INVER GROVE HEIGHTS
COMPREHENSIVE PLAN

October 2019

Prepared by:

Hoisington Koegler Group, Inc.

ACKNOWLEDGEMENTS

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CITY OF INVER GROVE HEIGHTS
DAKOTA COUNTY, MINNESOTA

RESOLUTION 19-205

A RESOLUTION ADOPTING THE 2040 INVER GROVE HEIGHTS COMPREHENSIVE PLAN UPDATE, A COMPILATION OF POLICY STATEMENTS, GOALS, STANDARDS, AND MAPS FOR GUIDING THE OVERALL DEVELOPMENT AND REDEVELOPMENT OF THE LOCAL GOVERNMENTAL UNIT

WHEREAS, Minnesota Statutes section 473.864 requires each local governmental unit to review and, if necessary, amend its entire comprehensive plan and its fiscal devices and official controls at least once every ten years to ensure its comprehensive plan conforms to metropolitan system plans and ensure its fiscal devices and official controls do not conflict with the comprehensive plan or permit activities that conflict with metropolitan system plans; and

WHEREAS, Minnesota Statutes sections 473.858 and 473.864 require local governmental units to complete their "decennial" reviews by December 31, 2018; and

WHEREAS, the Inver Grove Heights City Council authorized the review and update of its Comprehensive Plan; and

WHEREAS, the proposed Inver Grove Heights's 2040 Comprehensive Plan is a planning tool intended to guide the future growth and development of the City in a manner that conforms with metropolitan system plans and complies with the Metropolitan Land Planning Act and other applicable planning statutes; and

WHEREAS, pursuant to Minnesota Statutes section 473.858, the proposed 2040 Comprehensive Plan was submitted to adjacent governmental units and affected special districts and school districts for review and comment on June 27, 2018 and the statutory six-month review and comment period has elapsed; and

WHEREAS, the Planning Commission conducted a public hearing on November 7, 2018, has considered the proposed 2040 Comprehensive Plan and all public comments, and thereafter submitted its recommendations to the City Council; and

WHEREAS, the City Council authorized on December 10th, 2018 the proposed 2040 Comprehensive Plan be submitted to the Metropolitan Council for review; and

WHEREAS, the Minnesota Department of Natural Resources (DNR) approved the Mississippi River Corridor Critical Area (MRCCA) plan, which is a chapter of the 2040 Comprehensive Plan, on October 23, 2019; and

WHEREAS, at its regular meeting on October 9th, 2019, the Metropolitan Council completed its review of the proposed 2040 Comprehensive Plan and found that the Plan meets the requirements of the Metropolitan Land Planning Act; conforms to the metropolitan system plans for transportation (including aviation), water resources, and parks; is consistent with *Thrive MSP 2040*; and is compatible with the plans of adjacent jurisdictions and affected special districts and school districts; and

WHEREAS, the 2040 proposed Comprehensive Plan includes all revisions made during the review process and responds to additional advisory comments that are part of the Metropolitan Council's actions authorizing the Inver Grove Heights to place its proposed 2040 Comprehensive Plan into effect.

NOW THERE, BE IT RESOLVED BY THE CITY OF INVER GROVE HEIGHTS, MINNESOTA, that the City of Inver Grove Heights's 2040 Comprehensive Plan, including the MRCCA Plan, Chapter 9, is adopted and is effective as of the date of this resolution.

BE IT FURTHER RESOLVED that, pursuant to sections 473.864 and 473.865 of the Metropolitan Land Planning Act, the City of Inver Grove Heights will: (1) review its fiscal devices and official controls; (2) if necessary, amend its fiscal devices and official controls to ensure they do not conflict with the 2040 Comprehensive Plan or permit activity in conflict with metropolitan system plans; and (3) submit amendments to fiscal devices or official controls to the Metropolitan Council for information purposes.

Adopted by the City Council of the City of Inver Grove Heights, Minnesota, this 28th day of October 2019.

AYES: 5
NAYS: 0

George Tourville, Mayor

ATTEST:

Joseph Lynch, Interim Deputy Clerk

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INTRODUCTION
CHAPTER 1

The Metropolitan Land Planning Act requires that local governments within the seven-county metropolitan area review and update their Comprehensive Plans at least every ten years. The last Comprehensive Plan update was completed in 2008. This plan update was completed in 2018 and reflects the planning period of 2020 to 2040. By Statute, plans are required to have specific components as guided by the Metropolitan Land Planning Act. Review of these components are conducted by the Metropolitan Council in order to assess compatibility with metropolitan system plans, consistency with other adopted plans of the Metropolitan Council and compatibility with Comprehensive Plans of adjacent communities and affected jurisdictions.

In addition to complying with the legislative mandate and regional planning requirements, the City of Inver Grove Heights has undertaken this Comprehensive Plan for a far more important reason. The City has chosen to actively plan for its future so that the physical form of the community represents "what the community wants to be" rather than a reaction to trends and patterns that result from outside forces. This plan looks to the future and prescribes a plan and implementation strategy that is intended to provide guidance for decision making for the next 10 to 20 years.

The Comprehensive Plan addresses:

- Vision for the future
- Land use & Economic Development, including phasing for development with urban services and housing and job development opportunities
- Protection of wetlands, trees and other environmental amenities
- Location and character of parks and trails
- Transportation corridors, transit services and infrastructure
- Water, sewer and surface water infrastructure systems

As the guide for community development, the Comprehensive Plan influences many decisions. It is a dynamic document that is regularly reviewed and updated. The Plan:

- Leads to potential modifications of the zoning ordinance and other land use controls
- Influences the form, pace and location of new development
- Promotes the maintenance and enhancement of existing neighborhoods and commercial districts
- Determines and reinforces approaches for protecting natural resources and open spaces
- Guides City investments in roads, utilities and parks
- Determines the need for City roles in economic development, redevelopment and housing
- Establishes a "to do" list of public and private actions

Setting/History

Regional Setting

Inver Grove Heights is located approximately 10 miles south of downtown St. Paul in Dakota County which is one of the 7 principal counties comprising the Twin Cities Metropolitan Area. The corporate limits of Inver Grove Heights encompass approximately 27 square miles. The landscape of the

community consists of a mixture of land formerly used for farming and large tracts of wooded, rolling terrain with well-identified wetland areas. Major water resources consist of various small lakes and the Mississippi River which forms the eastern boundary of the community.

Community History

Bridge 5600

In 1852, pioneers staked claims in an area known as Inver Grove. Attracted by the area's access to the Mississippi River, these settlers from Ireland and Germany quickly established a community. Those of Irish decent clustered their farms along what is now known as Rich Valley Boulevard which had been built by Captain William B. Dodd's military crews from Fort Snelling. Settlers from Germany laid claim to the wooded farmland in the northwest portion of the community clearing and cultivating fields among the area lakes. Other settlers from France and England built homes along the Mississippi River.

In 1853, the first Dakota County Commissioners met at the Mission in the Sioux Village of Kaposia, north of Inver Grove Heights. They established the first school districts in the area and identified the boundaries of the proposed townships. By April of 1858, the Township of Inver Grove Heights was incorporated and the first Board of Supervisors was elected.

From 1858 until 1880, hundreds of settlers were attracted to the township that was named after an Irish fishing village "Inver" and commemorating the homeland of the German settlers, "Grove". By 1880, the area consisted of more than 240 individual farms, four churches, and four school districts.

In 1886, the Chicago Great Western Railroad was built in the township adjacent to the river attracting hotels, taverns, butcher shops and a railroad repair center to an area which became known as the "Village". The Town Board built a town hall and jail and had jurisdiction over the schools in the area. The original town hall was replaced by a second village hall that was constructed on Doane Trail in the 1930s as part of a W.P.A. project. The current City Hall complex was constructed in the 1980s.

As commercial and industrial expansion took place in the late 1880s, people living in the one square mile area adjacent to the railroad separated themselves from the surrounding area by incorporating as the Village of Inver Grove in 1909. The two entities existed side by side for more than 56 years. In that time, farmland changed hands infrequently. The Village on the other hand, benefited from military business stemming from activities at Fleming Field.

Following World War II, another period of immigration took place as residential development reached Inver Grove in the form of the South Grove project. Created out of 200 plus acres of farmland adjacent to Concord Street, south of the Village, the new development area became the home of families in St. Paul who chose to pursue a "life in the country". Fueled by residential growth, fields that once produced potatoes were converted to housing. At the same time, the Minnesota Legislature intervened in the government of both townships and villages by requiring townships either to become annexed to cities or to incorporate as cities. After considerable debate, voters chose to create the City of Inver Grove Heights in 1965 by combining the village and the township into one government entity.

Since the creation of the City of Inver Grove Heights, the area has grown considerably. The supply of vacant land which attracted the original settlers in 1852 is still attracting people today. The community that was started by a few settlers is expected to have a population that exceeds 46,000 by 2040.

Planning Framework

Planning Process

This Comprehensive Plan is intended to serve as a guide in making decisions that will affect the City of Inver Grove Heights for the next two decades. In order to be effective, it needs to represent the goals and collective vision of those who it is intended to benefit. The beneficiaries of this plan are the people of Inver Grove Heights, people that live in the community today and people that will make Inver Grove Heights their home in the years ahead. Therefore, the plan must truly represent their thoughts and ideas. Accordingly, the process used to prepare this plan included a wide variety of community involvement opportunities.

The key elements of the community involvement process were two open houses, two online surveys, and two interactive online mapping exercises. One open house was held to seek public input at the beginning of the process, prior to the time that any development plans were assembled. At this initial stage, the focus of the open house provided the opportunity for attendees to comment on the existing plan and express their wants, needs and desires for the future of Inver Grove Heights.

What Social Pinpoint participants "Liked" about Inver Grove Heights

What Social Pinpoint participants indicated "Needs Work" in Inver Grove Heights.

People's lives are always changing, so the ways that we can meaningfully engage with them also has to change. One way the 2040 Inver Grove Heights Comprehensive Plan decided to engage the community through this round of comprehensive planning was to try a new online engagement tool called Social Pinpoint. Social Pinpoint is a map-based online engagement tool that allows community members to leave comments on specific areas of the city via a map. Commenters are then able to interact with each other, by upvoting/downvoting other comments, or replying directly into a comment thread. This tool was used in multiple phases of community engagement.

Each engagement tool provided the City with a wealth of information that has been used as part of the Comprehensive Planning process. It was clear there were some common themes that evolved out of the public process including a desire for a safer transportation system for all roadways users, a feeling that the supply of commercial (retail, restaurant, and entertainment) options is dwindling and heading in the wrong direction, and that recreational facilities, parks, and trails need expansion and investment.

Vision

Inver Grove Heights' Vision and Guiding Principles reflect the desired direction towards a healthy community. The vision addresses what the city should be, based on the community's heritage, the natural features that are inherent to the area, and the values of its people. In the context of this plan, vision serves as a reminder of "what Inver Grove Heights wants to be." From time to time, the community will need to review this vision statement to ensure that it continues to focus on the aspirations and achievements that are expected to occur. The planning process for the 2018 update provided an opportunity to critique the vision. The vision sets the stage for establishing goals for the community. The identified vision for the City of Inver Grove Heights is:

Active Living

Vision Statement

Inver Grove Heights is a community well positioned within the Twin Cities metropolitan area: minutes away from MSP International Airport, two major urban centers, and within an hour of Rochester and the world renowned Mayo Clinic. Inver Grove Heights supports a

development pattern that accommodates urban, suburban, and rural lifestyles. Future growth and development will be forward thinking yet reflect the heritage of the community. The city will have a quality built environment that respects and protects its natural environment of open spaces, rolling meadows, wooded areas, clean lakes, and wetlands. Inver Grove Heights will accommodate the needs of all people by actively pursuing a variety of housing types, a connected and multi-modal (drive, bike, walk, bus) transportation system, a robust business community, and a range of goods and services. Inver Grove Heights will be a vital, attractive, safe community with a healthy environment that evokes strong community pride and supports a healthy and prosperous life for those who choose to make Inver Grove Heights their home.

Guiding Principles

The principles that have guided Inver Grove Heights over the last ten years continue to serve as statements of criteria by which community development issues can be assessed. For the Comprehensive Plan update, we continue to embrace these principles which have been reinforced through the public input process.

Together, the guiding principles and the vision serve the following purposes:

- They orient the community to the future, even to a future that is twenty years distant.
- They require imagination, recognizing that the direction that they set today will be the reality of the future.
- They look to current conditions and community traditions for clues to the appropriate future.
- They are based on a shared understanding of what the community desires for itself.
- They require commitment to maintain their integrity and expected outcomes.
- They will be used as tools for evaluation of proposals, projects, ideas and future directions.
- They will be an anchor during conflict, a way of finding common ground and shared values.
- They become a basis for coordination and cooperation.
- They are a source of energy and enthusiasm for maintaining a

Sustainability

- Sustainability is a characteristic that is often used to describe how we see our future communities, or a state that can be maintained at a certain level indefinitely. The Brundlant Commission (also known as the World Commission on Environment and Development) coined the term Sustainable Development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."
- The notion of sustainability is woven throughout all of our plan, beginning with the guiding principles and continuing on through the goals and policies.

commitment to the future of Inver Grove Heights.

The guiding principles are an important tool to be used in addressing future issues in Inver Grove Heights. They can be used as a conceptual yardstick in assessing future projects, developments and issues. While the community's plan will continue to evolve over time and modifications will be necessary to accommodate unforeseen circumstances, it is important that the spirit and intent of the guiding principles be upheld. In doing so, they will help to ensure that the steps that Inver Grove Heights has taken in preparing this Comprehensive Plan produce the desired results. The guiding principles include the following:

Guiding Principles

A Well Balanced Tax Base

Inver Grove Heights will preserve its fiscal integrity by maintaining a mix of land uses that result in a balanced tax base. A proper mix of land uses in the community will provide desired economic opportunities, employment, goods and services while helping to maintain manageable tax rates.

Provide Diverse Services

Inver Grove Heights residents seek a community that can meet their social and consumer needs. These needs and interests will be considered in defining a future mix of land uses and public services.

Residential Variety

Residential Variety

Residential neighborhoods will contain a variety of housing types and levels of affordability. Neighborhood areas will provide a mix of housing that give residents the opportunity to live in Inver Grove Heights as their needs change over time.

Retain the Rural Character

Inver Grove Heights will protect and enhance its open space and natural features as a reflection of the community's rural heritage and existing rural development pattern.

Retain the Rural Character

Connected Parks and Open Space

Inver Grove Heights will provide a balanced park system that provides diverse recreational and leisure opportunities to all residents, is inter-connected (within the City), and is linked to regional points of interest.

Vibrant Pedestrian Friendly Commercial Centers

Inver Grove Heights will maintain vibrant pedestrian friendly commercial centers. Commercial centers will be accessible for all people, resilient, and

offer an inviting atmosphere to shop, gather, and satisfy basic commercial service needs.

Planned Office and Industrial Areas

Efforts will be made to provide high quality planned office and industrial areas in Inver Grove Heights. Such uses will be sited carefully to protect neighborhoods, preserve natural features, and minimize environmental impacts while creating opportunities for business development and employment within the City.

Quality Infrastructure

Inver Grove Heights will maintain a high quality, technologically robust, and efficient infrastructure system. Utility, multi-modal transportation, and service delivery systems will meet both the present and future needs of the community. Development of individual renewable energy generation systems will be encouraged. Public infrastructure expenditures will be made on the basis of long-term costs and benefits rather than solely on initial cost.

Maintain Educational Excellence

Inver Grove Heights has an excellent educational system for both primary and secondary education. Future planning of public and private facilities will keep pace with the technological advances necessary to support educational institutions.

An Attractive and Safe Environment

The community will emphasize an attractive and safe environment that affords residents the opportunity to get to know their neighbors. Sidewalks and trails will connect the city's neighborhoods and commercial centers. Public and private gathering spaces located throughout the community will accommodate formal and informal gatherings, which help support a strong sense of community.

Connected Parks & Open Space

Planned Office & Industrial Areas

Thrive MSP 2040 Community Designation

Thrive MSP 2040, the regional long-range plan for the Twin Cities region produced by the Metropolitan Council characterizes Inver Grove Heights in two planning area designations: 1) Suburban Edge and 2) Rural Residential. The Met Council's definition of these areas are as followed:

Suburban Edge: The northern two thirds and a few slivers of land on either

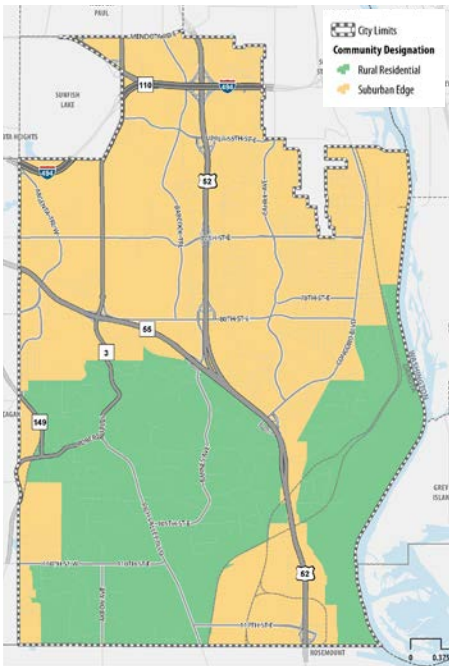


Figure 1-1: Thrive MSP 2040 Community Designation

side of the city are identified with this designation. This category reflects those areas of the community that currently receive municipal sewer and water services and are projected to accommodate future urban growth in the region. Areas across the metropolitan region identified as "suburban edge" include areas that have experienced significant residential growth beginning in the 1990s and continuing to the 2010s. At least 40% of the land in these areas are developed, but significant amounts of land remain for future development. These areas generally no longer contain large-scale agricultural areas.

Thrive MSP 2040 Suburban Edge Policies

The following are examples of the policies Suburban Edge communities similar to Inver Grove Heights are expected to incorporate into their plans:

- Plan for new growth and redevelopment to occur at a density of at least 3-5 dwelling units per acre.
- Conserve natural resources and protect vital natural areas when designing and constructing local infrastructure and planning land use patterns.
- Implement best management practices to control and treat stormwater.
- Plan for a mix of housing, including affordable housing and preserve the existing stock of naturally occurring affordable housing.
- Identify and address community resiliency.
- Remove barriers and identify opportunities to improve pedestrian and bicycle circulation, including access to regional transit services.
- Target opportunities for denser development around regional transit investments
- Preserve and support areas for employment, including sites for highway-, river-, and rail-dependent manufacturing and freight transportation needs.
- Plan for and program local infrastructure needs (roads, sidewalks, sewer, water, and surface water) to meet future growth and redevelopment.

Rural Residential: This area includes the southern 1/3rd or so of Inver Grove Heights. Rural Residential Areas are those areas not intended for future municipal sanitary sewer, and likely not municipal water service either. These areas are mostly characterized by large (1 - 2.5 acre plus) residential lots and estate type development. Rural Residential Areas face challenges in making the transition from rural unsewered development to sewered development. As the Metropolitan Council updates its system plans, the feasibility of providing regional wastewater services, in conjunction with local water supply and transportation system improvements, will continue to be examined. Regional policy directives in Rural Residential areas are focused on protecting and enhancing environmental and natural resources, ensuring sufficient public infrastructure, and discouraging further growth of this type of land use pattern. Rural development at densities greater than 1 unit per ten acres (0.1 units per acre) are not encouraged. The adoption of subsurface sewage treatment system (SSTS) management ordinances is necessary.

Population, Households and Employment

Introduction

Demographic data is an important component to understanding the make-up of a community. More importantly, it also identifies existing and future trends occurring in the community. The 2010 U.S. Census and 2011-2015 U.S. Census American Community Survey 5-year estimates provide us with a foundation to understanding the demographic make-up of Inver Grove Heights. Additional information on the community's demographics may be found through other sources such as the School District or State Demographer.

Growth Projections

This section focuses on a set of market observations and projections that are intended to help quantify various components of future growth in Inver Grove Heights. A part of the foundation for the Comprehensive Plan update has been the population, housing and employment forecasts generated by key regional and state agencies including the Minnesota Demographer, the Metropolitan Council, the Minnesota Department of Employment and Economic Development and Dakota County. All of these agencies use varying methods to project how much growth is going to occur in the region, and how much of that growth will be absorbed within the City of Inver Grove Heights. In each case, methodologies take into consideration a number of factors including Inver Grove Heights' current plans for growth and available land supply, but at a very general level.

Table 1-1 represents the City of Inver Grove Heights projections based on our Comprehensive Plan update. The projections were developed by understanding existing land use and development capacity on a parcel by parcel basis and developing a set of assumptions regarding development density, population and employment ratios by land use type, phasing of infrastructure improvements and property ownership patterns. All of these assumptions were developed based on sound planning principles and an understanding of recent market trends. The projections in this plan do not match exactly with any of the agency projections referenced above; however, the projections do generally fall within an acceptable range of deviation. This plan update recognizes that achieving these projections will be a product of a number of factors that are beyond the control of

Inver Grove Heights. It is conceivable that development could greatly exceed our expectations, particularly in the employment estimates. It is also conceivable that the economy has a slower recovery and we fall short of our projections. In either case, it should be understood that these projections will serve as a basis for planning to the year 2040, while our land use plan will look at what the community might become upon being fully built out. As mentioned early on in this document, Comprehensive Plans are dynamic documents, and as we learn more, we need to carefully monitor demographic trends to ensure our community remains sustainable.

Additional analysis and support of the projections will be presented throughout the remainder of the Comprehensive Plan. These projections provide a key foundation element for land use, park and recreation, roadway and infrastructure system planning.

Table 1-1. Population, Household, Employment Forecasts

Comprehensive Plan Est.	*2010 (actual)*	*2016 (est.)*	*2020*	*2030*	*2040*	*Change from 2014 to 2040*
Population	33,880	34,999	37,300	42,000	46,700	11,869
Households	13,476	14,037	15,400	17,600	19,800	5,977
Jobs	9,442	10,500*	11,400	12,400	14,000	3,653

Source: Metropolitan Council
** HKGi estimate*

Planning For Growth

Population

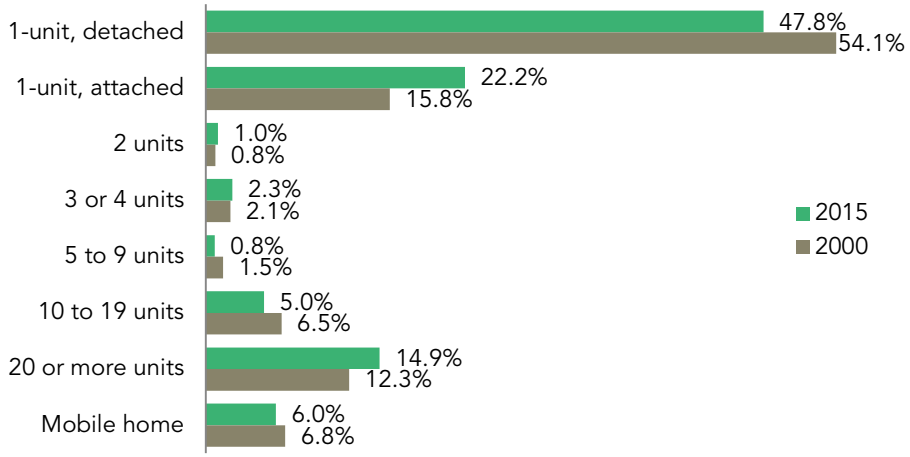
Inver Grove Heights has continually seen growth in population over the years, though the rate of growth has slowed. The City gained slightly more than 5,300 persons during the 1980's, a growth rate of nearly 31%. Growth continued between 1990 and 2000 adding approximately 7,285 people, which accounted for a growth rate of 32% and saw the population in 2000 approaching 30,000. Between 2000 and 2010 Inver Grove Heights gained 4,129 persons, a growth rate of 13.9% for the decade.

It is anticipated that for the next 20 years, Inver Grove Heights will continue to see moderate growth in population as a result of growth in the Northwest Area, continued infill on undeveloped lands, and through some redevelopment opportunities.

Housing

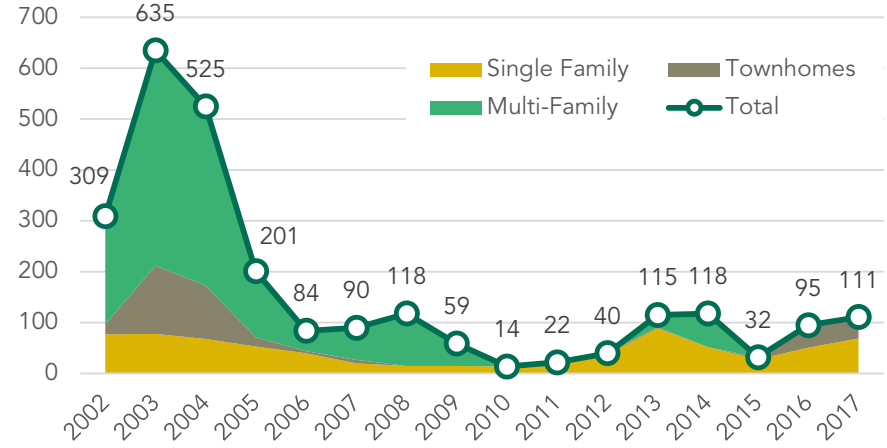
The housing market has seen some changes since the last round of updates in 2008. Single family homes remain the dominate housing type by far, but Inver Grove Heights has seen a greater mix of housing types within the past 15 years. As seen in Figure 1-2 the overall share of 1-unit, detached homes (traditional single family homes) has decreased between 2000 and 2015. The share of 1-unit, attached housing types (townhomes) has increased the most in the 15 years observed. The share of multi-family buildings of 20 or more units has increased as well.

Figure 1-2: Housing Types



Source: 2011-2015 ACS, 2000 Census

Figure 1-3: New Housing Units



Source: City of Inver Grove Heights

Before the recession, Inver Grove Heights saw a significant increase in new housing units. As highlighted in Figure 1-3, between 2002 and 2007 the City reported 1,754 new residential units, an average of 351 units added each year. Between 2007 and 2012 the City reported only 303

Inver Grove Heights Housing (1)

Inver Grove Heights Housing (2)

new residential units, an average of 61 units added each year. In the 6 year period after, 511 residential units were added, an average of 85 units added each year. No new multi-family units have been constructed since 2014.

An additional 5,977 units are projected to be constructed between the year 2014 and 2040, an average of roughly 230 units per year. Regardless of the current market conditions, the Comprehensive Plan will continue to follow these forecasts and plan for them accordingly throughout the Comprehensive Plan.

A study was completed for Dakota County in September of 2013 titled "Comprehensive Housing Needs Assessment for Dakota County." This study builds off of the regional forecasts and provides recommendations on the amounts and types of housing needed to meet housing demand over the next 15 years. The study has identified Inver Grove Heights as a "Developed Community," along with Eagan, Burnsville, Mendota Heights, Lilydale, West St. Paul, South Saint Paul and Sunfish Lake. Inver Grove Heights is expected to absorb the bulk of new single-family homes constructed in these "developed communities" between 2010 and 2030 largely as a result of the available vacant land in the Northwest Area.

Additional information on the housing can be found under the Housing Chapter.

Employment

Table 1-2 presents employment growth trends among Inver Grove Heights and Dakota County from 2000 to 2040 as prepared by Maxfield Research on behalf of Inver Grove Heights. The table demonstrates that job growth in Inver Grove Heights has been relatively strong in comparison to Dakota County and the rest of the Twin Cities Metro Area. Additional job growth is anticipated to continue based on the available land supply in the Northwest Area and the major transportation corridors available to Inver Grove Heights. Solid job growth is expected throughout the Market Area between 2010 and 2040. The PMA is projected to experience a 28.7% gain during the time period (+29,100 jobs). Within the PMA, Inver Grove Heights is expected to add 4,558 jobs (+48.3). The pace of job growth is projected to slow after 2020, as the region is expected to experience a surge in retirements and potential labor force shortages.

Table 1-2. Employment Growth Trends and Projections

	Estimates			Forecast	Forecast	Change 2000-2010		Change 2016-2040	
	2000	2010	2016	2030	2040	No.	Pct.	No.	Pct.
Population									
Primary Market Area	**107,873**	**101,510**	**111,410**	**120,910**	**130,610**	**-6,363**	**-5.9%**	**29,100**	**26.1%**
Inver Grove Heights	*8,168*	*9,442*	*11,400*	*12,400*	*14,000*	*1,274*	*15.6%*	*4,558*	*40.0%*
Remainder of PMA	*99,705*	*92,068*	*100,010*	*108,510*	*116,610*	*-7,637*	*-7.7%*	*24,542*	*24.5%*
Dakota County	211,589	170,192	203,130	219,660	236,300	-41,397	-19.6%	66,108	32.5%
Twin Cities Metro Area*	1,607,917	1,543,872	1,791,080	1,913,050	2,032,660	-64,045	-4.0%	488,788	27.3%

*Includes the 7-County Area (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington Counties)
Sources: US Census Bureau; ESRI; Metropolitan Council; Maxfield Research & Consulting, LLC

There is a growing trend toward flextime, home-based businesses, and telecommuting. As more and more workers utilize their residences as part-time offices, there will be less of a demand for traditional office space. The average amount of office space per worker will continue to decline over the long-term as we become more efficient with our space.

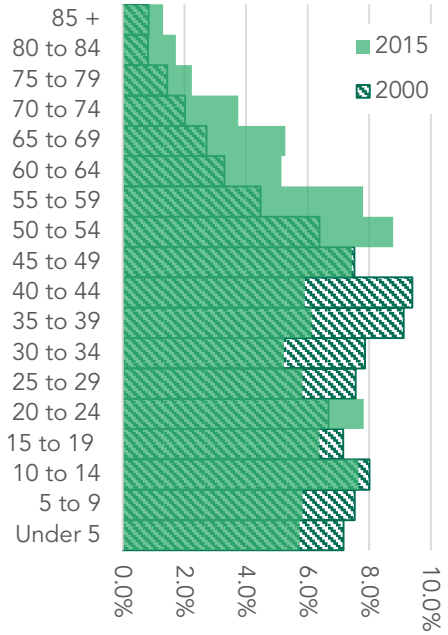
Based on the retail leakage data compiled by Maxfield Research, it appears that Inver Grove Heights could attract stores in a variety of retail categories. However, the most likely uses to be drawn to the area would be neighborhood and convenience-oriented goods and services where there is significant leakage such as full-service and limited-service restaurants, health and personal care stores, as well as specialty retailers (i.e. florists, gift stores, pet supplies, and home furnishings).

Age Distribution

In most cases communities are dealing with an aging population as a result of the "baby boom" generation. As highlighted in Figure 1-4, there has been a significant shift in Inver Grove Heights' age distribution between 2000 and 2015. All age cohorts above 50 years old saw a growth in their share of the overall age distribution. Nearly all age cohorts below 50 years old saw a decline in their share of the overall age distribution in Inver Grove Heights. In 2000, 22% of Inver Grove Heights' population was 50 years or older. In 2015, 36% of Inver Grove Heights' population was 50 years or older. The median age of the population was 39.2 in 2015, compared to 33.8 years old in 2000.

The distribution of age groups can tell a lot about a community. They can provide a better understanding for anticipated housing needs, social services, school enrollment and other public amenities. The current make-up of Inver Grove Heights indicates that there is a fair distribution of age groups. This is not surprising considering the fact that Inver Grove Heights is still a developing community.

Figure 1-4: Age Distribution



Source : 2011-2015 ACS, 2000 Census

Planning For All Ages

While Inver Grove Heights is committed to meeting the needs of the aging population, the City is also cognizant of the need to remain attractive to the Millennial and younger generations. Interestingly, living environments attractive to the well elderly portion of the population are also attractive to Millennials. Both segments of the age spectrum value mixed-use, walkable areas close to shopping, parks, and entertainment.

School Enrollment

One of the most reliable sources for up to date demographic data is provided through school enrollment information. Enrollment in the Inver Grove Heights Community Schools (a district entirely within Inver Grove Heights) has seen a decline over the last 5 years and is projected to continue to see declining numbers. The declining enrollment projections are partially a factor of an aging population within the portion of Inver Grove Heights covered by the district combined with little new housing offering opportunities to free up existing single family homes for young families to move into.

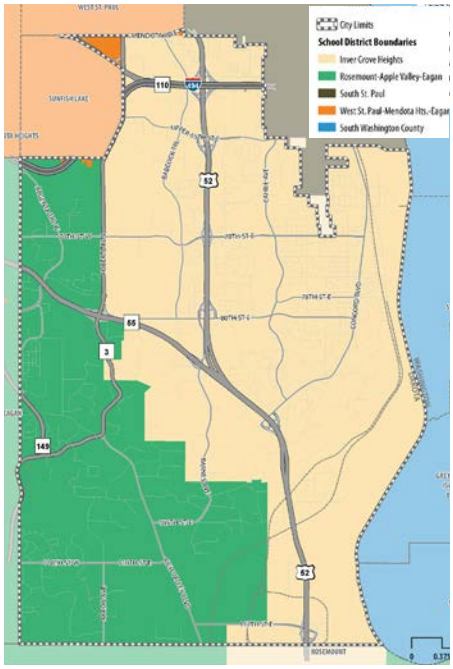


Figure 1-5: School Districts

Table 1-3. School Enrollment

Year	*Actual Enrollment*	*Year*	*Projected Enrollment*
2012-2013	3,704	2017-2018	3,588
2013-2014	3,778	2018-2019	3,554
2014-2015	3,777	2019-2020	3,523
2015-2016	3,753	2020-2021	3,493
2016-2017	3,556	2021-2022	3,461

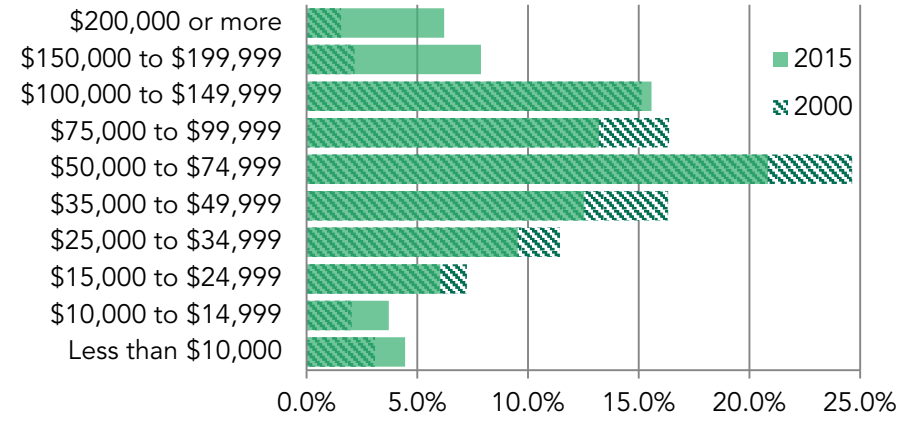
Source: Inver Grove Heights Community Schools.

The Rosemount/Apple Valley/Eagan district draws from a larger area with a significant amount of new growth opportunities and housing opportunities that generally favor younger families with children. This growth and land use pattern signifies the majority of future growth in the city will likely take place within the Rosemount/Apple Valley/Eagan district.

Household Income

Median household income rather than average household income is a better reflection of the majority of households, because average household incomes can be skewed upward by a few, very high-income households.

Figure 1-6: Household Income



Source : 2011-2015 ACS, 2000 Census

The median household income in Inver Grove Heights in 2000 was $59,090 ($81,332 in 2015 dollars). In 2015 the median household income dropped to $65,108. The change in household income is highlighted in Figure 1-6. Although the median household income dropped, significant growth can be seen in the upper income brackets. Growth can also be seen in the lowest income brackets. This income data suggests a trend of a shrinking middle class within Inver Grove Heights. The more affluent population is getting more affluent, while the less affluent population is getting less affluent. As seen in Table 1-4, the median household income in Inver Grove Heights is lower than the Twin Cities Metropolitan Area and Dakota County.

Table 1-4. Median Income

	Inver Grove Heights	*Dakota County*	*Twin Cities SMSA*
Median Household	**$65,108**	**$75,567**	**$68,778**
Median Family	**$68,629**	**$71,062**	**$85,636**
Per Capita	**$35,049**	**$36,171**	**$35,069**

Source: 2011-2015 ACS

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LAND USE PLAN
CHAPTER 2

Introduction

Inver Grove Heights borders the cities of Eagan, Sunfish Lake, Mendota Heights, West St. Paul, South St. Paul, Newport, St. Paul Park, Grey Cloud Township and Rosemount. Since settlement started in the area in 1852, the development pattern of Inver Grove Heights has extended west and southwest from the original Village on the Mississippi River in what is now generally known as the Concord neighborhood. The pace of development in the area increased during the 1970s and 1980s in response to improved accessibility provided by major freeways including I-494, TH 55 and Highway 52. The City has a total land area of approximately 19,205 acres and because all land bordering the community is incorporated, Inver Grove Heights' boundaries are fixed.

In 1998 approximately 40% of the City had municipal sanitary sewer as provided through the Metropolitan Urban Service Area (MUSA). That number grew to nearly 60% in 2008 and remains at 60% in 2018. Generally speaking the only portions of the community that are not intended to receive future public water and sanitary sewer services are those areas guided for rural residential land uses. The Land Use plan discusses these areas in further detail and a area around the refinery and landfill uses in Southern Inver Grove Heights.

Metropolitan Urban Service Area

The Metropolitan Urban Service Area, or "MUSA," is the area in which the Metropolitan Council ensures that regional services and facilities, such as sewers and major highways, are provided or planned. The Metropolitan Council oversees provision of these services to metro-area communities under the authority of the Metropolitan Land Planning Act. A planning concept developed in the 1970s, the Metropolitan Urban Service Area was designed to achieve orderly, economic and contiguous growth by directing development, primarily, to areas where roads and sewers already exist. The objective was to get the most use out of existing infrastructure and create efficiencies that save taxpayer dollars.

Existing Land Use Classifications

Describing existing land use enables us to take a snapshot of our current community as a basis for measuring our future land use plan. The following categories represent how our lands are currently being used.

Rural Residential – Rural Residential is primarily located in the southern portion of the community outside the MUSA boundary. These uses consist primarily of large lot, estate residential housing with private on-site septic and well systems. Limited agriculture or rural hobby related uses are often included in this land use category.

Single Family Residential & Manufactured Homes – Existing residential uses include single-family, detached housing, which on the basis of land consumption, is the dominant land use category in the community.

Multi-Family Residential – Multi-Family Residential includes all categories of attached housing such as apartments, condominiums, townhomes, duplexes, triplexes, quadhomes, senior housing, and manufactured housing.

Commercial – Commercial uses are those that supply goods and services to the general public. They also include commercial office buildings that provide space for a variety of business practices.

Industrial – Uses classified as industrial are those that create employment opportunities through manufacturing, assembly, warehousing and similar operations. Extractive uses such as lands being used for mining purposes are also included.

Institutional – Institutional uses include public lands and facilities such as City Hall, the community center, public works and schools. This category also includes religious institutions such as churches and cemeteries.

Public Park and Open Space– Land classified as public parks and open space provide a variety of recreational opportunities. This category includes publicly owned golf courses, publicly owned open space and city parks.

Private Recreation Areas—land classified as private recreation includes

uses that are largely undeveloped but used for recreation. These spaces might include privately owned golf courses, gun clubs, conservation areas, association owned common area or other lands not intended for further development.

Utility — Utility represents private utility infrastructure facilities.

Railroad – Railway property includes land within railroad right-of-way.

Open Water/ Wetlands – This category includes wetlands, lakes and the Mississippi River.

Vacant – Lands classified as vacant are parcels that do not contain developed land uses. Vacant parcels may be property that is currently under utilized or land that is presently used for agricultural purposes.

Right-Of-Way (ROW) – ROW include public right-of-way that is currently used for roadways or is available to accommodate public roads in the future.

The existing land use map depicts the current land use pattern in the City of Inver Grove Heights. Table 2-1 provides a detailed breakdown of existing land use.

Table 2-1. Existing Land Use Inventory (2018, in gross acres)

Land Use Category	*Within MUSA*	*Outside MUSA*	*Total*	*% of Total*
Rural Residential	1,545	4,035	5,580	29.1%
Single Family Residential	2,256	-	2,256	11.7%
Single Family/Manufactured	147	-	147	0.8%
Multi-Family Residential	748	-	748	3.9%
Commercial	714	56	770	4.0%
Industrial	714	177	891	4.6%
Public/Institutional	395	36	431	2.2%
Public Park and Open Space	981	462	1,443	7.5%
Private Recreation and Open Space	221	363	584	3.0%
Utility	257	68	324	1.7%
Railroad	93	150	243	1.3%
Open Water/Wetland	166	524	691	3.6%
Vacant	1,166	1,232	2,398	12.5%
ROW	2,144	557	2,701	14.1%
Total	11,546	7,660	19,206	100%

Existing Residential Land Use

The Pines

The age and styles of housing combined with their corresponding lot sizes have resulted in a number of distinctly different neighborhoods. The residential area in the Concord neighborhood, which is located in the extreme northeast portion of the community, contains some of the oldest housing stock in Inver Grove Heights. A unique bluff line paralleling the Mississippi River provides much of the context to this area. Neighborhoods east of Concord Boulevard at the bottom of the bluff have smaller lots and are situated on a grid pattern of streets. Neighborhoods west of Concord are constrained by steep topography of the bluff and thus are quite unique in their design. On top of the bluff, the residential area to the west, north of 80th Street and east of the Highway 52 contains neighborhoods that were platted in the 1970s and 1980s and feature curving streets and frequent cul-de-sacs. Housing located south of 80th Street in the Arbor Point development is more typical of planned unit developments that were completed in the 1980s and early 1990s. The residential character of this area is established by varying housing styles and densities, a connected open space system, trails, tear drop cul-de-sac islands, higher levels of landscaping and entry signs that identify neighborhoods.

The rural density residential area in Inver Grove Heights generally lies south of Highway 55/52 and southeast of Concord Boulevard. Housing styles and sizes in this single-family detached area vary. Lot sizes range from 1 acre to more than 10 acres with significant clusters of 2.5 acre and 5 acre lots. Some of the housing developments have a rural subdivision character with mowed lawns surrounding all of the homes. Other areas contain hobby farms or houses that are set within rugged, wooded terrain.

The existing land use map contains three residential classifications, rural, single-family and multi-family. Homes in the rural and single-family classification are all detached dwelling units while homes in the multi-family classification are primarily attached or stacked (vertical) housing units.

Existing Commercial Land Use

Inver Grove Heights contains pockets of commercial development that have either a regional orientation or are older commercial areas that primarily serve the local residential population. Regional commercial uses are located in the northwest corner of the community and in the southeast

quadrant of the I-494 and Highway 52 interchange. The northwest corner commercial area contains automobile dealers and large scale retail stores. In the southeast quadrant, commercial development began in 1997 with the construction of a theater complex and peripheral land uses.

Smaller, commercial uses (oriented as "nodes" typically at the intersection of two major roads) make up the balance of the commercial land use pattern in Inver Grove Heights. Examples of these areas include Cahill Avenue at 55th Street, 65th Street, 70th Street, 80th Street and along Concord Boulevard between Hwy. 52/55 and Cahill. Commercial uses in these areas include fuel stations, fast food restaurants, offices, grocery stores, drug stores, hardware, and recreational uses such as bowling. The dispersed pattern of these commercial uses makes it difficult to combine them into a cohesive focus for commercial activity. However, the nodal distribution serves to help diminish the length of trips for basic services in the community.

Retail Services

Office Condos

Existing Industrial Land Use

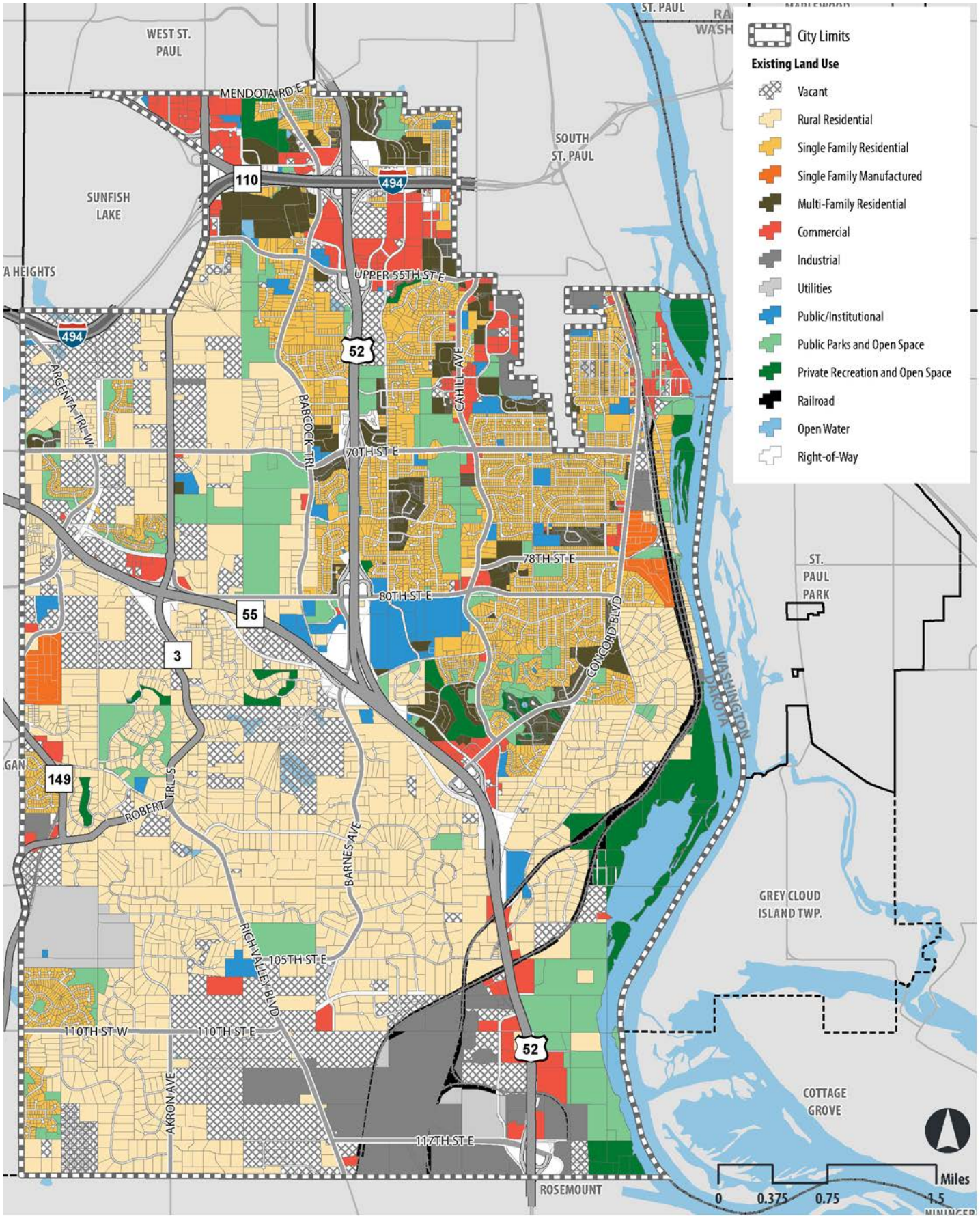
In 2008 the City's MUSA was expanded along the TH 52/55 corridor to encompass land guided for light and general industrial uses. This expansion has provided the city with an opportunity to increase its commercial/industrial tax base and employment opportunities.

Businesses in this area tend to be manufacturing and assembly operations on larger lots, many of which have associated outside storage. The largest single land uses include the landfill operation and an underground natural gas storage facility. The entire southern tier of land in Inver Grove Heights is also impacted by the refinery operation (currently owned by Flint Hills Resources) that is located across the border in the City of Rosemount. These industrial uses generate low employment compared to other industrial uses in the community.

Concord Boulevard

Another area of industrial land use lies in the northeast corner of the community, generally around the South St. Paul airport. Industrial uses in this area tend to be individual businesses that are involved in light manufacturing, assembly and warehousing operations. The stretch of old Concord Boulevard north of 70th Street is also the home of a number of smaller industrial businesses. In general, businesses in this area tend to be very small manufacturing or assembly operations, sometimes creating conflicts with the surrounding residential areas. These types of industrial uses do generate a greater degree of employment than industrial uses south along Highway 52.

Figure 2-1: Existing Land Use



Public/Institutional

Uses categorized as public/institutional include a number of different types of public and semi-public uses. Most of the institutional land in Inver Grove Heights is developed land occupied by public or private schools, religious institutions, or facilities associated with the government such as City Hall, Veterans Memorial Community Center, state or county facilities.

Dakota County
Inver Glen Library

Public Parks and Open Space

Park and open space areas that are operated by the City are delineated on the existing land use map. These areas include lands used for active or passive recreation use or lands that are in public ownership and are preserved as open space or conservation areas. Trail right-of-way would be included in this category also. The key distinguishing feature is that the land is held in public ownership.

Private Recreation and Open Space Areas

This category is used to characterize existing use of land in Inver Grove Heights. Land used for private recreation purposes that are "land" intensive (i.e. a small proportion of the site is needed for structures) whether passive (i.e. open space, nature areas, etc…) or active uses (i.e. gun club, golf course, park) are classified as private recreation areas. These areas, while possibly available for public use, are always owned by a private entity and not intended for development in the near term. Generally, these lands are not included in determining development capacity of the City.

Farmers Market

Vacant

Vacant areas include undeveloped land, portions of which are currently used for smaller scale farming operations. It is anticipated that these lands will be developed at some point in the future when property owners choose to.

Peripheral Uses

The existing land use pattern in Inver Grove Heights is impacted by a number of facilities that lie outside of its municipal boundary. These uses are not mapped, but they are important to recognize due to the impact on nearby land uses. Of these types of uses, the most dominant ones are airports and refineries. Refineries in Rosemount and St. Paul Park are easily seen from properties located in southern and eastern Inver Grove Heights. Both of these uses are visually unattractive. They have both direct and indirect negative impacts on the use of land for residential purposes either

due to visual concerns or proximity to some of the heaviest industrial uses in the entire Twin City Metropolitan Area.

The refinery located in Rosemount also has another type of direct impact on Inver Grove Heights. For many years, this refinery has been purchasing property in Inver Grove Heights to serve as a buffer for its refining operations in Rosemount. Company ownership in this area creates an uncertainty of future use regarding large parcels of land in southern Inver Grove Heights. Because the refinery generates a significant employment base that is nearby to Inver Grove Heights, this comprehensive plan update will offer directions on how to balance the issues identified and meet the needs of both the City and refinery business.

Airports are also a negative impact on existing residential development in Inver Grove Heights. The South St. Paul Airport is a small scale, general aviation facility with limited impact due principally to the lower intensity scale of airport operations. The Minneapolis/St. Paul International Airport, however, is another matter. Because of the extensive nature of commercial operations at MSP and the flight patterns that route departing and arrival traffic directly over the city, noise from airport operations impacts both existing and future residential developments. Although current construction techniques are able to sound proof homes so that they can co-exist, there is a sentiment from some residents that future development in areas impacted by airport noise should not be permitted.

Both airport facilities, however, provide services to Inver Grove Heights that can be perceived as much more of an asset than a liability. These services support hobby and leisure activities, jobs and economic development opportunities.

2040 Future Land Use Plan

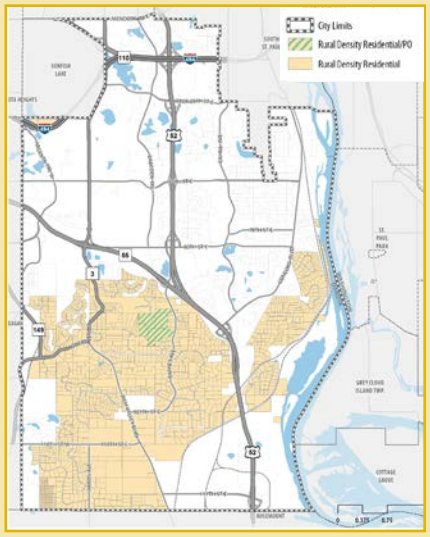
Residential Land Use

The Future Land Use Plan identifies five categories of residential land development including rural density residential (RDR), low-density residential (LDR), low-medium density residential (LMDR), medium density residential (MDR) and high density residential (HDR). The following is a review of each classification:

Rural Density Residential (RDR) *(< .4 residential units/net acre)(2.5 Acre parcels or larger)*

The rural density residential category is used in this comprehensive plan to recognize a land use pattern that has become firmly established in the southern portion of Inver Grove Heights. Over the past four decades, single-family home development on lots ranging from 2.5 acres to in some cases, 10 acres has become an established pattern in southern Inver Grove Heights. At the present time, this area contains over 1,600 residences, none of which are served by municipal utilities. Because of the extensive nature of the rural density residential area and the City's desire to accommodate a wide range of housing types, this development pattern is being considered permanent and it is anticipated that future infill development will match the existing pattern.

The rural density residential category features lots or parcels of 2.5 acres or more containing detached single-family housing without public water or sanitary sewer facilities. In addition to housing units, lots in this area are likely to have accessory uses such as small storage buildings associated with hobby farms and other related uses. Substantial areas of existing development in the rural density area contain lots ranging from 5 to 10 acres. As additional lots are platted adjacent to these areas in the future, proper transitioning of lot sizes will need to be considered.



Rural Density Residential

As additional lots are platted adjacent to these areas in the future, proper transitioning of lot sizes will need to be considered.

Rural Density Residential/ Private Recreation and Open Space (RDR/PO) *(< .4 residential units/net acre) (2.5 Acre parcels or larger)*

This category is used in this comprehensive plan to allow for the dual use designation of rural density residential and private recreation and open space. This use was created and applied in a 2013 comprehensive plan amendment to the 2030 comprehensive plan. In addition to the above RDR uses, the RDR/PO category may also include private nature center combining uses such as outdoor skills and environmental education center/open space that would be further defined in the zoning ordinance. A nature center may allow a senior independent/assisted care facility on a private treatment system as further defined by standards in the zoning ordinance.

Low Density Residential (LDR) *(1-4 residential units/net acre)*

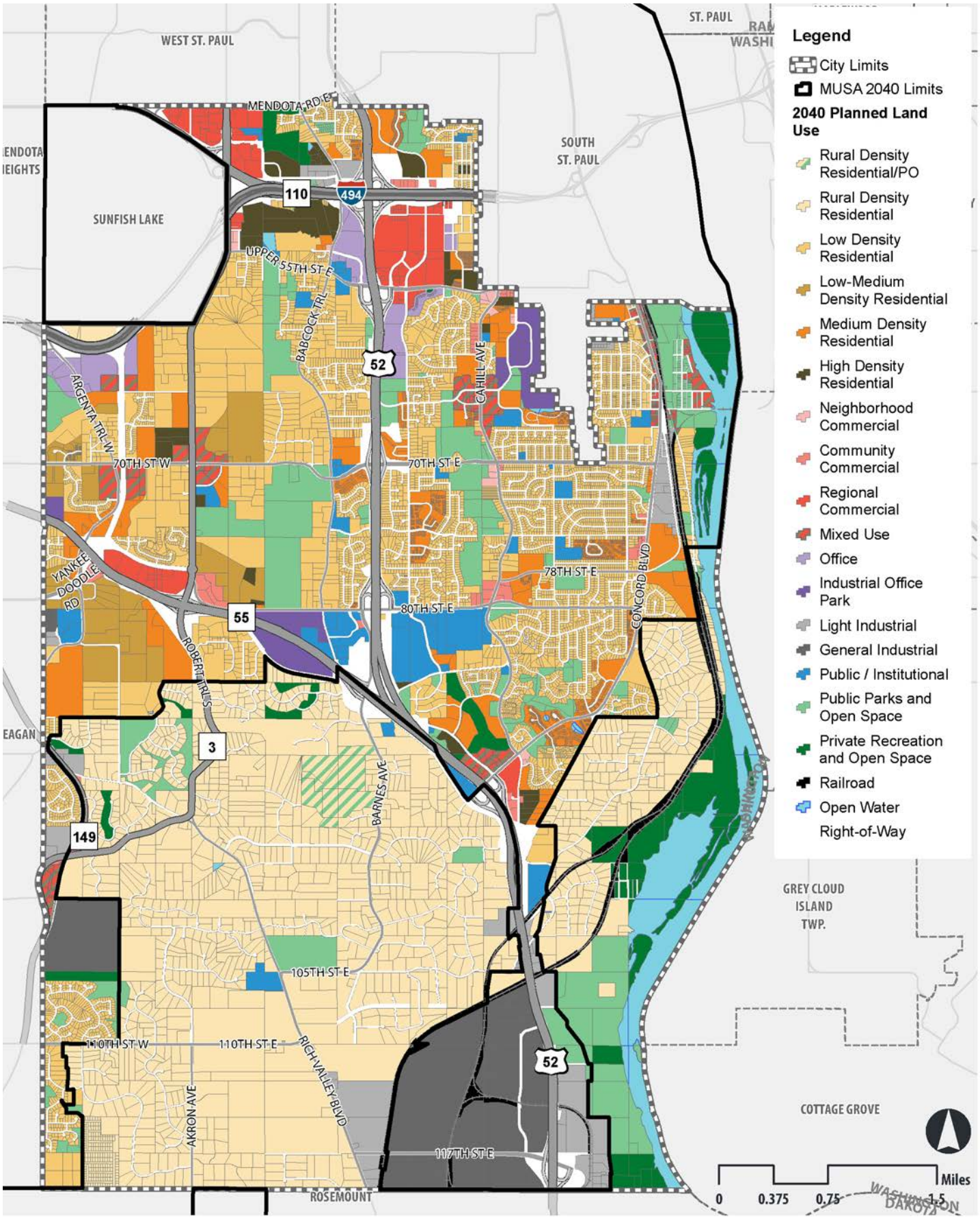
The low-density residential category encompasses traditional "urban" density development in Inver Grove Heights. LDR includes lots or parcels ranging from 1 unit per acre to 4 units per net acre. Substantial portions of the low-density residential area are anticipated to develop at a density of two to three units per net acre. Housing types in the low-density

Determining Density :

Density is a way of determining the degree of development on a specific parcel based on the future land use guidance. We receive guidance from the Metropolitan Council on how to determine appropriate density calculations in Comprehensive Plans. The Metropolitan Council establishes these guidelines to ensure a consistent way of measuring density across all communities in the Metropolitan Area. This enables a consistent and coordinated way to allocate future growth and development that affects regional infrastructure planning.

Density for sewered areas is calculated on a "net" basis meaning that development projections are based on a land's carrying capacity which does not include land area prohibited from development based on existing laws or ordinances or lands needed for arterial road ROW.

Figure 2-2: Land Use Plan



residential category include single-family detached homes, twin home units and lower density, townhome style developments. In all cases, low-density residential development will be served by public water and sanitary sewer systems.

Low-Medium Density Residential (LMDR) *(4-8 residential units/net acre)*

The low-medium density residential category includes a combination of single family attached and single family detached housing that is generally at a greater density than traditional single family housing in Inver Grove Heights. Density of the LMDR category ranges from 4 to 8 units per net acre. This land use category is principally isolated to the Northwest Area.

Medium Density Residential (MDR) *(8-12 residential units/net acre)*

Medium density residential accommodates somewhat higher residential densities ranging from 8 to 12 dwelling units per net acre. Uses in this classification include higher density townhome developments and apartments, all with full public utility service.

Table 2-2. 2040 Future Land Use (Acres)

Land Use	*Inside MUSA*	*Outside MUSA*	*Total*	*% of Total*
Rural Density Residential	50	5,249	5,299	27.6%
Rural Density Residential/PO	-	132	132	0.7%
Low Density Residential	3,603	4	3,607	18.8%
Low-Medium Density Residential	464	-	464	2.4%
Medium Density Residential	885	0	885	4.6%
High Density Residential	243	-	243	1.3%
Neighborhood Commercial	27	-	27	0.1%
Community Commercial	96	2	98	0.5%
Regional Commercial	346	-	346	1.8%
Mixed Use	248	-	248	1.3%
Office	194	-	194	1.0%
Industrial Office Park	195	-	195	1.0%
Light Industrial	289	160	449	2.3%
General Industrial	902	-	902	4.7%
Public/Institutional	396	28	424	2.2%
Public Parks and Open Space	966	462	1,427	7.4%
Private Recreation and Open Space	213	391	604	3.1%
Railroad	93	150	243	1.3%
Open Water/ Wetlands	169	524	693	3.6%
Right-of-Way	2,167	557	2,725	14.2%
Total	11,546	7,660	19,205	100.0%

High Density Residential (HDR) *(12-35 residential units/net acre)*

Areas designated as high density residential are intended to accommodate multi-family housing at densities exceeding 12 units per net acre. Uses in this category will be principally limited to higher density apartment or condominium buildings for either general occupancy or for specific segments of the population such as senior housing.

Mixed Use (MU) *(12-35 residential units/net acre)*

Mixed use areas consist of lots or parcels that contain a mix of retail and service commercial, office, institutional, higher density residential, public uses and/or park and recreation uses, organized in a pedestrian friendly environment. High density residential components within mixed use areas are intended to accommodate housing at densities exceeding 12 units per net acre. Residential uses in this category will be principally limited to higher density apartment or condominium buildings for either general occupancy or for specific segments of the population such as senior housing. It is expected that 2/3 of these areas will develop as residential uses.

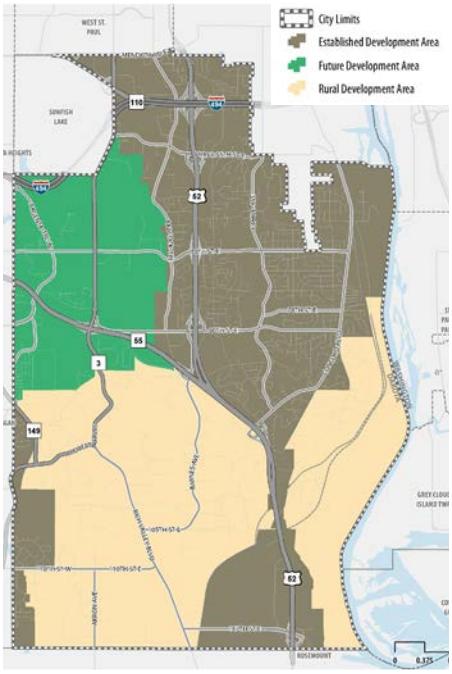


Figure 2-3: Development Policy Areas

Residential Policies

Based on the characteristics of the existing development pattern and varying policy implications, the residential land use categories can be characterized within three general development policy areas: 1) the rural development area, 2) the established development area, and 3) the future development area. The rural development area occupies most of the southern portion of the City, the established development area is generally in the northeast and southwestern areas served by Eagan sewer service, and the future development area is primarily in the northwestern area of the community (see Figure 2-3).

Rural Development Area Policies

1. Maintain the rural character of established neighborhoods.
2. Accommodate infill development that is consistent with existing development patterns and sizes.
3. Allow development with private, on-site utility systems. The city does not plan to extend water or sanitary sewer into rural development areas except in cases of environmental problems with existing on-site systems.
4. Create a quality living environment that is adapted to the natural environment.
5. Encourage and promote the unique lifestyle and housing opportunities that harmonize with the area's natural features and amenities.

Rural Areas

Rural development areas are not intended to have city sewer and water. Policy directions focus on preservation, maintenance and infill development.

6. Provide necessary municipal services (i.e. police, emergency response, garbage, recycling, etc...) to the estate area while recognizing that the type and level of services may differ from those provided to the urban area of the city.
7. Where possible and appropriate, encourage design patterns that integrate quality environmental resources such as wetlands or mature woods.
8. Discourage non-residential and/or non-local traffic on local streets.
9. Limit housing to single-family, detached homes capable of being supported by on-site utility systems.
10. Encourage the placement of housing units in a manner that preserves significant natural resources.
11. Prohibit commercial or industrial uses in residential areas including home occupations that involve exterior storage such as contracting businesses.
12. Continue to enforce periodic inspection requirements for on-site sewage treatment systems to ensure compliance with State and County environmental regulations.
13. Provide new development that has at least two individual sewage treatment system sites on each lot.
14. Acceptable uses within the rural development area shall include commercial agriculture pursuits but not animal feed lots, stockyards or animal slaughtering facilities.
15. The resubdivision of individual lots within existing neighborhoods shall maintain a minimum lot size of that neighborhood.
16. The design of future rural residential developments shall consider the lot sizes of adjacent developments.
17. Any nature center including outdoor skills and environmental education center/open space shall be designed to be consistent with the Rural Density Residential policies creating a quality living environment that is adapted to the natural environment.

Role of Agriculture in the Rural Development Area

Agriculture is one of the elements of the heritage of Inver Grove Heights. Because of past land subdivision activities and the construction of single-family homes, large-scale farming operations no longer exist. However, significant land areas continue to be used for the production of row crops and as pastureland for animals. Scattered small-scale truck farming operations also occur throughout portions of the community.

Since agriculture is a character element of the community and a means of preserving "open space", the comprehensive plan seeks to include

agriculture as an interim and permanent land use depending on the desires of property owners. Individuals that choose to maintain their land in agricultural production can continue to do so and will be consistent with both the comprehensive plan and current zoning practices. Long-term agriculture outside of the area designated as Rural Development Area is not anticipated in this plan.

Established Areas
Established areas represent portions of the community which are mostly built out. Policy directions focus on preservation and maintenance of existing neighborhoods.

Established Development Area Policies

1. Allow infill development in a manner that protects the character of existing residential neighborhoods.
2. Maintain a circulation system that connects neighborhood areas while emphasizing a system of collector roadways to accommodate vehicular movements.
3. Provide a broad range of housing opportunities.
4. Ensure that new development areas are compatible in size and scale with existing, adjacent neighborhoods.
5. Provide appropriate buffers to allow density transitions and to accommodate a range of housing types.
6. Promote programs and adopt and enforce codes that encourage the maintenance of the existing housing stock.
7. Encourage rehabilitation of deteriorating housing stock.
8. Conduct long term planning to ensure existing neighborhood infrastructure is well maintained and reliable.
9. Disperse affordable housing throughout the area rather than creating concentrations in specific locations.
10. Reflect the history and character of existing residential neighborhoods in future infill development within those neighborhoods.
11. Provide commercial services that are convenient to neighborhoods.
12. Work closely with the school districts within the City to ensure that local school facilities are properly maintained, sustainable and serve as gathering spaces for neighborhoods.
13. Continually monitor the vitality and viability of existing commercial nodes and encourage the integration of supporting residential uses where necessary.
14. The city will continue to support the R-4 Mobile Home Park Zoning District that was established for mobile home park developments.

Future Development Area Policies

1. Create planned neighborhoods with common facilities and amenities that establish a sense of identity and that helps promote long-term maintenance and value stability.

2. Create a quality living environment that is adapted to the natural environment.
3. Establish a collector road system that deters the use of local streets for non-local vehicular trips.
4. Establish a local street system that deters the use of collector and arterial streets for local vehicular trips.
5. Require that future street alignments fit the contours of the natural landscape.
6. Encourage diverse housing styles consistent with the inherent characteristics of the site.
7. Encourage developments that incorporate natural features as integral elements of the residential environment.
8. Encourage cluster development practices that preserve significant natural resources by concentrating building locations.
9. Utilize natural features as connecting links between and through neighborhood areas.
10. Encourage on-site retention of storm water in open space areas without negatively impacting natural areas and without creating negative impacts on the overall visual aesthetics of the area.
11. Provide infrastructure including but not limited to water, sanitary sewer, storm sewer and streets in a phased manner, consistent with the overall development plan for the area.
12. Require new growth in the future development area (such as the Northwest Area) to adequately fund sewer and water infrastructure extension based on city land use assumptions consistent with the comprehensive land use plan and financial projections based on engineering cost estimates for infrastructure development.
13. Mandate construction practices that mitigate the impact of airport noise in the area.
14. Provide commercial areas that are convenient to residential neighborhoods.
15. Encourage creative land planning to create neighborhood areas that have a unique personality reflecting the natural beauty of the area as well as the overall context of the community.

Future Development Areas
Future development areas consist of areas that are largely undeveloped and planned for the extension of city infrastructure

Employment Generating Land Uses

Land uses that principally generate employment (but also provide services) in Inver Grove Heights include a number of land use categories. These uses include the following classifications: office (O), neighborhood commercial (NC), community commercial (CC), regional commercial (RC) mixed use (MU), industrial office park (IOP), light industrial (LI) and General

Development Intensity Expressed as Floor Area Ratios (FAR):

A Floor Area Ratio or FAR is a way of determining the gross square feet of building area that a particular land use might generate. It is determined by taking the total (gross) square feet of building area divided by the square feet of a development site or parcel. A standard FAR for suburban commercial development ranges between 0.15 FAR to 0.35. Retail intensive uses generally require more parking and thus are on the low end of that measure.

Over time, the City of Inver Grove Heights policy is to encourage more efficient land use patterns that devote more land area to productive uses. For this plan, FARs were used to generate projected employment levels based on future land use. FARs for commercial land uses were estimated at 0.20 to 0.25. FARs for Industrial/Office Park type uses were estimated at 0.25 to 0.35.

Actual FARs will vary based on the market and eventual form of commercial development.

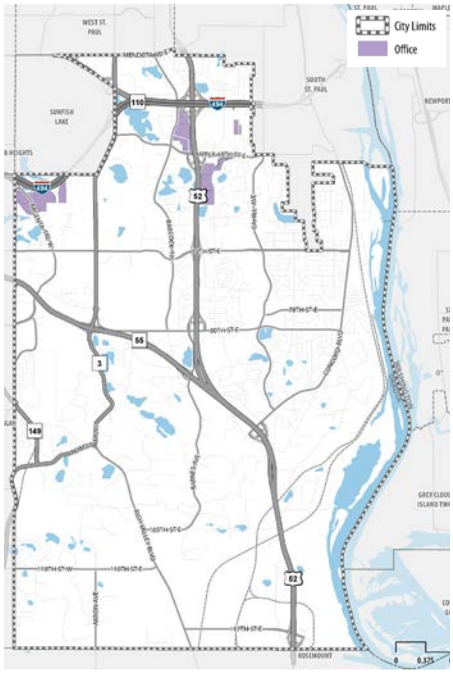


Figure 2-4: Office Uses

Industrial (GI). The following is a review of each classification:

Office (O)

The office land use category includes lots or parcels that contain professional offices and services such as medical, law, real estate and financial businesses. In the land use plan, offices are concentrated in two principal locations, 1) along the Hwy. 52 in the northern portion of the community and 2) in the northwest corner of the community at the intersection of Argenta Trail and Interstate 494 (See Figure 2-4).

The area designated office along the east side of Highway 52, south of Upper 55th Street and north of 65th Street East contains a large parcel of property currently owned by the City of Inver Grove Heights. The current plan seeks to attract a corporate headquarters type of office user to this site. The prominence of the property along a major gateway to the community in addition to its access to the adjacent freeway are elements that support the office designation of this property. A vacant parcel currently owned by MnDOT is also guided for office development further contributing to the size of a parcel potentially available for development. The scale of the property, site amenities and access could support a campus-type of commercial development possibly including a medical complex.

The second office site is the land located at Argenta Trail and Interstate 494. Past Comprehensive Plans called for office uses in this area and the current plan update concurs with this designation. Developing office uses in this area is contingent upon a future interchange at I-494. Development of an interchange to provide direct access to this portion of the City faces physical and political obstacles. Extensive wetlands and topographical features in the area complicate the location and design of the intersections. Obtaining local and regional support for an interchange may also pose a number of challenges; however, recent planning efforts conducted by Dakota County in partnership with local municipalities reinforces the need for an interchange due to regional traffic demand and has indicated strong local support. Last but not least, identifying funding for the interchange will also be a challenge. The City intends to pursue the interchange and thus is maintaining an office land use pattern in its Comprehensive Plan. If the interchange in this area proves to be unworkable, it is likely that the office property will be developed as low or medium density residential development. The area may be able to support medium or even higher density residential development if an appropriate east/west arterial or major collector roadway is developed with an eastward connection to South Robert Trail.

Office Development Policies

1. Create new and reserve existing areas for office development to provide employment opportunities in the community and signature land uses. In some cases, the designation of property as office may prolong the absorption rate compared to other possible land use designations.
2. Insure that large office areas have adequate access to major arterial roadways to prevent impacts on the local residential street network.
3. Encourage the inclusion of natural amenities such as ponds and wetlands into office campus environments.
4. Encourage relationships between existing and future large-scale office users and the local and community college school systems to strengthen the bind between the public and private sectors in Inver Grove Heights.
5. Connect concentrated office areas to residential neighborhoods via a pedestrian trail network to encourage alternative transportation methods.
6. Encourage site design principles that support transit useage.

Neighborhood Commercial (NC)

Neighborhood commercial areas include lots or parcels containing retail sales and services located along collector roadways that serve the adjacent neighborhood area (see Figure 2-5). The neighborhood commercial designation is the least intensive of the commercial classifications used in the comprehensive plan. Neighborhood commercial areas are intended to house businesses that provide convenience goods and services. Convenience goods and services include items that are regularly needed by nearby residents such as small grocery items, dry cleaning, video rentals, etc. Properties designated as neighborhood commercial on the land use plan are located along "A" minor arterials or community collector roadways.

Neighborhood Commercial Area Policies

1. Provide neighborhood commercial areas to supply convenience goods and services principally for residents of Inver Grove Heights.
2. Require appropriate land use transitions at the edges of residential neighborhoods through the use of setbacks, screening, buffering and fencing.
3. Enforce land use controls to limit the scale of commercial development in neighborhood areas.
4. Place strict limitations on lighting, vehicular access and other site

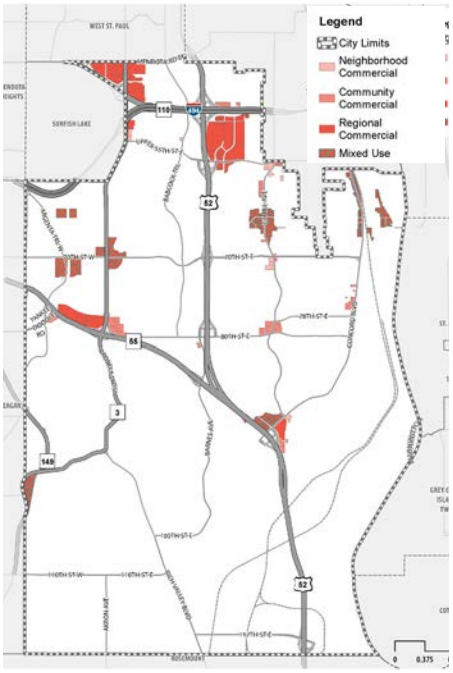


Figure 2-5: Commercial Uses

An appropriate scale of neighborhood commercial areas includes buildings that are one or two stories with footprints generally less than 40,000 square feet. Total area (critical mass) commercial space should generally not exceed 100,000 square feet.

planning elements in order to alleviate conflicts with abutting residential uses.

5. Require sidewalk connections along major streets leading up to neighborhood commercial centers and direct connections from the public sidewalk to the storefronts.

Community Commercial (CC)

Community commercial areas include lots or parcels that contain retail sales and services located along community collector and arterial roadways that serve the community (see Figure 2-5). Community commercial areas differ from neighborhood commercial areas in that they are more intensive and are designed to attract customers from a wider trade area. As such, the goods and services that are available in community commercial areas are broader in scope such as restaurants, private recreational facilities, professional service offices, small-scale printing, etc.

Community Commercial areas are intended to accommodate a critical mass of 100,000 to 250,000 square feet of space. The uses should be configured within a series of buildings that are well connected and encourage pedestrian circulation within the district as well as encouraging trail and sidewalk connections to adjacent neighborhoods.

Community Commercial Area Policies

1. Provide goods and services that are needed by Inver Grove Heights residents in environments that serve as identifiable community shopping nodes.
2. Ensure pedestrian connectivity via trails and sidewalks within community commercial districts as well as to adjacent and nearby neighborhoods.
3. Encourage private sector redevelopment efforts and rehabilitation of existing buildings.
4. Encourage convenient parking in locations that are buffered with landscaping to soften their appearance from abutting roadways.
5. Encourage a stronger linkage between the northern and southern Cahill community commercial areas through coordinated streetscaping efforts.
6. Provide safe and convenient pedestrian accesses within and connecting to community commercial areas and adjacent neighborhoods.
7. Carefully regulate uses that have the potential to create adverse secondary land use impacts such as adult uses, pawn shops, etc.

Regional Commercial areas range in size from 20 to 40 acres. Typical patterns of development include a series of stores or shops with one or more "big box" stores as anchors. A critical mass of commercial square feet would typically exceed 250,000 square feet.

Regional Commercial (RC)

Regional commercial areas are lots or parcels containing large-scale retail sales and services along arterial roadways that serve the region (see Figure 2-5). As the name implies, goods and services offered in such areas appeal to a wide range of consumers, many of whom are willing to travel a significant distance to patronize various business establishments. Regional Commercial districts are intended for large "big box" users. These types

of uses serve as anchors for other small to mid-sized commercial uses that benefit by the traffic generated by the anchors.

Inver Grove Heights has a number of areas located along major arterial roadways guided for regional commercial uses. An area on the north side of Interstate 494 and Highway 110 is currently developed. The developing area is in a parcel that is generally known as the southeast quadrant. Located in an area bounded by Interstate 494, Highway 52 and Upper 55th Street, this site has excellent exposure to regional transportation facilities. Despite this fact, development of the property did not begin until 1996 when construction began on a movie theater complex and associated commercial uses. The theaters served as a catalyst and the area has since undergone significant development.

Part of the Arbor Pointe development in southern Inver Grove Heights has seen development of a big box retailer as well as a number of adjacent retail services. The development of commercial space at Arbor Pointe has plateaued, and in recent years has seen multiple closures including a big box grocery store. Much of this node is now classified as mixed use.

