



City of Arden Hills

2030 Comprehensive Plan

Approved:
September 28, 2009

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City Vision

Arden Hills is a strong community that values its unique environmental setting, strong residential neighborhoods, vital business community, well-maintained infrastructure, fiscal soundness, and our long-standing tradition as a desirable City in which to live, work, and play.

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1. INTRODUCTION

Incorporated in 1951, the City of Arden Hills lies approximately eight miles north of downtown Saint Paul and downtown Minneapolis in the northwestern portion of Ramsey County (Figure 1.1). The City covers 9.4 square miles and, in 2007, was home to an estimated 9,985 people. The residents of Arden Hills enjoy a high quality of living with access to neighborhood and regional parks and trails; superb access to regional road transportation; nearby commercial services; and stable neighborhoods.

In addition to the City's high quality neighborhoods, Arden Hills is home to a number of large corporations, many small businesses, two private colleges, a high school, an elementary school, and more than 14,000 jobs¹. Arden Hills is a strong community that attracts residents and businesses because of its close-knit neighborhoods, parks, responsible government, and open spaces. Additionally, the Twin Cities Army Ammunition Plant (TCAAP) property provides the City with an opportunity for new development to help service the City's current and future residents.

While Arden Hills is a stable community with a bright future, the City does face some challenges. The median age has risen dramatically in recent years, a large percentage of the City's land area is tax-exempt, fewer families with children are able to afford a home in the City, and the regional transportation infrastructure is at or beyond capacity in many places. With one million new residents expected in the Twin Cities area between 2000 and 2030, Arden Hills will undoubtedly feel the pressure for development and the impact of development in other communities.

1.1 COMPREHENSIVE PLANNING

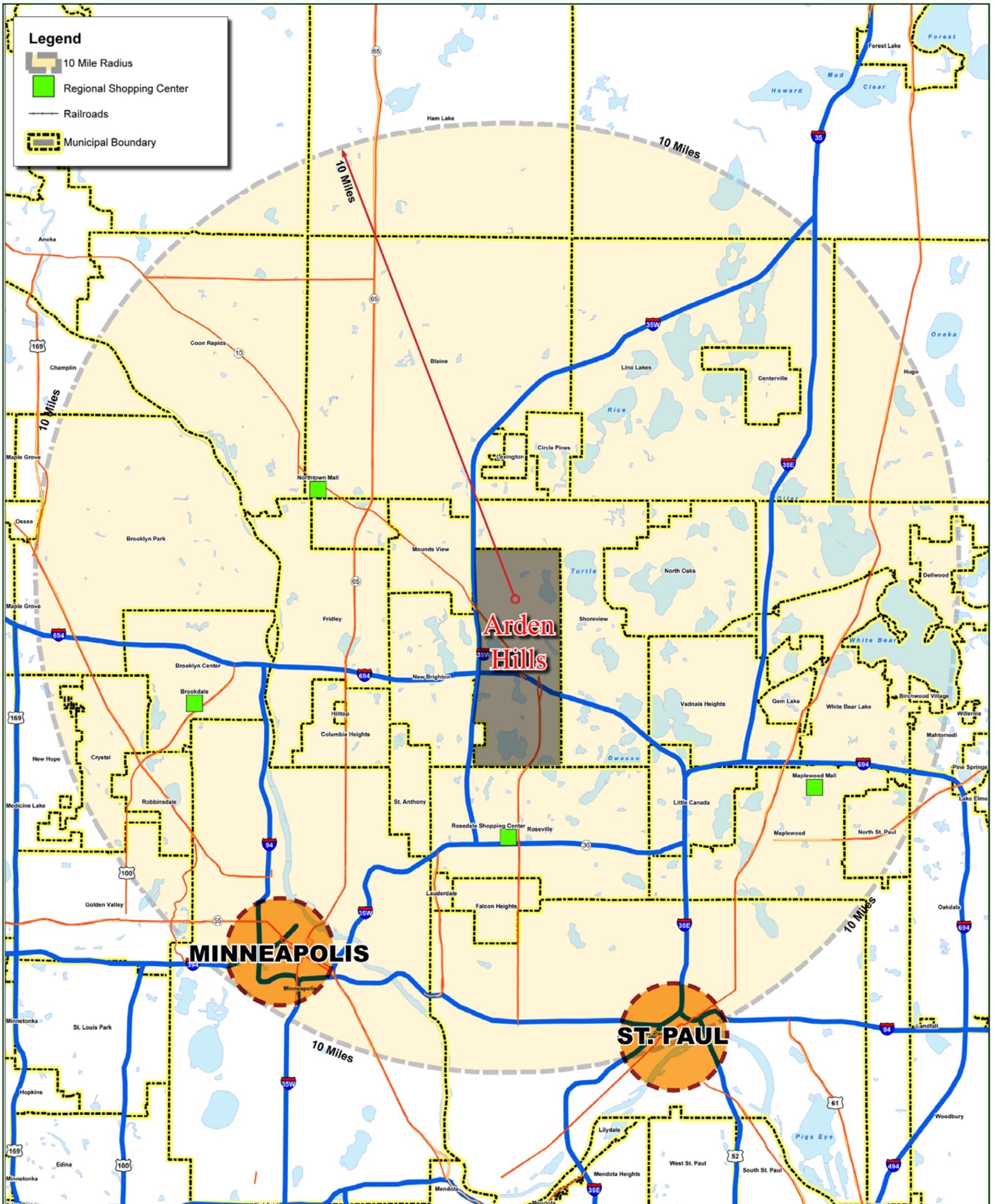
The Comprehensive Plan is a policy document that asks: where are we now, where do we want to go, and how do we get there? This document reflects the City's value system and creates a framework for the future by providing an overall vision for the City. As a guiding tool, the Plan provides a system for measuring progress, direction for day-to-day and long-term decision-making, and a framework for setting priorities in several key areas that are vital to the successful and efficient functioning of the community. Each of the chapters in this Plan is examined in a comprehensive and community-wide manner in order to take advantage of opportunities, increase efficiency, and work toward building a stronger community.

The City recognizes the importance of planning and setting community-wide goals; however, this Plan is also being prepared as a requirement of the Metropolitan Land

¹ Minnesota Department of Employment and Economic Development – 2nd Quarter 2008 QCEW Data

Regional Context Map

Figure 1.1



Planning Act. Arden Hills completed its first Comprehensive Plan in 1966 with updates in 1976, 1980, and 1998. It is anticipated that the next Comprehensive Plan review will take place in 2018.

While this Plan is a guide for development through 2030, it is intended to be a flexible and responsive document that can be amended to acknowledge changing conditions and new opportunities. To best achieve the City's vision, this Plan must be continually referenced, updated, and used on a regular basis. This document provides a path for the City but does not dictate specific activities or absolute decisions; instead, this Plan is intended to help City leaders in developing policies, programs, ordinances, capital improvement plans, and budgets that reflect the overall values and priorities of the residents and businesses.

1.2 2030 REGIONAL DEVELOPMENT FRAMEWORK

On January 14, 2006, the Metropolitan Council adopted the *2030 Regional Development Framework* to guide growth in the seven county metropolitan area through 2030. The Framework included regional growth policies and community roles in achieving these policies. The policies that are applicable to Arden Hills include:

- Policy 1: Working with the communities to accommodate growth in a flexible, connected and efficient manner.
- Policy 2: Planning and investing in multi-modal transportation choices based on the full range of costs and benefits, to slow the growth of congestion and serve the region's economic needs.
- Policy 3: Encouraging expanded choices in housing location and types, and improving access to jobs and opportunities.
- Policy 4: Working with local and regional partners to conserve, protect, and enhance the region's vital natural resources.

The City of Arden Hills supports these policies. The vision, goals, and policies identified in the City's Comprehensive Plan seek to advance the Metropolitan Council's 2030 Regional Development Framework where applicable to Arden Hills.

2. COMMUNITY PROFILE

In order to plan for the future of Arden Hills, it is important to understand where the City has been, where the City is now, and how the City is likely to change. Understanding the history of Arden Hills and the trends that affect the City can provide a basis from which to make better decisions. While the past is not a perfect indicator of future changes, it does give perspective on the status of the community and suggests where Arden Hills may be heading.

Since 1990, population has increased by nearly five percent, the median household income has remained higher than Ramsey County as a whole, a greater percentage of residents have a higher education, and the number of jobs in the City has increased. Arden Hills is a stable community and many residents are choosing to remain in Arden Hills as long as possible. However, high property values and the relative lack of turnover in the housing stock have made it difficult for some younger households to move into the City. Between 1990 and 2000, the 25-34 age group decreased by 32 percent in Arden Hills, compared to just a 12 percent decline in the metropolitan area. Moreover, the number of families with children increased by ten percent in the metropolitan area but decreased by seventeen percent in Arden Hills.

This chapter provides demographic and economic information about Arden Hills and some of the changes the community has seen in the last 10, 20, and 30 years. While there is a tendency to only look within the City borders, Arden Hills is part of a larger metropolitan area of seven counties with 184 municipalities and three townships. Therefore, a comparison of Arden Hills' demographic information to adjacent municipalities, Ramsey County, and the metropolitan area is provided where appropriate. The comparison helps provide context for this Plan, and helps explain the role that Arden Hills plays in the larger metropolitan community.

2.1 FORECASTS

The Metropolitan Council prepared population, household, and employment forecasts for all counties, cities, and townships in the metropolitan area. The forecasts were based on anticipated future land uses from previous plans, vacant land that is developable, and other factors. The forecasts released in September 2005 for Arden Hills were as follows:

Table 2.1 – Forecasts

	Actual		September 2005 Forecasts		
	1990	2000	2010	2020	2030
Population	9,199	9,652	11,200	13,500	22,500
Households	2,904	2,959	3,800	4,600	8,000
Employment	10,929	12,429	15,200	17,100	20,000
Source: Metropolitan Council					

While these forecasts were calculated based on data available in 2005, the 2030 forecasts are considered unattainable due to a decrease in developable land on the TCAAP property. Based on the available land and preliminary densities for residential development on the TCAAP property, the City anticipates that the 2020 forecasted numbers are the maximum achievable for Arden Hills. The Metropolitan Council approved a reduction in the forecasted numbers as follows:

Table 2.2 – Adjusted Forecasts

	Actual		Revised March 2008 Forecasts		
	1990	2000	2010	2020	2030
Population	9,199	9,652	11,200	12,900	12,900
Households	2,904	2,959	3,800	4,600	4,600
Employment	10,929	12,429	15,200	17,100	17,100
Source: Metropolitan Council					

2.2 POPULATION FORECASTS

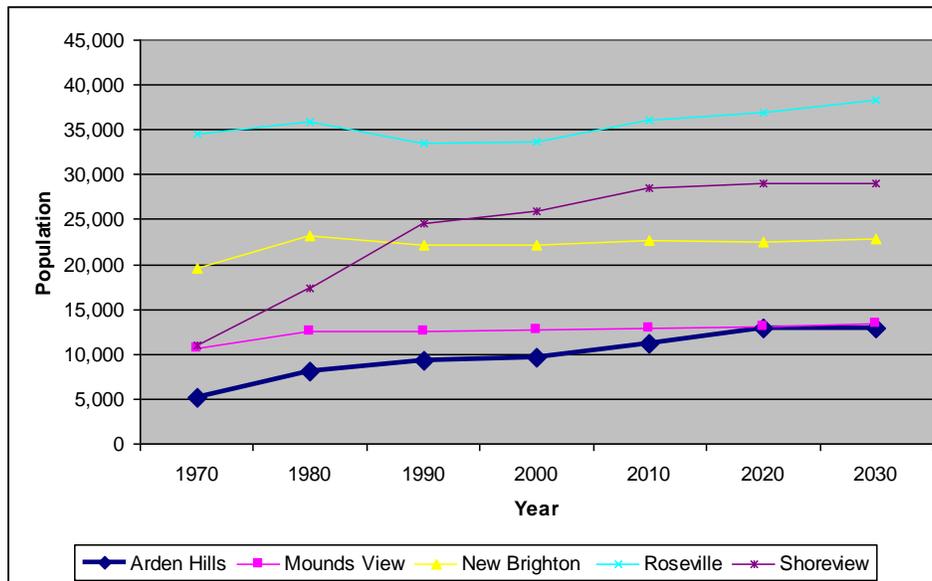


Figure 2.1 – 1970 - 2030 Population Change

Source: Metropolitan Council, US Census

Table 2.3 – Population Change 1970-2030

	1970	1980	1990	2000	1990-2000 % Change	2005	2010	2020	2030	2000-2030 % Change
Arden Hills	5,149	8,012	9,199	9,652	4.92%	9,787	11,200	12,900	12,900	33.65%
Mounds View	10,599	12,593	12,541	12,738	1.57%	12,442	12,900	13,000	13,400	5.20%
New Brighton	19,507	23,269	22,207	22,206	0.00%	22,113	22,700	22,500	22,800	2.67%
Roseville	34,438	35,820	33,485	33,690	0.61%	33,882	36,000	37,000	38,300	13.68%
Shoreview	10,978	17,300	24,587	25,924	5.44%	25,964	28,500	29,000	29,000	11.87%
Ramsey County	476,255	459,784	485,765	511,035	5.20%	515,258	547,700	570,860	598,900	17.19%
Twin Cities 7- County	1,874,612	1,985,873	2,288,721	2,642,056	15.44%	2,810,179	3,056,100	3,430,100	3,692,600	39.76%

Source: Metropolitan Council, US Census

- From 1990 to 2000, Arden Hills grew faster than most of its neighbors and almost as fast as Ramsey County as a whole. However, Arden Hills grew significantly slower than the metropolitan region, reflecting the mostly developed character of Arden Hills excluding TCAAP.
- The City’s most rapid growth occurred during the 1970s when the City grew by 56 percent.
- The City’s population nearly doubled between 1970 and 2000 when it increased approximately 87 percent.
- Most of the projected growth through 2030 is anticipated to occur on the proposed Twin Cities Army Ammunition Plant (TCAAP) property redevelopment.

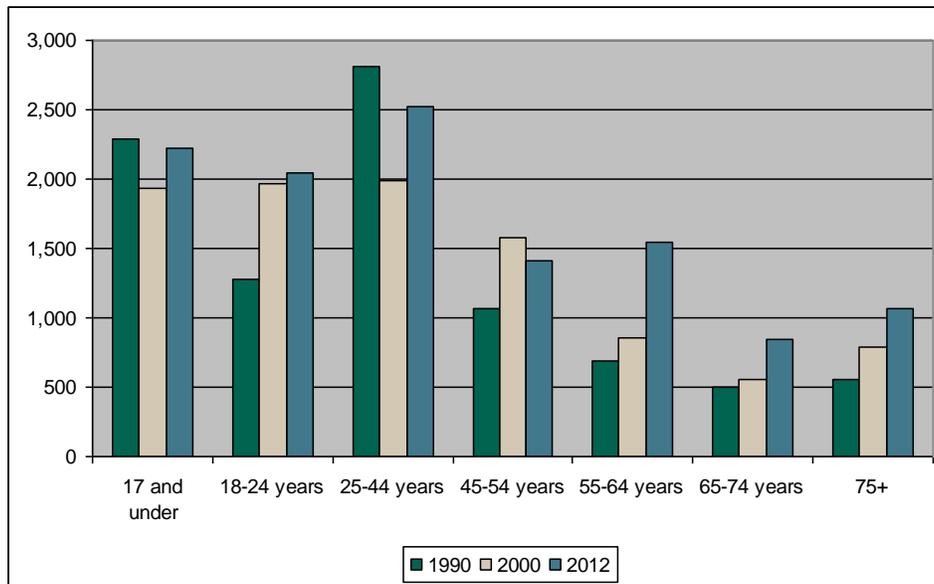


Figure 2.2 – Arden Hills Age Distribution 1990, 2000, 2012

Source: US Census & Maxfield Research

- In 1990, the median age of Arden Hills’ residents was 33.9 compared to 32 in Ramsey County. By 2000, the median age of Arden Hills’ residents increased to 36.2 compared to 33.7 in Ramsey County.
- The proportion of people over age 55 is anticipated to increase greatly from 1990 to 2012, increasing from 19 percent to 30 percent of the population.
- The relatively stable and higher percentage of population in the 18-24 age group from 2000 to 2012 is likely due to the student populations at Bethel University and Northwestern College.

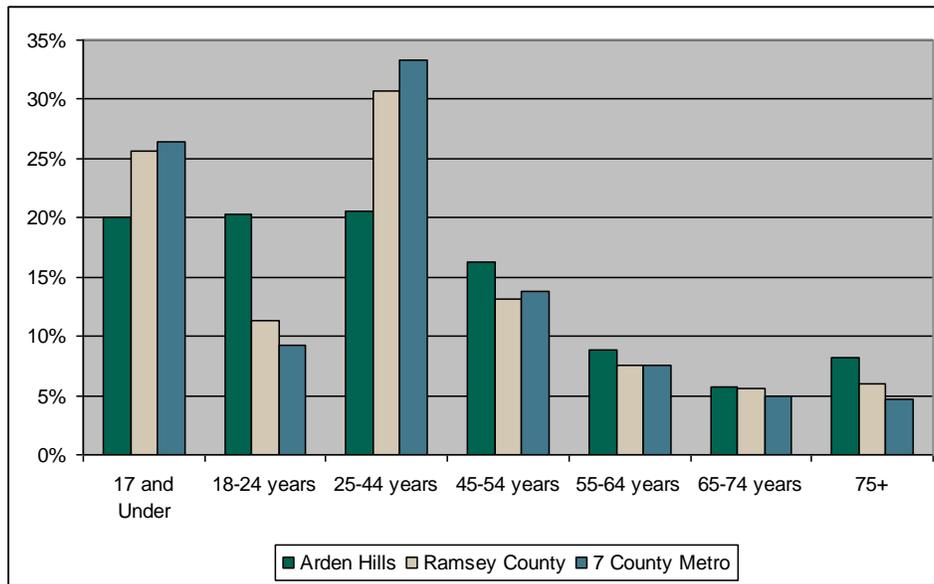


Figure 2.3 – Age Distribution in 2000

Source: US Census

- Except for the 18 – 24 age group, Arden Hills’ population tended to shift into the older age groups in 2000. This growth in the older age groups, as noted in Figure 2.2, is anticipated to continue.

2.3 HOUSING

Table 2.4 – Household Forecasts

	1990	2000	2010	2020	2030	% Change 1990-2000	% Change 2000-2030
Arden Hills	2,904	2,959	3,800	4,600	4,600	1.89%	55.46%
Mounds View	4,885	5,018	5,400	5,600	6,000	2.72%	19.57%
New Brighton	8,811	9,013	9,400	9,800	10,000	2.29%	10.95%
Roseville	14,216	14,598	15,500	16,000	16,500	2.69%	13.03%
Shoreview	9,280	10,125	11,000	11,300	11,300	9.11%	11.60%
Ramsey County	201,016	201,236	219,170	231,670	246,290	0.11%	22.39%
7 County Metro	947,465	1,021,456	1,213,800	1,386,200	1,513,100	7.81%	48.13%

Source: Metropolitan Council

- The forecasted increase in housing units from 2010 to 2030 is largely due to the proposed redevelopment of the TCAAP property.
- The adjacent communities and Ramsey County grew much slower between 1990 and 2000 and are anticipated to grow less than the seven county metropolitan area as a whole, which reflects the highly developed nature of Ramsey County.
- The developed portion of Arden Hills is likely to experience infill development and redevelopment in the coming years, particularly around the lakes.

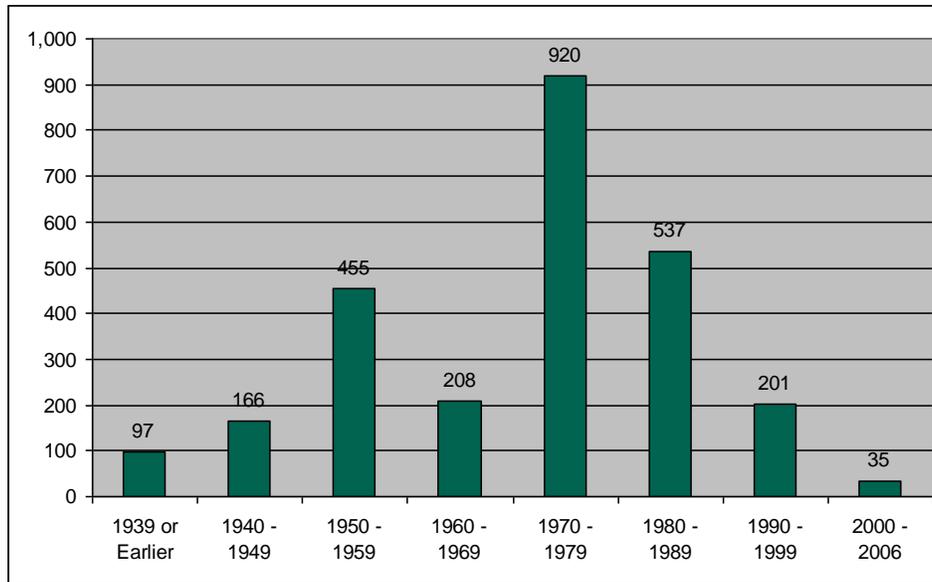


Figure 2.4 – Age of Housing Stock

*Does not include the manufactured home community
Source: US Census and City Building Permit Data

Table 2.5 – Housing Age

Median	1974
Mean	1969
Mode	1979
Source: Ramsey County	

- Most of the housing units in Arden Hills were built in the 1970s with more than 900 units (Figure 2.5).
- Half of the homes in Arden Hills were built before 1974. For comparison, by 1970, 63 percent of the homes in Roseville were built, 50 percent in New Brighton, and 43 percent in Mounds View. .
- At nearly 150 homes, more homes were built in 1979 than in any other year.
- There has been a significant drop in the number of housing units constructed as the availability of undeveloped land has significantly decreased.

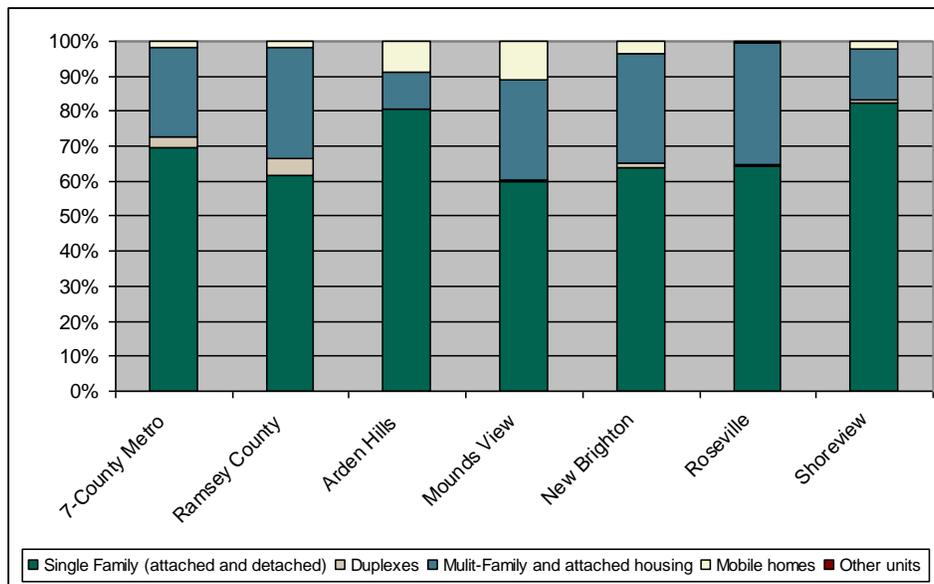


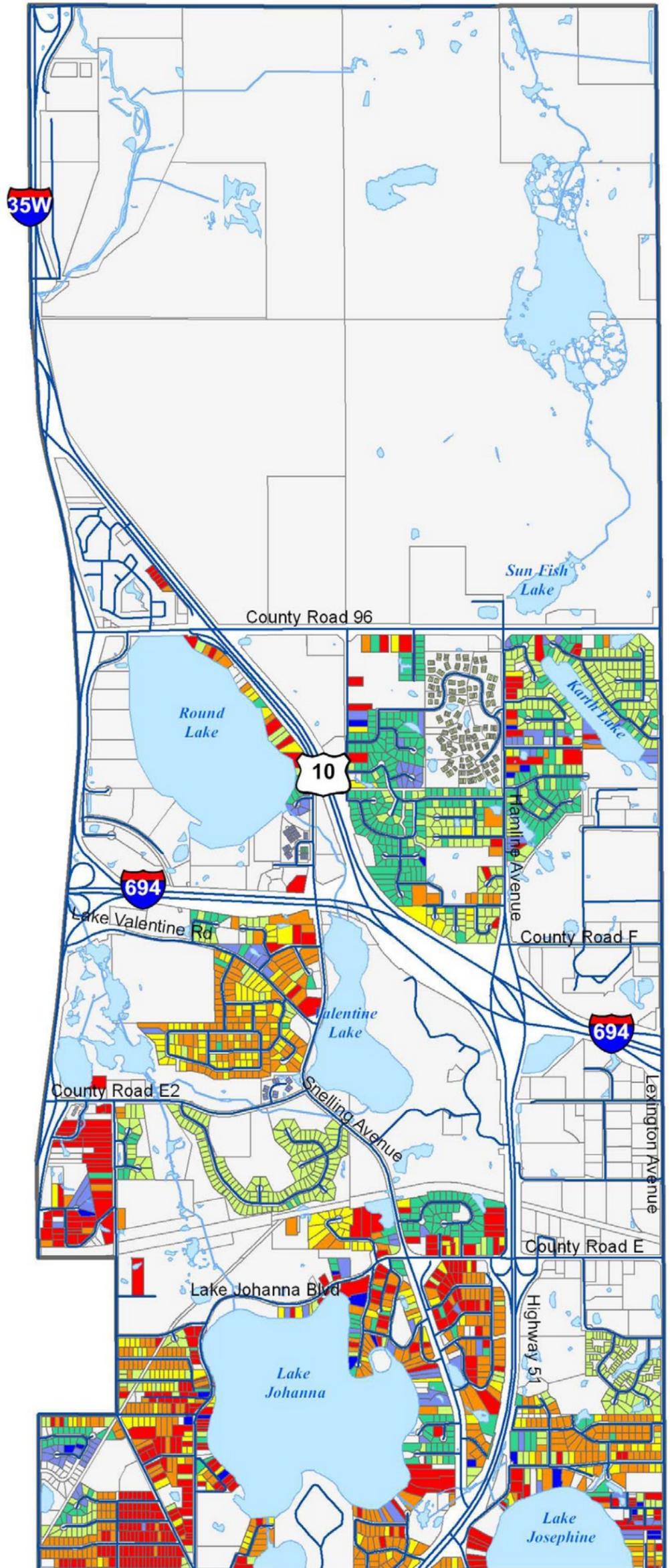
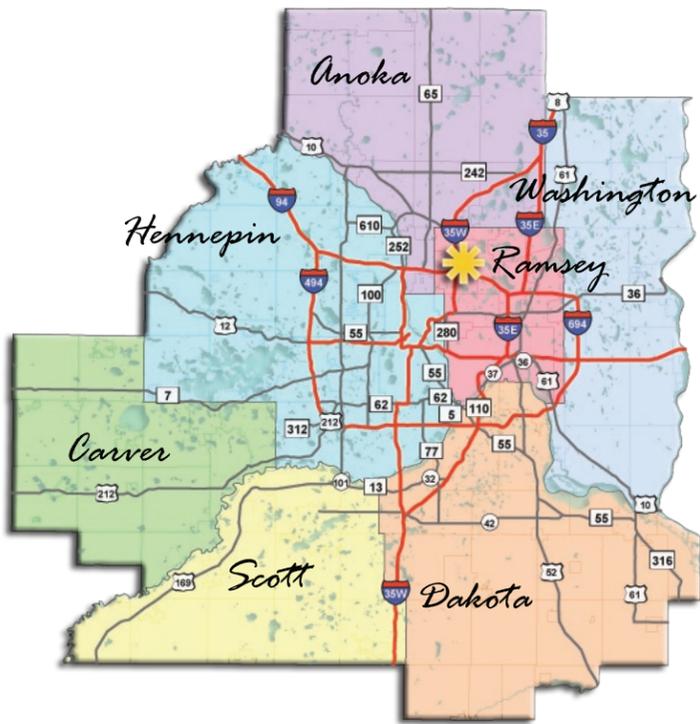
Figure 2.6 - Housing Type (2000)

Source: US Census

- Almost 80 percent of the housing in Arden Hills is single-family housing (attached and detached) compared to a metropolitan average of 69 percent.
- Arden Hills has a lower percentage of multi-family housing (10.5 percent) than its neighbors, Ramsey County (32 percent), or the seven county metropolitan area as a whole (26 percent).

Year Housing Built: Single Family Residential (Attached & Detached)

Figure 2.5

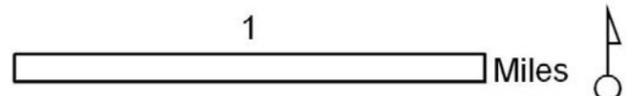


Year Constructed

- pre-1950
- 1951 - 1960
- 1961 - 1970
- 1971 - 1980
- 1981 - 1990
- 1991 - 2000
- 2001 +

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Source: Ramsey County



- Nine percent of the housing in Arden Hills is manufactured/mobile homes compared to a regional average of just 1.6 percent.

Chapter seven includes additional housing information.

2.4 EMPLOYMENT & INCOME

Table 2.6 – Employment Forecasts

	1990	2000	2010	2020	2030
Arden Hills	10,929	12,429	15,200	17,100	17,100
Mounds View	3,142	4,382	7,400	8,900	9,400
New Brighton	9,779	10,542	12,900	14,400	15,600
Shoreview	5,771	9,829	14,200	15,800	16,800
Roseville	33,046	39,103	42,500	44,700	46,100

Source: Metropolitan Council

- In 2000, Arden Hills had 28 percent more jobs than residents.
- Arden Hills is anticipated to have more jobs than people through 2030.
- Much of the employment growth after 2010 is anticipated to be on the TCAAP property.

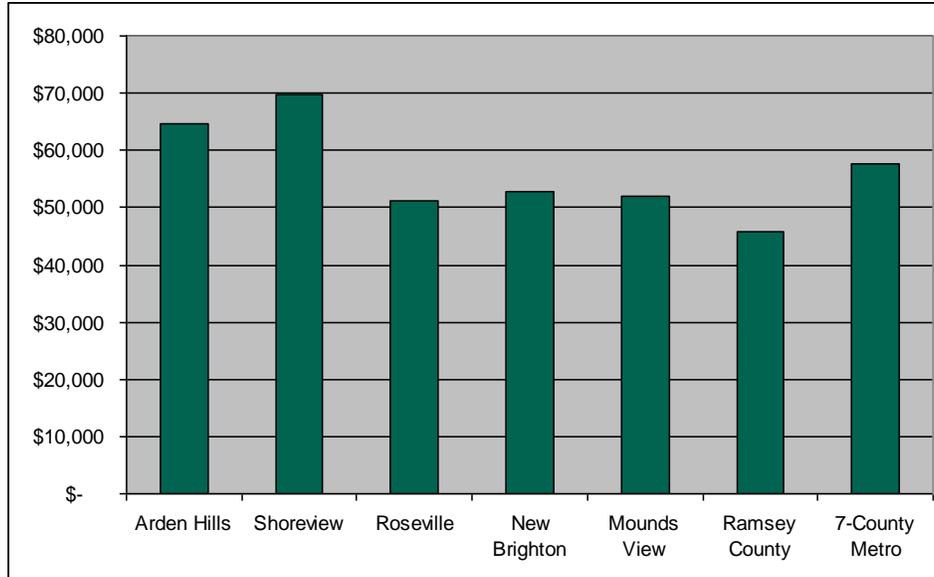


Figure 2.7 – Household Income

Source: US Census

- The median household income in Arden Hills in 1999 (in 1999 dollars) was \$64,773.
- The Arden Hills median household income was \$50,660 in 1989 (1989 dollars).
- The median household income in Arden Hills was almost 42 percent higher than the Ramsey County household median income and 12 percent higher than the seven county metropolitan area.

2.5 PLACE TO WORK/WORK TO PLACE

Table 2.7 – Top 10 Work Destinations in 2000

City	Workers	Percent
Arden Hills	1,104	29%
Saint Paul	771	20%
Minneapolis	658	17%
Roseville	490	13%
Shoreview	218	6%
New Brighton	156	4%
Fridley	106	3%
Bloomington	86	2%
Maplewood	75	2%
Golden Valley	72	2%
Remaining (73 destinations)	1,181	24%
Total	4,917	100%
Source: US Census		

Table 2.8 – Top 10 Sources of Employees in 2000

City	Workers	Percent
Saint Paul	1,315	10%
Arden Hills	1,104	9%
Shoreview	719	6%
Minneapolis	702	6%
Blaine	539	4%
Coon Rapids	486	4%
Roseville	397	3%
New Brighton	336	3%
Maplewood	303	2%
Woodbury	290	2%
Remaining (266 sources)	6,457	51%
Total	12,648	100%
Source: US Census		

In 2000, the City had nearly 5,000 people of working age and approximately, 12,600 jobs. Although the City had more than two jobs for each resident, a majority of people commuted out of the City for employment in 2000 (Table 2.7 and 2.8).

- Approximately one third of Arden Hills’ residents also worked in Arden Hills.
- About 37 percent of residents worked in either Saint Paul or Minneapolis (Figure 2.8).
- Residents worked in places as far away as Red Wing, Lakeville, Chanhassen, and Hudson.
- Saint Paul was the largest supply of workers for employers in Arden Hills (Figure 2.9).
- People came into Arden Hills from places as far away as Maple Plain, Zimmerman, Cannon Falls, Saint Cloud, and the western counties of Wisconsin.
- The City may have an opportunity to encourage more people to live and work in Arden Hills.

2.6 EDUCATION

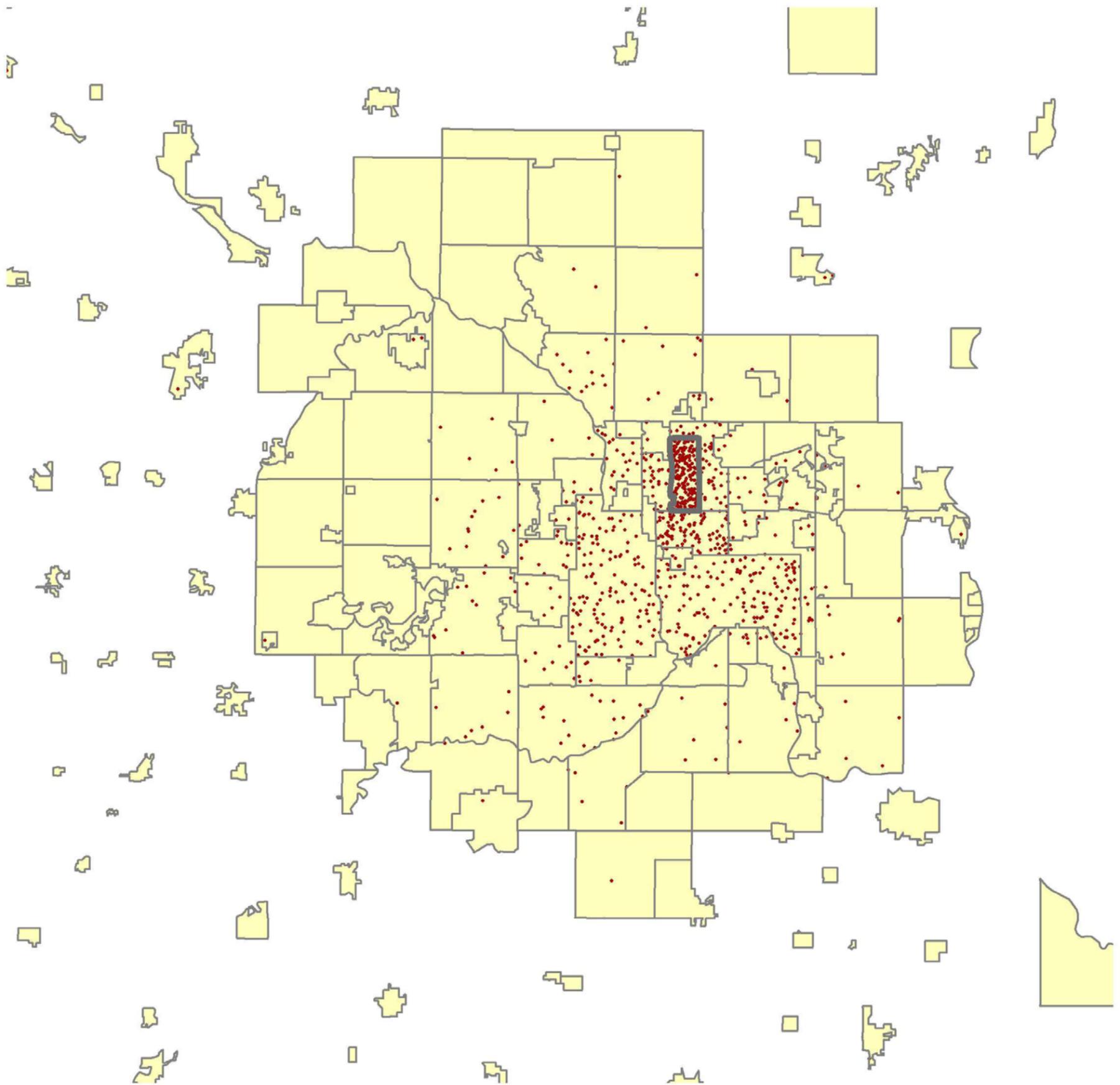
Table 2.9 – Educational Attainment (2000)

	Arden Hills	Mounds View	New Brighton	Roseville	Shoreview	Ramsey County	7-County Metro
Those 18 and Over, High School Graduate	93%	88%	92%	91%	95%	81%	79%
Those 25 Years and Over, Bachelor's Degree or higher	51%	42%	41%	42%	47%	34%	35%
Source: US Census							

- Arden Hills has a higher percentage of people with a bachelor’s degree or higher than any of its neighbors, Ramsey County average, and the metropolitan area average.
- At 91 percent, the population with a high school degree is higher than Ramsey County, the metropolitan average, or any of the immediate neighbors except for Shoreview.

Employment Destination for Arden Hills Residents

Figure 2.8



- Arden Hills
- 1 Dot = 5 Workers
- Work Destinations

Top 10 Work Destinations (2000)		
City	Workers	Percent
Arden Hills	1,104	29%
Saint Paul	771	20%
Minneapolis	658	17%
Roseville	490	13%
Shoreview	218	6%
New Brighton	156	4%
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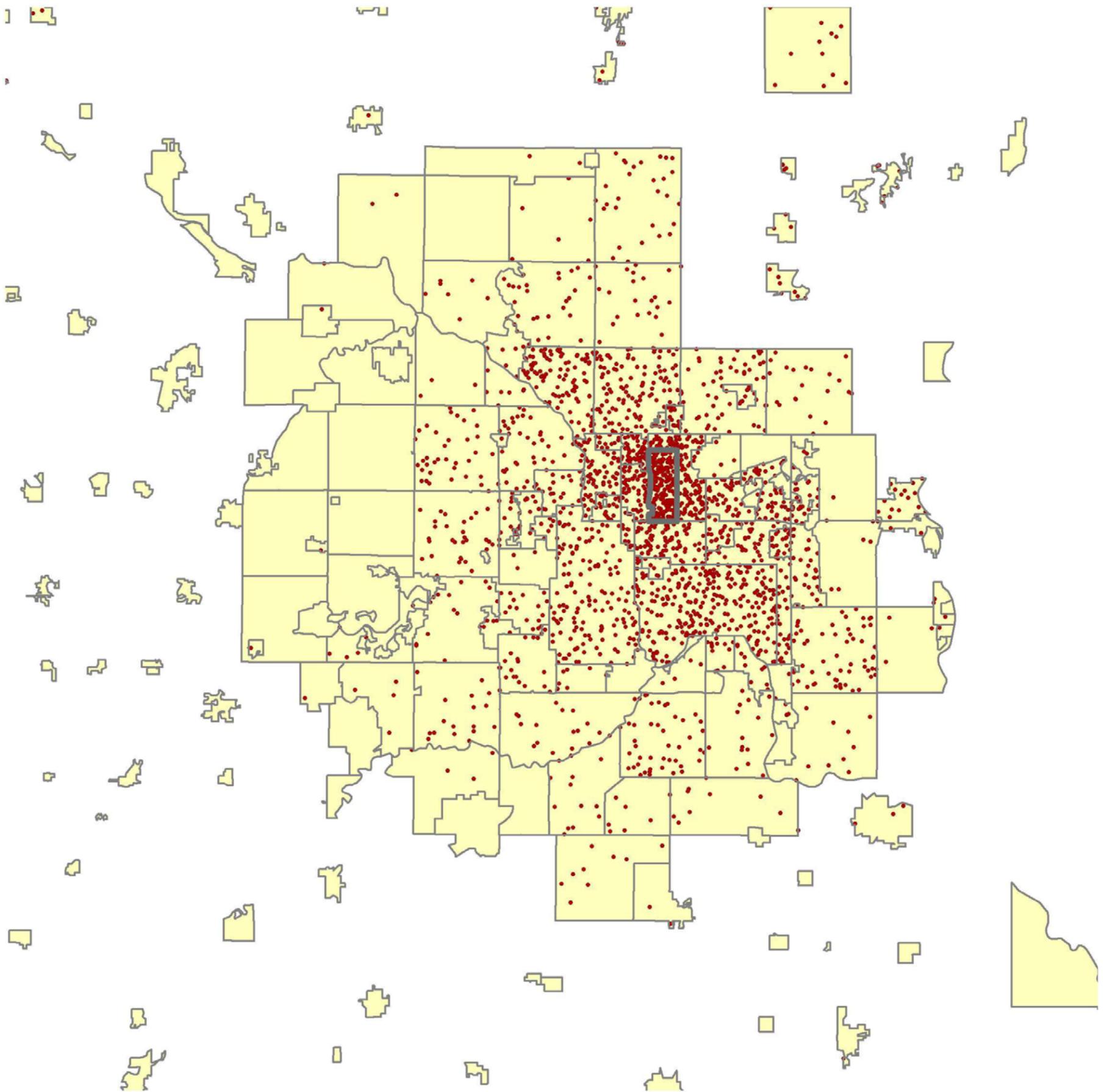
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Dots outside seven county metropolitan area are not shown
Source: US Census 2000



Source of Employees Working in Arden Hills

Figure 2.9

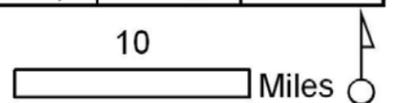


- 1 Dot = 5 Workers
- Source
- Arden Hills

Top 10 Sources for Employees (2000)		
City	Workers	Percent
Saint Paul	1,315	10%
Arden Hills	1,104	9%
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Blaine	539	4%
Coon Rapids	486	4%
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Maplewood	303	2%
Woodbury	290	2%
Remaining (266 sources)	6,457	51%

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Dots outside seven county metropolitan area are not shown
Source: US Census 2000



3. CITY VISION

On a day-to-day basis, the City provides many services that are needed to maintain a high-quality of living and contribute to the overall success of Arden Hills. This Plan is divided into fourteen chapters that address a range of topics, including land use, housing, and transportation among others. While each chapter has its own goals and policies, the chapters are not independent of each other. This Plan should be viewed as an integrated whole in order to take advantage of opportunities that may be able to advance the goals and policies from more than one chapter.

The chapters, goals, and policies in this Comprehensive Plan are not presented in order of importance or priority. Each goal and policy has been identified as a tool to advance the overall City vision. The primary purpose of this Plan is to support and advance the City's long-term vision:

City Vision – Arden Hills is a strong community that values its unique environmental setting, strong residential neighborhoods, vital business community, well-maintained infrastructure, fiscal soundness, and our long-standing tradition as a desirable City in which to live, work, and play.

The community seeks to achieve this overall City vision by working to advance the following goals in this Comprehensive Plan:

Active Living – Enhance the health, safety, and well-being of all who live, work, and play in the City.

TCAAP Redevelopment – Develop TCAAP in a way that accommodates a mix of land uses that is sensitive to the natural environment, economically sustainable, and of benefit to the community.

Land Use – Develop and maintain a land use pattern that strengthens the vitality, quality, and character of our residential neighborhoods, commercial districts, and industrial areas while protecting the community's natural resources and developing a sustainable pattern for future development.

Housing - Develop and maintain a strong, vital, diverse and stable housing supply for all members of the community.

Economic Development and Redevelopment – Promote the development, redevelopment, and maintenance of a viable, innovative, and diverse business environment serving Arden Hills and the metropolitan area.

Parks and Recreation – Create a comprehensive, maintained, and interconnected system of parks, pathways, and open spaces as well as a balanced program of recreational activities for residents of all ages, incomes, and abilities.

Protected Resources – Preserve, protect, and restore the community’s natural resources, including open spaces, lakes, wetlands, other significant natural features, and historic resources.

Transportation – Provide a transportation system that has convenient and effective multi-modal connections within Arden Hills and to adjacent municipalities, the remainder of the Twin Cities Metropolitan Area, and greater Minnesota.

Environmental Conservation and Sustainability – Promote conservation and sustainable design practices in the preservation, development, redevelopment, and maintenance of the City’s natural and built environment.

Public Facilities, Infrastructure, and Services – Provide efficient and high-quality public facilities, services, and infrastructure.

Each chapter in this Plan includes the background information for each goal, policies to advance the goal, and suggested implementation options. The policies and other implementation techniques listed in this Plan are not intended to be all-inclusive and there is overlap between chapters. New opportunities or tools that arise over time should be considered even if not included in this Comprehensive Plan.

4. ACTIVE LIVING

Goal: Enhance the health, safety, and well-being of all who live, work, and play in the City.

In 2006, the City received a grant from Blue Cross Blue Shield of Minnesota to incorporate active living principles into the Comprehensive Plan. The purpose of the grant was to encourage cities to create a natural and built environment that encourages more physical activity and, subsequently, leads to an increase in overall public health. There is no single solution to increasing physical activity or public health, and the City does not seek to change personal choices. However, the City can work to remove obstacles to physical activity and increase opportunities for healthy living choices.

4.1 ACTIVE LIVING PRINCIPLES

Active living is a way of life that integrates physical activity into daily routines. Removing obstacles in the built environment and encouraging a built environment that promotes physical activity can be achieved through the planning process.

In committing to promote and increase physical activity, the following principles, based on principles prepared by the Active Living by Design group (www.activelivingbydesign.org), serve as a guide to advancing the active living movement:

1. Physical activity is a behavior that can favorably improve health and quality of life.
2. Everyone should have safe, convenient and affordable choices for physical activity.
3. The City and new developments should be designed to provide a variety of opportunities for physical activity and should accommodate a wide range of individual preferences and abilities.
4. Development patterns should encourage opportunities for active living where appropriate as well as a variety of transportation choices.
5. Buildings should be designed and oriented to promote opportunities for active living, especially non-motorized transportation.
6. Transportation systems, including transit, should provide safe, convenient and affordable access to housing, worksites, schools and community services.

7. Parks and green space, including pathways, should be safe, accessible and part of a transportation network that connects destinations of interest, such as housing, worksites, schools, community services and other places with high population density.
8. The City, in cooperation with other public and private entities, are encouraged to plan for ongoing interdisciplinary collaboration, promotion of facilities, behavioral supports, policies that institutionalize the vision of active living, and routine maintenance that ensures continued safety, quality and attractiveness of the physical infrastructure.
9. City planning processes should address the multiple impacts of the built environment and transportation choices on residents' ability to be physically active.

These principles can help serve as an evaluation framework for new developments, ordinances, and policies.

4.2 APPLYING ACTIVE LIVING PRINCIPLES

This chapter does not encompass all of the goals or policies related to the active living movement. Where applicable, active living principles have been incorporated throughout this Plan to encourage coordination between goals, policies, and strategies. For example, reconstructing a road in the transportation chapter is related to creating a new pathway in the parks and recreation chapter, which increases opportunities for physical activity and healthy living.

In addition to the goals and policies throughout this Comprehensive Plan, the city seeks to advance the overall *active living goal* with the following additional policies:

- Encourage the incorporation of active living principles into new developments and redevelopments where feasible.
- Consider active living principles when evaluating new policies, ordinances, procedures, and proposals.
- Work with the adjacent communities, school districts, public & private institutions, and employers to encourage and advance the active living principles.
- Evaluate the City's regulations to identify and remove obstacles to active living where feasible for residents of all ages and abilities.

The above strategies should not be considered all-inclusive. New opportunities and strategies should be identified to further advance the City's active living goal and principles.

5. TWIN CITIES ARMY AMMUNITION PLANT (TCAAP) PROPERTY REDEVELOPMENT

Goal: Develop TCAAP in a way that accommodates a mix of land uses that is sensitive to the natural environment, economically sustainable, and a benefit to the community.

In 1941, the federal government started construction on the Twin Cities Army Ammunition Plant (TCAAP), which occupied about 3.7 square miles (2,370 acres) in what was then Mounds View Township (Figure 5.1). During a 16 month period, over 300 buildings were constructed to manufacture and test munitions for World War II. The plant also produced munitions for the Korean conflict, Vietnam conflict, and the first Gulf War. At its peak, the property had 40 miles of electric and telephone wire, 83 miles of sewer, 37 miles of road and railroad track, and employed more than 25,000 people.

The entire TCAAP property was included in the Arden Hills municipal border when the City incorporated in 1951, and now occupies approximately the northern third of Arden Hills. The TCAAP property is bounded by Highway 96 on the south, Highways 10 and 35W on the west, Lexington Avenue on the east, and County Road I on the north.

5.1 TCAAP DECOMMISSIONING AND LAND TRANSFERS

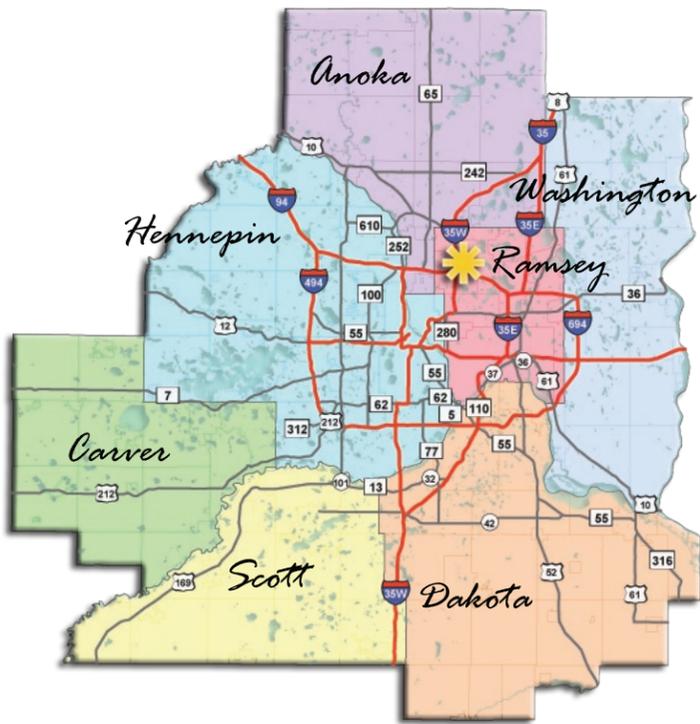
Between 1974 and 1985, the federal government started decommissioning TCAAP. While munitions production by private entities continued into the early 2000s, operations were a fraction of peak production. Plans to transfer portions of the property and redevelop it have been in the works since the 1980s. Redevelopment plans for the former TCAAP property have continued to evolve and become more detailed:

Table 5.1 – TCAAP Land Reuse Proposals

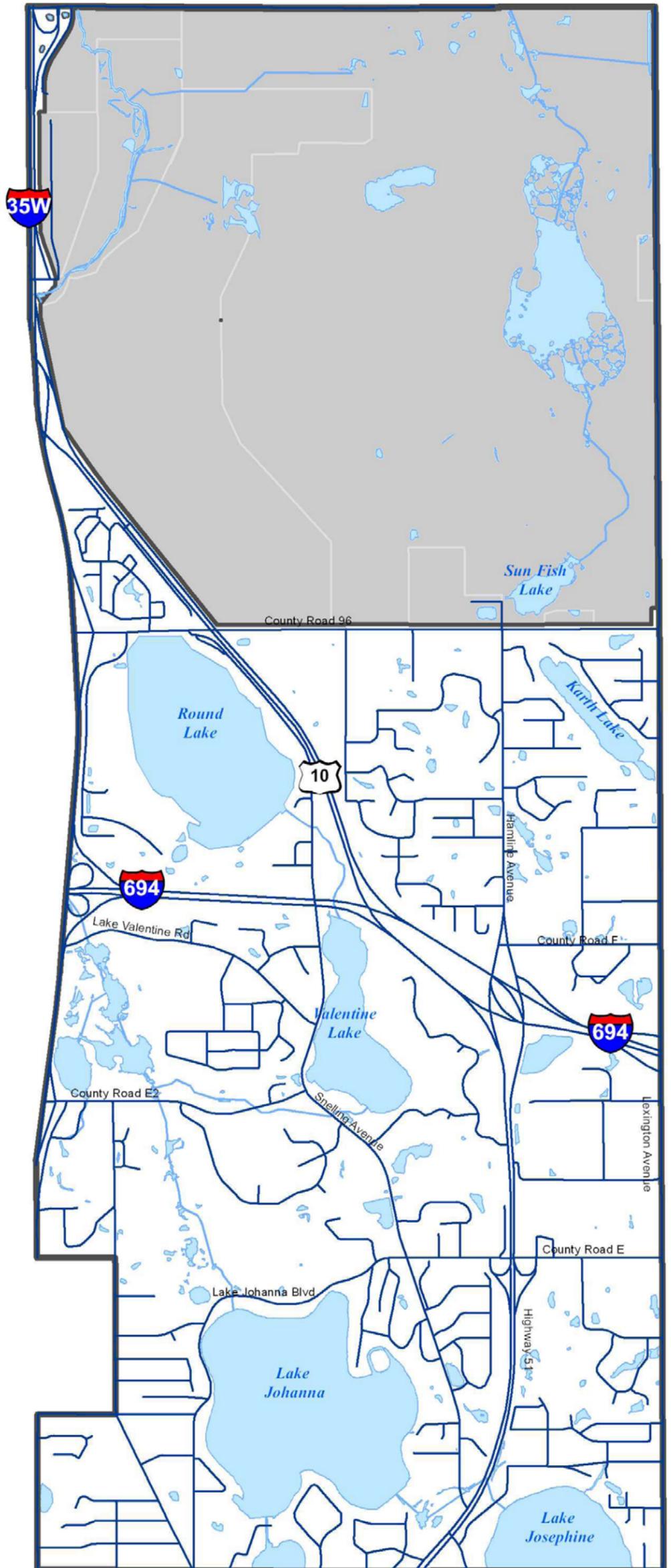
		1982	1998	2008	2015 (Approved)
Redevelopment Area	Residential	970	445	168	151
	Commercial/Industrial	500	222	182	168
	Parks and Other Open Space	805	252	168	24
	Institutional, Roads, & Other Public Use	95	215	65	84
Rice Creek Trail Corridor		na	na	113	221
Parks Preserve/Arden Hills Army Training Site (AHATS)/US Army Reserve		na	1,237	1,562	1,611
Other (MnDot, Ramsey County, Arden Hills)		na	na	113	113
Total		2,370	2,370	2,371	2,371
Acerage is approximate.					

Former Twin Cities Army Ammunition Plant (TCAAP) Property

Figure 5.1



 Former TCAAP Property



2030 Comprehensive Plan Update
Map Approved: September 28, 2009

Source: Ramsey County
Not to survey quality

Much of the former TCAAP property has already been transferred or leased to other public entities, including the Minnesota Department of Transportation, Ramsey County, Arden Hills, and the Minnesota National Guard (Figure 5.2). In April of 2013, Ramsey County purchased 427 acres of the TCAAP site from the General Services Administration (GSA) for redevelopment.

5.1.1 Ramsey County Parks and Recreation

Rice Creek traverses the northwestern corner of the former TCAAP property and is an important animal habitat and recreation area. Approximately 113 acres adjacent to the creek were transferred to Ramsey County in 2006 for the development of the Rice Creek North Regional Trail (Figure 5.2). Ramsey County is currently working with the GSA to have an additional 108 acres of land transferred for the purpose of expanding the Rice Creek trail corridor.

Ramsey County Parks and Recreation also owns a parcel that is approximately 5 acres in size adjacent to Lexington Avenue near the Marsden Lake and wetland complex. This site is known as the Marsden Archery Range.

5.1.2 Arden Hills Army Training Site (AHATS) and Army Reserve

Approximately 1,611 acres will remain under federal ownership; however, the Minnesota National Guard has a long-term lease for most of the land. A small portion is used for the Army Reserve station in the far southeastern corner of the property. This land is expected to remain under federal ownership for the foreseeable future.

The Minnesota National Guard has designated their leased area as the Arden Hills Army Training Site (AHATS). Although live munitions firing are prohibited on the site, the Minnesota National Guard does use the property for training purposes. Much of AHATS is anticipated to remain as open space, but the National Guard is in the process of developing a long-term master plan for the property.

The Arden Hills Army Training Site is anticipated to include a field maintenance shop, training area management building, division headquarters, state joint force headquarters, billeting, and a number of ancillary buildings. The project is also expected to include an armory/training center that could have a community center component. The future buildings would be located on the north and west sides of the Ramsey County/Arden Hills Public Works Facility at the northwest corner of the Hamline Avenue and Highway 96 intersection.

