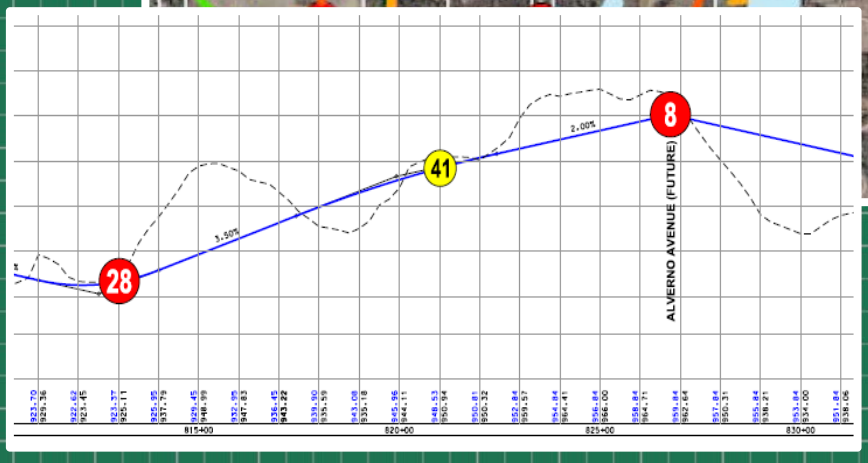
Northwest Area Collector Street Plan

FINAL REPORT

October, 2012

Prepared for:

City of Inver Grove Heights



Prepared by: WSB & Associates, Inc.

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Chapter 1

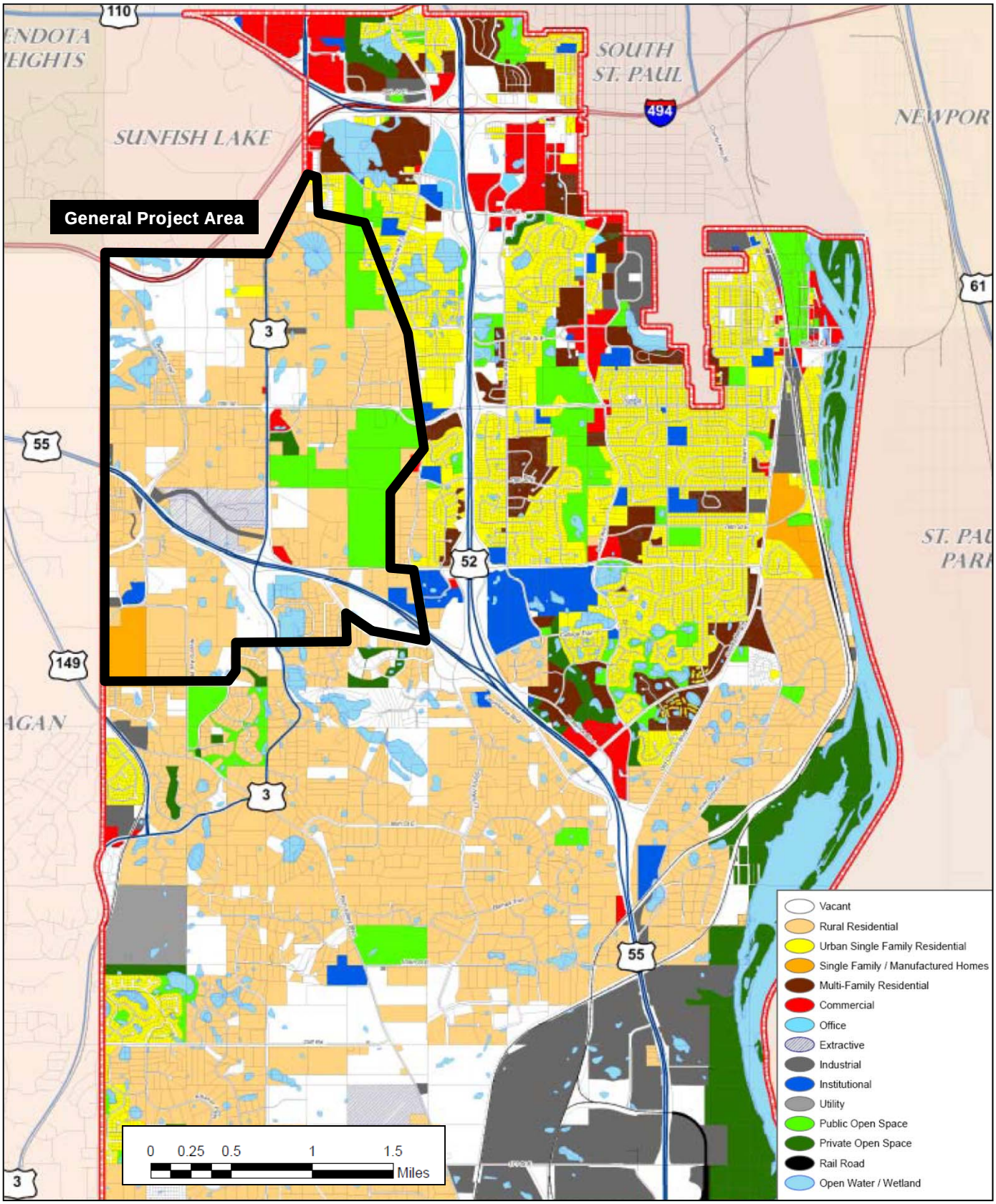
Introduction

The Northwest Area (NWA) Collector Street Plan was prepared by WSB & Associates, Inc. for the City of Inver Grove Heights, as well as its study partners of the City of Eagan, Dakota County, and MnDOT. The purpose of this study was to identify, plan, and guide future year development and transportation decisions related to the northwest area of Inver Grove Heights. The NWA is approximately 3,140 acres (4.9 square-miles) in size bounded by Interstate 494 on the north, Babcock Trail on the east and, the City's border with Eagan on the west. South of TH-55, at approximately 85th Street, is the southern boundary. **Figure 1-1** displays the general project area within the city of Inver Grove Heights and the existing (2010) land-use. Currently, the area is largely rural residential and vacant land.

Overseeing the study effort was a Technical Advisory Committee (TAC) comprised of staff representing the cities of Inver Grove Heights and Eagan, Dakota County, and MnDOT.

1.1 Inter-relationship of Future Development with the Collector Roadway Network

A land use plan has been developed for the area that uses a variety of low-impact development techniques to preserve existing natural resources that provide for a landlocked storm water management system with unique requirements. The City desires to develop a plan for a collector street network in the NWA. The plan will be used to direct future development and to guide the public transportation system needs during the development review and approval process. **Figure 1-2** displays the projected 2030 land-use for the NWA. As can be seen on this map, the NWA is planned to be developed in an orderly manner to group different land-uses together such as the establishment of areas for mixed-use development, commercial and industrial development, and residential development of various densities. In the City Comprehensive Plan, research was completed to approximate the amount of acreage dedicated to each of the uses within the area, specifically related to development potential. In this plan, we considered the Comprehensive Plan to guide the location of the Collector roadways and appropriate access based on future land use.



Source: 2030 Comprehensive Plan

FIGURE 1-1. NW Expansion Area: Existing Land-Use

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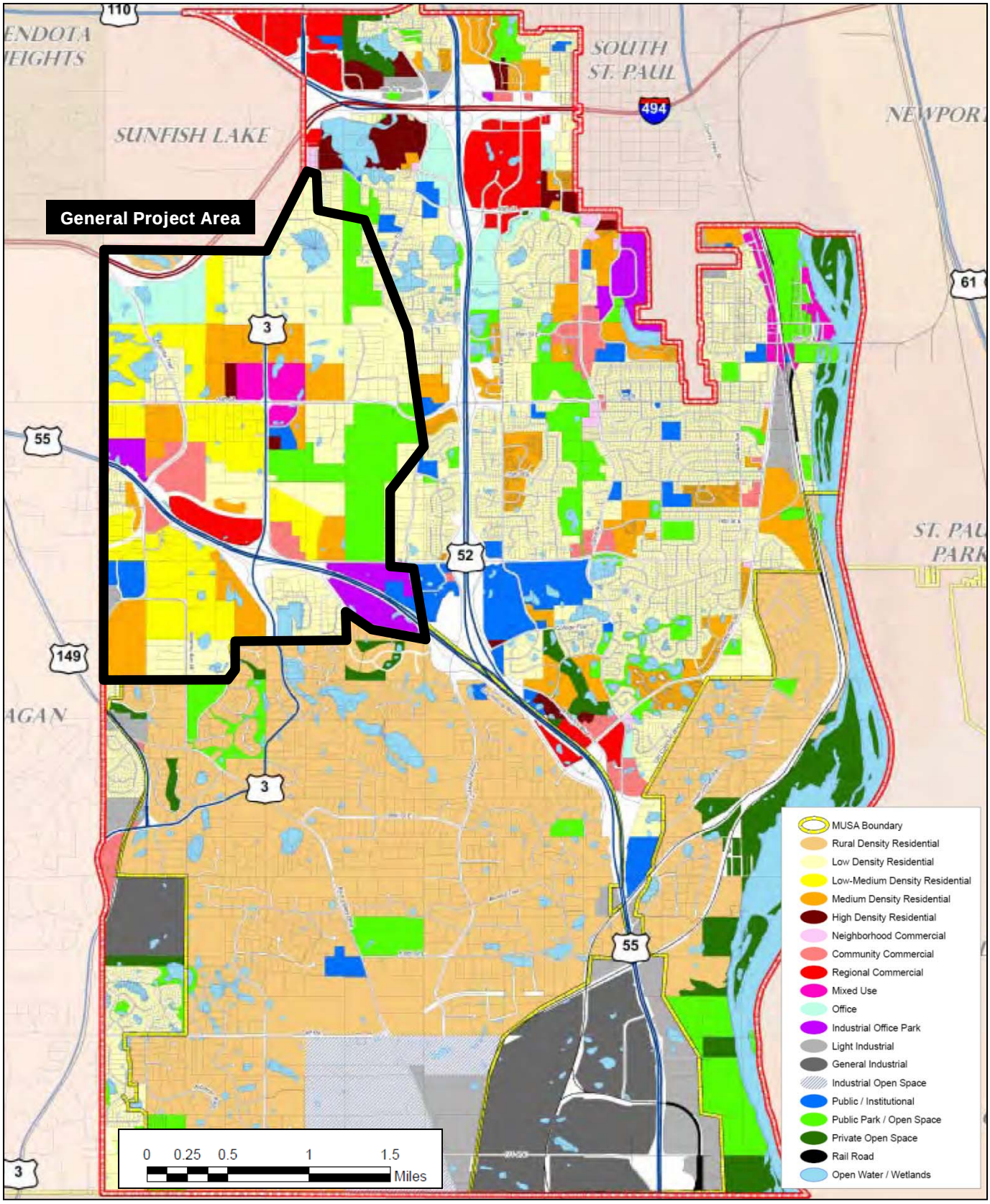

Source: 2030 Comprehensive Plan

FIGURE 1-2. 2030 Comprehensive Plan Land Use

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Chapter 2

Plan Background and Process

2.1 Background

The NWA Collector Street Plan represents a comprehensive and cooperative study for addressing transportation needs in the northwest quadrant of Inver Grove Heights. The results of the study provide a tool to help decision makers plan for future development within the area as well as the identification of an appropriate transportation system to serve the area's future needs.

The Study reflects the vision and direction of local officials, relevant agencies, stakeholders, and the general public. From the beginning of the plan development, a proactive public involvement process was undertaken that assured opportunities for the public to be involved in all phases of the planning process. The public provides valuable information needed to develop, maintain, and carry out an effective study. The public involvement process also provides an opportunity to educate the public about transportation planning and creates an informed community, which in turn leads to better planning.

In the recent years, numerous studies have been completed in the area that have provided a considerable amount of information about existing and projected conditions within the NWA related to transportation and land-use planning. These studies include:

- Northwest Quadrant Study, 2001
- Inver Grove Heights Northwest Area Natural Resource Inventory and Management Plan, 2003
- Northeast Eagan Land Use Study, 2005
- Northwest Expansion Area Alternative Urban Areawide Review (AUAR), 2004, 2007
- NWA Hydrologic Study, 2007, 2010
- Transportation Study for the Northeast Area of South Robert Trail/70th Street, 2006
- Dakota County North – South Corridor Travel Demand Study, 2007
- City of Eagan Comprehensive Plan Update, 2010
- City of Inver Grove Heights 2030 Comprehensive Plan Update, 2010, and
- Regional Roadway Visioning Study – Northeast Eagan/Northwest Inver Grove Heights, 2010

Information from the above studies was used in the formulation of a roadway system for the NWA. For instance, land-use information as well as traffic volume projections were reviewed and applied from several of the studies including the City of Inver Grove's 2030 Comprehensive Plan completed in

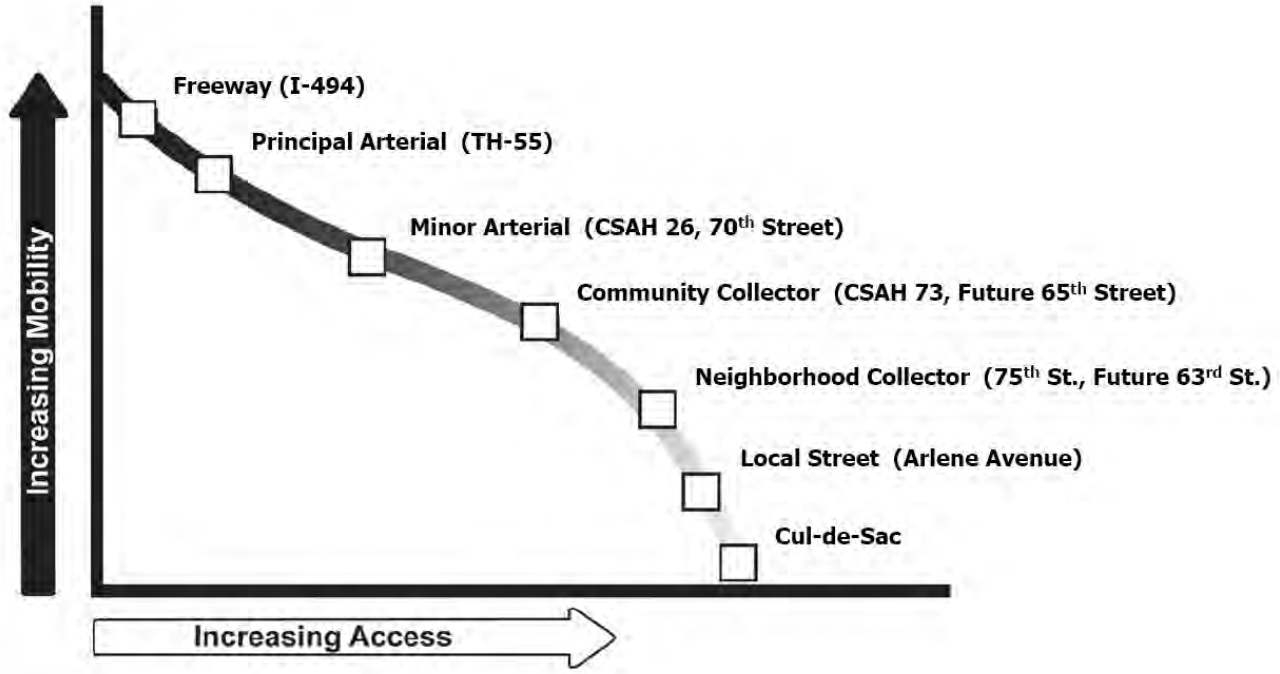
2010, and the Regional Roadway Visioning Study for Northeast Eagan/Northwest Inver Grove Heights was also completed in 2010.

2.2 Study Process and Intent

The study process was focused on the development of a layout plan for a Collector street system to serve the long-term development of the NWA. The plan identified vertical and horizontal alignments for the streets, along with approximate right-of-way requirements. The alignments were developed with consideration of the terrain, natural features, identified regional stormwater features, as well as for the provision of viable access for adjacent properties.

Each of the completed studies referenced in Section 2.1 dealt with a specific facet of the NWA ranging from development scenarios to the regional roadway system. The one component that was not specifically addressed in any detail was the identification of a Collector street plan to serve the area. A collector roadway is one of several functionally classified roadways, ranging from "Freeway" to "Local Streets." **Figure 2-1** displays a graph showing the relationship of each of the classifications with the degree of access and mobility served. As seen from

Figure 2-1. Functional Emphasis on Mobility and Access by Facility Type



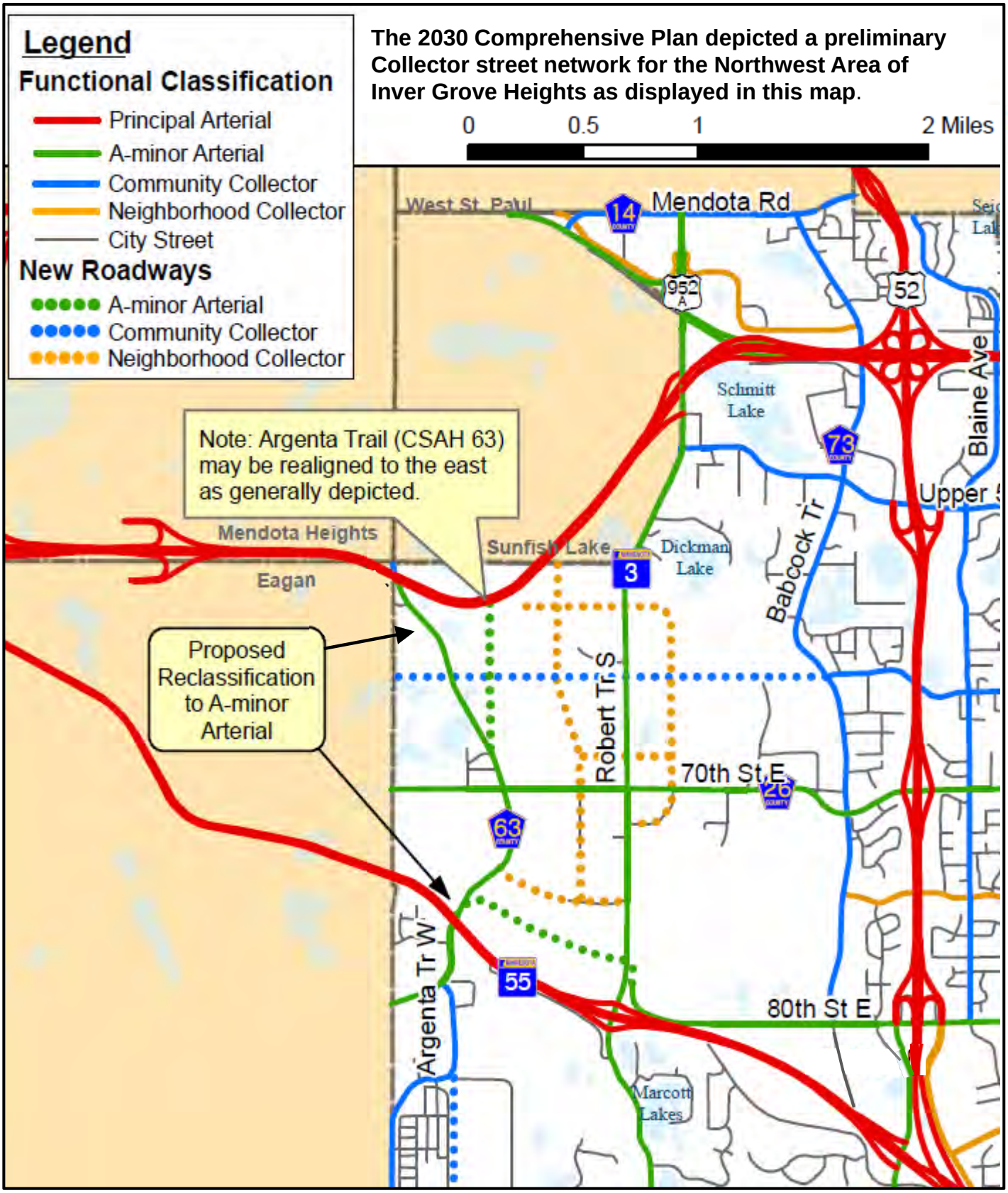
As shown in **Figure 2-1**, a Collector roadway generally balances access and mobility, but with more emphasis on access. As defined by the Met Council, a "Collector" roadway system should provide a connection between neighborhoods and from neighborhoods to minor business concentrations. Within neighborhoods themselves, local land access is provided via "local" streets, which function to provide access to individual parcels of land.

2.2.1 Study Goal

The established study goal was to develop a long-term plan for a Collector roadway system that promotes east-west and north-south connectivity. Specifically, the delineation of a proposed roadway network, including identifying approximate locations of access to adjacent land, will assist the City and landowners when development occurs in the plan area. In the City's 2030 Comprehensive Plan, the chapter on transportation presented a conceptual future roadway network for the NWA comprised of existing and future roadways. This represents the most recent effort in the development of a roadway network to serve anticipated development. **Figure 2-2** displays the 2030 Functional Classification and Preliminary Collector roadway network for the NWA.

2.3 Public Involvement

A proactive public involvement process was undertaken to assure opportunities for the public to be involved in all phases of this study process. A number of activities were used to inform and gather support/comments throughout the study process. These activities and how they relate to the development of the Collector roadway system are described in Section 4.4. – Public Involvement in the Development of the Collector Street Plan.



Source: 2030 Comprehensive Plan

FIGURE 2-2. 2030 Functional Classification and Preliminary NWA Collector Roadway Network

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Chapter 3

Collector Alignment Development

This chapter contains information on the base or planned roadway network and on the development of the Collector roadway alignments.

3.1 Base Future Transportation System

Using information from previous studies, a base transportation system alignment was established from which to start the evaluation. A key component of the base transportation network in the NWA was the identification of assumed Arterial roadway improvements.

The traffic projections used for the NWA study, were developed in the Regional Roadway Visioning Study – Northeast Eagan/Northwest Inver Grove Heights, 2010. In this study, traffic projections were developed for the higher functioning roadways such as those classified as Arterial roadways. No projections were done for the Collector roadway network as it is assumed that traffic volumes would not exceed the general capacity of a 2-lane roadway or approximately 13,000 vehicles per day (vpd).

Listed below and presented in **Figure 3-1** are the primary transportation improvements as well as the 2030 daily traffic projections for the base transportation system.

1. Expansion of 70th Street (CSAH 26) to 4-lanes
2. Expansion of South Robert Trail (TH-3) to 4-lanes
3. Argenta Trail (CSAH 63) Realignment
4. Potential Interchange at I-494 and Realigned Argenta Trail (CSAH 63)
5. Potential Interchange at TH-55 and Realigned Argenta Trail (CSAH 63)[1]
6. Realignment of 80th Street (CR 28)
7. 65th Street Extension between the Eagan border and Babcock Trail.

[1] The Regional Road Visioning Study - Northeast Eagan/Northwest Inver Grove Heights, 2010, identified this intersection as a potential interchange or high capacity intersection. This report identifies the improvement as an interchange, per the direction of the City Council. The City is aware that Dakota County and Mn/DOT currently do not support an interchange at this location.

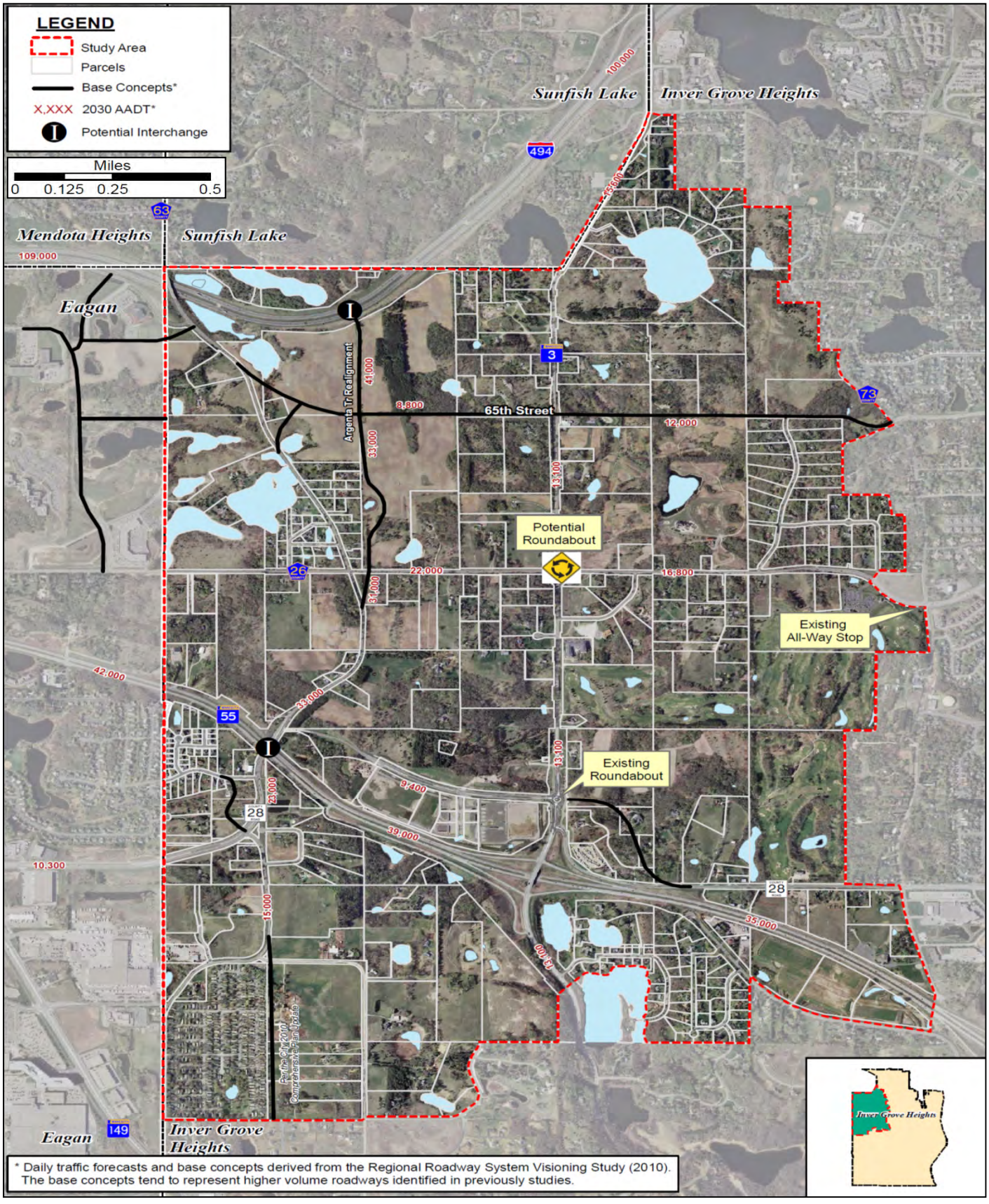

FIGURE 3-1. Base Future Transportation System: Arterial Roadway Network – *Property Line Overlay*

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3.1.1 Base Collector Roadway Network

In previous study efforts within the area, it has been recognized that a collector roadway network will be required in order for the area to properly develop. Specifically, it is necessary to have a transportation system that will accommodate the planned development of the area. The City of Inver Grove Heights has been planning for the long-term development of the Northwest Expansion Area by looking at infrastructure needs from both a utility and transportation perspective. Currently the area is largely unserved by public sewer and water, as well as a transportation network. As the City looks to grow and expand its tax-base, it sees the need to provide services in both these areas to foster economic development of the area. In the City Comprehensive Plan adopted in 2010, a conceptual collector street system was identified for the area. **Figure 3-2** displays this initial concept with general alignment revisions based on terrain. **Figure 3-3** shows this same information less the elevation (terrain) information.

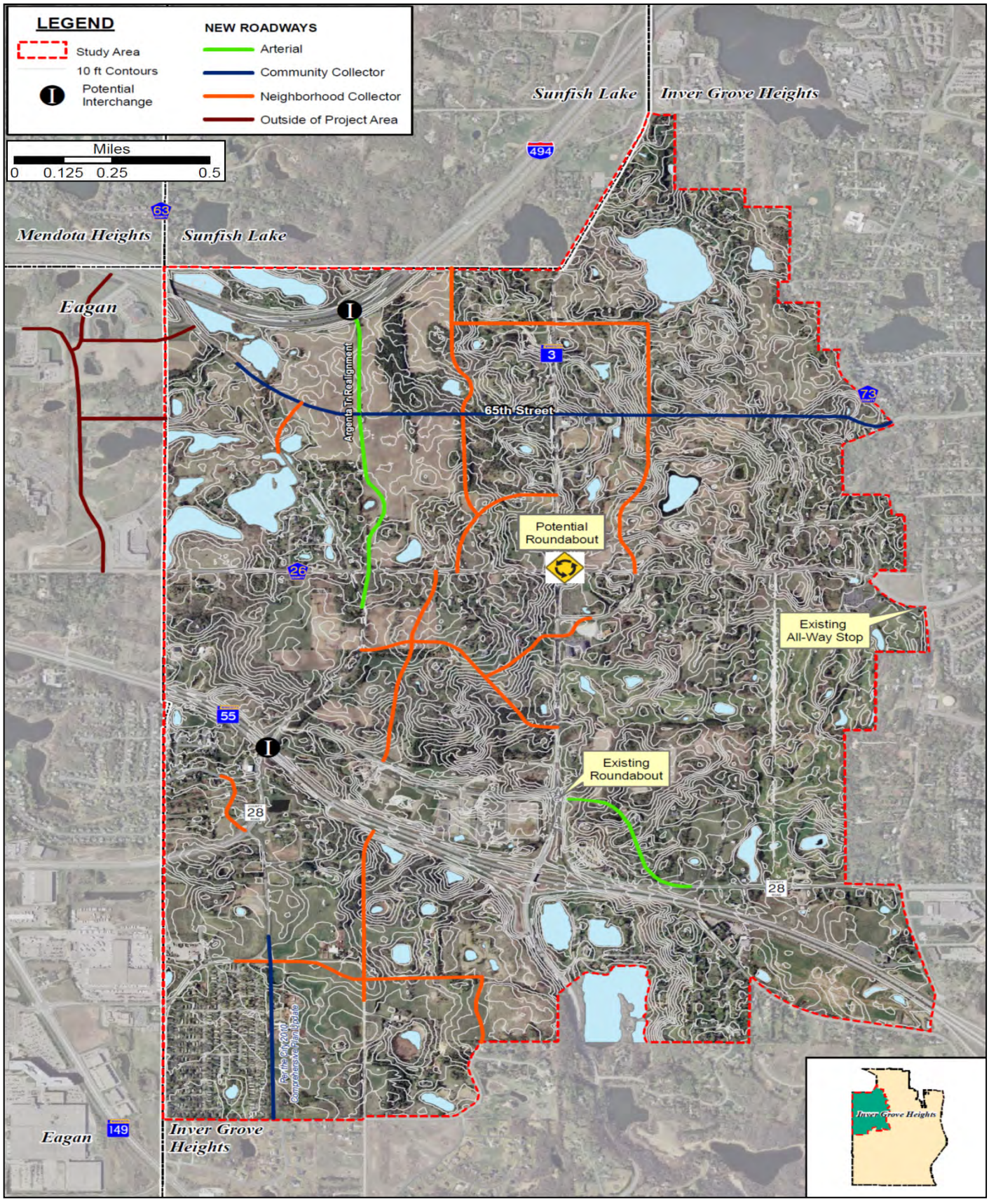

FIGURE 3-2. Base Collector Roadway Network
Topography Overlay

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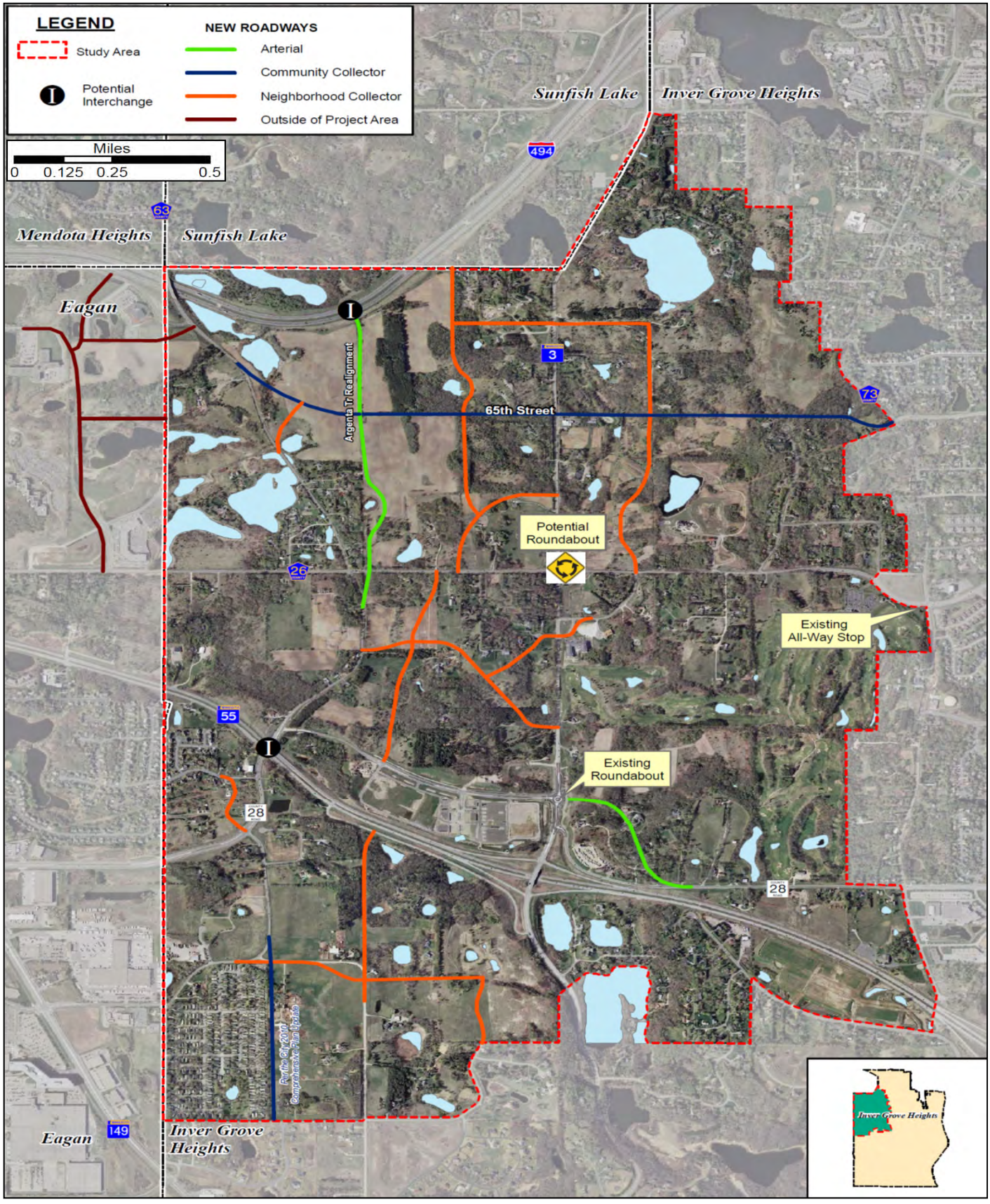

FIGURE 3-3. Base Collector Roadway Network

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Chapter 4

Design Refinement

The design process primarily considered four factors in adjusting or modifying the base collector network. These factors included:

- Access Management and Design Standards
- Property Impacts
- Topography and Terrain Constraints
- Public Involvement

4.1 Access Management and Design Standards

In the development of the collector roadway system, there were certain design standards that needed to be followed. Within the study area, there are roadways that fall under one of three different jurisdictions, including:

- City of Inver Grove Heights, who in general has jurisdiction over collector and local roadways (e.g.: Upper 55th Street, Arlene Avenue)
- Dakota County, who has jurisdiction over many collector and arterial roadways in the area (e.g.: CSAH 63, CSAH 26, etc.), and
- MnDOT, who has jurisdiction over many arterial roadways in the area (e.g.: TH-3, TH-55, etc.)
- Federal, who has jurisdiction over the Interstate system (e.g.: I-494)

4.1.1 Access Management

The spacing of intersections or access points in part play a role in the design of the Collector roadway system as the intersecting points between the different roadways should conform to the established guidelines as defined in **Tables 4-1** through **4-3**. This eliminates some of the ambiguity of where the roadways intersect. The more difficult challenge is to identify a new roadway or alignment that connects the access or intersecting points.

As previously displayed in *Figure 2-1: Functional Emphasis on Mobility and Access by Facility*, each roadway segment can be defined by access and mobility. Each of the three jurisdictions in the study area has their own individual access management guidelines. This means that the roadway system developed for the area must consider each of these guidelines. Provided in **Table 4-1** are the roadway access guidelines for Inver Grove Heights that were applied to roadways under the City's jurisdiction.

