

BOARD MEETING AGENDA

Board Room
Coon Creek Watershed District Offices
Monday, April 22, 2024
5:30 p.m.

Board of Managers:

Jim Hafner, President; Erin Lind, Vice President; Jason Lund, Secretary; Mary Campbell, Treasurer; Dwight McCullough, Member at Large

Note: Individuals with items on the agenda or who wish to speak to the Board are encouraged to be in attendance when the meeting is called to order.

- 1. Call to Order**
- 2. Approval of the Agenda** (*Additions/Corrections/Deletions*)
- 3. Announcements**
- 4. Open Mic/Public Comment**

*Members of the public at this time may address the Board, for up to three minutes, on a matter not on the Agenda. Individuals wishing to be heard must sign in with their name and address at the door. Additional comments may be accepted in writing. Board action or discussion should **not** be expected during the presentation of public comment/open mic. Board members may direct staff to research the matter further or take the matter under advisement for consideration at a future Board meeting.*

**ABM – At Board Meeting*

CONSENT ITEMS

The consent agenda is considered as one item of business. It consists of routine administrative items or items not requiring discussion. Items can be removed from the consent agenda at the request of a Board member, staff member or a member of the audience.

- 5. Approval of Minutes of April 8, 2024**
- 6. Approve Bills for Payment**

POLICY ITEMS

- 7. 2023 Annual Report**

PERMIT ITEMS

- 8. Coon Rapids Street Reconstruction Project 24-1**

DISCUSSION ITEMS

- 9. 2025 Economic Forecast & Revenue Estimates**
- 10. Draft 2025 Budget Assumptions**
- 11. 2024 District Tour (ABM)**
- 12. Coon Creek Watershed District's 65th Anniversary (ABM)**

INFORMATIONAL ITEMS

- 13. Northdale Shopping Mall Alternative Urban Areawide Review (AUAR)**
- 14. Creek x Highway Crossing Signage**
- 15. Legislative Update (ABM)**

ADJOURN

COON CREEK WATERSHED DISTRICT BOARD OF MANAGERS' MEETING

The Board of Managers of the Coon Creek Watershed District held their regular meeting on Monday, April 8, 2024, at the Coon Creek Watershed District Office.

1. Call to Order

The meeting was called to order at 5:30 PM

Board Members Present: James Hafner, Erin Lind, Jason Lund, Dwight McCullough, & Mary Campbell

Staff Present: Tim Kelly, Bobbie Law, Erin Margl, & Michelle Ulrich

Staff Present via Zoom: Jon Janke

2. Approval of the Agenda

Board Member McCullough moved to amend the agenda, moving Permit Items 9,10,11,12 to the Consent Agenda. Seconded by Board Member Lund. The motion carried with 5 yeas (Board Members Lind, Lund, Campbell, McCullough, and Hafner) and no nays.

3. Announcements

Administrator Kelly announced proposed changes currently being considered by the Minnesota Legislature to the Wetland Conservation Act (WCA) and the Watershed District Law (Chapter 103D).

4. Open Mic/Public Comment

No one was present for comment.

CONSENT ITEMS

5. Approval of Minutes of March 25, 2024

6. Administrator's Report

7. Advisory Committee Report

8. Approval of Bills:

Claims totaling \$95,510.48 on the following disbursement list will be issued and released upon Board approval.

Vendor	Amount
V0008--US BANK	3,168.22
V0010--A1 FLOOR AND CARPET CARE INC	1,076.25
V0013--AMERICAN RED CROSS	2,188.00
V0015--ANOKA COUNTY MN	172.86
V0030--CONNEXUS ENERGY	239.84
V0038--ENVIRONMENTAL SYSTEMS RESEARCH INST INC ESRI	2,767.00
V0044--HAMLINE UNIVERSITY	5,000.00
V0052--LOFFLER COMPANIES INC	42.62
V0054--MICHELLE J ULRICH PA	6,052.00
V0090--CENTERPOINT ENERGY-UTILITY	259.82
V0111--WELL GROOMED LAWNS INC	1,732.00
V0195--STANTEC CONSULTING SERVICES INC	882.00
V0195--STANTEC CONSULTING SERVICES INC	21,797.92
V0195--STANTEC CONSULTING SERVICES INC	9,534.00
V0195--STANTEC CONSULTING SERVICES INC	3,290.50
V0195--STANTEC CONSULTING SERVICES INC	25,963.90
V0221--ABDO LLP	2,750.00
V0221--ABDO LLP	3,327.50
V0228--EPG COMPANIES INC	1,333.50
V0237--EMMONS AND OLIVIER RESOURCES INC	3,029.25
V0286--CUSTOM SOLUTIONS MANUFACTURING INC	903.30
Grand total	95,510.48

The following Permit Items were moved to the Consent Agenda.

9. 152nd Ave Culvert Replacement

The purpose of this project, located in Ham Lake, is to replace collapsed metal culverts under 152nd Avenue in County Ditch 58.

The staff recommendation was to approve permit application number P-23-065 with 3 conditions and 2 stipulations as presented in the staff report:

Conditions to be Met Before Permit Issuance:

Rule 2.7 – Procedural Requirements

1. Submittal of a performance escrow in the amount of \$2,020.00.

Rule 4.0 – Soils and Erosion Control

2. Update the erosion and sediment control plan to stabilize exposed soils within 24 hours of inactivity.
3. Update the erosion and sediment control plan to show the correct placement of floating silt fence parallel to the flow of water as specified in the standard detail.

Stipulations: The permit will be issued with the following stipulations as conditions of the permit. By accepting the permit, the applicant agrees to these stipulations:

1. If dewatering is required, provide DNR dewatering permit prior to construction. If a DNR permit is not required, provide well-field location, rates, discharge location, schedule and quantities prior to construction.
2. Submittal of as-built (invert, pipe material, pipe size) for culvert installation within County Ditch 58.

10. Coon Creek Trail

The purpose of this project, located in Coon Rapids, is to construct a new asphalt trail and timber boardwalk along Coon Creek.

The staff recommendation was to approve permit application number P-23-075 with 2 conditions and 3 stipulations as presented in the staff report:

Conditions to be Met Before Permit Issuance:

Rule 4.0 – Soils and Erosion Control

1. Update the erosion and sediment control plan to include a double row of perimeter control in areas within 50 feet of a wetland.