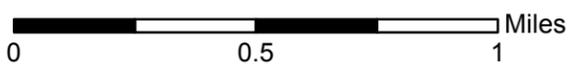
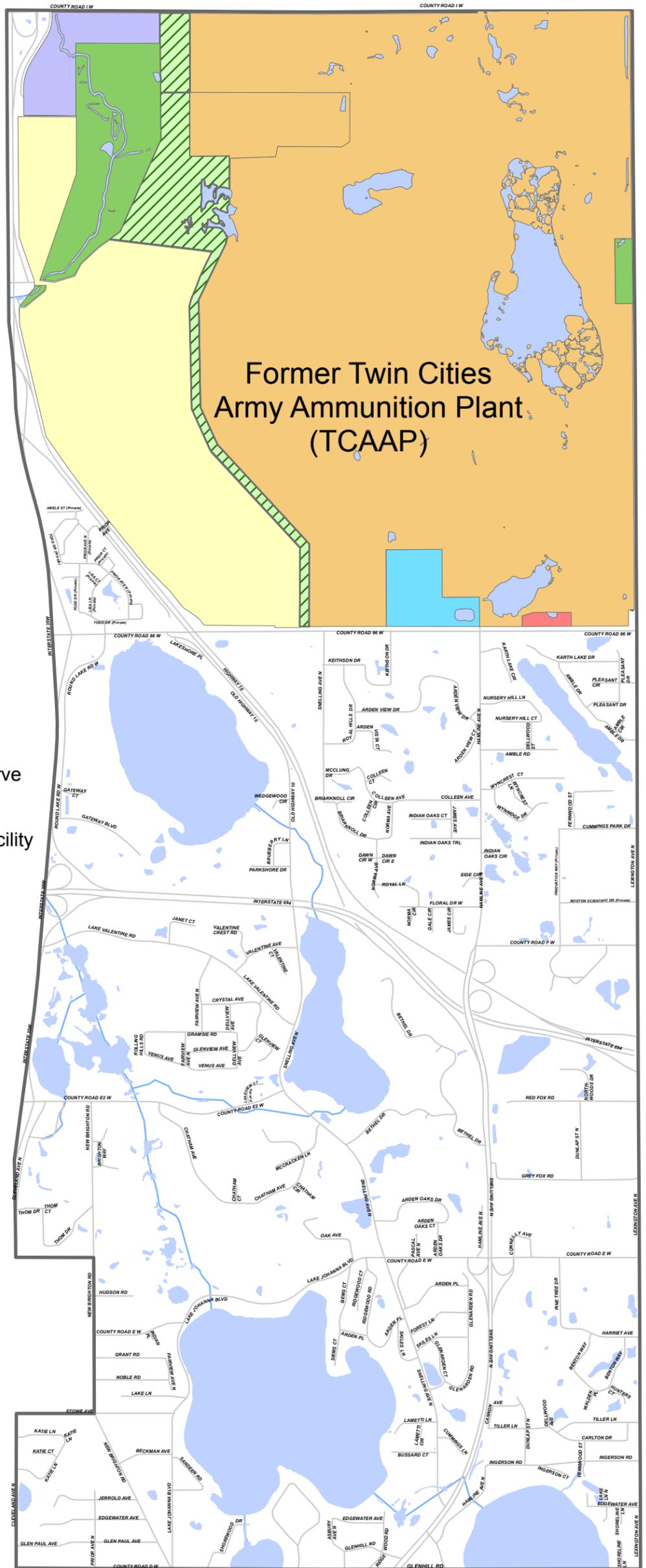


2015 Land Ownership/ User Status

Figure 5.2

Land Owner/User

- Arden Hills Army Training Site (AHATS)/Army Reserve
- City of Arden Hills - City Hall
- Joint Arden Hills - Ramsey County Public Works Facility
- MnDOT
- Ramsey County Parks & Recreation
- Proposed Ramsey County Parks & Recreation
- Ramsey County



2015 Comprehensive Plan Amendment (2030 Comprehensive Plan)

Approved by the City Council: July 13, 2015
 Printed: November 10, 2015
 Source: City of Arden Hills, Ramsey County

DISCLAIMER:

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This map is a compilation of records, information and data from various sources regarding the area shown, and is to be used for reference purposes only. The City does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and the City does not represent that the GIS Data can be used for navigational, tracking or any other purpose. The user of this map acknowledges that the City shall not be liable for any damages, and expressly waives all claims, and agrees to defend, indemnify, and hold harmless the City from any and all claims brought by User, its employees or agents, or third parties which arise out of the user's access or use of data provided.

The potential impacts of the AHATS master plan have not been fully evaluated, but it will increase use and workers on the National Guard property. The City seeks to maintain a working relationship with the Minnesota National Guard on planning activities and to potentially collaborate on a community center as part of the training facility.

5.1.3 Ramsey County

In 2002, the General Services Administration (GSA) formally declared 585 acres of the TCAAP property as excess that was to be sold. In 2013, Ramsey County purchased 427 acres of the site from the U.S. Government with the intent to clean up the property and put it back into productive economic use. The property purchased by Ramsey County is adjacent to Interstate 35W and Highway 10 (Figure 5.2). The City of Arden Hills is partnering with Ramsey County on the redevelopment project, with the City being responsible for preparing the master plan and other land use control documents.

5.1.4 City of Arden Hills

The City of Arden Hills owns 6.9 acres of the former TCAAP property adjacent to Highway 96 (Figure 5.2). This property was transferred to the City for use as a new City Hall, which was completed in 2001.

5.1.5 State of Minnesota

The State of Minnesota controls nearly 62 acres of the former TCAAP property in the northwestern corner adjacent to County Road I and Interstate 35W. The Minnesota Department of Transportation has a facility on the site, including a driver licensing center.

5.2 TCAAP Master Plan

The City of Arden Hills in partnership with Ramsey County has initiated a master planning process for the 427 acre parcel purchased by the County in April 2013. Over the course of the subsequent year, the City held a series of public open houses to solicit community preferences and met with local developers and other relevant stakeholders to help inform the Master Plan. The long-term vision for the site that came out of this process emphasized the need for regional employment, a variety of housing options, well-designed and pedestrian-friendly commercial areas, and a network of parks and open spaces.

The City Council approved the Master Land Use Map for the site in June 2014, and the Alternative Urban Areawide Review (AUAR) and Mitigation Plan in July 2014. Following these approvals, the City began work on the regulations and policies component of the Master Plan in August 2014. This document, officially titled the TCAAP Redevelopment Code (TRC), was adopted by the City Council in July 2015, and establishes the development regulations for the parcel purchased by Ramsey County.

The goals of the TRC are to promote a more functional and attractive community through the use of recognized design principles and to allow property owners and developers flexibility in land use while prescribing a higher level of detail in building design and form. The City, along with the consultant team, drafted the TRC to codify the goals and vision for the site that were identified through the public engagement process.

Included in the TRC is the TCAAP Redevelopment Regulating Plan, which has been adopted as the official zoning map for the site. While the Regulating Plan illustrates the City Council's current preferred development pattern for the area, as development occurs or circumstances change, the City may consider amendments to the Regulating Plan to promote high quality development consistent with City goals.

Since it is the City's goal to fully incorporate the TCAAP property into the fabric of the community, the land use, housing, parks and open space, transportation, and other components of the proposed TCAAP redevelopment have been integrated into their respective chapters in the Comprehensive Plan. The overall City vision, goals, and policies of each chapter also apply to the entire TCAAP redevelopment.

5.2.1 ENVIRONMENTAL CLEANUP

Portions of the TCAAP property were subject to environmental contamination during its four decades as a munitions manufacturing plant and testing area. The United States Army initiated environmental cleanup in the 1980s and cleanup of the groundwater is likely to continue for the next 40 years.

In 2013, Ramsey County entered into a contract with Carl Bolander & Sons Co. for hazardous material abatement, demolition, and site remediation services for the TCAAP property. The remediation project is expected to be completed in the fall of 2015. Remediation will comply with the Minnesota Pollution Control Agency's residential standard.

5.2.2 REDEVELOPMENT TIMELINE

Demolition and remediation of the site is scheduled to be completed by the fall of 2015. After the demolition and remediation is concluded grading of the site will begin for the construction of the Spine Road and trunk utilities in 2016. At this time, it is expected that private development will begin in 2017. The project is anticipated to be completed in phases over the next 10 to 20 years; however, the development timeline will depend on a number of conditions, including the market, transportation improvements, and other related factors.

6. LAND USE

Goal: Develop and maintain a land use pattern that strengthens the vitality, quality, and character of our residential neighborhoods, commercial districts, and industrial areas while protecting the community's natural resources and developing a sustainable pattern for future development.

To advance this *land use goal*, the following policies are proposed:

- Evaluate and amend the land use regulations to achieve the highest possible development standards, enhance the natural environment, protect public health, support a vital mix of land uses, and promote flexible approaches to implement the Comprehensive Plan.
- Ensure that land use regulations promote development that is compatible with nearby properties, neighborhood character, and natural features; minimize pedestrian and vehicular conflict; and visually enhance development.
- Preserve the stability and quality of the city's neighborhoods while allowing for redevelopment that is complimentary to existing development.
- Provide a balanced mix of residential, park, open space, and commercial land uses.
- Construct all new development at an average density of at least three residential units per net residential acre.
- Explore the possibility of creating additional community gathering space in conjunction with public or private organizations, including AHATS.

6.1 INTRODUCTION

Land use is a defining characteristic of a community. While land use does not operate independently from the other characteristics that create a community, it is a binding factor between transportation, housing, parks, paths, and other characteristics. Through zoning, subdivision, and other land use regulations, a city has powerful tools to guide the long-term, look, feel, and vitality of their community.

Despite the vacant TCAAP property (see Chapter 5), Arden Hills is classified as a fully developed community by the Metropolitan Council's *2030 Regional Development Framework*. The City is also entirely within the Metropolitan Urban Service Area (MUSA). The areas south of Highways 96 and 10 were mostly developed by the end of the 1970s, and less than three percent of the developable land in that part of Arden Hills is vacant. Significant land use changes are not anticipated in the developed part of Arden Hills; however, study areas have been identified in the Future Land Use section of this chapter. The City seeks to take a proactive stance to protect the high quality of life that residents have come to expect and to prepare for potential redevelopment opportunities on TCAAP and throughout the community.

6.2 FUTURE LAND USE – 1998 COMPREHENSIVE PLAN

The 1998 Comprehensive Plan included a future land use map (Figure 6.1) and proposed mix of land uses for future development, including potential land uses for the proposed TCAAP redevelopment:

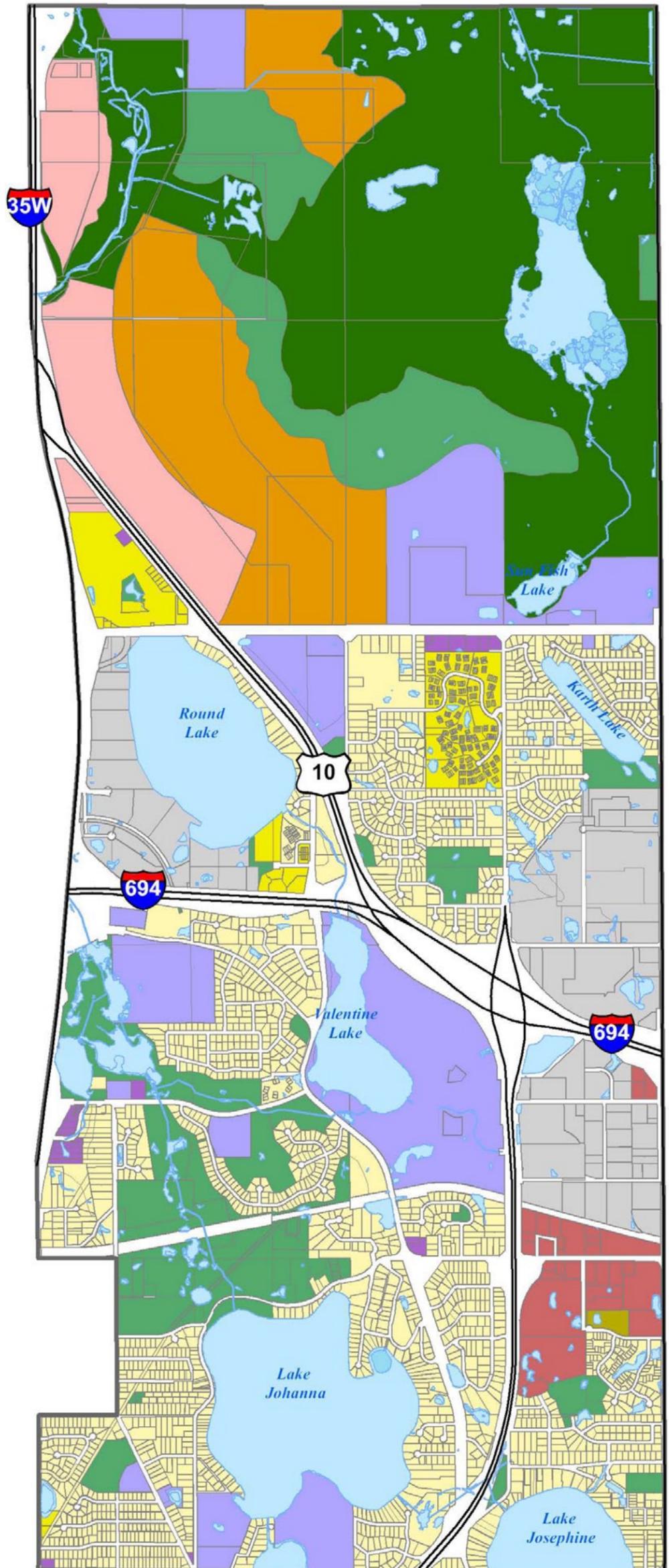
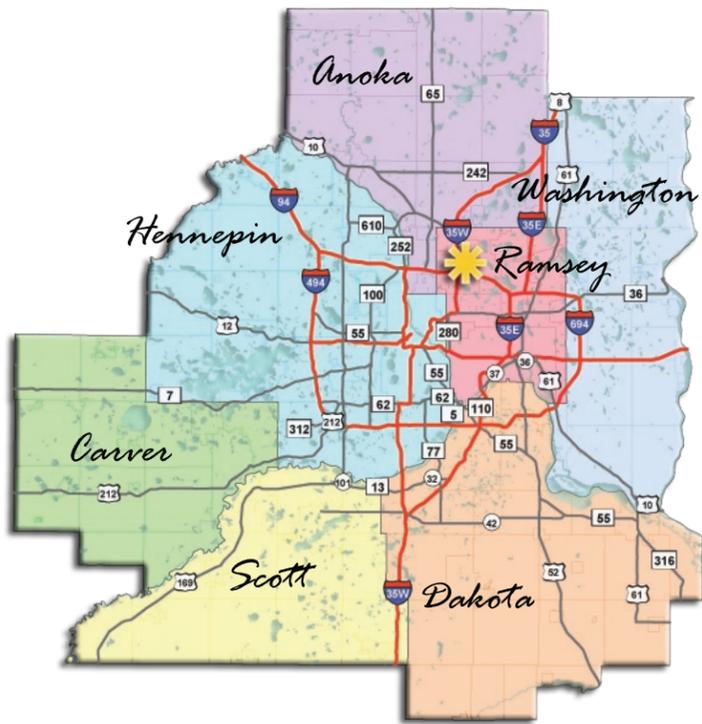
Table 6.1 – 1998 Future Land Use

Land Use		Acres
South of Highway 96/10	Low Density Residential	1,114
	Medium Density Residential	199
	High Density Residential	5
	Neighborhood Business	9
	Commercial	132
	Industrial	390
	Parks	350
	Subtotal	882
	TCAAP	Mixed Residential
Mixed Business		222
Parks		251
Park Preserve		1,237
Public/Institutional		215
Subtotal		2,370
Right-of-way (major roads only) & Open Water		2,902
Total	6,154	

The 1998 future land use data did not include detailed open water coverage or right-of-way area information, which makes comparing it to actual 2008 land uses difficult. In order to make a more accurate comparison between the existing land uses in 2008 and the proposed future land uses from 1998, estimated right-of-way and open water data has been incorporated into the 1998 land use data (Table 6.2). Due to the methodology for calculating land use data by the Metropolitan Council, only the rights-of-way for highways are calculated. The rights-of-way for city streets and smaller roadways are included with the adjacent land uses.

1998 Future Land Use

Figure 6.1



- LDR - Low Density Residential
- MDR - Medium Density Residential
- HDR - High Density Residential
- MR - Mixed Residential
- NB - Neighborhood Business
- COM - Commercial
- MB - Mixed Business
- IND - Industrial
- P/I - Public & Institutional
- P/OS - Park and Open Space
- PP - Park Preserve
- WAT - Water
- ROW - Right-of-Way

2030 Comprehensive Plan Update
 Map Approved: September 28, 2009

Source: Ramsey County, Metropolitan Council
 This map was created for the 1998 Comprehensive Plan

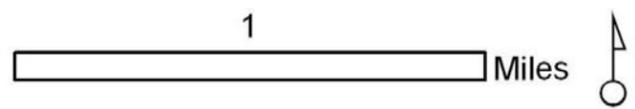


Table 6.2 – Adjusted 1998 Future Land Use Data

Land use		Acres
South of Highway 96/10	Low Density Residential	1,064
	Medium Density Residential	129
	High Density Residential	5
	Neighborhood Business	20
	Commercial	104
	Industrial	407
	Parks	336
	Public & Institutional	339
	<i>Subtotal</i>	<i>1,207</i>
	TCAAP	Mixed Residential
Mixed Business		222
Parks		251
Park Preserve		1237
Public/Institutional		215
<i>Subtotal</i>		<i>2370</i>
Other	Water	684
	Right-of-way	1,893
Total		6,154

The following descriptions were used to define the future land use categories in the 1998 Comprehensive Plan:

1. Low density residential (LDR) – traditional single-family residential land use category. A density range of three to five units per acre is allowed.
2. Medium density residential (MDR) – apartment and townhome land use category for providing densities of up to eight units per acre.
3. High density residential (HDR) – apartment and townhome land use category providing for densities of up to twelve units per acre. Mobile homes are also included in this category.
4. Mixed Residential (MR) – designed to provide for a variety and mixture of housing types, particularly in the TCAAP area. This category will allow for those types of units not readily available now in the City.
5. Neighborhood business (NB) – neighborhood business designates small, isolated areas for neighborhood commercial land uses when they are compatible with surrounding residential uses. Commercial uses that are high traffic generators, noise generators, or otherwise not compatible with residential neighborhoods, are inappropriate. Typically, neighborhood business areas will be located on intersections or nodes that are on the edge of residential areas, are less desirable sites for housing, or have traditionally been occupied with neighborhood services.

6. Commercial (C) – areas designated for a broad range of retail shopping and services to meet the needs of the community. Compatible uses such as office buildings are also intended for this area.
7. Mixed Business (MB) – areas designated for a variety of business, commercial and industrial uses, including office, general business, retail, and industrial uses. This designation will be used for the future commercial/industrial uses on the TCAAP property.
8. Industrial (IND) – areas designated for a broad range of industrial uses, including office, warehouse, and manufacturing.
9. Public & Institutional (P/I) – designates areas for uses including government buildings, colleges, schools, and churches.
10. Parks – areas designated for city and county parks.
11. Park Preserve (PP) – areas designated as natural and scenic areas that are to be preserved for public use.
12. Right-of-way (ROW) – public vehicular, transit rail, and/or pedestrian rights-of-way.
13. Water (WAT) – includes permanently flooded open water, rivers and streams, and wetlands (wetlands not included in the national wetland inventory data may not be displayed).

6.3 EXISTING LAND USE – 2008

The 2008 existing land use data is based on City and County property records and known land uses (Figure 6.2). The land uses are classified into the following categories:

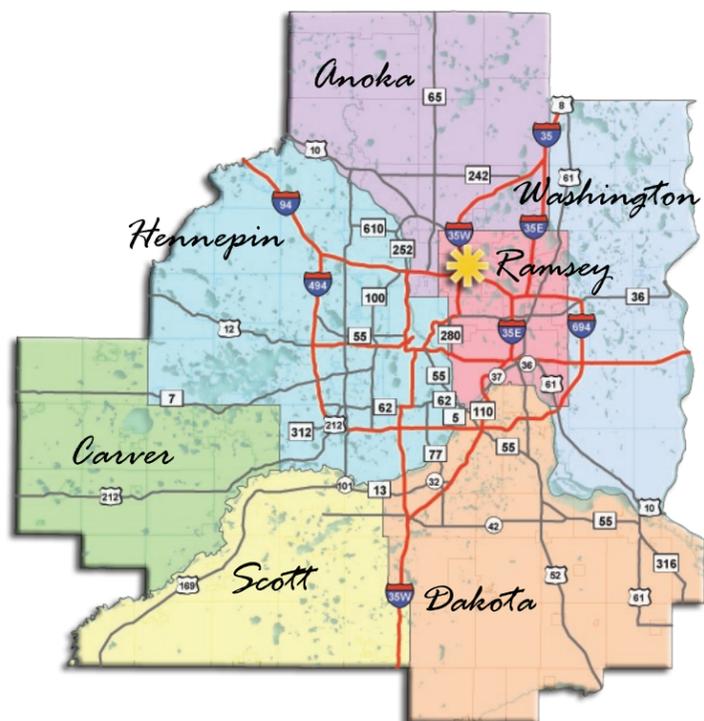
1. Single Family Attached (SFA) – includes all attached single family homes such as townhomes with separate entrances.
2. Single Family Detached (SFD) – includes all detached single family homes.
3. Multiple Family (MF) – includes apartment buildings and condominiums of more than one story.
4. Manufactured Housing (MH) – includes manufactured and mobile homes in specialized parks.
5. Neighborhood Business (NB) – neighborhood business designates small, isolated areas for neighborhood commercial land uses when they are compatible with surrounding residential uses.

Table 6.3 – 2008 Existing Land Uses

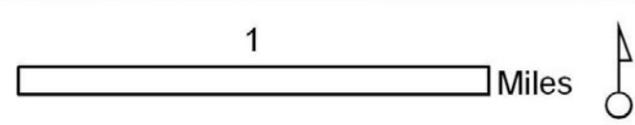
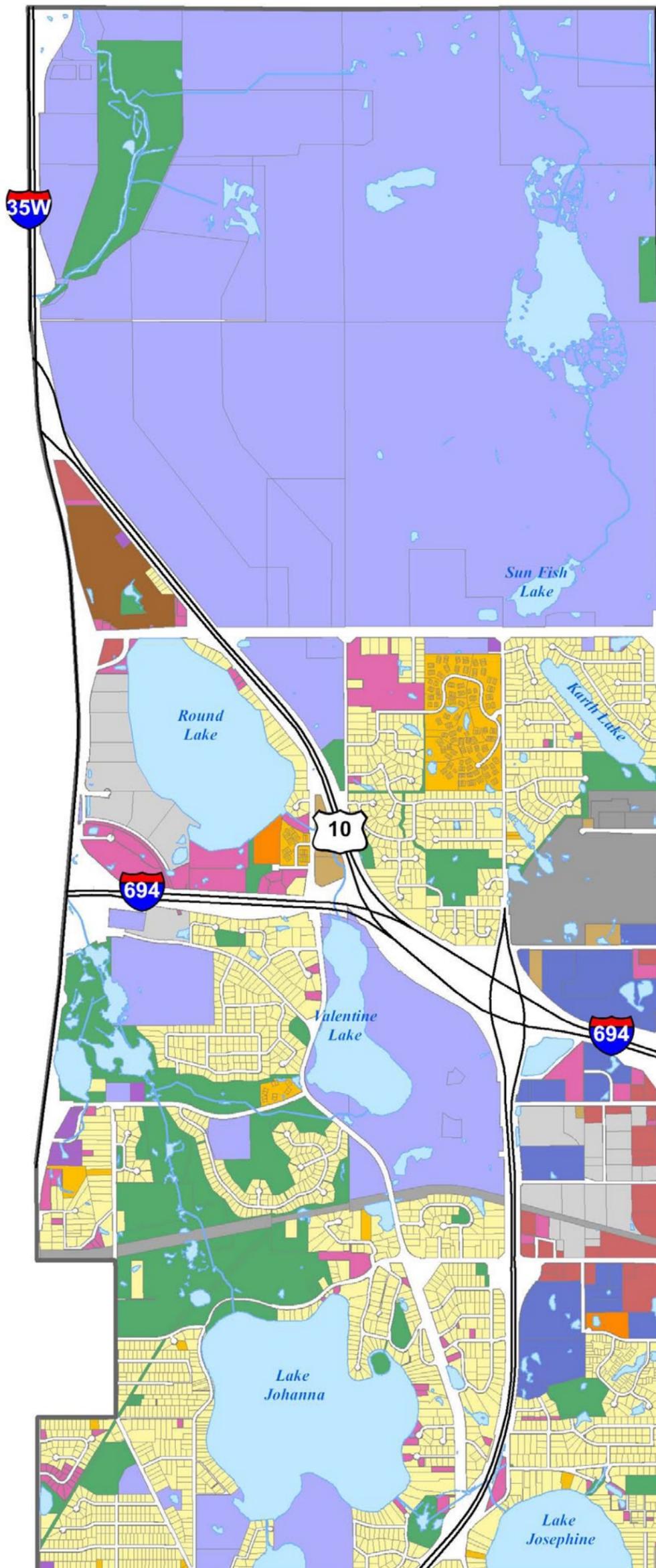
Land Use	Acres
Single Family Attached	84
Single Family Detached	904
Multiple Family	12
Manufactured Housing	48
<i>Total Residential</i>	<i>1,048</i>
Neighborhood Business	12
Commercial	65
Office	140
Mixed Use Industrial	106
Light Industrial	141
Park and Open Space	473
Public & Institutional	2,502
Utility	20
Vacant	131
Water (lakes and NWI wetlands)	796
Railroad Right-of-way	35
Right-of-way	685
Total	6,154

2008 Existing Land Use

Figure 6.2



- SFA - Single Family Attached
- SFD - Single Family Detached
- MF - Multiple Family
- MH - Manufactured Home Park
- NB - Neighborhood Business
- COM - Commercial
- OFC - Office
- MUI - Mixed Use Industrial
- LI - Light Industrial
- P/OS - Park and Open Space
- P/I - Public & Institutional
- UTL - Utility
- VAC - Vacant
- WAT - Open Water
- RR - Railroad Right-of-way
- ROW - Right-of-way



2030 Comprehensive Plan Update
Map Approved: September 28, 2009

Source: Ramsey County, Metropolitan Council



6. Commercial (COM) – areas designated for a broad range of retail, shopping, and services to meet the needs of the community and region. Compatible uses such as office buildings are also intended for this area.
7. Office (OFC) – Predominantly administrative, professional, or clerical services; includes medical clinics.
8. Mixed Use Industrial (MUI) – includes light manufacturing and/or processing, warehousing, distribution, and offices.
9. Light Industrial (LI) – primarily light manufacturing and/or processing of products; could include light industrial land use, distribution, warehouse facilities, and offices as a secondary use.
10. Park and Open Space (P/OS) – areas designated as public parks.
11. Public & Institutional (P/I) – areas designated for uses such as government buildings, colleges, schools, and religious uses but not medical uses.
12. Utility (UTL) – Public or private land occupied by a power substation, water tower, municipal well, pumping station, or similar use.
13. Vacant (VAC) – Private land not occupied with a building or use.
14. Water (WAT) – includes permanently flooded open water, rivers and streams, and wetlands (wetlands not included in the national wetland inventory data may not be displayed).
15. Railroad right-of-way (RR) – Railroad right-of-way.
16. Right-of-way (ROW) – public vehicular, transit and/or pedestrian rights-of-way.

Although there were few land use changes between 1998 and 2008, there are differences between the 1998 future land use data and the 2008 existing land use data. The differences are largely attributable to more accurate data in 2008, the delayed redevelopment of the TCAAP property, and other vacant property that was not developed. The two data sets use different land use descriptions because the 2008 existing land use data is based on actual land use while the 1998 future land use numbers were based on anticipated development.

In addition to more accurate data, there were a few land use changes between 1998 and 2008. In 2007, the Hazelnut Park #3 subdivision and subsequent extension of Katie Lane was approved, which increased the amount of land used for right-of-way. As part of the 2005 pavement management program, the road that connected Red Fox Road to Grey Fox Road was vacated, which reduced the amount of area used for right-of-way. Fernwood Avenue on the Boston Scientific (formerly Guidant) campus was vacated while Cummings Drive was dedicated to the City.

The land uses on the TCAAP property were the most notable differences from what was expected in the 1998 future land uses to the actual land uses in 2008. Since 1998, the number of acres that were anticipated to be part of the TCAAP redevelopment has been

reduced and, moreover, the redevelopment was delayed. Much of the TCAAP redevelopment is anticipated to occur in phases over the next 10 to 20 years depending on market conditions.

Finally, of the 131 acres of vacant land in 2008, approximately 70 acres are zoned for residential, 40 acres are zoned commercial, and 21 acres are light industrial. The vacant areas have not significantly changed anticipated land use types between the 1998 and 2030 future land use maps. The vacant land does not include the TCAAP property, which is currently classified as public/institutional land since it is owned by the federal government.

6.4 FUTURE LAND USE - 2030

While redevelopment may occur on some parcels throughout the City, no significant land use changes in the developed areas of Arden Hills are anticipated (Figure 6.3). Most of the City’s projected population, household, and employment growth will occur on the TCAAP redevelopment site. Table 6.4 – 2030 Future Land Use

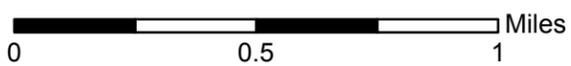
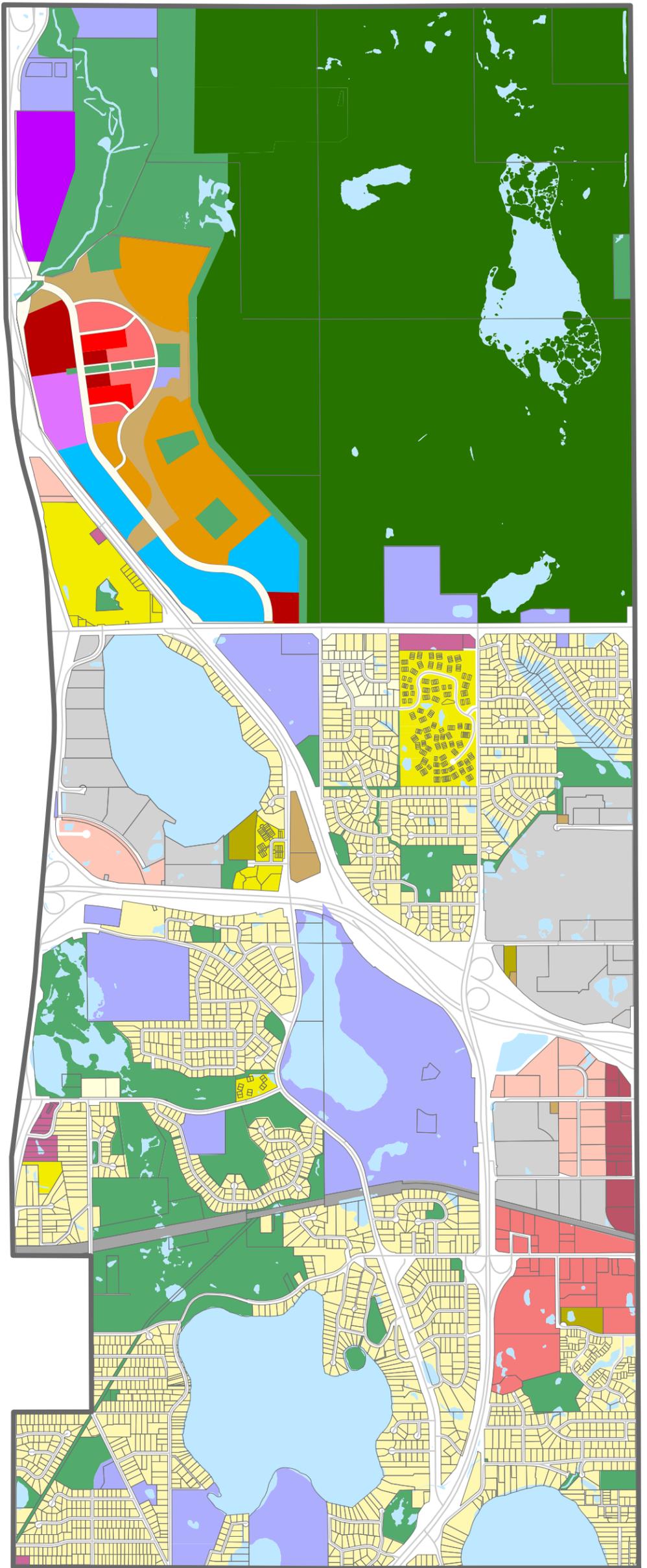
2030 Future Land Use			
Land Use (Not Including TCAAP)	Acres	Land Use (TCAAP)	Acres
Low Density Residential	978	Neighborhood Residential (TCAAP)*	117
Medium Density Residential	136	Neighborhood Transition (TCAAP)*	25
High Density Residential	12	Town Center (TCAAP)*	10
Neighborhood Business	19	Campus Commercial (TCAAP)*	46
Mixed Business	79	Office Mixed Use (TCAAP)*	20
Commercial	26	Retail Mixed Use (TCAAP)*	29
Community Mixed Use	100	Flex Business (TCAAP)*	73
Light Industrial and Office	303	Public & Institutional (Civic - TCAAP)	3
Public & Institutional	461	Parks and Open Space (TCAAP)	24
Utilities	15	Utilities (Water Infrastructure - TCAAP)	51
Park and Open Space	576	Right-of-way (Spine Road -TCAAP)	31
Park Preserve	1,472		
Water	796		
Railroad Right-of-way	35		
Right-of-way	685		
Total** (Not Including TCAAP)	5,694	Total** (TCAAP)	427
*Includes future right-of-way.			
**May not equal 5,694 or 427 due to rounding.			



2030 Future Land Use

Figure 6.3

- VLDR - Very Low Density Residential
- LDR - Low Density Residential
- MDR - Medium Density Residential
- HDR - High Density Residential
- NR - Neighborhood Residential
- NT - Neighborhood Transition
- TC - Town Center
- NB - Neighborhood Business
- MB - Mixed Business
- COM - Commercial
- CMU - Community Mixed Use
- CC - Campus Commercial
- RMU - Retail Mixed Use
- OMU - Office Mixed Use
- FO - Flex Office
- I/O - Light Industrial and Office
- P/I - Public & Institutional
- UTL - Utility
- P/OS - Park and Open Space
- PP - Park Preserve
- WAT - Water
- RR - Railroad right-of-way
- ROW - Right-of-Way



**2015 Comprehensive Plan Amendment
(2030 Comprehensive Plan)**

Updated: June 25, 2015
 Approved by the City Council: July 13, 2015
 Printed: November 10, 2015
 Source: City of Arden Hills

DISCLAIMER:

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6.4.1 Future Land Use Classifications

There are twenty-three future land use classifications:

1. Very Low Density Residential (VLDR) – traditional single-family residential land use category. A density range of 1.5 to 3 units per acre.
2. Low Density Residential (LDR) – traditional single-family residential land use category. A density range of three to five units per acre may be allowed.
3. Medium Density Residential (MDR) – apartment and townhome land use category for providing densities of six to nine units per acre.
4. High Density Residential (HDR) – apartment and townhome land use category providing for densities of nine to twelve units per acre.
5. Neighborhood Residential (NR) – Provides for a range of attached and detached single-family and small multi-family uses at a density of 1.5 to 8 units per acre.
6. Neighborhood Transition (NT) – Provides for a mix of small and medium multi-family uses at a density of 8 to 15 units per acre. Small scale commercial uses are also permitted in this district when transition standards and development criteria have been met.
7. Town Center (TC) – Provides for a range of commercial and residential uses that offer housing, assisted living, senior housing, office, retail, restaurant, and civic uses. Medium and large residential uses are permitted at a density of 15 to 45 units per acre.
8. Neighborhood Business (NB) – neighborhood business designates small, isolated areas for neighborhood commercial land uses when they are compatible with surrounding residential uses. Commercial uses that are high traffic generators, noise generators, or otherwise not compatible with residential neighborhoods, are inappropriate. Typically, Neighborhood Business areas will be located on intersections or nodes that are on the edge of residential areas, are less desirable sites for housing, or have traditionally been occupied with neighborhood services. Dwelling units of three units per acre or more may be permitted.
9. Mixed Business (MB) – areas designated for a variety of businesses, including commercial, certain light industrial uses, warehousing, office, general business, retail.
10. Commercial (C) – areas designated for a broad range of retail, shopping, and services to meet the needs of the community and region. Compatible uses such as office buildings are also intended for this area.

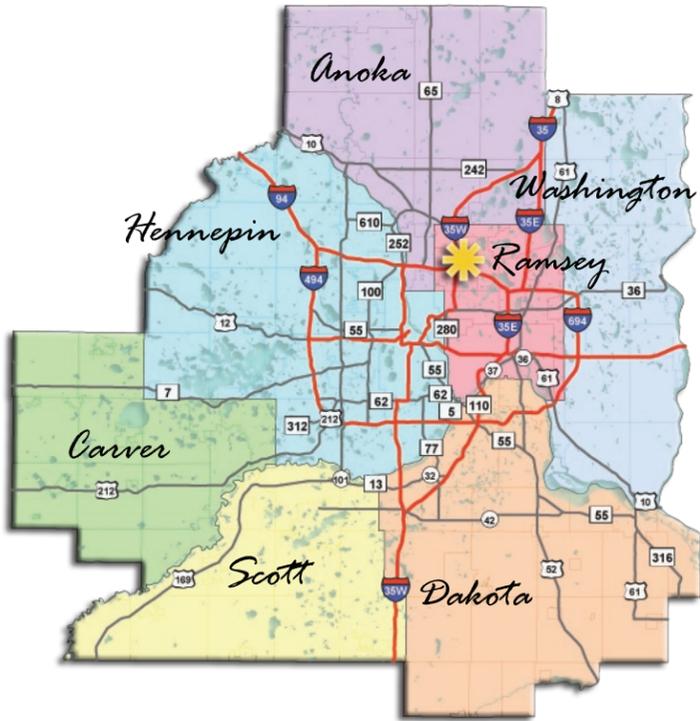
11. Community Mixed Use (CMU) – areas designated for a broad range of retail, shopping, services, and office space to meet the needs of the community and surrounding areas. This area may also include medium to high density housing with a potential density of three to 20 units per acre.
12. Campus Commercial (CC) – Provides for multiple, single tenant buildings or campuses within a business park atmosphere.
13. Retail Mixed-Use (RMU) – Promotes retail as a primary use and allows for other commercial uses to be incorporated as vertical mixed-use buildings.
14. Office Mixed-Use – (OMU) – Focuses on office as a primary use, but also permits other commercial uses to be incorporated as vertical mixed-use buildings.
15. Flex Office (FO) – Permits large scale development for employment and light manufacturing uses that take advantage of highway frontage and automobile access.
16. Light Industrial and Office (I/O) – areas designated for a broad range of light industrial uses such as warehousing with manufacturing. This land use may also include offices.
17. Public & Institutional (P/I) – areas designated for uses such as government buildings, colleges, schools, and religious uses, but not medical uses.
18. Utility (UTL) – Public or private land occupied by a power substation, water tower, municipal well, pumping station, drainage infrastructure , or similar use.
19. Park and Open Space (P/OS) – areas designated as public parks.
20. Park Preserve (PP) – areas designated as natural or scenic areas that are to be preserved for public use or open space.
21. Water – includes permanently flooded open water, rivers and streams, and wetlands (wetlands not included in the national wetland inventory data may not be displayed).
22. Railroad right-of-way (RR) – public or private freight or passenger rail activities.
23. Right-of-way (ROW) – public vehicular, transit and/or pedestrian rights-of-way.

6.4.2 Former City Hall/Public Works Property

The 6.82 acre former City Hall/Public Works property is undergoing a community vision process to determine how the property should be redeveloped (Figure 6.4). The property was home to the Arden Hills City Hall and Public Works for many years. While a redevelopment plan for this property was not adopted in

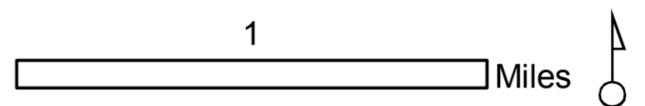
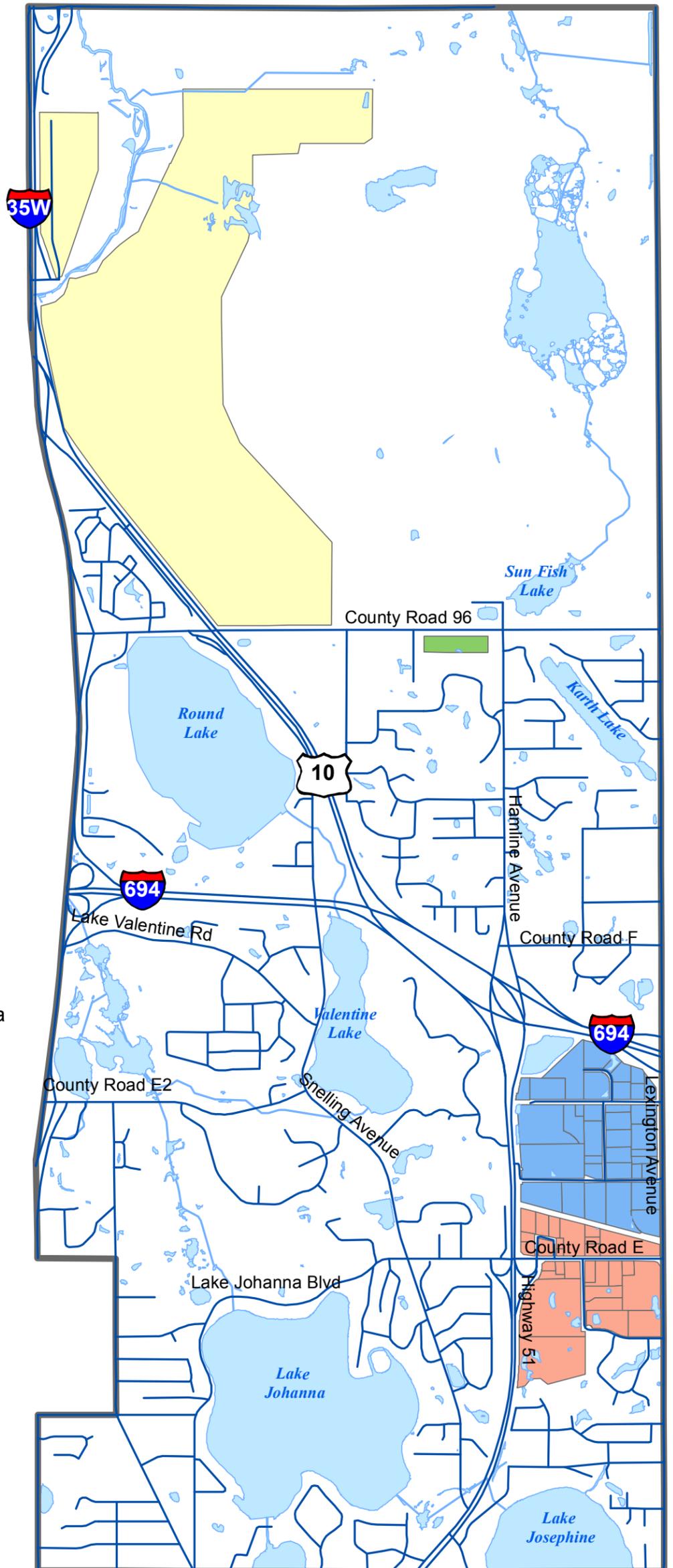
Areas of Interest

Figure 6.4



Areas of Interest

- Guiding Plan for the B2 District
- Former City Hall/Public Works Property
- Red Fox/Grey Fox/Lexington Business Area
- TCAAP Redevelopment



2030 Comprehensive Plan Update
Map Approved: September 28, 2009

Source: Ramsey County
Not to survey quality

time for this Comprehensive Plan, residential uses or a mix of residential and small-scale commercial uses are anticipated. Neither residential nor commercial development should require a change to the future land use designation.

6.4.3 Guiding Plan for the B2 District

In March 2008, the City initiated a visioning and planning process for the B-2 General Business District, which generally includes the commercial properties near County Road E between Lexington Avenue and Hamline Avenue/Highway 51 (Figure 6.4). This area hosts a number of retail, service, and office uses. Long considered the “downtown” of Arden Hills, the district is a mix of newer and older buildings. As this corridor ages, market initiated redevelopment is anticipated.

The City completed the planning process and accepted the “Guiding Plan for the B2 District” in October 2008. The Guiding Plan includes a long-term vision for the future redevelopment of this corridor and addresses transportation issues, land uses, infrastructure improvements, landscaping, pedestrian facilities, building design, and site layout among other issues. While the primary uses along this corridor are likely to remain retail, commercial, and office, the Guiding Plan and subsequent land use changes add the possibility for housing in this area.

Although the Guiding Plan document is not adopted as part of the Comprehensive Plan, the future land use map has been updated to reflect the proposed land uses in the B2 District (CMU), and the Capital Improvement Plan (CIP) includes a potential timeline for the public improvements described in the Guiding Plan (Appendix A).

6.4.4 Red Fox/Grey Fox/Lexington Avenue Business Area Guiding Plan

Immediately north of the B2 District is a significant industrial, office, and retail area for the City. This area includes Red Fox and Grey Fox roads and is bounded by Lexington Avenue, Highway 51, Interstate 694, and the Canadian Pacific railway (Figure 6.4). This area is used by a number of small and large businesses for a variety of retail, distribution, warehousing, and office uses. This area was largely developed between the 1950s and 1970s, though the retail area has had some new development in the last 10 years.

While good access to regional transportation has helped to continue to make this area viable, some of the buildings are becoming functionally obsolete for modern

manufacturing, warehousing, and business uses. As redevelopment pressure increases, a more detailed guiding plan is required to comprehensively address the overall redevelopment needs in this area of the City.

6.4.5 Neighborhood Business

The neighborhood business land use concept was developed in the 1998 Comprehensive Plan (Figure 6.1). The purpose of the concept was to promote the development of commercial nodes that were compatible with the surrounding residential uses and provided services to residential areas. Commercial uses that would generate high traffic, noise, or other negative impacts were considered undesirable. Neighborhood business areas were located at intersections or nodes at the edge of residential areas, on properties not considered desirable for housing, or properties that have traditionally been occupied with neighborhood services. Housing could be a component of the development but would not necessarily be the focal point.

To date, the success of the neighborhood business district has been mixed. Two projects have been developed under this zoning designation, and both resulted in the construction of small office buildings with a variety of services. However, neither of the projects focused on providing neighborhood level services. Nevertheless, the City seeks to maintain the neighborhood business areas and the long-term goal of creating small commercial areas that enhance the residential neighborhoods.

6.4.6 Manufactured Home Community

The Arden Manor neighborhood has been identified as an important community and the primary supply of affordable housing options in the City. Bounded by Interstate 35W, Highway 96, and Highway 10, the neighborhood is facing pressure from adjacent highways and land uses. Although the 1998 Comprehensive Plan identified this area for potential redevelopment into non-residential uses, the City anticipates this property will remain as a medium density residential use for the foreseeable future.

Although complete impacts are not yet known, potential changes to Highways 10 and 96 may impact the manufactured home community. The City is currently in the process of reviewing road design proposals for this area.

6.4.7 TCAAP Redevelopment

As noted in Chapter 5, the City of Arden Hills hired a consultant team in 2013, to create a Master Plan for the redevelopment of the TCAAP site. A central component of this work was the development of a Master Land Use Plan that allocated an appropriate mix of residential, commercial, industrial, civic, and open space uses on the site. The Master Land Use Plan was approved by the City Council in July 2015, and has been incorporated in the revised 2030 Future Land Use data (Figure 6.3 and Table 6.4).

The City began work on the zoning and design standards to implement the Master Land Use Plan in August 2014. These regulations and policies are found in the TCAAP Redevelopment Code (TRC), which was approved in July 2015. The TRC puts in place land use regulations that will achieve the community's goals for the TCAAP redevelopment including: high development and design standards; defined residential neighborhoods and commercial districts interconnected by streets, trails, and sidewalks; energy resiliency and sustainability; and abundant parks and open space.

Though the Master Land Use Plan establishes a proposed allocation of the various uses throughout the TCAAP area and illustrates the current preferred development pattern for the area, the City remains open to considering proposals from its partners or eventual developers for modifications to the Master Land Use Plan that propose different locations for the allocated uses, or on its own initiative to consider amendments to the adopted plan as development occurs or circumstances change in order to promote high quality development of the area consistent with City goals and this Plan.

6.4.8 Development Capacity and Net Residential Density

The Metropolitan Council's 2030 *Regional Development Framework* requires an average net residential density of at least three units per net residential acre. Densities lower than this are not an efficient use of the region's sanitary sewer infrastructure. Net residential acreage is calculated by subtracting wetlands, water bodies, public parks, arterial streets, and identified natural resources that are protected by ordinance from gross acres. The number of net residential acres is then divided by the number of lots to determine net residential density.

According to the 2005 land use data provided by the Metropolitan Council, there were 1,318 acres of net residential land in Arden Hills, which includes the rights-

of-way of adjacent City streets. The United States Census Bureau lists 3,017 housing units in Arden Hills in 2000. Based on that information, the residential density in the developed portion of Arden Hills is approximately 2.29 residential units per net residential acre. While this is below the three units per net residential acre required by the Metropolitan Council, the City is not required to raise densities in the built portion of Arden Hills. However, all future land uses should be able to accommodate development in average of three units per net residential acre.

There are no expected land use changes that would result in a reduction in net residential density in the developed part of Arden Hills. Furthermore, the remaining vacant residential land that is south of Highway 96 and 10 is already zoned for development that could be built at a density of an average of three residential units per acre.

The approved Master Plan for the TCAAP property includes 151 acres of residential land and a maximum of 1,431 residential units for an overall maximum gross density of 9.48 units per acre. The gross density includes the neighborhood collector roads; however, it excludes parks, arterial roads, and the water infrastructure.

6.4.9 Staged Development

Since the areas south of Highways 96 and 10 are considered fully developed and there is relatively little vacant property, a five year staged development has not been developed. While a small amount of vacant land exists in the developed portion of the City, development on the vacant land is unlikely to have a significant impact on the City's or region's infrastructure.

As previously noted in Chapter 5.2.2 the demolition and remediation of the TCAAP site is scheduled to be completed by the fall of 2015. After the demolition and remediation is concluded grading of the site will begin for the construction of the Spine Road and trunk utilities in 2016. At this time, it is expected that private development will begin in 2017. The project is anticipated to be completed in phases over the next 10 to 20 years; however, the development timeline will depend on a number of conditions, including the market, transportation improvements, and other related factors.

6.5 IMPLEMENTATION STRATEGIES

In order to advance implementation of this land use chapter, the below activities are proposed. This list is not intended to be all-inclusive and additional activities that advance the land use goal are encouraged to be developed.

- Update the City's Zoning Code to bring it into conformance with the land uses in the Comprehensive Plan.
- Evaluate zoning regulations to ensure that sufficient buffers are provided between commercial, industrial, and residential uses to protect the character of the City's residential neighborhoods.
- Develop small area plans for the B-2, B-3, B-4, and I-Flex Zoning Districts to provide a more detailed redevelopment vision for incorporation into this Comprehensive Plan.
- Develop design standards for commercial, industrial, and residential developments to ensure the construction of high-quality, sustainable, and aesthetically enhancing development.
- Develop zoning regulations that restrict housing construction that is not sensitive to the character of the existing neighborhood.
- Continue to enforce property maintenance codes to protect quality and property values in the City.
- Develop zoning classifications for all future development on the TCAAP property.
- Adopt design standards for the TCAAP development to create a cohesive character that compliments the established neighborhoods in the City.
- Work to protect significant environmental features on the AHATS property as park preserve.
- Work with the National Guard on the AHATS property to develop synergistic uses such as a community center.

The above strategies should not be considered all-inclusive. New opportunities and strategies should be identified to further advance the City's land use goal and policies.

7. HOUSING

Goal: Develop and maintain a strong, vital, diverse and stable housing supply for all members of the community.

To achieve this housing goal, the following policies are proposed:

- Promote the development of a variety of housing options by preserving and increasing high-quality housing opportunities that are suitable for a mix of ages, incomes and household types.
- Encourage the incorporation of affordable, life-cycle, and work force housing into new development and redevelopment where feasible.
- Maintain the quality, safety, and unique character of the City's housing stock.
- Preserve and strengthen the community's neighborhoods to maintain a high-quality of life for residents.
- Encourage housing development and redevelopment that is complimentary to and enhances the character of the City's established neighborhoods.

7.1 INTRODUCTION

One of the principal roles of a community is to serve as a place to live. In Arden Hills, 23.1 percent of all of the land area in the community is currently used for housing (not including TCAAP). However, if public open spaces and roads are removed, housing accounts for 52.9 percent of all developed land in Arden Hills. The approved TCAAP Master Plan envisions that 35.4 percent of the total 427 acre site will be developed for residential uses. Because housing is such an important part of Arden Hills, maintaining the quality of the current housing stock while providing long-term opportunities for new housing is important to the ongoing vitality of the community and to retaining Arden Hills' reputation as a highly desirable place to live.

7.2 CONTEXT

According to the United States Census, Arden Hills had 3,017 housing units in 2000. A housing unit is the actual structure while a household refers to the people living in a housing unit. Approximately 68 percent of the housing units in Arden Hills are detached single-family homes, 12 percent are attached single family homes (commonly referred to as townhomes), and nine percent are manufactured homes. These three housing types comprise almost 90 percent of the City's housing supply. Arden Hills has the second highest percentage of single-family homes compared to adjacent communities and is significantly above the Ramsey County and metropolitan area average.

Apartments with ten or more units are just 2.74 percent of the City's housing stock. The City has just one traditional apartment building with 37 units and one condominium

building with 72 units. The City has very few duplexes, which are relatively more prevalent in other metropolitan communities (Figure 7.2).

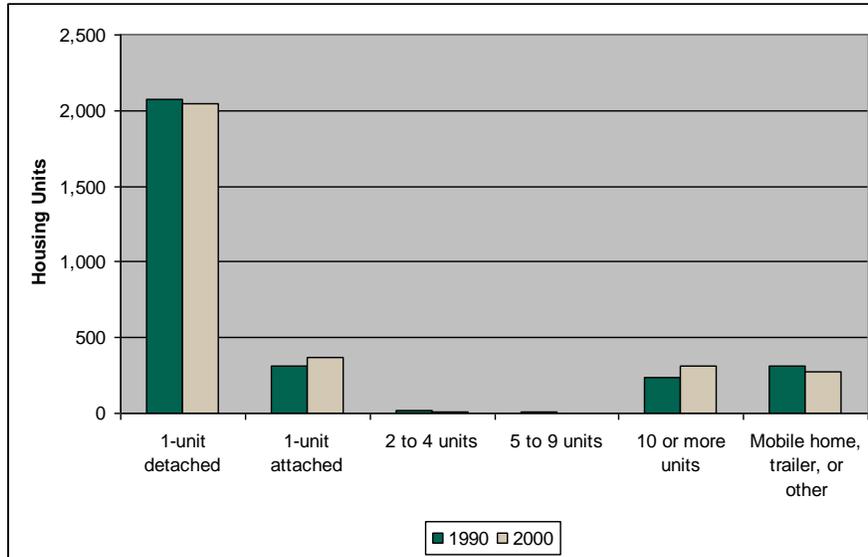


Figure 7.1 – Arden Hills Housing Type

Source: US Census

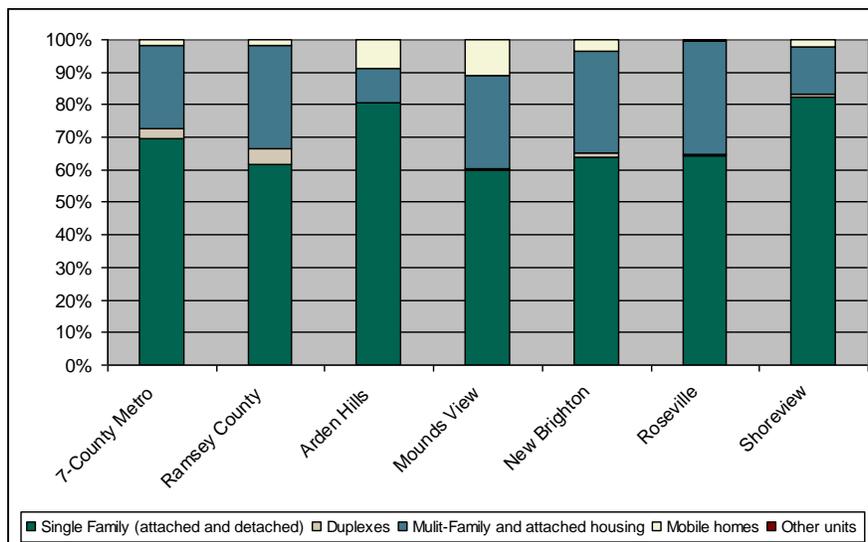


Figure 7.2 – Housing Type by Community

Source: US Census

Household composition will play a role in defining future housing needs in Arden Hills. Between 1990 and 2000, increases were seen in both the number of non-family households and in householders living alone.

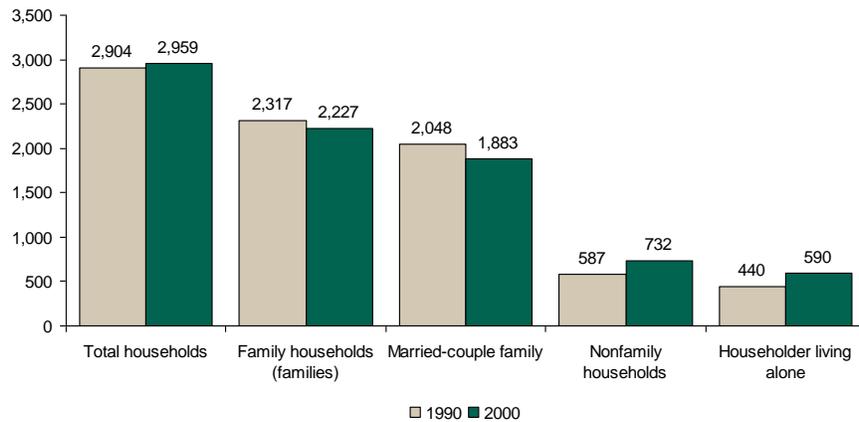


Figure 7.3 – Arden Hills Household Type
Source: US Census

Additionally, the age of Arden Hills’ residents will also impact housing choices. From 1990 to 2000, there was a significant increase in residents between 45 and 54 years of age. By 2012, this segment will increase in absolute numbers and as a percentage of the population. Additionally, by 2012 notable increases in the population between 65 and 74 as well as the 75+ age group will continue to occur.

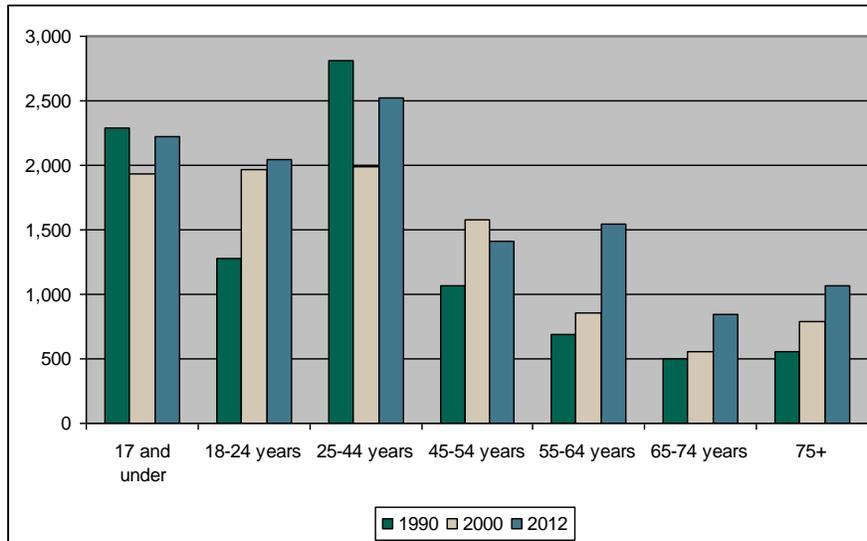


Figure 7.4 – Arden Hills Age Distribution 1990, 2000, 2012
Source: US Census and Maxfield Research Group

The age of the existing housing stock is also an indicator of potential future needs. From 1970 to 1979, 920 housing units were built in Arden Hills, the most of any decade to date. Of note is the fact that 50 percent of the housing in the community was

constructed prior to 1974 (not including the manufactured homes). Homes that are older than 30 years may typically need more repairs and renovations.

