SHERBURNE COUNTY

Twin Lakes Road / CSAH 13 Corridor Study

Final Report

May 2019

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Acknowledgments & Certification

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I hereby certify that this plan, specification or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

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Table of Contents

1. Resources.....2

2. Executive Summary.....3
   Study Partners; Timeline; Improvement Overview

3. Corridor Overview.....5
   Study Extents; Corridor Importance; Corridor Description

4. Existing Conditions.....11

5. Forecasted Conditions.....19

6. Public Input.....23

7. Recommended Improvements.....27

8. Implementation and Phasing.....45
   Implementation Time frames; High-Level Cost Estimates; Funding Opportunities

Appendices

I: Public Meeting Summaries
II: Project Management Team Meeting Summaries
III: Existing Conditions Memorandum
IV: Forecasted Conditions Memorandum
V: Environmental Screening Report

List of Figures

Figure 1: Study Area and Segments
Figure 2: Known Improvements
Figure 3: Sherburne County Access Spacing Guidelines
Figure 4: Access Inventory
Figure 5: Crash Inventory
Figure 6: Public Input Summary
Figure 7: Improvements Overview Layout

List of Tables

Table 1: Study Intersections and Segments
Table 2: Existing Population
Table 3: Access Inventory
Table 4: Crash Inventory
Table 5: Operations Analysis
Table 6: Forecasted Population Growth
Table 7: Issues and Opportunities
Table 8: Proposed Segment Improvements
Table 9: Proposed Intersection Improvements
Table 10: Turn Lane Warrants
Table 11: Proposed Non-Motorized Improvements
Table 12: Improvements Summary
Table 13: Implementation Time Frames
Table 14: Cost Estimate Descriptions
Table 15: Funding Sources and Application Periods
Table 16: Implementation Plan

Resources

The following list of previous studies were used as resources in the creation of the existing conditions, forecasted conditions, and recommendations outlined in this report:

- *Intersection Control Evaluation (ICE) for CSAH 13 (Twin Lakes Road NW) at CR 40 (Cleveland Street NW).*
  City of Elk River & Sherburne County. November 2017.

- ***Line Avenue Traffic Operations Study.***
  City of Elk River. 2016.

- ***Sherburne County Park, Trail, and Active Living Plan.***
  Sherburne County. 2016.

- ***City of Elk River Parks and Recreation Master Plan.***
  City of Elk River. 2015.

- ***Elk River Comprehensive Plan.***
  City of Elk River. 2014.

- *171st Avenue Alternative Urban Areawide Review (AUAR).*
  City of Elk River. November 2011.

- ***171st Avenue Focused Area Study (FAST).***
  City of Elk River. June 2010.

- ***TH 169, Elk River to Zimmerman Environmental Assessment/Environmental Assessment Worksheet.***
  Minnesota Department of Transportation (MnDOT) & Federal Highway Administration (FHWA). 2010.

- ***Sherburne County Long-Range Transportation Plan.***
  Sherburne County. 2007.

Executive Summary

Introduction

The County State Aid Highway 13 (CSAH 13)/Twin Lakes Road (TLR) corridor runs through the City of Elk River, in Sherburne County, from Trunk Highway (TH) 10 to the east edge of Elk river on the Anoka County line and is significant to both regional and local travel. It intersects with CSAH 12 (181st Avenue NW) midway through the study area, an important east-west corridor for both the county and city. South of CSAH 12, Twin Lakes Road is a city street and north of CSAH 12 Twin Lakes Road is designated as CSAH 13.

Study Partners

This study was conducted by Bolton & Menk with oversight and direction provided by Sherburne County and the City of Elk River. Bolton & Menk project staff worked closely with these agencies throughout the study process to ensure the recommendations of this study and implementation plan reflect their desires and align with overall community goals. Minutes from Project Management Team (PMT) meetings can be found in Appendix II.

Study Timeline

Data collection for this study occurred in the spring of 2018. Study development and public & agency engagement occurred throughout the summer months. This study was completed in the winter of 2018/19.

Purpose & Need

The purpose of this study is to identify issues and make recommendations for improvements along CSAH 13/Twin Lakes Road to ensure that the corridor can safely and efficiently accommodate the various functions it supports now and in the future. Traffic growth and continued local and regional circulation improvements require an ongoing evaluation of the roadway facilities. The corridor is significant for local access and circulation, and regional travel. Twin Lakes Road must also support current and future economic and social activity as well as accommodate future development for a variety of uses along the roadway.

This study aims to identify a vision for the Twin Lakes Road corridor to guide improvements in support of the following goals:

Growth

- Examine the impacts and develop an understanding of how local and regional growth and area land use will affect the corridor

Safety

- Analyze crash data and develop appropriate improvement recommendations
- Provide recommendations for pedestrian/ bicycle facility improvements

Process

- Collaborate plan and recommendation development between Sherburne County, the City of Elk River, and the local community
- Provide an engaging and transparent process which seeks out and incorporates input and feedback from the community

Funding

- Identify funding opportunities that align with corridor goals to develop projects that will best leverage county and city resources

Key Findings

- Driver use of the shoulder for passing on the right at intersections in the Middle Segment - including 193rd Avenue NW, Tyler Street/Twin Lakes Parkway, and Trott Brook Parkway - is a traffic operations issues and safety concern for pedestrians and drivers.
- Based on public comments and concerns, vehicle travel speeds in the North Segment are perceived to be above the posted 55 miles per hour (mph) speed limit.
- There are gaps in the non-motorized transportation facilities along Twin Lakes Road, particularly in the Middle and North Segments, and between the BNSF railroad and TH 10 in the South Segment.
- There are numerous intersections along Twin Lakes Road that have significant crash history, The following intersections with Twin Lakes Road have a critical crash rate index greater than one:
    - 205th Avenue (CSAH 33)
    - Viking Boulevard
    - Cleveland Road
    - Line Avenue
    - 181st (CSAH 12)
    - 175th Avenue NW
    - TH 10
- Nearly all intersections operate at an acceptable level of service during peak traffic hours for existing and forecasted traffic conditions.
- Travel experience along Twin Lakes Road for all modes would improve in the areas of safety, multi-modal opportunities, and intersection operations with improvements identified in this study.

Recommendations

For a complete list of recommendations, refer to pages 27-43 of this report. A summary table can be found on page 43.

Corridor Overview

Study Extents

The segment of County State Aid Highway 13 (CSAH 13)/Twin Lakes Road included in this study extends between the intersections with Trunk Highway 10 (TH 10)/Trunk Highway 169 at the southern limits to CSAH 33 at the northern limits. A map illustrating the study area can be seen in Figure 1.

Corridor Importance

Twin Lakes Road runs through the City of Elk River from TH 10 in the south to the Anoka County line on the eastern edge of Elk River. Within the study corridor, Twin Lakes Road provides unique and significant road network connections to the local area, the region, and greater Minnesota. Twin Lakes Road serves local circulation within Elk River along the east side TH 10 and TH 169 and supports access to the significant commercial (Walmart, Home Depot), industrial (Morrell Trucking, Lefebvre Trucking, and SportTech), and residential (multi-unit and single family) development. There are also important institutional uses along the corridor that include the Northstar train station, Spectrum High School, Twin Lakes Elementary School, and Emmanual Christian Center.

At the midpoint of the study corridor Twin Lake Road intersects with Sherburne CSAH 12/181st Avenue NW. Just to west, 181st Avenue NW connects to TH 169. To the east, CSAH 12 becomes CSAH 22 in Anoka County and connects with CSAH 64, CSAH 5, and CSAH 83 (Baugh St NW/Armstrong St/ Armstrong Blvd). On the north end of the study corridor, Twin Lakes Road intersects with the east leg of Sherburne CSAH 33 and Anoka CSAH 22 corridor, providing significant regional access to the east with its connections to TH 47, TH 65, and eventually Interstate 35 in Stacy.

TH 10 reaches western Minnesota and North Dakota, and on an alignment with TH 169, connects to the north metro region. TH 169 provides a connection to northern Minnesota. These two highways also have an interchange with TH 101 about a half-mile from the study corridor that provides a significant freeway connection to Intestate 94 in Rogers to the south.

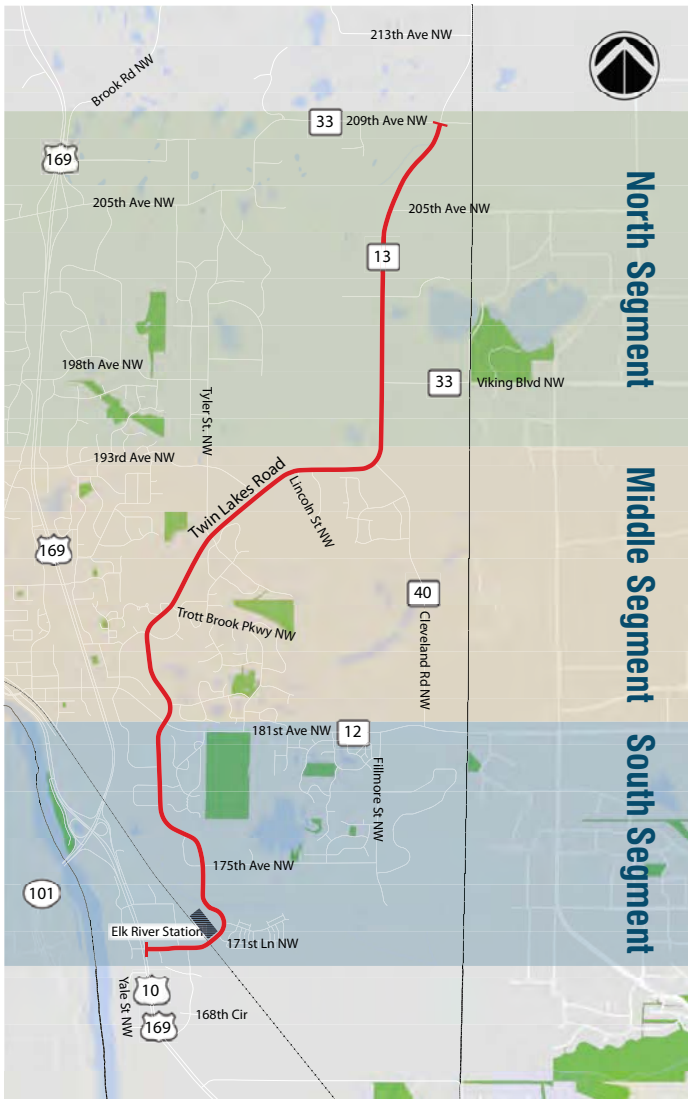


Figure 1: Study Area and Segments

Roadway Character & Description

The corridor study extents can be divided into three segments based on the roadway character & configuration, non-motorized facilities present, and the surrounding land uses. These segments are described below and are illustrated in Figure 1.

North Segment

The north study segment extends from CSAH 33/209th Ave NW to County Road 40 (CR 40)/Cleveland Road NW. This segment is characterized by a two-lane high-speed (55 mph) rural roadway carrying approximately 3,000 vehicles per day (vpd) near CSAH

33 on the north end of the study area. There is a paved shoulder, but no off-street non-motorized facilities. The surrounding land uses are primarily agricultural and rural residential.

Middle Segment

The middle study segment extends from CR 40/Cleveland Road NW to Line Ave/185th Ave NW. This segment is characterized by a two-lane high-speed (55 mph) roadway carrying roughly 6,900 vpd near Line Avenue on the south end. There is trail along the west side of the road between Trott Brook Pwky NW and Line Ave NW. A paved shoulder, but no other off-street non-motorized facilities, extend further north than Trott Brook Pwky. The surrounding land use is primarily rural residential.

South Segment

The south study segment extends from Line Ave/185th Ave NW to the intersection with TH10/TH169. This segment is characterized by a four-lane divided road with a sidewalk on the west side and trail on the east. Surrounding land uses include residential, commercial, and industrial. The existing ROW for this segment is generally 120-feet wide.

- CSAH 13/TLR between CSAH 12 and Line Avenue carries roughly 3,500 vehicles per day (vpd). This divided segment has dedicated left turn lanes at the one intersection along the segment. Due to local knowledge of a more convenient Line Avenue connection between CSAH 12 and CSAH 13, this segment of CSAH 13 is significantly underused given its capacity as a four-lane roadway.
- The section between CSAH 12 and the BNSF railroad carries approximately 5,400 vpd on the north end near CSAH 12 and approximately 6,200 vpd on the south end near the BNSF railroad. This segment has dedicated left turn lanes at most intersections.
- The four-lane undivided section of 171st Avenue NW between the BNSF railroad and TH 10/TH 169 carries approximately 6,800 vpd. This section does not have turn lanes. Instead, commuters have come to accept the westbound inside lane as a left turn lane at TH 10/TH 169.
- Within the above listed section, a segment of Twin Lakes Road running north-south intersects with the study corridor. This north-south roadway will be an important frontage road connection in the future.

Intersections & Roadway Segments in Study Area

The intersection and roadway segments within the study area are listed in the following table:

Table 1: Study Intersections & Segments

Identified Study Segment	Intersection with CSAH 13/TLR at:	Roadway Segment
North	CSAH 33/209th Ave NW	CSAH 33/209th Ave NW to CR 34/205th Ave NW
	CR 34/205th Ave NW	205th Ave NW to 201st Ave NW
	201st Ave NW	201st Ave NW to CSAH 33/Viking Blvd NW
	CSAH 33/Viking Blvd NW	CSAH 33/Viking Blvd to CR 40/Cleveland Rd
Middle	CR 40/Cleveland Rd NW	CR 40/Cleveland Rd to Kennedy St
	Kennedy St NW	Kennedy St NW to Lincoln St NW
	Lincoln St NW	Lincoln St NW to 193rd Ave NW
	193rd Ave NW	193rd Ave NW to Tyler St NW/Twin Lakes Pkwy NW
	Tyler St NW/Twin Lakes Pkwy NW	Tyler St NW/Twin Lakes Pkwy NW to 187th Ave NW/Trott Brook Pkwy NW
	187th Ave NW/Trott Brook Parkway NW	187th Ave NW/Trott Brook Pkwy NW to Line Ave NW/185th Ave NW
South	Line Ave/185th Ave NW	Line Ave NW/185th Ave NW to 182nd Ave NW
	182nd Ave NW	182nd Ave NW to CSAH 12/181st Ave NW
	CSAH 12/181st Ave NW	CSAH 12/181st Ave NW to 179th St NW
	179th St NW	179th Ave NW to Industrial Cir NW/178th Ave NW
	Industrial Cir NW/178th Ave NW	Industrial Cir NW/178th Ave NW to Industrial Cir NW
	Industrial Cir NW	Industrial Cir NW to 175th Ave NW
	175th Ave NW (North Connection)	175th Ave NW (North Connection) to 175th Ave NW (South Connection)
	175th Ave NW (South Connection)	175th Ave NW (South Connection) to 172nd Ave NW
	172nd Ave NW	172nd Ave NW to 171st Ln NW
	171st Ln NW	171st Ln NW to Twin Lakes Road NW
	Twin Lakes Road NW	Twin Lakes Road NW to Ulysses St NW
	Ulysses St NW	Ulysses St NW to Vance St NW
	Vance St NW	Vance St NW to TH 10/TH 169
	TH 10/TH 169 (Existing Location)	

Considerations

Known Improvements

The following improvements along the corridor were identified by either the City or County prior to the start of this Study and were taken into consideration when examining existing conditions and no-build scenarios. Improvements listed below have been illustrated in Figure 2.

- CSAH 33/Viking Blvd Roundabout (scheduled for construction in 2019)
- CR 40/Cleveland Rd Roundabout (scheduled for construction in 2019)
- Pedestrian improvements at Industrial Cir W/178th Ave NW. A Rectangular Rapid Flashing Beacon (RRFB) was installed at this intersection to facilitate students and staff crossing Twin Lakes to reach Spectrum High School. This was installed in the summer of 2018 after concern for pedestrian safety was voiced at the first Study Focus Group meeting.

Several other long-range improvements have previously been explored and identified by the City or County. These improvements range in timing and development level, with some having been planned and currently included in Capital Improvement Planning (CIP), while others are still being explored at the conceptual level. These improvements are listed below:

- CSAH 33 realignment: Sherburne County has previously explored the possibility of realigning the connection of CSAH 33/205th NW and CSAH 13/TLR to better facilitate stronger east-west connections in Elk River. This realignment would also work to mitigate roadway curvature issues between Vance St NW and Olson St NW and the lack of adequate

shoulder width or area for recovery after a lane departure along CSAH 33, both of which raise safety concerns. No definitive alignment has been determined and further study and community outreach is needed.

- Lincoln St extension to CR 40/Cleveland Rd: The City of Elk River has identified this connection for improved local circulation and emergency vehicle access. The area around CR 40/Cleveland Rd and 191st Ave NW has been or is slated for near term residential development and this extension of Lincoln St will support the local road network while providing another access to the Lincoln/Kennedy neighborhood.
- Twin Lakes Pkwy extension to CR 40/Cleveland Rd: The City of Elk River has identified this extension in order to support stronger east-west connections in the City and to support a well-connected local road network through these residential neighborhoods. The Twin Lake Parkway extension to Cleveland Road also supports east-west connections with Line Avenue, 193rd Avenue NW, and TH 169 and the residential and commercial areas along TH 169.
- Line Ave Closure: The City of Elk River completed the Line Avenue Traffic Operations Study in 2016 which proposed the cul-de-sac closure of Line Ave NW just south of the intersection with 5th St NW. The 5th St NW intersection would then realign such that 5th St would extend to CSAH 13/Twin Lakes Rd. The study was prompted by the desire for modifications along Line Ave to improve operations for the intersections at each end. Due to a known cut-through, drivers currently use Line Ave to get to/from CSAH 12 to CSAH 13/TLR. The study looked at opportunities and impacts from the realignment of 5th Street intersection with Dodge Avenue and Line Avenue to support Dodge to 5th Avenue as the dominate east-west movement in the area.

  While this study identified a recommended improvement, the City plans to postpone this project while impacts from the upcoming Corridor of Commerce funded TH 169 Improvements are evaluated and necessary local roadway network improvements are identified.
- Twin Lakes Road connection to TH 10/169: The City of Elk River has identified an extension of Twin Lakes Road south to a new at-grade intersection with TH 10/TH 169. This is included in the City's Capital Improvement Plan (CIP) and the City is currently seeking grant opportunities to fund this important improvement. Long-term planning for the new Twin Lakes Road intersection with TH 10/TH 169 includes potentially converting it to an interchange at which point the existing intersection (171st Ave NW & TH 10/TH 169) will be converted to a right-in/right-out or other secondary intersection type.

Corridors of Commerce

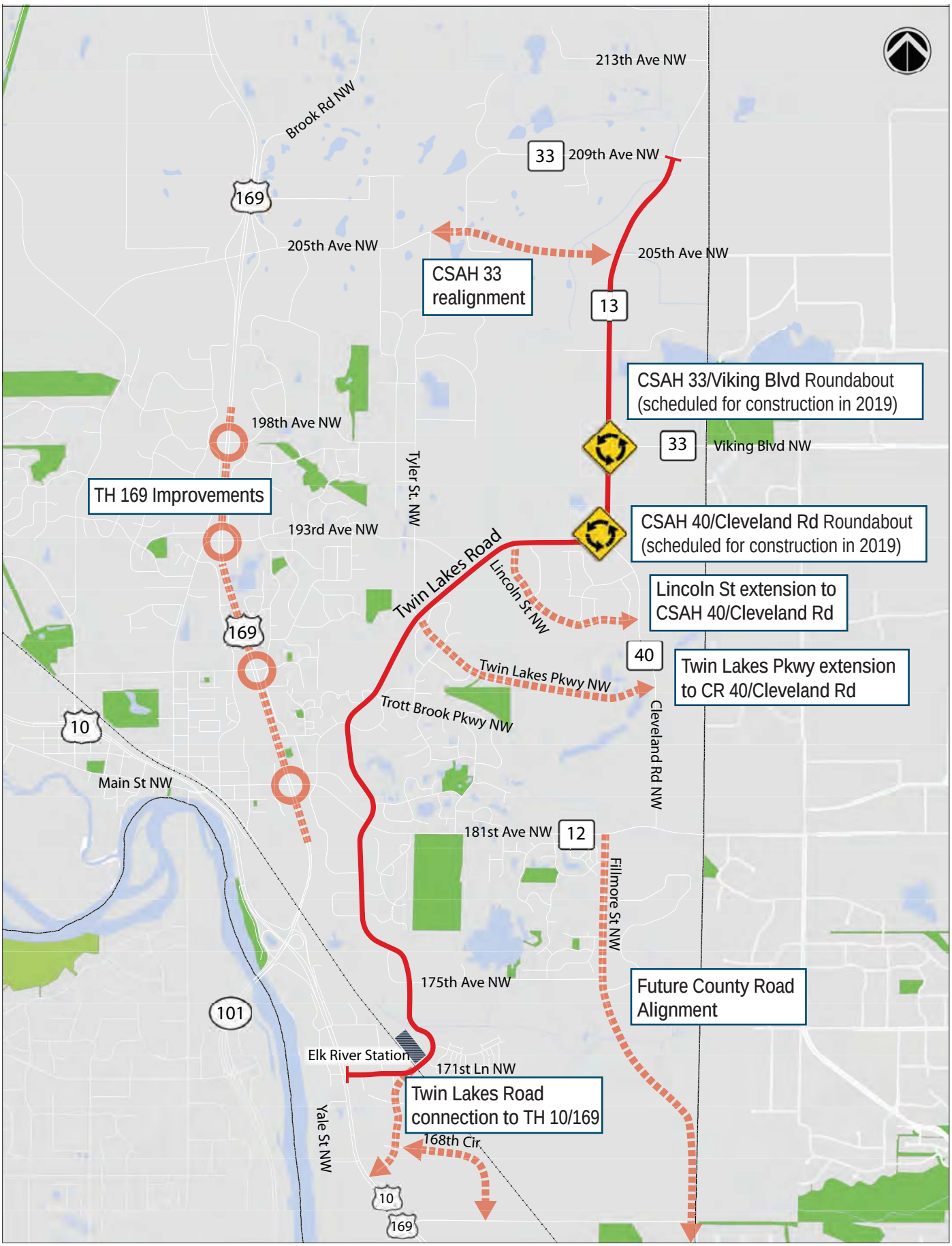
In May 2018 the City of Elk River was awarded funding through the Corridors of Commerce Program for improvements to TH 169. This project will convert Highway 169 in Elk River to a freeway. The proposed project is envisioned to have interchanges at Main Street, School Street, 193rd Avenue, and a partial interchange at 197th Avenue. The project will eliminate traffic signals and complete the freeway segment between Highway 10 and 205th Avenue. The project will reduce travel delay by more than 1000 hours per day, eliminate approximately $1.7 million in crash costs annually, and make trips and travel times on the corridor much more reliable.