Rule 5.0 – Wetlands

2. Submittal of Wetland Bank Credit Withdrawal Verification after approval of the replacement plan application.

Stipulations: The permit will be issued with the following stipulations as conditions of the permit. By accepting the permit, the applicant agrees to these stipulations:

1. The applicant must apply for coverage under the Minnesota Pollution Control Agency's (MPCA's) Construction Stormwater Permit (Permit No: MNR100001).
2. If dewatering is required, provide DNR dewatering permit prior to construction. If a DNR permit is not required, provide well-field location, rates, discharge location, schedule and quantities prior to construction.
3. Submittal of grading as-builts for the project to confirm adequate floodplain compensatory storage has been provided.

11. NSC Field and Turf Campus Improvements

The purpose of this project, located in Blaine, is to convert natural turf fields to artificial turf and a 30-foot-wide roadway.

The staff recommendation was to approve permit application number P-24-004 with 3 conditions and 5 stipulations as presented in the staff report:

Conditions to be Met Before Permit Issuance:

Rule 3.0 – Stormwater Management

1. Provide proof of recording of a fully executed Operations and Maintenance Agreement for the perpetual inspection and maintenance of all proposed stormwater management practices after review and approval by the District.
2. Provide at least one soil boring within the footprint of each infiltration practice (Basin 1, Basin 2, and Basin 3) to confirm soil types and depth to groundwater.

Rule 4.0 – Soils and Erosion Control

3. Update the erosion and sediment control plan to include a note to stabilize soils and soil within 24 hours of inactivity.

Stipulations: The permit will be issued with the following stipulations as conditions of the permit. By accepting the permit, the applicant agrees to these stipulations:

1. Completion of post construction infiltration tests on Basin 1P, Basin 2P, and Basin 5P by filling the basin to a minimum depth of 6 inches with water and monitoring the time necessary to drain, or multiple double ring infiltration tests to ASTM standards. The

- Coon Creek Watershed District shall be notified prior to the test to witness the results.
2. Submittal of grading as-builts for the project to confirm adequate floodplain compensatory storage has been provided.
 3. Submittal of as-builts for the stormwater management practices and associated structures listed in Tables 2 and 3, including volume, critical elevations and proof of installation for hydrodynamic separators.
 4. The applicant must apply for coverage under the Minnesota Pollution Control Agency's (MPCA's) Construction Stormwater Permit (Permit No: MNR100001)
 5. If dewatering is required, provide DNR dewatering permit prior to construction. If a DNR permit is not required, provide well-field location, rates, discharge location, schedule and quantities prior to construction.

12. Pleasure Creek Parkway Improvements

The purpose of this project, located in Blaine, is to reconstruct Pleasure Creek Parkway and other surrounding city streets.

The staff recommendation was to approve permit application number P-24-012 with 2 conditions and 2 stipulations as presented in the staff report:

Conditions to be Met Before Permit Issuance:

Rule 2.7 – Procedural Requirements

1. Submittal of a performance escrow in the amount of \$3,355.00.

Rule 4.0 – Soils and Erosion Control

2. Update the erosion and sediment control plan (pg 85) to include a note to stabilize soils and soil within 24 hours of inactivity.

Stipulations: The permit will be issued with the following stipulations as conditions of the permit. By accepting the permit, the applicant agrees to these stipulations:

1. The applicant must apply for coverage under the Minnesota Pollution Control Agency's (MPCA's) Construction Stormwater Permit (Permit No: MNR100001)
2. If dewatering is required, provide DNR dewatering permit prior to construction. If a DNR permit is not required, provide well-field location, rates, discharge location, schedule and quantities prior to construction.

Board Member Campbell moved to approve the Consent Agenda Items. Seconded by Board Member Lund. The motion carried with 5 yeas (Board Members Lind, Lund, Campbell, McCullough, and Hafner) and no nays.

POLICY ITEMS

None

PERMIT ITEMS

Moved to Consent

DISCUSSION ITEMS

13. Draft Annual Report

Mr. Kelly introduced the required report by state statute. He noted that this is briefer than the previous year's reports to meet the exact requirements. Other more in-depth topics will be managed and reported internally. He noted the reports focus on the recently updated 10-year comprehensive watershed management plan.

Managers discussed proposed amendments to the report.

Board Member Lund moved to receive the report and forward it for adoption with amendments as proposed by District staff and Board Members. Seconded by Board Member McCullough. The motion carried with 5 yeas (Board Members Lind, Lund, Campbell, McCullough, and Hafner) and no nays.

INFORMATIONAL ITEMS

None

ADJOURN

Board Member Campbell moved to adjourn at 5:54 p.m. Seconded by Board Member Lund. The motion carried with 5 yeas (Board Members Lind, Lund, Campbell, McCullough, and Hafner) and no nays.

President

COON CREEK WATERSHED DISTRICT Request for Board Action

MEETING DATE: April 22, 2024
AGENDA NUMBER: 6
ITEM: Bills to Be Paid

FISCAL IMPACT: Budgeted
POLICY IMPACT: Policy

REQUEST
Approve bills

BACKGROUND

Claims totaling \$299,333.78 on the following disbursement list will be issued and released upon Board approval.

Vendor	Amount
V0004--CITY OF HAM LAKE	20,000.00
V0015--ANOKA COUNTY MN	210,252.04
V0027--CITY OF FRIDLEY	40,000.00
V0068--PLM LAKE AND LAND MGT CORP	375.00
V0102--US GEOLOGICAL SURVEY	9,600.00
V0110--RESPEC COMPANY LLC	1,912.50
V0110--RESPEC COMPANY LLC	8,265.00
V0242--METRO I NET	5,398.00
V0247--POOP 911 OF MPLS STP LLC	731.40
V0270--MENARD INC	2,799.84
Grand total	299,333.78