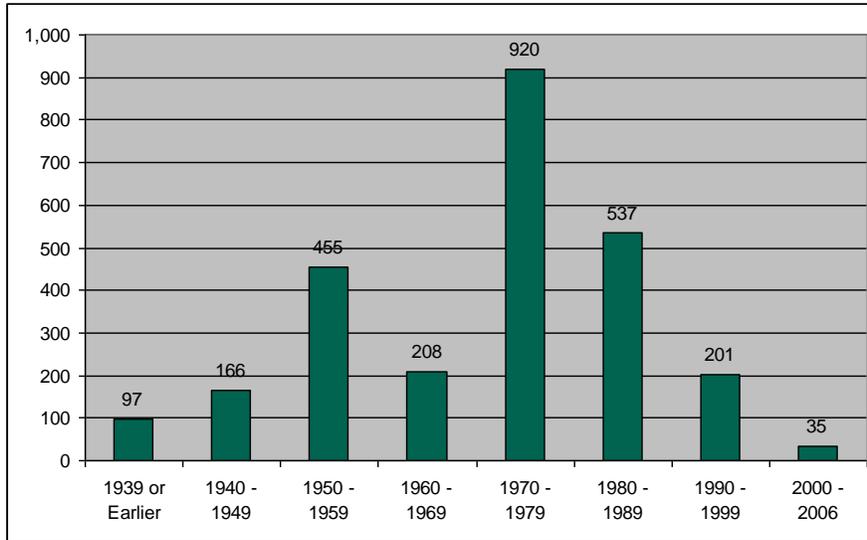


Figure 7.5 – Age of Housing Stock

Source: 1990 & 2000 US Census and City of Arden Hills

Group quarters, which include college dormitories, nursing homes, and group homes, are calculated separately from traditional types of housing such as single family homes, townhomes, and apartments. Since 1990, group quarters and the number of people living in group quarters have increased:

Table 7.1 – Arden Hills Group Quarters Population

	1990	2000	2008*
College Dormitories	631	1,557	1,776
Nursing Homes	384	411	377
Other Group Quarters	10	20	25
Total	1,025	1,988	2,178
Source: US Census, Bethel University, Presbyterian Homes			
*Estimated			

Almost the entire group quarters population is at Bethel University and Presbyterian Homes. Between 2000 and 2004, Bethel University increased the on-campus housing capacity from 1,530 to 1,963 students. Presbyterian Homes, a senior housing facility, had a 377 capacity and 19 senior apartment units and is typically at capacity. The remaining group quarters population lives in group homes in the residential areas of the City.

While group quarters housing is calculated separately from traditional housing, it is important to recognize this type of housing can impact the City’s sewer, water, transportation, parks, and recreation systems differently than traditional types of housing. It is likely that the number of people living in group quarters at Bethel University, Presbyterian homes, and other group homes will increase as those facilities do have additional land to expand. Therefore, it is important for the City to work with these institutions to manage the potential impacts as well as promote a diversity of housing.

7.3 HOUSEHOLD FORECASTS

The total number of households in Arden Hills is forecasted to increase by over 55 percent between 2010 and 2040.

Table 7.2 - Household Forecasts by City

	2000	2010	2020	2030	2040	% Change 2000-2010	% Change 2010-2040
Arden Hills	2,959	2,957	3,750	4,600	4,600	-0.07%	55.56%
Mounds View	5,018	4,954	5,100	5,200	5,500	-1.28%	11.02%
New Brighton	9,013	8,915	9,800	10,600	11,200	-1.09%	25.63%
Roseville	14,598	14,632	15,100	15,600	17,000	0.23%	16.18%
Shoreview	10,125	10,402	10,800	11,200	11,300	2.74%	8.63%
Ramsey County	201,236	202,691	223,920	238,260	248,550	0.72%	22.63%
Twin Cities 7 County	1,021,456	1,117,749	1,259,450	1,390,990	1,510,090	9.43%	35.10%

Source: Metropolitan Council

The rate of forecasted household growth in Arden Hills surpasses all adjacent communities as well as Ramsey County. In establishing its forecasts, the Metropolitan Council is assuming full development of the buildable portion of the TCAAP property by 2030 which will also represent essentially a full build-out of Arden Hills.

Table 7.3 - People per Household

	2010	2020	2030	2040
Arden Hills	3.23	3.04	2.89	2.93
Mounds View	2.45	2.43	2.40	2.38
New Brighton	2.41	2.35	2.32	2.32
Roseville	2.30	2.32	2.30	2.28
Shoreview	2.41	2.43	2.43	2.43
Ramsey County	2.51	2.44	2.41	2.40
Twin Cities 7 County	2.55	2.48	2.44	2.43

Source: Metropolitan Council

The significantly higher people per household in Arden Hills is misleading because the people living in group quarters housing is included in the total population, but the group quarters housing structures does not add to the number of households in the City.

When adjusted for group quarters population, the people per household is comparable to the adjacent cities and metropolitan area.

Table 7.4 - People per Household Adjusted

	1990	2000	2010	2020	2030
Total Population	9,199	9,652	11,200	12,900	12,900
Households	2,904	2,959	3,800	4,600	4,600
People per HH	3.17	3.26	2.95	2.80	2.80
Non-group Quarters Population*	8,174	7,664	8,860	10,560	10,560
People per Non-group Quarters HH	2.81	2.59	2.33	2.30	2.30
Source: 1990 and 2000 Census, Metropolitan Council					
*Assumes full capacity and no growth after 2000					

Consistent with long-term trends, the average occupancy of a housing unit in Arden Hills is projected to continue to decline from 2.59 persons per unit in 2000 to 2.3 people per unit in 2020 and 2030.

7.4 HOUSING ISSUES

Three primary housing issues will need to be addressed by Arden Hills in the next 20 years. They include housing diversity, housing affordability, and housing quality. Each is discussed below.

7.4.1 Housing Diversity

Life-cycle housing, which was referenced in the housing goals, is a common term used to describe the provision of housing types for all stages of life. Life-cycle housing is based on the premise that as people go through life, their housing needs change. A young person getting out of school and just starting out usually cannot afford to own a home so they often begin by renting. As a person grows older, they often establish a family and buy their first home, sometimes either a starter home or townhome. As a family's income grows, they may move up to a larger home. Once the children leave and the family size decreases, parents often move back to a smaller home with fewer maintenance needs or to one of the growing number of either single-family or multi-family housing options that has an association that take care of home

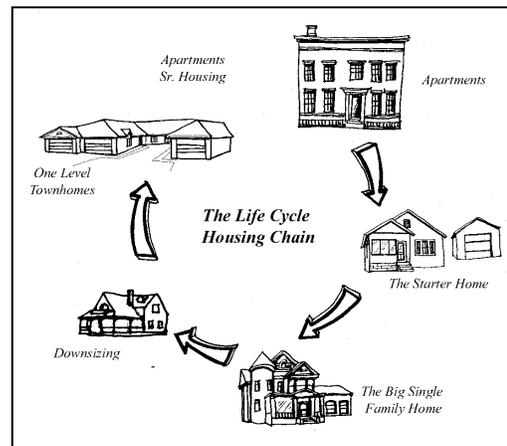


Figure 7.6 - Life Cycle Housing

and property maintenance. Eventually, as a person ages, there is often a need for assisted living or an extended care facility.

Housing in Arden Hills today is primarily focused on one stage of the housing life-cycle, move-up housing. Ironically, a significant number of units constructed in Arden Hills during the 1970s were oriented to the first-time homebuyer market. As housing prices have risen over the past three to four decades, what was once priced for a first-time buyer is now classified as move-up housing due to escalated prices. Arden Hills does still have a limited supply of more entry level housing. In 2007, there were 285 units in the Arden Manor manufactured home community and approximately 80 percent of the units were owner occupied.

Rental housing is another component of life-cycle housing that needs to be addressed. Rental housing is an important component of the overall housing supply since it provides options for both the beginning and later stages of the life-cycle chain. It may also serve the needs of several segments of the population including retail service employees, seniors, young adults just entering the workplace and economically disadvantaged households. Based on the homestead data from Ramsey County, 10 percent of the housing in Arden Hills is classified as non-homesteaded, which is a rough indicator for rental housing. According to Ramsey County property information, slightly more than 94 percent of the occupied single family homes and townhomes (not including manufactured homes or condominiums) were owner occupied in 2008.

Arden Hills promotes housing diversity through its long-term goals, policies, and strategies. The market is also expected to exert pressure on the City for more housing diversity. As was noted earlier, factors such as an aging population, a population that has more non-family households, and increased numbers of householders living alone is expected to drive demand for more attached, multi-family housing. Multi-family units expected to be in demand are likely to be oriented toward both owners and renters.

7.4.2 Housing Affordability

Affordable housing is an issue in every Twin Cities area community. With housing costs outpacing many wages, it is becoming increasingly important to focus on affordable housing. Because of the disparity of housing costs and wages throughout the Twin Cities, affordable housing continues to be a major initiative of the Metropolitan Council.

According to the Metropolitan Council, housing is considered affordable if it is priced at or below 30 percent of the gross income of a household earning 60

percent of the Twin Cities median family income. In 2007, the area median income for the seven-county Minneapolis-St. Paul area adjusted by the Department of Housing and Urban Development for a family of four was \$78,500. Therefore, in 2007, housing was considered affordable if annual housing costs for a family of four do not exceed 30 percent of \$47,100, which translates to \$14,130 per year or \$1,177.50 per month for housing. While the purchasing power of \$1,177.50 per month depends on interest rates and other household factors, it could be sufficient to purchase a home that is priced in the range of \$150,000.

To implement the Livable Communities Act in 2007, the Metropolitan Council uses as the upper limit of affordability for ownership purchase price and monthly rents, the following dollar amounts:

Table 7.5 - 2007 Owned Occupied Affordable Housing Prices

Household Income Level:	Affordable Home Price
80% of area median income (\$62,800)	\$206,800
60% of area median income (\$47,100)	\$152,000
Source: Metropolitan Council	

Table 7.6 - Rental Housing Affordable Prices

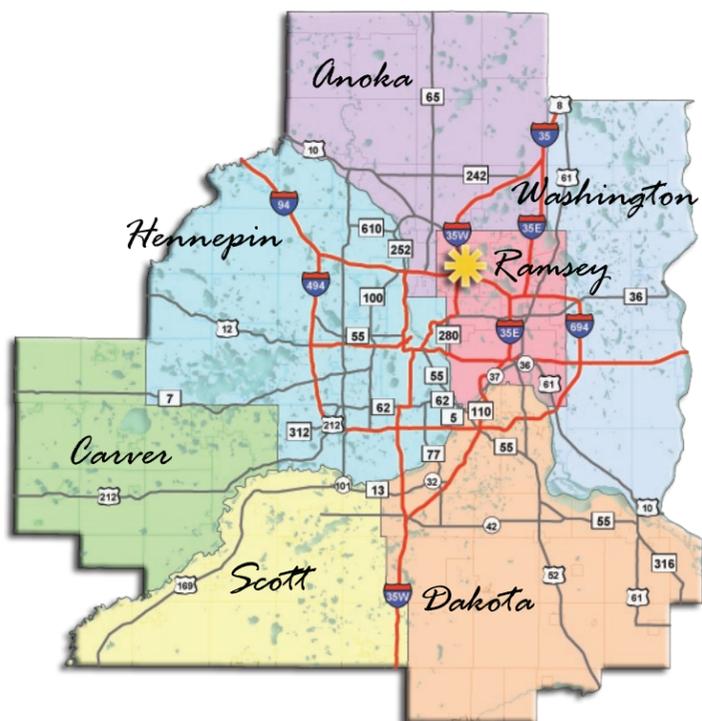
2007 RENTAL HOUSING	
Bedroom size:	*Monthly gross rent including tenant-paid utilities, affordable at 50% of area median income
Efficiency	\$687
1 bedroom	\$736
2 bedrooms	\$883
3 bedrooms	\$1,020
4 bedrooms	\$1,138
Source: Metropolitan Council	

The mean assessed value of housing in Arden Hills in 2007 was \$291,778 with a median of \$272,100 (Figure 7.7). Based on 2007 assessed property values from Ramsey County, 25 percent of the housing was at or below the affordable home price of \$206,800 and approximately 13 percent was at or below \$152,000.

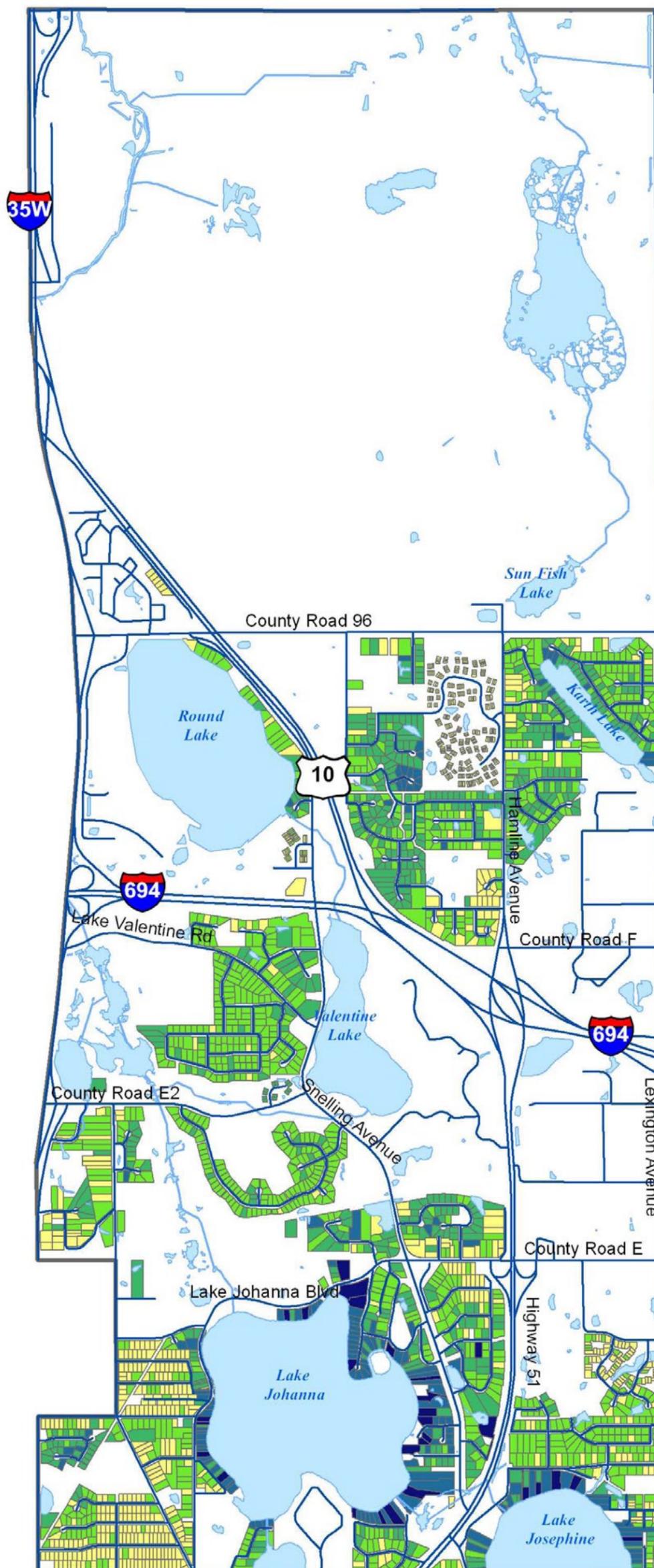
In January of 2006, the Metropolitan Council released a report entitled “Determining the Affordable Housing Need in the Twin Cities 2011-2020”. The report not only forecasts the regional need by 2020 for newly constructed, affordable housing but it allocates each community’s share of the regional need. The total need for newly constructed housing in the Twin Cities is estimated to be 51,000 units between 2011 and 2020.

2008 Assessed Value

Figure 7.7



2008 Assessed Value



2030 Comprehensive Plan Update
Map Approved: September 28, 2009

Source: Ramsey County, Metropolitan Council

Each community's share of the regional need is allocated based on a number of factors. According to the Metropolitan Council, 30.6 percent of new housing units in all cities should be affordable. Allocations are then adjusted by job proximity, the composition of the housing stock and access to transit service. Based on the formula, the Metropolitan Council has allocated a need for 288 affordable housing units to Arden Hills between now and the year 2020.

In order to ensure that this need can be met, Arden Hills has allocated several land use classifications on the Future Land Use Map with development standards that may accommodate affordable housing on TCAAP. In the remainder of Arden Hills, the City expects the majority of new affordable housing units to be constructed in areas designated as Medium Density Residential or High Density Residential on the Future Land Use Map. The City would not seek to concentrate affordable housing in any particular area.

In addition to ensuring that there is sufficient land designated that has the potential to provide affordable housing, the City of Arden Hills is committed to continuing its participation in the Metropolitan Livable Community Program. As a participant, the City of Arden Hills continues to be eligible to compete for grant funding provided by the Livable Communities Act (LCA) to assist with clean-up operations for polluted land for redevelopment, creating development or redevelopment opportunities that demonstrate efficient use of land and infrastructure through connected development patterns, and opportunities to create more affordable housing.

7.4.3 Housing Quality

Except for the TCAAP property, much of Arden Hills is considered developed. As was pointed out earlier, the age of 70 percent of the current housing stock makes ongoing maintenance a community concern. If Arden Hills' existing neighborhoods are going to remain attractive places to live, owners will need to continue maintenance and reinvestment efforts.

Encouraging housing maintenance can be done in two ways, either through voluntary efforts or through regulatory requirements. Many communities rely on both. Ideally, all residents will maintain their property in a sound and attractive manner. Realistically, however, a small percentage of properties will not be adequately maintained and in such cases, they can have a significant negative impact on surrounding properties and even the neighborhood as a whole.

Arden Hills relies primarily on individual owners to maintain property. The City has nuisance provisions in its local code, it enforces the Minnesota State Building

Code, and the International Property Maintenance Code was adopted in 2007. As was noted in the housing policies, the City stands ready to consider the adoption of a rental regulations should it become necessary. Additionally, Arden Hills will continue to work with programs offered by county, regional, state and federal agencies as appropriate. Such programs are more limited than they were in the past due to changes in priorities and reductions in funding.

7.5 FUTURE OPPORTUNITIES

While Arden Hills does have a limited number of smaller, infill vacant parcels south of Highway 96, future housing opportunities will largely come from the development of the TCAAP site. TCAAP offers an unparalleled opportunity to create a mix of housing integrated with employment, entertainment, recreation and transit service. The flexibility included in the design and development regulations for the site will help the community address its goals of housing diversity and housing affordability.

The TCAAP site will include approximately 427 acres of gross development area. Of this total, approximately 151 acres of land has been designated specifically for residential development. Residential areas are divided between several zoning districts with varying gross density requirements. A range of different housing types will be accommodated, including single-family detached homes, twin homes, townhomes, manor homes, apartments, condominiums, and senior housing. The City expects that up to 1,431 housing units will be constructed on the site at the time of full development.

The residential component of the TCAAP site will offer a future mix of housing that will compliment Arden Hills' current supply of predominately single-family detached housing. It will provide opportunities to address the changing needs of the local population and it will attract new people to the community. Combined with the City's efforts to maintain the current supply of housing, the development of the TCAAP site will continue Arden Hills' position in the marketplace as a highly desirable place to live.

7.6 IMPLEMENTATION STRATEGIES

In order to advance the policies and ideas identified in this chapter, the following implementation strategies could be used:

- Review City codes to consider and encourage a range of housing opportunities and innovative site design.
- Pursue grants or other opportunities that promote the construction of affordable housing.
- Explore the adoption of rental regulations to ensure the functionality and maintenance of rental properties.

- Explore the adoption of an administrative fine program to deter ongoing nuisance and property maintenance issues.
- Promote the use of high quality materials in new housing construction to minimize long-term deterioration of the housing stock.
- Ensure safety, livability and durability of the housing stock through enforcement of the Minnesota State Building Code, which includes educating property owners and residents on housing and property maintenance codes.
- Develop regulations that prohibit the construction of housing that is not compatible with the scale of the existing neighborhood.
- Develop standards for protecting lakes, wetlands, trees, and other open spaces during redevelopments and infill projects.
- Establish architectural/design guidelines for new developments and redevelopments.
- Identify programs, policies, and strategies that encourage aging in place for senior citizens.

The above strategies should not be considered all-inclusive. New opportunities and strategies should be identified to further advance the City's housing goal and policies.

8. ECONOMIC DEVELOPMENT AND REDEVELOPMENT

Goal: Promote the development, redevelopment, and maintenance of a viable, innovative, and diverse business environment serving Arden Hills and the metropolitan area.

To achieve this *economic development and redevelopment goal*, the following policies are proposed:

- Work to create and strengthen existing partnerships between public and private agencies and institutions.
- Engage the private sector to encourage development and redevelopment projects that are beneficial to the City and identify incentives or programs where applicable that promote private sector investment.
- Encourage communication and cooperation between businesses, educational institutions, and the public sector.
- Promote business retention and expansion to enhance the existing economic base and provide applicable and appropriate resources.
- Capitalize on existing community strengths, such as location, freeway access, and a well-educated population.
- Identify marketing and promotion tools and techniques to attract commercial, office, residential, and industrial uses.
- Adopt a public financing policy to maximize private investment and public benefit.
- Identify incentives or programs that provide housing choice.

Arden Hills has a strong local economy supported by a mix of size and types of businesses with an educated population, desirable residential neighborhoods, a central location in the north part of the metropolitan area, and relatively easy access to the freeway system. With more than 12,000 jobs in 2008, Arden Hills has more jobs than residents. While the City places a high value on its residential neighborhoods, the business community is an important component to the City's long-term success.

The long-term economic health of Arden Hills is not without its challenges. While the City's economic base is relatively strong, the City recognizes the need to maintain and enhance the economic base over the long-term. Except for the TCAAP redevelopment, the City has few vacant commercial or industrial properties remaining. Furthermore, some of the commercial and industrial buildings may not be cost-effective to convert to other uses and consequently may be nearing obsolescence. Redevelopment in certain parts of the City is almost certain to occur.

Economic development and redevelopment is linked to the other chapters of this Comprehensive Plan. Land use, housing, transportation, and public amenities impact the City's ability to retain its economic base and attract desired development.

8.1 ECONOMIC DEVELOPMENT AUTHORITY (EDA)

In 1996, the City established the Economic Development Authority (EDA) with the following mission:

- Preserve and create jobs;
- Enhance the City’s tax base; and,
- Promote the general welfare of the people of Arden Hills.

Minnesota State Statutes guide the powers of the EDA; however, the EDA is generally able to purchase property, redevelop property, create economic development districts, study economic development needs, and perform other duties related to economic development. The members of the City Council make up the full EDA.

The EDA is an important tool in projects where the City seeks to take an active role in purchasing property, redevelopment, and/or public financing of projects.

8.2 ECONOMIC DEVELOPMENT COMMISSION (EDC)

The Economic Development Commission is a nine member body that advises the City Council on economic development activities. The Commission was established to facilitate positive interaction with the business community and to advise the City Council and Economic Development Authority on economic development, redevelopment, and related community development issues. The Commissioners may be residents or non-resident business representatives; however, at least three of the Commissioners must be Arden Hills’ residents.

8.3 GUIDING PLANS AND REDEVELOPMENT

In October 2008, the City accepted the “Guiding Plan for the B2 District.” This Guiding Plan provides a vision for the entire B2 Zoning District, which generally includes those properties along County Road E between Highway 51 and Lexington Avenue, Connelly Avenue, and Pine Tree Drive. In addition to creating a vision, the Guiding Plan includes a number of potential implementation tools to enhance private property as it redevelops and possible upgrades to the public infrastructure. The City seeks to promote high-quality redevelopment in this district as the market allows to enhance its value for the overall community. The vision includes completing the pedestrian system, adding bike lanes, implementing design standards, enhancing the green spaces, and many other ideas.

While the Guiding Plan for the B2 District will be an ongoing project, the City identified additional study areas and redevelopment opportunities in Chapter 6:

- Redevelopment of the former City Hall/Public Works property;
- A Guiding Plan for the Red Fox/Grey Fox/Industrial Area;
- A Guiding Plan for the Commercial area along Lexington Avenue; and,
- The TCAAP redevelopment project.

This list is not intended to be all inclusive and other opportunities may arise over time.

8.4 IMPLEMENTATION STRATEGIES

In order to advance the policies and ideas identified in this chapter, the following implementation strategies could be used:

- Identify the desired long-term mix of businesses.
- Identify and promote the market strengths of Arden Hills.
- Use the small area planning process or a similar planning process to develop more detailed long-term plans for the business areas to better manage redevelopment as it occurs.
- Develop design standards to encourage the construction of high-quality buildings and designs.
- Work to strengthen and encourage communication and collaboration between businesses and institutions, such as Bethel University, Northwestern College, and other significant hiring establishments.
- Promote community education for residents of all ages and utilize the skills of residents where feasible.
- Identify infrastructure deficiencies and work to resolve deficiencies.
- Identify potential partnerships and/or developments that could enhance the City's infrastructure and/or quality of life.
- Identify constraints to development, redevelopment, and retention.
- Encourage the creation of a pedestrian friendly environment--link major roadways, destinations, and businesses to transit, pathways, and neighborhoods.
- Evaluate the land use regulations in the commercial zones to provide flexibility for economic development while requiring high-quality and mixed use buildings and uses with minimal impact on residential areas.
- Develop a database to assist businesses in identifying appropriate and available locations within the City.
- Provide information for businesses and developers on the City web site.

The above strategies should not be considered all-inclusive. New opportunities and strategies should be identified to further advance the City's economic development and redevelopment goal and policies.

9. PARKS AND RECREATION

Goal: Create a comprehensive, maintained, and interconnected system of parks, pathways, and open spaces as well as a balanced program of recreational activities for residents of all ages, incomes, and abilities.

To achieve this *parks and recreation goal*, the following policies are proposed:

- Develop, maintain, and encourage the use of a system of neighborhood parks and pathways that are safe and engaging, which includes:
 - Developing, maintaining, and encouraging the use of north-south and east-west arterial pathways that connect neighborhood paths within the City and to regional paths.
 - Connecting neighborhoods, parks, and other destination points through a City-wide pathway system.
 - Strengthening the park and path system by making improvements as feasible through the annual budgeting and CIP process.
- Provide recreation programs and activities that address the interests of all segments of the community, including children, adolescents, adults, families, and seniors.
- Encourage non-motorized transportation and commuting in and outside of Arden Hills to reduce reliance on motor vehicles and increase physical activity.
- Work to connect the pathway system to transit facilities.
- Protect and maintain access to lakes, marshes, and wooded areas for active and passive recreation.
- Plan for parks, paths, and recreation on the TCAAP property that addresses the interests of Arden Hills' residents.
- Explore financing and funding options to improve and expand the City's parks and recreation system.
- Promote the removal of invasive species throughout the park and recreational system.
- Construct way-finding signage for parks and paths.
- Explore options for collaboration with other governmental, educational, and private entities to provide an array of high-quality recreational programs.
- Work and coordinate with Ramsey County, the Metropolitan Council, the school districts and other applicable organizations to enhance the park, pathway, and recreation system.

9.1 PARKS, TRAILS AND OPEN SPACE PLAN

The City recognizes that demographic, recreation, and environmental trends will impact park, recreation, trail, and open space user needs. To prepare for future needs, the City of Arden Hills completed the Parks, Trails, and Open Space (PTOS) Plan in 2002. The

PTOS Plan analyzed the City's current parks and recreation system facilities and developed a long-term vision for the City's parks and recreation system. In order to realize the City's vision, the PTOS Plan recommended improvements to increase efficiency and achieve the long-term parks and recreation vision and priorities for the City. The vision and goals in the 2002 PTOS Plan were updated by the Parks, Trails, and Recreation Committee and adopted by the City Council in 2006.

Progress has been made on implementing the 2002 PTOS Plan. Since the PTOS Plan was intended to guide programs, improvements, and decision-making through 2020, this chapter largely reflects the content in the PTOS Plan and the 2006 update to the PTOS plan.

As part of the 2002 PTOS planning process, the City identified long-term trends to help determine future park, trail, and recreation needs. Recreation interests and participation are influenced by a number of factors, including, age, access to facilities, income, available leisure time, interest in the environment, new recreation technology, and social trends. In general, people are looking for quality recreation that is close to home, but they are willing to travel to obtain higher quality or more specialized activities or environments.

9.2 REGIONAL PARK AND RECREATION SYSTEM

Although the Arden Hills Comprehensive Plan focuses on local needs, the community recognizes that Arden Hills is connected to and participates in a larger, regional network of parks, pathways, and open spaces. The Metropolitan Council's regional park system includes 49 regional parks and park preserves that cover more than 52,000 acres. The regional system also boasts 28 regional trails that span 170 miles.

Arden Hills is linked to three regional trails and is home to one regional park (Figure 9.1). The Highway 96 Regional Trail crosses the City from east to west adjacent to Highway 96. The trail is primarily on the south side of the highway; however, it remains incomplete between Highway 10 in Arden Hills and old County Road 8 in the City of New Brighton. The proposed reconstruction of Highway 96 in this vicinity includes completing this trail, which would connect Arden Hills to Long Lake Regional Park in New Brighton. Completion of this trail is supported by the City.

The Lexington Parkway Regional Trail spans the entire length of the Shoreview and Arden Hills border on the eastern side of the City. While the trail is complete on the Shoreview side of Lexington Avenue, it is only extends from Tanglewood Ave. to County Road F in Arden Hills. As redevelopment occurs and other opportunities arise, the City does seek to complete the trail to both the north and south on the Arden Hills side of Lexington Avenue.



Existing Regional Park and Path System

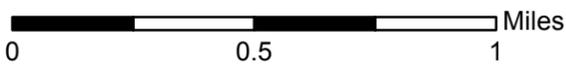
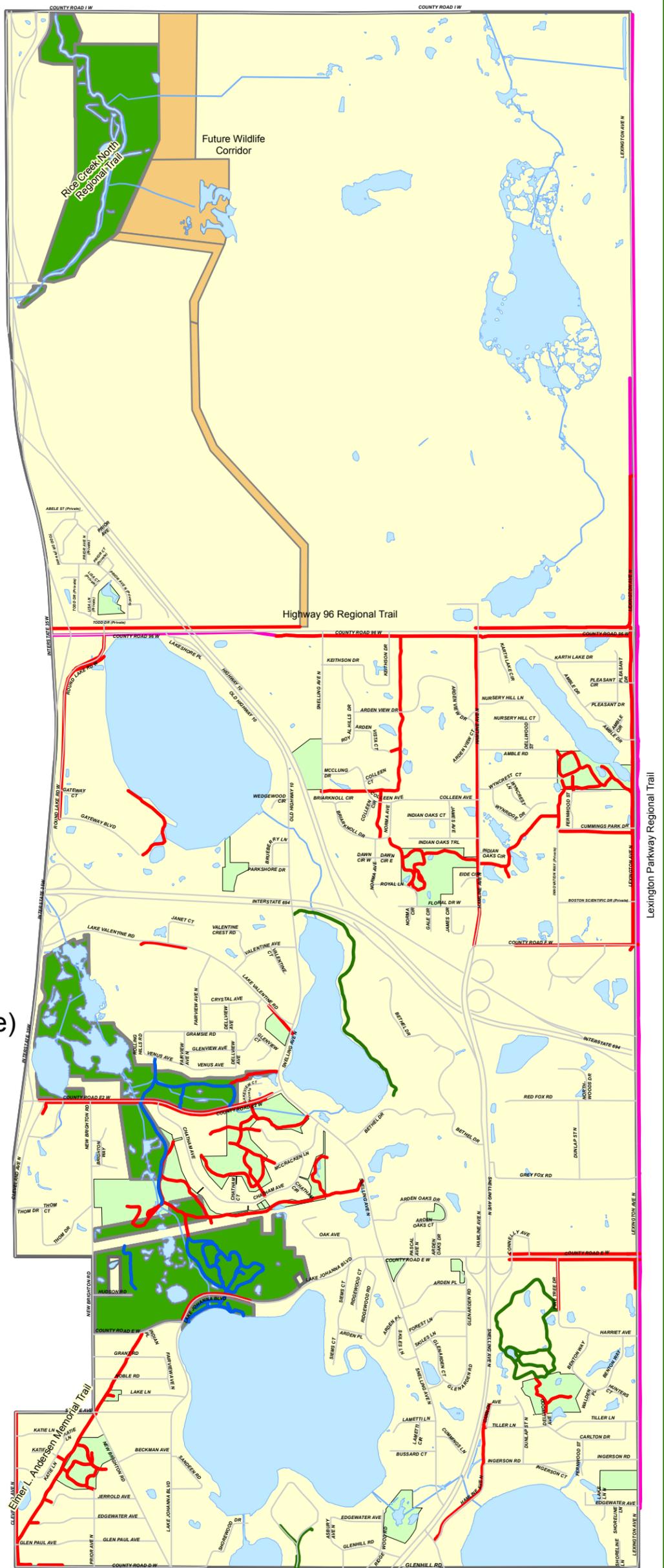
Figure 9.1

Other Pathways and Parks

- City
- County
- Private

Regional Pathways and Parks

- Regional Pathways
- Regional Parks
- Future Wildlife Corridor (Approximate)
- Arden Hills Parks & Open Spaces



2015 Comprehensive Plan Amendment (2030 Comprehensive Plan)

Updated: June 26, 2015
 Approved by the City Council: July 13, 2015
 Printed: November 10, 2015
 Source: City of Arden Hills

DISCLAIMER:

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In 2006, Ramsey County acquired 113 acres of land within the Twin Cities Army Ammunition Plant (TCAAP) property for the Rice Creek North Regional Trail Corridor. The new trail corridor is located in the northwestern corner of the TCAAP site adjacent to Rice Creek and Interstate 35W. This land was transferred to the County by the National Park Service as part of the Federal Lands to Parks Program. An amendment to the Rice Creek North Regional Trail Corridor Master Plan in 2003, identified an additional 49 acres to the east of the existing area to be acquired as a wildlife corridor. Following the County's purchase of 427 acres of the TCAAP site for redevelopment, a subsequent amendment was made to the Master Plan identifying 60 additional acres for the Rice Creek North Regional Trail Corridor. This area generally extends from Highway 96 to County Road I and would facilitate a trailhead entry, additional trails, and a 150 foot wide trail corridor along the eastern side of the TCAAP development.

Designated a regional park in 2006, the 217 acre Tony Schmidt Regional Park extends from the northern shore of Lake Johanna to the west side of Mounds View High School on Lake Valentine Road. Perry Park, a City of Arden Hills park, divides Tony Schmidt Park; however, a railroad underpass completed in 2006 provides a trail connection across Charles Perry Park to the two sections of Tony Schmidt Park. While much of the park is open space, the park offers a variety of amenities and is connected to local paths.

There are a number of regional parks within a short distance of Arden Hills. Long Lake Regional Park is located in New Brighton, and the Snail Lake Regional Park is in Shoreview. The Rice Creek Chain of Lakes Park Preserve is in Shoreview, Circle Pines, and Lino Lakes.

9.3 ARDEN HILLS PARK AND RECREATION SYSTEM

Arden Hills has 15 City parks ranging in size from one acre to 28 acres and other open areas that cover more than 145 acres (Figure 9.2 and Table 9.1). There is also approximately 11 miles of paths, which are primarily located on or adjacent to County roads. The surface of these paths varies between asphalt, concrete, gravel, wood chip mulch, and grass. The parks in Arden Hills provide a variety of amenities ranging from tennis courts and playgrounds to baseball diamonds and picnic shelters (Table 9.1). The City parks are well-distributed throughout Arden Hills south of Highways 96 and 10 and most residents are within one mile of a City park; however, controlled access roads interfere with convenient access to some parks that would otherwise be close by.

South of Highways 96 and 10, there are four lakes entirely within Arden Hills and one lake shared by Arden Hills and Roseville. Lake Johanna and Lake Josephine have public access and beaches, though the public access and beach for Lake Josephine is in Roseville. Lake Valentine is a relatively shallow lake adjacent to Bethel University



Existing & Proposed Park & Pathway System

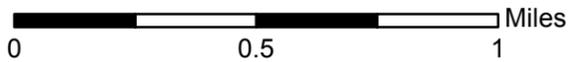
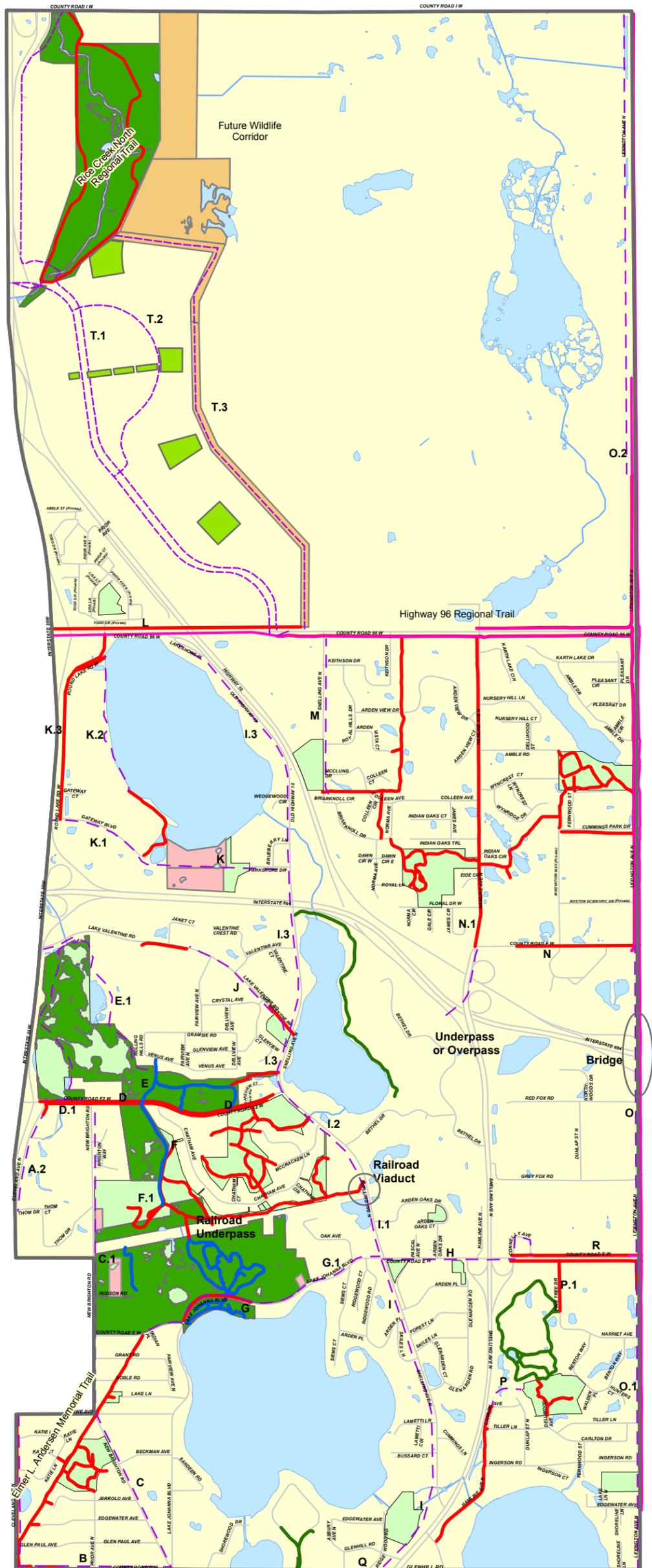
Figure 9.2

Proposed Pathways and Parks

- Proposed Pathways
- Proposed Parks and Public Open Space
- Future Wildlife Corridor (Approximate)
- Potential Additions to Park System

Existing Pathways and Parks

- City Pathway
- County Pathway
- Private Pathway
- Regional Pathway
- Regional Parks
- Arden Hills Parks and Public Open Spaces



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with some limited public use and access. Karth Lake, which is located southwest of the Highway 96 and Lexington Avenue intersection, is adjacent to a public park but is primarily used for non-motorized recreation by the surrounding property owners. Round Lake is unusable for recreation purposes due to contamination from the former Twin Cities Army Ammunition Plant. The entire shoreline of Round Lake is owned by the federal government, and there is no public access.

The City has approved the TCAAP Redevelopment Code (TRC) to guide development on 427 acres purchased by Ramsey County of the former Twin Cities Army Ammunition Plant site. Four City parks are planned to serve the new population on TCAAP and to complement the City's existing park and recreation amenities. Trails will be constructed throughout the development to serve the site and to provide access to adjacent park and open space areas.

Table 9.1 - Current Park Amenities

	Acres	Softball/ Baseball Field	Soccer	Tennis	B'ball Court Area	Play Equip.	Picnic Shelter	Warming House	Permanent Restrooms	Hockey Rink	Skating Rink	Trail(s)	Bocce Golf Course
Arden Manor Park 4601 Prior Avenue	2.5				■	■	■						
Arden Oaks Park 1413 Arden Oaks Drive	1.5				■	■							
Crepeau Nature Preserve* 1224 Harriet Avenue	12.5											■	
Cummings Park 1220 Wyncrest Court	17.5	■	■	■	■	■	■	■	■		■	■	
Floral Park 1423 West Floral Drive	20	■	■	■	■	■	■					■	
Freeway Park 1370 West County Road E	1				■	■		■		■	■		
Hazelnut Park 3301 New Brighton Road	12	■	■	■	■	■	■	■		■	■	■	
Ingerson Park 3255 North Lexington Avenue	5				■	■	■						
Johanna Marsh Park 3168 Ridgewood Road	8.5			■									
Lindey's North Snelling & County Road E	1.5												■
Perry Park 3700 New Brighton Road	20	■	■			■	■	■	■	■		■	
Royal Hills Park Snelling Avenue/McClung Drive	4.5	■		■	■	■	■						
Sampson Park 1900 Lake Lane	1				■	■						■	
Valentine Park 1650 West County Road F	3	■	■		■	■						■	

9.4 PARKS AND RECREATION MAINTENANCE, UPGRADES, AND EXPANSIONS

The proposed park and pathway upgrades are based on the recommendations in the 2002 PTOS Plan, which is supplanted by this Comprehensive Plan (Figure 9.2).

9.4.1 Park Renovation and Upgrades

In an effort to meet changing demographics, public safety, and the desires of the community, the City of Arden Hills will continue to use a multi-year capital improvement plan (CIP) to plan for park upgrades and renovations. The improvement recommendations are intended to improve public safety, aesthetics, function, and efficiency of individual parks as well as to promote overall public health and activity. The City also seeks to meet American with Disabilities Act (ADA) requirements.

In order to minimize park disruption, reduce costs through efficiency of construction, and improve park function, park renovation is recommended to be done all at once in each park, whenever possible. Individual park renovation recommendations are summarized below by park:

- **Arden Manor Park** – Provide connections within the park and from the park to the potential future paths along Highway 96 when reconstruction of this highway occurs. Add new shaded benches near park features. Add a park sign at the park entrance.
- **Arden Oaks Park** – Add benches and trash containers near the park features. Add trees and landscaping to provide shade, spatial definition, and to improve aesthetics.
- **Charles Perry Park** – Consider moving the entrance drive to line up with Thom Drive. This will eliminate the conflict that exists with the ice rink where skaters have to cross the entrance drive, and will create space for a pleasure rink. Explore the possibility of paving the existing skating rink for inline skating and half-court basketball. Complete the path from the picnic pavilion to the Elmer L. Andersen Memorial Trail in Tony Schmidt Regional Park. Look into the future acquisition of the single family home nearest the park to accommodate future uses (Figure 9.2).
- **Crepeau Nature Preserve** – Add additional unpaved paths within the park.

- **Cummings Park** – Explore the possibility of adding irrigation to the soccer fields. This will enhance the quality of the fields and allow for additional usage. Add benches along the paths and park amenities.
- **Floral Park** – Additional unpaved looped paths could be constructed in the park to provide more walking and nature watching opportunities. Add benches along the paths and park amenities.
- **Freeway Park** - Consider paving the hockey rink for year-round use. Upgrade existing half basketball court.
- **Hazelnut Park** – Replace the warming house with a new structure and provide a safer access to the rink. Install shaded benches near recreational features. Add lights from parking lot to skating rink. Add a picnic shelter or pavilion to meet the usage demands of the park.
- **Ingerson Park** – Add a connecting path to Lexington Avenue, Fernwood Court, and Lake Lane, utilizing a sewer easement to Fernwood as a path corridor and Lake Lane as a path access point.
- **Johanna Marsh** – Resurface tennis courts, add a park sign, and add benches.
- **Lindey's Park** – Provide benches. Utilize the Bocce Golf Course for recreation programming.
- **Round Lake Open Space** – Explore the possibility of adding a path connecting Old Highway 10 to the path west of Round Lake by easement or land acquisition. Add a parking lot at Parkshore Drive. Determine what type of amenities/fields meet the needs of the community and develop the park.
- **Royal Hills** – Add a fence along the outfield and sideline of the ball field to minimize balls going into the woods.
- **Sampson Park** – Add landscaping within the park to provide interest and improve aesthetics. Replace the parking lot surface of the basketball court with a colored, bituminous surface.
- **Valentine Park** – Complete drainage study and drainage improvements for the future of the park. Future Improvements are contingent upon the results of the study: Consider reconfiguring parking lot to detach park

features from the parking lot pavement. Replace the play structure. Add a new warming house/picnic shelter. Move or improve the surface of the half basketball court.

9.4.2 Recreation

The City currently has an extensive youth recreation program. While the programs have been primarily focused on youth and adolescent activities, an increased need for teen, adult, and senior activities was identified in the 2002 PTOS Plan as well as the community meetings held for the 2030 Comprehensive Plan update. To help inform the recreation program development process, the City may consider creating advisory groups for seniors, teens, children, and other interested groups.

9.4.3 Pathway Expansion and Upgrades

A number of neighborhoods in Arden Hills have pathways; however, in order to provide a connected and complete pathway system in Arden Hills, additional arterial and neighborhood paths are needed (Figure 9.2). While paths are popular for recreational purposes, there is also a growing demand for utilitarian pathways that connect residential areas to destinations such as commercial areas, offices, parks, and other popular places. Providing multiple destinations on a pathway system can increase use, promote physical activity, and reduce motorized travel.

This Plan includes the following recommendations for pathway expansions and upgrades:

Table 9.2 - Trail Improvement List

Segment	Proposed Trail Location	Length	
		Feet	Miles
A	Cleveland Ave. (County Road "D" to Stowe Ave.)	2,623	0.50
A.2	Cleveland Ave. (Thom Ct. to existing path off Cty E2)	1,672	0.32
B	County Road D (Cleveland to New Brighton Road)	2,644	0.50
C	New Brighton Road (County Rd. D to Stowe Ave.)	2,957	0.56
C.1	New Brighton Road (Stowe Ave. to County Road E2)	5,333	1.01
D.1	County Road E2 (Cleveland Ave. to New Brighton Rd.)	671	0.13
E.1	R.C. Open Space (from segment E path to MVHS)	2,974	0.56
F	Tony Schmidt Underpass trail North to County Road E2 (lift station rd.)	1,560	0.30
G	County Road E (Indian Pl. to Lk. Joh. Blvd. to Tony Schmidt U. Trail to end of park - north side)	2,787	0.53
G.1	Lake Johanna Blvd. (From Segment G to Old 10 - Snelling)	1,742	0.33
H	County Road E (Old 10-Snelling to Connelly Ave.)	2,185	0.41
I	Snelling Ave. (Highway 51 to County Road E)	4,382	0.83
I.1	Old Highway 10-Snelling (Cty Road E2 through CP Rail)	1,056	0.20
I.2	Old Highway 10-Snelling (from CP Rail to County Rd. E2)	2,270	0.43
I.3	Old Highway 10-Snelling (from Cty. Road E2 to Hwy. 96)	8,870	1.68
J	Lake Valentine Road (Mounds View H.S. to Old 10-Snelling)	1,600	0.30
K	Parkshore Dr. (from Old Hwy 10-Snelling to beginning of Rd. Lake Trail)	2,395	0.45
K.1	Gateway Blvd. (from proposed segment K to Round Lk. Road)	2,165	0.41
K.2	Round Lake Trail (Complete the loop that has a gap behind Nott Co.)	2,421	0.46
L	County Road 96 (Complete trail west from existing path to 35W)	3,100	0.59
M	North Snelling Ave. (From County Road 96 to Briarknoll)	2,827	0.54
N	County Road F (From Existing Sidewalk from Lexington to Hamline)	400	0.08
O	Lexington Ave. (From County Road F to County Road E)	1,500	0.28
O.1	Lexington Ave. (From County Road E to Shoreline Lane)	5,212	0.99
O.2	Lexington Ave. (From Tanglewood to County Road I - West Side)	7,890	1.50
P	Crepeau Preserve (From Cannon to Crepeau Nature Preserve)	838	0.16
Q	Highway 51 (From Old Hwy. 10/Snelling to just past Glenhill Rd)	1,373	0.26
T.1	Spine Road Trail (From HWY 96 to County Road H)	7,689	1.40
T.2	Town Center Trail (Along Water Infrastructure)	4,267	0.80
T.3	Rice Creek North Trail Corridor Addition (From HWY 96 to Rice Creek North Regional Trail)	8,977	1.70
Total Proposed Future Trails		96,380	18.21

The above list is not a ranked priority list of proposed path expansions and upgrades. The City has identified certain trail segments that are crucial for developing needed north-south and east-west path connections that are divided by major highways: G, G1, H, I, I1, I2, and I3. In coordination with the capital improvements plan (CIP), the City may benefit from setting specific trail priorities to take advantage of grants, road reconstruction projects, and other opportunities as they arise.

Segment D and E are planned pathways along County Road E2 and a connection through Ramsey County open space from the nearby neighborhood

(Venus Ave.) The City was successful in obtaining a grant for \$175,000 for these two segments from the Federal Safe Routes to School Funding Program. The goal of the pathways is to provide a safe route to Valentine Hills Elementary, the Ramsey County Library, and Tony Schmidt Regional Park. County Road E2 is a busy roadway that continues to increase in traffic and is a dangerous route for pedestrians. This project is scheduled to occur in the federal fiscal year 2009. This project is a cooperative effort between the City, Ramsey County Parks and Recreation, School District 621, and Ramsey County Public Works.

In conjunction with Ramsey County and MnDOT, grade separated crossings of major roads and railroads is one of the more important actions the City can take to improve the path network, increase safety, enhance access to parks, encourage increased physical activity, and help tie the community together (Figure 9.2). The following connections and improvements for pedestrian and bicyclists (non-motorized users), some of which are noted in the above list, are recommended from the 2002 PTOS Plan and the community meetings:

- **County Road E over Highway 51** – The existing bridge is very narrow and unsafe for pedestrians or bicyclists. This location is a key connection between the east and west portions of the City. The City will also need to work with Ramsey County and MnDOT to consider options for expanding or reconstructing the bridge to create adequate pedestrian and bike crossings or build a freestanding bike and pedestrian bridge near the vehicle bridge.
- **Highway 96** – A grade separated trail connection may be needed at a location between Highway 10 and Lexington Avenue. The grade-separated connection would provide access to City Hall, the TCAAP area, and the developed portion of the City south of Highway 96. A trail crossing of Highway 10 could possibly be incorporated into the Highway 96 and 10 intersection when it is rebuilt.
- **Highway 10** – Between Interstate 694 and the City border along Highway 10, a pathway crossing is needed. Two potential options for a grade separated crossings: An area just south of Royal Hills Park and/or along Highway 10 north of Highway 96. A minimum of one grade separated crossing is desired.
- **Interstate 35W** – The City desires a pedestrian and bike bridge over Interstate 35W. A specific location for this crossing needs to be identified. This would be a crucial pathway crossing to connect the TCAAP area with Long Lake Regional Park.

- **Interstate 694** – A pathway crossing in Arden Hills is needed at Interstate 694. A final location(s) will be selected when Interstate 694 is reconstructed; however, two potential locations include:
 - Hamline Avenue/Highway 51 – A pathway across Interstate 694 near Hamline Avenue/Highway 51 must be constructed when Interstate 694 is reconstructed.
 - Lexington Avenue – While there is a pathway on the Shoreview side of the Lexington Avenue bridge, there is not a path on the Arden Hills side of the bridge. When the Interstate 694 reconstruction occurs, a pathway should be provided at this location.
- **Trail Signage** – add small trail identification maps that include distance, name, and standard city identification where needed.

Implementing the pathway expansion and improvement plan will require cooperation with Ramsey County, MnDOT, the school districts, and other private and public entities. The City recognizes that the entire network cannot be completed at once; however, the above list represents the long-term goal of a comprehensive pathway network to facilitate recreational and utilitarian uses.

9.4.4 Park and Open Space Acquisitions

While there is very little vacant land available in the City outside of the TCAAP property, four locations were identified for potential incorporation into the City's park and recreational system (Figure 9.2). Two land parcels remain to be acquired within the boundary of Tony Schmidt Regional Park. Additional public lands adjacent to the park are proposed to be used for trails and trail connections under cooperative agreements.

- **Charles Perry Park** – The City should consider acquiring the residential property adjacent to Charles Perry in order to minimize the potential conflict caused by reflected light, noise and trespassing while providing an opportunity to expand the recreational offerings in the park and to provide better park access.
- **Round Lake Park** - The open land west of Round Lake Park should be considered for acquisition. This land could provide adequate space for soccer fields, community gardens, ball fields, or other recreational uses. The amount of property to acquire would be determined by what

programming needs exist at that time. This seeks to obtain the necessary area by park dedication and acquisition as possible.

- **Round Lake Trail Easements** - The remaining easements are needed to complete the trail around the west and south sides of Round Lake.
- **Tony Schmidt Regional Park** – While Tony Schmidt Regional Park is a Ramsey County park, the City encourages the County to expand its facility in accordance with their facility and land needs. The Tony Schmidt Regional Park Master Plan lists potential land acquisitions, which are shown on Figure 9.2

9.4.5 TCAAP Redevelopment Area

Ramsey County purchased 427 acres of the TCAAP property in April 2013. The City has approved the TCAAP Redevelopment Code to regulate zoning and land uses. Approximately 24 acres are planned to be used for City parks and public open space.. Ramsey County is acquiring an additional 30 acres from the federal government for a north-south trail and 78 acres for a future wildlife corridor and trailhead.

Four City parks will be located within or adjacent to residential neighborhoods. Amenities will be planned for each park based on the population served and to complement existing amenities in the developed portion of the City. The timing of park development will be aligned to the development of adjacent neighborhoods. In order to provide flexibility the exact boundary and location of each park include on the TCAAP property may move within its given district. However, each park will be required to include the identified amenities within the City's TCAAP Master Parks and Open Space Plan.

Green space will be provided along a pedestrian corridor linking the primary retail area west of the Spine Road to a City park on the eastern edge of the site. Trails will be provided along the Spine Road and along a collector road adjacent to the natural resources corridor. In cases where private development is immediately adjacent to park and open space areas, the TCAAP Redevelopment Code requires frequent pedestrian connections to open space. Connections to the north-south trail corridor and trails in the wildlife corridor will be provided from adjacent neighborhoods.

Ramsey County has prepared and the City has approved the Rice Creek North Regional Trail Wildlife Corridor Habitat Restoration plan. Improvements, remediation, restoration and other development of the wildlife corridor property,

prior to and following transfer to Ramsey County, will be guided by this plan. Trail connections for public use may be incorporated into the wildlife corridor. However, they must be designed and aligned so as not to impede the movement of wildlife.

9.5 IMPLEMENTATION STRATEGIES

9.5.1 Priority Setting

One tool to advance this chapter is to create a flexible priority list for improvements and expansions. With the priorities laid out, the City would be able better able to assess fund balances and make informed spending decisions and coordinate improvements with other projects such as road improvements. The priority list will need to be regularly evaluated to measure progress and to adjust the list to accommodate funding availability, changing circumstances, and changing priorities. A fully functioning and complete park and pathway system adds to the attractiveness of the City and to the values of property owners.

While a long-term priority list will help the City in the decision making process and help plan for future expenses, the list must be flexible. As new local and regional projects, needs, and opportunities arise, it may be necessary to adjust the list to take advantage of opportunities that may not yet be known.

9.5.2 Partnerships

Developing partnerships with other public and private organizations is an important tool for implementing this and other chapters of the Comprehensive Plan. With scarce resources and increasing demands, searching for partnerships to reduce costs, increase efficiency, and expand services is necessary. Working with adjacent cities, the Metropolitan Council, Ramsey County, businesses, school districts, higher education institutions, and other stakeholders may lead to better and more efficient implementation of this Chapter.

MNDOT & Ramsey County Transportation – Coordinating with MnDOT and Ramsey County Public Works will help ensure that pathway additions and crossings are in their transportation master plans, included in reconstruction projects, and are a priority for funding and implementation in their capital improvement plans (CIP).

Ramsey County Parks and Recreation – With regional facilities in Arden Hills and connecting to City pathways, it is important to coordinate with the County. The

County is working to implement the Tony Schmidt Master Plan, the Rice Creek trail system, and other regional park and trail projects that connect to or impact Arden Hills.

Mounds View and Roseville School Districts – The City has an opportunity to work with the school districts and the two facilities in Arden Hills to increase pedestrian and bike access to the schools, promote safe routes to school, and increase physical activity.

Bethel University and Northwestern College – Both of these campuses have trails that can be accessed by the public. The City should consider working with these institutions to ensure continued access to these trails and to make connections with City trails.

Twin Cities Army Ammunition Plant (TCAAP) Redevelopment Partner and the Arden Hills Army Training Site (AHATS) – The proposed redevelopment on the TCAAP property offers an opportunity to greatly expand the City's park and pathway network. The City seeks to continue working with the developers, AHATS, and private entities to ensure a park and pathway system is constructed that meets the needs of current and future residents. Although the AHATS property is not freely open to the public, it could play a role in future park and recreation opportunities.

9.5.3 Financing

While the City supports the park and recreation system, it is recognized that other needs in the City compete for funds and funding will continue to be a challenge. In order to implement the parks and recreation plan, yearly priorities could be identified in the City's capital improvement plan (CIP), which can be adjusted annually as funding, opportunities, and needs change. Flexibility in implementation will be necessary.

Since much of the City is developed, park and recreation expansion improvements cannot rely on park dedication fees alone. Therefore, the City may need to explore other financing options. Pursuing funding opportunities may help advance implementation of this plan at a faster rate than would otherwise be able to occur.

9.5.4 Additional Strategies

The strategies in the previous sections should not be considered all-inclusive. New opportunities and strategies should be identified to further advance the City's parks and recreation goal and policies.

10. PROTECTED RESOURCES

Goal: Preserve, protect, and restore the community’s natural resources, including open spaces, lakes, wetlands, other significant natural features, and historic resources.

To achieve this *protected resources goal*, the following policies are proposed:

- Identify and work to protect the sensitive natural resources within the City.
- Develop or enhance regulations to protect the City’s natural resources, including trees, lakes, wetlands, and other unique or significant natural resources.
- Work with the appropriate agencies to assure that surface and ground water quality is protected.
- Support public educational opportunities to foster a better understanding of the natural environment as well as ways to restore and protect the natural environment.
- Work with the Arden Hills Army Training Site (AHATS) to protect the unique natural resources and open spaces as park and/or open space.
- Encourage the identification and protection of historically significant sites and structures.

10.1 INTRODUCTION

The beautiful lakes, diverse topography, and wooded character of Arden Hills provide exceptional residential, recreational, and business environments. The community has carefully guarded these resources in the past; however, they are constantly threatened by human activities. Protecting these areas requires diligence, including adherence to strong protection policies and requirements, studying the most up-to-date preservation methods, and educating the public on environmentally sound development and maintenance practices.