Table 4-1. City of Inver Grove Roadway Access Guidelines

Type of Access	Minor Arterial	Collector	Local
Residential Driveways	No Direct Access	No Direct Access	As Required
Commercial Driveways	1/8 to 1/4 Miles (Based on: Speed, Traffic Volume, Sight Distance, etc.)	Minimum 250 feet (Based on Speed, Traffic Volume, Sight Distance, etc.)	Minimum 100 feet (Based on Speed, Traffic Volume, Sight Distance, etc.)
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.

NOTE: The spacing guidelines in this table may be adjusted on a case-by-case basis.

Source: Inver Grove Heights 2030 Comprehensive Plan

K:\01943-00\Admin\FINAL REPORT\[IGH Tables_ Nov 2011.xls]IGH Access Mgmt Guidelines

Provided in **Table 4-2** are the access guidelines for Dakota County that were applied within the Project Area.

Table 4-2. Dakota County Access Guidelines

Road Type (A)	Posted or Design Speed	Projected 2030 Daily Traffic	Full Movement Intersection	Partial Movement Intersection (B)
Principal Arterial	All	All	1/2 Mile	1/4 Mile (C)
Divided Highway	All	Greater than 35,000	1/2 Mile	1/4 Mile (C)
	All	Less than 35,000	1/4 Mile	1/8 Mile
Undivided Highway	< or = 40 mph	All	1/8 Mile	N/A
	> or = 45 mph	> 1,500	1/4 Mile	N/A
	> or = 45 mph	< 1,500	Allowed per (D)	N/A

(A) Road type refers to the anticipated future roadway cross-section and functional classification.

(B) Partial Movement intersections do not allow left turns from the minor street to the major street or movements straight across the major street. Movements that are allowed will be based on engineering study.

(C) Right-in/right-out access may be permitted at approximately ⅛ mile for public or private (See Note #3) streets if the County determines the access improves the overall safety and/or efficiency of the area transportation system.

(D) Private street or driveway access requests will be considered based on engineering judgment and the following factors: location, distance from other driveways and intersections, alignment with other access points, easement/access rights that allow widespread usage and system connectivity, the potential to combine accesses, visibility, adjacent land use, and other operational/safety issues.

N/A – Not Applicable to undivided roadway segments

Source: Dakota 2030 Transportation Plan

K:\01943-00\Admin\FINAL REPORT\[IGH Tables_ Nov 2011.xls]Dakota County Access Standards

Provided in **Table 4-3** are the access management recommended street spacing guidelines for MnDOT facilities that were applied within the Project Area.

Table 4-3. MnDOT Access Management Recommended Street Spacing

Area or Facility Type	Typical Functional Classification	Typical Posted Speed	Public Street Spacing		Signal Spacing
			Primary Full-Movement Intersection	Secondary Intersection	
Rural (4A)	Principal Arterial	45 - 55	1 mile	1/2 mile	Special provisions*
Urban / Urbanizing (4B)		40 - 45	1/2 mile	1/4 mile	1/2 mile
Urban Core (4C)		30 - 40	300 - 600 feet dependent upon block length		1/4 mile
Rural (5A)	Minor Arterial	45 - 55	1/2 mile	1/4 mile	Special provisions*
Urban / Urbanizing (5B)		40 - 45	1/4 mile	1/8 mile	1/4 mile
Urban Core (5C)		30 - 40	300 - 600 feet dependent upon block length		1/4 mile
Rural (6A)	Collector	45 - 55	1/2 mile	1/4 mile	Special provisions*
Urban / Urbanizing (6B)		40 - 45	1/8 mile	Not Applicable	1/4 mile
Urban Core (6C)		30 - 40	300 - 600 feet dependent upon block length		1/8 mile

* See Mn/DOT Access Management Manual section 3.2.5.

Source: Mn/DOT Access Management Manual (Tables 2.1and 3.2)

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4.1.2 Design Standards

The primary standards with respect to the development of the Collector roadway system include the size of the roadway needed to accommodate the anticipated traffic, which are projected to be fewer than 11,000 vehicles per day. Another consideration is the design speed for the roadway system, which impacts the degree of curvature of the roadways. Provided in the following sections is information related to roadway size and design speed.

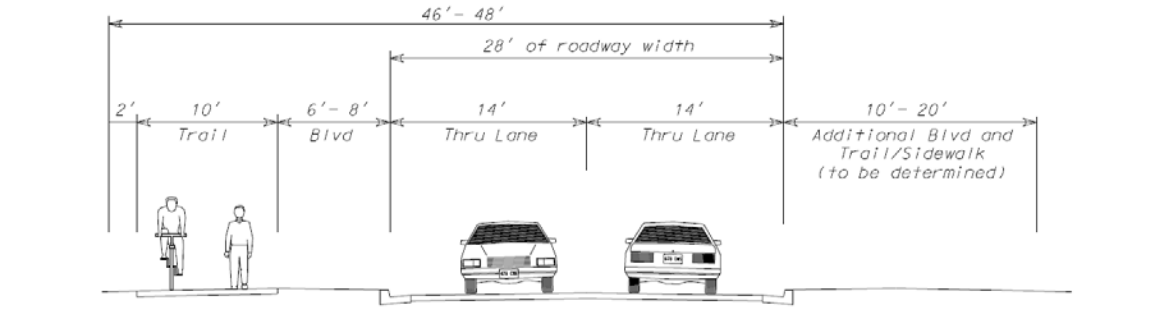
Typical Sections

The right-of-way (ROW) necessary to accommodate the roadway was also defined in the study. Through the study process, it was concluded that the collector roadway system should be comprised of 2-lane roadways and in some instances such as commercial development nodes, these roadways may need a center turn-lane to better accommodate turning movements. In general, the necessary ROW was assumed to be between 60 and 100 feet wide to accommodate a roadway width of 48 to 62 feet, depending on the desired roadway section. Certain roadways such as the new Argenta Trail are projected to have ROW needs between 120 and 150 feet. In these cases ROW acquisition will likely involve dedication and purchase. The preservation of ROW is recommended to accommodate utilities, drainage, and trails. Regarding trails, it is envisioned that most of the roadways would have multi-use trails on at least one side of the roadway. In general, the City would like to encompass the "Complete Streets" philosophy, where a transportation corridor is designed to provide safe and efficient travel for multiple modes of transportation, including bicycling, walking, and driving. Generally, the preservation of 60 to 100 feet of ROW, unless otherwise noted, would provide sufficient space to provide these accommodations if desired. **Figure 4-1** displays the typical sections for the Collector roadways within the NWA. Right-of-way to accommodate these sections would generally vary from 60 to 100 feet to accommodate utilities, drainage, terrain, etc.

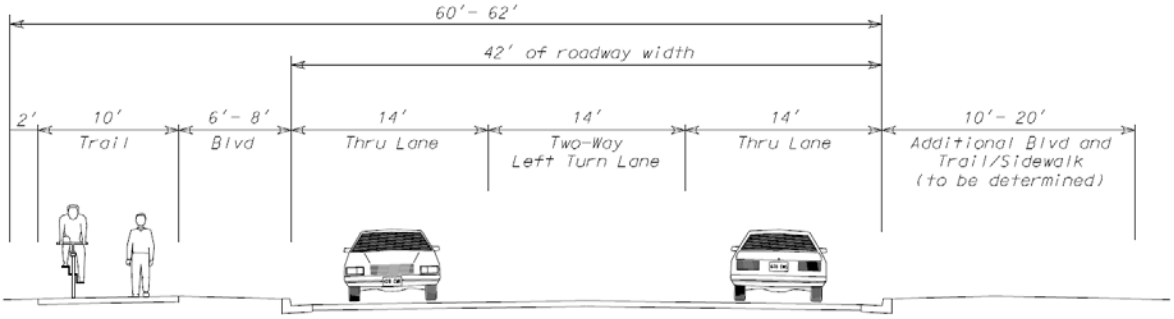
Design Speed

The agreed upon maximum design speed for the collector roadways was 45 mph. Design speed is a selected speed used to determine the various geometric features of the roadway. The design speed was chosen based on the area topography, anticipated operating speed, the adjacent land use, and the functional classification of the roadway. The design speed is not to be confused with the posted speed-limit, which is set by Minnesota State Statute. Individual cities do not have the authority to set speed limits, the exception being for selected residential (local) roadways.

Figure 4-1. Typical Sections for the NWA Collector Roadway System



2-Lane Section
(up to 11,000 vehicles per day)



3-Lane Section
(up to 17,000 vehicles per day)

4.2 Property Impacts

The development of the Collector roadway system also considered the potential impact on the property owners in the area. At the outset of the project, a notification and newsletter was mailed to area residents informing them of the study and how they can become involved in the process. In October, 2010 the City sent a letter to all area residents and property owners notifying them of the study. Over the course of the study there were meetings and open houses with the property owners as well as the general public to obtain input on the Collector roadway network study. By obtaining input from the property owners at the different stages in the project, particularly related to the development of preliminary alignments, many issues and opportunities related to potential alignments were able to be addressed or incorporated.

4.3 Topography and Terrain Constraints

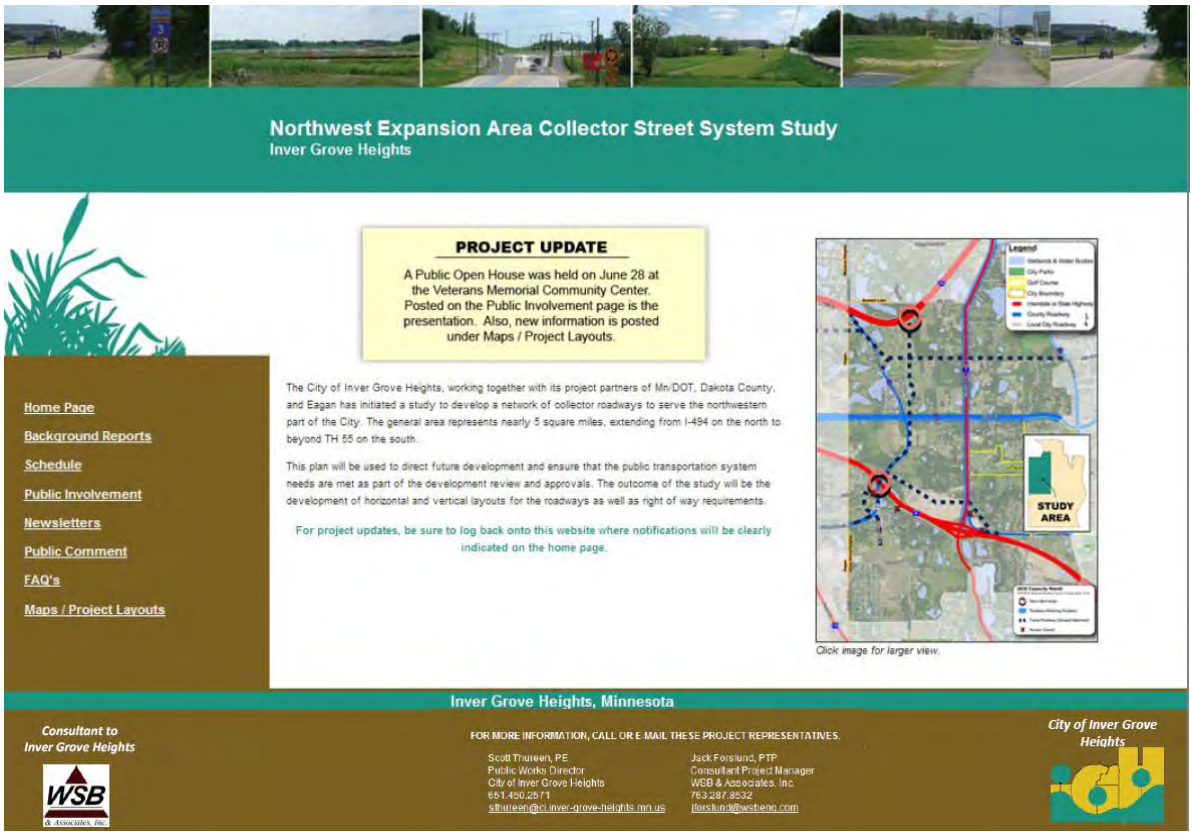
The study area presents physical challenges due to its extreme topography, terrain, and the regional stormwater basins. The area is characterized by large changes in elevation, with the presence of high hills and low valleys within proximity of one another. At the outset of the project, it was agreed that the development of the system was going to be challenging due to the topography. It was decided to allow for a maximum roadway grade of 8 percent on the Collector roadway system. This compares to the existing section of 70th Street (CSAH 26), which is an arterial roadway, west of South Robert Trail (TH 3) that has a grade of 8 percent. It must be restated that 8 percent represents the maximum allowable grade. It should be noted that Dakota County does have long term plans to reduce the grade on 70th Street upon roadway reconstruction. In the case of the Collector roadways, which are lower speed and carry fewer vehicles, the maximum grade of a roadway typically may be higher (e.g.: 8 percent). A maximum grade of 5 percent had been considered, however, it was decided that the additional disturbance to the environment and the added construction cost would not justify the reduction in grade. Therefore, 8 percent was used as the maximum allowable grade for the Collector roadways.

4.4 Public Involvement in the Development of the Collector Street Plan

Over the course of the study, preliminary layouts were developed and provided to the public for review. At the outset of the study, a base alignment was developed using information obtained from recent planning efforts, which was then refined through a public involvement process throughout the study. The key components of the public involvement process are provided below, including the identification of key dates or activities in the study.

Project Website – At the outset of the project, a website was created, which allowed for the timely posting of project information as well as to provide people an easy way to provide comments. The website address, which was active through the completion of the study, was www.ighnwareacollectorstreetstudy.com. **Figure 4-2** displays a screenshot of the project website.

Figure 4-2. NWA Collector Street Plan - Project Website



Property Owner Meetings – At the outset of the study, residents and property owners in the area were invited to attend one of four scheduled informational meetings with the City and their consultant, WSB & Associates. The purpose of these meetings, which were held in February 2011, was to inform the residents of the study and to obtain/exchange information with them regarding the study. To facilitate discussion, a draft collector roadway system was developed using information from previous studies conducted in the area. Over 200 property owners were sent personal invitation letters asking for them to attend the meetings. More than 45 property owners attended these meetings where there was a positive exchange of information.

Public Open House No. 1 – The first public open house was March 10, 2011 to inform the general public of the study and to exchange information with them on the preliminary alignments that were developed using information from earlier studies. However, some changes were made to the alignments based on comments received from the property owner meetings conducted in February 2011. Over fifty people attended this first open house.

Public Open House No. 2 – The second public open house was held on June 28, 2011 to present the refined collector roadway system, including the presentation of both the horizontal and vertical alignments. Over twenty-five people attended this open house.

A series of public meetings were held over the course of the Study. These meetings allowed for an open forum of communication between the public and the City.

Project Newsletters – A series of newsletters were produced and distributed via US Mail (354 households/property owners) and the project website over the course of the project. The newsletters contained updates to keep the residents and property owners informed of the project. Copies of the project newsletters are contained in **Appendix A.**

In summary, public involvement was an important component to the project, which led to the development of a collector roadway system that included active participation and input by those directly affected by the planned improvements.

4.5 Design Refinement Process

As the study progressed, the plan for the roadway system evolved based on public and property owner comments and more detailed design efforts to better consider impacts to property owners as well as the natural environment, specifically terrain and water features.

Below is the general timeline for refinement of the Collector roadway system in relationship to coordinating with the public.

Initial "Base" Design (*refer to Figure 3-2*):

- October, 2010 – Base alignment is posted to the website and mailed out to area residents notifying them of the study
- February 9th and 15th, 2011 - Meetings with property owners and residents of the NWA to discuss the "Base" design of the Collector roadway network.

Design Iteration 1: Entailed the modification of the alignments based on input from the Technical Advisory Committee (TAC), property owners, and the general public. The revised network is

displayed in **Figure 4-3**. This was then presented at an Open House on March 10, 2011.

Design Iteration 2: Entailed the modification of the alignments based on comments received from the TAC, property owners, and the public. This network is shown in **Figure 4-4**. At this point in the study, horizontal and vertical alignments (plans and profiles) were created to reflect a preliminary recommended long-range Collector Roadway system for the NWA. This information was subsequently presented to the public on June 28, 2011 at Open House No. 2.

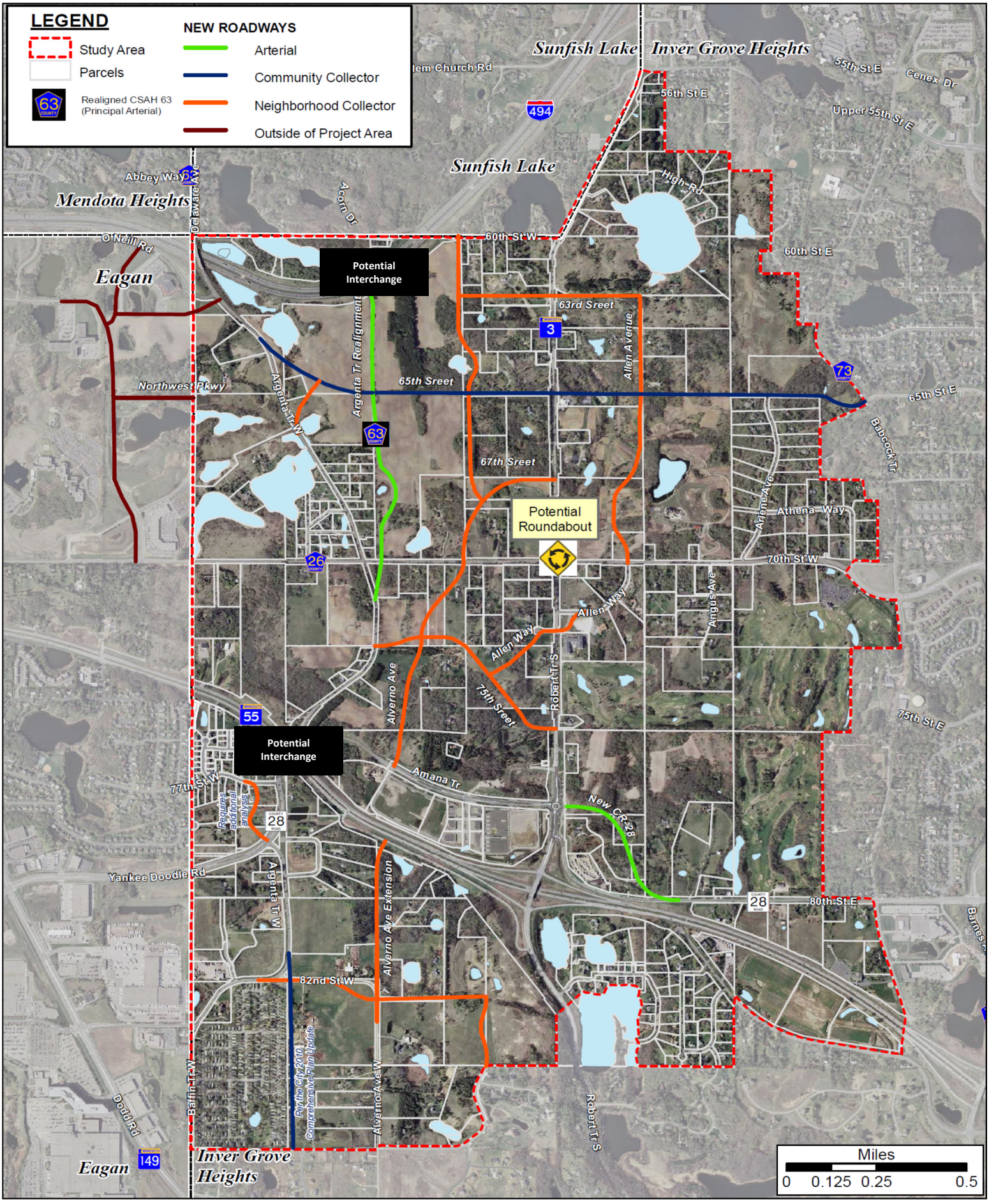


FIGURE 4-3. Design Iteration 1: Collector Roadway Network – *Property Line Overlay*

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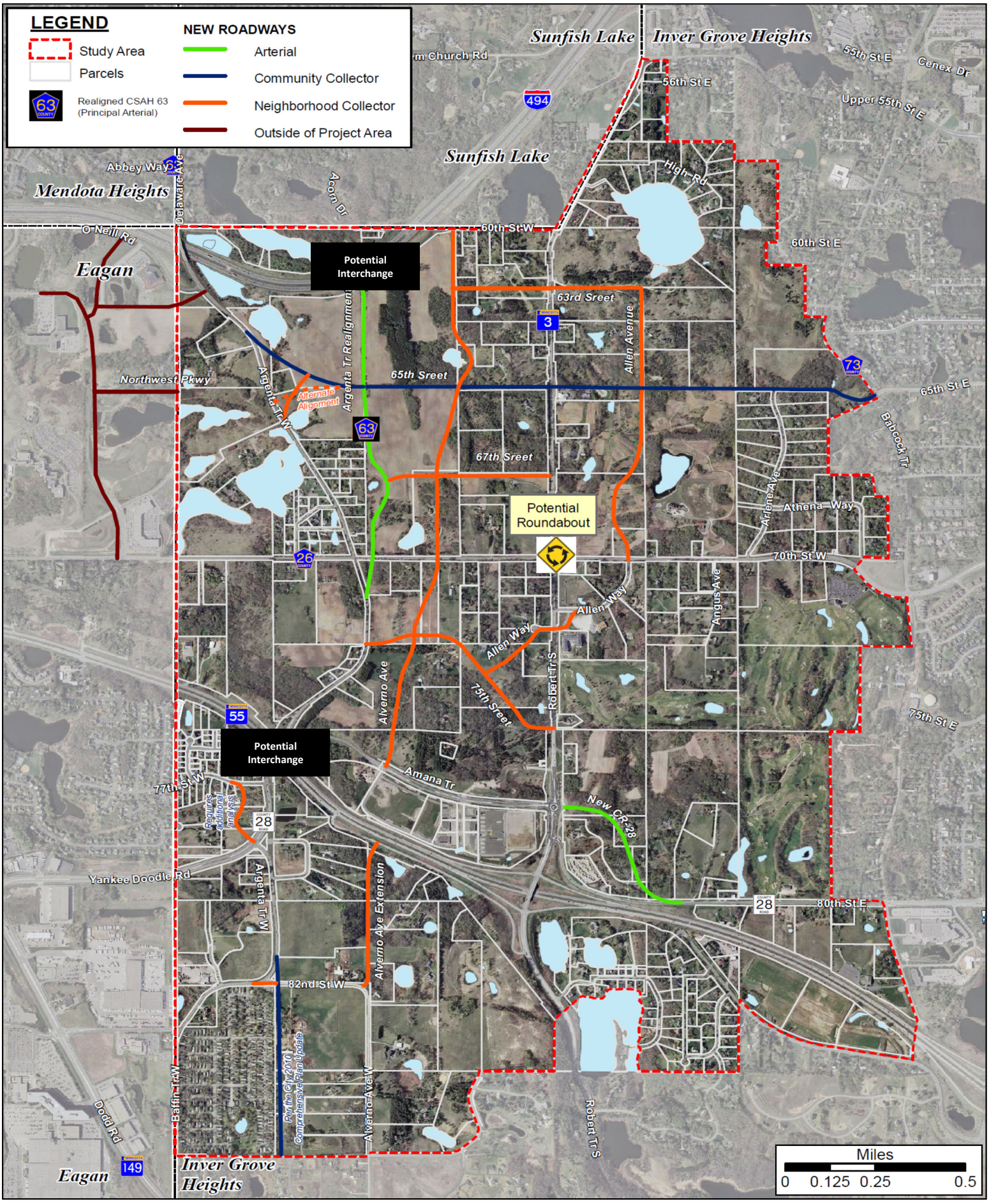


FIGURE 4-4. Design Iteration 2: Collector Roadway Network – *Property Line Overlay*

NORTHWEST EXPANSION AREA COLLECTOR STREET SYSTEM STUDY

WSB & Associates, Inc.

4.6 Roadway System Right-of-way Needs Analysis

The Collector street network *(refer to Figure 4-4*) will result in over 7.0 additional miles of roadway serving the NWA. This network will provide the framework to allow the area to accommodate the projected land-use as identified in the City's Comprehensive Plan. In the development of the Comprehensive Plan, the City's planning consultant, HKGi, conducted an analysis to identify areas of potential development and to quantify the amount of development. The analysis did not account for collector roadway right-of-way needs. It accounted for principal and arterial roadways, not collectors. Within the NWA, the analysis concluded that approximately 1,761 acres of land was developable. In determining the amount of developable land, HKGi eliminated land that was currently occupied, was environmentally sensitive (i.e., wetlands), or was on terrain considered uneconomical for development.[1] As the initial analysis was completed in 2006, it did not account for the collector system developed in this plan.[2] In order to account for the new Collector street system, HKGi subdivided the NWA into geographical areas or zones and then calculated how much acreage of developable land would be needed to accommodate the street system. In the analysis, it was determined that approximately 74 acres of developable land would be necessary for providing ROW needed to accommodate the Collector street system. It is expected that a reasonable amount the required ROW would be donated to build the roadway network. Provided in **Table 4-4** are the categories and amount of developable land within the NWA.

Table 4-4. Developable Land and Collector ROW Impacts

	DEVELOPABLE LAND		
Planned Land Use Designation	***TOTAL Acreage***	***Needed for Collector ROW***	***NET Acreage***
Low Density Residential	416	15	401
Low-Medium Density Residential	556	32	524
Medium Density Residential	295	11	284
High Density Residential	15	0	15
Mixed Use	65	3	62
Community Commercial	95	5	90
Office, Industrial/Office	265	7	258
Public / Semi-public	42	1	41
ROW for Arterials / Expansions (not Collector) 1)	12	0	12
TOTAL	1,761	74	1,687

NOTE: 1) The initial HKGi analysis included expansion of ROW needed for improvements to 70th Street, S. Robert Trail, existing Argenta Trail, and other roadways. See Figure 1-1 in Appendix B.

Source: HKGi, and WSB & Associates, Inc.

K:\01943-00\Admin\FINAL REPORT\Revised Final Report - Dec 2011\[District Analysis Table.xls]Table 4-4 for Report

In terms of development impacts, HKGi's generated values based on accepted development guidelines for each of the categories, which are also identified for each of the 25 geographic zones they used in their analysis. Provided in **Table 4-5** are the development impacts for each of the categories.

[1] Appendix B contains the initial memo (October, 2006) documenting the process of identifying developable land.

[2] In the 2006 analysis, developable area was determined to be 1,734 acres. In subsequent analyses, HKGi revised this number to 1,761.

Table 4-5. Developable Land by Land Use Category

Planned Land Use Designation	Total Net Developable Acres Displaced by new ROW	Density Assumption	Estimated Housing Units lost to new ROW	Estimated Square Feet of Office lost to new ROW
Low Density Residential	14.96	2 u/a	30	Na
Low-Medium Density Residential	31.91	4 u/a	128	Na
Medium Density Residential	11.20	6.5 u/a	73	Na
High Density Residential	0.33	12 u/a	4	Na
Mixed Use	3.17	2/3 res at 15 u/a 1/3 com at 0.25 FAR	32	11,520
Community Commercial	4.71	0.25 FAR	Na	51,300
Office	6.67	0.3 FAR	Na	87,140
Public / Semi-public	0.60	0.25 FAR	Na	6,500
ROW for Arterial Expansions (not Collectors) [1]	0.00	0.00	0.00	0.00
Total	73.55	Na	267	156,460

NOTE: 1) The initial HKGi analysis (October, 2006) included expansion of ROW needed for improvements to 70th Street, S. Robert Trail, existing Argenta Trail, and other roadways. See Figure 1-1 in Appendix B.

Source: HKGi

Developable Land Required for the Collector System

1. The development capacity impact across the entire NWA created by right-of-way needs for arterial and collector streets will pull approximately 74 acres of developable land area out of the development equation.

2. The 74 acres equate to an estimated impact of 267 housing units and 156,460 square feet of office/commercial development when applying the same density assumptions used in prior NWA planning analysis. Provided below are potential ways to recapture the development due to lost developable land necessary to accommodate the collector roadway system serving the area.

a. The office development impacts can be mitigated with a slightly higher density of development (an increase in FAR of approximately 0.02, or a commercial FAR of 0.27 instead of 0.25 and an office FAR of 0.32 instead of 0.30). This could be achieved by a few projects utilizing shared, underground or structured parking and building multi-story (2-4) structures. Given the grades and topographic relief, this is a feasible development option.

b. The residential development impacts are more of a challenge. Some areas of low density may need to be guided for a higher density in order to pick up the 267 units lost to ROW impacts. Road alignments might be tweaked to follow contours and natural

resource areas better as opposed to following parcel lines. This approach could potentially reduce roadway mileage and/or lessen the grading impacts on developable land. Also, this could increase the amenity opportunities of development areas and minimize impacts due to excessive grading. It should be noted that this strategy will likely require greater collaboration among property owners to develop or plan for larger development areas. This strategy is already encouraged through the NWA Planned Unit Development (PUD) overlay.

In summary, the impacts generated by the collector street network concept are within a manageable level of impacts. Using consistent assumptions, development impacts due to ROW needs are approximately 4 percent of the overall development magnitude assumed for the NWA financial planning assumptions. It is expected that a majority of the necessary ROW would be donated to build the Collector street network.

As the NWA develops over time, the bulk of this development impact can be absorbed within other areas of the NWA through slightly increased densities.

Provided in **Appendix B** is a memorandum developed by HKGi documenting the process of identifying the developable land within the NWA. Also provided within Appendix B is an earlier memorandum developed by HKGi in 2006 that documents the methodology followed for determining developable land.

Chapter 5

Recommended Collector Street System

The identification of the Collector roadway system was the result of an iterative design process that involved engineering design which was overseen by the public through an extensive outreach effort involving meetings, open houses, and information exchange through the use of the website. The culmination of the process provided a conceptual horizontal and vertical alignment of twelve segments totaling over 7 miles of new roadway. **Figure 5-1** displays the general alignments of the twelve segments comprising the recommended Collector roadway network. [3]

The recommended Collector roadway network also includes the identification of preliminary or potential access locations, which are identified as either a major or a minor access point and whether they are full or partial access. Generally, a major access point connects higher functioning roads (i.e., arterial with collector, collector with collector, etc.); while a minor access point connects local or private roads with higher functioning roads. Also identified is whether full or partial access would be provided.

Figure 5-2 displays the recommended Collector roadway system including the potential access locations to connect the network with the existing roadway network as well as adjacent properties. The access locations are intended to represent the approximate location of an access point which would serve future development. The actual location of access points will require coordination between the City of Inver Grove Heights, Dakota County, and MnDOT.

The numbers indicated in the access points correspond with the vertical layout sheets for each of the roadways, which are identified by number and shown in **Figures 5-3** (Roadways numbered 1-6) and **5-4** (Roadways numbered 7-12). Paper foldouts of the layouts are provided in a sleeve on the back cover of this report (**Appendix C**).

Note that these are not final design layouts and therefore, it is fully expected that some characteristics will be modified, particularly related to roadway grades.

[3] It should be noted that potential future frontage roads along I-494 and TH 55 were note included in this study and therefore are not shown in Figure 5-1.

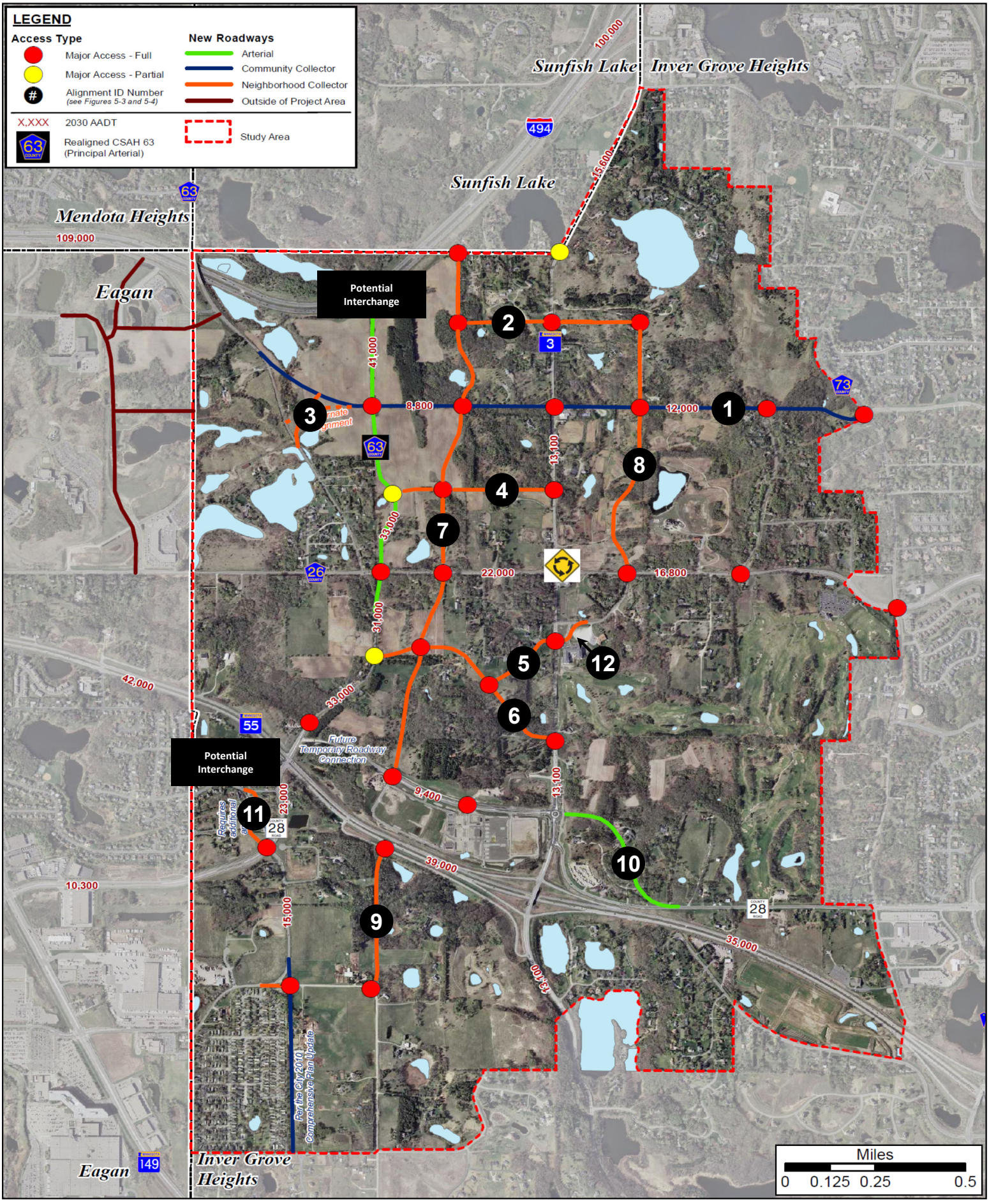


FIGURE 5-1. Recommended Collector Roadway System

NORTHWEST EXPANSION AREA COLLECTOR STREET SYSTEM STUDY

WSB & Associates, Inc.