Company name:	Coon Creek Watershed District									
Created on:	4/17/2024									
	Vendor name	Bill number	Date	Fund name	Department name	Account	Capital Project ID	Grant ID	Transaction amount	Memo
1043-166981	POOP911 OF MPLS STP LLC	1043-166981	4/1/2024	General Fund	Administration	61549		G22-001	540.60	4 WEEKS CLEAN UP SERVICE APR24
	POOP911 OF MPLS STP LLC	1043-166981	4/1/2024	General Fund	Public & Governmental Affairs	61549	PROJ23-602	G22-001-M	190.80	4 WEEKS CLEAN UP SERVICE APR24
Sum for 1043-166981									731.40	
1823	METRO I NET	1823	4/1/2024	General Fund	Administration	63066			5,398.00	IT SERVICES APR24
Sum for 1823									5,398.00	
2002882	PLM LAKE AND LAND MGT CORP	2002882	4/4/2024	General Fund	Water Quality	61549	PROJ24-515d		375.00	CCWD CROOKED LAKES SAMPLING
Sum for 2002882									375.00	
2024 WQCS INITIAL 80%	CITY OF HAM LAKE	2024 WQCS INITIAL 80%	4/9/2024	General Fund	Water Quality	61549	PROJ24-525b		20,000.00	24 WQCS INITIAL 80% OVERSIZED STIM/WRBASINS
Sum for 2024 WQCS INITIAL 80%									20,000.00	
24 WQCS INITIAL 80%	CITY OF FRIDLEY	24 WQCS INITIAL 80%	4/9/2024	General Fund	Water Quality	61549	PROJ24-527a		40,000.00	24 WQCS INITIAL 80% LEAF VACUUM
Sum for 24 WQCS INITIAL 80%									40,000.00	
91154176	US GEOLOGICAL SURVEY	91154176	4/10/2024	General Fund	Water Quality	61549	PROJ24-515c		9,600.00	CUST6000007418 2ND QTR MONITORING
Sum for 91154176									9,600.00	
CCWD-0324	ANOKA COUNTY MN	CCWD-0324	4/15/2024	General Fund	Administration	60110			164,921.60	SALARIES MAR24 PAYROLL
	ANOKA COUNTY MN	CCWD-0324	4/15/2024	General Fund	Administration	60714			15,058.00	HEALTH MAR24 PAYROLL
	ANOKA COUNTY MN	CCWD-0324	4/15/2024	General Fund	Administration	60717			12,499.20	PERA MAR24 PAYROLL
	ANOKA COUNTY MN	CCWD-0324	4/15/2024	General Fund	Administration	60721			218.00	LTD-MAR24 PAYROLL
	ANOKA COUNTY MN	CCWD-0324	4/15/2024	General Fund	Administration	60715			39.86	LIFE-MAR24 PAYROLL
	ANOKA COUNTY MN	CCWD-0324	4/15/2024	General Fund	Administration	60716			12,433.25	FOA-MAR24 PAYROLL
	ANOKA COUNTY MN	CCWD-0324	4/15/2024	General Fund	Administration	60713			2,267.56	HRM-MAR24 PAYROLL
	ANOKA COUNTY MN	CCWD-0324	4/15/2024	General Fund	Administration	60260			1,734.38	SALARIES TEMP-MAR24 PAYROLL
	ANOKA COUNTY MN	CCWD-0324	4/15/2024	General Fund	Administration	60720			663.52	DENTAL-MAR24 PAYROLL
	ANOKA COUNTY MN	CCWD-0324	4/15/2024	General Fund	Administration	63052			416.67	AC SVC EXP-MAR24 PAYROLL
Sum for CCWD-0324									210,252.04	
INV-0324-1221	RESPEC COMPANY LLC	INV-0324-1221	3/31/2024	General Fund	Administration	63010			8,265.00	PROJ02734 GIS SERVICES MAR24
Sum for INV-0324-1221									8,265.00	
INV-0324-1254	RESPEC COMPANY LLC	INV-0324-1254	3/30/2024	General Fund	Administration	63010			1,912.50	PROJ02734 GIS SERVICES FEB 24
Sum for INV-0324-1254									1,912.50	
PAN 18-031	MENARD INC	PAN 18-031	4/22/2024	Escrow Fund	Administration	24210			2,799.84	P18-031 ESCROW REF-MENARDS WAREHOUSE EXPANSION
Sum for PAN 18-031									2,799.84	
Sum Total									299,333.78	

COON CREEK WATERSHED DISTRICT
Request for Board Action

MEETING DATE: Aril 9, 2024
AGENDA NUMBER: 7
ITEM: Approve 2023 Annual Report

AGENDA: Policy

ACTION REQUESTED

Approve 2023 Annual Report for Submittal to the State of Minnesota

PURPOSE & SCOPE OF ITEM

This Annual report summarizes financial and program activities from January 1 to December 31, 2023, and is required to be filed each year with the State Board of Water and Soil Resources and the Department of Natural Resources.

BACKGROUND

The Coon Creek Watershed District was established in 1959 under the Minnesota Watershed District Law (Minnesota Statutes 103D). The District is a special purpose unit of government that addresses comprehensive water and related resource management within the 107 square mile District. The District includes the drainage area of Coon Creek as well as several other smaller watersheds that also drain directly to the Mississippi.

The Coon Creek Watershed District (District) is required to annually report on a variety of activities. These requirements and the state and federal laws that mandate the reporting are:

1. The Minnesota Watershed Act (M.S. 103D.351)
2. The Metropolitan Water Management Act (M.S. 103B.231)
3. The Minnesota Wetland Conservation Act (M.S. 103A)
4. The National Pollution Discharge Elimination System (NPDES) Program.

COORDINATION

Report was reviewed by District staff.

FACTS

The report:

- Reports the progress on implementing the 2014–2033 Comprehensive Watershed Management Plan
- Evaluates District management and operations.

ISSUES/CONCERNS

1. None

OPTIONS

1. Approve the report as presented.

2. Approve the report with amendments.
3. Direct staff to request an extension.

RECOMMENDATION

Review and approve the report for submittal to the state.

COON CREEK WATERSHED DISTRICT 2023 ANNUAL REPORT AND ASSESSMENT

Board of Managers

President	Jim Hafner
Vice-President	Erin Lind
Treasurer	Mary Campell
Secretary	Jason Lund
At Large	Dwight McCullough

Members Leaving Board During 2023

Matthew Herbst
Patrick Parker

District Administrator

Tim Kelly
763-755-0975

tkelly@cooncreekwd.org

Approved by Board of Managers April 2024

REPORTING REQUIREMENTS

The Coon Creek Watershed District (District) is required to annually report on a variety of activities. These requirements and the state and federal laws that mandate the reporting are:

1. The Minnesota Watershed Act (M.S. 103D.351)
2. The Metropolitan Water Management Act (M.S. 103B.231)
3. Minnesota Rule 8410.0150

PURPOSE OF THE REPORT

The Annual Report and Assessment documents the current condition and trend of water management efforts made the previous year and initiates the annual planning, programming, budgeting, and execution cycle. It is intended to provide guidance on key enduring and emerging planning issues to inform program development and investment decisions.