Lakes are a significant resource in the City and will continue to be if water quality can be enhanced and maintained. Lakes and their surrounding watersheds need to be managed as sensitive and limited resources, requiring purposeful planning and action. The lack of management of these limited resources can lead to diminished water quality and can negatively affect public health, recreational activities, wildlife, and fishing, community quality of life, and ultimately tax revenues through diminished property values.

Arden Hills is located entirely within the Rice Creek Watershed District (RCWD). The RCWD addresses water issues, administers regulatory programs, and undertakes projects to improve water quality. The City has a number of protective ordinances and policies in place that enhance RCWD activities; however, those policies require

monitoring to ensure that they are meeting community needs and effectively protecting the City's natural resources.

In addition to lake protection, several high-priority natural areas, endangered and protected species, and historic sites have been identified as significant in the City. These significant resources are highly valuable and have features that may require special levels of protection. Preserving the City's natural setting is of the utmost importance to residents of Arden Hills.

10.2 WATER RESOURCES

Covering nearly 550 acres in Arden Hills, the seven lakes and many wetlands have always been a focal point in the community (Figure 10.1). Early settlers and development took advantage of the recreational and scenic qualities of the lakes, and they continue to be an attractive characteristic for residents and visitors. Most of the shoreland development took place prior to the adoption of modern development regulations; and the City is experiencing redevelopment pressure along the City's shorelines.

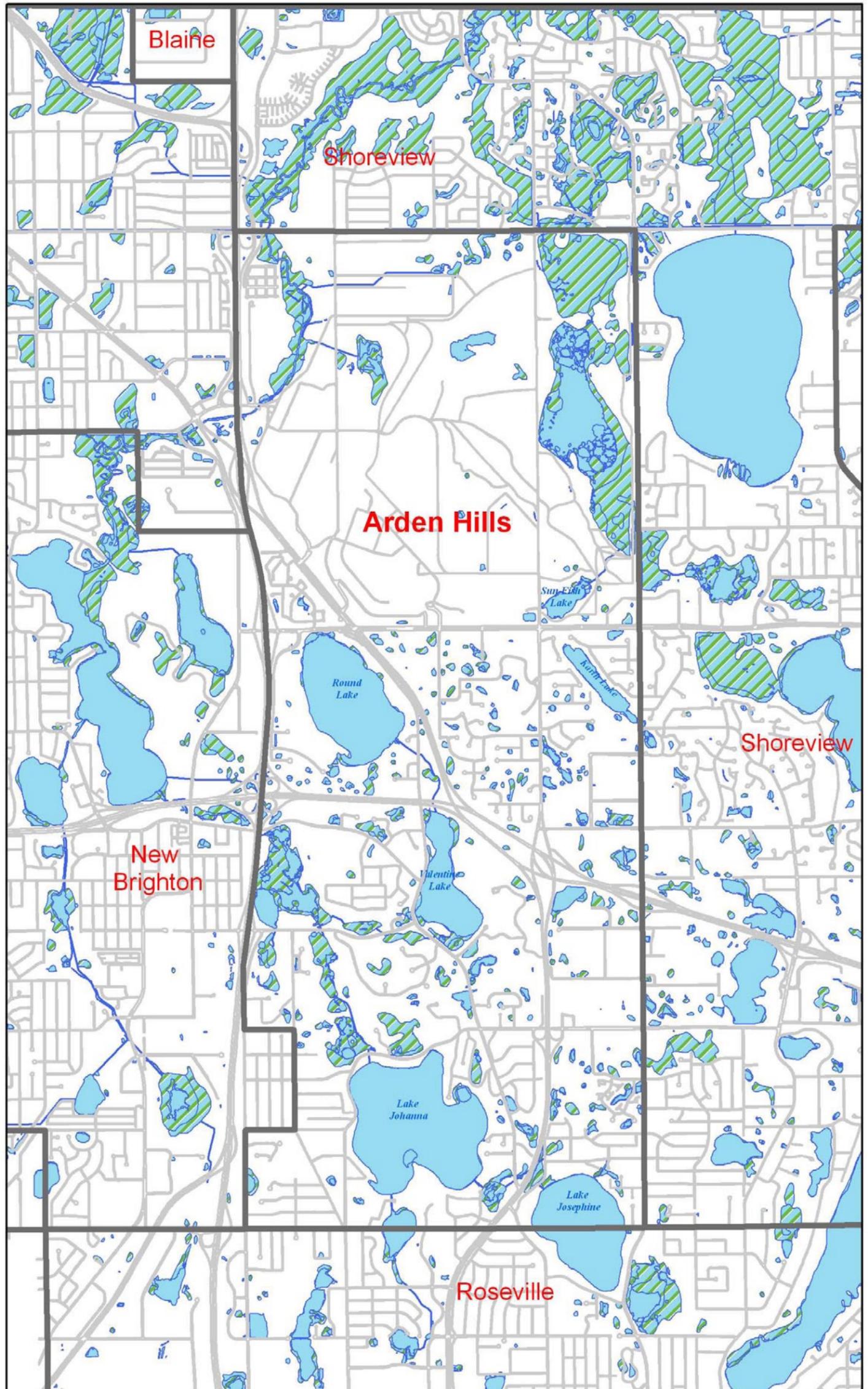
The Minnesota Department of Natural Resources (DNR) requires communities to adopt shoreland ordinances, which typically regulate lot size, minimum shoreline width, lot coverage, and structure setbacks for development along water bodies. Development regulations vary depending on the lake classification set by the DNR:

- Natural Environment Lakes and Streams (NE) – usually have less than 150 total acres, less than 60 acres per mile of shoreline, and less than three dwellings per mile of shoreline. They may have some winter kill of fish; may have shallow, swampy shoreline; and are less than 15 feet deep.
- Recreational Development Lakes (RD) – usually have between 60 and 225 acres of water per mile of shoreline, between three and 25 dwellings per mile of shoreline, and are more than 15 feet deep.
- General Development Lakes (GD) – usually have more than 225 acres of water per mile of shoreline and 25 dwellings per mile of shoreline, and are more than 15 feet deep.

The DNR is currently in the process of reviewing the statewide shoreland regulations. Upon completion of that regulatory review, the City should evaluate the shoreland regulations to determine if updates are needed.

Lakes and Wetlands

Figure 10.1



2030 Comprehensive Plan Update
Map Approved:
September 28, 2009

Source: City of Arden Hills,
Metropolitan Council



10.2.1 Lakes and Water Bodies

As noted above, the City has seven lakes in or partially in Arden Hills. All water bodies in the City are highly valued and warrant continued protection.

Lake Johanna

Lake Johanna is the biggest lake in Arden Hills at 230 acres with a 4.25 square mile watershed. It is up to 41 feet deep and has an average depth of 17 feet. The lake is classified as a GD lake.

The land on the north, west, and east sides of Lake Johanna is largely developed with single family homes. Tony Schmidt Regional Park, located on the northwest side of the lake, includes a swimming beach and boat ramp. Presbyterian Homes, a senior housing facility, is located on the southwest corner. Northwestern College occupies the peninsula on the southern side of the lake.

A wide variety of recreational opportunities exist on Lake Johanna, including swimming, skiing, and fishing. Boats are restricted to five miles per hour within 250 feet of the shoreline, and there are restricted hours for speeds in the rest of the lake. A wide variety of fish exist in the lake, including Bass, Bluegills, Bullheads, Carp, Crappies, Muskies, Northern Pike, Perch, Sunfish, and Walleye.

Storm water flows into Lake Johanna from Little Lake Johanna via Ramsey County Ditch 4, which originates north of County Road C in Roseville. City storm water is also routed into Lake Johanna on its west and east sides. As part of the City's pavement management program, the City is working to provide stormwater treatment systems to improve the water quality of the stormwater that reaches Lake Johanna.

The Lake Johanna Improvement Society is an organization made up of lake area property owners. The group coordinates lake issues with the City, including the boat speed limits.

The Rice Creek Watershed District has noted that Lake Johanna has the potential to become impaired without additional protection and attention to water quality. The lake is listed on the impaired list for mercury contamination. Although the source and long-term impacts are unknown, fish in Lake Johanna were found to have elevated levels of the chemical perfluorooctane sulfonate (PFOS) in 2007. No additional fish consumption or swimming warnings have been issued.

Lake Josephine

Lake Josephine is approximately 114 acres in size with a subwatershed of 1.31 square miles. The northern 60 acres are located in Arden Hills while the southern 54 acres are located in the City of Roseville. The lake has a maximum depth of 44 feet and an average depth of 20 feet. Lake Josephine is classified as a GD lake.

The land around the lake is fully developed with single family homes. There is a concrete boat access and public beach immediately south of the municipal border in the City of Roseville on the east side of the lake. The lake is used for boating swimming, and fishing. Bullheads, Crappies, Bluegills, Carp, Sunfish, Bass, Northern Pike, and Walleye can be found in the lake.

The outlet of Lake Josephine is located at the northwestern part of the lake and flow to Lake Johanna through a storm sewer and ditch system.

The Lake Josephine Improvement Association consists of lake area property owners. The City of Roseville and the City of Arden Hills have adopted joint regulations for Lake Josephine, which includes a maximum speed limit and a no wake zone of 150 feet from the shoreline.

The Rice Creek Watershed District has noted that Lake Josephine has the potential to become impaired without additional protection and attention to water quality. The lake is listed on the impaired list for mercury contamination.

The fish in Lake Josephine were tested for perfluorooctane sulfonate (PFOS) in 2007; however, the results of those tests were not available in time for the release of this Plan.

Little Johanna Lake

Little Johanna Lake is approximately 18 acres in size and has a maximum depth of 22 feet. The lake is classified as an NE and RD lake by the DNR and Ramsey County, but as a GD lake by the City. It is a non-swimming lake, there are no formal public access points, and recreational uses are limited.

The northern eight acres are within the City of Arden Hills, and the southern ten acres are within the City of Roseville. Northwestern College occupies much of the lake's eastern, northern, and southern shoreline and single family homes are on the west side of the lake.

Drainage into Little Johanna Lake comes from Ramsey County Ditch 4, which originates north of County Road C in the City of Roseville and flows out to Lake Johanna. Little Johanna Lake and the ditch function as a settling area for stormwater prior to flowing into Lake Johanna. During larger storm events, however, water flows through the water bodies rapidly, which allows little time for unwanted nutrients to settle out of the water. As a result, the quality of Little Johanna Lake and Lake Johanna are compromised.

Valentine Lake

Covering approximately 74 acres with a 2.4 square mile watershed, Valentine Lake is an NE lake located just south of Interstate 694. Bethel University owns almost all of the lakeshore; however, the lake can be viewed from Old Highway 10 along the western shoreline. While there is not any formal boat or public access points, the lake is used for fishing by the public. In the future, it may be necessary to develop a formal agreement with Bethel University for public use and a parking lot for users.

The lake has a dominance of blue-green algae and has heavy algal blooms throughout the summer. Water flows southwest out of Lake Valentine into the County Ditch 12 and eventually into Long Lake in the City of New Brighton.

Round Lake

Round Lake is approximately 125 acres in size and has a subwatershed of 0.83 square miles. The United States Fish and Wildlife Service owns all of the land around the lake. Public use of the lake is prohibited and there are not any public access points due to contamination in the lake bed from operations on the former Twin Cities Army Ammunition Plant (TCAAP) property. There are single family homes on the east side of the lake, apartments and townhomes on the southeast side, and industrial development on the south and west sides. The north side of the lake is bordered by Highway 96. None of the adjacent property owners have access to the lake.

Karth Lake

Karth Lake is approximately 15 acres in size and is surrounded by single family homes. There is a City park on the south side of the lake; however, there are not any public boat launches to the lake.

Rice Creek Watershed District is conducting water quality monitoring for the lake. The immediate area drains into the lake, and there are also five (5) stormwater

inlets draining approximately 170 acres to the lake. Prior to 2004, there was not an outlet for Karth Lake, and the water level steadily increased. The Karth Lake Improvement District was created in 2003 to manage the water level, and a pump was constructed in 2004 to control the lake level. Water that is pumped out of the lake flows through storm sewer and ditch systems to Valentine Lake.

Sunfish Lake

Located on the AHATS property, Sunfish Lake is approximately 11 acres in size. No water quality monitoring has been conducted for the lake. City Hall is southeast of the lake, and the joint Ramsey County/Arden Hills Public Works facility is west of the lake. There is not any residential development around the lake. The lake is not accessible to the public, and public access is not anticipated because the land is owned by the federal government and used for Minnesota National Guard training.

Marsden Lake

Covering more than 275 acres, Marsden Lake is a large wetland complex (wet meadow) that has been identified by the Minnesota DNR as an important natural community. The entire lake is within the federally owned property that is leased by the Minnesota National Guard. There are not any public access points to the lake. The lake is part of the critical habitat for the Blanding's Turtle, which is classified as "threatened" by the State of Minnesota.

Rice Creek

Rice Creek flows through the far northwest corner of the City and is the only natural watercourse in the City. There are a number of County drainage ditches connecting the major lakes and providing connections to Rice Creek.

Approximately 112 acres of land was transferred to Ramsey County along the creek, and the Rice Creek North Regional Trail is currently being constructed along both sides of the creek. The trail will ultimately connect to adjacent cities, the regional park system, and likely to the TCAAP redevelopment property.

Wetlands

Arden Hills has many wetlands of various sizes and types spread throughout the City. The wetlands are an integral part of the natural environment and are important component of healthy lakes, streams, and animal habitat. Development impacts to wetlands are regulated by Federal and State laws. The

U.S. Army Corps of Engineers – Saint Paul Office implements the federal wetland laws, and the Minnesota DNR and the Rice Creek Watershed District implement State wetland laws. Alterations to wetlands almost always require a permit, and the City seeks to protect wetlands wherever possible.

10.2.2 Rice Creek Watershed District & Water Quality Management

Arden Hills is located entirely within the Rice Creek Watershed District (RCWD). The RCWD requires permits for land development, site grading, wetland and shoreland alterations, and drainage plans and systems.

Water quality for Lake Josephine, Lake Johanna, Round Lake, and Valentine Lake is monitored by Ramsey County. The RCWD utilizes this data.

The City's Floodplain and Shoreland Ordinances govern development activities in areas that contribute storm water runoff to the City's lakes. In addition, the lake use ordinances on Lake Johanna and Lake Josephine help to control erosion and water quality. Unfortunately, water quality has decreased in recent years and additional efforts are needed to maintain and improve water quality.

10.3 PROTECTED SPECIES/HABITAT

The City is home to at least two species that have a legally protected status, and two habitats that have been identified by the DNR as in need of being protected (Figure 10.2). Blanding's Turtles have "threatened" species status in Minnesota, which means that the State has determined that the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range within Minnesota. While it is outside of the City's regulatory authority, Illinois Tick Trefoil is a rare plant that was identified in the AHATS area.

Both high value habitats are located on the AHATS property outside of the City's regulatory authority. Marsden Lake is a large wetlands complex (wet meadow) and has been identified by the Minnesota DNR as an important natural community. The kame, also located on the AHATS property, is a relict of the glacial landscape and has also been identified by the DNR as an important natural community. The kame is the highest geographical point in Ramsey County.

10.4 CULTURAL RESOURCES

Although little information has been compiled regarding historic sites or buildings in Arden Hills the Minnesota Historical Society and Ramsey County Historical Society identified one structure that may be worthy of being placed on the National Register of Historic Places (Figure 10.2). The 1998 Comprehensive Plan identified two additional buildings and one site as historic and/or architecturally significant to the community.

Charles Perry House

The Charles Perry House, located at 3491 Lake Johanna Boulevard, has been identified by the Minnesota Historical Society and Ramsey County Historical Society as historically important. While there has been consideration of placing this house on the National Register of Historic Places, additional research and community interest is needed.

Farrell Homestead

The Farrell Homestead at 1963 County Road E2 is a large, Victorian farm home just north of the intersection of County Road E2 and New Brighton Road. The Homestead was constructed in 1874. John Farrell, of Irish descent, settled and farmed more than 500 acres. A friend once asked him why he brought such a hilly farm, to which John replied, “Because it reminds me of Ireland.”

An interesting side note is from Mary (May) Marston, granddaughter of John Farrell, who grew up on the farm in the 1890s. Ms. Marston stated that, “Across from the farm was a hill with Indian grave platforms and artifacts.”

Nazareth Hall on the Northwestern College Campus

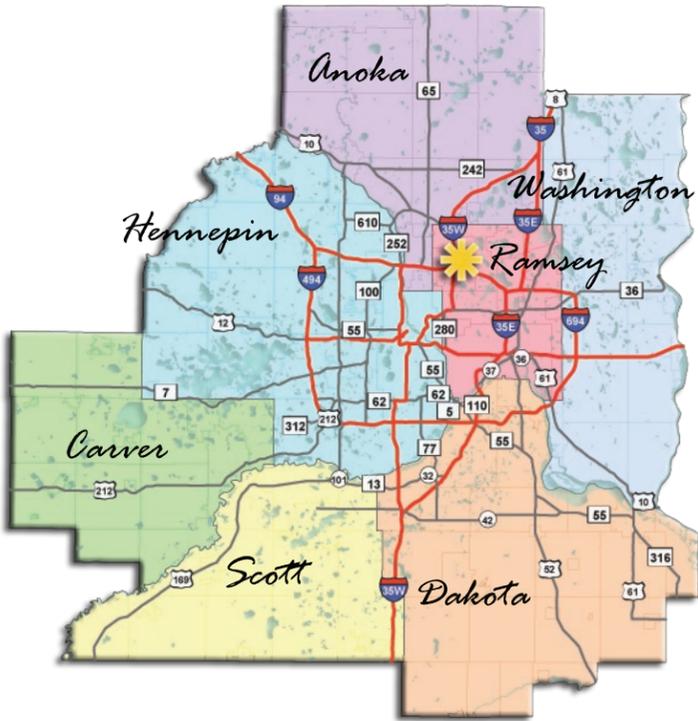
Nazareth Hall was constructed in 1921-22 on the Northwestern College campus. It was constructed in the “Lombardic Romanesque” style from northern Italy. It faces east to overlook Lake Johanna. It includes six buildings constructed as one, with several courtyards styled after the Vatican. The building covers approximately 37,400 square feet of ground and was designed to fit into its natural lakeshore setting.

Round Lake Prehistoric Site

The Round Lake prehistoric site is located on a small knoll on a peninsula on the southwestern shore of Round Lake. Archaeological exploration has determined that the knoll on the peninsula is most likely of natural origin. Artifacts relating to the manufacture or maintenance of stone tools were observed on the site, and it appears

Biological and Cultural Resources

Figure 10.2



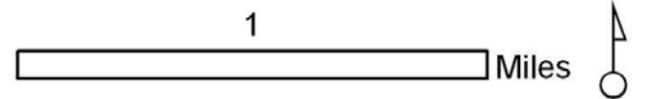
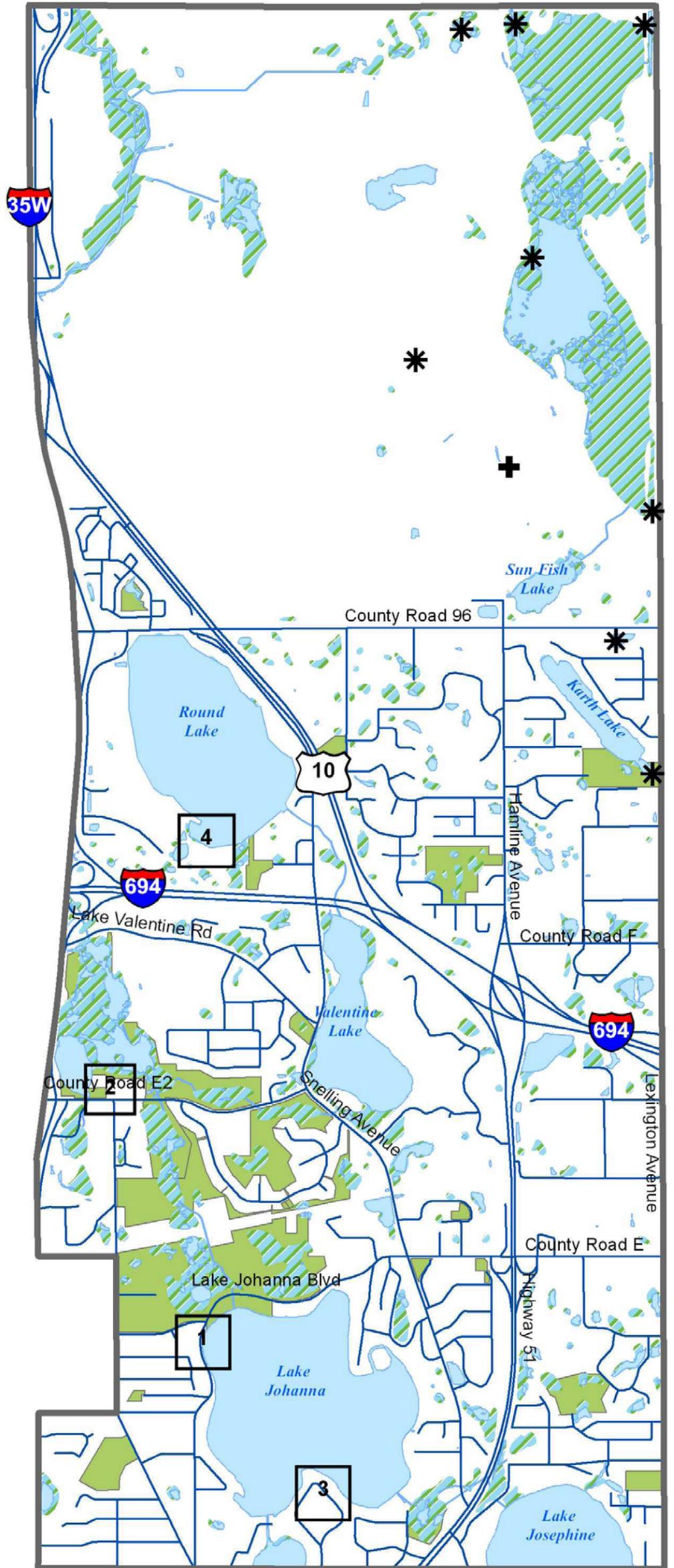
- 1 - Charles Perry House
- 2 - Farrell Homestead
- 3 - Nazareth Hall
- 4 - Prehistoric Site

* Blandings Turtle

+ Illinois Tick Trefoil

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Map Approved: September 28, 2009

Source: City of Arden Hills/MN DNR
The endangered or threatened species do not represent exact locations



that it may be eligible for the National Register of Historic Places. This site was threatened by development in 1997; however, the City was able to obtain a conservation easement over the peninsula to preserve it in its current condition. Further research, as well as community interest, is required before actual placement on the National Register of Historic Places.

10.5 NATURAL RESOURCE INVENTORY MAP

Although the portion of Arden Hills south of Highways 96 and 10 is considered fully developed, there is an abundance of mature trees, lakes, wetlands, open spaces, parks, and other natural amenities that give the City its highly valued natural and well-landscaped character. The southern two thirds of Arden Hills contain more than 363 acres of public parks and undevelopable open spaces. Northwestern College, Bethel University, and Mounds View High School also contain highly valued natural areas of varying character and quality.

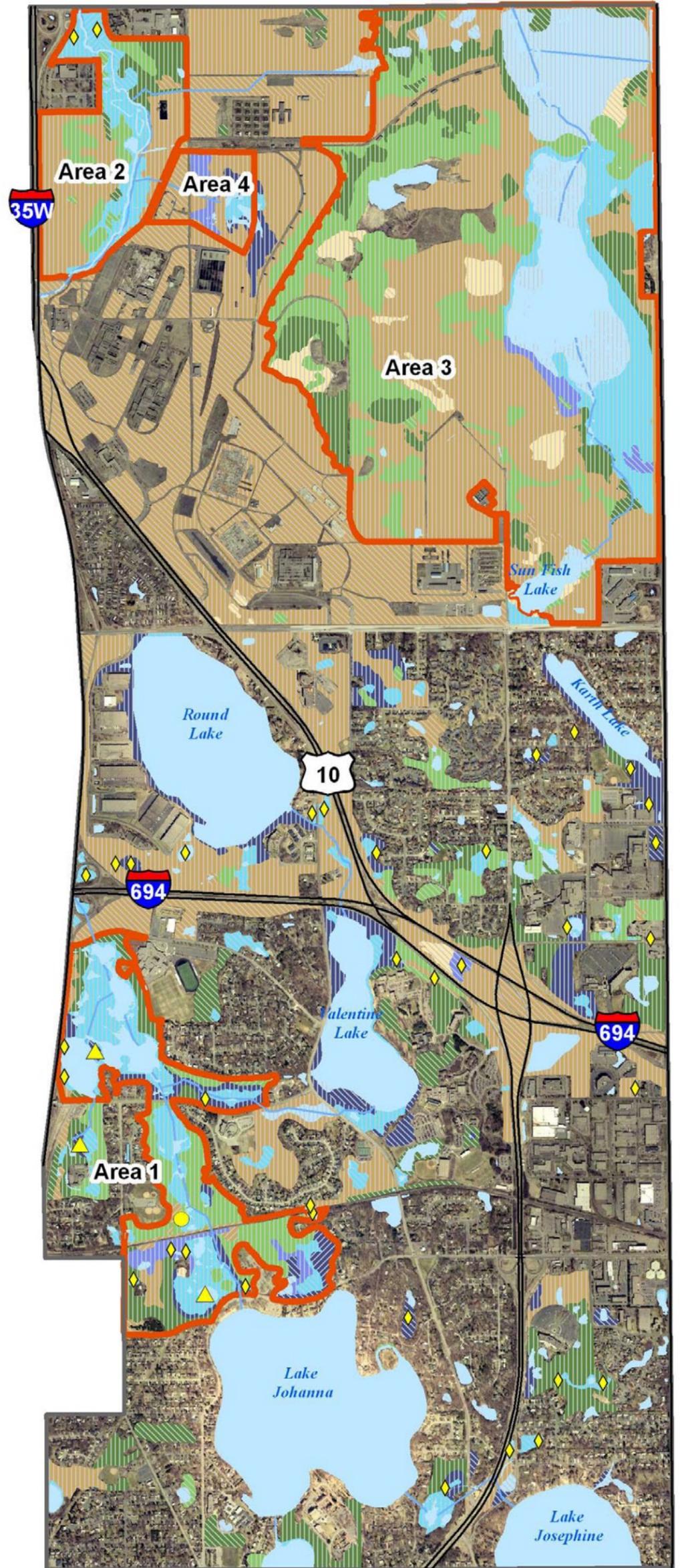
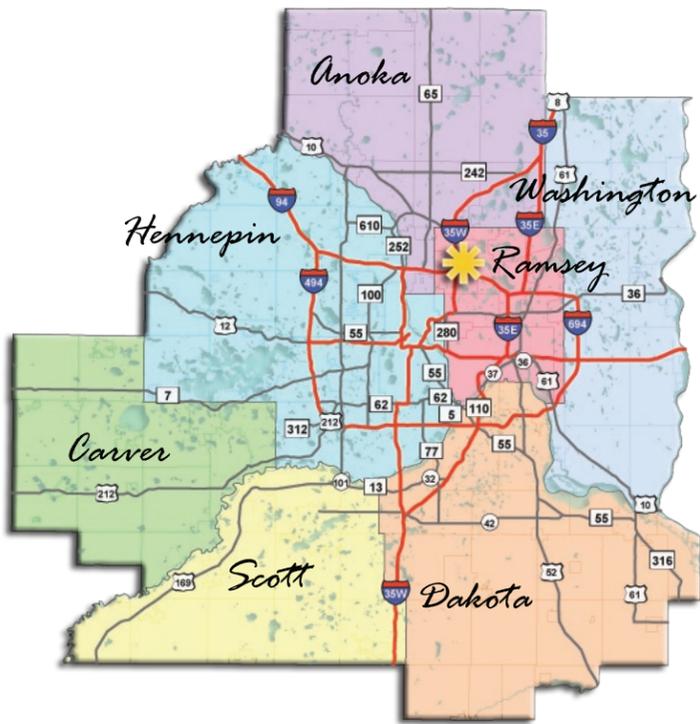
The Arden Hills Army Training Site (AHATS) property is also home to some of the most significant natural resources in Arden Hills, including lakes, wetlands, woodlands, meadows, rolling terrain, and vistas. The kame, which is a geological formation made by retreating glaciers, is located in the central part of the property and is the highest point in Ramsey County. While some institutional development from the Minnesota National Guard may occur on the southern part of the AHATS property, much of that area is anticipated to remain as open space. The AHATS property is not open freely to the public, but the National Guard does allow some scheduled visits on the property.

Of the 585 acres on the TCAAP property that are anticipated to be sold to the City for redevelopment, preliminary plans include approximately 168 acres for use as open space in the form of parks, wetlands, stormwater areas, recreational areas, and a wildlife corridor.

The Rice Creek Watershed District has compiled data and generated a resource protection map to show areas of significant natural resources (Figure 10.3). The map is only intended to be a guide and is not detailed enough for site specific planning as there may be inaccuracies due to the scale of the assessment. Additional information regarding feasibility and site condition should be collected before utilizing this information at a smaller scale.

This resource protection map has two primary purposes. First, it is meant to help develop regulations to protect significant natural resources where it is feasible to do so. Second, it is meant to help make more informed development decision in places where there may be significant resources. The map displays the following information:

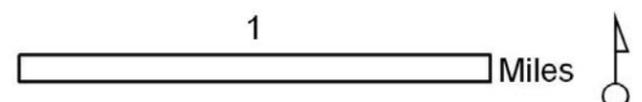
- Remaining natural areas within your community



- Priority Areas
- Wetland Restoration Potential**
 - ▲ Hydrologic
 - ◆ Vegetation
 - Both
- Natural Resource Preservation Priority**
 - Low
 - Medium
 - High
- Land Cover**
 - Forested
 - Woodland
 - Shrubland
 - Herbaceous Vegetation
 - Forested Wetland
 - Shrub Wetland
 - Herbaceous Wetland
 - Open Water

2030 Comprehensive Plan Update
Map Approved: September 28, 2009

Source: Rice Creek Watershed District



- Results of a natural resource assessment
- Results of a wetland restoration assessment
- Lakes and streams currently listed on the 303(d) list of impaired waters
- Results of lake water quality assessment

10.5.1 Natural Resources Assessment

The Rice Creek Watershed District (RCWD) evaluated the natural areas within its jurisdiction, which includes all of Arden Hills, to determine the relative quality of remaining natural areas. The RCWD evaluated the natural resource data based on the following characteristics:

- Health of natural area: High quality areas with native vegetation were considered more important than areas with partial or total dominance by invasive species.
- Size: Large natural areas (five acres or greater) were considered more important than small natural areas (less than five acres).
- Rarity of community type within the watershed: Natural community types that are rare due to specific site requirements (fens, bogs, etc.), or have become rare due to historic land use changes or degradation (prairie, oak savanna, etc.) were considered more important than more common natural community types.
- Adjacency to other natural areas: Natural areas that are immediately adjacent to several other natural areas were considered to be more important than natural areas that are adjacent to one or no other natural areas.
- Proximity of healthy natural areas to other healthy natural areas: Healthy natural areas that are in close proximity to each other (within 1/8 of a mile) were considered more important than isolated healthy natural areas, healthy natural areas in close proximity to degraded natural areas, or degraded natural areas in close proximity to each other.

These natural resource characteristics were combined to form the overall natural resource assessment ranking for each area shown on Figure 10.3.

10.5.2 Wetland Restoration Assessment

All wetland areas within the RCWD were evaluated to determine their potential for vegetation and/or hydrologic restoration. A wetland's potential for either type of restoration was determined in the following manner:

- Vegetation Restoration: The Minnesota Land Cover Classification System (MLCCS) data includes information on whether or not a natural area is

dominated by invasive species. Wetlands dominated by invasive species represent an opportunity to restore native vegetation. Taking this into account, wetland communities that were recorded in the MLCCS as dominated by invasive species and greater than two acres in size were included in this category and displayed on the map.

- Hydrologic Restoration: National wetland inventory (NWI) data and ditch inventory data were used to identify wetlands with the potential for hydrologic restoration. The location of partially drained wetlands in the NWI data and the location of known ditches were used to identify wetlands that have been partially drained and could be restored to more natural, flow through hydrology without necessarily changing the hydrologic regime. Only polygons one acre or larger were included and displayed on the map. Wetland areas with these characteristics that were in close proximity to existing infrastructure (homes, businesses and roads) were removed from consideration.

10.5.3 Lake water quality assessment

Each lake located within the Rice Creek Watershed District was evaluated to determine its potential for water quality impairment due to excessive nutrients (Table 10.1). The lakes fell into one of three categories:

- No data: Not enough water quality data available for evaluation.
- Listed on 303(d) list of impaired waters: Lake is currently on the impaired waters list (TMDL list) for excessive nutrients. (Lakes that are on the impaired waters list only due to high levels of mercury, and not due to excessive nutrients, are not included in this category.)
- Potential to become impaired: Available water quality data suggest that the lake is currently not impaired. Due to development pressure or to borderline water quality conditions, this lake has the potential to become impaired in the near future.

Table 10.1 - Lake Water Quality (Rice Creek Watershed District)

Lake	No Data	Listed on the 303(d) list of impaired waters	Potential to become impaired
Johanna*			X
Josephine*			X
Karth	X		
Little Johanna		X	
Marsden	X		
Round			X
Sunfish	X		
Valentine		X	

*Listed on the 303(d) list of impaired waters for mercury

The 303(d) list is part of the federal Clean Water Act, which requires states to adopt water quality standards to protect waters from pollution.

10.5.4 Priority Areas

Area 1 – This area contains a relatively diverse assemblage of upland and wetland communities connecting Lake Johanna and Farrel’s Lake. Upland community types in this area include aspen forest, lowland hardwood forest, oak woodland, and mesic prairie. Wetland community types in this area include willow swamp, mixed emergent marsh, and cattail marsh. The majority of these communities were given a “medium” ranking in the natural resource assessment. There are also several potential opportunities for wetland restoration within this area, both hydrologic and vegetation. Lake Johanna has the potential to become impaired due to excess nutrients.

Area 2 – This area contains areas a mosaic of upland and wetland community types surrounding Rice Creek. Community types include forest, woodland, and emergent marsh. The majority of these communities were given a “medium” ranking in the natural resource assessment. The portion of Rice Creek within the City of Arden Hills is currently on the 303(d) list of impaired waters. A portion of this area near Interstate 35W on the west side of Rice Creek is included in the TCAAP redevelopment plans.

Area 3 – This area contains areas of forest, woodland, and emergent marsh surrounding Marsden Lake. All of the lake’s shoreline is in natural vegetation. This complex of natural areas is unique because of its large size and lack of fragmentation. The majority of these areas were given a “medium” ranking in the natural resource assessment. Marsden Lake does not have sufficient water

quality information to determine its potential for water quality impairment due to excess nutrients.

Area 4 – As part of the TCAAP redevelopment, a 49 acre wildlife corridor will be designated to connect the Rice Creek corridor to the AHATS property. While the RCWD did not include the wildlife corridor in their analysis, the City and Ramsey County have identified it as a significant natural resource and as a priority area. Ramsey County will own and maintain the wildlife corridor.

10.5.5 Aggregate Resources

There are no accessible aggregate resources in Arden Hills.

10.6 INVASIVE SPECIES

While many of the open spaces in Arden Hills are of high quality, invasive species such as buckthorn are a problem in many parks and open spaces throughout Minnesota. Unfortunately, a number of parks and open spaces in Arden Hills contain buckthorn. In cooperation with residents and service groups, the City has instituted a buckthorn removal program. The City plans to continue to control buckthorn on an ongoing basis as needed and as resources are available. The City will also continue to encourage the removal of buckthorn and other invasive species from private land.

10.7 IMPLEMENTATION STRATEGIES

In order to advance the protected resources goal, the below activities are proposed:

- Maintain tree preservation standards and landscaping requirements.
- Review existing and develop new policies or regulations to protect identified natural resource protection areas, including historical areas.
- Encourage new development to respect the natural features and to minimize damage to the natural environment.
- Update the shoreland and floodplain development regulations to be in compliance with Minnesota Department of Natural Resources regulations, Rice Creek Watershed District regulations, and to encourage the protection of the City's water resources.
- Work cooperatively with private landowners and other governmental agencies to preserve and enhance open spaces.
- Explore the inclusion of an environmental library and/or education center on the TCAAP property.

- Support public educational opportunities to foster a better understanding of the natural environment.
- Work with the Rice Creek Watershed District to increase water quality and to complete Total Maximum Daily Load (TMDL) studies.
- Identify and adopt best management practices to protect the water quality of lakes, streams, wetlands, and groundwater.
- Work to reduce nonpoint pollution sources, including educating residents and using best management practices.

The above strategies should not be considered all-inclusive. New opportunities and strategies should be identified to further advance the City's protected resources goal and policies.

11. TRANSPORTATION

Goal: Provide a transportation system that has convenient and effective multi-modal connections within Arden Hills and to adjacent municipalities, the remainder of the Twin Cities Metropolitan Area and greater Minnesota.

To achieve this *transportation goal*, the following policies are proposed:

- Approach transportation in a comprehensive manner by giving attention to all travel modes and related facilities, linking transit and land use and by combining or concentrating various land use activities to reduce the need for transportation facilities.
- Coordinate transportation plans with adjacent communities and the County, State, and Federal governments to assure system continuity, determine priorities, increase safety, and to efficiently use resources and reduce congestion.
- Create/provide a safe, cost effective, and efficient transportation system that is adequate for car, transit, pedestrian, bicycle, and truck transportation for the movement of people and goods and services in the community.
- Encourage transportation methods that are less dependent on motor vehicles such as walking, biking, and transit.
- Maintain the existing transportation infrastructure to protect the existing investments, increase efficiency, and delay the need for improvement or expansion. Where necessary, expand the City's transportation system to meet current and future transportation needs.
- Continue to work with the County and State elected and appointed officials to include County road reconstruction projects to address needed reconstruction and potential trails along the roadways when improved.
- Work with developers to construct needed improvements prior to development.
- Work to manage traffic in residential neighborhoods to not overburden any particular City street.

11.1 INTRODUCTION

The transportation system in the City of Arden Hills is largely established, made up of metropolitan freeways and highways, County roads, and City streets. Except for the proposed TCAAP redevelopment, the City's transportation system is not likely to see major changes in the next 10 to 20 years. The fact that the network is established, however, does not diminish the importance of continually monitoring the system to ensure that it performs adequately. As such, whether an existing roadway is proposed for upgrading or a land use change is proposed on a property, this Plan provides the framework for decisions regarding the nature of roadway infrastructure improvements necessary to achieve safety, adequate access, mobility, and performance of the existing and future roadway system.

This chapter includes established local goals, policies, standards, and guidelines to implement a future roadway network and transit vision that is coordinated with respect to county, regional, and state plans in such a way that the transportation system enhances quality economic and residential development within the City of Arden Hills.

This chapter also includes two appendices. Appendix B describes the general transportation system principles and standards, including functional classification, roadway capacity by type, access management guidelines, geometric design standards, and roadway jurisdiction. Appendix C includes the full transportation forecast and traffic modeling methodology.

11.2 EXISTING TRANSPORTATION SYSTEM EVALUATION

The transportation system in Arden Hills includes a roadway system that accommodates a variety of vehicles including cars, trucks, and public transit. Transportation also includes pedestrian movement and bicycles, which is also discussed in Chapter 9 (Parks & Recreation) of this Plan. While upgrades will need to be made over time, existing City controlled roads provide sufficient transportation service to the City.

11.2.1 Existing Traffic Volumes and Capacity Issues

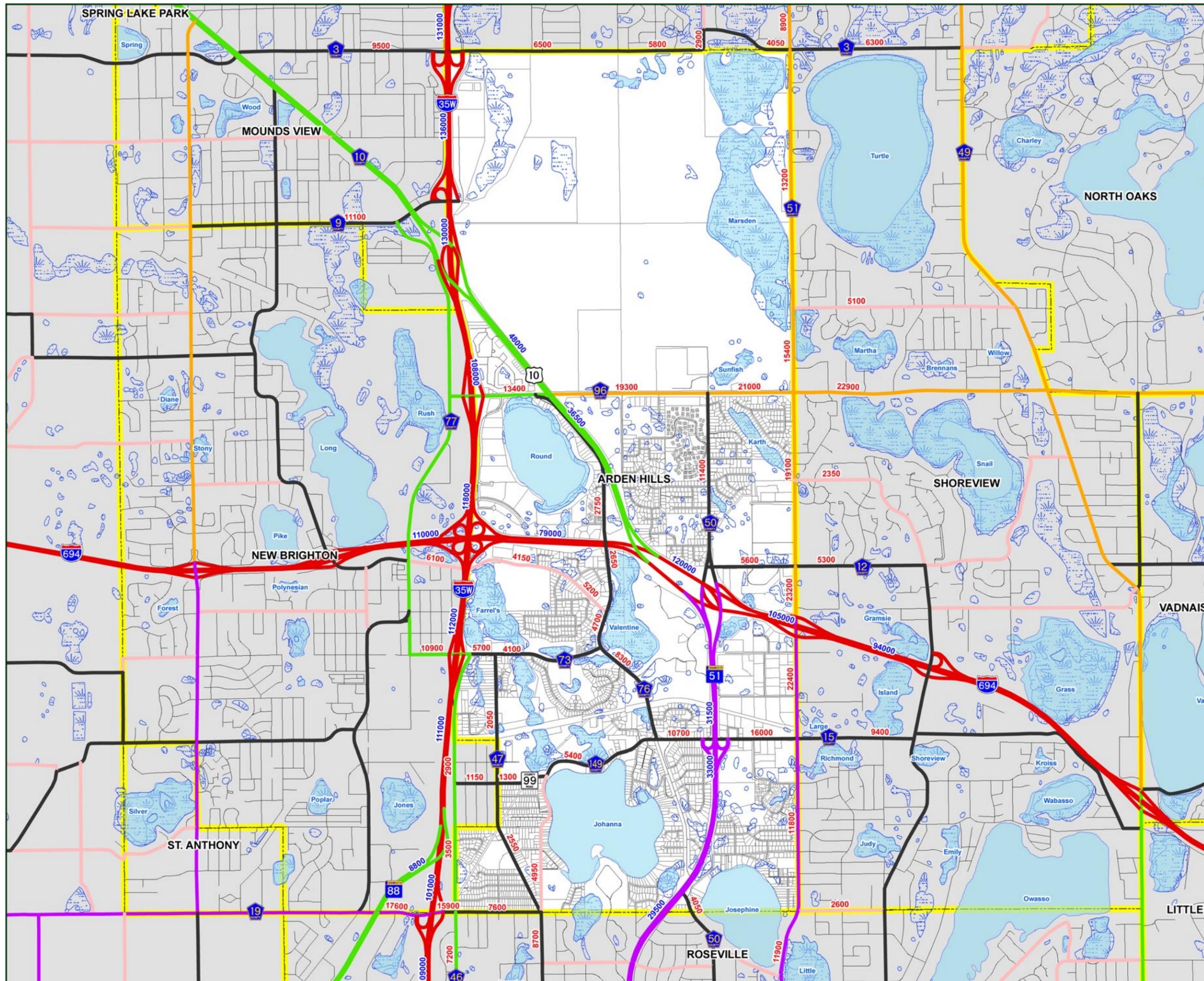
The existing traffic volumes within the area, which were collected by Mn/DOT, Ramsey County, and the City of Arden Hills, are represented in Figure 11.1 – 2005 and 2006 Average Daily Traffic Volumes. Volume to capacity analysis of the average daily traffic volumes indicates several roadway segments within the City of Arden Hills are currently operating at a periodically congested, near congested, or congested level (Figure 11.2). Additional data regarding segment design type and capacity is available within Appendix B. Based on available traffic volume data, the following roadways are classified into the following groups:

Level of Service C – Periodically Congested

- TH 10 from I-35W to I-694
- TH 51, South of CSAH 50/Hamline Avenue
- CSAH 50/Hamline Avenue from CSAH 96 to I-694
- CSAH 51/Lexington Avenue from CR I to CSAH 96
- CSAH 51/Lexington Avenue, South of CR F
- CSAH 96, East of CSAH 50/Hamline Avenue
- CSAH 96 from I-35W to TH 10
- CR D, CSAH 149/Lake Johanna Boulevard to CSAH 46/Cleveland Avenue

Existing Average Annual Daily Traffic Volumes

Figure 11.1



Legend

XXXX 2005 AADT Volumes

XXXX 2006 AADT Volumes

Existing Functional Classification

- Principal Arterial
- A Minor Arterial-Connector
- A Minor Arterial-Augmenter
- A Minor Arterial-Reliever
- A Minor Arterial-Expander
- B Minor Arterial
- Major Collector
- Minor Collector
- Local Roads
- Lakes
- Wetlands
- City Limits



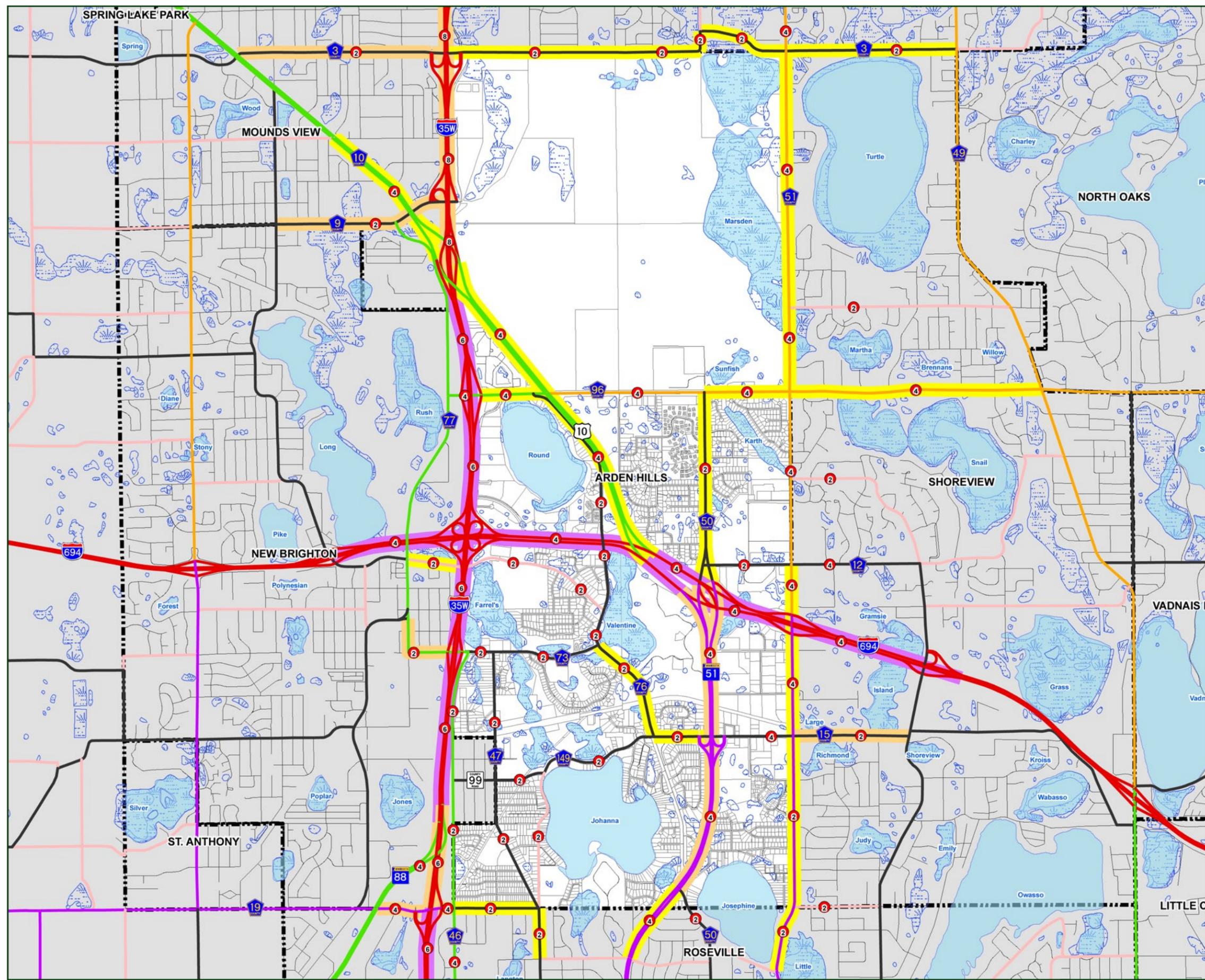
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** Map created by Bolton & Menk



Existing Volume to Capacity & Number of Lanes

Figure 11.2



Legend

Number of Lanes
 # Number of Lanes

Volume to Capacity
 Periodically Congested (V/C=0.50 to 0.75) LOS C
 Near Congested (V/C=0.75 to 1.00) LOS D to E
 Congested (V/C>1.00) LOS F

Existing Functional Classification
 Principal Arterial
 A Minor Arterial-Connector
 A Minor Arterial-Augmenter
 A Minor Arterial-Reliever
 A Minor Arterial-Expander
 B Minor Arterial
 Major Collector
 Minor Collector
 Local Roads

0 3,000 Feet

Map created by Bolton & Menk

- CR E, TH 51 to CSAH 76/Snelling Avenue
- CR I from I-35W to Snelling Avenue

Level of Service D & E – Near Congested

- I-35W, North of TH 10/CSAH 10
- I-35W from TH 88 to CR D
- TH 51 from I-694 to CSAH 50/Hamline Avenue
- CR D from CSAH 46/Cleveland Avenue to I-35W

Level of Service F – Congested

- I-35W from TH 10 to TH 88
- I-35W, South of CR D
- I-694 from Western City Limits to Eastern City Limits

Capacity improvements are recommended on any roadway with a future level of service of D, E, or F, as defined in the roadway capacity discussion within the Transportation System Principals and Standards section. Roadways identified above as near congested or congested are recommended to be monitored and programmed for capacity improvements when necessary. Roadways that are periodically congested are generally identified as providing an acceptable level of service.

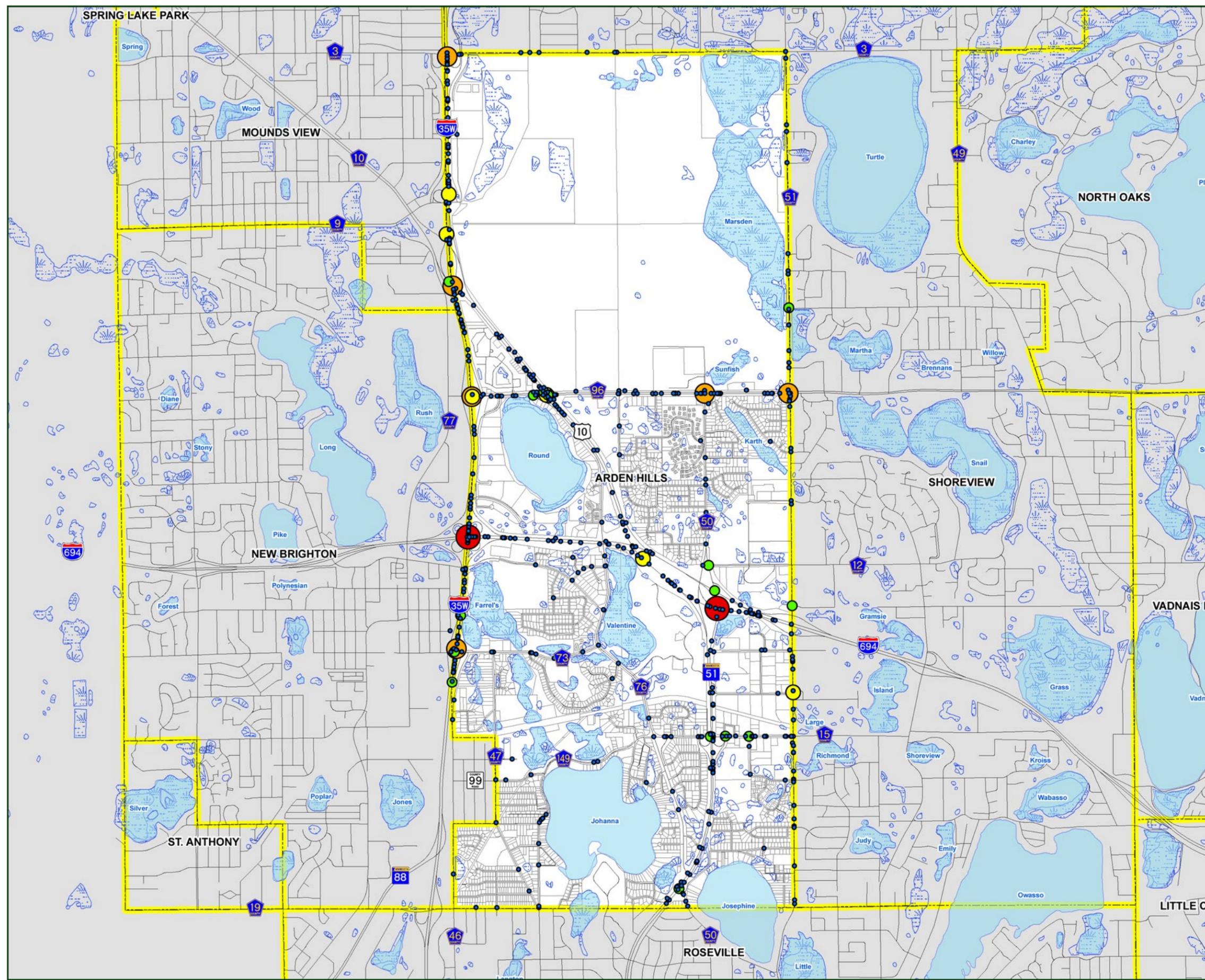
11.2.2 Safety and Mobility

Congestion analysis shows I-35W and I-694 as the roadways with significant congestion. The rest of the existing transportation system throughout Arden Hills is primarily periodically congested, with areas that are near congested. Of primary concern to the City of Arden Hills is the congestion on TH 51/Hamline Avenue, south of I-694 and the county roadways at the interchanges with I-35W. This indicates that the congestion on I-35W is impacting the county roadways that have access to it. As I-35W becomes more congested, more traffic will likely use TH 51 or other adjacent minor arterials as an alternate route, which may also become congested.

A planning-level analysis of the existing transportation system in Arden Hills was completed and included evaluating crash records for accident trends, the types of accidents most commonly occurring, and where accident trends may exist. In the five-year time period from January 1, 2002, through December 31, 2006, there were 2,305 crashes on the roadways within or adjacent to the City of Arden Hills. The locations with high crash rates are primarily on the county and state highway intersections (Figure 11.3). Locations with the highest crash frequency

**2002-2006 Crash
Density by Location**

Figure 11.3



- Legend**
- Crash Count**
- 1 - 10
 - 11 - 25
 - 26 - 50
 - 51 - 99
 - 100 - 318
- 🌊 Lakes
 - 🌿 Wetlands
 - 📐 City Limits



0 3,000
Feet

** Map created by Bolton & Menk

are on I-694 with TH 51, and I-694 with I-35W. Additionally, there are high crash rates along I-35W and I-694 at every interchange location.

Other locations off the freeway with high crash frequency are the intersections of TH 10 with CSAH 96, CSAH 96 with Hamline Avenue (CSAH 50), CSAH 96 with Lexington Avenue (CSAH 51), Lexington Avenue (CSAH 51) with Grey Fox Road, and Hamline Avenue (CSAH 50) with CR F (CSAH 12). Of the 2,305 crashes, 170 included injuries, 405 had possible injuries, and 1730 involved property damage only. Rear end crashes represented 48 percent of the crashes, and 8 percent were right angle crashes.

11.2.3 Jurisdictional Issues

There are no planned jurisdictional transfers planned between Arden Hills and Ramsey County. The City desires active participation in any jurisdictional discussion.

11.2.4 Relevant Transportation Studies

A number of studies have been completed or are in the process of being completed to provide direction relative to the development of the City of Arden Hills' transportation system.

Twin Cities Army Ammunition Plant (TCAAP) Alternative Urban Areawide Review:

An Alternative Urban Areawide Review (AUAR) and Mitigation Plan was approved for the TCAAP site in 2014, including "Minimum" and "Maximum" development scenarios. A separate traffic study was conducted as part of the preparation of the AUAR. This included a more comprehensive summary of the analysis results than what was provided in the AUAR. To determine the impacts on the local roadway network, a traffic operations analysis was conducted for intersections within the vicinity of the TCAAP site for various development scenarios, and mitigation measures were identified based on the results.

In addition to Existing and 2030 No Build Scenarios, the future development scenarios for TCAAP included a Year 2030 Minimum Development Scenario and a Year 2030 Maximum Development Scenario. The minimum development scenario was based on the City's existing zoning requirements for the site, which provided a constrained analysis. A Maximum Development Scenario for 2030 was also analyzed to evaluate a land use mix that maximized the acceptable use

of available and potential infrastructure, seeking a balance of financial feasibility, while maintaining community livability and sustainability.

Due to increases in background traffic and the proposed TCAAP redevelopment, transportation network changes are anticipated to occur in the future. Several long term improvements are being considered in and around the project study area. Improvements at the Interstate 35W interchanges with Highway 96, County Road H, and County Road I (expected to be completed in 2015 and 2016) will influence trip distribution for the TCAAP redevelopment project.

Highway 96 and Highway 10 Intersection:

A new interchange concept is being developed just to the north of CSAH 96 on TH 10, which would replace the current at-grade intersection of TH 10/CSAH 96. A series of road design concepts were developed in 2007. Further analysis will be completed in the future to analyze the interchange design. This interchange would eliminate the current at-grade intersection, which would improve safety and mobility for the TH 10 and CSAH 96 corridors.

Guiding Plan for the B2 District

A guiding plan study was underway at the time this Comprehensive Plan was written that included an analysis of the safety and mobility of vehicle and non-motorized traffic on CR E from TH 51 to Lexington Avenue and the intersection of CR E/Lexington Avenue.

11.2.5 Multimodal Transportation Opportunities

It is recognized that various methods of travel impact the economic vitality of a city, county, or broader region. In addition to the traditional road system, multimodal transportation includes transit, aviation, railway, and paths.

Transit Service

The City of Arden Hills is currently located within the Market III Transit System Service Area. This area includes communities with a land use pattern of generally lower concentrations with intermittent pockets of moderate concentrations, which receive highest service levels. The current service options are peak-only express busses, midday circulators, special needs paratransit (ADA, seniors), and ridesharing. Service characteristics include peak-period-only express busses, one-to-two hour midday frequencies, dial-a-ride advance

registration, service spans of 10-14 hours per day on weekdays and limited weekends, and access primarily tied to park-and ride lots and hubs.