A mobility improvement project of this magnitude will change circulation patterns in the City and will need to consider local circulation patterns during construction as well as forecasted patterns following the completion of the project. Construction is currently set to begin in 2023/2024. Implementation of the improvements listed in this study will need to consider this project.

Timeline

The information, analysis, and recommendations from this study reflect current conditions and data. As development occurs and area road improvements are completed, updated information and study should occur to verify the timeliness of the recommendations provided in the Twin Lakes Road Corridor Study.

Figure 2: Known Improvements



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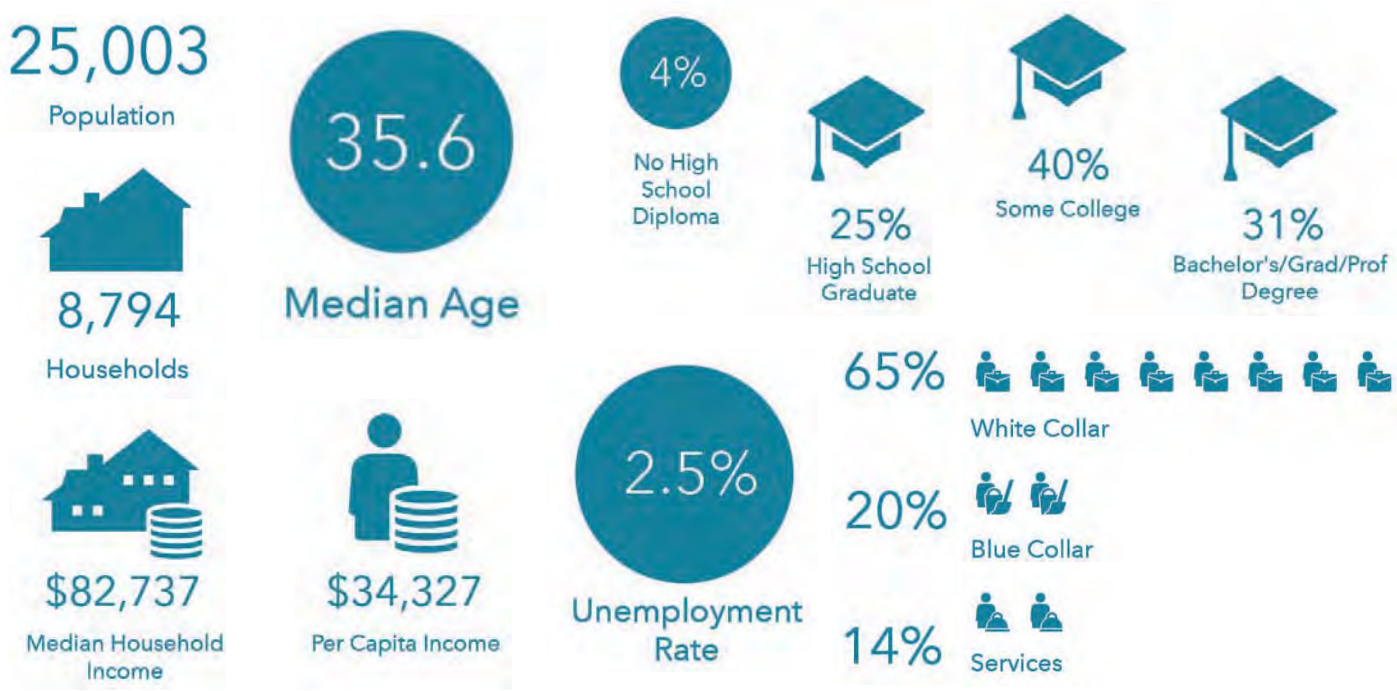
Existing Conditions

Community Snapshot



Data collected for the City of Elk River extents.
Source: Esri Business Analyst Report. Data pulled December 2018

Population

The current populations in Sherburne County and the City of Elk River are as follows:

Table 2: Existing Population

Year	Elk River		Sherburne County	
	Population	Change Between Decades	Population	Change Between Decades
2016 Estimates	23,743	3% (Change over 6 years)	91,188	3% (Change over 6 years)
2020	26,600	16%	134,390	52%

Source: Elk River Comprehensive Plan, 2014; American Community Survey, 2012-2016 Estimates

Land Uses

Along the CSAH 13/TLR corridor, significant land uses include industrial, commercial, retail, and residential (including rural, single family, multi-family, high-density, and senior housing). Other important uses include a commuter rail transit station, schools (Spectrum High School and Twin Lakes Elementary), and agricultural uses. Commercial uses are concentrated at the south end of the corridor with a more rural section at the north end of the corridor.

There are major commercial and industrial operations that rely on the existing and continued connectivity of Twin Lakes Road and its ability to accommodate large trucks and commercial vehicles. These operations include Morrell Trucking, Morrell Oversize, LeFebvre Companies, SportTech, Cornerstone Auto and Kia, Volvo Trucking, NorthStar Business Park, Elk River Crossing, and others.

Figure 3: Sherburne County Access Spacing Guidelines

Area Type	Functional Class	Facility Type	Intersection Spacing		Signal Spacing	Private Access	Turn Lanes (1)(2)(3)
			Full Median Opening	Right-In/ Right-Out			
Minor Arterials *(see Figure 18 for functional classification and area type)*							
Rural	Minor Arterial	Divided	1/2 Mile	1/4 Mile	1/2 Mile	660' minimum or subject to conditions *(see Section 6.3.8)*	Yes
		Undivided	1/2 Mile	1/4 Mile if part of local street network			Yes
Urbanizing	Minor Arterial	Divided	1/4 Mile	1/8 Mile	1/4 Mile	By exception or deviation only	Yes
		Undivided	1/4 Mile	1/8 Mile		660' minimum or subject to conditions *(see Section 6.3.8)*	Yes
Urban Core	Minor Arterial	All	300-660 feet dependent upon block length		1/4 Mile	Permitted subject to conditions *(see Section 6.3.8)*	Yes
Collectors *(see Figure 18 for functional classification and area type)*							
Rural	Collectors and Local	All	1/2 Mile	1/4 Mile	1/2 Mile	660' minimum or subject to conditions *(see Section 6.3.8)*	Yes
Urbanizing	Collectors	All	1/4 Mile	N/A	1/4 Mile	660' minmum or subject to conditions *(see Section 6.3.8)*	Yes
Urban Core	Collectors	All	300-660' dependent upon block length		1/8 Mile	Permitted subject to conditions *(see Section 6.3.8)*	Yes
Local *(see Figure 18 for functional classification)*							
Urban	Local Road	All	300-660 feet dependent upon block length		As warranted	Spacing from any intersection should be 330'	Yes
Rural	Local Road	All	1/4 Mile		NA	330'	

(1) Right-turn lanes are required for proposals of 10 lots or more or with projected daily volume of 100 or more.

(2) Bypass lanes are required: at T intersections for proposals of 20 or more lots, the highway has a CSAH, arterial or collector designation, there are unsafe geometrics or the highway has a present AADT of 1000.

(3) Left-turn lanes (4-legged intersection) are required on the county highways for large residential developments according to current policy. Commercial/industrial developments evaluated on case by case basis.

(4) Developing parcels shall provide connections for the current and future local roadway system.

General Notes:

- Proposed road intersections must meet minimum county sight distance requirements.
- Residential accesses should meet minimum stopping sight distances.
- The county has the authority to require a traffic study (scope determined by the county) for all developments at the developers expense.
- Exception and/or deviation may be permitted in an effort to accommodate existing access needs, while transitioning to future spacing system.
- By policy, the county requires elimination, consolidation and shared accesses.
- Access Permits are required. The access permit will control the width, placement and construction standards.
- Additional access may be permitted as right-in/right-out or temporary; however other conditions must be satisfied.

Maps illustrating the existing land use - as found in the City of Elk River's comprehensive plan - as well as the current roadway functional classifications, and a parks, trails, and open space overview can be found as a part of the Existing Condition Memo in Appendix III.

Environmental Screening

Environmental and cultural resource impacts are not anticipated for the recommendations outlined in this study. Improvements will primarily remain within the roadway's existing footprint. Any improvements explored outside of the recommendations outlined in this study will need to be evaluated separately.

The environmental screening conducted as part of this study is included in Appendix V and a summary of key findings are included in the Existing Conditions Memorandum (Appendix III).

Roadway Classification & Access Inventory

Roadway Classification

The CSAH 13/TLR study segment north of CSAH 12 is under County jurisdiction and is classified as a Minor Arterial.

- Minor Arterial roadways connect key activity centers and nodes and have continuity on a county level. They generally serve medium to long trips and they typically have higher posted speeds and more restrictive access than collector or local streets. Minor arterials generally connect to principal arterials, other minor arterials and collectors.

The CSAH 13/TLR study segment south of CSAH 12 is under City jurisdiction and is classified as a collector roadway from CSAH 12 to 175th Ave and local roadway from 175th Ave to the intersection with TH10/TH169. A portion of this later segment has been identified as a future collector route in the City's Comprehensive Plan (2014).

- Collector roadways provide links to local activity centers and connections between arterial routes and local city streets. These roadways are intended to bring traffic from various nodes and funnel it to the arterial network. Collector streets have continuity at a local level and generally serve medium to short trips. They serve a variety of land uses and can therefore have a variety of speeds. In general, an equal emphasis is placed on mobility and access.
- Local streets provide connections to neighborhoods, developments and to other streets. There is generally low continuity (many cul-de-sacs), low speeds, access is emphasized and a small travel shed.

Traffic Operations & Safety

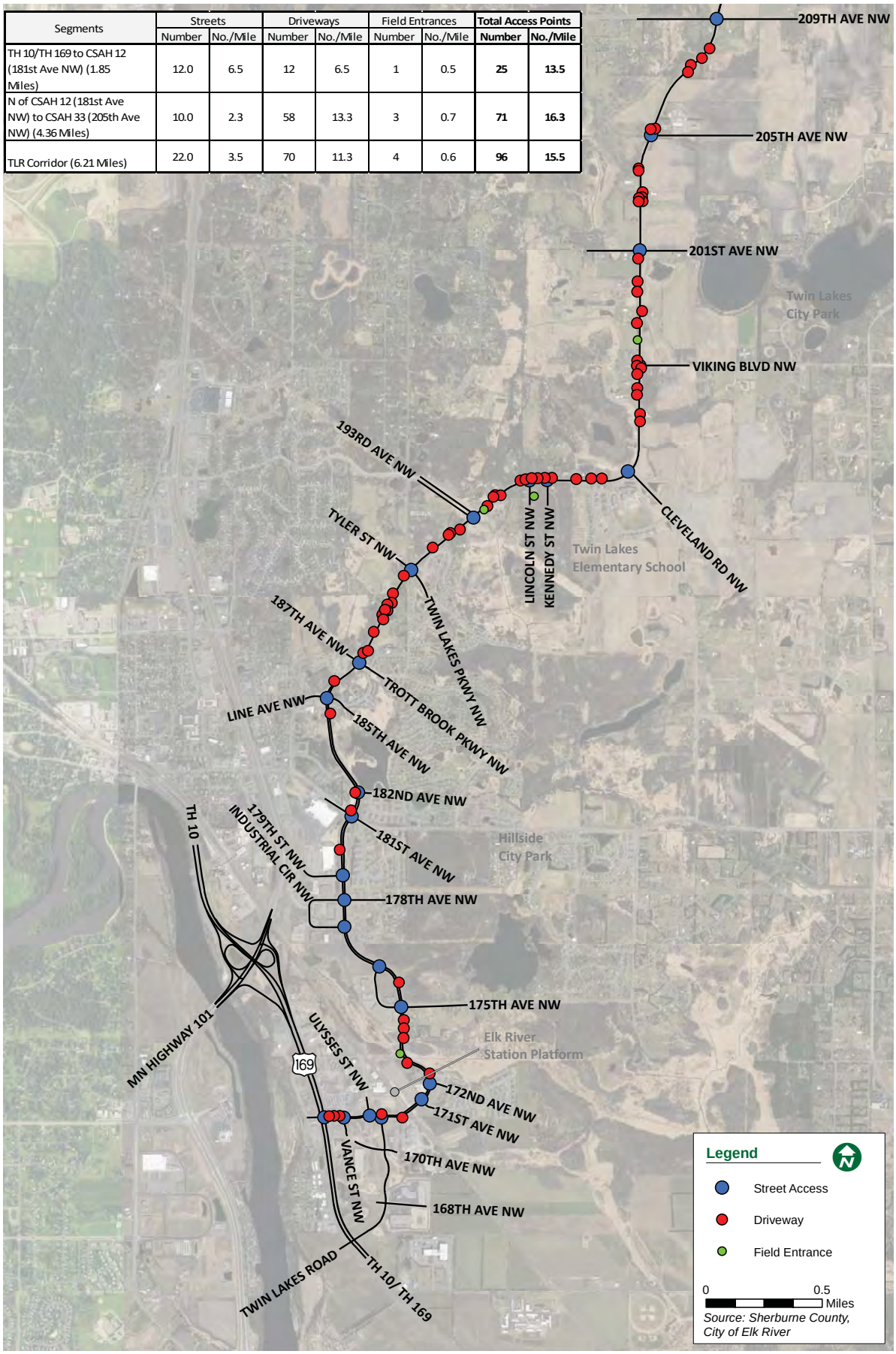
Traffic operations and safety existing conditions are documented in detail in a project memorandum located in Appendix III. Key points from the memo are provided below.

Access Spacing Guidelines

Access Management is important to balance the needs for safety, mobility, and property access. Creating consistent guidelines helps municipalities to guide development as it occurs. *Sherburne County's Access Spacing Guidelines* (Figure 3) state that for a minor arterial or collector roadway, the spacing between two public, full movement intersections is to be ½ mile or greater for rural areas and ¼ mile or greater for urbanizing areas for where local and collector streets intersect. Traffic signals should not be spaced closer than ½ mile along minor arterial roadways. In addition, commercial driveways and private accesses require a minimum 660-feet spacing or based on special conditions in rural areas. These accesses are not permitted on minor arterial roadways in urbanizing areas unless allowed by exception, deviation form guidance, or special conditions. Where there is opportunity for public or private access on Twin Lakes Road or a lower functional class intersecting public roadway, access shall be taken on the lower functioning roadway. Figure 3 illustrates *Sherburne County's Access Spacing Guidelines* as found in The *Sherburne County Transportation Plan* (adopted December 11, 2007).

Figure 4: Access Inventory

Segments	Streets		Driveways		Field Entrances		Total Access Points	
	Number	No./Mile	Number	No./Mile	Number	No./Mile	**Number**	**No./Mile**
TH 10/TH 169 to CSAH 12 (181st Ave NW) (1.85 Miles)	12.0	6.5	12	6.5	1	0.5	**25**	**13.5**
N of CSAH 12 (181st Ave NW) to CSAH 33 (205th Ave NW) (4.36 Miles)	10.0	2.3	58	13.3	3	0.7	**71**	**16.3**
TLR Corridor (6.21 Miles)	22.0	3.5	70	11.3	4	0.6	**96**	**15.5**



Access Inventory

Along Twin Lakes Road, there are approximately 11 accesses per mile. Along CSAH 13/TLR (CSAH 12 to CSAH 33), there are approximately 17 accesses per mile. Access points along the study area have been identified according to the following table.

Table 3: Access Inventory

Segment	TH 10/TH 169 to CSAH 12/181st Ave NW (1.85 miles)	CSAH 12/181st Ave NW to CSAH 33/205th Ave NW (4.36 miles)	Study Extents
Streets	12	10	22
Driveways	12	58	70
Field Entrances	1	3	4
Total Access Points	25	71	96

Sherburne County Minimum Access Spacing Guidelines are not met at all existing intersections in the study area. A small number of access locations on Twin Lakes Road north of 181st Avenue are closer than the spacing defined by the guidelines for local streets along a minor arterial roadway. Closely spaced intersections along Twin Lakes Road north of 181st Avenue include the following roadways:

- 182nd Avenue NW
- Trott Brook Parkway NW

South of 181st Avenue NW primary intersection access spacing is laid out well and there are only a few intersections on 171st Avenue NW and adjacent to TH 10 that would not meet Sherburne County Access Spacing guidelines. These include the following full access intersections:

- Vance Street NW
- Ulysses Street NW
- Twin Lakes Road
- 171st Lane NW

Each access in the study area was classified as primary or secondary based on the access control guidelines highlighted above. Primary intersections are those where all turning movements are allowed to occur. Secondary intersections typically involve the connection of a more minor roadway and may not necessarily allow all turning movements to occur. An access inventory was developed to assist with the planning process. This is a simplified illustration of access to show a clear picture of what exists today and can be seen in **Figure 4.** As the area develops and roadway access request come forward, intersection spacing will need to be considered closely to adhere to guidelines.

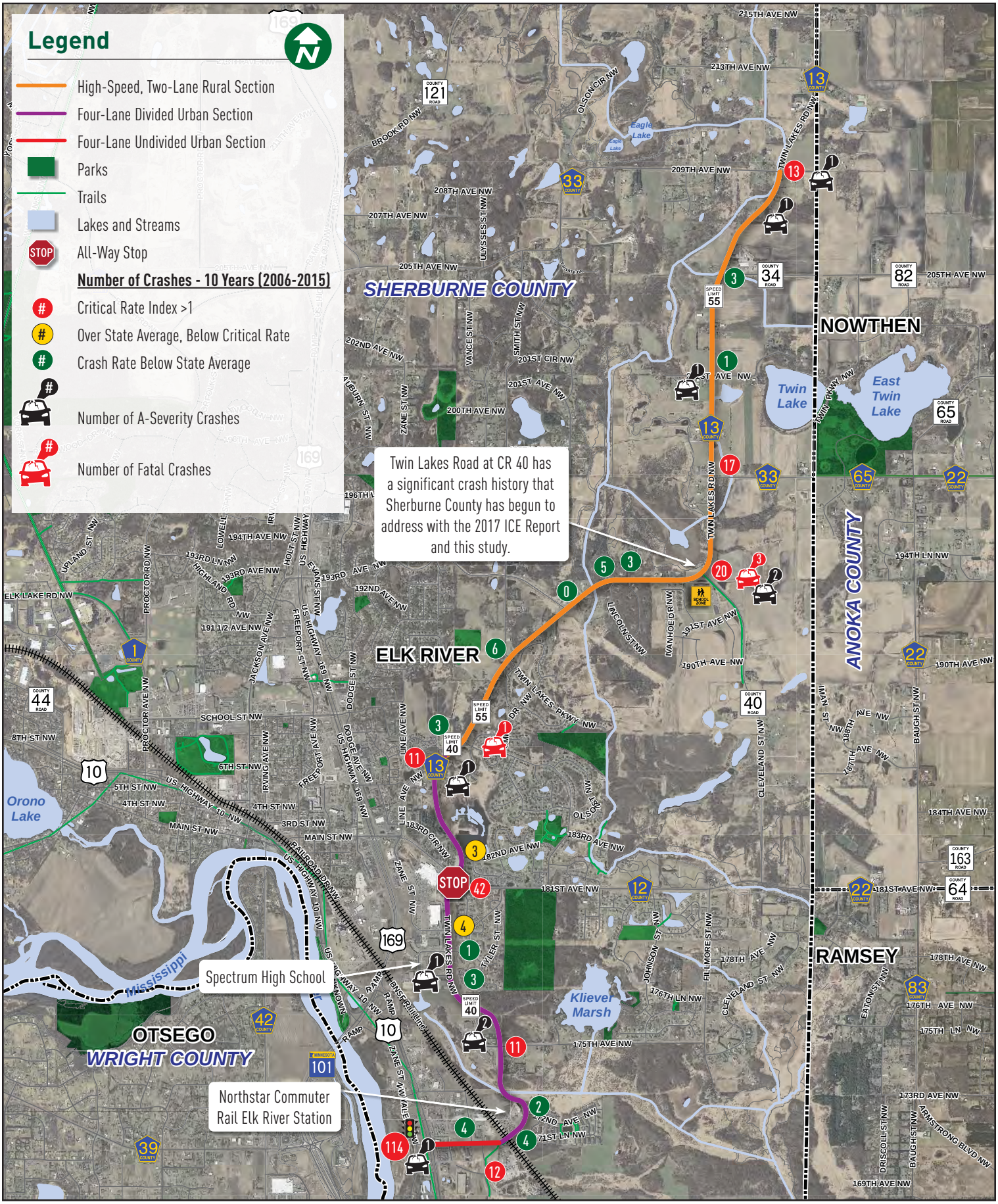
The CSAH 33 (Viking Boulevard) and CR 34 (205th Avenue NW) intersections have a one-mile spacing; this segment is the only one along TLR that would be in compliance with access spacing guidelines with the addition of a primary intersection access point.

Speed Limit

The study segment has two speed limits: 55 miles per hour (mph) north of Line Ave/185th Ave and 40 mph south of Line Ave/185th Ave.

Several of the issues associated with this corridor mentioned by the community have involved vehicle speeds. Specifically, the curve in the road at CR 40/Cleveland Rd was mentioned several times with the perception of vehicles driving too fast for the conditions. Another issue that was on the minds of the community was the travel speeds of vehicles in the middle and north study segments. There were numerous comments about lower posted speed limits along these two segments as a solution to high vehicle speeds. With the determination of posted speed limits in Minnesota based on a MnDOT Speed Study and the 85th-percentile vehicle running speeds, we do not anticipate lower posted speed limits in these areas.

Figure 5: Crash History



High vehicle speeds can be both a perceived and actual traffic safety issue as well as a contributor to the severity of crashes - particularly lane departure crashes as seen on TLR. We anticipate that as intersection improvements are made and traffic operations along the corridor and greater area improves, people will feel less like they need to “make up” lost time within the corridor area and a reduction in vehicle speeds would be observed. In addition, the characteristics of the identified middle and north segment improvements are such that they will mitigate issued related to high vehicle speeds.

- The widened median in the north segment will provide a space barrier between opposing through movements
- Within the middle segment, the center left turn cross section will provide separate lanes for turning vehicles and through movements at intersections and driveways. In addition the center left turn lane provides a space barrier between opposing through movements.
- Also within the middle segment, the option for the median-divided section would provide separation for left turns and through movements at primary intersections and the median would provide a space and physical barrier between opposing through movements.

Safety Analysis - Crash History

A crash review was completed for the major intersection and segments identified in Figure 5 using the Minnesota Crash Mapping Analysis Tool (MnCMAT) for the previous ten years (2006-2015). MnDOT uses a comparison of the crash rate and the critical crash rate when determining whether or not there is a safety issue at an intersection.

