actions (ensuring the equitable distribution of resources and opportunities) Pine Island can address sustainability in this plan.

Components of Sustainability

There are increasing concerns that communities are being created and developed that are not sustainable in the long run. The goal of this chapter is to establish a framework for strategic, efficient, progressive, purposeful and smart decision making as guided by this plan. One of the challenges in addressing sustainability in a comprehensive plan is that many of the issues are global in nature. These issues can include air quality, renewable energy sources, climate change, as well as others and it is often difficult to identify how local planning policies can address these issues. It can be problematic for a community to come to grips with how a relatively small local government can address these issues, particularly when the community has its hands full with local development issues. However, sustainability has local implications that can be considered and addressed in community plans.

According to the Environmental Sustainability Policies and Resources report prepared for the Environmental Policy Steering Committee in Pine Island, components of sustainability include the following and should be identified as to how local policies can address these components.

Environment

- Natural Systems (ecosystems and habitat, water and stormwater, air quality, waste and resource conservation)
- Planning and Design (land use, transportation, and mobility, and parks, open space and recreation)
- Energy and Climate (energy, greenhouse gas emissions and other air pollutants, renewable energy and green building)

Economy

- Economic Development (clean technologies and green jobs, local commerce, tourism, and local food system)
- Employment and Workforce Training (green job training, employment and workforce wages and youth skills)

Society

- Affordability and Social Equity (affordable and workforce housing, poverty, human services and race and social equity)
- Children, Health and Safety (community health and wellness, access to healthcare and public safety)
- Education, Arts and Community (education excellence, arts and culture and civic engagement and vitality)

The key to sustainability in Pine Island will be to understand the interrelatedness of the above mentioned components and how to incorporate that interrelatedness into the goals and policies of this plan. By interconnecting these three sustainability components, Pine Island can enhance the quality of life without compromising the ability of future generations to meet their own needs. According to the Minnesota Pollution Control Agency, the following list describes the key aspects of a sustainable community.

- **Acknowledges** that economic, environmental and social issues are interrelated and that these issues should be addressed "holistically."
- **Recognizes** the sensitive interface between the natural and built environments.
- **Understands** and begins to shift away from polluting and wasteful practices.
- **Considers** the full environmental, economic and social impacts/cost of development and community operations.
- **Understands** its natural, cultural, historical and human assets and resources and acts to protect and enhance them.
- **Fosters** multi-stakeholder collaboration and citizen participation.
- **Promotes** resource conservation and pollution prevention.
- **Focuses** on improving community health and quality of life.
- **Acts** to create value-added products and services in the local economy.

A sustainable comprehensive plan looks beyond the region and creates connections with national and global issues such as reducing the carbon footprint; incorporates integrated thinking by highlighting connections between growth areas and impacts on resources such as energy use; includes the typical plan topics such as land use and transportation and additional new topics such as energy conservation, community health and safety and waste reduction and recycling; and include a monitoring aspect that measures sustainable trends over time such as water consumption over the next ten years. Alternatives for incorporating sustainability principles into a comprehensive plan can include:

- Include a chapter that focuses on sustainability and references policies & strategies included in other chapters that relate to resource conservation.
- Incorporate a section in each chapter that addresses sustainability and the relationship of the chapter topic to resource conservation objectives.
- Have sustainability as a guiding principle for all plan goals and strategies. Sustainability would be pervasive throughout the document.
- Do not address sustainability explicitly, but build these principles into discussion and strategies.

This plan has included a separate chapter that focuses on sustainability that references the recommendations for sustainability in other chapters and has built sustainability principles into discussion and recommendations throughout the other chapters. By having a separate sustainability chapter in this plan, it will allow people to focus and better understand what sustainability is and how the interrelatedness between each of the chapters is an important goal of the overall plan itself.