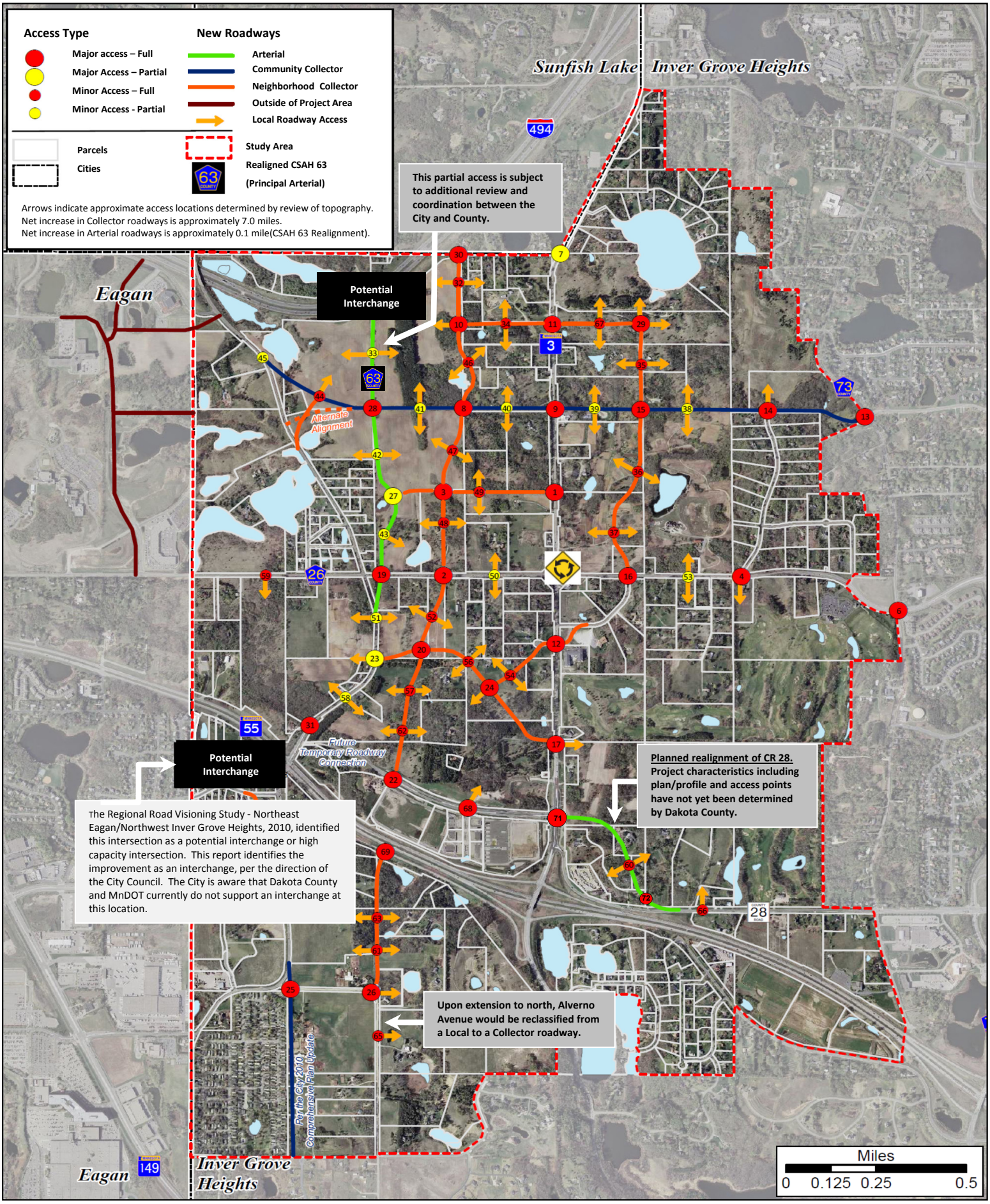
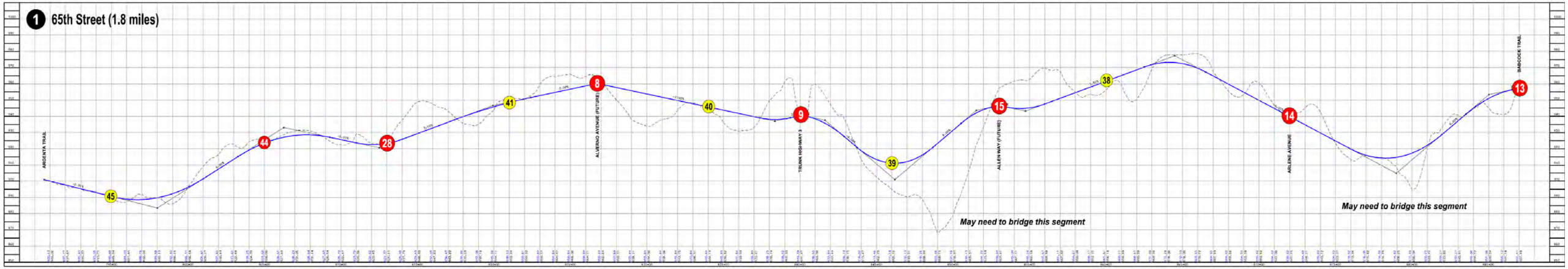


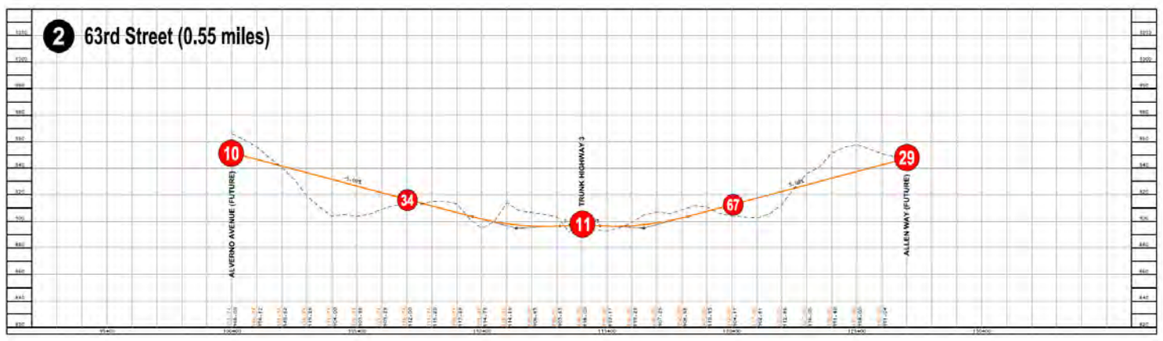
FIGURE 5-2. Recommended Collector Roadway System with Potential Access Locations

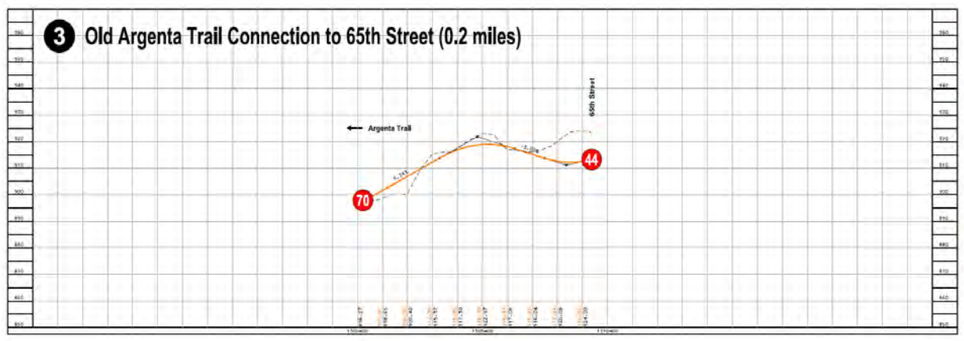
NORTHWEST EXPANSION AREA COLLECTOR STREET SYSTEM STUDY

N

WSB & Associates, Inc.





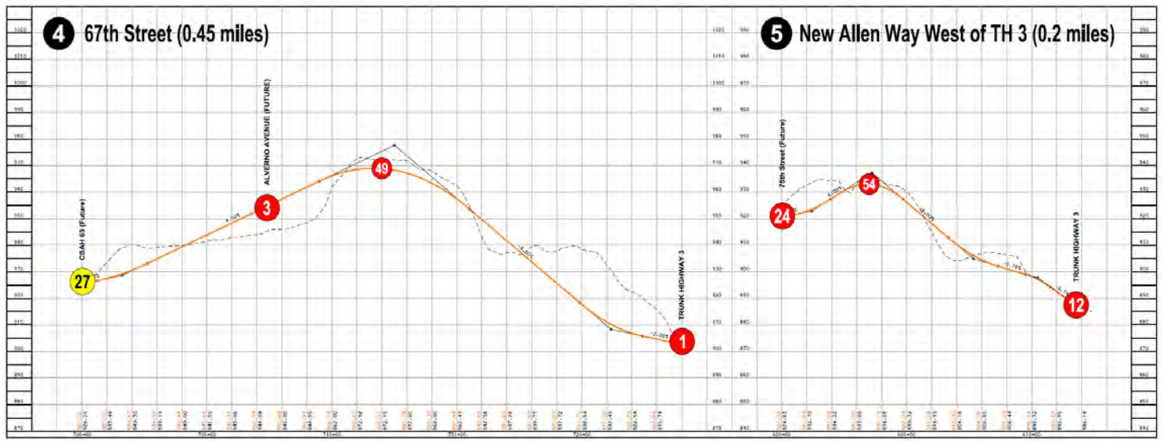


New Roadways

- Arterial
- Community Collector
- Neighborhood Collector

Access Points

- XX Major - Full Movement
- XX Minor - Full Movement
- XX Major - Partial Movement
- XX Minor - Partial Movement



Map Legend

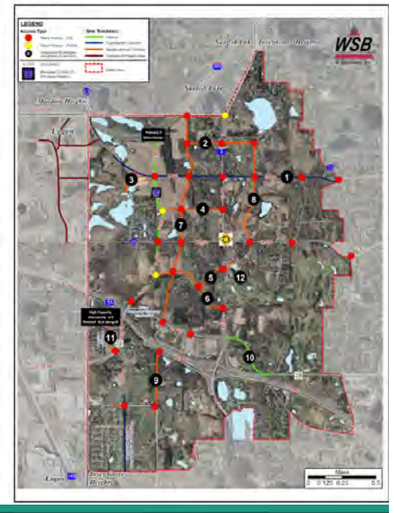
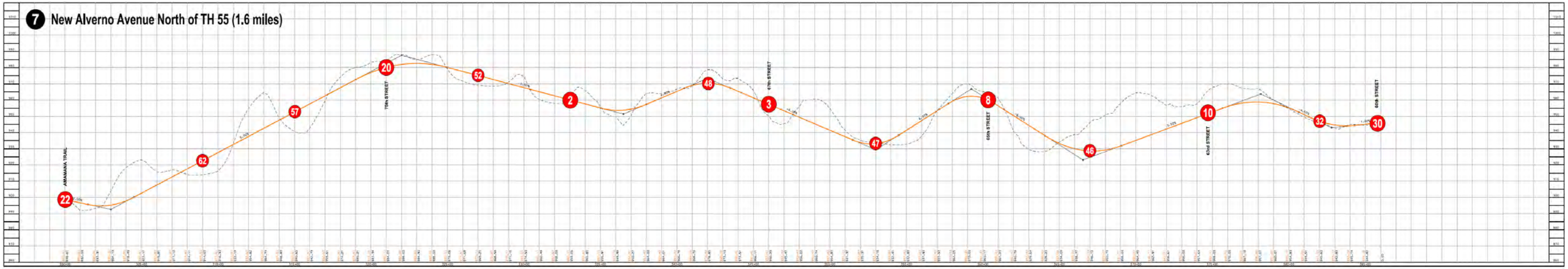


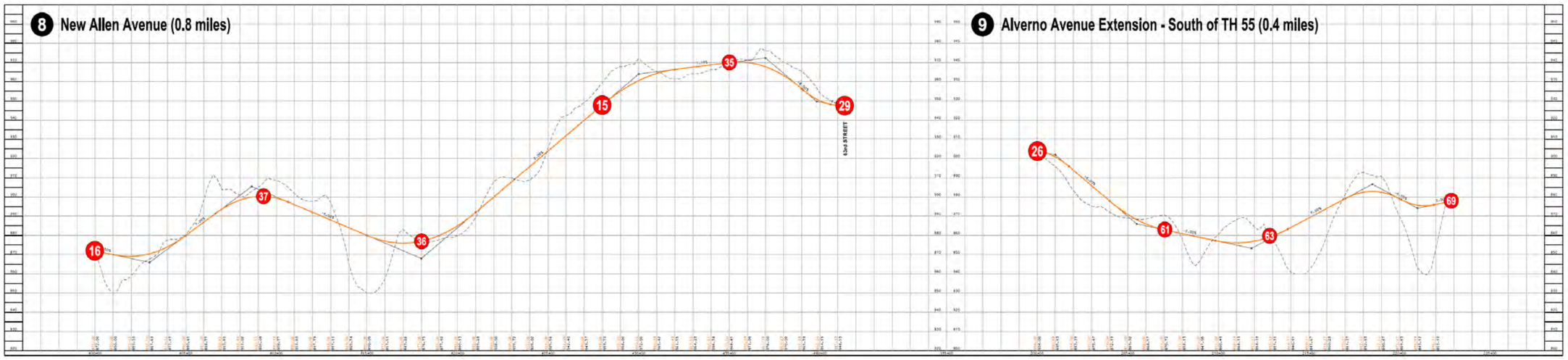
FIGURE 5-3. Vertical Alignments for Roadways: 1-6

NORTHWEST EXPANSION AREA COLLECTOR STREET SYSTEM STUDY

N

WSB & Associates, Inc.





New Roadways

- Arterial
- Community Collector
- Neighborhood Collector

Access Points

- XX Major - Full Movement
- XX Minor - Full Movement
- XX Major - Partial Movement
- XX Minor - Partial Movement

Map Legend

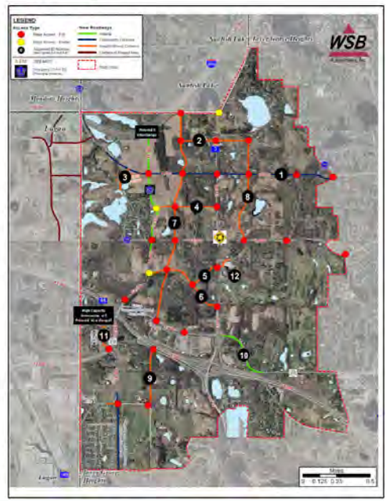


FIGURE 5-4. Vertical Alignments for Roadways: 7-12

NORTHWEST EXPANSION AREA COLLECTOR STREET SYSTEM STUDY

N

WSB & Associates, Inc.

Collector Street Segments Characteristics

In the development of the alignments a maximum allowable grade of 8 percent was used. In the description of the alignments provided below, the location of grades of 8 percent is noted. It should be noted that upon more detailed design, it may be advantageous to bridge certain roadway segments where grade changes are extreme. This would be determined in preliminary engineering.

Identified for each roadway segment (numbered 1 through 12, refer to Figure 5-1) is the location and type of access provided. It should be noted that conceptual alignments were developed for segments 1, 3, 10, and 11 in previous study efforts.[4] In this study, the alignments for these segments were developed in more detail including potential access locations.[5]

For access types, four types were used. These include:

- Major Access - Full Movement: intersection between Collector and higher classification roadways where all turning movements are allowed.
- Major Access - Partial Movement: intersection between Collector or higher classification roadways where access is limited to right-in/out or a three-quarter intersection (i.e., left turn allowed in but not out)
- Minor Access - Full Movement: intersection between a Collector or higher classification roadway with a local (i.e., neighborhood access) roadway
- Minor Access - Partial Movement: intersection between a Collector or higher classification roadway with a local (i.e., neighborhood access) roadway where access is limited to right-in/out or a three-quarter intersection (i.e., left turn allowed in but not out)

Provided in this section are the general characteristics for each of the Collector roadways developed for the NWA. Estimated construction costs that represent moderate grading were also generated for comparative purposes. The estimated project construction cost for one mile of a two-lane collector roadway was assumed to be $1.5 to $2.0 million per mile and for a three-lane section, $2.0 to $2.5 million per mile. Right-of-way cost is not included.

The estimated costs do not include bridges. However, it is recognized that in some cases where grade changes may make cut/fill construction cost prohibitive or result in significant challenges, it may be necessary to develop other options such as the use of bridges to cross low points in the topography. These decisions will be made upon more detailed engineering required prior to construction. Also, multi-use trails are not specified in the description of the roadway segments. While it is expected that the roadways will have a trail element, the number of trails will be determined with additional design as the roadway system is built. While the determination of the trail element by roadway segment is not identified, the costs per mile do assume the construction of one multi-use trail parallel to the roadway.

Also identified in the description of the roadway segments are potential Right-of-Way (ROW) issues with respect to existing structures. It must be emphasized that this is a generalized description to

[4] Roadways numbered 1, 3, 10, and 11 as well as the roadways in Eagan were conceptually identified in the Regional Roadway Visioning Study – Northwest Egan/Northwest Inver Grove Heights Study (2010).

[5] Roadway Segment No. 10 represents the realignment of CR 28 being developed by Dakota County. This project is still in the planning stages and as such access locations and other characteristics have not yet been determined.

acknowledge potential ROW impacts. Actual ROW impacts will not be known until additional design and coordination with the property owners has occurred as part of the project development process.

1. **65th Street from Argenta Trail to Babcock Trail**

   Typical Section: 3-lane (w/ center-turn lane)
   Length: 1.8 Miles
   Estimated Preliminary Construction Cost (2012$): $3.6 to $4.5 million

   Access Points:
   - Major Full Movement: 6
   - Major Partial Movement: 0
   - Minor Full Movement: 1
   - Minor Partial Movement: 5

   Maximum Grade: 8 percent, two locations (*see note below*)
   1) east of Robert Trail South,
   2) west of Babcock Trail

   NOTE: It may be desirable to build a bridge structure in two locations (refer to Figure 5-3) rather than to cut/fill to allow for a manageable road grade. This determination will be made as the project advances and with more detailed engineering.

   Potential ROW Issues (impact to structures):
   East of South Robert Trail there may be an impact to at least one structure along this alignment.

2. **63rd Street from new Alverno Avenue to new Allen Way**

   Length: 0.55 Miles
   Typical Section: 2-lane
   Estimated Preliminary Construction Cost (2012$): $825,000 to $1.1 million

   Access Points:
   - Major Full Movement: 3
   - Major Partial Movement: 0
   - Minor Full Movement: 2
   - Minor Partial Movement: 0

   Maximum Roadway Grade: 5 percent

   Potential ROW Issues (impact to structures):
   No structures appear to be impacted by the roadway alignment.

3. **Old Argenta Trail Connection to 65th Street**

Length: 0.2 Miles
Typical Section: 2-lane
Estimated Preliminary Construction Cost (2012$): $300,000 to $400,000

Access Points:

Major Full Movement: 0
Major Partial Movement: 2
Minor Full Movement: 0
Minor Partial Movement: 0

Maximum Roadway Grade: 5.34 percent

Potential ROW Issues (impact to structures):
No structures appear to be impacted by the roadway alignment.

NOTE: An alternative alignment was considered for connecting Old Argenta Trail with 65th Street. This alignment entails 65th Street extending directly west and connecting to existing (old) Argenta Trail via a T-Intersection. This is shown on Figure 5-2. The exact alignment of the Old Argenta Trail connection to 65th Street will be determined upon more detailed engineering required prior to construction.

4. **67th Street from realigned Argenta Trail (CSAH 63) to S. Robert Trail (TH-3)**

Length: 0.45 Miles
Typical Section: 2-lane
Estimated Preliminary Construction Cost (2012$): $675,000 to $900,000

Access Points:

Major Full Movement: 2
Major Partial Movement: 1
Minor Full Movement: 1
Minor Partial Movement: 0

Maximum Roadway Grade: 8 percent, west of South Robert Trail (TH-3)

Potential ROW Issues (impact to structures):
No structures appear to be impacted by the roadway alignment.

5. **New Allen Way from new 75th Street to S. Robert Trail (TH-3)**

Length: 0.20 Miles
Typical Section: 2-lane
Estimated Preliminary Construction Cost (2012$): $300,000 to $400,000

Access Points:

Major Full Movement: 2
Major Partial Movement: 0
Minor Full Movement: 1
Minor Partial Movement: 0

Maximum Roadway Grade: 8 percent, west of South Robert Trail (TH-3)

Potential ROW Issues (impact to structures):
There may be an impact to at least one structure along this alignment.

6. **75th Street from Argenta Trail (CSAH 63) to S. Robert Trail (TH-3)**

Length: 0.6 Miles
Typical Section: 2-lane
Estimated Preliminary Construction Cost (2012$): $900,000 to $1.2 million

Access Points:

Major Full Movement: 3
Major Partial Movement: 1
Minor Full Movement: 1
Minor Partial Movement: 0

Maximum Roadway Grade: 8 percent, west of South Robert Trail (TH-3)

Potential ROW Issues (impact to structures):
There may be an impact to at least one structure along this alignment.

7. **New Alverno Avenue (N of TH 55) from Amana Trail to 60th Street West**

Length: 1.6 Miles
Typical Section: 2-lane
Estimated Preliminary Construction Cost (2012$): $2.4 to $3.2 million

Access Points:

Major Full Movement: 7
Major Partial Movement: 0
Minor Full Movement: 7
Minor Partial Movement: 0

Maximum Roadway Grade: 6 percent

Potential ROW Issues (impact to structures):
North of 70th Street (CSAH 26) there may be an impact to at least one structure along this alignment.

8. **New Allen Avenue from 70th Street (CSAH 26) to new 63rd Street**

Length: 0.8 Miles

Typical Section: 2-lane

Estimated Preliminary Construction Cost (2012$): $1.2 to $1.6 million

Access Points:

Major Full Movement: 3
Major Partial Movement: 0
Minor Full Movement: 3
Minor Partial Movement: 0

Maximum Roadway Grade: 8 percent, two locations

1) south of new 65th Street,
2) south of new 63rd Street

NOTE: It may be desirable to build a bridge structure in up to two separate locations (between access points 16 and 36 shown on Figure 5-4) rather than to cut/fill to allow for a manageable road grade. This determination will be made as the project advances and with more detailed engineering.

Potential ROW Issues (impact to structures):

There may be an impact to at least one structure along this alignment.

9. **Alverno Avenue Extension (S of TH-55) from 82nd Street to Courthouse Blvd.**

Length: 0.4 Miles

Typical Section: 2-lane

Estimated Preliminary Construction Cost (2012$): $600,000 to $800,000

Access Points:

Major Full Movement: 1
Major Partial Movement: 0
Minor Full Movement: 3
Minor Partial Movement: 0

Maximum Roadway Grade: 8 percent, south of TH-55 Frontage Road

NOTE: It may be desirable to build a bridge structure in up to three separate locations (between access points 63 and 69 shown on Figure 5-4) rather than to cut/fill to allow for a manageable road grade. This determination will be made as the project advances and with more detailed engineering.

Potential ROW Issues (impact to structures):

No structures appear to be impacted by the roadway alignment.

10. **New CR 28 (realignment) from S. Robert Trail (TH-3) to 80th Street (existing CR 28)**

NOTE: This a planned project by Dakota County which would entail the realignment of CR 28 east of South Robert Trail (TH-3). The preliminary horizontal and vertical alignment for this roadway was provided by Dakota County.

Length: 0.6 Miles
Typical Section: To be determined by Dakota County as the CR 28 project advances
Estimated Preliminary Construction Cost (2012$): To be determined by Dakota County as the CR 28 project advances

Access Points: To be finalized by Dakota County as the CR 28 project advances

Maximum Roadway Grade: 6 percent
The preliminary horizontal and vertical alignment for the new CR 28 connection from S. Robert Trail to 80th Street was provided by Dakota County and may be subject to change as the project progresses.

11. **77th Street realignment from Yankee Doodle Road (CR 28) to existing 77th Street**

Length: 0.2 Miles
Typical Section: 2-lane
Estimated Preliminary Construction Cost (2012$): $300,000 to $400,000

Access Points:
- Major Full Movement: 1
- Major Partial Movement: 0
- Minor Full Movement: 0
- Minor Partial Movement: 0

Maximum Roadway Grade: 8 percent, two locations

Potential ROW Issues (impact to structures):
There may be an impact to at least one structure along this alignment.

NOTE: This will be a new connection linking 77th Street with Argenta Trail/Yankee Doodle Road. The alignment was assumed in the Regional Roadway Visioning Study – Northwest Eagan/Northwest Inver Grove Heights, (2010). The exact realignment will be determined upon more detailed engineering required prior to construction.

12. **Allen Way realignment from S. Robert Trail (TH-3) to 70th Street (CSAH 28)**

Length: 0.1 Miles

Typical Section: 2-lane

Estimated Preliminary Construction Cost (2012$): $150,000 to $200,000

Access Points:

- Major Full Movement: 1
- Major Partial Movement: 0
- Minor Full Movement: 0
- Minor Partial Movement: 0

Maximum Roadway Grade: 1.28 percent

Potential ROW Issues (impact to structures):

No structures appear to be impacted by the roadway alignment.

5.1 Plan Summary

The primary objective of this study was to delineate a Collector street plan, including identifying approximate locations of access to adjacent land, which will assist the City and landowners when development occurs in the northwestern area of Inver Grove Heights. Through a design process that engaged the public at key intervals, a Collector street plan was developed to accomplish this objective. While it is recognized that additional design and associated engineering and environmental analysis will be needed prior to construction, this first step provides the City a plan to use in guiding future development in the area.

Bibliograpy:

1) Northwest Quadrant Study, 2001
Produced by: HKGi, Inc.
Produced for: City of Inver Grove Heights, MN

2) Inver Grove Heights Northwest Area Natural Resource Inventory and Management Plan, 2003
Produced by: Bonestroo, Rosene, Anderlik & Associates, Inc.
Produced for: City of Inver Grove Heights, MN

3) Northeast Eagan Land Use Study, 2005
Produced by: HKGi, Inc.
Produced for: City of Eagan, MN

4) Northwest Expansion Area Alternative Urban Areawide Review (AUAR), 2004, 2007
Produced by: Bonestroo, Rosene, Anderlik & Associates, Inc.
Produced for: City of Inver Grove Heights, MN

5) Northwest Area Hydrologic Study, 2007, 2010
Produced by: Emmons & Olivier Resources
Produced for: City of Inver Grove Heights, MN

6) Transportation Study for the Northeast Area of South Robert Trail/70th Street, 2006
Produced by: SRF Consulting Group, Inc.
Produced for: City of Inver Grove Heights, MN

7) Dakota County North – South Corridor Eagan – Inver Grove Heights Travel Demand Study, 2007
Produced by: SRF Consulting Group, Inc.
Produced for: Dakota County, City of Eagan, and City of Inver Grove Heights, MN

8) City of Eagan Comprehensive Plan Update, 2010
Produced by: HKGi, Inc.
Produced for: City of Eagan, MN

9) City of Inver Grove Heights 2030 Comprehensive Plan Update, 2010
Produced by: HKGi, Inc.
Produced for: City of Inver Grove Heights, MN

10) Regional Roadway System Visioning Study – Northeast Eagan/Northwest Inver Grove Heights, 2010
Produced by: SRF Consulting Group, Inc.
Produced for: Dakota County, Eagan, Inver Grove Heights, and MnDOT

APPENDICES:

A: Public Outreach – Letters, Open House Materials, Newsletters, Comments Summary
B: NWA Collector Street Plan – Developable Land Analysis
C: Horizontal and Vertical Layouts for Collector System

APPENDIX A: Public Outreach – Letters, Open House Materials, Newsletters, Comments Summary

October 29, 2010

Re: Inver Grove Heights NW Area Collector Roadway Study

Dear Resident/Property Owner:

The City of Inver Grove Heights has initiated a study to develop a network of collector roadways to serve the largely undeveloped northwestern part of the City. The City hired WSB & Associates, Inc. (WSB) to prepare the study on behalf of the City and its project partners of Mn/DOT, Dakota County, and Eagan. The study area is generally defined by I-494 on the north, Babcock Trail (CSAH 73) on the east, just beyond TH 55 on the south, and the Eagan/Inver Grove Heights border on the west. The plan produced by this study will be used to ensure that the public transportation system needs are met as part of the development review and approval process. The outcome of the study will be the development of horizontal and vertical roadway layouts as well as right-of-way requirements.

Over the next six months, which is the project's expected duration, we will be actively seeking your input to help us identify a preferred configuration of collector roadways to serve the area. A combination of open house meetings and direct meetings with property owners will be used to solicit this input. Provided with this letter is the first of three newsletters that will be generated for the project. This newsletter provides information on the intent of the study along with specific tasks that will be performed. In addition to the newsletters, we have also developed a project website, at www.ighnwareacollectorstreetstudy.com, that will be updated as the study progresses.

If you have any questions or comments, you can contact either one of us, or you can send a comment through the project website by selecting the "Public Comment" tab on the homepage. An open house is tentatively scheduled for late November. The time and location of the open house will be posted on the project website once the date has been established.

Sincerely,

City of Inver Grove Heights

Scott Thureen, PE
Public Works Director
651-450-2571
sthureen@ci.inver-grove-heights.mn.us

WSB & Associates, Inc.

Jack Forslund, PTP
Project Manager
763-287-8532
jforslund@wsbeng.com

OPEN HOUSE
NORTHWEST AREA COLLECTOR STREET STUDY

Thursday, March 10th 6:00 to 8:00 p.m.
Veterans Memorial Community Center
Community Room No. 2

You are cordially invited to attend the first Open House for the Northwest Area Collector Street Study. The City, along with its consultant WSB and Associates, Inc. would like to invite you to a Public Open House on March 10th to present a preliminary collector roadway alignment that the City is planning (long term) for the area.

Project Background
The City of Inver Grove Heights has been planning for future development in the Northwest Area since the City's Comprehensive Plan of 1998. Since then, a number of plans and studies have been undertaken to evaluate land use patterns, natural resources, and public infrastructure improvements. To date, transportation system planning has focused on the existing major arterial roadway system. In each of these planning efforts, the City has taken steps to make sure property owners and stakeholders in the Northwest Area are engaged at the onset of studies as well as continually informed throughout the process. To that end, the City is in the process of developing a plan for a local roadway network that will serve future development within the Northwest Area. When completed, this plan will help ensure development occurs in the Northwest Area in a coherent and connected manner. It will also provide the City and developers with a roadway system plan to guide future design efforts.

Public Meeting
As part of the study process, key members of the consultant team along with City staff will be on hand to discuss the project, answer any questions you may have, and learn about future development interests or transportation/roadway related concerns you may have for the area**.** ***A brief presentation will be given at approximately 6:30 to provide information on the project, its goals and objectives.***

For your information, we are providing as an attachment to this letter a preliminary layout of a collector roadway system for the area. Also, for more information on the project, please visit the project website: *www.ighnwareacollectorstreetstudy.com*.

Sincerely,

City of Inver Grove Heights

Scott Thureen, PE
Public Works Director
651-450-2571
sthureen@ci.inver-grove-heights.mn.us

WSB & Associates, Inc.

Jack Forslund, PTP
Project Manager
763-287-8532
jforslund@wsbeng.com

Northwest Area Collector Street Study

Frequently Asked Questions

The City of Inver Grove Heights, working together with its project partners of Mn/DOT, Dakota County, and Eagan has initiated a study to develop a network of collector roadways to serve the northwestern part of the City. This plan will be used to direct future development and ensure that the public transportation system needs are met as part of the development review and approvals. Provided below are answers to some frequently asked questions that we have received about the project.

- **How were these preliminary roadway alignments determined?**

  The roads indicated in blue represent alignments that were defined in earlier planning or development efforts, while the alignment of the roads in orange considered property impacts (minimize segmentation of property, tried to follow property lines), terrain/topography, access guidelines (I.e., full access on Dakota County roads allowed no closer than 1/4 mile from one another), while promoting connectivity and access to the area.

- **When is the I-494 interchange going in? How about the interchange at TH 55?**

  While neither the I-494 nor the TH 55 interchanges are currently funded projects, they are considered high priority projects for the City. It should be noted that the intent of this study is to focus on the collector roadway system, not the interstate or interchanges. However, it is recognized that the proposed interchanges will have an influence on the collector roadway network.

- **Why is CSAH 63 (Argenta Trail) being realigned? Why not put the interchange on the current Argenta Trail alignment?**

  The realigned CSAH 63 was identified in the Regional Roadway System Study completed by Dakota County in 2010. It was determined that by moving it eastward, it will provide a more direct north-south route between the new interchange at I-494 and TH 55. It should be noted that the interchange at I-494 still needs approval from the Federal Highway Administration (FHWA). The existing Argenta Trail will remain providing mostly residential access, with a cul-du-sac on its southern end near 70th Street.

- **When will this roadway system be constructed? Is there a timeline? What segments will be built first?**

  The build-out of the collector roadways system will take many years, likely to the year 2030. The construction of individual segments will be influenced by land development. This study will help developers and property owners understand the right-of-way requirement for the roadway alignments.

- **How set are the roadway alignments? Can they change after this study or will they be set in stone?**

  These are preliminary alignments that may certainly change in time. However, the intent is to develop an alignment that property owners and the City will be able to refer to for planning purposes.

- **How do I keep involved in the study and what are the next steps?**

  We will post new information to the website for you to view/download. Also posted on the website is contact information for project personnel. The next steps in the study are to refine the alignments based on your comments and to conduct a public meeting, tentatively scheduled for early March. If you ever have any questions or comments feel free to contact Jack Forslund at 763-287-8532 or by email at jforslund@wsbeng.com.

Project Website:

www.ighnwareacollectorstreetstudy.com

City of Inver Grove Heights

Northwest Expansion Area Collector Street System Study

Public Open House

March 10, 2011

6:00 PM to 8:00 PM

City of Inver Grove Heights

Minnesota Department of Transportation

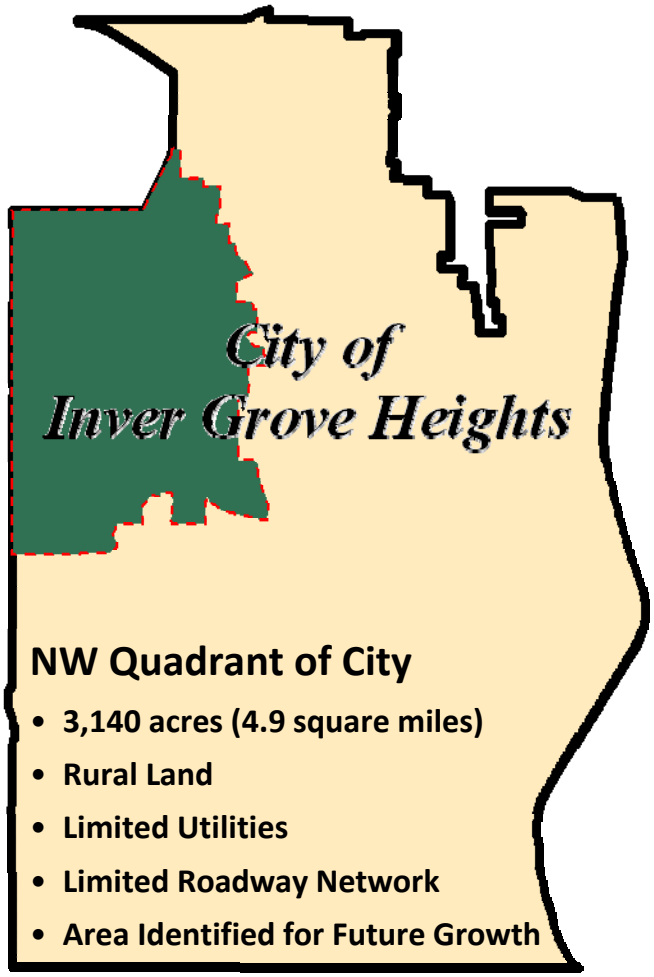
Dakota County

City of Eagan

WSB & Associates, Inc.