The objectives of the Annual Report are to:

Topic	Pg
1. Overview of Coon Creek Watershed District	3
2. Assessment of the Financial Condition and Audit Status of the District	9
3. Assessment of 2023 Comprehensive Watershed Management Progress	11
4. 2023 Findings and Lessons Learned	19
5. Assessment of the 2024-25 Operating Environment	21

OVERVIEW OF COON CREEK WATERSHED DISTRICT

BACKGROUND

The Coon Creek Watershed District (CCWD) was established in 1959 under the Minnesota Watershed District Law (Minnesota Statutes 103D).

The District is an independent special purpose unit of government that addresses comprehensive water and related resource management. The District is 107 square miles in size and includes the drainage areas of Coon Creek and five smaller watersheds that also drain directly to the Mississippi river.

BOARD OF MANAGERS

Office	Name	Appointing County	Term Ends
President	Jim Hafner	Anoka	2026
Vice-President	Erin Lind	Anoka	2026
Treasurer	Mary Campell	Anoka	2025
Secretary	Jason Lund	Anoka	2025
At Large	Dwight McCullough	Anoka	2027
Resigned	Matt Herbst	Anoka	
Deceased	Patrick Parker	Anoka	

Contact information is available on the District website:

www.cooncreekwd.org/board

DISTRICT MISSION

The District mission is derived from the nine principle directives and 38 mandates and rules from the state and federal governments. Distilling those requirements our mission is:

To manage surface water and groundwater systems and contributing lands to provide for and balance the competing uses of development, drainage, flood prevention and the protection and restoration of water quality and habitat for the benefit of our communities now and in the future.

OUR INTENT:

To pursue our mission within the framework of the existing state and federal programs using adaptive management and a theory of continual information and adaptation that enables disciplined decision-making by framing risk and assessing progress toward strategic objectives.

Our priority focus will be on flood prevention and addressing the water quality impairments within the watershed by directly addressing their restoration and long term shifting the biogeochemical integrity of the watershed from a poor to a moderate condition. We further intend to cease or slow the degradation of water resources within the watershed by 2033 as a stepping stone towards achieving the Total Maximum Daily Load (TMDL) Reductions by 2045.

Shifting the biogeochemical integrity of the watershed to address water quality and flood control problems will require the District to:

- Continue to conduct the full spectrum of projects and activities.
- Converge the capabilities across organizations and resource concerns.

Success will hinge on our ability to:

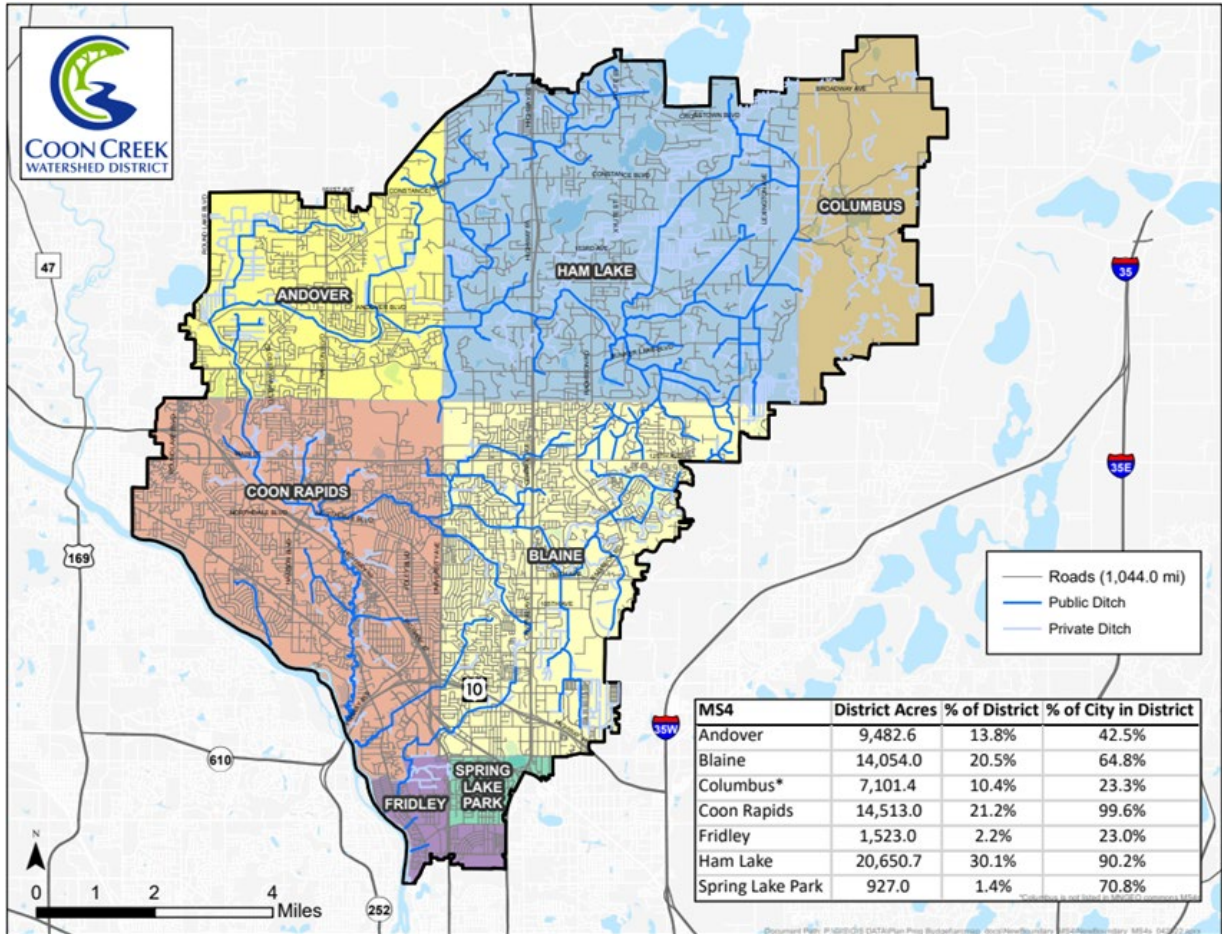
- Transform the inherent conflict involved with land and water to learning and adapting.
- Collaborate and maintain unity of effort.
- Maintain legitimacy of effort.
- Build partner capacity and capability.