Figure 11.4 – Existing and Planned Transit Routes and Passenger Facilities displays the current services available, including route and park and ride locations in and around the City of Arden Hills. An existing park and ride lot is located between I-35W and CSAH 10, on CR H in Arden Hills. Regular route service in the City as currently provided is described below:

- Route 225, 227 is a local bus route operated by Metro Transit. This route provides connectivity to Rosedale Commons in the City of Roseville, and serves Shoreview, Arden Hills, and Roseville. Schedules vary from 30 to 60 minutes between trips, depending on the day.
- Route 250 is an express bus route operated by Metro Transit. The route provides connectivity to downtown Minneapolis from Lino Lakes, Circle Pines, Lexington, Blaine, Shoreview, and Mounds View, primarily along I-35W, I-694, and I-94. Arden Hills' residents can access the route from the park and ride lot in Mounds View along CR H, just west of I-35W. Schedules with stops at the park and ride lot vary from 25 to 30 minutes between trips during the peak hours. It has six trips each peak hour during the weekdays only.
- Route 261 is a local bus route operated by Metro Transit. It connects up with express Route 260 to connect with downtown Minneapolis. The route provides connectivity between Shoreview, Roseville, and Minneapolis, along with Arden Hills, along Lexington Avenue. The schedule along Lexington Avenue varies from 10 to 30 minutes with five total trips during the peak hours during the weekdays only.
- Route 860 is an express bus route operated by Metro Transit. This route provides connectivity to downtown St. Paul from Coon Rapids, Blaine, and Mounds View. Arden Hills' residents can access the route from the park and ride lot in Mounds View along CR H, just west of I-35W. Schedules vary from 15 to 30 minutes between trips during the peak hours. It has five trips each peak hour during the weekdays only.

Aviation Plans/Facilities

There are no existing or planned aviation facilities within Arden Hills, but the Anoka County/Blaine Airport is located approximately 1.5 miles northwest of the City of Arden Hills, west of I-35W and north of TH 10.

Railway

There is one railway line and a few rail spurs within the City of Arden Hills. The rail line is active and operated by the Canadian Pacific Rail System (CPR) with an average of four trains per day using the line. It runs east-west through the southern portion of Arden Hills, north of County Road E with a speed threshold of 40 mph. The line includes a spur into the Red Fox/Grey Fox business area.

There are two rail spurs that are operated by the Minnesota Commercial Railway (MNNR). Both spurs have been or will be abandoned. One spur accessed the Gateway Business District, while the other spur accessed the Twin Cities Army Ammunition Plant (TCAAP) site.

Ramsey County has Regional Rail Authority, which reviews, recommends, proposes, and buys abandoned rail lines for future Light Rail Transit (LRT) corridors. It has identified a transitway corridor through the northeast metropolitan area. The Northeast Diagonal transitway corridor follows the partially abandoned and existing Burlington Northern Santa Fe railroad tracks from northeast Minneapolis through St. Anthony, Roseville, Shoreview, Little Canada, Vadnais Heights, Gem Lake, White Bear Township, and ending in White Bear Lake. The potential route does not directly impact Arden Hills.

Pathways

The City includes a number of pedestrian and bike pathways that are an integral part to the City's transportation system. The existing system is more fully described in Chapter 9.

11.3 FUTURE TRANSPORTATION SYSTEM PLAN

Except for the future roads on the TCAAP property, the transportation system within Arden Hills is generally considered developed, and improvements are anticipated as reconstruction of aging infrastructure is pursued. As reconstruction occurs, it will be important for the City to improve the roadway system and non-motorized travel opportunities consistent with the recommended Transportation System Principles and Standards in this Chapter and the pathways recommendations in Chapter 9 to the extent possible.

11.3.1 Forecasted Traffic Volumes & Capacity Needs

In the City of Arden Hills, the major roadways carrying traffic are county and state roadways, ranging from arterials to collectors. The City roadways are primarily

local city streets that only carry local traffic. Generally, the roadways in Arden Hills serve areas that are fully developed, and the land use patterns in Arden Hills are not expected to significantly change, except on the TCAAP property. However, an increase in traffic on these corridors is expected due to the future growth in the northern part of the City and the future growth in adjacent communities. The existing pattern of rights-of-way and development setbacks present challenges for significantly improving the existing level of service on some roadways through roadway capacity improvements.

The forecasted 2030 average annual daily traffic volumes are illustrated in Figure 11.5 – 2030 Forecasted Average Daily Traffic Volumes and also in Appendix C.

The reconstruction of the Interstate 35W interchanges at County Road 96, County Road I, and County Road H are included in the State and County transportation improvement programs. These projects are critical to support development intensities on TCAAP and are expected to be complete in 2015 and 2016.

In 2008, the proposed expansion of I-694 between I-35E and I-35W from four to six lanes was removed from the State transportation improvement program. This project had been listed as part of the 2012 transportation improvement program. This City supports keeping this project in the State's transportation improvement program.

Deferred from Ramsey County Five-Year Transportation Improvement Program (TIP): County Road D from Cleveland Avenue to Fairview Avenue – Reconstruction.

The forecasted average annual daily travel demands approach or exceed daily capacities on several corridors. Based on 2030 traffic projections, the following roadways are anticipated to be periodically congested, near congested, or congested (Figure 11.6):

Level of Service C – Periodically Congested

- TH 10 from CSAH 96 to I-694
- CSAH 51/Lexington Avenue from CSAH 96 to CR F
- CSAH 51/Lexington Avenue, North of Tanglewood Drive
- CSAH 96, East of TH 10
- CR E from TH 51 to CSAH 51/Lexington Avenue
- CR E from CSAH 76/Snelling Avenue to CR 99
- CR E2 from CSAH 76/Snelling Avenue to I-35W
- CR I from I-35W to CSAH 51/Lexington Avenue



2030 TRANSPORTATION PLAN

Legend

XXXX 2030 AADT Volumes

Existing Functional Classification

- Principal Arterial
- A Minor Arterial-Connector
- A Minor Arterial-Augmenter
- A Minor Arterial-Reliever
- A Minor Arterial-Expander
- B Minor Arterial
- Major Collector
- Minor Collector
- Local Roads
- Lakes
- Wetlands
- City Limits

Source: Ramsey County, Metropolitan Council (8-10-07), MnDOT, MnDNR

Notes: Traffic volumes rounded as follows:
<1000, Nearest 10
>1000, Nearest 100

Forecast numbers depicted have a confidence range of plus or minus 15%.

Forecasts follow procedures as documented in the Twin City Travel Demand Forecasts Prepared for Mn/DOT Metro: Model and Parameters for Adjustments to Model Inputs (Revised January 5, 2006).



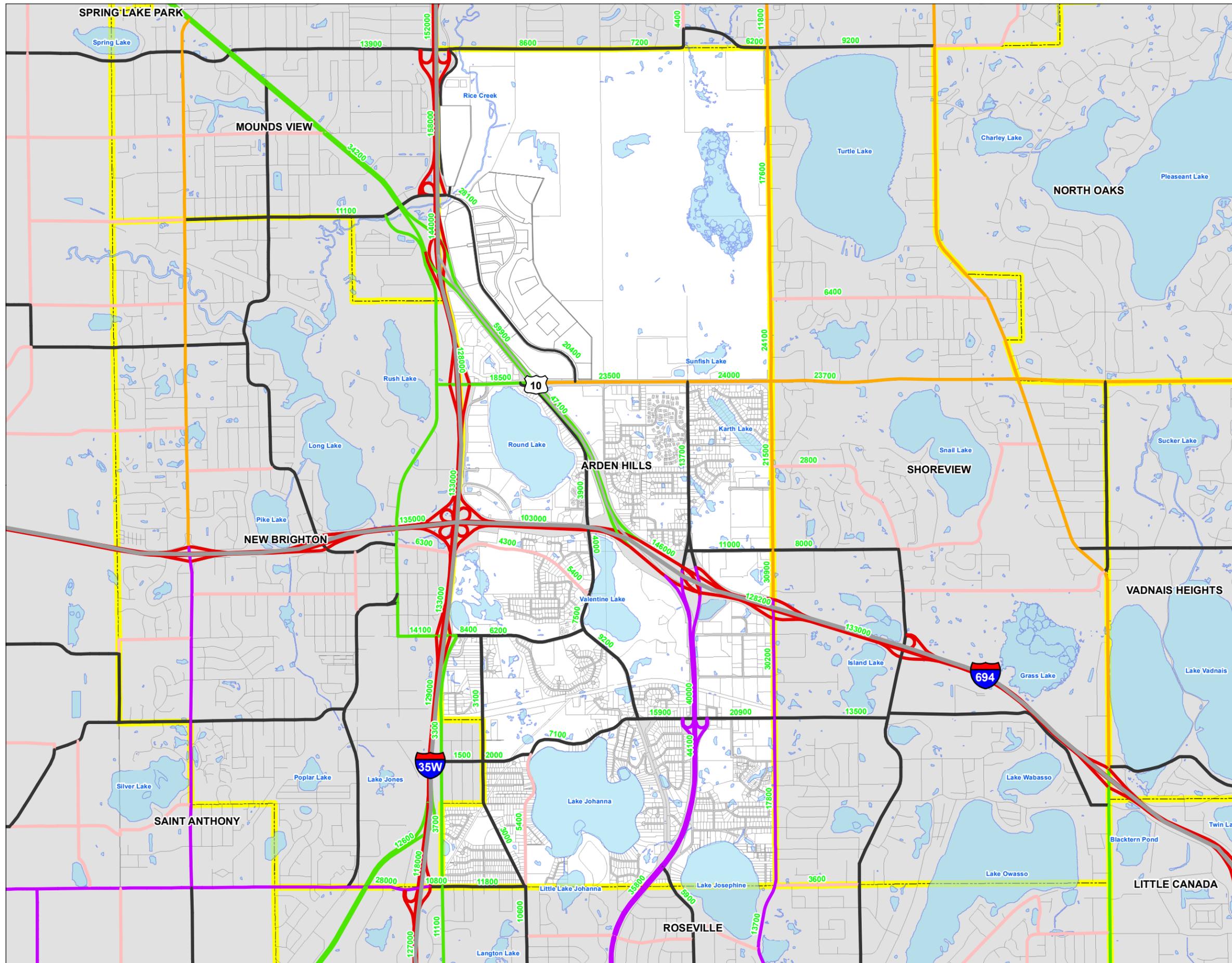
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2015 Comprehensive Plan Amendment (2030 Comprehensive Plan)

2030 Average Annual Daily Traffic Volumes

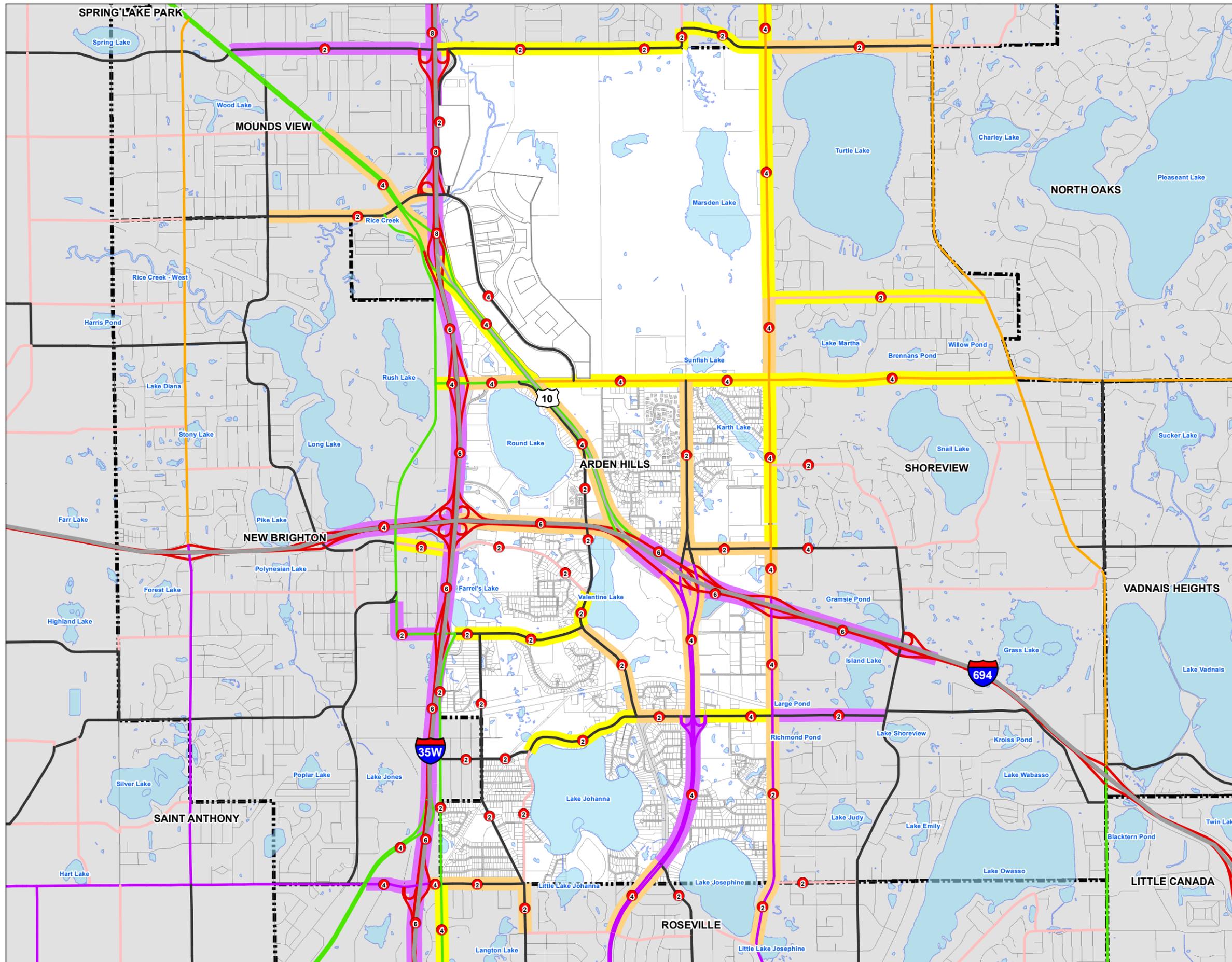
Figure 11.5

June 2015





2030 TRANSPORTATION PLAN



Legend

Proposed Number of Lanes

Number of Lanes

Volume to Capacity

- Periodically Congested (V/C=0.50 to 0.75) LOS C
- Near Congested (V/C=0.75 to 1.00) LOS D to E
- Congested (V/C>1.00) LOS F

Existing Functional Classification

- Principal Arterial
- A Minor Arterial-Connector
- A Minor Arterial-Augmenter
- A Minor Arterial-Reliever
- A Minor Arterial-Expander
- B Minor Arterial
- Major Collector
- Minor Collector
- Local Roads
- Lakes
- Wetlands
- City Limits

Source:
Ramsey County, Metropolitan Council (8-10-07),
MnDOT, MnDNR



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Feet

2015 Comprehensive Plan Amendment
(2030 Comprehensive Plan)

2030 Volume To Capacity & Proposed Number of Lanes

Figure 11.6

June 2015



Level of Service D & E – Near Congested

- I-694 from I-35W to TH 10
- TH 10 from CSAH 96 to I-35W
- TH 51 from I-694 to CR E
- TH 51, South of CSAH 50/Hamline Avenue
- CSAH 50/Hamline Avenue from CSAH 96 to I-694
- CSAH 51/Lexington Avenue from Tanglewood Drive to CSAH 96
- CSAH 51/Lexington Avenue, South of CR F
- CSAH 76/Snelling Avenue from CR E2 to CR E
- CSAH 96 from I-35W to TH 10
- CR D from I-35W to CSAH 149/Lake Johanna Boulevard
- CR E from TH 51 to CSAH 76/Snelling Avenue
- CR F from CSAH 51/Lexington Avenue to CSAH 50/Hamline Avenue

Level of Service F – Congested

- I-35W from Northern City Limits to Southern City Limits
- I-694, East of TH 10 and West of I-35W
- TH 51 from CR E to CSAH 50/Hamline Avenue
- CSAH 51/Lexington Avenue from Tanglewood Drive to CSAH 96

As a component of the TCAAP AUAR, an analysis of intersection level of service was conducted on future conditions for the Minimum and Maximum scenarios. With the mitigation measures identified in the traffic analysis, all intersections operate at an acceptable LOS of D or better.

Generally, the recommended Geometric Design Standards and associated right-of-way width requirements illustrated in the Geometric Design Standards should maintain the corridor's capacity to accommodate the forecasted traffic volumes on the City's roadways (Appendix B).

Capacity improvements are recommended on any roadway with a future level of service of D, E, or F, as defined in the roadway capacity discussion within the Transportation System Principals and Standards (Appendix B). Roadways identified above as near congested or congested are recommended to be monitored and programmed for capacity improvements when necessary. Roadways that are periodically congested are generally identified as providing an acceptable level of service.

11.3.2 Roadway Safety & Mobility Needs

Many of the roadways within and adjacent to the City of Arden Hills are in need of capacity improvements by 2030 due to the anticipated growth throughout the area. This is due not only to growth within the City of Arden Hills but also growth within adjacent cities and other cities along the freeway and highway corridors. With this increase in development and increase in traffic, an increase in congestion is expected for most roadways throughout Arden Hills. Improvements are recommended for Hamline Avenue, Lexington Avenue, Old Highway 10, and the interstate freeways. The expansion and reconstruction of I-694 will improve operations, especially from I-35W to TH 10, even with the increased traffic expected by 2030. The other areas of I-694 will likely be congested as much as they are today by 2030. Since the primary roadways providing significant mobility within the City of Arden Hills are county and state roadways, the City will need to coordinate with the State and County on roadway improvements.

Collector roadways carrying greater than 1,500 vehicles per day have volumes that tend to create potential conflicts between vehicles, bicycles, and pedestrians. The City, in cooperation with Ramsey County, will need to monitor pedestrian and bicycle issues, crashes, near misses, and complaints, and prioritize roadway improvements with pavement rehabilitation needs. Strategies to improve safety and mobility will be considered, including the consideration of adding pedestrian facilities at intersections, non-motorized facilities both along and separate from roadways, additional roadway width for wider lanes or shoulders, or when possible, turn lanes to City collector roadways intersecting with County roadways. To accommodate necessary turn lanes or roadway widening, additional right-of-way may be required at the intersection. As reconstruction of aging infrastructure is pursued on City collector streets the recommended geometric design standards will assist in improving safety and mobility (Appendix B).

Additionally, as traffic volumes approaching an intersection increase, an intersection control evaluation may be necessary. Triggers for an evaluation may include an increase in correctable crashes or an unacceptable traffic back up. Higher volume roadways that could show traffic signal benefits are under the jurisdiction of the County. As the jurisdictional authority, the County would make decisions on appropriate traffic control. The intersection control evaluation would identify the traffic control option (e.g. all way stop, roundabout, possible signalization) and capacity improvements (e.g. turn lanes) necessary to accommodate the traffic volumes in a safe and efficient manner. Future reconstruction may require modifications of existing access to include strategies such as access consolidation, right-in, right-out access only, or the development

of a frontage road to improve the safety and mobility of the corridor. Additional right-of-way should be acquired for future improvements as properties in the area develop or redevelop.

The high crash locations along I-694 at I-35W, TH 10, and TH 51 should be partially rectified by the proposed improvements on I-694 through the area. This improvement includes additional lanes, and the improvement of the TH 51 ramp access to eastbound I-694, one of the highest crash locations in the Arden Hills area. Further improvements should be studied with the Minnesota Department of Transportation and Ramsey County at the interchange ramps and intersections.

The current proposed interchange on TH 10 should improve the operations along TH 10 and also CSAH 96 near TH 10. This interchange would enable a separation of the traffic on each corridor, improving operations to both.

11.3.3 Functional Classification Needs

Due to the developed nature of the City of Arden Hills, together with the community's pattern of water features and freeway facilities, there are minimal opportunities to expand the local roadway system in the developed areas of the City and develop additional continuous routes through the City.

As redevelopment occurs on the TCAAP property, the internal roadway system will be expanded to serve this area of the City. The internal roadway system for TCAAP will consist of a north/south B-Minor arterial (referred to as the Spine Road) in addition to a network of local streets. The Spine Road will be consistent with County State Aid Standards (CSAH) for intersection spacing which is 1/4 mile minimum spacing for full access intersections and 1/8 minimum spacing for right-in/right-out accesses. The minor streets will primarily provide access to residences and private businesses. These local roads will be constructed on the property as future development occurs.

Other roadway continuity improvements in Arden Hills are not anticipated. The City will review redevelopment plans with the option to consider opportunities to improve continuity or improve/consolidate accesses.

The City of Arden Hills does not support an additional road connection over Interstate 35W between Interstate 694 and CSAH 96 due to the likely traffic impact on Round Lake Road.

11.3.4 Multimodal Transportation Opportunities

It is important for the community to plan for the ability to accommodate multimodal activities (i.e. transit, pedestrian, and bicycle) on non-local roadways to provide other opportunities to move about the City and beyond.

Transit Service

While significant changes to existing transit opportunities in Arden Hills are not planned by the Metropolitan Council, the City recognizes the growing need for transit services in Arden Hills, and the City supports exploring additional transit options. With increasing fuel costs, worsening congestion, and an aging population, the demand for transit will increase.

The City will continue to be supportive of the park-and-ride lots used by Arden Hills' residents, such as the lots on County Road H in Mounds View and at Rosedale in Roseville. The City will evaluate the need for future park-n-ride opportunities along with redevelopment proposals where feasible.

The City supports efforts to add or expand transit options to Northwestern College, Bethel University, Mounds View High School, and employers, such as Boston Scientific, Land O' Lakes, and the businesses along Round Lake Road and Gateway Boulevard. The Metropolitan Council is considering the feasibility of extending the A-line BRT route to TCAAP. The TCAAP redevelopment will be designed to be transit-ready along the new county roadway facility if Metro Transit decides to provide transit services to the site. As the City's population ages, the City will continue to work with Metro Transit and senior community services to ensure needs are being met. Para-transit, which is provided by Metro Mobility, is also an important resource for members of the community, particularly the disabled and seniors.

Aviation Plans/Facilities

Although there are not any aviation facilities within Arden Hills, standards for airspace protection are required to maintain a clear path for helicopters and for aviation related facilities.

Federal Regulation Title 14, Part 77 establishes standards and notification requirements for objects affecting navigable airspace. This notification serves as the basis for evaluating the effect of the construction or alteration on operating procedures, determining the potential hazardous effect of the proposed construction on air navigation, identifying mitigation measures to

enhance safe air navigation, and charting of new objects. Notification allows the Federal Aviation Administration (FAA) to identify potential aeronautical hazards in advance, thus preventing or minimizing the adverse impacts to the safe and efficient use of navigable airspace.

Title 14, Part 77.13 requires any person/organization who intends to sponsor any of the following construction or alterations to notify the Administrator of the FAA when:

- Any construction or alteration exceeding 200 feet above ground level;
- Any construction or alteration:
 - Within 20,000 feet of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with at least one runway more than 3,200 feet
 - Within 10,000 feet of a public use or military airport which exceeds 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 feet
 - Within 5,000 feet of a public use heliport which exceeds a 25:1 surface;
- Any highway, railroad or other traverse way whose prescribed adjusted height would exceed that above noted standards;
- When requested by FAA; and;
- Any construction or alteration located on a public use airport or heliport regardless of height or location.

Persons or organizations intending to sponsor construction or alterations require notification to the FAA under Title 14, Part 77.13 using FAA form 7460–1 and associated amendments. Any structure meeting the requirements in Title 14, Part 77.13 must receive permission from the Minnesota Department of Transportation (MnDOT) and the Federal Aviation Administration (FAA). Structures will be compatible with the Anoka County/Blaine Airport Long Term Comprehensive Plan.

Pathways

A more detailed plan for expanding the City’s non-motorized pathway system is discussed in Chapter 9. Non-motorized pathways are an integral part of the City’s transportation system. The improvements and expansions in Chapter 9 work to ensure a sound transportation system within Arden Hills.

Pursuing pathway projects in combination with road reconstruction projects is a primary method for implementing pathway expansion and improvement recommendations in Chapter 9. For each of the County highways within

Arden Hills, roadway shoulders, in addition to pathways, are recommended on both sides of the roadway to accommodate pedestrian, bicycle, and other non-motorized travel where feasible.

The City will also review pedestrian facilities and school routings to determine their adequacy as traffic conditions change. Shoulders and paths should be integrated with the roadway system to provide routes for non-motorized traffic to access existing and future controlled intersections where feasible. Non-motorized facilities are to be incorporated into road projects and land redevelopments to safely accommodate pedestrians and bicycles with vehicle traffic in the City, as the City grows.

11.3.5 Long-term Transportation Planning

It is fundamental to rethink transportation plans and systems through at least 2030 as infrastructure needs and demands will inevitably change. Due to changing demographics and increasing energy costs, the demand for mass transit is likely to increase. While efficient transit requires different growth and development patterns, transit corridors can be developed to compliment and be integrated with a community. Transit corridors may offer growth potential for residential, retail, and business.

While the City does not have a significant influence on the nation's energy infrastructure and it is difficult to predict future energy infrastructure needs, the City will be impacted by outside forces beyond its control. It will be necessary to be flexible when implementing this Comprehensive Plan and other developments in order to be responsive to changing conditions.

11.4 IMPLEMENTATION STRATEGIES

The following below strategies are proposed to help advance the goal of the transportation chapter:

- Utilize the Capital Improvement Plan (CIP) and Pavement Management Program (PMP) to plan for long-term improvements.
- Require right-of-way dedication along County and local roads to meet future capacity needs as redevelopment is proposed.
- Consider the use of flexible street design standards when reconstructing roadways in parts of the City with unique topographical or environmental features.
- Develop standards to increase the safety of pedestrian crossings throughout the City.

- Update the Zoning and Subdivision Ordinances consistent with the Transportation Plan.
- Establish a policy outlining when a traffic impact study should be conducted, including acceptable information to be contained within the study.
- Maintain a Capital Improvement Plan (CIP) that contains elements for reconstruction of the roadway system, with scheduled maintenance included in annual budgets. Street maintenance includes routine patching, crack filling, and storm sewer cleaning. Implement a schedule for roadway maintenance and reconstruction, street widening/realignment, etc.
- Seek to partner and collaborate with Ramsey County, MnDOT, adjacent cities, and other agencies on transportation planning, upgrades, and other issues.

The above strategies should not be considered all-inclusive. New opportunities and strategies should be identified to further advance the City's transportation goal and policies.

12. ENVIRONMENTAL CONSERVATION AND SUSTAINABILITY

Goal: Promote conservation and sustainable design practices in the preservation, development, redevelopment, and maintenance of the City's natural and built environment.

To achieve this *environmental sustainability goal*, the following policies are proposed:

- Develop regulations to include sustainable design practices in the construction and operations of new development, additions, and building renovations.
- Evaluate energy use that contributes to energy and climate uncertainty.
- Encourage the use of site sensitive planning and design to protect significant natural features throughout the City.
- Support the use of renewable energy.
- Support the efficient use of land and development that reduces reliance on fossil fuels.
- Work to reduce carbon emissions at City facilities, from City vehicles, and overall City design.
- Work to protect air, water quality, and healthier indoor environment.
- Encourage programs that reduce waste and increase recycling.

The need for environmental sustainability, green building practices, energy efficiency, and conservation is becoming more apparent as energy prices rise and the impact of humans on the environment becomes more prominent. While Arden Hills has a relatively small impact when compared to the rest of the world, the City does play a role in protecting the environment and encouraging sustainable development and redevelopment. If more cities adopt environmentally sustainable practices, the combined impact is substantial regardless of city size.

Sustainability incorporates environmentally sensitive site planning, using resource efficient building materials, enhancing indoor and outdoor air quality, enhancing the use of daylight, reducing the need for automotive travel, and many other techniques. There is a vast array of techniques that can be used to reduce human impact on the environment. The benefits of implementing sustainable building, sustainable environment, and conservation practices include, but are not limited to:

- Lower electric and utility costs;
- Environmentally effective use of building materials;
- Enhanced health and productivity;
- Long-term economic returns; and,
- Reduced environmental footprint.

While this chapter focuses on environmental sustainability, this chapter is not independent from the other chapters in this Comprehensive Plan. This particular

chapter discusses the overarching policies, practices, information, and implementation techniques that apply throughout the Plan. There are policies, tools, and implementation techniques in other chapters that directly relate to environmental conservation and sustainability, though may not be repeated in this chapter. The goal of this chapter is to recognize the importance of conservation and sustainability as well as to coordinate these efforts throughout the Comprehensive Plan.

12.1 WHAT IS SUSTAINABILITY AND SUSTAINABLE DESIGN?

Sustainability: The concept of meeting present needs without compromising the ability of future generations to meet their needs.

Sustainable Design: Design that seeks to avoid depletion of energy, water and raw material resources; prevent environmental degradation caused by facility and infrastructure development over their life cycle; and create environments that are livable, comfortable, and safe and that promote productivity.

12.2 GREEN BUILDING PRACTICES

The world and national focus is toward overall improved design of all types of buildings to conserve energy and produce a healthier living environment. Leading programs are Leadership in Energy and Environmental Design (LEED), and the US Green Building Council. Both of these organizations are leading the way along with the U.S. Environmental Protection Agency, MN Pollution Control Agency, and American Institute of Architects in developing rating systems.

The most notable rating system currently in use is the LEED rating system, which includes a number of rating factors:

- Innovation and Design Process
- Location and Linkages
- Sustainable sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Environmental Quality
- Awareness and Education

While gaining LEED certification has become important for the environmental aspects, it has also become a marketing tool and a competing factor for many new buildings. Encouraging the use of LEED standards may help the City be more competitive over the long term. With redevelopment along the County Road E corridor and

redevelopment of the TCAAP property, the City and developers have the opportunity to employ LEED standards and other sustainable techniques.

New development and redevelopment can use the newest sustainable and environmentally friendly practices; however, existing structures and practices can be modified or upgraded to reduce their impact. For example, using energy efficient lighting, increasing insulation, reducing automobile usage, and other similar measures can reduce a person's impact at home and at work.

12.3 LOW IMPACT DESIGN

Municipal land use and transportation planning decisions directly influence whether people and businesses will have mobility choices that allow them to save energy and money. Through zoning codes, building codes, public incentives, and the permitting process, municipalities can encourage building design that reduces energy needs, resources, and greenhouse gas emissions.

Environmental sustainability and low impact design also includes ecology and open space planning. Some of the practices and tools that coordinate development with protecting the environment and open spaces include:

- LEED and other similar design standards;
- Water gardens, porous or structured parking, and minimizing paved areas;
- Storm water control, collection, and filtration before entering storm sewers;
- Wetlands preservation and control;
- Access to local foods, materials, building supplies;
- Walkable and bikeable community;
- Increased landscaping with more trees and vegetation;
- Smart design and location for structures – east, west, south exposure for solar gain, natural ventilation to reduce air-conditioning, recycled and natural building products.
- Transportation hubs and depots – walkable, bikeable, electric vehicle distance to local community centers or business districts.

This section does not include all low impact design practices and tools. As technology and ideas are available, they should be evaluated to determine if they could advance the City's goals. The above practices and tools could be encouraged or required through the City's regulations.

12.4 CARBON REDUCTION

The state of Minnesota legislature passed the "MN Next Generation Energy Act of 2007" in an effort to plan for energy change and climate uncertainty. This act included

the following goals related to reducing carbon emissions from fossil fuels and conserving energy by:

- Reducing per capita use of fossil fuel by 15 percent by 2015;
- Annual energy savings of 1.5 percent of electricity and natural gas;
- Generate 25 percent of energy from renewable sources by 2025;
- Based on 2005 greenhouse gas emissions, make reductions of
 - 15 percent by 2015
 - 30 percent by 2025
 - 80 percent by 2050

Achieving these carbon reduction goals will require proactive planning at every level of government. In Arden Hills, a significant contributor of carbon and greenhouse gas emissions is traffic passing through on Interstates I-694, I-35W, Highway 10, Highway 96, Snelling Avenue, and Lexington Avenue. Although the City has limited ability to regulate these roads, the City could encourage other governmental units to use these tools to help lower emissions:

- Lowering speed limits
- Higher mpg vehicles
- Using fuel efficient, hybrid and/or alternative fuel buses
- Using electric cars or personal vehicles
- Traffic circles that slow speeds but do not stop traffic
- Light rail transport from potential hub or depot sites at existing rail lines

Some of the above options are based on individual decisions; however, the City and other governmental agencies can encourage, or possibly require, certain actions. For example, Arden Hills, in partnership with other agencies, could support transit hubs, light rail, or hybrid/alternative fuel buses. Each person must make responsible decisions to reduce carbon emissions. Cities, counties, and the state need to work cooperatively on other regulatory measures that encourage carbon emission reduction. Reducing carbon emissions will take cooperation at all levels to be successful, and Arden Hills is in support of finding ways to reduce carbon emissions.

12.5 IMPLEMENTATION STRATEGIES

Future sustainability projects that will benefit the City and region include, but are not limited to:

- Develop an energy conservation policy for City buildings and equipment.
- Encourage geothermal heating and cooling for individual buildings and for district heating/cooling size installations.
- Increase recycling at all uses.

- Develop regulations that encourage the use of pervious surfaces, green roofs, and other environmentally sensitive materials.
- Promote LEED/green building practices through, zoning, codes, and possible incentives.
- Encourage the use of renewable energy and work to protect access to direct sunlight for solar energy systems.
- Develop transportation hubs or depots in cooperation with neighboring communities and the Metropolitan Council and direct growth to these hubs.
- Advocate for the use of renewable energy on AHATS.

The above strategies should not be considered all-inclusive. New opportunities and strategies should be identified to further advance the City's environmental conservation and sustainability goal and policies.

13. PUBLIC FACILITIES, SERVICES, AND INFRASTRUCTURE

Goal: Provide efficient and high-quality public facilities, services, and infrastructure.

To achieve this *public facilities, services, and infrastructure goal*, the following policies are proposed:

- Provide reliable and high-quality water facilities, sanitary sewer, and stormwater systems.
- Prepare long-term plans to identify, prioritize, and determine the costs to maintain and/or replace City water and sewer facilities.
- Maintain and keep the emergency preparedness plan updated.
- Work to provide efficient, low-cost services through ongoing evaluation and intergovernmental coordination.
- Utilize the Capital Improvement Plan (CIP) and annual budgeting process for prioritizing major public expenditures.
- Work to reduce inflow and infiltration into the City's sanitary sewer system.
- Coordinate with the public and private school system on programs and activities where feasible.
- Promote the continuation of a public library within Arden Hills.
- Continuously evaluate all contracted services to assure that efficient and high-quality services are being provided.

The Arden Hills City government provides a variety of public facilities and services. While some services are used or seen on a daily basis, such as streets, sanitary sewer, and water, other services are less noticed, but are absolutely necessary for the efficient functioning of the City. Utility services are vital to the health, safety and welfare of the citizens of Arden Hills. The physical infrastructure of the Arden Hills is aging; the City recognizes the need to track and evaluate the condition of the existing infrastructure. The Capital Improvement Plan and annual budgeting process are two tools used to plan for improvements to the infrastructure.

13.1 WATER RESOURCE MANAGEMENT

In the developed portion of Arden Hills, the City is not anticipating any significant land use changes that would result in increased demand on the City's water supply, stormwater management, or sanitary sewer system. Redevelopment of the TCAAP property is expected to be completed in ten to twenty years. Infrastructure for water, sanitary sewer, stormwater, and other utilities are anticipated to be implemented during the Spine Road construction in calendar year 2016.

13.1.1 Water Supply Plan (Appendix D)

The Water Supply Plan provides the City of Arden Hills and its residents with assurance that an adequate supply of safe water is available for use, guidance and procedures for water system emergencies are in place, and includes measures being used to conserve the City’s water supply. The Water Supply Plan is divided into four parts (Appendix D):

- Part I: Water supply system description and evaluation
- Part II: Emergency response procedures
- Part III: Water Conservation Plan
- Part IV: Metropolitan Land Planning Act Requirements

The City of Arden Hills purchases potable water from the City of Roseville, who purchases water from the Saint Paul Regional Water Services. Saint Paul Regional Water Services provides the required treatment processes before the water is introduced into the water distribution system in Arden Hills; no further treatment is required by the City of Arden Hills. Once in the City, the system is under the jurisdiction of the City’s water utility.

The City has three connection points with the City of Roseville:

1. Cleveland Avenue and County Road D,
2. Fairview Avenue and County Road D, and
3. Glenhill Road and Hamline Avenue.

Historically, the water utility has managed to be self-supporting, with future replacement needs financed from revenues generated from the fees paid by users. The City periodically reviews the arrangement with the City of Roseville and the Saint Paul Regional Water Services to ensure that the City is obtaining the most cost-effective services.

The City operates and maintains approximately 44 miles of mainline, two water towers, one booster station (water pumping facilities) and has three emergency cross connections with adjacent communities (Table 10.1). These interconnections are normally closed, but can be opened to meet emergency needs.

Table 13.1 - Intercommunity Water Connections

City	Size	Location
Shoreview	8"	North of Grey Fox Road on Lexington Avenue
Shoreview	8"	North of Cummings Park Drive on Lexington Avenue
New Brighton	8"	East of Cleveland Avenue on Stowe Avenue

13.1.2 Sanitary Sewer (Appendix E)

The entire City of Arden Hills is within the Metropolitan Urban Service Area (MUSA), therefore sanitary sewer interceptor and treatment is provided to the City via the Metropolitan Council Environmental Services (MCES) system. Within the City, the system is under the jurisdiction of the City's sanitary sewer utility. Historically, the sanitary sewer utility has managed to be self-supporting; with future infrastructure replacement needs financed from revenues generated from the fees paid by users.

The Arden Hills sanitary sewer system consists of approximately 42 miles of sanitary sewer, over 1,050 manholes, and fourteen (14) lift stations. The sanitary sewer information is included in Appendix E.

13.1.3 Stormwater/Surface Water Management

With nearly 550 acres of water across seven lakes, numerous wetlands, and Rice Creek, protecting water quality and managing stormwater is of the utmost importance in Arden Hills. As part of the City's water quality goals, the City recognizes the need to establish a plan that is in conformance with the plans and regulations adopted by the Rice Creek Watershed District and the Metropolitan Council's *Water Resource Management Plan*.

As part of the TCAAP redevelopment process, an AUAR was completed that included an analysis of stormwater mitigation needs. According to the AUAR, stormwater will be managed on-site, maintaining the current drainage patterns and utilizing the current outfalls to Rice Creek and Round Lake. Stormwater will be conveyed to Round Lake and Rice Creek by means of underground storm sewer, ponds, vegetated swales, and wetlands. Conveyance systems will be designed in accordance with acceptable industry standards and in conformance with jurisdictional requirements. The primary method of stormwater treatment will be the use of multiple ponds for the removal of total phosphorous and total suspended solids. Water reuse, bio-filtration, filtration, and stormwater wetlands are also suitable for treatment within the Study Area. No discharge water will be directed to surface waters without prior retention in a temporary settling basin and a determination that no contamination exists.

13.1.3.1 Stormwater Management Plan (Appendix F)

Arden Hills falls entirely within the Rice Creek Watershed District (RCWD), which is the regulating authority for stormwater in Arden Hills. The RCWD is responsible for administering the Wetland Conservation Act and related permitting activities.

The RCWD approved the City's Local Stormwater Management Plan (LSWMP) in 2012 (Appendix F). Regulatory agencies, including the Metropolitan Council, share Arden Hills' view on the importance of protecting water quality and storm water management. The City's 2012 LSWMP discusses local methods to further joint goals and policies regarding surface water management while assessing problems and proposing corrective actions. The primary purpose of the 2012 LSWMP was to:

- Assess existing water quantity and quality issues;
- Assess potential problems and opportunities for natural resource enhancement in light of anticipated development within each watershed; and,
- Formulate practical strategies to correct existing problems to prevent potential problems and to take advantage of opportunities to enhance water related natural resources.

In order to advance the above purpose statement, the 2012 LSWMP reviewed the physical environment, performed water quality and hydraulic analyses, established the objectives and policies, and set implementation steps. In summary, the LSWMP objectives were to (pp. 11-19of the LSWMP):

- Improve water quality
- Prevent flooding and erosion from surface water flow
- Promote groundwater recharge
- Protect and enhance fish and wildlife habitat and water recreation
- Pollution control and good housekeeping for municipal operations
- Public participation, information, and education
- Establish funding sources for management programs

In April 2008, the Rice Creek Watershed District initiated an update to their Water Resource Management Plan (WRMP). Once the RCWD completes the update, the City will update its Stormwater Management Plan to bring it into conformance with the RCWD Plan and the Metropolitan Council's *Water Resource Management Plan*.

13.1.3.2 Local Ordinances (Appendix F)

In addition to the LSWMP, the City has adopted regulations to further the City's goals in protecting water quality, reducing nonpoint source pollution, protecting sensitive natural areas, and managing stormwater (Appendix F):

- Erosion and Sediment Control Ordinance
- Shoreland Ordinance
- Floodplain Ordinance

The Erosion and Sediment Control Ordinance was adopted in 2008 and the Shoreland and Floodplain ordinances were adopted in 2002 and 2001, respectively. The City intends on reviewing the Shoreland and Floodplain ordinances to ensure that they are effectively advancing City goals and policies.

13.1.3.3 National Pollutant Discharge Elimination System (Appendix F)

On March 17, 2014, the Minnesota Pollution Control Agency (MPCA) approved the City's Municipal Separate Storm Sewer System (MS4) permit. The MS4 general permit is mandated by federal regulations under the Clean Water Act and administered by the MPCA. In general terms, MS4s are publicly owned or operated stormwater infrastructure, used solely for stormwater, and which are not part of a publicly owned wastewater treatment system. Examples of stormwater infrastructure include curbs, ditches, culverts, stormwater ponds and storm sewer pipes. The City of Arden Hills is an MS4.

The MS4 general permit focuses on reducing the pollution that enters these public systems and discharges to wetlands, streams and lakes ("waters of the state"). The MS4 permitting program gives owners or operators of municipal separate storm sewer systems approval to discharge stormwater to lakes, rivers and wetlands in Minnesota. All owners or operators of MS4s are required to satisfy the requirements of the MS4 general permit.

The MS4 general permit requires the MS4 operator or owner to create a Stormwater Pollution Prevention Program (SWPPP) with six important components (included in the attached MS4 permit):

- Public education and outreach, which includes teaching citizens about better stormwater management.

- Public participation: Include citizens in solving stormwater pollution problems. This includes a required public annual meeting and an annual report.
- A plan to detect and eliminate illicit discharges to the stormwater system (such as chemical dumping and wastewater connections)
- Construction-site runoff controls. This includes the implementation of an Erosion and Sedimentation Control ordinance.
- Post-construction runoff controls
- Pollution prevention and municipal “good housekeeping” measures, such as covering salt piles and street-sweeping.

13.1.3.4 Total Maximum Daily Load (TMDL)

Chapter 10 section 5.3 of the Comprehensive Plan includes the TMDL listing status for the major water bodies in Arden Hills. Lakes Johanna and Josephine are listed for mercury in fish tissue but do not have a completed TMDL study. Little Lake Johanna and Valentine Lake have not had TMDL studies completed. The Minnesota Pollution Control Agency (MPCA) has set a target start date for Little Lake Johanna and Valentine Lake of 2010. The City will cooperate with the MPCA and other related agencies as TMDL studies that impact Arden Hills are approved and implemented.

Table 13.2 - TMDL Status

Lake	Lake or wetland ID#	Affected use	Pollutant or stressor	TMDL Target start	TMDL Target completion	Approved TMDL EPA ID#	Year TMDL Plan Approved
Josephine	62-0057-00	Aquatic consumption	Mercury in fish tissue				2008
Little Johanna	62-0058-00	Aquatic recreation	Nutrient/Eutrophication Biological Indicators	2010	2014		
Valentine	62-0071-00	Aquatic recreation	Nutrient/Eutrophication Biological Indicators	2010	2014		
Johanna	62-0078-00	Aquatic consumption	Mercury in fish tissue			32414	2008

13.1.3.5 Additional Water Quality Plans and Tools

The City is committed to adopting plans, policies, and tools that effectively advance the City’s, RCWD’s, and regional water quality goals. As part of LSWMP update, development reviews, regulatory updates, and other related policies, the City will work to address the following issues:

- Formally adopt criteria to protect and improve stormwater runoff and quality, such as the Nationwide Urban Runoff Program (NURP);
- Require stormwater plans for new development and redevelopment that requires increased stormwater infiltration and a decreased use of impervious materials;

- Identify and adopt best management practices that reduce stormwater runoff, such as the Metropolitan Council’s Urban Small Sites Best Management Practice Manual;
- Where feasible, require pre-settlement stormwater discharge on new developments and redevelopments;
- Identify and adopt methods for minimizing the effects of temperature, especially for streams and wetlands;
- In cooperation with the RCWD, collect water quality data on lakes within the City and establish goals for each water body;
- Educate residents on the link between surface water and ground water quality; and,
- In cooperation with the RCWD, complete a wetland management plan;

13.1.4 Inflow and Infiltration (I&I) (Appendix G)

The Metropolitan Council Environmental Services (MCES) Water Resources Management Plan includes policies for reducing inflow and infiltration into the region’s sewage treatment system. The MCES has projected significant growth in the metropolitan area by 2030. This increase, along with current levels of inflow & infiltration (I&I) in the system, would require significant, costly increases to expand the existing MCES treatment facilities to meet the future wastewater flows. As a result, MCES has implemented an I&I surcharge program.

Communities with excessive I&I are required to develop plans and reduce their I&I. If I&I is not reduced in the community with excessive I&I, the MCES will impose a surcharge. The City of Arden Hills has been identified as a community with inflow and infiltration (I&I) challenges. The MCES has imposed a surcharge on the City as a part of its I&I reduction program. Based on current readings that the MCES has taken from several monitoring points, Arden Hills’ surcharge is estimated at \$100,100 a year for five years, beginning in 2007. The City is examining its sanitary sewer system to identify areas that are contributing to the I&I problem, and the City will take the necessary measures to reduce and/or eliminate the surcharge.

Appendix G outlines the City’s objectives, policies, strategies and implementation plan to achieve reduction in I&I.

13.2 OTHER UTILITIES

Electricity, natural gas, and cable television are provided and maintained by private companies; however, they do use the right-of-way for distribution of these services.

Electricity and natural gas is provided by Xcel Energy. Comcast provides cable television services to Arden Hills.

13.3 CITY STREET AND RIGHT-OF-WAY MAINTENANCE

The City has an on-going Pavement Management Program (PMP) that documents the physical condition of the approximately 31 miles of streets. The condition of each of the streets is evaluated and given a Pavement Condition Index (PCI), which is used to prioritize street reconstruction and maintenance. The PMP reviews roadway pavement condition as well as presence of concrete curb and gutters, storm drainage system, and public utility conditions. These factors are weighted together to generate a prioritized list of roadway improvements. A financial analysis is conducted and the proposed improvements are grouped into annual programs in the Capital Improvement Plan (CIP) and annual budgeting process.

Technological advances and development activities are placing increasing strains on the City's right-of-way. Right-of-way (ROW) is used to provide area for electric, gas, telephone, cable, and other public and private utility lines. Unplanned use of the ROW can lead to a confusing jumble of underground utilities that increase the maintenance and reconstruction costs to all users. It is in the City's best interest to revise its right-of-way ordinance to provide for a comprehensive approach for the maintenance and construction for all public and private utilities within the City ROW.

13.4 EMERGENCY PREPAREDNESS

The City adopted the Ramsey County-wide Emergency Operations Plan on November 14, 2005, and updated its City supplemental plan on December 12, 2006. The purpose of this Plan is to maximize the protection of life and property, ensure the continuity of government, sustain survivors, and repair essential facilities and utilities. The Plan is intended to assist key City officials and emergency organizations to carry out their responsibilities for protection of life and property under a wide range of emergency conditions. It is also important to be able to efficiently coordinate emergency services and communicate with other governmental organizations.

13.5 CITY BUILDINGS

13.5.1 City Hall

The City Hall building was opened in October 2001 and is located at 1245 West Highway 96, which is approximately half way between Lexington and Hamline

Avenues on the north side of Highway 96. The building includes a community room, Council chambers, and additional space for future needs.

13.5.2 Public Works/Joint Maintenance Facility

In October 2004, the City of Arden Hills, Ramsey County, and the Mounds View School district opened a joint maintenance and operations facility on Paul Kirkwood Drive, which is in the northwest corner of the Highway 96 and Hamline Avenue intersection. The City's Public Works Department, including staff and equipment is located at this facility.

13.6 CITY SERVICES

In addition to basic infrastructure needs, the City provides a variety of public services, including police and fire protection as well as day to day administrative functions. In 2008, the City had 24 full-time employees. The number of temporary employees changes throughout the year but ranges between five and fifteen at anyone time depending on the time of year. Many of the temporary employees are hired by the Public Works Department for park and recreation services. The City continually strives to provide services in an efficient manner. In order to provide services at a low-cost, Arden Hills has sought partnerships with other cities and Ramsey County.

13.6.1 Police

The City contracts with the Ramsey County Sheriff's Office for all police services. As with all its vendors, the City periodically reviews this arrangement to ensure that the City is obtaining the most cost-effective services for its residence. The Ramsey County Patrol Division is located in Arden Hills at the Joint Maintenance Facility. As development occurs on TCAAP, the City and Ramsey County will evaluate the services provided to the City to determine if additional facilities or services are needed.

13.6.2 Fire

The Lake Johanna Volunteer Fire Department provides fire fighting services to Arden Hills, Shoreview, and North Oaks. The fire department owns four fire stations:

- Station 1 in Arden Hills at 3246 New Brighton Road;
- Station 2 in North Oaks at 4676 Hodgson Road;
- Station 3 in Shoreview at 5545 Lexington Ave NE; and,
- Station 4 in Shoreview at 3615 Victoria Street.

As with all its vendors, the City periodically reviews this arrangement to ensure that the City is obtaining the most cost-effective services for its residence. As development occurs on TCAAP, the City and Lake Johanna Fire Department will evaluate the services provided to the City to determine if additional facilities are needed.

13.6.3 Administration

The City operates under a City Administrator style government, and the administrator manages the function of all other departments as well as implementation of the City Council's policies and decisions.

In 2006, the City entered into a Joint Powers Agreement with the City of Roseville for engineering services, which includes a part-time engineer at Arden Hills City Hall. The City also has had a Joint Powers Agreement with the City of Roseville for information technology services since 2001.

13.7 POSTAL SERVICES

The City receives regular mail service via the New Brighton Post Office. If the need or opportunity arises for new or additional facilities, it has been a longstanding desire to have a full service post office within Arden Hills.

13.8 LIBRARY

Opened in 1969, the Arden Hills Library is located at 1941 County Road E-2, which is near the intersection of County Road E2 and New Brighton Road. In 2008, the library had more than 81,000 items in its collection. The library is part of the Ramsey County Library system, which includes six other libraries.

While discussions about the future of the Arden Hills Library are ongoing, the City has a stated goal to keep a library facility within the City limits. As development occurs on TCAAP, relocating the library to TCAAP or somewhere else in Arden Hills may be a possibility.

13.9 PUBLIC SCHOOLS

Almost all of Arden Hills is in the Mounds View School District (ISD 621); however, a small area in the southern part of Arden Hills is within the Roseville School District (ISD 623). Two of the eleven Mounds View School District buildings are located in Arden Hills: the Mounds View High School at 1900 Lake Valentine Road and Valentine

Elementary at 1770 West County Road E2. The Mounds View School is also a partner in the joint maintenance facility used by the City and Ramsey County.

The Mounds View School District is one of the highest rated school districts in the state and is a valued organization in the community. In addition to serving Arden Hills, the Mounds View School District also serves all or part of the cities of Blaine, Mounds View, New Brighton, Roseville, Shoreview, North Oaks, Spring Lake Park, and Vadnais Heights as well as White Bear Township. As of October 2007, the district had approximately 9,700 students and was the fourteenth largest school district in the State. The district is anticipating declining enrollment, and no new educational facilities are planned. While future development on the TCAAP property may add students to the school system, those students would likely just offset other declines.

The Roseville School District has 10 buildings; however, none of them are located in Arden Hills. In addition to serving Arden Hills, the district also includes all or parts of the cities of Falcon Heights, Lauderdale, Little Canada, Maplewood, Roseville, and Shoreview.

13.10 HIGHER EDUCATION

While not technically a public service, Arden Hills is home to two private higher education institutions, Bethel University and Northwestern College. Bethel University is located south of Interstate 694 and is on the shoreline of Lake Valentine. The University has a long range Master Plan and future expansion on the campus is expected.

Split by the Roseville-Arden Hills border, Northwestern College is located in the south part of the City on the southern shore of Lake Johanna. The College does not have road access into Arden Hills; however, many of the College's educational buildings are located in Arden Hills. Both Roseville and Arden Hills approved a long range Master Plan for Northwestern College in October 2007.

Bethel University and Northwestern College have abundant natural resources and trails that are open for use to the residents of Arden Hills. The City strives to maintain a strong working relationship with both institutions to help ensure long term recreational access to these campuses and to coordinate any changes or expansions with the adjacent residential areas.

14. IMPLEMENTATION

The Comprehensive Plan is a guide for decision making, setting priorities, developing new policies, and guiding City business. However, this Plan requires active implementation to be successful. The vision, goals, policies, and information in this document are meant to support the City and provide a strategic framework for accomplishing City goals and maintaining a healthy, vibrant, and stable community. While this Plan provides a policy framework, implementation will require additional review, research, process, and action.

14.1 IMPLEMENTATION STRATEGIES

Most of the chapters include recommended implementation strategies and ideas to advance the City's vision and goals. The strategies are not ranked and are not considered all-inclusive. The potential implementation strategies in the chapters of this Plan are meant to be coordinated where feasible. The information, goals, and policies throughout this Plan are often interrelated and directly impact each other: land uses impact housing, transportation, and protecting natural resources. Coordinating the goals, policies, and strategies from each chapter is a primary strategy of implementing the City's vision in this Comprehensive Plan.

The vision, goals, and policies in this Comprehensive Plan chapter are a starting point for implementation continuing the implementation discussion. As new opportunities and tools arise, new strategies and ideas can be added to help ensure the advancement of the City's vision. The City will review the Plan on a regular basis to ensure implementation continues on a timely manner.

14.2 CAPITAL IMPROVEMENT PLAN (CIP)

The Capital Improvement Plan (CIP) is the financial planning mechanism used by the City to plan for long range and significant expenditures. Arden Hills has adopted a five-year CIP that is updated on a regular basis. The official Copy is kept on file at the City of Arden Hills, and a copy is included in Appendix A for informational purposes only. The CIP is subject to change. Each year the CIP is reviewed and revised as priorities change, more details are known, and funds become available for capital projects and purchases. The CIP is an important implementation tool for the annual budgeting process because it helps guide the allocation of funds for the upcoming year.

The Comprehensive Plan sets forth overall direction for the City; the CIP and the annual budgeting process implement the goals and policies contained within this Plan. Each year, the CIP is evaluated in relation to the goals, policies, and direction in the

Comprehensive Plan. This yearly process allows spending decisions to be made within the overall context and future planned environment for the community. While it is important that the City's financial tools implement the intent of the Comprehensive Plan, the Comprehensive Plan cannot predict every future need, project, or constraint. The Comprehensive Plan is a dynamic document that can be amended, with careful review, to respond to unanticipated changes in the City.

14.3 ORDINANCES

Ordinances are a powerful tool for implementing the Comprehensive Plan since they provide the legal framework for evaluating projects and implementing many policies. The City currently uses a number of ordinances to regulate development and other activities, including, but not limited to:

- Erosion – provides regulations for controlling erosion on development throughout the City.
- Floodplain – regulates development within the floodplains throughout the City.
- Shoreland – regulates development along shorelines of streams and lakes.
- Subdivision – regulates the subdivision and consolidation of land.
- Zoning (Appendix H) – regulates the use, type, and style of development throughout the City.

Ordinances require periodic evaluation to ensure they are meeting the City's vision, Metropolitan Council requirements, Rice Creek Watershed District regulations, and State Statutes. State law requires the official controls to be amended to conform to the Comprehensive Plan. Implementing this Comprehensive Plan will require the review and possibly the updating of a number of ordinances. Although no significant changes to the existing zoning classifications are anticipated, it is the City's intent to revise ordinances where needed. The Zoning Code will be updated in preparation for the TCAAP redevelopment upon selection of a land use plan.

14.4 ADDITIONAL PLANNING EFFORTS

While this Comprehensive Plan provides overall policy direction for the City, additional planning detail is needed in select areas. In March 2008, the City embarked on a small area plan for the County Road E corridor. This small area plan will address land use, future redevelopment, and transportation issues in greater detail in this area. The small area plan is anticipated to be completed by the end of 2008 and may result in an amendment to this Comprehensive Plan.

The City may also move forward with a more detailed plan for the Lexington Avenue/Red Fox/Grey Fox business area. Although there has been some new development in this area, many of the buildings are aging and are likely to be

redeveloped in the future. An additional plan to address issues in this area may be warranted.

14.5 COMMUNITY INVOLVEMENT

Community involvement is an important part of implementing this Comprehensive Plan. While the City can adopt policies and programs, successful implementation requires solid communication as well as input and participation from residents and businesses. The City currently utilizes a number of methods to facilitate communication between the residents, elected officials, and City staff, including surveys, direct mailings, regular City newsletters, public comment times at Council meetings, Town Hall meetings, cable television, and the City's website.

The City also uses volunteer commissions, committees, and special task forces to include residents and businesses in the project development and decision-making process:

- Communications Committee;
- Economic Development Commission;
- Financial Planning and Analysis Committee;
- Parks, Trails, and Recreation Committee;
- Planning Commission;

These groups allow more direct involvement and participation from the community to help advance and create programs that work toward implementing the Comprehensive Plan. In addition to these groups, the City can create other types of committees as needed to work on specific projects or policies. These committees are created by the City Council and exist throughout the duration of the project.

14.6 INTERGOVERNMENTAL COORDINATION

Coordinating with the adjacent communities, Ramsey County, the Metropolitan Council, and the State are needed to help advance local as well as regional goals. The City's water, sewer, transportation, park, and recreation systems are linked to other public entities. Where feasible, the City seeks to cooperate with other governments to help ensure efficient use of public resources and reduce overlapping government services.

14.7 FUTURE COMPREHENSIVE PLAN AMENDMENTS

As a policy and planning document, text and/or map amendments to this Comprehensive Plan will be needed. This Plan is meant to be a dynamic document that can respond to unforeseen changes, priorities, and opportunities.

Amendments will be needed for the TCAAP redevelopment and may be needed for a future Lexington Avenue/Red Fox/Grey Fox Guiding Plan, and for redevelopment of the former City Hall/Public Works property. Additional amendments may be considered where appropriate to advance the overall City vision and goals.

APPENDIX A: CAPITAL IMPROVEMENT PLAN

The Arden Hills Capital Improvement Plan (CIP) is included for informational purposes only. The CIP is not adopted as part of the Comprehensive Plan. The CIP is updated on an annual basis and future projects may be adjusted as needed outside of the Comprehensive Plan process.

APPENDIX B: TRANSPORTATION SYSTEM PRINCIPLES AND STANDARDS

The transportation system principles and standards included in this Plan create the foundation for improving the transportation system, evaluating its effectiveness, determining future system needs, and implementing strategies to fulfill the goals and policies identified.