- The crash rate is the number of crashes per million entering vehicles (MEV). The severity rate takes into account the crash severity.
- The critical rate (not shown) is a statistical comparison based on similar intersections statewide.

An observed crash rate greater than the critical rate indicates that the intersection operates outside of the expected, normal range and that something beyond the random nature of crashes is occurring. The critical index reports the magnitude of this difference and a critical index of less than one shows that the intersection is operating within the normal range.

Crash rates were determined using 2006-2015 crash data and 13-hour turning movement counts collected for this project in May 2018 and adjusted to reflect 24-hour entering traffic volumes. Statewide average crash rates, severity rates and critical crash rates were attained from MnDOT using the 2015 version of the State Aid for Local Transportation (SALT) Intersection Green Sheets. Crash rate calculations, crash map, and crash detail information is included in Appendix III.

Over the ten-year period analyzed, a total of 283 intersection related crashes and 37 segment crashes occurred within the study area. 5 fatal crashes, 7 incapacitating injury crash, and 23 non-incapacitating injury crashes were documented at intersections during the study period. The remaining 248 crashes were possible injury or property damage only crashes. The number of crashes and their severity by intersection are shown in Table 4 and Figure 5.

Operations Analysis

A level of service (LOS) analysis of the peak hours was completed using the existing turning movement counts in collaboration with the microsimulation software, Trafficware SimTraffic. The LOS results are based on average delay per vehicle as calculated by the 2010 Highway Capacity Manual (HCM), which defines the level of service, based on control delay. Control delay is the delay experienced by vehicles slowing down as they are approaching the intersection, the wait time at the intersection, and the time for the vehicle to speed up through the intersection and enter into the traffic stream.

The average intersection control delay is a volume weighted average of delay experienced by all motorists entering the intersection on all intersection approaches. Intersections and each intersection approach are given a ranking from LOS A through LOS F.

- LOS A indicates the best traffic operation, with vehicles experiencing minimal delays.
- LOS A through D is generally perceived to be acceptable to drivers, however LOS D can be considered unacceptable in non-metro areas of the state.
- LOS E indicates that an intersection is operating at, or very near, its capacity and that drivers experience considerable delays.

- LOS F indicates an intersection where demand exceeds capacity and drivers experience substantial delays.

AM and PM peak hour traffic operations analysis using traffic volumes collected in May 2018 and existing roadway geometry are shown in **Table 5**.

- Intersection delay and maximum delay are shown in seconds per vehicle.
- The limiting movement refers to the highest delay movement at the intersection.
- The maximum approach queue is based upon the movement with the longest maximum queue.
- The maximum queue refers to the 95th percentile queue.

Table 4: Crash Serverity (2006-2015) by Intersection

Intersection	Traffic Control	Total Crashes	Crash Severity				
			Fatal	Incapacitating	Non-Incapacitating	Possible Injury	Property Damage
CSAH 33	Thru / Stop	13	0	1	2	2	8
205th Ave.	Thru / Stop	3	0	0	1	1	1
201st Ave.	Thru / Stop	1	0	0	0	0	1
CSAH 31	Thru / Stop	17	0	0	2	6	9
CSAH 40	Thru / Stop	21	4	2	2	6	7
Kennedy St.	Thru / Stop	3	0	0	0	1	2
Lincoln St.	Thru / Stop	5	0	0	0	2	3
Tyler St.	Thru / Stop	6	0	0	1	1	4
Trott Brook Parkway	Thru / Stop	3	1	0	0	1	1
185th Ave.	Thru / Stop	11	0	0	1	0	10
182nd Ave.	Thru / Stop	3	0	0	0	0	3
CSAH 12	All Stop	42	0	0	3	8	31
179th Ave.	Thru / Stop	4	0	0	0	2	2
178th Ave.	Thru / Stop	1	0	0	0	1	0
Industrial Circle	Thru / Stop	3	0	1	0	0	2
175th Ave.	Thru / Stop	11	0	2	2	2	5
172nd Ave.	Thru / Stop	2	0	0	0	1	1
171st Lane	Thru / Stop	4	0	0	0	1	3
171st Ave.	Thru / Stop	12	0	0	1	1	10
Ulysses St.	Thru / Stop	4	0	0	0	1	3
TH10/TH169	Signal	114	0	1	8	30	75
Total Crashes by Type		283	5	7	23	67	181

Table 5: Traffic Operations Analysis - Existing Conditions

Intersection	Peak Hour	Intersection Delay (1.)		Maximum Delay-LOS (2.)		Limiting Movement (3.)	Max Approach Queue		
							Direction	Average Queue (ft)	Max Queue (ft)
Twin Lakes Rd & TH 10/TH 169	AM	37	E	84	F	NBL	SBT	375	675
Signalized Intersection	PM	90	F	189	F	NBL	NBT	1275	1375
171st Ln NW & Twin Lakes Rd	AM	2	A	19	C	NBT	NBL/T/R	50	100
Stop Controlled	PM	2	A	11	B	NBL	NBL/T/R	25	75
Twin Lakes Rd & 175th Ave NW	AM	1	A	11	B	EBT	WBL/T/R	50	75
Stop Controlled	PM	1	A	9	A	EBT	EBL/T/R	50	75
Twin Lakes Rd & 179th St NW	AM	1	A	9	A	EBL	EBR	25	75
Stop Controlled	PM	2	A	12	B	EBL	EBL	50	100
Twin Lakes Rd & 181st AVE NW (CSAH 12)	AM	8	A	11	B	EBT	EBT/R	50	100
Stop Controlled	PM	9	A	12	B	EBT	EBT	50	100
Twin Lakes Rd & Line Ave NW	AM	2	A	13	B	WBT	EBL/T/R	75	125
Stop Controlled	PM	5	A	13	B	EBT	EBL/T/R	100	200
Twin Lakes Rd (CSAH 13) & Trott Brook PKWY NW	AM	3	A	9	A	WBL	WBL/T/R	50	75
Stop Controlled	PM	2	A	11	B	WBL	SBL/T/R	25	75
Twin Lakes Rd (CSAH 13) & Twin Lakes PKWY	AM	2	A	8	A	WBT	EBL/T/R	25	75
Stop Controlled	PM	3	A	10	B	EBT	NBL/T	25	75
Twin Lakes Rd (CSAH 13) & 193rd Ave NW	AM	2	A	7	A	EBL	EBL	50	100
Stop Controlled	PM	3	A	9	A	EBL	EBL	50	100
Twin Lakes Rd (CSAH 13) & Cleveland Rd NW (CR 40)	AM	1	A	6	A	WBL	WBL	50	75
Stop Controlled	PM	1	A	7	A	WBL	WBL	50	75
Twin Lakes Rd (CSAH 13) & Viking BLVD (CSAH 33)	AM	4	A	9	A	WBL	WBL/R	50	125
Stop Controlled	PM	4	A	10	B	WBL	WBL/R	75	125
Twin Lakes Rd (CSAH 13) & 209th Ave NW (CSAH 33)/209th Ave NW	AM	2	A	7	A	EBT	EBL/T/R	50	100
Stop Controlled	PM	2	A	14	B	EBT	EBL/T/R	50	75

1. Delay in seconds per vehicle
2. Maximum delay and LOS on any approach and/or movement
3. Limiting Movement is the highest delay movement

Forecasted Conditions

How is the Community Expected to Grow?

Population Growth

The number of people living in Elk River is anticipated to grow at a fairly consistent rate until 2040. Sherburne County is projected to see notable population growth through 2030 with more modest growth anticipated between 2030 and 2040.

Table 6: Forecasted Population Growth

Year	Elk River		Sherburne County	
	Population	Change Between Decades	Population	Change Between Decades
2016 Estimates	23,743	3% (Change over 6 years)	91,188	3% (Change over 6 years)
2020	26,600	16%	134,390	52%
2030	31,960	20%	161,990	21%
2040	34,890	9%	175,410	8%

Source: Elk River Comprehensive Plan, 2014; American Community Survey, 2012-2016 Estimates

Land Uses

Comparing the existing and future land uses from the City of Elk River's comprehensive plan illustrate the following changes around the study segments:

- North Segment – the majority of the undeveloped land has been identified as residential development.
- Middle Segment – the future land use maps identified mixed-use between Line Avenue and TLR on the north side of 181st Ave/CSAH 12. The majority of the undeveloped land has also been identified as residential development.
- South Segment – the 171st Avenue Focused Area Study (FAST) has identified land use changes for the majority of the south study segment. These changes include expanded industrial uses, highway commercial development, and the addition of expanded higher density residential.

A map illustrating the future land use - as found in the City of Elk River's comprehensive plan - can be found as a part of the Forecasted Condition Memo in Appendix IV.

Roadway Classification

While we do not anticipate or necessarily recommend any changes in roadway functional classification for TLR, we would anticipate continued discussions between the City of Elk River and Sherburne County related to a potential jurisdictional transfer from the City to the County for the segment of TLR south of 181st Avenue. The functioning of TLR south of 181st Avenue aligns nicely with the expected role of a minor arterial county road. It is understood that the City and County agree to this transfer in principle, but there are also concerns with some geometric elements. These concerns about road geometry include lack of super-elevation (carrying the normal road crown through curves), median elements out of compliance with applicable guidance, and lack of accessibility features meeting current ADA standards.

In addition to the current TLR corridor, the planned extension (long-term) of an east frontage road for TH 10/TH 169 between the proposed Twin Lakes Road extension/165th Avenue area and Jarvis Street would complement the current function of Twin Lakes Road as an important arterial corridor and provide for the development of a regional reliever to TH 10/169. Having a parallel route to TH 10/TH 169 that enhances travel through the area, provides local access, and supports local circulation, aligns nicely with the role of an arterial county roadway between Jarvis Street and 205th Avenue NW (CSAH 33). As the TH 10/TH 169 corridor

transitions to more of a freeway/expressway, removal of direct street and driveway access points will become critical to its success; The Twin Lakes Road corridor will provide the needed functional classification to support access and circulation off of TH 10/TH 169.

Traffic Operations & Safety

Forecasted Traffic Volumes

Forecasted AADT traffic volumes for TLR segments were developed based on the historic growth rate for AADT counts from MnDOT's website and the growth of 2018 TLR hose counts according to the Sherburne County State Aid Projection Factor of 1.4. To determine forecasted volumes based on historic counts we looked at both a linear and logarithmic growth. For application of the State Aid projection factor, we grew the latest MnDOT hose count (generally 2014) on a weekday (Wednesday) and weekend (Friday) May 2018 hose count at 1.7% annually for 20 years. We used the results of these five projections along with our engineering judgment and knowledge of the corridor to identify the 2038 AADT for each segment along TLR.

The turning movement counts collected in May of 2018 as part of this study were used as the baseline for developing 2038 AM and PM peak-hour time period turning movement counts. Refer to Appendix IV: *Forecasted Conditions Memo*, for a full report on the projected corridor conditions.

Safety Analysis - Crash History

The Existing Conditions section of this report and the Existing Conditions Memo review the crash history of the corridor including the crash rate at each intersection and the State averages expected for the specific type of intersection.

A crash rate is a method of conveying crash frequency per certain number of vehicles and is a way to compare crash numbers at intersections that have different traffic levels. However, the most statistically reliable method for identifying hazardous crash locations is the identification of a critical crash rate which accounts for design of facility, type of intersection control, amount of exposure, and the random nature of crashes. An intersection is considered unsafe if the crash rate is greater than the critical crash rate.

With ongoing intersection traffic operations based on the existing conditions and growth in peak-hour traffic and AADT toward the forecasted traffic volumes, the following intersections are expected to continue to operate with a higher than acceptable crash rates based on currently having a critical crash rate greater than one.

- CSAH 33 (209th Avenue)
- 185th Avenue
- CSAH 12 (181st Avenue)
- 175th Avenue
- 171st Avenue
- TH 10/TH 169

With the construction of roundabouts at the intersections of Twin Lakes Road (CSAH 13) at CSAH 33/Viking Blvd and CR 40/Cleveland Rd, we anticipate lower crash rates than with the existing side street stop condition and a crash experience with severities mostly at possible injury (C-severity) or property damage only. This is especially relevant for CR 40 which has experienced four fatal and two incapacitating injury (A-severity) crashes during the study period.

We anticipate that intersections with diminished peak-hour traffic operations performance, based on 2038 Build 1 traffic operations (see Appendix IV), would experience higher crash rates than today. As development happens and traffic levels increase on Twin Lakes Road, we anticipate that Twin Lakes Road (CSAH 13) at 181st Avenue NW (CSAH 12) would experience diminished performance and elevated crash rates from today based on PM peak-hour operations.

All other intersections operate at LOS A or B for both the AM and PM peak-hours under the Build 1 and Build 2 conditions except

for 171st Avenue at TH 10, which operates at LOS F for existing and both build conditions. Given these operations we anticipate the similar crash rates and experience over time.

Operations Analysis

A level of service (LOS) analysis of the peak hours was completed using the existing turning movement counts in collaboration with the microsimulation software, Trafficware SimTraffic. The LOS results are based on average delay per vehicle as calculated by the 2010 Highway Capacity Manual (HCM), which defines the level of service, based on control delay. Control delay is the delay experienced by vehicles slowing down as they are approaching the intersection, the wait time at the intersection, and the time for the vehicle to speed up through the intersection and enter into the traffic stream.

The average intersection control delay is a volume weighted average of delay experienced by all motorists entering the intersection on all intersection approaches. Intersections and each intersection approach are given a ranking from LOS A through LOS F.

- LOS A indicates the best traffic operation, with vehicles experiencing minimal delays.
- LOS A through D is generally perceived to be acceptable to drivers, however LOS D can be considered unacceptable in non-metro areas of the state.
- LOS E indicates that an intersection is operating at, or very near, its capacity and that drivers experience considerable delays.
- LOS F indicates an intersection where demand exceeds capacity and drivers experience substantial delays.

AM and PM peak hour traffic operations analysis using traffic volumes collected in May 2018 and existing roadway geometry are shown the Existing Conditions sections of the report and the *Existing Conditions Memo* (Appendix III).

With the forecasted traffic volumes, the following intersections and segments are expected to have an unacceptable Level of Service (LOS).

- 181st Avenue NW (CSAH 12)
    - LOS F during Build 1 PM peak-hour
- 171st Avenue NW at TH 10
    - LOS F with Build 1 AM and PM peak-hours
    - LOS F with Build 2 AM and PM peak hours

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Public Input

Engagement Overview

The public engagement conducted for this Corridor Study included a study website, two focus group meetings and two open house meetings for the general public. The content and outcomes of these efforts are summarized in this section. Full meeting summaries can be found in Appendix I.

Study Website

A website was created and maintained for the duration of this study to provide an overview of the process, study contacts, meeting details, meeting materials, and an opportunity for public input. The website was located at www.twinlakesroadstudy.com

Focus Group

A focus group was created in order to have targeted conversations with community leaders on the corridor issues and opportunities, as well as to provide a forum to vet potential improvements. The focus group roster was created by the Project Management Team (PMT) so that representation from all diverse stakeholder groups along the corridor were present. These stakeholder groups included residents from various neighborhoods, business owners (including local freight and trucking operations), school representatives, public safety representatives, and elected officials.

Two focus group meetings were held through the summer and fall of 2018:

Focus Group Meeting #1 – June 19, 2018
This meeting focused on the user experience of the corridor. A brief presentation provided an overview of the corridor study extents and purpose and need before diving into discussion driven by the focus group members. This meeting was an opportunity for the PMT to listen and learn about corridor issues from the community's perspective, stakeholder interests, and differing perspectives. A corridor layout was used as the centerpiece for focus group members to identify issues and opportunities along the corridor. A graphic summary of these can be found in Figure 6. Participants were also asked to weigh in on the vision and goals for the corridor as a closing activity; individuals left their ideas and vision on sticky notes for the PMT to compile into a draft vision.

Focus Group Meeting #2 – November 7, 2018
The draft corridor vision & goals and potential corridor improvements were presented and discussed at this meeting. The vision and goals can be found in the following section and the comments on potential improvements have been incorporated into the concepts shared in this report.

Figure 6: Public Input Summary

2 Meetings

35 Community Participants

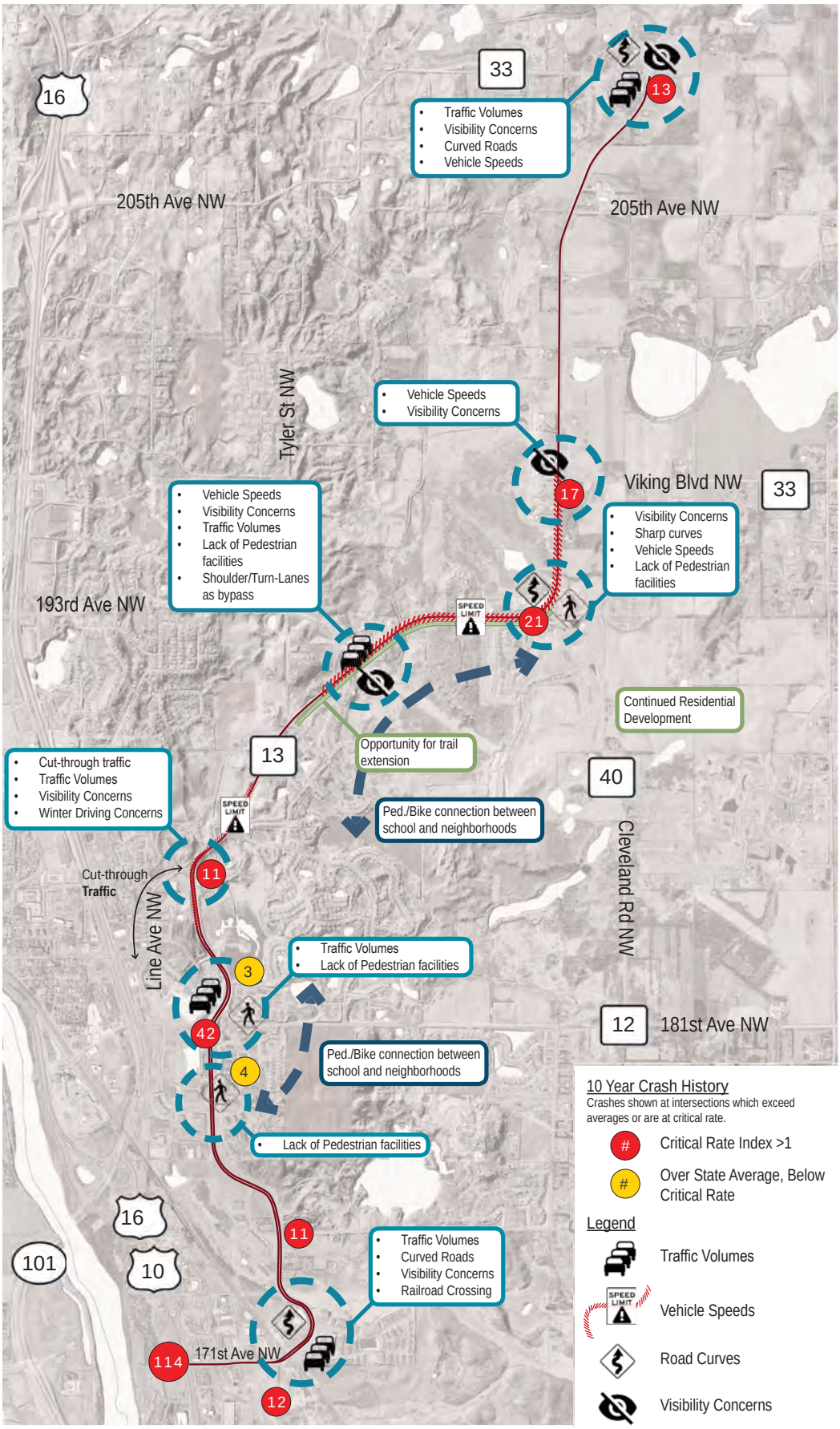
80 Comments

Vehicle Speeds

Sight-Line Concerns

Illegal Bypassing

Non-motorized Facilities



Open House Meetings

Two Open House meetings were held in order to share study information and provide an opportunity for public input.

Open House Meeting #1 – June 27, 2018
Similarly, to the first Focus Group meeting, this meeting focused on the user experience of the corridor. Information on the Corridor Study extents, purpose & need, considerations, and projected area growth was available. Attendees were encouraged to add issues and opportunities to the map and contribute to the corridor vision & goals. The vision and goals can be found in the following section and the identified issues and opportunities have been included in Figure 6.

Open House Meeting #2 – November 14, 2018
Potential corridor improvements were shared at this Open House. Participants were asked to weigh in on specific improvements and ask questions or share their feedback with project staff. The draft corridor vision and goals was also shared for the public to weigh in on. The comments on potential improvements have been incorporated into the concepts shared in this report.

Issues & Opportunities

Issues and opportunities from the public engagement efforts were compiled, summarized, and referred to when identifying potential improvements. Quantitative data (traffic counts, level of service, crash history, etc.) was compiled by the PMT, but this does not provide the full picture of the corridor. The qualitative data, or user experience of the roadway, as collected at the above outlined meetings rounded out the full picture of the roadway and which issues needed to be solved through this study.

The primary issues and opportunities identified by the public are listed below.

Table 7: Issues & Opportunities

Issues	Opportunities
Vehicle speeds	Traffic calming measures
Sight Line issues	Intersection safety improvements
	Access Management
Non-motorized facilities	Ped./Bike Facilities
Illegal passing	Left & right turns lanes
	Traffic/intersection operations improvements
Poor intersection visibility	Intersection lighting

Corridor Vision Statement & Goals

A corridor vision was developed from the public engagement process to act as the "North Star" to developing potential improvements. Understanding the existing and forecasted conditions of the corridor as well as the future vision for what the corridor could be are all vitally important to identify improvements that align with the City's, County's, and Community's goals for the roadway. This vision statement can be used by the local agencies to help guide improvements to stay on track for making the following vision a reality.

SAFE – EFFICIENT – SUPPORTIVE – ADAPTABLE

Twin Lakes Road supports a transportation system that safely and effectively accommodates all modes of mobility - including vehicles, bicyclists, and pedestrians - along and across the corridor. The roadway functions in support of current and future surrounding land uses and to accommodate local trips and regional travel.