OUR VISION

The District will focus on the drainage basin of Coon Creek and 15 square miles that directly drain to the Mississippi River and remain ready, willing, and able to collaborate, encourage, deter, and correct a range of water resource-related problems, issues, and concerns. The CCWD is prepared and capable of pursuing this task alone or as part of a joint effort with the seven cities within the watershed district, Anoka County, and the Anoka Conservation District.

Our approach is to leverage **the natural tendencies, capabilities, and capacities of the landscape through adaptive and innovative evidence-based practices, using competent empowered professionals, public and government collaborators whose work and efforts** result in the short and long-term beneficial use of the resource and that enable city staff and decision-makers to achieve success in preventing, repairing, and correcting water resource problems and issues.

LOCATION

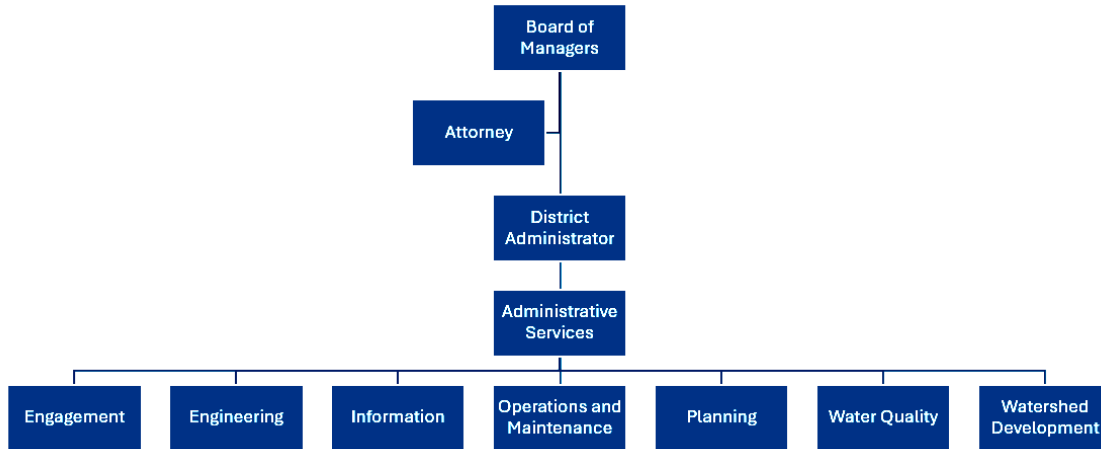


*The City of Columbus is not an MS4 (Municipal Separate Storm Sewer System)

OUR APPROACH AND CONCEPT OF OPERATION

Basic Organization

The District is organized into multiple program areas that mirror and serve as essential field operating systems.

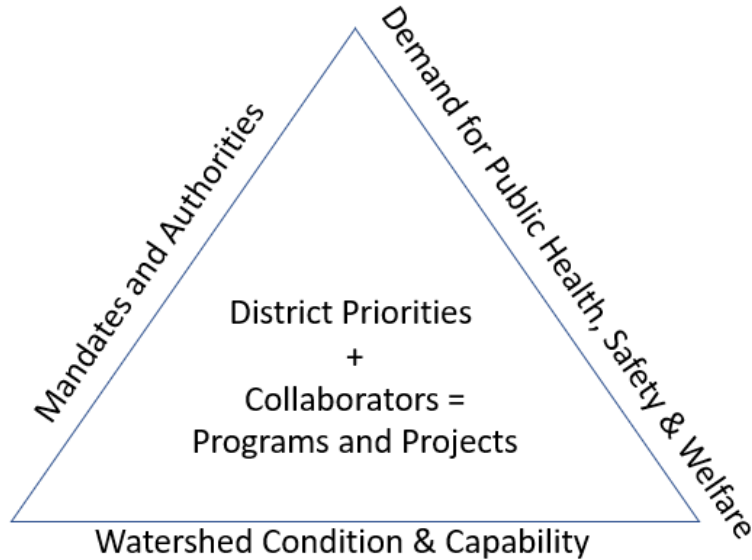


Key Staff and Leadership

Program	Staff Contact
Administrator	Tim Kelly
Administrative Services	Corinne Elfelt
Administrative Assistant	Bobbie Law
Attorney	Michelle Ulrich
Director of Operations	Jon Janke
Engagement	Jessica Lindemyer
Engineering	Eileen J. Weigel, P.E., Stantec
Finance & Accounting	Julie Peterson
Information	Dawn Doering
Operations and Maintenance	Jon Janke
Field Operations	Tyler Thompson
Infrastructure Inspections	Jason Hilst
Planning	Erik Bye
Water Quality	Justine Dauphinais
Monitoring & Weather Specialist	Chase Vanderbilt
Watershed Development	Erin Margl
Plan and Permit Review	Abbey Lee
Inspections	Kailee Hasbrook

Concept of Operations

The District’s current strategy and concept of operations is founded on watershed-based collaborative management actions.



Operate in One- and Ten-Year Cycles

All District goals, programs and intended projects and actions are disclosed in an approved Comprehensive Watershed Management Plan. The plan is reviewed by all state and local stakeholders and approved by the Minnesota Board of Water and Soil Resources. Those plans typically are developed for a ten-year period (e.g. 2014-2023 or 2024-2033) and document and disclose the: water management situation; the principal needs and priority goals to be pursued or accomplished: the mix of research, capital, regulatory, and public information and engagement projects, tasks and activities that will be taken to pursue or achieve those goals; the costs, material and staff that will be needed over that time to make this happen: and finally the leadership, governance, communication and collaboration involved.

Implementation of the ten-year Comprehensive Watershed Management Plan occurs through the District’s annual planning, programming, budgeting, and execution (PPBE) system. The annual PPBE process is shown below.