A newer developing area of regional commercial uses is located in the Northwest Area along the north side of Highway 55 between Argenta Trail and South Robert Street. This area is conveniently accessible to major highways and will serve future residential development within the Northwest Area. Development in this commercial area has been slower than anticipated.

Market studies completed by Stantec in 2014 and Maxfield Research in 2017 have suggested the following as possible reasons why commercial nodes such as Arbor Pointe and Argenta Hills are struggling.

- Inver Grove Heights has excess retail square footage.
- Larger national chains are not as interested in the Inver Grove Heights market area as it may draw from existing stores in Eagan, West St. Paul, South St. Paul that better serve a market.
- Both Arbor Pointe and Argenta Hills struggle because of the low density or no density housing pattern south of the sites. Thus there are fewer households within their market draw areas than competing commercial nodes.
- Competing commercial nodes offer a larger critical mass also compared to Inver Grove Heights commercial areas.
- Highway 52 in this area serves longer trips (this is due to the "end of the line" location of Inver Grove Heights commercial nodes.

Regional Commercial Area Policies

1. Provide regional commercial areas to supply goods and services that appeal to a broad base of customers.
2. Ensure a design pattern that facilitates pedestrian circulation between uses within the district and establishes a level of amenities that enhances the sustainability of the center.
3. Encourage public and private improvements that create attractive environments for regional commercial developments.
4. Unify major roadway corridors with appropriate design guidelines and consistent landscaping and signage improvements.
5. Require landscaping and site design details to help break up large parking lot areas and to make developments more attractive both internally and when viewed from adjacent roadway corridors.
6. Require high quality building materials for structures in regional commercial areas.
7. Provide arterial and community collector roadways necessary to support regional commercial developments.
8. Carefully regulate uses that have the potential to create adverse secondary land use impacts such as adult uses, pawn shops, etc.
9. Consider long term strategies for future reuse/reconfiguration of regional commercial centers during the initial planning stages.
10. Encourage a mix of commercial uses within regional centers that share varying peak period traffic and parking patterns to help manage traffic congestion and allow for shared parking opportunities.
11. Encourage site design that supports transit useage for employees and potential shoppers.
12. Integrate higher density housing into regional commercial centers to offer more activity and place making. Consider design guidelines and support and encourage a mix of housing price points and tenancy options.

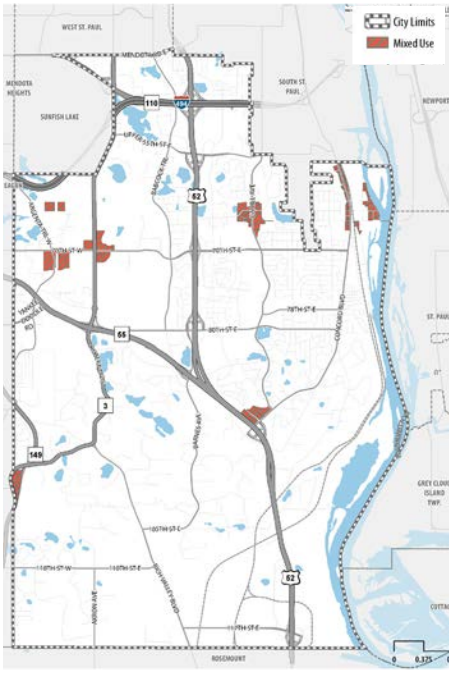


Figure 2-6: Mixed Uses

Mixed Use (MU)

Mixed use areas consist of lots or parcels that contain a mix of retail and service commercial, office, institutional, higher density residential, public uses and/or park and recreation uses, organized in a pedestrian friendly environment (see Figure 2-6). It is expected that 1/3 of these areas will develop as non-residential uses.

Robert Street and 70th Street West: The Comprehensive Plan designates the area at the intersection of South Robert Trail and 70th Street West as mixed use. The vision for this area is to establish a neighborhood hub that integrates higher density residential uses with neighborhood

Mixed Use Assumptions

In order to establish development projections, mixed use areas are assumed to be approximately 2/3 residential and 1/3 commercial. Residential density would be at a minimum of 12 units per acre in mixed use areas.

commercial services. In recent years, there has been an increased interest in creating development patterns that capture historic urban qualities and land use relationships. This movement was originally known as "new urbanism" and is now generally known as "traditional neighborhood design" or TND. The mixed use area in Inver Grove Heights has the potential to be developed utilizing some of these design principles. The development pattern is expected to have a pedestrian orientation rather than a sole focus on vehicular movement. The opportunity exists to integrate a variety of land uses making neighborhood commercial areas truly accessible to the surrounding residential neighborhood both due to the close proximity of the uses and a pedestrian sidewalk or trail system that provides direct linkages. Also of long term consideration is the notion of "Transit Oriented Development" or TOD, which encourages mixed use as a means of supporting transit service because of its ability to generate transit users who both arrive and depart from a particular node. Developed in this manner, the mixed use area in Inver Grove Heights has the potential to become an attractive amenity for both the northwest area and the community as a whole.

Concord Boulevard: Another area of mixed use is the Concord Boulevard Corridor (generally north of 70th Street.). The idea for mixed use along the Concord Boulevard Corridor is to encourage or facilitate redevelopment and reinvestment along the corridor in a way that helps traffic flow by controlling access, encourages an attractive street frontage as a gateway corridor to the City and allows flexibility in the use of lands along the corridor as business or residential uses. This pattern of use current exists along the corridor. A redevelopment plan was prepared for the Concord Boulevard area, which was adopted by the City in 2012. The plan addressed a number of issues including:

- Land use patterns
- Redevelopment opportunities
- Community and neighborhood support
- Public actions necessary to facilitate redevelopment
- Transportation and connectivity
- Housing
- Business development
- Public recreation

Figure 2-7: Concord Boulevard Concept

A concept for Concord Boulevard explores the idea of mixed use along the corridor with commercial focused at key nodes. This concept takes advantage of the improvements with Heritage Park and the potential connections to the Mississippi River.

The plan includes a set of implementation strategies to direct future redevelopment efforts. The land use recommendations from the adopted Concord Boulevard Redevelopment Plan were directly incorporated into

the Future Land Use Plan of the Inver Grove Heights Comprehensive Plan. This plan will continue to serve as a policy guide.

As Concord Boulevard improvements are implemented over the next few years, redevelopment proposals will likely be brought forward by property owners and developers interested in the corridor. The guiding principles for the Concord Boulevard Corridor are associated with the following:

1. Pedestrian realm improvements/connectivity
2. Neighborhood park amenities
3. Gateway treatments
4. Wayfinding
5. Concord Boulevard frontage
6. Building orientation/site design
7. Development transitions/buffers
8. Parking and circulation
9. Stormwater management
10. Transit service
11. Preservation of natural resources
12. Recognition/celebration of historic place

Redevelopment of the Concord Boulevard corridor is an important future improvement that will support the significant investment in Heritage Park and reconstruction of Concord Boulevard and provide an important critical mass that helps sustain commercial development in Inver Grove Heights. Future redevelopment will also take advantage of the Mississippi River Regional Trail Corridor connecting Inver Grove Heights with regional destinations.

Figure 2-8: Arbor Pointe Concept

This concept for Arbor Pointe explores the idea of mixed use in the node as well as strengthened pedestrian connections across Concord Boulevard.

Arbor Pointe: The development of commercial space at Arbor Pointe has plateaued, and in recent years has seen multiple closures including a big box grocery store. In October of 2014 a retail analysis of the Arbor Pointe retail district was completed by Stantec. Key findings of this report included:

- There is an oversupply of retail space in the Arbor Pointe retail district
- The Arbor Pointe trade area is constrained by other competitive retail districts as well as physical barriers and low population density, especially south of the district. Future household growth isn't enough.
- Arbor Pointe lacks a critical mass of retailers to draw consumers, but adding more retailers to achieve the critical mass is highly risky.
- There is increased market turnover, partially attributing to an aging population.

- Most of the properties built within this district were built on the margins during the housing boom of the early 2000s when retailers were emboldened by strong forecasts.

Some of the recommendations from the Arbor Pointe Trade Area Study are as follows:

- Consider land use changes that allow for different types of uses in existing structures.
- Independent owned businesses may need to be cultivated and supported.
- If properties become problematic, acquire them for redevelopment.
- Evaluate improving access and circulation within the district for all modes of transportation.

Much of this node is now classified as mixed use in order to integrate higher density housing to offer more activity and place making.

Cahill Commercial Area: The commercial uses along Cahill Avenue near 65th Street were previously guided as Community Commercial in the 2030 comprehensive plan. During this comprehensive planning process it became evident that a mix of residential and commercial uses would be more appropriate fit for this node. Currently this node has a variety of small service commercial, retail commercial, and professional service buildings. These small to medium sized buildings are outnumbered in area by their surrounding parking lots and other paved surfaces. Future redevelopment within this area should follow the mixed use area policies to bolster the vitality of this area as well as create a better sense of place.

Figure 2-9: Cahill Area Concept

A concept for this area of Cahill Ave. at 65th St. explores the idea of transitioning away from a parking lot-dominated landscape to a mixed use node containing community scale retail, multi-family housing, and townhomes.

Mixed Use Area Policies

1. Provide a unique mix of commercial, residential, public and related uses in a pedestrian friendly environment.
2. Provide a flexible land use tool that supports redevelopment while minimizing the creation of non-conforming uses.
3. Enact zoning modifications necessary to facilitate a mixed use development pattern that includes small, neighborhood scale structures and design features.
4. Provide walkway and trail linkages to other public recreational facilities in the area.
5. Encourage consistent design standards that serve as a framework for both public and private improvements addressing streets, lighting, landscaping, building materials and building placements.

6. Limit commercial uses to those that provide neighborhood and convenience goods and services.

Industrial Office Park (IOP)

Industrial office park includes lots or parcels containing warehousing, storage and light industrial uses with associated office functions (see Figure 2-10). Industrial office park developments are usually designed in a unified manner and feature landscaped open areas and roadway edges, consistent lighting, and entry monumentation. The future land use plan identifies a number of IOP parcels along Highway 55 and 55/52.

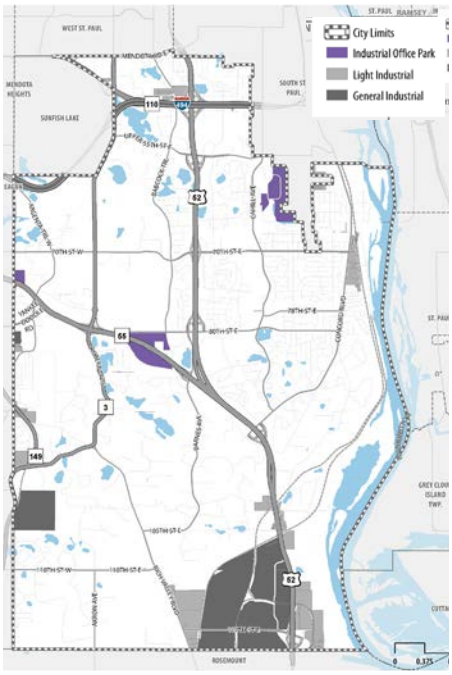


Figure 2-10: Industrial Land Uses

Industrial Office Park Area Policies

1. Provide opportunities for new industrial development and expanded employment opportunities in Inver Grove Heights.
2. Provide attractive, planned environments as means to induce employers to locate within the City.
3. Provide public services and infrastructure in keeping with the needs of employers.
4. Require that all storage be enclosed within buildings or screened from view from roadways.
5. Adopt design guidelines addressing signage, landscaping, lighting, exterior building materials and other site improvements.
6. Encourage design and development techniques that seek to minimize storm water runoff and other environmental impacts.
7. Encourage uses that are building and employment intensive as opposed to land intensive uses such as truck parking and outdoor storage.

Light Industrial (LI)

Light industrial areas in Inver Grove Heights include lots or parcels containing light manufacturing, goods movement and wholesale trade. Light industrial parcels are located in a number of sites throughout the community with concentrations in the northeast and extreme southern portions of the city (see Figure 2-10).

General Industrial (GI)

The general industrial category includes lots or parcels containing manufacturing, processing and disposal facilities. General industrial parcels exist in only one area, southern Inver Grove Heights lying immediately west of Highway 52/55 (see Figure 2-10). The land designated as general industrial on the future land use plan includes the Pine Bend Landfill.

Light industrial and general industrial are similar uses with the predominate differences being in the intensity of the types of uses and the nature of the uses themselves. General industrial is analogous to "heavy" industrial users such as the landfill operation. In southern Inver Grove Heights, areas containing both of these uses are intended to be improved and upgraded over time. Industrial development in the southern part of the City has been occurring for the past 50 years. Recent public improvements and comprehensive plan amendments have enabled the extension of public infrastructure to serve much of this area. In the future, if it becomes feasible to extend infrastructure to more of this area, the City anticipates potential redevelopment.

Because of the similarities between the light industrial and general industrial land use categories, policies are combined for both uses.

Light Industrial and General Industrial Policies

1. Provide opportunities for new industrial development, expansion of existing uses and the redevelopment of existing industrial uses to expand employment opportunities and to serve existing businesses in the community.
2. Improve the appearance of existing industrial areas and minimize adverse impacts on the community's image and development potential.
3. Ensure adequate public facilities and infrastructure systems to serve future development and redevelopment of the area.
4. Improve existing industrial areas over time using redevelopment tools and possibly financial incentives, particularly in areas that are highly visible from adjacent roadways.
5. Enact standards for new industrial developments that are in keeping with the need to improve the overall appearance of the community.
6. Require landscaped buffers between dissimilar land uses to enhance compatibility.

Public/Institutional Use Policies

1. Provide needed public facilities and services for existing and future Inver Grove Heights residents.
2. Interconnect the City's most important public facilities including schools and churches via open space corridors.
3. Continue to cooperate with the local school districts and Inver Hills Community College for the joint use of facilities.
4. Provide sufficient land to meet the public/institutional service needs of the community.

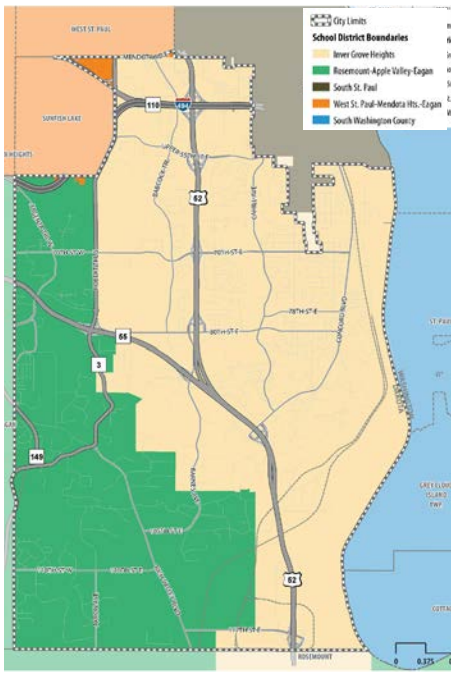


Figure 2-11: School District Boundaries

5. Continue to cooperate with Dakota County to provide library services in the community.

Public Park and Open Space

Public park and open space includes the City's Park system as well as areas of public ownership that are intended for open space use (see Figure 2-12). Typically, these areas include lands used for stormwater storage or other public infrastructure need and are not considered developable.

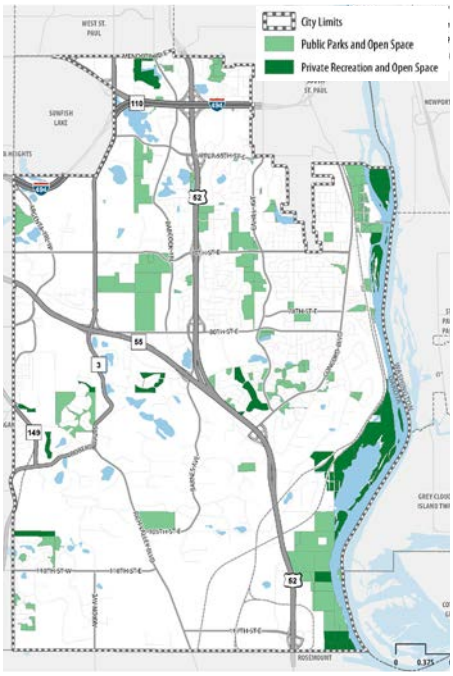


Figure 2-12: Parks & Open Space

Public Park and Open Space Policies

1. Provide adequate lands to accommodate future park needs consistent with the Park Plan.
2. Ensure sufficient lands set aside to manage storm water runoff and other infrastructure needs.

Private Recreation/Open Space

Private Recreation/open space is a land use category that identifies private land areas which are used for recreational purposes and have the appearance of open lands (i.e. golf course, gun clubs, nature areas/nature centers, or common open space.) The intent of the comprehensive plan is to guide these uses as they are known today to ensure a public process for future re-guiding should the development intentions of such property change.

Private Recreation/Open Space Policies

1. Ensure areas used for private recreation and open space areas are able to continue operating under current conditions.
2. Ensure future redevelopment of private recreation and open space areas is conducted through an informed and transparent public planning process.
3. Allow for private nature centers combining such uses as outdoor skills and environmental education center/open space with a senior independent/assisted care living component as defined by standards in the zoning ordinance.

Future Growth Phasing

In 2015, Inver Grove Heights had an estimated population of 34,417. Current residents were attracted to the community for a number of reasons including proximity to employment, an attractive natural environment, an excellent park system, a mix of housing types, good schools, etc. These same factors will continue to attract new residents to the community in the years ahead. In order to accommodate demand for community growth, a number of amendments to the 2030 Comprehensive Plan have been made. These changes, highlighted in Figure 2-19 at the end of the chapter, were largely a result of market forces but also were based on a more detailed understanding of site conditions and constraints. Each change was carefully evaluated for consistency with the community's vision and guiding principles. Consistent with the future land use plan, growth will be largely accommodated in the northwest area of the City and supplemented with some redevelopment in mixed use nodes in the established development area.

Figure 2-13 and Table 2-3 identifies vacant, developable, and redevelopable lands within the City of Inver Grove Heights. With the exception of Rural Residential, all lands within MUSA limits are intended to receive municipal sewer and water services.

Figure 2-13: Vacant Land Areas

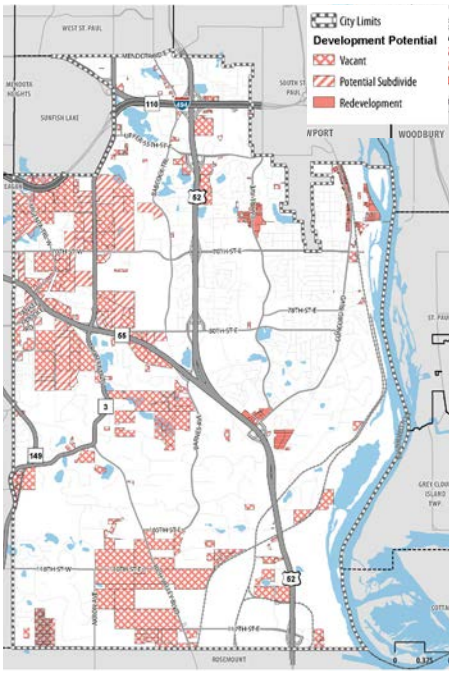


Table 2-3. Total Developable Net Acres

(Note: This table represents a full build out based on the 2040 Land Use Designations.)

Future Land Use (2040)	*Within MUSA*	*Outside MUSA*	*Total Acres*
Rural Density Residential	17	1,019	1,037
Rural Density Residential/PO	-	80	80
Low Density Residential	471	-	471
Low-Med. Density Residential	389	-	389
Medium Density Residential	198	-	198
High Density Residential	55	-	55
Mixed Use	207	-	207
Neighborhood Commercial	2	-	2
Community Commercial	37	-	37
Regional Commercial	68	-	68
Light Industrial	37	15	51
General Industrial	86	-	86
Office	122	-	122
Industrial Office Park	89	-	89
Public Institutional	10	1	10
Public Parks and Open Space	35	-	35
Right-of-Way	4	-	4
TOTAL:	1,827	1,115	2,942

Factors influencing population, household and employment forecasts:

1) Regional growth and travel demand has demonstrated a need for future north/south transportation improvements through Inver Grove Heights. This regional growth suggests a need for an additional interchange at I-494. (See the North South Corridor Study completed by Dakota County in 2007)

2) Given Inver Grove Heights proximity within a metropolitan area (close to an international airport and two central business districts) and adjacency to major regional highway corridors, the land use patterns and intensities assumed in our projections are reasonable.

Hoisington Koegler Group Inc. is the primary source of the population, household and employment projections contained within this plan. Estimates were developed from 2017 Dakota County parcel data integrated with future land use and infrastructure data. Detailed assumptions are available as a supplemental report to the plan.

A key consideration in our planning process is seeking a balance of jobs and housing in our community. This balance is both in terms of the number of jobs relative to the number of households, as well as the type of job relative to our land use patterns (see Table 2-4). This balance will be discussed further in the housing chapter. The benefits of achieving a balance of jobs to households are many, but most importantly, having jobs close to housing reduces vehicle miles traveled to work which in turn reduces transportation costs and time spent in traffic. This is an important aspect of being a sustainable community and a healthy community.

Table 2-4. Job Growth 2016-2040 by Land Use

Job Type	*Est. Job Growth 2016 to 2040*	*% of Total Jobs Added*
Office (Include Public/Institutional)	1,000	29%
Industrial Office	700	21%
Industrial	600	18%
Commercial/Retail Services	1,100	32%
Total Potential Job Growth	3,400	100%

Based on 2010 Census data, IGH had a ratio of 0.70 jobs for every household. (see Table 2-5) The majority of these jobs were industrial or commercial (retail or service) jobs based on the existing land use supply. Research suggests that a targeted standard for jobs-housing ratio is approximately 1.5 (Source: Jobs-Housing Balance: APA Planning Advisory Service Report Number 516 published in 2003). This ratio is based on the assumption that the average number of workers per household is 1.5. However, in metropolitan areas where jobs are more regionally allocated, such as Inver Grove Heights, that target may be closer to 1. Eagan's 2010 ratio was 2.0 jobs per household.

Table 2-5. Population, Household, Employment Forecasts

Comprehensive Plan Est.	*2010 (actual)*	*2016 (est.)*	*2020*	*2030*	*2040*	*Change from 2016 to 2040*
Population	33,880	34,999	37,300	42,000	46,700	11,869
Households	13,476	14,037	15,400	17,600	19,800	5,977
Jobs	9,442	10,650	11,400	12,400	14,000	3,653
Jobs/HH Ratio	0.70	0.75	0.74	0.70	0.71	

Source: Metropolitan Council

In Inver Grove Heights, the Metropolitan Council has provided the City with its forecasts for population, households and employment. By and large, this comprehensive plan supports these estimates. However, our plan suggests that there is a possibility of greater development that might exceed these forecasts, particularly in the area of employment. Table 2-5 reflects the population, households and employment projections for this Comprehensive Plan update.

In order to provide the rational for our estimates, we have examined future land use needs and conducted a general analysis of the existing land use supply in Inver Grove Heights. It is important to note that projecting land demand is a challenging task that is greatly influenced by market conditions and land owner interests in development; two forces which are not controllable by the City of Inver Grove Heights. However, the City's ability to guide land for development and plan for capital improvements that provide necessary urban infrastructure to development areas, plays a significant role in achieving development projections. The following section provides greater rationale for our forecasts.

Future Land Demand

Based on household projections completed by both the Metropolitan Council and the City of Inver Grove Heights, land requirements for future land development can be calculated. As seen in Table 2-6, from 2017 through 2040, Inver Grove Heights has capacity to add as few as 4,100 households and as many as 10,100 new households. These households will be accommodated in a number of types of residential dwellings at varying densities. The actual types of units that will be built and the corresponding land that is required will be determined by the needs of the new residents and general market conditions. Projections of land demand, however, can be made based on reasonable assumptions of housing unit types and densities.

The following assumptions were used in projecting land use absorption between 2010 and 2040:

Residential Assumptions
LDR: 1-4 units per net acre
LMDR: 4-8 units per net acre
MDR: 8-12 units per net acre
HDR:12-35 units per net acre
MU: 12-35 units per net acre

Commercial/Office/Industrial Assumptions
Floor Area Ratio (FAR) - or the ratio of usable square feet of a building to the land area ranged from .15 to .35 with industrial uses on the higher side due to need for less parking, and commercial uses on the lower side due to the need for more parking.

Land Use	*Assumed FAR*
Commercial (All)	.25
Mixed Use	.25
Light Industrial	.30
General Ind.	.30
Office	.25
Ind. Office Park	.25
Public/Inst.	.15

Employment is estimated at 1 employee per 1,500 to 2,500 square feet for the bulk of serviced industrial users, and 1 employee per 500 to 1,000 square feet for commercial and office users.

Table 2-6. Anticipated Staging of Residential Development

				2017-2020		2021-2030		2031-2040	
Future Land Use	*Net Acres*	*Density (Units/ Acre)*	*Expected % Residential*	*Net Acres*	*Units Added*	*Net Acres*	*Units Added*	*Net Acres*	*Units Added*
Northwest Area - Near Term									
Low Density Residential	150	1-4	100%	42	42 - 168	78	78 - 313	30	30 - 120
Low-Medium Density Residential	114	4-8	100%	32	128 - 256	59	238 - 476	23	91 - 183
Medium Density Residential	36	8-12	100%	10	82 - 122	19	152 - 227	7	58 - 87
High Density Residential	25	12-35	100%	7	84 - 244	13	156 - 454	5	60 - 174
Mixed Use	65	12-35	67%	18	146 - 425	34	271 - 789	13	104 - 304
Northwest Area - Extended Term									
Rural Density Residential	17	0.1-0.4	100%	0	0 - 0	0	0 - 0	9	1 - 3
Low Density Residential	293	1-4	100%	0	0 - 0	0	0 - 0	147	147 - 587
Low-Medium Density Residential	275	4-8	100%	0	0 - 0	0	0 - 0	137	549 - 1,098
Medium Density Residential	145	8-12	100%	0	0 - 0	0	0 - 0	73	580 - 870
High Density Residential	10	12-35	100%	0	0 - 0	0	0 - 0	5	60 - 174
Mixed Use	21	12-35	67%	0	0 - 0	0	0 - 0	11	84 - 246
Arbor Pointe Redevelopment									
Medium Density Residential	12	8-12	100%	2	17 - 25	4	32 - 47	2	19 - 29
High Density Residential	13	12-35	100%	2	28 - 81	4	52 - 151	3	32 - 93
Mixed Use	23	12-35	67%	4	32 - 93	7	59 - 173	5	36 - 106
Cahill Redevelopment									
Mixed Use	41	12-35	67%	0	0 - 0	0	0 - 0	14	116 - 337
Concord Redevelopment									
Mixed Use	37	12-35	67%	3	26 - 77	6	49 - 142	9	75 - 219
Throughout City									
Rural Density Residential	1,100	0.1-.04	100%	346	35 - 139	643	64 - 257	55	5 - 22
Low Density Residential	27	1-4	100%	9	9 - 34	16	16 - 63	1	1 - 5
Medium Density Residential	5	8-12	100%	2	12 - 18	3	22 - 34	0	2 - 3
High Density Residential	6	12-35	100%	2	25 - 72	4	46 - 133	0	4 - 11
Mixed Use	20	12-35	67%	6	50 - 146	12	93 - 272	1	8 - 23
			Overall	486	714 - 1,901	902	1,326 - 3,531	550	2,064 - 4,697

Source: HKGi

For the purpose of anticipating phased residential and employment growth in the comprehensive plan, six growth phasing areas were established to recognize the fact that future development will not be dispersed evenly across the whole city. These growth phasing areas are illustrated in Figure 2-14. A brief description of each are is as follows:

- **Northwest Area - Near Term:** This area reflects land within the Northwest Area/ Future Development Policy Area that can be easily served with minimal City investment in sanitary sewer service. The majority of available large lot and vacant land within this area will develop by 2030.
- **Northwest Area - Extended Term:** This area reflects land within the Northwest Area/ Future Development Policy Area that may take more substantial investment from the City in sanitary sewer extensions. The majority of available large lot and vacant land within this area are anticipated to develop after 2030, but before 2040.
- **Arbor Pointe Redevelopment:** This area reflects land within the Arbor Pointe redevelopment node included in the small area concept highlighted earlier in this chapter and the Established Development Area. A small amount of this land may develop before 2030, followed by more redevelopment between 2030 and 2040.
- **Concord Boulevard Redevelopment:** This area reflects land within the Concord Boulevard Master Plan area and the Established Development Area. A small amount of this land may develop before 2030, followed by more redevelopment between 2030 and 2040.
- **Cahill Redevelopment Node:** This area reflects land within the Cahill redevelopment node included in the small area concept highlighted earlier in this chapter and the Established Development Area. A small amount of this land may develop before 2030, followed by more redevelopment between 2030 and 2040.
- **Throughout City:** This area reflects land within the rest of Inver Grove Heights in the Established Development Area and Rural Development Area. Most development in this area will occur as infill development on vacant parcels before 2030. Any remaining vacant parcels are anticipated to develop before 2040 with exception of any substantially difficult and unmarketable parcels.

Figure 2-14: Growth Phasing Areas

Anticipated residential growth within these areas can be seen in Table 2-6. This staging plan was used in the development of the Local Sewer Plan. Analysis conducted determined that the City will be capable of serving this new growth when it occurs.

Table 2-7. Anticipated Residential Land Use Growth and Overall Density

	2017-2020		2021-2030		2031-2040	
	Min Units	Max Units	Min Units	Max Units	Min Units	Max Units
Inside MUSA	679	1,763	1,262	3,273	2,058	4,675
Overall Dwelling Units/Acre	**5.27**	13.67	**5.27**	13.67	**4.31**	9.79
Outside MUSA	35	139	64	257	6	22
Overall Dwelling Units/Acre	0.1	0.4	0.1	0.4	0.1	0.4
Total	714	1,901	1,326	3,531	2,064	4,697

Source: HKGi

Table 2-8. Anticipated Non-Residential Land Use Growth

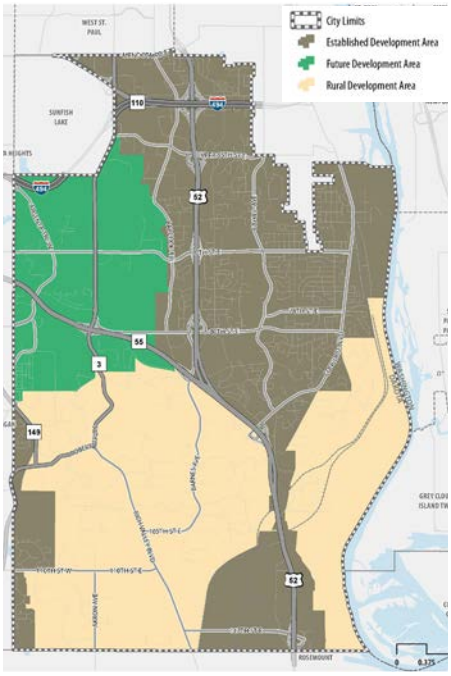
	2017-2020		2021-2030		2031-2040	
	Sq. Ft.	Jobs	Sq. Ft.	Jobs	Sq. Ft.	Jobs
Inside MUSA	776,408	802	948,943	980	1,335,723	1,552
Outside MUSA	43,754	30	53,478	36	48,616	33
Total	820,162	831	1,002,421	1,016	1,384,339	1,585

Source: HKGi

Our future land use plan provides a capacity to meet our 2040 household projections. The bulk of this capacity is serviceable with sewer and water and is anticipated to occur within the City's Northwest Area. The overall minimum net residential density for future anticipated development in Inver Grove Heights within the Metropolitan Urban Service Area (MUSA) (see Table 2-7) is consistent with the Metropolitan Council's "Suburban Edge" community designation.

Our future land use plan also provides capacity for future commercial, office and industrial development. Based on reasonable planning assumptions relative to development intensity our land use plan demonstrates a total capacity to add nearly 1.75 million square feet of commercial (725k), office (500k) industrial office (520k), and industrial space (1.3 million). Absorption of this space will vary based on market conditions, land owner development interests and regional infrastructure improvements. Anticipated non-residential space absorption as well as how many jobs can be accommodated within that space is highlighted in Table 2-8.

Figure 2-15: Development Policy Areas



A key factor in the future development of office and industrial space is access to regional transportation systems and future interchanges at Argenta and Highway 55 and in the general proximity of Argenta Trail and I-494.

Expansion of Urban Services

In the last 15 years the City of Inver Grove Heights has undergone a significant amount of infrastructure planning pertaining to the northwest

area of the community and the industrial area south along Highway 55/52. These areas are the predominant areas of community growth over the course of the next 20 years. Other areas of the community that might begin to see infrastructure improvements include portions of the City with joint services from Eagan and areas south of Highway 55 on the west side of Inver Grove Heights. Figure 2-15 depicts the anticipated areas of service for future development with urban services. This figure is for general planning purposes and does not serve as a limiting factor for future growth.

Extension of infrastructure to serve future development requires a significant amount of physical planning (how to get the infrastructure in the ground and to the area to be served) and financial planning (how do you pay for the infrastructure). A number of factors impact the ability to extend services. These factors include land ownership patterns and the desire to develop; land characteristics and the ability of the land to carry projected development; market forces/conditions and the ability of the market to sustain the necessary and projected development type; and regional infrastructure improvements that require actions from multiple jurisdictions in order to proceed.

The City of Inver Grove Heights approach to extending infrastructure is to maintain an open door policy and consider extension of infrastructure at the discretion of the City Council with consideration of the following factors:

- Extension of services that might facilitate expansion of the City's job base: A stated objective of the comprehensive plan is to work towards balancing jobs to households at a 1:1 ratio.
- Form of development consistent with future land use guidance: The City has guided land use for every parcel. Consistency with the land use map is important. However, changes to the land use plan should be considered and should be evaluated based on the vision, guiding principles and policy directives in the plan.
- Extension of services to areas already guided for urban development: Significant planning has been done for the Northwest Area and areas in southern Inver Grove Heights that have evaluated the physical and financial impacts of infrastructure development.
- Financial impact to the City: The City finances the extension of trunk infrastructure systems and utilizes revenues from development to help pay for such investments. Extending infrastructure through areas that do not anticipate developing in the near term pose financial challenges

that must be overcome.

- Local and regional transportation impacts: A long term transportation plan has been established as part of this plan update. Future development should be evaluated as to the impact with this plan and its consistency with regional transportation investments or improvements.
- Market demand and economic conditions: The City must evaluate development within the context of current and near term market/ economic conditions and manage the level of risk.

MUSA Expansion Exceptions

Four existing neighborhood areas in the northwest portion of Inver Grove Heights have unique land use characteristics that warrant special consideration in the Land Use Plan and specifically, in future utility planning (see Figure 2-16). These neighborhoods were identified in past planning efforts and are carried forward for this plan.
The neighborhoods include the following:

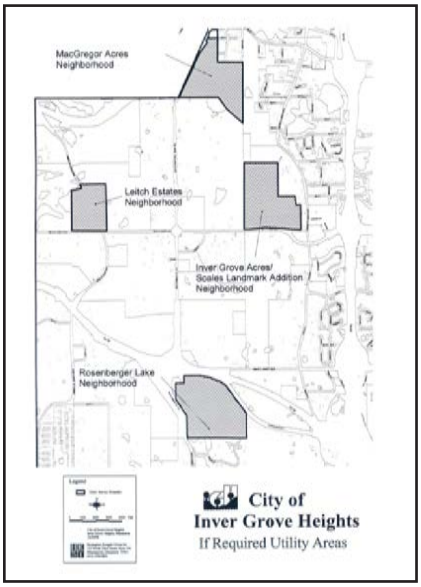


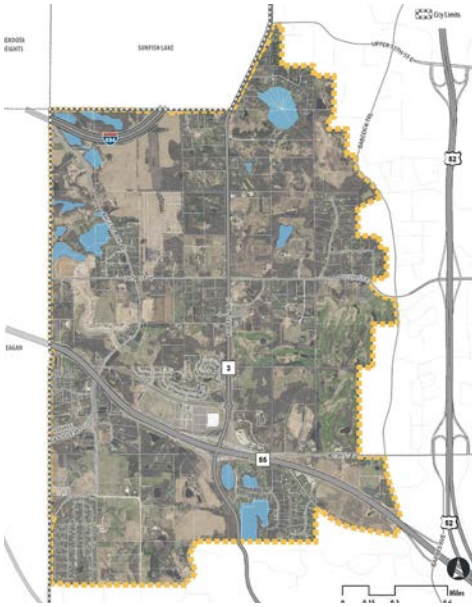
Figure 2-16: Exception Neighborhoods

- Rosenberger Lake Neighborhood – The Rosenberger Lake Neighborhood which is located southeast of the intersection of South Robert Trail and Highway 55 includes 104 acres and approximately 50 single-family detached homes.
- Leitch Estates Neighborhood – Leitch Estates straddles Argenta Trail just north of 70th Street. This area, which includes 46 acres of land currently, contains approximately 33 single-family detached homes.
- Inver Grove Acres/Scales Landmark Addition Neighborhood – The two subdivisions that comprise this neighborhood include 90 acres of land. This area, which is located north of 70th Street across from Inver Wood Golf Course, includes approximately 31 single-family detached homes.
- MacGregor Acres Neighborhood – The MacGregor Acres neighborhood is located off of South Robert Trail with access being provided by High Road. This area includes approximately 19 single-family detached homes on 89 acres of land.

In all of these areas, past zoning practices have established substantial concentrations of smaller lots of various sizes. In each case, the neighborhood areas are virtually fully developed with only isolated lots potentially available for further home construction. In all of these areas, the existing on-site sanitary sewer treatment systems are performing adequately and large-scale problems are not present. As a result, the City anticipates that these areas will not change over the next 20 years unless environmental problems develop in the future.

The comprehensive plan includes these four neighborhood areas within proposed MUSA line expansions, however, they are expected to remain as islands without sanitary sewer unless unforeseen circumstances occur. These properties would only receive sanitary sewer service in the future "if required" or "if desired" by the property owners. Requiring the area to be served by sanitary sewer would only happen if substantial quantities of on-site systems exhibit future failures and no other action can be taken to provide proper treatment. These neighborhoods are considered permanent land uses and the land use plan does not contemplate further lot divisions and/or platting.

Northwest Area



Northwest Inver Grove Heights is an area of unique natural features including varying topography, mature tree cover and wetlands. Because of the terrain in the area, unique development practices are warranted in order to manage stormwater and provide cost effective municipal infrastructure. Over the last 20 or more years, the City of Inver Grove Heights has conducted a number of planning, engineering, and financial analyses for the Northwest Area in order to determine the areas capacity for future growth based on the premise that storm water will be managed on site and not conveyed through a pipe to outlet into the Mississippi River. These studies were essentially identified as projects in the 1998 Comprehensive Plan. Based on these studies, the City implemented a zoning ordinance unique to the Northwest Area to further guide development and ensure infrastructure investments are adequately funded. This ordinance requires future developments in the Northwest Area to be done through the Planned Unit Development (PUD) process.

This comprehensive plan update modifies some of the land uses previously guided for the Northwest Area recognizing development that has occurred since the last plan update and adjusting land uses based on a renewed understanding of development constraints, property owner interests, capital improvement costs, and market conditions.

Northwest Area Infrastructure Financing Policy

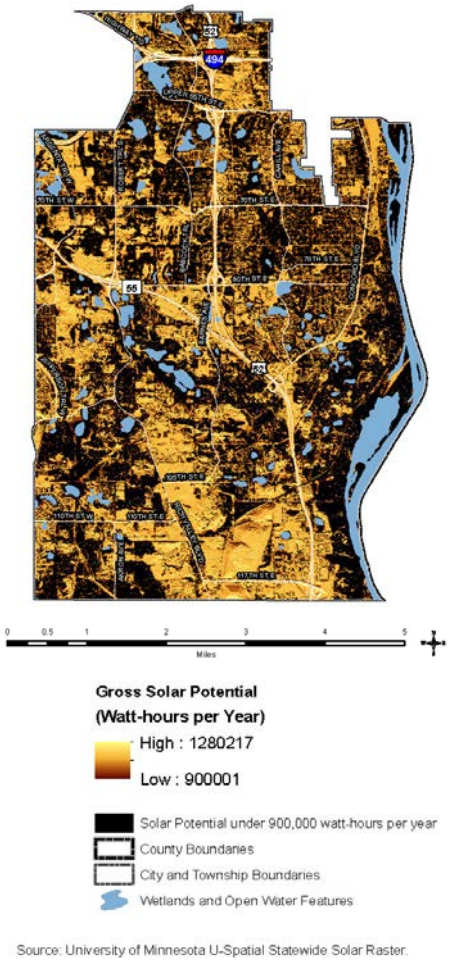
The City of Inver Grove Heights bases sewer and water infrastructure fees on the land use data from the future land use plan contained in the Comprehensive Plan. Baseline fees for sewer and water infrastructure systems shall be determined based on applying a reasonable density consistent with the descriptions within the Comprehensive Plan. These densities are as follows (see Table 2-9):

Table 2-9. Assumed Densities in Northwest Area for Infrastructure Financing

Future Land Use Category	*Density (units per acre)*
LDR – Low Density Residential	2.00
LMDR – Low Medium Density Residential	4.00
MDR – Medium Density Residential	8.00
HDR – High Density Residential	12.00
MU – Mixed Use (Residential portion of land only)	15.00

If a developer chooses to develop at a lower density (either by developing at a lower density threshold within the allowable range or by requesting a comprehensive plan amendment to a lesser density land use), then the developer must make up the financial difference in utility connection and hook up fees. The basis for the development is assumed by applying the above densities to the net developable area of the proposed development. This policy was established by resolution #14-192 adopted by the City Council in November of 2014.

Figure 2-18: Gross Solar Potential



Source: University of Minnesota U-Spatial Statewide Solar Raster.

Solar Access

State legislation enacted in 1978 requires local comprehensive plans to address solar access protection. The law requires that communities make efforts to ensure that direct sunlight access to solar panels is not subjected to shading from nearby trees, buildings or other structures. In the 1980s, energy prices and potential fuel shortages focused attention on both passive and active solar collection systems. Since that time, however, lower energy prices have diminished interest in active solar energy collection systems. While solar energy issues are seldom discussed during subdivision reviews today, it is possible that conditions will change in the future.

Table 2-10. Solar Resource Calculations

Gross Potential (Mwh/yr)	*Rooftop Potential (Mwh/yr)*	*Gross Generation Potential (Mwh/yr²)*	*Rooftop Generation Potential (Mwh/yr²)*
41,747,184	1,848,652	4,174,718	184,865

Source: Metropolitan Council

As shown in Figure 2-18, areas of Inver Grove Heights where the most gross solar potential exists include the southern portion of Inver Grove Heights within the existing agricultural and industrial uses, around the Hwy. 55/52 interchange, around the I-494/Hwy 52 interchange, in the Northwest Area,

and within Heritage Village Park. The values represented in the map are reflected in Table 2-10. The gross solar potential and gross solar rooftop potential were calculated by the Metropolitan Council. These potentials are expressed in megawatt hours per year (Mwh/yr), and represent gross totals. In other words, these calculations do not demonstrate the amount of solar likely to develop in Inver Grove Heights; instead the calculations estimate the total potential resource.

Solar Access Policies

The City will take the following measures to ensure protection of solar access where appropriate:

1. Examine the existing Subdivision Ordinance to ensure that it adequately includes solar energy protection measures.
2. Encourage the design of new subdivisions in a manner that allows the maximum number of new buildings to receive sunlight sufficient for solar energy systems. The city will encourage the siting of buildings and vegetation in a manner that allows unobstructed sunlight to reach the south sides of structures between the hours of 10:00 AM and 2:00 PM.
3. The City will assemble and make available, information pertaining to design criteria for solar access. Such criteria will also be used by staff in reviewing new subdivision proposals.
4. Consistent with State Statutes, the city will consider variances in circumstances where hardships are imposed because of the inability of structures to obtain direct sunlight for solar energy systems because of existing zoning and subdivision ordinance provisions.
5. The City will consider enrolling/continue to be enrolled in the following cost-free technical assistance programs designed to provided planning, technical, and policy assistance to local governments:
    - U.S. Dept. of Energy's SoiSmart Program (Solar Permitting, Zoning, and Development)
    - MN GreenStep Cities Program (Sustainability Best Practices)
    - Xcel Energy's Partners in Energy Program (Energy Action Plan Development)

Historic Sites

The Metropolitan Land Planning Act (Minnesota Statutes 473.859, Subd. 2) requires that local comprehensive plans include a section on historic preservation. Historic assets promote community pride and create a sense of community. The National Register of Historic Places is the nation's

official list of properties deemed worthy of preservation. The Register is maintained by the National Park Service and is administered by a State Historic Preservation Office (SHPO) in each state. Properties may be listed due to their association with significant persons and events, their architectural or engineering significance, or for the historic or pre-historic information they provide. The Register also lists important groupings of properties as historic districts. An environmental review process protects properties that may be affected by state projects or federally funded or licensed projects but does not interfere with a private property owner's right to alter, manage or dispose of the property.


Freeman, Reuban, House
Source: Minnesota Historical Society

Freeman, Reuben, House

Listed: December 31,1979
Address: 9091 Inver Grove Tr.
Significance Level: Local

Built in 1875, the Freeman House is a square 1.5 story building constructed of coursed field stone laid in wooden forms about 16 inches high and puddled with mortar, a masonry technique uncommon in the area. The Freeman House is significant both as a unique vernacular architectural design and as a rare example of coursed fieldstone construction in Minnesota. The principal gables do not rise from the corners, but are inset by several feet. Smaller secondary gables rise at an angle over the corners of the house. This roof design has no discernible function except visual effect.

Historic Sites Policies

1. Develop approaches to preserving significant historical sites within the City in conjunction with the Minnesota and Dakota County Historical Societies.

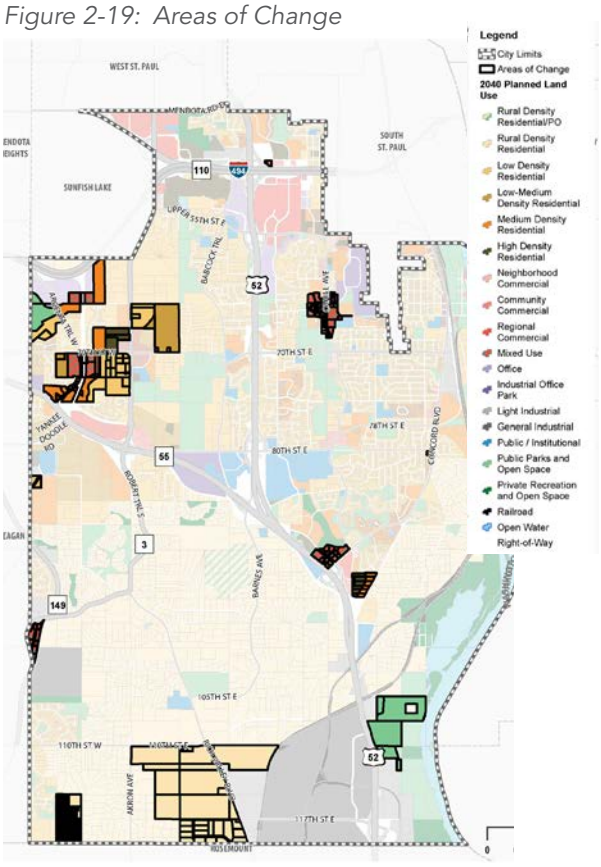
Summary

Our land use patterns have not changed dramatically since our last Comprehensive Plan. The land use assumptions and development projections outlined in this chapter form a basis for the remaining chapters of our Comprehensive Plan.

Areas of Change

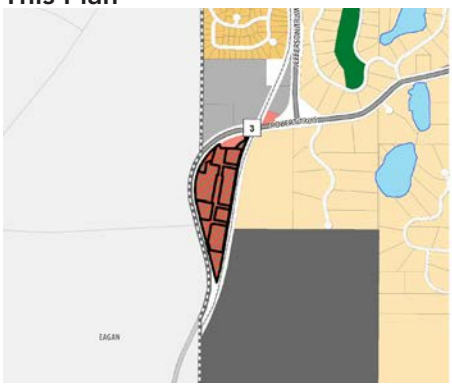
The following figures and tables identify key changes in land use in "areas of change" anticipated in the City of Inver Grove Heights through 2040. These areas of change represent a change in land use guidance between what was guided in the 2030 Comprehensive Plan and this comprehensive plan. Figure 2-19 shows all the areas of change within Inver Grove Heights, the figures following zoom in for better detail. The legend below is used for all of the maps in this section. Each figure is accompanied by a change area table. Table 2-11 through Table 2-17 indicate how 2030 planned land uses changed, acre by acre, to the updated 2040 planned land use.

Figure 2-19: Areas of Change



West Side Robert Trail Change Area

This Plan



2030 Comprehensive Plan

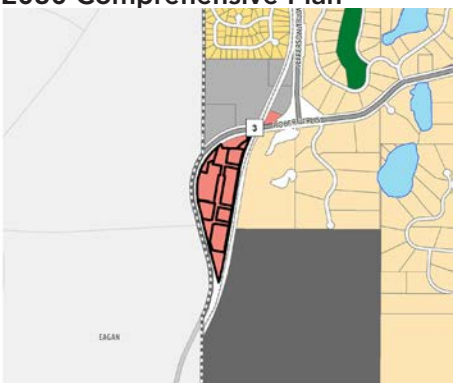


Table 2-11. West Side Robert Trail Change Area

2030 Planned Land Use	*2040 Planned Land Use*	*Acres*
Community Commercial		19.9
	Mixed Use	19.9
	Total	**19.9**

City Limits
2040 Planned Land Use
Rural Density Residential/PO
Rural Density Residential
Low Density Residential
Low-Medium Density Residential
Medium Density Residential
High Density Residential
Neighborhood Commercial
Community Commercial
Regional Commercial
Mixed Use
Office
Industrial Office Park
Light Industrial
General Industrial
Public / Institutional
Public Parks and Open Space
Private Recreation and Open Space
Railroad
Open Water
Right-of-Way
Industrial Open Space

Northwest Area Change Area

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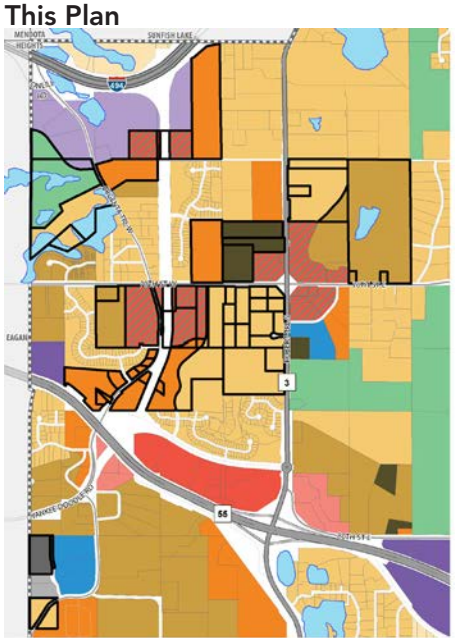

2030 Comprehensive Plan

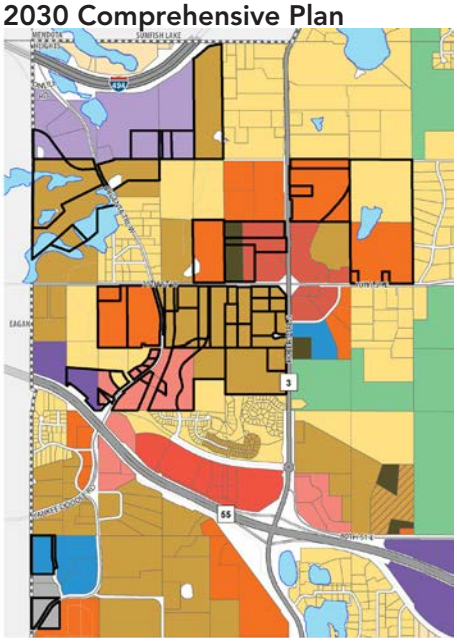

Table 2-12. Northwest Area Change Area

2030 Planned Land Use	*2040 Planned Land Use*	*Acres*
Community Commercial		35.8
	Low Density Res.	7.0
	Medium Density Res.	28.8
High Density Res.		11.1
	High Density Res.	11.1
Industrial Office Park		9.0
	Medium Density Res.	9.0
Low Density Res.		42.6
	Low-Med. Density Res.	39.7
	Medium Density Res.	2.9
Light Industrial		7.5
	Low Density Res.	7.5
Low-Med. Density Res.		201.4
	Low Density Res.	102.6
	Medium Density Res.	45.0
	Mixed Use	21.1
	Office	2.5
	Public Parks Open Space	24.4
	Right-of-Way	5.8
Medium Density Res.		132.2
	Low Density Res.	32.9
	Low-Med. Density Res.	61.5

2030 Planned Land Use	2040 Planned Land Use	Acres
	Medium Density Res.	19.1
	Mixed Use	18.8
Mixed Use		16.7
	High Density Res.	16.7
Office		23.5
	Mixed Use	15.5
	Public Parks Open Space	5.3
	Right-of-Way	2.7
Public/Institutional		
	General Industrial	9.2
	Total	**479.8**

Pine Bend Bluffs Change Area

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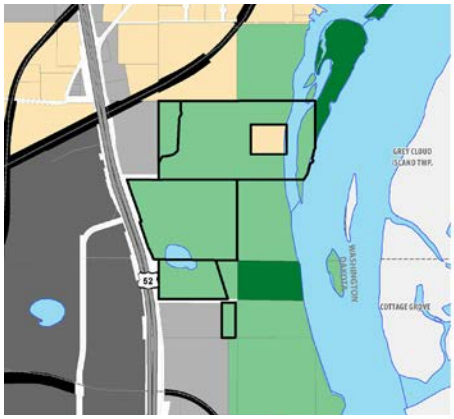

2030 Comprehensive Plan

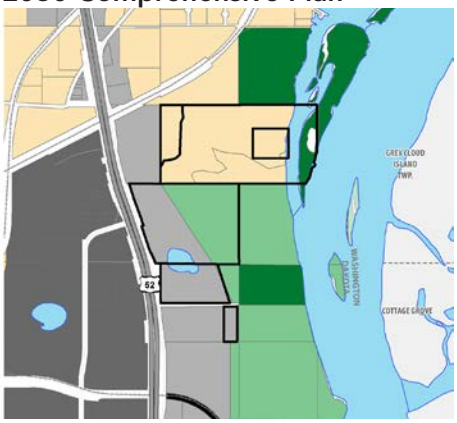

Table 2-13. Pine Bend Bluffs Change Area

2030 Planned Land Use	2040 Planned Land Use	Acres
Light Industrial		39.8
	Public Parks Open Space	39.8
Private Rec. and Open Space		5.0
	Public Parks Open Space	5.0
Public Parks Open Space		27.3
	Public Parks Open Space	27.3
Rural Density Residential		59.1
	Public Parks Open Space	59.1
	Total	**141.3**

Arbor Pointe and Concord Change Area

This Plan **2030 Comprehensive Plan**

Table 2-14. Arbor Pointe and Concord Change Area

2030 Planned Land Use	*2040 Planned Land Use*	*Acres*
Community Commercial		30.1
	Medium Density Res.	4.7
	High Density Residential	11.8
	Mixed Use	13.6
High Density Residential		3.7
	Mixed Use	3.7
Low Density Residential		10.9
	Medium Density Res.	3.2
	High Density Residential	7.7
Neighborhood Commercial		1.2
	High Density Residential	1.2
Regional Commercial		11.1
	Mixed Use	11.1
	Total	**57.0**

Cahill/65th and I-494/Hwy 52 Change Area

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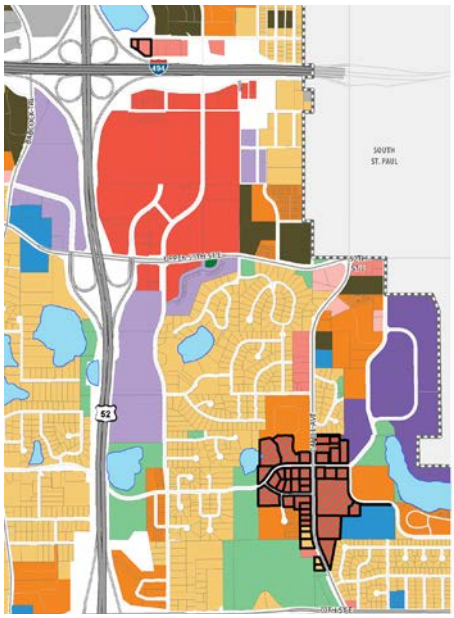

2030 Comprehensive Plan

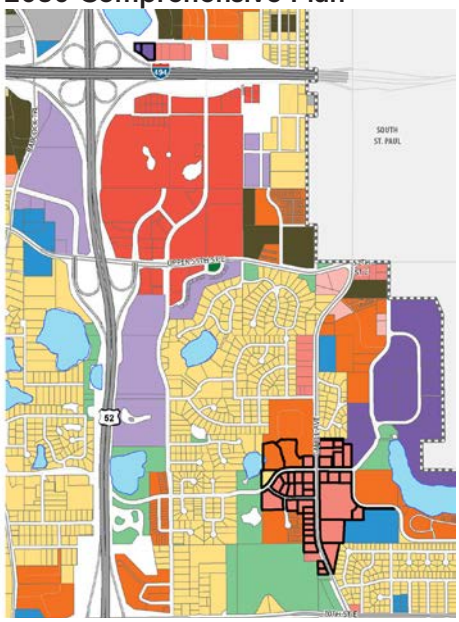

Table 2-15. Cahill/65th and I-494/Hwy 52 Change Area

2030 Planned Land Use	*2040 Planned Land Use*	*Acres*
Community Commercial		42.7
	Low Density Residential	2.7
	Mixed Use	40.0
Industrial Office Park		2.0
	Community Commercial	2.0
Low Density Residential		1.2
	Mixed Use	1.2
Medium Density Residential		7.2
	Mixed Use	7.2
	Total	**53.0**

"Pinkville"

The area known as "Pinkville" is an area with a unique history of being platted to a small lot residential pattern but never having a clear understanding of how it would develop. Subsequently, the property has experienced some parcel foreclosures resulting in city ownership of several parcels. A small area study is recommended to help understand future uses and an implementation strategy.

Southwest IGH Change Area

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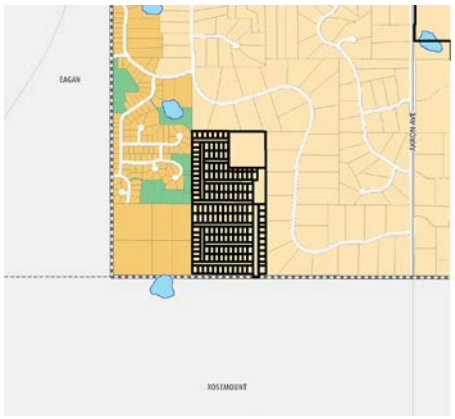


2030 Comprehensive Plan

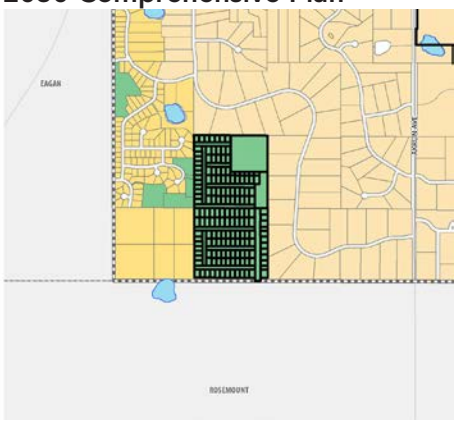
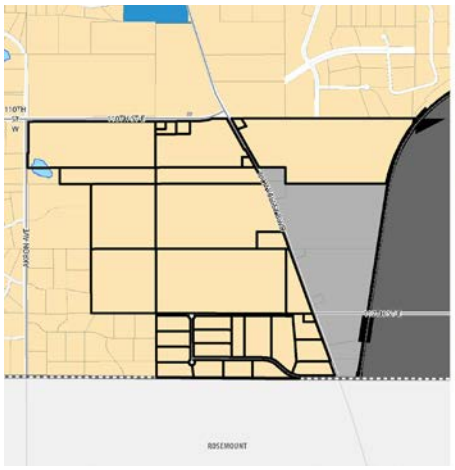


Table 2-16. Southwest IGH Change Area

2030 Planned Land Use	*2040 Planned Land Use*	*Acres*
Public Parks Open Space		77.9
	Rural Density Residential	77.9
	Total	**77.9**

Flint Hills Change Area

This Plan



2030 Comprehensive Plan

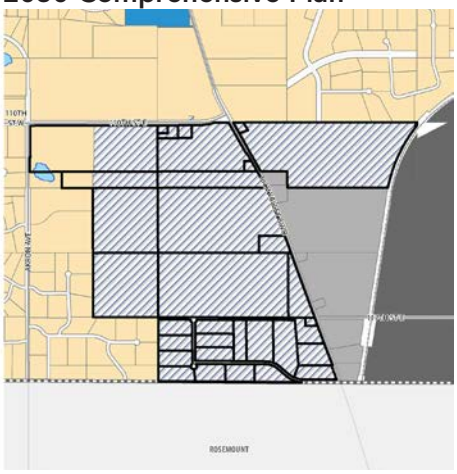


Table 2-17. Flint Hills Change Area

2030 Planned Land Use	*2040 Planned Land Use*	*Acres*
Industrial Open Space		520.5
	Rural Density Residential	520.5
Rural Density Residential		31.9
	Rural Density Residential	31.9
	Total	**552.4**

ENVIRONMENTAL PROTECTION AND NATURAL RESOURCES

CHAPTER 3

Harmon Landscape

Introduction

An inventory of natural resources for a community typically includes soils, lakes, wetlands, ponds, topography, vegetation and floodplains. All of these resources lend definition to the City of Inver Grove Heights. The landscape of the community is defined by the rolling topography, the stands of mature timber, wetland depressions, the scattered lakes and the Mississippi River, which forms the eastern boundary of the community.

In 2017, residents were asked to rank the importance of actions that would support a healthy environment and overall community resiliency. Protecting water bodies from excessive and polluted stormwater runoff was the top priority identified. Encouraging redevelopment of underutilized, previously developed sites, and protecting environmental amenities through development restrictions were also identified as important actions to undertake. In the same survey, open space, and the natural beauty of the area were identified as one of the top attributes that make Inver Grove Heights a great place to live.

Respecting the natural environment pays us great dividends over the long term. A healthy urban forest helps shade our community. Wetlands clean our lakes and water resources. Intact open spaces serve as habitat for wildlife populations displaced through development. Consideration of open spaces and natural features in the community is integral to the comprehensive planning process. Preservation of natural resource areas and the integration of development patterns within the natural characteristics of the landscape contribute to a healthy natural environment.

Existing Conditions

Geology

The terrain of Inver Grove Heights is the result of various periods of glacial activity that occurred thousands of years ago. The pre-glacial terrain has been so thoroughly covered by glacial materials; the exact original form is unknown. Three distinct geologic forms exist and can be identified today.

The first, glacial moraine, also known as knob and kettle topography, represents a large area containing materials that were carried by a glacier and left in place when it melted. Today, we recognize glacial moraine as small lakes, ponds, wetlands and potholes that usually have small drainage areas and often contain trapped water due to a lack of natural outlets. The knob and kettle terrain features can provide a series of stormwater holding basins. Controlled outlets and inlets combined with interconnecting storm sewer pipes can allow these natural basin areas to function as part of a stormwater collection and treatment system.

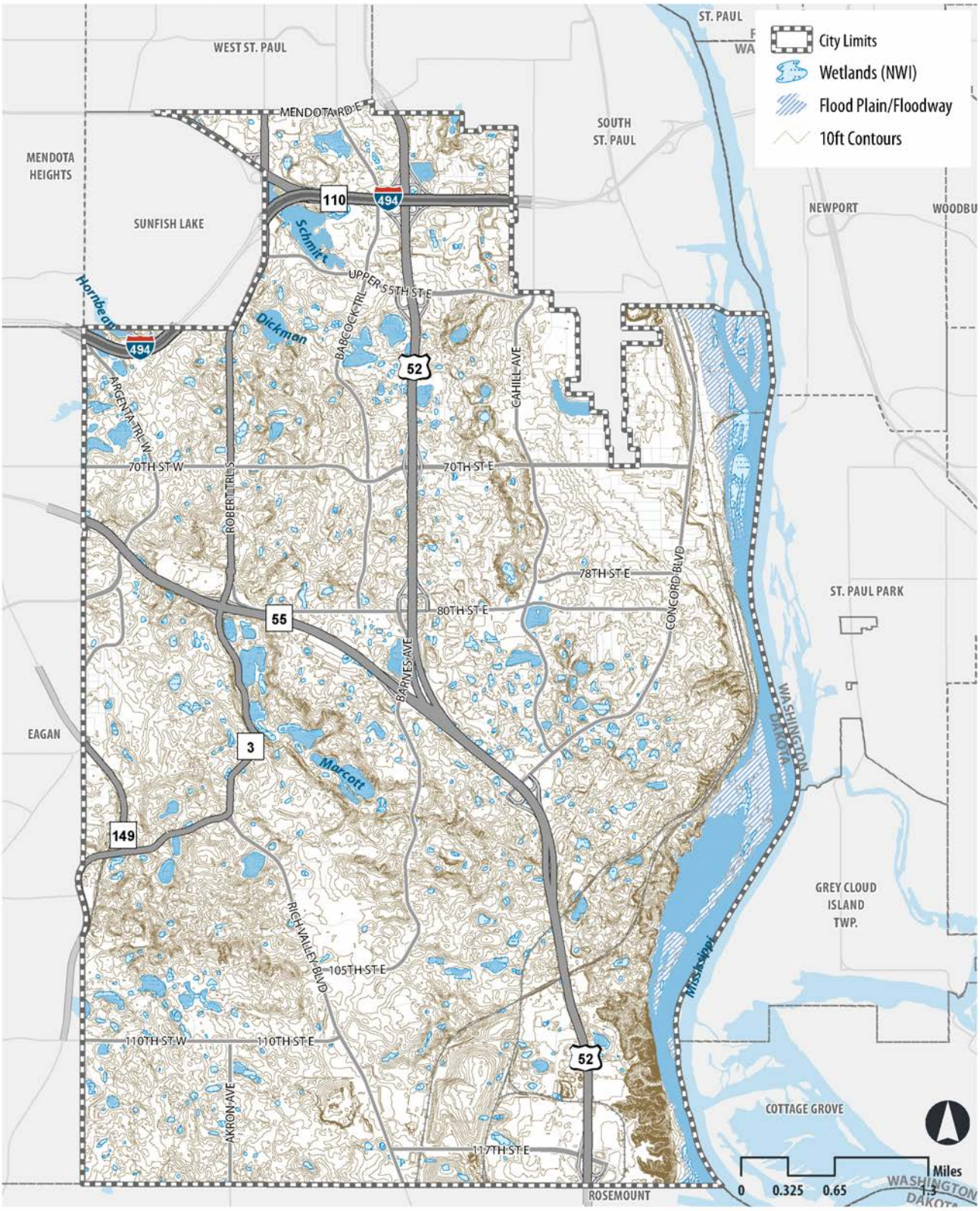
The second geologic feature evident in Inver Grove Heights is the outwash plain. Central Dakota County contains a large outwash plain with a finger of the plain extending into Inver Grove Heights. This channel carried away much of the fine silt and loam away from the glacier resulting in the rich agricultural land found south of the community.

The third geological feature was formed as an indirect result of glacial activity. The Mississippi River was the primary spillway for the glacial Lake Agassiz, which encompassed what is now the Red River Valley. The lake drained via the Minnesota River leaving a landscape with a broad river bottom floodplain and steep side slopes in southern Inver Grove Heights.

Topography/Hydrology

The topographic and hydrological features of Inver Grove Heights are closely tied to the glacial history. Glacial activity resulted in a landscape that features significant topography in a number of areas in the community (see Figure 3-1). The landscape along the Mississippi River contains steep slopes in the central and southern reaches of the community. Two primary fingers of steep topography extend to the north and northwest, one following up the Marcott chain of lakes and the other lying between the Lafayette Freeway and Cahill Road. North and South Valley Parks lie within this area. Additionally, a large concentration of land exhibiting slopes exceeding 12% lies north of Cliff Road and west of Rich Valley Road.

Figure 3-1: Topography, Wetlands & Flood Plain/Floodway



Sources: National Wetland Inventory, US Geological Survey, MnDNR and Metropolitan Council

Aggregate Resources

State legislation enacted in 1978 requires local comprehensive plans to address aggregate resources. The law requires that communities include the local government's goals, intentions, and priorities concerning aggregate resources as part of their land use plan. Aggregate resources known or suspected to be located in Inver Grove Heights are illustrated in Figure 3-2. These areas are made up of three types of aggregate resources:

- Class 6 - Des Moines Lobe Sand and Gravel 10-40 ft thick, moderate to good quality
- Class 7 - Superior Lobe Sand and Gravel 10-40 ft thick, good to excellent quality
- Class A - Prairie du Chien Dolostone > 30 ft thick

Aggregate resources identified in the City of Inver Grove Heights are dispersed throughout the city. It is unlikely extraction would occur in the areas along the Mississippi River due to topography and potential environmental impacts to the river. It is also unlikely to see extraction in areas of the community that are fully developed. Areas that could potentially see extraction are in the rural or undeveloped areas of the community. Prior to development on these sites, the City will explore, with property owners, the feasibility of extracting resources and will follow all required state laws in order to understand the potential impacts of mineral extraction.

Aggregate Resources

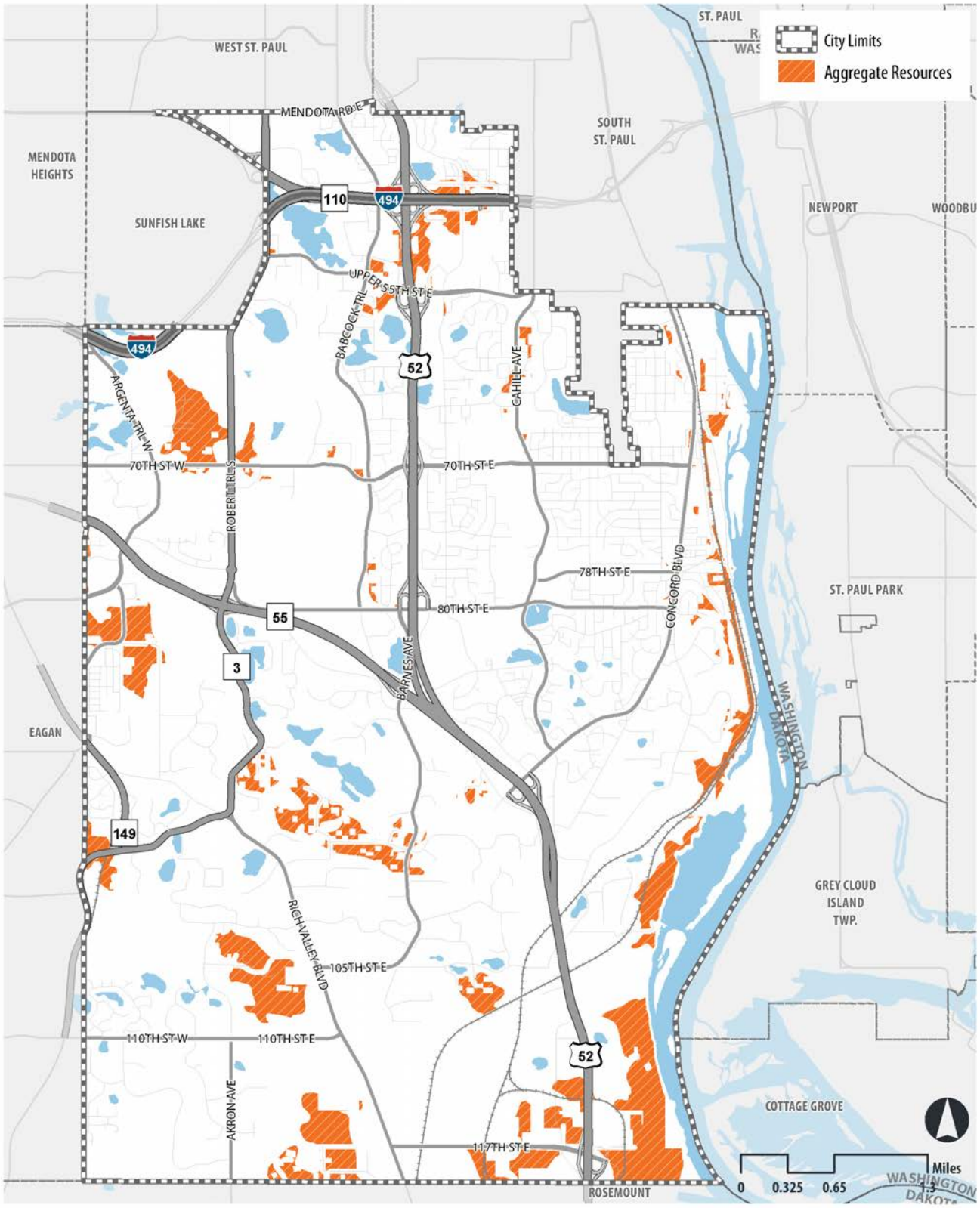
Aggregate Resources Inventory of the Seven-County Metropolitan Area, Minnesota, is a report funded jointly by the Minnesota Department of Natural Resources, the Metropolitan Council, and the Minnesota Geological Survey. It was released on May 9, 2000 as Minnesota Geological Survey Information Circular 46.

Among its conclusions, the report shows that the Twin Cities region was originally endowed with a total of 5.7 billion tons of sand and gravel, and dolomitic bedrock that meet present-day industry standards for construction aggregate resources. Only 1.7 billion tons of these resources remained as of 1997. With the continuing expansion of developed areas, possible zoning restrictions, and other factors, aggregate supplies may be exhausted as early as 2028. Local and regional decisions will have important implications for future supplies and costs of aggregate materials.

Not protecting our available aggregate resource supply can have costly impacts to community development. These costs would be born due to the need to transport aggregate for construction projects.

Source: Minnesota Department of Natural Resources

Figure 3-2: Aggregate Resources



Source: Metropolitan Council

Soils

Undeveloped areas of Inver Grove Heights in the southern and northwestern portions of the community have similar soil characteristics (see Figure 3-3). The areas generally contain Kingsley-Mahtomedi soils and Waukegan-Wadena-Hawick soils. Kingsley-Mahtomedi soils are prominent in the southern part of the City while the Waukegan-Wadena-Hawick soils run in a band from northwest to southeast through the Marcott Lakes area. The northwestern portion of the City also contains substantial pockets of Otterholt silt loam. The following are the characteristics of these soils:

- Kingsley-Mahtomedi - This class of soils is made up of 40 percent Kingsley, 12 percent Mahtomedi and 40 percent minor soils. Kingsley soils typically consist of a black sandy loam surface layer approximately 8 inches thick. The subsurface layer is brown loamy sand about 4 inches thick. The subsoil is 26 inches thick; the upper part is dark brown and reddish brown sandy loam and the lower part is dark brown sandy loam. The underlying material is dark brown sandy loam with layers of loamy sand.

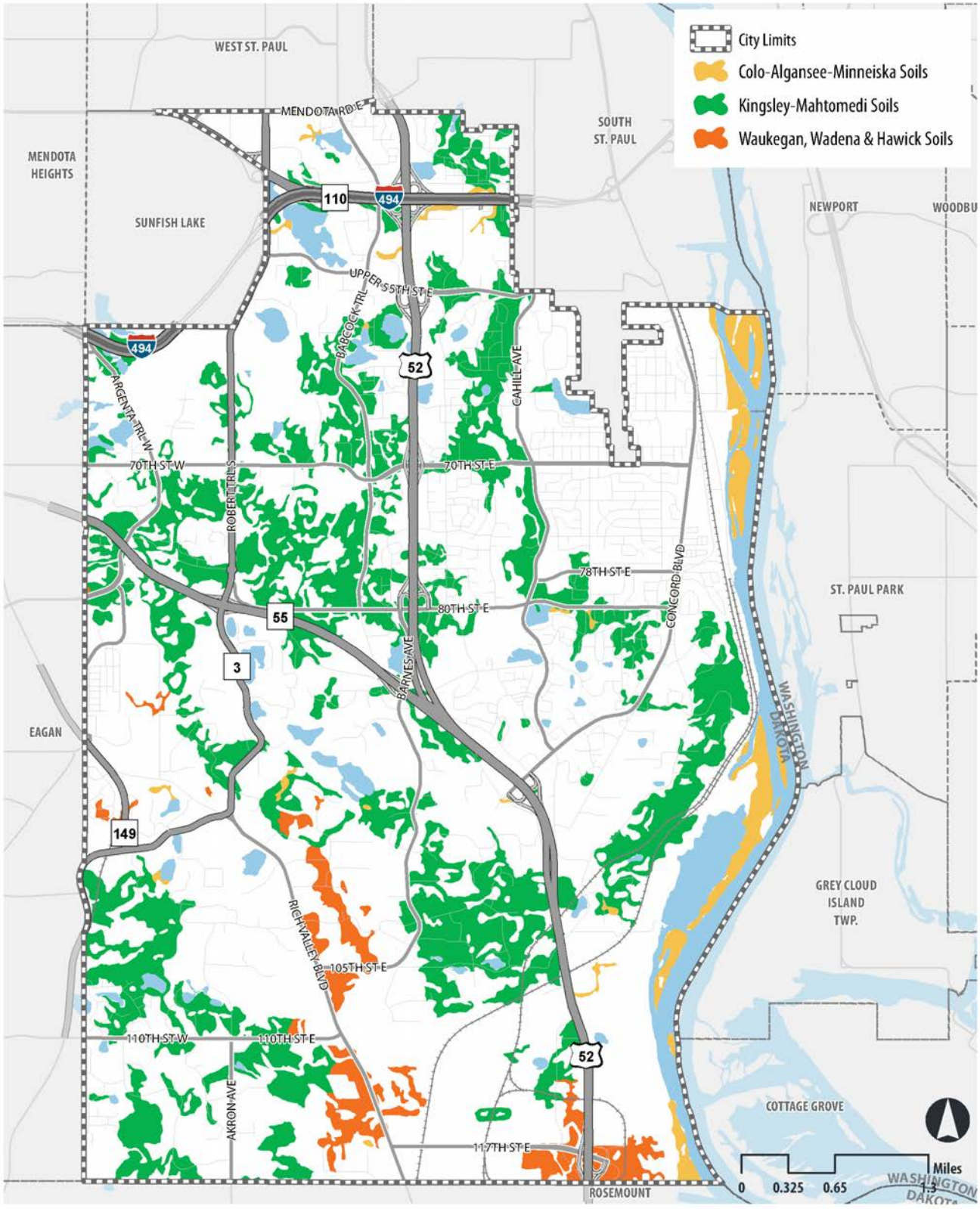
  This soil is well suited for the use of an individual sewage treatment system. Loam soils are resistant to compaction while containing clay and silts, which often retain the moisture and microbes necessary for the treatment of effluent. Loam soils typically have good surface drainage and a favorable percolation rate.