Twin Lakes Road Corridor Study Goals:

- Develop solutions that safely accommodate all users along the CSAH 13 corridor and intersecting local routes
- Identify scalable solutions compatible with projected area growth and surrounding land uses
- Enhance vehicle mobility on Twin Lakes Road corridor in a way that maintains and supports local roadways and regional transportation system
- Identify a comprehensive network for non-motorized transportation that is compatible with the major transportation corridors
- Develop a financially responsible infrastructure implementation plan

Corridor Study recommendations should identify improvements and projects which:

- Accommodate all users and land uses
- Improve intersection operations and traffic throughput
- Control/reduce vehicle speeds
- Manage Access
- Identify and implement the best traffic control at intersections
- Provide expected crash reductions through design
- Include appropriate intersection and mainline design elements when needed (e.g. turn lanes)
- Align with available grant programs and opportunities to leverage City and County resources

Recommended Improvements

This section describes and illustrates the proposed improvements for the CSAH 13/TLR Corridor. These improvements have been broken into three categories:

- Segment Improvements
- Intersection Improvements
- Non-motorized Improvements

Complete quantitative data collected to assess existing roadways function and test improvements with forecasted conditions can be found in the *Existing Conditions and Forecasted Conditions Memorandums* (Appendix III and Appendix IV). Corridor issues identified by the public can be found in the Public Input section of this document and Appendix I: *Public Engagement Meeting Summaries.*

Improvement Drivers

It is important to note that the proposed improvements along the corridor are primarily safety driven rather than capacity driven. The coming years will bring several area circulation changes, with the TH 169 Improvements funded through Corridors of Commerce, being a primary driver of these changes. A goal of this study was to ensure that improvements identified along Twin Lakes Road/CSAH 13 be long-term solutions rather than reactive solutions to potential construction disruptions to the area. It is strongly believed that the improvements listed in this document will be appropriate following the completion of the TH 169 improvements.

Segment Improvements

The following table summarizes the segment improvements as recommended in this study. The following pages illustrate the improvements listed in the table and provide summary information for each.

Table 8: Proposed Segment Improvements

Segment	Existing Section	Proposed Section
North	Two-lane undivided, rural section, with select turn lanes	Super two: two-lane rural section with four-foot painted median including rumble/mumble strips in center and along shoulder. 11' drive lanes.
Middle	Two-lane undivided, rural section, with select turn lanes	Three-lane, combined urban and rural, section with center-left-turn-lane and designated right-turn-lanes where warranted. 11' drive lanes.
		Two-lane divided urban section with dedicated right- and left-turn-lanes where warranted. 11' drive lanes.
South	Four-lane divided with left-turn lanes	*Maintain existing section with focused improvements*

North Segment – CSAH 33/209th Ave NW to Cleveland Rd (CR 40)

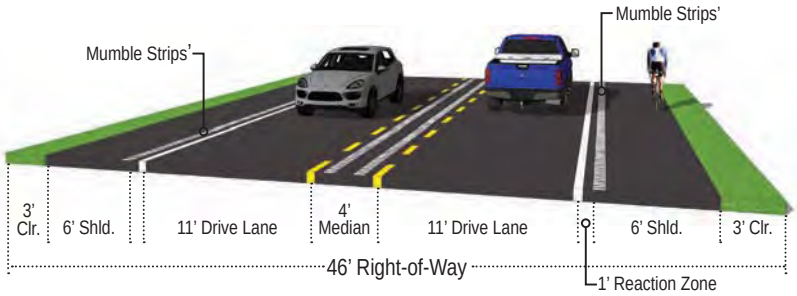
The primary issues identified for this segment included: vehicle speeds, vehicles veering over the centerline; and a lack of comfortable non-motorized facilities.

To address these issues, a Super-Two typical section is recommended. A Super-Two consists of two travel lanes separated by a painted, at-grade, median to further delineate lanes and provide a reaction zone. In this case, the following improvements will be included with the typical section:

- 11-foot drive lanes with a four-foot painted median and one-foot reaction along the shoulder
- Rumble- or mumble-strips in the painted median and along the shoulder
- Six-foot paved shoulder per Sherburne County guidance for *Roadway Design Options for Average Bicyclists, Rural Sections* to support non-motorized uses

Super-Two

2.00 miles, Estimated cost per mile: $1,700,000 (includes trail costs)



Anticipated Outcomes

The improvements identified for this segment are expected to provide the following outcomes:

- 11-foot drive lanes will create a sense of a tighter corridor to aid in slowing vehicle speeds.
- By providing a one-foot vehicle reaction along the shoulder, there will still be a 12-foot drivable surface for larger vehicles that may need this space.
- The four-foot, painted, median will provide a reaction zone for any vehicle veering over into the oncoming lane. The rumble- or mumble-strips will provide an additional warning to these drivers.
- The paved shoulder, one-foot reaction zone, and the rumble- or mumble-strips along the shoulder all contribute to a more delineated space for non-motorized use and will help to create a more comfortable experience for those users.

Middle Segment – Cleveland Rd (CR 40) to 181st Ave (CSAH 12)

The primary issues identified for this segment included: vehicle speeds, poor intersection sight lines with a curving road, illegal bypassing using the shoulder or turn-lane, and a lack of non-motorized facilities.

To address these issues, two typical roadway sections were explored: a three-lane section with center left turn lane (CLTL) and a two-lane section with raised median and dedicated turn-lanes where warranted.

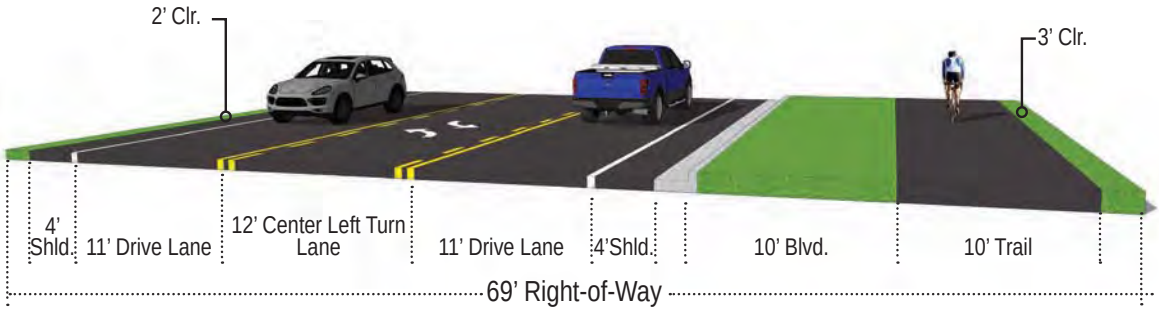
Three-Lane Typical Section

The following improvements will be included with this typical section:

- 11-foot drive lanes
- Center left turn lane throughout segment
- Both rural or urban sections are viable alternatives for this improvement.
    - A rural section, without curb and gutter, is generally less costly than an urban section. Eliminating curb and gutter will, however necessitate a wider buffer (24- 34-feet) between the roadway and trail, requiring a wider right-of-way and potentially higher cost.
    - An urban section, with curb and gutter, will be more costly, but will allow for a tighter right-of-way. An urban section from 181st (CSAH 12) to Tyler St. would be appropriate and recommended to extend the character from the south segment and to support a trail on the east side and sidewalk on the west side of TLR while managing right-of-way impacts.
- 10- to 35-foot boulevard on east side (urban to rural section respectively)
- Extend 10' trail from Trott Brook Pkwy to Cleveland Rd (CR 40)
- Extend sidewalk on east side north to 187th Ave NW in the near term. A long term connection could be made to 193rd Ave NW via Tyler St NW as development occurs.

Middle Segment Alternative #1 Three-Lane Section

1.75 miles, Estimated cost per mile: $2,300,000 (includes trail costs)



Anticipated Outcomes

This typical section is expected to provide the following outcomes:

- Narrower lanes create a sense of a tighter corridor to aid in slowing vehicle speeds
- Remove turning vehicles from the through-lane will improve corridor drive time and is anticipated to reduce or eliminate illegal bypassing.
- A CLTL will also create a reaction zone between the travel lanes
- Extending the trail to Cleveland road along with the sidewalk connections will provide a missing connection in the non-motorized network.

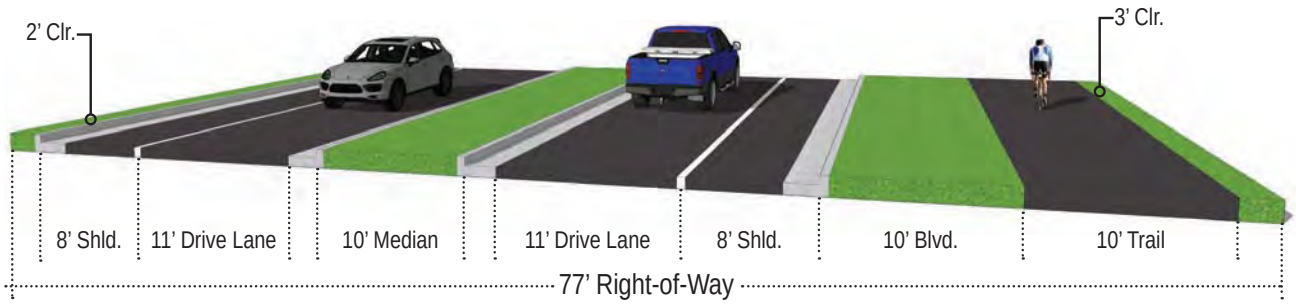
Two-Lane Typical Section with Median

The following improvements will be included with the typical section:

- 11-foot drive lanes
- Center median throughout segment
- Designated turn-lanes (breaks in median) where warranted
- 8-foot shoulder required for two-lane divided section
- Urban section with curb and gutter
- 10-foot boulevard along east side
- Extend 10' trail from Trott Brook Pkwy to Cleveland Rd (CSAH 40)
- Extend sidewalk on east side north to 187th Ave NW in the near term. A long term connection could be made to 193rd Ave NW via Tyler St NW as development occurs.

Middle Segment Alternative #2 Median with Dedicated Turn Lanes

1.75 miles, Estimated cost per mile: $2,600,000 (includes trail costs)



Anticipated Outcomes

This typical section is expected to provide the following outcomes:

- Narrower lanes create a sense of a tighter corridor to aid in slowing vehicle speeds
- Remove turning vehicles from the through-lane will improve corridor drive time and is anticipated to reduce or eliminate illegal bypassing.
- The center median will continue the character of the south segment north to Cleveland Rd
- Extending the trail to Cleveland road along with the sidewalk connections will provide a missing connection in the non-motorized network.

Recommended Typical Section

The three-lane section along this segment is recommended because it will be more economical to implement and is anticipated to have fewer impacts with its slightly narrower cross section. This three-lane section will separate turning vehicles from through movements and provide a separation between opposing traffic. Given the number of access points along the Middle Segment, a three-lane section will do a better job of supporting safe operations at intersections and driveways without cutting off access.

South Segment - 181st Ave (CSAH 12) to TH10/TH169 Intersection

It is recommended that the existing typical section in the South segment remain. The character of this segment is much more urban and commercial than either of the other two segments; a four-lane roadway with raised center median and dedicated turn lanes serves the function of this area well. Focused improvements have been identified in the *Intersection Improvements* section of this report and intersections which warrant additional dedicated turn lanes, per 2038 forecasts, are listed later in this section.

It is important to note that it is recommended that the curve in the road between 175th Ave NW and 172nd Ave NW be flattened, where possible, to improve sight lines. This recommendation has been illustrated with the *Intersection Improvements* section.

Refer to the *Known Improvements* section in the *Corridor Overview* for more information on the extension of TLR south to connect with TH10/TH 169 at a new at-grade intersection.

South Segment **Existing Typical Section**

2.40 miles, Maintain existing typical section through this segment

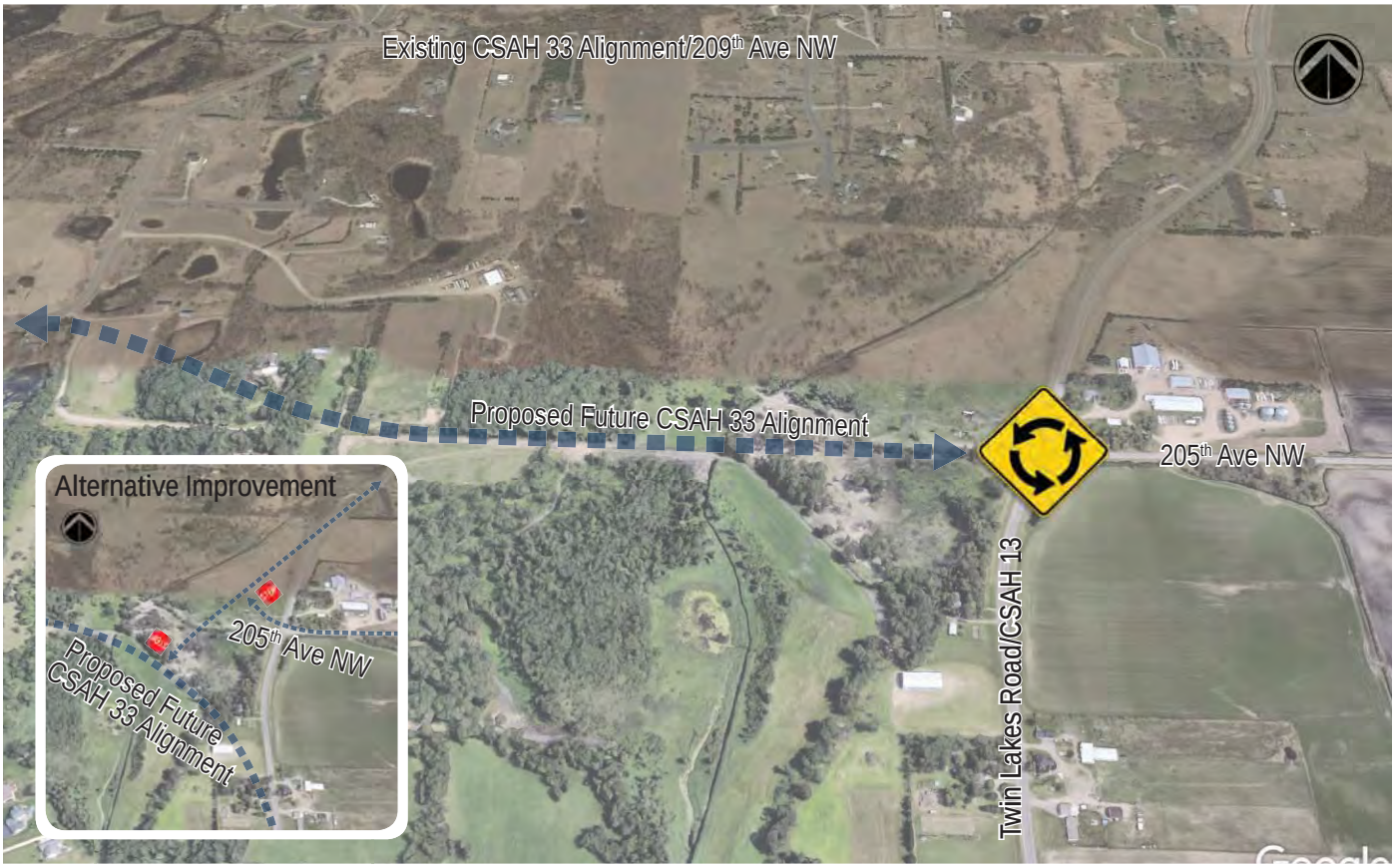
Intersection Improvements

The following table summarizes the intersection improvements as recommended in this study. The following pages illustrate the improvements listed in the table and provide summary information for each.

Table 9: Proposed Intersection Improvements

Intersection	Existing Controls	Proposed Controls/Improvements
CSAH 33	Side-street stop	Roundabout or realigned side-street stop
CSAH 33/Viking	Side-street stop	Roundabout (by others)
CR 40/Cleveland Rd	Side-street stop	Roundabout (by others)
Lincoln St	Side-street stop	Right-in/right-out (maintain side-street stop)
		Alternative: Close access
Tyler St/Twin Lakes Pkwy	Side-street stop	Roundabout
		Alternative: Traffic signal
Line Ave/185th Ave NW	Side-street stop	Roundabout
CSAH 12/181st Ave NW	All-way stop	Traffic signal
175th Ave NW	Side-street stop	Traffic signal or roundabout
172nd Ave NW	Side-street stop (right-in/right-out)	Side-street stop (full access)
171st Ln NW	Side-street stop	3/4 intersection (maintain side-street stop)

Future Proposed CSAH 33 Alignment



Identified Issues

Primary issues identified at the current intersection of CSAH 33/209th Ave NW and TLR include:

- Poor intersection visibility
- Vehicle speeds on Twin Lakes Road
- Accommodating several vehicle types (personal vehicles and freight traffic)
- One of few east-west connections (disjointed connection with jog of CSAH 33 down to Viking Blvd)

Proposed Improvements

A potential future alignment of CSAH 33 has been explored to create a stronger east-west connection in the area – this alignment is illustrated in the layout in Figure 2. The dominant traffic movement at the current CSAH 33/TLR intersection is the northbound left from TLR onto CSAH 33.

- Recommended Improvement: Roundabout
- Alternative Improvement: Realign TLR to curve west and meet the realigned CSAH 33. Convert Jarvis Street, to the north, to a side street stop off Twin Lakes Road. This realignment would have significantly more right-of-way impacts than a roundabout intersection.

Anticipated Outcomes

With the potential future alignment and the dominant traffic movement expected to perpetuate, these improvements are anticipated to better support the dominant traffic movements. Required roundabout lighting would eliminate the visibility issue and the roundabout itself would aid in slowing speeding vehicles on the corridor.

Lincoln Street

Identified Issues

Primary issues identified at this intersection includes:

- Poor sight lines for vehicles making left-turns out of the neighborhood onto TLR
- Vehicles on TLR veering into the northbound right-turn lane at Lincoln, using it as a thru-lane around the curve

Proposed Improvements

- Recommended Improvement: Convert the intersection to a right-in/right-out
- Alternative Improvement: Close the intersection and provide a cul-de-sac for vehicles to turn around

Anticipated Outcomes

Eliminating the left-turning movement out of this neighborhood will provide a safety improvement with fewer anticipated risky movements near a high-speed curve. The proposed extension of Lincoln to 191st Ave NW and Cleveland Road will maintain two access points in and out of this neighborhood.

Tyler Street/Twin Lakes Parkway

Identified Issues

Primary issues identified at this intersection includes:

- A lack of dedicated turn lanes and vehicles using the shoulder or right-turn lanes as bypass lanes
- Sight line issues and speed of traffic around curves

Proposed Improvements

- Recommended Improvement: Roundabout
- Alternative Improvements: Traffic Signal

Anticipated Outcomes

Adding a primary intersection at this location will have several benefits for the corridor and greater area circulation. Identifying this intersection control at Tyler rather than 193rd will support a stronger east-west connection with the future proposed extension of Twin Lakes Parkway NW to 191st Ave NE and Cleveland Rd (CR 40) to the east and the TH 169 improvements to the west. Both intersection types will provide a designated pedestrian crossing clear to both drivers and pedestrians and slow vehicle speeds throughout the corridor.

A roundabout is recommended for this intersection because it will provide safe operations at LOS A, minimize delay, and be consistent with other traffic controls throughout the corridor.

While a traffic signal will provide slightly less intersection delay than a roundabout - the roundabout will slightly increase the maximum delay for Trott Brook Parkway and 193rd Avenue due to less available adequate gaps in the mainline traffic - we still feel the roundabout is the right traffic control for this intersection. The average intersection delay for the roundabout is 9 seconds (average maximum delay is 12 seconds) and the average delay for a traffic signal is 6 seconds (average maximum delay is 13 seconds).

It is important to note that the intersections of Tyler St/TLR, 193rd Ave/TLR and Tyler St/193rd Ave will essentially function as one intersection with drivers using the most convenient route to their destination. For example, westbound left turn lanes are not deemed necessary at 193rd because if a driver traveling north on TLR wishes to turn westbound, they would likely make that movement at Tyler. This principal work similarly for a driver traveling southbound on TLR turning right at 193rd rather than Tyler if needing to turn westbound.

Line Avenue/185th Avenue NW

Identified Issues

- Drivers use Line Ave as a shortcut to avoid the all-way stop at CSAH 12/13 - Line Avenue is not set up for this purpose and the traffic turning left (northbound) onto TLR from Line Ave face short sight distances with a curving road and high vehicle speeds.

Proposed Improvements

- A roundabout is proposed at this intersection

Anticipated Outcomes

- A roundabout at this intersection is anticipated to facilitate both local and regional traffic needs. The Line Avenue Study (City of Elk River, 2016) outlines a cul-de-sac closure of Line Ave at 5th St NW to reduce the cut through traffic and to support a stronger local frontage road system. At the time of this report, these improvements have been put on hold while the TH 169 improvements are finalized. A roundabout at this intersection is expected to perform regardless of whether Line Ave is closed as outlined in the *Line Avenue Traffic Operations Study*.
    - We anticipate that traffic volumes on Line Ave will remain similar to existing conditions because of increased possibility for local trips on the proposed frontage road connection via 5th St NW/Dodge Ave NW.

181st Avenue NW (CSAH 12)

Identified Issues

- Delay at the all-way stop
- With 13 lanes of traffic approaching the all-way stop, there are numerous decisions and points of conflict for drivers navigating the intersection.

Proposed Improvements

- A traffic signal with double-left turn lanes for northbound left turns from CSAH 12/181st Ave NW and a right-turn lane for westbound right turns from CSAH 13/TLR is recommended at this intersection.

Anticipated Outcomes

- A signal at this intersection is anticipate to reduce vehicle delay by:
  - Total Intersection Delay: 34 seconds (AM), 87 seconds (PM)
  - Maximum Intersection Delay (EBL): 137 seconds (AM), 498 seconds (PM)
- The signal will need to coordinate with the existing signal at Line Ave/Zane St and the future identified traffic control on TH 169.
- A signal at this location is also anticipated to reduce the number of vehicles using Line Avenue to avoid this intersection today.

175th Avenue NW

Identified Issues

- Background and development driven traffic growth will put increasing pressure on this intersection. Development of the NE quadrant and redevelopment of the parcels south of 175th Ave NW to the east both could add significant additional traffic to the 175th Ave NW intersection.
- The planned extension of Fillmore Street south to Jarvis Street will make 175th NW an important east-west connection for this area. This, along with other local roadway network connections - including the proposed new intersection of TLR at TH 10/TH 169 and an anticipated frontage road along the east side of TH 10/TH 169 - will put an increased demand on the traffic operations of this intersection.