Phase	J	F	M	A	M	J	J	A	S	O	N	D
Planning												
Programming												
Budgeting												
Execution												

CRITICAL RESOURCES

Citizen Advisory Committee

Name	City	Representing
Barbara Goodboe-Bisschoff	Spring Lake Park	SLP Council member liaison
Roger Johnson	Coon Rapids	Resident
Paddy Jones	Ham Lake	Rural landowner
Bill Kurdziel	Coon Rapids	Resident
Gary Nereson	Andover	Crooked Lake Area Association Representative
Jim Lindahl	N/A	Anoka Conservation District Representative
Joe MacPherson	N/A	Anoka County Representative

Technical Advisory Committee

Agency	Representative	Position Title
Anoka Conservation District	Chris Lord	District Administrator
Anoka County	Joe MacPherson	Anoka County Highway Engineer
Andover, City of	Dave Berkowitz	City Engineer and Public Works Director
	Jason Law	Assistant City Engineer
	Kameron Kytonen	Natural Resource Technician & City Forester
Blaine, City of	Dan Schluender	City Engineer and Public Works Director
	Megan Hedstrom	Stormwater Coordinator
Columbus, City of	Elizabeth Mursko	City Administrator
	Larry Boher	City Engineer
Coon Rapids, City of	Tim Himmer	Public Works Director
	Mark Hansen	City Engineer
Fridley, City of	Jim Kosluchar	City Engineer and Public Works Director
	Rachel Workin	Environmental Planning and Public Affairs
Ham Lake, City of	Dave Krugler	City Engineer
Spring Lake Park, City of	Dan Buchholtz	City Administrator
	Phil Gravel	City Engineer

ASSESSMENT OF THE FINANCIAL CONDITION (UNAUDITED)

2023 FINANCIAL CONDITION

Description	Fund Balance		Change
	1/1/2023	1/1/2024	
Special Revenue Funds			
MWMA Fund	1,958,079	1,916,389	(41,690)
Illicit Discharge Detection	750	750	-
Rapid Response Reserve	40,000	40,000	-
MWMA Balance	1,917,329	1,875,639	(41,690)
Grants			
ACD WCA Block Grant	-	-	-
FY 19 BWSR CWF MSCCR	-	-	-
FY 20 BWSR CWF Coon Ck Park	6,716	6,716	-
FY 20 Fed 319 NKE Grant	-	-	-
FY 21 BWSR WBIF Aurelia Park	-	-	-
FY 21 BWSR CWF PCSBIESF	39,592	33,280	(6,312)
FY 22 PCA 319 Pet Waste	(676)	-	676
FY 22 BWSR CWF ECIESF	172,500	-	(172,500)
FY 22 BWSR WBIF Retrofits	108,189	62,557	(45,632)
Fiduciary Funds			
Escrow Trust	2,109,241	1,953,598	(155,643)

2023 BUDGET PERFORMANCE

Revenue Source	Adopted Budget	Actual	Variance	Pct Variance
Property Taxes	\$ 3,187,821	\$ 3,160,508	\$ (27,313)	-1%
Special Assesments	-	-	-	#DIV/0!
Fees & Charges	552,291	224,491	(327,800)	-59%
Grants	405,527	260,511	(145,016)	-36%
Other Revenue	26,963	169,086	142,123	527%
Fund Blances	342,274	161,336	(180,938)	-53%
Total	\$ 4,514,876	\$ 3,975,932	\$ (538,944)	-12%
Expenditre Sources	Adopted Budget	Actual	Variance	Pct Variance
Slaries & Benefits	\$ 1,775,997	\$ 1,668,810	\$ (107,187)	-6%
Professional Services	382,506	310,769	(71,737)	-19%
Operating Expenses	227,180	176,421	(50,759)	-22%
Program Expenses	2,402,962	1,715,979	(686,983)	-29%
capital Equipment	21,795	21,415	(380)	-2%
Total	\$ 4,810,440	\$ 3,893,394	\$ (917,046)	-19%

STATUS OF 2023 AUDIT

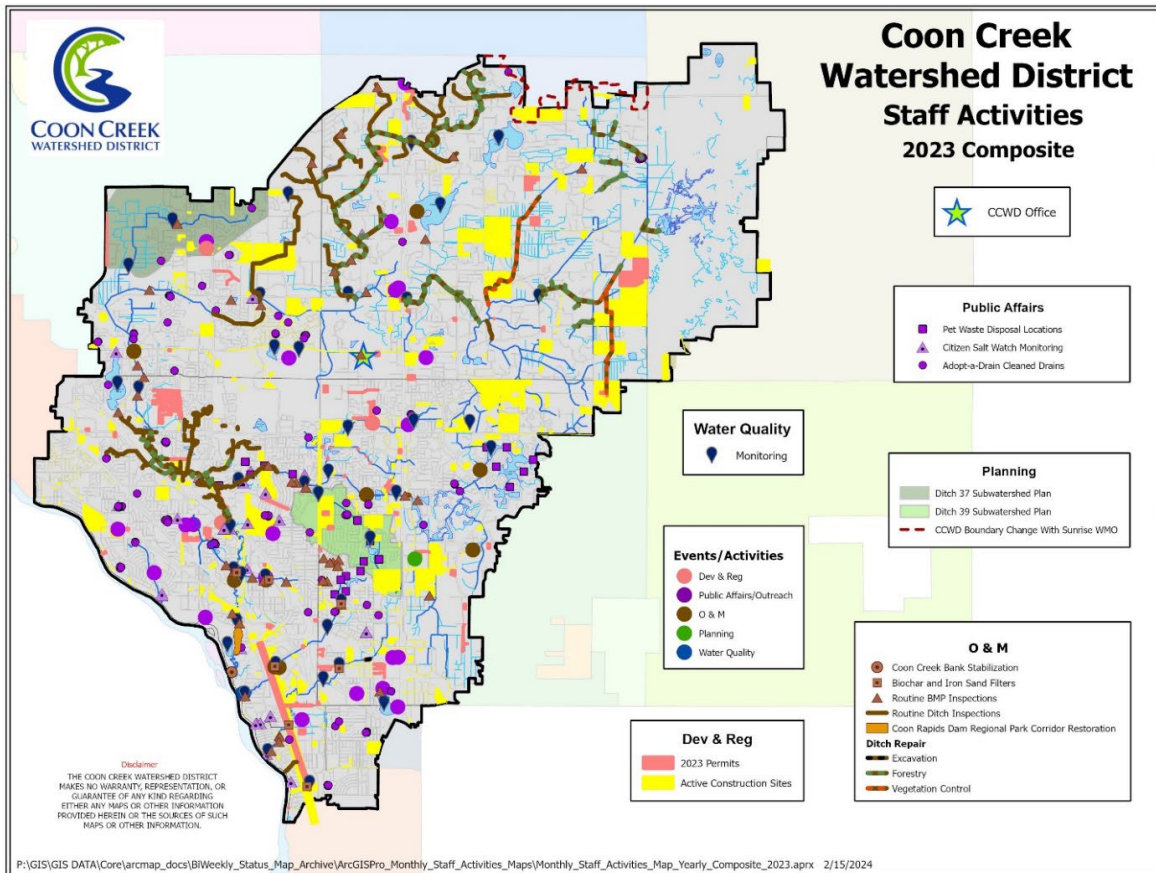
Anoka County performs the accounting for the district and the district's accounts and general ledger are incorporated into the County database. To save time and money both audits are performed by the same audit team at the same time. The implication of this is that the 2023 audit will not be available until the fall of 2024.