  Mahtomedi soils typically have very dark grayish brown loamy sand approximately 5 inches thick. The subsoil is dark brown and dark yellowish brown gravelly coarse sand about 30 inches thick. The underlying material to a depth of about 60 inches is yellowish brown stratified sand and coarse sand. Individual sewage treatment systems in Mahtomedi soils can be adequately installed and maintained.

  Kingsley-Mahtomedi soils are generally poorly suited to most cultivated crops due to erosion, complex slopes and susceptibility to drought.

- Waukegan-Wadena-Hawick - This class of soils is approximately 36 percent Waukegan, 22 percent Wadena and 8 percent Hawick soils. The remaining 34 percent consists of minor soils.

Figure 3-3: Soils



Source: USDA - NRCS Data

The Waukegan soils are well drained silt loams with a bottom layer of gravelly sand. This soil is similar to the Kingsley soil and is suited for individual sewage treatment systems. The Wadena soils are also well drained loams, sandy loams and loamy sands. Hawick soils are sandy loams, loamy sands and gravelly sands. The Wadena and Hawick soils have characteristics similar to Mahtomedi soils and are suitable for individual sewage treatment systems with appropriate testing to assure the soil will filter the effluent. Waukegan-Wadena-Hawick soils are also well suited for cultivated crops as well as road and building construction.

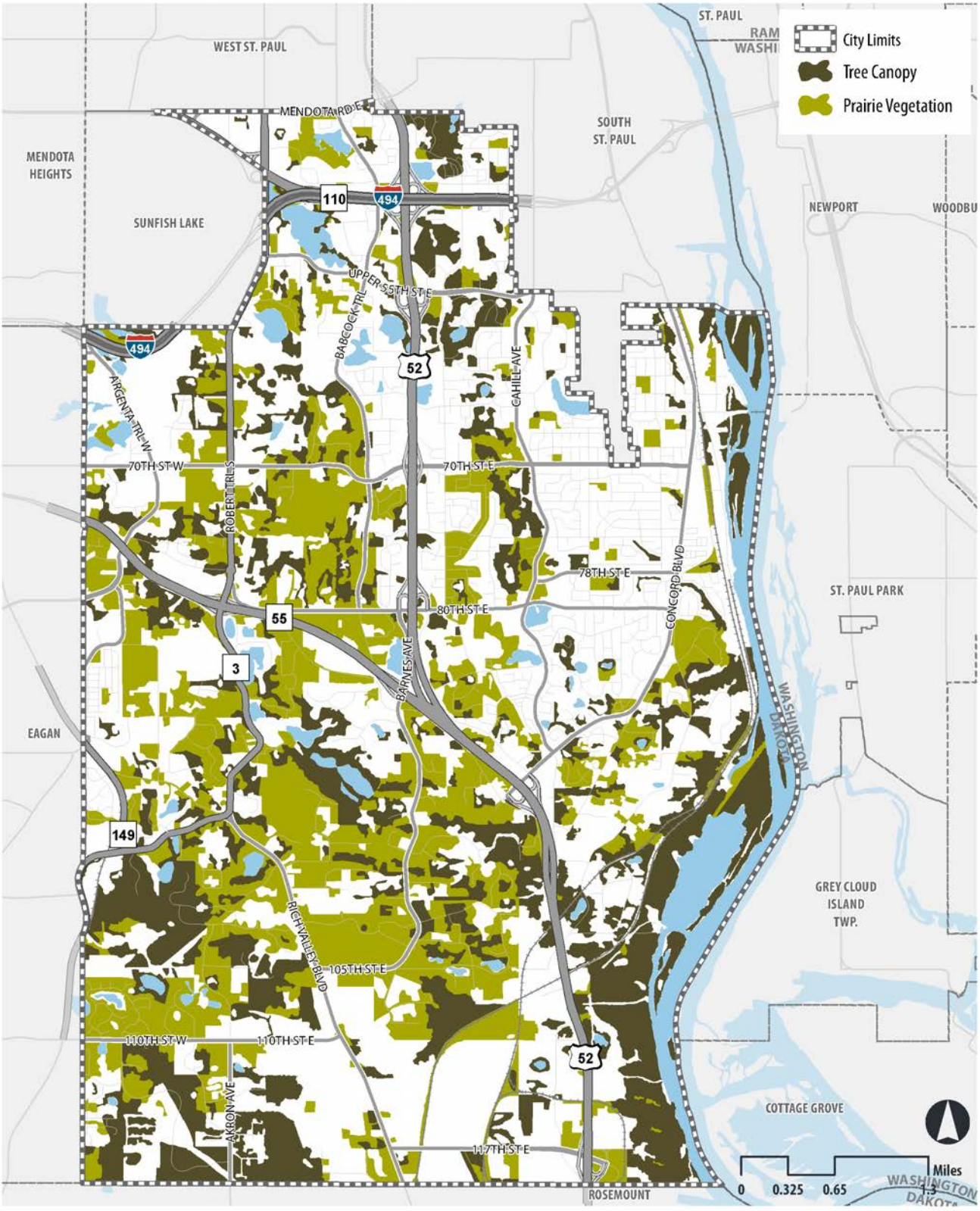
- Otterholt Silt Loam - Otterholt silt loam is a well drained soil on side slopes and broad hillcrests on end moraines. Individual areas are irregular in shape and range in northwest Inver Grove Heights from less than 5 acres to up to 30 acres. The surface layer of Otterholt soils is typically very dark grayish brown and about 2 inches thick. The subsurface layer is brown silt loam about 9 inches thick. The subsoil is about 24 inches thick. It is dark yellowish brown silt loam. The underlying material to a depth of about 60 inches is reddish brown sandy loam to dark brown loam. In some areas, the silt mantle is less than 30 inches thick. If buildings are constructed on Otterholt soils, foundations and footings should be designed to accommodate the shrinking and swelling of the soil. The moderate permeability of Otterholt soils restricts its use for septic tank absorption fields. This soil is well suited to agricultural crops, however, it erodes easily.

Vegetation

Inver Grove Heights contains three distinct plant communities: the upland forest, prairie and wetlands (see Figure 3-4). Upland forests or upland forest remnants can be found in virtually all areas of the city. Wetlands are also scattered throughout the community with a concentration in the south and east. Prairies are also interspersed throughout the city. Oak and aspen tree species dominate the upland forest areas with understory growth consisting of dogwoods and ferns. Prairie lands contain a variety of species of grasses as well as poplar, sumac and cedar. Wetland fringes contain stands of birch, willow, ash, elder and poplar with an understory growth of red twigged dogwood, viburnums and varieties of wildflowers.

Vegetation in Inver Grove Heights provides both functional and aesthetic benefits. Vegetation serves to clean water, prevent erosion, provide wildlife habitat, modify climate and enhance scenic views and vistas.

Figure 3-4: Vegetation



Source: Minnesota Land Cover Classification System

Lion's Lake

Future Environmental Impacts

The City of Inver Grove Heights will continue to develop over the next 20 years. Future development patterns will influence natural resources in the community. The Land Use Plan in Chapter 2 has taken into account environmental features and sets the foundation for future development patterns. Areas that are anticipated to develop over the next 20 years, such as the Northwest Area, have gone under extensive planning efforts to ensure the environment is protected. The City will continue to address environmental impacts in developing areas to ensure the appropriate mitigation measures are taken to preserve and protect the environment.

Several sites in Inver Grove Heights will continue to pose environmental concerns. Examples include the Pine Bend Landfill, two demolition landfills and the Flint Hills Refinery. The City will continue to work closely with owners of these heavier industrial use properties, as well as state and federal agencies, to contain these operations and minimize direct and indirect impacts on the greater environment and to adjacent properties. Lands held within these buffer areas can continue to operate under existing conditional use permits; with undeveloped areas to be left as open space and, where possible, restored to a more natural state (restored native landscapes) and maintained through a management program. Agricultural uses will continue to be an acceptable interim use within the buffer areas.

The Northwest Area

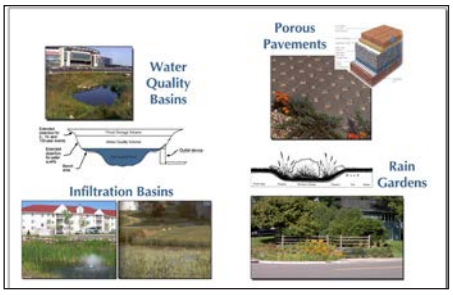
Since the late 1990s, the City of Inver Grove Heights has conducted a number of planning and engineering analyses for the Northwest Area. Each of these analyses had a different set of objectives. However, they each had a common goal in mind: to guide new development towards environmental sustainability. The result of this effort was the passage of an ordinance to mandate a fair and reasonable open space pattern, achieving an efficient density of development, protecting natural resources and preserving areas that will allow the maximum amount of stormwater infiltration. After years of planning for the Northwest Area, development broke ground on the first projects in the late summer of 2008 and has since seen a modest amount of new development. The city will continue implementing the NW Area PUD ordinance to protect natural resources and valued open space corridors.

Implementation

Environmental Protection and Natural Resource Goals and Policies

Goal 1: Conserve and enhance key natural resources to respect, reflect, and protect the natural environment of Inver Grove Heights.

1. Emphasize proper management of open space areas in order to preserve the trees, steep slopes, water quality and similar significant features of these areas.
2. Cooperate with the County and other levels of government to remove of diseased trees or mitigate the effects of disease.
3. Encourage re-forestation within the corporate limits with disease tolerant and/or native species appropriate for the existing plant communities.
4. Continue monitoring private septic systems in order to safeguard against contamination of the underground water system and related health problems.
5. Encourage efforts to preserve endangered and threatened wildlife species including preservation of natural habitat areas where feasible.
6. Enforce federal, state and local wetland rules and regulations.
7. Cooperate with state and federal agencies to achieve compliance with air quality, water quality and noise regulations.
8. Continue to work closely with state and federal agencies involved in the regulation and monitoring of heavy industrial users such as the refinery and landfill operations, as well as coordinate with landfill operators and residents.
9. Continue to work closely with the refinery businesses and local agencies to communicate needs, collaborate on planning, monitor air quality and ground water and coordinate emergency management.
10. Continue working with Dakota County to identify old dump sites and seek remediation as development occurs.



Stormwater management best practices are required in future development projects within the Northwest Area. The above illustration is a part of a development submission demonstrating how a project intends to manage stormwater runoff using innovative solutions as outlined in the City of Inver Grove Heights Stormwater Management Manual.

What is Low Impact Development (LID)?

LID is an ecologically friendly approach to site development and storm water management that aims to mitigate development impacts to land, water, and air. The approach emphasizes the integration of site design and planning techniques that conserve natural systems and hydrologic functions on a site. The practice has been successfully integrated into many municipal development codes and storm water management ordinances throughout the United States. Specifically, LID aims to:

1. Preserve Open Space and Minimize Land Disturbance;
2. Protect Natural Systems and Processes (drainage ways, vegetation, soils, sensitive areas);
3. examine the Use and Sizing of Traditional Site Infrastructure (lots, streets, curbs, gutters, sidewalks) and Customize Site Design to Each Site;
4. Incorporate Natural Site Elements (wetlands, stream corridors, mature forests) as Design Elements; and
5. Decentralize and Micromanage Storm Water at its Source.

What is LEED?

The LEED Green Building Rating System™ is the nationally-accepted benchmark for the design, construction, and operation of high performance green buildings. LEED promotes sustainability in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

The LEED for Neighborhood Development Rating System is currently a pilot program and integrates principles of smart growth, urbanism, and green building into the first national standard for neighborhood design. LEED certification provides independent, third-party verification that a development's location and design meet accepted high standards for environmentally responsible, sustainable, development.

Source: U.S. Green Building Council

Goal 2: Promote future urban development in Inver Grove Heights to sustain the character and function of essential natural resources.

1. Continue to carefully monitor development by requiring Environmental Assessment Worksheets, Alternative Urban Areawide Reviews and/or Environmental Impact Statements where they are needed to properly assess the environmental impacts of proposed development.
2. Incorporate performance standards into construction contracts with plats to provide specific controls within developments where warranted.
3. Review and update existing development checklists to address environmental concerns related to development projects.
4. Consider re-establishing a program of periodically testing water bodies within the community in order to assess the long-range effects that urbanization has on these water bodies and correspondingly, in order to undertake any necessary protective measures that may be pointed out through this monitoring system.
5. Assist with the preservation of prime agricultural lands to be farmed as long as desired by property owners within the community.
6. Continue to require appropriate erosion controls during construction.
7. Incorporate select stands of existing wooded, prairie, and wetland areas timber into permanent open space areas as part of traditional platting and planned unit developments.
8. Continue implementing the Northwest Area zoning ordinances as a model for innovative stormwater management and development patterns.
9. Encourage the use of Low Impact Development (LID) techniques that preserve and enhance our environment.
10. Continue to enforce tree preservation ordinance with new subdivisions and update the ordinance as new information or techniques become available.
11. Encourage private development projects to seek LEED certification for new construction of buildings.
12. Consider LEED certification for new public buildings.
13. Encourage future subdivisions to explore the design principles that are encouraged through the LEED for Neighborhood Development program.

HOUSING
CHAPTER 4

Introduction

Housing is an integral part of Inver Grove Heights' vision (see page 1-4). Developing and maintaining a diversity of housing options is a key guiding principle of the Comprehensive Plan. Ensuring opportunities for diversity in housing also helps achieve community "sustainability" (see sidebar on Page 1-6.) To be sustainable, Inver Grove Heights' approach to housing is to provide opportunities for housing for everyone at all stages of the life-cycle, at a full range of price levels and design patterns, and locations near regional investments such as existing and future transit corridors. This approach to housing will help sustain:

- our K-12 school system;
- a strong economic environment that is supported by a diverse population base and labor force;
- a market for commercial development (goods and services) supported by a diverse mix of households (household purchasing power) within close proximity to shopping and other community amenities;
- a market for active transportation options such as walking, biking, and local, express or fixed-route transit systems supported by a density of housing that enables an efficient transit system; and
- a diverse tax base.

Enacted in 1976, the Metropolitan Land Use Planning Act (MLUPA), Minn. Stat. Sec. 473.859 Subd. 2, paragraph [c] requires inclusion of a housing element in the Comprehensive Plan to address key housing needs identified from a regional basis. This plan will identify the plans, policies, and programs intended to meet these needs for Inver Grove Heights.

Land Use Planning Act-Minn. Stat. Sec. 473.859 Subd. 2, para [c].

A land use plan shall…include a housing element containing standards, plans and programs for providing adequate housing opportunities to meet existing and projected local and regional housing needs, including but not limited to the use of official controls and land use planning to promote the availability of land for the development of low- and moderate-income housing.

The City's role in housing.

Through legislative powers, the City has the responsibility to enact planning, zoning policies and building laws that encourage and regulate housing development. It is also the responsibility of the City to ensure an adequate level of services to maintain strong neighborhoods and to encourage, through the use of various tools, development of a wider range of housing options within each neighborhood.

Background

In June 2009, the Inver Grove Heights City Council appointed a Housing Task Force consisting of 12 members with a goal of developing a housing action plan by July, 2010. The Housing Task Force held monthly meetings between July 2009 through June 2010 and prepared a report and recommendation based on research conducted by the task force and opinions and recommendations gathered from other groups and individuals such as the Dakota County Community Development Agency (CDA), Inver Glen Senior Housing, ISAIAH and the Builders Association of the Twin Cities. The Housing Task Force report recommends the Council address three main issues, each with their own set of recommendations;

1. Housing Education,
    - A. Creation of a Housing Committee
        - i. Suggested topics
            - a. market study update
            - b. rental housing licensing
            - c. foreclosures
            - d. property maintenance
        - ii. Suggested education programs
            - a. CDA liaison
            - b. information to public

2. Senior Housing, and
    - A. Accessory Housing
    - B. CDA Assistance
    - C. Availability Study

3. Affordable Housing
    - A. Affordable Housing Incentives
    - B. Multi City Joint Powers Agreement
    - C. Flexible Housing Standards
    - D. Renovation of Existing Housing Stock
    - E. CDA Partnering

In September 2013, the Dakota County Community Development Agency completed a Needs Assessment for all of Dakota County. This report estimated a demand for approximately 920 - 976 new rental and 2,405 - 2,460 ownership housing units (3,325 - 3,436 total units) in Inver Grove Heights from 2010 to 2030. (See Table 4-1 for a breakdown of this demand.) The report findings indicate that demand is now outpacing supply in some housing categories, most notably apartment rentals. Rental vacancy rates have hit new lows in some communities and the tightening vacancies and

increasing rents have resulted in low- and moderate-income households experiencing much greater challenges to secure affordable housing. An insufficient supply of affordable housing and particularly, housing affordable to households at the lowest income levels (less than 50% of Area Median Family Income), are creating significant barriers to assisting individuals and families in need to remain or help them to become more independent and reduce the risk of these households becoming homeless.

Table 4-1. Summary of Additional Housing Demand for Inver Grove Heights (Dakota County Housing Study)

	2010 to 2020				*2020 to 2030*			
	General Occupancy		*Senior*		*General Occupancy*		*Senior*	
	Market Rate	*Affordable/ Subsidized*	*Market Rate*	*Affordable/ Subsidized*	*Market Rate*	*Affordable/ Subsidized*	*Market Rate*	*Affordable/ Subsidized*
Rental Housing	240-249	215-222	125-135	90-100	55-60	60-65	60-65	75-80

	2010 to 2020			*2020 to 2030*		
	Single Family	Multi-Family	Senior	Single Family	Multi-Family	Senior
Ownership Housing	620-625	290-600	30-30	425-450	690-700	50-55
Total Units	1,610-1,961			1,415-1,475		

Source: Maxfield Research Inc.

As part of the comprehensive planning process, in May 2017 Maxfield Research completed a housing market analysis for Inver Grove Heights. The report found that rental vacancy rates were well below equilibrium across all unit types in the Inver Grove Heights market area. Rental vacancy rates range from 2.1% to 2.6% in the market area while average rents have increased by roughly 1.3% year-over-year. The tight rental market can be partially attributed to a group of foreclosed homeowners that entered the rental market during the Great Recession and traditional renters, who are potential home-owners, but are staying in the rental market longer due to lifestyle preferences. Job growth is also contributing to the demand for apartment units. The report concludes that Inver Grove Heights could support roughly 2,489 new general occupancy market rate housing units between 2017 and 2040.

The report also highlights that median sale prices have been climbing steadily in the market area since 2011. Since 2011, the median sale price for single-family homes has increased nearly 28% to $323,900, the median sale price for multi-family for sale homes jumped 34% to $168,000. Approximately 28% of the homes for sale in the market area were built

in the year 2010 or later. Multi-family units represent 34% of the for-sale homes that were built 2000 or later. The report concludes that Inver Grove Heights could support roughly 1,585 additional multi-family for sale units and 446 single family units between 2017 and 2040.

Together, these three reports provide a basis for the policy directions for the Comprehensive Plan update.

Existing Housing Stock, Trends and Patterns

Data from the Metropolitan Council 2015 housing stock estimates indicated that there were approximately 14,397 housing units in Inver Grove Heights and that 69%, the majority, of these units were reported to be single-family homes. Multi-family units accounted for 25% of Inver Grove Heights' housing stock, while manufactured homes accounted for a 6% share. Housing tenure (whether someone rents or owns the home they are living in) skews largely, 68%, toward ownership units in Inver Grove Heights.

Table 4-2. Housing Unit Type, 2015

Tenure	*Number of Units*	*% of Total Housing Units*
Single-family Units	9,906	69%
Multi-family units	3,637	25%
Manufactured homes	854	6%
Total Units	14,397	100.0%

Source: Metropolitan Council

Table 4-3. Housing Tenure, 2015

Tenure	*Number of Units*	*% of Total Housing Units*
Ownership Units	9,795	68%
Rental Units	4,602	32%
Total Units	14,397	100.0%

Source: Metropolitan Council

Table 4-4. Age of Housing Stock

Year Unit Built	*Units*	*% of Total*
2010 to 2017	361	3%
2000 to 2009	2,586	18%
1990 to 1999	3,585	25%
1980 to 1989	2,709	19%
1970 to 1979	2,319	16%
1960 to 1969	1,292	9%
1940 to 1959	990	7%
1939 or earlier	414	3%
Total Units	14,256	100%

Source: 2011-2015 US Census ACS, IGH City Building Permit Data

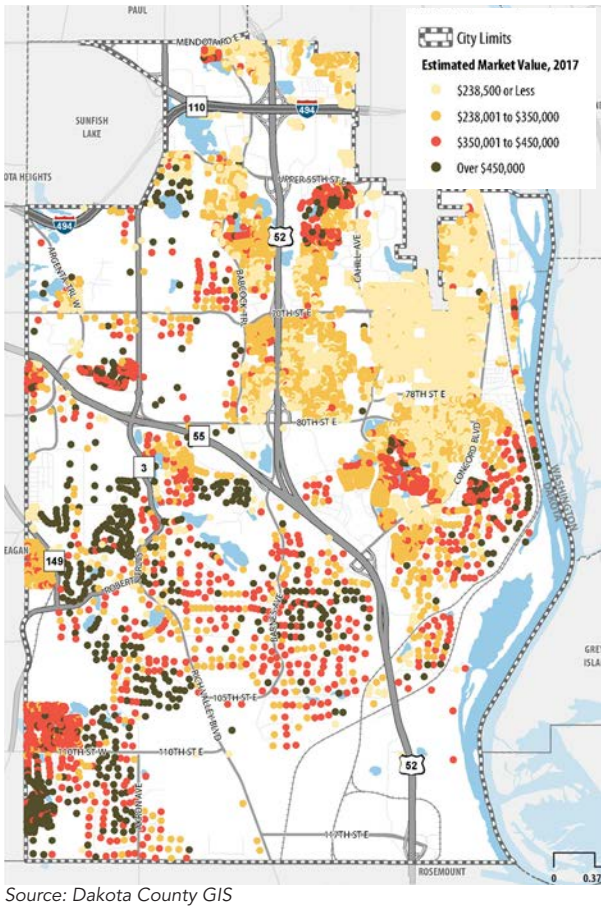
Between 2002 and 2007 the City reported 1,754 new residential units, an average of 351 units added each year. Between 2007 and 2012 the City reported only 303 new residential units, an average of 61 units added each year. In the 6 year period after this, 511 residential units were added, an average of 85 units added each year. No new multi-family units have been constructed since 2015. Using 2011-2015 U.S. Census ACS and Inver Grove Heights building permit data, it is estimated that the City currently has approximately 14,256 total housing units, nearly half of which are less

than 30 years old. However, as Inver Grove Heights continues to age, a growing priority will be on preserving and maintaining the existing housing stock.

Housing values in Inver Grove Heights continue to reflect typical characteristics of suburban new-home construction where housing costs are heavily influenced by the rising cost of land and infrastructure, particularly as raw land becomes more scarce and areas left for infrastructure expansion are more difficult to serve.

Each year the Met Council determines the affordable purchase price for each low income level, these limits are summarized in Table 4-5. Dakota County Assessors data for Inver Grove Heights indicated that the average residential property (excluding apartments) had an estimated market value in 2018 of approximately $283,000. Figure 4-1 illustrates the estimated market value of owner occupied housing units around the City. Many of the properties over $450,000 are located south and west of Hwy. 55. New construction in the Northwest Area generally has an estimated market value of $350k and above. The oldest developed area in Inver Grove Heights has the highest concentration of housing below $238,500, homes most likely affordable to those making 80% of the area's Area Median Income (AMI).

Figure 4-1: Owner-Occupied Housing by Estimated Market Value



Source: Dakota County GIS

Table 4-5. Affordable Purchase Price, 2015

30% AMI	50% AMI	80% AMI
$84,500	$151,500	$238,500

Source: Metropolitan Council

Affordable and Workforce Housing

Affordable housing is an important part of a community's vitality. It provides

Example of an affordable housing unit mixed into a market rate development project.

This housing development is located within Plymouth, MN. Part of the development project included the integration of affordable housing. These units were made affordable through regional grants and the underwriting of a second mortgage through the Plymouth HRA.

In this picture, there are four units. One is maintained as affordable (i.e. can't be sold outside of defined affordability limits) for up to 15 years.

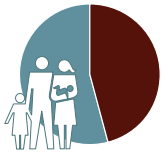
DAKOTA COUNTY RENTER SNAPSHOT

Housing impacts every aspect of our lives, from the jobs we can access to the educational outcomes of our kids. But too many people in our community pay too much for housing, forcing hard-working families to choose between paying the rent or buying adequate groceries, covering healthcare and other critical needs. Across the Twin Cities region, even those employed full time in the most in-demand jobs can't make ends meet with rising rents and declining vacancy rates.

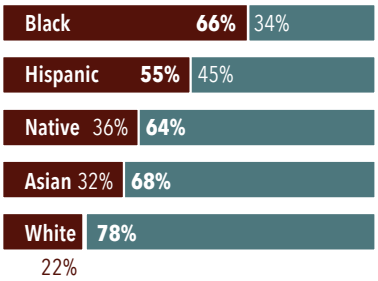
Housing is affordable when a household pays **no more than 30%** of its monthly income on rent or mortgage.

Working full time in many of the **region's most in-demand jobs** (see table right) doesn't pay enough to afford the median rent ($1,003) or average two-bedroom rent ($1,188)[4] in **Dakota County**.

In **Dakota County**, **43% of renter households** – and 65% of senior renter households – pay more than they can afford on housing.



Housing is a racial equity issue, with far more households of color **RENTING** rather than **OWNING** a home in **Dakota County**.



AVERAGE RENT IN DAKOTA COUNTY has increased 12% since 2010 to $1,116 overall. In 2017, the average rent was $996 for a one-bedroom and $1,188 for a two-bedroom apartment.

VACANCY RATE IN DAKOTA COUNTY has declined since 2010 to just 4.8%, creating a challenging market for renters.

IN-DEMAND JOBS in the Twin Cities	Median annual income	Affordable housing costs per month[1]	% income needed to pay median rent in Dakota County	% income needed to pay av 2-bd rent in Dakota County
Dakota County median renter	$43,183	$1,080	**28%**	**33%**
Minimum wage earner [2]	$20,060	$502	**60%**	**71%**
Food Prep / Serving Workers	$20,614	$515	**58%**	**69%**
Cashiers	$21,330	$533	**56%**	**67%**
Retail Salespersons	$22,731	$568	**53%**	**63%**
Personal Care Aides	$24,326	$608	**49%**	**59%**
Stock Clerks / Order Fillers	$26,437	$661	**46%**	**54%**
Janitors	$29,209	$730	**41%**	**49%**
Landscapers / Groundskeepers	$33,423	$836	**36%**	**43%**
Food Prep / Serving Supervisors	$34,133	$853	**35%**	**42%**
Nursing Assistants	$34,012	$850	**35%**	**42%**
Customer Service Reps	$39,274	$982	**31%**	**36%**
Truck Drivers	$47,514	$1,188	**25%**	**30%**
Accountants and Auditors	$67,343	$1,684	**18%**	**21%**
Registered Nurses	$81,737	$2,043	**15%**	**17%**

SOURCES: Occupational Data for Twin Cities Economic Development Region by MN Department of Employment and Economic Development, July 2017, and American Community Survey, 2016 estimates. FOOTNOTES: 1- Housing is affordable when it consumes no more than 30% of a household's monthly income. 2- Based on current minimum wage for large employers in Minnesota ($9.65). 3- Metropolitan Council staff analysis of U.S. Census Bureau, 2012-2016 American Community Survey Public Use Microdata Sample five-year data. 4- CoStar.

Learn more at **mhponline.org**

mhp Minnesota Housing Partnership

housing for young people who are in transition from home and post-secondary education into the workforce and it provides housing for seniors and others who live on modest and fixed incomes. A term often used in relation to affordable housing is "workforce housing." Workforce housing is increasingly popular among planners, government administrators and fair housing advocates, and is gaining popularity with home builders, developers and lenders. Four key factors help explain workforce housing: affordability, home ownership (recognizing the most desirable form of housing is ownership), critical workforce (teachers, police officers, medical technicians/nurses, office workers, retail workers), and proximity (to a major employment concentration). The Inver Grove Height's comprehensive plan refers to workforce housing as one component of affordable housing needs. The plan uses the term affordable housing because it captures the full intent of the need; it includes seniors and others living on modest or fixed incomes and those college students preparing for the workforce.

Affordable housing is most commonly achieved through development of new attached housing developments (townhome, condo or apartment development) where residential densities are sufficient enough for the private market to keep development costs reasonable. Programs through the Dakota County Community Development Agency or other regional non-profit organizations also contribute to the development of new workforce housing in Inver Grove Heights. The other important source of affordable housing stock is the existing housing stock. As housing ages, the degree of affordability increases. However, maintenance costs with older housing stock also increases. It is also important to acknowledge the aging population in Inver Grove Heights and the region in general. Housing affordability is important to retired people who are living on fixed incomes and often unable to keep pace with rising housing costs.

Accessory dwelling units (ADUs) also referred to as accessory apartments, second units, or granny flats — are additional living quarters on single-family lots that are independent of the primary dwelling unit. The separate living spaces are equipped with kitchen and bathroom facilities, and can be either attached or detached from the main residence. In addition to providing practical housing options for the elderly, disabled, empty nesters, and young workers, ADUs can provide additional rental income for homeowners. ADUs are smaller in size, do not require the extra expense of purchasing land, can be developed by converting existing structures, and do not require additional infrastructure. They are an inexpensive way for municipalities to increase their housing supply, while also increasing their property tax base. By allowing ADUs, communities can retain population

groups that might otherwise be priced out of the housing market.

Housing is considered "affordable" when no more than 30% of a household's income goes to housing. The basis for determining affordability is area median income (AMI), which is the midpoint of the Twin Cities region's income distribution such that half of households earn more and half earn less. For purposes of Comprehensive Plans, the Metropolitan Council has established three levels of affordability: 1) At or below 30% of AMI; 2) Between 31 and 50% of AMI; and 3) Between 51 and 80% of AMI.

Area Median Income

The Area Median Income (AMI) is the midpoint of a region's income distribution – half of families in a region earn more than the median and half earn less than the median. For housing policy, income thresholds set relative to the area median income—such as 50% of the area median income—identify households eligible to live in income-restricted housing units and the affordability of housing units to low-income households.

Table 4-6. Existing Affordable Housing Units, 2015

Household Income	*Units Affordable to Households*	*% of Total Housing Units*
At or below 30% of AMI	1,225	8.5%
31% to 50% of AMI	2,815	19.6%
51% to 80% of AMI	5,927	41.2%
Subtotal at or Below 80% AMI	9,967	69.2%
Total Housing Units	**14,397**	**100.0%**

Source: Metropolitan Council

As seen in Table 4-6, the City has a limited number of housing units that are considered affordable to very low income households (those households with 30% or less of the AMI). There are a fair number of homes considered in the affordable range for low income households (31% to 50% AMI) and moderate income households (51% to 80% AMI).

Table 4-7. Housing Cost-Burdened Households, 2015

Household Income	*Number of Households*	*% of Total Households*
At or below 30% of AMI	1,422	10.1%
31% to 50% of AMI	1,132	8.1%
51% to 80% of AMI	866	6.2%
Subtotal at or Below 80% AMI	3,420	24.4%
Total Households	**14,037**	**100.0%**

Source: Metropolitan Council

The cost of housing is typically the most significant expense in a household's budget. A residence is considered "affordable" when 30% or less of the household's gross income is spent on housing. If a household spends more than 30% of their gross income on housing, it is experiencing a "Housing Cost Burden". According to the Metropolitan Council, Inver Grove Heights has the following breakdown of households experiencing

Figure 4-2: Percentage of Income Needed for Housing in the Twin Cities Metropolitan Area

Assembly Worker | Median Salary: $34,640

Can Afford Monthly Housing Costs of: **$855**

% of income required to:

Rent a 2-Bedroom Apartment **39%**

Own a House **53%**

Child Care Worker | Median Salary: $23,587

Can Afford Monthly Housing Costs of: **$590**

% of income required to:

Rent a 2-Bedroom Apartment **56%**

Own a House **76%**

Groundskeeper | Median Salary: $27,602

Can Afford Monthly Housing Costs of: **$690**

% of income required to:

Rent a 2-Bedroom Apartment **48%**

Own a House **65%**

Restaurant Cook | Median Salary: $24,690

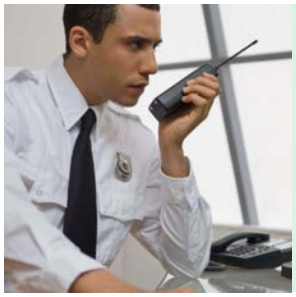
Can Afford Monthly Housing Costs of: **$617**

% of income required to:

Rent a 2-Bedroom Apartment **54%**

Own a House **73%**

Security Guard | Median Salary: $28,350



Can Afford Monthly Housing Costs of: **$709**

% of income required to:

Rent a 2-Bedroom Apartment **47%**

Own a House **63%**

School Bus Driver | Median Salary: $33,987

Can Afford Monthly Housing Costs of: **$850**

% of income required to:

Rent a 2-Bedroom Apartment **39%**

Own a House **53%**

Maid/Housekeeper | Median Salary: $21,778

Can Afford Monthly Housing Costs of: **$544**

% of income required to:

Rent a 2-Bedroom Apartment **61%**

Own a House **83%**

Salesperson | Median Salary: $21,424

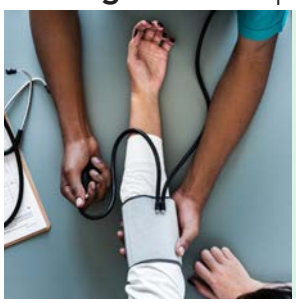
Can Afford Monthly Housing Costs of: **$536**

% of income required to:

Rent a 2-Bedroom Apartment **62%**

Own a House **84%**

Nursing Assistant | Median Salary: $29,931



Can Afford Monthly Housing Costs of: **$748**

% of income required to:

Rent a 2-Bedroom Apartment **44%**

Own a House **60%**

Receptionist | Median Salary: $29,910

Can Afford Monthly Housing Costs of: **$748**

% of income required to:

Rent a 2-Bedroom Apartment **44%**

Own a House **60%**

Source: Family Housing Fund *"Working Doesn't Always Pay for a Home"*. Updated July 2015

housing cost burden, as seen in Table 4-7.

Table 4-8. Publicly Subsidized Units, 2015

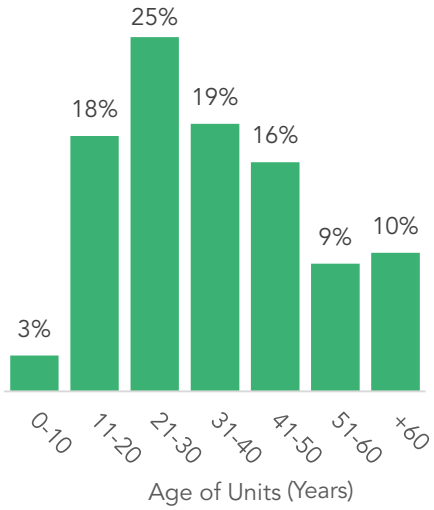
	Number of Units	*% of Total Housing Units*
Publicly subsidized senior units	99	0.7%
Publicly subsidized units for people with disabilities	0	0.0%
All other publicly subsidized units	343	2.4%
All publicly subsidized units	442	3.1%
Total housing units	**14,397**	**100.0%**

Source: Metropolitan Council

Sometimes the cost of housing is so out of reach for individuals or families that the only way to make a unit affordable is through public subsidy. Table 4-8 shows that, as of 2015, there were a total of 442 publicly subsidized units in Inver Grove Heights. Publicly subsidized units only accounted for 3% of a housing units in the City. No publicly subsidized units specifically for people with disabilities exist in Inver Grove Heights, though this doesn't necessarily mean that people with disabilities aren't in some other type of publicly subsidized unit.

Housing Maintenance

With the aging of the City's housing stock, preservation and maintenance will continue to be a critical objective for the City. The City has a position titled, "Rental and Code Compliance Specialist". This position is responsible for handling complaints regarding code violations. This staff person also helps answer questions, educates citizens and connects interested homeowners with housing resources.



The graph above illustrates the bulk of Inver Grove Heights Housing being constructed in the previous three decades.

The City could create its own home improvement loan/grant program, or partner with the CDA, to help residents keep up their properties as a means of keeping up the overall values of properties in neighborhoods.

Aging In Place

While there is no doubt that the region's population will grow older over the life of this Comprehensive Plan, the implications for housing in Inver Grove Heights are less clear.

- How long will residents stay in their current homes (age in place)?
- If people want to move, are desirable and affordable housing options available in Inver Grove Heights?
- Will economic conditions encourage different family and non-family

household structures to live in Inver Grove Heights (adult children with parents, parents with adult children, groups of unrelated seniors)?

Some aspects of the current housing stock suggest potential barriers for the population aging in place. Many single-family detached homes built in the last 30 years were built for families (two story, split-entry or split-level) and all will require the normal maintenance. As the City's population ages, maintenance is often challenged by our physical ability to conduct regular household tasks, and as financial resources become limited (fixed through retirement) housing maintenance can begin to suffer. The Dakota County's Housing Needs Assessment shows future demand for senior housing. This demand is important to serve so that seniors have housing options within the community that meet their life-cycle needs and facilitate the turnover of housing.

Summary of Existing Housing Needs

Based on the data and analysis of this plan, we have identified the following housing needs as priorities for our community through 2040. In the implementation section of this chapter, you will find a discussion of tools and strategies we will employ to address those needs.

1. Housing affordable to households at less than 50% of Area Median Family Income
2. Preservation of naturally-occuring affordable housing within all levels of affordability.
3. Senior housing affordable at all levels of affordability.
4. Multi-family housing, for sale and rental, affordable to all levels of affordability.
5. Housing affordable for those with special needs/disability, both physical and mental.

Projected Housing Demand

The Metropolitan Council determined the need for affordable housing in each community based on a variety of factors. This methodology is detailed in a report titled "Appendix B: Methodology of the Allocation of Affordable Housing Need" published as part of the Thrive MSP 2040 Housing Policy Plan. The factors include:

- Projections of growth of households experiencing housing cost burden
- Current supply of existing affordable housing, whether subsidized or naturally occurring

- Disparity of low-wage jobs and housing for low-wage households within a community

Using these factors in a formula that is fully described in the Metropolitan Council's report, Inver Grove Heights' affordable housing need is identified as 591 new construction housing units between the years 2021 and 2030 as determined by the Metropolitan Council. The breakdown by levels of affordability is shown in Table 4-9.

Table 4-9. Affordable Housing Need Allocation for Inver Grove Heights

Household AMI	*Number of Units*
At or Below 30% AMI	274
31% to 50% AMI	157
51 to 80% AMI	160
Total Units	591

Source: Metropolitan Council

Challenges in Providing Affordable Housing

The ability of the marketplace to provide affordable housing is constrained by land and infrastructure costs, building material costs, regulatory barriers (restrictive zoning and land use controls) and local resident opposition (often referred to as NIMBY or Not In My Back Yard).

Public subsidies are usually required to make affordable housing a reality. When public subsidies enter the picture, challenges arise with how the property will be owned, managed and maintained, how the project is financed and how the affordability of the housing will be preserved.

The land use plan guides future development areas for a balance of single-family detached and attached housing types as well as multi-family attached housing. The City's goal is to preserve an even balance of housing with approximately 50% single family detached and 50% multi-family attached housing. Table 4-10 is a summary of vacant developable lands guided for residential development within the City of Inver Grove Heights.

Table 4-10. Land Capacity for new housing

(Note: This table represents a full build out based on the 2040 Land Use Designations.)

Residential Land Use (Density in net units per acre)	*Developable Acres*	*Min Units*	*Max Units*
Rural (2.5 acre or greater lot size)	1,117	112	447
Low Density (1-4 u/a)	471	471	1,883
Low Medium (4-8 u/a)	389	1,556	3,111
Medium (8-12 u/a)	198	1,587	2,381
High (12 + u/a)*	55	656	1,912
Mixed Use (12+u/a)**	207	1,661	4,845
TOTAL	2,436	6,042	14,579

* Assumed 35 units as a maximum density for High Density and Mixed Use

** Assumed 2/3 of mixed use areas will be residential

The way that communities meet the affordable housing allocation is by designating adequate vacant land or redevelopable land at minimum densities (units/acre) that are high enough for affordable housing to be an option. Essentially, the more units/acre allowed on a site, the less cost per unit to be built, which makes the development an option for affordable housing developers as well as market-rate developers. The affordable housing allocation does not mean that the government must force the building of this many affordable units by 2030. Rather, through future land use guidance, the community needs to ensure that the opportunity for affordable housing exists by having adequate vacant or redeveloped land guided for higher densities to meet the stated share. The Metropolitan Council has determined that minimum residential densities of 8 units/acre are adequate to enable the possibility of

development of affordable housing. Future land uses within Inver Grove Heights that meet this requirement are highlighted in Table 4-11.

Table 4-11. Demonstration of Capacity to Meet Affordable Housing Share

		2021 to 2030	
Residential Land Uses	*Minimum units/acre*	*Net Acres*	*Units Added*
Medium Density Residential	8	27	206
High Density Residential	12	25	253
Mixed Use*	12	39	472
Total	-	91	930

Source: HKGi

* Assumed 2/3 of mixed use areas will be residential

The figure above illustrates a blend of affordable housing with market rate housing. 30% of the units are affordable to families at 80% of the average median income. The Kensington Park project is located in the City of Richfield.

Implementation

Housing Policies

The following policies will guide the City of Inver Grove Heights housing development.

1. Maintain land use guidance of a sufficient supply of land at 8 units per net acre or more to accommodate Inver Grove Heights share (591 overall units) of the regional affordable housing needs as set by the Metropolitan Council's Thrive MSP 2040 Housing Policy Plan.
2. Work with the Dakota County Community Development Agency and other agencies to integrate affordable housing into larger development projects rather than isolated into a single development project.
3. Partner with housing development agencies to assist with the development of affordable housing in locations of the community that have (or will have) transit options and are in close proximity to employment centers.
4. Maintain a balanced housing supply with housing available for people at all income levels and unit types that meet the varying life-cycle needs of Inver Grove Heights residents.
5. Maintain quality housing by promoting ongoing maintenance of owner occupied and rental housing units through code compliance, homeowner education, financial incentives, and providing technical resources.
6. Establish a housing pattern that respects the natural environment, i.e. cluster development, while striving to meet local housing needs and the community's share of metropolitan area housing growth.
7. Maintain zoning and subdivision regulations allowing for the

construction of workforce and low-cost housing (e.g. houses with a smaller building footprint, 400 s.q. ft minimum).

8. Maintain a close working relationship with the Dakota County Community Development Agency to provide necessary financial programs to promote the construction of workforce housing.
9. Continue to utilize City ordinances and incentives that allow planned developments that provide a mixture of housing types and promote developers to build a variety of housing types within a single development.
10. Require the development of multi-family housing in areas that are guided for higher densities (high density residential, mixed use) in the land use plan and allow multi-family housing of appropriate scale in other housing categories (low density, low-medium density, medium density) to avoid over-concentration in isolate areas.
11. Require the integration of open spaces within residential developments in order to maintain a living environment that is consistent with the City's vision and guiding principles.
12. Promote higher density housing in the mixed-use areas of the City as identified in the land use plan. In particular, the City will study redevelopment of Cahill Ave. at 65th Street, Concord Blvd. between 65th Street and 70th Street, and Arbor Pointe.
13. Adopt innovative approaches to zoning and development that seek to achieve the goals and policies outlined in the plan such as the idea of "inclusionary zoning."
14. Encourage new technologies and innovations in home building that reduce housing costs, conserve energy and water resources, provide for renewable energy, and protect solar access to existing buildings that maintains a safe and healthy living environment.
15. Encourage affordable housing to be dispersed throughout the community rather than being centralized in one area or neighborhood.
16. Create and adopt opportunities to defray City fees such as park or sewer availability/ water availability charges for affordable housing units that add significantly to developer capital costs.
17. Adjust zoning regulations to allow for a mix of single family, duplex, and triplex units within existing neighborhoods and new developments.
18. Codify and formalize the permit process for short term rentals as an economic development opportunity for residents and a means to encourage better maintenance of existing structures.
19. Enable the existing EDA to also serve as a Housing Development Authority and expand membership to include housing advocates and residents with an appropriate financial and development background in order to improve its effectiveness.

Inclusionary Zoning

"How do you meet the needs of developers that want approval for higher density projects and also provide communities with the affordable or workforce housing they need? Inclusionary zoning is a possible answer. Originally conceived in the 1960's, and adapted over the decades, today's inclusionary zoning programs offer developers incentives in return for including affordable units within market-rate developments. Inclusionary zoning can be developed to offer incentives, reduce barriers or require developments of a certain magnitude to integrate workforce housing." Urban Land Institute.

20. Create awareness around tenant/landlord rights and responsibilities, best practices, and resources (including posting a complaint number and info or rental housing inspection requirements).

Housing Action Steps

This plan identifies some of the important challenges Inver Grove Heights will face over the life of this plan. Those challenges require the City take active steps in order to carry out the vision and policies. The following are action steps recommended by the City's Housing Committee after five years of study, presented here for further analysis and consideration.

A. Conduct a critical review of development regulations and processes to reduce barriers.

Barriers to developing affordable housing can come in many ways. Setting too restrictive standards for lot size and dimensions or building and off-street parking requirements add costs to housing that pushes it beyond the affordability level. Requiring multiple layers of approval delays processes adding administrative costs and increasing risks.

Key components of this action step include:

1. Conduct an inclusive and unbiased process of evaluation including representation from:
    - housing advocacy groups
    - builders association (developers/realtors/builders/lenders)
    - the design profession (architects, sustainability and resilience professionals, inspectors, planners)
    - policy makers and advisors
    - social and environmental justice groups
    - residents and owners of affordable housing (subsidized and unsubsidized)
2. Consider design guidelines that illustrate acceptable means of site design, building materials, facade treatments and site improvements (landscaping.)
3. Design affordable housing in a manner that reflects the surrounding market rate housing, while incorporating a variety of housing styles, including duplexes and triplexes and smaller units, into single family housing developments.
4. Evaluate financial impacts of various regulatory provisions to ensure affordability can be maintained or preserved. This can include exploration of financial programs and tools that may help in achieving sometimes conflicting objectives (i.e. high design aesthetic vs. maintained affordability or energy efficiency capital costs vs. savings

in operating costs.)

5. Establish performance metrics to regularly measure and report on the success in the construction/rehab of affordable units.
6. Work with partners to assure that any affordable housing units, especially ownership units, employ tools to maintain their affordability rather than to be "flipped" for profit.

B. Conduct an education campaign to help dispel myths of affordable housing and recognize the community benefits.

A significant barrier to overcome is the opposition to affordable housing. This opposition is not new by any means. However, much of it is often driven by strong emotions over the fear of change. This action step should be something embraced by the same representation group as noted in action step A. Substantial resources already exist to undertake an educational program and can be obtained through partnerships with agencies such as MICAH, ISAIAH, Dakota County CDA, Metropolitan Council and other housing agencies. Establishing a clear definition of affordable housing is necessary for this step.

C. Prepare a detailed housing action plan.

Developing a housing action plan that is dedicated and focused on the topic of housing will be an important tool for the City to better understand the critical housing issues facing the community and the most effective means to address them. Significant data has been assembled through the Comprehensive Planning process as well as through regional housing studies completed by the Dakota County CDA. This will enable the planning effort to focus on solutions. The housing action plan should include:

1. *Establishing a Housing Improvement Area.*

   Designate the area bordered by 80th Street on the south, Concord Blvd. to the east, Cahill to the west and 65th Street to the north (aka South Grove Neighborhood) as an area of naturally occurring affordable housing (or housing improvement area) for the purpose of making funds available for updating and improving homes. Perform a comprehensive survey of the neighborhood to identify demographic make-up, residents wishing to improve their properties, possible time-line for selling property, and type of housing desired by potential sellers and where.

2. *Adopting at least three to four tools designed to increase the supply of affordable housing.*

   Potential tools and funding mechanisms may include:

   - Inclusionary zoning policy,
   - Livable Communities Act Demonstration Account funds,

- Community land trust,
- Community revitalization funds,
- CDBG rehab funding,
- Tax increment financing, or
- Other tools listed in the housing tools table

Housing Tools

A majority of the housing tools currently available in Inver Grove Heights are programs run by the Dakota County Community Development Agency (CDA). The CDA was established in 1971 and has been a leader in providing affordable housing for over 45 years. . The City will continue its close relationship with the CDA, and look to other opportunities to make housing more affordable within Inver Grove Heights.

Table 4-12 on the following pages outlines tools that can be utilized by the City, residents, developers, and financiers to meet Housing Needs in Inver Grove Heights. The table identifies each widely-available tool/action, when it would be considered, and what housing need(s) it addresses.

Table 4-12. Housing Implementation Tools and Needs

Tool	*Circumstances & Sequence of Use*	*Housing Need*
Housing and Redevelopment/ Development Authority, Community Development Authority, Economic Development Authority	The City will continue to work with the Dakota County Community Development Agency (CDA). The City will continue to utilize its EDA and add to its responsibilities the role of Housing Development Agency and expand membership to include residents with an appropriate financial and/or development background in order to improve its effectiveness.	Tool addresses multiple housing needs and improves our housing strategy capacity in general
Community Development Block Grants (CDBG) through Dakota County CDA	The City will explore the use of a portion of our CDBG funds to prioritize projects if they provide units affordable to very low-, low-, or moderate-income households.	Housing Affordability Housing Preservation
HOME – Home Investment Partnership Program	CDA administers the HOME program for Dakota County. They allocate funding from a consortium with Anoka, Ramsey, Washington, and Dakota Counties as well as the Cities of Coon Rapids and Woodbury. Funds are used to develop affordable medium and high density housing development The City will explore with the CDA the application for HOME funds to provide rental assistance to very-low, low, and moderate income households that are in existing rental units in the City.	Housing Affordability Senior Housing
Emergency Solution Grants (ESG)	CDA program that looks to address emergency housing needs. Funds may be used for five components: • Street outreach • Emergency shelter • Homelessness prevention • Rapid re-housing assistance • HMIS (Homeless Management Information System) The City will support the CDA's efforts with local non-profits to establish a referral network to ensure emergency funds can reach the greatest need.	Housing Affordability
Home Improvement Loan Program	Administered through CDA utilizing CDBG and MHFA funds to provide rehabilitation loans to low- and moderate-income homeowners for projects. The City supports the CDA's program.	Housing Preservation Housing Affordability Senior Housing
MHFA Rehabilitation Loan Program	CDA administers Minnesota Housing Finance Agency loan funds through their Home Improvement Loan Program (above). MHFA Rehabilitation Loan Program funds are specifically meant to serve very low-income homeowners at or below 30 percent AMI. The City will support, through its partnership with the CDA, the application of funds through the MHFA, to provide very low-income homeowners with these funds	Housing Preservation Housing Affordability

Tool	*Circumstances & Sequence of Use*	*Housing Need*
Weatherization / Weatherization Plus	The City will continue to support the CDA program utilizing funding from federal Low-Income Weatherization Assistance Program (WAP), providing weatherization services to homeowners and renters.	Housing Preservation Housing Affordability
Housing Counseling	CDA provides free one-on-one sessions as well as in-depth classes for a fee regarding a variety of topics for homeownership and financing. • Homebuyer counseling • Homebuyer education • Refinance counseling • Foreclosure counseling The City will encourage the CDA to update its reference procedures and training for applicable staff, including a plan to maintain our ability to refer residents to this program for housing counselling	Tool addresses multiple housing needs and improves our housing strategy capacity in general
First Time Homebuyers Program	CDA provides low-interest mortgage financing for first time-homeowners. The City will refer residents to this program.	Housing Affordability
Senior Housing Program	The CDA has partnered with Dakota County to develop and construct affordable senior housing throughout the County. The City supports this program and will ensure local ordinances allow senior housing.	Senior Housing Housing Affordability
Workforce Housing Program	The CDA partners with private corporations to fund the construction of workforce housing for moderate-income families. These developments often utilize Low Income Housing Tax Credits in their financing as well. The City supports this CDA program.	Housing Affordability
HOPE (Housing Opportunities Enhancement) Program	CDA and Dakota County program to provide gap-financing for the acquisition, new construction, and preservation of affordable housing – both rental and ownership. HOPE assisted units are rental units affordable to households at or below 50% AMI, or homeownership units affordable to households at or below 80% AMI. The City supports this CDA program.	Housing Affordability
Low Income Housing Tax Credits	CDA allocates Minnesota Housing tax credits to housing developers for projects that have subsidized units. The CDA has also been a developer of units that utilize Low Income Housing Tax Credits. The City supports this CDA program.	Housing Affordability
Fair Housing Policy	This City will adopt a local fair housing policy by 2019 to ensure that the City is aware of fair housing obligations with regard to housing decisions and provide sufficient resources to educate and refer residents who feel their fair housing rights have been violated.	Tool addresses multiple housing needs and improves our housing strategy capacity in general

Tool	*Circumstances & Sequence of Use*	*Housing Need*
Housing Bonds	The City supports the CDA's issuance of Housing Bonds for the development of units serving low- and moderate-income households. The City does not intend to issue its own Housing Bonds.	Housing Affordability
Tax Abatement	The City does not plan on using Tax Abatement for residential development.	Housing Affordability
Tax Increment Financing (TIF)	The City would consider Tax Increment Financing for redevelopment projects in Mixed Use areas that provide opportunities for affordable housing for very low-, low-, or moderate-income households and meet City redevelopment goals	Housing Affordability
Consolidated RFP through the MHFA	The City will consider supporting/sponsoring an application to the Consolidated RFP programs through MHFA for residential project proposals in areas guided for high density residential uses and mixed uses	Housing Affordability
Land Bank Twin Cities	The City will encourage developers and property owners to work with the Land Bank of the Twin Cities. The City will support CDA participation in the Twin Cities Land Bank "First Look" program to strategically acquire any foreclosed properties that are guided at Medium Density, High Density Residential or Mixed Use as shown on our future land use map and represent a reasonable location to expect housing which includes affordable units for very low-, low-, or moderate-income households.	Housing Affordability
Livable Communities Demonstration Account (LCDA) through Metropolitan Council	The City is currently a participating city in the Livable Community Act program. The City will consider making an application to Livable Communities Account programs for proposals with residential units in areas guided as medium density residential, high density residential, as well as mixed use areas.	Housing Affordability Multi-Family Housing
Site Assembly	The City will support an environmental clean-up grant application and other site assembly activities for housing projects that provide affordable units for very low-, low-, and moderate-income households.	Housing Affordability
Housing Referrals	The City will continue to maintain our ability to refer our residents to any applicable housing programs available through the CDA.	Tool addresses multiple housing needs and improves our housing strategy capacity in general

Tool	*Circumstances & Sequence of Use*	*Housing Need*
Guiding land at densities that support affordable housing	See our future land use plan and projected housing needs section of the housing chapter of this comprehensive plan.	Tool to address multiple housing needs and improves our housing strategy capacity in general
Participation in Housing Related Organizations	The Mayor of Inver Grove Heights participates in the Urban Land Institute Minnesota's Regional Council of Mayors Group. The City will also continue to participate in Metro Cities and will look to other organizations for possible engagement and involvement.	Tool to address multiple housing needs and improves our housing strategy capacity in general
Zoning and Subdivision Ordinances	The City will regularly review our zoning and subdivision ordinances to identify any regulations that inhibit the housing priorities in this document. Some specific ordinance adjustments are highlighted in the plan's housing implementation policies such as those related to ADUs, short-term rentals, and minimum building size.	Tool addresses multiple housing needs and improves our housing strategy capacity in general
Rental License and Inspection Program	The City requires all rental property owners to obtain a rental license every two years. This program assures property maintenance of structures so as to preserve neighborhood stability, protect the quality of existing rental housing stock, and maintain property values.	Housing Preservation Multi-Family Housing
Housing Improvement Areas	The City will designate the area bordered by 80th Street on the south, Concord Blvd. to the east, Cahill to the west and 65th Street to the north (aka South Grove Neighborhood) as an HIA.	Housing Preservation
Manufactured Home Parks	A number of manufactured home parks exist within the City of Inver Grove Heights. These parks contribute to the existing supply of affordable housing in the City. The City's land use guidance doesn't preclude their existence in the future. The city will continue to support the R-4 Mobile Home Park Zoning District that was established for mobile home park developments.	Housing Affordability Housing Preservation
Community Land Trust	CLT's hold the land they own "in trust" forever to ensure that it will always remain affordable for homebuyers. The City will not act as a CLT, but would support a nonprofit, community-based community land trust (CLT) that works to provide perpetually affordable home ownership opportunities.	Housing Affordability
Scattered Site Public Housing	The CDA Scattered Site Public Housing Program is designed to provide affordable housing for families with low- or moderate-incomes through a variety of housing options. The City supports this CDA program.	Housing Affordability

Tool	*Circumstances & Sequence of Use*	*Housing Need*
"4d" Tax Incentives (Minnesota Low Income Rental Classification Program)	The City will explore the possibility of a 40% property tax reduction on qualifying Low Income Rental Classification multi-family properties where building owners agree to keep a minimum of 20% of units per building affordable to households making 60% of Area Median Income (AMI), for ten years.	Housing Affordability Multi-Family Housing Housing Preservation

TRANSPORTATION
CHAPTER 5

Introduction

The Transportation Element of the Comprehensive Plan of the City of Inver Grove Heights is intended to provide guidance for the development of transportation systems that will meet year 2040 conditions. The plan, upon its adoption by the City, will have gone through a systematic and detailed review process by City staff and by City decision-makers.
This plan addresses the roadway system as well as other transportation modes including transit, freight, aviation, and trails/bikeway. A trails/bikeway element is also included in the parks and open space section of the comprehensive plan.

The plan, functioning as a guide, requires periodic updating to reflect and react to potential changes in transportation conditions and technology, as well as major land use changes that could occur in the future.

Transportation Policy Plan

In 2014, the Metropolitan Council prepared the 2040 Transportation Policy Plan (TPP) to support its 2040 Regional Development Framework (see sidebar). The TPP contains several transportation policies and strategies intended to guide the development of the regional transportation system. The philosophy and focus of the TPP is emphasized through the plan's goals:

- **Transportation System Stewardship:** Sustainable investments in the transportation system are protected by strategically preserving, maintaining, and operating system assets.
- **Safety and Security:** The regional transportation system is safe and secure for all users.

2040 Regional Transportation Policy Plan

The 2040 Transportation Policy Plan presents the region's policies and plans to guide the development of the region's transportation system. It carries forward the vision of Thrive MSP 2040 for growth and development of the Twin Cities region toward economic success and vibrancy in the decades to come.

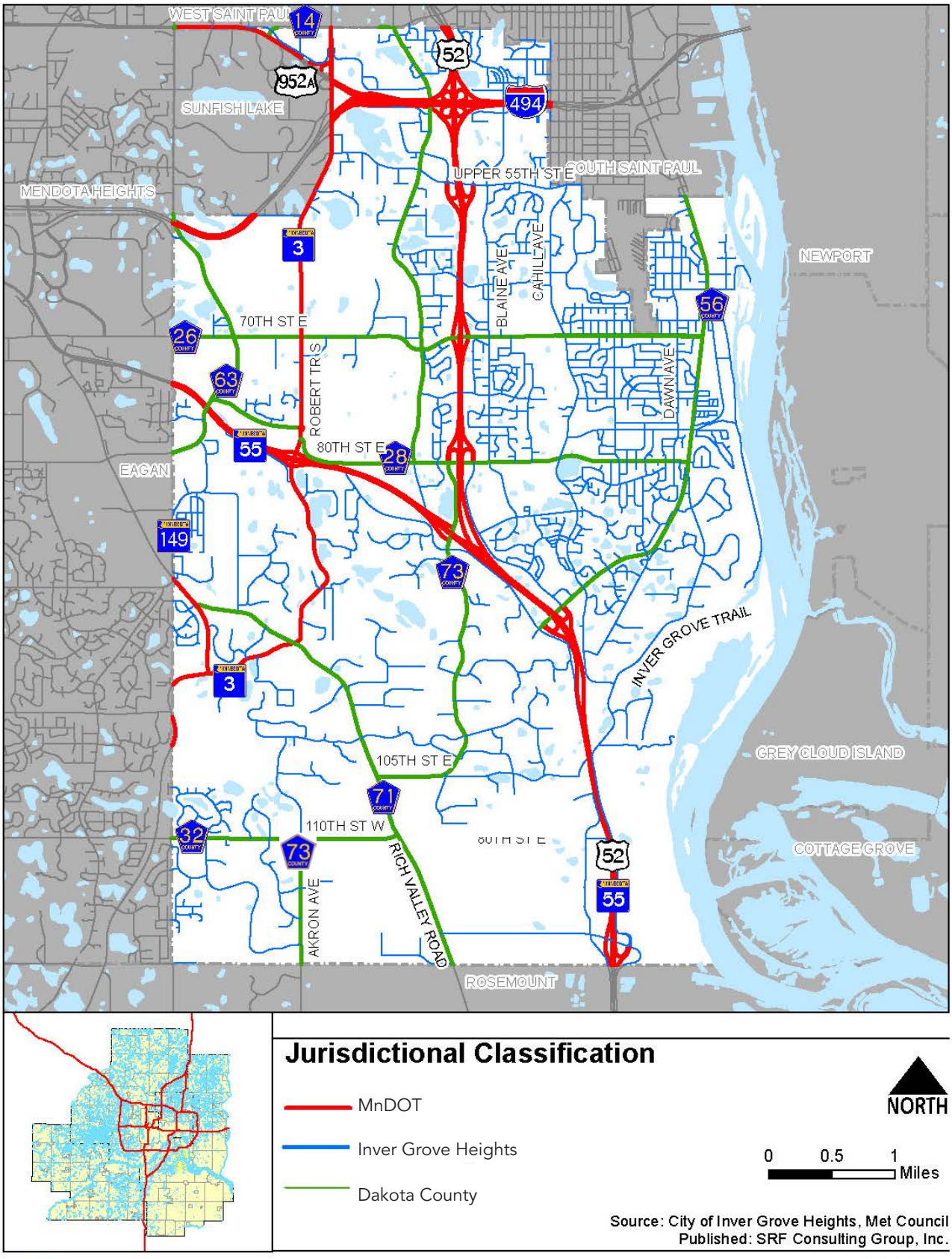
- **Access to Destinations:** People and businesses prosper by using a reliable, affordable, and efficient multimodal transportation system that connects them to destinations throughout the region and beyond.
- **Competitive Economy:** The regional transportation system supports the economic competitiveness, vitality, and prosperity of the region and state.
- **Healthy Environment:** The regional transportation system advances equity and contributes to communities' livability and sustainability while protecting the natural, cultural, and developed environment.
- **Leveraging Transportation Investments to Guide Land Use:** The region leverages transportation investments to guide land use and development patterns that advance the regional vision of stewardship, prosperity, livability, equity, and sustainability. When considering the local context of the transportation plan, a series of goals that are important to the provisions of an efficient transportation system should be considered. These goals are listed below:
  - Provide a transportation system that serves the access and mobility needs of the City.
  - Provide a safe and efficient transportation system that is cost effective.
  - Ensure that the transportation system is implemented in an environmentally sensitive manner.
  - Provide a coordinated transportation system with respect to regional and adjoining municipalities' plans.
  - Provide a transportation system that supports multi-modal transportation whenever and wherever feasible and advantageous.
  - Provide a transportation system that reflects the values and goals of the residents of Inver Grove Heights.
  - Provide and support a transportation system that enhances quality economic development within the City.

Existing Conditions

Roadway Jurisdiction

Roadways are classified based on which level of government owns and has jurisdiction over them. In the case of Inver Grove Heights, roadways are under the jurisdiction of MnDOT, Dakota County or the City. Figure 5-1 depicts the existing roadway jurisdictional classification system in Inver Grove Heights.

Figure 5-1: Jurisdictional Classification



Metropolitan Council - Functional Classification

For arterial roadways, the Metropolitan Council has designation authority. Local agencies may request that their roadways become arterials (or are downgraded from arterial to collector), but such designations or re-designations must be approved by the Metropolitan Council.

Functional Classification

The functional classification system is a roadway and street network that distributes traffic from neighborhood streets to collector roadways, then to arterials and ultimately the Metropolitan Highway System. Roads are placed into categories based on the degree to which they provide access to adjacent land versus providing higher-speed mobility for "through" traffic. Functional classification is a traditional cornerstone of transportation planning. Within this approach, roads are located and designed to perform their designated function.

The current roadway functional classification map for Inver Grove Heights is presented as Figure 5-2. The roadway system presently consists of five functional roadway classifications.

- Principal Arterial
- A-minor Arterial
- Other Arterial
- Major Collector
- Minor Collector

Right-of-Way Needs

The roadway rights-of-way and roadway widths will vary given the function of the facility. The right-of-way ranges are as summarized in Table 5-1, below:

Table 5-1. General Right-of-Way Requirements

Functional Classification	*Right-of-Way Range*
Principal Arterial	100-300 feet
Minor Arterial	60-150 feet
Collector	60-100 feet
Local	50-80 feet

Roadway Capacity

As a part of this transportation plan analysis, an inventory of the roadway system was conducted to view certain operational characteristics and to note the number of travel lanes on the roadways. The number of lanes for the primary roadway facilities in Inver Grove Heights are shown on Figure 5-3. That graphic is not intended to illustrate the available lanes at intersections (where exclusive turn lanes may or may not exist), but rather to provide an overall view of available lanes for through traffic on the roadway segments.

Figure 5-2: Functional Classification

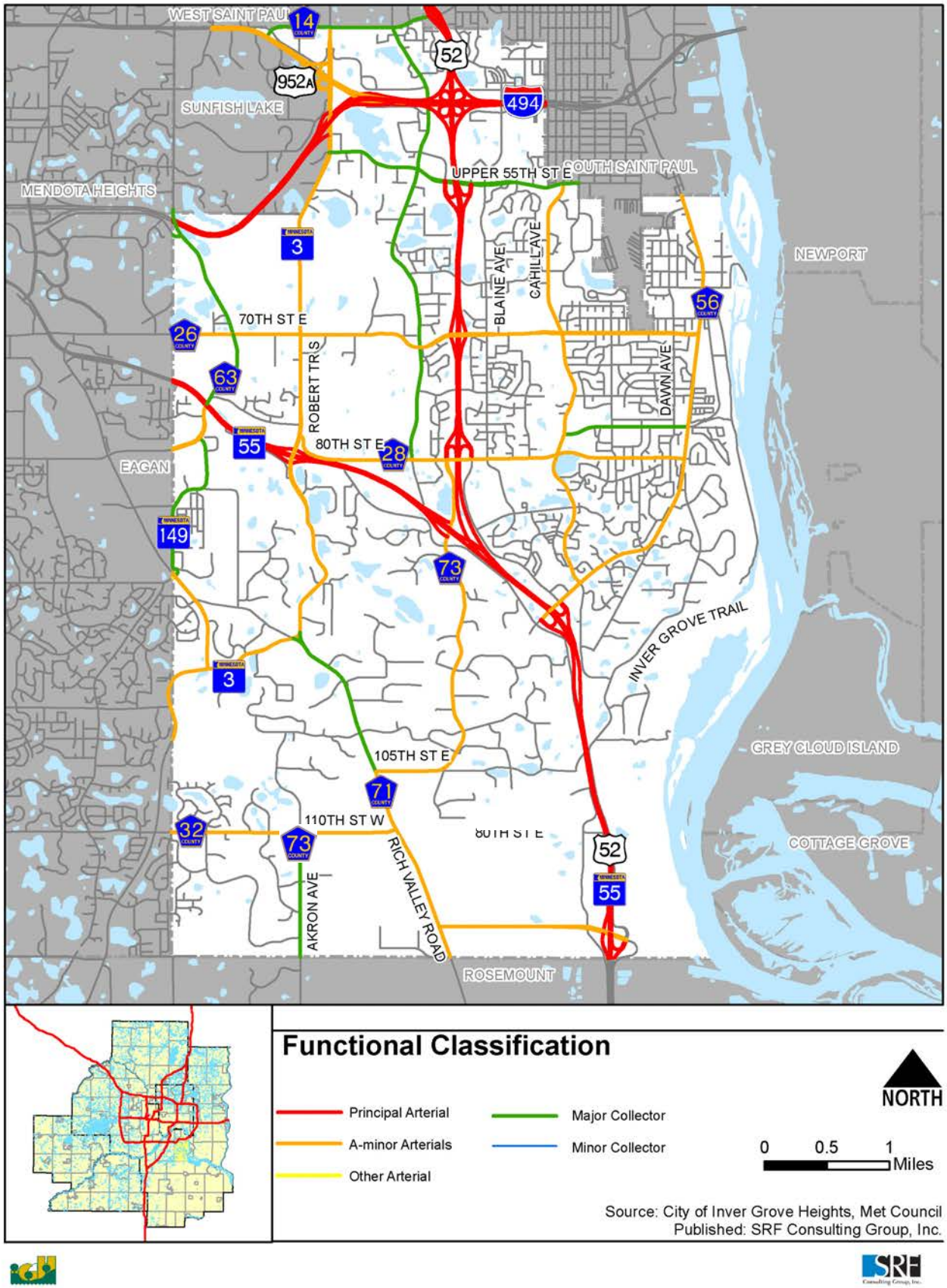


Figure 5-3: Number of Lanes

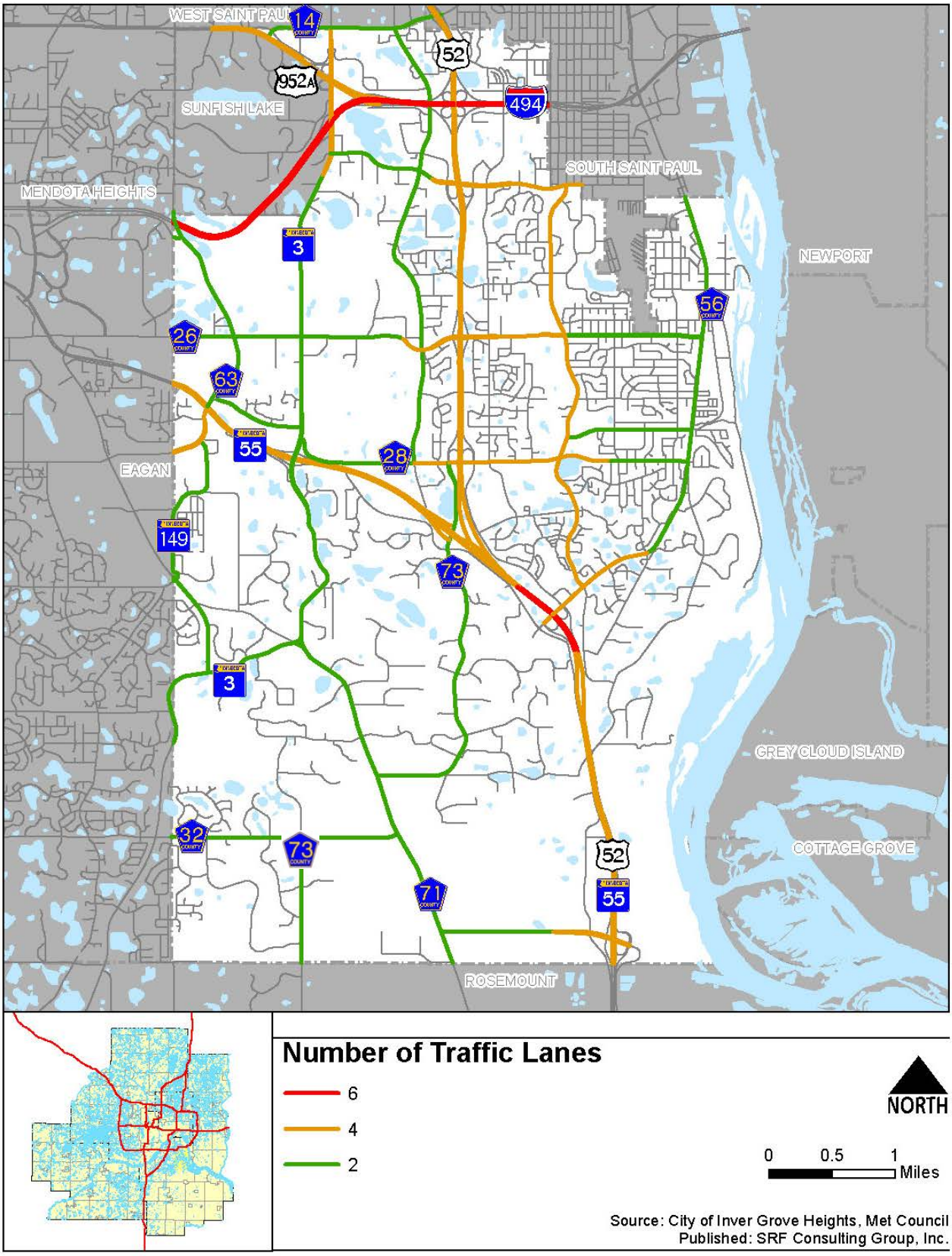


Table 5-2. Generalized Roadway Capacities – Level of Service

	Level of Service (upper capacity limits – vehicles per day)			
Facility Type	*A-C*	*D*[2]	*E*	*F*
2-Lane Urban	9,000	11,000	13,000	>13,000
2-Lane Rural	12,000	15,000	18,000	>18,000
3-Lane	14,000	18,000	22,000	>22,000
4-Lane Undivided	19,000	24,000	29,000	>29,000
4-Lane Divided	29,000	36,000	43,000	>43,000
4-Lane Expressway	34,000	42,000	50,000	>50,000
6-Lane Expressway	50,000	63,000	76,000	>76,000
4-Lane Freeway	56,000	70,000	84,000	>84,000
6-Lane Freeway	84,000	105,000	126,000	>126,000

[1] These generalized thresholds are based on a variety of sources, including the Highway Capacity Manual (HCM) and the Metropolitan Council Regional Model. Actual operational thresholds can be affected by a range of factors such as access spacing, traffic signal spacing, and topography.
[2]The upper LOS D limit is generally considered the highest acceptable volume and associated congestion level for roadways in metropolitan areas such as the Twin Cities.

Level of Service

In general, the capacity of a roadway is a measure of its ability to accommodate a certain volume of moving vehicles. Level of service (LOS) refers to a quantitative comparison between an existing traffic volume and the maximum volume of traffic the roadway can accommodate given its lane configuration (see Table 5-2). Based on the ratio between existing traffic volumes and roadway capacity, a level of service from A – F is assigned. LOS D and E are considered approaching capacity in a metropolitan area for planning purposes. LOS F conditions are considered over capacity and generally require mitigation measures such as added lane capacity, improved access management, or localized intersection improvements. As a long-term planning document, this chapter will address capacity improvement needs (number of traffic lanes). This approach is consistent with Metropolitan Council guidelines for 2040 comprehensive plans.

Table 5-3 displays the level of service categories, approximate volume-to-capacity (V/C) ratios, and a general description of the traffic operations. In accordance with Minnesota Department of Transportation guidelines, the traffic level analysis uses the LOS E/F boundary as the indicator of acceptable traffic operations and congestion. LOS E (approaching capacity) is generally considered an acceptable operating condition during peak hours in urban areas such as the Twin Cities.

Expressway (i.e. TH 55/52) —
A multilane highway that provides a high level of mobility from a regional level. Access is controlled by at-grade interchanges and partial or full grade separation.

Freeway (i.e. I-494) —
A multilane highway that provides the highest level of mobility from a regional level. Access is controlled by grade separations.

Table 5-3. Level of Service & Volume Capacity

Level of Service (LOS)	*Traffic Flow*	*Volume/ Capacity Ratio*	*Description*
A	Free Flow Below Capacity	0.20	Low volumes and no delays
B	Stable Flow Below Capacity	0.40	Low volumes and speed dictated by travel conditions
C	Stable Flow Below Capacity	0.60	Speeds and maneuverability closely controlled due to higher volumes
D	Restricted Flow Near Capacity	0.85	Higher density traffic restricts maneuverability and volumes approaching capacity
E	Unstable Flow Approaching Capacity	1.0	Low speeds, considerable delays, and volumes at or slightly over capacity
F	Forced Flow Over Capacity	>1.0`	Very low speeds, volumes exceed capacity, and long delays with stop-and-go traffic

Current Traffic Volumes and Roadway Deficiencies

Existing traffic volumes are used to determine the ability of the roadways to function as intended. The levels of traffic along a roadway, along with the available lanes on which traffic operates, are the primary determinants for calculating the levels of service of a roadway facility. The most current average daily traffic volume data available from MnDOT is provided on Figure 5-4.