Proposed Improvements

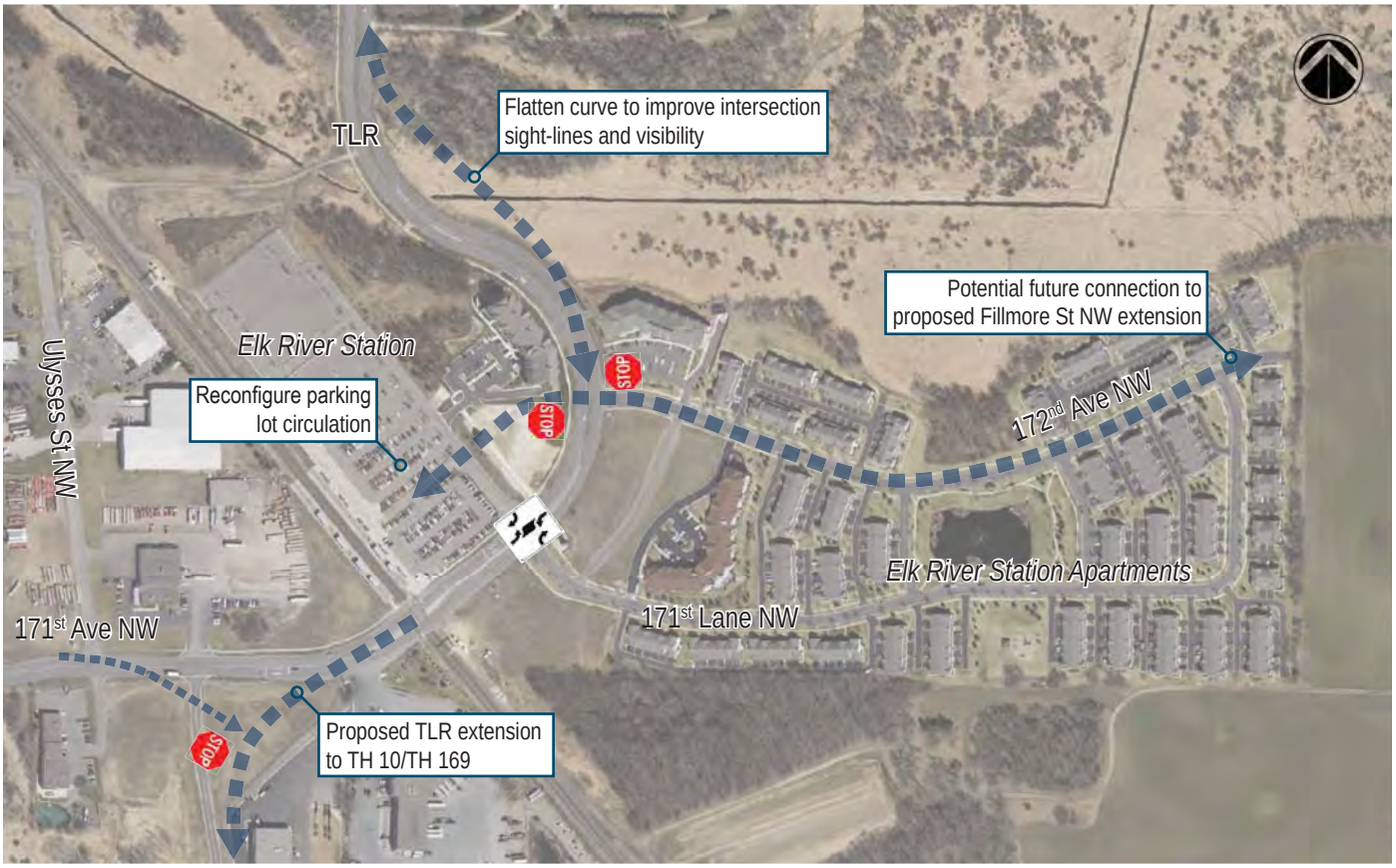
- A Roundabout is recommended at this intersection

  A traffic signal and side-street stop condition were also analyzed for this intersection. All three traffic controls performed exceptional; a roundabout performed only slightly better than the others.

Anticipated Outcomes

- A roundabout is the recommended long-term traffic control for this intersection based on consistency in traffic control along the corridor, an improved pedestrian experience over a side-street condition, and the tendency for less severity in crash experience for roundabouts.

172nd Avenue NW & 171st Lane NW



172nd Avenue NW

Identified Issues

- Perception of short sight-lines around a curving road
- Vehicles traveling at high speeds

Proposed Improvements

Converting this right-in/right-out intersection to a full access intersection with side-street stops is recommended.

171st Lane NW

Identified Issues

- Perception of short sight-lines around a curving road
- Vehicles traveling at high speeds

Proposed Improvements

Converting this full access intersection to a ¾ intersection is recommended.

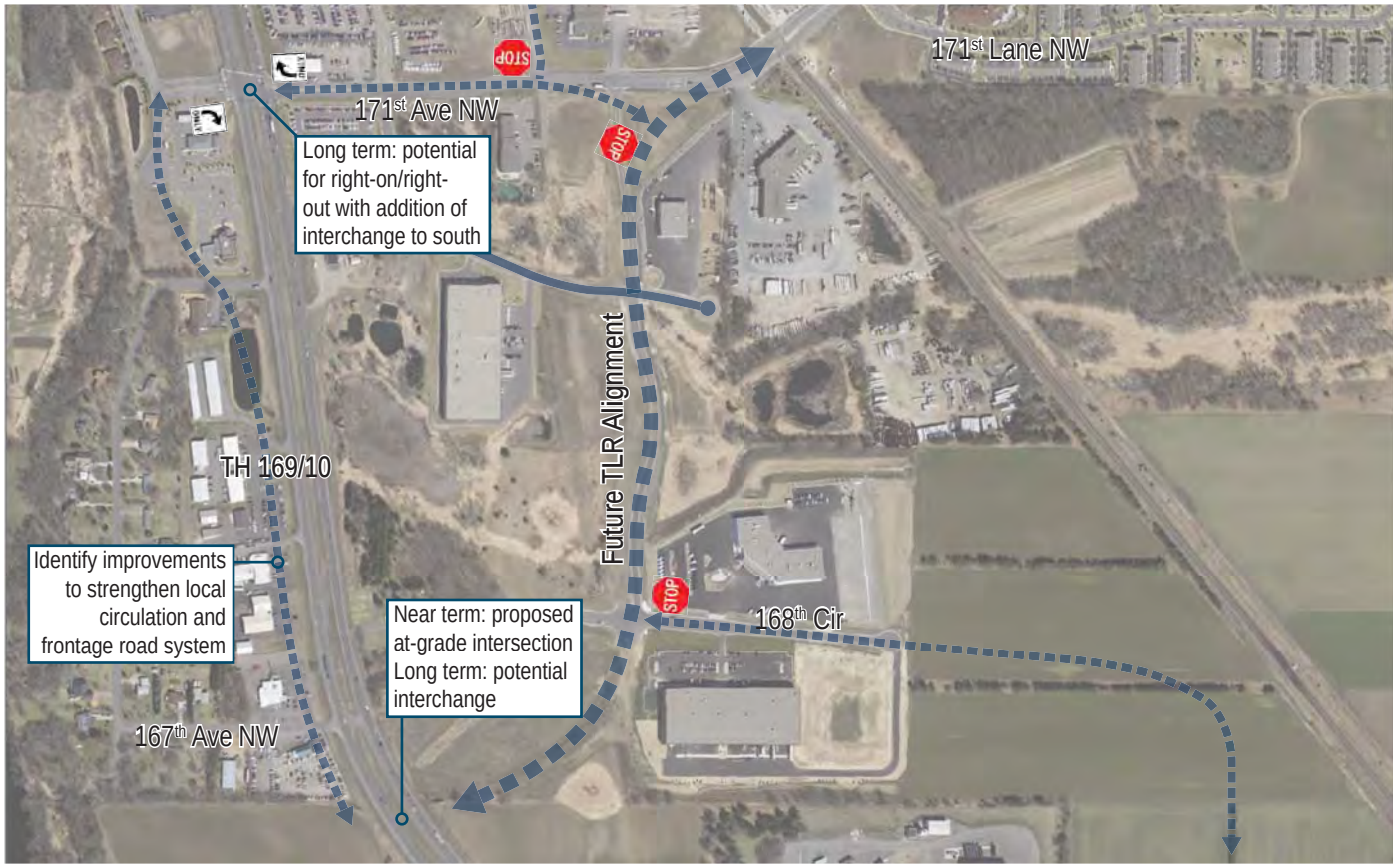
In addition to the two intersection improvements in this area, it is recommended that the curve in TLR between 175th Ave NW and 172nd Ave NW be flattened out to help improve visibility in this area. Reconstructing this road to improve curvature will also provide opportunity to correct the super elevation issues existing today.

Anticipated Outcomes

Moving the primary access to the transit station and Elk River Station neighborhood to 172nd Ave, in addition to flattening out the curve in the roadway, is expected to provide better sight-lines for vehicles leaving the transit station and better visibility of vehicles entering onto the road for drivers on TLR. A ¾ intersection at 171st Ln will still allow for vehicles to enter the station and neighborhood.

172nd Ave as the primary intersection also supports a future local network connection to meet Fillmore St NW to the east.

Proposed Twin Lakes Road Extension to TH 10/TH 169



The *171st Avenue Focused Area Study (FAST)* identified an extension of Twin Lakes Road south to connect with TH 10/TH 169 at a new at-grade intersection. Long-term planning has identified this as a potential interchange further into the future. This improvement is expected to support existing and future land uses/development in this area.

Turn Lane Warrants

The following table identifies intersections which warrant right- and/or left- turn lanes with 2038 traffic forecasting. The complete turn lane warrant analysis can be found as part of the Forecasted Conditions Memo in Appendix IV.

Table 10: Warranted Turn Lanes

Intersection		NBR	SBR	NBL	SBL
205th Ave NW	Existing Turn Lanes	N	N	N	N
	Warranted Turn Lanes*	W	W	W	W
Kennedy St NW	Existing Turn Lanes	Y	-	-	N
	Warranted Turn Lanes*	W	W	W	W
193rd Ave NW	Existing Turn Lanes	-	Y	BP	-
	Warranted Turn Lanes*	-	W	W	-
Tyler St NW/Twin Lakes Pkwy NW	Existing Turn Lanes	Y	Y	N	N
	Warranted Turn Lanes*	W	W	W	W
187th Ave NW/Trott Brook Parkway NW	Existing Turn Lanes	Y	N	N	N
	Warranted Turn Lanes*	W	W	W	W
Line Ave/185th Ave NW	Existing Turn Lanes	Y	Y	Y	N
	Warranted Turn Lanes*	W	W	W	W
182nd Ave NW	Existing Turn Lanes	N	Y	N	Y
	Warranted Turn Lanes*	W	-	-	W
CSAH 12/181st Ave NW	Existing Turn Lanes	N	N	Y	Y
	Warranted Turn Lanes*	W	W	W	W
179th St NW	Existing Turn Lanes	-	N	Y	-
	Warranted Turn Lanes*	-	W	W	-
175th Ave NW (North Connection)	Existing Turn Lanes	N	N	N	N
	Warranted Turn Lanes*	-	W	-	-
175th Ave NW (South Connection)	Existing Turn Lanes	N	N	Y	Y
	Warranted Turn Lanes*	W	W	W	W
171st Ln NW	Existing Turn Lanes	N	N	Y	Y
	Warranted Turn Lanes*	Y	Y	Y	Y
171st Ave NW	Existing Turn Lanes	-	-	-	-
	Warranted Turn Lanes*	-	W	W	-
TH 10/TH 169 (Future Connection)	Existing Turn Lanes	-	-	-	-
	Warranted Turn Lanes*	-	W	-	W

(Y) Existing turn lane
(N) No existing turn lane
(BP) Bypass lane
(W) Turn lane warranted

Non-Motorized Improvements

The following table summarizes the non-motorized improvements identified along the corridor. Several of the segment improvements have been identified to complete connections in the non-motorized network.

Table 11: Proposed Non-Motorized Improvements

Segment	Proposed Improvement	Extents
North	Paved shoulder with rumble/mumble strips	209th Ave/CSAH 33 intersection to CR 40/Cleveland Rd intersection
Middle	Trail extension	Along east side of TLR from Trott Brook Pkwy to CR 40/Cleveland Ave NW
	Sidewalk connections	Extend sidewalk along west side of TLR from Line Ave NW to 187th Ave NW
		Construct sidewalk on west side of TLR from 187th Ave NW to Tyler Ave
		Construct sidewalk along Tyler St NW from TLR to existing sidewalk system on 193rd Ave NW
South		

Note: Other recommendations included this study - included in the segment and intersection improvements - are expected to improve pedestrian and bicycle connectivity, including: the improved intersection controls at CSAH 33/Viking Blvd, CR 40/Cleveland Rd, Tyler St, CSAH 12/181st Ave/Main St, and the paved shoulder with rumble/mumble strips in the northernmost segment.

Many of the identified intersection improvements will have non-motorized as well as vehicular improvements. The addition of intersection controls (traffic light, roundabout) will designate crossing points for pedestrians and bicycles that is clear to all roadway users. Anticipated improvements for the intersection control type have been listed below:

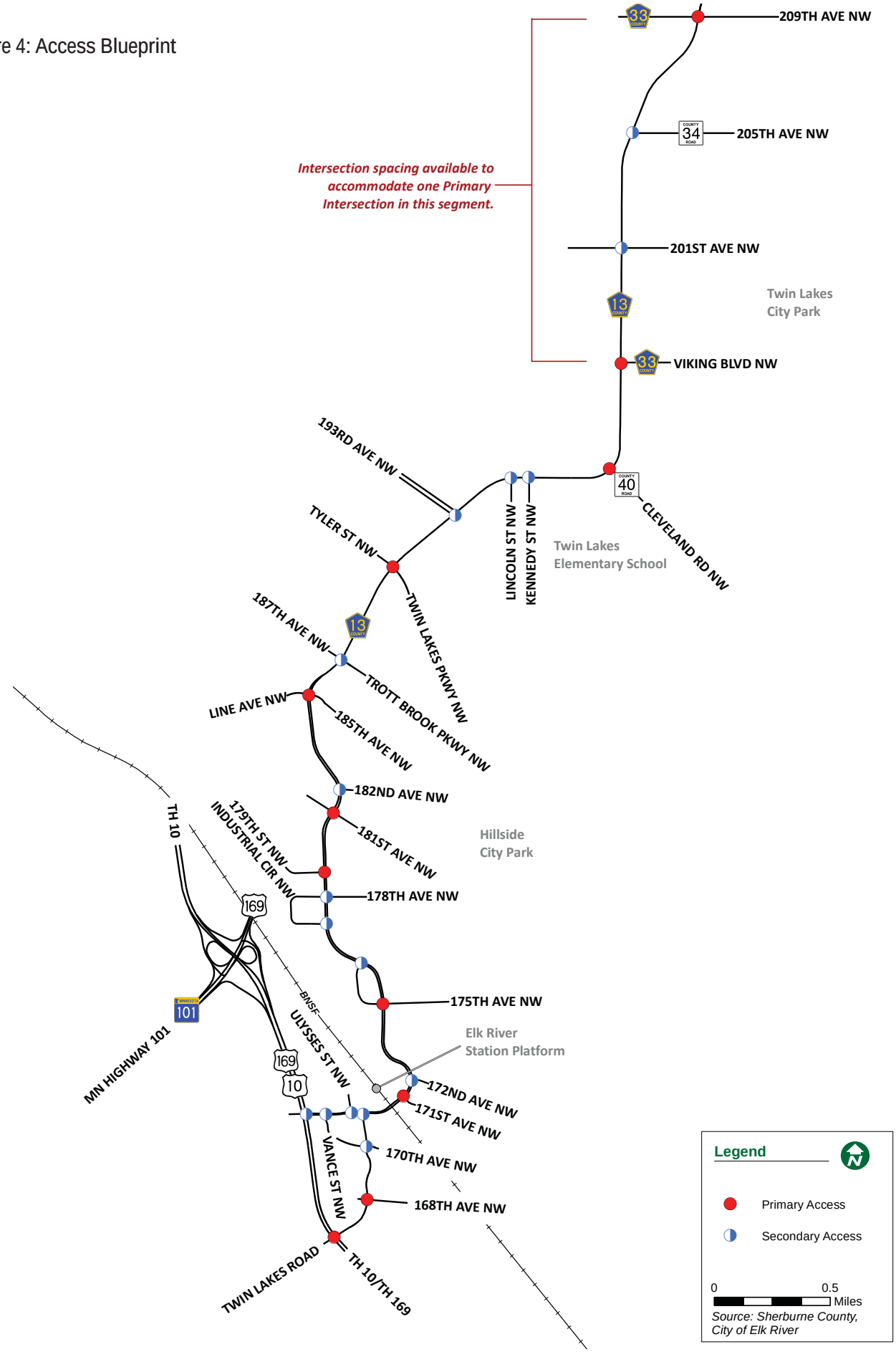
- Signalized Intersection -
  - Fully accessible (Full-APS) traffic signal
  - Properly timed pedestrian cycle with countdown timers
  - Marked crosswalks identify safe crossing locations
- Single-lane Roundabout -
  - Marked two-stage pedestrian crossings with splitter island refuge area
  - Vehicles speeds are anticipated to be at circulatory design speed (20 mph) at pedestrian crossing locations

Further Study

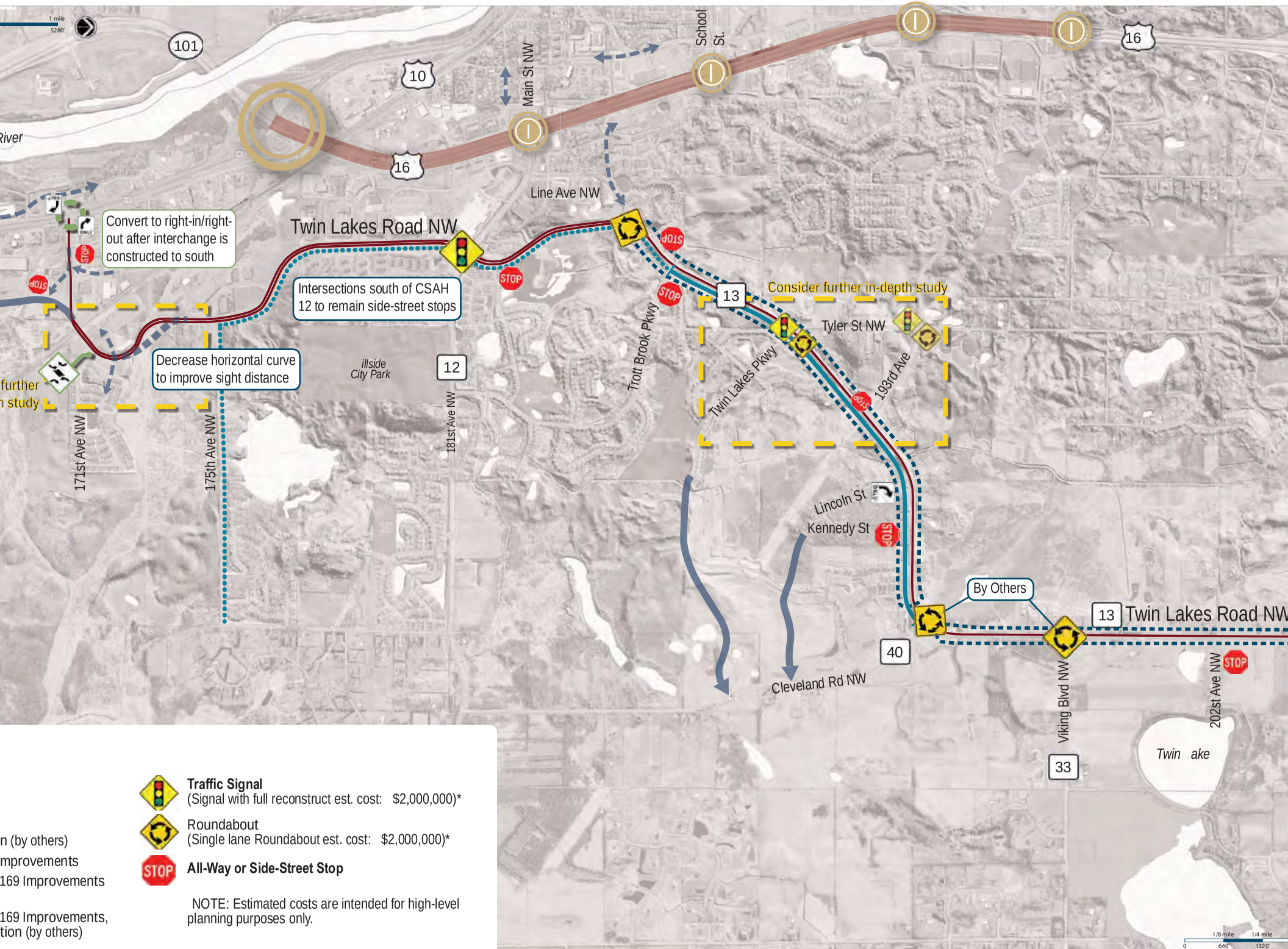
The planned improvements to TH 169 will impact area circulation and development both in the near term (during construction), mid-term (once construction is complete), and long-term (as development occurs). As a result, there are several areas along the corridor where further study is recommended prior to the implementation of improvements outlined in this study. These areas include:

- The CSAH 33 realignment and intersection controls at TLR
- The Tyler Avenue and 193rd Ave intersection controls
- The roadway realignment, intersection controls, and parking lot reconfiguration in the South segment between 175th Ave and 172nd Ave

Figure 4: Access Blueprint



iew Layout



n (by others)
mprovements
169 Improvements

169 Improvements,
tion (by others)

Traffic Signal
(Signal with full reconstruct est. cost: $2,000,000)*

Roundabout
(Single lane Roundabout est. cost: $2,000,000)*

All-Way or Side-Street Stop

NOTE: Estimated costs are intended for high-level planning purposes only.