POLICIES, GOALS AND OBJECTIVES

Sustainability Integration in the Plan

The topic of sustainability has been integrated into many aspects of the comprehensive plan and therefore sustainability policies, goals and objectives do not fall under just this chapter of the plan. Other sections of the plan are relevant to the topic of sustainability, and this chapter should not be read without consulting other chapters which are concerned with the typical actions of the local municipality including:

- Housing regulation
- Land use planning
- Transportation planning
- Parks, recreation and open space planning
- Wastewater and water infrastructure planning
- Historic preservation

The policies, goals and objectives within the chapters of this plan primarily address issues related to sustainability that fall under the above mentioned topics but other closely related topics can include energy productions, food production, public health, regulation of building design and social capital. The policies, goals and objectives listed below related to sustainability can be found throughout the other chapters of this plan.

Chapter 2 - Demographics and Housing

Policy 2. Promote a broad spectrum of owner occupied and rental housing stock within all residential zoning districts and across all price ranges.

Goal A. Conduct a thorough review of residential zoning standards and lot sizes (Planning and Zoning Commission).

Objective ii. By basing residential zoning districts on density rather than minimum lot sizes, zoning regulations can be created to help preserve open space and natural features as part of the overall development. The open space and natural features can be incorporated into the overall greenspace of the City and trails can be constructed to connect these areas.

Chapter 3 - Land Use

Urban Area Land Use Policies, Goals and Objectives

Policy 3. Work in concert with our neighbors and partners within abutting townships and counties and with State and regional agencies.

Goal A. Ensure ample supply of open and recreational space.

Goal B. Adopt the urban growth boundary and its proposed general land use designations.

Goal C. Preserve agricultural land use outside the adopted urban growth area.

Policy 4. Establish a clear understanding of the responsibilities and obligations of the City of Pine Island and surrounding Townships as they relate to adopted land use policies and the promotion of future growth while we maintain quality of life.

Goal B. Work with surrounding Townships to promote preservation of prime agricultural land.

- Policy 1.** Support the creation of opportunities for economically viable farm-related or agricultural enterprises, and help promote the economic viability of our farm communities and agricultural land use.
- Policy 2.** Preserve agriculture land by adopting existing and future land use policies.
- Policy 3.** Require all new platted housing developments to connect to public infrastructure or formulate a plan to connect, within a reasonable amount of time, to public infrastructure consistent with the City’s Capital Improvement Plan.
- Policy 4.** Work with counties and townships to preserve agricultural land outside the adopted Urban Growth Boundary Map.

Annexation Policies, Goals and Objectives

- Policy 4.** Develop a mechanism to work with surrounding townships and counties for review and approval of housing and commercial developments within and near the future urban growth areas.
 - Goal A. If limited rural residential development is to occur while the land is located within the townships, the preferred density is one home per 40 acres. Cluster platting is encouraged to preserve open space for future development, and if cluster platting is utilized it shall be consistent with the Goodhue and Olmsted County Comprehensive Plans and be designed to allow for future connection to municipal infrastructure systems.

Chapter 4 - Transportation

- Policy 1.** The transportation system in the City of Pine Island shall facilitate the safe and efficient movement of its citizens within the City and to and from regional highway facilities.
 - Goal A. Develop a functional classification system of existing and future roads within the City and surrounding Urban Growth Area to promote orderly development and convenient access for people and goods.
 - Goal B. Prepare and annually update a five-year Capital Improvement Program that plans infrastructure improvement, maintenance, and replacement programs that maintains the existing roadways, trails, and sidewalks, while promoting orderly development in new areas.
- Policy 2.** The planned transportation system should provide for the vehicular and non-motorized mobility needs of citizens and businesses in the City as one system to be coordinated and related on a comprehensive basis.
- Policy 3.** The future transportation system shall provide for a connected, coordinated, and affordable network of transportation facilities within and through the City of Pine Island.
 - Goal A. Establish a local transportation network that preserves neighborhood identity but links neighborhoods together to community facilities, such as schools and activity centers.
 - Goal B. Require sidewalks along both sides of local/neighborhood streets and provide pathways/trails along at least one side of regional and local arterials and regional and local collectors.
- Policy 4.** The US Highway 52 Plan will support the creation of infrastructure to encourage alternatives to single occupant motor vehicles.
 - Goal C. Partner with Mn/DOT to plan for the future establishment of a park and ride facility by establishing guidelines on how to preserve potentially viable sites.
- Policy 5.** The future transportation system shall balance transportation needs with significant environmental factors and the desired land uses as identified in the Land Use chapter of the Comprehensive Plan.
 - Goal A. Plan, design, and construct both public and private transportation related transportation improvements that respect the natural environment and reflect the aesthetic character, historical and cultural context, and values of the citizens of Pine Island, while managing and shaping growth consistent with the land use policies of the Comprehensive Plan.