Based on a review of existing traffic volumes against capacities of roadway segments in Inver Grove Heights, there are a few segments that are approaching or over capacity- see Figure 5-5.

Safety

A central concern of transportation professionals is roadway safety. To assist in the evaluation of crashes, MnDOT maintains a database of crash records from around the State of Minnesota. These records identify the location, severity and circumstances associated with each crash. This dataset was reviewed to identify the number, location and severity of crashes on roadways, excluding Interstate highways, in the City of Inver Grove Heights for the years 2011-2015 (see Table 5-4).

Figure 5-4: 2016 Average Daily Traffic Volumes

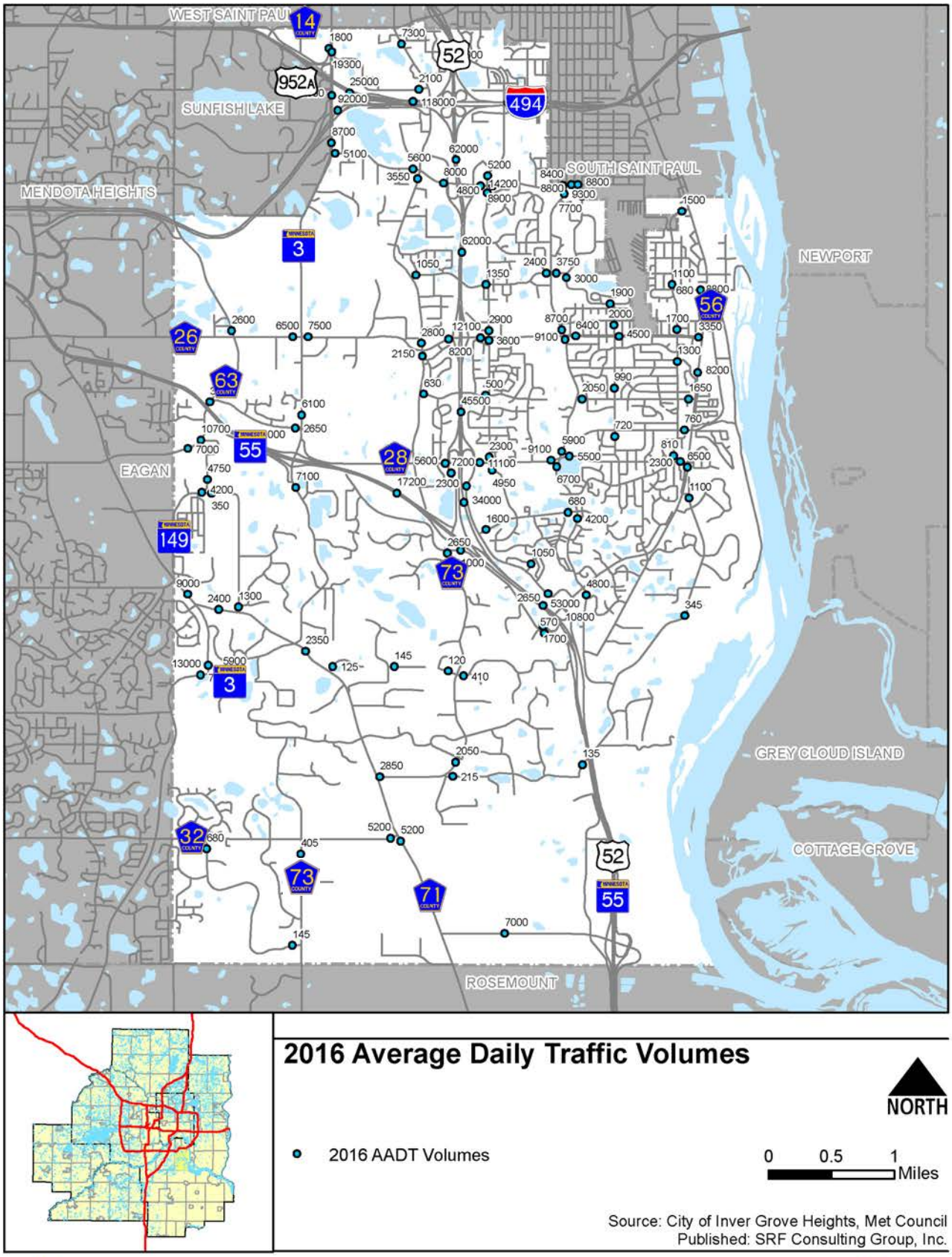


Figure 5-5: Existing Roadway Deficiencies

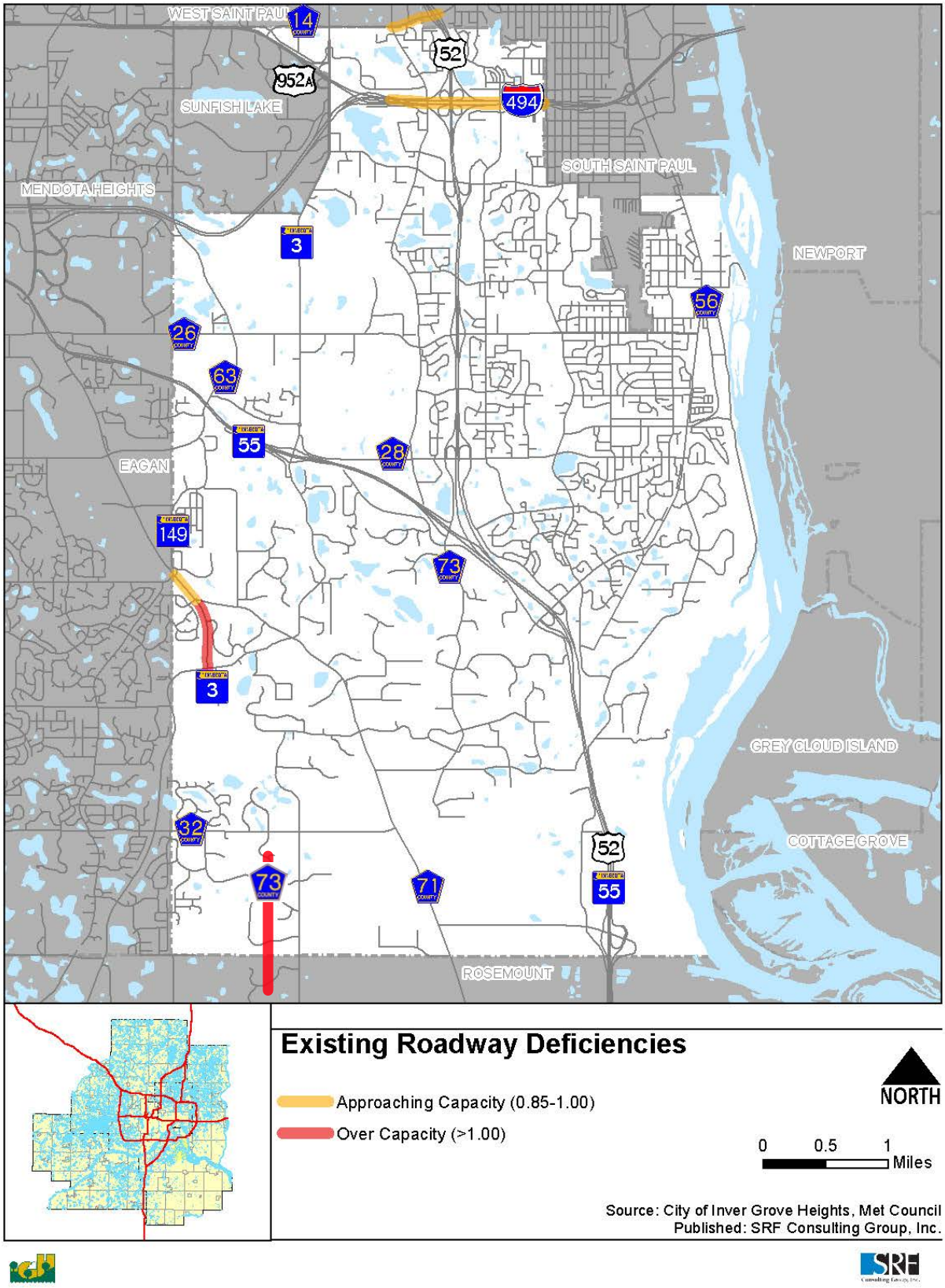


Figure 5-6: Number of Crashes

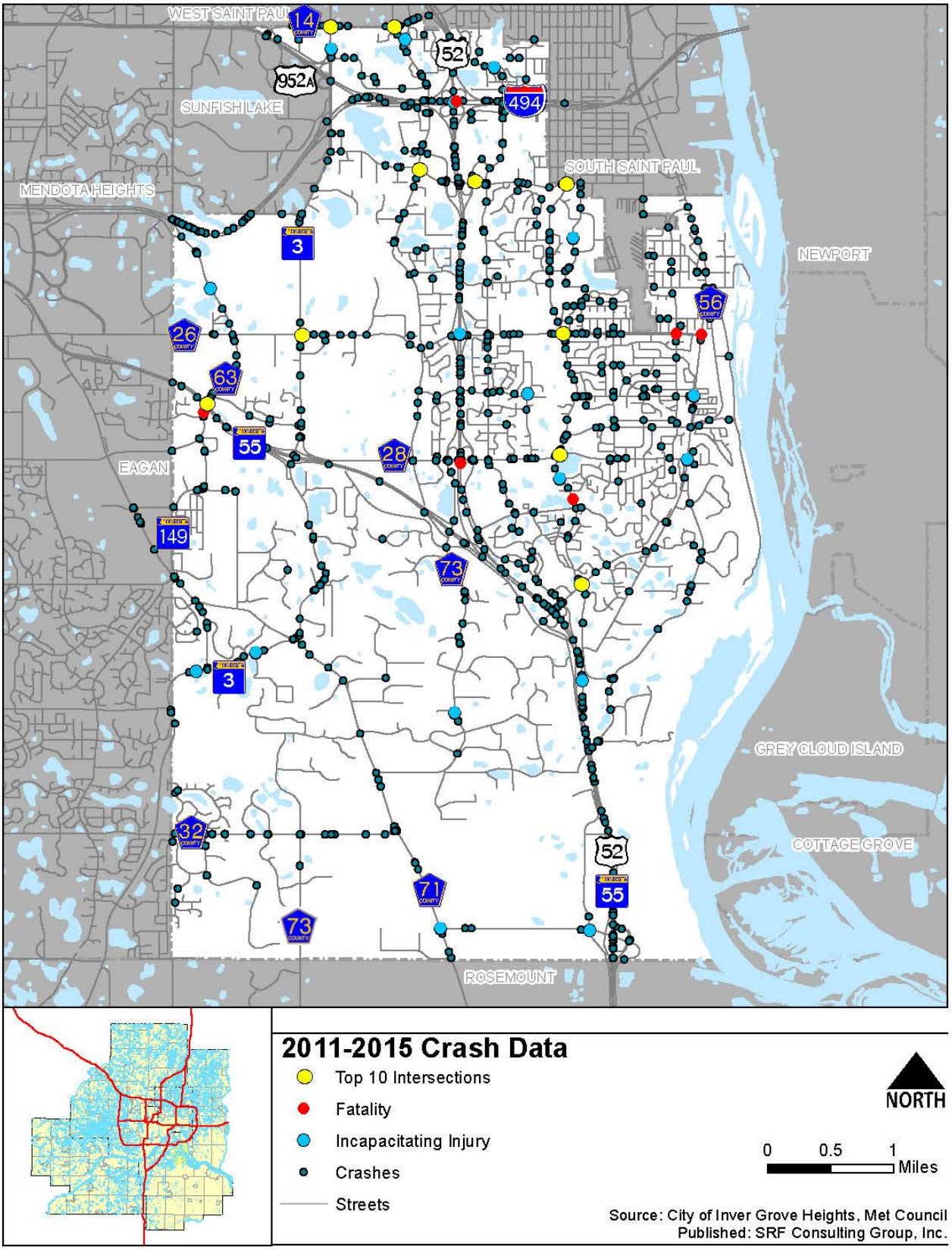


Table 5-4. Crash Data Summary; 2011-2015

		Personal Injury Crashes				
Year	*Fatal*	*Type A: Incapacitating Injury*	*Type B: Non-incapacitating Injury*	*Type C: Possible Injury*	*Property Damage*	*Total Crashes*
2011	1	3	19	61	216	300
2012	3	2	32	64	236	337
2013	1	6	34	76	283	400
2014	0	2	24	80	345	451
2015	1	7	29	62	315	414

A more detailed review of locations with a high frequency of crashes occurring was completed. Crashes throughout the city were generally widely distributed with most locations accounting for only one or two incidents, suggesting that a crash at that location was a random event. However, several crashes were concentrated at a limited number of locations. Figure 5-6 displays the intersections where a high frequency of crashes occurred during the years 2011-2015. Table 5-5 also provides additional information on the top 10 intersections with the highest number of crashes. These intersections were evaluated using MnDOT's crash rate methodology. Per MnDOT, a critical index of 1.00 or less indicates performance within statewide trends. Critical index above 1.00 indicates that the intersection operates outside of an expected range. The numbers highlighted in red in Table 5-5 illustrate where the intersections are operating outside an expected range, either on an index including all crashes or an index including just high-severity crashes.

Table 5-5. Top 10 Intersections with Highest Number of Crashes; 2011-2015

Intersection	Severity					Intersection Control	Critical Index All Crashes	Critical Index Fatal/ Type A
	Fatal	Type A	Type B	Type C	Property Damage			
TH 55 (Courthouse Blvd)/ CSAH 63 (Argentina Trail)/ County Road 28	1		2	5	22	Signal	0.98	0.87
TH 3 (Robert Trail)/ CSAH 26 (70th Street)	0	0	1	5	20	AWSC	1.41	0.00
CSAH 14 (Mendota Road)/ CSAH 73 (Oakdale Ave/ Babcock Trail)	0	0	2	6	18	Signal	0.77	0.00
CSAH 56 (Concord Blvd)/ Cahill Avenue	0	1	2	10	11	Signal	1.33	1.07
CSAH 26 (70th Street)/ Cahill Avenue	0	0	0	2	21	Signal	0.86	0.00
CSAH 28 (80th Street)/ Cahill Avenue	0	0	3	5	15	Signal	1.02	0.00
Upper 55th Street/Bishop Avenue/US 52 NB ramps	0	0	1	3	18	Signal	0.79	0.00
CSAH 73 (Babcock Trail)/ Upper 55th Street	0	1	0	2	14	AWSC	1.07	0.91
TH 3 (Robert Trail)/Robert Street/CSAH 14 (Mendota Road)	0	0	1	5	10	Signal	0.36	0.00
Upper 55th Street/7th Avenue/ Cahill Avenue/ South Street	0	0	0	2	11	AWSC	0.73	0.00

Programmed and Planned Improvements

Figure 5-7 identifies programmed and planned roadway improvements. Programmed improvements have advanced through the project funding programming process and have funds committed to the improvement in a designated year; while planned improvements have been formally studied and/or included in a transportation plan, but typically no financial commitments to fund the improvement have been made. Below are descriptions of each.

1. Programmed Improvements – Programmed improvements have already been identified in the City's or County's Capital Improvement Program (CIP). Funding has been secured for these projects, and they will be constructed within the next five years (Table 5-6).

Table 5-6. Programmed Transportation Improvements

Roadway/Facility	*Location*	*Primary Improvement*	*Lead Agency*
CSAH 26 (70th Street)	TH 3 (South Robert Trail)	Roundabout	Dakota County
TH 52	North of I-494	Pavement preservation	MnDOT
CSAH 26 (Lone Oak Road)	TH 55 to east of Arlene Avenue	Expand to 4-lane divided roadway	Dakota County
CSAH 56 (Concord Blvd)	75th Street	Pedestrian Improvements	Dakota County
CR 28 (80th Street)	TH 3 to 0.62 mile east	Construct 2-lane urban roadway	Dakota County/City of IGH

2. Planned Improvements – Planned improvements have been discussed between agencies and/or identified in previous transportation planning documents. However, a funding source has not been established. The City assumes that these projects will receive funding and be implemented prior to 2040. A summary of each planned improvement is provided in Table 5-7 and is followed by more detailed background discussion for each planned improvement.

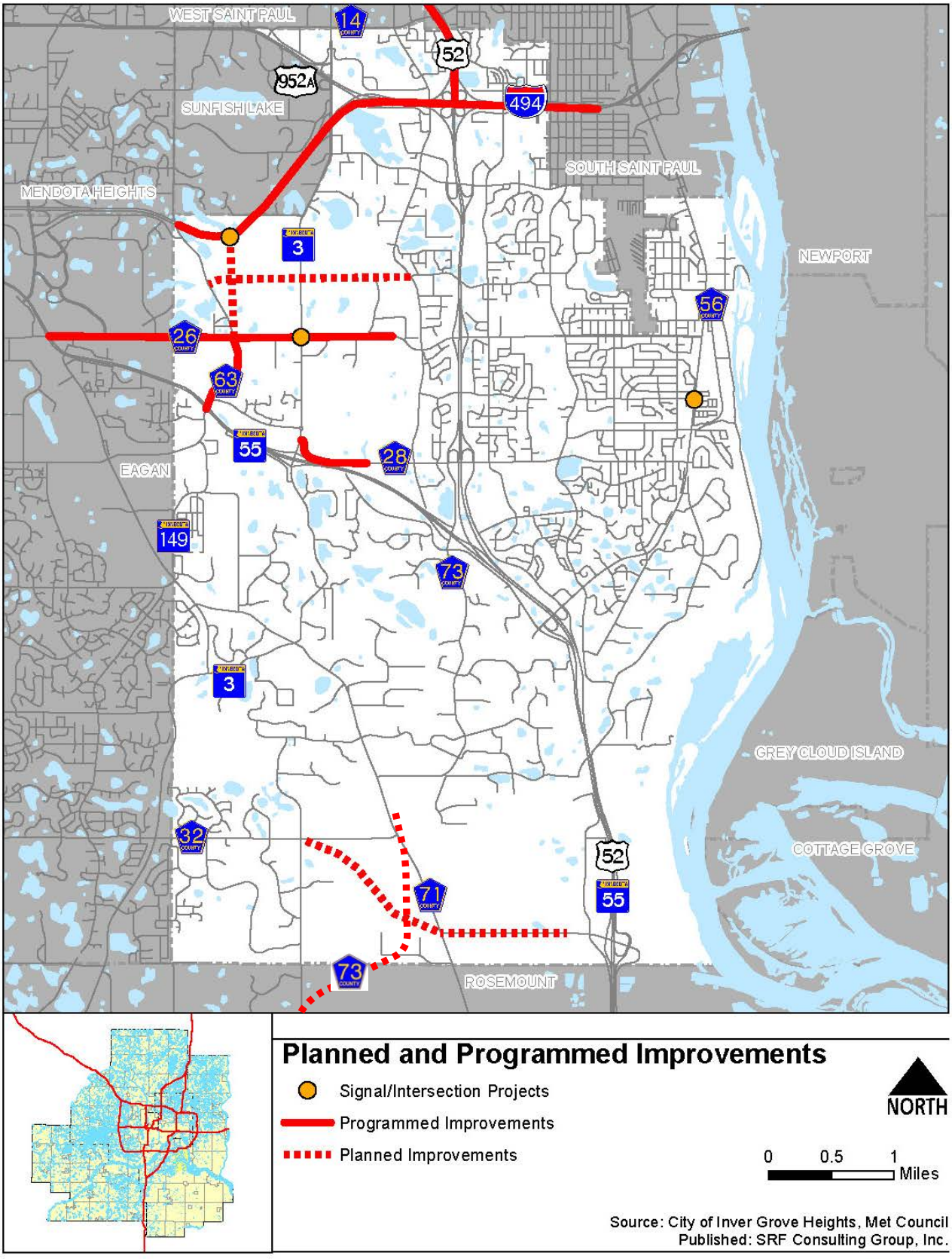
Table 5-7. Planned Transportation Improvements

Roadway/Facility	*Location*	*Primary Improvement*	*Lead Agency*
CSAH 63 (Argenta Trail)	Existing terminus to I-494	Extension	Dakota County/City of IGH
CSAH 63 (Argenta Trail)	I-494	New Interchange	Dakota County
CSAH 32 (Cliff Road)/110th*	117th Avenue & Rich Valley	Realignment	Dakota County/City of IGH
CSAH 73 (Akron Ave)*	Bonaire Path (Rosemount) to Rich Valley	Realignment	Dakota County/City of IGH
117th Avenue	CSAH 71 to TH 52	2 to 4-lane expansion	Dakota County/City of IGH
65th Street	Argenta Trail to Babcock Trail	New Roadway	City of IGH
I-494	CSAH 63 to	New Interchange	Dakota County

**This improvement is planned by Dakota County as the result of previous study; Inver Grove Heights has not formally adopted, nor accepted this Study for implementation within the City.*

I-494/CSAH 63 (Argenta Trail) Interchange - This interchange was included in the City's 2030 Transportation Plan and has been studied significantly as part of two subarea and corridor studies. This interchange is not listed in the current Metropolitan Council Transportation Policy Plan's fiscally constrained scenario.

Figure 5-7: Programmed and Planned Roadway Projects



CSAH 63 may be realigned to the east as depicted on Figure 5-7. It is understood that this realignment and connection to the regional system will serve north-south movement through Inver Grove Heights and into Rosemount and beyond.

In addition to the projected regional demand, high development is anticipated in northwest Inver Grove Heights. Projected development within the NW Area may combine to generate approximately 200,000 trips per day when fully developed. The NW Area does not have convenient access to the north- south principal arterials in the study area, I-35E to the west, and TH 52 to the east.

Argenta Trail Improvements- With the assumed Argenta Trail (CSAH 63) interchange with I-494 and the recently constructed intersection with TH 55, Argenta Trail will need to be upgraded accordingly. Based on the linkage of these two interchanges, as well as level of anticipated future development in this part of the City, it is assumed that a 4-lane divided roadway will be required. Significant study has occurred to determine the best alignment for this improved roadway. Since this is a County roadway, the City will coordinate closely with Dakota County regarding its final alignment, preliminary design, and funding. In February & March 2015, the Dakota County Board of Commissioners and the Inver Grove Heights City Council adopted individual alignments from the CSAH 28 & CSAH 63 Argenta Trail Realignment Study. The study determined a new alignment for CSAH (County State Aid Highway) 28 and CSAH 63 in Inver Grove Heights from its connection with CSAH 28 (Yankee Doodle Road) to Interstate 494. The Regional Roadway System Visioning Study (RRSVS) recommended that Argenta Trail (CSAH 28 & 63) be realigned and constructed as a four-lane divided highway and determined that Argenta Trail would eventually need to be expanded to a six-lane divided highway (principal arterial).

Coordination with Other Jurisdictions

The City of Inver Grove Heights will continue to coordinate with adjacent jurisdictions (e.g., Eagan, Rosemount, Mendota Heights, Dakota County, etc.), as well as MnDOT when planning future improvements. Coordination among jurisdictions provides opportunities for collaboration that benefit all agencies and the public. This results in financial and time savings through economies of scale as well as potentially reducing construction impacts to residents and businesses.

Traffic Forecast Methodology

Year 2040 daily traffic volumes were developed by considering the historical traffic growth rates on each roadway in Inver Grove Heights, the broader Metropolitan Council regional travel demand activity-based model trends, and previously prepared forecasts for roadways in the area. In areas where land development is anticipated (or understood to be reduced from previous planning activities), the projected traffic volume was compared to generalized traffic trip rates for the development types and the traffic volumes adjusted as necessary. For documentation purposes, Figure 5-8 and Table 5-8 presents the roadway network and Transportation Analysis Zones for the City of Inver Grove Heights contained in the Metropolitan Council regional travel demand model. Figure 5-9 presents the forecast year 2040 traffic volumes for all roadways within Inver Grove Heights.

2040 Roadway Deficiency Analysis

The capacity thresholds previously presented in Table 5-3 were used again to identify segments of roadway that are either nearing capacity or exceeding capacity under year 2040 conditions with programmed improvements accounted for. Figure 5-10 illustrates the number of lanes anticipated under Figure 5-11 presents the future conditions and the resultant future (2040) capacity deficiencies within the community.
Several segments of state and county facilities are projected to experience capacity deficiencies. These roadways are under MnDOT and Dakota County jurisdiction and are major transportation corridors within the community.

Overall, the local roadway system within the city has been designed to serve local transportation needs well. Conflicts can result when regional traffic uses local roads as alternative routes. The local roads used as relievers to the regional system are typically those that serve a collector roadway function, such as Argenta Trail and Alverno Avenue. Residential property owners along these routes recognize the increase in traffic when congestion on the regional system occurs. This increase in traffic can create conflicts with those residential land uses. The City of Inver Grove Heights should continue to coordinate with MnDOT and Dakota County regarding these collectors that serve as relievers within the system – specifically the

Table 5-8. Socioeconomic Forecasts by Transportation Analysis Zones

2018 TAZ	2020 Population	2020 Households	2020 Jobs	2030 Population	2030 Households	2030 Jobs	2040 Population	2040 Households	2040 Jobs
414	0	0	0	0	0	0	0	0	0
415	0	0	0	0	0	0	0	0	0
417	0	0	400	0	0	400	0	0	400
439	0	0	0	0	0	0	0	0	0
441	1,075	540	870	1,100	560	900	1,166	574	982
442	353	144	4	353	144	4	353	144	5
443	550	275	80	550	275	90	550	275	95
448	350	175	500	350	175	506	356	178	512
449	29	10	450	29	10	490	29	10	570
450	2,817	1,162	1,500	2,821	1,164	1,527	2,825	1,165	1,553
451	490	200	100	1,134	616	150	1,777	1,032	217
452	900	343	100	927	350	100	954	356	100
453	225	123	125	225	123	200	225	123	341
454	1,180	543	630	1,190	547	650	1,200	552	681
455	320	149	200	346	155	230	372	161	270
456	1,850	871	1,400	1,867	877	1,450	1,885	883	1,573
457	1,500	534	175	1,520	540	175	1,540	546	175
458	634	234	125	643	238	130	653	242	135
459	715	271	305	728	277	325	741	283	347
460	2,400	925	30	2,435	925	30	2,469	925	30
461	2,230	875	190	2,294	875	194	2,311	875	196
462	2,000	798	800	2,075	811	814	2,149	824	828
463	2,450	1,001	53	2,507	1,005	53	2,564	1,008	53
464	1,900	800	195	1,892	857	198	1,883	914	200
465	8	5	408	8	5	440	8	5	483
466	286	131	460	286	131	460	286	131	460
467	1,838	776	180	1,838	776	195	1,838	776	212
468	545	182	18	545	182	18	545	182	18
469	779	279	1	779	279	1	779	279	1
470	600	250	119	1,334	707	140	2,068	1,164	181
471	600	250	170	1,370	748	200	2,140	1,246	335
472	52	20	20	69	27	200	86	34	397
489	600	232	40	613	236	40	625	239	40
490	550	229	50	820	341	85	1,090	454	120
491	800	336	150	1,113	455	226	1,426	573	301
492	1,100	425	75	1,751	756	125	2,402	1,086	175
493	1,200	625	45	1,434	642	47	1,668	659	49
494	14	6	300	21	8	307	28	11	314
495	0	0	0	0	0	0	0	0	0
509	994	400	25	994	400	38	994	400	52
510	0	0	0	0	0	0	0	0	0
511	1,200	450	175	1,597	530	240	1,994	610	309
512	110	44	5	135	44	6	160	45	6
513	750	289	200	821	296	286	893	303	380
514	550	212	540	591	218	545	632	223	550
515	750	283	15	892	295	15	1,035	310	15
724	2	1	15	2	1	15	2	1	15
725	2	2	157	2	2	157	2	2	325
Total	37,300	15,400	11,400	42,000	17,600	12,400	46,700	19,800	14,000

Figure 5-8: Transportation Analysis Zones

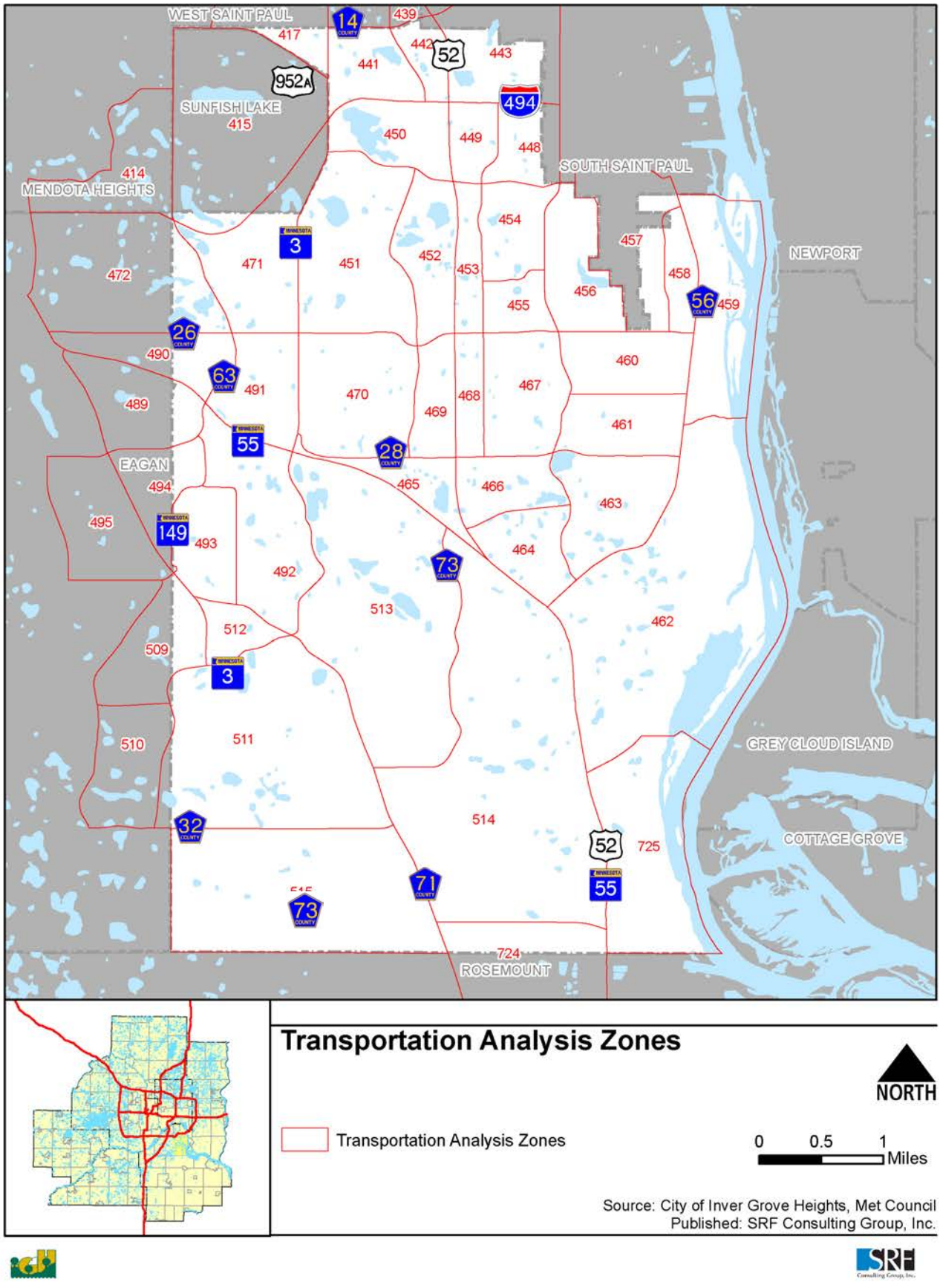


Figure 5-9: 2040 Traffic Volumes

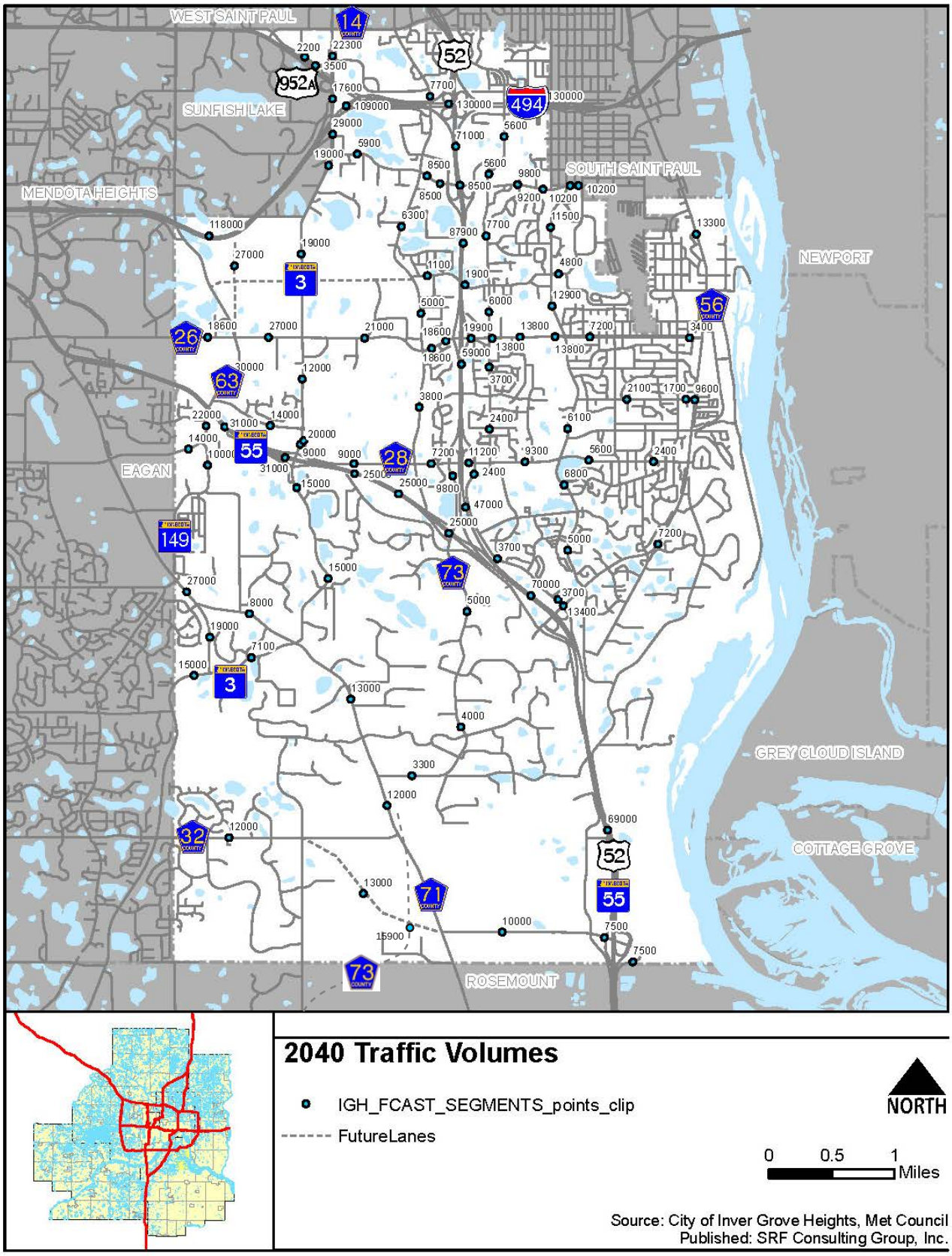


Figure 5-10: 2040 Number of Traffic Lanes

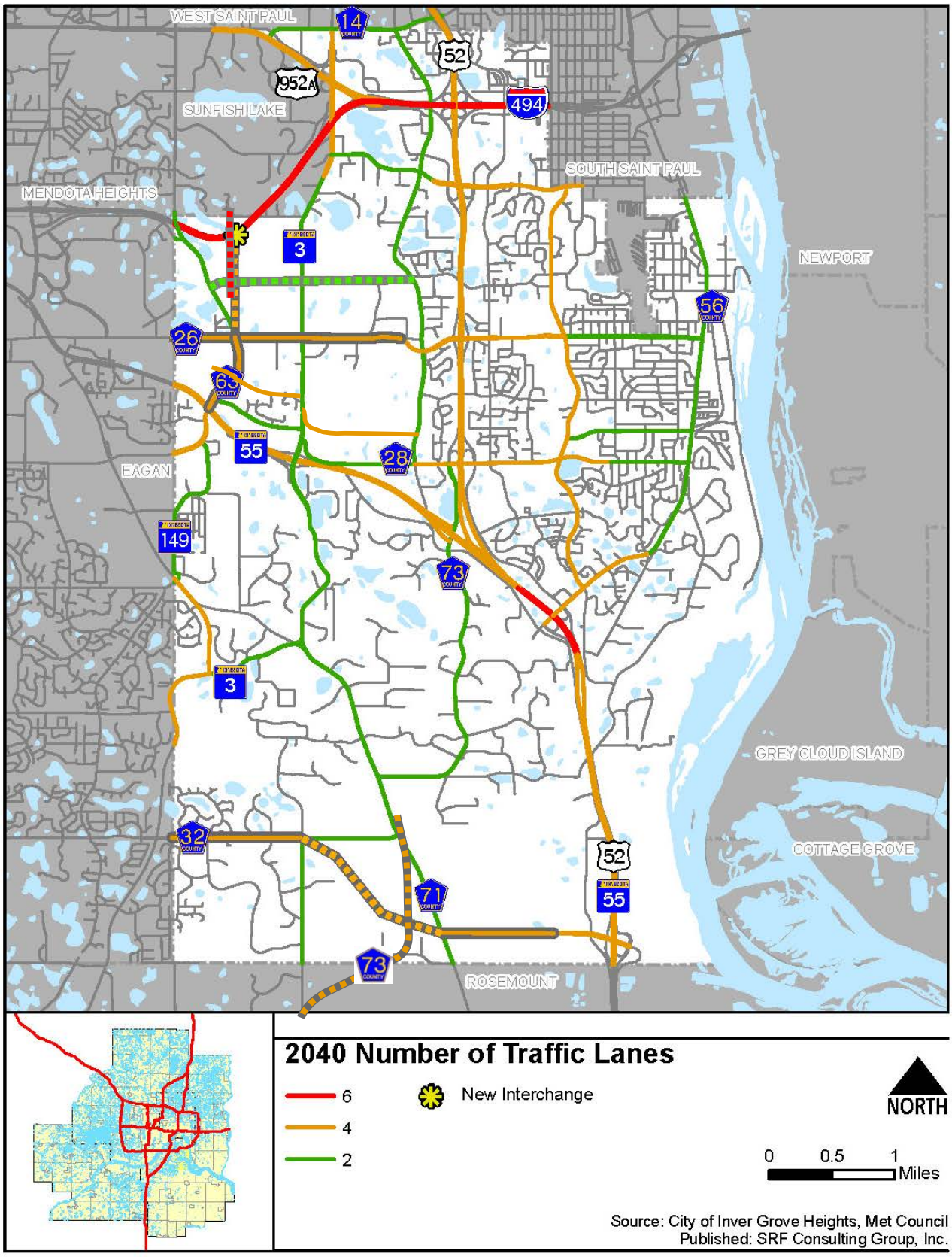


Figure 5-11: Future Roadway Deficiencies

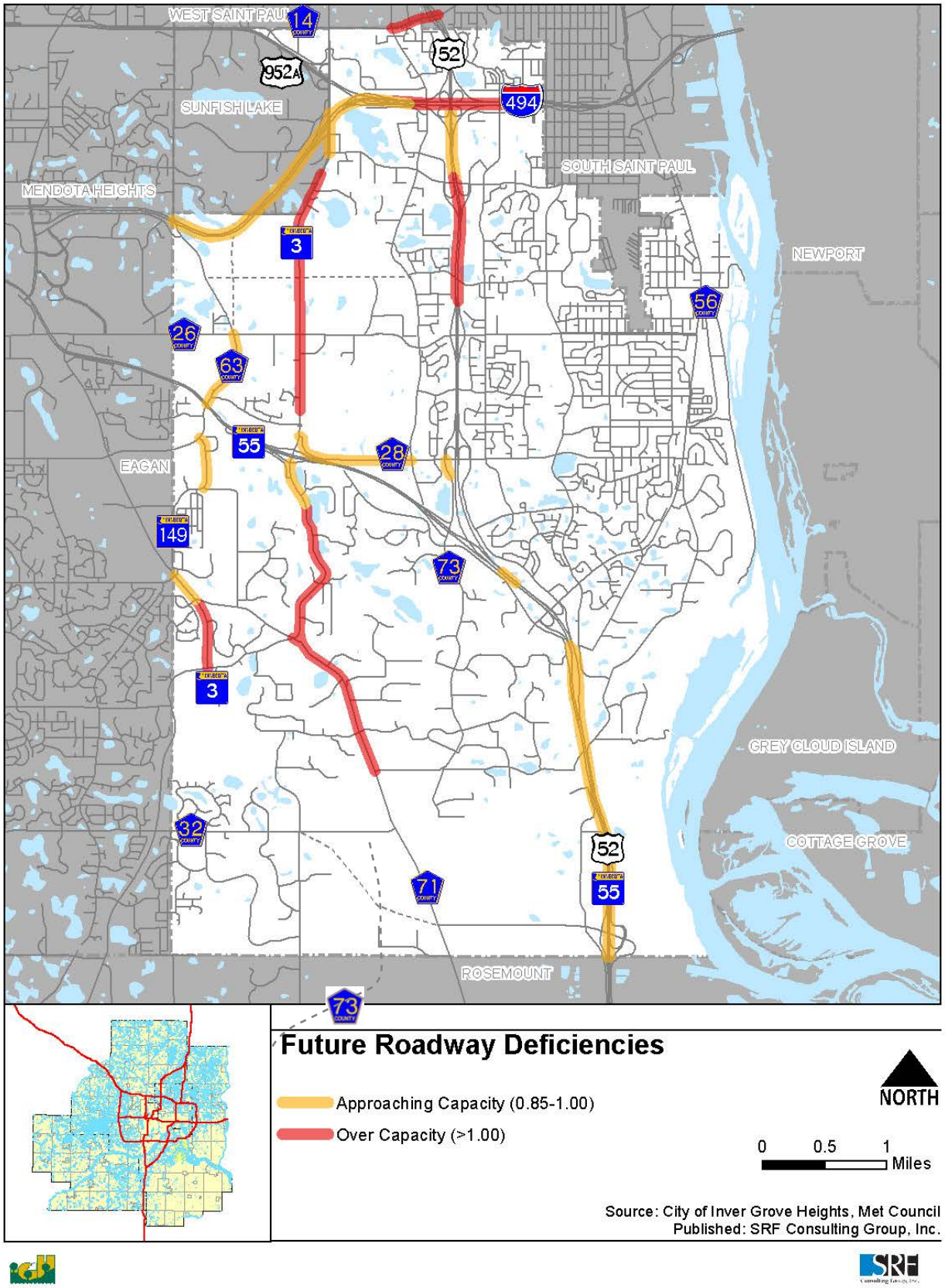
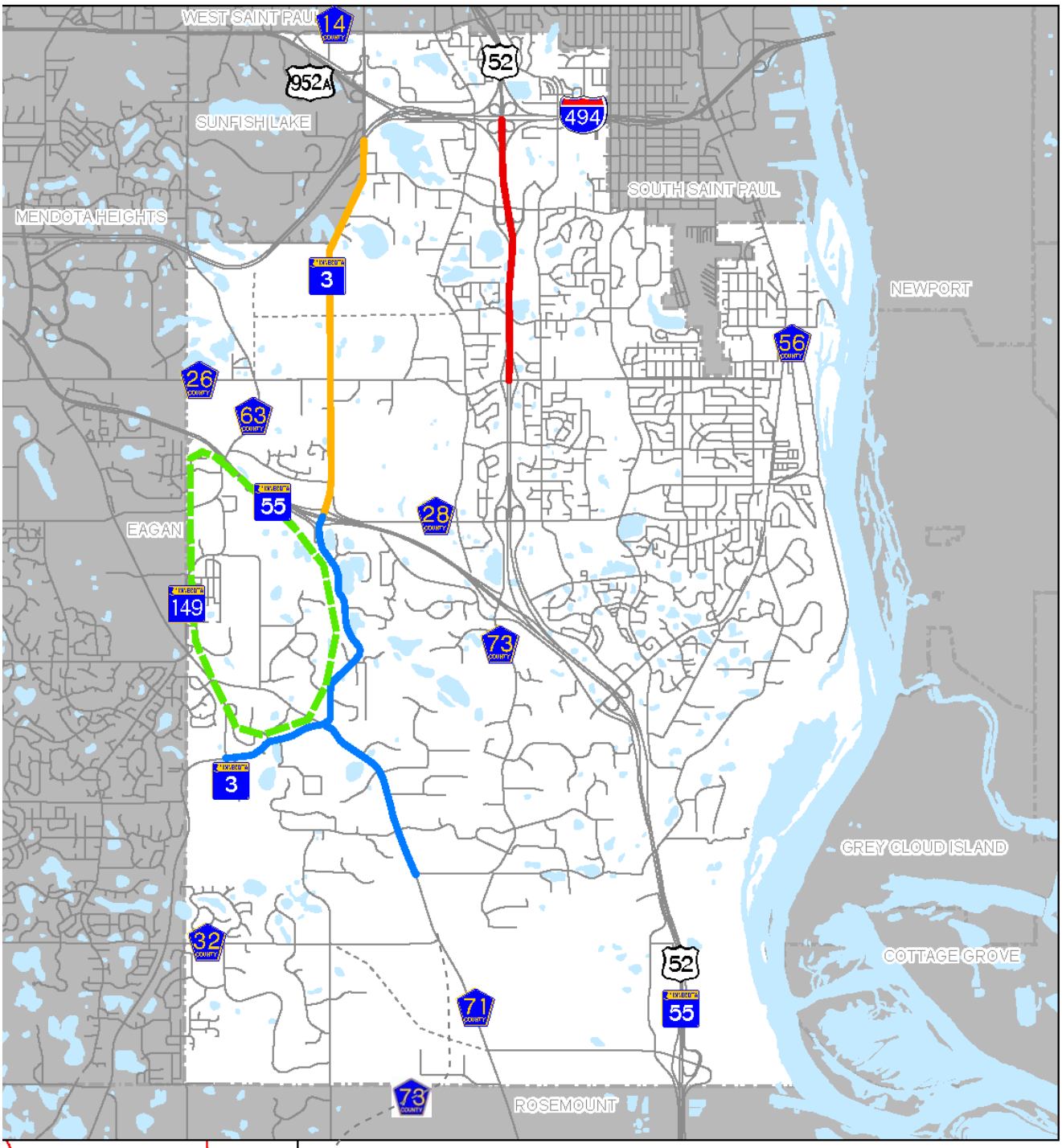
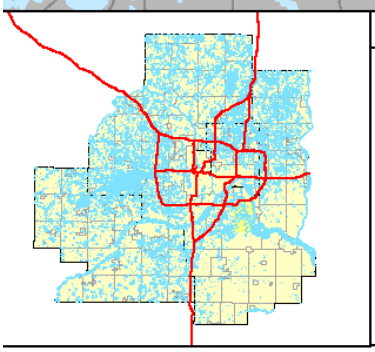


Figure 5-12: Potential Future Roadway Improvements





Potential Future Roadway Improvements

- Proposed 6-lane
- Proposed 4-lane
- Proposed 3-lane
- North/South Connection Needs

NORTH

0 0.5 1 Miles

Source: City of Inver Grove Heights, Met Council
Published: SRF Consulting Group, Inc.

north-south corridor needs through the central part of the city.

Potential Future Roadway Improvements

There are several roadway improvements that appear to be needed, yet do not have funding allocated based on previous activity or study. These roadway improvements will require additional analysis to confirm the roadway extents and necessary upgrades. The 2040 forecasts and the subsequent geometric deficiency analysis reviewed as part of the long-range plan help to put these potential roadway improvements into perspective. Figure 5-12 depicts these improvements.

2040 Jurisdictional and Functional Classification Plan

Jurisdictional Classification Changes

As the City and County work to provide their 2040 transportation networks, the ownership of roadways may need to change. Ownership is important as that agency becomes responsible for the roadway, including regulatory, maintenance, construction, etc. The goal, however, is to match the roadway's function with the appropriate agency. For instance, a road that serves regional trips should be controlled by a regional agency, such as the State or the County.

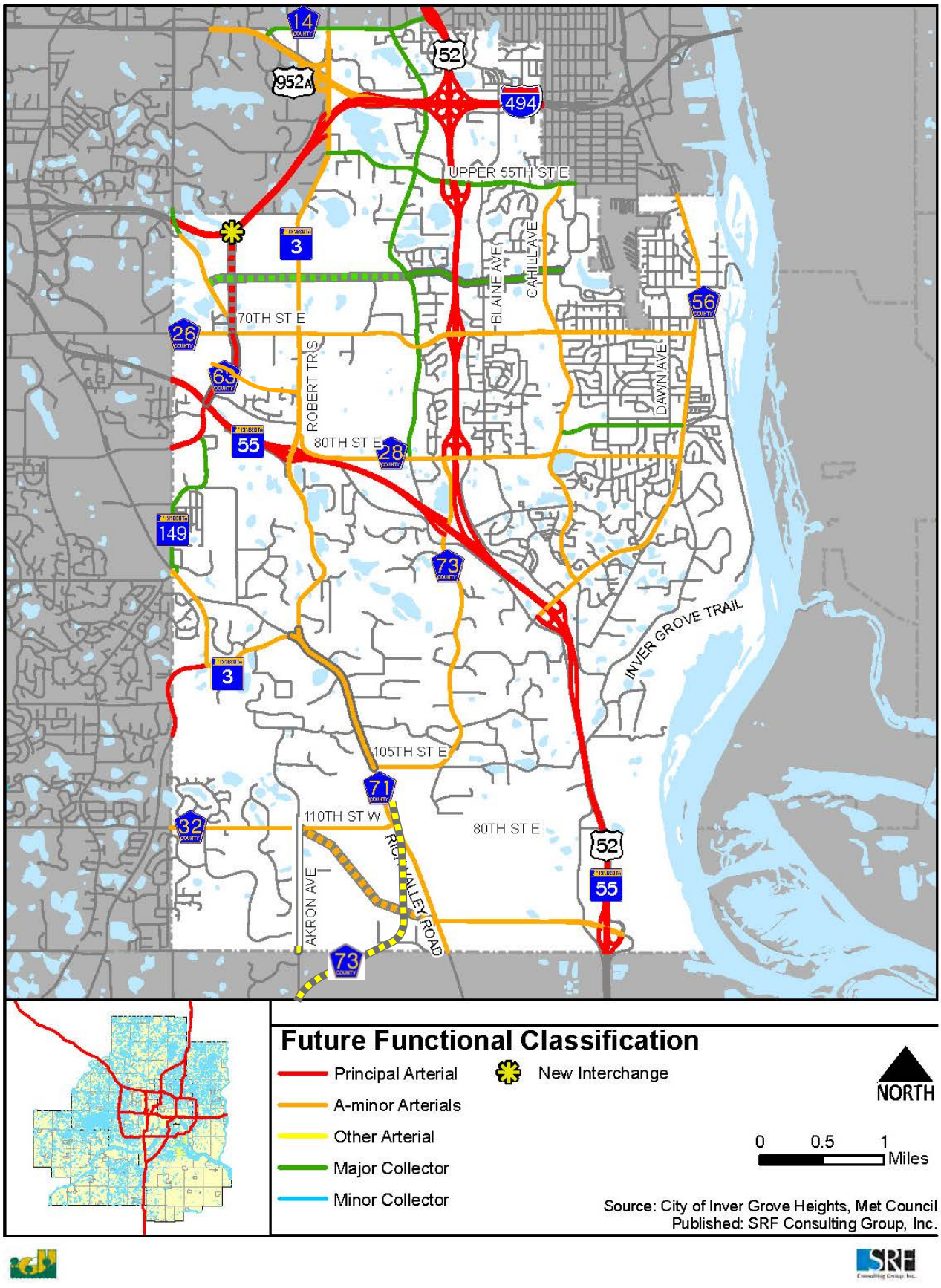
Inver Grove Heights still maintains and anticipates the transfer of 117th Street to County jurisdiction (likely extension of CSAH 32) from CSAH 71 to TH 52. The City will work with the County for appropriate and efficient ownership transfer to align their transportation networks.

The City will consider transferring CSAH 71 (Rich Valley Blvd), between TH 3 and TH 149, from County jurisdiction to City Jurisdiction. The Dakota County 2030 Transportation Plan identifies the turnback of this highway to City jurisdiction in the 10-20 Year category because the roadway is functionally classified as a local street.

Functional Classification Changes

The existing functional classification network for roadways in Inver Grove Heights was discussed earlier in the Plan. The Metropolitan Council has published roadway functional classification as an appendix to the 2040 Transportation Policy Plan. These guidelines should be used when

Figure 5-13: Future Functional Classification



identifying and considering revisions to the functional classification network.

The Inver Grove Heights 2040 functional classification map is presented on Figure 5-13. Revisions relative to the existing network are summarized below:

1. **Rich Valley Boulevard (CSAH 71) between TH 3 and 105th Street (CSAH 73)**; reclassification as an "A" minor arterial – CSAH 71 is currently classified as "A" minor arterial from south of Inver Grove Heights to CSAH 73. Then between CSAH 73 and TH 3 it is classified as a major collector roadway. For continuity, the "A" minor arterial status of CSAH 71 should be extended north to TH 3. This reclassification was identified in the 2030 Inver Grove Transportation Plan. It would be initiated by Dakota County with final approval required from the Metropolitan Council.
2. **Argenta Trail (CSAH 63) between I-494 and TH 55**; reclassification as "A" minor arterial – As discussed previously, interchanges at I-494 and TH 55 are identified in this Transportation Plan. With these interchanges, CSAH 63 would become an "A" minor arterial. This reclassification would be initiated by Dakota County with final approval from the Metropolitan Council's Transportation Advisory Board.
3. **65th Street between Cahill Avenue and Babcock Trail (CSAH 73)**; reclassification from minor collector to major collector – This reclassification will become appropriate with the anticipated extension of 65th Street west from Babcock Trail to the westerly City limit. The overall roadway will become an important east-west link in the northern portion of the City, connecting an "A" minor arterial (Babcock Trail) with TH 3, Argenta Trail, and the City of Eagan to the west.
4. **28th Street between Cahill Avenue and CSAH 56**; reclassification as a local street – this roadway does not serve a major collector purpose within the local system. The City will coordinate this change with the Metropolitan Council.

Access Management

Proper access management is a key component of providing a roadway system that effectively balances mobility and access needs (see Figure 5-14). Access management concerns the number of roadways and/or driveways that can directly access a given roadway, as well as facility design at the access points. Arterial roadways, which primarily serve a mobility function, can only have limited access to not disrupt the flow of traffic and not create safety concerns. At the other end of the spectrum,

Figure 5-14: Access/Mobility Relationship

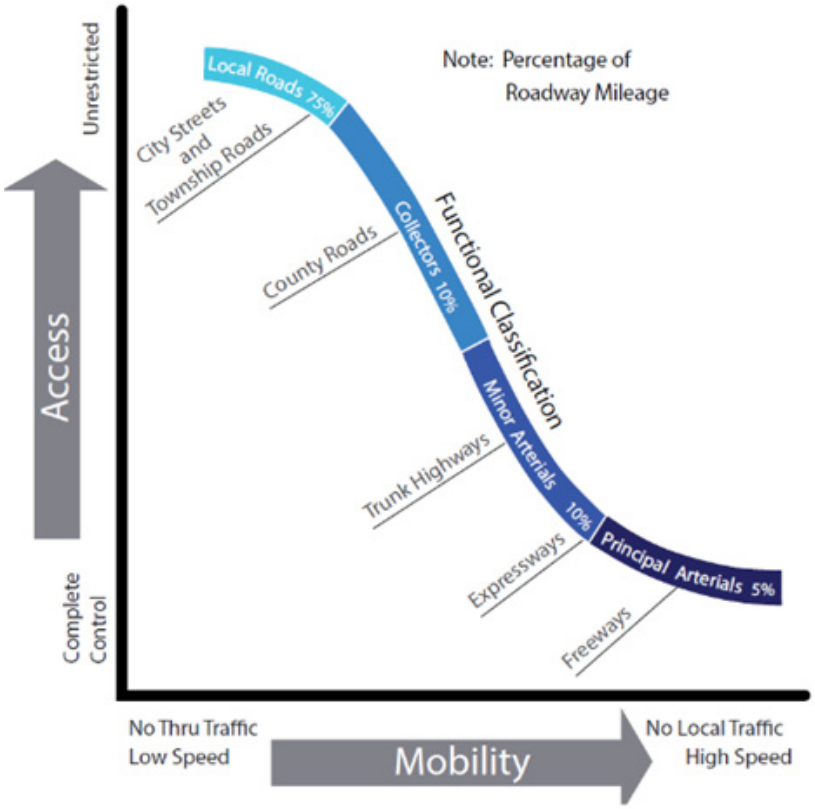


Table 5-9. Access/Mobility Relationship

Type of Access	*Minor Arterial*	*Collector*	*Local*
Residential Driveways	No Direct Access	No Direct Access	As Required
Commercial Driveways	Based on: Speed, Traffic Volume, Sight Distance, etc. (1/8 to 1/4 mile)	Based on: Speed, Traffic Volume, Sight Distance, etc. (min. 250 ft.)	Based on: Speed, Traffic Volume, Sight Distance, etc. (min. 100 ft.)
Low Volume Streets	Full Access – 1/8 mile	Full Access – 1/8 mile	Full Access – 330 ft.
	Partial Access – 330 ft.	Partial Access – 330 ft.	Partial Access – 330 ft.
High Volume Streets < 10,000 ADT	Full Access – 1/4 mile	Full Access – 1/8 mile	Full Access – 330 ft.
	Partial Access – 1/8 mile	Partial Access – 330 ft.	Partial Access – 330 ft.
Collector Streets	Full Access – 1/2 mile	Full Access – 1/4 mile	Full Access – 1/8 mile
	Partial Access – 1/4 mile	Partial Access – 1/8 mile	Partial Access 330 ft.

PLEASE NOTE: The spacing guidelines identified in this table may be adjusted on a case-specific basis pending detailed traffic engineering analysis and review by the City Engineer.

the primary function of local streets is to provide access to local land uses, so there are fewer access restrictions on these roadways. However, there are important considerations regarding access on local streets as well. Collector roadways are between arterials and local streets in terms of access allowed, since they serve a relatively even balance of the mobility and access functions.

Numerous studies have demonstrated the safety and operational benefits of managing access in an appropriate manner. The government agency which has jurisdiction over a given roadway determines the applicable access management guidelines for that facility. MnDOT has access management guidelines that apply to Trunk Highways, such as TH 3 (So. Robert Trail). Similarly, Dakota County's access guidelines apply to County roadways within Inver Grove Heights. County roadways make up a substantial portion of the roadway network serving the City. Access management is also important for roadways under Inver Grove Heights' jurisdiction. Recommended City access management guidelines are provided in Table 5-9 which are consistent with MnDOT guidelines.

Transit Plan

As the Twin Cities metropolitan region grows and more people decide to live, work, and play in Inver Grove Heights, it will be increasingly important to have robust transit services and facilities within the city. Whether provided via fixed-route services, on-demand rides, or some combination of the two, transit is a key aspect of a functional and effective transportation system.

Transit provides access to necessities and leisure activities for those who cannot operate a vehicle and those who choose not to. Additionally, it eases congestion for all road users by removing some portion of existing and future automobile traffic from the roads.

This section of the transportation plan identifies transit-related facilities and services currently present in Inver Grove Heights and outlines strategies the city can use to support these services. Transit serving the Inver Grove Heights is characteristic of smaller suburban areas in the region, with three local bus routes and one express bus operating within city limits.

Transit Market Areas

The Metropolitan Council established Transit Market Areas to indicate the

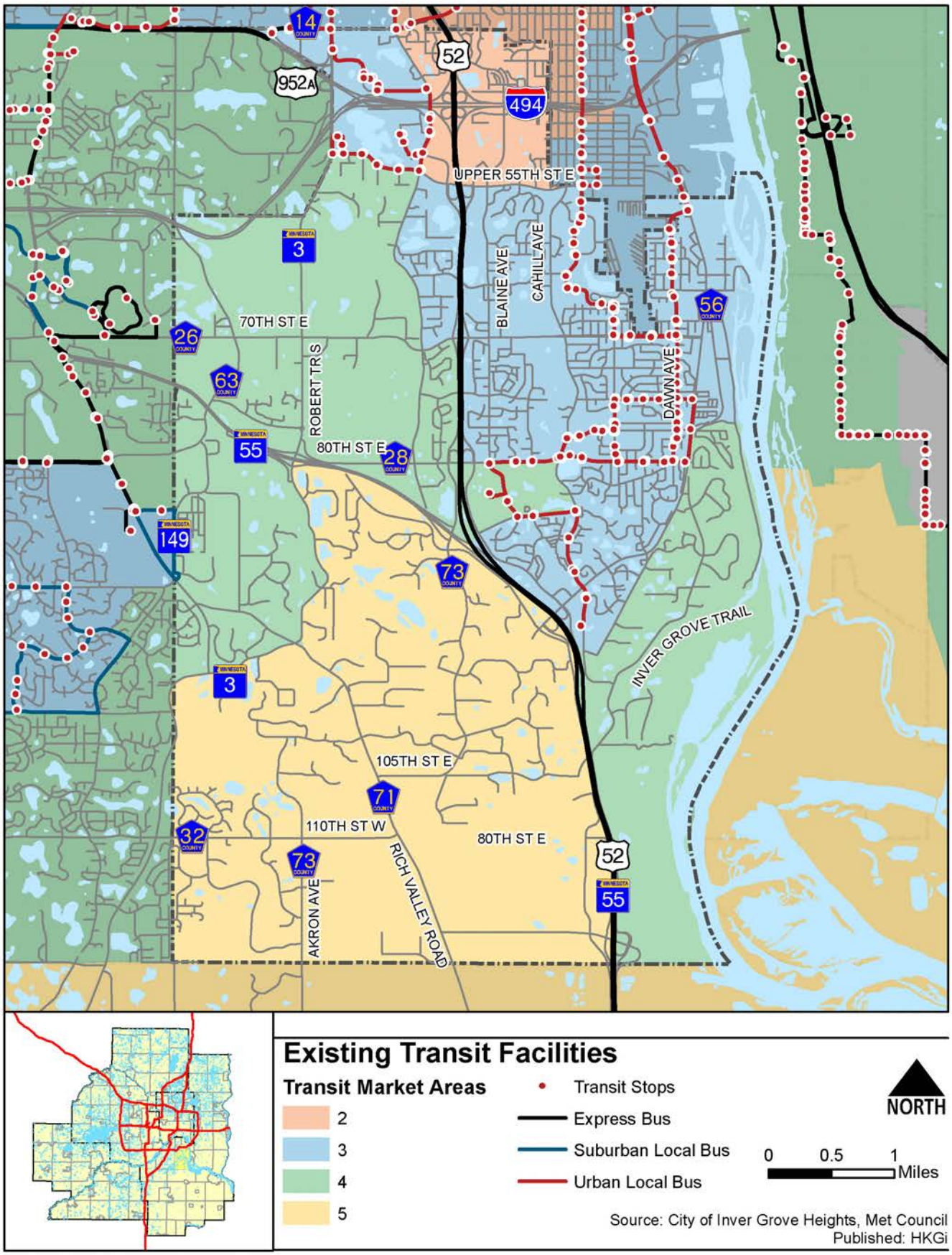
likely cost effectiveness of transit in each area. The determination of Transit Market Areas is based on three primary factors: population and employment density, residents' car ownership rates, and the interconnectedness of the local street system. Table 5-10 outlines the characteristics of each transit market area and indicates which parts of the city fall into each category, and Figure 5-15 gives a graphical representation of this information.

Inver Grove Heights hosts four different Transit Market Areas. Near the I-494 and TH 52 interchange where there are multi-family dwellings is designated as Market Area II, areas currently served by local transit service (the northeast quadrant, northwestern corner, and central Inver Grove

Table 5-10. Transit System Market Service Areas

Market Area	*Propensity to Use Transit*	*Service Characteristics*	*Typical Transit Service*	*Presence in Inver Grove Heights*
I	Highest potential for transit ridership	Frequency: 15-30 min most modes Span: early to late, seven days a week Access: ½ mi between routes	Dense network of local routes with highest levels of service accommodating a wide variety of trip purposes. Limited stop service supplements local routes where appropriate.	None
II	Approximately 1/2 ridership potential of Market Area I	Frequency: 15-60 min most modes Span: morning to night, seven days a week Access: one mile between routes	Similar network structure to Market Area I with reduced level of service as demand warrants. Limited stop services are appropriate to connect major destinations.	Northeast corner of Inver Grove Heights adjacent to 52/494 interchange
III	Approximately 1/2 ridership potential of Market Area II	Frequency: 15-60 min most modes Span: peak times, occasional weekends Access: varies on development patterns	Primary emphasis is on commuter express bus service. Suburban local routes providing basic coverage. Demand-response available to the public complements fixed route in some cases.	Northeast quadrant, northwestern corner, and central Inver Grove Heights
IV	Approximately 1/2 ridership potential of Market Area III	Frequency: three trips per peak express bus Span: peak times Access: usually at large nodes, if at all	Peak period express service is appropriate as local demand warrants. Demand-response services are appropriate.	Northwestern quadrant, southeast corner, and part of central Inver Grove Heights
V	Lowest potential for transit ridership	Frequency: 30 minutes, Commuter Rail Span: n/a Access: n/a	Not well-suited for fixed-route service. Primary emphasis is on demand-response services.	Southwestern quadrant of Inver Grove Heights
Emerging Market Overlay	Varies, typically matches surrounding Market Area	Varies	Varies. Typically matches surrounding Market Area.	None

Figure 5-15: Existing Transit Facilities



Heights) are designated Transit Market Area III. Areas further south and closer to Eagan are designated as Service Areas III and IV.
Notably, the only part of Inver Grove Heights classified as Market Area II has just one bus route adjacent to it. Upon closer inspection, it becomes evident that this route serves most of the multi-family dwellings within Market Area II east of TH 52. Within Market Area II west of TH 52, there is a subdivision comprised by fourplexes that is not served by transit. The land in the remainder of the area is predominantly allocated for use as public right-of-way or commercial space, and some remains undeveloped.

The portions of Inver Grove Heights classified as Market Area III receive a level of transit service appropriate to their designation, with one or two routes serving each area on weekdays in 15-minute to one-hour intervals. The southern portion of Inver Grove Heights, which is entirely designated as either Market Area IV or Market Area V, has no fixed-route service. On-demand services are still available for the residents who need them, which is fitting for the density, street network, and car ownership rates in the area.

Existing Transit Services and Facilities

Scheduled transit service in Inver Grove Heights is provided by Metro Transit, a division of the Metropolitan Council. Current service routes are depicted in Figure 5-15 and described in Table 5-11. Local routes 68, 71, and 75 serve Inver Grove Heights with all-day and evening service into downtown Saint Paul. Route 68 has weekend service; Route 71 previously provided weekend service to Inver Grove Heights as well, but the route has since been reduced and now terminates in South St. Paul on weekends. Express bus route 445, with service from the Eagan YMCA to the Cedar Grove Transit Station, has one stop on the western border of Inver Grove Heights. Express bus route 484 passes through Inver Grove Heights on TH 52 but does not have any stops within city limits. Park-and-ride facilities make other nearby routes, including some routes operated by the Minnesota Valley Transit Authority, accessible for Inver Grove Heights residents.

Where fixed-route service is not available in Inver Grove Heights, Transit Link, operated by Metropolitan Council, is an option. Transit Link is a curb-to-curb minibus or van service operating throughout the seven-county metropolitan region. It is a shared-ride service that must be reserved. Transit Link customers can transfer to regular Metro Transit routes without paying a separate fare.

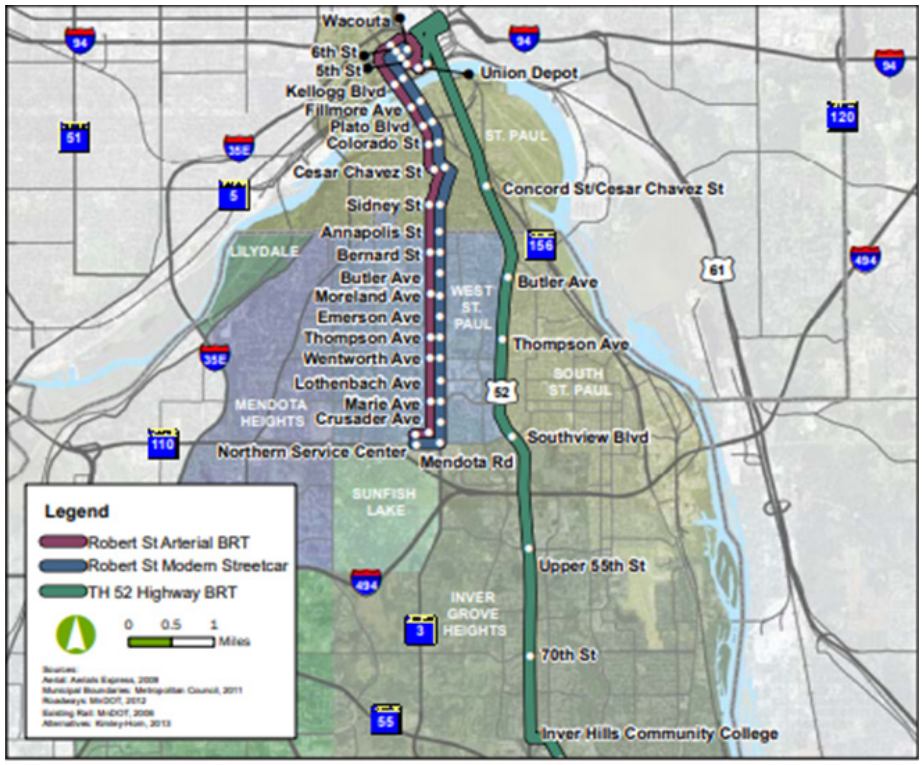
Table 5-11. Characteristics of Fixed Routes Serving Inver Grove Heights

Route	*Provider*	*Type*	*Weekday Peak Frequency*	*Hours*	*Service Area*
68	Metro Transit	Local	Hourly	5:00 am – 1:00 am weekdays 8:00 am – 12:00 am weekends	Northern Saint Paul to Inver Grove Heights via downtown Saint Paul (route branches serve West St. Paul and South St. Paul)
71	Metro Transit	Local	30 minutes weekdays	5:00 am – 9:00am and 2:00 pm -- 7:30 pm weekdays	Little Canada or Maplewood to Inver Grove Heights via downtown Saint Paul (route branches serves South St. Paul)
75	Metro Transit	Local	30 minutes weekdays	6:00 am – 6:00 pm weekdays	Downtown Saint Paul to Inver Grove Heights (route branches serve West St. Paul and Mendota Heights)
445	MVTA	Local	30 minutes weekdays,	7:00 am – 10:00 pm weekdays, 6:00 am – 9:00 pm weekends	Eagan YMCA to Cedar Grove Transit Station

Paratransit, or "dial-a-ride" transit services are also provided for Inver Grove Heights residents. These are services for those who are unable to drive or use scheduled transit. Individuals call ahead to reserve rides for medical visits, shopping, and other needs. In Inver Grove Heights, these services are provided by Dakota Area Resources and Transportation Services for Seniors (DARTS). DARTS is a demand-responsive transit service serving Inver Grove Heights and other communities in Dakota County. DARTS is a nonprofit funded by County contributions and donations.

Currently, there are no transitway stations or transit support facilities within Inver Grove Heights, nor are there transit advantages. A transitway station is a place on a transitway where scheduled vehicles stop during every trip. Transit support facilities are used to support transit operations and are not typically used by the public. These include bus garages, rail facilities, and administrative offices. A transit advantage is a stretch of highway where buses can travel on the shoulder if there is significant congestion, or a separate ramp where transit vehicles can bypass vehicles waiting to enter the freeway. The Metropolitan Council does not have any transitway stations, transit support facilities, or transit advantages planned within Inver Grove Heights city limits.

Figure 5-16: Robert Street Corridor Final Alternatives



While there are no park-and-ride facilities in Inver Grove Heights, several nearby serve residents of the city, including the West St Paul Sports Complex, Fort Snelling, and Eagan Transit Station park-and-ride facilities. Demand for park-and-ride facilities is expected to grow significantly over the next decade. The Metropolitan Council's 2030 Park-and-Ride Plan identifies a projected shortage of 400 park-and-ride spaces in the TH 52/55 corridor by the year 2030, but this need has not materialized nor is it shown in preliminary projections for the Park-and-Ride plan update. The planned expansion to the Fort Snelling facility and an additional facility proposed between the I-494 and TH 52/55 split are not expected to be included in the Park-and-Ride plan update.

Dakota County Robert Street Corridor Alternatives Study

In 2015, the Dakota County and Ramsey County Regional Railroad Authorities completed a study regarding the potential for successful new transit investments along the Robert Street corridor. The study identified modern streetcar, arterial bus rapid transit (BRT), and highway BRT as the three final alternatives for such an investment. A technical recommendation for arterial BRT was presented to the Steering Committee, but continued interest in the modern streetcar alternative led the Steering Committee to conclude the study without selection of a locally preferred alternative.

Highway BRT was the only alternative that would have run through Inver Grove Heights, and the two remaining alternatives terminate at the northern boundary of Inver Grove Heights in the current plan, reducing the project's ability to expand transit access for residents of the city. However, potential service extensions for both modern streetcar and arterial BRT extend along the western boundary of Inver Grove Heights and into the southern portion of the city should be further considered. It is crucial that the city remain engaged with the Robert Street Corridor planning process to ensure the outcome is beneficial to present and future residents. The Robert Street Corridor is not funded in the 2040 Transportation Policy Plan Increased Revenue Scenario.

City of Inver Grove Heights Summary

The City of Inver Grove Heights currently has limited transit service and lacks the land use and density needed to support increased service. No major changes to transit service are expected in the city.

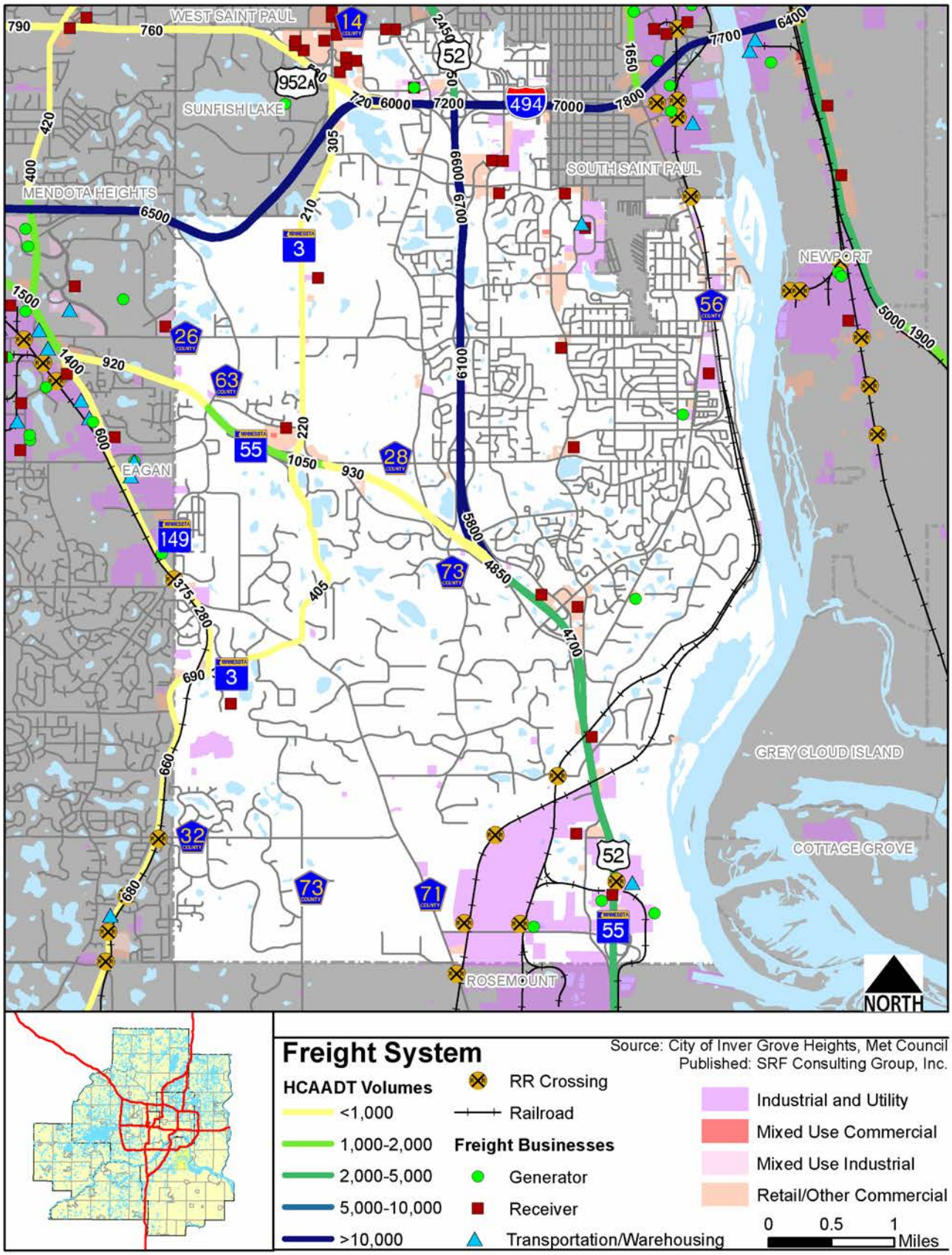
Freight

All industrial areas in the City of Inver Grove Heights are located with adequate access to the metropolitan highway system (Figure 5-17). The Interstate and Minnesota Trunk Highway systems in Inver Grove Heights are all built to 10-ton axle loading standards, and are part of either the National Truck Network or the Minnesota Twin Trailer Network, allowing extra capacity and flexibility for commercial trucking. This major highway coverage reduces the impact of truck traffic on local roadways and minimizes the potential for disruption of neighborhoods. No known bridge deficiencies exist within Inver Grove Heights that impact freight movement.