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			• 11' drive lanes.	movements to improve safety	
	South	• Traffic volumes • Vehicle speeds • Mix of vehicle types (pesonal vehicles, semi trucks, train crossing, transit station traffic) • Curving roads (visibility issues)	• Maintain existing roadway section with focused intersection improvements	• Improved intersection visibility and sight-lines	
			• Flatten roadway curvature between 175th and 172nd Ave	• Improved intersection visibility and sight-lines	*Parcels impacted by fla TLR curve near transit not been explored. Fur discussion with proper recommended.*
			• Extend TLR to connect with TH 10/TH169 at new at-grade intersection (intersection type to be determined with further study) as outlined in the City Comprehensive Plan (included in CIP)	Improved alignment with greater area long term transportation goals and infrastructure improvements	
North Segment	CSAH 33/209th Ave	• Poor intersection visibility • Few existing east-west connections in area • Critical Crash Rate Index > 1 • Dominant movement at current CSAH 33/Twin Lakes Road intersection is northbound, left-turning vehicles, driving from TLR onto westbound CSAH 33 • Realign CSAH 33 (by others)	• ALTERNATIVE: Roundabout at potential future intersection with TLR	• Facilitate dominant traffic movement while still providing a full access intersection and east-west connectivity • Fewer right-of-way needs than intersection realignment	*Consider further in-dep CSAH 33 realignment*
			• ALTERNATIVE: Side-Street Stop at potential future intersection with TLR	• Intersection improvements which support dominant traffic movement	
	CSAH 33/Viking Blvd	• Poor intersection visibility • Poor Peak-hour traffic operations causing long queues on Viking Boulevard approach • Critical Crash Rate Index > 1	• Roundabout (by others)	• Slow vehicle speeds • Reduction in severity and number of crashes	
Middle Segment	CR 40/Cleveland Rd	High vehicle speeds around curve at intersetion with CSAH 13 • Critical Crash Rate Index > 1	• Roundabout (by others)	• Slow vehicle speeds • Reduction in severity and number of crashes	
	Lincoln St	• Poor sight lines from neighborhood (curving road and vegetation) • Poor visibility • Planned neighborhood connection from Lincoln St to Cleveland Rd NW (by others)	• ALTERNATIVE: Right-in/right-out (maintain side-street stop) • Re-stripe north-bound right turn lane on TLR for more distinct transition around curve	• Eliminate left turns out of neighborhood at Lincoln • Maintain left-turn out of neighborhood onto southbound TLR at Kennedy where sight-lines are better • Better align access spacing with guiding documents • Maintain a minimum of two neighborhood access points into and out of neighborhood with Lincoln St connection to 191st Ave	*Further discussion with neighborhood resident recommended prior to development or implem alternatives*
			• ALTERNATIVE: Close access at Lincoln St (provide turnaround)		
	Tyler St/Twin Lakes Pkwy	• Shoulder or turn-lanes used as bypass of turning vehicles • Future east-west connection from 193rd to CR 40/Cleveland Rd along Tyler St. and Twin Lakes Pkwy	• ALTERNATIVE: Roundabout	• Support stronger east-west connection from TH 169 to CR 40/Cleveland Rd via 193rd Ave/Tyler St/Twin Lakes Pkwy • Three intersections - TLR/193rd Ave, TLR/Tyler, and Tyler/193rd Ave - function together to distribute traffic patterns • Slow vehicle speeds • Improved non-motorized connectivity by providing designated crossing opportunity	*Consider further in-dep this system of intersec*
			• ALTERNATIVE: Traffic signal		
	Line Ave/185th Ave NW	• Cut through traffic • Poor sight lines • Grade issues prevelant in icy conditions • Intersection proximity to TH 169 • Critical Crash Rate Index > 1 • Potential for Line Ave connection to 5th St NW/Dodge Ave to act as primary connection to local frontage road system • Roadway improvements to support current and potential future uses (potential for commercial)	• Roundabout	• Improved mobility for both local and regional trips • Better connectivity to local frontage road system • Slow vehicle speeds • Improved non-motorized connectivity by providing designated crossing opportunity	*Line Ave closure (Line Study), to be re-evalua Study and TH 169 imp are further explored*
	CSAH 12/181st Ave NW	• Intersection congestion • Several decision points at single intersection • Students crossing at intersection to get to Spectrum High School • Critical Crash Rate Index > 1	• Traffic signal with double left turn lanes (west leg) and addition of right turn lane for southbound rights (north leg)	• Improved intersection function • Improved non-motorized connectivity by providing designated crossing opportunity	*Signalized intersection be coordinated with ex signal at Line Ave/Zan future traffic control at*
South Segment	175th Ave NW 172nd Ave NW	• Projected area growth requires intersection control improvement	• Traffic signal or Roundabout • Convert to primary intersection (full access) with side street stops • Add access drive to transit station as fourth leg of intersection • Reconfigure transit station parking lot circulation to support two accesses (171st Ln and 172nd Ave)	• Traffic control to maintain corridor mobility with increased demand on roadway • Improve sight lines and intersection visibility by moving primary intersection to "top" of curve • Support future potential connection of 172nd Ave to Fillmore St	
	171st Ln NW	• Poor intersection visibility to traffic on TLR	• Convert to 3/4 intersection (eliminate cross-traffic)	• Provide additional separation from primary intersection to railroad crossing	

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Implementation and Phasing

Implementation & Phasing Plan Table

One of the goals of this study was to identify improvements that could be phased over time as conditions within the study area change, as growth occurs, and development happens. This was achieved through the identification of near, medium, and long-term improvements to the corridor as well as high-level cost estimates. The following tables outline the time frames and cost break downs. Table 16 summarizes the implementation and phasing plan.

Table 13: Implementation Time Frames

Implementation Term	Description
Short Term	Improvements identified as short-term improvements are those recommended for construction in the next five-years. An improvement is deemed "short term" if there will be an immediate improvement and funding is available or has been identified.
Mid-Term	Improvements identified as mid-term are those identified as a need beyond next five-years. An improvement is deemed "mid term" if we know there is a need but no funding is identified and the project is not fully mature.
Long Term	Long-term improvements include those that are dependant on growth, improvements, and development along the Twin Lakes Road corridor. The nature of actual growth growth and development along the corridor will determine the need, timing, and nature for these improvements.

Table 14: Cost Estimate Descriptions

Cost Estimate	Description
●	Improvements have minimal complexity and/or impacts; are non-controversial; typically includes small infrastructure projects or maintenance activities.
●●	Improvements are small to medium non-complex infrastructure improvements that would require minimal expenditures to implement; are non-controversial; impacts are minimal and right of way is not needed.
●●●	Improvements have a scale of work or complexity requiring a moderate level of expenditures to implement; moderate controversy is possibly; typically impacts, issues, and controversy is minimal and the public is perceived to understand and accept the proposed improvement; right of way is limited to temporary easements and small takings of permanent right of way; public engagement would be a necessary only to inform public of timing and expected outcomes.
●●●●	Improvements have a higher scale of work or complexity requiring a higher level of expenditures to implement; likely to have focused controversey; typically impacts are moderate and issues/solutions are minimally-complex; public is percieved to understand and accept the proposed improvement; right of way takings may be required but they are non-controversial; public engagement would be a necessary to inform public of timing and expected outcomes.
●●●●●	Improvements have a significant scale of work or complexity requiring a high level of expenditure to implement; could be controversial; issues could include environmental impacts such as wetlands or right of way impacts and costs; the scale of infrastructure would lend to a high cost estimate; public engagement would be a critical component of implementation due to cost, impacts, controversy, and/or complexity.

Funding & Grant Programs

The following funding sources and grant programs are applicable to the improvements outlined in this study.

Table 15: Funding Sources & Application Periods

Funding Source	Type of Improvements Funded	Application Period	Prospects
Greater MN Highway Safety Improvement Program (HSIP)	To reduce fatalities and serious crashes	Early Fall	High critical rate index intersections, comprehensive pedestrian and traffic signal upgrades, restricted access medians, addition of turn lanes
Local Road Improvement Program (LRIP)	Local road construction/reconstruction that provides for safety improvements, regional significance, redevelopment efforts	Varies as program funding is available	South segement (south of CSAH 12)
Surface Transportation Block Grant Program (STBG)	Preserve and improve condidtions and performance of the highway	Late Fall	South segement (south of CSAH 12)
State Safe Routes to School Program	Safe Routes to School infrastructure improvements withing two-miles of a school	Late Fall / Early Winter	Trail and sidewalks that serve SRTS planning initiatives
Outstate Transportation Alternatives	Greater Minnesota Safe Routes to School infrastructure improvements within two-miles of a school	Late Fall / Early Winter	Trail and sidewalks that serve SRTS planning initiatives

Table 16: Implementation

Improvement Type		Intersection/Segment	Recommended Improvements	High Level Cost Estimate	Implementation
Segment		North	• Super Two	●●	Mid-Term
		Middle	• ALTERNATIVE: Three-lane section with center-left-turn-lane	●●● / ●●●●	Mid-Term
			• ALTERNATIVE: Two-lane divided urban section	●●●●●	
		South	• Flatten roadway curvature between 175th and 172nd Ave	●●●●	Long-Term
			• Extend TLR to connect with TH 10/TH169 at new at-grade intersection as outlined in the City Comprehensive Plan (included in CIP)	●●●	Near-Term
Intersection	North Segment	CSAH 33/209th Ave	• ALTERNATIVE: Roundabout at potential future intersection with TLR	●●●●	Mid-Term
			• ALTERNATIVE: Side-Street Stop at potential future intersection with TLR	●●●●●	
		Viking Blvd (CSAH 33)	• Roundabout (by others)	N/A	Near-Term
	Middle Segment	Cleveland Rd (CSAH 40)	• Roundabout (by others)	N/A	Near-Term
		Lincoln St	• ALTERNATIVE: Right-in/right-out (maintain side-street stop)	●	Mid-Term
			• Re-stripe north-bound right turn lane on TLR for more distinct transition around curve	●	Near-Term
			• ALTERNATIVE: Close access at Lincoln St (provide cul de sac within development for turnaround)	●●	Mid-Term
		Tyler St/Twin Lakes Pkwy	• ALTERNATIVE: Roundabout	●●●●	Mid-Term
			• ALTERNATIVE: Traffic signal	●●●●	Mid-Term
			• Northbound left turn lane on TLR at Tyler • Southbound right turn lane on Tyler at TLR	●●●	Mid-Term
		Line Ave/185th Ave NW	• Roundabout	●●●●	Mid-Term
		CSAH 12/181st Ave NW	• Traffic signal with additional turn-lanes (westbound right; northbound left)	●●●●●	Near-Term
	South Segment	175th Ave NW	Traffic Signal or Roundabout	●●●●	Long-Term
		172nd Ave NW	• Convert to primary intersection (full access) with side street stops • Add access drive to transit station as fourth leg of intersection • Reconfigure transit station parking lot circulation to support two accesses	●●●●●	Long-Term
		171st Ln NW	• Convert to 3/4 intersection (eliminate cross-traffic)	●●●	Long-Term
Non-Motorized		North Segment	• Paved shoulder with rumble/mumble strips in accordance with County and State standards for on-street trail facilities	●●	Mid-Term
		Middle Segment	• Trail extension along east side of TLR from Trott Brook Pkwy to Cleveland Ave NW (CSAH 40)	●●●	Near-Term
			• Extend sidewalk along west side of TLR from Line Ave NW to 187th Ave NW	●●●	Near-Term
			• Construct sidewalk on west side of TLR from 187th Ave NW to 193rd Ave NW via Tyler St NW	●●●	Long-Term
		South Segment	• Complete sidewalk/trail connections as outlined by the City Comprehensive Plan as improvements are implemented	●●	Mid-Term

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Public Meeting Summaries

Appendix I

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Sherburne County

CSAH 13 / Twin Lakes Road Corridor Study

Focus Group Meeting #1

June 19, 2018 – 4:30 to 6:00 PM
Twin Lakes Road Elementary School, Media Center
10051 191st Ave NW, Elk River, MN 55330

MEETING SUMMARY

OVERVIEW

The purpose of this Focus Group meeting was to *discuss participants' experiences on Twin Lakes Road and the issues and opportunities they see in the corridor. Vision and goals for the corridor were briefly explored. The intended outcomes from this meeting were to: build a common understanding of what the Corridor Study is; to provide an opportunity for the project team to listen to the participants' local expertise on issues and opportunities; and to gain an understanding of the community's vision for the corridor.*

ATTENDEES

Project Staff: Dave Roedel (Sherburne County), Dan Knapek (Sherburne County); Justin Femrite (City of Elk River); Pete Lemke (Bolton & Menk), and Madeline Peck (Bolton & Menk)

Task Force Members –Twelve Task Force members attended the meeting.

Presentation Summary

Corridor Study extents: Twin Lakes Road from County State Aid Highway (CSAH) 33/209th Ave NW to 171st Ave NW intersection with Hwy 10. From CSAH 33 to CSAH 12 (181st Ave NW) Twin Lakes Road is under the jurisdiction of Sherburne County as CSAH 13; from CSAH 12 (181st Ave NW) to TH 10 Twin Lakes Road is under the jurisdiction of the City of Elk River as a city street.

What is a Corridor Study? A guiding document that summarizes the corridor's vision and recommended improvements to the roadway overtime. A corridor study is not one specific project to be built, rather it is to be used as a guide as the area continues to develop and future projects arise.

To create the corridor study qualitative data - such as, community values and vision for the roadway - as well as quantitative data – such as, traffic counts, turning movements, crash history, posted and travelled speeds, adjacent land uses, development potential, and access points – are pulled together to form evaluation criteria for alternative solutions.

What is the study timeline?

Corridor Issues/Opportunities

Each participant was given two stickers to place on a large-scale map of the Twin Lakes Road corridor: one green to indicate an opportunity and one orange to indicate an issue. Each sticker was then discussed as a larger group and notes were added to the map to capture the discussion. The following list captures the issues/opportunities moving north to south:

North of County Hwy 33/209th Ave NW

- More overhead lights
- Twin Lakes Road needs to be plowed by 3:00-4:30 am in morning.
- Traffic too fast

CSAH 33/209th Ave NW

- Traffic Volumes
- Poor Visibility
- Too curved?
- Realignment of CSAH 33 has been discussed at "30,000-foot level of planning" to establish better E-W connection

County Road 40/Cleveland St NW

- Planned roundabout as opportunity with future (5- to 10-year term) development in area – residential, city growth and development
- Have to walk on shoulder

County Hwy 33/Viking Blvd NW

- Poor Visibility
- Traffic too fast
- Flashing light for intersection
- What about mail boxes?

Segment of road between CR 40 and 193rd Ave NW

- Poor visibility
- Traffic too fast
- Traffic Volume
- Trail extending to Twin Lakes Elementary for bikes/pedestrians and especially students

193rd Ave NW

- Poor visibility
- Could also use a roundabout at intersection of Twin Lakes Road and 193rd Avenue

Tyler St NW/Twin Lakes Parkway NW

- Multi-use trail
- 193rd and Tyler. More traffic with connection to development and CR 40 to East
- Improve intersections with increasing development. Example: add center left turn lanes and passing lanes
- Issues: Southbound traffic on TLR to Trott Brook Parkway
- Think of Twin Lakes Parkway extension as a whole (CSAN 13 – CR40) Roadway Corridor, not just an extension of the roadway.

Trott Brook Parkway

- Traffic doesn't slow early enough. Almost get hit turning left here.

Line Avenue

- Snow melt at intersection – grade issues, icy
- Opportunity for roundabout

- Explore future use of neighborhood near Line Ave when developing alternatives – may not always be same use as it is today, feels like it could become commercial
- Cut through NB traffic backup to Abra - 90% of those, taking left onto TLR
- Need right turn lane on Line Avenue onto Main Street.

County Highway 12/181st Ave NW

- 16 decision points in intersection and increased development/increased traffic volume: stoplights, roundabout?
- Students to Spectrum through intersection – walk, bike, vehicular
- Line Ave intersection and Walmart entrance in close proximity to 169
- 12 & 13 intersection as area funnel

Industrial Circle NW/178th Ave NW

- Opportunity for student/staff crossing to Spectrum walk, bike, vehicular

172nd Ln NW

- Road Curves
- High Traffic volumes
- Intersection with transit station – dangerous.

RR Crossing

- Heaviest mix of traffic, truck, train crossing, industrial; minimum width for 4-lane with curve

Ulysses St NW

- Road Curves
- Traffic too fast
- Planned connection to TH 10 further south

General Comments

- Notes on map exemplify "urban (level of traffic) uses on rural roadways (design for lower volume use" (examples: visibility issues, lack of turn lanes)
- Opportunity to get local system set up prior to TH 169 construction
- Disconnected commercial corridor East of TH 169; what happens during TH 169 construction?

Corridor Vision

Participants were asked to write down key words or phrases, or full statements on what they feel is important to include in the Corridor's Vision statement. The following responses were received:

- Handle increasing traffic in a safe and effective way
- Address changes resulting from 169 improvements
- Vision for corridor is to create a transportation system that safely and efficiently accommodates all methods of mobility within and through the corridor
- Extend 4 lane traffic up to the school from the south
- Provide turn lanes and clear brush for better visibility - acquiring property from private if necessary
- Safe, efficient movement of local tips with easy solutions for scalability to support future growth
- Controlling speed solves 90% of problems
- Safety for spectrum students
- Crosswalk for spectrum students
- Safety for kids and families to walk/bike/ride to school
- People mover
- Dedicated turn lanes
- All traffic can move safely to their destination in a timely manner
- Line of sight correction
- Turn and bypass lane addition where needed

- Reduction of speed in dense stretches by traffic control devices
- Safety
- Traffic flow
- Less accidents by better design
- Urban
- Useable
- Speed
- Access point safety
- Recreational safety
- High traffic volume times
- Be ready for expected and unexpected residential growth
- Safety for types of traffic use: commercial, commuter, local, thru (cabin)
- Recognize options for re-development along corridor and adjacent
- Slow the entire section down through engineering, design, lower speed allowances and divided turn lanes all the way through
- Safe turning movements into residential areas
- Safe movement of pedestrians to and from Twin Lakes Section

NEXT STEPS

- HOMEWORK (see below): Participants were asked to discuss the Corridor Study and gather experiences on Twin Lakes Road with two friends/neighbors/acquaintances/strangers and invite them to attend the Open House
- The first Study **Open House** will be held on Wednesday June 27th from 4:30-6:00 pm at Twin Lakes Elementary.
- Bolton & Menk to send out meeting summary to participants.
- Bolton & Menk to write draft vision statement based on input from the Focus Group. This will be discussed and developed further at the next Focus Group meeting.
- Second Focus Group meeting to be scheduled once corridor alternatives are developed – date TBD.

Sherburne County

CSAH 13 / Twin Lakes Road Corridor Study

Open House #1

June 27, 2018 – 4:30 to 6:00 PM
Twin Lakes Road Elementary School, Cafeteria
10051 191st Ave NW, Elk River, MN 55330

MEETING SUMMARY

OVERVIEW

The purpose of this Open House was to *discuss participants' experiences on Twin Lakes Road and the issues and opportunities they see in the corridor. Vision and goals for the corridor were briefly explored. The intended outcomes from this meeting were to: build a common understanding of what the Corridor Study is; to provide an opportunity for the project team to listen to the participants' local expertize on issues and opportunities; and to gain an understanding of the community's vision for the corridor.*

ATTENDEES

Project Staff: Dave Roedel (Sherburne County), Dan Knapek (Sherburne County); Pete Lemke (Bolton & Menk), Jake Pilz (Bolton & Menk), and Madeline Peck (Bolton & Menk)

Attendance –23 community members signed into the Open House.

Presented Materials

The presented boards are included at the end of this document. A layout of the study extents was also used at the meeting for participants to mark their issues and opportunities along the corridor using dots (orange for issues, green for opportunities) and sticky notes – these comments are included in the next section.

Corridor Issues/Opportunities

After signing in, each participant was given two stickers to place on a large-scale map of the Twin Lakes Road corridor: one green to indicate an opportunity and one orange to indicate an issue. Participants were also instructed to add sticky notes with comments to the layout that describe the identified issue/opportunity. Additional dots were available for those who wanted to add more than two. The following list captures the issues/opportunities moving north to south:

North of County Hwy 33/209th Ave NW

- More overhead lights all along Twin Lakes Road and Jarvis
- Kids should not stand on Twin Lake Road and Jarvis. Especially, when there is cul-de-sac
- Blind corner (213th Ave NW), need to cut back trees.
- Left onto 213th. Need a sign to stop people going around. They hit the ditch all the time.
- Twin Lakes Road and 213th. It is NOT a bypass land. Everyone goes around you as you are turning.
- Twin Lakes Road needs to be plowed by 3:00-4:30 am in morning.
- More 30 mph sign on this road. People drive too fast. Business on end of road.
- Need to plow out earlier in winter, 5:30 a.m.

County Hwy 33/209th Ave NW

- County Road 33 too curvy and too many big trucks on it. Cross line all the time.
- Blind spot to your right when trying to go North. More overhead lights

- 33 and Twin Lakes Road (205th): Please clear trees on west side of Twin Lakes going South. Low visibility when turning Northern Twin Lakes from Co 33.

North of County Road 40/Cleveland St NW

- Have to walk on shoulder

County Hwy 33/Viking Blvd NW

- Blind spot when turning onto Twin Lakes from Viking. My daughter was T-boned here. So were three others from 1/17-1/18.
- More lights; people pull out in front of you all the time; too much speed.
- Flashing light for intersection
- What about mail boxes?
- When traveling north bound on Twin Lakes Road, many people pull out off Viking Blvd. There's a blindspot when some are turning onto Viking.

County Road 40/Cleveland St NW

- Almost been hit a lot when turning left onto Cleveland Avenue, coming from North going South.
- Temporary 3 way stop signs should be put at Twin Lakes Road and Cleveland Road (CR 40) till the Roundabout is built.
- Roundabouts are dangerous. People don't know how to exit/enter.

Segment of road between CR 40 and 193rd Ave NW

- Vehicle speeds too fast
- Intersection of Lincoln and Twin Lakes Avenue is extremely dangerous. Too many speeding vehicles make it very difficult to turn onto Twin Lakes from Lincoln Street.
- Pedestrian connection to T.L. Elementary. People walking on shoulders.
- Intersection of Kennedy and Twin Lakes has limited visibility!
- Walking/bike trail for walkers (students) all Twin Lakes Road (2 stickers)

193rd Ave NW

- Could also use a roundabout at intersection of Twin Lakes Road and 193rd Avenue

Tyler St NW/Twin Lakes Parkway NW

- Passing Lane Twin and Tyler (2 stickers)
- Think of Twin Lakes Parkway extension as a whole (CSAN 13 – CR40) Roadway Corridor, not just an extension of the roadway.

Trott Brook Parkway

- Traffic doesn't slow early enough. Almost get hit turning left here. (2 orange stickers)

Line Avenue

- Line Avenue and Twin Lakes Road (2 orange stickers)
- Need right turn lane on Line Avenue onto Main Street.

County Highway 12/181st Ave NW

- Light the 4-way?
- 4-way stop sign
- Stop light at the 4 way stop

171st Ln NW

- Intersection with transit station – dangerous.

Corridor Vision

Participants were asked to write down key words or phrases, or full statements on what they feel is important to include in the Corridor's Vision statement. The following response was received. Note: The majority of time by all participants was spent around the issues/opportunities layout.

- Issue of traffic after roundabouts installed and 169 flyover project starts.

NEXT STEPS

- BMI to add comment form to study website as requested at Open House.
- BMI to add information regarding roundabout projects to website as requested at Open House.
- BMI to write draft vision statement based on input from the Focus Group and Open House. This will be discussed and developed further at the next PMT meeting and Focus Group meeting.
- Issues/Opportunities from Focus Group and Open House will be summarized for PMT.
- Second Open House meeting to be scheduled once corridor alternatives are developed – date TBD.