Purpose of Open House

- **Information Exchange**
  - Provide information to the public
  - Obtain information from the public
- **Collector Roadway System**
  - Base Concept Alignments
    - Taken from previous studies
  - Preliminary Alignments
    - Access locations
    - Property impacts
    - Horizontal & vertical design constraints
- **Study Information**
  - Website
    - Layouts
    - Newsletters
    - Frequently Asked Questions (FAQ's)
    - Previous Study Documents



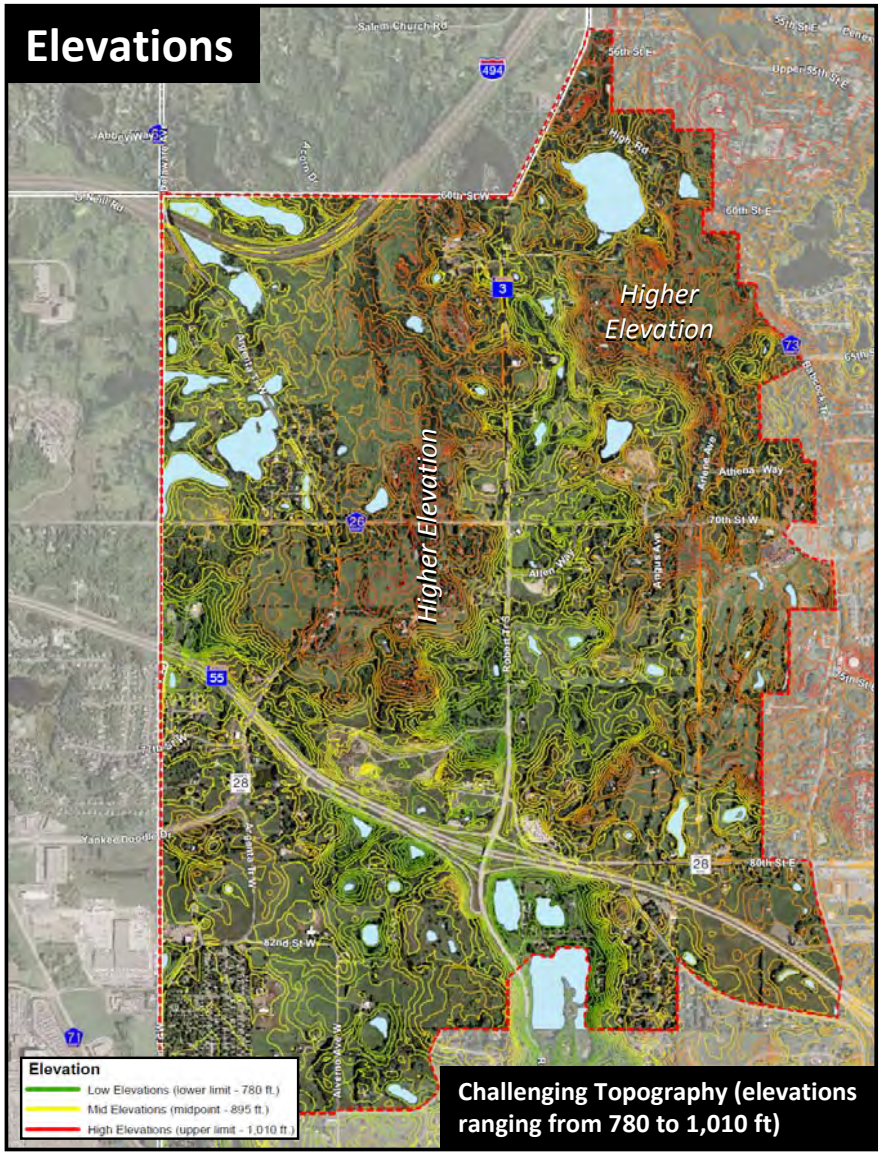
Study Partners

City of Inver Grove Heights

City of Eagan

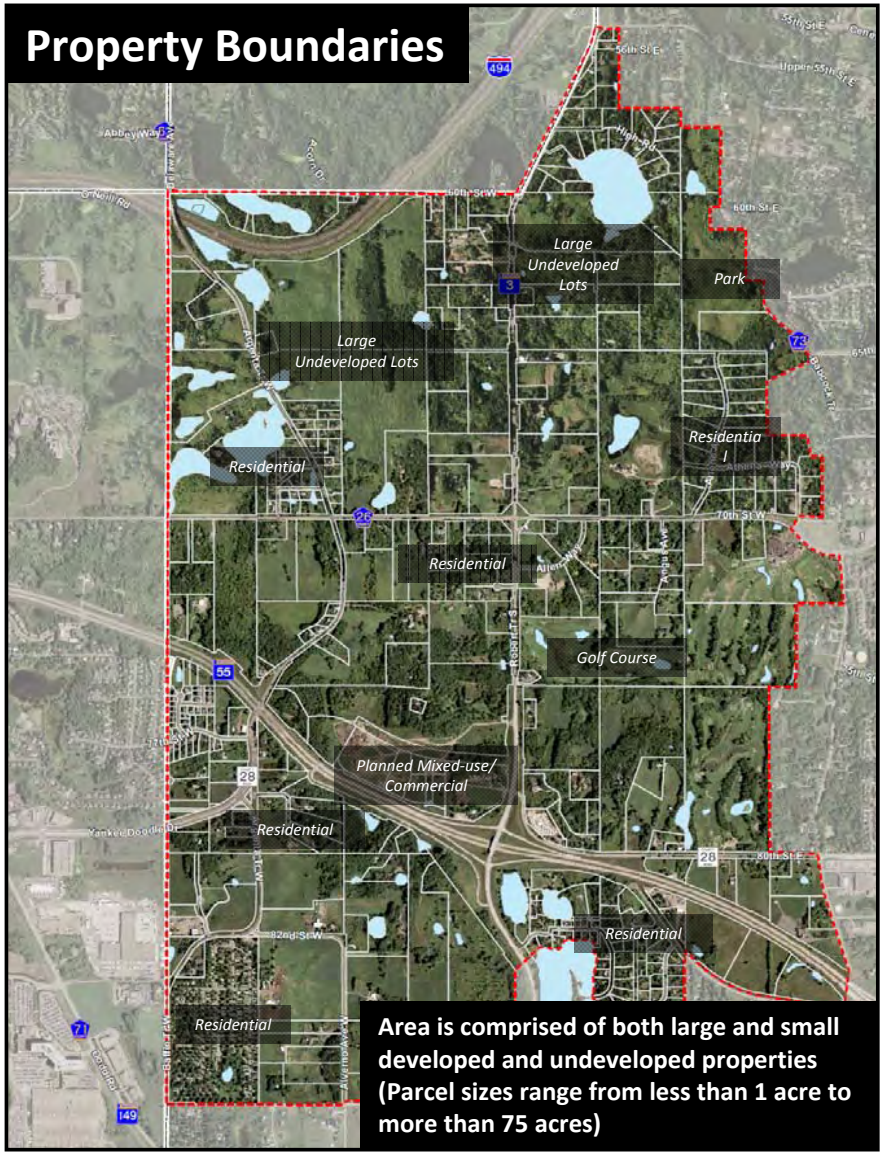
Elevation and Property Boundaries

Elevations



Challenging Topography (elevations ranging from 780 to 1,010 ft)

Property Boundaries

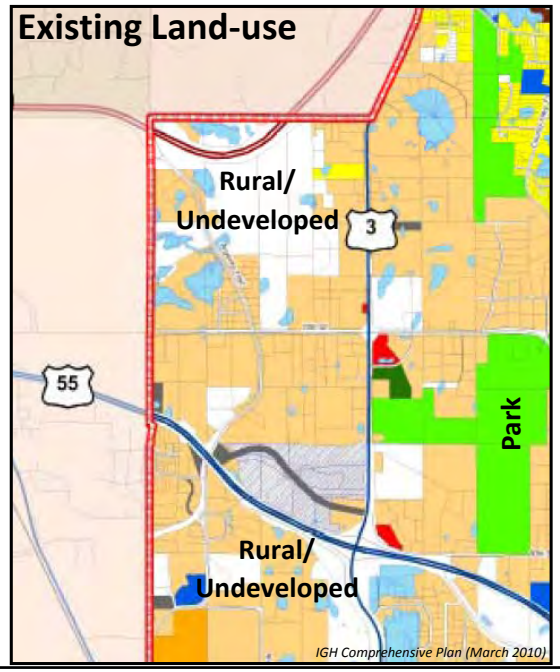


Area is comprised of both large and small developed and undeveloped properties (Parcel sizes range from less than 1 acre to more than 75 acres)

Existing and Future Conditions

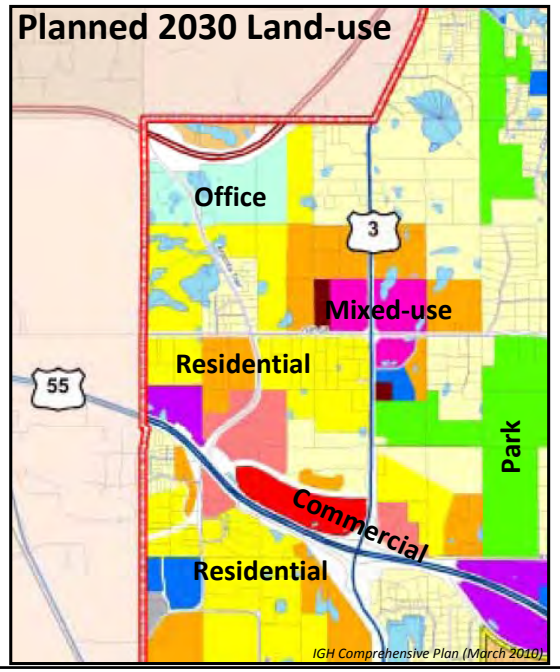
Existing

- Largely rural undeveloped area with a population of approximately 1,000
- Congestion is largely non-existent on roadway system
- One of the largest areas of undeveloped land near the I-494/694 ring
- Majority of area without City water and sewer (City has extended utilities into the area and has long-term plans to complete the utility expansion)
- Area lacks a collector roadway system needed to accommodate future development



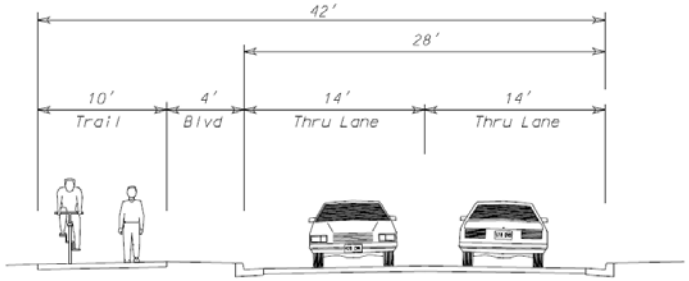
Future

- Potential new interchanges at I-494 and TH 55 to serve the area
- Majority of the area will have City sewer and water
- Area projected to add over 10,000 residents and 3,000 jobs
- Roadway Improvements
  - 70th Street (CSAH 26) will need to be expanded to 4-lanes
  - South Robert Trail (TH 3) will need to be expanded to 4-lanes
  - A realigned and expanded Argenta Trail (CSAH 63)
  - A collector roadway system will be in place
- Land-use changes from rural to a mixture of commercial, office, and residential

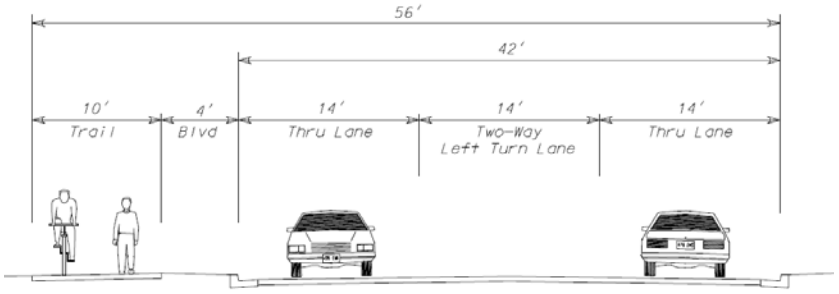


Collector Roadway System

- **Study Goal**
  - Establish a long-term plan for a Collector roadway system that promotes east-west and north-south connectivity and is sensitive to the natural (topography) and built (property owners) environment. A Collector roadway provides a connection between Local or neighborhood roads (e.g., Arlene Avenue) and Arterial roadways (e.g., South Robert Trail).
- Collector network built around a base roadway system developed in recent studies including the Regional Roadway System Visioning Study (2010)
- Collector Roadway Characteristics:
  - Maximum traffic level
    - 11,000 vehicles/day
  - Number of lanes
    - 2 with turn lanes or 3-lane (center turn-lane)
  - Design Speed
    - 35 to 45 mph
  - Roadway Grade
    - Provide appropriate balance between travel speed, sight distance, aesthetics, and environmental impacts
  - Intersection Spacing
    - Full access at ½ (Principal Arterial) or ¼ mile intervals with partial access provided between these points



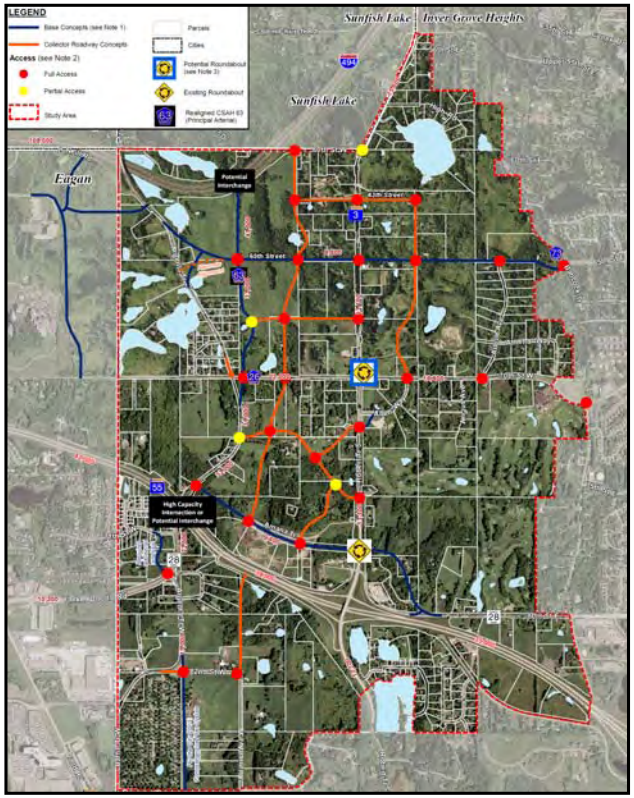
2-Lane Section
(up to 11,000 vpd*)



3-Lane Section
(up to 17,000 vpd*)

Preliminary Alignments

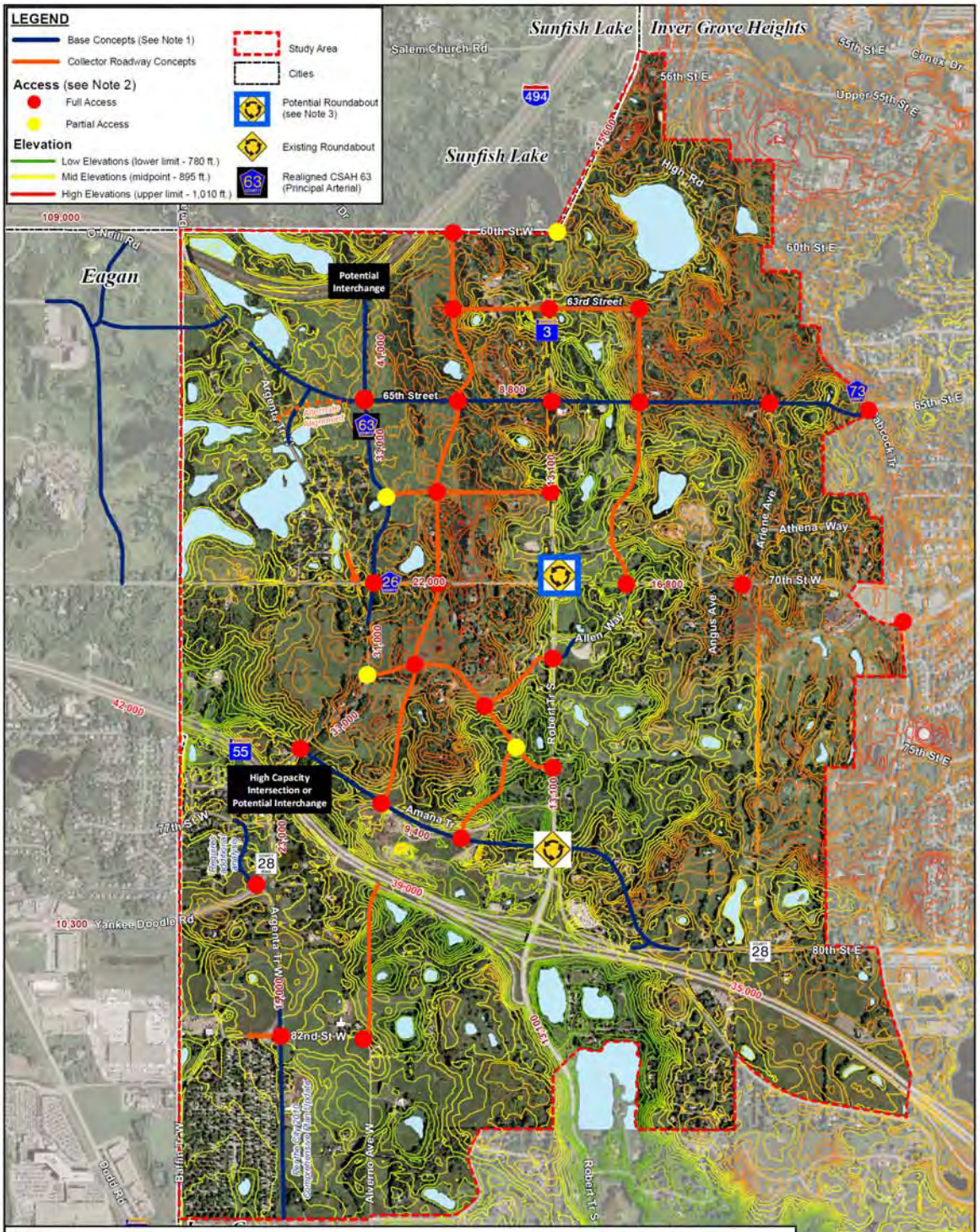
- Base Network
  - Alignments identified from previous planning efforts
- Design Considerations/Constraints
  - Property Impacts
    - Access
    - Development
    - Traffic Circulation
    - Minimize segmentation of properties
    - Land Use
  - Topography
  - Intersection Spacing
  - Utilities
  - Natural Environment



Iterative Process

- Iteration 1 (completed)
  - Identity Access Spacing Criteria
    - Develop Network of Connection Points
    - Study Team Review
- Iteration 2 (current step)
  - Revise Network
    - Public and Study Team Review
    - Property Owner / Stakeholder Input
    - Review Planned Developments
    - Consider Aesthetic Treatments
- Iteration 3 (next step)
  - Revise horizontal alignments based on Public Comment
  - Prepare vertical alignments for Collector Roadway System
  - Establish Aesthetic Treatments

Study Area Topography



NOTES:

1. Base roadway concepts (blue lines) and 2030 daily traffic forecasts were derived from the Regional Roadway System Visioning Study (2010), the 2010 IGH Comprehensive Plan Update, and from the Dakota County North-South Corridor Eagan-Inver Grove Heights Travel Demand Study (2007). The alignments as determined in these studies are preliminary in nature and will require additional analysis. Specifically, the western connection of 65th Street at existing Argenta Trail as well as other areas as identified on the figure. The potential improvements at I-494 (interchange) and TH 55 (high capacity intersection or long-term interchange) will also require additional analysis to determine feasibility.

2. The access locations depicted on the figure are preliminary and will require further coordination between the City, County, and State. The intent of this study is to identify a collector roadway system. As part of this process it is necessary to identify approximate access locations that intersect the arterial roadway system. In general, roadway access locations were derived from previous study efforts as well as the application of access spacing guidelines per roadway jurisdiction. The realigned CSAH 63 (Argenta Trail) would be classified as a Principal Arterial with full access intersections spaced at one-half mile apart. For all other roadway, the objective was to provide full access locations a minimum of one-quarter mile apart, and partial access intersections a minimum of 1/8th mile apart.

3. A final determination has not been made on this potential improvement (roundabout).

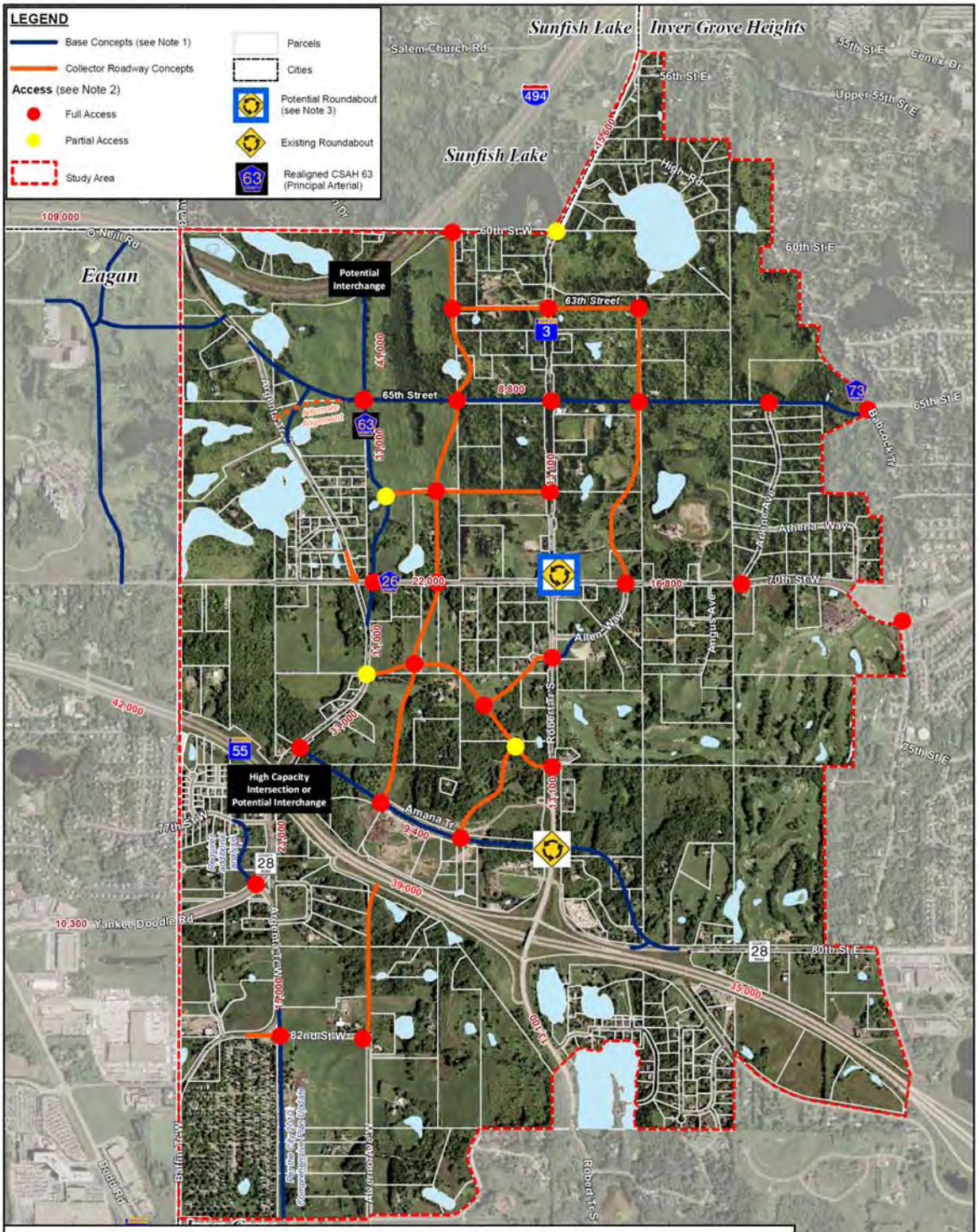
WSB & Associates, Inc.

N

Miles
0 0.125 0.25 0.5

Preliminary Collector Roadway Alignments and Access
Study Area Topography

Property Lines Base Map



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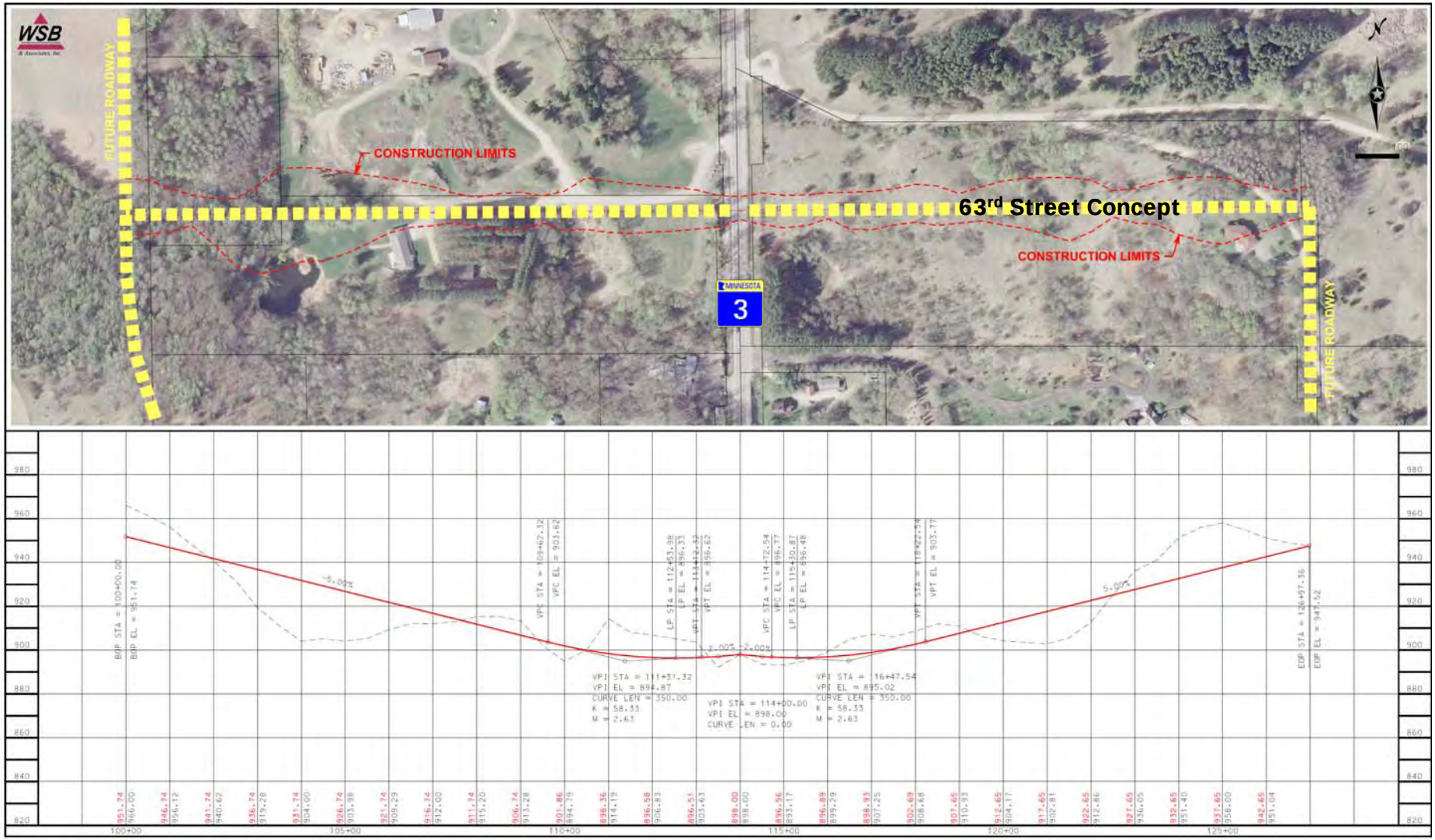
Miles

0 0.125 0.25 0.5

Preliminary Collector Roadway Alignments and Access

Property Lines Base Map

Preliminary Vertical Alignment



Preliminary Collector Roadway - 63rd Street
City of Inver Grove Heights, Minnesota

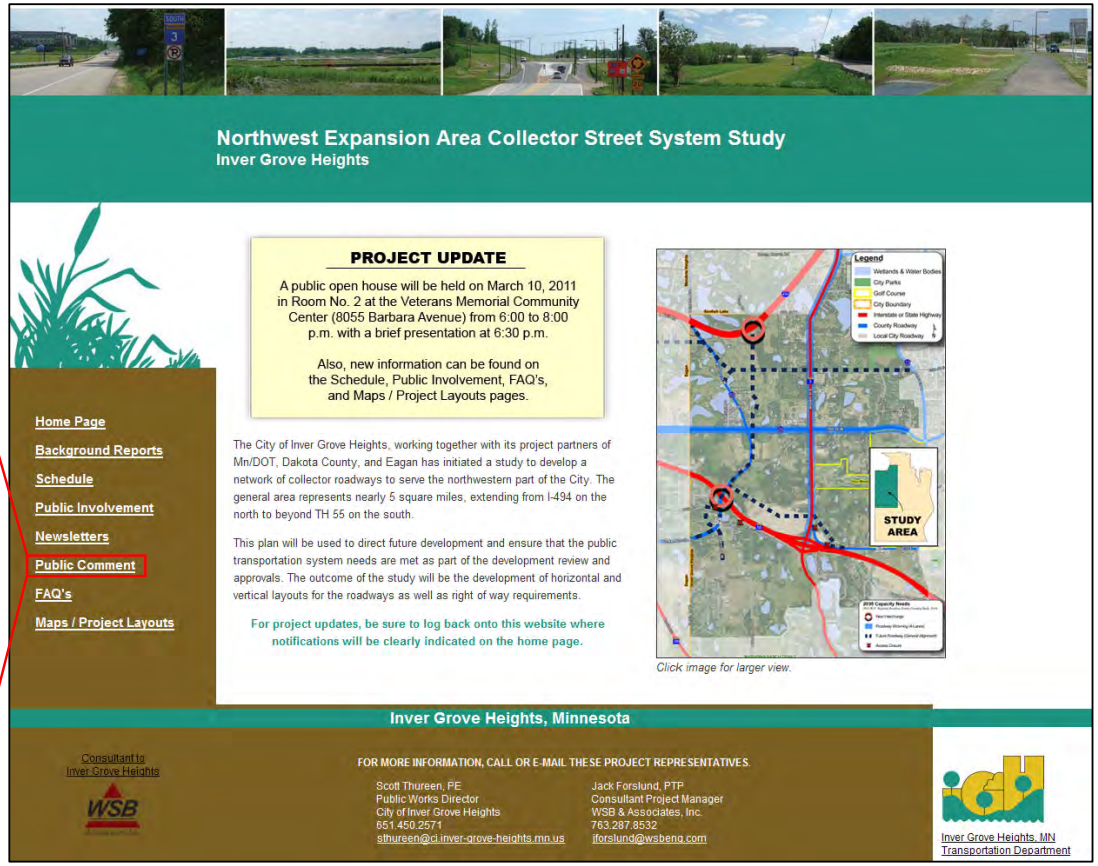
Study Website and Feedback

PLEASE TAKE A STUDY BUSINESS CARD FOR WEBSITE & CONTACT INFORMATION

Newsletters

On-line Comments

Website



Next Steps

- Complete Design Iterations 2 and 3
- Update Website Information
  - Maps / Project Layouts, Newsletters, other materials
- Schedule Next Open House
- Produce Study Report

STUDY WEBSITE: *www.ighnwareacollectorstreetstudy.com*

Inver Grove Heights NW Area Collector Street Study

Presentation

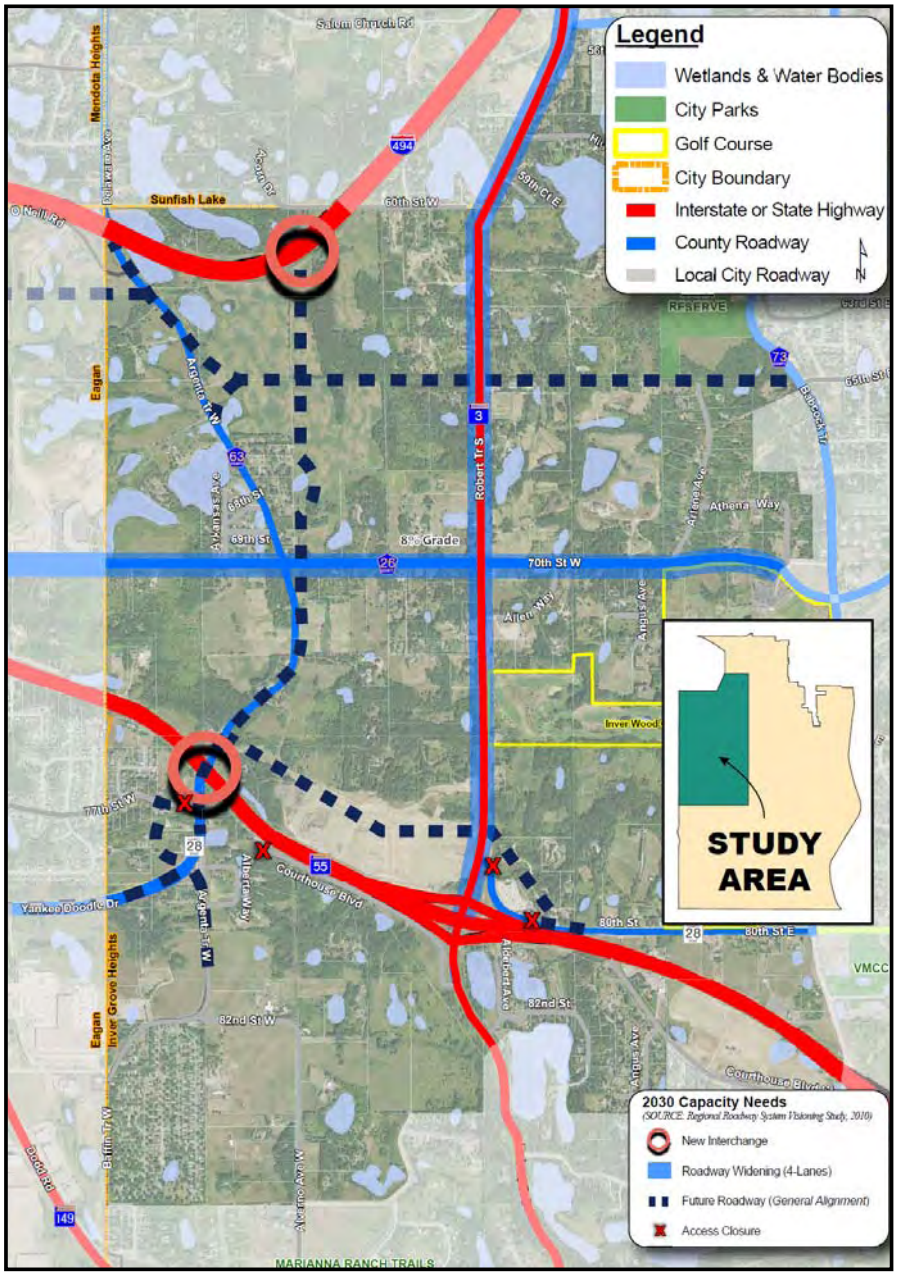
6:30 pm

March 10, 2011

WSB & Associates, Inc.

Presentation Agenda

- Study Introduction
- Purpose of Open House
  - Invitation letters sent to nearly 400 residents/property owners
- Study Area Overview
- Key Study Tasks
  - Review of Previous Studies
  - Existing Conditions
  - Future Conditions - 2030
  - Collector Roadway System
    - Goal
    - Characteristics / Guidelines
    - Development of Alignments
  - Public Involvement
  - Next Steps



Purpose of Open House

- Information Exchange
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    - Access locations
    - Property impacts
    - Horizontal & vertical design constraints
- Study Information
  - Website
    - Layouts
    - Newsletters
    - Frequently asked Questions (FAQ's)
    - Previous Study documents

WSB & Associates, Inc.

Overview

Study Partners

City of Inver Grove Heights

City of Eagan

Study Area

NW Quadrant of City

- Rural Land
- Limited Utilities
- Limited Roadway Network
- Area Identified for Future Growth

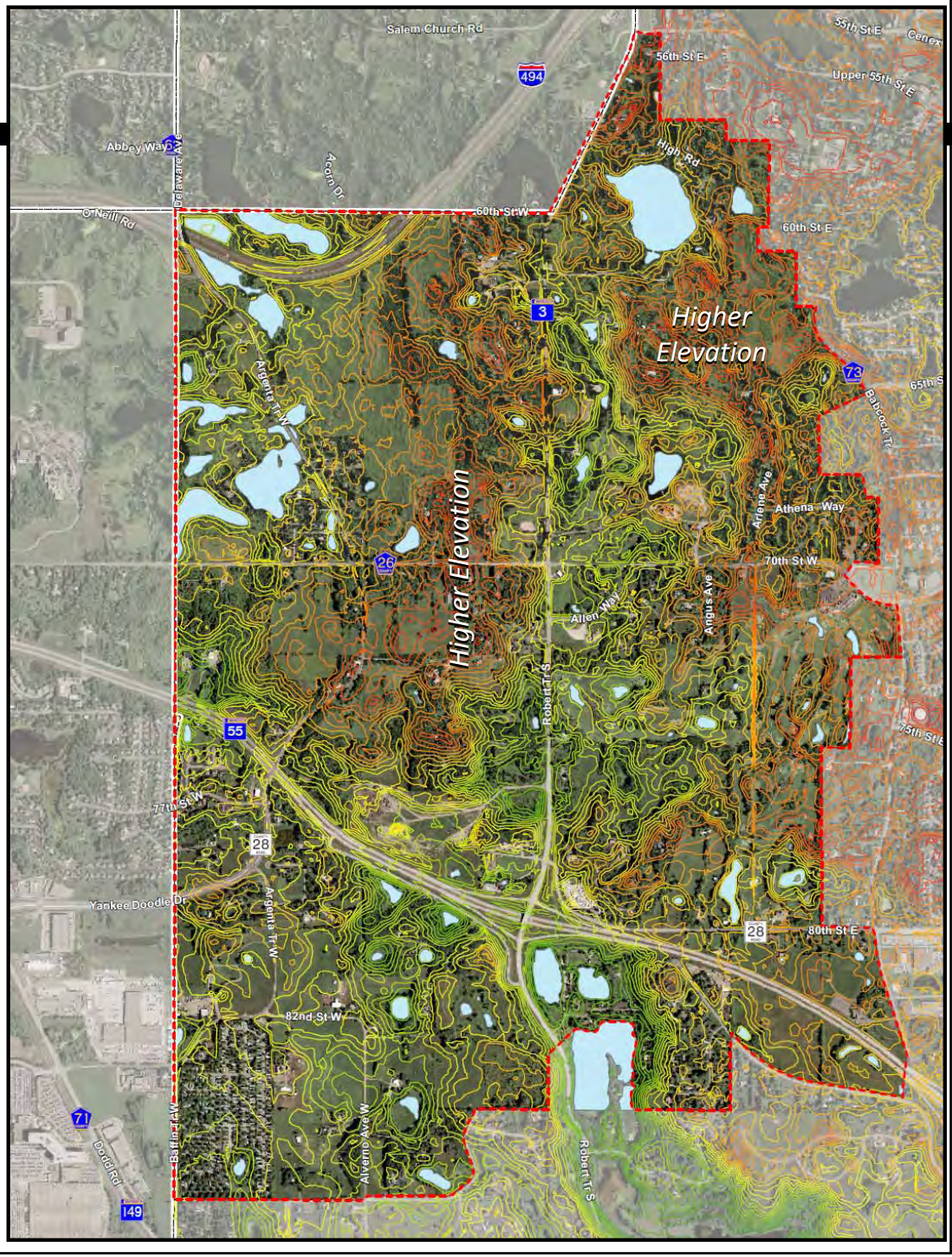
Elevations

- Challenging Topography

  (elevations ranging from 780 to 1,010 ft)

Elevation

- Low Elevations (lower limit - 780 ft.)
- Mid Elevations (midpoint - 895 ft.)
- High Elevations (upper limit - 1,010 ft.)