1. FUNCTIONAL CLASSIFICATION

It is recognized that individual roads and streets do not operate independently in any major way. Most travel involves movement through a network of roadways. It becomes necessary to determine how this travel can be channelized within the network in a logical and efficient manner. Functional classification defines the nature of this channelization process by defining the part that any particular road or street should play in serving the flow of trips through a roadway network. It is the process by which streets and highways are grouped into classes according to the character of service they are intended to provide. Functional classification involves determining what function each roadway should perform prior to determining its design features, such as street widths, speed, and intersection control. The functional classification system typically consists of five major classes of roadways: Principal Arterials, Minor Arterials, Major Collectors, Minor Collectors, and Local roadways. The existing roadways are described below and illustrated in Figure B.1 – Existing Roadway Functional Classification.

1.1 PRINCIPAL ARTERIALS

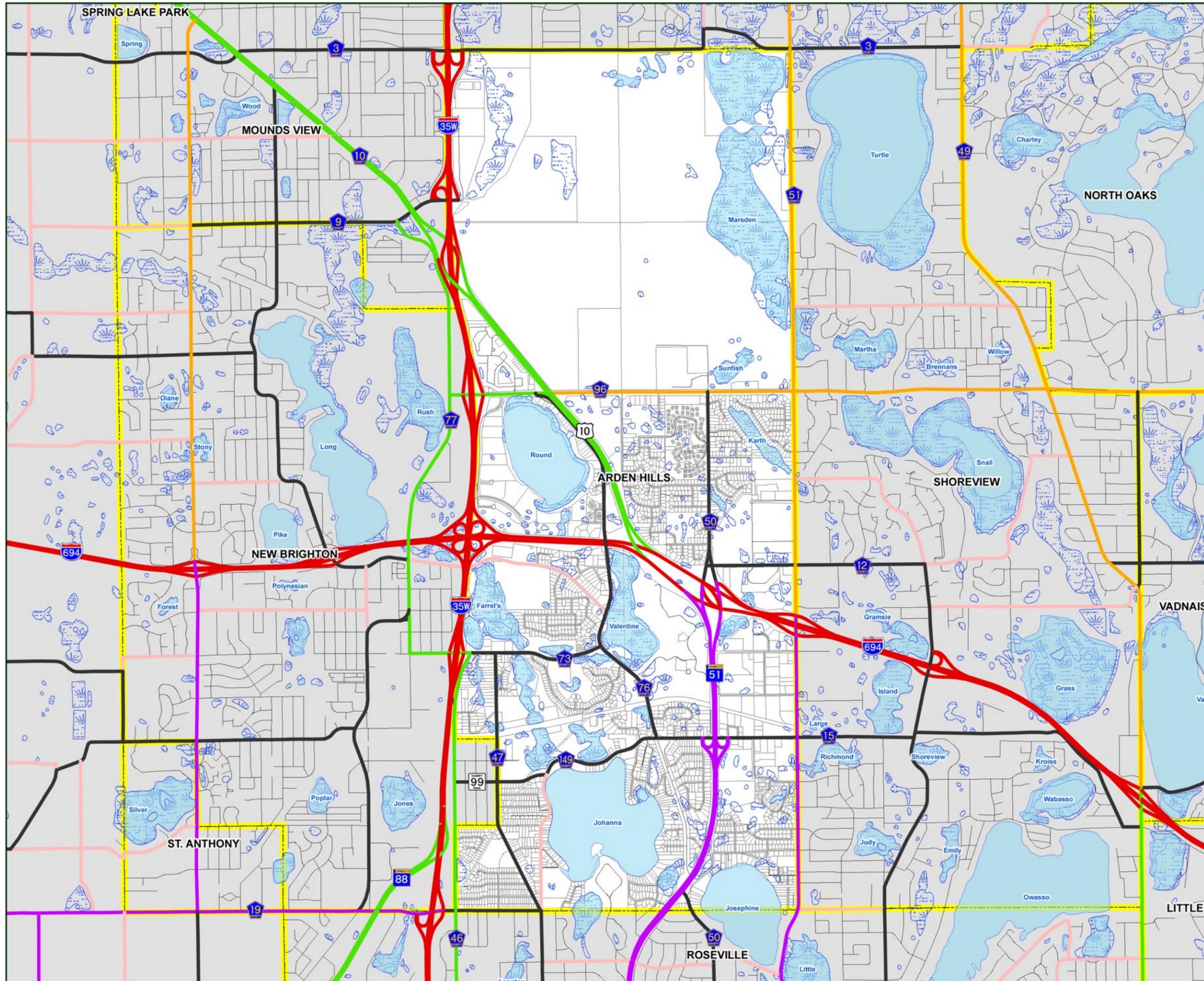
Roadways of this classification typically connect large urban areas to other large urban areas or they connect metro centers to regional business concentrations via a continuous roadway without stub connections. They are designed to accommodate the longest trips. Their emphasis is focused on mobility rather than access and as such, private access should not be allowed. They connect only with other Principal Arterials, interstate freeways, some Minor Arterials, and Collector Streets. There are two Principal Arterials within Arden Hills, Interstates 35W and 694.

1.2 MINOR ARTERIALS

Roadways of this classification typically link urban areas and rural Principal Arterials to larger towns and other major traffic generators capable of attracting trips over similarly long distances. Minor Arterials service medium length trips, and their emphasis is on mobility as opposed to access in urban areas. They connect with Principal Arterials, other Minor Arterials, and Collector Streets. Connections to Local Streets should be avoided if possible, and private access should not be allowed. Minor Arterials are

Existing Roadway Functional Classification

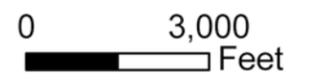
Figure B.1



Legend

Existing Functional Classification

- Principal Arterial
- A Minor Arterial-Connector
- A Minor Arterial-Augmenter
- A Minor Arterial-Reliever
- A Minor Arterial-Expander
- B Minor Arterial
- Major Collector
- Minor Collector
- Local Roads
- Lakes
- Wetlands
- City Limits



** Map created by Bolton & Menk



responsible for accommodating through-trips, as well as trips beginning or ending outside the Arden Hills area. Minor Arterial roadways are typically spaced approximately one to two miles apart in urbanized communities similar to Arden Hills. Within Arden Hills there are 15 roadways classified as Minor Arterials. These roadways are Trunk Highway (TH) 10, TH 51, Old US-10, County State Aid Highway (CSAH) 46/Cleveland Avenue, CSAH 47/New Brighton Road, CSAH 50/Hamline Avenue, CSAH 51/Lexington Avenue, CSAH 76/Snelling Avenue, CSAH 96 (CR G), CSAH 149/Lake Johanna Boulevard, County Road (CR) D (CSAH 19), CR E (CSAH 15, CSAH 149, CR 99), CR E2 (CSAH 73), CR F (CSAH 12), CR H (CSAH 9), and CR I (CSAH 3).

In the Twin Cities Metropolitan Area, there is a further breakdown of Minor Arterial roadways to establish federal funding priorities, “A–Minor” and “B–Minor.” The A Minor Arterial classifications include Relievers, Expanders, Connectors, and Augmenters. As defined by the Twin Cities Metropolitan Council, Relievers provide ‘open up’ capacity for traffic on Metropolitan Highway Principal Arterials. Augmenters supplement the Principal Arterials within the beltway. Expanders provide connection between developing areas outside the beltway, and connect Principal Arterials. Connectors provide links between rural town centers in the urban reserve and rural area. B–Minor Arterials have a lower priority than A–Minor Arterials and are not eligible for federal funding.

Within Arden Hills, the A-Minor Arterial Relievers are TH 10, CSAH 46/Cleveland Avenue, CSAH 73/CR E2 (west of CSAH 46), and CSAH 96 (west of TH 10). The A-Minor Arterial Expanders are CSAH 51/Lexington Avenue (north of I – 694) and CSAH 96 (east of TH 10). The A-Minor Arterial Augmenters are TH 51, CR D (west of I - 35W), and CSAH 51/Lexington Avenue (south of I – 694). The B-Minor Arterials are Old US-10, CR E, CR E2 (east of Cleveland Avenue), Hamline Avenue, Snelling Avenue (north of CR E), and New Brighton Road.

1.3 MAJOR COLLECTORS

Roadways of this classification typically link neighborhoods together within a city or they link neighborhoods to business concentrations. In highly urban areas, they also provide connectivity between major traffic generators. A trip length of less than five miles is most common for Major Collector roadways. A balance between mobility and access is desired. Major Collector street connections are predominately to Minor Arterials, but they can be connected to any of the other four roadway functional classes. Local access to Major Collectors should be provided via public streets and individual property access should be avoided. Major Collector streets are predominantly responsible for providing circulation within a city. Major Collectors that are a part of the road network in Arden Hills includes Valentine Lake Road, west of CSAH 76/Snelling Avenue; and CSAH 149/Lake Johanna Boulevard from CR D to CR E.

1.4 MINOR COLLECTORS

Roadways of this classification facilitate the collection of local traffic and convey it to Major Collectors and Minor Arterials. Minor Collector streets serve short trips at relatively low speeds. Their emphasis is focused on access rather than mobility. Minor Collectors are responsible for providing connections between neighborhoods and the Major Collector/Minor Arterial roadways. There are no roadways designated as Minor Collector roadways in the City of Arden Hills.

1.5 LOCAL STREETS

Roadways of this classification typically include city streets that facilitate the collection of local traffic and convey it to collectors and Minor Arterials. Their emphasis is to provide direct property access. An example of a local street is Snelling Avenue between CR E (CSAH 15/149) and TH 51.

2. ROADWAY CAPACITY

Capacities of roadway systems vary based on roadway functional classifications, roadway design (number of lanes, divided or undivided), and system connectivity. A two-lane divided arterial roadway has a daily capacity of 12,000 to 18,000 vehicles per day, a four-lane divided arterial street has a daily capacity of 28,000 to 40,000 vehicles per day, and a four-lane freeway has a daily capacity of approximately 70,000 vehicles per day. The variability in capacities are directly related to many roadway characteristics including access spacing, traffic control, adjacent land uses, as well as traffic flow characteristics, such as percentage of trucks and number of turning vehicles. Therefore, it is important that the peak hour conditions are reviewed to determine the actual volume-to-capacity on roadway segments with average daily traffic volumes approaching these capacity values.

Major Collector and Minor Collector streets have physical capacities similar to those of a two-lane arterial street; however the acceptable level of traffic on a residential street is typically significantly less than the street's physical capacity. The acceptable level of traffic volumes on Major Collectors and Minor Collector streets vary based on available right-of-way width, housing densities and setbacks, locations of parks and schools, and overall resident perceptions. Typically, traffic levels on Major Collector streets in residential/educational areas are acceptable when they are at or below 50 percent of the roadway's physical capacity, resulting in an acceptable capacity of 6,000 to 9,000 vehicles per day. In most communities, acceptable traffic levels on Minor Collector

streets are considerably less. Typically, a daily traffic volume of 1,000 to 1,500 vehicles per day is acceptable on Minor Collector streets in residential areas.

In the City of Arden Hills, the roadways that function as Major Collectors currently carry 50 percent or less than the roadway capacity, except Valentine Lake Road, west of Mounds View High School, which has a volume to capacity ratio of 51 Percent. Even though the capacity ratio is over 50 percent, the volumes on the major collectors in Arden Hills are considered to generally be accepted and the roadways are interpreted as operating at or below their capacity.

2.1 ESTIMATED DAILY CAPACITIES

Table B.1 – Roadway Types and Capacities in Arden Hills, identifies various roadway types and the estimated daily capacities that the given roadway in the City of Arden Hills can accommodate. A capacity deficiency exists when traffic volumes approach or exceed the capacity of the roadway.

Table B.1 – Roadway Types and Capacities in Arden Hills

Roadway Type	Daily Capacities
Minor Collector	1,000 – 6,000
Urban 2-Lane	7,500 – 12,000
Urban 3-Lane or 2-Lane Divided	12,000 – 18,000
Urban 4-Lane Undivided	Up to 20,000
Urban 4-Lane Divided	28,000 to 40,000
4-Lane Freeway	Up to 70,000
6-Lane Freeway	Up to 105,000
8-Lane Freeway	Up to 140,000

2.2 LEVEL OF SERVICE

Roadway Level of Service (LOS) is used to assign a value to the level of congestion and efficiency of the roadway. The LOS is determined by the ratio of the actual roadway volume to the established capacity. In general, the higher the volume, the lower the LOS. There are six LOS, depending on the extent of congestion and service on the roadway. The LOS are defined in Table B.2 – Roadway Level of Service as follows:

Table B.2 Roadway Level of Service

Level of Service	Volume to Capacity Ratio (v/c)
A	0.00 to 0.35
B	0.35 to 0.49
C	0.50 to 0.74
D	0.75 to 0.89
E	0.90 to 0.99
F	> 1.00
Source: Based on Highway Capacity Manual	

Generally, the City of Arden Hills should consider capacity improvements on roadways with a LOS D or worse and volume-to-capacity ratios over 0.75 during the peak hours.

2.3 ACCESS MANAGEMENT GUIDELINES

Access management guidelines are developed to maintain traffic flow on the network so each roadway can provide its functional duties, while providing adequate access for private properties to the transportation network. This harmonization of access and mobility is the keystone to effective access management.

Mobility, as defined for this Transportation Plan, is the ability to move people, goods, and services via a transportation system component from one place to another. The degree of mobility depends on a number of factors, including the ability of the roadway system to perform its functional duty, the capacity of the roadway, and the operational level of service on the roadway system.

Access, as applied to the roadway system in Arden Hills, is the relationship between local land use and the transportation system. There is an inverse relationship between the amount of access provided and the ability to move through-traffic on a roadway. As higher levels of access are provided, the ability to move traffic is reduced. The graphic below illustrates the relationship between access and mobility.

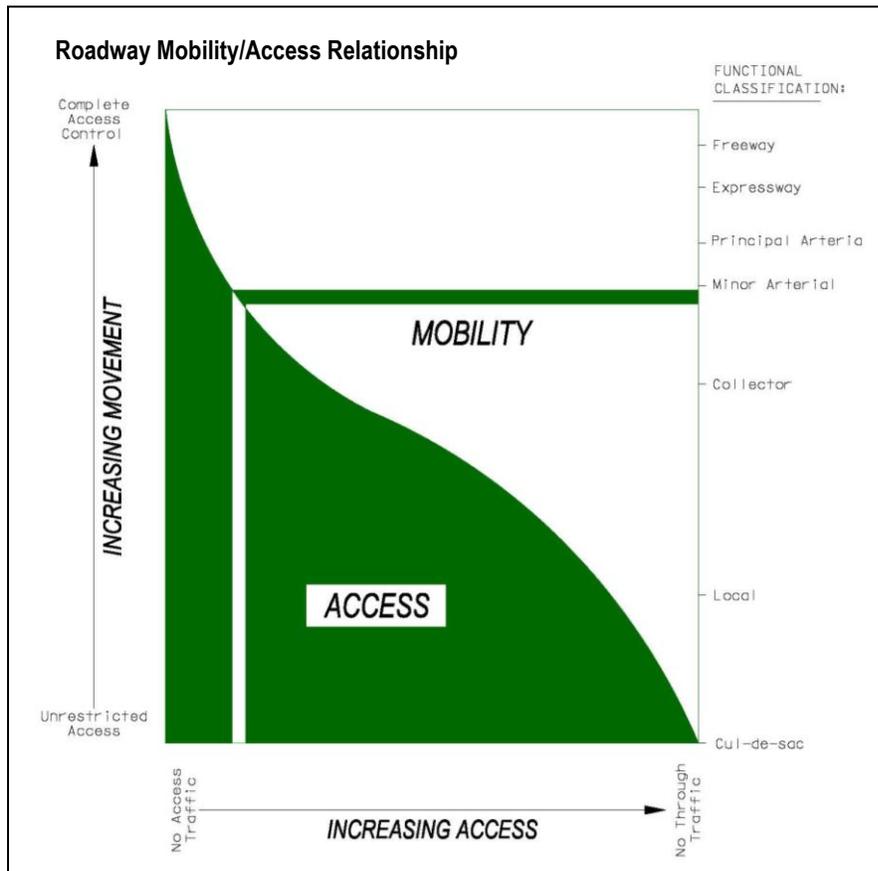


Figure B.4 - Roadway Mobility/Access Relationship

Each access location (i.e. driveway and/or intersection) creates a potential point of conflict between vehicles moving through an area and vehicles entering and exiting the roadway. These conflicts can result from the slowing effects of merging and weaving that takes place as vehicles accelerate from a stop turning onto the roadway, or deceleration to make a turn to leave the roadway. At signalized intersections, the potential for conflicts between vehicles is increased, because through-vehicles are required to stop at the signals. If the amount of traffic moving through an area on the roadway is high and/or the speed of traffic on the roadway is high, the number and nature of vehicle conflicts are also increased.

Accordingly, the safe speed of a road, the ability to move traffic on that road, and safe access to cross streets and properties adjacent to the roadway all diminish as the number of access points increases along a specific segment of roadway. Because of these effects, there must be a balance between the level of access provided and the desired function of the roadway.

In Arden Hills, access standards and spacing guidelines are recommended as a strategy to effectively manage existing ingress/egress onto streets and to provide access controls for new development and redevelopment. While the City of Arden Hills has access authority for those roadways under its jurisdiction, Ramsey County and the Minnesota Department of Transportation (MnDOT) have access authority for roadways under their jurisdiction. The permitted width of accesses to County or State streets or roads is subject to County or State regulations. The current Ramsey County driveway dimensions are included in the Ramsey County Driveway Specifications, Attachment I. The State regulations for access standards and spacing are included in the MnDOT State-Aid design standards and the MnDOT Access Category System and Spacing Guidelines. To further the relationship of access and mobility throughout Arden Hills, the City supports managing access consistent with the roadway mobility and access relationship figure above and supports the access spacing guidelines of the State and County. The City of Arden Hills agrees to work with Ramsey County and MnDOT to achieve desirable access and spacing standards. Table B.3 below presents the access spacing guidelines for the roadway network in Arden Hills.

Table B.3 – Access Spacing Guidelines for Collector Roadways in Arden Hills ⁽¹⁾

Type of Access	Major Collector ⁽²⁾	Minor Collector ⁽³⁾
Private Residential	Not Permitted	As Needed
Private Commercial/Industrial	Not Permitted	As Needed
Minimum Corner Clearance from a Collector Street	660'	300'
⁽¹⁾ These guidelines apply to City streets only. Ramsey County has access authority for roadways under their jurisdiction.		
⁽²⁾ Access to Major Collectors is limited to public street access. Steps should be taken to redirect private accesses on Major Collectors to other local streets. New private access to Major Collectors is not permitted unless deemed necessary.		
⁽³⁾ Private access to Minor Collectors is to be evaluated by other factors. Whenever possible, residential access should be directed to non-continuous streets rather than Minor Collector roadways. Commercial/Industrial properties are encouraged to provide common accesses with adjacent properties when access is located on the Minor Collector system. Cross-traffic between adjacent compatible properties is to be accommodated when feasible.		

Providing direct access from private property onto collectors and arterials should be minimized in order to minimize conflict points and increase safety and mobility.

3. GEOMETRIC DESIGN STANDARDS

Geometric design standards are directly related to a roadway's functional classification and the amount of traffic that the roadway is designed to carry. For the City of Arden Hills, geometric design standards are based on MnDOT State-Aid standards. The following geometric design standards for Major and Minor Collector roadways are illustrated in Figures B.2 and B.3 A and B respectively. These design standards achieve adequate capacity within the roadway network, as well as a level of acceptance by adjacent land uses, given the constraints associated with the existing development pattern. Each component identified in the typical sections helps establish a roadway's ability to perform its function in the roadway network.

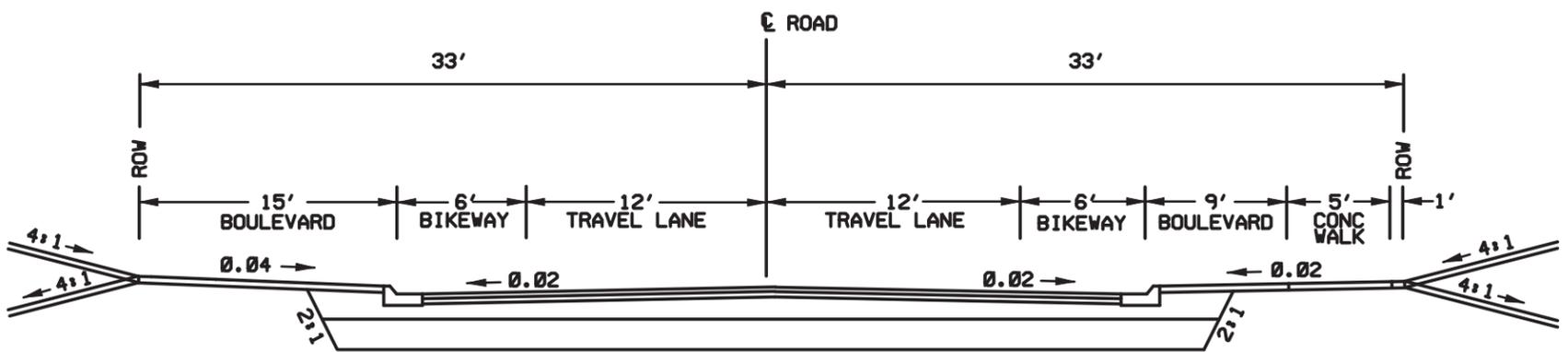
3.1 ROADWAY WIDTH

Roadway and travel lane widths are directly associated with a roadway's ability to carry vehicular traffic. On Major Collector roadways and Minor Collector streets, a 12' lane is recommended for each direction of travel. The 24' total travel width is recommended to accommodate anticipated two-way traffic volumes. In addition to the travel width, a minimum 6' shoulder lane width accommodates pedestrian and bicycle traffic, parked or stalled vehicles, and maintenance activity. Roadway widths not meeting the Geometric Design Standards results in decreased performance of the particular roadway and additional travel demand on the adjacent roadway network components. For example, a sub-standard Major Collector roadway may result in additional travel demand on an adjacent Minor Collector or local street, resulting in an overburden for adjacent landowners. Similarly, additional local circulation on an adjacent Minor Arterial results in reduced mobility for regional trips. Due to the varying right-of-way widths present in Arden Hills, Figure B.3A and B.3B identify four different typical sections for Minor Collector roadways to be considered as reconstruction is pursued.

3.2 PATHWAYS

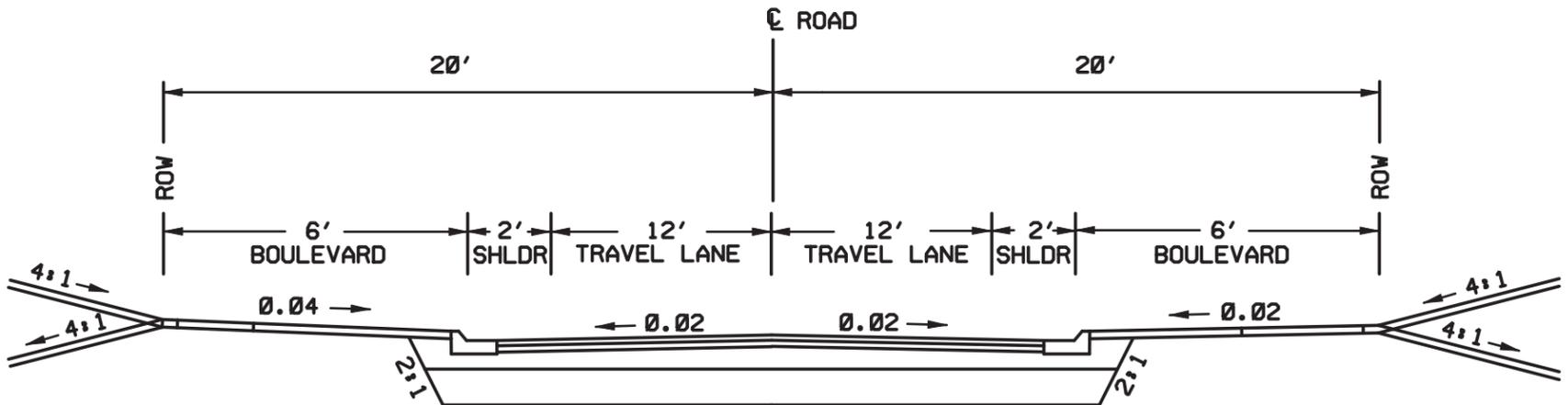
Pathways, including bikeways, sidewalks, trails, and some roadway shoulders, are recommended to be on or adjacent to Major Collector and Minor Arterial roadways, and most Minor Collector roadways to accommodate pedestrian, bicycle, and other non-motorized travel in a safe and comfortable manner. These roadways carry a considerable amount of vehicular traffic and non-motorized facilities are recommended. Design and accommodations for non-motorized traffic facilities in Arden Hills follow the

TYPICAL SECTION 36' ROAD W/66' ROW, ON-STREET BIKEWAY & SIDEWALK

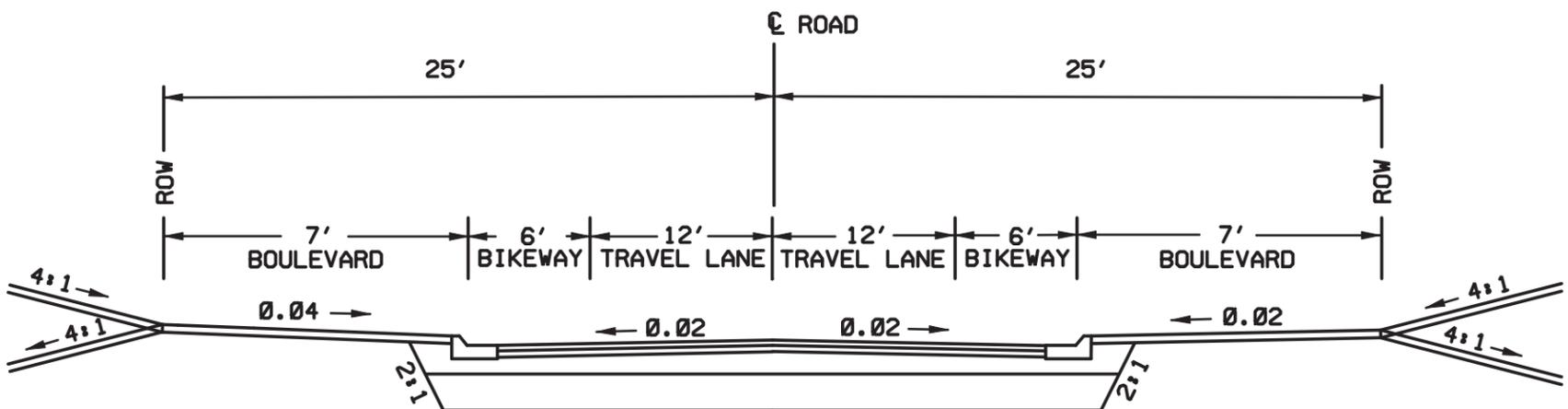


1. DESIGN STANDARDS APPLY TO ROADWAYS UNDER THE CITY OF ARDEN HILLS JURISDICTION ONLY.
2. ADDITIONAL ROW WILL BE NEEDED AT INTERSECTIONS TO ACCOMMODATE TURN LANES, AT THE DISCRETION OF THE CITY ENGINEER.

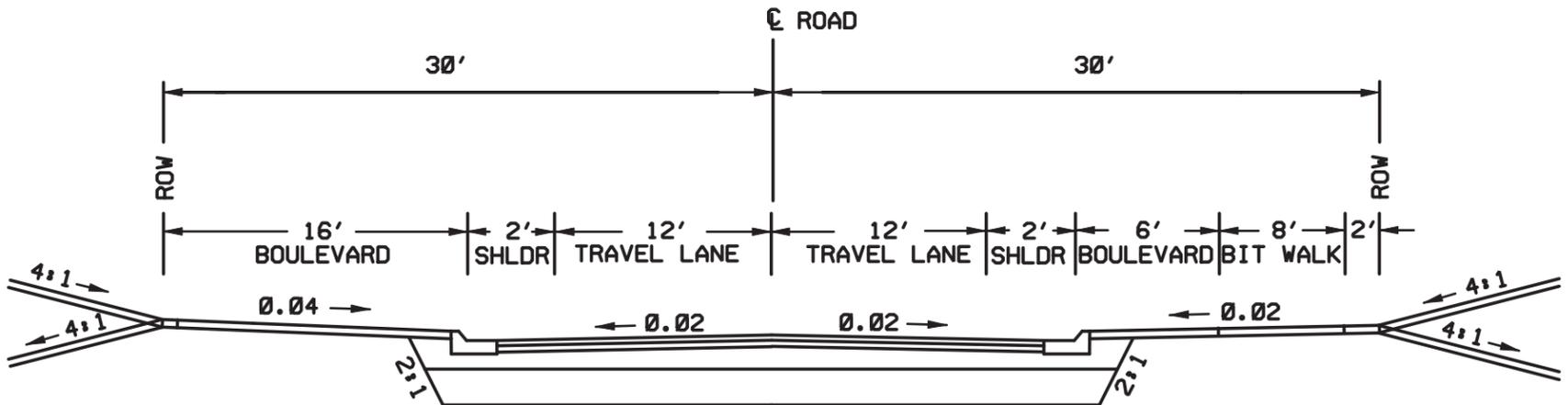
TYPICAL SECTION 28' ROAD W/40' OF ROW



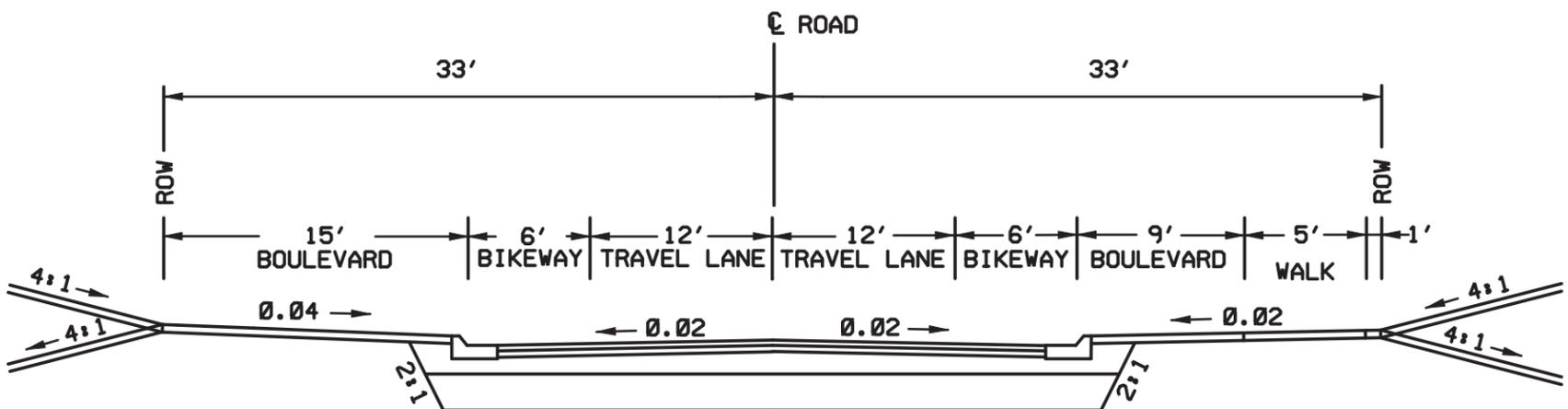
TYPICAL SECTION 36' ROAD W/50' OF ROW & ON-STREET BIKEWAY



TYPICAL SECTION 28' ROAD W/60' ROW, OFF STREET TRAIL



TYPICAL SECTION 36' ROAD W/66' ROW, ON STREET BIKEWAY & SIDEWALK



BOLTON & MENK, INC.
Consulting Engineers & Surveyors



MnDOT Bikeway Facility Design Manual; Americans’ with Disabilities Act (ADA); AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities; FHWA Designing Sidewalks and Trails, Part II, Best Practices Design Guide; and FHWA Design Guidance, Accommodating Bicycle and Pedestrian Travel: A Recommended Approach. The City will continue to work with Ramsey County and MnDOT to plan, evaluate, and design non-motorized facilities and integrate the facilities into reconstruction efforts. At the discretion of the City, the requirements for trails, sidewalks, bikeways, and shoulders may vary. The non-motorized traffic facilities will provide connectivity as shown in the Arden Hills Parks, Trails, and Open Space Plan.

3.3 DESIGN SPEED

The design speed of a roadway is directly related to the roadway’s function in the roadway system. The focus of Minor Arterial roadways is mobility; therefore these roadways should be designed to accommodate higher travel speeds. Likewise, Minor Collector roadways are more focused on accessibility and should be designed to accommodate lower travel speeds. The function of Major Collectors is balanced between mobility and accessibility; therefore these roadways should be designed accordingly. Table B.4 below presents the recommended design speed for the Arden Hills roadway network:

Table B.4 – Roadway Design Speed Guidelines

Functional Classification	Design Speed ⁽¹⁾
Minor Collector Street	30 mph
Major Collector Roadway	35 – 40 mph
Minor Arterial Roadway	45 – 55 mph
⁽¹⁾ At the discretion of the City Engineer for City roadways, with approval by the City Council.	

3.4 RIGHT-OF-WAY WIDTH

Right-of-way width is directly related to the roadway’s width and its ability to carry vehicular and pedestrian traffic in a safe and efficient manner. The roadway right-of-way widths identified in Figures B.2 and B.3 A and B are the minimum required for Major and Minor Collector streets, respectively. For Minor Collector streets in residential areas, a minimum right-of-way width of 66’ is necessary for the added roadway width, as well as to provide added setback distance between the roadway and homes along the roadway. Right-of-way widths greater than 66’ may be required on

Major Collector roadways within commercial areas to accommodate the potential for higher traffic volumes and the need for additional through or turning lanes. All right-of-way requirements may be increased at the discretion of the City Engineer, with approval by the City Council. Please refer to Ramsey County's right-of-way requirements for county roads in their current Transportation Plan. The City should obtain identified local and county right-of-way through any proposed redevelopment process to accommodate long-term roadway and sidewalk/trail needs.

3.5 ROADWAY JURISDICTION

Roadway jurisdiction directly relates to functional classification of roadways. Generally, roadways with higher mobility functions (such as arterials) should fall under the jurisdiction of a regional level of government. In recognizing these roadways serve greater areas resulting in longer trips and higher volumes, jurisdiction of Principal Arterial and Minor Arterial roadways should fall under the jurisdiction of the State and County, respectively. Similarly, roadways with more emphasis on local circulation and access (such as collectors) should fall under the jurisdiction of the local government unit. These roadways serve more localized areas and result in shorter trip lengths and lower volumes. Major Collector and Minor Collector roadways should fall under the jurisdiction of the City of Arden Hills. As roadway segments are considered for turn-back to the City, efforts will be taken to evaluate the roadway features for conformance to current standards, structural integrity, and safety. This effort will help the City develop short and long-range programs to assume the responsibilities of jurisdictional authority. In the City of Arden Hills, three jurisdictions have responsibility for the overall road network. The Minnesota Department of Transportation is responsible for I-35W, I-694, TH 10, and TH 51, while Ramsey County is responsible for routes D, E, E2, F, H, I, 46, 47, 50, 51, 76, 96, and 149. The City of Arden Hills is responsible for all remaining roadways.

APPENDIX C: TRANSPORTATION PLAN FORECASTS

To provide accurate traffic forecasts for the City of Arden Hills, the future 2030 socioeconomic forecasts for the City of Arden Hills are allocated to the Metropolitan Council Transportation Analysis Zones (TAZs) (Figure C.1). The forecasts for 2030 match the 2020 forecasts for the City from the Metropolitan Council’s Regional Development Framework. These lower forecasts for 2030 are considered to be more accurate due to decreased development schedules for properties throughout Arden Hills, including the Twin Cities Army Ammunition Plant (TCAAP) site.

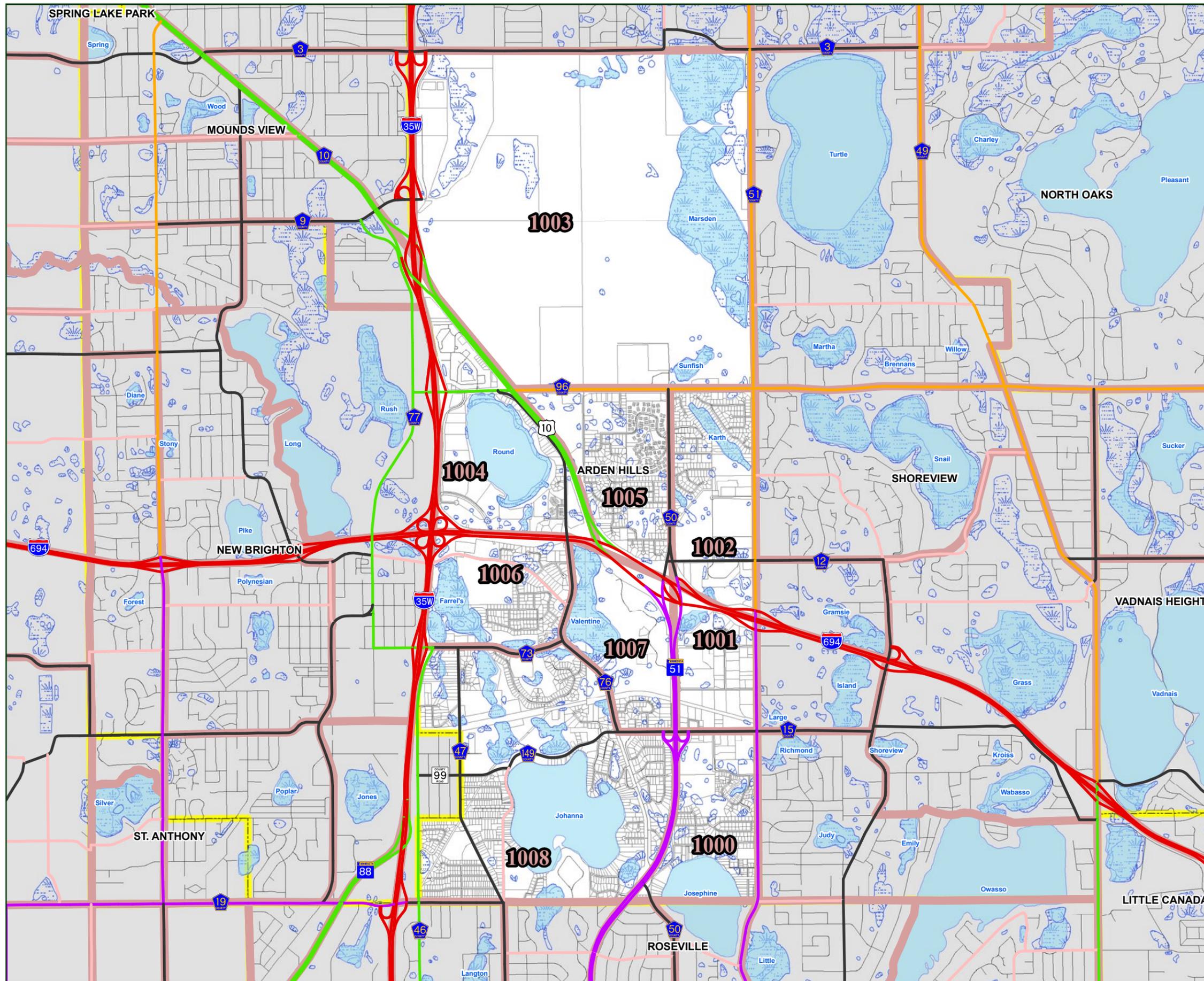
In March 2008, the Metropolitan Council approved the adjusted population, household, and employment forecasts that reduced the 2030 forecasts down to the 2020 forecasts (Chapter 2.1). However, the adjusted forecasts reduced the total population down to 12,900 instead of the 13,500 used in the transportation analysis. Since no significant impact on the transportation system is anticipated due to the additional population decrease, the following transportation analysis has not been recalculated for the 12,900 population forecast.

Table C.1 – Year 2030 Socioeconomic Forecasts by TAZ

TAZ	Population	Households	Total Employment	Retail Employment	Non-Retail Employment
1000	789	361	1,570	360	1,210
1001	1	1	3,245	510	2,735
1002	830	298	5,920	290	5,630
1003	3,635	1,300	1,200	500	700
1004	895	415	1,080	40	1,040
1005	1,540	653	590	10	580
1006	628	248	570	0	570
1007	1,986	184	1,115	0	1,115
1008 (Arden Hills)	3,196	1,140	1,810	0	1,810
Total (Arden Hills)	13,500	4,600	17,100	1,710	15,390
1008 (New Brighton)	823	426	1,090	0	1,090
1008 (Total)	4,019	1,566	2,900	0	2,900

Existing Transportation Analysis Zones

Figure C.1



Legend

Existing Functional Classification

- Principal Arterial
- A Minor Arterial-Connector
- A Minor Arterial-Augmenter
- A Minor Arterial-Reliever
- A Minor Arterial-Expander
- B Minor Arterial
- Major Collector
- Minor Collector
- Local Roads
- Lakes
- Wetlands
- City Limits



0 3,000
 Feet

** Map created by Bolton & Menk



1. TRAFFIC MODELING METHODOLOGY

Model Used:

- Twin Cities Regional Model
 - Existing Model: Year 2000
 - Future Model: Year 2030
- Consistent with Current Regional Transportation Policy Plan Adopted by the Metropolitan Council
 - Demographics
 - Metropolitan Highway System
 - Metropolitan Transit System

Model Methodology:

The general approach to forecasting the traffic volumes consisted of the following:

- Utilizing the Twin Cities regional travel demand model and model parameters, maintained by Metropolitan Council, as the primary instrument for forecasting the volumes.
- Collecting year 2000 and current year traffic count and census data and basic roadway attribute information in the study area for the purpose of validating the regional model, run for the base year (2000).
- Utilizing the Traffic Analysis Zones developed by Metropolitan Council.
- Adding additional county and other major local roadways to the roadway network in the regional model.
- Applying the regional model for the base year and validating its projections against the observed traffic count information; making appropriate adjustments as necessary to reach an acceptable validation.
- Applying the regional model for the forecast year (2030), taking into account the adjustments made to the 2000 model run and the changes in socioeconomic forecasts for the TAZs in Arden Hills, to generate the projected volumes.
- Analyzing traffic patterns that ultimately comprise the elements themselves, through a series of special selected link analyses; using this information as a basis for adjusting the forecasted volumes if determined to be necessary.
- Preparing the final set of forecast volumes.

Model Details:

Regional Model – The regional model provides a systematic procedure for forecasting volumes, taking into account the projected changes in regional land use/socioeconomic data and the regional transportation network. The regional model was obtained from Metropolitan Council for 2000 and 2030 conditions.

Historical and Current Year Traffic Count Data – Traffic count data in the study area was collected from the Minnesota Department of Transportation (MnDOT).

Current Roadway Attribute Information – The regional model highway network was reviewed in detail for conformity to current conditions. A check of roadway functional classification, speed, number of through lanes, and roadway capacity was completed. Some roadways were added to the network to assist in the network analysis. These roadways were populated with the appropriate attributes based on regional model documentation, so as to be consistent with the regional model parameters.

Census Data – Year 2000 census data was collected from the U.S. Census Bureau. This data includes population and households by census block. This information was used to validate the year 2000 TAZ forecasts in the Regional Model.

Traffic Analysis Zones (TAZs) – The Regional Model TAZs were not changed.

Socioeconomic Data – The socioeconomic data forecasts for 2030 were received from the City. The forecasts for the City are consistent with the 2020 projections due to the slower growth being seen by the City.

Base Model Validation – The 2000 model was validated using 2000 traffic count data, aerial photos, and field observations. The assigned volumes from the 2000 regional model were then compared to the 2000 traffic counts.

Future Model Forecasts – The 2030 model was updated to include the existing roadways used in the 2000 model. Functional classifications, speed, and capacities were adjusted based on the expected future roadway attributes.

Review of Forecasts – The traffic forecasts were reviewed for reasonableness. The modeled volumes were reviewed and adjusted based on existing and historic travel patterns and also through some additional selected link analysis of model output. A series of selected link assignments were performed and the model estimated volumes were adjusted to more accurately reflect future traffic patterns within the study area. The checks for reasonableness of the projected volumes follow the procedures as outlined in the Mn/DOT Metro: Model Output Checks for Reasonableness and Post Processing Adjustments (Revised 5 January, 2006). These include:

- Peak Hour Percentage of Daily Traffic: The peak hour percentages of daily traffic produced by the model for the forecast year were compared to existing/observed peak hour percentages for select roadways within the project limits and on other routes nearby with the same functional classification.

- Directional Split of Peak Hour Traffic: The directional splits of peak hour traffic forecasts produced by the model for the forecast year were compared to existing/observed directional splits for select roadways within the project limits and on other routes nearby with the same functional classification.
- Capacity of Road Segments Beyond Limits of Project: Peak hour traffic forecast volumes assigned to road segments beyond the limits of the study area were studied to determine if the projected growth from the area affects the capacities of those road segments. On roadways outside of the study area with volume to capacity ratios over 1.00, the model results were compared to the regional model results from Met Council and MnDOT. The capacities on I-35W and I-694 were exceeded within and outside of the study area, which is consistent with the Met Council and MnDOT existing operations and forecasts.
- Daily Traffic Growth Factors: The daily traffic forecasts from the model on the state roadways were compared with the last 20 years record of daily volumes and with the regional model results from Met Council and MnDOT. The projections are consistent with the general expectation that the model should yield forecast values which are lower than those based on an extrapolation of the last 20 years of increases in daily traffic.

Post Processing – The post-processing of the projected volumes follow some of the procedures as outlined in the MnDOT Metro: Model Output Checks for Reasonableness and Post Processing Adjustments (Revised 5 January, 2006). The post processing includes:

- Traffic forecast volumes were rounded to the closest multiple of ten if less than 1,000 or to the nearest multiple of 100 if more than 1,000.
- All products depicting the forecast numbers (maps, tables, layouts, etc.) contain a very visible caution that the forecast numbers depicted have a likely confidence range of plus or minus 15 percent.
- Traffic smoothing and corridor diversion adjustments were accomplished using the procedures described in Chapter 9 of NCHRP Report 365, “Travel Estimation Techniques for Urban Planning”.

Table C.2 – City of Arden Hills Traffic Counts and Forecasts

Roadway			Existing Characteristics					2030 Forecasts		
Route	Route Description	Future Functional Class	Design Type	Roadway Capacity	2005 AADT	2006 AADT	Existing v/c Ratio	Roadway Capacity	2030 AADT*	2030 v/c Ratio
I - 35W	North of CR I	PA	F8	140000		131000	0.94	140000	152000	1.09
	CR I to CR H	PA	F8	140000		136000	0.97	140000	158000	1.13
	CR H to TH 10	PA	F8	140000		130000	0.93	140000	144000	1.03
	TH 10 to CSAH 96	PA	F6	105000		108000	1.03	105000	128000	1.22
	CSAH 96 to I - 694	PA	F6	105000		118000	1.12	105000	133000	1.27
	I - 694 to CR E2	PA	F6	105000		112000	1.07	105000	133000	1.27
	CR E2 to TH 88	PA	F6	105000		111000	1.06	105000	129000	1.23
	TH 88 to CR D	PA	F6	105000		101000	0.96	105000	118000	1.12
	South of CR D	PA	F6	105000		109000	1.04	105000	127000	1.21
I - 694	East of CSAH 51	PA	F4	70000		94000	1.34	105000	133000	1.27
	CSAH 51 to TH 51	PA	F4	70000		105000	1.50	105000	128200	1.22
	TH 51 to TH 10	PA	F4	70000		120000	1.71	105000	146000	1.39
	TH 10 to I - 35W	PA	F4	70000		79000	1.13	105000	103000	0.98
	West of I - 35W	PA	F4	70000		110000	1.57	70000	135000	1.93
TH 10	I - 694 to CSAH 96	A-MiA-R	F4	70000		36500	0.52	70000	47100	0.67
	CSAH 96 to I - 35W	A-MiA-R	F4	70000		48000	0.69	70000	59900	0.86
TH 51	I - 694 to CR E	A-MiA-A	D4	40000		31500	0.79	40000	40000	1.00
	CR E to CSAH 50	A-MiA-A	D4	40000		33000	0.83	40000	44100	1.10
	South of CSAH 50	A-MiA-A	D4	40000		29500	0.74	40000	35800	0.90
TH 88	West of I - 35W	A-MiA-R	D4	40000		8800	0.22	40000	12600	0.32
CR D (CSAH 19)	CSAH 149 to CSAH 46	B-MiA	U2	12000	7600		0.63	12000	11800	0.98
	CSAH 46 to I - 35W	B-MiA	U4	20000	15900		0.80	20000	18000	0.90
	West of I - 35W	A-MiA-A	U4	20000	17600		0.88	20000	28000	1.40
CR D	East of CSAH 51	MC	U2	12000	2600		0.22	12000	3600	0.30

CR E (CSAH 15)	East of CSAH 51	B-MiA	U2	12000	9400		0.78	12000	13500	1.13
	CSAH 51 to TH 51	B-MiA	D4	40000	16000		0.40	40000	20900	0.52
	TH 51 to CSAH 76	B-MiA	U3	18000	10700		0.59	18000	15900	0.88
CR E (CSAH 149)	CSAH 76 to CR 99	B-MiA	U2	12000	5400		0.45	12000	7100	0.59
CR E (CR 99)	CSAH 149 to CSAH 47	B-MiA	U2	12000	1300		0.11	12000	2000	0.17
	CSAH 47 to CSAH 46	B-MiA	U2	12000	1150		0.10	12000	1500	0.13
CR E2 (CSAH 73)	CSAH 76 to CSAH 47	B-MiA	U2	12000	4100		0.34	12000	6200	0.52
	CSAH 47 to I - 35W	B-MiA	U2	12000	5700		0.48	12000	8400	0.70
	West of I - 35W	A-MiA-R	U2	12000	10900		0.91	12000	14100	1.18
Valentine Lake Rd.	CSAH 76 to Fairview Ave. N.	MC	U2	12000	5200		0.43	12000	5400	0.45
	Fairview Ave. N. to I - 35W	MC	U2	12000	4150		0.35	12000	4300	0.36
	West of I - 35W	MC	U2	12000	6100		0.51	12000	6300	0.53
CR F (CSAH 12)	East of CSAH 51	B-MiA	U4	20000	5300		0.27	20000	8000	0.40
	CSAH 51 to CSAH 50	B-MiA	U2	12000	5600		0.47	12000	11000	0.92
Victoria St. N.	East of CSAH 51	MC	U2	12000	2350		0.20	12000	2800	0.23
CSAH 96	East of CSAH 51	A-MiA-E	D4	40000	22900		0.57	40000	23700	0.59
	CSAH 51 to CSAH 50	A-MiA-E	D4	40000	21000		0.53	40000	24000	0.60
	CSAH 50 to TH 10	A-MiA-E	D4	40000	19300		0.48	40000	23500	0.59
	TH 10 to Prior Avenue North	A-MiA-R	D4	40000	13400		0.34	40000	18500	0.46
	Prior Avenue North to I-35W	A-MiA-R	D2	20000	13400		0.67	20000	18500	0.93
	West of I - 35W	A-MiA-R	D4	40000	12700		0.32	40000	20600	0.52
Tanglewood Dr.	East of CSAH 51	MC	U2	12000	5100		0.43	12000	6400	0.53
CR H (CSAH 9)	West of I - 35W	B-MiA	U2	12000	11100		0.93	12000	11100	0.93
CSAH 10	West of I - 35W	A-MiA-R	D4	40000		26500	0.66	40000	34200	0.86
CR I (CSAH 3)	East of CSAH 51	B-MiA	U2	12000	6300		0.53	12000	9200	0.77
	CSAH 51 to Hamline Ave. N.	B-MiA	U2	12000	4050		0.34	12000	6200	0.52
	Hamline Ave. N. to Snelling Ave. N.	B-MiA	U2	12000	5800		0.48	12000	7200	0.60
	Snelling Ave. N. to I - 35W	B-MiA	U2	12000	6500		0.54	12000	8600	0.72
	West of I - 35W	B-MiA	U2	12000	9500		0.79	12000	13900	1.16

CSAH 46 (Cleveland Ave.)	CR E2 to CR E	A-MiA-R	U2	12000	2900		0.24	12000	3300	0.28
	CR E to CR D	A-MiA-R	U2	12000	3500		0.29	12000	3700	0.31
	South of CR D	A-MiA-R	U4	20000	7200		0.36	20000	11100	0.56
CSAH 47 (New Brighton Rd.)	CR E2 to CR E	B-MiA	U2	12000	2050		0.17	12000	3100	0.26
	CR E to CR D	B-MiA	U2	12000	2550		0.21	12000	3000	0.25
	South of CR D	B-MiA	U2	12000	8700		0.73	12000	10600	0.88
CSAH 149 (Lake Johanna Blvd.)	CR 99 to CSAH 19	B-MiA	U2	12000	4950		0.41	12000	5400	0.45
CSAH 76 (Snelling Ave. N.)	CSAH 96 to Parkshore Dr.	B-MiA	U2	12000	2750		0.23	12000	3900	0.33
	Parkshore Dr. to Valentine Lake Rd.	B-MiA	U2	12000	2650		0.22	12000	4000	0.33
	Valentine Lake Rd. to CR E2	B-MiA	U2	12000	4700		0.39	12000	7500	0.63
	CR E2 to CR E	B-MiA	U2	12000	8300		0.69	12000	9200	0.77
Snelling Ave. N.	CR E to TH 51	Local	MCS	6000	1650		0.28	6000	2100	0.35
Hamline Ave. N.	North of CR I	MC	U2	12000	2900		0.24	12000	4400	0.37
CSAH 50 (Hamline Ave. N.)	CSAH 96 to CR F	B-MiA	U3	18000	11400		0.63	18000	13700	0.76
	South of TH 51	B-MiA	U2	12000	4050		0.34	12000	5900	0.49
CSAH 51 (Lexington Ave. N.)	North of CR I	A-MiA-E	U4	20000	8900		0.45	20000	11800	0.59
	CR I to Tanglewood Dr.	A-MiA-E	U4	30000	13200		0.44	30000	17600	0.59
	Tanglewood Dr. to CSAH 96	A-MiA-E	U4	30000	15400		0.51	30000	24100	0.80
	CSAH 96 to CR F	A-MiA-E	D4	40000	18100		0.45	40000	21500	0.54
	CR F to I - 694	A-MiA-E	D4	40000	23200		0.58	40000	30900	0.77
	I - 694 to CR E	A-MiA-A	D4	40000	22400		0.56	40000	30200	0.76
	CR E to CR D	A-MiA-A	U3	18000	11800		0.66	18000	17800	0.99
	South of CR D	A-MiA-A	U3	18000	11900		0.66	18000	13700	0.76

F# = 4 to 8-Lane Freeway

D4 = Urban 4-Lane Divided

U4 = Urban 4-Lane Undivided

U3 = Urban 3-Lane or 2-Lane Divided

U2 = Urban 2-Lane

PA: Principal Arterial
 A-MiA-R: A - Minor Arterial Reliever
 A-MiA-C: A - Minor Arterial Connector
 A-MiA-E: A - Minor Arterial Expander
 B-MiA: B - Minor Arterial

* The Forecast Numbers Have a Likely Confidence Range of Plus or Minus 15%.

MCS = Minor Collector Street

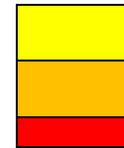
Source: 2005 and 2006 data from Mn/DOT

Source: Functional Class data from the Metropolitan Council

MC: Major Collector

MiC: Minor Collector

Local: Local Street



Periodically Congested, V/C = 0.50 to 0.74,
LOS C

Near Congested, V/C = 0.75 to 1.00, LOS D
& E

Congested, V/C > 1.00, LOS F

APPENDIX D – WATER SUPPLY PLAN

The City of Arden Hills receives its water through the City of Roseville from the Saint Paul Regional Water Service (SPRWS). The items applicable to the City of Arden Hills have been completed. Please see the Saint Paul Regional Water Service for additional information (<http://www.stpaul.gov/index.asp?NID=75>).

**DEPARTMENT OF NATURAL RESOURCES - DIVISION OF WATERS and
METROPOLITAN COUNCIL
WATER SUPPLY PLANS**

These guidelines are divided into four parts. The first three parts, Water Supply System Description and Evaluation, Emergency Response Procedures and Water Conservation Planning apply statewide. Part IV, relates to comprehensive plan requirements that apply only to communities in the Seven-County Twin Cities Metropolitan Area. If you have questions regarding water supply plans, please call (651) 259-5703 or (651) 259-5647 or e-mail your question to wateruse@dnr.state.mn.us. Metro Communities can also direct questions to the Metropolitan Council at watersupply@metc.state.mn.us or (651) 602-1066.

DNR Water Appropriation Permit Number(s)	N/A
Name of Water Supplier	City of Arden Hills (Via Roseville from SPRWS.)
Address	1245 W. Highway 96, Arden Hills, MN 55112
Contact Person	Greg Hoag
Title	Public Works Director
Phone Number	651-792-7847
E-Mail Address	greg.hoag@ci.arden-hills.mn.us

PART I. WATER SUPPLY SYSTEM DESCRIPTION AND EVALUATION

The City of Arden Hills Water Utility is a distribution only system, as all water is purchased from the City of Roseville, who purchases it directly through a wholesale contract from the St. Paul Regional Water Services (SPRWS). Roseville has been providing water through the current arrangement since 1963. The current contract provides for 28 million gallons per day (MGD) to be available to Arden Hills and Roseville and expires in 2024.

Many of the sections in PART 1 of this plan that refer to the water source are referring to the St. Paul Water Utility (SPRWS) water conservation and emergency response plan. Sections relating to storage and consumption capacities are outlined. A water system distribution map is included as Attachment D-1.

A. ANALYSIS OF WATER DEMAND.

Fill in Table 1 for the past 10 years water demand. If your customer categories are different than the ones listed in Table 1, please note the changes below.
The city's customer categories are only residential and commercial.

TABLE 1 Historic Water Demand

Year	Total Population	Population Served	Total Connections	Residential Water Sold (MG)	C/I/I Water Sold (MG)	Wholesale Deliveries (MG)	Total Water Sold (MG)	Total Water Pumped (MG)	Percent Unmetered/Unaccounted	Average Demand (MGD)	Maximum Demand (MGD)	Residential gallons/capita/day	Total gallons/capita/day
1998	9670 est.							399.2		1.09			113.1
1999	9670 est.							445.7		1.22			126.3
2000	9652							415.5		1.14			117.9
2001	9679 est.							423.9		1.16			120.0
2002	9702 est.							409.6		1.12			115.7
2003	9733 est.		2,564	230.0				464.3		1.27		64.7	130.7
2004	9760 est.		2,581	187.3				427.3		1.17		52.6	119.9
2005	9787 est.		2,564	174.5				452.4		1.24		48.9	126.6
2006	9880 est.		2,429	185.9				479.5		1.31		51.5	133.0
2007	9985 est.		2,521	196.0	198,884,008		394,885,197	464.8	15.05%	1.27		53.7	127.5

MG – Million Gallons **MGD** – Million Gallons per Day **C/I/I-** Commercial, Industrial, Institutional

Residential. Water used for normal household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens.

Institutional. Hospitals, nursing homes, day care centers, and other facilities that use water for essential domestic requirements. This includes public facilities and public metered uses. You may want to maintain separate institutional water use records for emergency planning and allocation purposes.

Commercial. Water used by motels, hotels, restaurants, office buildings, commercial facilities, both civilian and military.