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Sherburne County

CSAH 13 / Twin Lakes Road Corridor Study
Focus Group Meeting #2

November 7, 2018 – 4:30 to 6:00 PM
Twin Lakes Road Elementary School, Media Center
10051 191st Ave NW, Elk River, MN 55330

MEETING SUMMARY

OVERVIEW

The purpose of this Focus Group meeting was to *gain a better understanding of existing and forecasted conditions along the corridor and how those conditions impact potential improvements. Public input was sought to further develop the corridor vision statement. Typical sections along the corridor and several potential intersection improvements were presented in a presentation and on a layout for the Focus Group participants to review and provide feedback on.*

ATTENDEES

Project Staff: Dave Roedel (Sherburne County), Dan Knapek (Sherburne County), Andrew Witter (Sherburne County); Justin Femrite (City of Elk River); Pete Lemke (Bolton & Menk), and Madeline Peck (Bolton & Menk)

Task Force Members –Six Task Force members signed into the meeting.

Presentation Summary

A presentation was shared covering: where we've been; a summary of what we've heard; the draft corridor vision; potential typical sections; a crash course in transportation planning; potential intersection improvements; and next steps/where we're going.

Corridor Vision

Small groups worked together to provide feedback on the draft corridor vision that was developed from comments at the first Focus Group meeting. Comments included:

- A brief discussion was held on the "modes of mobility" listed in the vision statement and that we need only to address bikes and pedestrians
- It was suggested to switch the order of the sentences, to state the corridor function first.
- Several wordsmithing suggestions were made and incorporated into the vision statement

Comments Summary

General discussion was held around potential improvements as a large group

Improvements Timeline

- Project team reminded participants that improvements included in Study report do not have specific timeline. As opportunities arise, this study can be used as a guide to what those improvements could be. Study can also aid in securing funding.
- Corridor of Commerce TH 169 improvements are slated to begin in 2022 and take 2-3 years to complete.

North Segment Typical Section

- Clarification was provided as the difference between "rumble" and "mumble" strips – both are viable alternatives for this application

Middle Segment Typical Section

- Identifying turn lanes at appropriate intersections is important. Tyler needs of turn lanes.

Future CSAH 33 Realignment

- County reiterated that making this stronger east-west connection is an interest, but no plans exist currently to take next steps
- Potential realignment led to discussion on Corridors of Commerce timeline

Lincoln St

- Connection to 191st Ave NW complete, with barricades in place.
- Neighborhood interest in improvements at Lincoln if safety were to be improved.
- Maintain two access points to neighborhood.
    a. Barricades to 191st would not come down without changes to Lincoln - do not want to add additional traffic using that intersection.
- E-mail comment from Focus Group member was sent to Zach Carlton and Justin Femrite following the meeting:

Good morning Zach and Justin,

Sorry I was unable to talk with you and Justin last evening as I had…to leave early.

I wanted to discuss a bit regarding the proposed closing off of the Lincoln Street connection at TLR which "WILL" increase safety for those leaving the development through the Kennedy Street connection. If this is the "ONLY" solution for this, I would say we need to do this anticipating a large increase of traffic using this way to access TLR once the connection to the new development has been completed. It is rather interesting though that we ended up taking out the cul-de-sac at the end of Lincoln on the SE side to make one on the opposite end NW side. I also understand that the connection point to the new development was always planned and additional traffic stacking up at the location of Lincoln and TLR can present a safety issue because of the nature of all of us humans being impatient when it comes to waiting. People will take chances when they get impatient and there lies the danger. It has always been a concern for the residents in the neighborhood, but being a development of 25 homes, the split has been even between Lincoln and Kennedy Streets so stacking has not been an issue at Lincoln Street. Therefore the case of impatient travelers has been kept at a minimum up to this point.

I know I have stated this many times, but do need to keep coming back to it. Having 2 exit points for the Sunset Ridge development and it's 25 residential home owners has worked. The problem lies with the additional traffic from the SE connection to the new development. Leaving the breakaway connection in place on the SE side of Lincoln Street would save the City from having to make a new cul-de-sac at the existing entrance point of Lincoln and TLR. Is there enough easement in place to do this? I might be wrong, but I suspect that the City may have to purchase property from the 2 home owners on the NW side of Lincoln St in order to make a large enough cul-de-sac to allow plows and garbage trucks to turn around. I do not know what costs are involved with this if it has to be done.

Feel free to reach out to me to discuss this, as I am trying to be cognizant of the issues on both ends and would want this to work out well for everyone involved and costing the least for the City.

I would hope that the City would consider this additional option when it comes to keeping us residents traveling safely.

Tyler Street

- Primary intersection identified at Tyler rather than 193rd in order to support stronger east-west connections in city
- Extension of Twin Lakes Pkwy to CSAH 40 has been held up by need to cross Trott Brook – unclear who should pay for this crossing
- Three intersections – TLR/Tyler, TLR/193rd, Tyler/193rd – will need further study in future to determine appropriate intersection at Tyler 193rd.

- Sidewalk connection along Tyler to 193rd is identified with study, which side of the street that the sidewalk is constructed would be determined with further study/in design.

Proposed TH 10/TH 169 Connection

- Extension of TLR to new at-grade intersection with TH 10/TH 169 identified on City's CIP.
- Identified future intersection closest location MnDOT would allow with future interchange improvements to TH 169

Sherburne County

CSAH 13 / Twin Lakes Road Corridor Study

Open House #2

November 14, 2018 – 4:30 to 6:00 PM
Twin Lakes Road Elementary School, Cafeteria
10051 191st Ave NW, Elk River, MN 55330

MEETING SUMMARY

OVERVIEW

The purpose of this Open House was to *gain a better understanding of existing and forecasted conditions along the corridor and how those conditions will impact potential improvements. Public input was sought to further develop the corridor vision statement. Several potential improvements were presented on boards and a layout for the community to review and provide feedback on.*

This Open House was advertised through the County and City social media pages as well as an e-mail blast sent to 322 subscribers (29% open rate).

ATTENDEES

Project Staff: Dave Roedel (Sherburne County), Dan Knapek (Sherburne County), Andrew Witter (Sherburne County); Pete Lemke (Bolton & Menk), Jake Pilz (Bolton & Menk), and Madeline Peck (Bolton & Menk)

Attendance –15 community members signed in to the Open House.

Meeting Content

Station
Introduction *[2 boards]* • Study purpose, goals, timeline, & extents (context map) • Why is this important? What is a Corridor Study? Considerations. Area population trends/forecasts.
Existing Conditions *[2 boards]* • Traffic Summary Board • Summary map of input collected at Focus Group 1 and Open House 1
Draft Corridor Vision Board *[1 board]* **INPUT**
Crash Course in Transportation Planning *[1 board]* • Access Inventory/Management Planning • Primary versus secondary intersection
Corridor Layout **INPUT** • Known improvements • Potential Intersection Improvements • Typical Sections • Highlight pedestrian crossing opportunities

Intersection Improvements *[6 boards]* **INPUT**

- Typical Sections
- Turn Lane and Intersection Evaluations
- Intersection Diagrams

Public Comment

No written comments were submitted. A few primary themes that arose from one-on-one conversations are listed below:

- Public concern on number of roundabouts on corridor, particularly for truck traffic. Opportunity for further education on advancements in roundabout design for trucks (mountable curbs) as well as how to navigate a roundabout (why is there a truck apron)
- Several attendees were interested in learning more about the roundabouts at CSAHs 33 and 40 and were instructed to attend the Open House for those particular projects.
- Right-of-way concerns for any intersection or typical section improvements outside of existing right-of-way
    - Additional outreach to occur should specific improvements be funded for design

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Project Management Team (PMT) Meeting Minutes

Appendix II

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Sherburne County

CSAH 13 / Twin Lakes Road Corridor Study

PMT Meeting #1 – Kick-off

April 16, 2018, 3:00 to 5:00 PM
Sherburne County Government Center
13880 Business Center Drive NW
Elk River, MN 55330

MINUTES

Attendees:

Andrew Witter, Dave Roedel, Dan Knapek, Justin Femrite, Chris Chromy, Pete Lemke, Madeline Peck.

1. **Introductions**
2. **Confirm Study Goals and Objectives**
    a. ***Vision to develop a document the County/City can use to guide accommodation of future traffic growth and economic development along the corridor.***
    b. ***A long-range transportation guidance plan***
3. **Review Schedule and Work Plan**
    a. ***Alignment between schedule and approach:***
        i. ***Gather data and define issues (May-July)***
        ii. ***Confirm goals and objectives – identify evaluation criteria (June-July)***
        iii. ***Develop alternatives (July-August)***
        iv. ***Evaluate alternatives, preferred alternatives, and develop visions and recommendations (September-November)***
    b. ***How we schedule agency meetings will inform schedule for open houses.***
    c. ***City Council meetings are shifted one day if they land on a holiday. Work Sessions occur as needed.***
    d. ***BMI to send out Doodle Poll for PMT meetings, first Focus Group Meeting, and Open House #1***
4. **Public & Agency Communications**
    a. Decision making process
        i. ***County suggested timeline overlay on decision making graphic***
    b. Project website
        i. ***BMI to pull together draft website to share with PMT prior to publicizing. Initial content will include: project overview; project contacts; e-mail sign up; schedule.***
        ii. ***Community identifies corridor as "Twin Lakes Road" not CSAH/CR 13.***
        iii. ***Desired website url – twinlakesroadstudy.com. Keep simple, include word "study."***
        iv. ***Social media is to be coordinated through existing agency pages. BMI to provide content to City and County communications for posting.***
    c. INPUTiD

Real People. Real Solutions.

i. ***BMI shared example of INPUTiD as a location based input tool. Can be used to collect input on existing conditions as well as to compare alternatives.***

d. Focus Group (2-3 meetings)

i. ***Identify appropriate stakeholders. Active community in Elk River. Stakeholders suggested to represent various facets of community. Chamber of Commerce is very active – many businesses represented. BMI to compile draft Focus Group list with contact information to send to PMT for review.***

ii. ***Meeting schedule/location. Twin Lakes Elementary School suggested as meeting location.***

iii. ***Other engagement opportunities discussed include: Thursday Farmers Markets; Thursday evening concerts; County Fair (second weekend in July) – county will have a booth presence; Downtown City Celebration; Elk River days (Park and Rec Staff).***

5. Issues, Opportunities

a. Issues Map

i. ***Issues map to be simplified for public consumption***

ii. ***Discussion around projects on Line Ave (cul-de-sac) and roundabouts at Cleveland Road (CR 40) and Viking Boulevard (CSAH 33) and how these three project would influence traffic operations and travel patterns along the CSAH/TLR Corridor***

iii. ***Other potential connections discussed:***

1. ***205th Ave NW to TLR (CSAH 13) – city mentioned this is a ways off, but some discussions with property owners have taken place;***
2. ***Twin Lakes Parkway NW to Cleveland Avenue (CR 40) – City mentioned the roadway corridor is identified and platted within the housing development adjacent to CR 40 (Miske Meadows);***
3. ***grade separated intersection Hwy 10 south of 171st (near the area of Broadway Pizza)***
4. ***The group briefly discussed the forthcoming announcement of the Corridors of Commerce results on May 1, 2018 and the City/County application for TH 169.***

6. Data Needs/Collection

a. 13-hour traffic and pedestrian counts

i. ***We will work with TDI to collect traffic data as identified in the BMI proposal and adjusted for available studies, existing data, and that CR 40 and CSAH 33 are programmed for the design and construction of roundabouts***

b. Hose counts (heavy/commercial volumes, vehicle classifications, available gaps in traffic, and vehicle speeds)

i. ***Similar to above we will work with TDI to ensure we collect the right data to inform the study and have the best understanding of existing traffic characteristics along the corridor. We will also collect traffic data to capture the recreational (up north) traffic occurring along the corridor and ensure we have an understanding of its impact (both up north spread out over and back home) and how that would inform the study.***

7. Previous Studies and Planning Efforts

a. ***City to share 171st Ave/Natures Edge Business Center Development AUAR***

b. ***City to share Line Ave Traffic Operations Evaluation and Addendum***

8. Travel Forecasts/Projections

a. ***Bolton & Menk will utilize the collected traffic data along with an industry standard approach and methods to determine traffic forecasts and future-year traffic operations for the corridor. This work will commence after traffic data has been collected and processed.***

9. Upcoming Meetings

a. Monthly PMT meetings
b. Focus Group meeting #1 – week of May 21st (tentative)
c. City Council & County Board Update – week of June 4th (tentative)
d. Open House #1 – Week of June 11th (tentative)

10. Next Steps

a. Traffic Counts
b. Website

Sherburne County

CSAH 13 / Twin Lakes Road Corridor Study

PMT Meeting #2

May 24, 2018, 1:00 to 3:00 PM
Sherburne County Government Center
13880 Business Center Drive NW
Elk River, MN 55330

MINUTES

Attendees: ***Dave Roedel, Dan Knapek, Justin Femrite, Pete Lemke, Madeline Peck.***

1. Public & Agency Communications

a. Website
   i. *Project goals, as included in the RFP/proposal, will be summarized into project approach goals. Broad statements to be used in order to allow community to shape specific corridor goals in upcoming public meetings.*
   ii. *BMI to send out website url to PMT for review. Provide feedback by End of Business (EOB) on May 30th.*

b. Focus Group Meeting #1
   i. Tentative date - Tuesday June 12, 2018 (Twin Lakes Elementary School)
      1. *Proposed meeting date does not work for all parties. BMI to send out Doodle Poll to identify new date.*
   ii. Review invite list
      a. *Justin to reach out to Council Member Wagner for a potential representative from Trott Brook Farm Homeowners Association*
      b. *Dave to reach out to Plaistad and County Sheriff for potential representatives*
      c. *Pete to reach out to Dr. Dan Bittman (ISD 728 School Superintendent) for recommendations of ISD-728 student representation on Focus Group. Junior from Spectrum High School suggested – Pete will reach out to Dan DeBruyn for Spectrum representative.*
      d. *Additional club representation deemed unnecessary as many listed participants are also associated with those groups.*
      2. Study overview
      3. What they can expect
      4. Our expectations from them?
   iii. Meeting invitation (send late May) & outline
      1. *Meeting to be conversational setting. Specific meeting format to be determined once number of participates is identified. Input desired includes*
         a. *Individual and commercial/business experiences along the corridor*
         b. *issues/opportunities along the corridor*

c. *goals/vision/outcomes for the corridor – leads us into evaluation matrix*

2. *Corridor layout to include roundabout symbols at Cleveland Rd. and Viking Blvd., and show future connection of TLR on southernmost termini of project connecting to Hwy 10.*

c. Open House #1
   i. Tentative date - Tuesday June 21, 2018 (Twin Lakes Elementary School)
      1. *Proposed meeting date does not work for all parties. BMI to send out Doodle Poll to identify new date. County has all-staff event on June 26th.*
   ii. Meeting invitation (send early June) & outline
      1. *Messaging of Open House invitation important to get participation. Primary objective of Open House is to hear community experiences on corridor – no concepts, solutions, or traffic "data" present. BMI will send invitation to PMT for review prior to distribution.*
      2. *Input desired includes goals/vision for the corridor and issues/opportunities/individual experiences on the corridor.*

d. City of Elk River Council Workshop – Monday July 2 (tentative)

e. Sherburne County Board Workshop – Tuesday July 26, Tuesday July 17, Wednesday August 8
   i. *City Council and County board meetings will be tabled for the time being. Meeting dates will be revisited after the first Focus Group meeting, the Open House, and once traffic data has been analyzed.*

2. Data Needs/Collection

a. Traffic counts
   i. Video: May 22nd – May 24th (13 hour turning movement counts)
   ii. Hose: May 22nd – May 29th
   iii. Results from TDI expected within 7-10 days of May 29 (June 7th-12th)

3. Environmental Screening

a. *Information has been gathered for environmental screening and will be included in considerations for existing conditions/issues/opportunities*

4. TH 169 / Corridors of Commerce Funding

a. *Justin provided an overview of the Corridors of Commerce project limits. Preliminary layout, as included in the funding application, is not to be referenced in TLR project layout as interchange solutions are being reevaluated to consider and possibly incorporate new interchange types from the last ten years and local circulation patterns may deviate from the existing concept.*

b. *Local frontage and backage road system needs to be determined prior to TH 169 improvements for constructability (maintaining local access and connectivity in and out of area)*

c. *Corridor study to help inform Corridors of Commerce scope – potential to look to study for necessary intersection improvement along TLR to facilitate TH 169 interchange improvements.*

d. *Pete identified near-term function of the TLR corridor as a reliever to TH 169 as congestion occurs. Long term, with the conversion of TH 169 to a freeway, Twin Lakes Road will continue to serve the transportation system by helping to align trips with functional classification (i.e. local trips on the local system and regional trips on TH 169). Study to guide improvements on CSAH 13/Twin Lakes Road towards this dual role, but with an emphasis on the latter.*

5. Upcoming Meetings

a. June PMT meeting

i. June PMT meeting will be scheduled once the two public meeting dates have been finalized.

6. Next Steps

a. BMI to send out Doodle Poll for Task Force and Open House
b. BMI to schedule next PMT
c. Traffic analysis to commence once traffic count data received.

Sherburne County

CSAH 13 / Twin Lakes Road Corridor Study

PMT Meeting #3

September 25th, 2018 - 1:00 to 3:00 PM
Sherburne County Public Works
425 Jackson Street
Elk River, MN 55330

Minutes

Attendees: ***Dave Roedel, Dan Knapek, Justin Femrite, Pete Lemke, Madeline Peck.***

1. Public & Agency Communications

a. Focus Group 1 and Open House 1 Summaries
   i. *Maddie to send out meeting minutes and summary graphic to PMT*

b. Draft Roadway Vision Statement
   i. *Maddie to send digital copy of draft vision statement to PMT for review. Once changes are incorporated, vision statement and goals will be uploaded to project website for public feedback. This will also be discussed at second Open House and Focus Group Meetings*
   ii. *Include information on the importance of a vision statement and the role it plays*

2. Environmental Screening Report

i. *Anticipate that recommended improvements will stay within existing road footprint. Do not anticipate any major environmental, cultural resource, or transit impacts.*
ii. *Draft report completed. Will be sent out with draft report for PMT review and input*

3. Traffic Analysis

a. Traffic Count - collected end of May
b. Analysis – Traffic Modeling *existing and projected traffic volumes*
   i. Build 0 – Existing roadway conditions
   ii. *Build 1 – Known Improvements*
      1. *RAB at Viking and Cleveland*
   iii. *Build 2 – Proposed Corridor Improvements*
c. Draft Evaluation Matrix
d. Signal Warrant Analysis
   i. *CSAH 12 & 13 intersection meets 2, 3, & 7 warrants for traffic signal*
   ii. *If turning movements at nearby intersections are diverted to this signal, expected increased volumes will further support signal improvements.*
e. Corridor Improvements Discussion
   i. *3-lane configuration between Trott Brook and Cleveland Roundabout*
      1. *Median separation would be consistent with rest of corridor (to south), but more costly. HSIP funding may be available if crashes warrant.*

Real People. Real Solutions.

2. *Potential for super two to extend south to Trott Brook with left turn lanes where necessary*
3. *BMI to look more specifically at this stretch for recommended solution or alternatives*

ii. *Super 2 from CSAH 33 to Cleveland Roundabout*

1. *Two lanes of travel with widened median treatment – in this case rumble strips*
2. *Example on CSAH 12 in Wayzata*
3. *Noise (from rumble strips) may be a concern if super two extends south of Cleveland as it is a more urban/suburban section in that area. County currently looking into mumble strips as an alternative.*
4. *11' lanes contribute to traffic calming without reducing drivable surface available for larger vehicles and turning movements*

iii. *Enhanced pedestrian crossing near Spectrum High school (is currently operating and considered part of Build 1 – Known Improvements*

1. *City has already installed a RRFB at this crossing.*

iv. *Signal at CSAH 12/13*

1. *Dave and Justin expressed concern over limited expansion of intersection with several constraints on ROW. Needs to be considered when evaluating potential circulation patterns and lane configuration.*
2. *TH 169 improvements will need to take this intersection into account as it must remain for circulation, but is close enough to the highway, that grades may be tricky to match. TH 169 will potentially be set lower than current roadway.*

v. *Other Topics of discussion*

1. ***Speed Limit** – County expressed desire to assess varying speeds throughout corridor. Would ideally have more consistent speed limit – not greater than 45 mph. Potential for speed study after RABs have been installed to slow drivers around corner*
2. ***Access Management** – City expressed desire to address access management throughout corridor and identify access spacing, potential closures (if necessary) and future access planning. 660' minimum spacing today (Long Range Transportation Plan)*
3. ***Lincoln St. NW** – safety issue coming in and out of this neighborhood primarily due to sight lines. BMI to look into turn lane taper alternatives, R-in/R-out solutions, tree trimming, and possible access closure. Roadway connection to 191st has been constructed; currently closed with barricades.*

4. Next Steps

a. **Identify, develop** and evaluate alternative solutions

b. Project needs to be completed by the end of December to be available for funding applications

5. Upcoming Meetings

a. City Council/County Board Updates

i. *City and County would prefer to give Council and Board updates after the second Open House and Focus Group meetings. These should be scheduled for late November – at the latest early December*
ii. *Funding cycle is beginning. City would like to present funding application at December 3rd Council meeting. Council will need to be familiar with findings of this study to move forward.*
iii. *City and County will be going after funding for projects on this corridor. City will likely be completing extension of TLR south to Hwy 10. County may consider a signal at CSAH 12/CSAH 13 intersection.*

b. Focus Group Meeting #2
   i. *Mid October, BMI to send potential dates*
c. Open House #2
   i. *Early November, BMI to send potential dates*
d. PMT #4 – review corridor improvements and draft report

6. Action Items

a. *Dave to provide Viking Blvd RAB layout*
b. *Dave to inquire with WSB for traffic volumes at Viking Blvd and TLR*
c. *BMI to look into speed limit on Super Two in Wayzata*

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Existing Conditions Memo

Appendix III

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Forecasted Conditions Memo

Appendix IV

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Construction of interchanges will eliminate existing access points onto US 10 and US 169. Frontage roads are also proposed in locations along the corridor, but are not shown on this map.