Chapter 5 - Parks, Recreation and Open Space

Parks, Recreation and Open Space Policies, Goals, and Objectives

- Policy 1. Provide the environment, resources, and specific requirements to ensure an adequate, healthy, and well-maintained supply of recreational opportunities for the use and enjoyment of the residents of City of Pine Island.**
- Goal A. Develop and implement a Park and Recreation plan to meet current and near future needs.
 - Goal B. Designate specific areas to be used as open space, recreation, and trail facilities.
 - Goal C. Modify the City Zoning & Subdivision Code as necessary to implement Park, Recreation and Open Space policies.
 - Goal D. Allocate and seek funding from the available resources on regular basis to implement the adopted Park Board annual park and recreation plan.
 - Goal E. Amend the current park dedication policy to require park land dedication for commercial and industrial development and to review the requirements for the residential park land dedication.
- Policy 2. Provide neighborhood based facilities to maintain easy and safe access to open space and park facilities.**
- Goal A. The Park Board should examine existing facilities, project future needs, and plan for budget expenditures that take into account the new open spaces being dedicated for the public parks systems as part of new housing developments (neighborhood parks).
- Policy 3. Specify the type, location, and the manner within which open spaces, trails and recreation areas will be provided throughout the city.**
- Goal A. Ensure access, safety and availability of useable open space and recreation areas to all residents and others who could utilize such facilities.
 - Goal B. Work with neighborhood groups, developers, and other public and private agencies to design, locate and construct park and open space facilities
 - Goal D. Designate the location and type of trails to be added to the trail system on the parks and trails map to address connectivity throughout the community.
- Policy 4. Cooperate with other governments, agencies and communities to encourage a regional park and trail system.**
- Policy 5. Use trails, sidewalks and greenways as a way to connect and integrate undeveloped and developing areas of the City with the developed areas of Pine Island.**
- Goal A. To connect all the parks, recreation and open space areas in the City together with a trail system throughout the entire City. In areas where trails are not feasible greenway corridors or sidewalks should be used if possible.

Floodplain, Shoreland and Wetlands Policies, Goals and Objectives

- Policy 1. Limit Pine Island’s flood damage liability as well as private investors’ liability by adopting and enforcing the urban growth boundary.**
- Goal A. Require submittal of development plans to expressly address the environmental and flood area limitation consistent with City ordinance.
 - Goal B. Ensure that Planning and Zoning Commission review encourages meaningful mitigation of risk early in the review process.
- Policy 2. Develop an understanding of State and Federal rules guiding development and land uses in floodplain areas beyond the current boundaries of the City of Pine Island.**
- Goal A. Update the current flood plain management regulations in the Zoning Ordinance to address the requirements for the current boundaries of the City and the urban growth boundary.
- Policy 3. Restrict development in primary flood areas or flood fringe areas consistent with the adopted City Flood Plain Management Ordinance.**
- Goal A. Direct growth away from flood hazard areas and other high risk environmental landscapes through the adopted future land use map and overlays.

- Policy 4. Adopt buffer land protection areas around flood ways and wetland areas as defined by existing floodway and wetland maps.**
- Policy 5. Where possible seek dedication of proposed development areas falling within buffer land protection for the purposes of trail and nature area preserve developments.**
- Policy 6. Limit the intensity of development within the shoreland areas along the protected rivers within the City.**
 - Goal A. Adopt shoreland rules and regulations as part of the zoning ordinance to address development within the shoreland areas of the City.
 - Goal B. Identify and classify all protected surface waters within the City and include as protected waters in the shoreland rules and regulations in the zoning ordinance.