Truck traffic from industrial, industrial/warehousing, and commercial land uses can be adequately accommodated through the following measures:

- Locating truck-intensive land uses with good proximity to the metropolitan highway system and with good access to the minor arterial system;
- Using acceptable design standard on arterials, which will ensure adequate turning radius and pavement depth for trucks; and
- Signing and marking to minimize truck traffic through neighborhoods.

Figure 5-17: Freight System



The Dakota County Comprehensive Plan identifies a major truck terminal (with over 1,000 trucks) located south of TH 55 near the Inver Grove Heights/Rosemount city line. The plan also identifies the C.F. Industries Pine Bend Terminal as a barge terminal operating within the city.

There are rail lines located in the eastern and southern sections of Inver Grove Heights. The trackage in the southeast part of the City accommodates five trains per day. The Class I Union Pacific trackage running parallel to Concord Boulevard near 71st and 65th Streets carries 11 trains per day. A portion of a Class III Progressive Rail line runs parallel to Jefferson Trail in the western part of the City carrying seven trains per day.

Figure 5-17 highlights 6 at-grade railroad crossings within the City with competing truck traffic. There may be existing or potential conflicts between rail and road users, including trucks. These crossings should be reviewed in the future for issues such as:

- Which crossings pose issues regarding safety or mobility for trucks?
- Are there sight line issues for trucks at these crossings?
- Are there truck access issues due to long and/or frequent trains blocking trucks near entrance points to freight terminals, or in delaying trucks on regular freight routes?
- Are the surface conditions for any existing rail crossings causing problems for trucks? Are there plans for any rail crossing upgrades where this may be an issue?

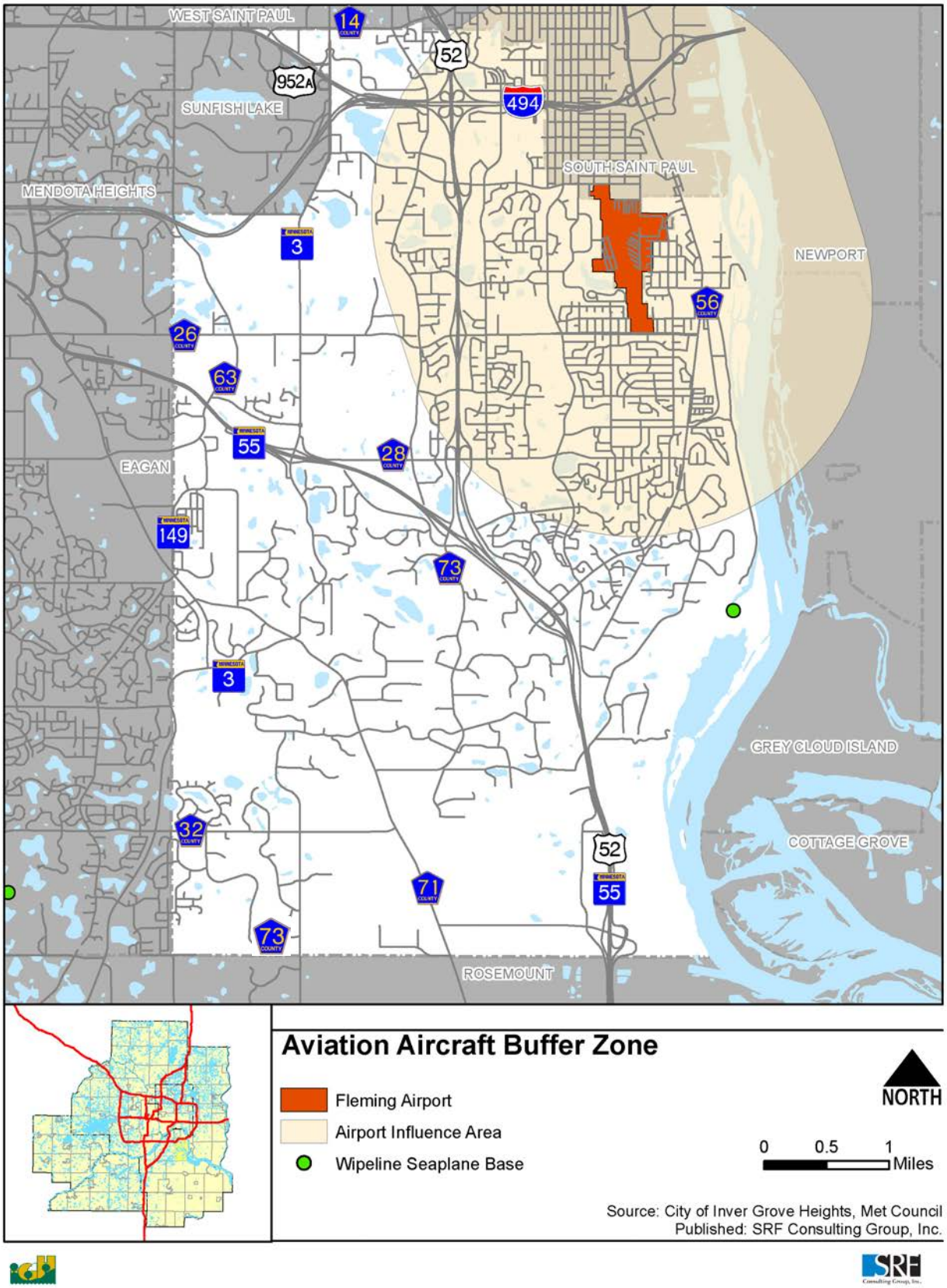
Aviation

There currently are no existing or planned aviation facilities within the City of Inver Grove Heights. However, each community has a responsibility to include airspace protection in its comprehensive plan. This includes potential hazards to air navigation including electronic interference. Inver Grove Heights is located within the airport Influence Area of Fleming Field (see Figure 5-18) and outside the airport Influence Area of the Minneapolis/St. Paul International Airport.

Minneapolis/St. Paul International Airport

The Minneapolis/St. Paul International Airport is operated by the Metropolitan Airports Commission located approximately 4.4 miles west-northwest of the City of Inver Grove Heights. It is designated as the region's "Major" airport and is expected to fill that role for many years to come according the Metropolitan Council's System Statement for the City

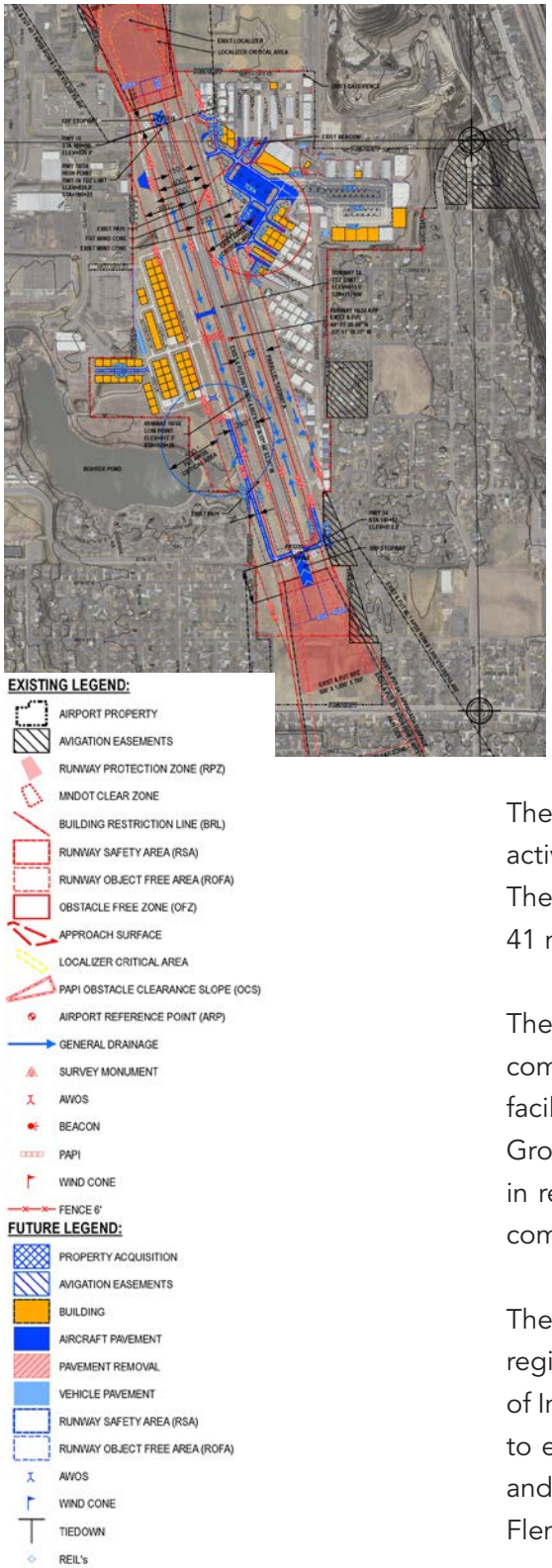
Figure 5-18: Aviation Influence Area



of Inver Grove Heights.

MSP noise policy contours no longer extend into Inver Grove Heights. However, a one-mile buffer zone provides the City with additional flexibility in addressing local land use concerns. Land use compatibility within the buffer zone is the same as defined for Noise Zone 4 (DNL65-60). The City has established a Noise Abatement Overlay in Subdivision 34 of its Zoning Ordinance defining City requirements, which are consistent with the Metropolitan Council's Guidelines for Land Use Compatibility with Aircraft Noise.

Figure 5-19: South St. Paul Airport Layout Plan



South St. Paul Municipal Airport (Fleming Field)

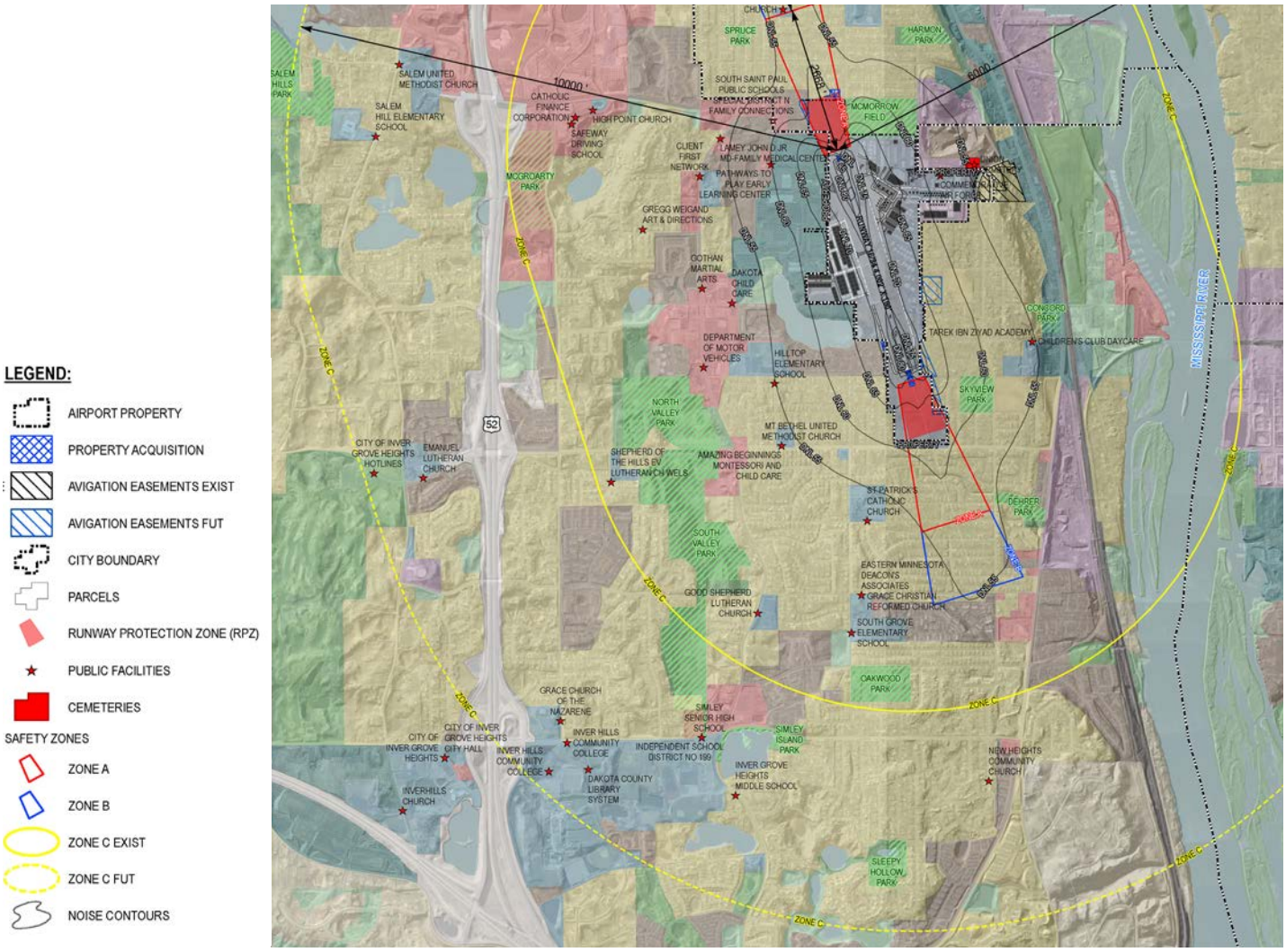
Fleming Field is located north of 70th Street between Cahill Avenue and Concord Boulevard. Fleming is designated as a reliever facility for MSP providing general aviation needs to the local area as well as air travel from outside the region. The facility encompasses 204 acres with one paved north/south runway that is 4,000 feet in length. It is an active airport with approximately 58,100 landings and takeoffs per year (2012). Approximately 260 aircraft are based at the airport. The noise generated (see noise contours in Figure 5-20) by South St. Paul's municipal airport is not to an extent which would require soundproofing or other corrective measures.

The airport serves 2 main purposes: business and recreation. Most of the activity occurs between 7 a.m. and 9 p.m. weekdays and on weekends. The economic impact from airport related activities totals approximately 41 million dollars.

The City of South St. Paul is responsible for preparation of the airport comprehensive plan. This includes associated hanger and maintenance facilities, some of which are located north of 63rd Street East in Inver Grove Heights. The airport has made improvements along Craig Avenue in recent years to make the surrounding residential neighborhood more compatible with the airport.

The South St. Paul Municipal Airport will continue to be a part of the regional airport system well into the foreseeable future. As such, the City of Inver Grove Heights will continue to work with the City of South St. Paul to ensure a safe and compatible environment exists for both the airport and surrounding land uses. Requirements for development in proximity to Fleming Field are identified in Subdivision 36 of the Inver Grove Heights

Figure 5-20: South St. Paul Airport Safety Zones and Noise Contours



Source: South St. Paul Airport Layout Plan

Zoning Ordinance. These requirements cover issues including airspace obstructions, land use safety, and hazard marking and lighting. In 2015, the most recent Airport Layout Plan (ALP)(see Figure 5-19) was completed and approved by the Federal Aviation Administration.

The airport's land use safety zone extends north and south of the airport property itself (Figure 5-20). Land uses within these zones are predominantly residential in nature, specifically single family. Land use incompatibilities have recently been addressed including the reconfiguration of McMorrow Field (South St. Paul), acquisition of two residential properties on South Street (South St. Paul), the removal of a storage shed and trees along Craig Ct., and the acquisition of avigation easements. The Federal Aviation Administration (FAA) has stated that since Fleming Field is in a built-up urban zone and therefore allows the City great leeway since many of the buildings have been in the clear zones for around 50 years.

Aviation Policies

The following policies will help guide the City in addressing land use and airport environment related issues:

- Apply the Metropolitan Council land use compatibility guidelines to new development.
- Create an awareness of the airport environment by educating the public.
- Notify MnDOT Aeronautics and the Federal Aviation Administration (FAA) of any structure 200 feet above the ground that could affect airspace.
- Engage in conversations with adjacent communities on airport environment issues.
- Work with the MAC in locating airport navigational facilities as needed.
- Consider incorporating noise mitigation techniques in new residential construction.

Non-Motorized Transportation

Trails and bikeways are an integral component of the City's transportation system. Trails and bikeways offer residents safe access to many city-wide destinations such as schools, shopping areas, parks and a wide variety of natural resources. Some trails are destinations in themselves, offering scenic walks such as the trails in South Valley Park. In addition to City trails, county trails and paved shoulders provide transportation along major corridors through the City and between neighboring regional park destinations (see Figure 5-21). There are no on-street bikeways (i.e. bike lanes) located within Inver Grove Heights.

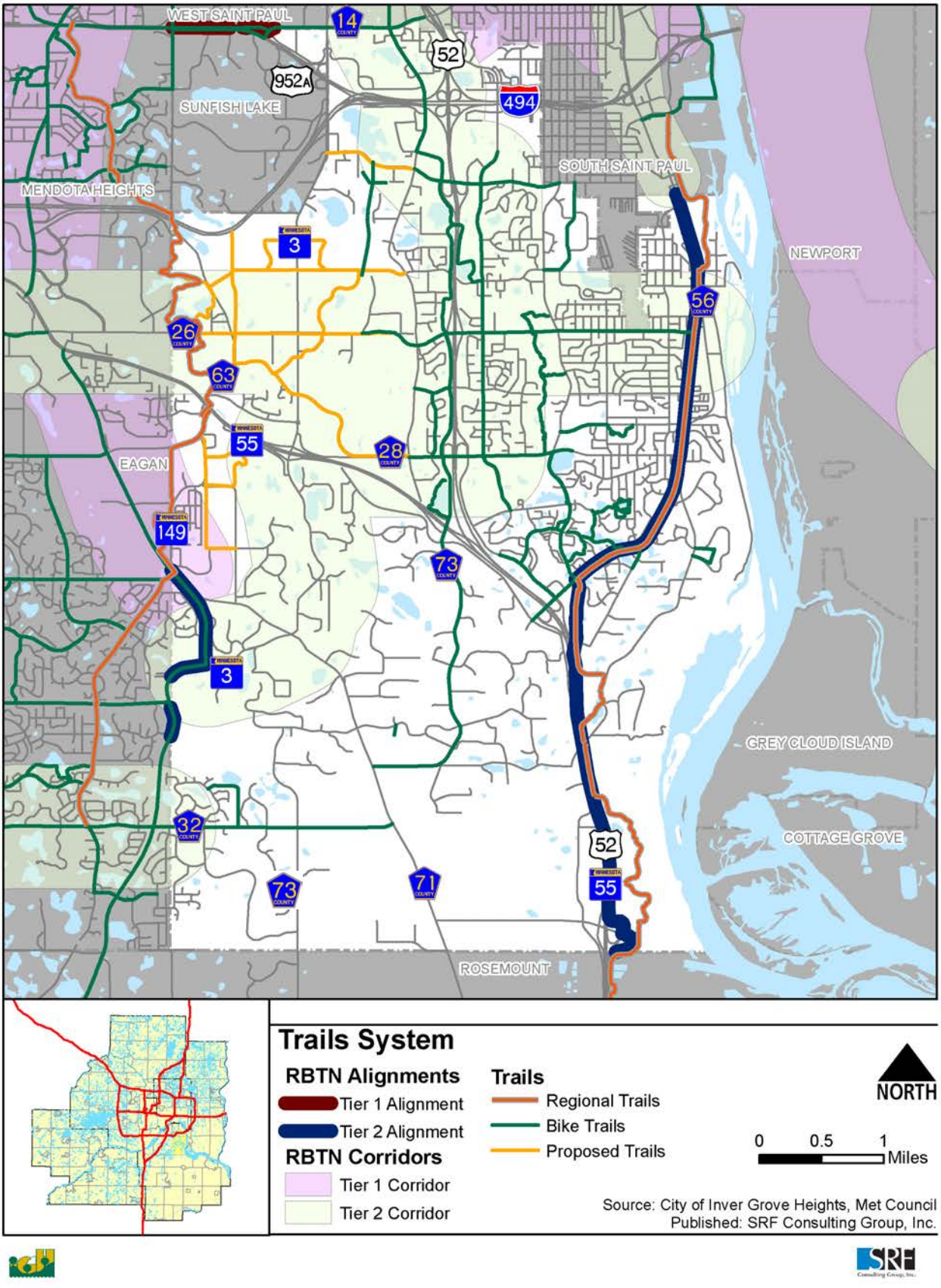
Bicycle Circulation - Sidewalks
Sidewalks play an important role pedestrian circulation. Sidewalks, in locations not heavily used by pedestrians, can also help fill gaps in the bicycle circulation network for young children. "Figure 6-3: Existing Trail System" on page 6-151 in the Parks Chapter shows the location of sidewalks within Inver Grove Heights.

Regional Bicycle Transportation Network (RBTN)

The RBTN was developed as an outcome to the Regional Bicycle System Study and serves as a framework of designated regional corridors and alignments and defines critical bicycle transportation links to help municipalities guide their bikeway planning and development. The RBTN is subdivided into two tiers for regional planning and investment prioritization:

1. **Priority Regional Bicycle Transportation Corridors and Alignments.** These corridors and alignments have been determined to provide the best transportation connectivity to regional facilities and developed

Figure 5-21: Trails System



areas, and are given the highest priority for transportation funding.

2. **Regional Bicycle Transportation Network Corridors and Alignments.** These corridors and alignments are the second highest priority for funding. They provide connections to regional facilities in neighboring cities, and serve to connect priority regional bicycle transportation corridors and alignments.

RBTN Tier 1 Alignments:

The River to River Greenway is an east-west corridor that connects Lilydale, Mendota Heights, West St. Paul and South St. Paul. The trail is in place between Robert Street and the Mississippi River in South St. Paul. Future construction projects will link Valley Park in Mendota Heights to the area near Dodge Nature Center in West St. Paul. The segment between CSAH 63 and Mendota Road is classified as a Tier 1 alignment.

RBTN Tier 2 Alignments:

The Mississippi River Regional Trail follows the Mississippi river for 27 miles, connecting Harriet Island Regional Park in St. Paul, Spring Lake Park Reserve and the City of Hastings (see Figure 5-21). The regional trail construction will be completed in phased segments with an anticipated completion date of 2020. Currently, the north and south/east segments of the MRT are open for use. The Inver Grove Heights portion of the trail runs parallel to CSAH 56 to TH 52 and is classified as a Tier 2 alignment. There is a designated trailhead located at Swing Bridge Park inside the Inver Grove Heights city limits.

A Tier 2 Alignment follows TH 149 south to CSAH 3 in the western section of the City.

Tier 1 and Tier 2 Regional Bicycle Transportation Corridors

Tier 1 Corridors are a subset of the RBTN and have been identified as the highest priority for regional transportation planning and investment. The priority corridors are planned in locations where they can attract the most riders and where they can most effectively enhance mode choice in favor of biking, walking, and transit over driving alone. High rates of bicycle travel demand, as well as current and planned population and employment densities, where heavily weighted in the analysis of corridors. These corridors are intended to allow flexibility among local government agencies to tailor specific alignments for bikeway facilities through the local planning process. When specific alignments are designated through

the local planning process, the regional corridor will be replaced on the RBTN map with the preferred alignment.

Tier 1 Corridors in Inver Grove Heights are shown as a pink bubble on Figure 5-21 and are located generally in a one-mile corridor along 70th St, Robert Trail (south of Hwy 55), 80th St (Hwy 55 to Hwy 52), Blaine Ave (south of Upper 55th St.), Upper 55th St. (Babcock Trail to Blaine Ave.), and Babcock Trail (Upper 55th Ave to north IGH boundary).

Tier 2 Corridors are the remaining corridors in the overall RBTN. These corridors are assigned the second tier priority for regional transportation planning and investment.

Tier 2 Corridors in Inver Grove Heights are shown as a green bubble on Figure 5-21 and are located generally in a one-mile corridor along Babcock Trail (at the IGH northern boundary) and Jefferson Trail W./Dodd Rd. (at IGH western boundary).

Relationship of Existing and Planned Bicycle Facilities to RBTN Corridors

Within Inver Grove Heights, the closest existing bicycle facility alignment to the RBTN tier 1 corridor along 70th St. is the existing trail along the south side of 70th St. The City of Inver Grove Heights planned 70th St. Trail westward extension would be the best candidate to be proposed for this RBTN tier 1 corridor.

There are no existing bicycle facility alignments along the RBTN tier 1 corridor along Robert Trail. A striped shoulder exists along Robert Trail and would be the best candidate to be proposed for the RBTN tier 1 corridor. There are no planned facilities along this corridor.

The closest existing bicycle facility alignment to the RBTN tier 1 corridor along 80th St. is the existing trail along the north side of 80th St. This would be the best candidate to be proposed for the RBTN tier 1 corridor.

The closest existing bicycle facility alignment to the RBTN tier 1 corridor along Blaine Ave. is the existing trail along the west side of Hwy 52. This would be the best candidate to be proposed for the RBTN tier 1 corridor because the sidewalk along Blaine Ave. is inadequate to properly service bicyclists. There are no future trails or bikeways planned along Blaine Ave.

The closest existing bicycle facility alignment to the RBTN tier 1 corridor

along Upper 55th St. is the existing trail along the north side of Upper 55th St. This would be the best candidate to be proposed for the RBTN tier 1 corridor.

There are no existing bicycle facility alignments along the RBTN tier 1 corridor along Babcock Trail. A striped shoulder exists along Babcock Trail and would be the best candidate to be proposed for the RBTN tier 1 corridor. There are no planned facilities along this corridor.

Within Inver Grove Heights, there is no existing bicycle facility alignment close to the RBTN tier 2 corridor along Babcock Trail. The striped shoulder along Babcock Trail. would be the best candidate to be proposed for this RBTN tier 2 corridor.

The closest existing bicycle facility alignment to the RBTN tier 2 corridor along Dodd Rd./Jefferson Trail would be the trail along the northeast side of Dodd Rd. in Eagan. This would be the best candidate to be proposed for the RBTN tier 2 corridor.

General Trail Criteria

- The location of parks and trails will be determined by the City using the 2040 Parks, Trails and Open Space Plan as a guide.
- Trail land shall be of sufficient width and slope to accommodate 10' wide trails and appropriate buffer areas. General guidelines include a minimum width of 20' – 30', a maximum slope less than 12 percent and an average slope not to exceed four percent.

Where topographic constraints pose barriers to achieving the above criteria, the City encourages a collaborative design process to minimize the degree of deviation from these criteria.

Dakota County adopted The Greenway Guidebook in 2010 which helps local jurisdictions within Dakota County work independently towards the shared goal of a complete greenway system throughout Dakota County. Cities in Dakota County have recognized demand for trails and have built impressive systems anchored on by their parks system.

Trail and Bikeway Needs

Trails are popular and use has boomed regionally and in the city per community input. Trails are used for safe and convenient access to parks, open space, neighborhoods, commercial areas and destination beyond

the City. A complete and connected trail system of trails and bikeways is highly valued by residents for leisure use and for transportation. Trails are important to maintain a healthy community and high quality of life.

Trail users have differing needs depending on their skill level and purpose for riding. Those riders with advanced skills most often ride for convenience and speed and want direct access to destinations with a minimum of detour or delay and are comfortable riding on roads with motor-vehicle traffic. Those riders of lesser skill level or riding for leisure will avoid high traffic areas and will more likely use routes with bike lanes, off-street trails or trails in parks and open spaces depending on the skill level. To accommodate the full range of bicyclists, there is a need to provide connectivity to destination in and outside of the City. To maintain active life-styles, the City needs a coordinated trail and bikeway network to provide non-motorized and recreation options.

Trail and Bikeway Policies

The following policies will help guide the City in addressing trail and bikeway related needs:

- Improve pedestrian and bicycle circulation, including access to regional transit services, regional trails with improved pedestrian connections, and regional bicycle corridors.
- Coordinate a trail and bikeway network to provide non-motorized and recreation options.
- Develop the trail and bikeway network into future growth areas sufficient to meet local needs.
- Provide better signage of the community's sidewalk, trail, and bikeway system.
- Work with Dakota County to develop master plans for regional trails in the City that improve bicycle connections across City boundaries.
- Increase access to the Mississippi River and to the Dakota County Mississippi River Regional Trail.
- Develop trails and bikeways to natural resources and open space.
- Improve trail and bikeway connectivity to adjacent City's trail networks.

Planning for the Future

Throughout the City of Inver Grove Height's comprehensive planning effort, the City will need to consider how to address existing transportation needs, while setting the stage for future growth. Items for consideration include the following:

- Roadway System Preservation
- Assisted Driving and Autonomous Vehicles
- Travel Demand Management
- Complete Streets and Safe Routes to School

System Preservation

Infrastructure systems (e.g., roads, bridges, culverts, and sidewalks) have become very expensive and difficult to maintain in today's environment with aging infrastructure, rising costs of materials, and stagnant or declining revenue. In fact, many local agencies are being forced to pause, and ask questions about the costs and benefits of continuing to maintain assets throughout their entire system, or if other approaches should be explored to better balance needs with available resources. Generally, considerations to include are:

- **Performance Standards and Measures.** A performance-based approach improves the accountability of local infrastructure investments, assess risks related to different performance levels, monitor progress and increase transparency.
- **Project Prioritization.** Project prioritization can help cities rank infrastructure needs in a manner that is consistent with preservation goals and objectives. This technique can help avoid the typical "worst first" approach to programming preservation projects that tends to invest limited resources in the most expensive "fixes" (reconstruction) instead of directing maintenance funds to infrastructure that merely need rehabilitation, which will provide more cost-effective solutions in a timely manner.
- **New Revenue Sources.** There are methods to capture new revenue streams to close the financial gap in maintaining assets in a "state of good repair." Exploring new revenue sources will allow the City to expand and accelerate preservation initiatives.
- **New Maintenance Techniques.** There are new maintenance techniques that can extend the lifecycle of an asset. For example, new maintenance techniques for roadway surfaces can provide

longer service life and higher traffic volume thresholds, resulting in more stable road maintenance costs. Cost reduction of life cycle extension strategies which save money, or extend surface life, can directly benefit preservation needs, and minimize any identified financial gap.

- **Asset Management.** Tracking assets and their condition will provide a stronger outlook on lifecycle costs and replacement schedules. This will help establish funding plans and identified future funding gaps or shortfalls.

Assisted Driving and Autonomous Vehicles

Fully autonomous cars are still in the advanced testing stages, but partially automated technology and low-speed cars are beginning to embed themselves into markets across the country. In that respect, understanding autonomous vehicles will play an important role in how agencies manage their transportation assets, while setting the stage for investments. In addition to fully autonomous vehicles there are connected vehicles that will interact with our transportation system (vehicles that communicate with the roadside to complete driving functions or provide information to the driver to make informed decisions).

Aside from some of the more obvious predicted impacts such as the continued growth of car-sharing, and on-demand taxi services like Uber and Lyft, autonomous vehicles (AVs) and connected vehicles (CVs) also stand to disrupt the norms of both transportation and land use planning. Parking minimums, street design, right-of-way needs, development demand, signage and signalization, building siting and design, access management, and their accompanying norms and standards have the potential to change dramatically over the next 40-50 years.

Researchers have concluded that AVs and CVs will reshape future road rights-of-way. Autonomous vehicles are likely to be smaller than existing passenger vehicles, permitting narrower lanes, likely will not require medians, and due to wireless communication between vehicles, will allow travel much closer to one another. By accommodating the same or more volume in less space, newly available road can be reapportioned to other road users like pedestrians and bicycles.

Although new roads can be configured for additional multimodal use, there are some potential drawbacks for pedestrians, bicyclists, and other road users that the City will need to be conscious of when moving towards

a more automated roadway infrastructure. The reapportioning of rights-of-way may allow for expanded sidewalks and more dedicated bike lanes; however, due to potential signal removal this may cause longer waits at intersections dominated by free-flowing vehicles. Adding pick-up and drop-off locations could also fragment the streetscape, complicating travel for multimodal users.

The redevelopment of former parking lots has the potential to transform existing urban centers. Future site designs will be impacted by the implementation of autonomous vehicle structure, potentially allowing for buildings to more regularly front streets rather than parking lots. Accommodation for pick-up and drop-off locations within these parking lots will need to be a consideration.

The City of Inver Grove Heights will need to be mindful of the potential infrastructure impacts caused by adoption of autonomous and connected vehicle culture. As the City looks to redevelop larger roadways, thoughtful consideration for how roadway infrastructure can be expanded to compliment autonomous vehicles is important.

Travel Demand Management

Research has shown that Travel Demand Management (TDM) strategies are a useful technique in helping alleviate parking demands in a geographical area. TDM strategies are applied to help reduce the number of single occupancy vehicles traveling and parking in a certain area. Examples of TDM strategies from a development perspective are highlighted in the following text.

- **Bicycle Amenities.** Actively promoting bicycling as an alternative means of travel to and from a destination can be achieved through information dissemination and the provision of bicycle storage facilities and adding on-street bicycle lanes and additional connections to trails. These actions can help decrease the demand for vehicle parking.
- **Car Sharing Provisions.** Car sharing programs provide mobility options to those who would not otherwise have access to a vehicle. These programs encourage the efficient use of a single vehicle among multiple users, while reducing the amount of parking needed to accommodate each resident within a neighborhood or employees within a business area. Zoning language can encourage or require new developments of a certain size to include off-street parking provisions for car sharing programs.

- **Shared Mobility.** Shared mobility includes bikesharing, carsharing, and ridesourcing services provided by companies such as Uber and Lyft. Predictions indicate that by creating a robust network of mobility options, these new modes will help reduce car ownership and increase use of public transit (where available), which will continue to function as the backbone of an integrated, multimodal transportation system.
- **Travel Demand Management Plans (TDMP).** A TDMP identifies measures to mitigate parking demand as part of the development permit process, which can result in innovative solutions that are tailored to the specific needs of a neighborhood, district, or private employer. These types of plans may require specific strategies for reducing single-occupancy vehicle trips and promoting alternative modes of transportation.

Complete Streets and Safe Routes to School

Complete Streets are commonly defined as roadways that accommodate all users (e.g., pedestrians, bicyclist, vehicles and transit), regardless of age and ability. This is important to consider when recognizing the diversity of people traveling throughout the community.

The City of Inver Grove Heights has not established design guidelines related to complete streets. However, the goals and policies relative to transportation do embrace several elements of complete streets (e.g., safety for pedestrians and bicyclists). MnDOT has adopted a Complete Streets Policy (updated May 2016) and has committed to assessing opportunities for incorporating complete street design principles in all MnDOT projects. MnDOT's Complete Streets Policy can serve as a resource to the City for incorporating complete street design standards into city projects.

Safe Routes to School is a national initiative to increase safety and promote walking and bicycling for America's youth. The Safe Routes to school program will assist in providing infrastructure and non-infrastructure grants to build trails, paths, and safe connections to local schools.

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PARKS & RECREATION
CHAPTER 6

Introduction

Inver Grove Heights is well served by its developed parks, trails, recreation facilities and open spaces. These elements are important to residents and are a significant factor in maintaining a healthy community with a high quality of life. Parks define neighborhoods, offer recreation opportunities, and serve as open space and wildlife habitat. Parks act as neighborhood gathering points, strengthen the sense of community and set the stage for active living. The developed park system provides a solid foundation from which the City can expand to serve future residents. Inver Grove Heights is committed to meeting its resident's parks and recreation needs and will plan wisely for the future.

Since the adoption of the previous Comprehensive Plan, the City of Inver Grove Heights, along with Dakota County, has engaged in a number of development and improvement projects, as well as the development of park-specific master plans. The 2040 Comprehensive Plan focuses on the following key elements, to guide the improvement and development of the park and recreation system for the next 20 years:

- Acquisition of parks in the Northwest Area for new planned residential growth.
- Continued development of historical and cultural resources.
- Enhancing trail and bikeway connectivity.
- Preservation and management of natural resource lands.
- Leadership in sustainability.
- Improvements to promote a healthy and active community.

Accomplishments Over the Last 10 Years

Since the adoption of the 2030 Comprehensive Plan, the following improvements and developments within Inver Grove Parks and Recreation:

- Inver Wood Driving Range, Irrigation
- Playgrounds replaced at Oakwood Park, Skyview Park, Arbor Pointe, and Groveland Park
- Development of Heritage Village Park
- Development of Swing Bridge Park
- Re-purposed Skyview ballfields to soccer/football fields
- Added a community garden
- Development of Veterans Memorial Community Center (VMCC) East and West Rinks
- Aquatic play equipment added at VMCC
- Artificial turf added at VMCC
- Development of Mississippi River Regional Trail (Dakota County)
- Pine Bend Bluff Trailhead installed (Dakota County)
- Planning for dog park at Heritage Village Park
- Development of Mendota to Lebanon Hills Greenway (Dakota County) - in progress
- Development of Rich Valley Greenway (Dakota County) - in progress

Existing Parks System

Inver Grove Height's developed park system consists of 832 acres of park and natural areas and over 79 miles of combined trails and sidewalks not including those located on school sites. Schools provide an important recreational amenity for a number of neighborhoods in Inver Grove Heights and the City partners with the school district for some of its needs. This system was achieved through parkland dedication, partnerships with the school districts, donations and land acquisitions all designed to meet neighborhood and community recreation needs.

City Parks and Recreation Facilities

The Inver Grove Heights Park System is comprised of two community parks, 11 neighborhood parks, one linear park, one greenway, two special use parks, a historic site, five neighborhood playfields, one community athletic complex and five natural areas. City-owned parks and natural areas represent roughly 5% of the City's land area. There are approximately 18 acres of parkland per 1,000 residents, not including school district athletic facilities or Inver Wood Golf Course. Schools provide additional space for athletic fields and facilities through joint powers agreements for use and maintenance of them; however, hours are limited to school off-hours. Natural areas provide additional open space and access to natural resources. Within the park system are key community park and recreation facilities that provide community gathering, athletic fields and facilities, passive recreation and access to natural, cultural and historic resources including Veterans Memorial Community Center, Rich Valley Athletic Complex and Inver Wood Golf Course and Heritage Village Park. A summary of the existing parks and recreation facilities can be found in Table 6-1

Natural Areas

Harmon Park

There are five City-owned natural areas in the park system consisting of 139 acres of oak savanna, oak woodlands, wetlands, creeks, ponds and natural prairie areas that offer residents opportunities to access open space and natural resources. These sites include Harmon Park, Marianna Ranch, River Heights Park, Woodlands Preserve Park and Marcott Woods. In addition, there are other natural areas owned by regional public agencies or private institutions that offer conservation and natural resource oriented park amenities. These include Pine Bend Bluffs Scientific and Natural Area, a 256-acre area owned by the Minnesota DNR, the Katherine B. Ordway Natural History Study Area, and a 278-acre preserve owned and

Table 6-1. Inver Grove Heights Facility Grid

City of Inver Grove Heights Park and Facility Table

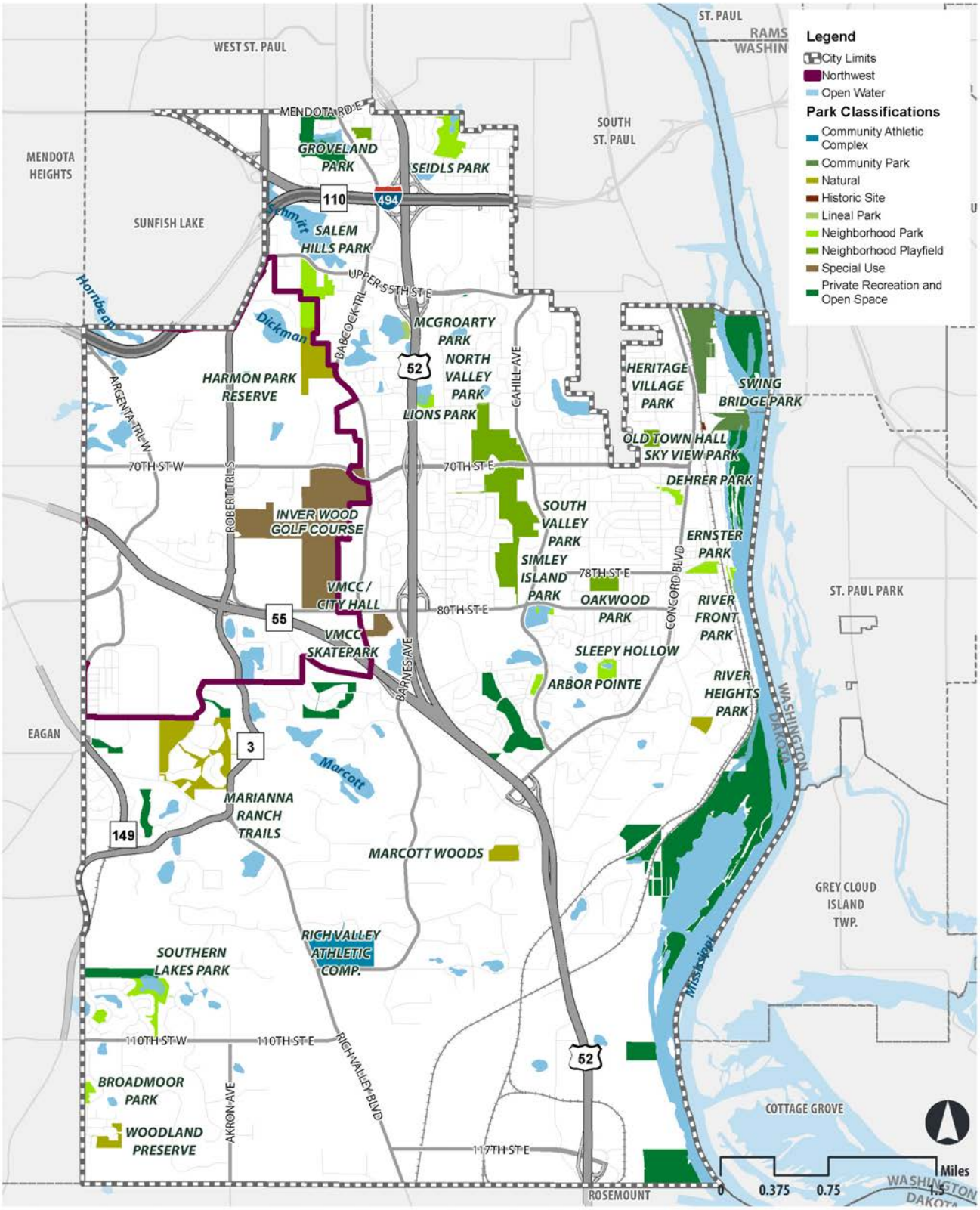
	Land Area (Acreage)	Water Area (Acres)	Picnic Shelter	Parking Lot (spaces)	Playground	Baseball/Softball Fields	Basketball Courts	Soccer Fields	Football/LaCrosse	Tennis Courts/Pickleball Tennis	Courts/Pickleball Sand Volleyball Court	Enclosed Shelter	Hockey Rinks (lighted)	Pleasure Rink	Sliding Hill (lighted)	Horseshoe Pits	Fishing	Fishing Pier	Disc Golf Course	Skate Boarding	Benches	Picnic Table(s)	Grill(s)	Water Fountain(s)	Tree Nursery	Paved Trail (ft)	Natural Trails (ft)	Mtn Bike Trails (ft)	Community Garden
Community Park																													
Heritage Village Park 65th Street and Concord Blvd.	57																				1					4,260			
Swing Bridge Park 4465 66th St	18		1	45								1					1				5	10	2			2,600			
Community Athletic Complex																													
Rich Valley 1841 105th St. E (105th & RichValley)	71	2	2	603	1	9	1	4			1		2								67	27	4	5		8,604			
Neighborhood Playfield																													
Groveland 1990 46th St. (46th & Audrey Ave.)	6			19	1	1	1				1		1	1	1						3	3				756			
North Valley 2800 70th St. (70th St. & Cahill Ave.)	58	3		87		2					4								1		10	3		3		4,970			
Oakwood 3534 78th St. E. (78th St. & Clayton)	15		1	40	1	3				2			1	1	1						10	4	2			3,336			
Skyview 6765 Dawn Ave. (69th & Dawn)	8			20	1		1	2	1	2			1	1	1						10	3		1		711			
South Valley 2810 70th St. (70th St. & Cahill Ave.)	93	2	1	37	1	1							1		1	1			1		11	7	3			6,840			
Neighborhood Park																													
Arbor Pointe Park 8545 Cahill Avenue	4	1			1																2					1,821			
Broadmoor Park 11306 Strafford Lane	7				1																2	1				203	737		
Dehrer 4085 Dehrer Way	5																												
Ernster Park 7750 Dickman Trail	7				1	1	1					1				1					2	1				2,540			
Lions Park 2423 65th Street E. .	4	8	1		1												1	1			6	5	1						
River Front Park 7782 River Road	2			12													1					2	1						
Salem Hills 1642 Upper 55th (Asher & Upper 55th)	41			26	1	1	1				2										6	2		1	1	2,151			1
Seidl's Lake Park 2655 47th Street E.	26				1												1				1					166			
Simley Island 3110 80th St. E. (80th & Cahill Ave.)	3	15	1	6													1	1			1	3				120			
Sleepy Hollow 3645 84th Street E.	10	2			1		1				1					1					9	2				4,095			
Southern Lakes Park 10810 Alison Way	4	0			1	1								1							2	1				102			
Natural Area																													
Harmon Park Reserve 1642 Upper 55th Street E.	43	2																									1,812	22,294	
Marianna Ranch 9125 Alverez Avenue	64																										9,681		
River Heights Park 8780 Inver Grove Trail	8																										1,937		
Woodland Preserve 11666 Azure Ln	10																												
Marcott Woods 2830 96th Street E .	14																												
Historic Site																													
Old Town Hall 6701 River Road	1																												
Lineal Park/Greenway																													
Hwy 52 Trail																										15,840			
McGroarty Park Co. Rd. 18 & Blaine Avenue	4	17															1				1								
Special Use Area																													
Inver Wood Golf Course 1850 70th St. E .	235			280																									
	Championship 18 and Executive 9 hole golf courses, driving range, Two weather shelters																												
Veterans Memorial Grove Community Center 8055 Barbara Ave.	13	2	1	365	1															1									
	The Veterans Memorial Community Center, Grove Fitness and Aquatics Center, Parks and Recreation Office																												
TOTAL	832	53	8	1,540	14	19	6	6	1	4	8	2	7	3	5	1	2	6	2	2	1	149	74	13	#	1	59,115	14,167	22,294	1

Independent School District 199 Facility Table

	Land Area (Acreage)	Playground	Baseball/Softball Fields	Stadium Football/Soccer Field	Tennis Courts (not lighted)
Simley High School 2920 - E 80th St	60		3	1	8
Simley Middle School 8167 Cahill Ave.	-		3		
Salem Hills Elementary 5899 Babcock Trail	11	1			
Hilltop Elementary 3201 - 68th St. E.	13	1	2		
Pine Bend Elementary 9875 Inver Grove Trail	26	1			
TOTAL	109	3	8	1	8

Last updated February 2018

Figure 6-1: Existing Park System



operated by Macalester College for education and research purposes. The Pine Bend Bluffs Scientific and Natural Area is open to the public and includes a trailhead provided by Dakota County. The Katharine B. Ordway Natural History Study Area is only open to the public on a limited basis with advanced approval.

Historical and Cultural Resources

The City of Inver Grove Heights has a rich history as a River City. There remain two historic buildings, the old town hall and school house as well as property along the Mississippi River that the City has been acquiring for Heritage Village Park. Heritage Village Park encompasses the old "Village" settlement and rail yard transportation hub along the Mississippi River. The park will provide passive recreation, historic displays, a dog park and a community gathering space.

Swing Bridge Park, near Heritage Village Park, consists of the remains of an old roundhouse foundation and the Swing Bridge. The City and the County have worked in cooperation to restore the Swing Bridge and create the park. The Swing Bridge, also known as Bridge 5600, is a double decked rail and vehicle bridge that served the railroad, stockyard, and travelers from 1894 until 1999 and connected Inver Grove Heights to Saint Paul Park.

These artifacts add to the historical and cultural significance of the Concord Avenue commercial area and riverfront area and provide abundant opportunities for interpretation and education.

Trails and Bikeways

Trails are an integral component of the City's park system. There are over 27 miles of off-road, on-road and internal park trails located throughout the developed community. Trails offer residents safe access to many city-wide destinations such as schools, shopping areas, parks and a wide variety of natural resources. Some trails are destinations in themselves, offering scenic walks such as the trails in South Valley Park. In addition to City trails, county trails, paved shoulders and sidewalks provide pedestrian and bicycle transportation to community destinations (see Figure 6.3).

The Mississippi River Greenway Regional Trail follows the Mississippi River, connecting Harriet Island Regional Park in St. Paul, Spring Lake Park Reserve and the City of Hastings (see Figure 6-3). A trailhead with parking

Conservation
Natural areas are community open space that contain significant natural resources and are preserved for environmental, open space & aesthetic purposes.

Historical Sites
Historical Sites contain historical features for preservation and interpretation.

Swing Bridge Park

Old Town Hall

Bridge 5600

View from Pine Bend Bluffs

and restrooms are provided at Swing Bridge Park and Pine Bend Bluffs.

Mendota to Lebanon Hills Greenway is a proposed 8.5-mile regional trail connecting Mendota Heights, Inver Grove Heights and Eagan. As of the completion of this Comprehensive Plan, the first phase has been constructed, consisting of a 0.5-mile trail segment and pedestrian underpass of Highway 110 in Mendota Heights.

Rich Valley Greenway is a regional trail and open space corridor that will provide a link between Lebanon Hills Regional Park and the Mississippi River in central Dakota County. The 5-mile corridor stretches east and west within the cities of Eagan and Inver Grove Heights.

Figure 6-2: Dakota County Regional Trails

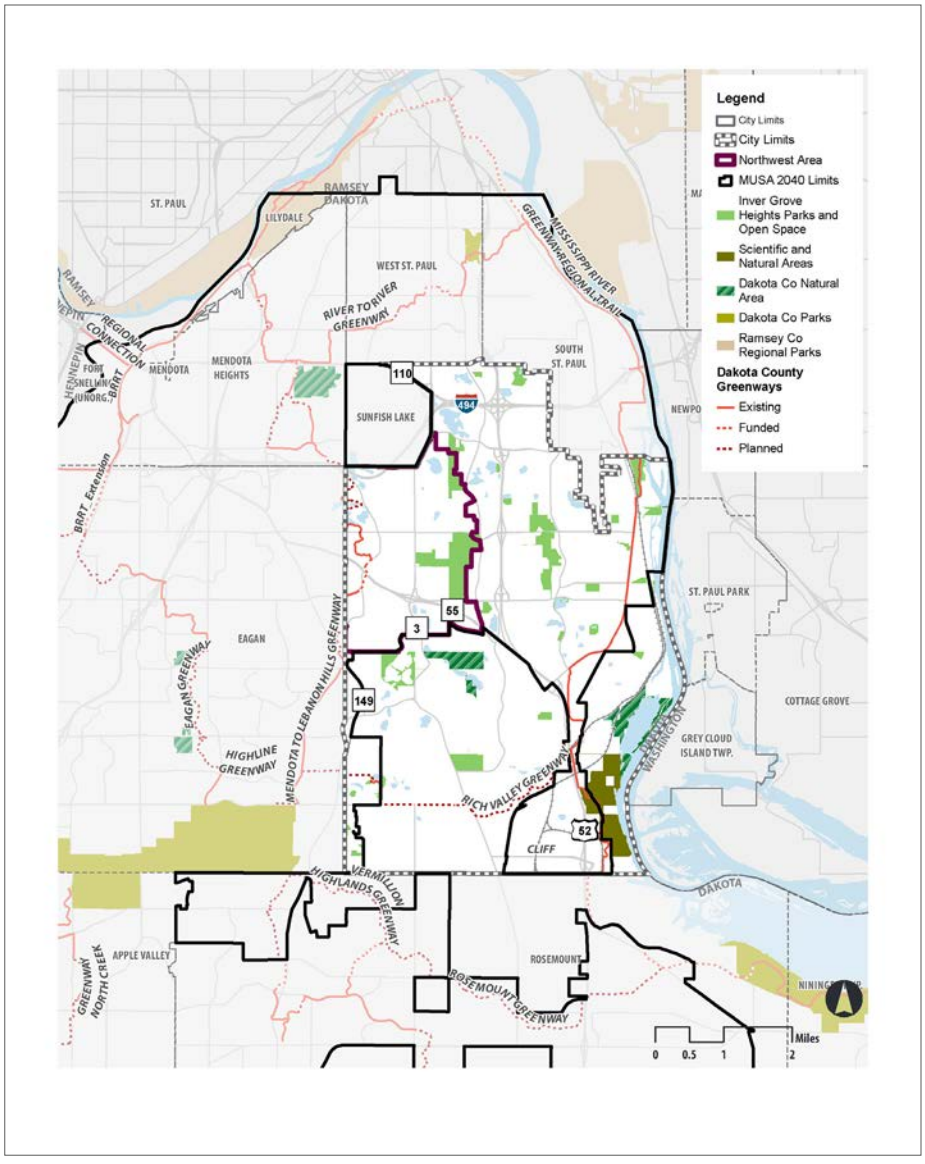
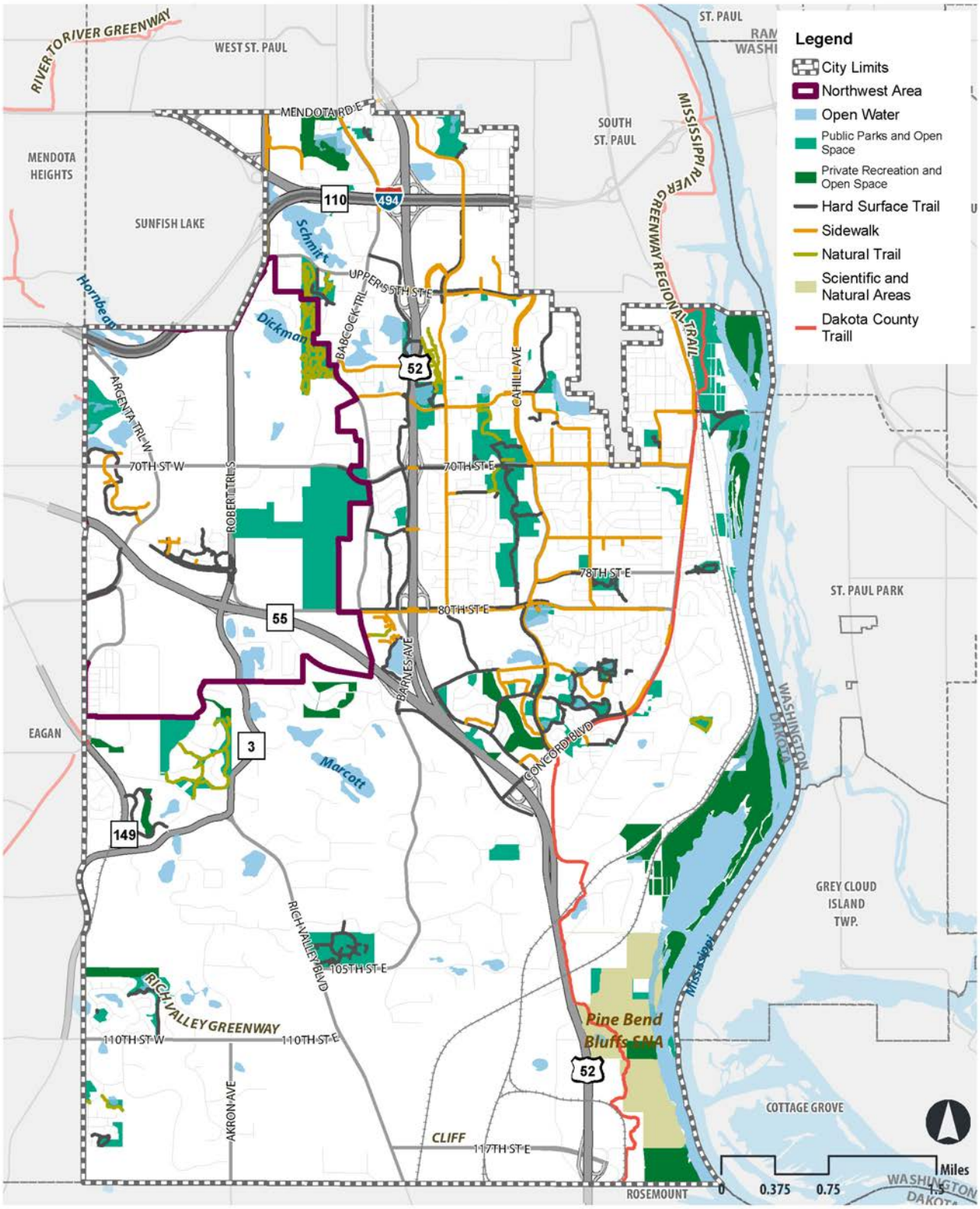


Figure 6-3: Existing Trail System



Parks System Framework

Introduction

Park, recreation, open space and trail connections are essential components of a healthy community. Decisions about parks, trails and open space affect the entire community, enhance sense of community and affect the quality of life in the City. The following park system framework was prepared to guide park planning and decision making. The framework criteria are based on national park and recreation standards developed by the National Parks and Recreation Association modified based on local conditions. This framework should be used as a guide and should be adjusted over time as local conditions change with community needs and trends.

Overall Park Area Standard

One accepted measurement of a park system is the quantity of parkland per 1,000 persons. The National Recreation and Parks Association developed a minimum standard of ten acres per 1,000 residents. In the Twin Cities, the accepted minimum standard is a range from 10 - 20 or more acres of parkland per 1,000 residents. Parkland acres refers to neighborhood parks, playfields and community parks and typically does not include trail corridors, special use parks, school lands, regional parks or natural areas. This park area standard should be viewed as a benchmark for comparison purposes.

Park Classifications

Lions Park Pier

Parks serve a variety of purposes, providing active and passive recreation and open space at a neighborhood and community wide scale. For planning purposes, the City has adopted a uniform park classification system that classifies parks according to their use and function. The existing park classifications include community parks, neighborhood playfields, neighborhood parks, special use areas, historic sites, natural areas, linear parks and park/school recreation. The future park classifications applicable to future urban residential areas outside the present developed urban areas exclude neighborhood playfields and linear parks. Community active recreation needs are better served by Community Athletic Complexes which are the preferred park type for community-wide active recreation.

Although park/school recreation areas are not City property, they are classified in the classification system as school lands offering active recreation opportunities for Inver Grove Heights residents even if on a limited basis. The City's park classifications for future growth areas are summarized in Table 6.2. A map of the City's parks can be found on Figure 6-1. Existing Park System.

Simley Island Park

Table 6-2. Inver Grove Heights' Park Classifications

Park Classification	Use/Design Direction	Service Area	Size	Acres/1,000	Site
Neighborhood Park	Basic unit of the park system, developed for both active & passive activities. Design criteria should anticipate the changing demographic profiles of the neighborhood served, as to provide appropriate facilities. Focus on informal and unstructured activities. Typical facilities include: • Playground • Open field area • Trails • Parking evaluated as needed	1/2 mile radius	4 to 10 acres	2.5 to 3.5	Easily accessible to the neighborhood population with safe walking and biking access utilizing trail networks. Site should have well-drained soils and not include topography of excessively steep slopes.
Neighborhood Playfield	Similar to a neighborhood park, but with more emphasis on organized youth athletics. Provides active & passive activities. Design criteria should balance neighborhood and community youth athletic needs. Typical facilities include: • Playground • Athletic fields (lighting not recommended) • Trails • Parking facilities designed to accommodate scheduled athletic use.	1/2 to 1 mile radius	6.5 to 15 acres	2.5 to 3.5	Easily accessible to the neighborhood and the community with a mix of local and collector street access.
Community Park	Area possessing natural qualities conducive to passive recreational activities. Typical facilities include: • Playground • Picnicking facilities • Trails • Natural resources • Community facilities (special uses) • Parking facilities designed to accommodate uses	2 to 2.5 mile radius	20 to 80 acres	2.5 to 5	Site typically affords a variety of natural features, well-drained soils, positive drainage, varied topography and accessible to pedestrian and vehicular traffic.

Park Classification	Use/Design Direction	Service Area	Size	Acres/1,000	Site
Natural Areas	Area possessing natural qualities preserved for environmental, open space or aesthetic purposes. Facilities should be compatible with the preservation of the resource.	Community Wide	Depends on resource	Varies	Significant natural areas, which merit preservation and would be adversely, affected by development
Community Athletic Complex	Area for intensely programmed recreation facilities and uses. Typical features include: • Athletic fields - youth and adult (lighted) • Swimming pools and other special use facilities • Playground • Trails • Parking designed to accommodate uses.	Community Wide	25 to 80 acres	3.0 to 4.0	Site should be suited for intense development that is easily accessible to the population it is intended to serve. Located near high traffic areas such as schools and major thoroughfares, preferably in non-residential areas.
Linear Parks	Linear parks and open spaces developed for varying modes of recreational travel such as walking, biking, skiing, in-line skating, etc. or for preservation of wildlife corridors, streams, etc. Features include: • Trails	Site specific & Community Wide	Sufficient width for intended use. Minimum 30 feet wide	Variable	Built or natural trail corridors used to link parks, natural resource sites, and/or community facilities such as schools, libraries, and commercial areas. Certain uses such as wildlife corridors require sufficient width to ensure proper function.
Special Use	Highly specialized use area for community recreation facilities such as: • Community golf courses • Arenas • Gardens • Plazas • Pools • Community Center • Other specialized recreation uses	Community Wide	Variable	Variable	Site Specific
Historic Sites	Area set-aside for preserving and interpreting historical features such as landscapes and architecture. Features include: • Interpretive signs • Parking • Museum	Community Wide	Variable	Variable	Size should be adequate to provide support facilities such as picnic area, parking, etc.

Trail Classifications

Trails in Inver Grove Heights are classified based on function, design and location. Trails are designed to serve differing users depending on their location. Trails are designed to connect neighborhoods, parks, schools and commercial areas. Some trails are used primarily for recreation and others for transportation purposes. Trails in Inver Grove Heights include use-separated trails (parallel pedestrian and bicycle trails) within the same corridor, combined trails for both pedestrians and bikes, bike lanes (paved shoulder next to the street) and unpaved natural trails and special use trails (mountain bike, cross county ski, horse and snowmobile). Trail classifications and criteria are summarized in Table 6.3. The function and design of trails within parks will be determined as part of individual park master plans. A map of the City's existing trails can be found on Figure 6.3.

Harmon Park Preserve

Table 6.3: Trail Classification

Trail Classification	Location and Use	Surface	Width	Slope	Notes
Class I - Separate pedestrian and bicycle trails.	Off-street	Bituminous or bituminous and concrete	5-6 feet for pedestrians 8-10 feet for bicycles	0-5% pedestrian 0-3% bike	
Class II - combined pedestrian and bicycle trail	Off-street	Bituminous	10 feet	0-3% average	
Class III - Bikeway lane	On-street - one way per side	Striped lane next to vehicle lane	8-10 feet	Slope to match road	One way lanes
Nature trail	Within parks and conservation areas	Aggregate, wood chip or turf	4-6 feet	0-5% desirable 10% maximum	
Cross country ski trail	Within parks and conservation areas	Snow	10-14 - varies for one or two way	0-15% + depending upon difficulty	Diagonal and skate tracks
Snowmobile trail	Off-street	Snow	10-14 feet	0-10%+	
Horse trail	Off-street	Turf or wood chips	10 feet	0-10%+	12 foot overhead clearance

Preserving Natural Resources (Harmon Landscape)

General Park and Trail Criteria

Park classifications describe criteria applicable to each park type. The following park and trail criteria are applicable to all parks:

- The location of parks and trails will be determined by the City using the 2040 Parks, Trails and Open Space Plan as a guide.
- Parkland shall be suitable to its intended use. This means adequate size, parcel shape, soils, slope, access and relationship to adjacent land uses.
- Parkland shall be continuous and undivided by roadways, railroad tracks, pipelines, or other impassible or unusable barriers.
- Parkland shall be free from any contaminants or debris.
- Trail land shall be of sufficient width and slope to accommodate 10' wide trails and appropriate buffer areas. General guidelines include a minimum width of 20' – 30', a maximum slope less than 12 percent and an average slope not to exceed four percent.
- When park land is dedicated, the developer is required to grade the park land and pave access and perimeter trails (not internal park trails) and sidewalks within the park and adjoining rights of way. All construction must meet City specifications.

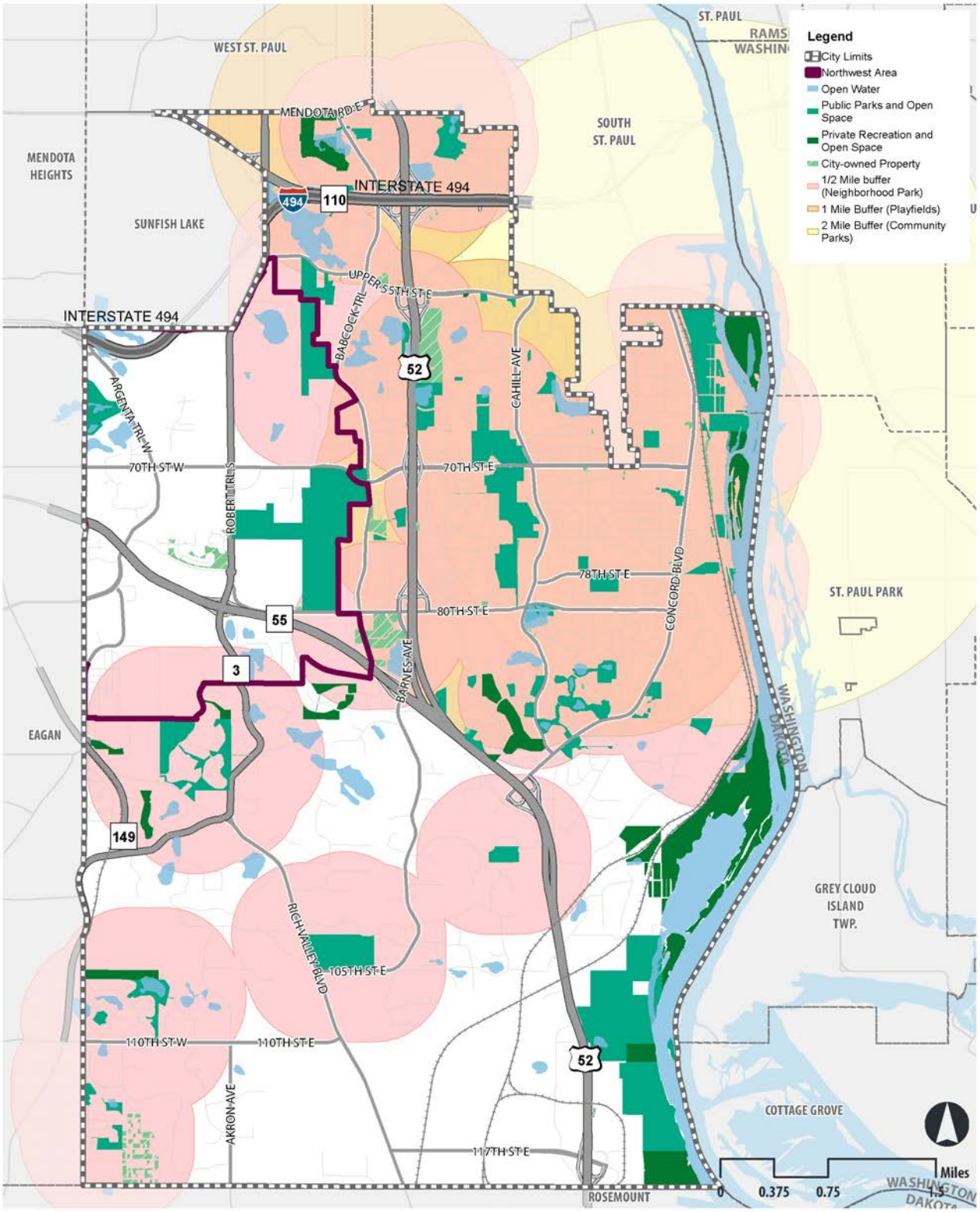
Where topographic constraints pose barriers to achieving the above criteria, the City encourages a collaborative design process to minimize the degree of deviation from these criteria.

Park System Needs

Introduction

There is no single standard or measurement to determine community parks and recreation needs. Each community is unique and has its own needs and opportunities. Inver Grove Height's park and recreation needs were determined through a public process that included community and stakeholder input; guidance from City staff, the Parks and Recreation Commission; and an analysis of the park system considering growth forecasts and recreation trends and using the Park System Framework. With 18 acres of parkland per 1,000 residents, Inver Grove Heights exceeds the standard benchmark for minimum park acreage per 1000 residents. An analysis of park service areas shows good access to parks and facilities from most neighborhoods (see Figure 6.4 – Park Service Area Analysis). Both suggest that the City has done well to provide adequate parkland to meet neighborhood and community recreation needs. To continue this

Figure 6-4: Park Service Area Analysis



level of service in future residential growth areas, additional parkland is needed in the Northwest Area of the City.

Neighborhood Park Needs

Oakwood Park Playground

Neighborhood Parks in Inver Grove Heights are the cornerstone of the park system providing passive recreation to neighborhoods within a safe half-mile walk for most residences in the urbanized portions of the City. Existing neighborhood parks are generally in good shape and serve the neighborhoods well. Based on the application of the Park System Framework to future growth areas, an additional 4-5 Neighborhood Parks may be needed to accommodate neighborhood recreation needs of future residents in the Northwest Area, (see Figure 6-6: Northwest Area Park Service Areas Analysis). Typical neighborhood park amenities will be needed, although an opportunity exists to cater the parks to the character of the neighborhood and the site and to specific local needs. Community input suggests that the following improvements are needed in existing neighborhood parks:

- Looped trails, shade and seating areas.
- Handicap accessibility improvements.
- Ongoing life-cycle replacement of playgrounds and facilities.
- Landscape improvements.

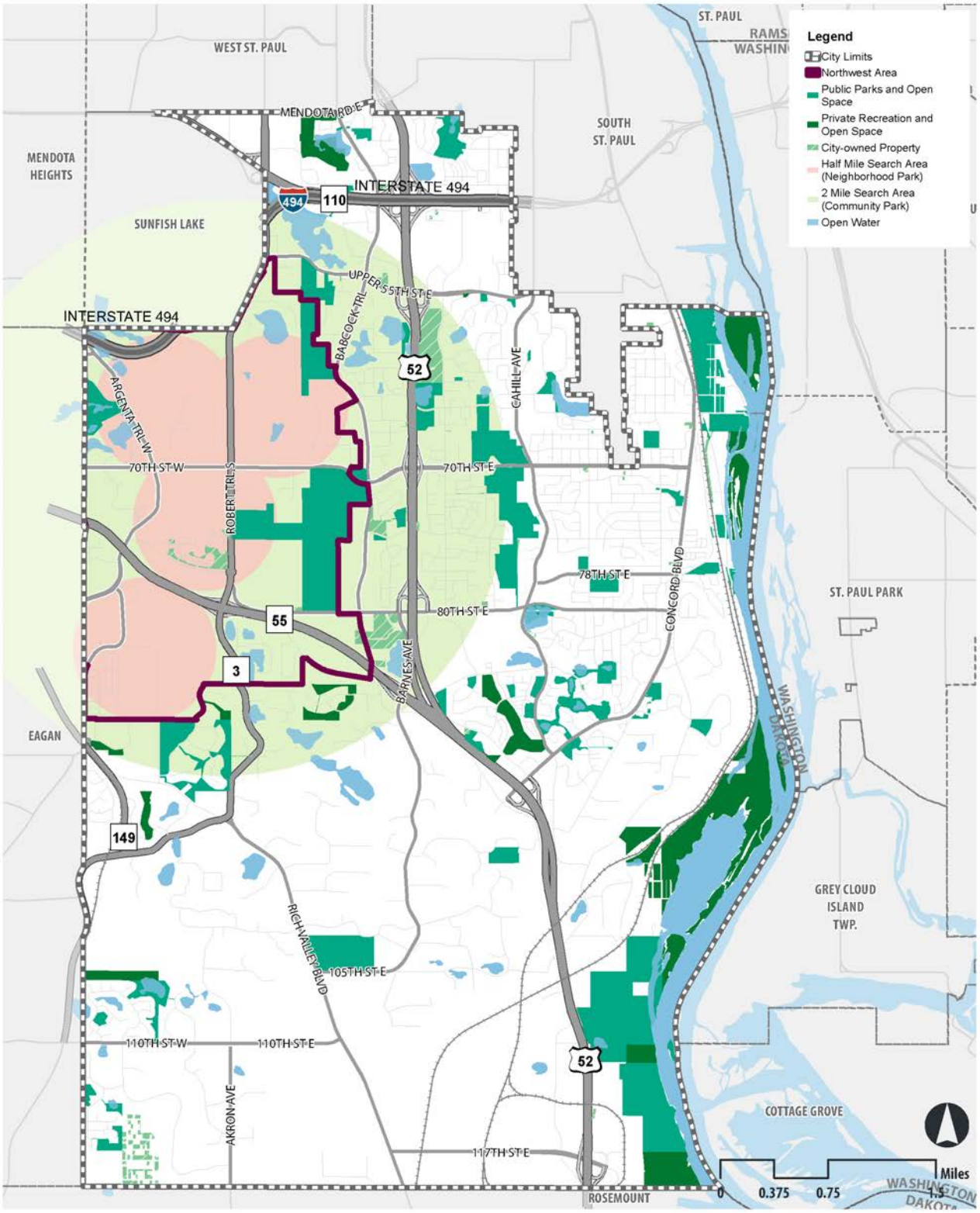
Community Park and Recreation Facility Needs

Community garden plots at Salem Hills Park

The Rich Valley Athletic Complex and existing neighborhood playfields reasonably meet existing needs for community-wide active recreation. There is also a need to maximize the use of the City's existing fields through lighting, irrigation, and scheduling improvements. While community survey results showed that a majority of residents are satisfied by the existing parks and recreational facilities offered, there are a number of facility improvements that would help to meet the more specific needs of the community:

- Youth Soccer/lacrosse/football fields
- Disc golf area improvements
- Archery range(s)
- Dog exercise area
- Expansion of community gardens
- Larger gathering areas for community events
- Large community picnic shelters with electrical service and food serving area
- Skills course for mountain bikes
- Accessibility improvements, such as a barrier free playground

Figure 6-5: Northwest Area Park Service Area Analysis



installed in at least one of the parks
- Looped trails, seating areas and shade
- Continued life-cycle replacement of existing recreation facilities
- Nature-based play areas
- Pickleball courts
- Adequate public parking at all public parks and facilities such as VMCC/Grove, and Inver Wood Golf Course
- Paired volleyball courts for tournament play
- Outdoor aquatic facility
- Public boat launch along the Mississippi River
- Winter recreation in the northwest and southwest areas of the city

Veterans Memorial Community Center Water Park

Special Use Facilities Needs

The park system contains two special use facilities that are popular with residents and serve important community recreation needs, the Inver Wood Golf Course and the Veterans Memorial Community Center. These facilities provide for year-round opportunities to promote healthy active living lifestyles for all ages of the population. Continuation of general maintenance is needed at these facilities. Additional needs include:

- New program space
- New and alternative use of ice sheets
- Aesthetic improvements

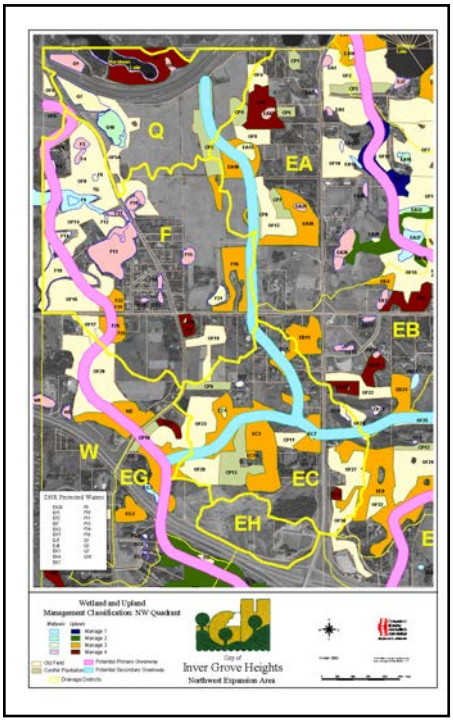


Figure 6-6: NRI of NW Area

Open Space and Natural Resources Needs

The City's natural areas provide open space and natural resource preservation for all residents. Open space and natural resources are valued by Inver Grove Heights residents and they have been identified as important to maintaining a healthy community. As the City develops into the Northwest Area, open space and natural resource preservation is needed to protect existing natural resources identified in the City's Natural Resources Inventory (NRI) and preserve areas for stormwater management (see Figure 6-5: NRI of Northwest Area).