Property Lines

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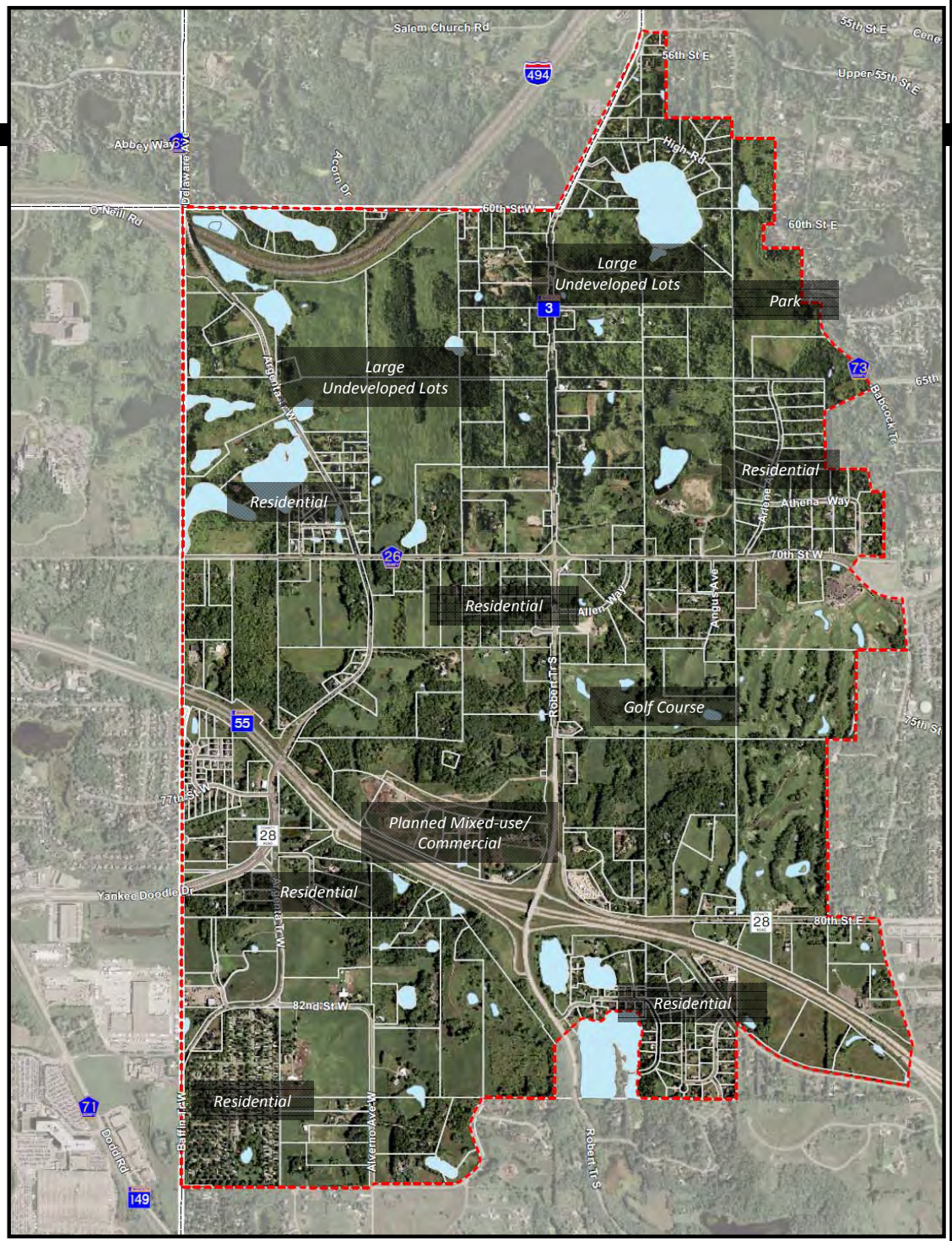

Previous Studies

- City of Inver Grove Comprehensive Plan, 2010
- Regional Roadway Visioning Study – NE Eagan/NW Inver Grove Heights
- Dakota County North-South Corridor Travel Demand Study, 2007
- City of Eagan 2008 Comprehensive Plan Update
- Northeast Eagan Land Use Study, 2006
- Northwest Expansion Area AUAR (2006), and
- Other Pertinent Studies/Information from the past ten years

WSB & Associates, Inc.

Existing Conditions

- Largely rural undeveloped area with a population of approximately 1,000
- Congestion is largely non-existent on roadway system
- One of the largest areas of undeveloped land near the I-494/694 ring
- Majority of area without City water and sewer (City has extended utilities into the area and has long-term plans to complete the utility expansion)
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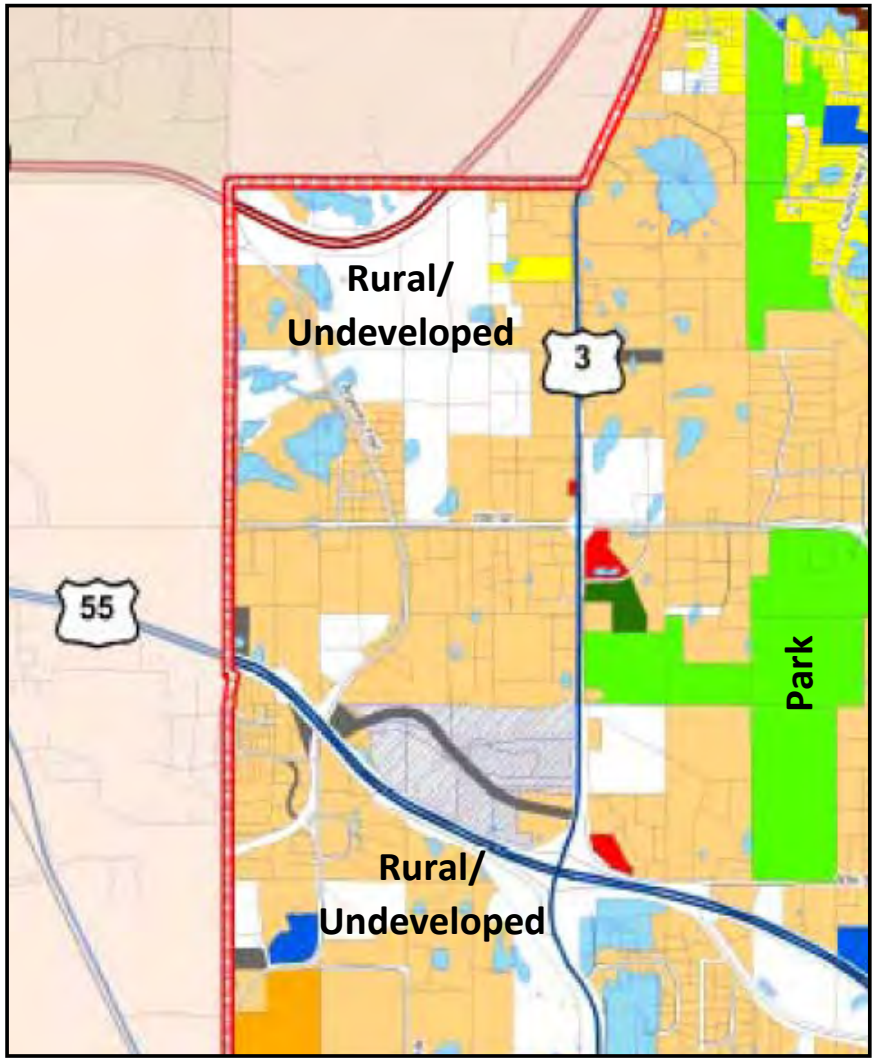
Existing Land-use



IGH Comprehensive Plan (March 2010)

WSB & Associates, Inc.

Future Conditions - 2030

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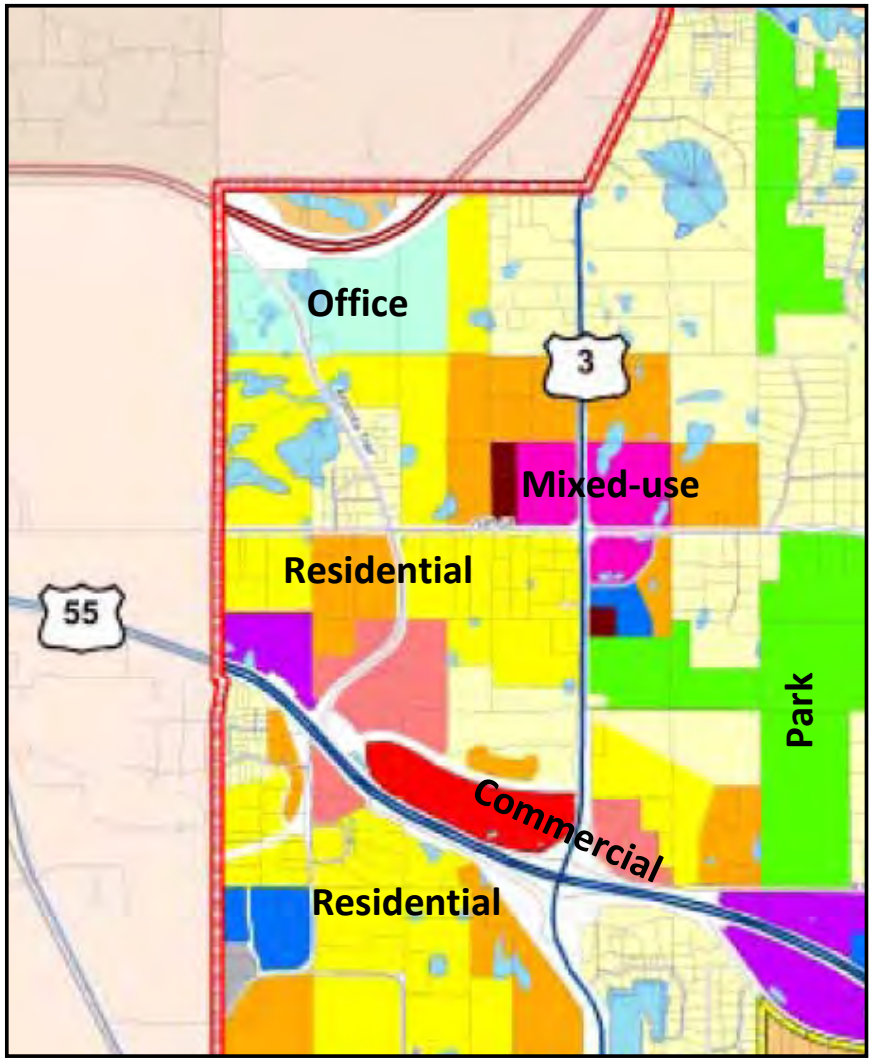
- Land-use changes from rural to a mixture of commercial, office, and residential

Planned 2030 Land-use

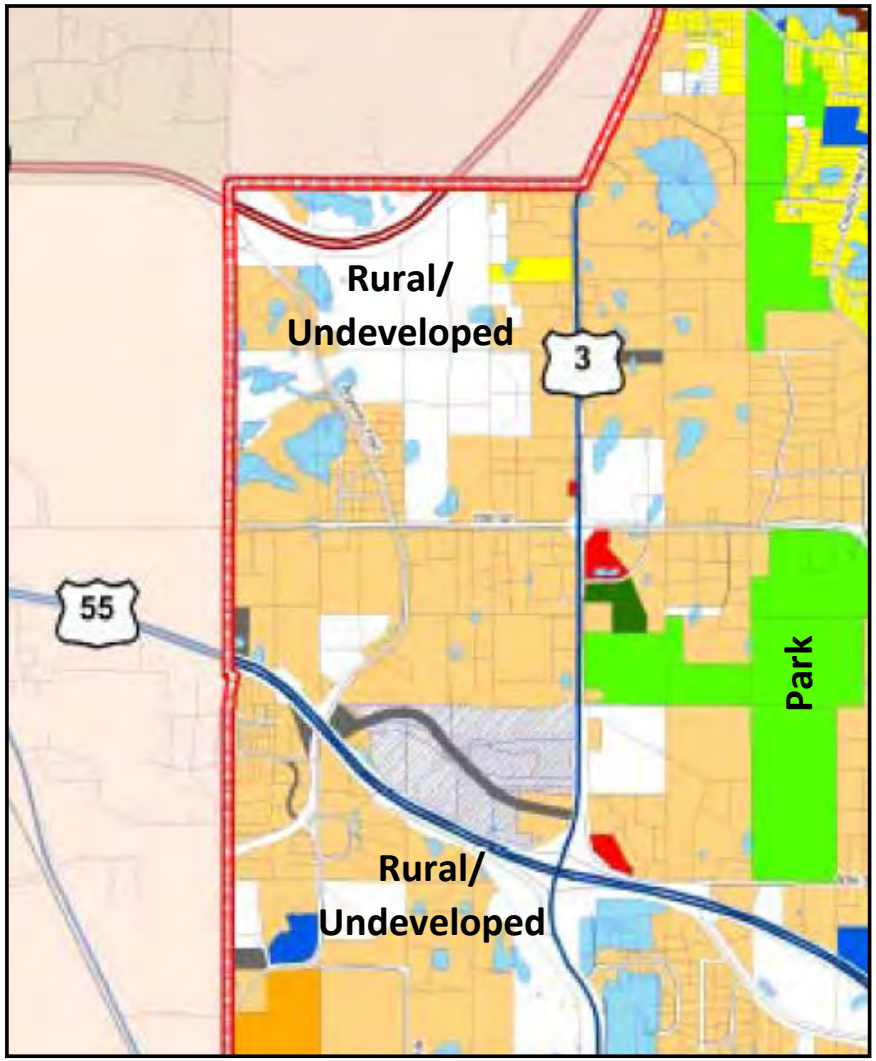


IGH Comprehensive Plan (March 2010)

WSB & Associates, Inc.

Land-use Comparison

Existing Land-use



IGH Comprehensive Plan (March 2010)

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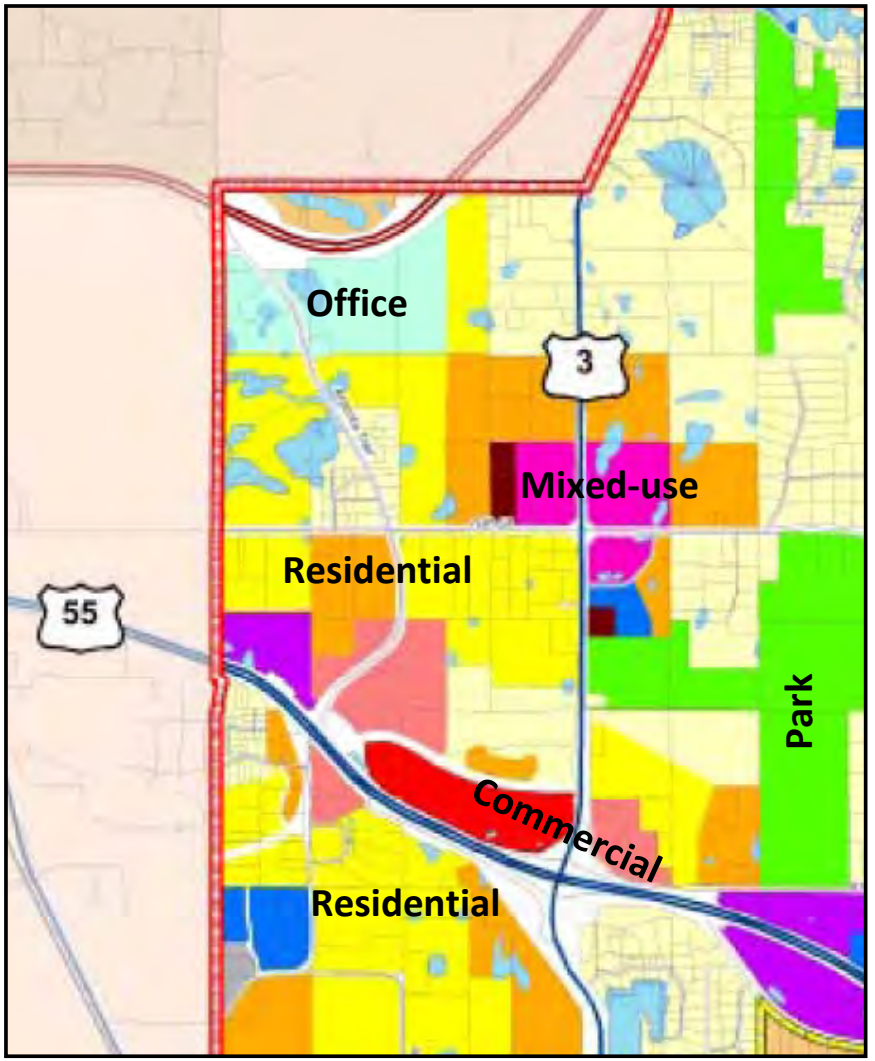

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WSB & Associates, Inc.

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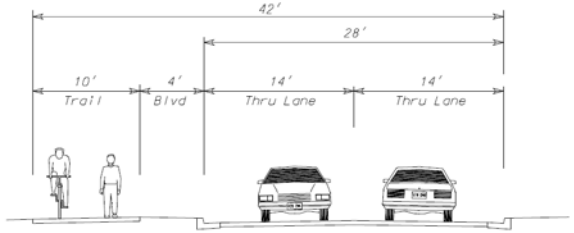
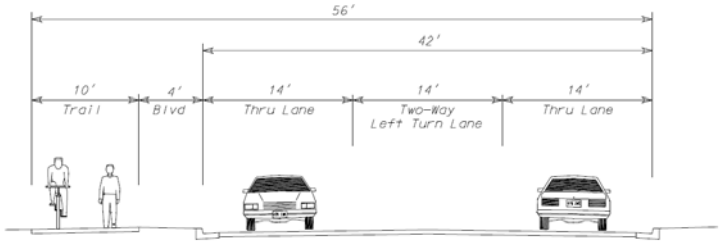


2-Lane Section
(up to 11,000 vpd*)



3-Lane Section
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WSB & Associates, Inc.

Alignment Guidelines

- Base Network
  - Alignments identified from previous planning efforts – Preliminary Alignment Concepts
- Design Considerations/Constraints
  - Property Impacts
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    - Development
    - Traffic Circulation
    - Minimize segmentation of properties
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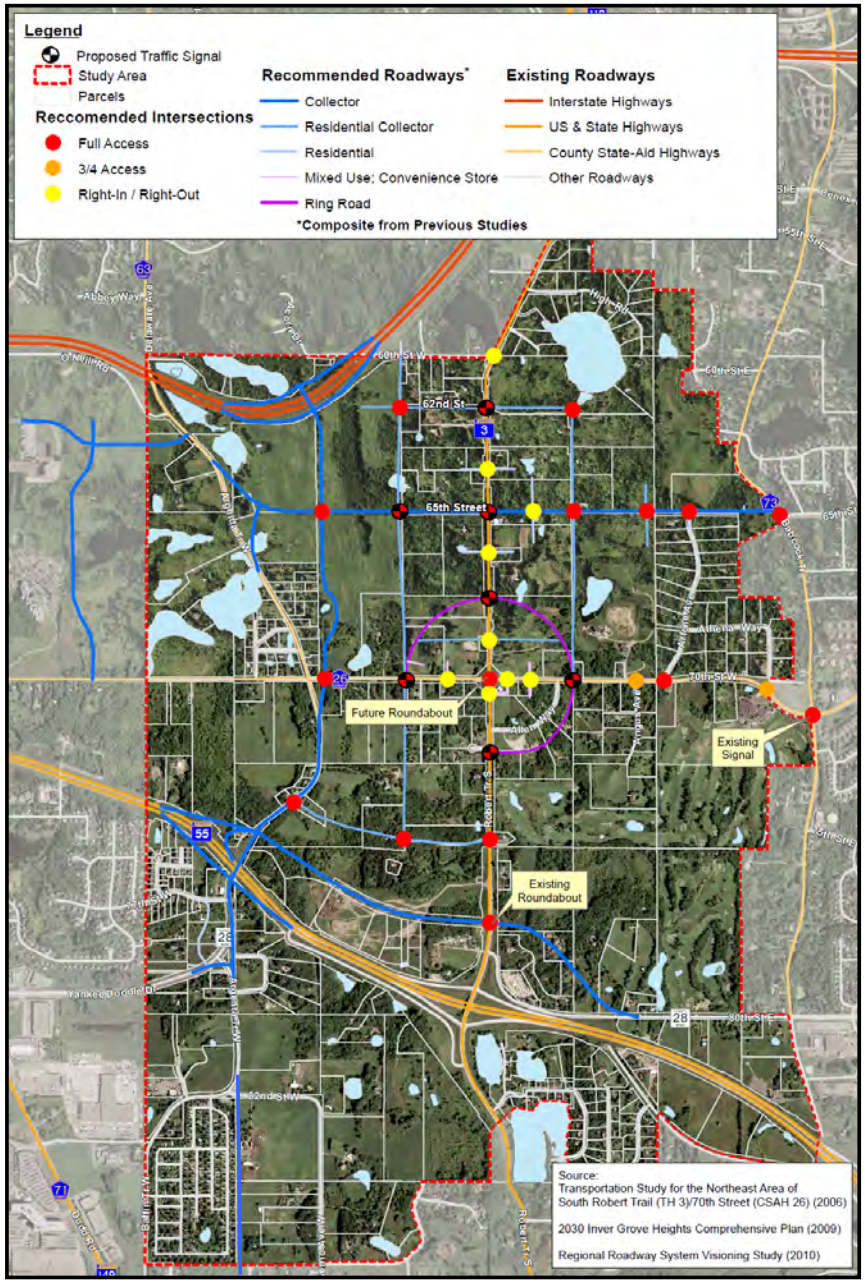

Development of Alignments

Iterative Process

- Iteration 1 (completed)
  - Identity Access Spacing Criteria
    - Develop Network of Connection Points
    - Study Team Review
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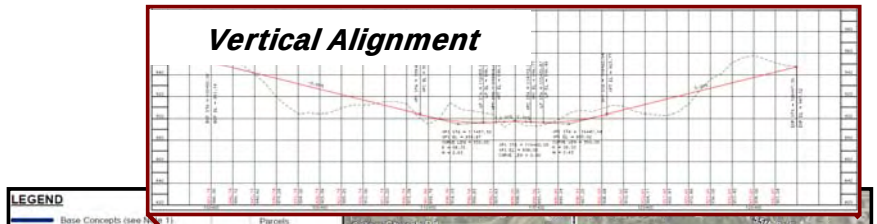
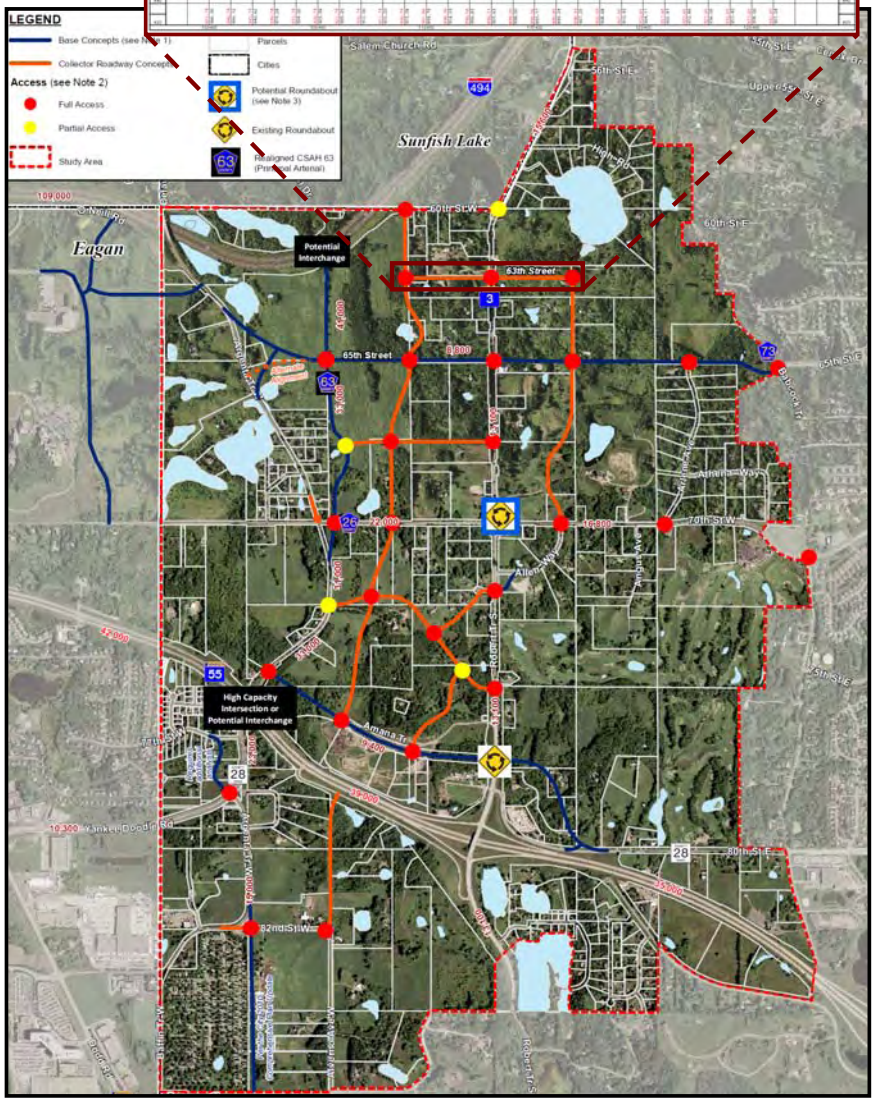
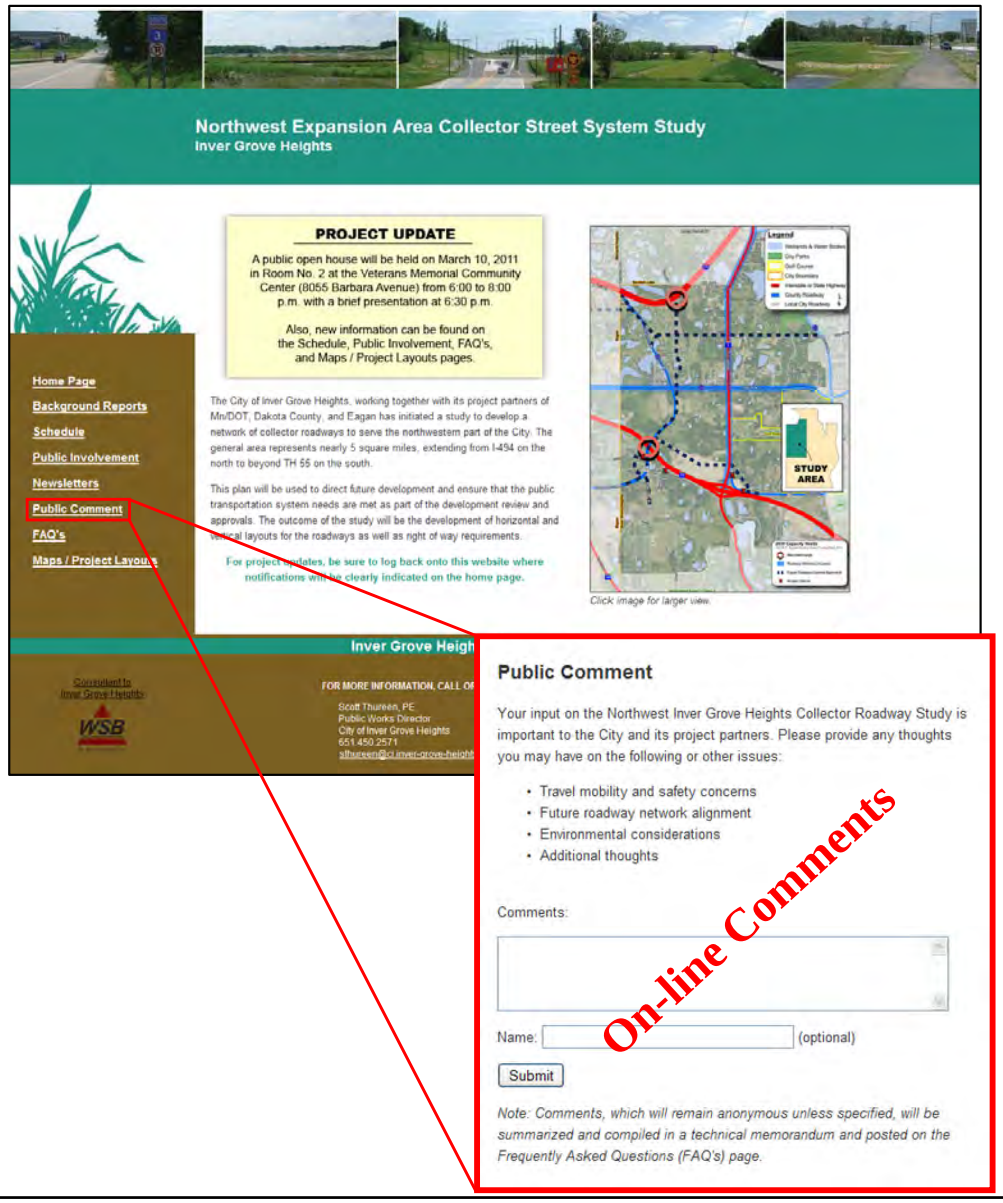




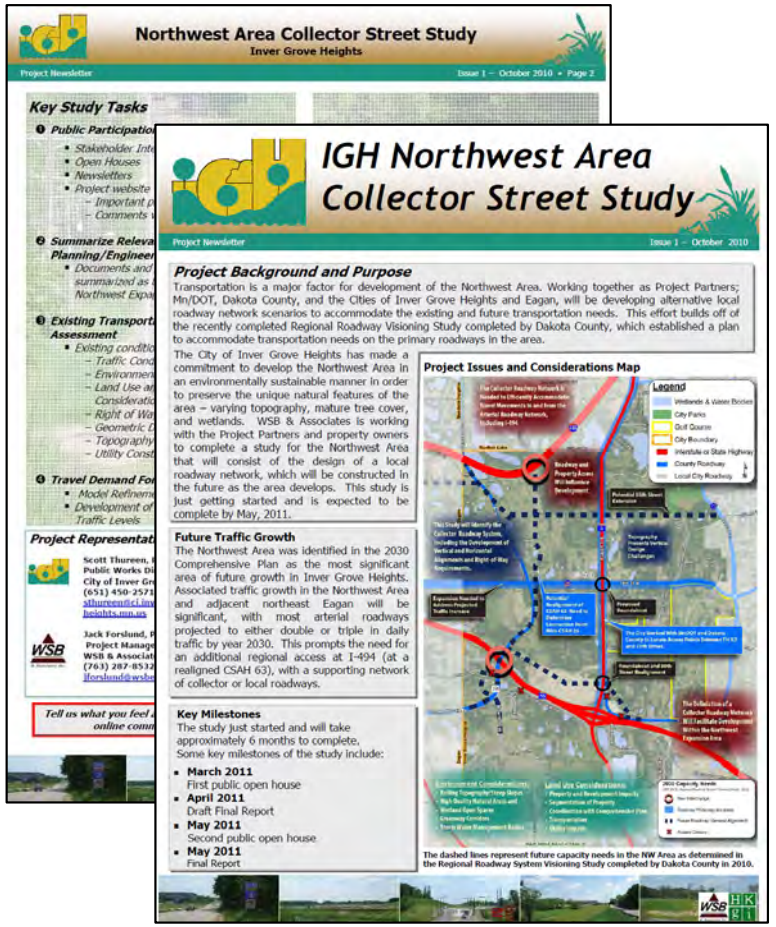
Public Involvement

Website (link on City's website)

www.ighnwareacollectorstreetstudy.com



Newsletters



WSB & Associates, Inc.

Next Steps

- Complete Design Iterations 2 and 3
- Update Website Information
  - Maps / Project Layouts, Newsletters, other materials
- Schedule Next Open House
- Produce Study Report

In Closing

Study personnel are here tonight and will be available to record your comments and answer questions

Please remember to sign-in and pick up Study materials

- Thank you for your participation -

WSB & Associates, Inc.

Contact Information

NW Area Collector Street Study

WEBSITE:

www.ighnwareacollectorstreetstudy.com

Jack Forslund, PTP
Consultant Project Manager
WSB & Associates, Inc.
763.287.8532
jforslund@wsbeng.com

Open House No. 1

NW Area Roadway Collector Street Study

Thank you for attending tonight's Meeting

Please sign-in and be sure to leave your e-mail address if you would like to receive future updates regarding the Study

PLEASE PRINT

	NAME		E-MAIL or Address
1	Don & Nancy Cornier	1	1286 70th St E
2	LeRoy & Gladys Motz	2	7660 Argenta TR IGH Mn 55077
3	Larry Rochefort	3	1966 77th St. W.
4	Tony Kopp	4	7215 So. Robert TRL 55077
5	Don Spaeth	5	2582 Delaware Ave 55118
6	Scott Spaeth	6	1024 Goodrich Ave 55105
7	Bill Kreck	7	7755 Argenta trail
8	Sean Syring	8	7576 Bell Lane 55077
9	Don Fischer	9	7010 Angus Ave E 55077
10	Nick Fischer	10	7010 Angus Ave E 55077
11	Bryan Bergren	11	11 High Rd 55077
12	Tom Leach	12	6760 Arkansas 55077
13	Joe Vogel	13	6963 Arkansas Ave 55077
14	Kevin Reckinger	14	7317 Boyd Ave
15	Marius Dina	15	1234 70th St W 55077
16	Mary Braun	16	7680 Allen Way 55077
17	Janine Nelson	17	1845 77th St W
18	Phil Nelson	18	" "
19	Val + Cliff Sprague	19	1962 77th St. W
20	Ted Hakanson	20	1760 80th St E
21	Betty Hakanson	21	1760 E 80 St IGH 55077
22	Alaina Hagen	22	7085 Allen Way
23	Kathy Jerome	23	7085 Allen Way 55077
24	[illegible]	24	625 Hampshire Dr
25	Mark Mueller	25	1712 W. 82nd St.
26	Eric Olson	26	8561 Alverno Ave
27	Jeffrey Bergquist	27	1100 70th St W.
28	Susan Huggins	28	1100 70th St W.
29	Joe Jacoby	29	1060 72nd Circle W
30	Todd McInerny	30	1120 70th St. W.

Open House No. 1

NW Area Roadway Collector Street Study

Thank you for attending tonight's Meeting

Please sign-in and be sure to leave your e-mail address if you would like to receive future updates regarding the Study

PLEASE PRINT

NAME	E-MAIL or Address
1 William John Carlson	1 1629 W 20th ST
2 Tim/Theresa Petersen	2 PETERSEN1061@MSN.COM
3 Jason or Gail Redeker	3 Gail@pcsuperhero.com
4 Denny & Laurie Wolfe	4 dwolfe@mid-northern electric.com
5 Eric Helm	5 ejholm@comcast.net
6 GENE KRUCKENBERG	6 JFNNK@USfamily.NET
7 Steven Schmidt/Dakota 53	7 Steve@StevenBSchmidtMEDIATION.COM
8 Steve + Sue Schnarr	8 Sue@Snowshoegoldens.com
9 Jim Riley	9
10 Robert Mansfield	10
11 John Cota	11 Johncota@juno.com
12 Deb/Mark Van	12 hockey3@usintrnet.com
13 Tamara Kappauf	13 Tamara.Kappauf@gmail.com
14 Pat Simon	14
15 TIM KRIZ	15 MNMAVEN@COMCAST.NET
16	16
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OPEN HOUSE No. 2
NORTHWEST AREA COLLECTOR STREET STUDY

Tuesday, June 28th 6:00 to 8:00 p.m.
Veterans Memorial Community Center
Community Room No. 1

You are cordially invited to attend the second Open House for the Northwest Area Collector Street Study. On Tuesday, June 28th from 6:00 until 8:00 p.m., the City, along with its consultant WSB and Associates, Inc. will present an update on the collector roadway alignment that the City is planning (long term) for the area.

Project Background
The City of Inver Grove Heights has been planning for future development in the Northwest Area since the City's Comprehensive Plan of 1998. Since then, a number of plans and studies have been undertaken to evaluate land use patterns, natural resources, and public infrastructure improvements.

In each of the previous planning efforts, the City has taken steps to make sure property owners and stakeholders in the Northwest Area are engaged at the onset of studies as well as continually informed throughout the process. To that end, the City has been in the process of developing a plan for a local roadway network that will serve future development within the Northwest Area. Upon completion, this plan will help ensure development occurs in the Northwest Area in a coherent and connected manner. It will also provide the City and developers with a roadway system plan to guide future design efforts.