Natural Resource Areas Policies, Goals and Objectives

- Policy 1. Dedicate natural resource areas throughout the City and urban growth boundary to preserve open space and promote and maintain cultural activities, parks and recreation facilities.**
 - Goal A. Develop a resource identification system to help prioritize open space, park and sensitive areas not already designated as floodplain or wetlands such as rock outcroppings and large stands of trees.
- Policy 2. Manage and enhance the natural and manmade environments through natural resource protection to ensure continued use, enjoyment, and access for present and future generations.**
 - Goal A. Create active programs associated with cultural, park and recreation assets to meet the needs of all residents and visitors.
 - Goal B. Strive to acquire public access to natural and manmade environments through dedication or the use of easements for trail purposes to connect these natural resources to the trails system.
- Policy 3. Encourage developments that incorporate and work with their natural surroundings while they preserve the various functions and integrity of our natural environment.**
 - Goal A. Link the City’s natural resource identification system to the development approval process.
 - Goal B. Adopt zoning or performance standards for open space preservation as necessary to preserve natural features that meet the City’s natural resource identification process.
 - Goal C. Promote the use of planned unit developments during the approval process in order to ensure concentration of open space into more useable areas and the preservation of the natural resources of the site including wetlands, woodlands, steep slopes and scenic views.

Chapter 6 - Wastewater Infrastructure

- Policy 1. Maintain an adequate level of service to meet existing needs.**
 - Goal D. Evaluate the potential limits to surface discharge.
 - Goal E. Create a mechanism to implement Minnesota Rules Chapter 7080 in relation to the installation, inspection and abandonment of subsurface sewage treatment systems and inventory all existing subsurface sewage treatment systems within Pine Island and the urban growth boundary.
- Policy 3. The City should emphasize redevelopment or infill in existing developed areas to maximize existing wastewater infrastructure.**
 - Goal A. The City should plan for the future servicing of parcels currently surrounded by City limits which are currently in the township and served with Subsurface Sewage Treatment Systems.
 - Goal B. Continue to upgrade existing wastewater infrastructure that needs replacing as street reconstruction projects take place and coordinate future street construction with needed wastewater infrastructure improvements to avoid duplicate costs.
- Policy 4. Continue to plan for the expansion of wastewater infrastructure to meet the projected growth of the City through the year 2035 and beyond.**

- Goal A. Update the Subdivision Regulations to include language on “Premature Subdivisions”, which addresses the right to deny development if the wastewater infrastructure is unable to meet the needs of the proposed development. In addition, the Subdivision Regulations should be updated to address design standards for wastewater infrastructure as needed.
- Goal D. As new industrial developments are submitted for review, “wet industries” or manufacturers which use high levels of water should be encouraged to recycle water, as the remaining capacity for may not be able to service the community or the user may consume a large portion of the city’s remaining capacity.
- Goal E. The City may wish to consider a policy to reserve a portion of sewer system capacity specifically for the purpose of commercial and industrial development (e.g. 20% of overall capacity reserved for future commercial and industrial development).
- Goal F. Develop a policy regarding the requirements of when existing subsurface sewage treatment systems within Pine Island shall be hooked up to the municipal sanitary sewer system which is based on a time frame as to how long the property has before it needs to be hooked-up and a minimum distance requirement which is feasible to allow the hook-up.

Chapter 7 - Water Infrastructure

Policy 1. Maintain an adequate level of service to meet existing needs.

- Goal A. Continue to follow the recommendation and objectives as stated within the Pine Island Wellhead Protection Plan.
 - Objective i. Continue to concentrate management efforts on the categories and strategies in the Wellhead Protection Plan to create awareness about groundwater protection and help prevent future contamination of the aquifer.
 - Objective ii. Continue to evaluate on a yearly basis and publish in the local newspaper the effectiveness of the efforts towards management efforts and groundwater protection according to the Wellhead Protection Plan.
- Goal B. Continue to evaluate future capacity expansions in light of the ongoing housing, commercial and industrial growth.