The Mississippi River corridor is a vast natural resource that the City depended on for its very existence in the early days. Access to this resource is very limited in the City. The Mississippi National River Recreation Area is working with numerous partners to protect the natural resources of the river corridor and to provide continuous trail connections along it. The City should work cooperatively in these efforts and should work to create connections to the River at every opportunity.

Community input suggests that there is a need for natural resource interpretation and education as a way to connect youth with the environment. The City's natural areas provide such an opportunity. Another opportunity is at the Katharine B. Ordway Natural History Study Area. Past plans have suggested a cooperative agreement for public use of the Katharine B. Ordway Natural History Study Area. Today, groups and individuals must receive prior approval from Macalester University prior to visiting or utilizing the area. As the City grows it should explore all opportunities to provide natural resource education and interpretation, whether through a provision of interpretive signs in City parks and natural areas, through a cooperative agreement to access the Macalester College site, or as a unique City facility dedicated for that purpose.

It is not enough to preserve open space and natural resources. Management of these valued resources is needed to protect them from degradation caused by invasive species, disease and deer browse. The City needs to develop and implement natural resource management plans as new open space is preserved.

Lion's Trail

Trail and Bikeway Needs

Trails are popular and use has boomed regionally and in Inver Grove Heights. Trails are used for safe and convenient access to parks, open space, neighborhoods, commercial areas and destination beyond the City. A complete and connected trail system of trails and bikeways is highly valued by residents for leisure use and for transportation. Trails are important to maintain a healthy community and high quality of life. Increased access to trails and hiking was identified as the most popular park amenity that residents would like to see more of, especially within the City, according to community input.

Rich Valley Trail

Trail users have differing needs depending on their skill level and purpose for riding. Those riders with advanced skills most often ride for convenience and speed and want direct access to destinations with a minimum of detour or delay and are comfortable riding on roads with motor-vehicle traffic. Those riders of lesser skill level or riding for leisure will avoid high traffic areas and will more likely use routes with bike lanes, off-street trails or trails in parks and open spaces depending on the skill level. To accommodate the full range of trail users, there is a need to provide connectivity to destinations in and outside of the City. To maintain active lifestyles, the City needs a coordinated trail and bikeway network to

provide non-motorized and recreation options.

Community input suggests the following trail and bikeway needs:

- A coordinated trail and bikeway network to provide non-motorized and recreation options.
- Develop the trail network into future growth areas.
- Provide better signage of the community's sidewalk and trail system.
- Work with Dakota County to develop master plans for regional trails in the City.
- Increase access to the Mississippi River and to regional trails.
- Provide trails to natural resources and open space.
- Provide trail connectivity to adjacent City's trail networks.
- Continue to close gaps in the trail system

Sustainability Needs

The City of Inver Grove Heights, through its community vision, is committed to the preservation and enhancement of its natural environment and to greater sustainability. The park system represents a visible opportunity to provide leadership in achieving greater sustainability. Opportunities for sustainability in the park system include:

- Development of new facilities in the park following Leadership in Energy and Environmental Design (LEED) standards.
- Consideration of life-cycle costs in the planning and development of park and recreation facilities.
- Consideration of solar-power as an energy source for future park facilities.
- Restoration and management of the City's natural resources.
- Use of native plants to reduce landscape maintenance requirements, to serve as a source of food and shelter for wildlife, to buffer shorelines, to control runoff and to manage geese populations.
- Seek biologic controls for invasive species.
- Exploration of greater use of pervious pavers, rain gardens, and Best Management Practices (BMPs) in park projects.
- Develop natural resource and environmental interpretation/education component to City Parks and Open Spaces.

Salem Hills tennis courts

Healthy Community Needs

Part of the City's vision is for Inver Grove Heights to be a healthy active community. Such a community offers a balance of active and passive recreation options, is interconnected through a multi-modal transportation system including a component of off-street trails and bikeways, trails link community destinations such as parks, open spaces, places of work and shopping and to home, encourages walking with pedestrian environment that is attractive with looped walking routes. There is an opportunity for the park system to provide key components of this City goal through targeted improvements to parks, trails and open spaces.

Parks System Plan

Introduction

A comprehensive park trail and open space system is a key element of a healthy community with a high quality of life. As The City of Inver Grove Heights grows in population and new areas of the City develop, additional recreational opportunities will be needed. This plan insures new residents will have access to quality neighborhood parks that are connected to a larger park network that includes Community parks and open spaces, and natural resources.

The 2040 Parks, Trails, and Open Space Plan, Figure 6-7 shows existing parks and trails and general locations of proposed parks and trails. The proposed new park locations are designed to provide neighborhood recreation for future residential growth that are interconnected to trails. Proposed new trails are designed to link neighborhoods to parks, to community resources and to create loop trail opportunities.

The 2040 Parks, Trails, and Open Space Plan is a guide to park system improvements and development of the park and recreation system to the year 2040.

Neighborhood Parks

Four new neighborhood parks are proposed to accommodate the neighborhood recreation needs of future residential growth in the Northwest Area representing 20 - 40 acres of new parkland. New Neighborhood Park Search Areas are shown on Figure 6-7: 2040 Park, Trail and Open Space map. These search areas represent an approximate location of future neighborhood parks that are intended to meet the

needs of the specific neighborhood they generally serve within ½ mile walk with no barriers such as busy roads or large water bodies to inhibit park access. Neighborhood parks are also located to be connected by a system of trails that may include varying facilities and may incorporate natural features to create unique amenities in a neighborhood.

Community Parks

One new community park is proposed to accommodate the community recreation needs of future residential growth in the Northwest Area representing 20 - 40 acres of new parkland. The Community Park Search Area shown on Figure 6-7: 2040 Park, Trail and Open Space map represents an approximate location of the future community park to meet the community park needs within a 2 mile distance – a distance that encompasses all of the Northwest Area.

The City has acquired all but one property intended for the full development of Heritage Village Park, a community park with cultural and historical significance in the City. A portion of the park will be improved as a 10-acre dog park. As the Heritage Village Park area redevelops, the City should encourage adjacent land uses and public improvements that will activate the park with people to create a vital place and destination in the community. Such improvements might include development of a retail hub with restaurants or other destination oriented gathering places around or near Heritage Park and an enhanced water front area that enables public access and improved pedestrian connections to adjacent neighborhoods and the Concord Avenue commercial area. Currently, the area does have access to a private commercial marina.

Swing Bridge Park

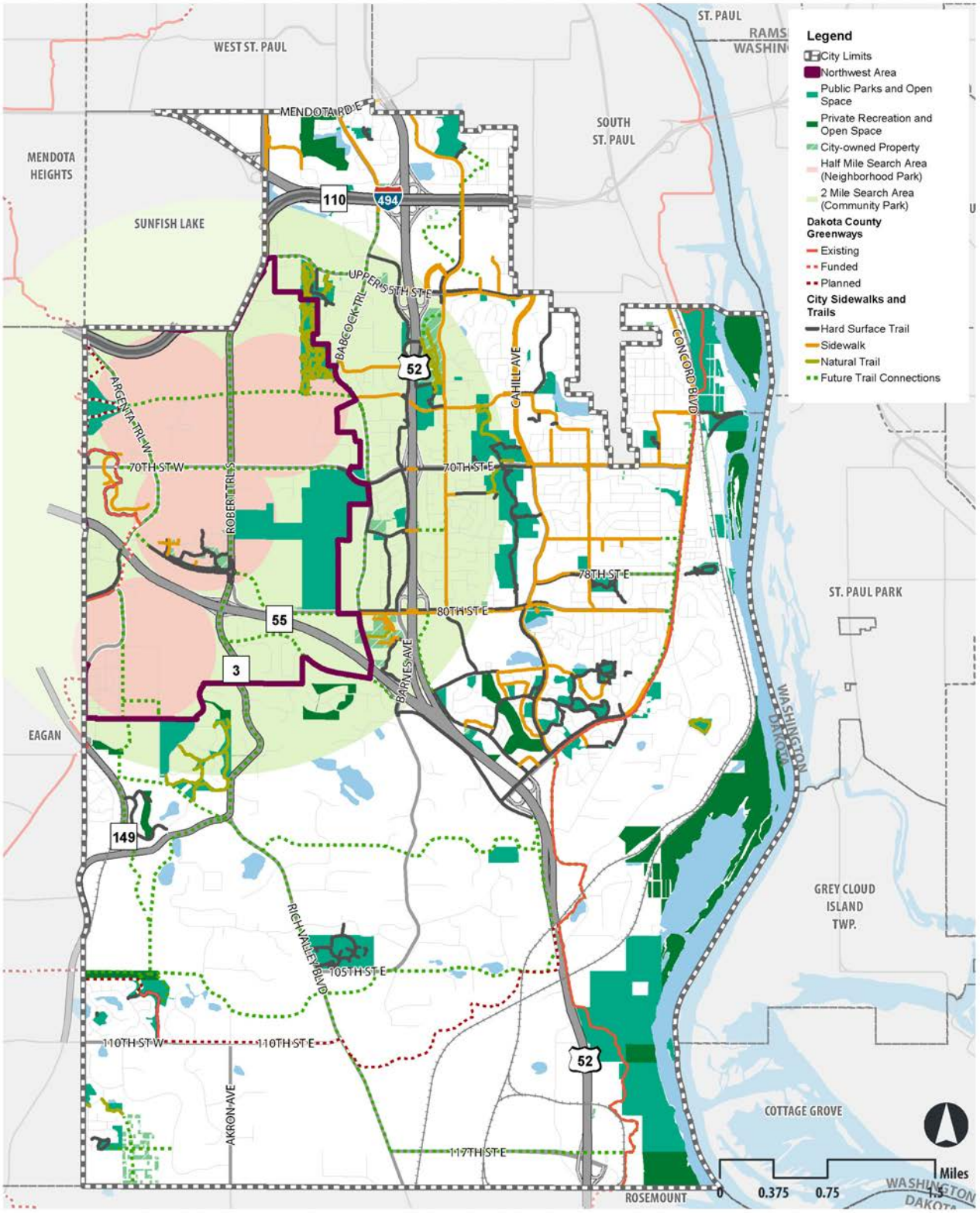
Open Space & Natural Resources

The City's 2003 Natural Resource Inventory (NRI) of the Northwest Area was conducted to plan for the management, protection and enhancement of natural resources (see Figure 6-5: Northwest Area NRI). The NRI identified and ranked existing natural resources according to ecological and local values. Opportunities for expanding open space areas should be explored to meet the community's desire for natural resource preservation.

Trails and Bikeways

The 2040 Comprehensive Trail Plan (Figure 6-8) is a 20 year plan for a trails and bikeways in the City that will connect residents to parks, open spaces, schools, commercial areas and to regional trails and trails of adjacent

Figure 6-7: 2040 Parks, Trails & Open Space Plan (The proposed trail alignments are conceptual.)



communities. The plan suggests improvements to provide access to natural resources and open spaces and trails that provide key connections to destinations in the City, to regional trails and to trail system of adjacent cities and new trails in the Northwest Area. New trails will promote a healthy active community and will accommodate a range of uses including walking, bicycling, in-line skating, etc., and a wide variety of trail user skill levels.

The 2040 Comprehensive Trail Plan identifies trail alignments that are conceptual in nature. Their locations have been identified to achieve stated objectives such as connecting residential areas to local park facilities, open spaces, natural resources and other destinations. The actual locations of such trails shall be determined through negotiations and mutual agreements between land owners/developers and the City. The plan serves as a statement of policy that trail connections are desired in certain areas. Precise alignments that achieve this desired goal need to be the product of more detailed design.

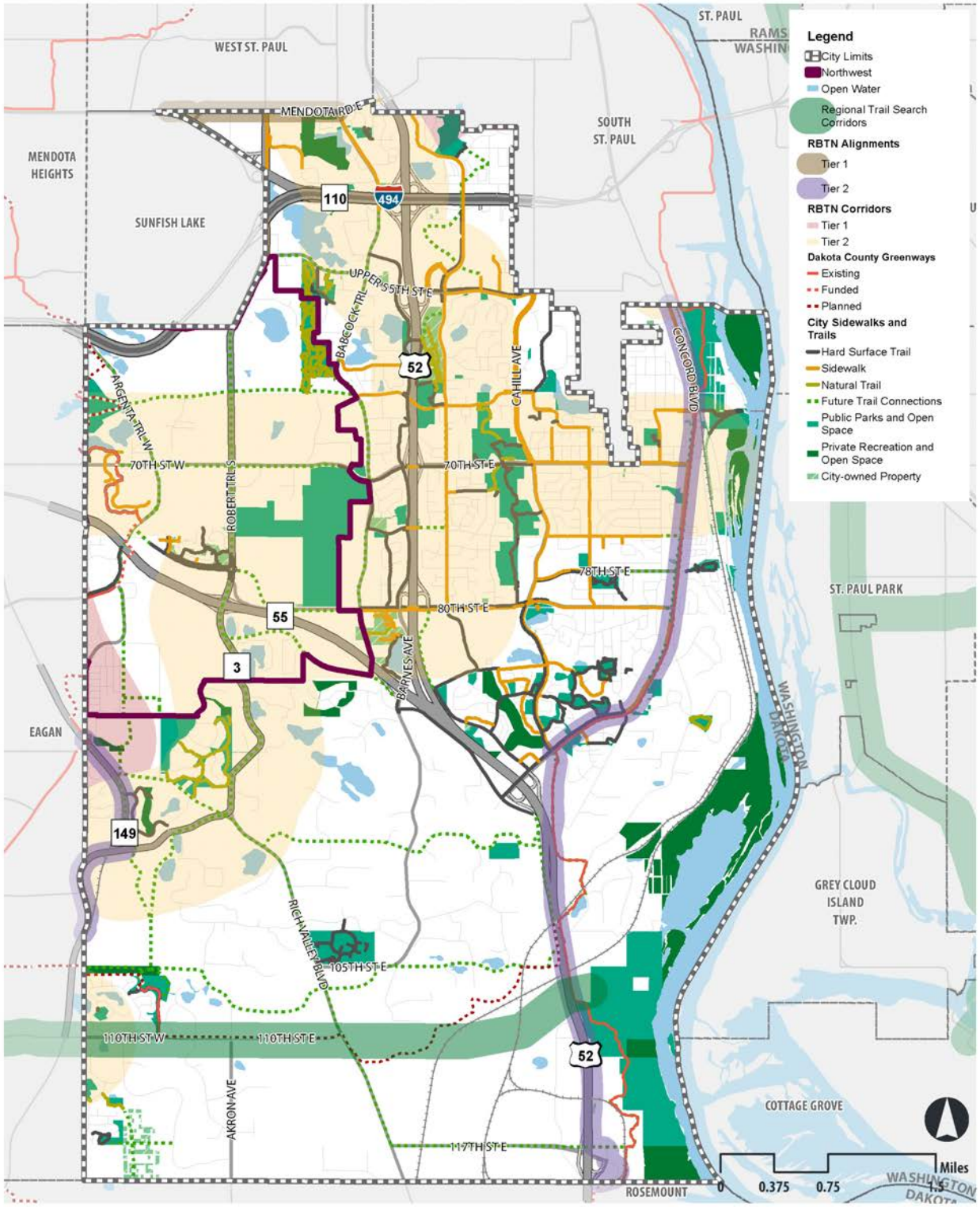
Regional Trails and the Regional Bicycle Transportation Network

The 2040 Comprehensive Trail Plan incorporates Regional Trail Corridor Search Areas. The Metropolitan Council recently created the 2040 Transportation Policy Plan (TPP), which was adopted in January 2015. The TPP establishes a vision for the metro region over the next 20 years and provides detail about how this vision will be reached. The Regional Bicycle System Study was completed in 2014 to develop a more complete understanding of how the region's on-street bikeways and off-street trails connect and how they work together to serve regional transportation trips by bicycle. As a result of the study, the TPP has established the Regional Bicycle Transportation Network (RBTN) with the goal of creating an integrated seamless network of off-street bikeways and off-road trails that complement each other to most effectively improve conditions for bicycle transportation at the regional level.

The RBTN is divided into tiers for regional planning and investment prioritization, including:

- Tier 1 and Tier 2 Regional Bicycle Transportation Corridors:
  - Tier 1 Corridors reflect those locations where improvements can most effectively enhance mode choice in favor of biking and walking.
  - Tier 2 Corridors represent the remaining corridors in the overall Regional Bicycle Transportation Network.
- Tier 1 and Tier 2 Regional Bicycle Transportation Alignments:
  - Tier 1 Alignments reflect improvements that would provide direct transportation connections to and between regional destinations.
  - Tier 1 Alignments represent the remaining alignments in the overall Regional Bicycle Transportation Network.

Figure 6-8: 2040 Comprehensive Trail Plan (The proposed trail alignments are conceptual.)



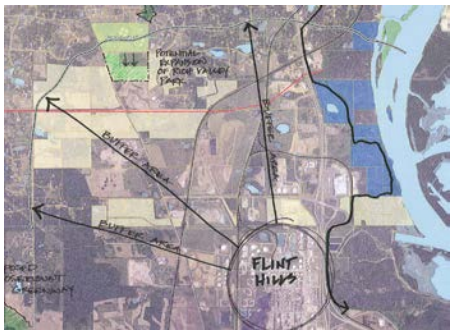


Figure 6-9: Flint Hills Buffer Area

As the City and the County develop master plans for new trails and trail segments, active participation by adjacent property owners will help determine the final alignments. As the alignments are finalized, the City should enter into joint powers agreement between the County and Inver Grove Heights for each of the trails that outline management and maintenance responsibilities.

Equestrian Trails

Horse stables are prominent in some rural residential neighborhoods and the need exists for off-street riding areas. Lebanon Hills Regional Park in Eagan provides trails for horseback riding but until the Rich Valley Regional Trail is completed, there is no trail connection into Inver Grove Heights.

Because of limited public resources for equestrian trail development, trail construction in the near future may be completed by private entities such as trail clubs or a group of users. The City of Inver Grove Heights supports private trail development. It may be possible for private groups to reach an agreement with Flint Hills Resources to utilize some of the buffer land that surrounds the refinery for equestrian trails (see Figure 6-9: Flint Hills Buffer Area).

Community Recreation Facilities

The City's community recreation facilities are important to City residents and are key to providing a healthy active community. As such, the Comprehensive Plan Update envisions continuing the use of Inver Wood Golf Course as a public golf course. Improvements to Inver Wood Golf Course were completed in 2016 and Veterans Memorial Community Center is improved annually to better keep and attract members and guests. Improvement plans should be developed to improve aesthetics, provide alternative uses or multiple uses and provide community meeting and program space.

Natural Resources

Preserving and maintaining the City's natural resources are important to Inver Grove Heights residents. Access to natural resources is important to maintaining a healthy community. Natural resources exist on both City and private property. The City should continue to encourage the preservation and management of natural resources on private property through enforcement of City regulations, forestry and educational programs and

communications. The City should develop management plans and utilize best management practices for the maintenance of natural resources on City property.

Additionally, the City should consider providing natural resource interpretation throughout City parks and natural areas. There is also an opportunity for the City to partner with Macalester College for public use of the Katharine B. Ordway Natural History Study Area. The City might also consider making natural resource and interpretive improvements to the Harmon Nature Preserve. Within the existing developed City and future growth areas, there may be other natural resource areas that are worthy of preservation and interpretation. The following are examples of other nature centers that could serve as a model:

- Pine Bend Bluffs Scientific and Natural Area (SNA) is a Department of Natural Resources property in Inver Grove Heights. SNA's contain rare natural resources and in some cases provide parking facilities and interpretive kiosks to help visitors identify key features and processes for self guided tours.
- Roseville's Harriet Alexander Nature Center in Central Park is operated by an independent, nonpolitical, nonprofit organization created to support the mission of the Nature Center with a Board of Directors that oversees the nature center operations and fund-raising efforts. Programming is paid for in part through membership dues and donations.
- The Oakdale Discovery Center is a City owned and operated facility providing a variety of nature exhibits and educational opportunities. The facility began as a nature center that was a converted home in Oakdale Park and is now a reconstructed facility with space for meetings, programming, and nature interpretation in renamed Oakdale Nature Preserve.

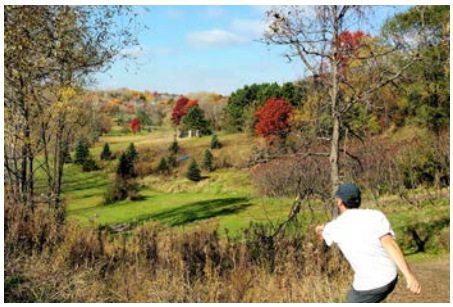
The City should also encourage and support the development of private nature centers on private property as a means to preserve environmentally sensitive natural areas and further encourage residents to participate in nature-based activities and education.

An excellent example of such a private nature center is the Dodge Nature Center located in West St. Paul and Mendota Heights. Dodge has a diversified and beautiful area of prairies, hardwood forests, lakes, wetlands, miles of hiking trails, a working farm orchard and bee apiary. Dodge offers a variety of unique experiences for people of all ages. It has an expansive environmental education curriculum for children.

The Oakdale Discovery Center

Pine Bend Bluffs Scientific Nature Area

Veterans Memorial Community Center Skatepark



Disc golf at North Valley Park

Sustainability

Greater sustainability in the park system will be achieved by the incorporation of Leadership in Energy and Environmental Design (LEED) standards for new park buildings, consider life-cycle costs in the planning and development of park and recreation facilities, utilization of best management practices, such as the use of rain gardens, permeable pavers and other innovative stormwater retention techniques in new parks and park renovations and through use of native plants in landscaping. The City can provide leadership through enforcement of City regulations related to natural resources, through educational and recreation programming and by providing interpretation of natural resources in the City's parks and open spaces. Greater sustainability can be achieved by the development of a system of connected open spaces, or the preservation of natural resource areas.

Healthy Active Community

The park system is central to achieving a key goal of the City's Comprehensive plan, to maintain a healthy active community. Priority should be given to park system improvements that encourage greater use of the park system, and that provide amenities for diverse park system users.

Active living integrates physical activity and healthy eating into daily routines of residents. There are many ways to engage in daily exercise, such as biking, walking or gardening. Daily physical exercise can be achieved without expensive gym memberships or rigorous workout routines designed for athletes. Active Living can be achieved through small changes in our lifestyles, and can contribute to increasing social interactions and our connections to nature.

The City's ability to integrate active living practices into parks, trails, and open spaces is heavily influenced by the following environmental factors:

- A varied mix of land uses
  - » Locating places where we live, work, study, shop, eat, and play near each other make walking and biking more convenient
- Functional, inviting, and attractive parks
  - » Providing places that are engaging and inviting encourages us to get outdoors and enjoy physical activity
- Safe and comfortable access to parks and the outdoors
  - » Providing places where people of all ages, abilities can safely and comfortably access parks is one of the most influential factors to active living in the community. This includes providing visible signage and safe road crossings for pedestrians.
- Access to healthy foods

Crime Prevention Through Environmental Design (CPTED)

"CPTED is the proper design and effective use of the built environment which may lead to a reduction in the fear and incidence of crime, and an improvement of the quality of life."

- National Crime Prevention Institute

» Providing places where people can access healthy, fresh, and affordable food is a serious consideration for Active Living. There are a number of ways that parks can provide access to healthy foods, such as serving as a drop-off point for CSAs (Community Supported Agriculture), and providing community garden plots.

Improvements should be made that provide increased public safety, such as those that utilize Crime Prevention through Environmental Design (CPTED) techniques to create safe and welcoming parks, trails and recreation facilities; improvements that include amenities for a variety of age and skill levels; improvements that include looped trails of varying lengths and trails to provide access to natural resources and other key destinations in the City. Parks improvements should focus on providing places to rest with benches and shade that are spaced to serve all users with a variety of abilities.

The Four Strategies of CPTED

1. Natural Surveillance - A design concept directed primarily at keeping intruders easily observable. Promoted by features that maximize visibility of people, parking areas and building entrances: doors and windows that look out on to streets and parking areas; pedestrian-friendly sidewalks and streets; front porches; adequate nighttime lighting.
2. Territorial Reinforcement - Physical design can create or extend a sphere of influence. Users then develop a sense of territorial control while potential offenders, perceiving this control, are discouraged. Promoted by features that define property lines and distinguish private spaces from public spaces using landscape plantings, pavement designs, gateway treatments, and "CPTED" fences.
3. Natural Access Control - A design concept directed primarily at decreasing crime opportunity by denying access to crime targets and creating in offenders a perception of risk. Gained by designing streets, sidewalks, building entrances and neighborhood gateways to clearly indicate public routes and discouraging access to private areas with structural elements.
4. Target Hardening - Accomplished by features that prohibit entry or access: window locks, dead bolts for doors, interior door hinges.

Implementation

Park System Goals and Policies

In order to guide the future park system, the following park system policies have been proposed by the Inver Grove Heights Parks and Recreation Commission:

Planning Goals & Policies

Planning Goals & Policies

The following planning goals and policies will guide the City of Inver Grove Heights.

Planning Goals:

- Develop and adopt a System-wide Parks and Recreation Master Plan based on the needs and demands of all segments of Inver Grove Heights's population.
- Locate parks when they are geographically, financially and physically feasible, and based on park and recreation needs.
- Coordinate the efforts of local, state and federal governments and agencies to plan and develop the Park and Recreation System.
- Increase community engagement and input during the planning process for parks, trails, and recreation.

Planning Policies:

1. The Park and Recreation Plan will seek to be compatible with adjacent local community plans and metropolitan, state and federal plans and programs.
2. Public school facilities and their recreation areas will be considered in the planning of the park and recreation system. Maximum cooperation, coordination and participation with school districts will be sought in the planning of the development and operation of the park and recreation system.
3. The description and standards established in the park classification system will be a basis for developing the park and recreation system.
4. Park and recreation services and facilities should be provided where recreational opportunity is deficient or non-existent. This will be done in conjunction with the resources of the volunteer-based organizations, Community Education and the private sector, where appropriate.
5. Continue to develop master plans for individual parks and integrate the goals, policies, and implementation strategies into a System-wide Parks and Recreation Master Plan
6. Consider creating Community Advisory Committees with diverse

South Valley Park Sliding Hill

representation for future park planning processes that will work in tandem with the Parks and Recreation Advisory Commission.

7. Look for ways to encourage diversity, education, and equity in future parks planning, with an extra effort to engage with seniors, youth, people with lower incomes, and minority populations.

Parks Goals & Policies

The following park goals and policies will guide the City o f Inver Grove Heights.

Park Goals & Policies

Park Goals:

- Promote park development that will best encourage and/or control use.
- Provide a well balanced park and recreation system.
- Strengthen the image of the Parks as a System which provides community services and recreational facilities.

Park Policies:

1. Offer a variety of activities in the park system including cultural, conservation, passive, active and organized recreation areas.
2. Acquire parkland and develop existing parks at a rate and level commensurate with the needs of Inver Grove Heights's changing population.
3. Establish and promote high quality design standards in the development of the park system.
4. Encourage joint use of facilities by incorporating school facilities with park and recreation programs whenever possible.
5. Encourage multi-use park facilities that will maximize accessibility and use by area residents.
6. Allow the conversion of park and public open lands to other uses only when no feasible alternative exists and community needs are not compromised. When conversion is unavoidable, the taking agency should pay for the replacement of land and facilities to serve the needs of the people in that area.
7. Specific park development priorities will be discussed, reviewed, analyzed and measured for progress annually.
8. Ongoing information and education process will be conducted, making the residents aware and knowledgeable of park and recreation facilities and programs.
9. Parkland will be acquired in accordance with the Comprehensive Park Plan and Development Guide.

10. Require a park dedication from all developers pursuant to City Ordinance.
11. Wetlands and storm water ponding areas will not be accepted as fulfillment of park dedication requirements.
12. Provide public access into City park areas by a variety of transportation modes, with an emphasis on pedestrian and bicycle connectivity.
13. A consistent signing policy will be developed for all park and recreation areas buildings, etc., including directional and information signs.

Trail System Goals & Policies

Trail System Goals & Polices

The following trail system goals and policies will guide the City of Inver Grove Heights.

Trail System Goals:

- Promote safe, convenient and coordinated facilities for alternative means of transportation throughout the City of Inver Grove Heights.
- Provide Inver Grove Heights residents with sections of trail that focus on recreational value and harmony with the natural environment.

Trail System Policies:

1. Coordinate the use of a city-wide trail plan.
2. Plan bicycle and pedestrian access to parks, open space areas, schools and neighborhood shopping areas to encourage maximum use of these facilities.
3. Encourage the utilization of utility easements and transportation right-of-ways for trail development.
4. Provide ramped curbs to meet accessibility standards and to accommodate bicyclists.
5. Trails should be bituminous or concrete, except in nature areas, and be multi-use facilities when uses are compatible.
6. Trails will be integral to larger scale development and will be installed and paved at the developers' expense. These trails should connect to the existing and proposed extensions of the Inver Grove Heights trail system.
7. Inver Grove Heights trail system will be coordinated with the trail systems for Dakota County, surrounding cities and Metropolitan Council.
8. All existing and proposed trails should be mapped, reviewed and updated annually.
9. Off street trails will be coordinated with the future location of on-street bikeways (bike lanes) to create an integrated non-motorized recreation and transportation system.

Natural Resource/Open Space Goals & Policies

The following natural resource/open space goals and policies will guide the City of Inver Grove Heights.

Natural Resource/Open Space Goals:

- Preserve and protect the natural environment with emphasis on the conservation of needed and useful natural resources for the present and future benefit of the community.
- Use natural resource areas to provide an overall open space system to satisfy the physiological and psychological needs of the people, considering their needs as individuals and as a community.

Natural Resource/Open Space Policies:

1. Conserve a variety of natural resource areas including wetlands, soils, ground water recharge areas, woodlands, lakeshore, drainage ways and steep slopes.
2. Encourage the assistance of metropolitan, state, and federal agencies to, where appropriate, preserves natural resource areas.
3. Open space areas should be used as a structuring element linked to other park and open space areas within projects and from one project to another, whenever possible.
4. Natural resource open space can be used to physically separate elements, which are incompatible, by scale or function.
5. Preserve natural drainage ways and wetlands and where feasible, reconstruct former natural drainage ways and wetlands to handle storm water runoff.
6. Encourage the use of contained storm water systems that treat the water on-site as much as possible.
7. To establish, maintain or restore natural conservation areas for wildlife management and educational and scientific purposes.

Natural Resource/Open Space Goals & Policies

Sustainability Goals & Policies

The following sustainability goals and policies will guide the City of Inver Grove Heights.

Sustainability Goals:

- To be a leader in sustainability and natural resources management.

Sustainability Goals & Policies

Sustainability Policies:

1. Encourage new park buildings to be constructed using LEED (Leadership in Energy and Environmental Design) standards.
2. Parks will have recycling receptacles in addition to trash receptacles.
3. New facilities and significant renovation of existing facilities include a sustainability evaluation of materials, energy use, operating cost and lifecycle replacement.
4. Innovative stormwater retention techniques should be utilized in new park development and in the renovation of existing parks, such as permeable paving and rain gardens.
5. Native plants, such as prairie plantings, should be used in parks and open space to reduce landscape maintenance requirements, to provide food and shelter for wildlife, to buffer shorelines, to control runoff and to manage geese populations.
6. A natural resource and environmental interpretation/education component will be developed for City parks and open spaces.
7. Natural resource management plans will be developed for the preservation of natural resources in City parks and open space.
8. The City should continue the "adopt-a-park or open space" program to encourage community involvement in park maintenance and safety, and look for ways to increase participation and active stewardship of residents.
9. Continue to follow the adopted Emerald Ash Borer (EAB) Management Plan

Healthy Community Goals & Policies

Healthy Community Goals & Policies

The following healthy community goals and policies will guide the City of Inver Grove Heights.

Healthy Community Goals:

- To promote active healthy living for all.

Youth sports at Rich Valley Athletic Complex

Healthy Community Policies:

1. The Parks and Recreation Advisory Commission asks that park users refrain from smoking and tobacco use in parks.
2. Ensure convenient and equitable access to parks and recreation facilities by locating new parks within ½ mile of all residents
3. Special attention should be given to park and open space improvements that provide for handicap accessibility consistent with the Americans with Disabilities Act Accessibility Guidelines for Building and Facilities

and universal design principles.

4. Special attention should be given to parks and open space improvements providing seating, shade and a trail loops of varying lengths to encourage active living for an aging population.
5. Special attention should be given to providing safe walking and biking routes to schools, parks and trails from neighborhoods.
6. The City will provide bicycle parking at park system destinations to encourage bicycle use.
7. To encourage the financial assistance of metropolitan, state, and federal agencies and non-profit organizations to fund healthy active living initiatives.
8. The City will implement the 2040 Comprehensive Parks, Trails and Open Space Plan.
9. That public safety improvement will be made as needed utilizing Crime Prevention through Environmental Design (CPTED) principles to ensure park and trail user's well being.
10. Demonstrate and encourage healthy choices by offering nutritious foods in park vending and at events.
11. Promote the benefits of active living through Parks and Recreation Department communications and programming.

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SANITARY SEWER
CHAPTER 7

Introduction

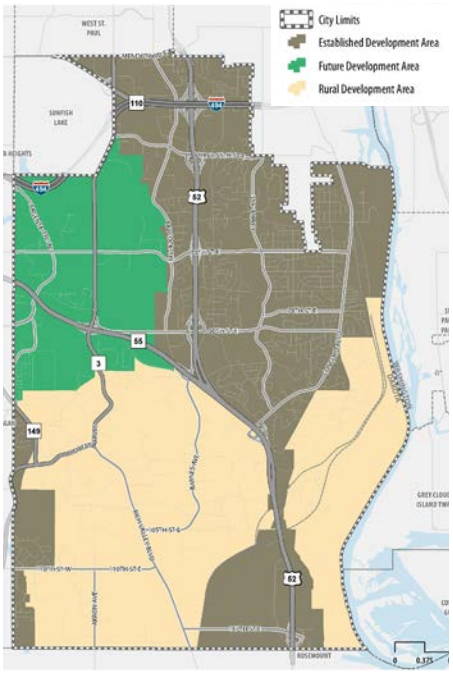
To accommodate projected growth, the City of Inver Grove Heights initiated an update to the 1998 Comprehensive Sanitary Sewer Plan in conjunction with the City's 2008 Comprehensive Plan and in accordance with Minnesota Statute 473.513. The 2040 Comprehensive Plan update appends and updates the information from prior comprehensive plans as well as takes into account 2017 updates in the Northwest Area. The purpose of this plan element is to identify existing system facilities and deficiencies and to ensure a system that serves future new growth and redevelopment needs.

Sanitary sewer flows for the City of Inver Grove Heights are projected through the year 2040 based on the land use plan and development projections described in Chapter 2. The potential 2040 service area was defined as areas that can be feasibly served by sanitary sewer in the future and was based on the Land Use Plan prepared for the City's 2040 Comprehensive Plan. The 2040 service area for the City is considered to be the full build-out of the proposed urban service area and is not substantially different than the 2030 Comprehensive Plan. Sanitary sewer districts and sub-districts from the 2030 plan were used. Existing and future sanitary sewer flows rate were calculated for each sub-district based on the respective land uses.

Future trunk improvements were defined with the intention that the trunk system would serve the 2040 service area. An approximate layout of potential trunk system improvements that will serve the future growth areas (NW AREA) is included in this chapter of the Comprehensive Plan. Future improvements were incorporated into a Sanitary Sewer Capital Improvement Plan (CIP).

Metropolitan Council Environmental Service (MCES)

MCES exists to support the Metropolitan Council's mission by protecting the public health and environment and providing its customers efficient and effective water resources management.



The above diagram represents three planning areas: 1) Future Development Area (NW Area),
2) Established Development Area, 3) Rural Development Area

Data Available

In preparing this report, the following sources of information were utilized:

- Existing Sanitary Sewer GIS Information provided by the City of Inver Grove Heights.
- Sanitary Sewer Asbuilts provided by the City of Inver Grove Heights
- MCES Sanitary Sewer Design Peaking Factors
- MCES Metering Data
- MCES System Statement for City of Inver Grove Heights
- Bolton & Menk Sewer Modeling in the Northwest Area
- Kimley-Horn Study for the Inver Grove Trail Lift Station

Existing City Sanitary Sewer System

Metropolitan Urban Service Area (MUSA)

The MUSA designates areas either currently receiving urban services (i.e., sewer service) or that are scheduled to receive urban services within the next 20 years. It is important to note that the boundary for the MUSA is subject to ongoing adjustments that respond to changes in local comprehensive plans and projected service needs (Source Met Council).

The purpose of the sanitary sewer element of the Inver Grove Heights Comprehensive Plan is to serve as a guide for the expansion and maintenance of the existing trunk sanitary sewer system. The report deals primarily with the conveyance facilities required to collect the wastewater from the community and transport it to the MCES Central Interceptor. It presents an overall trunk layout for the North West Area.

Typically, sanitary sewer systems consist of two elements: collection and treatment. Collection systems include sewer services, trunk sewer pipe, manholes, lift stations, and forcemains which collect the sewer flows from private residential, commercial, and industrial properties within the city. Treatment systems include the biological or chemical treatment in order to remove targeted contaminants from the wastewater.

The City's existing sanitary sewer system is a collection system only; the Metropolitan Council Environmental Services (MCES) provides treatment for Inver Grove Heights's sanitary sewer flows. MCES is also responsible for major trunk facilities conveying wastewater across City boundaries to regional treatment facilities. All wastewater flows from the City of Inver Grove Heights enter the MCES Interceptor system and is conveyed to the MCES Metropolitan Wastewater Treatment Plant (WWTP) located in the City of St. Paul, directly adjacent to the Mississippi River.

The sanitary sewer service area is defined as the area from which wastewater flows are collected by the City's sewer system. Based on the 2040 Land Use Plan the existing service area within the City of Inver Grove Heights is comprised of approximately 11,522 gross acres which includes

the lakes, wetlands, open park land, and road right-of-ways. This service area is shown on Figure 7-1. Eleven sanitary sewer service districts were developed within the City boundaries based on trunk gravity service and lift station service areas. The existing service area is partially developed within several districts.

The existing gravity sanitary sewer system is in good overall condition. The City conducts video inspection of sanitary sewers to identify portions that need rehabilitation. The City will rehabilitate when needed/necessary sanitary sewer using cast- in- place pipe. The City cleans and televisions approximately one-third of the sewer system annually.

The City of Inver Grove Heights's sanitary sewer system includes 8 public lift stations ranging in capacity from 20 gallons per minute (gpm) to 4,300 gpm depending on the development demand within the service area.

The locations of existing lift stations are shown on Figure 7-1. Table 7-1 summarizes capacity information for each of the existing lift stations:

Table 7-1. Existing Lift Station Information

Lift Station Area	*Year of Construction*	*Pumping Capacity (gpm)*
Doffing Avenue	1971	75
Forest Haven	1987	75
70th Street	1999	20
Whistletree Woods	2003	50
Pine Bend	2007	577
Argenta Hills	2009	4,300
River Road	2013	130
Blackstone Vista	2016	965

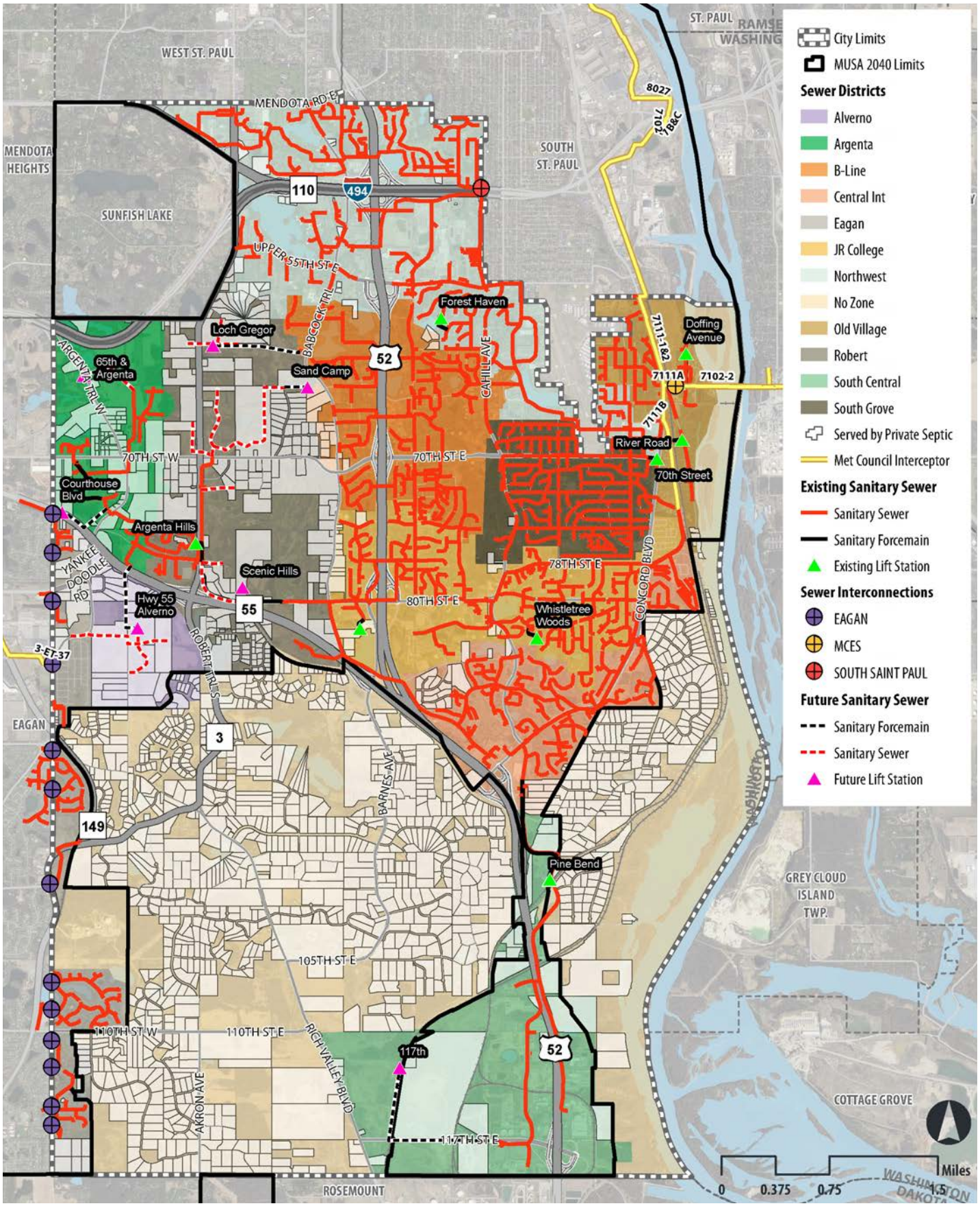
Subsurface Sewage Treatment Systems (SSTS)

A portion of the City is currently served by SSTS constructed and maintained privately. The areas are primarily located in the northwest and southern parts of the City. There are approximately 1,668 existing SSTS within the City. An annual report is produced and reported to the Metropolitan Council. The City has a monitoring and maintenance program that ensures the systems are properly maintained on a regular basis.

SSTS Maintenance

The City adopted a revised ordinance, Ordinance 911, relating to individual sewage treatment systems (referred to as subsurface sewage treatment systems or SSTS) on January 26, 1998. That ordinance requires residential and commercial/industrial properties to inspect or pump their systems every three years. The City will continue to comply with MPCA 7080 Regulations. The City uses the Dakota County's SSTS tracking and data base information for this maintenance program.

Figure 7-1: Sanitary Sewer & Sewer Districts



Existing Estimated Sanitary Sewer System Flows

The MUSA Area is divided into eleven major sewer districts. The sewer districts and the estimated existing wastewater flow generated from each sewer district are presented in Table 7-2. The districts are shown on Figure 7-1. The existing sanitary sewer system's capacity to convey existing wastewater flows to the MCES collection system was analyzed by identifying existing land use areas within each sewer district and comparing estimated flows to actual metered flows from MCES. Existing system as-built information was used to determine system capacity. Average day and peak flows were calculated by determining the existing developed area in each district, area of each existing land use, number of existing units, and assuming a flow generated for each land use. The flows were calibrated by reducing the flow generated for each land use until the total system flow matched existing sewer flows metered by MCES. All trunk sanitary sewer mains exhibited adequate capacity for the existing system flows.

Table 7-2. Sewer Districts and Estimated Existing Wastewater Flow

Sewer District	*Average Flow (Million Gallons per Day [MGD])*	*MCES Peak Flow Factor*	*Design Peak Flow (MGD)*
Alverno	0.000	4.0	0.00
Argenta	0.046	4.0	0.18
B-Line	0.268	3.7	0.99
Central Int	0.265	3.7	0.98
Eagan	0.166	3.9	0.65
JR College	0.299	3.6	1.08
NW	0.611	3.4	2.08
Old Village	0.087	4.0	0.35
Robert	0.071	4.0	0.28
South Central	0.321	3.6	1.15
South Grove	0.172	3.9	0.67
Total Existing System Flows	2.305	2.7	6.22

Table 7-3. Land Use Breakdown

Land Use Designation	*Abbreviation*
Public Open Space	POS
Public/ Institutional	P/I
Neighborhood Commercial	NC
Community Commercial	CC
Regional Commercial	RC
Light Industrial	LI
General Industrial	GI
Industrial Office Park	IOP
Rural Density Residential	RDR
Low Density Residential	LDR
Low Medium Density Residential	LMDR
Medium Density Residential	MDR
High Density Residential	HDR
Office	O
Mixed Use	MU
Private Open Space	PROS
Right of Way	ROW
Railroad	RR
Open Water/ Wetland	W

Land Use Breakdown

The current and ultimate land use plan for the City of Inver Grove Heights is described in chapter two of this Comprehensive Plan. Land use is a critical factor in determining future sanitary sewer alignments and sizes due to the fact that different land uses generate different wastewater flow rates. Table 7-3 presents the current City land use breakdown and the associated abbreviations.

The total area within the City of Inver Grove Heights is approximately 30 square miles or 19,205 acres, including wetlands and undevelopable area. Areas considered undevelopable are lakes, wetlands, protected open space, existing parks, right-of-way, and railroad. For sewer planning purposes, land that is currently not served by sanitary sewer is considered not developed. Inver Grove Heights has a considerable area in the southern portion of the City that is expected to remain Rural Residential that will not be served by sanitary sewer.

Sanitary Sewer Districts

To develop the future sanitary sewer trunk system, the 2040 potential service area was divided into major service areas or districts. Generally the selection of these larger district areas is governed by existing topography and/or other existing features such as roadways. The 2040 potential service area for Inver Grove Heights is divided into eleven major sanitary sewer districts. Figure 7-1 shows the major sanitary sewer districts. The following sections describe the major sanitary sewer districts; future improvements to serve the undeveloped districts will be discussed in a later section of this chapter. Generally, all of the districts are sufficiently served for existing sanitary sewer needs.

B – Line District

The B–Line Sanitary Sewer District is located on either side of US 52 essentially between 60th and 75th Streets. The majority of the area within this district is currently developed and serviced with sanitary sewer. Future development potential includes infill low density residential and office development along US 52 as well as mixed-use redevelopment at Cahill and 65th Street. This district was built in the early 1980's, consisting of RCP and VCP pipe with sizes ranging from 8" to 18". This area will also receive flows from future development between TH 3 & Babcock in the area north of 65th st.

Central Int District

The Central Int Sanitary sewer district is a wedge shaped district located west of Concord, east of US 52, and South of College Trail \ Delaney Drive. The district has some infill development remaining and potential redevelopment (Arbor Point) anticipated to occur by 2040.

Eagan Area District

The Eagan District is located south of Highway 55 and to the west of Argenta Trail extending to the southerly City limits. An existing Joint Powers Agreement between the Cities of Eagan and Inver Grove Heights enables flowage from Inver Grove Heights into the Eagan system. Future development within the Eagan Area District will require evaluation against the Eagan sanitary sewer collection system and consistency with the existing joint powers agreement.

Junior College District

The Junior College district is located east of Babcock Trail, west of Concord Boulevard, generally north of College Trail, and generally south of 75th and 78th Streets. There is an additional area west of Concord Boulevard, bounded by Dickman Trail and Royal Avenue. A limited amount of infill residential development and redevelopment is anticipated in this district over the next 20 years. Adequate capacity exists in this district to accommodate anticipated redevelopment densities and levels.

North West District

The North West Sanitary sewer district is located in the northernmost part of the city and surrounds the South St. Paul airport. The area has already been developed to a great extent; however, significant areas remain vacant and are anticipated to develop (mostly to commercial uses) by 2040 as market pressures grow for commercial development.

Old Village District

The Old Village Sanitary sewer is located between the airport and the river in the northeast corner of the city, extending as far south as 72nd Street (extended). This district is fully developed and is beginning to experience redevelopment pressures along Concord Blvd. and Heritage Village Park which will demand future sanitary sewer usage. The capacity of the existing 8-inch sanitary sewer is sufficient for carrying the projected wastewater flows in this district.

South Grove District

The South Grove District is located east of Cahill Avenue, west of Concord Boulevard, north of 77th Street, and south of 68th Street. This district is expected to expand minimally to serve projected Mixed Use development in the northwest portion of the sewer district, along with Regional Commercial and Industrial Office Park development in the central part of the sewer district and Low Density Residential development in the southern part of the sewer district. The capacity of the sanitary sewer is sufficient to handle the additional wastewater flow generated from projected growth.

Alverno District

The Alverno District is located to the south of Highway 55 and to the west of South Robert Trail. The area is largely undeveloped with the exception of a few established large lot residential neighborhoods. This area is planned as low-density, low-medium density, and medium-density residential. This area is currently not serviced. Existing homeowners have their own individual septic systems.

Argenta District

The Argenta District is located about a half mile west of South Robert Trail and to the north of Highway 55. Sewer service has recently been extended to serve this area. Existing rural estate homes in this district have their own individual septic systems. The district is currently developing and planned for a mix of varying densities of residential development and commercial/office uses bordering both Highway 55 and Interstate 494. This district is anticipated to absorb the bulk of Inver Grove Heights new development by 2040.

Robert District

The Robert District is located to the east and west of South Robert Trail. This district is primarily undeveloped except for the rural residential area currently located in the northeast and southwest corners of the district. These homes have individual septic systems. The district is planned for varying densities of residential uses with the exception of the existing golf course, the commercial/industrial areas located along Highway 55, and limited mixed use at the intersection of South Robert Trail and 70th Street West (Co. Rd. 26). The intersection at South Robert Trail and 70th Street is intended to have the greater intensity of development in this district. This district, like Argenta, is also anticipated to absorb a significant amount of Inver Grove Heights new development to 2040.

South Central District

The South Central District is located east and west of Highway 52 and generally to the south of the Chicago & Northwestern Railroad and north of the City of Rosemount Boundary. Light and general industrial development is planned for this sewer district. The South Central Sewer District is served by a trunk sanitary sewer line extend south from the Pine Bend Lift Station along Highway 52 and Clark Road to 117th Street. This area may see increased flows if industrial development occurs along 117th st. This would result in a need to upsize the Pine Bend lift station and lateral sewers on Inver Grove Trail.

Growth Projections

It is assumed that as development occurs within the urban service area, sanitary sewer service will be extended to serve new developments and existing developments that are located within the urban service area consistent with the City's Growth Management Policies.

Table 7-4. Gross and Developable Land Area by Sewer District

Sewer District	*Vacant-Developable Land Area (Acres)*	*Gross Land Area (Acres)*
ALVERNO	291	437
ARGENTA	401	757
B-LINE	86	1,076
CENTRAL INT	53	892
EAGAN AREA	101	685
JR-COLLEGE	2	1,199
NORTH WEST	93	2,005
OLD VILLAGE	57	489
ROBERT	643	1,723
SOUTH GROVE	2	657
SOUTH CENT.	197	1,605
Grand Total	1,926	11,526

Table 7-5. City of Inver Grove Heights Historical Growth (Total City Growth)

Year	*Population*	*Total Households*	*Employees*
1980	17,171	5,551	2,600
1990	22.477	7,803	5,724
2000	29,751	11,355	8,168
2010	33,880	13,476	9,442

Table 7-6. Sewered and Unsewered Population/Household/Employment*

Year	2010	2020	2030	2040
Sewered Population	28,134	33,440	37,700	41,700
Sewered Households	11,462	13,990	16,000	17,890
Sewered Employment	9,102	10,990	11,950	13,500
Unsewered Population	5,746	3,860	4,300	5,000
Unsewered Households	2,014	1,410	1,600	1,910
Unsewered Employment	340	410	450	500

*Source: Metropolitan Council, *Sewered indicates MCES system*

Estimated Flow Generation Rates

Future sanitary sewer flows, in conjunction with available slope, govern the capacity of sanitary sewers. To determine future sanitary flows, historical flow data and MCES recommendations were considered. Based on historical flows in Inver Grove Heights and general industry standards, an estimate of 200 gallons per day per 'unit' is used. A 'unit' is equal to 1 household and 20 jobs. Based on sewered household and employment projections provided by the Metropolitan Council, future sewer flows are projected to increase by approximately 0.8 to 0.9 million gallons per day (MGD) from Inver Grove Heights.

Municipal wastewater is made up of a mixture of domestic sewage, commercial and industrial wastes, groundwater infiltration, and surface water inflows. With proper design and construction, groundwater infiltration and surface water inflows, often called Infiltration/Inflow (I/I), do not become a significant percentage of the total flow. In accordance with MN rules 4715, the City prohibits the connection of roof and foundation drains to the sanitary sewer system.

The projected design flows incorporate an allowance for extraneous water entering the sanitary sewer system through infiltration and inflow (I/I).
The anticipated average flows from the various districts were determined by applying unit flow rates consistent with projected growth and allocated amongst the sewer districts consistent with the future land use plan.

Peak Flow Factors

The sanitary sewer system must be capable of handling the anticipated peak wastewater flow rate including any I/I. The peak wastewater flow rate can be expressed as a variable ratio applied to the average flow rate. Curves

used to describe this peak flow factor (PFF) indicate a decreasing ratio of peak flow to average flow with increasing average flow. MCES peaking factor were used to determine peak hour flows for Inver Grove Heights. These values are generally conservative and widely used throughout the Metro Area for municipal planning. They include a standard allowance for I/I, which is typical of new sanitary sewer construction or properly operating existing sewers.

Infiltration and Inflow (I/I)

The quantity of I/I entering a wastewater collection system can be estimated utilizing wastewater pumping records, daily rainfall data, and water usage characteristics. Water from inflow and infiltration can consume available capacity in the wastewater collection system and increase the hydraulic load on the treatment facility. In extreme cases, the added hydraulic load can cause bypasses or overflows of raw wastewater. This extra hydraulic load also necessitates larger capacity collection and treatment components, which results in increased capital, operation and maintenance, and replacement costs. As sewer systems age and deteriorate, I/I can become an increasing problem. Therefore, it is important that I/I be reduced whenever it is cost effective to do so.

The MCES has established wastewater flow goals for each community discharging wastewater into the Metropolitan Disposal System (MDS) based on average day flows and allowable peaking factors. These enforced wastewater flow goals are aimed at reducing excessive I/I within the City's sanitary sewer system and also the MCES interceptor system.

Infiltration and Inflow (I/I)

Infiltration is clear water that enters the sanitary sewer system through defects in the sewer pipes, joints, manholes, and service laterals. Water that enters the sewer system from cross connections with storm sewer, sump pumps, roof drains, or manhole covers is considered inflow.

The City of Inver Grove Heights currently does not have an I/I problem and is not part of the MCES I/I Surcharge Program. The City does recognize the importance of I/I and monitors it on a regular basis.

Sources, Extent, and Significance of Existing I/I

The city's estimated clear water flow is shown in Table 7-7. This data is based on three years of data from 2015 to 2017. Average I/I represents less than 2% of the average sewer flows.

Table 7-7. Estimated I&I Rate

	MGD
Average Flow (MGD)	2.121
Peak Month Flow (MGD)	2.331
Base Flow (MGD) (Based on Winter Water pumped)	2.087
Average Annual I/I (MGD)	0.034
Peak Month I/I (MGD)	0.244

The bulk of I/I that enters Inver Grove's sanitary sewer system has come from an area near River Road and Doffing Avenue. This area contains some of the older pre-1970 homes and older sewer lines and infrastructure. In spring months pumps from lift stations run more constantly (12-24 hours per day) compared to summer months when they run 2-3 hours per week. This indicated that I/I has been an issue in this area. To address this issue in the Doffing Avenue and River Road area, the city has lined the majority of the sewer lines, repaired or sealed many of the manholes, and through private redevelopment (homes in the flood plain removed for a park development) removed and sealed or plugged a number of the private homes sewer systems. The city does not monitor private connections and thus the source and extent of I/I from private systems is unknown but anticipated to be relatively minor based on flow data. The City is not aware of any of the roughly 2,700 housing units built pre 1970 in Inver Grove Heights being evaluated for I/I susceptibility and repair. The city currently does not a have a program in place to track or monitor this specifically.

Table 7-8. Age of Residential Housing Stock

Year Unit Built	*Number*	*Percent*
Pre-1970 Era	2,696	19%
Post-970 Era	11,317	81%
Total Housing Units	14,013	100%

Source: US Census Bureau , 2011-2015 ACS

The City carefully monitors and maintains the public sanitary sewer system in order to minimize sources of I/I. Since before 2012, the City has been televising and jetting a portion of the City's infrastructure on an annual basis. This is done during the spring months when I/I is usually at its highest point. As issues are discovered or observed, they are then repaired.

In the current CIP and budget for sanitary sewer, 50k is allocated each year for maintenance of sanitary sewer. This includes the televising and jetting of ¼ to 1/5 of the city each year along with grouting, lining, and manholes repair. The extent of repairs needed have historically been very minimal.

On an annual basis, the city also walk and visually inspects the primary trunk sewer main in the city to make sure manhole lids are functioning and in good shape.

The city has not measured the flow reductions that resulted from these improvements but has noticed a positive change in the hours that pumps run during wet weather months

Requirements and Standards for Minimizing I/I in Inver Grove Heights

The City's municipal sewer system ordinance (Title 8 of the municipal code) prohibits the connection of sump pumps, foundation drainage, or other surface water as stated here (8-4-7):

"It shall be unlawful to discharge or cause to be discharged into the sewer system, either directly or indirectly, any roof, storm, surface or ground water of any type or kind, or water discharged from any air conditioning unit or system."

The ordinance will continue to be followed. The City does not have an ordinance or resolution requiring the "disconnection" of illegal connections that would contribute clear water to the sanitary sewer system. However, the City will continue to promote voluntary compliance with the City's ordinance that prohibits such connections. (See policy and strategies below.)

I/I Reduction Goals and Strategies

Goals for I/I Reduction:

- to minimize or eliminate I/I entering private and public sewer infrastructure
- to reduce ratepayer costs for transporting and treating wastewater
- to minimize liability from water pollution and public health risks

Policies and strategies for I/I Reduction:

- Educate property owners about I/I by posting information on city web site and distributing information via email blasts and community newspapers.
- Encourage private property owners to proactively inspect and repair or replace older segments of private sanitary sewer connections that are beyond their service life.
- Explore grants or other financial assistance programs to provide financial assistance to private property owners wishing to replace or repair private sewer connections to the city main.
- Make sure sump pumps and building drains are not connected to the sanitary sewer system. This can be done through educational information and when permits are required for home improvements or expansions.
- Ensure careful construction, maintenance and rehabilitation practices are followed in all aspects, both public and private, of the sanitary sewer system.

Plan for Preventing and Eliminating Excessive I/I

The City has taken numerous steps to minimize I/I including stringent testing of all new sanitary sewer lines, use of manholes with concealed pick holes, and proper maintenance of the existing system such as a regular program of manhole leak detection/sealing. The City also prohibits the connection of roof and foundation drains and sumps to the sanitary sewer

system. The City provides alternative discharge permits for sumps with annual street reconstruction projects.

The city will continue to budget annually for televising, jetting and maintenance/repair of the public sewer system to prevent and eliminate excessive I/I.

The city will begin to push out educational information on social media and city newsletters that help educate private homeowners on the value of investigating and preventative care and maintenance to help eliminate excessive I/I. This information will include reminders that connecting sump pumps, roof, or foundation drains to the sanitary sewer system is illegal and that any of these existing connections must be removed.

Hydraulics and Pipe Material

The trunk sewer system was laid out to prevent surcharging and maintain a minimum flow velocity of 2 feet per second at design peak flow. It is recommended that the City of Inver Grove Heights institute a yearly pipe-cleaning program for trunk lines and lateral systems to maintain the hydraulics of their system and prevent any buildup of sediment in the pipes. This will be especially important for larger pipes with relatively flat slopes. During flows less than design peak flows, velocities may fall below 2 feet per second, resulting in sediment accumulation in the pipes. If this material is not removed, pipe capacity will be reduced and corrosion problems could develop.

Future Sanitary Sewer System

Wastewater Flow Projections

Wastewater flow projections were generated for each sanitary sewer district based on the net developed acreage available, anticipated land uses, and wastewater flow generation rates. The total district average and peak flows were calculated using the projected land use for 2040 flows. Estimated peak hour flows are not totaled as the peaking factor is dependent upon the average day flow rate. Summing the projected peak hour flow rates would produce a flow rate higher than the peak hour flow rate for the entire City. Therefore, the following 2040 peak hour flows were calculated by multiplying the total average flows by the MCES design factors. Table 7-10 presents the projected 2040 flows for each sanitary sewer district.

Table 7-10. 2040 Wastewater Flows per Sewer District (IGH)

Sewer District	2020 Average Flow (MGD)	2020 Peak Hour Projected Flow (MGD)	2030 Average Flow (MGD)	2030 Peak Hour Projected Flow (MGD)	2040 Projected HHs	2040 Projected Jobs	2040 Average Flow (MGD)	2040 Peak Hour Projected Flow (MGD)
Alverno	-	-	-	-	1,047	60	0.142	0.55
Argenta	0.086	0.34	0.160	0.63	1,321	726	0.256	0.95
B-Line	0.275	1.02	0.287	1.03	1,956	510	0.307	1.11
Central Int	0.278	1.03	0.302	1.09	1,662	238	0.314	1.13
Eagan	0.173	0.67	0.185	0.70	1,354	498	0.215	0.82
JR College	0.299	1.08	0.300	1.08	1,858	1,430	0.300	1.08
NW	0.627	2.13	0.656	2.17	3,380	1,663	0.672	2.22
Old Village	0.092	0.37	0.100	0.40	532	554	0.110	0.44
Robert	0.142	0.55	0.274	1.01	3,462	951	0.470	1.65
South Central	0.336	1.21	0.365	1.31	0	6,551	0.387	1.35
South Grove	0.172	0.67	0.172	0.67	1,318	319	0.172	0.67
Total System	**2.479**	**6.692**	**2.801**	**7.563**	**17,890**	**13,500**	**3.347**	**8.702**

Note:
1. Projected 2040 peak hour flows equal the total average flow multiplied by MCES peaking factors.
2. The sum of the existing peak hour flow does not equal the sum of the peak discharges from each district since the peaking factor decreases as the average flow increases.
3. Peaking factors were taken from MCES factors.

The City has not calculated future flows based on its trunk connections to the MCES regional system. The City will prepare capacity and design flow information for its lift stations, and each trunk sewer that connects to the regional system to the Metropolitan Council once it completes a hydraulic model of its wastewater system by the end of 2020.

Intercommunity Flows

The Joint Powers Agreement between the Cities of Eagan and Inver Grove Heights allocates 147 acres of land in Inver Grove Heights that will be served by the existing sanitary sewer system in Eagan. The existing system in Eagan was designed to handle an additional flow of 0.4 MGD from Inver Grove Heights. The area to be served by Eagan is designated as the Eagan sewer District in Figure 7-1. This area is governed by a Joint Powers Agreement. There are five (5) single family residential properties in South St. Paul that are served by the IGH sanitary sewer system. They are 6053, 6063, 6073, 6083, and 6093 Cromwell Court. All five are billed by the City of Inver Grove Heights. No agreement is known to exist.

Table 7-9. MCES Flow Variation Factors for Sewer Design

Average Flow (MGD)	Peak Factor
0.00-0.11	4.0
0.12-0.18	3.9
0.19-0.23	3.8
0.24-0.29	3.7
0.30-0.39	3.6
0.40-0.49	3.5
0.50-0.64	3.4
0.65-0.79	3.3
0.80-0.99	3.2
1.00-1.19	3.1
1.20-1.49	3.0
1.50-1.89	2.9
1.90-2.29	2.8
2.30-2.89	2.7
2.90-3.49	2.6

Source: Met. Council 2040 Water Resources Policy Plan

Table 7-11. Lift Station Analysis

Lift Station	*Existing or Proposed*	*Pumping Capacity (gpm)*	*Future Peak Hour Inflow (gpm)*
River Road	Existing	130	130
Doffing Avenue	Existing	75	75
Forest Haven	Existing	75	75
70th Street	Existing	20	20
Whistletree Woods	Existing	50	50
Pine Bend*	Existing	577	694
Argenta Hills	Existing	4300	4300
Blackstone Vista	Existing	965	965
Hwy 55/Alverno	Proposed	1316	1316
Scenic Hills	Proposed	112	392
117th Street	Proposed	28	28
Argenta/65th	Proposed	190	190
Sandcamp	Proposed	67	67
Loch-Gregor	Proposed	230	230
Courthouse Blvd	Proposed	59	59

** The City has been approached by an industrial user on 117th St. which would require capacity increases to Pine Bend C.S. & F.M. if the project is built by 2040.*

Proposed Sanitary Sewer Trunk System

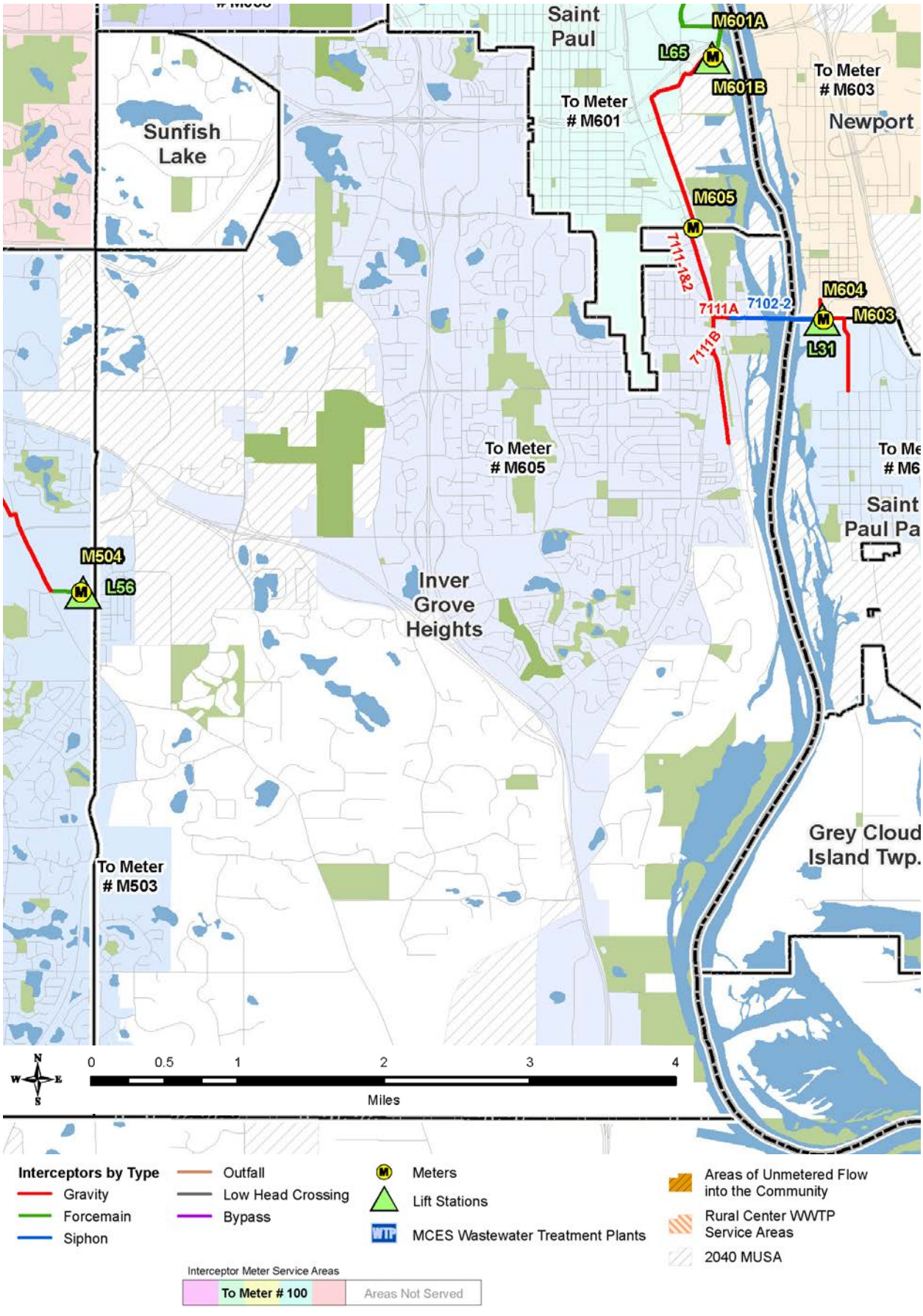
Existing sanitary sewer as-builts for pipe diameter and slopes were utilized to determine the ability of the existing trunk sanitary system to convey future wastewater flows. Future trunk mains and lift stations will be extended to accommodate future development, which in turn will increase the flows conveyed to the existing trunk system.

Table 7-11 shows information for the existing and proposed lift stations to service the 2040 service area. With the exception of the Pine Bend Lift Station, all the existing lift stations have sufficient capacity to service the 2040 service area. The Pine Bend Lift Station is currently being upgraded to provide service to the South Central Sewer District Area.

It should be noted that in addition to trunk lift stations, local lift stations may be necessary as development occurs and final grading plans are established. All local lift stations will be constructed and financed privately.

The trunk sewer system layout for the 2040 service area of Inver Grove Heights is presented on Figure 7-1. This map shows the sewer district

Figure 7-2: MCES Sanitary Sewer Meter Service Areas



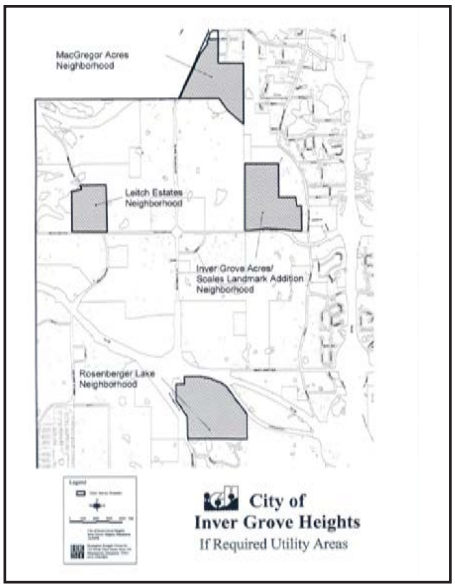


Figure 7-3: Exception Neighborhoods

boundaries, proposed trunk sanitary sewers, lift stations, and force mains. In addition, the approximate sizes of all future trunk facilities are shown. Figure 7-1 shows the existing and proposed trunk sewer system for the entire City. The proposed alignment of the trunk sanitary sewers as shown on the map is tentative and should be reviewed at the time of final design. The alignments shown on the map generally follow the natural drainage of the land to minimize the use of lift stations.

Proposed Sanitary Sewer Connection to Existing System

The majority of the wastewater generated in the 2040 Service Area will be conveyed to an existing trunk sanitary sewer at Babcock Trail. This existing trunk will then convey the flow to the MCES Central Interceptor along the northeastern border of the City. A small area will be conveyed to the City of Eagan. Areas of existing large lot developments, known as "exception neighborhoods (two in the Robert District and one in the Argenta District) will remain unsewered (see Figure 7-3), unless requested by residents or required due to failing on-site systems. Similarly, one area in the northern portion of the Robert District will remain unsewered unless requested or required.

The existing trunk currently conveys flow from a relatively small area of the city. In the future, it is proposed to convey flows from the MUSA Expansion Area as well as the industrial area in the southeastern portion of the City. This existing trunk was determined to have adequate capacity to convey the proposed flows.

Capital Improvements

Cost estimates have been prepared for proposed trunk facilities planned to serve the Northwest Area. These cost estimates inform the CIP. Trunk sewers include force mains, all gravity lines greater than or equal to 12-inch in diameter, and some smaller diameter lines at extreme depths due to topography.

The estimated capital improvement costs as broken down by individual project and are summarized in the CIP (click here to review the full CIP). The CIP is maintained and updated on an annual basis. The cost estimates include construction, design, legal, administration, and planning contingency costs. The estimated costs do not include costs for land acquisition.

Funding

Utility usage fees are charged to both residential and non-residential users based on the actual water usage metered during the winter quarter. The purpose of the user charges is to fund the operation, maintenance, and replacement costs of existing collection systems. User charges are primarily based on the actual costs of operations, maintenance, and replacement of all wastewater system facilities.

City SAC fees provide a funding mechanism for construction of the major infrastructure improvements needed to serve growth. The City of Inver Grove Heights has established that growth should be funded and paid for by those who are in need of the facilities. The development creating the need for additional sanitary sewer system improvements are expected to finance new trunk facilities and expansion of existing facilities through City SAC fees. Currently, the SAC fees are calculated based upon the Metropolitan Council's SAC Procedure Manual, which assigns non-residential properties a SAC unit for office or industrial/commercial buildings. The City has two levels of fees for growth, one covers the Northwest Area and the other covers the remaining developing areas in the city.

Implementation

Goals and Policies

Growth of the trunk sanitary sewer system will be consistent with the Growth Management Policies outlined in the Comprehensive Plan (see Expansion of Urban Services in Chapter 2.).

The timing of future trunk sanitary sewer improvements will be influenced by several parameters including development in specific areas, failing on-site septic systems, regulatory requirements, availability of funds, etc. As a result it is difficult to accurately predict the time of future improvements especially those which may occur far into the future. Therefore, the Capital Improvement Program is intended to serve as a guide only for future fiscal planning and should be reviewed on a regular basis as more current planning and cost data becomes available.

The following items are general policy guidelines to be considered when reviewing and/or revising the City's sanitary sewer fee structure:

Sanitary Sewer Policies

1. The City will continue to maintain existing infrastructure systems to avoid or minimize inflow and infiltration issues.
2. The City will continue to plan for capacity to serve rural neighborhoods identified as "exception neighborhoods" however; these neighborhoods will not be required to hook up to sanitary sewer systems or incur costs until such time as services are requested by the neighborhood or a public health concern arises.
3. The City will not extend sanitary sewer to those areas guided for rural residential except in cases where public health is a concern.
4. The City will continue to implement a septic system maintenance and monitoring program consistent with Metropolitan Council guidelines.
5. The City will explore extension of infrastructure in a financially responsible manner and will seek to avoid circumstances where land owners are forced to develop due to the extension of infrastructure prior to their interest or readiness to develop.
6. The City will continue to invest in the maintenance and care of the existing sanitary sewer infrastructure in its efforts to control inflow and infiltration and to maximize the use of public financial resources.
7. The City will complete and submit capacity and design flow information for its lift stations, and each trunk sewer that connects to the regional system to the Metropolitan Council once it completes its hydraulic model of its wastewater system by the end of 2020.

Overdepth and Oversizing

The costs of additional depth shall be defined by differences in cost for the depth required by the development and the depth required for trunk facilities. Trunk oversizing as defined by the City and installed by the developer will be credited using the differential of pipe costs between the larger and the minimum pipe size required for the development. Bid pricing shall not be the sole determinate in defining a developer credit. The City shall determine if a credit will be given for a project. Overdepth credits for trunk sewers are determined by the City per its written policy.

Lift Stations

Trunk lift stations will be defined as those included as part of the Comprehensive Sewer Plan. The cost of trunk lift stations will be financed by the City. Lift stations that do not fit the definition for a trunk lift station will be constructed and financed privately as needed to serve individual developments. All lift stations will be designed and constructed in accordance with City standards. The City encourages the use of gravity

systems for conveyance of wastewater rather than costly and less efficient force mains and lift stations.

Existing Developed Unserviced Properties (Exception Neighborhoods)

There are a number of existing developed areas that do not receive sewer service within the City limits. These areas are referred to as exception neighborhoods (Chapter 2 Land Use). The trunk system has been designed to accommodate all existing developed unserviced properties within the City, but it is not the policy of the City to force individual property owners to connect to City services. If an individual property owner or group of neighboring property owners wish to connect to City services where it is not yet available, the City will review whether or not it is an economically viable alternative to provide services to the area at the time of the request for connect. Existing developed unserviced residential properties will be required to pay all connection fees as required by the City Code.

Existing Non-Residential Unserviced Properties

Existing unserviced commercial/industrial or other non-residential properties wishing to expand or connect to municipal utilities shall be treated the same as new development and will be required to pay all connection fees as required by the City Code.

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WATER SUPPLY PLAN
CHAPTER 8

Introduction

Salem Hills Watertower

Purpose

To accommodate the existing and projected growth, the City initiated an update to the 2008 Comprehensive Water System Plan in conjunction with the City's 2008 Comprehensive Plan and in accordance with Minnesota Statute 473.513.

The Department of Natural Resources (DNR) Division of Waters and the Metropolitan Council have worked together to develop a set of guidelines in which all cities are to complete their water system plans. The purpose of these guidelines is to provide the agencies with information regarding the water emergency and conservation procedures for that city. 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. The information contained in this report follows the DNR Water Supply Plan template directly.

The purpose of this study is to provide the City with an updated plan to serve future development, identify and correct existing system deficiencies, and estimate future water system costs. In addition, a number of conservation and emergency response procedures will be identified as part of this comprehensive plan.