ASSESSMENT OF 2023 COMPREHENSIVE WATERSHED MANAGEMENT PROGRESS

WHERE WE ARE AT

In 2023 the Minnesota Board of Water and Soil Resources granted a one-year extension on the 2013-2023 Comprehensive Watershed Management Plan to August 2024. In December 2023 a draft of the new Comprehensive Plan was submitted for public and agency review. Over 300 comments were received by the end of February 2024. At present the District is reviewing the comments and preparing appropriate responses. Because of the Comprehensive Plan extension, and the proposed shifting in District goals, this assessment will focus on work and progress within the District’s five principal resource management areas.

2023 MANAGEMENT ACTIVITIES



GROUNDWATER

In the Anoka Sand Plain there are two ground water systems of concern to the District.

First, deep bedrock aquifers provide most of the drinking water to the citizens of the District. In 2023 the District's watershed development program played an active role in source water protection by reviewing and regulating and in some instances prohibiting approximately 66 proposed land use changes within the watershed that involved ground water and potentially influenced public drinking water supplies.

The second ground water resource concerns the water table. An unconfined water source that provides base flows to ditches and streams as well as lakes and wetlands. In 2022 and 2023 monitoring of surface waters in the southern portion of the watershed showed high levels of chloride that could only have come from the surficial ground water. The magnitude of impact of groundwater inputs on the surface water resources was a new discovery due to multiyear drought conditions. This was a new discovery and in 2023 the District planned actions disclosed in the Draft Comprehensive Plan to further assess the scope of the effect and cost-effective options for mitigating this chloride pollution.

Goal

The District's goal for ground water management within the watershed is:

To manage groundwater underlying the Coon Creek Watershed cooperatively with the cities and the involved state agencies to promote long-term maintenance or restoration of groundwater systems and their groundwater-dependent ecosystems, including springs, lakes, ponds, streams, riparian areas, and wetlands.

How We Did in 2023

Objective 1: To assist drinking water suppliers in protecting public water supply well heads and source waters.

Activity	
Adopted and implemented new and revised rules	1
Permit Applications Received	66
Technical Assistance Applications Received	61
Permits Issued	50
Board Application Decisions Made	54
New and Reconstructed Impervious Surface Permitted (acres)	129.7
Land Disturbance Permitted (acres)	298.2

Inspections Conducted (include all inspection types and infiltration witnessing)	746
Groundwater educational brochures distributed	10
Groundwater Social media reach	219

Objective 2: To assess the scope and effect of water quantity and quality changes in the surficial aquifer.

Activity
Developed and distributed for public review a strategy to address the surficial ground water system of the District
Conducted targeted water quality monitoring for Chloride during low flow
Monitored water levels of 7 long term reference wetland sites

PUBLIC DRAINAGE

The District serves as the drainage authority for 133 miles of public ditch within the watershed. Sixty-three percent of the public drainage system is in good condition and adequately serves the purpose for which it was established. Thirty-six percent of the public drainage system is in fair condition and also successfully functions as designed but is prone to difficulties which require spot maintenance. These ditches serve as essential infrastructure for 13,780 acres of drainage dependent land that have established drainage rights.

Goal

The District’s goal for managing public drainage is:

To provide sustainable drainage in a fiscally responsible manner from watershed lands for administration, protection, utilization, and enjoyment of the waters and related resources of the District.

How We Did in 2023

The public drainage system faces three major challenges:

1. Fulfilling its legal obligations to the landowners with established drainage rights that depend on continued drainage for their livelihood.
2. To ensure that stormwater from newly developed or changed land uses upstream from those drainage dependent lands is reasonably and adequately controlled so as not to cause or contribute to flooding or water quality degradation.

3. To address, to the maximum extent practicable, those stressors and functions contributing to the impairment of water quality within these conveyances.

Number 3 is assessed in the discussion on water quality.

Number 2 is assessed in the discussion on water quantity.

Number 1, ensuring drainage, is assessed below.

How We Did in 2023

2023 Public Drainage Related Management Activities

Activity	2023
Bank stabilization projects	1
Beaver issues	29
Beaver removed	23
Ditch maintenance	5
Drainage issues	5
Erosion issues	6
Miles of Contracted Municipal Channel Inspections	11.26
Miles of Ditch inspections	27.75
Number of Contracted Municipal Channel Inspections	2
Number of Drainage System Inspections	4
Obstruction complaints	32
Obstruction issues	25
Percent of Total Drainage System Inspected	18.0%

The District also responded to 73 questions and complaints involving the condition or general nature of the public drainage system.

WATER QUALITY

The watershed contains, or abuts, 11 water resources that do not meet state or federal standards for water quality and are therefore designated as ‘impaired’. Seven streams, three lakes and the Mississippi River. The primary pollutants of interest with direct impacts on both aquatic life and recreation-based impairments are total suspended sediments (TSS), total phosphorus (TP), E. coli, and chlorides. Secondary stressors include poor habitat, altered hydrology, and low dissolved oxygen levels. Exceedances of water quality standards for these parameters are widespread. Major issues compounding these pollution problems or creating problems and issues on their own include:

- Active channel erosion
- Channel incision and loss of floodplain connectivity
- Loss of lateral connectivity caused by barriers to movement

- Aquatic invasive species
- Groundwater vulnerability to pollution
- Aging infrastructure such as leaky sanitary pipes
- Natural conditions associated with low-gradient, wetland-dominated systems

Goal

District water quality goal is:

To protect and improve the physical, chemical, and biological quality of the District's water resources consistent with State and Federal water quality standards.