Policy 3. The City should emphasize redevelopment or infill in existing developed areas to maximize existing wastewater infrastructure.

- Goal A. The City should plan for the future servicing of parcels currently surrounded by City limits which are currently in the township and served with individual wells.
- Goal B. Continue to upgrade existing water infrastructure that needs replacing as street reconstruction projects take place and coordinate future street construction with needed water infrastructure improvements to avoid duplicate costs.

Policy 4. Continue to plan for the expansion of water infrastructure to meet the projected growth of the City through the year 2035 and beyond.

- Goal A. Update the Subdivision Regulations to include language on “Premature Subdivisions”, which addresses the right to deny development if the water infrastructure is unable to meet the needs of the proposed development. In addition, the Subdivision Regulations should be updated to address design standards for water infrastructure as needed.
- Goal E. Develop a policy regarding the requirements of when existing wells within Pine Island shall be hooked up to the municipal water system which is based on a time frame as to how long the property has before it needs to be hooked-up and a minimum distance requirement which is feasible to allow the hook-up.

Chapter 8 - Historic Preservation

Policy 1. Continue to treat the preservation, protection, and use of historic resources as a legitimate public need.

- Goal A. The preservation, protection and use of significant historic resources will be a priority goal in community development planning.
- Goal B. Respect Pine Island’s heritage and enhance preservation efforts in community development activities.

Policy 2. Identify and evaluate historic resources that give Pine Island its special character.

Goal A. Establish criteria based on federal and state guidelines for determining historical, architectural, archeological, and cultural significance in existing building, places, and landscapes.

Policy 3. Develop integrated organizational, regulatory, and incentive mechanisms to facilitate preservation of historic resources and provide the leadership to make them work.

Goal A. Capitalize on the historic value of significant historic properties by creating revitalization strategies for neighborhoods and districts.

Policy 6. Continue to promote the preservation of resources through the commitment to conduct historic resource surveys and the continued development of ordinances, guidelines and/or databases.

Goal A. The City shall produce a map which identifies heritage landmarks, properties eligible for heritage landmark designation and properties on the National Register of Historic Places in order to better promote the preservation of these properties.

Goal B. The City will continue to review its land use, zoning and land development regulations and consider initiating amendments to such regulations to remove unnecessary disincentives to the reuse and redevelopment of historic landmarks. The City will solicit input from appropriate local and state organizations and interest groups.

Sustainability Policies, Goals and Objectives

As mentioned earlier in this chapter, sustainability policies, goals and objectives within this plan are related mostly to the typical topics of each chapter within this plan. The following policies, goals, and objectives are intended to take a broad approach to additional sustainability topics that should be applied when considering ways for Pine Island to begin moving forward becoming a sustainable community.

Policy 1. Consider the impact and implications of policies and ordinances and whether or not they advance principles of environmental sustainability.

Goal A. To promote sustainability within the community, Pine Island should consider adopting a Sustainability Plan which can tie together the City's goals, policies, objectives and implementation plans for improving sustainability.

Objective i. As part of a Sustainability Plan, measurable indicators or specific targets should be adopted for measuring and quantifying results that are established.

Objective ii. Timelines should be established to delineate when goals should be reached and measured.

Objective iii. Guidelines should be established as part of the plan to create accountability and allow for refinement and adaptation as situations change.

Goal B. Update any City ordinances and policies with incentive based options when possible that may advance the principles of sustainability.

Policy 2. Promote education and outreach as a way to promote sustainability throughout the community and region.

Goal A. Provide opportunities to engage residents and businesses on providing ideas and solutions on how to promote sustainability as a way to better the quality of life of Pine Island's residents.

Goal B. Establish different sources and outlets for promoting sustainability topics such as hosting events with speakers, issuing a newsletter, writing articles in the local paper and working with other agencies such as the Minnesota Pollution Control Agency.

Policy 3. Promote environmental based sustainability practices as a priority within Pine Island.

Goal A. Develop or amend regulations that provide protection for natural resources including woodland preservation, wetland protection,

groundwater protection and landscape requirements.