Industrial. Water used for thermoelectric power (electric utility generation) and other industrial uses such as steel, chemical and allied products, food processing, paper and allied products, mining, and petroleum refining.

Wholesale Deliveries. Bulk water sales to other public water suppliers.

Unaccounted. Unaccounted for water is the volume of water withdrawn from all sources minus the volume sold.

Residential Gallons per Capita per Day = total residential sales in gallons/population served/365 days **Total Gallons per Capita per Day** = total water withdrawals/population served/365 days

NOTE: Non-essential water uses defined by Minnesota Statutes 103G.291, include lawn sprinkling, vehicle washing, golf course and park irrigation and other non-essential uses. Some of the above categories also include non-essential uses of water.

Water Use Trends. Discuss factors that influence trends in water demand (i.e. growth, weather, industry, conservation). If appropriate, include a discussion of other factors that affect daily water use, such as use by non-resident commuter employees or large water consuming industry.

With more than 14,000 jobs and just 10,000 residents, Arden Hills water consumption is greatly impacted by the business community. Boston Scientific (formerly Guidant), a large medical device manufacturer, has historically been the greatest water consumer. Employment growth has exceeded population growth in recent years, particularly at Boston Scientific. Water demand is also impacted by weather, unidentified pipe leaks, water main breaks, hydrant flushing, skating rink flooding, and sewer line cleaning (both from unmetered hydrants) account for an unknown amount of water annually.

TABLE 2 Large Volume Users - List the top 10 largest users.

Customer	Gallons per year	% of total annual use
Boston Scientific	49,671,912	12%
D& H Enterprises (Arden Manor Manufactured Home Community)	21,860,800	5%
Presbyterian Homes	11,791,457	3%
Northwestern College	8,859,000	2%
Land O'Lakes	8,335,800	2%
International Paper Company	6,464,800	2%
Bethel University	5,964,537	1%
Celestica	5,261,000	1%
Smith Medical	5,002,520	1%
Lodgian, Inc (Holiday Inn)	4,880,560	1%

B. TREATMENT AND STORAGE CAPACITY.

TABLE 3(A) Water Treatment

Water Treatment Plant Capacity	See SPRWS	Gallons per day
Describe the treatment process used (i.e., softening, chlorination, fluoridation, Fe/Mn removal, reverse osmosis, coagulation, sedimentation, filtration, others). Also, describe the annual amount and method of disposal of treatment residuals, if any.		
N/A, Arden Hills purchases water from the City of Roseville, who directly purchases it from the Saint Paul Regional Water Utility Service (SPRWS).		

TABLE 3(B) Storage Capacity - List all storage structures and capacities.

Total Storage Capacity	Average Day Demand (average of last 5 years)	
1.5 million Gallons	N/A Gallons per day	
Type of Structure	Number of Structures	Gallons
Elevated Storage	2	1.5 million gallons, (500,000

		and 1,000,000)
Ground Storage	--	--
Other:	--	--

C. WATER SOURCES.

Sections of the water source section are not applicable to the City of Arden Hills. As noted, the SPRWS supplies water to the City of Arden Hills through the City of Roseville.

TABLE 4(A) Total Water Source Capacity for System (excluding emergency connections)

Total Capacity of Sources	Gallons per minute
Firm Capacity (largest pump out of service)	Gallons per minute

TABLE 4(B) Groundwater Sources - Copies of water well records and well maintenance information should be included with the public water supplier’s copy of the plan in Attachment . If there are more wells than space provided or multiple well fields, please use the List of Wells template (see Resources) and include as Attachment **See SPRWS plan for information in this section as they provide the treated water for our system.**

Well # or name	Unique Well Number	Year Installed	Well & Casing Depth (ft)	Well Diameter (in)	Capacity (GPM)	Geologic Unit	Status

Status: Active use, Emergency, Standby, Seasonal, Peak use, etc. GPM – Gallons per Minute
 Geologic Unit: Name of formation(s), which supplies water to the well

TABLE 4(C) Surface Water Sources

Intake ID	Resource name	Capacity (GPM/MGD)

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 4(D) Wholesale or Retail Interconnections - List interconnections with neighboring suppliers that are used to supply water on a **regular basis** either wholesale or retail.

Water Supply System	Capacity (GPM/MGD)	Wholesale or retail
City of Roseville (Cleveland Avenue)		Wholesale
City of Roseville (County Rd. D)		Wholesale
City of Roseville (Hamline		Wholesale

Avenue)		
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GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 4(E) Emergency Interconnections - List interconnections with neighboring suppliers or private sources that can be used to supply water on an emergency or occasional basis. Suppliers that serve less than 3,300 people can leave this section blank, but must provide this information in Section II C.

Water Supply System	Capacity (GPM/MGD)	Note any limitations on use
City of Shoreview	Lexington Ave. & Grey Fox Rd. 8” 500 GPM est.	Different supply source
City of Shoreview	Lexington Ave. & Cummings Park Dr. 8” 500 GPM est.	Different Supply Source
City of New Brighton	Cleaveland Ave. & Stowe Ave. 8” 500 GPM est.	Different Supply Source

GPM – Gallons per Minute MGD – Million Gallons per Day

D. DEMAND PROJECTIONS.

TABLE 5 Ten Year Demand Projections

Year	Population Served	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)

MGD – Million Gallons per Day MGY – Million Gallons per Year

Projection Method. Describe how projections were made, (assumptions for per capita, per household, per acre or other methods used).

Demand projections are incorporated in the STRWS plan.

E. RESOURCE SUSTAINABILITY

Sustainable water use: use of water to provide for the needs of society, now and in the future, without unacceptable social, economic, or environmental consequences.

Monitoring. Records of water levels should be maintained for all production wells and source water reservoirs/basins. Water level readings should be taken monthly for a production well or observation well that is representative of the wells completed in each water source formation. **If water levels are not currently measured each year, a monitoring plan that includes a schedule for water level readings must be submitted as Attachment See SPRWS.**

TABLE 6 Monitoring Wells - List all wells being measured.

Unique well number	Type of well (production, observation)	Frequency of Measurement (daily, monthly etc.)	Method of Measurement (steel tape, SCADA etc.)
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Water Level Data. Summarize water level data including seasonal and long-term trends for each ground and/or surface water source. If water levels are not measured and recorded on a routine basis then provide the static water level (SWL) when the well was constructed and a current water level measurement for each production well. Also include all water level data taken during well and pump maintenance.

See SPRWS

Attachment --: Provide monitoring data (graph or table) for as many years as possible.

Ground Water Level Monitoring – DNR Waters in conjunction with federal and local units of government maintain and measure approximately 750 observation wells around the state. Ground water level data are available online www.dnr.state.mn.us/waters. Information is also available by contacting the Ground Water Level Monitoring Manager, DNR Waters, 500 Lafayette Road, St. Paul, MN 55155-4032 or call (651) 259-5700.

Natural Resource Impacts. Indicate any natural resource features such as calcareous fens, wetlands, trout streams, rivers or surface water basins that are or could be influenced by water withdrawals from municipal production wells. Also indicate if resource protection thresholds have been established and if mitigation measures or management plans have been developed.

N/A

Sustainability. Evaluate the adequacy of the resource to sustain current and projected demands. Describe any modeling conducted to determine impacts of projected demands on the resource.

N/A

Source Water Protection Plans. The emergency procedures in this plan are intended to comply with the contingency plan provisions required in the Minnesota Department of Health’s (MDH) Wellhead Protection (WHP) Plan and Surface Water Protection (SWP) Plan.

Date WHP Plan Adopted: N/A

Date for Next WHP Update:

SWP Plan: In Process Completed Not Applicable

F. CAPITAL IMPROVEMENT PLAN (CIP)

Adequacy of Water Supply System. Are water supply installations, treatment facilities and distribution systems adequate to sustain current and projected demands? Yes No If no, describe any potential capital improvements over the next ten years and state the reasons for the proposed changes (CIP Attachment).

Proposed Water Sources. Does your current CIP include the addition of new wells or intakes? Yes No If yes, list the number of new installations and projected water demands from each for the next ten years. Plans for new production wells must include the geologic source formation, well location, and proposed pumping capacity.

Water Source Alternatives. If new water sources are being proposed, describe alternative sources that were considered and any possibilities of joint efforts with neighboring communities for development of supplies.

See SPRWS Plan for the joint contract with Roseville and SPRWS. The contract expires in 2024.

Preventative Maintenance. Long-term preventative programs and measures will help reduce the risk of emergency situations. Identify sections of the system that are prone to failure due to age, materials or other problems. This information should be used to prioritize capital improvements, preventative maintenance, and to determine the types of materials (pipes, valves, couplings, etc.) to have in stock to reduce repair time.

Arden Hills has an average of seven water main breaks per year. As part of the City annual CIP program for roadway reconstruction, the City evaluates the condition and break frequency of the water system and makes longer term repairs or replacements as needed. The City stocks a supply of repair materials for all sizes of our water main, as well as new valves and miscellaneous parts.

PART II. EMERGENCY RESPONSE PROCEDURES

Water emergencies can occur as a result of vandalism, sabotage, accidental contamination, mechanical problems, power failures, drought, flooding, and other natural disasters. The purpose of emergency planning is to develop emergency response procedures and to identify actions needed to improve emergency preparedness. In the case of a municipality, these procedures should be in support of, and part of, an all-hazard emergency operations plan. If your community already has written procedures dealing with water emergencies we recommend that you use these guidelines to review and update existing procedures and water supply protection measures.

Federal Emergency Response Plan

Section 1433(b) of the Safe Drinking Water Act as amended by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188, Title IV – Drinking Water Security and Safety) requires community water suppliers serving over 3,300 people to prepare an Emergency Response Plan. **Community water suppliers that have completed the Federal Emergency Response Plan and submitted the required certification to the U.S. Environmental Protection Agency have satisfied Part II, Sections A, B, and C of these guidelines and need only provide the information below regarding the emergency response plan and source water protection plan and complete Sections D (Allocation and Demand Reduction Procedures), and E (Enforcement).**

Provide the following information regarding your completed Federal Emergency Response Plan:

Emergency Response Plan	Contact Person	Contact Number
Emergency Response Lead	Greg Hoag	651-755-0219
Alternate Emergency Response Lead	Ron Moore	651-755-5909
Emergency Response Plan Certification Date		

Operational Contingency Plan. An operational contingency plan that describes measures to be taken for water supply mainline breaks and other common system failures as well as routine maintenance is recommended for all utilities. Check here **X** if the utility has an operational contingency plan. At a minimum a contact list for contractors and supplies should be included in a water emergency telephone list.

Communities that have completed Federal Emergency Response Plans should skip to Section D.

EMERGENCY RESPONSE PROCEDURES

- A. Emergency Telephone List.** A telephone list of emergency contacts must be included as **Attachment D-2** to the plan (complete template or use your own list). The list should include key utility and community personnel, contacts in adjacent communities, and appropriate local, state and federal emergency contacts. Please be sure to verify and update the contacts on the emergency telephone list on a regular basis (once each year recommended). In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the warning point for that community. Responsibilities and services for each contact should be defined.
- B. Current Water Sources and Service Area.** Quick access to concise and detailed information on water sources, water treatment, and the distribution system may be needed in an emergency. System operation, water well and maintenance records should be maintained in a central secured location so that the records are accessible for emergency purposes and preventative maintenance. A detailed map of the system showing the treatment plants, water sources, storage facilities, supply lines, interconnections, and other information that would be useful in an emergency should also be readily available. Check here **X** if these records and maps exist and staff can access the documents in the event of an emergency. **Attachment D-3**
- C. Procedure for Augmenting Water Supplies.** List all available sources of water that can be used to augment or replace existing sources in an emergency. In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the warning point for that community. Copies of cooperative agreements should be maintained with your copy of the plan and include in Attachment . Be sure to include information on any physical or chemical problems that may limit interconnections to other sources of water. Approvals from the MN Department of Health are required for interconnections and reuse of water.

TABLE 7 (A) Public Water Supply Systems – List interconnections with other public water supply systems that can supply water in an emergency.

Water Supply System	Capacity (GPM/MGD)	Note any limitations on use
Shoreview (Lexington & Grey Fox)	8"	Different Supply Source
Shoreview (Lexington & Cummings Park)	8"	Different Supply Source
City of New Brighton (Cleveland & Stowe)	8"	Different Supply Source

GPM – Gallons per Minute MGD – Million Gallons per Day

TABLE 7 (B) - Private Water Sources – List other sources of water available in an emergency.

Name	Capacity (GPM/MGD)	Note any limitations on use

D. Allocation and Demand Reduction Procedures. The plan must include procedures to address gradual decreases in water supply as well as emergencies and the sudden loss of water due to line breaks, power failures, sabotage, etc. During periods of limited water supplies public water suppliers are required to allocate water based on the priorities established in Minnesota Statutes 103G.261.

Water Use Priorities (Minnesota Statutes 103G.261)	
First Priority.	Domestic water supply, excluding industrial and commercial uses of municipal water supply, and use for power production that meets contingency requirements.
	<i>NOTE:</i> Domestic use is defined (MN Rules 6115.0630, Subp. 9), as use for general household purposes for human needs such as cooking, cleaning, drinking, washing, and waste disposal, and uses for on-farm livestock watering excluding commercial livestock operations which use more than 10,000 gallons per day or one million gallons per year.
Second Priority.	Water uses involving consumption of less than 10,000 gallons per day.
Third Priority.	Agricultural irrigation and processing of agricultural products.
Fourth Priority.	Power production in excess of the use provided for in the contingency plan under first priority.
Fifth Priority.	Uses, other than agricultural irrigation, processing of agricultural products, and power production.
Sixth Priority.	Non-essential uses. These uses are defined by Minnesota Statutes 103G.291 as lawn sprinkling, vehicle washing, golf course and park irrigation, and other non-essential uses.

List the statutory water use priorities along with any local priorities (hospitals, nursing homes, etc.) in Table 8. Water used for human needs at hospitals, nursing homes and similar types of facilities should be designated as a high priority to be maintained in an emergency. Local allocation priorities will need to address water used for human needs at other types of facilities such as hotels, office buildings, and manufacturing plants. The volume of water and other types of water uses at these facilities must be carefully considered. After reviewing the data, common sense should dictate local allocation priorities to protect domestic requirements over certain types of economic needs. In Table 8, list the priority ranking, average day demand and demand reduction potential for each customer category (modify customer categories if necessary).

Table 8 Water Use Priorities

Customer Category	Allocation Priority	Average Day Demand (GPD)	Demand Reduction Potential (GPD)
Residential	1		
Institutional	2	No Current data	
Commercial	3	To differentiate	
Industrial	4	Between the	
Irrigation	5	remaining	
Wholesale	7	categories	
Non-essential	6		
	TOTALS		

GPD – Gallons per Day

Demand Reduction Potential. The demand reduction potential for residential use will typically be the base demand during the winter months when water use for non-essential uses such as lawn watering do not occur. The difference between summer and winter demands typically defines the demand reduction that can be achieved by eliminating non-essential uses. In extreme emergency situations lower priority water uses must be restricted or eliminated to protect first priority domestic water requirements. Short-term demand reduction potential should be based on average day demands for customer categories within each priority class.

Triggers for Allocation and Demand Reduction Actions. Triggering levels must be defined for implementing emergency responses, including supply augmentation, demand reduction, and water allocation. Examples of triggers include: water demand >100% of storage, water level in well(s) below a certain elevation, treatment capacity reduced 10% etc. Each trigger should have a quantifiable indicator and actions can have multiple stages such as mild, moderate and severe responses. Check each trigger below that is used for implementing emergency responses and for each trigger indicate the actions to be taken at various levels or stages of severity in Table 9.

- | | | | |
|-------------------------------------|--|-------------------------------------|-------------------------|
| <input checked="" type="checkbox"/> | Water Demand | <input checked="" type="checkbox"/> | Water Main Break |
| <input checked="" type="checkbox"/> | Treatment Capacity | <input type="checkbox"/> | Loss of Production |
| <input checked="" type="checkbox"/> | Storage Capacity | <input checked="" type="checkbox"/> | Security Breach |
| <input type="checkbox"/> | Groundwater Levels | <input checked="" type="checkbox"/> | Contamination |
| <input type="checkbox"/> | Surface Water Flows or Levels | <input type="checkbox"/> | Other (list in Table 9) |
| <input checked="" type="checkbox"/> | Pump, Booster Station or Well Out of Service | | |
| <input checked="" type="checkbox"/> | Governor’s Executive Order – Critical Water Deficiency (required by statute) | | |

Table 9 Demand Reduction Procedures

Condition	Trigger(s)	Actions
Stage 1 (Mild)	Water demand, Treatment capacity, security breach, Contamination	Restrict lawn watering, vehicle washing, golf course and park irrigation and other nonessential uses.
Stage 2 (Moderate)	All of the above, and Booster Station out of service	Suspend lawn watering, vehicle washing, golf course and park irrigation and other nonessential uses.
Stage 3 (Severe)	All of the above	Shut off water to nonessential areas and uses as needed
Critical Water Deficiency (M.S. 103G.291)	Executive Order by Governor & as provided in above triggers	Stage 1: Restrict lawn watering, vehicle washing, golf course and park irrigation and other nonessential uses Stage 2: Suspend lawn watering, vehicle washing, golf course and park irrigation and other nonessential uses

Note: The potential for water availability problems during the onset of a drought are almost impossible to predict. Significant increases in demand should be balanced with preventative measures to conserve supplies in the event of prolonged drought conditions.

Notification Procedures. List methods that will be used to inform customers regarding conservation requests, water use restrictions, and suspensions. Customers should be aware of emergency procedures and responses that they may need to implement.

Notifications will be made using a variety of methods, Local media, Cable TV, website, City watch phone notification, mass email, and signage, Door to Door contact.

E. Enforcement. Minnesota Statutes require public water supply authorities to adopt and enforce water conservation restrictions during periods of critical water shortages.

**Public Water Supply Appropriation During Deficiency.
Minnesota Statutes 103G.291, Subdivision 1.**

Declaration and conservation.

(a) If the governor determines and declares by executive order that there is a critical water deficiency, public water supply authorities appropriating water must adopt and enforce water conservation restrictions within their jurisdiction that are consistent with rules adopted by the commissioner.

(b) The restrictions must limit lawn sprinkling, vehicle washing, golf course and park irrigation, and other nonessential uses, and have appropriate penalties for failure to comply with the restrictions.

An ordinance that has been adopted or a draft ordinance that can be quickly adopted to comply with the critical water deficiency declaration must be included in the plan (include with other ordinances in Attachment 7 for Part III, Item 4). Enforcement responsibilities and penalties for non-compliance should be addressed in the critical water deficiency ordinance.

Sample regulations are available at www.dnr.state.mn.us/waters

Authority to Implement Water Emergency Responses. Emergency responses could be delayed if city council or utility board actions are required. Standing authority for utility or city managers to implement water restrictions can improve response times for dealing with emergencies. Who has authority to implement water use restrictions in an emergency?

Utility Manager City Manager City Council or Utility Board
 Other (describe):

Emergency Preparedness. If city or utility managers do not have standing authority to implement water emergency responses, please indicate any intentions to delegate that authority. Also indicate any other measures that are being considered to reduce delays for implementing emergency responses.

The City Administrator or their designee is also the City Emergency Management Director. They can make executive emergency decisions, which the City Council will formally act on at a later time.

PART III. WATER CONSERVATION PLAN

Water conservation programs are 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.

Minnesota Statutes 103G.291, requires public water suppliers to implement demand reduction measures before seeking approvals to construct new wells or increases in authorized volumes of water. Minnesota Rules 6115.0770, require water users to employ the best available means and practices to promote the efficient use of water. Conservation programs can be cost effective when compared to the generally higher costs of developing new sources of supply or expanding water and/or wastewater treatment plant capacities.

A. Conservation Goals. The following section establishes goals for various measures of water demand. The programs necessary to achieve the goals will be described in the following section.

Unaccounted Water (calculate five year averages with data from Table 1)	
Average annual volume unaccounted water for the last 5 years	gallons
Average percent unaccounted water for the last 5 years	percent
AWWA recommends that unaccounted water not exceed 10%. Describe goals to reduce unaccounted water if the average of the last 5 years exceeds 10%.	
Due to a conversion of the City's utility billing system, the information needed for table one is not available. The City recognizes that is it above the ten percent goal. Efforts to reduce unaccounted for water are primarily in City public works operations that use fire hydrants without metering the water used.	

Residential Gallons Per Capita Demand (GPCD)	
Average residential GPCD use for the last 5 years (use data from Table 1)	54.28 GPCD
In 2002, average residential GPCD use in the Twin Cities Metropolitan Area was 75 GPCD. Describe goals to reduce residential demand if the average for the last 5 years exceeds 75 GPCD.	
--	

Total Per Capita Demand: From Table 1, is the trend in overall per capita demand over the past 10 years <input checked="" type="checkbox"/> increasing or <input type="checkbox"/> decreasing? If total GPCD is increasing, describe the goals to lower overall per capita demand or explain the reasons for the increase.
While the overall demand is increasing slightly, it does fluctuate from year to year. The increase is likely due to an increasing number of jobs in the City and an increase in usage by non-residential users.

Peak Demands (calculate average ratio for last five years using data from Table 1)	
Average maximum day to average day ratio	
If peak demands exceed a ratio of 2.6, describe the goals for lowering peak demands.	
The City adopted a new rate structure on December 8, 2008. The new rate structure is intended to encourage conservation.	

B. Water Conservation Programs. Describe all short-term conservation measures that are available for use in an emergency and long-term measures to improve water use efficiencies for each of the six conservation program elements listed below. Short-term demand reduction measures must be included in the emergency response procedures and must be in support of, and part of, a community all-hazard emergency operation plan.

1. **Metering.** The American Water Works Association (AWWA) recommends that every water utility meter all water taken into its system and all water distributed from its system at its customer's point of service. An effective metering program relies upon periodic performance testing, repair, repair and maintenance of all meters. AWWA also recommends that utilities conduct regular water audits to ensure accountability. Complete Table 10 (A) regarding the number and maintenance of customer meters.

TABLE 10 (A) Customer Meters

	Number of Connections	Number of Metered Connections	Meter testing schedule (years)	Average age/meter replacement schedule (years)
Residential	2521	2521		/
Institutional				/
Commercial				/
Industrial				/
Public Facilities				/
Other				/
TOTALS	2521	2521		

Unmetered Systems. Provide an estimate of the cost to install meters and the projected water savings from metering water use. Also indicate any plans to install meters.
n/a

TABLE 10 (B) Water Source Meters

	Number of Meters	Meter testing schedule (years)	Average age/meter replacement schedule (years)
Water Source (wells/intakes)			/
Treatment Plant			/

2. **Unaccounted Water.** Water audits are intended to identify, quantify, and verify water and revenue losses. The volume of unaccounted-for water should be evaluated each billing cycle. The AWWA recommends a goal of ten percent or less for unaccounted-for water. Water audit procedures are available from the AWWA and MN Rural Water Association.

Frequency of water audits: each billing cycle yearly other:

Leak detection and survey: every year every year periodic as needed
 Year last leak detection survey completed:

Reducing Unaccounted Water. List potential sources and efforts being taken to reduce unaccounted water. If unaccounted water exceeds 10% of total withdrawals, include the timeframe for completing work to reduce unaccounted water to 10% or less.
 Metering all City use.

3. **Conservation Water Rates.** Plans must include the current rate structure for all customers and provide information on any proposed rate changes. Discuss the basis for current price levels and rates, including cost of service data, and the impact current rates have on conservation.

Billing Frequency: Monthly (Commercial) Bimonthly Quarterly (Residential)
 Other (describe):

Volume included in base rate or service charge: 10,000 gallons or cubic feet

Conservation Rate Structures

- Increasing block rate: rate per unit increases as water use increases
- Seasonal rate: higher rates in summer to reduce peak demands
- Service charge or base fee that does not include a water volume

Conservation Neutral Rate Structure

- Uniform rate: rate per unit is the same regardless of volume

Non-conserving Rate Structures

- Service charge or base fee that includes a large volume of water
- Declining block rate: rate per unit decreases as water use increases
- Flat rate: one fee regardless of how much water is used (unmetered)

Other (describe):

Water Rates Evaluated: every year every years no schedule
 Date of last rate change: 1/1/08. A new rate system will go into effect on January 1, 2009.

Declining block (the more water used, the cheaper the rate) and flat (one fee for an unlimited volume of water) rates should be phased out and replaced with conservation rates.

Incorporating a seasonal rate structure and the benefits of a monthly billing cycle should also be considered along with the development of an emergency rate structure that could be quickly implemented to encourage conservation in an emergency.

Current Water Rates. Include a copy of the actual rate structure in Attachment D-4 or list current water rates including base/service fees and volume charges below.

Non-conserving Rate Structures. Provide justification for the rate structure and its impact on reducing demands or indicate intentions including the timeframe for adopting a conservation rate structure.

4. **Regulation.** Plans should include regulations for short-term reductions in demand and long-term improvements in water efficiencies. Sample regulations are available from DNR Waters. Copies of adopted regulations or proposed restrictions should be included in Attachment _____ of the plan. Indicate any of the items below that are required by local regulations and also indicate if the requirement is applied each year or just in emergencies.

Water restrictions are set by the SPRWS.

- Time of Day: no watering between _____ am/pm and _____ am/pm (reduces evaporation) year around seasonal emergency only
- Odd/Even: (helps reduce peak demand) year around seasonal emergency only
- Water waste prohibited (no runoff from irrigation systems)
Describe ordinance:
- Limitations on turf areas for landscaping (reduces high water use turf areas)
Describe ordinance:
- Soil preparation (such as 4"-6" of organic soil on new turf areas with sandy soil)
Describe ordinance:
- Tree ratios (plant one tree for every _____ square feet to reduce turf evapotranspiration)
Describe ordinance:
- Prohibit irrigation of medians or areas less than 8 feet wide
Describe ordinance:
- Permit required to fill swimming pool every year emergency only
- Other (describe):

State and Federal Regulations (mandated)

Rainfall sensors on landscape irrigation systems. Minnesota Statute 103G.298 requires “All automatically operated landscape irrigation systems shall have furnished and installed technology that inhibits or interrupts operation of the landscape irrigation system during periods of sufficient moisture. The technology must be adjustable either by the end user or the professional practitioner of landscape irrigation services.”

Water Efficient Plumbing Fixtures. The 1992 Federal Energy Policy Act established manufacturing standards for water efficient plumbing fixtures, including toilets, urinals, faucets, and aerators.

Enforcement. Are ordinances enforced? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, indicate how ordinances are enforced along with any penalties for non-compliance.
--

Notification and tagging if necessary.
--

5. Education and Information Programs. Customers should be provided information on how to improve water use efficiencies a minimum of two times per year. Information should be provided at appropriate times to address peak demands. Emergency notices and educational materials on how to reduce water use should be available for quick distribution during an emergency. If any of the methods listed in the table below are used to provide water conservation tips, indicate the number of times that information is provided each year and attach a list of education efforts used for the last three years.

Current Education Programs	Times/Year
Billing inserts or tips printed on the actual bill	
Consumer Confidence Reports	1
Local news papers	2
Community news letters	3
Direct mailings (water audit/retrofit kits, showerheads, brochures)	
Information at utility and public buildings	2
Public Service Announcements	
Cable TV Programs	
Demonstration projects (landscaping or plumbing)	
K-12 Education programs (Project Wet, Drinking Water Institute)	
School presentations	
Events (children’s water festivals, environmental fairs)	
Community education	
Water Week promotions	
Information provided to groups that tour the water treatment plant	
Website (include address: _____)	
Targeted efforts (large volume users, users with large increases)	
Notices of ordinances (include tips with notices)	
Emergency conservation notices (recommended)	
Other:	

List education efforts for the last three years in Attachment _____ of the plan. Be sure to indicate whether educational efforts are on-going and which efforts were initiated as an emergency or drought management effort.

Proposed Education Programs. Describe any additional efforts planned to provide conservation information to customers a minimum of twice per year (required if there are no current efforts).
 The City plans to expand its educational information on the City website.

A packet of conservation tips and information can be obtained by contacting DNR Waters or the Minnesota Rural Water Association (MRWA). The American Water Works Association (AWWA) www.awwa.org or www.waterwiser.org also has excellent materials on water conservation that are available in a number of formats. You can contact the MRWA 800/367-6792, the AWWA bookstore 800/926-7337 or DNR Waters 651/259-5703 for information regarding educational materials and formats that are available.

6. **Retrofitting Programs.** Education and incentive programs aimed at replacing inefficient plumbing fixtures and appliances can help reduce per capita water use as well as energy costs. It is recommended that communities develop a long-term plan to retrofit public buildings with water efficient plumbing fixtures and that the benefits of retrofitting be included in public education programs. You may also want to contact local electric or gas suppliers to see if they are interested in developing a showerhead distribution program for customers in your service area.

A study by the AWWA Research Foundation (Residential End Uses of Water, 1999) found that the average indoor water use for a non-conserving home is 69.3 gallons per capita per day (gpcd). The average indoor water use in a conserving home is 45.2 gpcd and most of the decrease in water use is related to water efficient plumbing fixtures and appliances that can reduce water, sewer and energy costs. In Minnesota, certain electric and gas providers are required (Minnesota Statute 216B.241) to fund programs that will conserve energy resources and some utilities have distributed water efficient showerheads to customers to help reduce energy demands required to supply hot water.

Retrofitting Programs. Describe any education or incentive programs to encourage the retrofitting of inefficient plumbing fixtures (toilets, showerheads, faucets, and aerators) or appliances (washing machines).

Educate public through newsletters and website.

Plan Approval. Water Supply Plans must be approved by the Department of Natural Resources (DNR) every ten years. Please submit plans for approval to the following address:

DNR Waters

Water Permit Programs Supervisor

500 Lafayette Road

St. Paul, MN 55155-4032

or Submit electronically to

wateruse@dnr.state.mn.us.

Adoption of Plan. All DNR plan approvals are contingent on the formal adoption of the plan by the city council or utility board. Please submit a certificate of adoption (example available) or other action adopting the plan.

Metropolitan Area communities are also required to submit these plans to the Metropolitan Council. Please see PART IV. ITEMS FOR METROPOLITAN AREA PUBLIC SUPPLIERS.

METROPOLITAN COUNCIL

PART IV. ITEMS FOR METROPOLITAN AREA PUBLIC SUPPLIERS

Minnesota Statute 473.859 requires water supply plans to be completed for all local units of government in the seven-county Metropolitan Area as part of the local comprehensive planning process. Much of the required information is contained in Parts I-III of these guidelines. However, the following additional information is necessary to make the water supply plans consistent with the Metropolitan Land Use Planning Act upon which local comprehensive plans are based. Communities should use the information collected in the development of their plans to evaluate whether or not their water supplies are being developed consistent with the Council's Water Resources Management Policy Plan.

Policies. Provide a statement(s) on the principles that will dictate operation of the water supply utility: for example, "It is the policy of the city to provide good quality water at an affordable rate, while assuring this use does not have a long-term negative resource impact."

Goal: *Provide efficient and high-quality public facilities, services, and infrastructure.*

To achieve this *public facilities, services, and infrastructure goal*, the following policies are proposed:

- Provide reliable and high-quality water facilities, sanitary sewer, and stormwater systems.
- Prepare long-term plans to identify, prioritize, and determine the costs to maintain and/or replace City water and sewer facilities.
- Maintain and keep the emergency preparedness plan updated.
- Work to provide efficient, low-cost services through ongoing evaluation and intergovernmental coordination.
- Utilize the Capital Improvement Plan (CIP) and annual budgeting process for prioritizing major public expenditures.
- Work to reduce inflow and infiltration into the City's sanitary sewer system.

Impact on the Local Comprehensive Plan. Identify the impact that the adoption of this water supply plan has on the rest of the local comprehensive plan, including implications for future growth of the community, economic impact on the community and changes to the comprehensive plan that might result.

No significant changes are anticipated.

Demand Projections

Year	Total Community Population	Population Served	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)
2010	11,200	11,200	NA	NA	NA
2020	12,900	12,900	NA	NA	NA
2030	12,900	12,900	NA	NA	NA
Ultimate	12,900	12,900	NA	NA	NA

Population projections should be consistent with those in the Metropolitan Council's 2030

Regional Development Framework or the Communities 2008 Comprehensive Plan update. If population served differs from total population, explain in detail why the difference (i.e., service to other communities, not complete service within community etc.).

PLAN SUBMITTAL AND REVIEW OF THE PLAN

The plan will be reviewed by the Council according to the sequence outlined in Minnesota Statutes 473.175. **Prior to submittal to the Council, the plan must be submitted to adjacent governmental units for a 60-day review period.** Following submittal, the Council determines if the plan is complete for review within 15 days. If incomplete, the Council will notify the community and request the necessary information. When complete the Council will complete its review within 60 days or a mutually agreed upon extension. The community officially adopts the plan after the Council provides its comments.

Plans can be submitted electronically to the Council; however, the review process will not begin until the Council receives a paper copy of the materials. Electronic submissions can be via a CD, 3 ½" floppy disk or to the email address below. Metropolitan communities should submit their plans to:

Reviews Coordinator
Metropolitan Council
390 Robert St,
St. Paul, MN 55101

electronically to:
watersupply@metc.state.mn.us



Water Supply Infrastructure

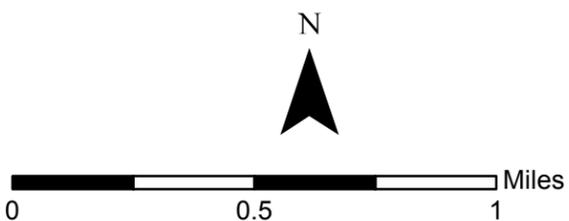
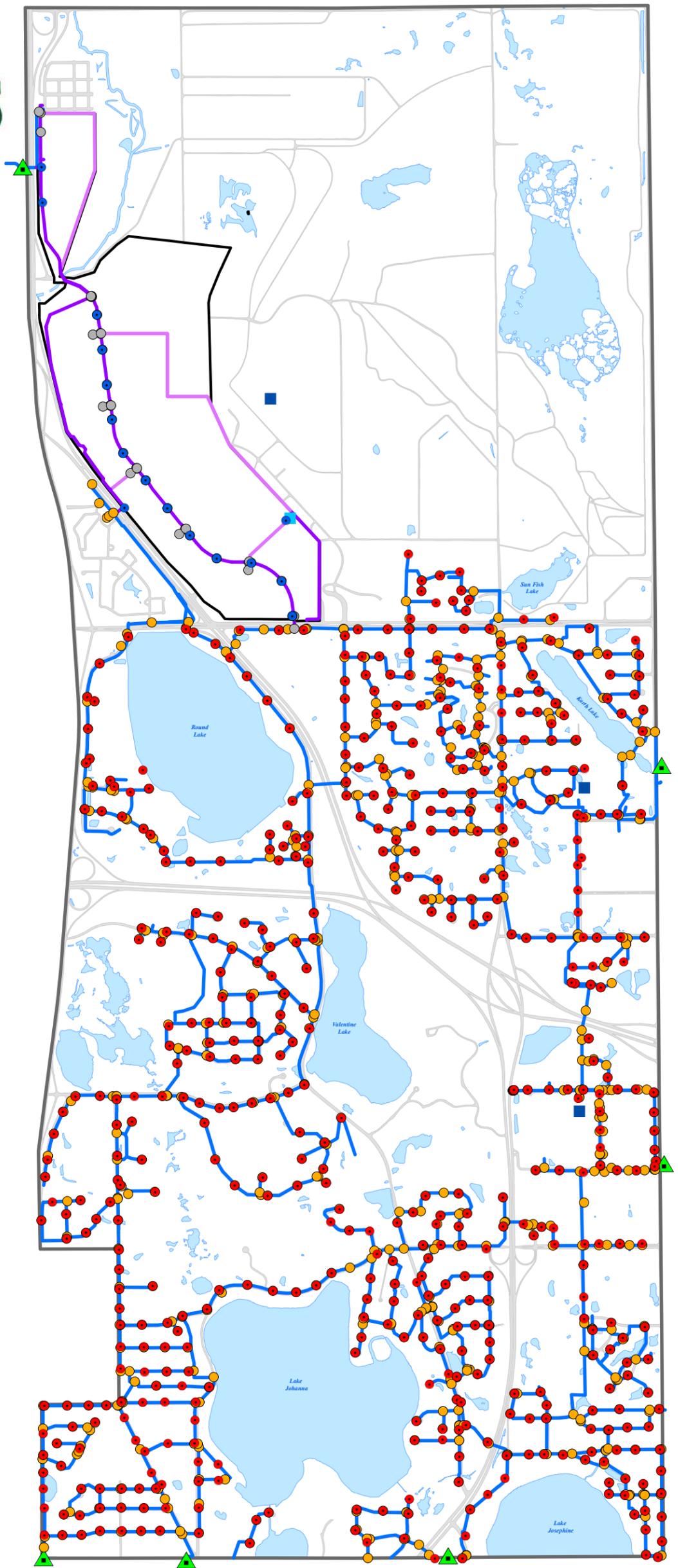
Figure D.1

Proposed and Future

- Hydrants
- Gate_Valves
- Water Tower
- Proposed Watermain
- Future Watermain

Existing

- Water Tower
- Hydrants
- Gate Valves
- ▲ Water Connections
- Watermain



2015 Comprehensive Plan Amendment (2030 Comprehensive Plan)

Updated: June 23, 2015
 Approved by the City Council: July 13, 2015
 Printed: November 10, 2015
 Source: City of Arden Hills, Ramsey County, City of Roseville

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Attachment D-2
Arden Hills
Water Supply Emergency Telephone List

City Emergency Response Team	Name	Organization	Telephone	Telephone 2
Emergency Response Lead	Greg Hoag	Arden Hills	651-792-7847	651-755-0219
Alternate Response Lead	Ron Moore	Arden Hills	651-792-7810	651-755-5909
Mayor/PIO	Stan Harpstead	Arden Hills	651-792-7800	651-604-9097
Water Operator	Joe Mooney	Arden Hills	651-792-7852	651-755-0211
Water Operator	Mike Schifsky	Arden Hills	651-792-7852	651-755-0207
Water Operator	Pete Saxe	Arden Hills	651-792-7852	651-755-0213
Water Operator	Dave Winkel	Arden Hills	651-792-7852	651-755-0223
Water Operator	Tony Nowlan	Arden Hills	651-792-7852	651-755-0229
Water Operator	Scott Freyberger	Arden Hills	651-792-7852	651-755-0209
Water Operator	Jeff Frid	Arden Hills	651-792-7852	651-755-1461
Water Operator	Aaron Andrews	Arden Hills	651-792-7852	651-755-0217
Water Operator	Vacant	Arden Hills	651-792-7852	

State and Local Emergency Response Contacts	Name	Organization	Telephone	Telephone 2
State Incident Duty Officer	Minnesota Duty Officer	State	800-422-0798	651-649-5451
National Guard	Minnesota Duty Officer	State	800-422-0798	651-649-5451
County Emergency Management	Judd Freed	Ramsey County	651-266-1014	952-203-5919
Fire Department	Tim Boehlke	Lake Johanna FD	651-481-7024	911
Police	Bob Fletcher	Ramsey County SD	651-484-3366	911
Ambulance	Jeff Lanenberg	Allina Medical	952-894-5492	911
Hospital	Regions		651-254-3456	
Hospital	St. Johns		651-232-7000	
Hospital	Unity		763-421-2222	

State and Local Agencies	Name	Organization	Telephone	Telephone 2
MDH		MDH	651-215-0770	
MDH District Engineer	Chad Kolstad	MDH	651-201-5000	
MPCA			651-296-8100	
MnDOT			651-779-1168	
State Testing Lab	Minnesota Duty Officer	State	800-422-0798	651-649-5451
St. Paul Regional Water Utility	Steve Schneider	General Manager	651-266-6274	651-266-6868
Interconnect/ Emergency	Tony Thury	City of Roseville	651-792-7053	651-775-3511
Emergency	Mark Maloney	City Of Shoreview	651-490-4650	
Emergency	Grant Wyffels	City of New Brighton	651-638-2053	

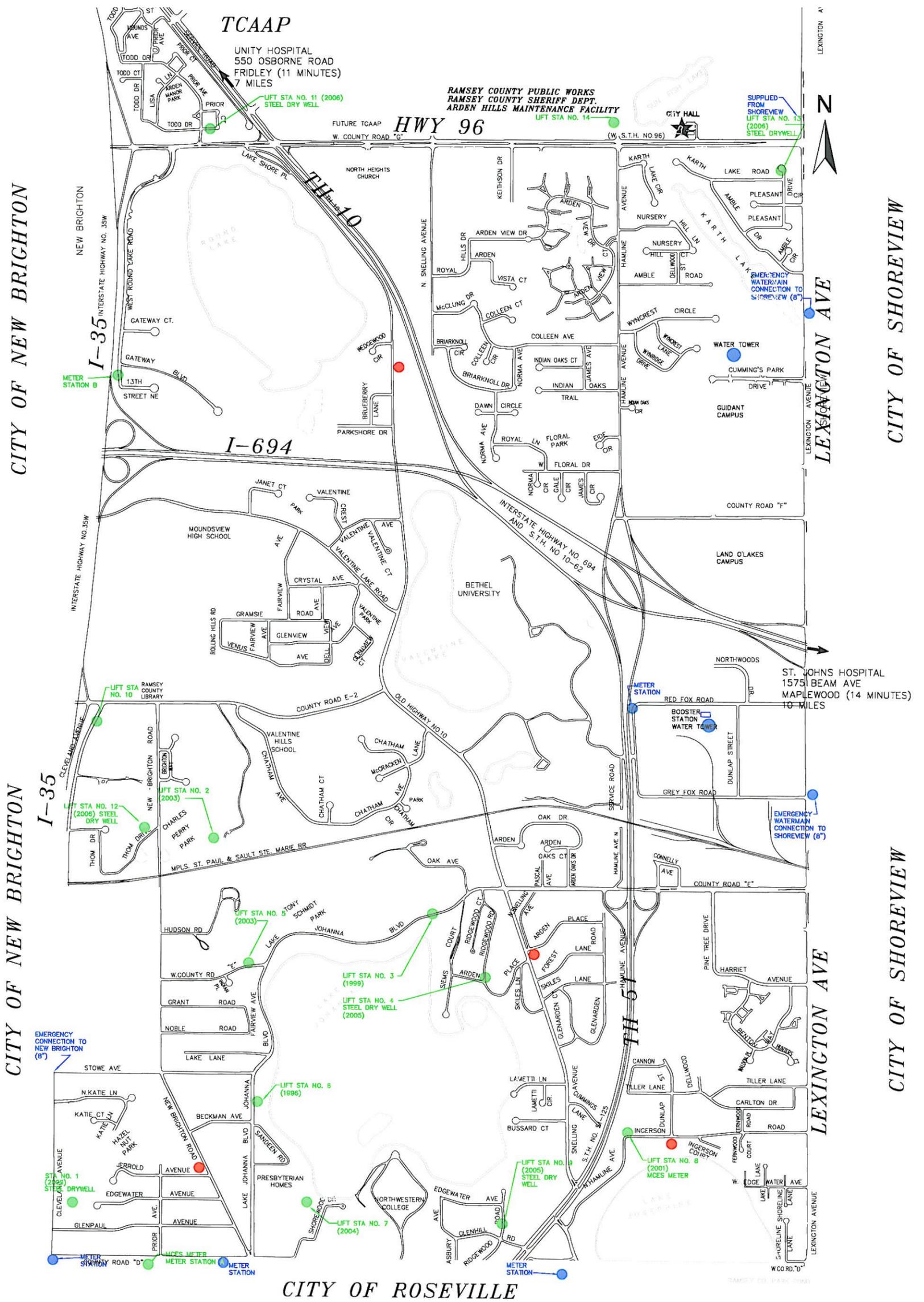
Utilities	Name	Organization	Telephone	Telephone 2
Electric	Xcel Energy		800-895-1999	
Gas	Xcel Energy		800-895-2999	
Telephone	Quest		800-954-1211	
Telephone/Cable TV	Comcast		651-222-3333	
Gopher State One Call			800-252-1166	651-454-0002

Contracted Services & Supplies	Name	Organization	Telephone	Telephone 2
Engineering	Deb Bloom/ Kris Giga	City of Roseville	651-792-7842	651-792-7849
Excavation/Repair	Steve Ingram	Valley-Rich Co.	952-448-3002	612-839-8502
Excavation/Repair	Tony Frattalone	FM Frattalone	651-484-0448	651-283-6608
Pump Repair	Ray Anderson	General Repair	651-766-0874	612-867-9153

Attachment D-2
Arden Hills
Water Supply Emergency Telephone List

Electrician		Peoples Electric	651-227-7711	
Meter Repair	Mike McNabb	Dakota Supply	952-890-3811	612-840-5060
Testing Laboratory		Pace Analytical	612-607-1700	
Pipes/Fittings/Valves		Northern Waterworks	763-560-5200	
Insurance	Judy Pettit	TC Field	651-227-8405	651-726-5138
Insurance	Phil Trebattoski	LMCIT	651-215-4060	651-357-5699
Leak Detection	Tony Schrantz	Wa. Conservation	612-600-8716	
Leak Detection	Verne Jacobsen	TKDA	651-292-4484	612-991-3400
Security Alarm		Electro Watchman	651-227-8461	
MRWA Technical Services	MN Rural Wa. Assoc.		800-367-6792	

Critical Water Users	Name	Organization	Telephone	Telephone 2
Moundsview High School			651-633-4031	
Valentine Elementary School			651-631-0737	
Bethel College	Bruce Kunkel	Tom Trainer	651-638-6999	651-638-6259
Boston Scientific	Randy Cook	Boston Scientific	651-582-6295	651-895-0548
Presbyterian Homes	Wayne Hardison	Presbyterian Homes	651-636-5042	651-238-2555
Land O Lakes	Kevin Taaffe	Land O Lakes	651-481-2087	612-685-8218



- WATERMAIN METER STATION & EMERGENCY CONNECTION
- SANITARY LIFT STATION & METER STATION
- CIVIL DEFENSE SIRENS

Attachment D-4

The below rates are effective as of January 1, 2009.

Utility Use Charges		
Water – Residential Per Quarter:		
Senior – Base Charge		\$22.40
Non-Senior Base Charge		\$32.00
Over Base 10,000 gallons – 35,000 gallons		\$2.73/1,000 gallons
Over 35,000 gallons		\$4.78/1,000 gallons
Standby		\$6.00/per account
Water – Commercial Per Quarter:		
Base Charge	3/4” Meter size or Smaller	\$32.00/quarter
Base Charge	1” Meter Size	\$58.50/quarter
Base Charge	1.5” Meter Size	\$108.93/quarter
Base Charge	10” Meter Size	\$2,412.75/quarter
Base Charge	12” Meter Size	\$3,416.91/quarter
Base Charge	2” Meter Size	\$167.37/quarter
Base Charge	3” Meter Size	\$348.66/quarter
Base Charge	4” Meter Size	\$516.03/quarter
Over Base 10,000 gallons – 35,000 gallons		\$2.73/1,000 gallons
Over 35,000 gallons		\$4.78/1,000 gallons
Standby	Average	\$50.65/per account
Sanitary Sewer Per Quarter:		
Residential Senior Base Charge		\$55.00
Residential Non-Senior Base Charge		\$67.83
Residential Usage Over 15k gallons for every 1k gallon		\$3.75
Commercial Usage for every 1k gallons		\$4.05
Surface Water Per Quarter:		
Residential (Senior & Non-Senior)		\$9.32/lot
Residential – Townhomes		\$12.08/unit
Apartment		\$76.06
Industrial - Commercial		\$118.75/acre
Undeveloped Land		\$13.98/acre

APPENDIX E – SANITARY SEWER PLAN

1. INTRODUCTION

The Sanitary Sewer portion of the Arden Hills Comprehensive Plan was last updated in 2009. The primary purpose of this update is to consider development/redevelopment that is being planned within the Twin Cities Army Ammunition Plant (TCAAP) area of the City. This is the area located north of Highway 96 and east of Interstate 35W. This 427 acre area comprised of a mix of business and residential land uses is expected to develop beginning in 2016 and be fully built out by 2030.

This update has been prepared to be consistent with the requirements of the Metropolitan Council's Local Planning Handbook. The Local Planning Handbook describes the content requirements for the sewer element of comprehensive plans. This report serves as both the sewer element of the City's comprehensive plan (Tier I) as well as the City's local sewer extension plan (Tier II). The information included in this update allows the Metropolitan Council to plan and manage their regional sewage collection and treatment systems.

2. EXISTING SANITARY SEWER SYSTEM

The City of Arden Hills is entirely within the Metropolitan Urban Service Area (MUSA), therefore sanitary sewer collection and treatment is provided to the City via the Metropolitan Council Environmental Services (MCES) system. The City does not own or operate any sewage treatment facilities. Within the City, the system is under the jurisdiction of the City's sanitary sewer utility. Historically, the sanitary sewer utility has managed to be self-supporting; with future infrastructure replacement needs financed from revenues generated from the fees paid by users.

The Arden Hills sanitary sewer system consists of approximately 42 miles of sanitary sewer, over 1,050 manholes, and 14 lift stations. The public sanitary sewer provides service connections to approximately 2,622 households and businesses. Of these connections, approximately 2,492 are residential and 130 are non-residential. The City's sanitary sewer lines and lift stations collect sewage from individual parcels or properties and route the sewage to the MCES sewer system. MCES owns and maintains the interceptor sewers. Wastewater is collected and delivered to four connection points with the MCES system: Meter 051, Meter 052, Meter 054, and Meter 059. The City's sanitary sewer system and the connection points to the MCES system are identified on Figure E.1.

Sanitary sewer in Arden Hills flows into MCES interceptors, which deliver the waste to the Pigs Eye Wastewater Treatment Plant in Saint Paul. Operated by the MCES, this plant received 332.9 million gallons from the City of Arden Hills in 2014. This amount has been relatively consistent on an annual basis; however, flows vary on a monthly basis due to seasonal weather patterns. The last five

years of MCES total metered flow from Arden Hills (million gallons / year) are as follows:

<u>Year</u>	<u>Volume</u>
2010	314 MG
2011	348 MG
2012	270 MG
2013	302 MG
2014	333 MG

The City operates and maintains 14 sanitary sewer lift stations. Since 1990, 13 of these have been replaced or rehabilitated. The last lift station to be rehabilitated (lift station 11) is scheduled as a 2016 Capital Improvement. All of these facilities require around the clock monitoring. All lift stations are connected via monitoring equipment that allows for data collection and remote monitoring capability. One new sanitary sewer lift station is proposed to serve the portion of TCAAP located south of County Road H. This lift station will be installed as a part of the first phase of the proposed development.

A list of the lift stations is included below in Table E.1. Refer to Attachment 1 for an inventory of lift station design and capacity information provided by the City of Arden Hills.

Table E.1 – Lift Station Information

Lift Station	Location	Status / Year Installed
Lift Station 1	3182 Cleveland Ave N near Elmer L. Anderson Memorial Trail	New 2012
Lift Station 2	3700 New Brighton Road in Charles Perry Park	Pump Rehabilitate: 2011 Wetwell Rehabilitate: 2003 Controls Rehabilitate: 2011
Lift Station 3	1600 Lake Johanna Boulevard near Siems Court	Wetwell Rehabilitate: 1999
Lift Station 4	3484 Ridgewood Road and Arden Place	Pump Rehabilitate: 2013 Wetwell Rehabilitate: 2005 Controls Rehabilitate: 2013
Lift Station 5	Tony Schmidt Regional Park and Lake Johanna Boulevard	Pump Rehabilitate: 2011 Wetwell Rehabilitate: 2003 Controls Rehabilitate: 2011
Lift Station 6	3324 Lake Johanna Boulevard, south of Stowe Avenue	Pump Rehabilitate: 1996
Lift Station 7	Located behind 3191 Shorewood Drive	Pump Rehabilitate: 2004 Wetwell Rehabilitate: 2004 Controls Rehabilitate: 2013
Lift Station 8	Located at 1327 Ingerson Road	Pump Rehabilitate: 2011 Wetwell Rehabilitate: 2001 Controls Rehabilitate: 2011
Lift Station 9	Ridge Wood Road and Edgewater Avenue	

		Pump Rehabilitate: 2013 Wetwell Rehabilitate: 2005 Controls Rehabilitate: 2013
Lift Station 10	3820 Cleveland Avenue North and County Road E2	
		New 1989
Lift Station 11	Located at Hwy 96 and Prior Ave N near Arden Manor Park	
		Built 1971
Lift Station 12	Located at Thom Drive and New Brighton Road	
		New 2012
Lift Station 13	Located at Karth Lake Drive and Pleasant Drive	
		New 2012
Lift Station 14	Located at Hamline Avenue N and Paul Kirkwood Drive	
		Pumps, Wetwell and Controls: 1995

3. INTERCOMMUNITY SERVICES

Arden Hills has inter-community utility service connections with the neighboring municipalities of Shoreview, Roseville, and Mounds View. Former TCAAP property wastewater entered MCES meter 203 in Mounds View at the location of MCES lift station 35. There is an existing agreement between the City of Arden Hills, the Department of the Army, and the City of Mounds View for this interconnection. This existing sanitary sewer connection allows sewage to be directed into the Mounds View system. However, the purchase of the TCAAP property by Ramsey County has made the existing sanitary sewer connection and use agreement invalid and a new agreement will need to be established. The new agreement will be between the City of Mounds View, the City of Arden Hills and MCES. The inter-community connections are summarized on Table E.2 below and shown on Figure E.1.

Table E.2 – Intercommunity Sewer Service Connections

City	Sewer Flow TO Arden Hills	Sewer Flow FROM Arden Hills
Mounds View	None	TCAAP Area (Per New Agreement)
Roseville	58 Units	53 Units
Shoreview	None	2 Units (1185 Hwy 96 & 1900 County Rd I)
Total	58 Units	55 Units + TCAAP

4. MCES SEWER VOLUME FORECAST

The MCES has estimated wastewater flows for Arden Hills based on the Metropolitan Council’s population, housing and employment forecasts, and historical community flow data. This information was provided from the MCES in the 2030 System Statement and is shown below in Table E.3. These numbers were not adjusted as a part of this Comprehensive Sewer Plan Update. Projections for 2030 indicate an average annual wastewater flow of 1.47 mgd.



Sanitary Sewer Infrastructure

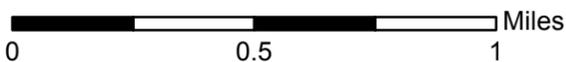
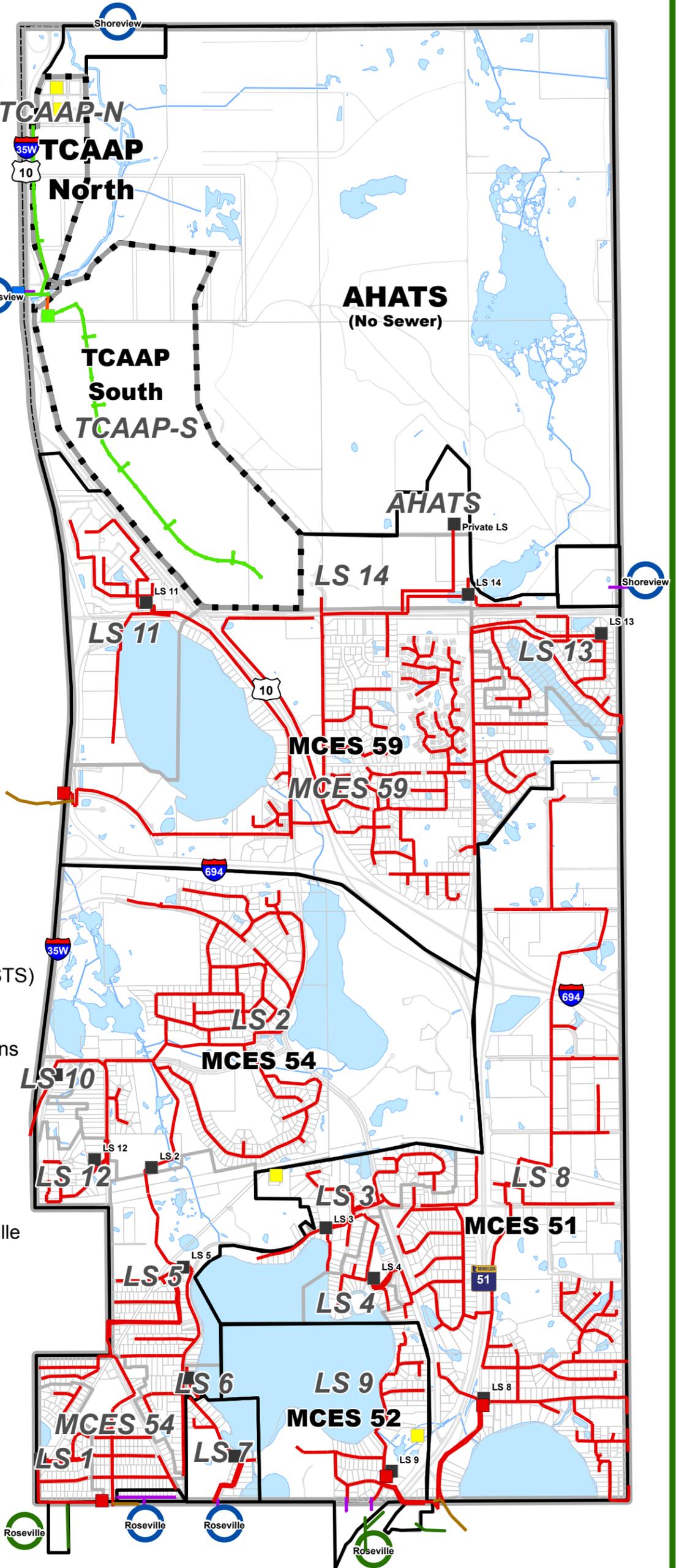
Figure E.1

Proposed

- Proposed Lift Station
- Arden Hills Meter
- Sanitary Sewer
- MCES Meter Area
- Lift Station Area

Existing

- Sewer Provided by Arden Hills
- Sewer Provided by Adjacent Community
- MCES Meter
- Individual Sewage Treatment Systems (ISTS)
- Lift Station
- Intercommunity Sewer Service Connections
- Interceptors
- Sanitary Sewer
- MCES Meter Area
- Lift Station Area
- MCES Area Shared with the City of Roseville



2015 Comprehensive Plan Amendment (2030 Comprehensive Plan)

Updated: June 25, 2015
 Approved by the City Council: July 13, 2015
 Printed: November 10, 2015
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Table E.3 – MCES Sewer Volume Forecast

Year	2010	2020	2030
Sewered Population	11,200	13,500	15,200
Sewered Households	3,800	4,600	8,000
Sewered Employment	15,200	17,100	20,000
Average Annual Wastewater Flow (MGD)	1.28	1.47	1.47
Allowable Peak Hourly Flow (MGD)	3.84	4.41	4.41

Note: This data is from the Metropolitan Council 2030 System Statement provided to Arden Hills as part of the September 2009 Comprehensive Plan Update.

5. LAND USE AND ZONING

This update has been prepared considering the City of Arden Hill’s current zoning and land use maps. A copy of the current zoning map, existing land use map, and 2030 future land use map is included as Figures E.2-E.4 respectively. For the purposes of estimating sewage flows, we have assumed the following:

- 2010 sewage flows are based on actual meter records provided by the MCES.
- The existing land use map compares well with the current zoning map and is used to illustrate 2015 development within the City.
- The 2030 land use map in conjunction with the TCAAP Master Plan is used to illustrate projected 2030 development within the City.