Scope

The scope of this study incorporates the population projections from the 2040 Comprehensive Plan to project water system demands for the City of Inver Grove Heights through the year 2040. The potential 2040 service area was defined as the existing service area plus areas that can be feasibly served by the City's water supply system in the future based on the Land Use Plan prepared for the 2040 Comprehensive Plan. The 2040 service area generally includes the existing service area plus the northwest part of the community. Based on the 2040 service area, a trunk water main system, including storage and well supply capacities, was defined. Existing and future water demands were calculated for the City based on the historical data and population projections.

Future trunk improvements were defined with the intention that the trunk system would serve the 2040 service area. An approximate layout of potential 2040 trunk system improvements (isolated to the NW Area) is provided. Future improvements are included in a Capital Improvement Program (CIP).

General Contact Information

The City of Inver Grove Heights's water system has a DNR Water Appropriation Permit (1980-6052). The water system is managed by the Utility Superintendent at 8055 Barbara Avenue and all contact can be made at (651) 450-2565.

The City Completed its "Local Water Supply Plan Template - Third Generation for 2016-2018" and submitted the plan to the DNR in April of 2017. Information contained in this chapter is drawn from the template.

Data Available

In preparing this report, the following sources of information were utilized:

- City of Inver Grove Heights past Comprehensive Plans
- Water Supply Plan Template created by the Department of Natural Resources and the Metropolitan Council Environmental Services
- MCES System Statement for the City of Inver Grove Heights
- Stantec computer model of the water system

Water Supply System Description and Evaluation

The first step in any water supply analysis is to assess the current status of demand and supply and the existing water system infrastructure. Information in this section, including the water system capital improvement plan can be used in the development of Emergency Response Procedures and Conservation Plans in the subsequent sections.

Water Use Categories and Definitions

General water use categories and definitions as defined by the Department of Natural Resources are as follows:

- Residential uses consist of water being used for normal household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens.
- Institutional uses consist of those for hospitals, day care centers, and other facilities that use water for essential domestic requirements. This includes public facilities and public metered uses. Institutional water use records are typically maintained for emergency planning and allocation purposes.
- Commercial uses consist of water used by hotels, restaurants, office buildings, and commercial facilities.
- Industrial uses consist of 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 consist of bulk water sales to other public water suppliers.
- Unaccounted water is the volume of water withdrawn from all sources minus the volume sold.
- Non essential water uses as 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.

Residential Uses

Commercial Uses

Analysis of Existing Water Demand

Table 8-1 and Table 8-2 present the actual water demand for the past ten years. The City of Inver Grove Heights itemizes the water demand by customer category including residential, commercial, industrial, and institutional water sales.

Table 8-1. Historic Water Demand

Year	Population Served	Total Connections	Residential Water Sold (MG)	C/I/I Water Sold (MG)	Total Water Sold (MG)
2005	29500	7237	728	203	931
2006	29500	7326	785.7	248.6	1034.3
2007	33358	7356	803	270	1073
2008	33555	7347	763	218	981
2009	33555	7349	754.5	248.2	1002.7
2010	33898	6843	696.7	217.8	914.5
2011	33936	6877	713.8	229.9	943.7
2012	34000	7024	772.1	287.9	1060
2013	34031	7034	691.7	237.6	929.3
2014	34303	7081	643.4	210.6	854
2015	34627	7101	633.9	240.9	874.8
5 - year Avg	33115	7143	726.0	237.5	963.5

**Total population data per Minnesota State Demographic Center. Estimated population served per DNR Public Water Supply Inventories.*

Table 8-2. Historic Water Demand

Year	Total Water Pumped	Percent Unmetered/ Unaccounted	Average Daily Demand (MGD)	Maximum Daily Demand (MGD)	Date of Max. Demand	Residential gallons/ capita/day	Total gallons/ capita/day
2005	1038	10.31%	2.55	7.6	7/21/05	67.61	86.46
2006	1134.9	8.86%	2.83	8.2	7/6/2006	72.97	96.06
2007	1152	6.86%	2.94	6.53	6/28/07	65.95	88.13
2008	1137	13.72%	2.69	6.6	7/30/08	62.30	80.10
2009	1114	9.99%	2.75	6.8	6/4/09	61.60	81.87
2010	996.1	8.19%	2.51	5.3	5/25/10	56.31	73.91
2011	1005.3	6.13%	2.59	6.2	7/9/11	57.63	76.19
2012	1123.3	5.64%	2.90	6.7	7/11/12	62.22	85.41
2013	1018.5	8.76%	2.55	5.7	8/27/13	55.69	74.81
2014	970.4	12.00%	2.34	4.8	8/15/14	51.39	68.21
2015	960.4	8.91%	2.40	5.5	8/3/15	50.15	69.22
5 - year Avg	1059.1	9.03%	2.64	6.4	7/13/10	60.35	80.03

**Average demand based on gallons sold per day. Maximum day demand is based on gallons pumped in a day. MG – Million Gallons*
MGD – Million Gallons per Day C/I/I - Commercial, Industrial, Institutional

Factors that influence trends in water demand include growth, weather, industry, and conservation efforts. Through conservation efforts and consumer education, total water demand per capita has remained relatively consistent.

Currently, the City of Inver Grove Heights has several large water users; however, none of the top ten water users individually utilize a significant portion of the City's total water usage. Combined, the top ten water users attribute to less than 2% of the City's total water usage. Table 8-3 summarizes the City's top ten largest water utility users.

Table 8-3. Large Volume Users

Customer	*Use Category (Residential, Industrial, Commercial, Institutional, Wholesale)*	*Amount Used (Gallons per Year)*	*Percent of Total Annual Water Delivered*	*Implementing Water Conservation Measures? (Yes/ No/Unknown)*
1. EMERALD HILLS MHC LLC	RESIDENTIAL	2,006,000	0.23%	UNKNOWN
2. FRATTALONE S DAWNWAY	COMMERCIAL	1,980,000	0.22%	UNKNOWN
3. CF MH SKYLINE FEE LLC	RESIDENTIAL	1,887,000	0.21%	UNKNOWN
4. PATTI JO HAYNES	RESIDENTIAL	1,532,000	0.17%	UNKNOWN
5. CITY OF INVER GROVE HEIGHTS	INSTITUTIONAL	1,190,000	0.13%	YES
6. ROSE HILL VILLAS	COMMERCIAL	1,006,000	0.11%	UNKNOWN
7. MCGOUGH FACILITY MANAGEMENT	COMMERCIAL	995,000	0.11%	UNKNOWN
8. BRIDGEWOOD	RESIDENTIAL	879,000	0.10%	UNKNOWN
9. SPRINGWOOD PONDS CONDO ASSN	COMMERCIAL	868,000	0.10%	UNKNOWN
10. LAFAYETTE RDIGE HOA	COMMERCIAL	819,000	0.09%	UNKNOWN

Existing Treatment, Storage, and Distribution Facilities

The City of Inver Grove Heights currently treats all water at the City's municipal water treatment facility. The municipal water treatment facility has an existing capacity of 12 Million Gallons per Day (MGD). The plant process involves iron and manganese removal, fluoridation, and chlorination. The facility includes 8 gravity sand filters, 5 backwash settling tanks, 6 high service pumps, a one million gallon clearwell, various chemical feed rooms, a control room and two laboratories.

There are five storage facilities described in Table 8-4 with a usable storage volume of 10.3 million gallons serving the City of Inver Grove Heights's water system. As detailed in Table 8-2, the City's average day demand is

2.64 million gallons on average for the past 5 years. Ten State Standards recommend providing storage capacity equal to the City's current average day demand, therefore, the City's system provides adequate water storage.

Table 8-4. Storage Facilities

Facility	*Reservoir Type*	*Storage Volume (MG)*	*Year Constructed*
Plant	Ground/Clear Well	1.3	1998
Reservoir	Ground Storage	5.0	1989
Arbor Pointe	Elevated Storage	2.0	2005
Asher	Elevated Storage	1.0	2014
North Side Tower	Elevated Storage	1.0	1988
Total		10.3	

Because the City's topography ranges considerably, the system operates under five pressure zones. The Reduced Pressure Service Area is served by pressure reducing valves from the South Grove Service Area. The Babcock Booster Station pumps water from the South Grove Service Area to the Asher Service Area. The North Booster Station pumps water from the Asher Service Area to the North Service Area. The high water level for each pressure zone is as follows:

North Service Area	1160
Asher Service Area	1115
South Grove Service Area	1014
Northwest Area	1060

The existing water system is shown in Figure 8-1. The future water system is shown in Figure 8-2 and was developed based on the northwest area water system improvements included in the May 2005 Northwest Area Feasibility Report and more recent Northwest Water System Study completed in January of 2017 (Stantec). The City of Eagan provides water service to a portion of Inver Grove Heights south of Highway 55 through a joint powers agreement. Existing connections to Eagan are primarily the mobile home park and some residential development in the vicinity of Cliff Road. There is a small overlap in the Eagan and Inver Grove Heights service areas. While Eagan or Inver Grove Heights could serve the area south of Highway 55 and north of the mobile home park with water, it is not the City of Inver Grove Heights practice to use the City of Eagan for water service.

Figure 8-1: Existing Water System

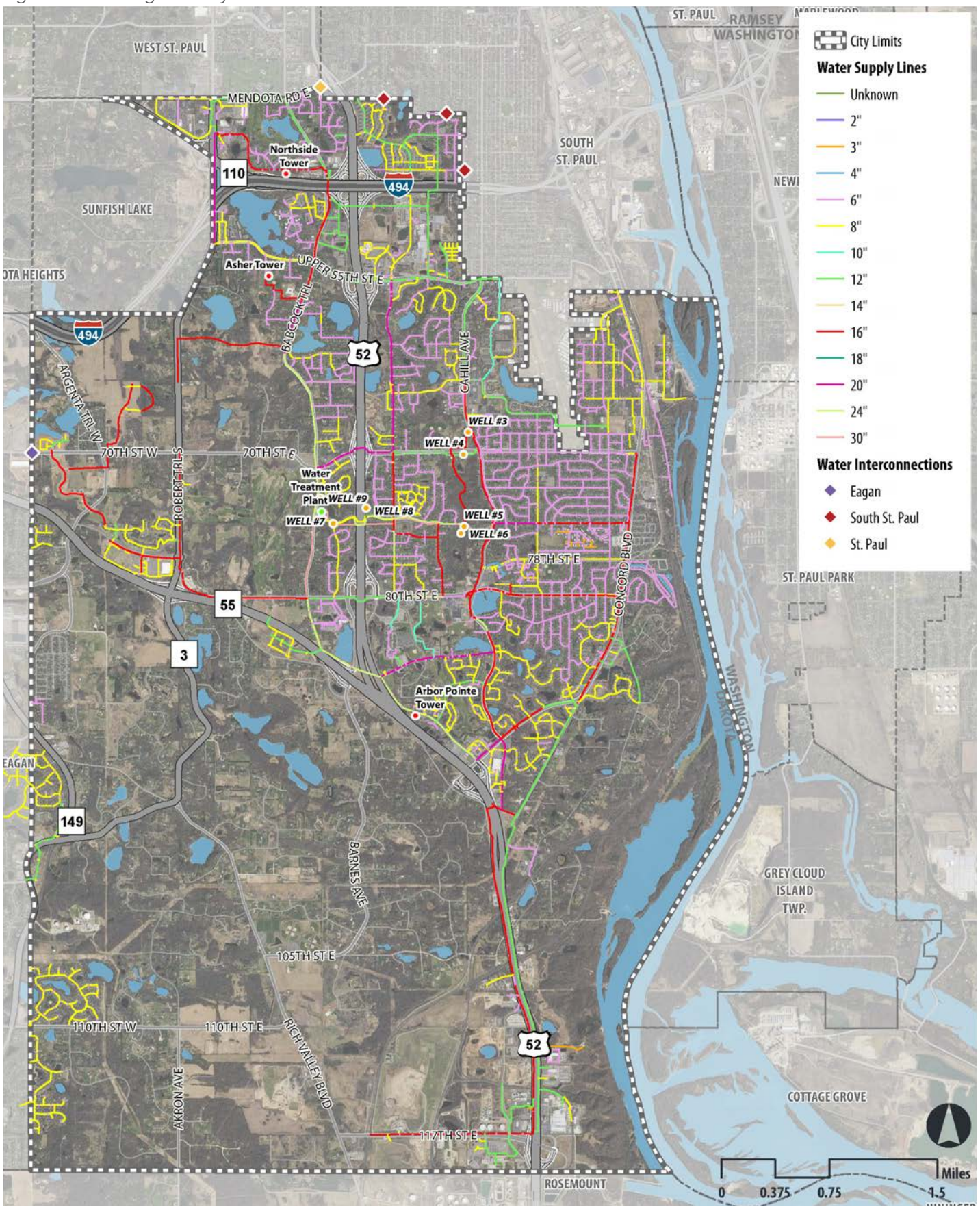
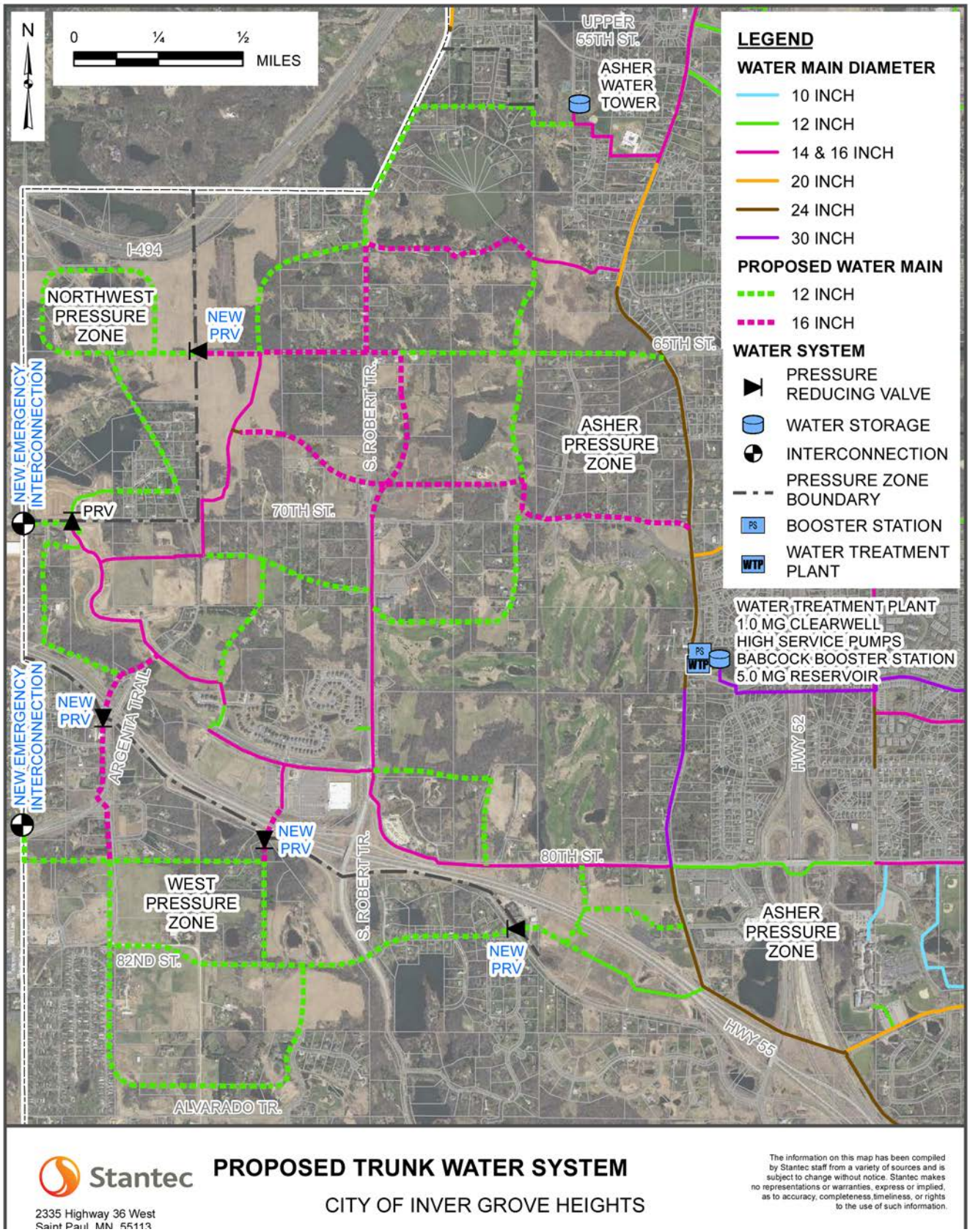


Figure 8-2: Future Proposed Water System (Source: Stantec)



Existing Water Sources

The City of Inver Grove Heights currently has seven wells in service. They are designated Well No. 3, Well No. 4, Well No. 5, Well No. 6, Well No. 7, Well No. 8 and Well No. 9. All wells except Well No. 6 draw water from the Jordan Formation. Well No. 6 draws water from the Mt. Simon – Hinckley Aquifer. Groundwater from the wells is treated at the water treatment facility as described in the previous section. Following treatment, water is pumped into the distribution system.

The rated capacity of the existing wells is 9,000 gallons per minute (gpm). Ten State Standards recommends maximum day demand be satisfied with the largest pump out of service (firm capacity). The City's system falls well within this standard.

In the past five years, the maximum day demand for the City's water system was on average approximately 6.4 million gallons per day (gpd) which equates to 4,400 gpm. Supply firm capacity is sufficient to supply maximum day water system demands.

Table 8-5 summarizes the City's current groundwater sources. Copies of water well records and well maintenance information are included in the Water Supply Plan Template submitted to the MN DNR.

Table 8-5. Ground Water Well Summary Information

Well No.	*Unique Well Number*	*Year Installed*	*Well & Casing Depth (ft)*	*Well Diameter (in)*	*Capacity (GPM)*	*Aquifer Name*
Well #3	207284	1970	407	12	1200	Jordan
Well #4	207285	1970	360	12	1200	Jordan
Well #5	165640	1980	452	24	1200	Jordan
Well #6	433259	1987	1044	24	1000	Mount Simon Hinkley
Well #7	463527	1990	514	16	1200	Jordan
Well #8	655940	2004	542	18	1200	Jordan
Well #9	759561	2008	510	18	2000	Jordan

Emergency Interconnections

The City of Inver Grove Heights has three interconnections with the City of South Saint Paul, one with West St. Paul, and one with Eagan which are only used in the event of an emergency. Two additional emergency interconnections to the City of Eagan are planned to be requested in the near future. The City of West Saint Paul is supplied water by Saint Paul

Ten State Standards

The ten state standards are the recommended standards for Water Works and include policies for the review and approval of plans and specifications for public water supplies . The standards are in a report of the Water Supply Committee of the Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers and can be found at www.10statestandards.com.

MEMBER STATES AND PROVINCES
Illinois Indiana Iowa Michigan Minnesota Missouri New York Ohio Ontario Pennsylvania Wisconsin

Regional Water Services which has a supply capacity of approximately 144 MGD.

Demand Projections

Table 8-7 summarizes the City of Inver Grove Heights's projected population served by the water system for the next ten years, the average day demand, the maximum day demand, and the projected demand per year. It should be noted however that the average and maximum projected water demand is not water pumped and does not include unaccounted for water.

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

Table 8-7. Ten Year Demand Projections

Year	Population Served	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)
2016	34,710	2.27	5.40	828.55
2017	35,673	2.32	5.45	846.8
2018	36,009	2.37	5.50	865.05
2019	36,345	2.42	5.55	883.3
2020	36,682	2.47	5.60	901.55
2021	37,144	2.52	5.65	919.8
2022	37,606	2.57	5.70	938.05
2023	38,068	2.62	5.75	956.3
2024	38,530	2.67	5.80	974.55
2025	38,993	2.72	5.85	992.8

Table 8-6 summarizes the population projections in ten year increments consistent with those in the City's 2040 Comprehensive Plan update.

Table 8-6. 2040 Demand Projections

Year	Total Community Population	Population Served	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Projected Demand (MGY)
2020	37,300	36,682	2.47	5.60	901.55
2030	42,000	41,304	2.97	6.10	1,084.05
2040	46,700	46,700	3.59	6.48	1,310.35

Resource Sustainability

Sustainable water to provide for the needs of society, now and in the future, without unacceptable social, economic, or environmental consequences. The City of Inver Grove Heights has kept well monitoring records in accordance with the resource sustainability requirements of the Department of Natural Resources. Records of water levels are maintained for the existing six production wells that are in service. Water level readings are taken periodically for the production wells which are representative of the water levels in each water source formation.

Sustainable Water Use

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

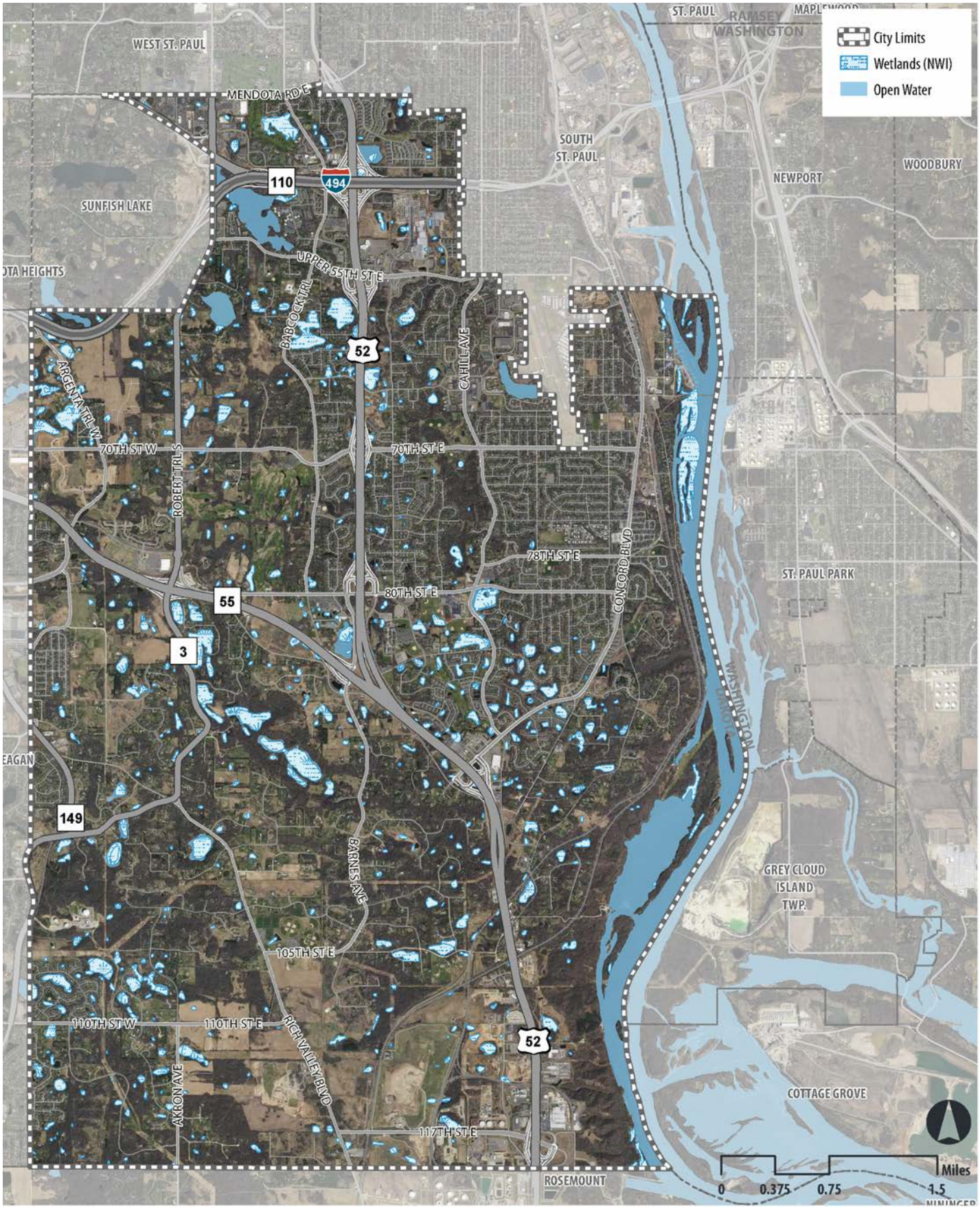
The water levels of each well within the City of Inver Grove Heights have maintained a constant level given the monitoring information provided from the construction of each well, maintenance records, and pumping level information. These records are included in the Water Supply Plan submitted to the MN DNR. Data indicates the aquifer as a sustaining water supply. Table 8-8, summarizes the monitoring procedures. Also included in the Water Supply Plan submitted to the MN DNR is water level information from a local DNR observation well which shows a gradually increasing water level.

Table 8-8. Monitoring Wells

Well No.	*Unique Well Number*	*Type of well (production, observation)*	*Frequency of Measurement (daily, monthly, etc.)*	*Method Measurement (steel tape, SCADA etc.)*
Well #3	207284	Production	Annually	SCADA
Well #4	207285	Production	Annually	SCADA
Well #5	165640	Production	Annually	SCADA
Well #6	433259	Production	Annually	SCADA
Well #7	463527	Production	Annually	SCADA
Well #8	655940	Production	Annually	SCADA
Well #9	759561	Production	Annually	SCADA
Arbor Pointe	19005	DNR Monitoring	Hourly	SCADA

Currently, there are no natural resource features in the City of Inver Grove Heights that could be affected by municipal production well withdrawals. Figure 8-3 presents the National Wetland Inventory (NWI) for the City. There are protected and impaired surface waters within the City; the hydrogeology of the Prairie du Chien – Jordan Aquifer indicates that the Jordan portion of the aquifer is confined within Inver Grove Heights except at the far eastern edge near the Mississippi River (per Minnesota

Figure 8-3: National Wetland Inventory (NWI)



Geological Survey) and the southernmost part of Inver Grove Heights. Therefore, groundwater may influence surface waters. However, a thick layer of glacial sediment covers the bedrock in all parts of Inver Grove Heights except near the river to the east. This inhibits vertical water transmission and makes the Jordan less susceptible to contamination.

Historically, the Jordan Aquifer has maintained a constant static water level and, therefore, indicates there is ample water supply for the foreseeable future to meet projected demands.

Mt. Simon – Hinckley Aquifer is confined beneath Inver Grove Heights. The hydrogeology of the Mt. Simon – Hinckley Aquifer water does not influence surface waters and surface waters do not influence the water in this aquifer. Resource protection thresholds have not been established, as the groundwater and surficial natural resource features have been determined to not influence each other.

Historically, the Mt. Simon – Hinckley Aquifer has a declining water level, so regulatory protections have been established to ensure there is ample water supply for the foreseeable future to meet projected demands.

Preventative Maintenance

Inver Grove Heights has recently completed its Wellhead Protection Plan. The City does not have any surface water supplies. Long term preventative programs and measures for the City's existing water system will help reduce the risk of emergency situations. The City of Inver Grove Heights staff performs much routine maintenance to ensure proper performance of treatment plant equipment, well pumps, and distribution system.

Future Water System Improvements

Maintenance at the Water Treatment Facility consists of maintaining several systems including the chemical feed systems, backwash reclaim system, high service pumps, and filter media.

Chemical feed system maintenance includes annual servicing of chlorine feed and storage equipment. Chlorine feeds lines are replaced annually. Potassium permanganate, fluoride, and manganese sulfate feed systems are annually serviced and equipment replaced as necessary.

Backwash reclaim system maintenance consists of semiannual reclaim tank inspection and cleaning, semiannual pumping equipment inspection

and lubricant changing, and annual air scrubbing and backwash pumping equipment servicing.

High service pump maintenance consists of semi-annual electric pump motor servicing and vertical turbine pump servicing after 30,000 hours of use.

The depth and condition of the filter media is checked annually.

Well pumps are serviced after approximately 1 billion gallons are pumped. Hollow shaft well pump motors are serviced semi-annually and submersible well pump motors are serviced after approximately 1 billion gallons are pumped.

Distribution system maintenance includes flushing/exercising of all hydrants in the spring. Dead end mains are flushed in the fall in addition to the spring flushing.

The City of Inver Grove Heights's water capital improvements plan includes improvements to expand system supply as growth occurs, as well as water main extensions necessary to serve the northwest area. A summary of the City's capital improvements plan is included in the following sections.

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.

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. As the City of Inver Grove Heights does serve over 3,300 people, the City is required to complete the Federal Emergency Response Plan. The Federal Emergency Response was certified in January

of 2017. The emergency response lead is the Chief of Police, and the alternative emergency response lead is assigned to a Police Lieutenant.

Inver Grove Heights Water Tower

Allocation and Demand Reduction Procedures

Water Supply Plans as required by the Department of Natural Resources and the Metropolitan Council 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.

These allocation and demand reduction procedures must also be in accordance with the Minnesota State Statutes 103G.261, which identifies and defines the priorities in which water usage will be allocated in the event of an emergency. These priorities are defined as follows:

- The first priority water use category includes domestic water supply only and excludes industrial and commercial uses of municipal water supply. The first priority also includes uses for power production that meets contingency requirements. Domestic use is defined by 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.
- The second priority water use category includes uses involving consumption of less than 10,000 gallons per day.
- The third priority water use category includes uses for agricultural irrigation and processing of agricultural products.
- The fourth priority water use category includes uses for power production in excess of the use provided for in the contingency plan under first priority.
- The fifth priority water use category includes uses, other than agricultural irrigation, processing of agricultural products, and power production.
- The sixth priority water use category includes 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.

Table 8-9 presents the statutory water use priorities along with any local

priorities for the City of Inver Grove Heights. 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. Table 8-9 lists the priority ranking, average day demand, and demand reduction potential for each customer category in the City.

Table 8-9. Water Use Priorities

Customer Category	*Allocation Priority*	*Average Day Demand (GPD)*	*Demand Reduction Potential (GPD)*
Residential	1	1,989,041	1,477,858
Institutional	1	74,829	31,578
Commercial	2	544,623	52,829
Industrial	3	32,233	6,125
Irrigation	4	0	0
Non-essential	6	0	0
	TOTALS	2,640,726	1,568,390

Triggers for Allocation and Demand Reduction

Triggers for allocation and demand reduction actions are defined by the City of Inver Grove Heights for implementing emergency responses, including supply augmentation, demand reduction, and water allocation. Examples of triggers can include the water demand in excess of 100% of storage capacity, the water level in the City's wells below a certain elevation, etc. Each trigger should have a quantifiable indicator and actions can have multiple stages such as mild, moderate, and severe responses. Emergency demand conditions, triggers, and actions are outlined in the 2016-2018 Local Water Supply Plan.

Notification procedures as designated by the City of Inver Grove Heights include 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 the City may need to implement.

Methods used to inform customers of water use restrictions are also

outlined in the 2016-2018 Local Water Supply Plan.

Enforcement

Minnesota Statutes require public water supply authorities to adopt and enforce water conservation restrictions during periods of critical water shortages. As stated in Minnesota Statutes 103G.291, Subdivision 1, regarding public water supply appropriation during deficiency, 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. 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.

The copy of the draft ordinance is included in the Water Supply Plan submitted to the MN DNR. The City's existing watering restriction is voluntary. There is no enforcement of the existing watering restriction. However, utilities staff have noted significant decreases in water consumption when the restrictions are initiated.

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.

Conservation Goals

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.

The American Water Works Association (AWWA) recommends that unaccounted for water not exceed 10% of the City's total average annual volume of water consumed. In the last five years, the City of Inver Grove Heights's unaccounted for water totals an average of approximately 9% of the City's average annual volume of water consumed. The amount of unaccounted water should be monitored regularly as it is a good indication of pipe breaks or system failures.

Water Conservation Programs

The City of Inver Grove Heights has short term conservation measures available for use in an emergency. Short term demand reduction measures are 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 system 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, and maintenance of all meters. AWWA also recommends that utilities conduct regular water audits to ensure accountability. Table 8-11 presents a summary of the number of meters and their maintenance schedule including source water meters.

Table 8-11. Water Meters

	Number of Metered Connections	*Meter Testing Schedule (years)*	*Average Age/ Meter Replacement Schedule*
Residential	7,205	Not tested	15 / Replaced after 2 million gallons of consumptions
Institutional	32	Tested or replaced on schedule according to individual meter size	
Commercial	282		
Industrial	7		
Water Source (wells)	7	5	5 / As necessary per testing
Treatment Plant	10	N/A	10 / N/A

Currently there are no known unmetered connections to the City of Inver Grove Heights's water system.

2. Unaccounted Water: Water audits are intended to identify, quantify, and verify water and revenue losses. It is recommended by the AWWA that the volume of unaccounted for water should be evaluated each billing cycle. The City of Inver Grove Heights currently evaluates the unaccounted for on an annual basis. Annually leak detection surveys are performed to identify and repair water loss locations.
3. Conservation Water Rates: The City currently has implemented an increasing block rate structure. It includes a base charge for a minimum number of gallons and increases in three steps as the volume consumed increases. Water rates are evaluated annually. Customers are billed monthly or quarterly dependent on the type of customer.
4. Regulation: The City of Inver Grove Heights also has a number of regulations for short term reductions in demand and long term improvements in water efficiencies. The City has adopted a voluntary odd/even watering policy to help reduce peak demand and to reduce demand in emergency situations. The City also enforces all mandated State and Federal Regulations. These regulations include the Minnesota Statute 103G.298 requiring all automatically operated landscape irrigation systems to have furnished and installed technology that inhibits or interrupts operation of the landscape irrigation system during periods of sufficient moisture. The technology must also be adjustable either by the end user or the professional practitioner of landscape irrigation services. The 1992 Federal Energy Policy Act established manufacturing standards for water efficient plumbing fixtures, including toilets, urinals, faucets, and aerators and is also enforced with the City's building permit and inspections department.
5. Education and Information Programs: The City of Inver Grove Heights provides information on how to improve water use efficiencies by a number of education methods throughout the year. The City publishes water conservation information and tips in the annual water quality report and the bimonthly Insights City Newsletter. Also, the City has been coordinating with middle schools to become a part of the "wet" program, and bring schools to the water treatment facility for tours. Table 8-12 summarizes the City's educational efforts.

Table 8-12. Current Education Programs

Current Education Programs	*Frequency/ Year*
Staff Training	Ongoing
Facility Tours	Ongoing
Displays and Exhibits	Ongoing
Community Newsletters	4
Information Kiosk at Public Facilities	Ongoing
Website	Ongoing

Capital Improvement Program

General

The City's capital improvement program includes improvements for

the overall water system consistent with the Water Supply Plan and the Northwest Water System Report.

Based on the projected future water demand (as derived from population, household and employment projections), it is likely that supply will need to be increased to supply future development. Water usage should be monitored and projections updated periodically to confirm that the appropriate improvements are planned in order to meet Ten-State Standards recommendations. These recommendation include being able to supply the projected maximum day demand with the largest well out of service.

Funding

The City's water fee structure includes water user fees, trunk water fees, and water availability charge fees (WAC). The water fees are collected to cover the operation, maintenance and replacement costs of the existing systems and provide a funding mechanism for construction of the major infrastructure improvements needed to serve growth. The City of Inver Grove Heights has established that growth should be funded and paid for by those who are in need of the facilities. The parties creating the need for additional water system improvements are expected to pay for new trunk facilities and expansion of existing facilities through trunk and WAC fees.

User charges (Water Rates) are used to fund operations, maintenance, and replacement costs of wells, water treatment facilities, water storage facilities, booster pumps, and the distribution system.

Trunk water fees are used to fund new wells, pump houses, raw water transmission mains, water storage facilities, and booster pump stations. Trunk water fees are also used to fund oversizing of watermains more than what is needed for a general development, considered watermains, which exceed 8 inches in diameter for residential development and which exceed 12 inches for commercial/industrial development.

The water availability charge is used to fund water treatment facility improvements.

Implementation

Summary of Water Supply Plan Policies

It is the policy of Inver Grove Heights to:

1. Provide water to the community that meets the standards required by the State of Minnesota.
2. Minimize the amount of unaccounted water usage to maintain a level of lower than 10% of the City's total average annual volume of water consumed.
3. Ensure adequate water pressure to meet daily usage needs and provide adequate pressure for emergency services.
4. Continue to monitor and maintain storage consistent with Ten State Standards.
5. Continue with practices to maintain the existing water supply and distribution system.
6. Maintain or improve upon the average maximum day to average day demand ratio of 2.6.
7. Pursue a 10-15% reduction in per capita water production, in cooperation with other Dakota County cities, to support aquifer supply sustainability, utilizing groundwater modeling as a tool to ensure aquifer sustainability.

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CRITICAL AREA PLAN
CHAPTER 9

Introduction

History & Overview

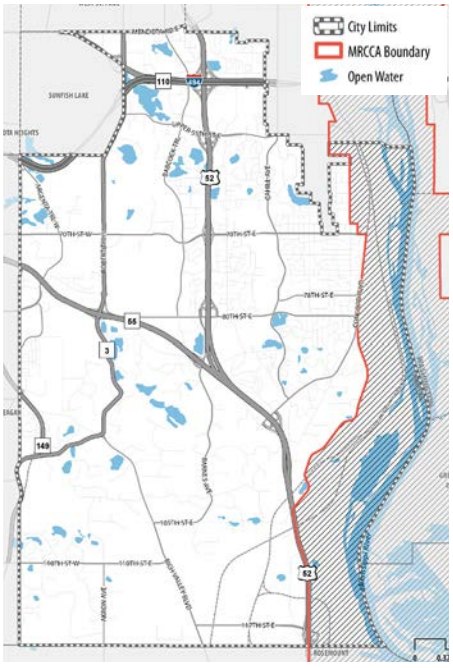
The Mississippi River Corridor Critical Area (MRCCA) is a land corridor along the Mississippi River in the Twin Cities Metropolitan Area governed by special land planning requirements and land development regulations. Throughout the Twin Cities, the MRCCA comprises 72 miles of river across 30 jurisdictions. In Inver Grove Heights, the MRCCA includes 3,000 acres, or 16 percent of the City's total land area. These regulations protect and preserve the natural, scenic, recreational, and transportation resources of this section of the Mississippi River. Originally designated in 1976, local communities within the corridor are required to complete a MRCCA plan as a chapter of their Comprehensive Plan. The Critical Area Plan for Inver Grove Heights is intended to serve as both a separate document and also as a part of the City's Comprehensive Plan.

The MRCCA was designated by Governor's Executive Order in 1976, following the passage of the Minnesota Critical Areas Act of 1973. On January 4, 2017, Minnesota Rules, chapter 6106 replaced Executive Order 79-19, which previously governed land use in the MRCCA. The rules require local governments to update their MRCCA plans and MRCCA ordinances for consistency with the rules. The MRCCA is important because it contains many significant natural and cultural resources, including: scenic views, water, navigational capabilities, geology and soils, vegetation, minerals, flora and fauna, cultural and historic resources and land and water based recreational resources. The MRCCA is home to a full range of residential neighborhoods and parks, as well as river-related commerce, industry, and transportation. A brief timeline of the MRCCA history is as follows:

Critical Area Act

The "Critical Areas Act" was enacted in 1973 by the Minnesota State Legislature and was replaced by Minnesota Rules 6106 in 2017. The Act prescribed a process for planning and managing areas of regional and state-wide interests, areas of significance that transcend local government's authority.

Figure 9-1: MRCCA in Inver Grove Heights



- **1973** - Minnesota passes Critical Areas Act of 1973 (MN Statutes, Chapter 116G) Environmental Quality Board (EQB) adopts rules to implement Act (MN Rules, parts 4410.8100 – 4410.9910)
- **1976** - Mississippi River and adjacent corridor designated a state critical area by Governor Wendell Anderson (Executive Order No. 130)
- **1979** - Designation continued by Governor Albert Quie (Executive Order 79-19) Metropolitan Council acts to make designation permanent (Resolution 79-48)
- **1988** - In 1988, the U.S. Congress established the Mississippi National River and Recreation Area (MNRRA), a unit of the National Park System.
- **1991** - MNRRA designated a state critical area per Critical Areas Act (MN Statutes, section 116G.15)
- **1995** - Responsibility shifts from EQB to Department of Natural Resources (DNR) by Governor Arne Carlson (Reorganization Order 170)
- **2007** - Legislature directs DNR to prepare report on the Mississippi River Corridor Critical Area (Completed January 2008)
- **2009** - Legislature amends MN Statutes, section 116G.15 and directs DNR to conduct rulemaking for the Mississippi River Corridor Critical Area (MN Laws 2009, Chapter 172, Article 2, Section 5.e.)
- **2011** - DNR develops draft rule after participatory stakeholder process, but rulemaking authority lapses
- **2013** - Legislature directs DNR to resume rulemaking process in consultation with local governments
- **2017** - Rules become effective January 4.

Mississippi National River and Recreation Area established in 1988

The MNRRA shares the same boundary as the MRCCA, and the park's Comprehensive Management Plan (CMP), signed by the Governor and Secretary of the Interior, incorporates by reference the MRCCA program for land use management. The MNRRA largely relies on the MRCCA to manage land use within the park. This reliance establishes a unique partnership and framework for land use management amongst the local, state and federal governments to protect the intrinsic resources of the Mississippi River Corridor.)

Progress Towards the 2030 Plan

As part of Inver Grove Heights 2030 Comprehensive Plan four projects were identified that had potential to have the greatest potential to accomplish the stated goals of the river corridor. These projects included 1) development of Heritage Village Park, 2) acquire and develop a viewing facility through reuse of Bridge 5600, 3) coordinate with the Katherine Ordway Natural Science Study Area to develop community programs, and 4) support redevelopment efforts for the Concord Neighborhood.

Elements Shaping the Critical Area

MRCCA Districts

Six districts are defined in the MRCCA rules. The districts are based on the natural and built character of different areas of the river corridor. Structure setbacks, height limits, and the amount of open space required for subdivisions vary by district. All other MRCCA standards apply uniformly throughout the corridor. The presence and diversity of the districts supports the different dimensional standards needed to enhance the corridor's character and to protect the resources and features identified for special protection.

The Critical Area Corridor map shows the boundary within Inver Grove Heights (see Figure 9.1). It can generally be described as the east 1,000 feet of the community bordering the river and including portion of the Mississippi River. The Critical Area Corridor in Inver Grove Heights is comprised of four districts: 1) Rural & Open Space District, 2) Urban Mixed District, 3) River Neighborhood District, and 4) Separated from River District. The description and management purposes of each of these districts is as follows:

- **Rural and Open Space District:** The rural and open space district (CA-ROS) is characterized by rural and low-density development patterns and land uses, and includes land that is riparian or visible from the river, as well as large, undeveloped tracts of high ecological and scenic value, floodplain, and undeveloped islands. Many primary conservation areas exist in the district. The CA-ROS district must be managed to sustain and restore the rural and natural character of the corridor and to protect and enhance habitat, parks and open space, public river corridor views, and scenic, natural, and historic areas.
- **River Neighborhood District:** The river neighborhood district (CA-RN) is characterized by primarily residential neighborhoods that are riparian or readily visible from the river or that abut riparian parkland. The district includes parks and open space, limited commercial development, marinas, and related land uses. The CA-RN district must be managed to maintain the character of the river corridor within the context of existing residential and related neighborhood development, and to protect and enhance habitat, parks and open space, public river corridor views, and scenic, natural, and historic areas. Minimizing erosion and the flow of untreated storm water into the river and enhancing habitat and shoreline vegetation are priorities in the district.

What We've Heard

During the public engagement process multiple comments were received praising the existing park space within the MRCCA. Particularly residents voiced their support for River Heights Park, the great views of the MIssissippi River from Pine Bend Bluffs Scenic and Natural Area, and the trails that exist throughout the area.

Residents wish to see more trails throughout the area in the future and are looking forward to regional trail connectivity in the future, specifically the ability to bike to Hastings along the river via the Mississippi River Regional Trail.

Adult establishments located within the MRCCA have been identified by residents as a barrier to further enjoyment of the park areas.

Figure 9-2: Critical Areas

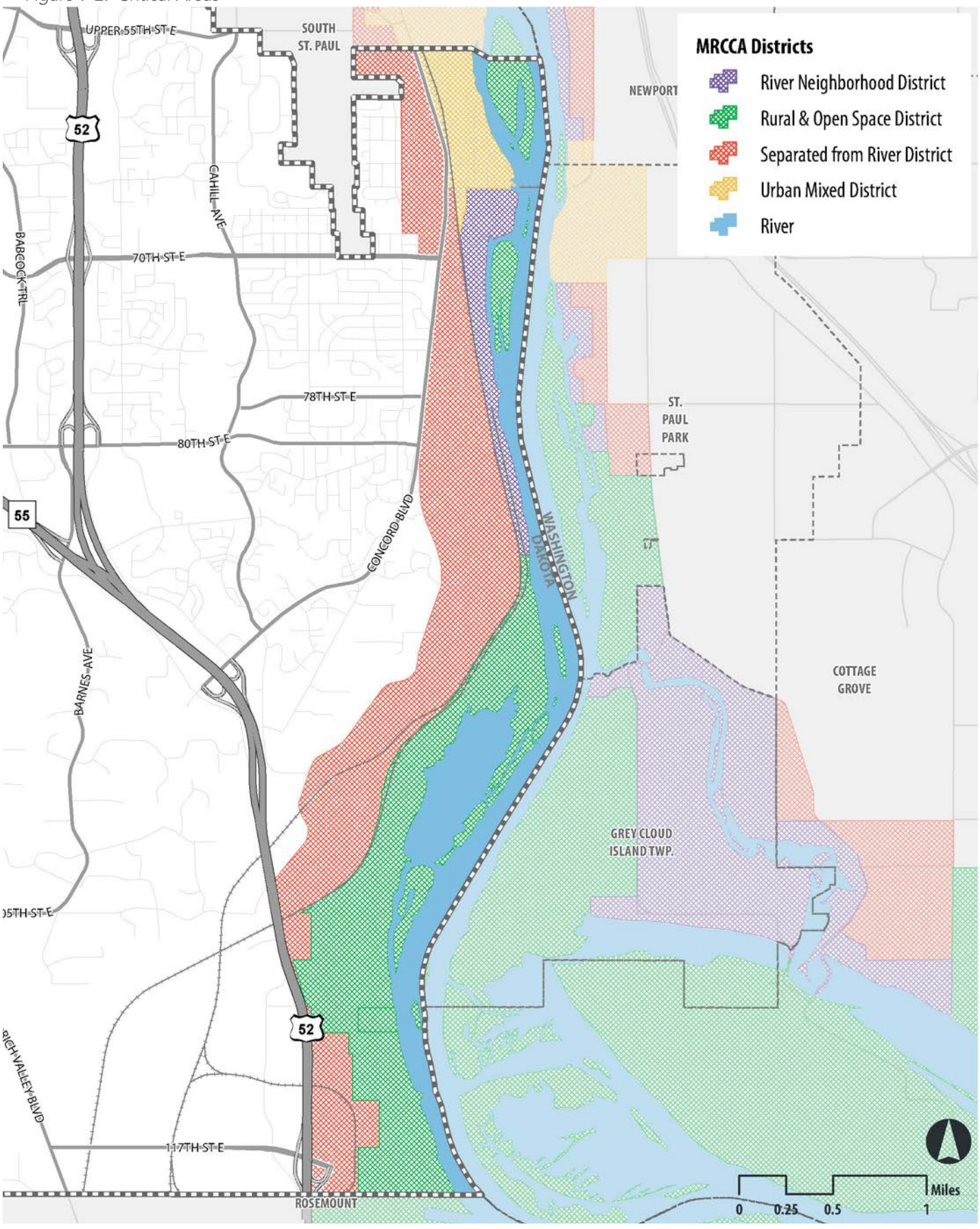
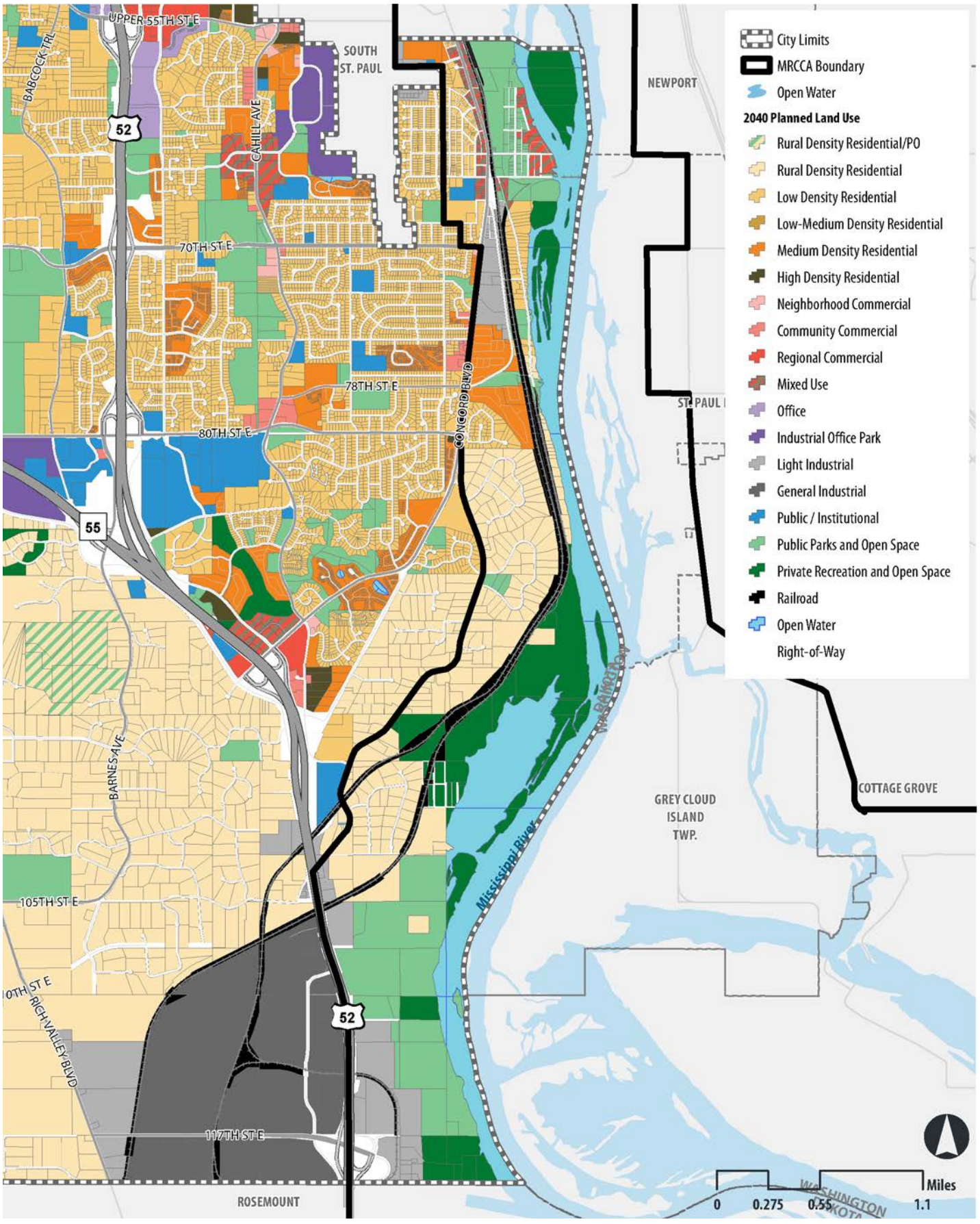


Figure 9-3: Future Land Uses Within MRCCA



- **Separated from River District:** The separated from river district (CA-SR) is characterized by its physical and visual distance from the Mississippi River. The district includes land separated from the river by distance, topography, development, or a transportation corridor. The land in this district is not readily visible from the Mississippi River. The CA-SR district provides flexibility in managing development without negatively affecting the key resources and features of the river corridor. Minimizing negative impacts to primary conservation areas and minimizing erosion and flow of untreated storm water into the Mississippi River are priorities in the district.
- **Urban Mixed District:** The urban mixed district (CA-UM) includes large areas of highly urbanized mixed use that are a part of the urban fabric of the river corridor, including institutional, commercial, industrial, and residential areas and parks and open space. The CA-UM district must be managed in a manner that allows for future growth and potential transition of intensely developed areas that does not negatively affect public river corridor views and that protects bluffs and floodplains. Restoring and enhancing bluff and shoreline habitat, minimizing erosion and flow of untreated storm water into the river, and providing public access to and public views of the river are priorities in the district

The land uses found within the Critical Area corridor are wide-ranging. Inver Grove Heights is a transition area along the river corridor reflecting a change from urban to rural character. As such, the northern portion of the corridor is influenced largely by the development pattern of South St. Paul with small lot residential, commercial, and industrial uses. The southern portion of the corridor again, reflects the rural setting of its neighbor Rosemount.

Located within the urban mixed district, east of Concord Boulevard, is the Heritage Village Park. There remain two historic buildings, the old town hall and school house and property along the Mississippi that the City has been acquiring for the expansion of Heritage Village Park.

The future land use plan recognizes the redevelopment plan for the Concord Neighborhood developed in 2012 and the plan's recommendations by guiding the area for mixed use development. The intent of the mixed use category is to encourage or facilitate redevelopment and reinvestment along the corridor. Redeveloping in this manner has also taken into consideration its location within the urban mixed, river neighborhood, and separated from river districts. The land use plan has identified a set

Scientific & Natural Areas (SNA) Program

The SNA program preserves natural features and rare resources of exceptional scientific and educational value. SNAs are open to the public for nature observation and education, but are not meant for intensive recreational activities. As a general rule there are no trails, rest rooms, or other facilities. Pets are not permitted.

Source: Minnesota Department of Natural Resources

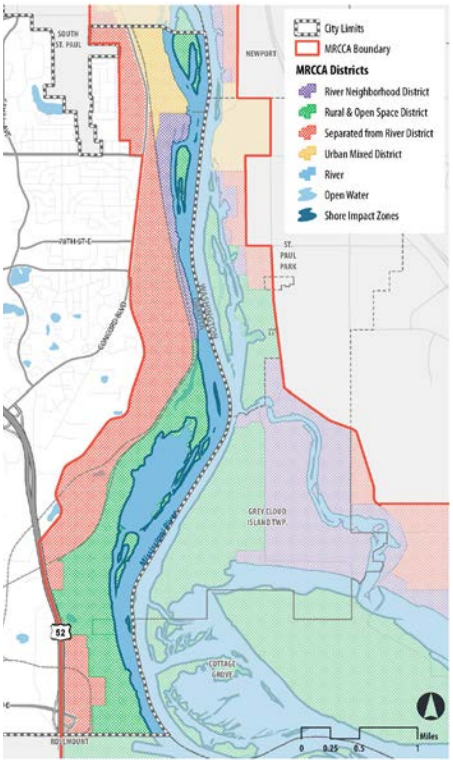
of guiding principles for the Concord Boulevard Corridor in addition to a set of mixed use area policies. Both sets of polices have recognized its relationship to the Mississippi River.

Within the separated from river district, the southern portion is planned for light industrial uses and has been incorporated into the MUSA. Due to the proximity to the Flint Hills Refinery and Highway 52/55, these uses have been long identified as reasonable for this area. Although the entire area south of the railroad tracks is identified as a Light Industrial Area, topography will limit development to the east along the state highway.

The central portion of the separated from river district is nearly built out with rural residential estates on minimum 2.5 acre lots. Few changes to this area are expected in the future in terms of public service delivery.

East of Highway 52/55 and west of the Mississippi River in the rural and open space district is the Pine Bend Bluffs Scientific and Natural Area which encompasses approximately 1,300 acres of woodland and dry prairie bluff lands. The Pine Bend Bluffs area offers majestic views of the river, a safe haven for wildlife habitat and provides shelter for native plants and ecosystems. The importance of preserving these resources has been recognized by the community and region as a whole. In 2003 the Minnesota Department of Natural Resources purchased numerous properties to be included as part of the Scientific and Natural Areas (SNA) Program (see Sidebar opposite left).

Figure 9-4: MRCCA Shore Impact Zones



Primary Conservation Areas

Primary Conservation Areas (PCAs) are defined in the MRCCA rules as key resources and features that are given priority consideration for protection. PCAs include shore impact zones, bluff impact zones, floodplains, wetlands, gorges, areas of confluence, natural drainage routes, unstable soils and bedrock, native plant communities, cultural and historic properties, significant existing vegetative stands, tree canopies, and other identified resources.

Shore Impact Zone

The land along the water's edge is environmentally sensitive and needs special protection from development and vegetation removal. The shore impact zone is a "buffer" area between the water's edge and the area where development is permitted (see illustration at right as pulled from the MRCCA Rules, 11).

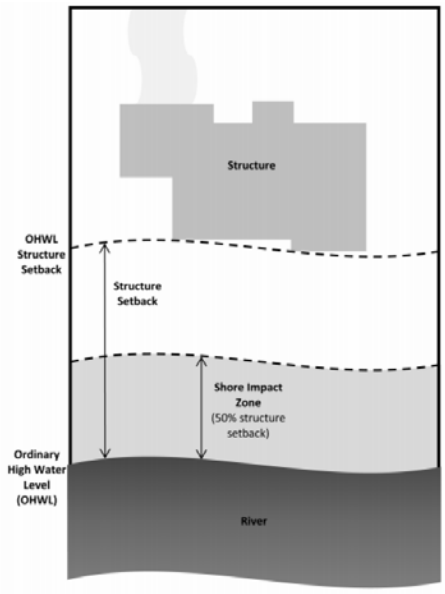


Figure 9-5: MRCCA Floodplains & Wetlands

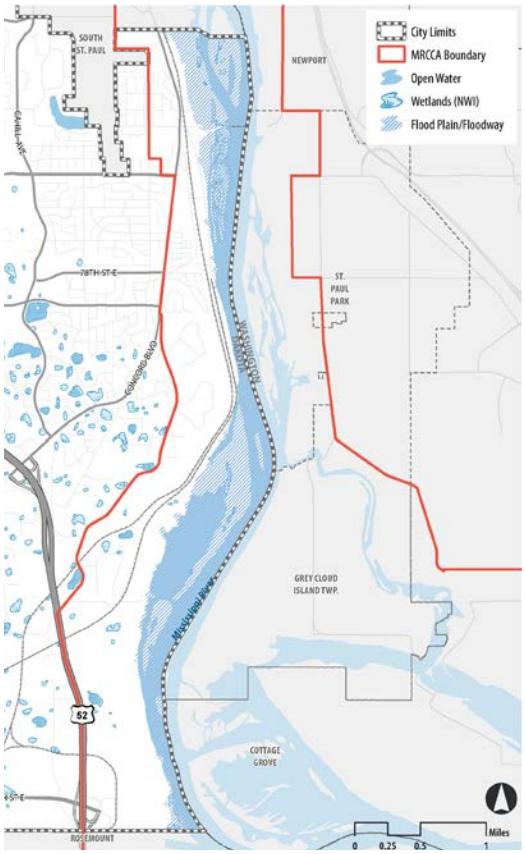
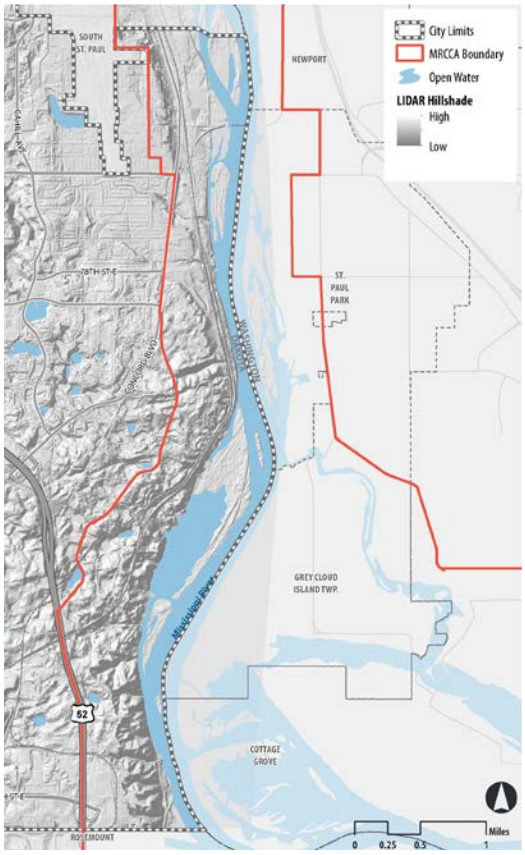


Figure 9-6: MRCCA Natural Drainage Ways



The shore impact zone along Inver Grove Height's boundary with Mississippi River varies in depth depending on the MRCCA District that it lies within. The shore impact zone is at its deepest depth within the Rural and Open Space District and narrowest within the Urban Mixed District. The shore impact zone does not lie within the Separated from River District.

Floodplains & Wetlands

Wetlands are transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Floodplains are the areas adjoining a watercourse which have been or may be covered by large floods that typically occur on an average frequency in the magnitude of the 100-year recurrence interval.

The islands in eastern Inver Grove Heights that are surrounded by the Mississippi River are all covered by the the floodway and floodplain. The low lying northeastern portion of Inver Grove Heights in the MRCCA is largely inundated by the floodplain as well. Much of this land is owned by the City of Inver Grove Heights and lies within Heritage Village Park and Swing Bridge Park. The floodplain is nearly non-existent in the southern portion of Inver Grove Heights because of the bluffs immediately adjacent to the Mississippi shore.

Wetlands within the Critical Area are found in the rural areas where the land has remained in a somewhat natural state and on islands in the Mississippi River. They generally can be found along natural drainageways or in low-lying areas where ponding occurs. The National Wetlands Inventory identifies 19 wetlands within the Critical Area

Natural Drainage Ways

Natural drainage ways are natural open linear depressions which function for the collection and drainage of surface water. They may be permanently or temporarily inundated. The liquids flow under the force of gravity.

There are no major drainage courses other than the Mississippi River in the Critical Area. A number of smaller seasonal drainage courses can be found in valleys of bluff topography (seen in Figure 9-6). Preservation of drainage courses is beneficial from a public investment standpoint as it reduces costs for storm sewers and other capital improvements.

Bluffs & Bluff Impact Zones

MRCCA rules define a bluff as a natural topographic feature having a slope that rises at least 25 feet and the grade of the slope averages 18 percent or greater, measured over a horizontal distance of 25 feet. A bluff impact zone means the bluff and land within 20 feet of the bluff.

Slopes within the Critical Area vary greatly from low lying plains in northern areas to steep bluff slopes in the south. The severest slopes are generally found on land south of the Ordway Nature Center continuing south into Rosemount. Slopes in this area exceed 12 percent but are protected from erosion largely due to the dense vegetation. In addition to deterring erosion, the vegetation adds to the aesthetic beauty and provides habitat for wildlife.

Native Plant Communities & Significant Vegetative Stands

Native plant communities are plant communities that have been identified as part of the Minnesota biological survey. They represent the highest quality native plant communities remaining in the MRCCA. Significant vegetative stands are plant communities identified by the National Park Service that are largely intact and connected and contain a sufficient representation of the original native plant community. Much of this vegetation contributes to the scenic value of the MRCCA.

In the Critical Area there are two areas of vegetation, upland hardwood forest and wetland forest. The upland hardwood forest consists of grasses and white, black, and red oak. Upland areas with potholes contain maples, basswood, elm, and box elder. Wetland forest is found in low lying floodprone areas where soft maple, poplar, and elm prosper. This vegetation isn't prevalent in the areas occupied by single family homes and their accompanying yards as well as within industrial areas.

Cultural & Historic Properties

Historic properties are properties with features such as an archaeological site, standing structure, site, district, or other property that are listed in the National Register of Historic Places, the State Register of Historic Places, locally designated as a historic site, or are determined to meet the criteria for eligibility.

The City of Inver Grove Heights has a rich history as a River City. The following structures and/or sites, identified by the Dakota County Historical Society and City of Inver Grove Heights* (locations show

Figure 9-7: MRCCA Bluff Impact Zones

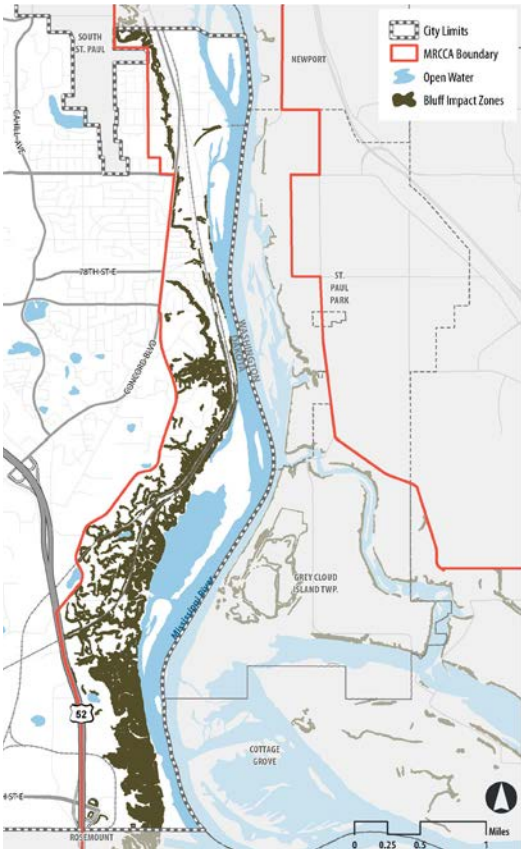


Figure 9-8: MRCCA Vegetation

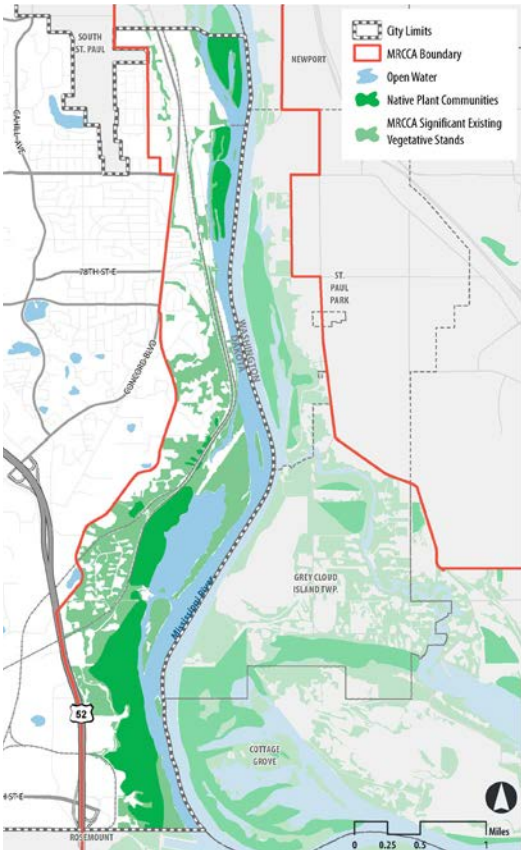


Figure 9-9: MRCCA Cultural & Historic Properties

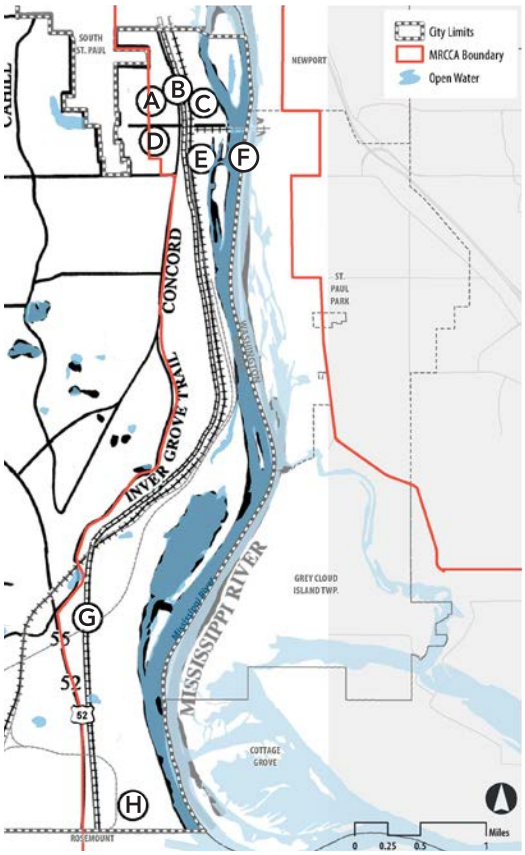
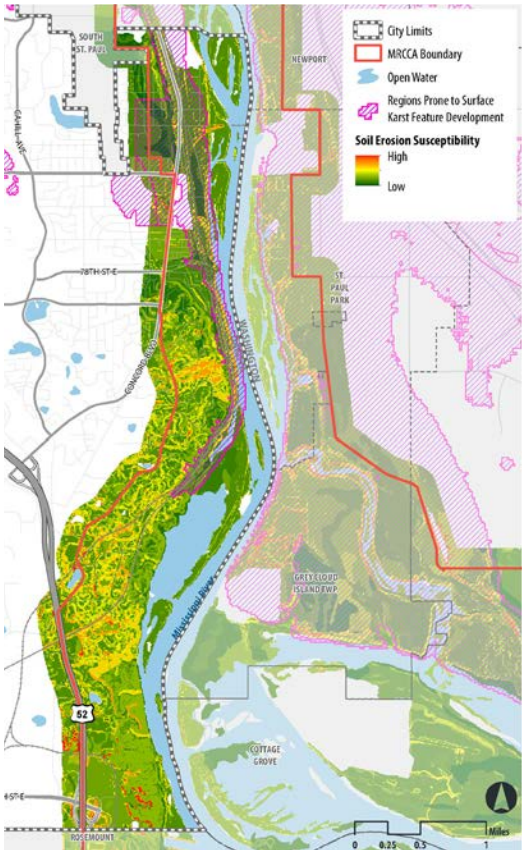


Figure 9-10: MRCCA Unstable Soils



in Figure 9-9) have played an important role in Inver Grove Heights' cultural and founding history:

- A - 1906 Duke's Restaurant: On Concord, originally Piekarski's butcher shop. Building became Duke's offering good food and hotel rooms mostly for railroaders. Meals served 24 hours a day. Now Jersey's Bar.
- B - 1913 Cameron's Store: Located at 65th and Concord. Originally 1880s site of Bushnell Market and Weier and Miller 1895 grocery. Cameron's was a grocery and restaurant. The business has remained in family, now a liquor store. The orignal structure no longer exists.
- C - 1886 Inver Grove Village Rail Depot: The nearby Rock Island boxcar clearing yard was the largest in the Twin Cities. Rock Island was a major area employer.
- D - 1882 Dist. 7 School: School and meeting place, built with bricks by railroad. Earlier location of Dakota County's first public school in 1854. Doane and 67th.
- E - 1934 Inver Grove Village Hall: Still stands on River Road south of 66th St. in former village square. Built by WPA with bricks from the old village school
- F - Railroad Swing Bridge: 1894, rail and wagon Mississippi River crossing for over a century. Built by South St. Paul Beltline railroad for stockyards. Acquired by the Rock Island in 1915. Sold to the Roman Co. in 1981 who operated it as a toll bridge until closing in 1999. The City and Dakota County have worked in cooperation to save and restore the swing bridge.
- G - St. Paul and Southern Electric: Rail line built in 1914 provided commuter service from St. Paul to Hastings with six stops. Equipment included foure passenger cars. Car maintenance shops were located in Inver Grove Village.
- H - Chief Medicine Bottle's Village: Formed in 1836, area became the Pine Bend townsite and post office.

* This information has been adapted from "A brief history of Inver Grove Heights from Township and Village to City" prepared by W. G. Wolston and the Dakota County Historical Society in Cooperation with the City of Inver Grove Heights.

Unstable Soils & Bedrock

Soil is mixture of sand, gravel, silts, clay, water, and air. The stability of soil can be attributed to the mix of these ingredients and other factors that cause frost action, high saturation depth, steep slopes,

low soil strength, ponding, high shrink-swell rates, subsidence and other soil stability issues. Bedrock is the lithified rock that lies underneath loose deposits such as soil or alluvium. Karst formations are a form of unstable bedrock and are areas were sinkholes, springs, caverns, and stream sinks may exist.

The majority of the soils located within the critical area are described below:

- **Colo-Algansee-Minneiska:** Nearly level, poorly drained to moderately well drained soils formed in loamy, silty, or sandy alluvium; on flood plains of major rivers.
- **Waukegan-Wadena-Hawick:** Level to very steep, well drained and excessively drained soils formed in silty and loamy sediments over sandy outwash; on outwash plains and terraces.
- **Kingsley-Mahtomedi:** Gently sloping to very steep, well drained and excessively drained soils formed in loamy and sandy glacial till and sandy glacial outwash; on uplands and pitted outwash plains.

Soils with high erosion susceptibility are limited within the MRCCA in Inver Grove Heights and are primarily found along steep slopes. Most slopes in the southern part of the city exceed 12 percent but are protected from erosion largely due to the dense vegetation. The northern and central eastern parts of Inver Grove Heights lie within a region prone to surface karst feature development. This particular karst area unit is the Prairie du Chien Group and is identified by the Minnesota Karst Lands map which defines areas underlain by carbonate bedrock with less than 50 feet of sediment cover. No known Karst formations have been identified in Inver Grove Heights.

Public River Corridor Views

Public river corridor views (PRCVs) are views toward the river from public parkland, historic properties, and public overlooks, as well as views toward bluffs from the ordinary high water level of the opposite shore, as seen during the summer months. PRCVs are deemed highly valued by the community and are worth protecting because of the aesthetic value they bring to the MRCCA.

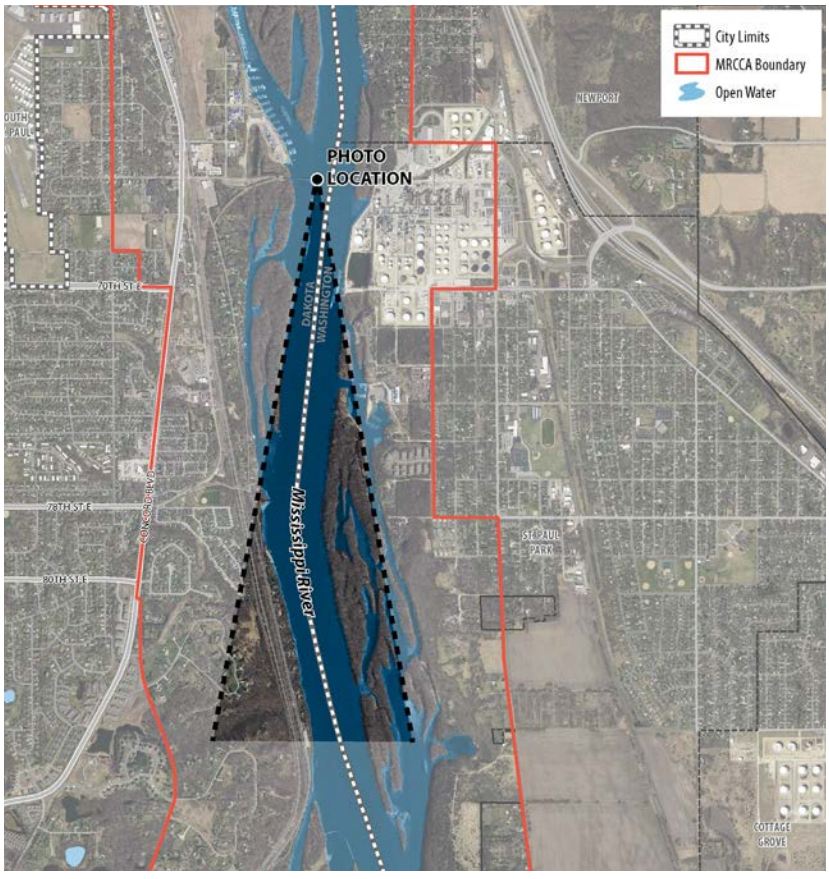
Pine Bend Bluffs SNA has the best river views in Inver Grove Heights.

Through multiple phases of the comprehensive plan engagement process citizens had the ability to provide their input on what views they thought were important to the community. In the first phase people were asked what the liked about Inver Grove Heights through an online mapping tool. One particular comment indicated that people enjoyed the views

Figure 9-11: View Towards the Mississippi from a Historic Property

from the Pine Bend Bluffs Scenic and Natural Area. During the second phase of community engagement citizens where more directly asked about views of the Mississippi River through a voting exercise online and at a community open house. Participants were shown several pictures of views of the Mississippi River that were taken specifically for the Critical Area Plan and asked to vote on which view they felt deserved the most protection. The views receiving the most votes are shown in Figure 9-11 and Figure 9-13. These views are located on the Rock Island Swing Bridge and from a overlook within the Pine Bend Bluffs SNA. An additional view, shown in Figure 9-15, suggested by the National Park Service has been included as well because of its character and unique quality.

Figure 9-12: Map of View Towards the Mississippi from a Historic Property



As part of Met Council's 6-month adjacent community plan review process Inver Grove Heights will consider comments from Cottage Grove, St. Paul Park, and Grey Cloud Island Township (Washington County) about the views they valued looking across the river to bluffs in Inver Grove Heights.