- Goal B. Develop regulations that encourage the preservation of high-value natural areas such as shoreland, wetlands, steep slopes, floodplains and all their related setbacks and buffers. These high-value natural areas should be placed into conservation easements or outlots when developed and then dedicated to the City while allowing the same amount of density overall for the development.
- Goal C. To encourage the establishment of a citizen based sustainability committee or task force to begin sustainability discussion and the formulation a sustainability plan.

IMPLEMENTATION

An important part of this chapter is to develop specific strategies the City can implement to achieve goals related to sustainability. Cities across the state and country have developed sustainability plans to coordinate implementation and ensure continued progress on efforts that often involves different facets of the traditional organizational structure of city government. In developing a sustainability plan it is important to involve citizens in the process, as it is with a comprehensive plan. With the citizen involvement, comes additional buy-in which improves the likeliness of implementation.

In order to document progress, the sustainability plan should be based on measureable goals outcomes. Each topic should have a goal or target set with indicators identified which can be assessed on a regular basis to measure progress towards the goal or target. A single indicator can relate to multiple goals or targets. One example of an indicator used in other communities is the growth of vehicle miles traveled. This indicator could relate to land use, transportation, public health, open space preservation, etc.

Resources for Implementing Sustainability Policies

International

United Nations Department of Economic and Social Affairs, Division for Sustainable Development
<http://www.un.org/esa/dsd/>

The Natural Step
<http://www.naturalstep.org/>

ICLEI – Local Governments for Sustainability (originally International Council for Local Environmental Initiatives)
<http://www.iclei.org/>

National/ Federal/Other States

U.S. Environmental Protection Agency Green Communities Program <http://www.epa.gov/greenkit/index.htm>

New Jersey Department of Environmental Protection, Division of Science, Research and Technology, Bureau of Sustainable Communities and Innovative Technologies *How to Become a Sustainable Community*, January 2006
<http://www.state.nj.us/dep/dsr/bscit/howtobecome-esc.pdf>

California Air Pollution Control Officers Association *Model Policies for Greenhouse Gasses in General Plans*, June 2009
<http://www.capcoa.org/modelpolicies/CAPCOA-ModelPolicies-6-12-09-915am.pdf>

State

Minnesota Pollution Control Agency (now merged with the Office of Environmental Assistance)
<http://www.pca.state.mn.us/oea/index.html>

Minnesota Pollution Control Agency Climate Change Corps Program

<http://www.pca.state.mn.us/oea/publications/climatechange-corps.pdf>
Paul Moss (Minnesota Pollution Control Agency), Minnesota Climate Change Corps coordinator
paul.moss@state.mn.us or 651-757-2586.

Minnesota Pollution Control Agency NextStep Program (Minnesota Sustainable Communities Network)
<http://www.nextstep.state.mn.us/index.cfm>

Minnesota Department of Commerce, Office of Energy Security
<http://www.state.mn.us/portal/mn/jsp/home.do?agency=Energy>

Non-profit/Other organizations

1000 Friends of Minnesota
<http://www.1000fom.org/>

Alliance for Sustainability
<http://www.afors.org/>

CR Planning *Model Ordinances for Sustainable Development*, partnership with Minnesota Pollution Control Agency GreenStep Cities program
<http://www.crplanning.com/susdo.htm>

Grassroots Environmental Education *How Green is My Town?* <http://www.howgreenismytown.org/mylocalgovt/lgmain.html>

The Green Institute
<http://www.greeninstitute.org/>

League of Minnesota Cities
<http://www.lmc.org/page/1/sustainability-resources.jsp>

The Minnesota Project – Renewable Energy, Local Foods, Sustainable Agriculture
<http://www.mnproject.org/index.html>

Regional Sustainable Development Partnerships
<http://www.regionalpartnerships.umn.edu/>
Southeast Minnesota Program:
Erin Meier, Director, Experiment in Rural Cooperation
tegtm003@umn.edu
UM Rochester: 507-536-6313

Institute on the Environment
<http://environment.umn.edu/12re/>
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