Public Meeting
As part of the study process, key members of the consultant team along with City staff will be on hand to discuss the project, answer any questions you may have, and learn about future development interests or transportation/roadway related concerns you may have for the area**.** ***A brief presentation will be given at approximately 6:30 to provide an overview of the project.***

For your information, we are providing as an attachment to this letter a preliminary layout of a collector roadway system for the area. Also, for the latest information on the project, please visit the website: *www.ighnwareacollectorstreetstudy.com*.

We look forward to seeing you on the 28th!

Sincerely,

Scott Thureen, PE
City of Inver Grove Heights
Public Works Director
651-450-2571
sthureen@ci.inver-grove-heights.mn.us

Jack Forslund, PTP
WSB & Associates, Inc.
Project Manager
763-287-8532
jforslund@wsbeng.com

Inver Grove Heights NW Area Collector Street Study

Open House 2 Presentation

6:30 pm

June 28, 2011

WSB & Associates, Inc.

Purpose of Open House

- Information Exchange
- Present Collector System
  - Base Concept Alignments
    - Taken from previous studies
  - Roadway Network
    - Numerous design iterations
    - Community and property owner input
    - Access locations
    - Horizontal & vertical design (plan/profiles)
- Study Information
  - Website
    - Layouts
    - Newsletters
    - Frequently asked Questions (FAQ's)
    - Public comment
    - Previous Study documents

WSB & Associates, Inc.

Overview

Study Partners

City of Inver Grove Heights

Dakota County

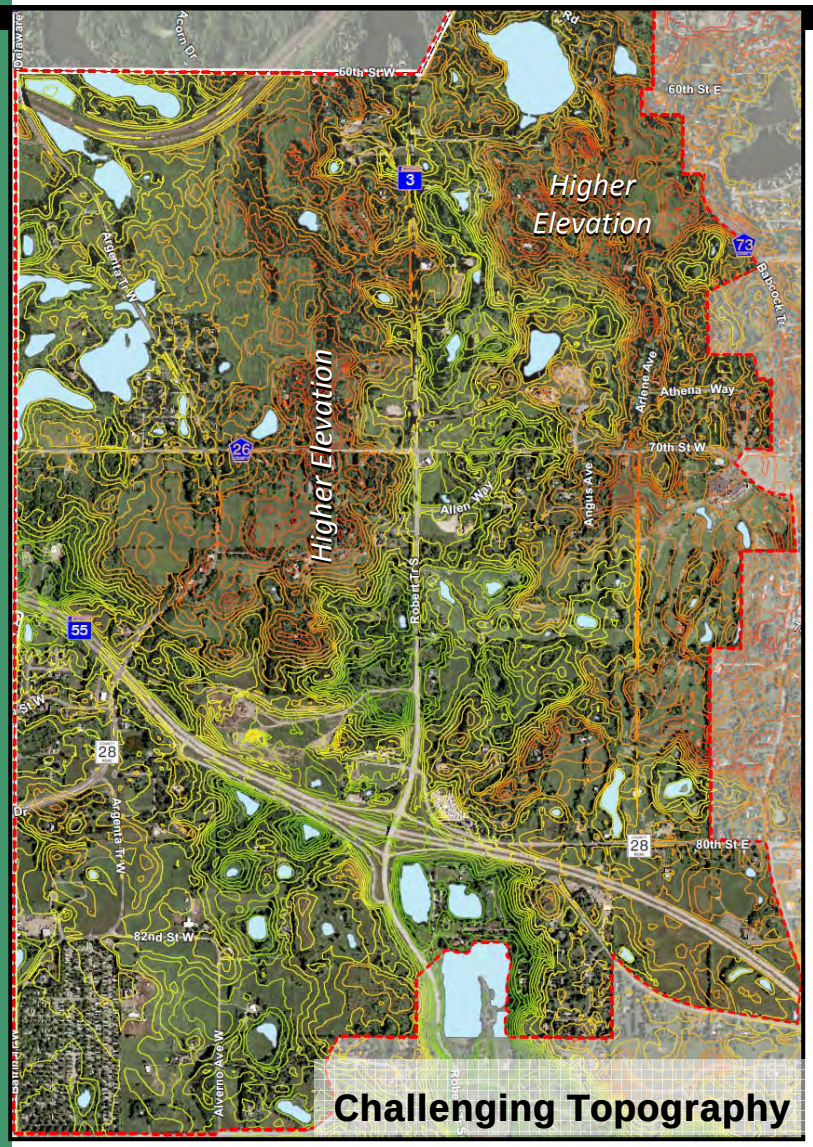
City of Eagan

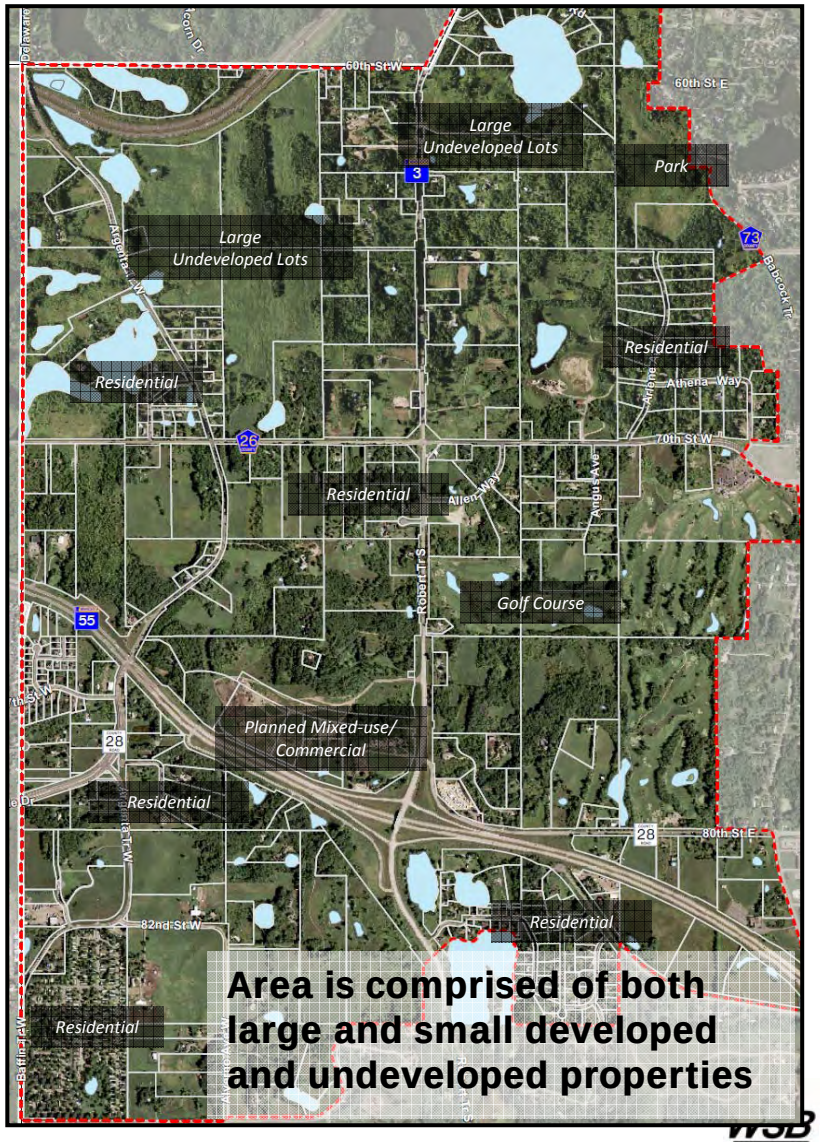
Study Goal

Establish a long-term plan for a Collector roadway system that promotes east-west and north-south connectivity

- The delineation of a proposed roadway network, including identifying approximate locations of access to adjacent land will assist the City and landowners when development occurs in the Northwest Area

Area Landscape

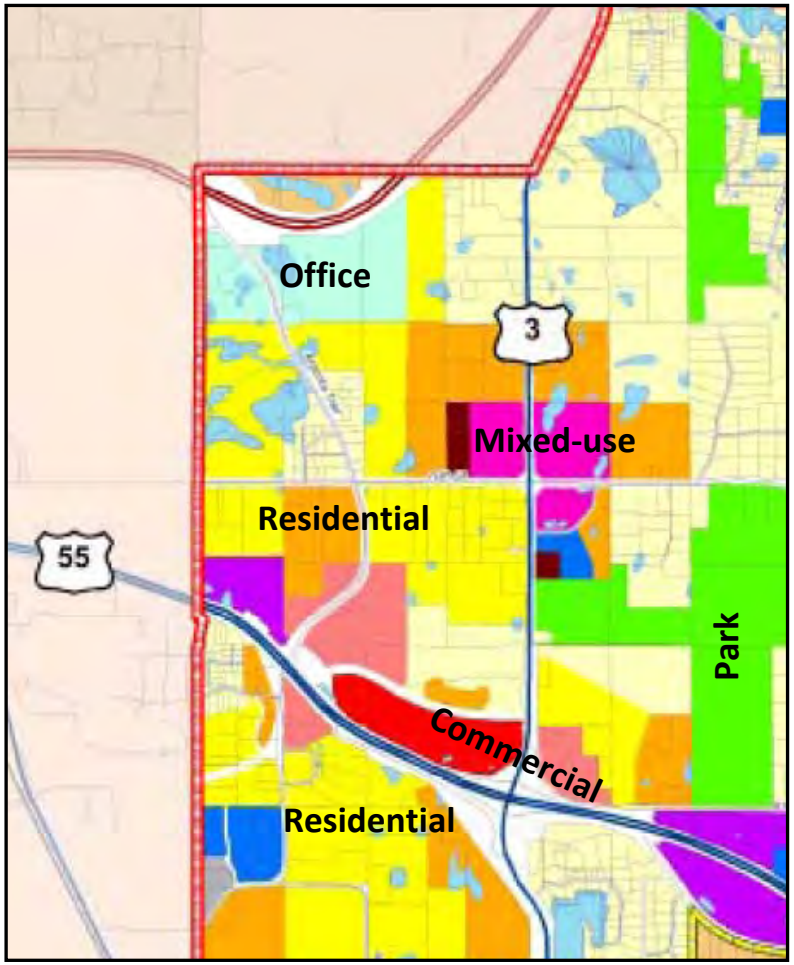




Future Conditions - 2030

- Majority of the area will have City sewer and water
- Land-use changes from rural to a mixture of commercial, office, and residential
- Area projected to add over 10,000 residents and 3,000 jobs
- Roadway Improvements
  - Potential new interchanges at I-494 and TH 55 (or high capacity intersection) to serve the area
  - 70th Street (CSAH 26) will need to be expanded to 4-lanes
  - South Robert Trail (TH 3) will need to be expanded to 4-lanes
  - A realigned and expanded Argenta Trail (CSAH 63)
  - **Collector roadway system**

Planned 2030 Land-use



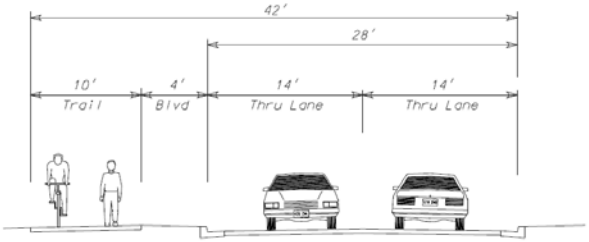
IGH Comprehensive Plan (March 2010)

WSB & Associates, Inc.

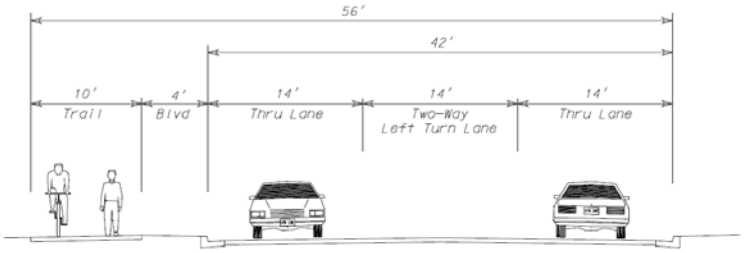
Collector Roadway System

Built around a base roadway system developed in recent studies including the Regional Roadway System Visioning Study (2010)

- Collector Roadway Characteristics:
  - Maximum traffic level
    - 11,000 to 17,000 vehicles/day
  - Number of lanes
    - 2 with turn lanes or 3-lane (center turn-lane)
  - Design Speed
    - 45 mph
  - Roadway Grade
    - Provide appropriate balance between travel speed, sight distance, aesthetics, and environmental impacts.
    - Grades range from zero to 8 percent (Maximum)
  - Intersection Spacing
    - Collector Roadway spacing at ¼ mile intervals with non-local roadways and 1/8 mile spacing with local roadways (per the City's Comprehensive Plan)



2-Lane Section
(up to 11,000 vpd*)



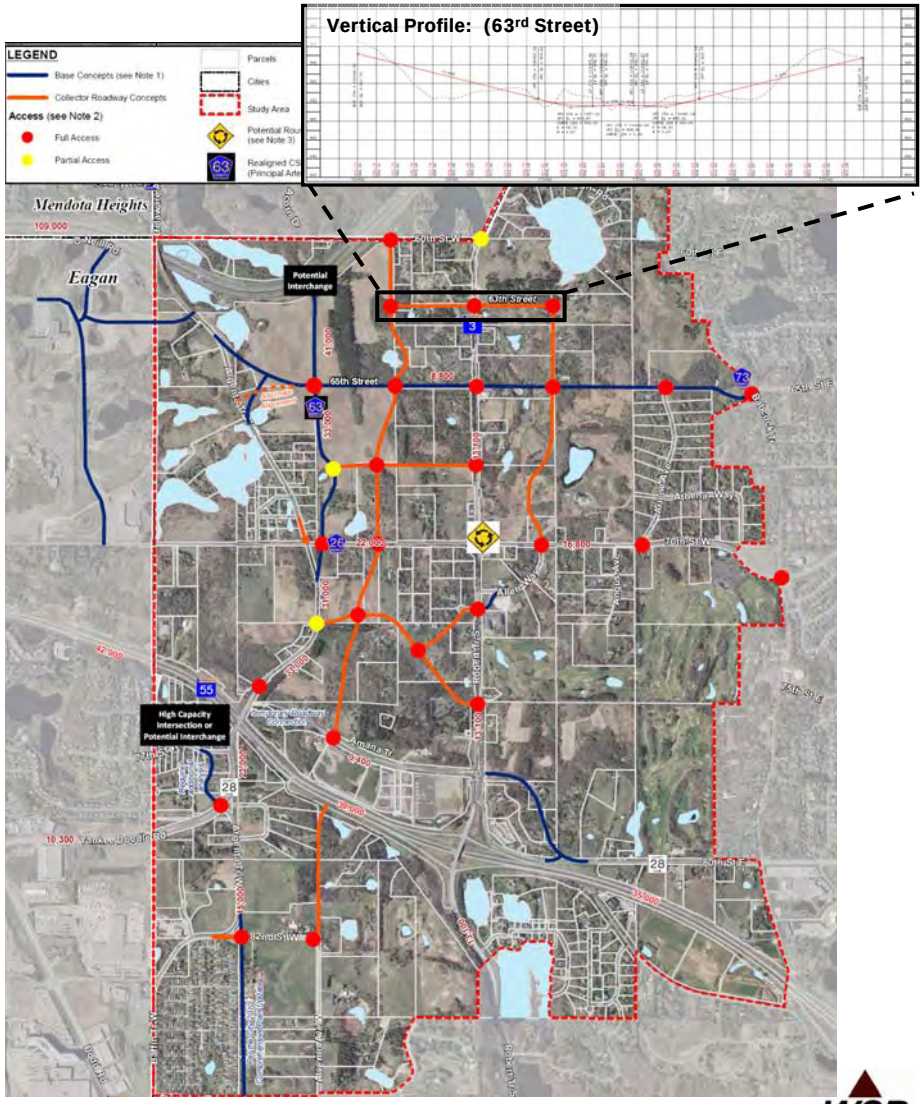
3-Lane Section
(up to 17,000 vpd*)

WSB & Associates, Inc.

Development of Alignments

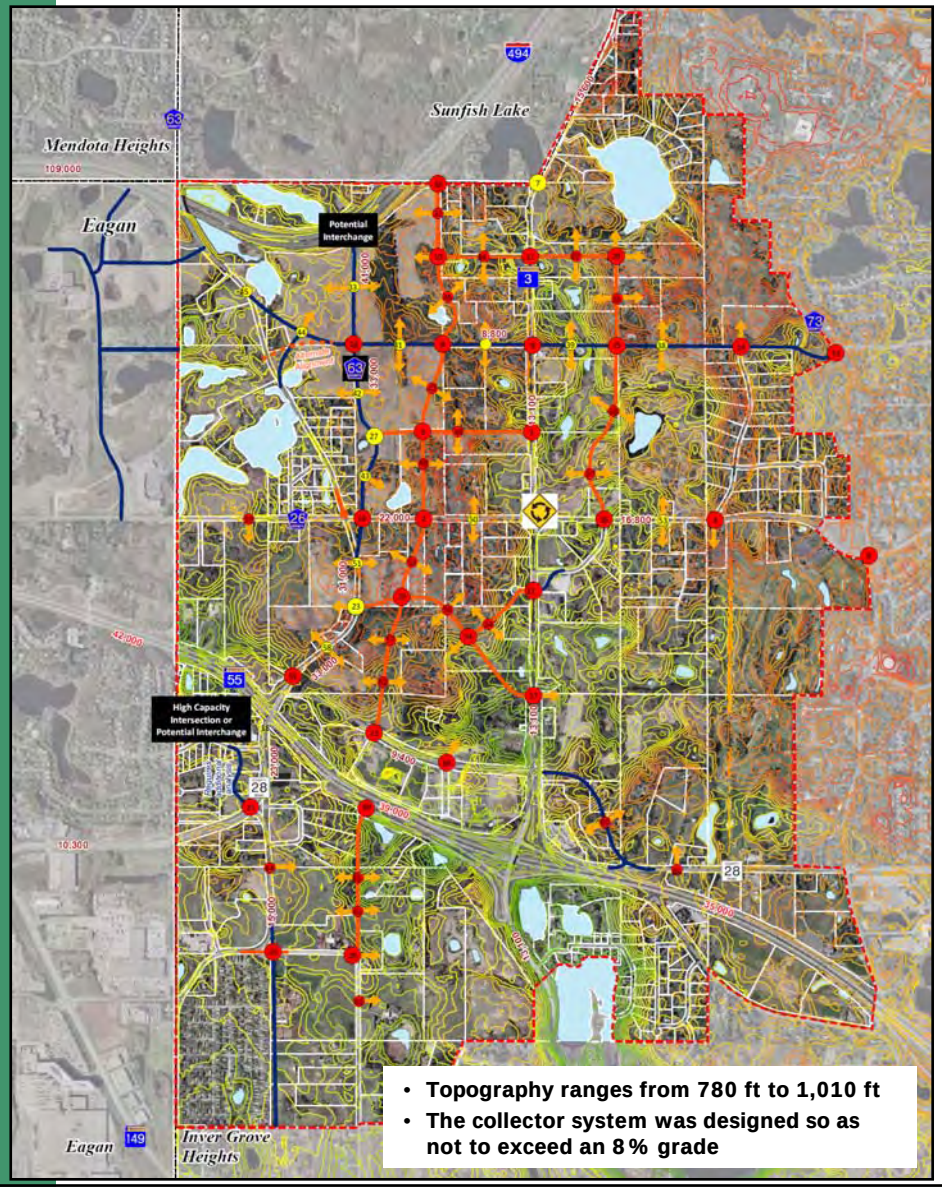
Iterative Process

- Iteration 1 (completed)
  - Identity Access Spacing Criteria
    - Develop Network of Connection Points
    - Property Owner / Stakeholder Input
    - Study Team Review
- Iteration 2 (completed)
  - Revise Network
    - Public and Study Team Review
    - Property Owner / Stakeholder Input
    - Review Planned Developments
    - Consider Aesthetic Treatments
- Iteration 3 (under review)
  - Revised Horizontal Alignments
  - Prepared Vertical Alignments for Collector Roadway System
  - Review Potential Development Impacts

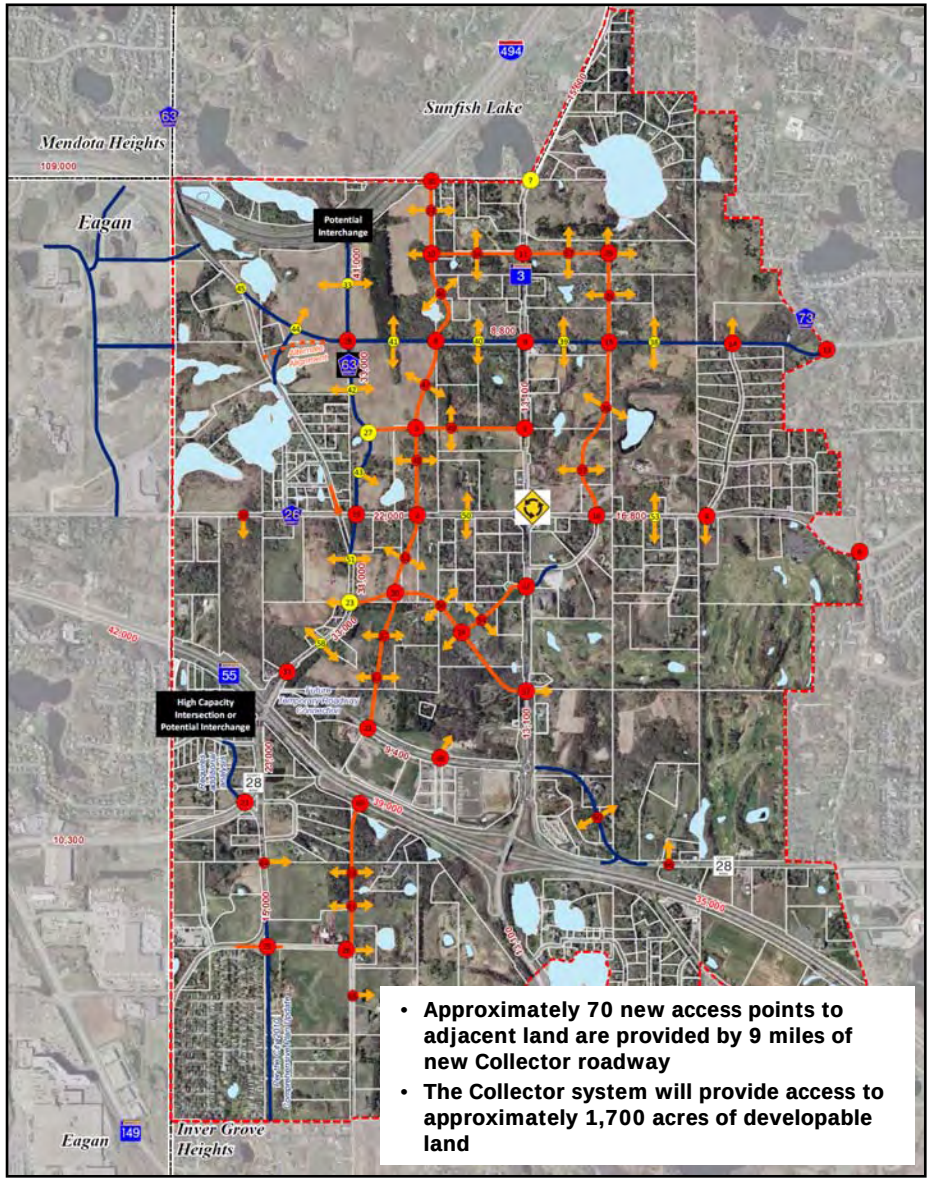


WSB & Associates, Inc.

Roadway Network Horizontal Alignment



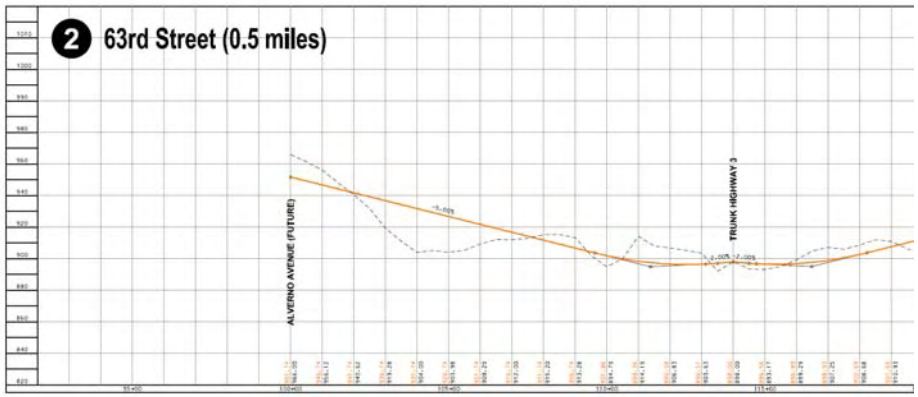
- Topography ranges from 780 ft to 1,010 ft
- The collector system was designed so as not to exceed an 8% grade

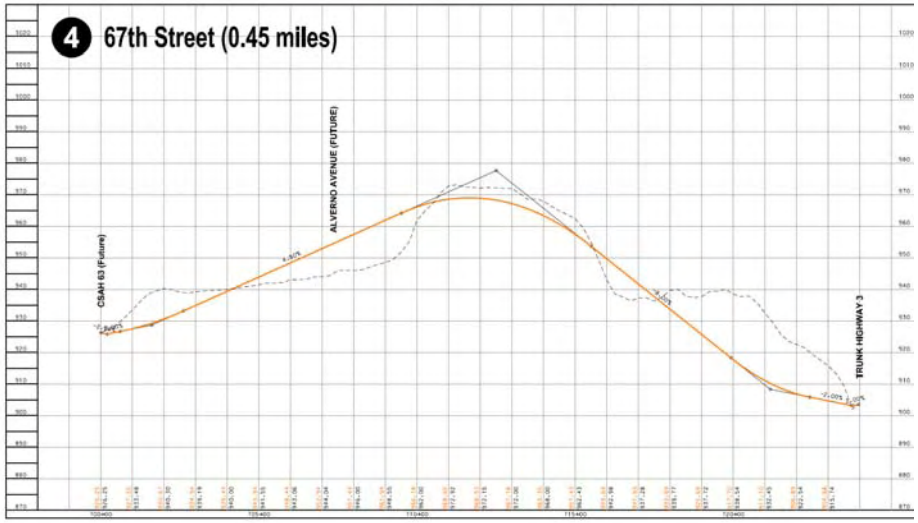


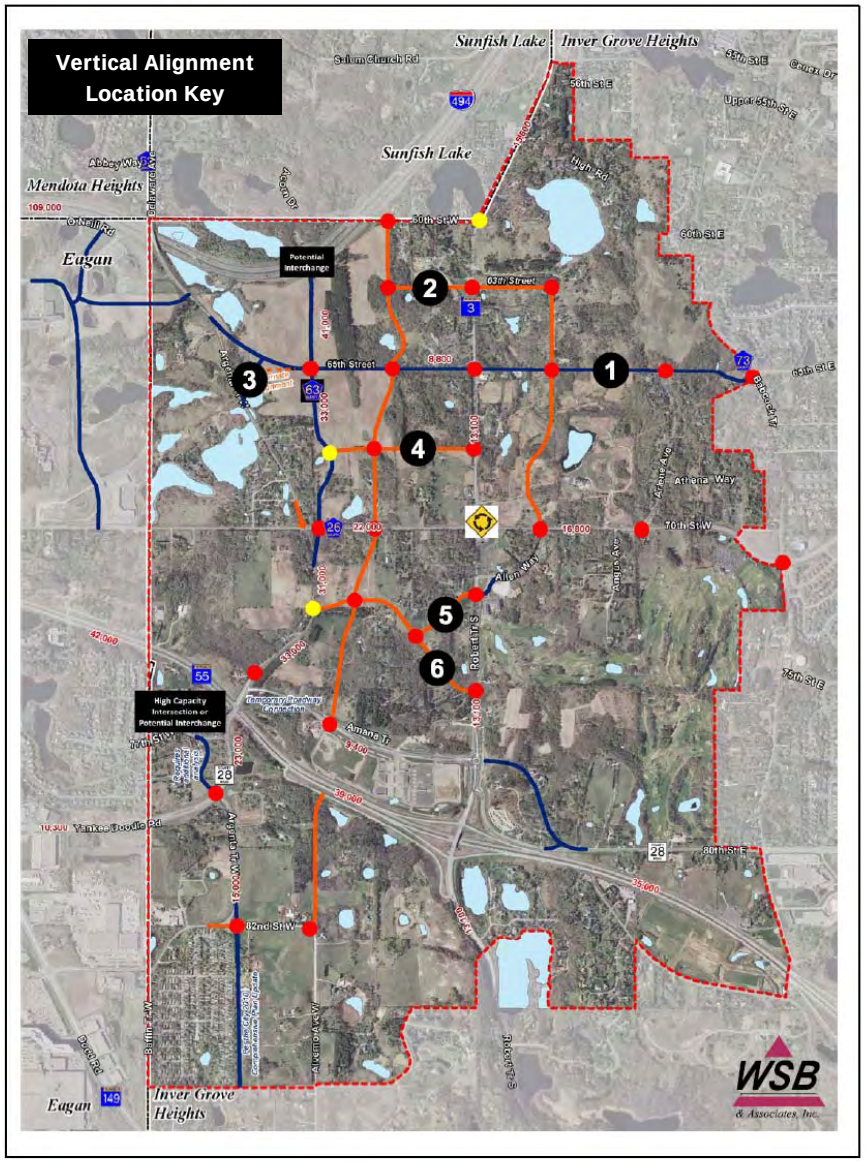
- Approximately 70 new access points to adjacent land are provided by 9 miles of new Collector roadway
- The Collector system will provide access to approximately 1,700 acres of developable land

Roadway Network Vertical Alignments

Vertical Alignments were developed for all 9 miles of the Collector roadway network







In Closing

Study personnel are here tonight and will be available to record your comments and answer questions

Next Steps

- Update Website Information
  - Maps / Project Layouts, Newsletters, other materials
- Produce Study Report

Thank you for your participation in this project

WSB & Associates, Inc.

Open House No. 2

NW Area Roadway Collector Street Study

Thank you for attending tonight's Meeting

Please sign-in and be sure to leave your e-mail address if you would like to receive future updates regarding the Study

PLEASE PRINT

NAME	E-MAIL or Address
1 Deborah Hill	1 debbistrehle@yahoo.com
2 Bill Strehle	2 BillStrehle@gmail.com
3 Larry Flannery	3 flann6692@MSN.com
4 LeRoy Metz	4 7660 Argenta Tr IGH Hapbot61@aol.com
5 Gladys Metz	5 " " " "
6 Todd Foster	6 traffic4todd@yahoo.com
7 Sean Syring	7 tara-sean syring@hotmail.com
8 Lloyd Sachs	8 1216-70th St W
9 Eric Holm	9 ejholm@comcast.net
10 Jon Blanchar	10 joanne@elliottlaw.net
11 Brian Rauchwarter	11 #broch20@MSN.COM
12 Joe Jacoby	12 jjacoby@pinebendpaving.com
13 Dave Shinbaker	13 6190 S. Robert
14 Vicki Rainey	14 7929 Argenta Trail W,
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Open House No. 2

NW Area Roadway Collector Street Study

Thank you for attending tonight's Meeting

Please sign-in and be sure to leave your e-mail address if you would like to receive future updates regarding the Study

PLEASE PRINT

	NAME		E-MAIL or Address
1	Bob & Barbara Dalsin	1	bobd@dalsin.com
2	Pat Simon	2	newtownstewart@Netzero.com
3	Violet Sachs	3	
4	Don Fischer	4	Donald.Fischer@Unisys.com
5	[illegible]	5	[illegible]
6	[illegible]	6	GISSo Robert Reid IGH
7	Bill Kreck	7	bkreck@[illegible]enterprises.com
8	Steve Povolny	8	Steve@Povolny.com
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IGH Northwest Area Collector Street Study

Project Newsletter

Issue 1 – October 2010

Project Background and Purpose

Transportation is a major factor for development of the Northwest Area. Working together as Project Partners; Mn/DOT, Dakota County, and the Cities of Inver Grove Heights and Eagan, will be developing alternative local roadway network scenarios to accommodate the existing and future transportation needs. This effort builds off of the recently completed Regional Roadway Visioning Study completed by Dakota County, which established a plan to accommodate transportation needs on the primary roadways in the area.

The City of Inver Grove Heights has made a commitment to develop the Northwest Area in an environmentally sustainable manner in order to preserve the unique natural features of the area – varying topography, mature tree cover, and wetlands. WSB & Associates is working with the Project Partners and property owners to complete a study for the Northwest Area that will consist of the design of a local roadway network, which will be constructed in the future as the area develops. This study is just getting started and is expected to be complete by March, 2011.

Future Traffic Growth

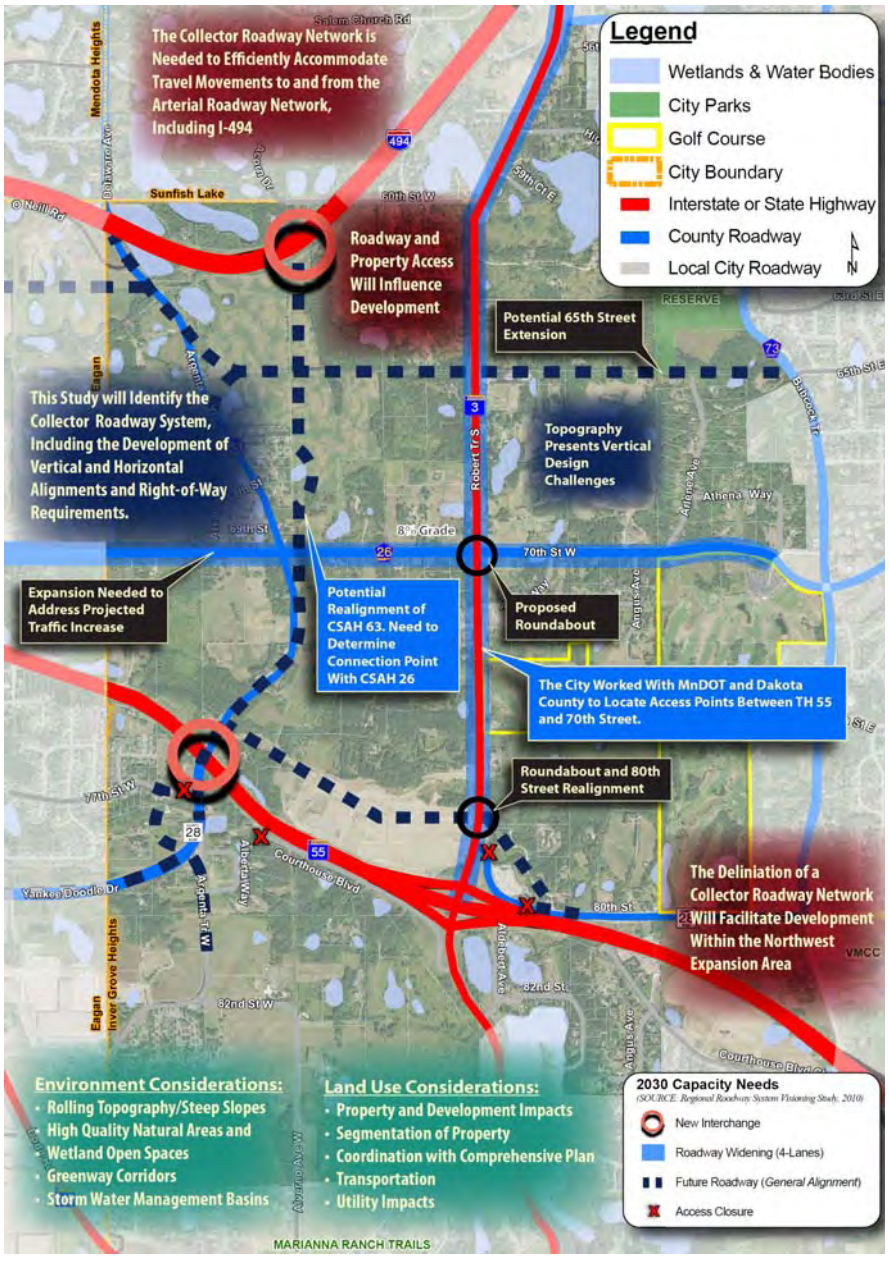
The Northwest Area was identified in the 2030 Comprehensive Plan as the most significant area of future growth in Inver Grove Heights. Associated traffic growth in the Northwest Area and adjacent northeast Eagan will be significant, with most arterial roadways projected to either double or triple in daily traffic by year 2030. This prompts the need for an additional regional access at I-494 (at a realigned CSAH 63), with a supporting network of collector or local roadways.