6. SANITARY SEWER SERVICE DISTRICTS

The City is divided into eighteen (18) primary sewer districts comprised of the following: Lift Station Districts LS 1- LS 14, Gravity Districts MCES 54 & MCES 59, and TCAAP Districts North and South. Additionally, the sewered portion of the Arden Hills Army Training Site (AHATS) discharges via a private forcemain into MCES 59. The district boundaries included in this update are consistent with the boundaries identified in the 2009 update with the exception of the addition of two new sewer districts in the TCAAP area. A map illustrating these boundaries is attached as Figure E.5.

7. PROJECTED SEWAGE FLOWS

Projected sewage flows have been determined for each of the eighteen (18) sewer districts in the City. Sewage flows for 2010 are based on actual meter records provided by MCES. Projections have been made for 5 year increments from 2015 to 2030.

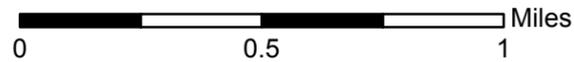
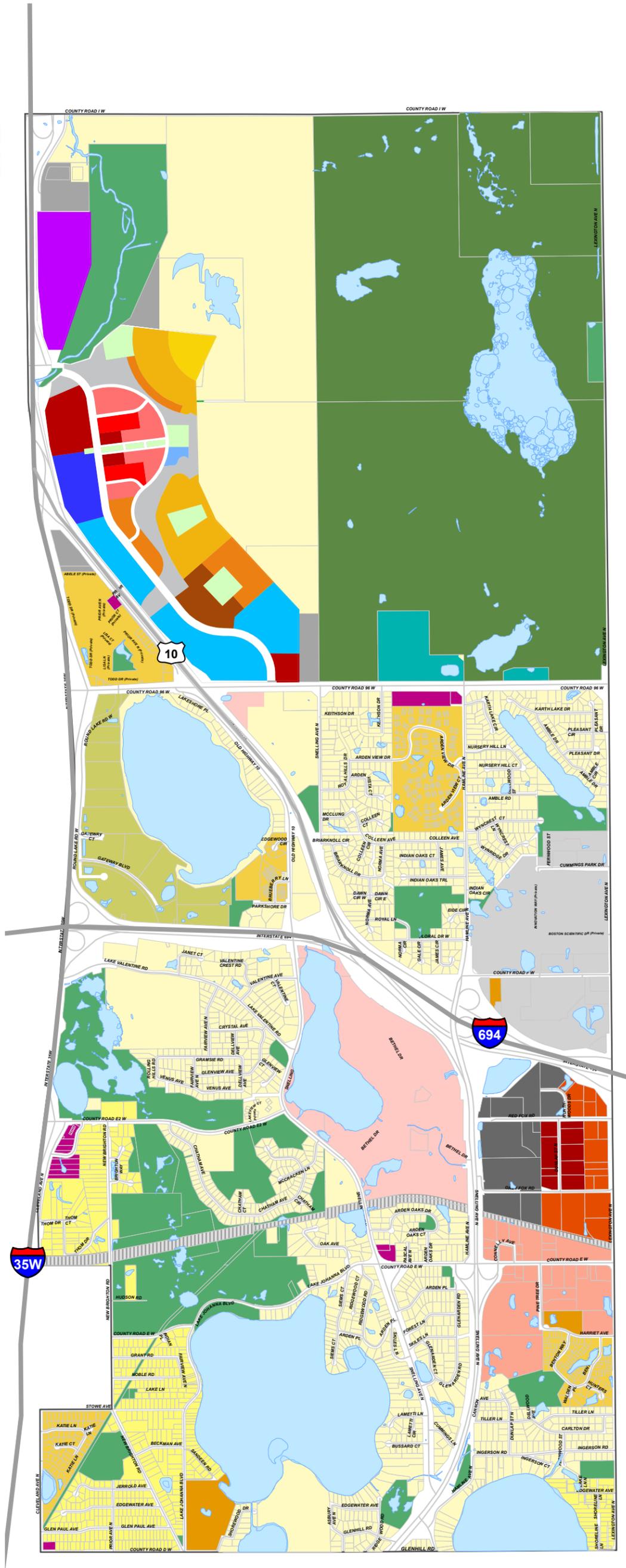
As stated in the land use and zoning section of this update, the following assumptions have been made in determining the estimated sewage flows:



Zoning Map

Figure E.2

- TRC CC – Campus Commercial
- TRC – Civic/Open Space
- TRC FO – Flex Office
- TRC RMU – Retail Mixed Use
- TRC NR-1 – Residential
- TRC NR-2 – Residential
- TRC NR-3 – Residential
- TRC NR-4 – Residential
- TRC NT – Neighborhood Transition
- TRC OMU – Office Mixed Use
- TRC OS – Open Space
- TRC TC – Town Center
- TRC – Water Infrastructure
- R-1 - Single Family Residential District
- R-2 - Single & Two Family Residential District
- R-3 - Townhouse & Low Density Multiple Dwelling District
- R-4 - Multiple Dwelling District
- B-1 - Limited Business District
- B-2 - General Business District
- B-3 - Service Business District
- B-4 - Retail Center District
- NB - Neighborhood Business District
- CC - Civic Center District
- GB - Gateway Business
- I-1 - Limited Industrial District
- I-2 - General Industrial District
- I-FLEX District
- POS - Parks and Open Space District
- CD - Conservation District
- Railroad
- Right-of-Way
- Water



**2015 Comprehensive Plan Amendment
(2030 Comprehensive Plan)**

Approved by the City Council: July 13, 2015
 Printed: November 10, 2015
 Source: City of Arden Hills

The zoning district designations represented on this map correspond to the City of Arden Hills official Zoning Map. Questions concerning the Zoning Map should be directed to City Hall. Zoning designations are subject to change. Please refer to the Zoning Code for complete information.

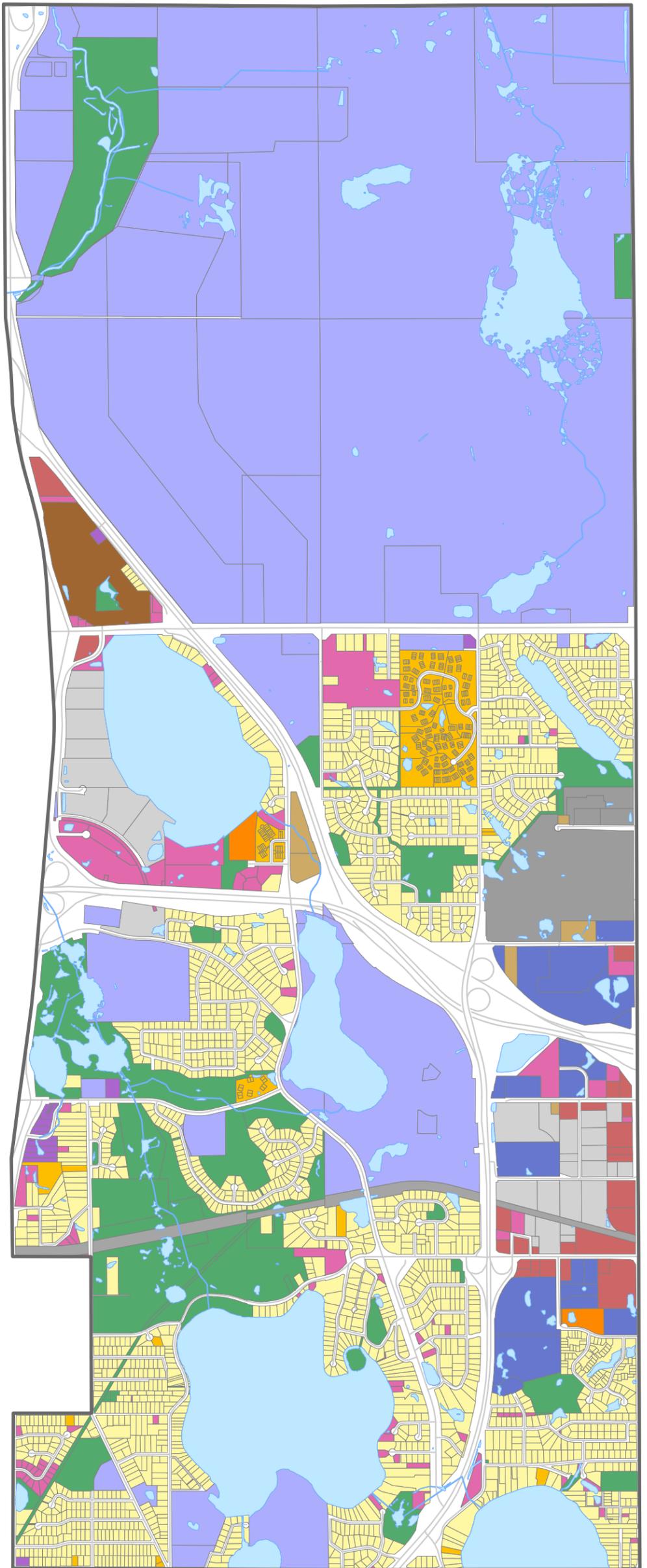
Adopted: April 12, 1993



2008 Existing Land Use

Figure E.3

- SFA - Single Family Attached
- SFD - Single Family Detached
- MF - Multiple Family
- MH - Manufactured Home Park
- NB - Neighborhood Business
- COM - Commercial
- OFC - Office
- MUI - Mixed Use Industrial
- LI - Light Industrial
- P/OS - Park and Open Space
- P/I - Public & Institutional
- UTL - Utility
- VAC - Vacant
- WAT - Open Water
- RR - Railroad Right-of-way
- ROW - Right-of-way



0 0.5 1 Miles

**2015 Comprehensive Plan Amendment
(2030 Comprehensive Plan)**

2008 Comprehensive Plan
Printed: November 10, 2015
Source: City of Arden Hills, Ramsey County, Metropolitan Council

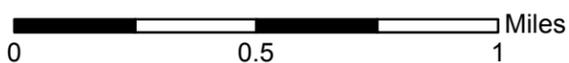
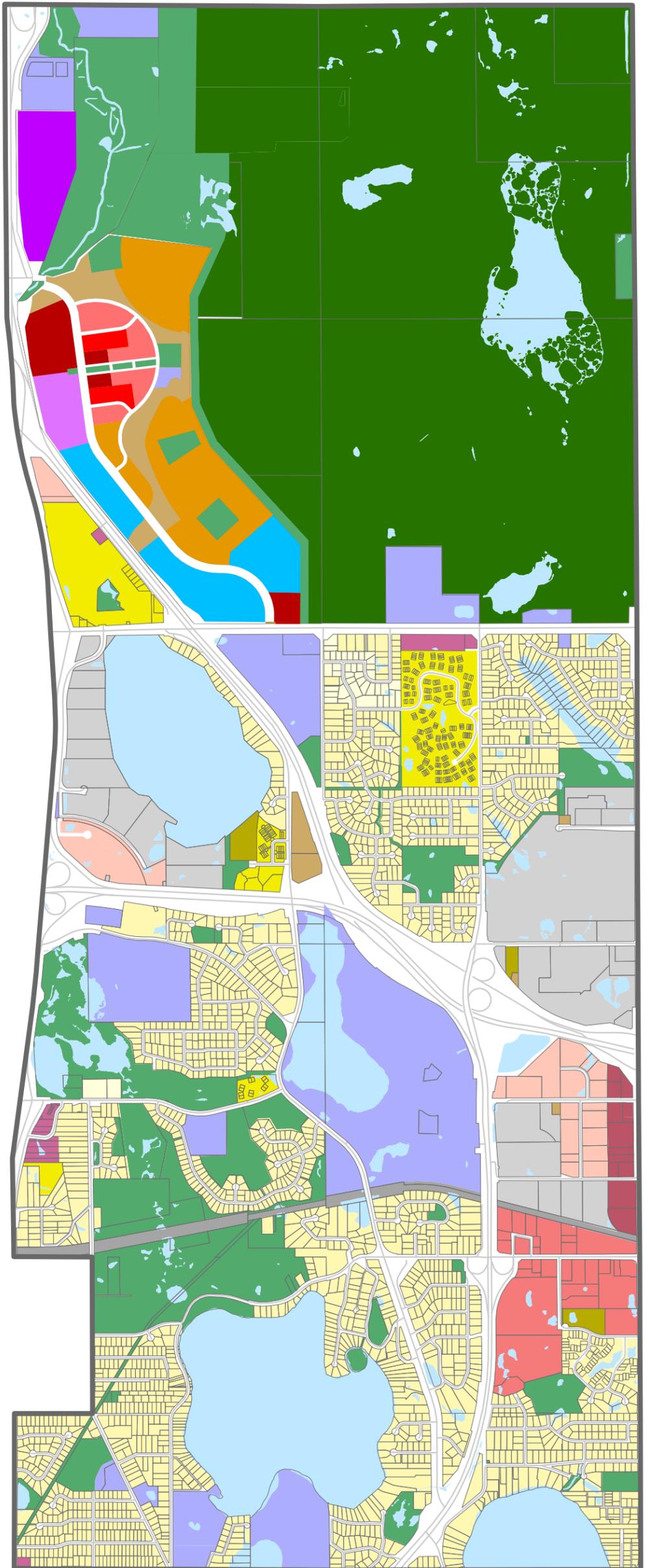
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2030 Future Land Use

Figure E.4

- VLDR - Very Low Density Residential
- LDR - Low Density Residential
- MDR - Medium Density Residential
- HDR - High Density Residential
- NR - Neighborhood Residential
- NT - Neighborhood Transition
- TC - Town Center
- NB - Neighborhood Business
- MB - Mixed Business
- COM - Commercial
- CMU - Community Mixed Use
- CC - Campus Commercial
- RMU - Retail Mixed Use
- OMU - Office Mixed Use
- FO - Flex Office
- I/O - Light Industrial and Office
- P/I - Public & Institutional
- UTL - Utility
- P/OS - Park and Open Space
- PP - Park Preserve
- WAT - Water
- RR - Railroad right-of-way
- ROW - Right-of-Way



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- 2010 flows are actual flows provided by MCES based on their meter records.
- 2015 flows have been estimated considering the existing land use map.
- 2030 flows have been estimated considering the proposed land use map and the TCAAP Master Plan
- 2020 and 2025 flows have been estimated by interpolating between the 2015 and 2030 flows.

The following flow rates have been used for each land use and zoning type:

Land Use / Zoning	Land Use
Low Density Residential (R-1, R-2)	475 Gallons/Acre/Day R-1 / R-2 = 3 / 5 units per Acre Max Assumes: 2.5 units per acre ~ 2,076 units / 915 acres 3.12 people per unit = 9,552 people / 3053 total units 60 gals per capita per day
Medium Density Residential (R-3)	950 Gallons/Acre/Day Assumes: 5 units per acre ~ 641 units / 132 acres 3.12 people per unit = 9,552 people / 3053 total units 60 gals per capita per day
High Density Residential (R-4)	5,250 Gallons/Acre/Day Assumes: 28 units per acre ~ 336 units / 12 acres 3.12 people per unit = 9,552 people / 3053 total units 60 gals per capita per day
Residential [TCAAP]	274 Gallons/Unit/Day Assumes: 274 gallons of maximum potential daily wastewater flow capacity is equal to one MCES SAC unit.
Flex Office / Commercial Development [TCAAP]	800 Gallons/Acre/Day
Commercial Land Uses (G-B, N-B, B-1, B-2, B-3, & B-4)	800 Gallons/Acre/Day
Industrial Land Uses (I-1, I-2, & I-FLEX)	800 Gallons/Acre/Day
Institutional / Government Land Uses (C-C)	250 Gallons/Acre/Day
Community Service Land Uses/No Flow (POS, CD, RR, ROW)	0 Gallons/Acre/Day

The projected flow rate for residential properties is based upon the existing known number of housing units per acre multiplied by a unit population density factor, again multiplied by an average sewer use per person. The number of units per acre for residential properties is based upon density assumptions

included in the City’s land use plan. The unit population density factor was determined by dividing total population based on the 2010 US Census by the total number of housing units in the City. The estimate of 60 gallons/capita/day was based upon discussions with Metropolitan Council Environmental Services (MCES) staff and some calibration of the projected flow rates with actual metering records.

The projected flow rates for non-residential properties were based upon discussions with MCES staff and some calibration of the projected flow rates with actual metering records.

The projected 2015 flow rates for the combination of residential and non-residential properties compares well with the historic metering records for the years 2010-2014.

The projected flow rates for future TCAAP properties were based upon a maximum sewer potential for a new development given the uncertainty of future development.

The estimated wastewater flows projected in the Arden Hills System Statement are based on the Metropolitan Council’s population, housing and employment forecasts, and historical flow data. Projections for 2030 indicate an annual wastewater flow of 1.47 mgd as shown at the bottom of Table E.3. In 2030, Arden Hills predicts an annual wastewater flow of 1.73 mgd as shown at the bottom of Table E.4. Arden Hills’ estimate is 18 percent higher than Metropolitan Council’s projections; however, the flows shown in Table E.4 represent a conservative scenario.

Table E.4 – Projected Sewer Flows by Interceptor by Year

	Projected Sewer Flow by Interceptor - Average Annual Wastewater Flow (MGD)				
MCES Interceptor	2010 (Actual)	2015	2020	2025	2030
MCES 51	0.37	0.45	0.45	0.45	0.45
MCES 52	0.04	0.04	0.04	0.04	0.04
MCES 54	0.19	0.24	0.24	0.24	0.24
MCES 59	0.26	0.36	0.36	0.36	0.36
TCAAP	0.00	0.00	0.21	0.43	0.64
Totals	0.86	1.09	1.30	1.52	1.73

Table E.4 provides a summary of the projected 2010, 2015, 2020, 2025 and 2030 Average Annual Wastewater Flow (MGD) sewage flows for each interceptor district. The details of the land use and projected sewage flows by sewer district for years 2015 (No TCAAP development) & 2030 (Full TCAAP build-out) are included as Attachments E2 and E3. A map illustrating the underlying land use for each sewer district is shown on Figure E.5.



Sanitary Sewer Districts

Figure E.5

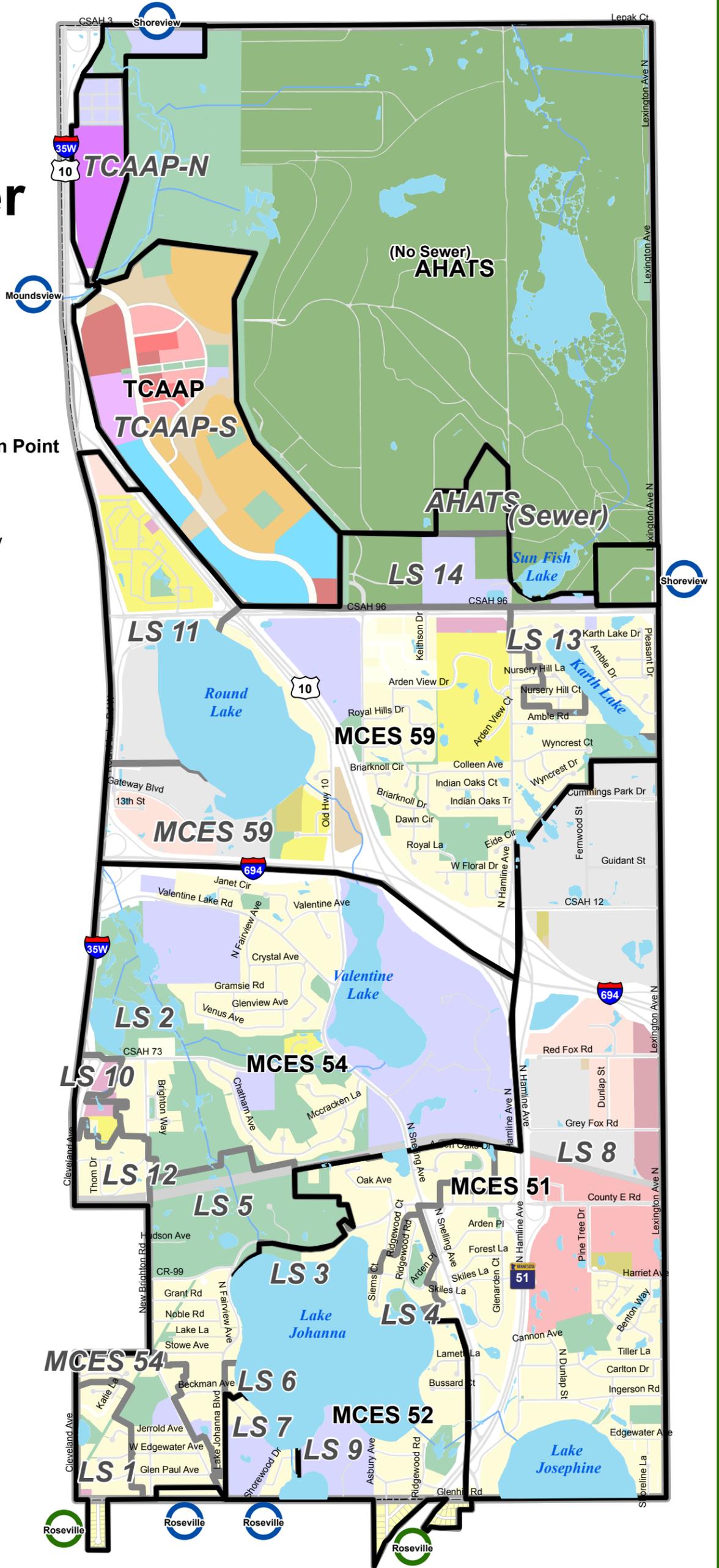
Intergovernment Sewer Service Connection Point

- Sewer Provided by Arden Hills
- Sewer Provided by Adjacent Community

- Met Council Meter Area
- Lift Station Areas
- Arden Hills Boundary

Future Land Use Areas

- VLDR - Very Low Density Residential
- LDR - Low Density Residential
- MDR - Medium Density Residential
- HDR - High Density Residential
- NR - Neighborhood Residential
- NT - Neighborhood Transition
- TC - Town Center
- NB - Neighborhood Business
- MB - Mixed Business
- COM - Commercial
- CMU - Community Mixed Use
- CC - Campus Commercial
- RMU - Retail Mixed Use
- OMU - Office Mixed Use
- FO - Flex Office
- I/O - Light Industrial and Office
- P/I - Public & Institutional
- UTL - Utility
- P/OS - Park and Open Space
- PP - Park Preserve
- WAT - Water
- RR - Railroad right-of-way
- ROW - Right-of-Way



2015 Comprehensive Plan Amendment (2030 Comprehensive Plan)

Updated: June 25, 2015
 Approved by the City Council: July 13, 2015
 Printed: November 10, 2015
 Source: City of Arden Hills, Ramsey County

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8. INDIVIDUAL SEWAGE TREATMENT SYSTEMS (ISTS)

Nearly all properties in the City of Arden Hills are connected to the sanitary sewer system. There are currently only four (4) individual sewage treatment systems (ISTS) in the City of Arden Hills.

The following four properties have private Individual Sewage Treatment Systems (ISTS):

- 5400 Highway 8 (State of Minnesota facility)
- 5420 Highway 8 (State of Minnesota facility)
- 3233 Snelling Avenue (private residence)
- 1680 Oak Avenue (private residence)

These addresses are shown on Figure E.1.

The two State of Minnesota properties are exempt from City requirements. TCAAP includes a proposed sanitary sewer extension to State of Minnesota facilities to allow for a future connection to public sewer and abandonment of ISTS.

The two private residences are nearly 700 feet and 600 feet, respectively, from the nearest sewer line but are subject to all City regulations and Minnesota Rules Chapter 7080. The City Code requires structures with on-site septic systems to connect to the municipal sanitary sewer system within two years of sewer service being made available. The City Code should be updated to the minimum Ramsey County Ordinance standards and include the following ISTS regulations:

- Require inspections and/or pumping every three years;
- Require repair or replacement of failing systems within five years;
- Require replacement of a system that poses an imminent public health or safety threat within ten months; and,
- Develop an enforcement system that addresses failing systems or systems found to be an imminent public health threat. Since the City has only two ISTSs under its jurisdiction, a full tracking and notification database is not needed.

9. INFILTRATION/INFLOW (I/I)

The Metropolitan Council Environmental Services (MCES) Water Resources Management Plan includes policies for reducing inflow and infiltration into the region's sewage treatment system. The MCES has projected significant growth in the metropolitan area by 2030. This increase, along with current levels of inflow & infiltration (I&I) in the system, would require significant, costly increases to expand the existing MCES treatment facilities to meet the future wastewater flows. As a result, MCES has implemented an I&I surcharge program.

Communities with excessive I&I are required to develop plans and reduce their I&I. If I&I is not reduced in the community with excessive I&I, the MCES will

impose a surcharge. The MCES first imposed a surcharge on the City in 2007. This surcharge has been \$100,100 a year for the five years between 2007 and 2012.

The City of Arden Hills continues to be a community with inflow and infiltration (I&I) challenges. If the MCES I&I goals for the communities are exceeded, the community will receive a letter stating that a particular event has caused an exceedance. Arden Hills has received three notices since 2012. There was an exceedance in MCES Sewer Meter District MO51 from a June 21, 2013 storm as well as two more exceedances due to a June 19, 2014 storm. One was in MCES Sewer Meter District MO51 and the other was in MO54.

Based on current readings that the MCES has taken from several monitoring points, the new surcharge is estimated at \$76,775 a year for four years, beginning in 2015. The City is examining its sanitary sewer system to identify areas that are contributing to the I&I problem, and the City will take the necessary measures to reduce and/or eliminate the surcharge.

In order to gain some economics of scale and to take advantage of the recent grant programs from the MCES, Arden Hills has been undertaking a larger I/I reduction project in odd numbered years focusing on reducing I&I in the MO51 and MO54 meter districts.

Appendix G of the 2030 Comprehensive Plan outlines the City's objectives, policies, strategies and implementation plan to achieve reduction in I&I.

10. PROPOSED CAPITAL IMPROVEMENT PROGRAM (CIP)

A number of trunk sanitary sewer improvements have been identified that should be considered as a part of the City's future Capital Improvement Program (CIP) to address deficiencies in the system. A summary of these improvements and a proposed schedule for their completion is listed below:

- Sewer Rehabilitation/Lining in year 2015 at \$500,000
- Reconstruction of Lift Station 11 in 2016 at \$253,000
- TCAAP Sanitary Sewer South Lateral Extension and Lift Station Construction in 2016 at \$1,200,000
- Sewer Rehabilitation/Lining in year 2017 at \$400,000
- Sewer Rehabilitation/Lining in year 2019 at \$400,000
- TCAAP Sanitary Sewer North Lateral Extension at a date to be determined at \$250,000

The schedule for a number of these improvements may be impacted by development pressure and the availability of funding and grants.

11. SUMMARY AND RECOMMENDATIONS

This report has been prepared to provide an update of the Sanitary Sewer Comprehensive Plan portion of the Arden Hills Comprehensive Plan. The primary purpose of this update is to consider development/redevelopment that is being planned within the Twin Cities Army Ammunition Plant (TCAAP) area of the City. This update has been prepared to be consistent with the requirements of the Metropolitan Council's Local Planning Handbook. The Local Planning Handbook describes the content requirements for the sewer element of comprehensive plans. This report serves as both the sewer element of the City's comprehensive plan (Tier I) as well as the City's local sewer extension plan (Tier II). The information included in this update allows the Metropolitan Council to plan and manage their regional sewage collection and treatment systems.

Based upon the results of this update, the following recommendations are presented for consideration:

1. The City Council adopt this update of the Comprehensive Sanitary Sewer Plan for 2015 and order that it be submitted to the Metropolitan Council for review and comment for adoption in the Arden Hills Comprehensive Plan.
2. That the City's existing ordinances and inspection policies for individual sewage treatment systems be updated and maintained pursuant to the update.
3. That I/I issues in the City's sanitary sewer system continue to be addressed.
4. That the sanitary sewer CIP as outlined herein be adopted and revised on a regular basis as appropriate.

APPENDIX F: SURFACE/STORM WATER MANAGEMENT PLAN

This Appendix F includes the following documents:

- Storm Sewer Infrastructure Supplement Map (Figure F.1)
- Erosion and Sediment Control Ordinance (Chapter 15 of the City Code)
- Shoreland Regulations (Section 1330 of the Zoning Code)
- Floodplain Regulations (Section 1335 of the Zoning Code)
- Arden Hills Municipal Separate Storm Sewer System (MS4) permit in combination with the Stormwater Pollution Prevent Plan (SWPPP)
- 2002 Arden Hills Local Stormwater Management Plan (LSWMP)

If the above documents are not attached, they are available for review at City Hall or online at www.ci.arden-hills.mn.us.



Storm Sewer Infrastructure

Figure F.1

Proposed

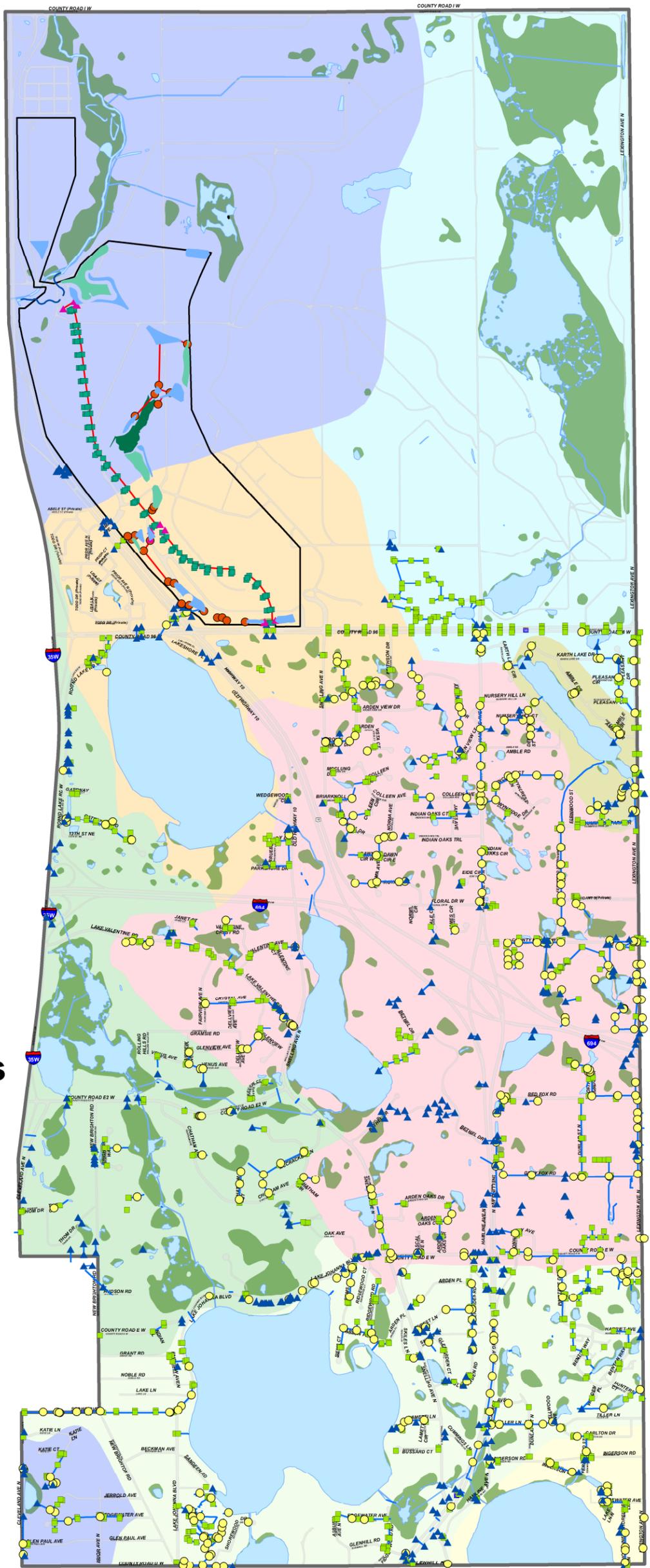
- ▲ Inlets & Outlets
- Manhole
- Catch Basin
- Creek Meander
- Storm Sewer
- Wetland Mitigation
- Stormwater Ponds

Existing

- ▲ Inlet & Outlet
- Manholes
- CatchBasin
- StormPipe
- Wetland
- Water

Stormwater Drainage Areas

- Karth Lake
- Lake Johanna
- Lake Josephine
- Long Lake
- Marsden Lake
- Rice Creek
- Round Lake
- Valentine Lake



2015 Comprehensive Plan Amendment (2030 Comprehensive Plan)

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APPENDIX G: INFLOW & INFILTRATION

The Metropolitan Council Environmental Services (MCES) Water Resources Management Plan includes policies for reducing inflow and infiltration into the region's sewage treatment system. The MCES has projected significant growth in the metropolitan area by 2030. This increase, along with current levels of inflow and infiltration (I&I) in the system, would require significant, costly increases to expand the existing MCES treatment facilities to meet the future wastewater flows. As a result, the MCES has implemented an I&I surcharge program.

Communities with excessive I&I are required to develop plans and reduce their I&I. If I&I is not reduced in a community with excessive I&I, the MCES will impose a surcharge. The City of Arden Hills has been identified as a community with inflow and infiltration challenges, and a surcharge will be imposed if the I&I is not reduced. Based on current readings that the MCES recorded at several monitoring points, Arden Hills' surcharge is \$100,100 a year for five years, beginning in 2007. The City is examining its sanitary sewer system to identify areas that are contributing to the I&I problem, and the City will take the necessary measures to reduce and/or eliminate the surcharge.

Problem: The City of Arden Hills is faced with an annual \$100,100 surcharge from the MCES due to infiltration/inflow levels which exceed the MCES allowable peak flow rate for the community

Objective: The objective of the program is to identify and remove sufficient I/I to eliminate the current I&I surcharge and reduce the annual treatment cost paid to the MCES.

Approach: The approach will include an initial "big picture" review of the current situation, followed by more detailed investigations, data evaluation, rehabilitation and then long term follow-up. The plan provides a basic guideline for the anticipated project, but it must be flexible to adjust direction in response to actual situations or defects that occur or are identified during the course of the work. Rehabilitation is the step that actually removes sources of I&I and should be considered an on-going task during the project.

1. EXISTING I&I PROBLEM

In 2007, the City began to study its I&I problem in response to the MCES imposed surcharge. In 2008, the City will complete the initial study and develop and implement an I&I reduction plan, along with an analysis of costs for remediation. The following steps will be taken to identify extent, source and significance of I&I throughout the City's sanitary sewer system.

1. Initial review: This was completed through the compilation of MCES flow data, city maps, city investigation records, lift station data, connection data, building type information,
2. Analysis: the data was reviewed with respect to other system information to develop a “plan” for additional investigation efforts. The data allowed staff to eliminate areas where monitoring demonstrated there was not an I&I issue. We were then able to focus efforts on areas with I&I peaks.
3. Collection of additional flow data: The areas with I&I peaks were outfitted with temporary flow meters to allow us to review “flow response” and the correlation to rainfall events. We also used lift station pumping records for our analysis.
4. Identify potential source(s): Once the analysis was complete, we are able to determine types I&I within the system. The source of I&I will impact which actions the City will implement to reduce the excessive I&I.

2. IMPLEMENTATION PLAN:

Once the potential sources of I&I are identified, the City will perform the following actions to eliminate and prevent excessive I&I.

1. Conduct additional investigation to pinpoint I&I sources. Methods used:
 - Smoke testing to reveal direct inflow sources such as low lying manhole covers, roof drains, catch basins and area drains.
 - Physical survey of manholes to identify deficient adjusting rings, manhole barrel joints or wall leakage, and pipe penetration joint leakage.
 - Internal televising of sewer mains to view and video tape the condition of the existing underground pipe. This will identify structural pipe problems including open and leaking joints, collapsed pipes, poor quality service connections, and broken pipes, in addition to I&I defects such as leaking joints and leaking or running service connections.
 - Sump pump inspections will be conducted in selected areas to inspect individual properties for sump pumps that may be connected to the sanitary sewer. If the pump is illegally connected, the property owner has an opportunity to correct the situation and have the property re-inspected periodically to ensure that it remains disconnected.
 - Foundation drain (or leaking service line) inspection requires would be conducted in selected areas to inspect individual properties to identify directly connected foundation drains and leaking service lines. Since this method is on private property and connections are typically underground it

is a difficult and potentially expensive task that is left as last choice in our investigation list.

2. Rehabilitation of defects: Serious defects that are identified during the course of the investigation will be rehabilitated to eliminate I&I sources. Since the majority of the defects that are identified will be smaller, they will be compiled and evaluated before developing a rehabilitation project. This list of defects will be regularly reviewed and prioritized to provide the most benefit. A data base of defects and projected rehabilitation methods will be maintained to prepare a priority listing of rehabilitation required to correct the problems. Rehabilitation methods include:
 - Catch basin disconnection- Disconnect catch basin leads from sanitary sewer, extend connection to storm sewers for clean water flows.
 - Disconnect/ re-route roof drains to ground, street surface or storm sewer.
 - Seal manholes- Raise cover to grade, seal cover or replace with non-vented type cover, grout manhole barrel joints, cast in place manhole liner, or replace deteriorated manhole as needed.
 - Fix pipe defects- Test and seal joints, Cured in place pipe liner (CIPP), Slip lining with new carrier pipe, or perform pipe bursting to replace pipe “in place”
 - Eliminate private property sources- Re-route sump pumps to discharge onto ground or street surfaces, provide alternative outlets for sump pump discharge water,
 - Follow up inspections- Conduct regular (every two to three years) random re-inspection to assure that the outside surface discharge remain in tacked.
 - Disconnection of foundation drains- Disconnect the direct connection to the sanitary sewer and re-route the flow from the drain tile to a new sump pump. The sump pump is installed to lift the water from the foundation level and discharge it onto the ground surface away from the foundation.
 - Repair of leaking service lines- Either replace or slip line to correct the leakage.
3. Annual Report: An annual report will be prepared to summarize efforts and costs during the course of the year. It will include a review of flow data and comparison of changes from previous years and MCEs allowable flow rates, and recommend work efforts for the following year.

3. MECHANISMS FOR MINIMIZING I&I

The City is committed to reviewing and updating the City Code to meet MCES requirements to eliminate and prohibit illegal discharge into the sanitary sewer system. The City Code currently includes the following two regulations:

1010.08 Types of Wastes Restricted or Prohibited .

Subd. 3 Drainage Water. It shall be unlawful for any person to discharge or cause to be discharged into the municipal sanitary sewer system of the City, either directly or indirectly, any roof, storm, surface or groundwater of any type or kind.

1010.10 Construction Requirements.

Subd. 7 Restrictions on Installation of Sump Pump System; Necessity of Obtaining Permit. Any person installing a subsurface drainage system in connection with the construction of a building shall include as part of the system a sump pump which has a permanent discharge connection to the exterior of the building. Any person installing a sump pump system in an existing building shall also provide the system with a permanent discharge connection to the exterior of the building. No person shall install a subsurface drainage system in connection with new construction or the modification of an existing building without having first obtained a permit to do so from the City and may not connect it to the sanitary sewer system.

APPENDIX H: ZONING DISTRICT REGULATIONS

Arden Hills Zoning District Regulations taken from the Arden Hills Code (AHC) of Ordinances Chapter 13 and the TCAAP Redevelopment Code (TRC) as of July 13, 2015.

1. R-1 Single Family Residential District (AHC):
 - A. To establish areas for the development of single family detached housing at a maximum density of approximately three (3) units per net acre.
 - B. To reserve development areas for single-family housing.
 - C. To restrict encroachment of incompatible uses.
 - D. To maintain density limitations.
 - E. To take advantage of municipal utilities.
 - F. To preserve open space.

2. R-2 Single Family and Two Family Residential District (AHC):
 - A. To establish areas for the development of single and two (2) family housing at a maximum density of approximately five units per net acre.
 - B. To reserve development areas for single and two family housing.
 - C. To restrict encroachment of incompatible uses.
 - D. To maintain density limitations.
 - E. To take advantage of municipal utilities.
 - F. To preserve open space.

3. R-3 Townhouse and Low Density Multiple Dwelling District (AHC):
 - A. To provide areas offering a broad development range in housing units with a maximum density of eight (8) units per net acre.
 - B. To retain the environment and character of less intensive residence areas through carefully established bulk and lot area requirements.

4. R-4 Multiple Dwelling District (AHC):
 - A. To establish areas for the development of multiple dwelling structures with a maximum density of twelve (12) units per net acre.
 - B. To permit the most intensive residential development allowed in the City.
 - C. To maintain an essentially residential character in areas developed at a more intensive density.

5. NB Neighborhood Business District (AHC):
 - A. To be located at the edge of residential neighborhoods.
 - B. To provide a limited range of over-the-counter, convenience, retail, and service uses to accommodate the needs of the adjacent residents.

- C. To place limitations on the type, size and intensity of uses within this district, given its proximity to residential uses.
 - D. To place emphasis on convenience for pedestrian, bicycle, and public transportation access to the use.
 - E. To accommodate, where possible, a public commons giving residents a place to gather and interact with one another.
 - F. To ensure adequate buffering is provided on these sites for the adjacent residential uses.
 - G. To require, where applicable, compliance with the City's gateway requirements.
- 6. B-1 Limited Business District (AHC):**
- A. To establish areas for the location and development of administrative office buildings and related office uses which are subject to more restrictive controls.
 - B. To provide a district which is related to and may reasonably adjoin high density or other residential districts.
 - C. To establish a business district in which there is limited contact with the public and no exterior display or selling of merchandise to the general public.
- 7. B-2 General Business District (AHC):**
- A. To be a place in which people can live, work and play.
 - B. To create a compact, architecturally diverse, pedestrian- and bicycle-friendly community with a distinct identity.
 - C. To provide a connected sidewalk system and places for people to gather and socialize.
 - D. To implement design standards to promote an attractive environment with lasting and sustainable value.
 - E. To group compatible retail and service business uses that tend to draw trade that is naturally interchangeable and promotes business prosperity.
 - F. To provide an adequate supply of businesses and professional service areas to meet the needs of the residents.
 - G. To minimize the effects of traffic congestion, noise, odor, glare and similar safety problems.
 - H. To implement the Plan known as the "Guiding Plan for the B2 District," which was adopted by the City Council on October 27, 2008.
- 8. B-3 Service Business District (AHC):**
- A. To accommodate an adequate supply of businesses and services that serve the community and motorists traveling through the community with a broad range of services and goods.
 - B. To provide locations for uses that may be incompatible with retail centers, thereby keeping the retail centers compact and convenient.

- C. To keep services in close proximity to arterial streets or highways in areas that are appropriately designated on the Comprehensive Plan.
- D. To encourage grouping of compatible and mutually supportive business uses and services.
- E. To promote business prosperity.
- F. To establish a high standard of development and design that produces a positive visual image and minimizes the effects of traffic congestion, noise, odor and glare.
- G. To allow a transitional reuse of existing buildings until market conditions warrant redevelopment.
- H. To enhance redevelopment potential by prohibiting uses that would impede redevelopment.
- I. To ensure acceptable traffic operations on local streets.
- J. To promote flexibility in land uses and site development standards to achieve the purposes of the district.

9. B-4 Retail Center District (AHC):

- A. To meet retail shopping needs of the surrounding community by providing a district that will accommodate a wide range of retail goods and services.
- B. To promote business prosperity by creating an attractive and functional retail center.
- C. To provide an integrated retail trade center that groups compatible retail uses in one or more multiple-occupancy buildings. Free standing, single-occupancy buildings will be allowed if planned and constructed as part of a unified development that contains a retail center or is developed after such a retail center is developed.
- D. To produce a positive visual image by establishing a high standard of design and development.
- E. To allow transitional uses that will allow an orderly phasing out of existing uses and development that are not appropriate in a contemporary retail center and a phasing in of uses and development as warranted by market conditions.
- F. To encourage grouping of uses that are mutually supportive and have similar requirements for vehicular and pedestrian accessibility and exposure.
- G. To alleviate potential traffic congestion on local streets by the design of the circulation pattern and arrangement of uses.

10. CC Civic Center District (AHC):

- A. To implement that part of City of Arden Hills Comprehensive Plan known as the Civic Center (CC) area.
- B. To create a destination-oriented area that serves as focal point for the Community where a mix of uses including public, small retail, educational, semi-public facilities and some mid-to-high-density housing are located.

- C. To bring forth a government center that would integrate Sunfish Lake with a civic campus and commercial area, and create a gathering/activity place that is unified in purpose, design and use.
- D. To require strict development standards and building materials to create a high quality civic environment.
- E. To preserve, protect, and enhance existing development adjacent to the district.
- F. To promote compact, unified development that takes advantage of the proximity to the adjacent open space areas and regional transportation facilities.
- G. To minimize the effects of traffic congestion.
- H. To allow development that will insure reasonable traffic operation on the internal and surrounding transportation systems including Lexington, Hamline, and Highway 96.
- I. To encourage arrangement of uses that are mutually supportive and have similar requirements for vehicular and pedestrian accessibility and exposure.

11.GB Gateway Business District (AHC):

- A. To implement that part of Arden Hills Comprehensive Development Plan known as the I-694/I-35W Plan.
- B. To promote high quality, unified, large-scale development in a manner similar to a planned unit development.
- C. To take full advantage of the site's location as documented and described in the NE I-694/I-35W Plan.
- D. To allow only development that will create an attractive environment and a positive image for this site, which is one of the most visible in the community and represents the City's last major development site.
- E. To protect the site's environmental resources.
- F. To promote flexibility in land uses and development standards to achieve the objectives of the I-694/I-35W Plan.
- G. To allow development that will insure reasonable traffic operation on the internal and surrounding transportation systems.

12.I-1 Limited Industrial District (AHC):

- A. To allow only those types and intensities of industrial uses that do not detract from the surrounding area.
- B. To maintain performance standards to keep the intensity of land utilization lower than in the general Industrial District.

13.I-2 General Industrial District (AHC):

- A. To provide an area where more intensive light industrial land uses may locate.

- B. To present the least deleterious effect to adjacent, less intensive land uses.

14. I-FLEX District (AHC):

- A. To preserve, protect, enhance and perpetuate existing development in the district.
- B. To attract new development that is compatible with existing development in the district in terms of use, performance, character, quality and appearance of buildings and sites.
- C. To permit only those uses that will have traffic generation characteristics that are compatible with existing development in the district and that will ensure reasonable traffic operation on streets in the vicinity.
- D. To encourage new site development that will be compatible with existing site development standards of existing development in the district.
- E. To promote flexibility in land uses and site development standards to achieve the objectives of the I-Flex District.

15. Planned Unit Development (PUD) Overlay District (AHC):

- A. To allow flexibility in land development to benefit from new technology in building design and construction and in land development.
- B. To encourage variety in the organization of site elements, land uses (residential and non-residential), building densities, and building and dwelling types.
- C. To promote higher standards of site and building design through the use of trained and experienced professional land planners, landscape architects, registered architects, engineers and surveyors to prepare plans for all PUD's.
- D. To preserve and enhance desirable site characteristics and open space.
- E. To promote more efficient and effective use of land, open space and public facilities.
- F. To effectuate the policies and standards of the Arden Hills Comprehensive Development Plan.

16. POS Parks and Open Space District (AHC):

- A. To support the Arden Hills Parks, Trails, and Open Space Plan and the Ramsey County Parks and Recreation System Plan.
- B. To provide an area for publicly owned lands that have recognized outdoor recreational or open space resources.
- C. To support community health through the provision of active and passive outdoor recreational opportunities.
- D. To promote natural and ecological stewardship.
- E. To conserve vital environmental resources.

17. CD Conservation District (AHC):

- A. To provide a “holding” zone for federally owned lands on the Arden Hills Army Training Site to ensure that future development is staged, maintains a sustainable level of public expenditures for utilities and services, and protects those areas generally determined to be unsuitable for development due to the presence of wetlands, floodplains, steep slopes, certain drainage and soil conditions, and critical wildlife habitat.

18. Neighborhood District (TRC):

- A. The Neighborhood Zoning District: Provides a range of attached and detached single-family and small multi-family residential uses.
 - 1) NR-1 Residential (Neighborhood Sub-District 1): Maximum density of 2.5 dwelling units per acre.
 - 2) NR-2 Residential (Neighborhood Sub-District 2): Minimum density of 2.5 dwelling units per acre and a maximum density of 4 dwelling units per acre.
 - 3) NR-3 Residential (Neighborhood Sub-District 3): Minimum density of 4 dwelling units per acre and a maximum density of 6.75 dwelling units per acre.
 - 4) NR-4 Residential (Neighborhood Sub-District 4): Minimum density of 4 dwelling units per acre and a maximum density of 8 dwelling units per acre.

19. NT - Neighborhood Transition (TRC):

- A. The Neighborhood Transition Zoning District provides for a range of residential (live-work, single family, and small and medium multi-family) transitions between the active retail and employment mixed-use districts and adjoining single-family neighborhoods.
- B. Development standards in this district emphasize smaller scale residential uses and establish building transition standards to adjoining neighborhoods.
- C. Residential uses permitted at a density of 8 to 15 units per acre.

20. TC - Town Center (TRC):

- A. The Town Center Zoning District creates a vibrant commercial and residential environment that maximizes the potential for an outdoor experience.
- B. This district promotes walkability through allowing for housing, office, retail, restaurant, and civic uses all within close proximity of each other.
- C. Residential uses permitted at a maximum density of 45 units per acre.

21.OMU - Office Mixed-Use (TRC):

- A. The Office Mixed-Use Zoning District creates a flexible zone that allows and promotes a seamless transition from Retail Mixed-Use but focuses on employment and other compatible uses.
- B. This district promotes employment as a primary use, but allows for other commercial uses to be incorporated as vertical mixed-use buildings.

22.RMU - Retail Mixed-Use (TRC):

- A. The Retail Mixed-Use Zoning District creates a flexible zone that allows and promotes a seamless transition from Office Mixed-Use but focuses on retail and compatible uses.
- B. This district promotes retail as a primary use and allows for other commercial uses to be incorporated as vertical mixed-use buildings.

23.FO - Flex Office (TRC):

- A. The Flex Office Zoning District creates an opportunity for large scale development for employment and manufacturing uses that take advantage of the highway frontage and automobile access.

24.CC - Campus Commercial (TRC):

- A. The Campus Commercial Zoning District facilitates a building format that allows multiple, single tenant buildings or campuses within the northern “Thumb” site of the Plan Area.
- B. The goal is to allow for an individual plan approach for each campus or building, based on user preferences within a range of requirements.

25.OS - Open Space (TRC):

- A. Open Space within the TRC shall be categorized as Required Open Space.
- B. The detailed Open Space Standards for different open space types are included in Section 9.0 and Attachment 2 of the TRC. These standards include general character, typical size, frontage requirements and typical uses.

26.GO - Gateway Overlay (TRC)

- A. The Gateway Overlay District indicates where additional aesthetic treatments are required to create a welcoming environment that establishes the character of the TCAAP Redevelopment Area. The specific standards are included in Section 7.6 of the TRC.

27.Water Infrastructure (TRC)

- A. The Natural Resources Corridor within the TCAAP Site Redevelopment will be designed with the goal of maximizing compatibility and functionality

of regional storm water, wetland mitigation, the Rice Creek re-meander, floodplain restoration, and groundwater requirements.

- B. An additional goal is to provide visual and active and passive recreational features to support adjacent land uses. The Natural Resources Corridor is intended to be an amenity to the site's uses and users.

Table H.1: Zoning District Regulations (Table H.1 does not include the Zoning Districts within the TCAAP Redevelopment Code (TRC))

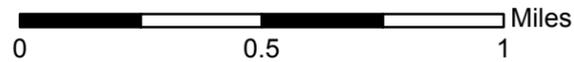
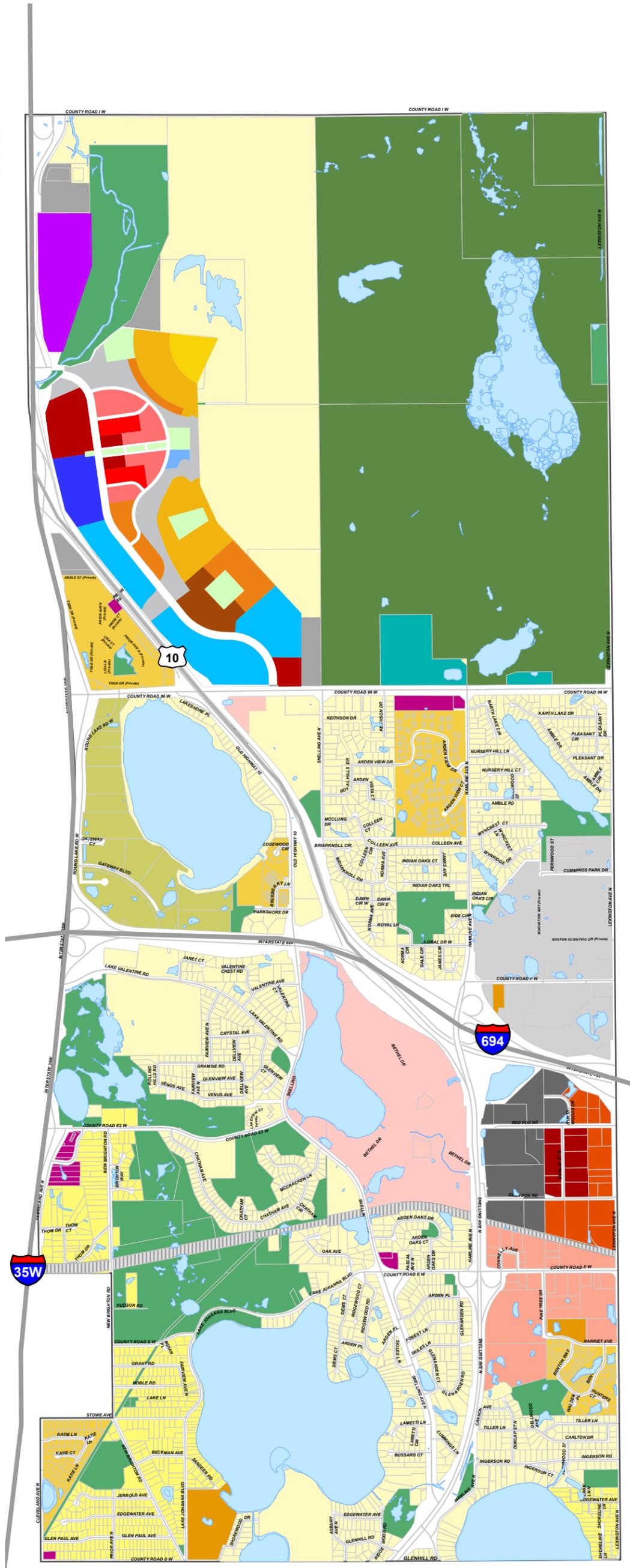
	R-1	R-2	R-3	R-4	NB	B-1	B-2	B-3	B-4	CC	G-B	I-1	I-2	I-FLEX	CD	POS
1. Minimum Lot Area (SF per Dwelling Unit)																
Single Family	14,000	11,000	11,000	11,000	==	==	==	==	==	==	==	==	==	==	==	==
Two Family	14,000	8,000	8,000	8,000	==	==	==	==	==	==	==	==	==	==	==	==
Multiple Family PUD	==	==	5,450	3,630	==	==	2,178	==	==	==	==	==	==	==	==	==
2. Minimum Lot Area (SF)																
Non-Residential Uses	14,000	11,000	11,000	11,000	13,000	13,000	13,000	13,000	==	20,000	5 AC	30,000	24,000	24,000	==	==
Mixed Use Project or Multiple Occupancy Center	==	==	==	==	==	==	13,000	==	5 AC	==	20 AC	==	==	==	==	==
Single Use Project or Free standing Building	==	==	==	==	==	==	13,000	==	2 AC	==	10 AC	==	==	==	==	==
3. Minimum Lot Size (ft) Width/Depth																
Non-residential	==	==	==	==	100/130	100/130	100/130	100/130	100/130	100/100	100/130	100/130	100/130	100/130	==	==
Single Family	95/130	85/120	85/120	85/120	==	==	==	==	==	==	==	==	==	==	==	==
Two Family	95/130	85/120	85/120	85/120	==	==	==	==	==	==	==	==	==	==	==	==
4. Height (ft.)	35	35	35	35	35	35	35	35	35	35	35	35	45	45	35	35
5. Floor Area Ratio (F.A.R.)	0.3	0.3	0.3	0.3	0.7	0.7	0.8	0.8	0.3	0.8	==	0.6	0.8	0.8	.3	.3
6. Lot Covered by Structure	25%	25%	25%	25%	35%	35%	45%	40%	25%	40%	==	30%	40%	40%	25%	25%
7. Min. Landscape Lot Area	65%	65%	65%	65%	35%	25%	20%	25%	25%	20%	35%	35%	25%	25%	65%	65%
8. Minimum Building Setbacks (ft)																
Front yard	40	40	40	40	20	50	20	50	50	20	50	55	50	50	40	40
Rear Yard (Principle)	30	30	30	30	20	20	20	20	20	20	20	20	20	20	30	30
Rear Yard (Accessory)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Side Yard Interior - Principal (Min/total both yards on lot)	10/25	5/15	5/15	5/15	5/15	20/40	10/20	20/40	20/40	10/20	20/40	** 20/40	20/40	20/40	10/20	10/20
Side Yard Interior - Accessory	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Side Yard Corner	40	40	40	40	20	50	50	50	50	20	50	50	50	50	40	40
Other Setbacks										60						
Lakeshore - High Water Mark***																
Abutting Residential Zoning District	==	==	==	==	30	100	==	100	100	100	100	100	100	100	==	==
9. PUD & CUP																
Maximum Dwelling Unit – Density Per Net Acre	3.0	5.5	8.0	12.0	==	==	20.0	==	==	20.0	12.0	==	==	==	==	==



Zoning Map

Figure H.1

- TRC CC – Campus Commercial
- TRC – Civic/Open Space
- TRC FO – Flex Office
- TRC RMU – Retail Mixed Use
- TRC NR-1 – Residential
- TRC NR-2 – Residential
- TRC NR-3 – Residential
- TRC NR-4 – Residential
- TRC NT – Neighborhood Transition
- TRC OMU – Office Mixed Use
- TRC OS – Open Space
- TRC TC – Town Center
- TRC – Water Infrastructure
- R-1 - Single Family Residential District
- R-2 - Single & Two Family Residential District
- R-3 - Townhouse & Low Density Multiple Dwelling District
- R-4 - Multiple Dwelling District
- B-1 - Limited Business District
- B-2 - General Business District
- B-3 - Service Business District
- B-4 - Retail Center District
- NB - Neighborhood Business District
- CC - Civic Center District
- GB - Gateway Business
- I-1 - Limited Industrial District
- I-2 - General Industrial District
- I-FLEX District
- POS - Parks and Open Space District
- CD - Conservation District
- Railroad
- Right-of-Way
- Water



**2015 Comprehensive Plan Amendment
(2030 Comprehensive Plan)**

Approved by the City Council: July 13, 2015
 Printed: November 10, 2015
 Source: City of Arden Hills

The zoning district designations represented on this map correspond to the City of Arden Hills official Zoning Map. Questions concerning the Zoning Map should be directed to City Hall. Zoning designations are subject to change. Please refer to the Zoning Code for complete information.

Adopted: April 12, 1993