Figure 6-8. Proposed Highway Improvements (Long-Term)

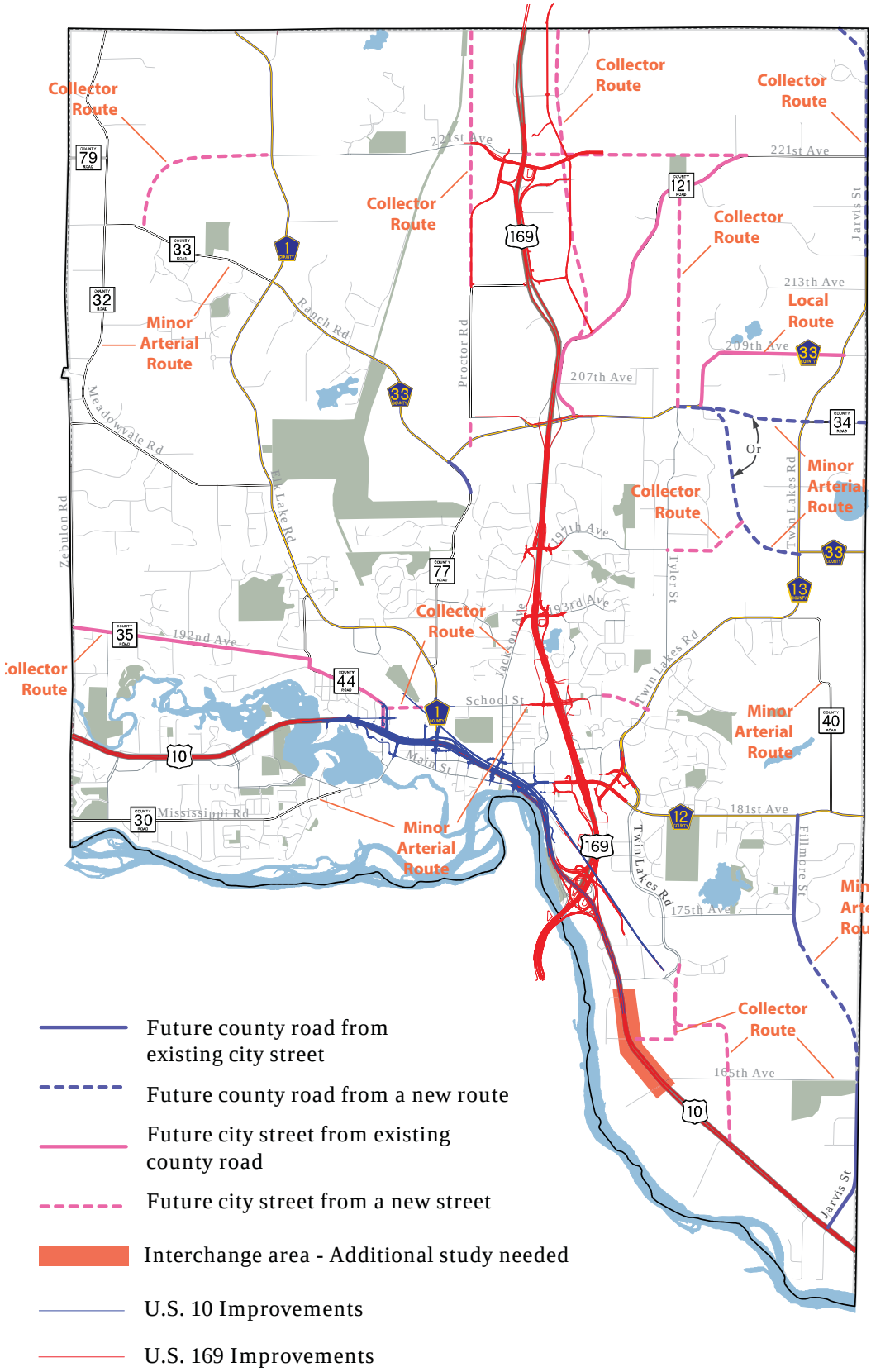


Figure 6-11. Future Network

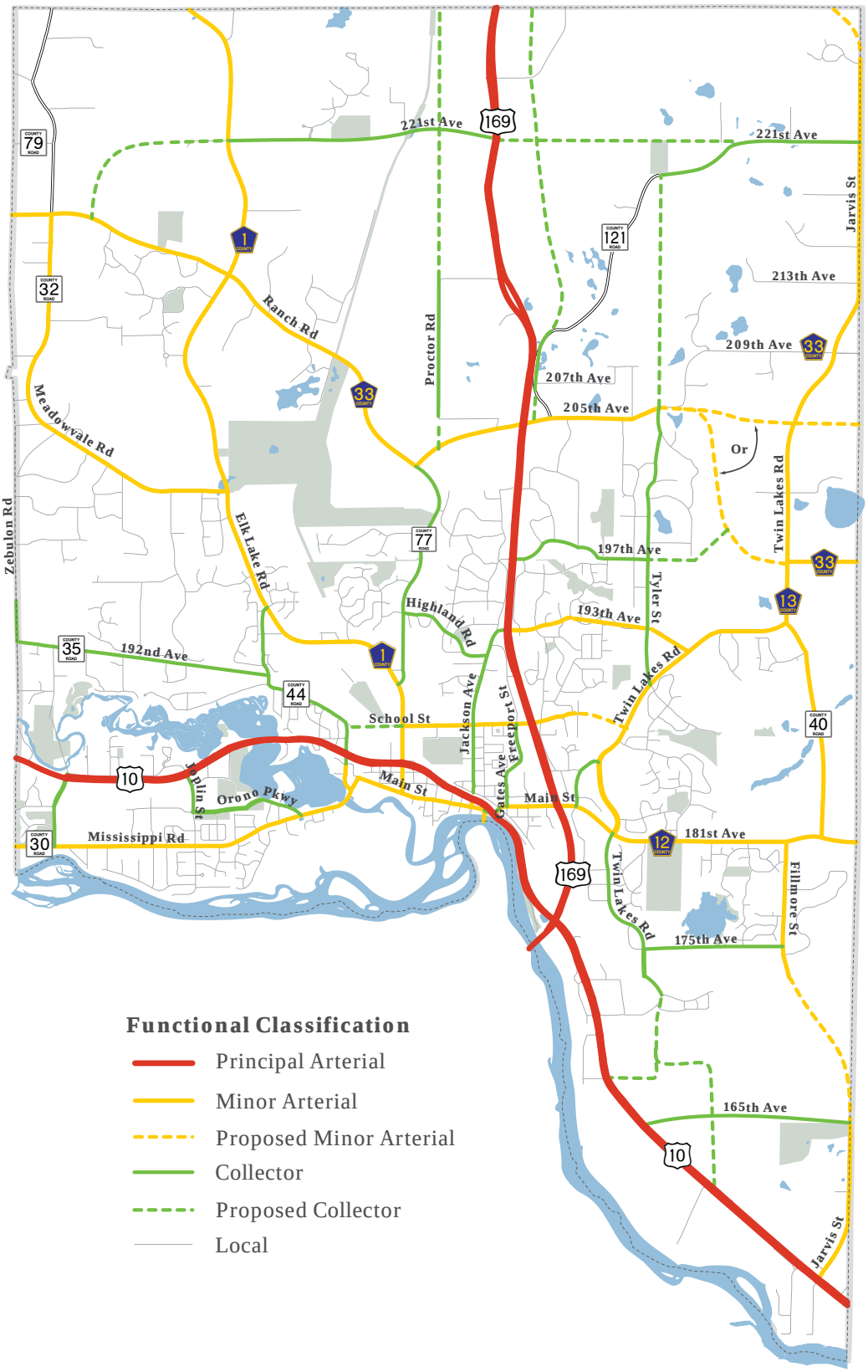


Figure 6-10. Future Functional Classification

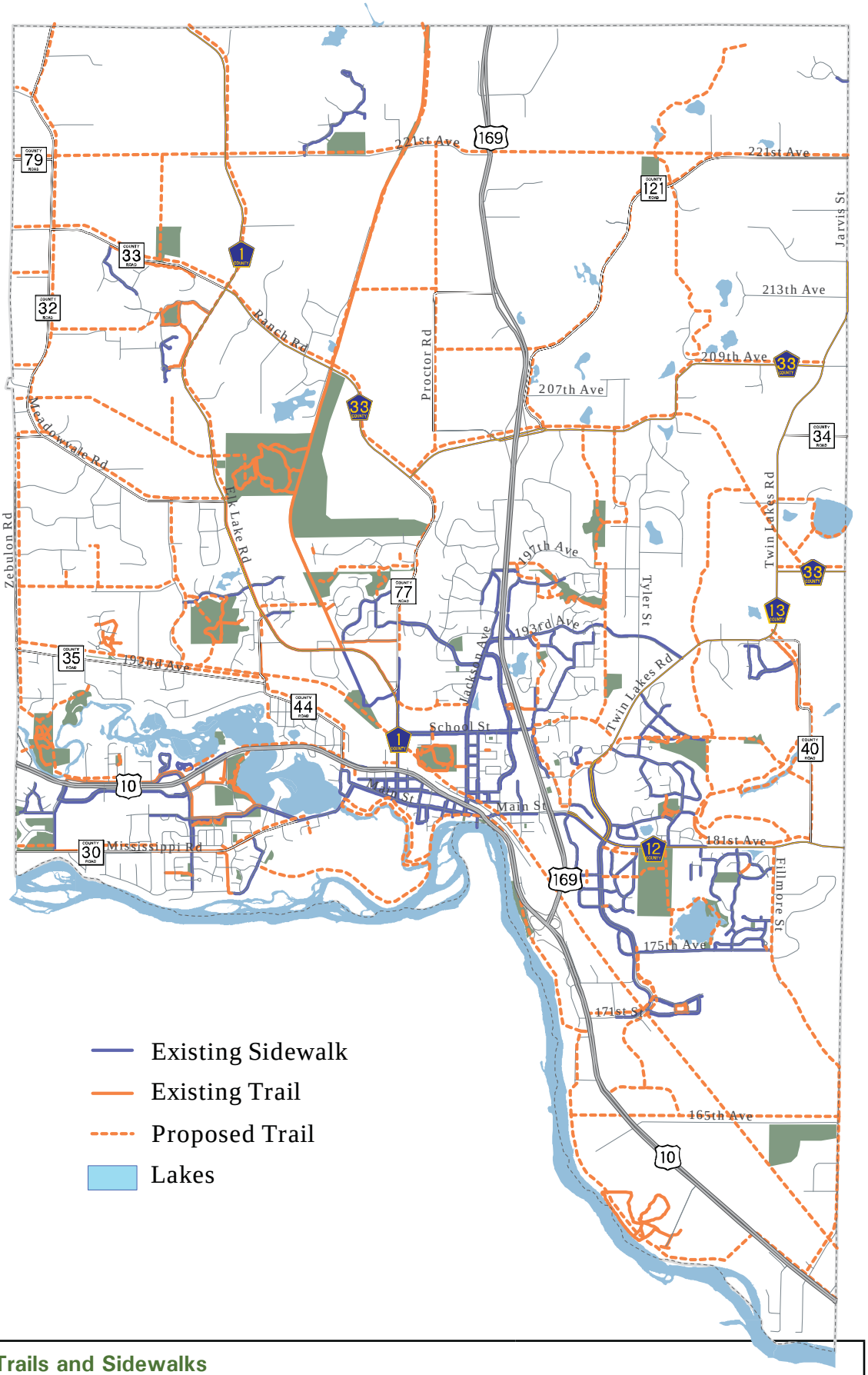
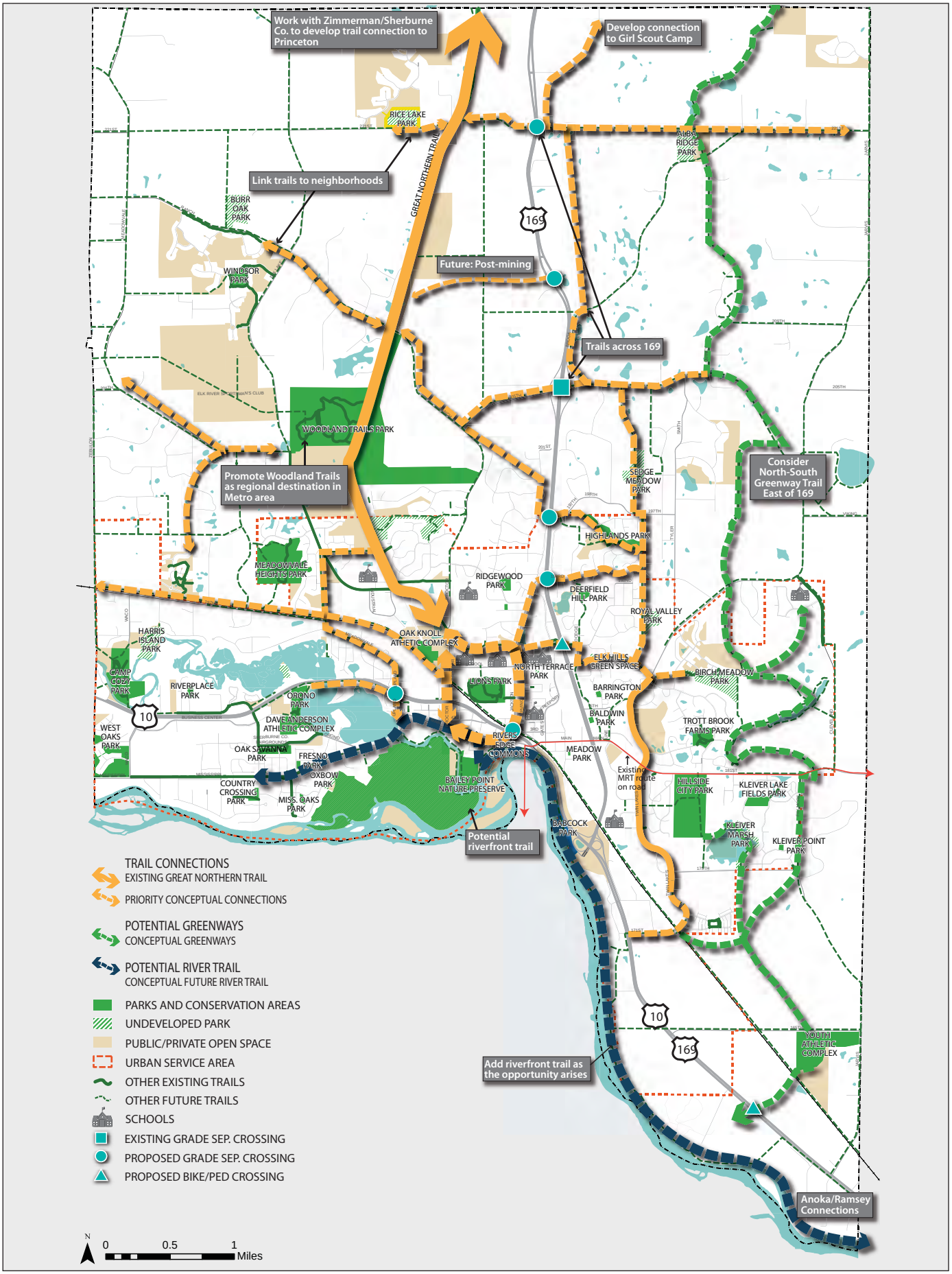


Figure 6-7. Proposed Trails and Sidewalks

Figure 5.6 Trail Connectivity



GETTING THERE

Regional Bicycle Transportation Network (RBTN) Corridors

PROPOSED

RBTN Corridors with Alignments

- Tier 1 Aligments
- Tier 2 Alignments

RBTN Corridors (Alignments Undefined)

- Tier 1 Priority Regional Bicycle Transportation Corridor
- Tier 2 Regional Bicycle Transportation Corridors

Other Trail Systems

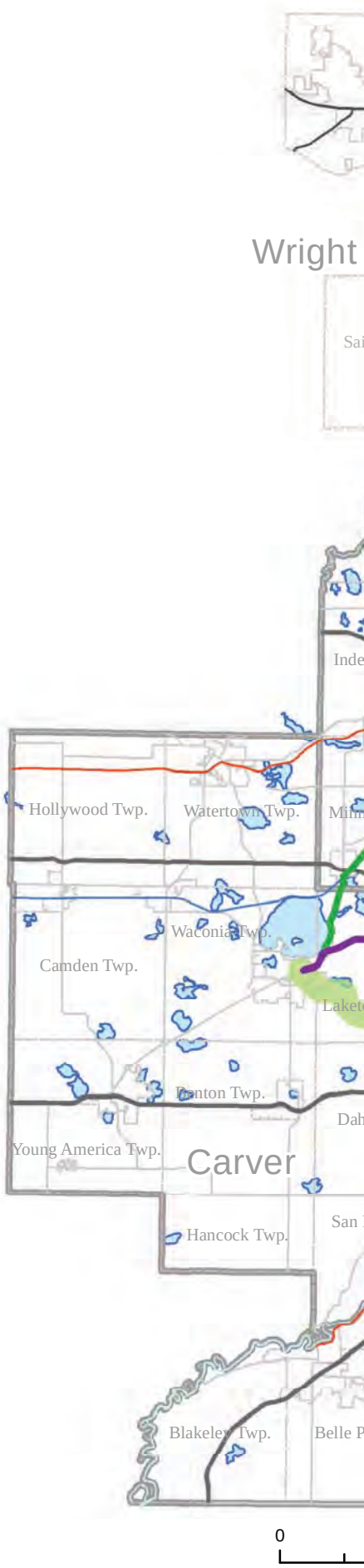
- Regional Trails (Regional Parks Policy Plan)
- Mississippi River Trail (US Route 45)
- State Trails (DNR)

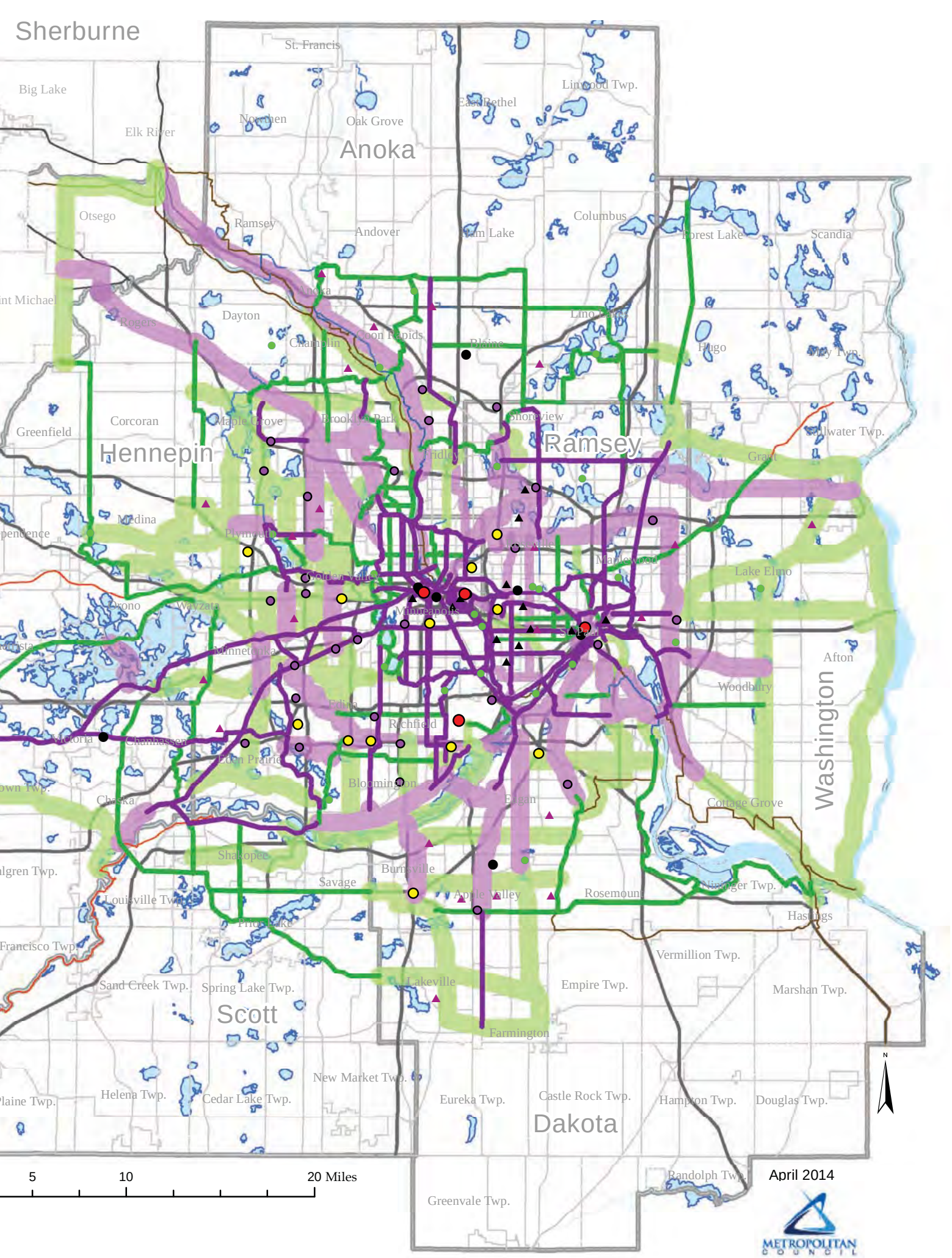
Regional Destinations

- Metropolitan Job Centers (50,000+ jobs)
- Regional Job Centers (15,000 - 50,000 jobs)
- Subregional Job Centers (7,000 - 15,000 jobs)
- Large High Schools (2000+ Students)
- Colleges & Universities (2000+ Students)
- Major Sport & Entertainment Centers
- Highly Visited Regional Parks (400,00+ visits per year)

Reference Items

- Principal Arterial Roads
- Lakes and Rivers
- City Boundary
- County Boundary
- 2040 Municipal Urban Service Area
- MPO Area




Sherburne
Anoka
Hennepin
Ramsey
Washington
Scott
Dakota
St. Francis
Big Lake
Elk River
Nowthen
Oak Grove
East Bethel
Linwood Twp.
Otsego
Ramsey
Andover
Ham Lake
Columbus
Forest Lake
Scandia
Rogers
Dayton
Anoka
Coon Rapids
Champlin
Blaine
Lino Lakes
Hugo
Corcoran
Greenfield
Maple Grove
Brooklyn Park
Shoreview
Stillwater Twp.
Ridley
Grant
Medina
Plymouth
Maplewood
Lake Elmo
Orono
Wayzata
Minneapolis
Minnetonka
Afton
Woodbury
Edina
Richfield
Victoria
Chanhassen
Eden Prairie
Bloomington
Eagan
Cottage Grove
Chaska
Shakopee
Burnsville
Savage
Apple Valley
Rosemount
Nininger Twp.
Hastings
Louisville Twp.
Prior Lake
Vermillion Twp.
Sand Creek Twp.
Spring Lake Twp.
Lakeville
Empire Twp.
Marshan Twp.
Farmington
New Market Twp.
Helena Twp.
Cedar Lake Twp.
Eureka Twp.
Castle Rock Twp.
Hampton Twp.
Douglas Twp.
Randolph Twp.
Greenvale Twp.
5
10
20 Miles
April 2014
METROPOLITAN COUNCIL

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Environmental Screening Report

Appendix V