Views Toward the River from Public Places

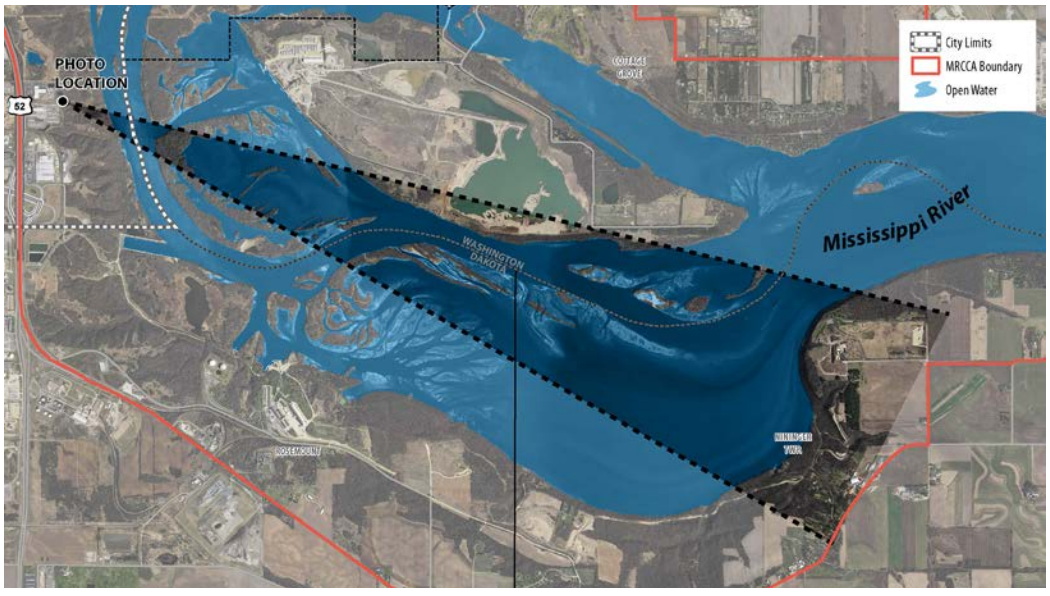
Since its rehabilitation and conversion into a

Figure 9-13: View Towards the Mississippi from Public Parkland

recreational pier in 2010, the Rock Island Swing Bridge (Bridge 5600) has given people the opportunity to view the Mississippi River from a unique angle in the middle of the river.

Views from the Rock Island Bridge are plentiful and diverse. From this location, the viewing public gets the sense of the Mississippi River being a "working river" with a rich history. Views looking north of the bridge include features such as residential uses and dense vegetation. Looking directly east from the end of the bridge there are many heavy industrial uses, once supported by this railroad bridge. As seen in Figure 9-12, views looking south from the bridge are long and expansive, reaching more than two miles along the Mississippi River. The landscape appears to be nearly unaltered by human settlement and the vista is terminated by bluffs in southern Inver Grove Heights. Viewers can see the occasional river barge make its way up the river on its way to barge fleeting areas a few miles north.

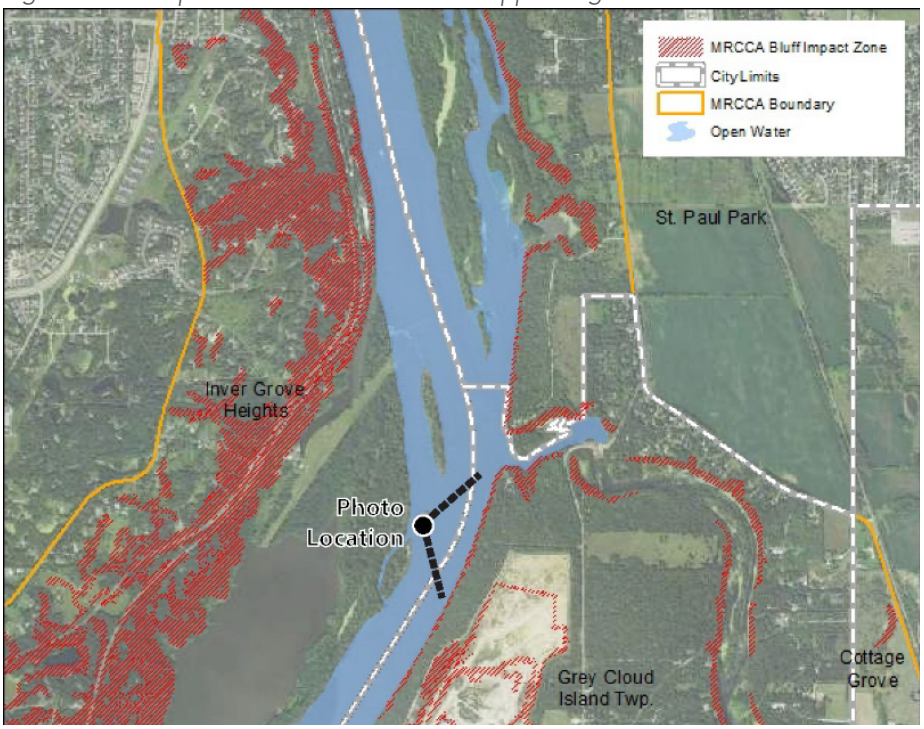
Figure 9-14: Map of View Towards the Mississippi from a Public Place



Further vegetative screening of heavy industrial uses to the east of the bridge would positively affect this view. Changes that would negatively affect this view include: further expansion of heavy industrial uses southward in St. Paul Park,

Figure 9-15: View Towards the Mississippi along the Shoreline

Figure 9-16: Map of View Towards the Mississippi along the Shoreline



extensive vegetative clearing of land along the shore of Inver Grove Heights, and any additional screening restricting viewsheds above the current railing on the Swing Bridge.

The Pine Bend Bluff Scientific and Natural Area in Inver Grove Heights also provides spectacular views of the Mississippi River from bluffs overlooking the river valley. As seen in Figure 9-13, viewsheds of over 5 miles exist from atop the bluffs. This particular view is valuable because of its expansiveness and the largely unaltered natural landscape that can be observed. In this view a well known bluff in Dakota County's Spring Lake Park Reserve, Schaar's Bluff, can be seen in the distance. Farms dot the landscape in this view, reminding the viewer that they are on the edge of the metro area. River barges moving up and down the Mississippi River occasionally appear in this view.

Tree canopy maintenance and the addition of viewfinders may directly positively affect this view. Additional wayfinding to direct people to this view and further Mississippi River Trail expansion would increase access to this view. Changes that would negatively affect this view include extensive vegetative clearing of land along Mississippi River valley and bluffs, large scale utility or transportation crossings, and the addition of man-made structures above the treeline.

The view of Robinsons Rock (Figure 9-15), as seen from just off the shore of the island at the end of River Road, contains unique natural geologic and

vegetation features. The natural features are undisturbed and are visible primarily from an on-river user in a canoe, kayak, or boat.

Development activities that would disturb the vegetation, bluffs, or natural geologic features or would be visible above the treeline would detract from the view. Additionally, the introduction of barge fleeting areas in both Inver Grove Heights and Grey Cloud Island Township at this location would detract from the view as well.

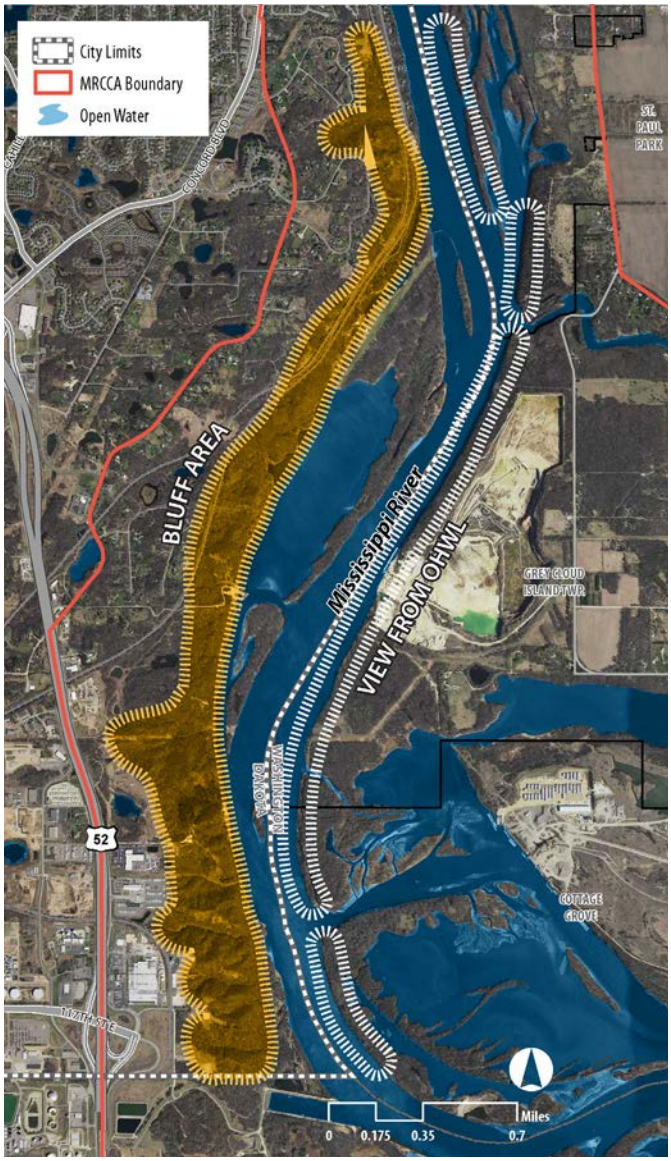
Views Towards Bluffs from the Ordinary High Water Line of the Opposite Shore

The southern portion of Inver Grove Heights along the MRCCA is covered with bluffs. Views of these bluffs from the ordinary high water line (OHWL) of the opposite shore can be observed from Cottage Grove, Grey Cloud Island Township, and St. Paul Park (Washington County). Public access to the shoreline from these jurisdictions is very limited due to their separated nature and private ownership. These views are primarily accessible by boaters, canoers, kayakers, and other river users.

The fact that this area is one of the largest relatively undisturbed natural areas left in the Twin Cities metro area and is one of the more remote areas within the MRCCA, makes this view valuable.

Changes that would negatively affect this view include extensive vegetative clearing of land along the bluffs and large scale utility or transportation crossings.

Figure 9-17: Map of View Towards Bluffs from OHWL of Opposite Shore

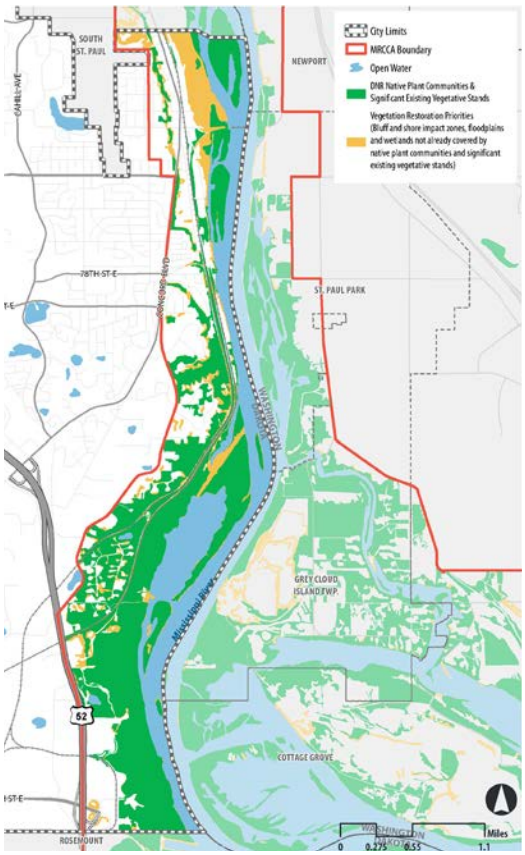


Priorities for Restoration

Vegetation restoration priority areas are areas where bluff and shore impact zones, floodplains, and wetlands exist, but are not already covered with native plant communities and significant existing vegetative stands. These areas represent opportunities to restore natural vegetation, prevent erosion, and stabilize slopes and banks. Restoration measures are often needed to maintain resource integrity and water quality.

As shown in Figure 9-18, two of the most contiguous and sizeable areas for potential vegetation restoration exist in the northern part of the MRCCA

Figure 9-18: MRCCA Vegetation Restoration



in Inver Grove Heights and along a private airplane strip at the end of River Rd. Much of the land in the northern part of the MRCCA in the floodplain is owned by the City of Inver Grove Heights through acquisition and clearance. Heritage Village Park and Rock Island Swing Bridge Park are located in this area. Implementation of their master plans is currently in process. As a part of the Heritage Village Park development, much of this area has already been restored to natural vegetative state. A small strip that has been highlighted on the island in the center of the MRCCA in Inver Grove Heights exists within a small private operating air strip. The air strip is an important service to industry in Inver Grove Heights and will remain in the future. Should this air strip cease to exist, it would provide another opportunity vegetative restoration. Most of the other vegetation priority areas exist within bluff impact zones to the rear of existing residential lots. Restoration activities and priorities may still occur and be planned for where native plant communities and significant vegetation already exist.

Surface Water Uses

Surface water uses along the Mississippi River range from commercial and industrial to recreational and may include barge fleeting, marinas, boat tours, seaplaning, and paddle share. These uses provide both economic and enjoyment benefits as well as external impacts such as traffic, conflicting hours of operation, noise, and surface water use that need to be managed to minimize conflicts.

Inver Grove Heights does not manage surface water uses.

Water Oriented Uses

Water-oriented uses along the Mississippi River range from commercial and industrial to recreational and may include barge terminals, marinas, boat tour docks, and paddle share launch areas. These uses provide both economic and enjoyment benefits as well as external impacts such as traffic, conflicting hours of operation, noise, and surface water use that need to be managed to minimize conflicts.

There are no large commercial barge fleeting areas within the MRCCA in Inver Grove Heights, these exist north in South St. Paul, south in Rosemount, and east in St. Paul Park and Grey Cloud Island Township. Just south of the city's border in Rosemount is a large barge slip used by the Flint Hills Refinery for fuel loading. This slip has also been used by CHS, located in Inver Grove Heights, over the years through an agreement.

It would appear that as long as the slip can continue to provide for the needs of both industries, an additional slip may not be needed. There has been a history of opposition from residents of Inver Grove Heights and the City of Newport on proposals for barge fleeting along the northern section of river in the city. Because of the views many of these residences are afforded, they feel barges will create an eyesore.

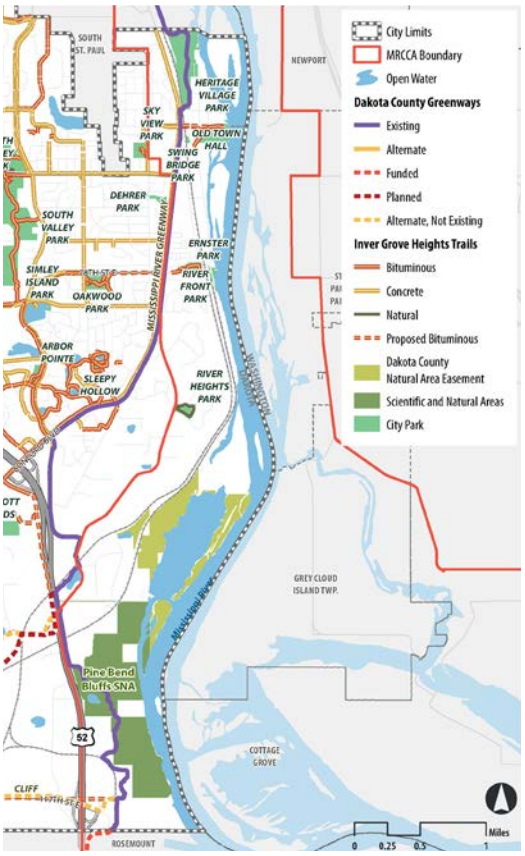
A handful of privately owned and managed boat marinas exist in Inver Grove Heights. A cluster of four marinas exist just north of Swing Bridge Park and one boat marina exists immediately north of the Pine Bend Bluff Scientific and Natural Area. Residential boat docks scatter the shoreline of the Mississippi River in Inver Grove Heights. These residential docks are accessory in nature and are not primarily a water oriented use.

Because the marinas in Inver Grove Heights are located away from the main navigable Mississippi River channel on a secondary channel, their potential for conflict with other water oriented and surface water uses is minimal.

Open Space and Recreational Facilities

Open space and recreational facilities include features such as parks, trails, scenic overlooks, natural areas, islands, and wildlife areas. These features add to the quality of a community and increase opportunities for the public to access and enjoy the Mississippi River Corridor.

Figure 9-19: Open Space and Rec Facilities



The Katherine Ordway Natural Science Study Area is owned by Macalester College and is used as an educational facility for studies at the college. Because of the sensitive areas within the facility, the public is kept out to prevent any possible damage to the natural features found there. The college has a large investment in maintaining this as a long-term study facility. There is some interest from the college

Figure 9-20: Heritage Village Park Master Plan

in developing a relationship with the city's park programs to provide limited access to the facility for interpretive programs. A program like this could provide an excellent opportunity for people to learn about plant and animal species native to the area and experience a portion of the Mississippi River corridor that has remained in its natural state.

Most of Inver Grove Heights' trail system exists west of the MRCCA boundary. Small segments within Swing Bridge Park, Ernster Park, and River Heights Park currently exist. Future trail connections along 66th St. and 117th St. are planned. Dakota County's Mississippi River Regional Trail runs north-south, parallel to the Mississippi River, and is the most prominent trail within the MRCCA boundary in Inver Grove Heights.

Today, Heritage Village Park exists mainly as open space. The master plan for the park is illustrated in Figure 9-20. The plan includes large swaths of passive native/naturalize landscape, consistent with vegetation restoration priorities outlined earlier in the chapter. The plan at the southern and eastern end of the park contains more active uses including a play area, picnic space/shelter, park building, performance area, and a multi-purpose lawn. Inver Grove Heights is currently in the process of implementing this plan.

Transportation & Public Utilities

Transportation and utility facilities (electricity, gas, water, sewer, stormwater) can have negative impacts on scenic views and habitat and soil erosion. Proper development of these facilities can minimize their impacts on the MRCCA.

There are no existing or planned power generating facilities, including solar farms and wind generation, within the MRCCA in Inver Grove Heights. Wind power converters are allowed as a conditional use in the Ag Zoning District for residential use. Large scale/commercial electric power generation facilities are not addressed in the zoning code.

Most existing underground facilities such as water and sanitary sewer are found in the northern developed portion of the MRCCA in Inver Grove Heights. No major future expansions of underground and overhead facilities

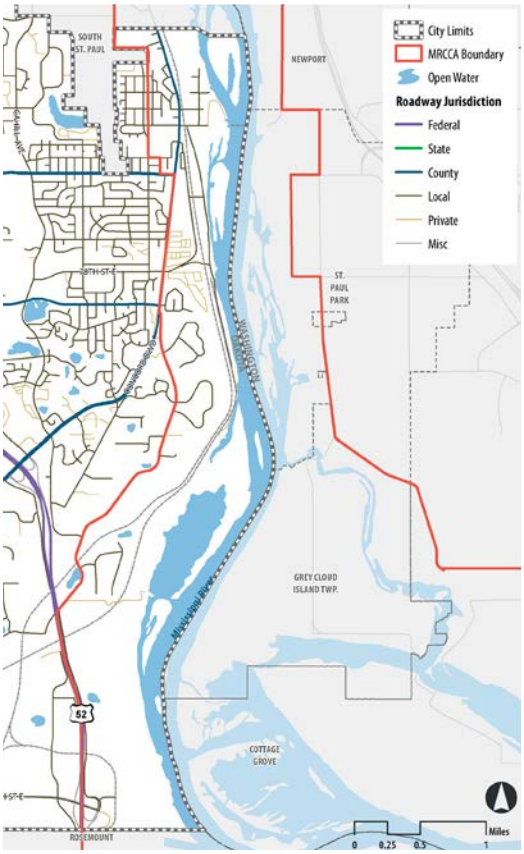
are planned within the MRCCA by the City. The Dickman Trail Stormwater outfall is a known source of sediment plumes into the Mississippi River from a nearby contractors borrow area. The City has implemented a project to constructed a water quality treatment basin to treat the runoff. The City also has a large diameter storm sewer from Doffing Avenue to the Mississippi River. This outfall is anticipated to be replaced in the coming years. The City needs to repair the storm sewer outfall near River Road and 77th street. For new stormwater discharge points/outfalls, the City will provide/require pretreatment of stormwater prior to its discharge. There are no other known impacts from underground and overhead facilities to PCAs and PRCVs within the MRCCA in Inver Grove Heights.

The existing transportation facilities within the Critical Area corridor inhibit connections to the river. Major roadways include Concord Boulevard and US 52/TH 55 which parallel the river. Inver Grove Trail is a local collector through the estate residential area which provides connections to Concord Boulevard and US 52/TH 55 (see Figure 9-21). Seventy-ninth Street is the only public access connection linking River Front Park with Dickman Trail. The steep bluffs in the southern portion of the corridor have limited development and associated transportation facilities.

There are no river crossing projects planned within the City's river corridor. Two area river crossings that serve a regional connection to the City are the I-494 Wakota Bridge and TH 61 Hastings Bridge.

There are two railroad lines within the corridor both operated by the Union Pacific. One line provides connection to St. Paul and the other is rail siding for industrial uses in southern Inver Grove Heights and Rosemount. These two lines merge into one track in the area of 75th Street. The railroad also impacts the ability to make connections to the river in the northern two-thirds of the corridor. The railroad closely follows the river's edge through much of the corridor separating the riverfront residential from the rest of the community. There are a few railroad crossings which link paralleling roads and isolated residential areas including 71st Street and 79th Street. New crossings may be difficult given the existing roadway network.

Figure 9-21: MRCCA Transportation Facilities



Issues & Opportunities

The Mississippi River, although forming the entire 6 mile eastern border of the community, is somewhat removed from the community. There are a number of natural and physical features that create barriers for connections to the river. Roads and railroad tracks parallel the river form slivers of land that are isolated from surrounding neighborhoods. In the southern portion of the community steep bluffs and heavy vegetation create both physical and visual barriers. In addition to these barriers, public access to the river is limited. Most of the river frontage land is held in private ownership. The few public access points include four marinas in the northern portion of the corridor and River Front Park along River Road. Additional issues and opportunities identified include:

- Low public awareness of the river and role it has in the community.
- Limited public connections to the river corridor.
- Opportunity to address river corridor issues associated with the Concord Neighborhood Study.
- Preservation of open space and natural resources.
- Opportunity to restore native/natural vegetation in areas such as Heritage Village Park that are owned by the City.

Goals & Policies

The future of the Mississippi River Corridor Critical Area within Inver Grove Heights will depend on community wide planning as well as those efforts specifically targeted for the corridor. The Comprehensive Plan establishes policies that attempt to better link the Critical Area to the rest of the community. The Critical Area Plan takes a more focused view, prescribing policies intended to meet the goals of Minnesota Rules Chapter 6106 as well as some that advance MNRRA plan goals.

Goal

Preserve and enhance the natural, aesthetic, economic, recreational, cultural, and historical values of the Mississippi River corridor within Inver Grove Heights and protect its environmentally sensitive areas.

Policies

Land Use Policies

- Inver Grove Heights will guide land use and development and redevelopment activities within the MRCCA boundary to be consistent with the management purpose of the CA-RN, CA-ROS,

CA-SR, and CA-UM districts.

Primary Conservation Areas (PCA) Policies

- Inver Grove Heights will protect and minimize impacts from public and private development and land use activities to the existing Primary Conservation Areas which include floodplains, bluffs and bluff impact zones, shore impact zones, natural drainage ways, unstable soils and bedrock, and Native Plant Communities and existing vegetative stands.
- Inver Grove Heights will support mitigation of impacts to PCAs through subdivisions/PUDs, variances, Conditional Use Permits, and other permits.
- Inver Grove Heights will make restoration of removed Native Plant Communities and natural vegetation in riparian areas a high priority during development.
- Inver Grove Heights will support alternative design standards that protect Inver Grove Heights' identified PCAs, such as conservation design, transfer of development density, or other zoning and site design techniques that achieve better protections or restoration of PCAs.
- Inver Grove Heights will make permanent measures (such as public acquisition, conservation easement, deed restrictions, etc.) that protect PCAs a high priority.

Public River Corridor Views (PRCV) Policies

- Inver Grove Heights will protect and minimize impacts to PRCVs from public and private development activities.
- Inver Grove Heights will protect and minimize impacts to PRCVs from vegetation management activities.
- Inver Grove Heights will protect PRCVs located within the community and identified by other communities.
- The City shall ensure that the location and siting of new structures will keep bluffs and scenic overlooks in their natural state.

Restoration Priorities Policies

Sustaining and enhancing the ecological functions (habitat value) of vegetation is important for the MRCCA and is a goal for the restoration of new vegetation and existing degraded vegetation in Inver Grove Heights.

- Inver Grove Heights will protect existing vegetation during the development process and require its restoration if any is removed by development. Priorities for restoration shall include stabilization of erodible soils, riparian buffers, and bluffs or steep slopes visible from

the river.

- Inver Grove Heights will seek opportunities to restore vegetation to protect and enhance PRCVs identified in this plan.
- Inver Grove Heights will seek opportunities to restore vegetation in restoration priority areas identified in this plan through the CUP, variance, vegetation permit, and subdivision/PUD processes.
- Inver Grove Heights will evaluate proposed development sites for erosion prevention and bank and slope stabilization issues and require restoration as part of the development process.

Surface Water Uses Policies

- Inver Grove Heights does not regulate surface water use and therefore does not have any policies related to surface water uses.

Water-Oriented Uses Policies

Inver Grove Heights recognizes the Mississippi River as a "working river" that is important to the economy of the Twin Cities metropolitan area and the Midwest.

- Inver Grove Heights will seek to minimize potential conflicts of water-oriented uses with other land uses and surface water uses.
- Encourage the utilization of private marinas for public connection and access to the river.
- Enhance existing marinas and other water-oriented uses through site design improvements.

Open Space & Recreational Facilities Policies

- Inver Grove Heights will encourage the creation, connection, and maintenance of open space and recreational facilities, including public access to the river.
- Inver Grove Heights will provide a park and recreation system that offers physical and visual connections to the river, including connection of CA-SR district land to existing and planned parks and trails.
- Inver Grove Heights will provide trail links to regional trail systems and trails maintained by adjacent municipalities.
- Inver Grove Heights will encourage that land dedication requirements be used to acquire land suitable for public river access.
- Inver Grove Heights will include facilities in the capital improvement program for parks and open space facilities.

Transportation & Utilities Policies

- Inver Grove Heights will minimize impacts to PCAs and PRCVs from solar and wind generation facilities, public transportation facilities,

and public utilities.

Implementation Actions

Ordinance Updates

- Amend existing MRCCA ordinance /overlay district for consistency with the goals and policies of the MRCCA plan and with Minnesota rules, part 6106.0070, Subp. 5 – Contents of Ordinances.
- Amend zoning map to reflect new districts.
- Incorporate specific design and placement conditions that minimize impacts to PCAs and PRCVs into local permits for solar and wind generation facilities and essential and transmission services.
- Provide for water-oriented uses.

Ordinance Administration

- Establish procedures and criteria for processing applications to ensure compliance with MRCCA dimensional and design standards and to evaluate potential impacts to PCAs and PRCVs, including:
    - Identifying the information that must be submitted and how it will be evaluated,
    - Determining appropriate mitigation procedures/methods for variances and CUPs, and
    - Establishing evaluation criteria for protecting PCAs when a development site contains multiple types of PCAs and the total area of PCAs exceed the required set aside percentages.
- Develop administrative procedures for integrating DNR and local permitting of riprap, walls, and other hard armoring.
- Actively communicate with other communities to protect views they have identified in Inver Grove Heights that are valuable and vice versa.
- Establish a vegetation permitting process that includes permit review procedures to ensure consideration of restoration priorities identified in this plan in permit issuance, as well as standard conditions requiring vegetation restoration for those priority areas.
- Establish a process for evaluating priorities for natural vegetation restoration, erosion prevention, and bank and slope stabilization, or other restoration priorities identified in this plan in CUP, variances, and subdivision/PUD processes.
- Develop a visual analysis approach for CUPs for additional height in the CA-UM district, as well as for proposed PUDs and variances.
- Develop a system for reviewing, tracking, and monitoring open

space set-aside and/or dedicated as part of the subdivision/PUD process.

Education & Outreach

- Ensure that information on the new MRCCA districts and zoning requirements, and the location of PCAs, PRCVs, and restoration priorities is readily available to property owners to help them understand which ordinance requirements - such as setbacks, height, vegetation management, and land alteration permits - apply to their property for project planning and permitting. Specific actions may include:
    - Develop an outreach and communication strategy to alert MRCCA property owners of new districts and zoning requirements, and the location of PCAs, PRCVs, and restoration priorities.
    - Develop web materials (mapping applications, FAQs, handouts, and other materials) to help property owners identify if their property is in the MRCCA and what regulations apply.
    - Provide information to residents and park and facility users that these facilities are in the MRCCA, including information on what the MRCCA is and ways in which the resources are being protected.

Land Acquisition

- Continue to explore land acquisitions for the development of Heritage Village Park.
- Utilize the Comprehensive Plan as a guide for the acquisition, development, and redevelopment of park and recreation facilities.

Specific Planning Efforts, Projects, & Initiative

- Coordinate with regional, state, and national park planning efforts within the MRCCA.
- Continue to explore redevelopment initiatives along Concord Boulevard and implement strategies found in the 2012 Concord Boulevard Neighborhood Plan and Design Guidelines that are consistent with MRCCA policies.
- Continue to implement plans for the development of Heritage Village Park.
- Collaborate with property owners, such as Macalester College and the Flint Hills Refinery, DNR and County to determine future open

space, recreational activities and the preservation of lands within the critical area corridor.

- Inver Grove Heights should be an active participant in any river crossing project that attempts to address transportation and river aesthetic issues.
- Coordinate with the Katherine Ordway Natural Science Study Area to develop community programs.

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SURFACE WATER MANAGEMENT
CHAPTER 10

Introduction

This chapter is an excerpt from the City's Water Resource Management Plan (WRMP). The preparation of the WRMP coincided with the Comprehensive Plan and was adopted by the City Council on December 10, 2018. The purpose of this chapter is to summarize the WRMP and fulfill the requirements needed for the comprehensive plan update. The WRMP should serve as the City's guide to surface water management planning and implementation.

Water Resource Management Plan

The WRMP was created by WSB for the City of Inver Grove Heights in 2014 and updated in 2018 by Wenck.

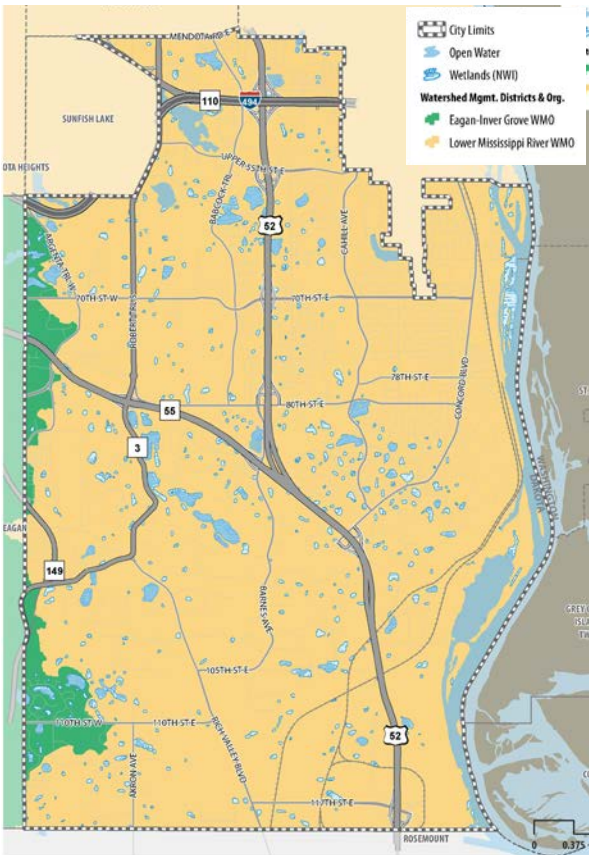
December 4, 2018: Eagan -Inver Grove Heights WMO
December 12, 2018: Lower Mississippi River WMO

WRMP Summary

The Inver Grove Heights Water Resources Management Plan (WRMP) sets the course for the City's management of the water resources and stormwater within the City. The WRMP provides data and other background information, outlines the applicable regulations, assesses city-wide and specific issues, sets goals and policies for the City and its resources, and lists implementation tasks to achieve the goals. The WRMP also provides information regarding the funding of the implementation program.

The WRMP presents a city-wide inventory, including land use, public utilities, climate and precipitation, topography, soils, geology, groundwater, MDNR public waters, wetlands, surface water resource monitoring information, water body classification, floodplain information, unique features and scenic areas, pollutant sources, and major basins and overall drainage patterns. This information can also be found throughout the comprehensive plan.

Figure 10-1: Watershed Management Organizations



Purpose

According to Minnesota State Statute 103B.201, the purposes of these water management programs are to:

1. Protect, preserve, and use natural surface and groundwater storage and retention systems;
2. Minimize public capital expenditures needed to correct flooding and water quality problems;
3. Identify and plan for means to effectively protect and improve surface and groundwater quality;
4. Establish more uniform local policies and official controls for surface and groundwater management;
5. Prevent erosion of soil into surface water systems;
6. Promote groundwater recharge;
7. Protect and enhance fish and wildlife habitat and water recreational facilities; and
8. Secure the other benefits associated with proper management of surface and ground water.

This WRMP will guide the City of Inver Grove Heights in protecting, preserving, and managing its surface water resources and stormwater system. The plan meets the requirements of Minnesota Statutes 103B.235, Minnesota Rules Chapter 8410, and the watershed organizations with jurisdiction in the City, which are the Lower Mississippi River Watershed Management Organization (LMRWMO) and the Eagan-Inver Grove Heights Management Organization (E-IGHWMO) (see Figure 10-1).

Water Resource Management Plan Goals

The WRMP has identified a series of goals related to water quality of lakes and ponds, stormwater runoff quality, rates and volumes, floodplain management, erosion and sediment control, wetland management, recreation, habitat and shoreland management, education and public involvement, groundwater and funding. These goals are as followed:

Water Quality of Lakes and Ponds

Goal 1: Water bodies designated as lakes by the City will be managed to meet the City's water quality criteria for non-degradation of water quality, with allowance for natural variability.

Stormwater Runoff Quality, Rates, and Volumes

Goal 1: Operate, manage, and maintain the City's stormwater system to ensure proper functioning of the system and to meet the requirements of the City's NPDES Phase II MS4 Permit and other agency requirements.

Goal 2: Improve the quality of stormwater runoff reaching the Mississippi River by reducing nonpoint source pollution (including sediment) carried as stormwater runoff.

Goal 3: Minimize flood damage to residential, business, commercial and public structures and property, and protect against increased flooding caused by land disturbing activities and other projects.

Goal 4: Reduce volumes of stormwater runoff and the amount of impervious surfaces in the developed parts of the City.

Goal 5: In the Northwest Area - limit the rates and volumes, and increase the treatment of stormwater runoff, by managing stormwater runoff as close to its source as possible and mimicking the system's natural hydrology. Incorporate the "treatment train" approach with a goal to require that at least 50% of water quality treatment is provided my BMPs located in the upstream areas of the site.

Floodplain Management

Goal 1: Minimize flood damage to residential, business, commercial, and public structures and property, and protect against increased flooding caused by land disturbing activities and other projects.

Erosion and Sediment Control

Goal 1: Prevent erosion and sedimentation to the greatest extent possible.

Goal 2: Regulate land-disturbing activities to protect against erosion and sedimentation.

Goal 3: Implement soil protection and sedimentation controls to maintain health, safety, and welfare.

Goal 4: Enforce erosion and sediment controls consistent with ordinances, SWPPP, and MS4 Program.

Wetland Management

Goal 1: Preserve wetlands for water retention, recharge, soil conservation,

National Pollutant Discharge Elimination System

The NPDES As authorized by the Clean Water Act, controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal and other facilities must obtain permits if their discharges go directly to surface waters..

Municipal Separate Storm Sewer System

MS4 is a term used under the Clean Water Act to identify larger communities that operate their own separate storm sewer system. Inver Grove Heights is an MS4 community.

wildlife habitat, aesthetics, and natural enhancement of water quality.

Goal 2: Achieve no net loss of wetlands, in conformance with the Minnesota Wetland Conservation Act (WCA) and associated rules (Minnesota Rules 8420).

Recreation, Habitat and Shoreland Management

Goal 1: Protect and enhance fish and wildlife habitat and recreation opportunities, and maintain shoreland integrity

Education and Public Involvement

Goal 1: Increase public support of the City's stormwater and water resource related efforts.

Goal 2: Inform the public about the City's water resources and stormwater system, including their use, protection, and management.

Goal 3: Raise public awareness regarding the steps they can take to reduce pollutants in stormwater runoff.

Goal 4: Involve the public in stormwater management programs and decision-making.

Goal 5: Perform public education and outreach, and invite public participation and involvement consistent with the City's NPDES Phase II MS4 Permit.

Groundwater

Goal 1: Protect the quality and quantity of the City's groundwater resources.

Goal 2: The City will continue to participate in the Southeast Metro Groundwater Group.

Funding

Goal 1: Achieve appropriate funding level through the City's stormwater utility to fund the costs of the City's stormwater system.

Goal 2: Pursue grant funding to assist in funding stormwater improvement projects. This may include working with Dakota County Soil and Water Conservation District as well as other programs.

Water Resource Management Related Agreements

The City of Inver Grove Heights has entered into the following water resource management related agreements:

Joint Powers Agreement establishing the Lower Mississippi River Watershed Management Organization (LMRWMO) - the original joint powers agreement between the seven member cities (including Inver Grove Heights) went into effect in 1985. The revised and restated joint powers agreement was developed and signed in 2001, after LMRWMO adoption of the second generation watershed management plan.

Joint Powers Agreement establishing the Eagan - Inver Grove Heights Watershed Management Organization (E-IGHWMO) - the original joint powers agreement between the two member cities (including Inver Grove Heights) went into effect in 2014.

Assessment of Problems and Issues

The WRMP presents and discusses the status of problems and issues in the City, in the following topic areas: water quality, stormwater runoff rates and volumes, erosion and sediment control, and adequacy of existing programs.

Water Quality

The WRMP discusses general stormwater runoff quality issues (e.g., nonpoint source runoff and phosphorus loadings), impaired waters and TMDL issues (e.g., reaches of the Mississippi River on the impaired waters list, and MPCA impaired waters listing criteria according to ecoregion), and specific water quality issues.

Stormwater Runoff Rates and Volumes

The WRMP discusses general issues (e.g., impacts of land development on stormwater rates and volumes, landlocked basin issues, flooding damages, and floodplain management) and specific issues (e.g., intercommunity issues—Schmitt Lake, Seidls Lake, Dawn Way and 59th Street, Dickman Trail Outfall, Trailer Court Pond, Argenta Trail Drainage Basin, and Eagan Drainage Basin); and local city issues—properties in the floodplain of the Mississippi River in the Old Village/Concord Boulevard neighborhoods, eroding storm sewer pipes at 64th Street and Doffing Avenue and at

Concord Blvd. and 77th Street/Dickman Trail, the need for a stormwater basin just east of Dixie Avenue and Dickman Trail, provision for future discharge from Babcock Trail and Valley Park drainage basins into the 70th Street drainage basin system, various Point Source Implementation Grant Projects, various MS4 projects, Marcott Lakes high water levels, and citizen-identified drainage issues).

Erosion and Sediment Control

The WRMP discusses the general causes and impacts of erosion and sedimentation, specific examples of erosion and sedimentation problems in the City, the City's implementation and enforcement of its ordinances and approval processes pertaining to erosion and sediment control, and the NPDES construction permit.

Adequacy of Existing Programs

The WRMP discusses the adequacy of the City's ordinances and official controls, including a description of the City's stormwater guidance document for the Northwest Area (Inver Grove Heights Stormwater Manual Northwest Area (December 2006), the LMRWMO classification system, the City's education and public involvement program, maintenance of the City's stormwater system, groundwater protection, and the City's capital improvement and implementation programs.

Implementation

The WRMP has identified a series of polices based on the plan's goals. These polices are adhered to as part of the comprehensive plan update. A summary of those policies are as followed :

Water Quality of Lakes and Ponds Policies

The WRMP includes policies that reference the City's lake classification system, which is presented in Section 2. Specific policies call for the City to: recruit volunteers to collect water quality data for the City lakes; use the monitoring data to determine appropriate lake management actions; share water quality data with the LMRWMO and E-IGHWMO, address future total maximum daily load (TMDL) requirements; and to require or seek opportunities to provide pretreatment of stormwater runoff. The city will also require implementation of best management practices during land development and other construction in the tributary watershed.

Stormwater Runoff Quality, Rates, and Volumes Policies

The WRMP includes policies pertaining to the City's NPDES Phase II MS4 Permit and SWPPP, including the City's preparation of a loading assessment and nondegradation report.

The WRMP also includes policies requiring implementation of best management practices (BMPs) to reduce total suspended solids and total phosphorus by 85% and 55%, respectively; requiring submittal of stormwater management plans for land alteration and development activities; requiring infiltration of the first 1 inch of runoff from new impervious surfaces; bring redevelopment projects into compliance with water quality standards; requiring implementation of low impact development techniques in the Northwest Area and considering their implementation in other parts of the City; requiring developers follow the City's stormwater guidance document for the Northwest Area; requiring the placement of skimming devices at pond outlets; requiring post-development peak discharge rates to not exceed existing discharge rates for the 2-year, 10-year, and 100-year events; requiring 10-year "level of service" and 100-year level of protection for the City's stormwater system; requiring project proposers to consider methods for reducing the amount of impervious surface on their sites; requiring emergency overflow structures where feasible into pond outlet structure designs to prevent undesired flooding; securing easements extending up to at least the 100-year flood elevation; policies regarding water discharge and quality into land-locked basins; describing the City's response to citizen-identified drainage issues; and requiring WMO review and approval of projects with intercommunity impacts.

Floodplain Management Policies

The WRMP includes policies calling for the City to implement and enforce its ordinances to prevent/minimize flood damages, including lowest floor elevation requirements (with special requirements for landlocked basins); removal of structures in the Mississippi River floodplain in the Old Village/ Concord Boulevard neighborhoods on a willing seller basis as properties come up for sale; implementing Northwest Standards for landlocked basins throughout the City; filtration and infiltration facilities should not be under water for more than 48 hours; establishing high water elevations for landlocked basins and determine wether outlets are needed; and to consider recruiting volunteers to monitor water levels on City lakes.

Erosion and Sediment Control Policies

The WRMP includes policies regarding the City's general requirements for preparation and submittal of erosion and sediment control plans; calling for City inspection of projects; discouraging the alteration of the natural course and meandering of streams; providing/requiring energy dissipation devices that reduce outlet velocities to 4 feet per second or less; and calling for the City to collect a cash surety.

Wetland Management Policies

The WRMP includes policies regarding the City's role as the local government unit responsible for administering the Wetland Conservation Act. The WRMP calls for the City to complete a phased wetland inventory and assessment, implement wetland management standards in the Northwest Area and consider implementing such standards in other areas of the City, develop a new wetlands ordinance, seek grants and other funding to offset costs of the wetland inventory and assessment process, and protect wetlands from impacts in a defined order.

Recreation, Habitat and Shoreland Management Policies

The WRMP includes policies calling for the City to; continue enforcing its shoreland ordinance and Critical Area Plan; implement natural resource management standards in the Northwest Area and consider implementing such standards in other areas of the City; maintain existing public access to City lakes and seek to obtain easements for passive access to lakes where there is currently no access (i.e., during development or redevelopment); consider performing natural resource inventories; encourage landowners to maintain wetlands and open space areas; promote and encourage protection of non-disturbed shoreland areas and restoration of disturbed shorelines; adoption of a City-wide wetland ordinance outlining wetland buffer and bounce requirements; prioritize shoreland areas for restoration; and incorporate alternative landscape designs into proposed projects.

Education and Public Involvement Policies

The WRMP includes policies calling for the City to implement the education and public involvement-related BMPs identified in the City's SWPPP for its NPDES Phase II MS4 permit, to consider recruiting and training volunteers for monitoring and other activities, consider implementing a recognition program for volunteers, exploring joint education efforts with the WMOs, adjacent cities, Dakota County, and other stakeholders, encourage the City

Engineer and Public Works Director to attend WMO Board Meetings to provide technical advice and information to the Board, and to incorporate public involvement and pubic education efforts into all of the City's significant proposed projects.

Groundwater Policies

The WRMP includes policies calling for the City to prepare a wellhead protection plan (when required), encourage groundwater recharge and protect groundwater recharge areas, enforce its impervious surface ordinance, enforce all Subsurface Sewage Treatment Systems (SSTS) non-compliance and violations, continue to implement and enforce the City's SSTS Ordinance, and cooperate with Dakota County to promote awareness of groundwater resource issues.

Funding Policies

Adequate funding is essential for the City to implement its WRMP policies. The WRMP includes policies calling for the City to use stormwater utility funds for meeting NPDES Phase II MS4 requirements, operation and maintenance and project implementation; updating the stormwater utility rate structure to ensure sufficient funds to cover stormwater system; continue to use Storm Water Special Tax District levy to fund capital projects; request and receive cost sharing from the LMRWMO for intercommunity water resource projects; and seek LMRWMO assistance in determining cost allocations for intercommunity projects.

Implementation Program

The implementation program describes the significant components of the City's WRMP implementation program, including its NPDES Phase II MS4 permit, operation and maintenance of its stormwater system, education and public involvement, funding, design standards, ordinance implementation and official controls, implementation priorities, and WRMP update and amendment procedures.

The implementation section provides a detailed program, which includes project descriptions, cost estimates, potential funding sources, and proposed years of implementation.

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IMPLEMENTATION
CHAPTER 11

Shaping the Future

Over the years, the Inver Grove Heights community has spent a great deal of time and energy updating its comprehensive plan. The implementation chapter is intended to carry out the vision and guiding principles that were crafted at the beginning of the planning process. To be most affective, the plan must serve both long term and near term needs. Chapter 11, Implementation, is organized around a series of general strategies and more specific action steps. Strategies are continuous and have no defined start or end point. Strategies emphasize utilization of the plan as an every day planning tool. Action steps are specific projects that have a defined start and end point and result in a tangible product or capital investment.

It is important to recognize the plan as a living and breathing document. The plan provides the flexibility to adapt to unforeseen changes. Changes may include new development products in the market place, shifts in the regional, national or global economy, technological advances and political decisions that force us to rethink our vision from time to time. On a smaller scale, individual property owner decisions (or needs) also force change. Small incremental changes must be carefully evaluated relative to a community's vision and guiding principles.

Implementing the Comprehensive Plan is a collective effort between the Inver Grove Heights City Council, the various boards and commissions that advise the Council and City Staff.

The following sections highlight community strategies and action steps.

Vision Statement:

At the beginning of this plan, Inver Grove Heights vision was presented. It is appropriate to repeat the vision statement because the ideas embodied in the vision statement establish the framework for the implementation strategies and action steps.

Inver Grove Heights is a community well positioned within the Twin Cities metropolitan area: minutes away from MSP International Airport, two major urban centers, and within an hour of Rochester and the world renowned Mayo Clinic. Inver Grove Heights supports a development pattern that accommodates urban, suburban, and rural lifestyles. Future growth and development will be forward thinking yet reflect the heritage of the community. The city will have a quality built environment that respects and protects its natural environment of open spaces, rolling meadows, wooded areas, clean lakes, and wetlands. Inver Grove Heights will accommodate the needs of all people by actively pursuing a variety of housing types, a connected and multi-modal (drive, bike, walk, bus) transportation system, a robust business community, and a range of goods and services. Inver Grove Heights will be a vital, attractive, safe community with a healthy environment that evokes strong community pride and supports a healthy and prosperous life for those who choose to make Inver Grove Heights their home.

Community Strategies

Periodically Review and Understand Community Development Tools and Programs

Many of the tools available to the City of Inver Grove Heights for community planning and development are enabled by state laws such as: zoning and subdivision ordinances, park dedication ordinances, infrastructure ordinances, ability to create or establish tax increment financing districts, to use tax abatement or other financing mechanisms or environmental reviews. These are only a few of the important implementation tools available to Cities.

Allocation of Staff Resources

The City should continue dedicating staff resources to implementing community strategies and staying familiar with state laws and rules.

A key strategy for Inver Grove Heights is to regularly review state laws to stay abreast of changes that might favorably or adversely affect the City's ability to implement its plan. This can be done by subscribing to newsletters or e-mail blasts through such organizations as the League of Minnesota Cities (LMC), Minnesota Chapter of the American Planning Association (MnAPA), Metro Cities or the Economic Development Association of Minnesota (EDAM) just to name a few.

Conduct Regular Reviews of the Comprehensive Plan

Inver Grove Heights will continue to grow and change over the next 20 years. As this growth continues to occur, data will emerge through evaluation of development projects and planning analysis that will help with understanding the impacts on the community. The Comprehensive Plan should be reviewed on a regular basis (annual or biannually) to assess progress on attaining the community's goals and objectives and to continue a dialogue about the community's future. The review should focus on both the successes and failures of the Plan. The review should be informed by development projects, observations of change and technical analysis. GIS mapping should be maintained and annual adjustments to population, household and employment projections should be carefully evaluated in collaboration with the Metropolitan Council.

Adjustments to Demographic and Employment Projections

As new development occurs and the economy shifts, demographic and employment projections should be reviewed. Through this Comprehensive Plan update, the City is equipped with the necessary GIS mapping and spreadsheet tools to closely monitor land inventory and development projections.

Establish a Set of Community Indicators to Measure Progress

Community indicators are an effective measurement tool to assess how Inver Grove Heights is progressing towards its goals and objectives identified throughout the plan. "In essence, indicators are measurements that reflect the interplay between social, environmental, and economic factors affecting a community's well-being (American Planning Association)." The City of Inver Grove Heights should establish a series of indicators to evaluate the progress and success of this plan.

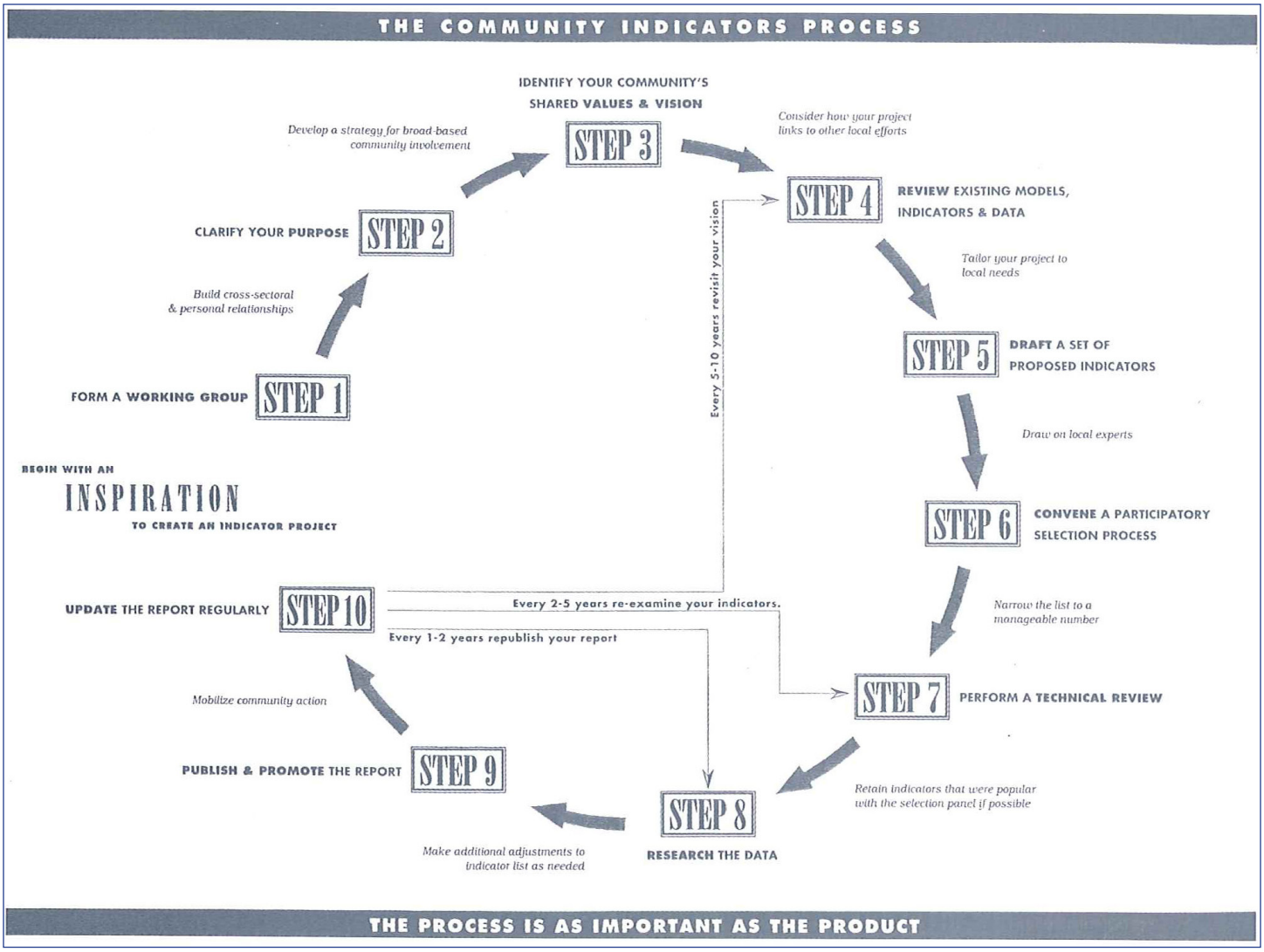


Figure 11-1: A process for identifying community indicators. Source: Planning Advisory Services Report #517 American Planning Association

Agreeing upon a series of community indicators will require a public process. Figure 11-1 depicts a process that was developed by the American Planning Association. The 10 step process provides a community with the tools necessary to formulate effective community indicators. This is a long term strategy that will provide the City of Inver Grove Heights with a wealth of information to help guide future decision making.

The list of community indicators can be quite lengthy and exhaustive. This is why the process is as important as the product. What gets measured and how it gets measured must be a product of a community dialogue. The following list is a starting point of some possible indicators relevant to Inver Grove Heights. This list is developed based on past community input and recent planning trends:

Land use efficiency as measured by:

- density of new residential development
- ratio of commercial building square feet to gross land area of new construction
- total acres of new development absorbed on an annual basis
- total acres of projects zoned as a Planned Unit Development

Economic development

- number of existing businesses visited by City Staff or economic development agency
- number of new businesses developed in the community
- number of new jobs created (private vs. public)
- number of new start up businesses
- vacancy rates of commercial and industrial space
- unemployment rates
- valuation trends of commercial and industrial businesses
- size of local/regional labor force
- the ratio of jobs in Inver Grove Heights to the number of housing units

Housing

- number of new affordable housing units developed
- number and value of permits pulled for housing maintenance (siding, roofing, mechanical, windows, etc...)
- number and value of permits pulled for new housing construction (by type--detached SF, attached MF, stacked MF)
- number and value of permits pulled for housing remodeling/expansions
- number of real estate transactions of owner occupied housing
- vacancy rates
- dollars invested in assisting with housing maintenance

Government services

- number of candidates filing for government offices
- number of complaints logged at city offices
- average timeliness of city resolution
- number of city employees per 1,000 residents
- number of police calls by type/area or location
- number of fire calls by type/area or location
- average response times of each call
- number of joint service agreements or public private partnerships
- satisfaction rating change over time

Environment and energy conservation

- water quality of key lakes and the Mississippi River
- air quality measurements taken at key locations in the community
- number of new storm water treatment systems installed or volume of storm water treated
- acres of sensitive natural resources protected
- number of new buildings LEED certified
- number of vehicles in the city fleet that operate on alternative fuel sources (i.e. bio-desiel, solar, hybrid)
- volume of waste generated per capita
- percent of waste stream recycled per capita
- carbon footprint measurement

Transportation/traffic/mobility

- lane miles of congested roadways (LOS E or F)
- number of traffic crashes by type
- number of lane miles of new roadways built (and dollar value)
- number of lane miles of streets reconstructed (and dollar value)
- traffic volumes on major streets
- number of pot-holes repaired or volume of fill on an annual basis
- volume of transit ridership from the City and destinations
- number of cars per household
- miles of paths constructed by type (sidewalk or multi-purpose trails)
- miles of bike lanes constructed
- household trip patterns (bike, walk, drive, transit)
- percent of households within walking distance of key destinations

Park and recreation

- participation in active recreation programs
- dollar value of investments in existing parks
- hours spent on park maintenance
- number of new parks developed
- change in programing over time

Community infrastructure

- miles of new sanitary sewer pipes and number of lift stations
- volume of inflow and infiltration
- miles of new trunk water mains and number of new city wells
- volume of unaccounted for public water usage
- per capita useage of water by land use
- number of wells
- volume of water treated

State Statute 473.865

According to Minnesota Statutes 473.865, Subd. 3, communities have nine months from the adoption of their comprehensive plan by the City Council to bring their local controls into alignment with the comprehensive plan.

It is also important to note that the judicial system has cited inconsistencies between the Comprehensive Plan and Zoning Ordinance when ruling against the community in a zoning dispute. Thus, one of the first implementation initiatives should be a thorough review of the Development Code to identify where changes are needed to bring it into alignment with the Comprehensive Plan.

Official Controls

Inver Grove Heights City Code, which contains its Zoning and Subdivision Regulations, is the official regulatory tool to implement the Comprehensive Plan. The Comprehensive Plan provides the "nexus" to the specific laws in the City's ordinances and allows implementation of ideas that help the City reach the goals that are outlined throughout the plan. The City's existing zoning map and list of zoning districts are provided in Figure 11-2 and Table 11-1. According to Minnesota Statutes 473.865, Subd. 3, communities have nine months from the adoption of their comprehensive plan by the City Council to bring their local controls into alignment with the comprehensive plan. This process will require a public process before any changes are made. Minor changes to the zoning code and zoning map districts will be required following adoption of the comprehensive plan. These areas are addressed below:

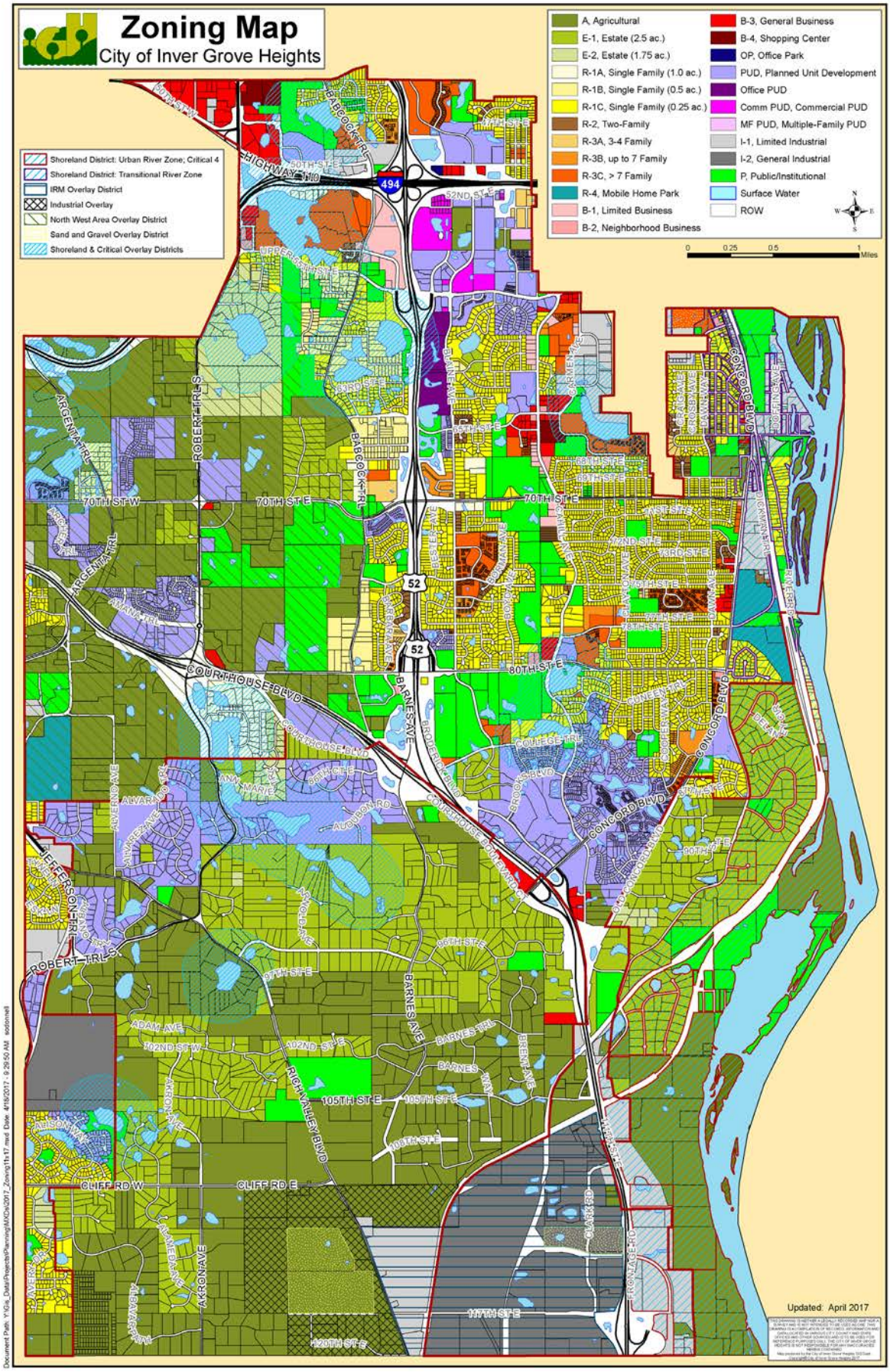
- Park dedication-the subdivision ordinance contains provisions for park dedication. The park chapter provides a long term plan for future park and trail improvements that (in conjunction with the Park and Trail Master Plan) form the nexus for establishment of park dedication. Park dedication should be reviewed on a regular basis.
- Inclusionary housing--inclusionary housing was presented in the housing chapter. The city should evaluate the possibility of incorporating policies into the zoning code that remove barriers to the development of affordable and workforce housing.
- Access management--functionality of major road corridors can be greatly enhanced by the ability to regulate access onto roadways. Development of an access management ordinance strengthens the City's ability to implement and enforce access management strategies.
- Zoning map amendments--a limited number of areas with the community will be affected by the changes in land use guidance. These areas will need to be rezoned accordingly through the rezoning process which requires a public hearing.
- Amend existing Mississippi River Corridor Critical Area ordinance / overlay district for consistency with the goals and policies of the MRCCA plan and with Minnesota rules, part 6106.0070, Subp. 5 – Contents of Ordinances.

The entire comprehensive plan will be evaluated to ensure the official controls are aligned with one another. If changes to the official controls are needed, the City will proceed with the appropriate process required by state law.

Table 11-1. Existing Zoning Districts (2018)

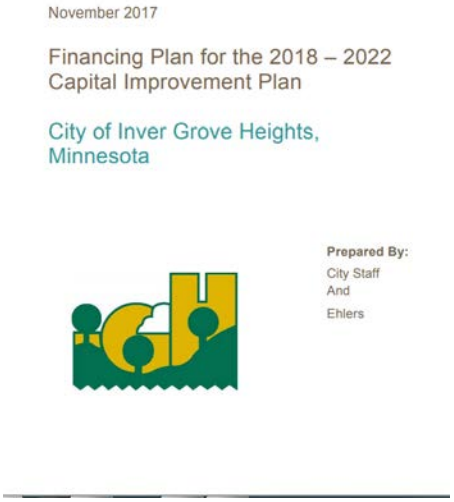
Zoning District	*Density*	*Minimum Lot Size*
Agricultural	1 unit per 5 acres	5 acres
"E-1" Estate District	1 unit per 2 1/2 acres	2 1/2 acres
"E-2" Estate District	1 unit per 1 3/4 acres	1 3/4 acres
"R-1A" One-Family Residential District	1 unit per 40,000 sq.ft.	40,000 sq.ft.
"R-1B" One-Family Residential District	1 unit per 20,000 sq.ft.	20,000 sq.ft.
"R-1C" One-Family Residential District	1 unit per 12,000 sq.ft. (interior lot) 1 unit per 12,500 sq.ft. (corner lot)	12,000 sq.ft. (interior lot) 12,500 sq.ft. (corner lot)
"R-2" Two-Family Residential District	2 units per 15,000 sq.ft.	15,000 sq.ft.
"R-3A" Multiple Family Residential District	3 to 4 unit buildings with up to 6 dwelling units per acre	7,260 sq. ft. per unit
"R-3B" Multiple Family Residential District	Up to 7 units per building with densities ranging up to 12 dwelling units per acre.	3,630 sq. ft. per unit
"R-3C" Multiple Family Residential District	More than 7 units per building and densities greater than 12 dwelling units per acre	2,000 sq. ft. per unit
"R-4" Mobile Home Park District	1 unit per 5,000 sq. ft.	5,000 sq. ft. per unit
"B-1" Limited Business District	N/A	10,000 sq. ft.
"B-2" Neighborhood Business District	N/A	1 acre
"B-3" General Business District	N/A	None
"B-4" Shopping Center District	N/A	10 acres
PUD (including Northwest Area Overlay)	Based on Comprehensive Plan	varies
"OP" Office Park	N/A	20 acres
"IOP" Industrial Office Park	N/A	1 acre
"I-1" Limited Industry District	N/A	1 acre
"I-2" General Industry District	N/A	1 acre
"P" Institutional District	N/A	See City Code

Figure 11-2: 2018 Existing Zoning Map



Financial Resources

Implementation of the Comprehensive Plan requires a combination of public and private actions, many of which require public investment. While there is not a bottomless pot of money to tap into, there are a variety of financial resources available to implement the Comprehensive Plan. The City's Capital Improvement Program (CIP) (available online) is an important tool for prioritizing public investments. The City's CIP will need to be continually updated and reviewed on an annual bases. The Comprehensive Plan has taken into consideration a series of planned improvements that were identified in the City's CIP and are supported through the Comprehensive Plan update.


November 2017

Financing Plan for the 2018 – 2022 Capital Improvement Plan

City of Inver Grove Heights, Minnesota

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The CIP is one of several financial tools that may be used to implement specific initiatives. However, financial tools of today may become outdated and should be reviewed on a regular bases. City staff and decision makers will need to retain a current working knowledge of all the tools that can be used. To help serve as a resource, a list of some of the more common financial tools are provided in Table 11-22.

Transportation (Right-of-Way Preservation)

The transportation plan has identified a series of roadway improvements that are needed to meet local and regional needs over the next 20 years. Implementing these improvements could be one of the most challenging efforts as each one will have an infrastructure cost associated to them. The recommended improvements at this time do not have a funding source associated with them. However, it is important to continue to plan for these improvements as infrastructure and land costs continue to rise. This in turn enhances the importance of right-of-way preservation.

The City's strategy for preserving right-of-way (ROW) for long term transportation projects is to work collaboratively with property owners to ensure that development projects take into consideration both short and long term transportation needs. This may require the City taking a more proactive planning role, engaging regional agencies (Dakota County and MnDOT) and affected land owners in more detailed master planning and system planning efforts. Planning for local, county, and state roadway connections in the Northwest Area is the primary example of this need.

The City will continue to work with the County, Minnesota Department of Transportation and the Metropolitan Council to determine the appropriate planning and funding mechanisms for constructing roadway improvements.

Table 11-2. Common Community Development Financial Resources

Topic	*Funding Resource*
Redevelopment/ or Economic Development	Livable Communities Grant Program
	Tax Increment Financing
	Tax Abatement
	EDA Levy as authorized by state statute
	Special service districts/Business Enterprise Zones
	Environmental Clean up grants/loans through the MPCA or other agency
Housing	Community Land Trust
	Community Revitalization Fund (CRF)
	Community Development Block Grant funds (CDBG)
	EDA/HRA Levy as authorized by state statute
	Livable Communities Act
	Home Program
	Minnesota Housing Finance Agency Programs (MHFA)
Transportation	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)
	Safe Routes to School
	County State Aid System
	Cooperative Agreements
Parks and Recreation	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)
	Minnesota Department of Natural Resources (DNR) Grants

Housing

The housing chapter has identified a series of action steps that need to take place in order to meet local and regional housing needs. From those action steps, the City will need to continue to explore ways to provide housing options for all income levels and lifestyles. Affordability is an important component to the overall housing plan. The City will need to work to reduce the barriers that are not conducive to affordable housing and work to dispel the myths of affordable housing. A housing action plan should be developed to address housing issues in a more detailed manner.

Economic Development

Economic development in Inver Grove Heights has historically been facilitated through a collaborative environment with the Chamber of Commerce and a non-profit organization, Progress Plus. The Cities economic development strategy includes a continued partnership with the business community through participation in the Chamber and Progress Plus coupled with a renewed vigor and focus on economic development. The significance that community development has on a city's ability to foster a strong economic development climate suggests that economic development cannot be solely focused on business recruitment and retention. Instead, a strong economic development program must include an integrated planning environment that focuses on improving Inver Grove Heights' overall quality of life, attracting a diverse and ample labor force and providing the services and amenities that businesses, employers and employees look for when deciding to locate in a community. Inver Grove Heights has tremendous assets to promote a strong economic climate including a diversity of housing types, quality park and recreation system, connections to regional transportation systems, the Mississippi River and natural resource areas nearby, proximity to an International Airport and proximity to the downtown core of the Twin Cities.

As part of this comprehensive plan update, the City Economic Development Authority went through a process to develop a strategic plan. The process included establishing the following economic development goals:

- Economic Development Goal #1 (EDG1) – Grow the number of living wage jobs available within Inver Grove Heights.
- Economic Development Goal #2 (EDG2) – Establish and maintain a thriving and vibrant commercial (retail goods and services) presence in Inver Grove Heights.
- Economic Development Goal #3 (EDG3) – Establish and maintain a quality and diverse tax base.

A series of strategies and implementation actions were adopted in support of these goals. These strategies generally include:

- conducting and implementing small area plans around sites that are aging and economically distressed
- master planning the area around the future interchange at I-494 and Argenta Trail in collaboration with property owners
- Monitoring and understanding vacancy/occupancy patterns and trends at key commercial nodes/centers
- Supporting the retention and growth of local businesses and providing business development support to both existing and new businesses
- Assisting with the disposition of City or other government excess property
- Measuring progress (see community indicators strategy) and revisiting strategies on an annual basis.

Public facilities

The growth and development of the City of Inver Grove Heights adds pressure on government services through increased demands for building permits, community development resources, streets, utilities, stormwater, police and fire protection, park and recreation programming and general administrative responsibilities. Such demands require the City to develop public facilities that house such services. These include administration (City Hall), park and recreation (community center) police, fire and public works. Currently, the bulk of the communities public facilities are sited at the campus on Barbara Avenue. The City should continually monitor space needs and incorporate facility improvements into its CIP.

Action Steps

This implementation plan presents a number of action steps that together have the potential to positively shape growth and change in the City. Since resources are usually limited, it is unrealistic to assume that the City can undertake all of them simultaneously. Therefore, it will be necessary to focus on those that have the greatest potential to accomplish stated goals or those that respond to issues or problems that have been identified within the comprehensive plan.

In order to measure the progress of each action step an implementation matrix has been developed and can be seen in Table 11-3. This tool will allow the City to track each action by its responsible party, associated costs and priority (see sidebar). Essentially, the Action Steps should serve as the "to do list" for the City. As the City and its advisory boards develop annual goals in goal setting workshops, they should consult the to do list as a starting point. As a number of action steps are completed, the plan should be updated to refresh the action steps and, using the community indicators, establish new action steps.

The action steps highlighted in the following table are developed based on the goals and policies identified in the plan and the broader community strategies identified within the Implementation Chapter.

Priority

On-Going: Continuous efforts with no definite start or stop date.

Short-Term: Completing within 1 - 3 years.

Mid-Term: Completing within 3-5 years.

Long-Term: Completing within 5-10 years.

Responsible Party

City – Refers to the City of Inver Grove Heights

County – Refers to Dakota County

Region - This may include regional agencies such as the Metropolitan Council, Minnesota Department of Transportation, Minnesota Department of Natural Resources or Watershed Districts.

Cost

The financial component is indicated by dollar signs:

$-Low Cost: 0 -$20,000

$$ - Medium Cost: $20,000 - $100,000

$$$ - High Cost: +100,000

The intent of the scale is to give a general idea of what it would take to carryout the initiatives from a cost, staffing and resources standpoint.

Table 11-3. Implementation Action Steps

		Implementation Initiative	*Description*	*Responsible Party*	*Priority*	*Cost*
LAND USE	**1**	Review and update zoning and subdivision ordinance.	*State law requires consistency between a community's zoning ordinance and its comprehensive plan. Ordinances need to be thoroughly reviewed to ensure consistency.*	Planning Commission and City Council	Short Term	$
	2	Conduct Small Area Master Planning for the Northwest Area.	*The extension of Argenta Trail to connect to I-494, associated roadway improvements, and regional development impacts suggest now is a good time to conduct a focused small area plan in the northwest area. This efforts should be collaborative process with property owners and regional agencies (Dakota County and MnDOT). The public purpose is to ensure that near term development is best organized to protect efficiencies of developing long term public improvements (i.e. potential interchange with I-494) and to ensure the highest and best land use configuration.*	City Council in partnership with property owners/ developers and regional agencies	Short Term to Mid Term	$$ to $$$
	3	Conduct Small Area Study for the area known as "Pinkville"	The area known as "Pinkville" is an area in Southwest Inver Grove Heights with a unique history of being platted to a small lot residential pattern but never having a clear understanding of how it would develop. Subsequently, the property has experienced some parcel foreclosures resulting in city ownership of several parcels. A small area study is recommended to help understand future uses and an implementation strategy.	Planning Commission and Parks & Recreation Advisory Commission	Mid Term	$
ECONOMIC DEVELOPMENT	**4**	Implement strategies outlined in the Economic Development Strategic Plan	*The City has established an Economic Development Authority and has established a 10 year economic development strategic plan with 5 key strategies.* ** revitalize and redevelop ageing commercial nodes (small area planning)* ** support and coordinate continued growth and infrastructure needs in the northwest area* ** support retention and growth of local businesses and new business opportunities* ** assist with disposition of excess city owned property* ** measu*	EDA	Short Term to Mid term	varies
	6	Develop marketing materials to promote economic development opportunities in IGH.	*Marketing efforts should be developed to promote the quality life style within Inver Grove Heights that encourage a diverse labor force to live in Inver Grove Heights and the region thus enhancing the attractiveness for business expansion and growth. The marketing efforts should also highlight City owned lands available for economic development.*	EDA	Short Term to Mid term	$

		Implementation Initiative	Description	Responsible Party	Priority	Cost
HOUSING	7	Prepare a detailed housing action plan.	*A detailed housing action plan is needed to better understand the critical housing issues facing the community and the most effective means to address them. This effort would include evaluating the merits of inclusionary housing as well as determining other methods and approaches to meeting housing goals including maintenance, diversity and variety.*	City	Short Term	$$
	8	Conduct a critical review of development regulations and processes to reduce barriers.	*Barriers to developing affordable housing can come in many ways. Setting too restrictive standards for lot size and dimensions or building requirements add costs to housing that pushes it beyond the affordability level. Require multiple layers of approval delay processes adding administrative costs and increasing risks. (See action step 1)*	City	Short Term	$
	9	Conduct an educational campaign to help dispel the myths of affordable housing and recognize the community benefits.	*A significant barrier to overcome is the opposition to affordable housing. Substantial resources already exist to undertake an education program and can be obtained through partnerships with agencies such as ISAIAH, Dakota County CDA, Metropolitan Council and other housing agencies.*	City, County & Region	Short Term	$
TRANSPORTATION	10	Collaborate with Metro Transit in siting future park and rides in Inver Grove Heights.	*The regional system plans identify a future park and ride facility in Inver Grove Heights. The City should develop a master plan and design guidelines to clearly communicate a desired form and function, such as Transit Oriented Development for future park and rides in Inver Grove Heights.*	City Council and Metro Transit	Mid Term	$ to $$
	11	Coordinate with Metropolitan Council, MnDOT, Dakota County and other roadway authorities to recognize the need for future interchanges in the NW Area.	*Planning efforts in the NW Area have identified the need for a future interchange at TH 55/Argenta and I-494. These planning efforts have shown both interchanges will serve as a benefit to the future local and regional transportation system. However, the interchanges are not currently recognized as part of the Transportation Policy Plan. This serves as a significant barrier to implementing the proposed interchanges. To overcome this barrier the City will need to collaborate with local and state agencies to include the interchanges as part of the TPP.*	City	Short Term	$ to $$$

		Implementation Initiative	Description	Responsible Party	Priority	Cost
TRANSPORTATION	12	Request a functional classification change for: 117th Street from Rich Valley Boulevard to TH 52. Rich Valley Boulevard (CSAH 71) between TH 3 and 105th Street (CSAH 73 Argenta Trail (CSAH 63) between I-494 and TH 55 65th Street between Cahill Avenue and Babcock Trail (CSAH 73).	*The Transportation Chapter has identified this segment of road to be reclassified. The City will need to work with the Metropolitan Council in order to request a functional classification change.*	City, County & Region	Short Term	$
PARKS AND RECREATION	13	Work to acquire lands for future parks and the expansion of existing parks	*The comprehensive plan has identified search areas for future parks and areas that may be candidates for expansion. The City should explore with affected property owners the alternatives for expanding the park system including acquisition and relocation.*	Park Board and City Council	Mid Term to Long Term	$$ to $$$
	14	Develop Community Indicators List	*Community indicators, as described earlier in the implementation chapter, can be quite exhaustive. Development of the indicators should follow an inclusive process and should seek to prioritize what measurements are most important to Inver Grove Heights while understanding the relative availability of the data and the level of effort needed to collect the data.*	City Council	Short to Mid Term	$ to $$
	15	Review and update the City's 2030 Trail Plan	*The parks and recreation chapter has identified a network of existing and future trail connections. A detailed trails plan is needed to better understand the proposed corridors and the issues facing property owners and the community. This effort would include evaluating alternative alignments and other methods to meet the parks and recreation goals.*	City	Short to Mid Term	$ - $$
OTHERS						