Key Milestones

The study just started and will take approximately 6 months to complete.
Some key milestones of the study include:

- **December 2010**
  First public open house
- **February 2011**
  Draft Final Report
- **March 2011**
  Second public open house
- **March 2011**
  Final Report

Project Issues and Considerations Map



The dashed lines represent future capacity needs in the NW Area as determined in the Regional Roadway System Visioning Study completed by Dakota County in 2010.

Key Study Tasks

❶ Public Participation

- *Stakeholder Interviews*
- *Open Houses*
- *Newsletters*
- *Project website*
  - *Important project information*
  - *Comments via online questionnaire*

❷ Summarize Relevance of Past Planning/Engineering Efforts

- *Documents and plans will be reviewed and summarized as to their pertinence to the Northwest Expansion Area Study*

❸ Existing Transportation Conditions Assessment

- *Existing conditions assessment*
  - *Traffic Conditions*
  - *Environmental Constraints*
  - *Land Use and Development Considerations*
  - *Right of Way Constraints*
  - *Geometric Deficiencies*
  - *Topography Constraints*
  - *Utility Constraints*

❹ Travel Demand Forecasting

- *Model Refinement*
- *Development of 2030 Traffic Levels*

❺ Identification and Evaluation of Collector Roadway System (Alternatives Analysis)

- *Development of Goals, Objectives, and Screening Criteria*
- *Development of Design Considerations*
  - *Design Standards*
  - *Cost*
  - *Ability to Serve Adjacent Properties (land use)*
- *Development of Collector Roadway System Alternatives*
- *Evaluation of Collector Roadways*
- *Screen 1 – Fatal Flaw Analysis*
- *Screen 2*
- *Identification of a Preferred Collector Roadway Network*

❻ Report Production

- *Draft Report and Review*
- *Final Report*

Project Website:

www.ighnwareacollectorstreetstudy.com

Project Representatives

Scott Thureen, P.E.
Public Works Director
City of Inver Grove Heights
(651) 450-2571
sthureen@ci.inver-grove-heights.mn.us

Jack Forslund, PTP
Project Manager
WSB & Associates
(763) 287-8532
jforslund@wsbeng.com

Tell us what you feel are the most important transportation needs in the Northwest Area by submitting an online comment to the Project Team via the project webpage's link "Public Comment".

- Thank you for your interest -

IGH Northwest Area Collector Street Study

Project Newsletter

Issue 2 – April 2011

Frequently Asked Questions

- How were these preliminary roadway alignments determined?

The major roads in the area, which will be County or State owned, were defined in earlier planning or development efforts. The collector roadway system, which is the focus of this effort, was developed with consideration for property impacts, future land use, terrain, access guidelines, connectivity, and access to the area.

- When will this roadway system be constructed? Is there a timeline?

The build-out of the collector roadways system will take many years, likely to the year 2030. The construction of individual segments will be influenced by land development. This study will help developers and property owners understand the right-of-way requirement for the roadway alignments.

- How set are the roadway alignments? Can they change after this study or will they be set in stone?

These are preliminary alignments that may change with time. However, the intent is to develop alignments that property owners and the City will be able to refer to for planning purposes.

Preliminary Alignments Displayed at Open House

Public Participation Key to Successful Study

A Public Open House was held on Thursday, March 19, 2011, at the Veterans Memorial Community Center. This was the first of two opportunities the public will have to attend public open houses or workshops as part of the Northwest Area Collector Street Study planning process.

The purpose of the open house was to exchange information with the public for the proposed collector roadway system in Inver Grove Heights. Information displayed included the design guidelines, potential access locations, and preliminary layouts for the roadway network. A presentation was given to the attendees, which can be found on the project website. The open house was well received with over 50 people attending the event.

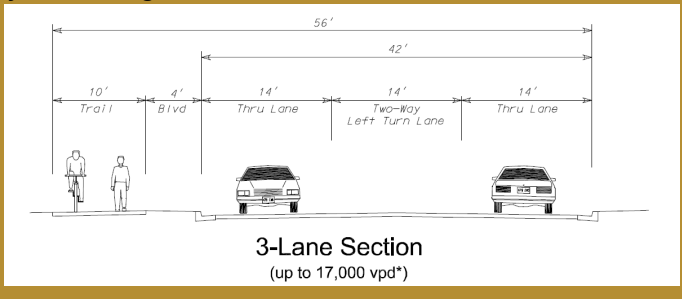
Public participation is a critical component of the planning process. As such, it is important that the collector roadway network reflect the desires of the area residents. Open house attendees had an opportunity to ask questions and comment on various elements of the study. Attendees were also given an opportunity to complete a brief questionnaire regarding the preliminary roadway layouts.

Study Goal

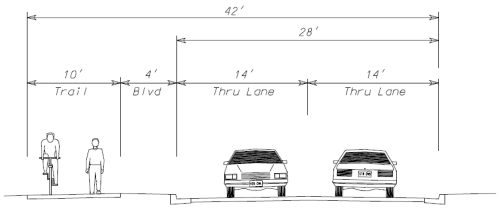
Establish a long-term plan for a Collector roadway system that promotes east-west and north-south connectivity and is sensitive to the natural (topography) and built (property owners) environment. A Collector roadway provides a connection between Local or neighborhood roads (e.g., Arlene Avenue) and Arterial roadways (e.g., South Robert Trail).

Design Process

The design of the collector roadway system is an iterative process where the first step was to identify access spacing criteria, obtain property owner input, and develop a network of roadway connection points. The second step, or iteration 2, was to revise the network to address property impacts, including those related to potential development as well as topography. During this step, we also established characteristics of the roadway, including number of lanes and multi-use trails.



3-Lane Section
(up to 17,000 vpd*)



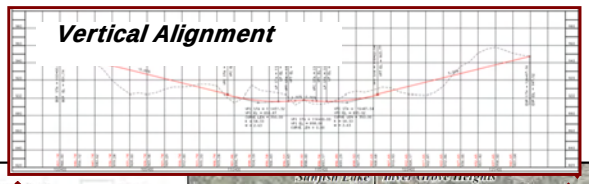
2-Lane Section
(up to 11,000 vpd*)

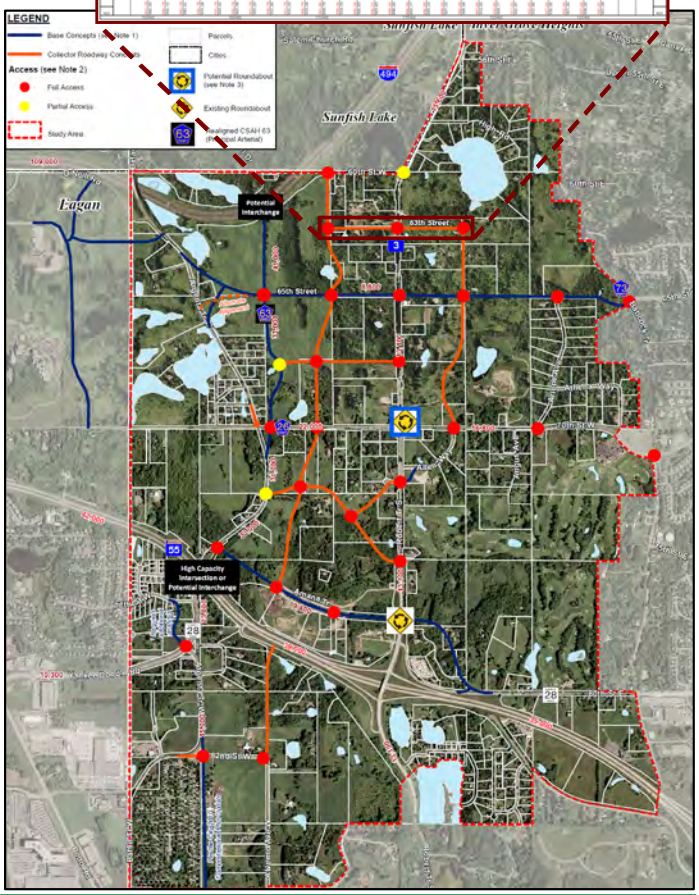
Design Iteration 2

Design iteration two resulted in the development of a collector roadway system that facilitate travel through the area, while being sensitive to natural and built environmental features.

Design Iteration 3

Design iteration three involves revising the horizontal and vertical alignments while establishing general aesthetic treatments for the roadway system. Upon completion of this process, there will be another open house to present the findings and exchange information with the public. At the conclusion of the study, the City will have an established long-term vision for the northwest area, which will better prepare the area for impending development.





Next Steps

- **April / May 2011**
  Draft Final Report
- **May 2011**
  Second public open house
- **May 2011**
  Final Report

For more information, contact Jack Forslund at 763-287-8532 or jforslund@wsbeng.com or log onto the project's webpage at www.ighnwareacollectorstreetstudy.com

- Thank you for your interest -

Northwest Area Collector Street Study

Comment Sheet

Thank you for attending tonight's Public Open House. At tonight's meeting, we are presenting to you a preliminary layout for a future collector roadway system. Shown on the provided maps are roads shown in blue and orange lines. The blue lines represent a base roadway network concept that has been identified in previous study efforts. The orange roadways represent "collector" roadways that link neighborhoods with larger roadways such as 70th Street, Argenta Trail, South Robert Trail, etc.

We want to obtain your input on this information to refine the alignments. If you have any comments/questions, please share them with staff members or, if you wish, submit them on this comment sheet and mail/fax/email them to the address below. You may also provide comments via the public comment tab on the website at:

www.ighnwareacollectorstreetstudy.com

MAIL
Jack Forslund
WSB & Associates, Inc.
701 Xenia Avenue South
Minneapolis, MN 55416

FAX
TO: Jack Forslund
Subject: IGH Study
Fax: 763-541-1700

or E-MAIL responses to:
jforslund@wsbeng.com

---- Please continue on back of page -----

Public Outreach: Received Comments

Provided below is a description of the primary methods used to obtain community input well as a general description of comments received during the course of the study.

Website:

The project website (www.ighnwareacollectorstreetstudy.com**)** included a public comment tab where individuals could provide their thoughts on:

- Travel mobility and safety concerns
- Future roadway network alignment
- Environmental considerations, or
- Any additional thoughts

General Comments:

Many people visited the website but only approximately 10 comments were received. Of these, many people stated that that found the project interesting and were appreciative for the City in undertaking the effort to plan for the future. Other comments that were received generally fell into one of the following categories.

- Limited connections through the area
- Worried about cut-through traffic due to development of the area
- Do not want the areas natural beauty disrupted

More specific comments were received regarding:

- 70th Street: too steep and can be dangerous
- TH 55: Congested and can be dangerous, specifically at the intersection of Argenta Trail.

Property Owner Meetings

Four meetings with property owners were held early in the study where the project team members presented very preliminary collector roadway alignment concepts. Over 200 property owners were invited to the meetings in which approximately 50 persons attended.

General Comments:

At the property owner meetings, it was a very interactive process where the attendees were encouraged to mark up maps that were provided for their use. Many property owners marked areas where they either thought the roadways could go as well as areas that should be avoided. Many of the attendees were asking about the timeline for developing the roadway system. They were informed that this is a long term plan that is somewhat dependent on the development of the area. Most people were appreciative of the City's proactive effort of involving them (property owners) as they are directly impacted by the project.

Project Open Houses

Two Open Houses were held during the study. The first one was held in the evening on March 10, 2011 and the second one was held June 28, 2011. Both events were held at the Veterans Memorial Community Center in Inver Grove Heights. For each Open House, over 350 personal invitations wee mailed out. The event was also advertised on the project website.

General Comments:

The attendees of the Open Houses tended to be either property owners and/or residents of the area. Several people were interested in the timing of the plan and how it might impact them. As with the property owner meetings, they were informed that this was a long term plan that was largely dependant on the timing of development of the area, which would underscore the purpose and the need for the collector roadway system. In general, the Open Houses included a presentation of the project, followed by one-on-one discussions with the attendees to describe the details of the plan. Overall, the Open Houses were very positive, and succeeded in the development of a collector roadway plan that was met acceptance.

APPENDIX B: NWA Collector Street Plan – Developable Land Analysis

MEMORANDUM

Hoisington Koegler Group Inc.

To: Jack Forslund, PTP - WSB & Associates

From: Brad Scheib, AICP

Subject: Northwest Area Collector Street Plan – Developable Land Analysis

Date: August 18, 2011

Utilizing the draft collector street network plan (dated April 28, 2011), we have run an analysis of development impacts on the land use plan and development assumptions made in prior planning initiatives for the Northwest Area. These initiatives include analysis of infrastructure impacts and financing alternatives completed between 2006 and 2009, and the comprehensive plan update completed in 2010.

Attached to this document is a reference document dated October of 2006. The October 2006 document outlines key assumptions made in the early planning stages that were ultimately used to support development projections used to determine key fee structures for infrastructure and utility extension. The 2006 effort determined a "net" developable land area based on best available data and key planning assumptions. The assumptions did not include ROW for the collector street network.

For this analysis, we overlaid the street network concept on the 2010 comprehensive plan land use map, divided the Northwest Area into a series of grids and evaluated the impact to developable land area for each quadrant. We then applied the density assumptions used consistently through past planning efforts to determine the degree of impact on each quadrant. A map is attached to reflect this analysis. Also attached is a spreadsheet to reflect the individual breakdown for each quadrant.

We also looked at development access from the collector street network to each assigned quadrant and provided an illustration of how development access might be made to each site. A map is provided illustrating access.

Analysis Conclusion

1. The development capacity impact across the entire NW Area Site created by right-of-way needs for arterial and collector streets will pull approximately 74 acres of developable land area out of the development equation.

2. The 74 acres equate to an estimated impact of 267 housing units and 156K square feet of office/commercial development when applying the same density assumptions used in prior NW Area Planning analysis.

    a. The office development impacts can be mitigated with a slightly higher density of development (an increase in FAR of approximately 0.02, or a commercial FAR of .27 instead of 0.25 and an office FAR of 0.32 instead of 0.30). This could be achieved by a few projects utilizing shared, underground or structured parking and building multi-story (2-4) structures. Given the grades and topographic relief, this is a feasible development option.

    b. The residential development impacts are more of a challenge. Some areas of low density may need to be guided for a higher density in order to pick up the 267 units lost to ROW impacts. Road alignments might be tweaked to follow contours and natural resource areas

123 North Third Street, Suite 100, Minneapolis, MN 55401-1659
Ph (612) 338-3800 Fx (612) 338-6838 www.hkgi.com
Direct (612) 252-7122 Email bscheib@hkgi.com

better as opposed to following parcel lines. This approach could lessen the grading impacts on developable land and could increase the amenity opportunities of development areas and minimize impacts due to excessive grading. However, this strategy will require greater collaboration among property owners to develop or master plan larger development areas. This strategy is already encouraged through the Northwest Area PUD overlay.

Planned Land Use Designation	Total Net Developable Acres Displaced by new ROW	Density Assumption	Estimated Housing Units lost to new ROW	Estimated Square Feet of Office lost to new ROW
Low Density Residential	14.96	2 u/a	30	
Low-Medium Density Residential	31.91	4 u/a	128	
Medium Density Residential	11.20	6.5 u/a	73	
High Density Residential	0.33	12 u/a	4	
Mixed Use	3.17	2/3 res at 15 u/a 1/3 com at 0.25 FAR	32	11,520
Community Commercial	4.71	0.25 FAR		51,300
Office	6.67	0.3 FAR		87,140
Public / Semi-public	0.60	0.25 FAR		6,500
ROW for Arterial Expansions (not Collectors) [1]	0.00	0.00	0.00	0.00
Total	73.55	--	267	156,460

NOTE: 1) The initial HKGi analysis (October, 2006) included expansion of ROW needed for improvements to 70th Street, S. Robert Trail, existing Argenta Trail, and other roadways. See Figure 1-1 in Appendix C.

Summary

The impacts generated by the collector street network concept are within a manageable level of impacts. Using consistent assumptions, development impacts due to ROW needs are approximately 4% of the overall development magnitude assumed for the Northwest Area financial planning assumptions.

As the Northwest Area develops over time, the bulk of this development impact can be absorbed within other areas of the Northwest Area through slightly increased densities.

See Attachments.

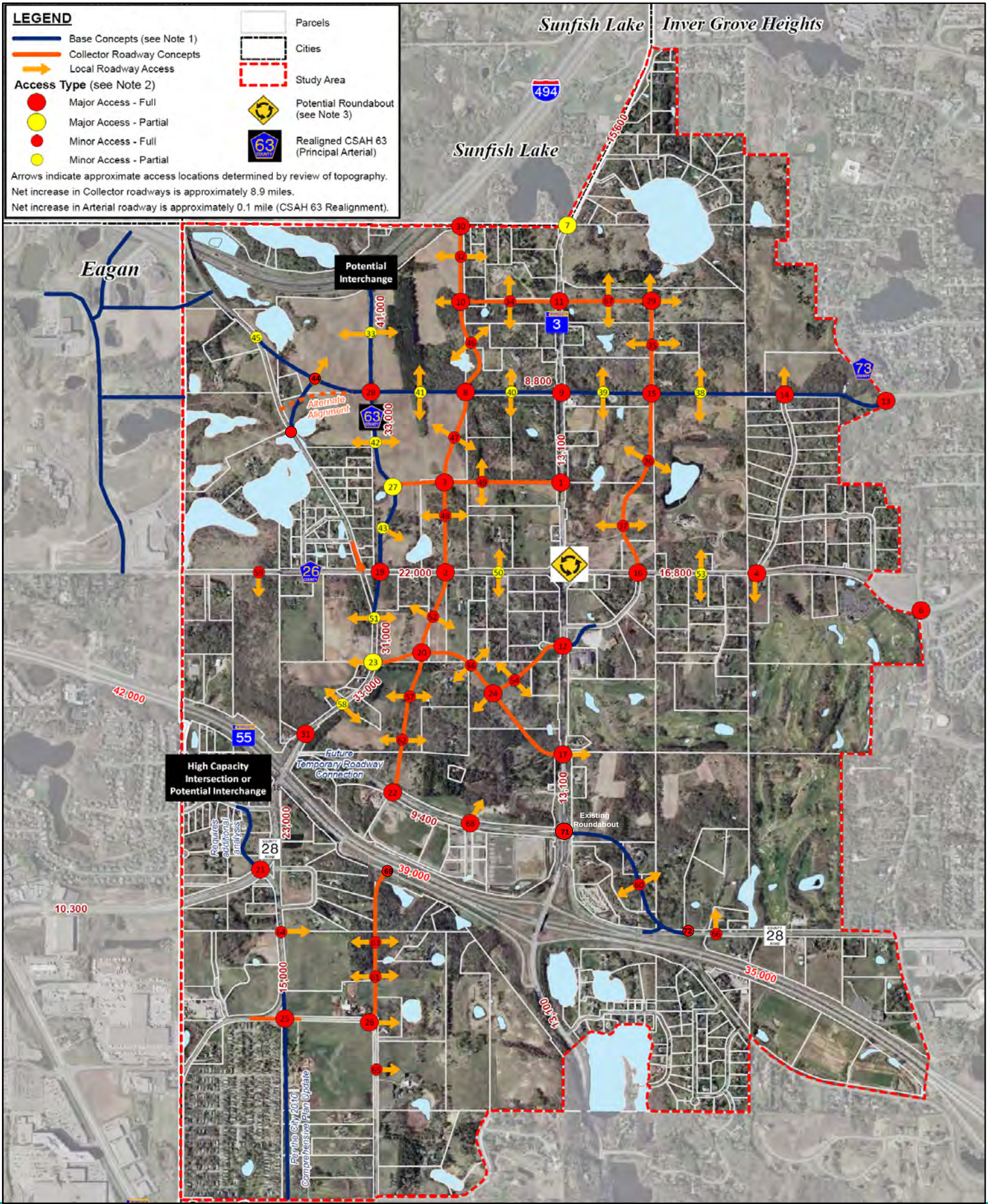
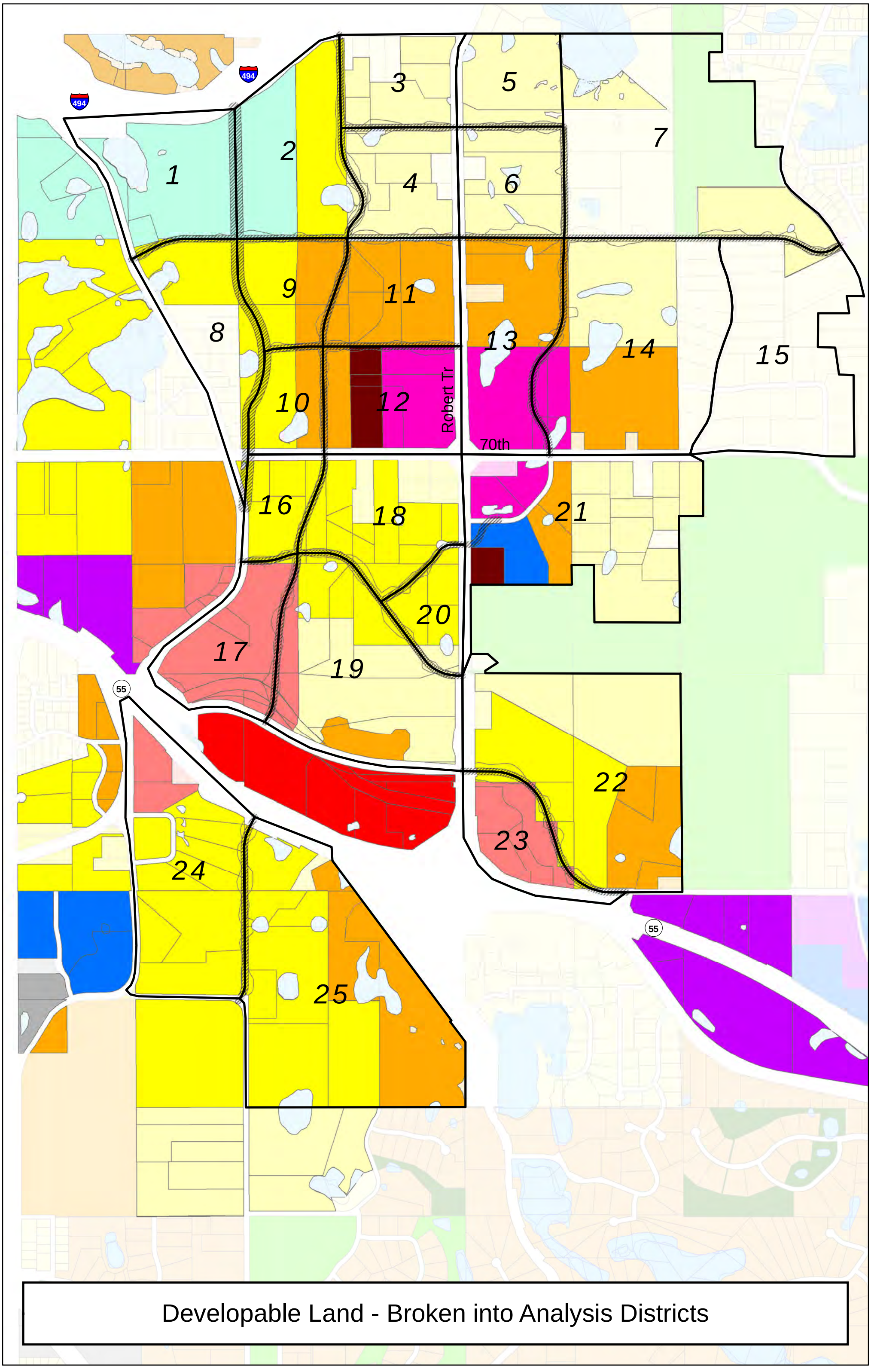


FIGURE 5-2. Recommended Collector Roadway System with Potential Access Locations

NORTHWEST EXPANSION AREA COLLECTOR STREET SYSTEM STUDY

N

WSB & Associates, Inc.



Developable Land - Broken into Analysis Districts

MEMORANDUM

Hoisington Koegler Group Inc.

To: Tom Link, Community Development Director

From: Brad Scheib, AICP

Subject: Analysis of Development Capacity within the Northwest Area

Date: 25 October 2006

Summary

This memorandum serves two purposes. First, it clarifies developable area in order to derive the most accurate estimate for the total development capacity of the Northwest Area. Secondly, it clarifies the land areas that should be used in determining future financial projections and funding strategies for public improvements.

There are roughly 3,090 acres within the northwest area. Of that area, approximately 1,734 acres are considered "developable acres." This represents nearly 56% of the total Northwest Area. Developable acres are those areas that are not needed for major road rights-of-way, are not already developed (existing parks and golf course are considered developed), and are not constrained by sensitive environmental resources regulated by any state, federal or local laws including conservation easements. Developable area is further described later in this memorandum.

A development capacity of approximately 6,040 housing units and 4.9 million square feet of non-residential development is projected for the Northwest Area. These projections are based on the future land use plan established through the Comprehensive Plan and subsequent master planning efforts. Infrastructure systems developed for the Northwest Area will service this development.

Nine (9) parcels representing approximately 98 acres of land area in the Northwest Area have already paid assessments for area charges. These parcels have not developed and paid connection charges to date. Some of these parcels only paid a partial assessment resulting in a total of only 74 acres that have already paid area assessment charges. Because they have already been assessed for area charges, these areas will not be included in the formula for assessing infrastructure costs on an area wide basis. However, these parcels have not yet connected to urban services. Infrastructure from the Northwest Area will better service these parcels, thus the land area is included in establishing development capacity for the Northwest Area.

Methodology and background data used for this assessment is documented below.

123 North Third Street, Suite 100, Minneapolis, MN 55401-1659
Ph (612) 338-0800 Fx (612) 338-6838 www.hkgi.com
Direct (612) 252-7122 Email bscheib@hkgi.com

Background

In the last several years, 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 and was conducted at varying degrees of detail and resulted in planning projections for the Northwest Area that had some variations. As each stage of the planning becomes closer to actual implementation, the level of detail becomes more thorough, as does the desire for exact, field certifiable data. In all cases, however, a *comprehensive planning* level of analysis has been maintained. This is different from the *site planning* level, where a project may have a physical land survey to inform the analysis. Planning and engineering efforts done to date have relied on available mapping information that originated from sources such as Dakota County, MnDOT, Metropolitan Council, DNR (County Biological Survey), MPCA, USGS, or other governmental agencies. For the most part, theses sources did not include field verification other than review of aerial photography and in some cases select site visits. Other layers of information have been assembled by various consulting firms to depict such features as existing and future land uses, natural resource priority areas, hydrology patterns, roadway corridors and future parks. The following summary provides a brief description of varying levels of analysis conducted by the City for the Northwest Area and a rationale why projections may vary slightly between each analysis.

1. ***Comprehensive Plan***: Comprehensive Planning is conducted at the broadest level of all planning efforts. The objectives of a comprehensive plan are to establish a community wide vision with a broad set of goals and policies intended to assist decision makers in the evaluation of development projects and capital investments. This requires projecting household and employment growth city wide and establishing system plans to support those projections. As part of the City of Inver Grove Heights Comprehensive Planning efforts, household projections ranged between 6,500 and 8,000 new units for the entire city between 2000 and 2020. Subsequent projections for the Northwest Area fall within that general range of these growth projections. Within the Comprehensive Plan, the Northwest Area is specifically addressed through identifying future MUSA expansion plans. Thus the boundary for the Northwest Area followed more rigid parcel line boundaries that comprised hypothetical sewer districts and resulted in an acreage total of 2,937 acres (see Sanitary Sewer System: MUSA Expansion Area Figure 1 page 139 of the Comprehensive Plan and Appendix B-1).

2. ***Northwest Quadrant Pilot Study***: The Northwest Quadrant Pilot Study did not project total household growth but instead its objective was to determine if housing density could be spread across an area in attempt to protect some areas that have greater potential for infiltration, while loading greater levels of development on other areas. The study only looked at a small portion of the Northwest Area. The level of mapping and analysis for this project relied on natural resource and hydrology evaluations that were based on a review and ranking of various environmental and geologic/hydrology data. The pilot study determined that future urban development, if done in a certain manner, does have the potential to minimize storm sewer infrastructure. The manner of development referred to is a more environmentally sustainable development pattern that explores clustering of density in areas more suitable for development and preserving those areas that are more inclined to infiltrate storm water runoff.

3. ***The Natural Resource Inventory and Management Plan***: The NRI and Management Plan was conducted utilizing methods that are standardized to the industry. Using available natural resource information (NWI, PWI, DNR Biological Survey, topography, soils data, aerial photography), resources were inventoried and mapped. Some select areas were evaluated in the field. The resources were then ranked according to industry standard methodologies. The methodology is thoroughly documented in Chapter 4 of the NRI document. The boundary for the Northwest Area was drawn with a more natural line following contours and watershed district boundaries. The total acreage was estimated at roughly 3,140 acres. This area (3,140 acres) has been a consistent area carried through the Northwest Area AUAR and Feasibility Study for Water and Sewer.

4. ***The Northwest Quadrant Hydrologic and Hydraulic Analysis:*** This study was completed in February of 2004. The study began with similar project boundaries as the Northwest Quadrant Pilot Study but was later expanded to include the entire Northwest Area. However, the geographic boundaries of this effort focused on the sub-watershed district boundaries and did not necessary match the boundaries used for other study initiatives. Land use assumptions for this study were based on the Comprehensive Plan and the subsequent Northwest Quadrant Pilot Study.

5. ***The Northwest Area AUAR***: The AUAR projected development that would reflect the greatest level of development within the Northwest Area. This level of development was determined by establishing a more detailed land use pattern than the Comprehensive Plan. The land use patterning incorporated greenway features and open space areas and determined developable acreage by extracting areas for existing road right-of-way, future road right-of-way for new roads, NWI wetlands and open water bodies. Household projections were made for residentially guided land areas based on assumed densities. The result was a total of 7,090 housing units and approximately 410 acres of Industrial/Office, 1,434,760 square feet of pure office and 1,674,215 square feet of commercial retail/service (see table 7.1 of the AUAR) that were used to evaluate impacts (traffic, sewer demand, public water demand, environmental). The project boundary followed physical boundaries including roadway corridors, corporate boundaries or parcel boundaries. The project area acreage was estimated at 3,140 acres.

6. ***Feasibility Report (Water and Sanitary Extensions)***: The Feasibility Report utilized the projections from the AUAR and natural resource information from the NRI to determine the feasibility of constructing a system of public water and sanitary sewer infrastructure to serve the Northwest Area. The feasibility study followed the same rigid boundary lines of the Northwest Area using parcel boundaries, corporate limits and road rights-of-way (total area of 3,140 acres). This analysis was used to determine location and sizing of infrastructure systems. The design and associated cost estimates for the system were based on 7,481 total residential units, 11 acres of public or institutional use, 359 acres of industrial/office, 5 acres of commercial, and 230 acres of golf course and existing parks (see appendix C-1.) Sizing of infrastructure systems area was generally based on a maximum level of development to ensure adequate capacity. This study also used these land use projections to establish cost estimates and general financing strategies for capital improvements.

7. ***Park Planning***: In January of 2006, Brauer and Associates completed a concept draft of the Northwest Area Park System Plan. This concept evaluated the level of park needs in the Northwest

Area based on the land use patterns and service areas within the Northwest Area. The park plan utilized the same project boundaries and population/household projections from the AUAR to establish estimated park needs and generalized locations for park facilities.

8. ***Financing Policies (Ehlers and Associates)***: A detailed financial analysis was conducted to determine the best approach to funding the capital improvements. A policy was established that was based on the assumption that the Northwest area will be developed to 80% of the assumptions estimated in the Northwest Area Water and Sanitary Sewer Extensions Feasibility report dated May 2005. This results in approximately 6,000 total residential *connections* which were used as the basis of the financing plan.

Issue

Concerns have been raised that the Northwest Area residential development projections (land supply) have been overstated particularly as it relates to building public infrastructure and financing the infrastructure investment. Such overstatement of development projections may result in putting the City of Inver Grove Heights at risk of not being able to support enough future development to pay off debt secured to finance the improvements.

Analysis Purpose

The purpose of this analysis and memorandum is to re-evaluate the land area within the Northwest Area and to account for development projections with a better understanding of potential development constraints. This analysis will provide verification of the residential development assumptions used for the infrastructure and financial planning efforts.

Methodology For Determining Developable Areas

The following step-by-step methodology was used to reaffirm development projections in the Northwest Area. The primary point of this effort was to establish a "net developable area" as defined in the City's draft of the Northwest Area PUD Overlay District and to assign reasonable density assumptions to these areas in order to establish development projections. In the draft of the Northwest Area PUD Overlay District, net developable area is defined as "the area of a property remaining after excluding those portions that are either: a) encumbered by right of way for principal arterial roads as defined in the Inver Grove Heights Comprehensive Plan; or b) lying below the ordinary high water level of public waters as identified in the Shoreland Overlay District (see City Code Section 515.80, Subd. 30); or c) lying within the boundaries of wetlands delineated according to the Minnesota Wetland Conservation Act; or d) bluffs in Shoreland Overlay Districts abutting public waters; or e) land to be dedicated to the City of Inver Grove Heights for public park/recreation area purposes."

1. **Starting Point**—the analysis began with the most current Dakota County Tax Parcel Data Base. This database is in a Geographic Information System format which allows the mapping of various tax data on a parcel by parcel basis. Generally, the acreage counts for each parcel are reflected in this database on a gross (total) parcel area. The data base for the Northwest Area represents a total of 494 tax parcels.

2. **Assign Land Uses**—land uses were assigned to each parcel as articulated in the AUAR Land Use Plan. Acreages for each category are provided in the table below and are illustrated in the attached Land Use Figure (Figure 1). This figure is a direct reflection of the Future Land Use figure contained in the Northwest Area AUAR.

3. **Extra Right-Of-Way (ROW) considerations**—ROW that was included in the original Dakota County parcel database was expanded upon to include necessary ROW for existing and future arterial roadways. This land area was not factored into prior analyses. The ROW was tabulated and extracted from each applicable land use designation in the table below and is illustrated in an attached figure (Figure 2). Extra ROW calculations performed as part of this analysis represent a departure from previous analysis within the AUAR and Feasibility Study.

4. **National Wetlands Inventory (NWI) and Public Waters Inventory (PWI)**—these features are extracted from the gross acres as they are undevelopable land areas. These features were also extracted when determining net acres in the previous analysis. NWI and PWI were data obtained from regional and national mapping sources. NWI and PWI are illustrated in Figure 3.

5. **Future Parks**—future parks were not anticipated in the AUAR land use projections. Previous assumptions were that parks would be accommodated within greenway and open space areas. Thus there was no deduction from developable lands in projecting development. An attached figure illustrates a number of areas where the recently completed Northwest Area Park System Plan concept illustrates park needs. An estimate of acres accompanies each park based on the type of park planned. This analysis extracts a total of roughly 33 acres for future park needs from the developable area. This area is not attributed development capacity. Future park areas are illustrated on Figure 1.

6. **Bluff Analysis**—additional evaluation was conducted to determine areas that are protected from development based on the Northwest Area PUD overlay ordinance definition. Bluffs within shoreland areas are protected by the shoreland ordinance. These areas are represented in an attached figure (see Figure 3). The bluffs were determined by conducting a slope analysis using two foot contour data and the definition of bluffs as represented in the shoreland ordinance (a grade of 18% or more stretching a distance of 50 feet or more). Deducting these areas also reflect a departure from previous analysis.

7. **Conservation Easements**—a legally recorded easement on property protecting it from development is considered another constraint to development. To date, one property owner has placed their property under a permanent conservation easement prohibiting future urban development. Existing known conservation easements areas are identified. (see Figure 4)

8. **Exception Neighborhoods**—for planning analysis in the Northwest Area, an assumption was established early on in the Comprehensive Planning process that certain neighborhoods already developed to a rural large lot pattern in the Northwest Area would be exempt from being serviced with City Sewer and Water. These areas are often referred to as "exception neighborhoods". Those neighborhoods are illustrated in Figure 4 and include the Rosenberger Lake, Leitch Estates, Inver Grove Acres/Scales Landmark Addition and the MacGregor Acres Neighborhoods.

9. **Small Lots**—there are also a number of parcels outside of the exception neighborhoods that will be "unlikely to participate" in the Northwest Area improvement project. Given their size of generally less than 2.5 acres, it is assumed that they will not redevelop. It should be noted that the infrastructure system was designed with enough capacity to serve these areas should they need or desire services in the future. Small lots are illustrated in Figure 4.

10. **Resultant Net Acres**—extracting the above constraints from the gross acre tabulations by land use category results in a net developable acreage tabulation for the Northwest Area. This area is then used to estimate development capacity.

Table 1 provides a summary of net land area by category. The land uses are broken into two categories: developable and constrained/un-developable.

Table 1—Land Use Acres

Land Use Category	Acres	Sub-total
Developable Land Areas		
Low Density Residential (LDR)	*407*	
Low/Mid Density Residential (LMDR)	*567*	
Mid Density Residential (MDR)	*282*	
High Density Residential (HDR)	*45*	
Mixed Use	*59*	
Office	*100*	
Commercial	*51*	
Industrial/Office	*168*	
Public/Semi-Public	*56*	*1,734*
Constrained/Un-developable Area		
Golf Course	243	
Open Space (Malensak)	49	
Existing Park	58	
Future Parks	33	
Shoreland Bluff	5	
Small Lot (<2.5 ac.)	56	
Exception Neighborhood	382	
Public Waters Inventory (PWI)	69	
Existing Right-of-Way (ROW)	322	
Additional Right-of-Way (ROW)	56	
National Wetlands Inventory(NWI)	82	1,354
Total Area	**3,089**	**3,089**

Methodology for Determining Development Projections

Residential Density

Directions for assuming development densities started with the Comprehensive Plan. Density assumptions were further informed through the Northwest Quadrant Pilot Study. The densities were established by exploring feasible development patterns that are reflective of the character and topography of the Northwest Area as articulated in the Northwest Quadrant Pilot Study. The densities utilized for the assumptions generally fell within the middle to lower end of density ranges evaluated in previous planning efforts including the Comprehensive Plan and the Pilot Study. Staff chose the middle to lower end of the density ranges due to an understanding of the physical site characteristics (topography, wetlands, woodlands, etc…) present in the Northwest Area. Those densities included:

Low Density Residential	2 units per acre
Low/Mid Density Residential	4 units per acre
Medium Density Residential	6.5 units per acre
High Density Residential	12 units per acre
Mixed Use Residential	15 units per acre

Note: The Comprehensive Plan assumptions for low density residential assumed 3.0 units per acre. Medium and high density land uses were assumed to collectively average 9 units per acre. Two thirds (2/3) of the mixed use area was assumed to be attached residential development; however, no density assumptions were made.

The resultant density based on this analysis represents an average density of 4.5 units per acre when extracting those land areas that are not expected to develop. This estimate of 4.5 units per acre only includes developable lands guided for residential use. When factoring back into the equation the existing residential developments on larger lots and local parks, the net density becomes 3.4 units per acre. The Metropolitan Council policy is to only deduct parks that are part of the regional system, so existing local parks and future local parks are not deducted.

Commercial and Industrial Density

For commercial and industrial development, staff assumed a Floor Area Ratio or FAR. FAR represents the ratio of building square feet to the total area of the parcel. Assumptions for FAR were developed based on an analysis of industry trends and research that was conducted while developing the Northwest Area PUD Overlay. The FAR assumptions included a 0.3 FAR for office and industrial buildings and a 0.25 FAR for commercial uses.

There are a number of properties that are currently owned by church organizations. Some of these parcels are not currently developed on or have excess land area for their immediate needs. There is some speculation that these parcels may consider residential development on them should the long term plans to use the site for church needs not come to fruition. This assumption was not included in the estimates for financing public improvements.

Development capacity estimates are included in Table 2 on the following page.

Table 2—Development Capacity Projections

Land Use	Net Developable Acres	Density Assumptions (units per acre)	Residential Units
LDR	407	2	815
LMDR	567	4	2,267
MDR	282	6.5	1,833
HDR	45	12	536
MIXED USE	39	15	588
Sub Total	**1,340**		**6,040**
		floor area ratio	**Square feet**
COMMERCIAL	51	0.25	551,894
INDUSTRIAL/OFFICE	168	0.3	2,192,941
OFFICE	100	0.3	1,311,021
MIXED USE	20	0.25	213,549
PUB SEMI-PUB	56	0.25	608,457
Sub-Total	**394**		**4,877,863**
Total Developable Area	**1,734**		

Areas Deducted for Finance Planning Purposes

Future infrastructure systems will need to be financed based on the ability of the area to generate development. This ability is determined by individual parcels development capacity. At a planning level, this analysis has determined that there are approximately 1,734 acres that could be developed and yield roughly 6,040 housing units and 4.9 million square feet of non-residential development.

However, some parcels have been assessed as a part of adjacent infrastructure projects. These parcels were assessed so that they could potentially hook up to sewer and water services should they choose to do so. Because of this, these parcels representing 74 acres will not be included in the Northwest Area calculations when determining the financing strategy. These parcels are illustrated in Figure 5.

Comparison of Analysis to Development Projections that formed the basis for the Financial Planning

The Financial Policy for funding of public improvements assumed 80% of the projected development in the Northwest Area. This 80% was based on the number of potential "connections" to the system and represents a total of 6,000 residential connections.

Based on the additional analysis outlined in this memorandum, the information indicates that there is adequate development capacity in the Northwest Area to meet or exceed the estimated connections assumed in the financial model. Taking a closer look at "net" areas and making further assumptions about parcels "unlikely to participate", it has been determined that the assumed development capacity of the area is roughly 6,040 housing units.

Attachments:

Figure 1 -- Future Land use map with future park areas
Figure 2 -- Additional ROW areas
Figure 3 -- Wetlands, Public Waters and Shoreland Bluffs
Figure 4 – Exception Neighborhoods, Small Lots and Conservation Easement
Figure 5 – Areas Already Charged Areawide Assements

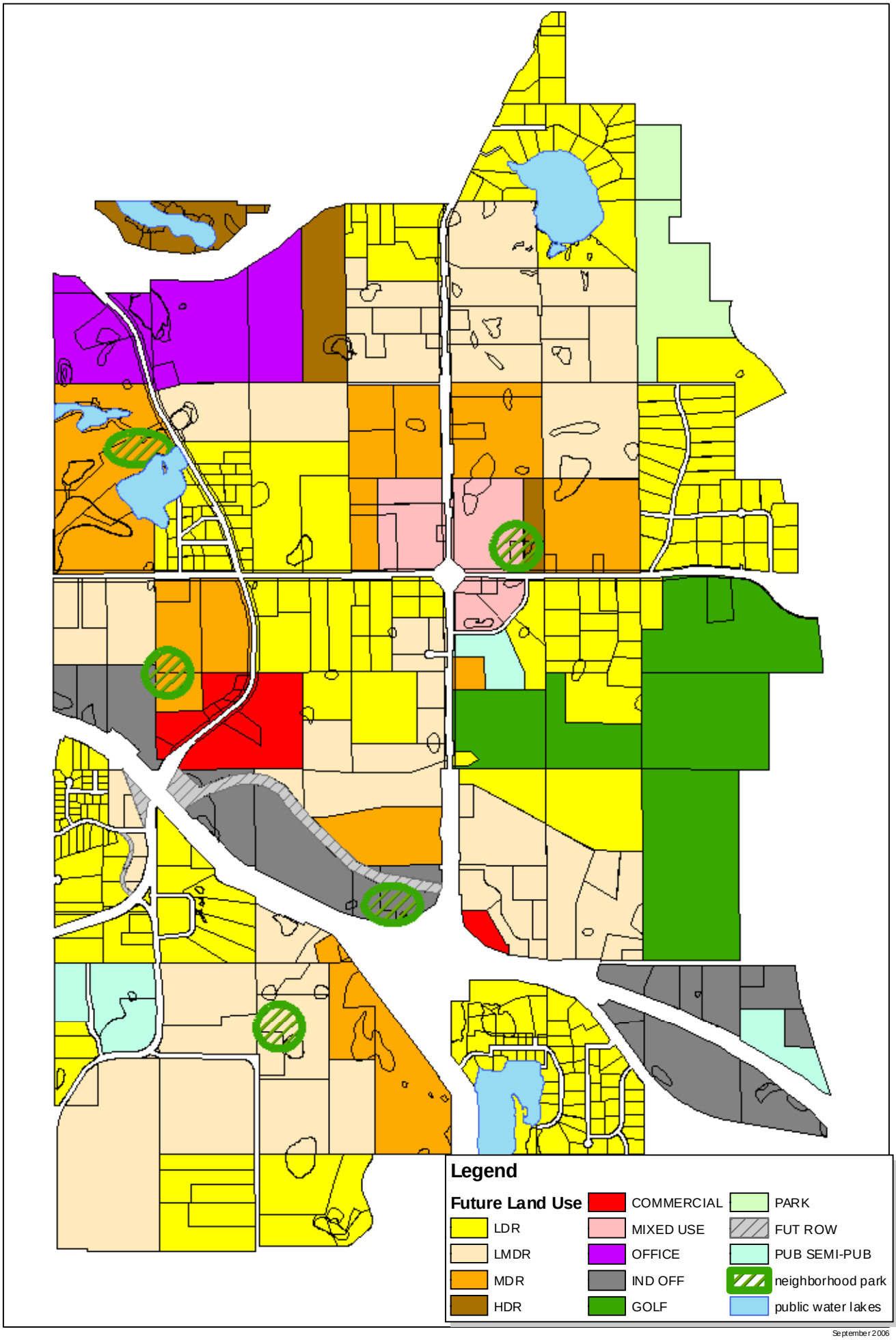


Figure 1 -- Future Land Use Map

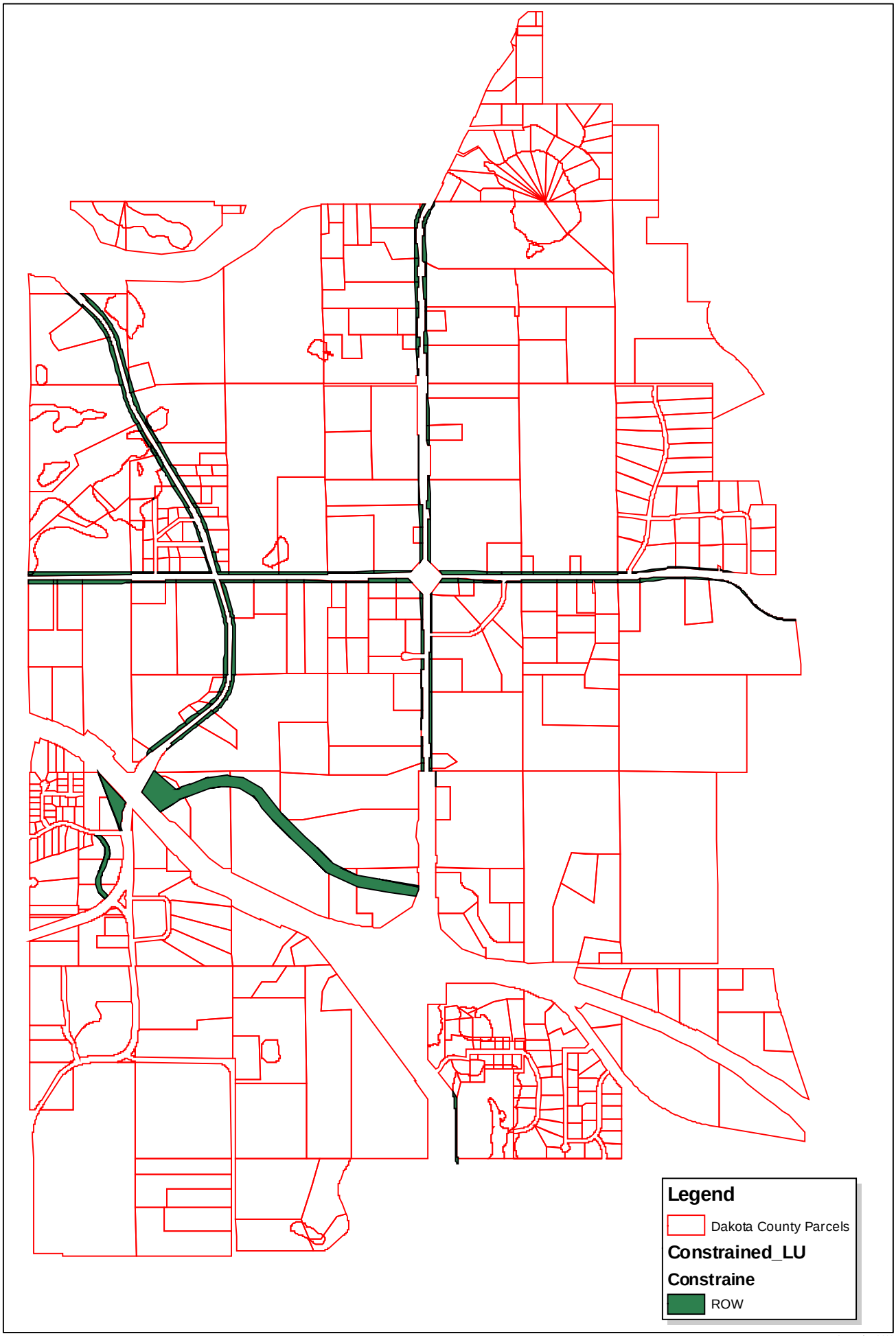


Figure 2 -- Additional Right-Of-Way

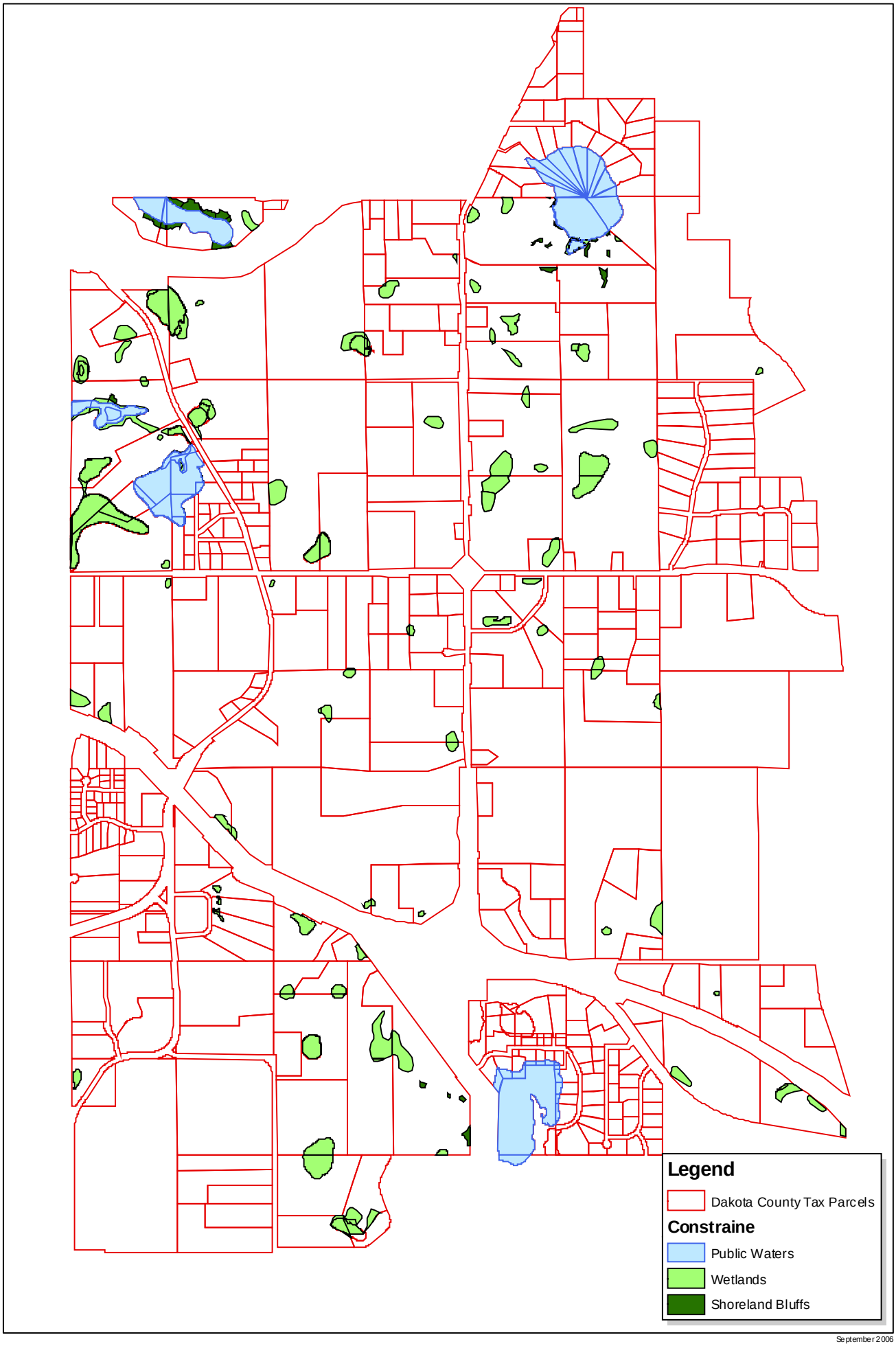


Figure 3 -- PWI, NWI and Shoreland Bluffs

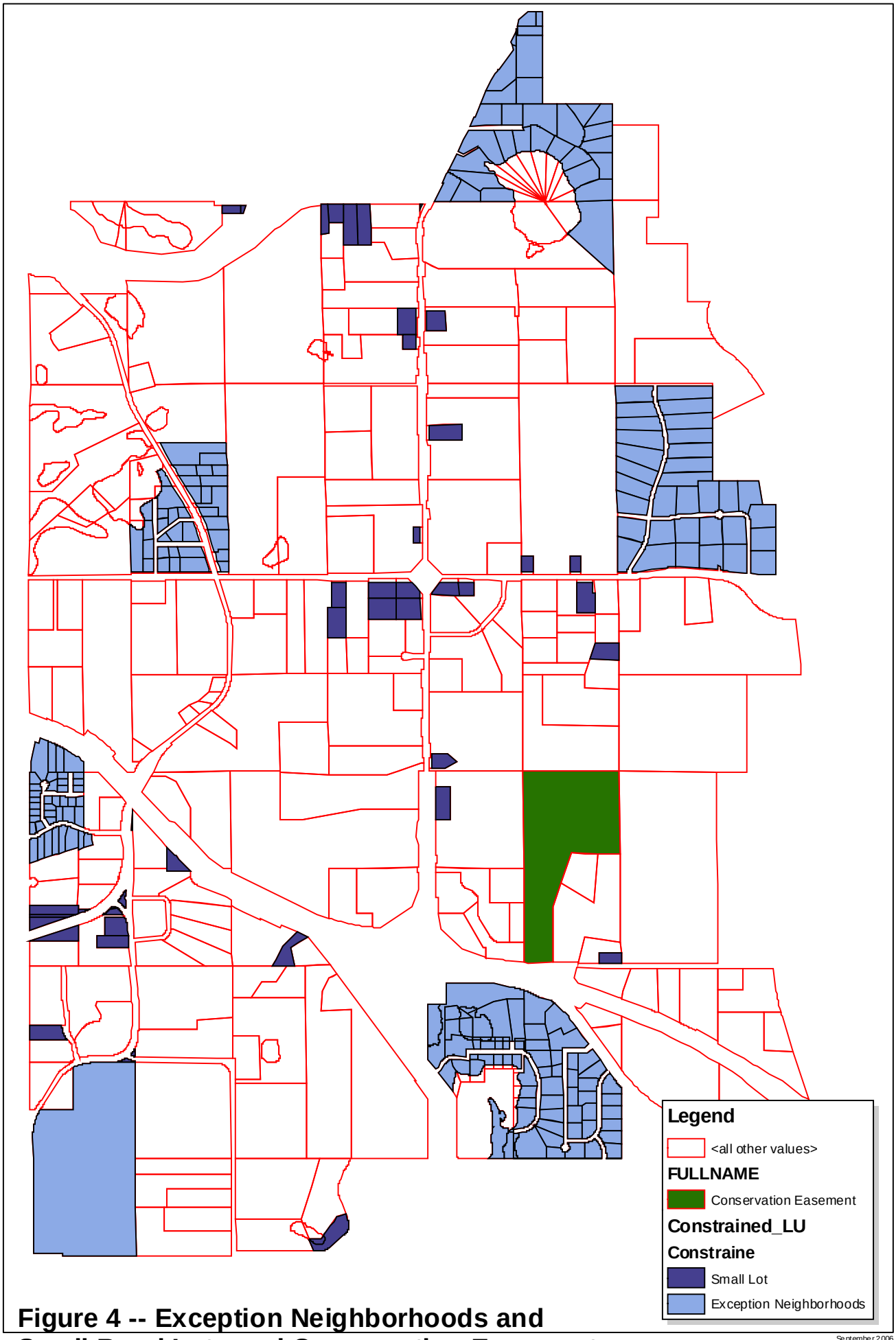


Figure 4 -- Exception Neighborhoods and Small Rural Lots and Conservation Easement

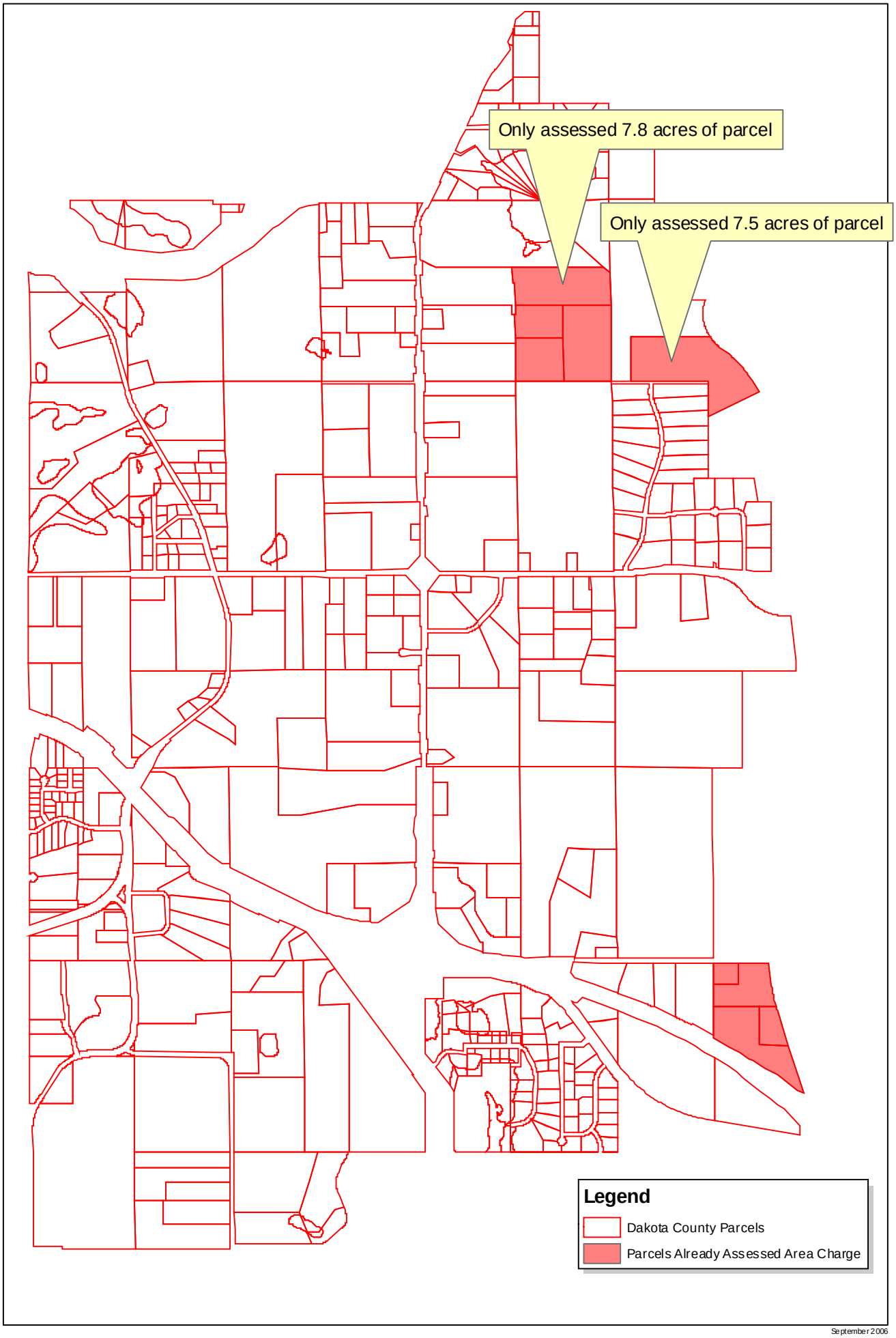


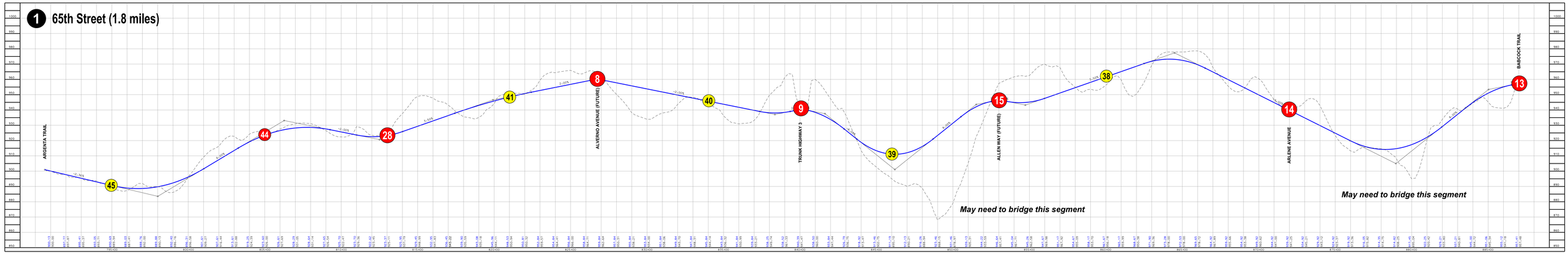
Figure 5 -- Areas Already Assessed Area Charges

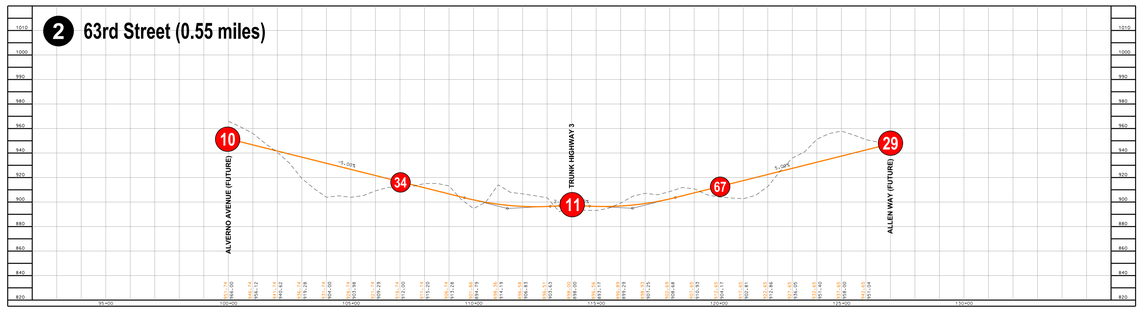
APPENDIX C: Horizontal and Vertical Layouts for Collector System

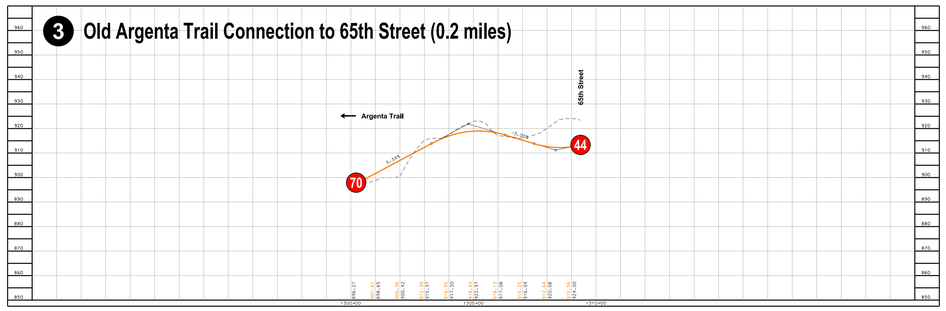
NOTE:
A sleeve containing printed fold-outs of the Horizontal and Vertical layouts (Figures 5.3 and 5.4) is located on the back cover of this report.

Preliminary Collector Roadway Profiles
City of Inver Grove Heights, Minnesota

APPENDIX C
Figure 5-3. Vertical Alignments for Roadways: 1-6

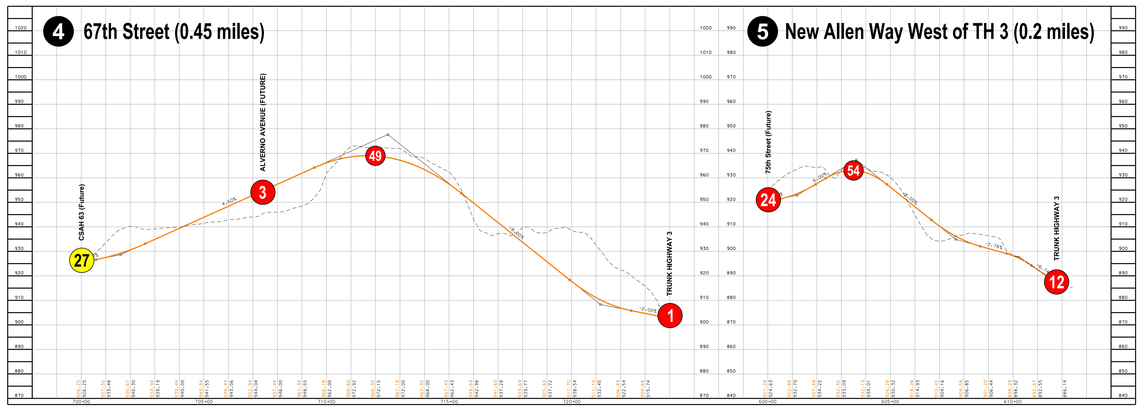


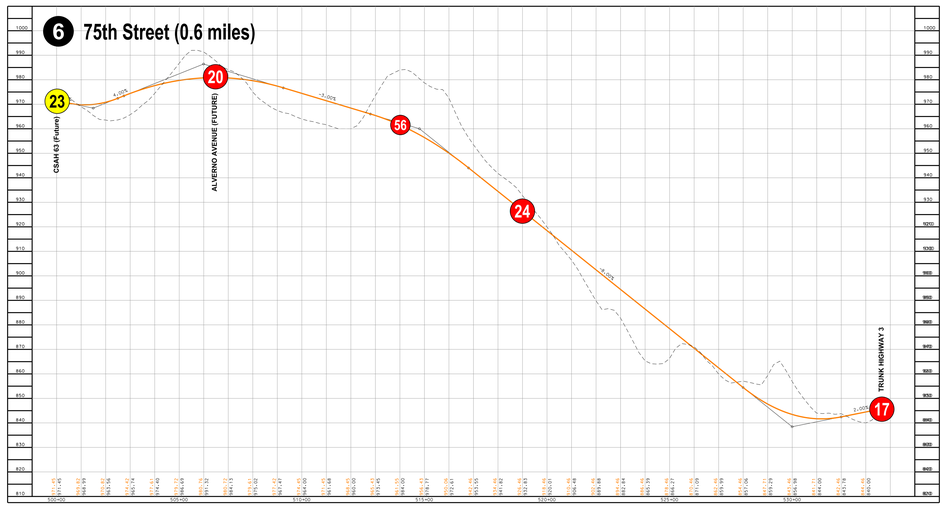




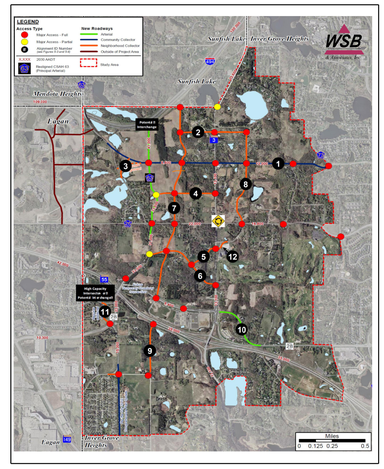
New Roadways
- Arterial
- Community Collector
- Neighborhood Collector

Access Points
- XX Major - Full Movement
- XX Minor - Full Movement
- XX Major - Partial Movement
- XX Minor - Partial Movement



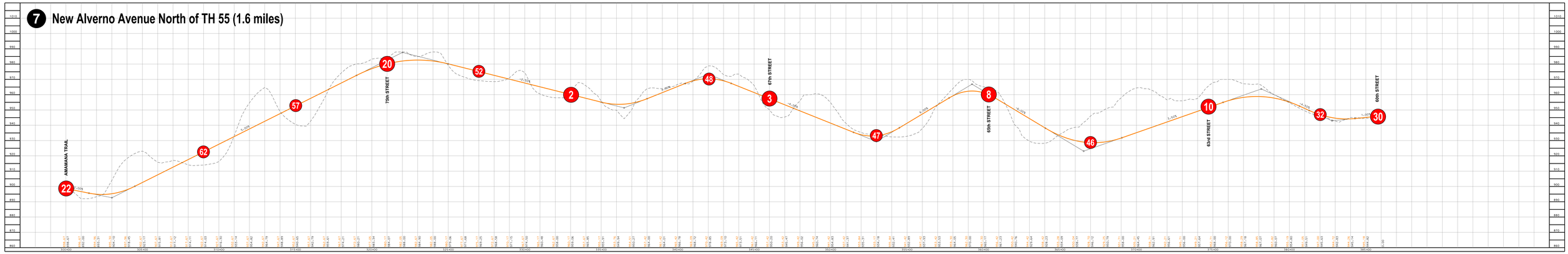


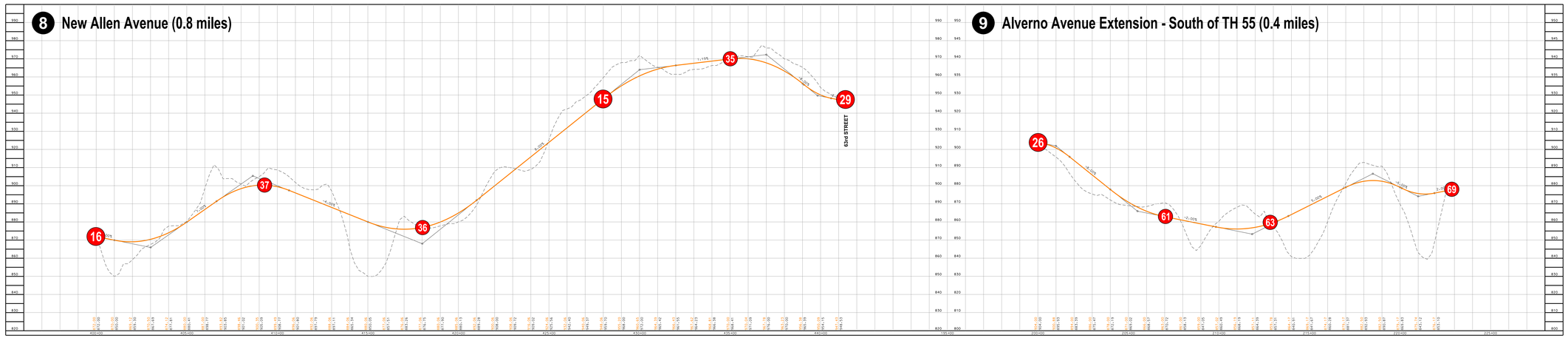
Map Legend



Preliminary Collector Roadway Profiles
City of Inver Grove Heights, Minnesota

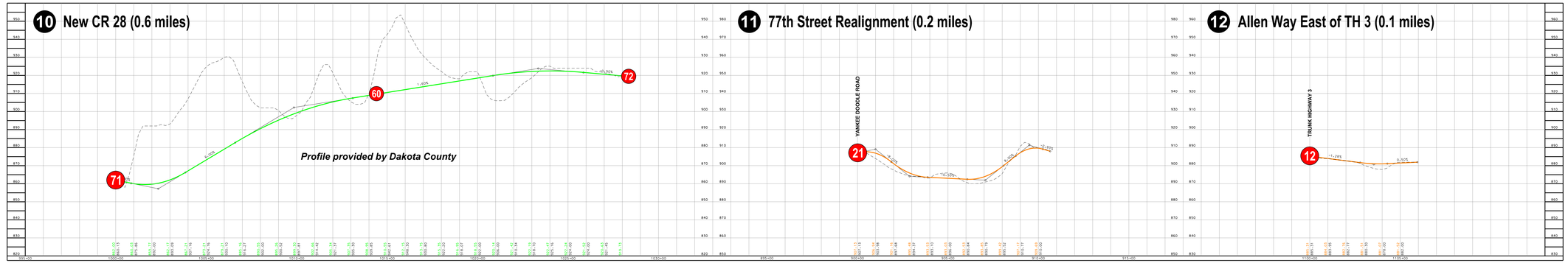
APPENDIX C
Figure 5-4. Vertical Alignments for Roadways: 7-12



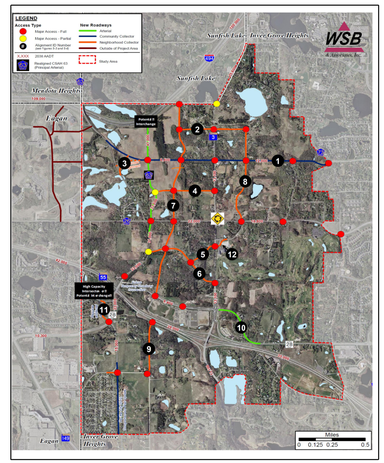


New Roadways
- Arterial
- Community Collector
- Neighborhood Collector

Access Points
- XX Major - Full Movement
- XX Minor - Full Movement
- XX Major - Partial Movement
- XX Minor - Partial Movement



Map Legend



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