How We Did in 2023

2023 Water Quality Related Management Activities

Activities	2023
Sites Monitored	67
Monitoring Visits	421
Grab Samples Collected	1459
Sonde Measurements	364
Paired Flow Measurements	153
Telemetry-enabled sites	9
Aquatic Invasive Species (AIS) early detection surveys	10
AIS response treatment sites	8
Grants applications & awards	1 of 1
Active grants administered	5
Cost share projects funded	2
Stream habitat restoration projects	0
Regional stormwater Best Management Practices (BMPs) constructed	2
Conference Presentations	3
Water Quality Issue Response	6
Educational articles published related to Total Suspended Solids (TSS) and Total Phosphorus (TP)- 26; chlorides-7; IDDE-4; and <i>E. coli</i> -3	40
Pet waste stations- (N=23); pounds collected	16,056
Pet waste education handouts distributed	1,251
SaltWatch Volunteer Monitoring sample collections	53
Adopt-a-Drain reported debris collected, in pounds	1,100
Community trash cleanups- 2; pounds collected	360
Special Studies (Sediment Source Investigation, Enhanced Sweeping)	2

Water Quantity

The watershed drains approximately 107 square miles and on average receives about 32-33 inches of precipitation per year. There are approximately 180 miles of open channel comprising approximately 7,700 acres. Approximately 134 miles (74%) were improved between 1890 and 1920 and are maintained as part of the public drainage system. There are 10 natural and manmade lakes within the watershed. The natural lakes are shallow lakes usually associated with type 4 & 5 wetlands. Groundwater occurs under the entire District. It is within five to ten feet of the land surface over approximately 75% of the watershed.

Water quantity management within the watershed is driven by the amount of precipitation (rain and snow) we receive, land use changes, and the variables found in the standard hydrologic equation:

Variable	Definition
P	Total precipitation input
ET	Total evapotranspiration loss
R	Total stream flow
Δ SMS	Change in soil moisture storage
Δ GMS	Change in groundwater storage
Δ DS	Change in depression storage
GWF	Groundwater flux (groundwater flow into or out of the drainage basin).
R	Runoff

Goal

The District has four goals concerning water quantity:

1. To closely monitor and model the watershed's response and behavior to various hydrologic events.
2. To restore and preserve desirable watershed conditions that will prevent or minimize flooding and minimum flows.
3. To prevent property damage from flooding, erosion, or degraded water quality
4. To ensure a balance between inflow, outflow, and the storage of water

How We Did in 2023

2023 Water Quantity Related Management Activities

Activity	2023
Months of daily precipitation monitoring in the watershed reported to the District and collaborators monthly.	12
Spring snowpack investigations	10
Subwatershed hydrologic model review, updates and refinements for flood elevations	3 (23%)
Reviewed subwatersheds with hydrologic model refinements	1 (8%)
Percent of subwatersheds with restoration and mitigation projects	66%
Cases modeled for FEMA action to ensure flood elevations.	17
Permits reviewed to prevent flood damage.	60
The number of flood hazard obstructions removed.	49
Miles of Contracted Municipal Channel Inspections	11.3
Number of Contracted Municipal Channel Inspections	2
Bank stabilization projects	1
Erosion issues	6
Flooding issues	5
Public safety issues	0
Routine or follow-up inspections.	94
Spring flooding responses	10
Published articles about flood risk	3
Social media reach about flood prevention (via Adopt-a-Drain)	6127
Rain Gauge Network Volunteers	17
New webpage on Spring Flood Risk	1
Lake and wetland levels monitored	12

WETLANDS

The Coon Creek Watershed contains approximately 15,508 acres of wetland (NWI, 2019). An additional 6,500 acres of wetland may be farmed. Wetlands comprise approximately 31% of the watershed. Historic estimates, based on hydric soil mapping, are that approximately 47% of the watershed was wetland, as we define them today, prior to settlement (USDA, 1977).

Coon Creek Watershed District serves as the Local Governmental Unit that administers the Minnesota Wetland Conservation Act in all portions of the cities within the watershed district.

There are three priority problems, issues, and concerns facing wetlands within the watershed:

1. Effects of drainage on jurisdictional wetland
2. Long-term sustainability of wetland hydrology
3. Areas with the capability and capacity to restore and sustain wetlands

Goal

The District goal is:

To pursue the no net loss of the quantity, quality, and biological integrity of the District wetlands.

How We Did in 2023

2023 Wetland Related Management Activities

Activity	2023
Wetland-related Landowner Contacts	192
Boundary/Type Applications	28
No-loss Applications	5
Exemption Applications	3
Square Ft of Exempt Permanent Impact	2,676
Sequencing Applications	0
Replacement Plan Applications	2
Replacement Plans utilizing Wetland Banking	2
Replacement Plans utilizing Project-Specific Replacement	0
Replacement Plans utilizing both Wetland Banking and Project-Specific Replacement	0
Square Ft of Permanent Impact with Approved Replacement Plan	37,056
Potential WCA Violations Investigated	6
TEP Meetings Held	22
Wetland Mitigation Monitoring Reports Reviewed	2
Total Wetland Applications/Requests Received	45
Wetland-related social media reach	662
"May is Wetlands Month" Display at Northtown Library, # Days	31
Long-term wetland reference sites monitored	7

2023 FINDINGS AND LESSONS LEARNED

GROUNDWATER

1. 2023 stream chloride monitoring revealed problematic levels of chloride contamination in shallow groundwater as evidenced by elevated chlorides during baseflow compared to stormflow including prolonged exceedances of the chronic aquatic life toxicity standard in Pleasure Creek for the first time.
2. Many of the long-term wetland level monitoring wells went dry in late June-mid September, but all rebounded to measurable levels by early October except for one in central Andover which remained at least 27" below the ground surface at edge of wetland.
3. In 2023, shallow lakes throughout the District remained 1-2' below the long-term average water level for the third consecutive year.

PUBLIC DRAINAGE

4. Prolonged drought is contributing to an increase of dying and falling trees and sloughing of the ditch banks resulting in obstructions and deflected flows creating erosion.
5. MPCA Stream Habitat Assessment completed on 40% of the public ditch system for qualitative aquatic habitat information identified habitat variability ranging from 25-72 (out of 100) throughout the ditch system enabling managers to better target aquatic habitat improvement strategies and efforts.

WATER QUALITY

6. A diagnostic study in the lower reaches of Pleasure Creek revealed that TSS exceedances at the outlet monitoring site are caused by in-channel sources and not direct watershed runoff as previously believed.
7. A Districtwide street sweeping cost-benefit analysis revealed that enhanced street sweeping would be a cost-effective BMP to meet TP reduction goals; optimizing existing sweeping effort and equipment capacity alone could result in achieving 3-21% of TMDL TP WLAs and increasing sweeping effort could realistically achieve 19-100% of TMDL TP WLA across the four impaired streams at a cost less than \$500 per lb TP.
8. Performance monitoring of District-operated BMPs revealed that all BMPs are currently meeting removal efficiency design standards.
9. Routine lake and stream monitoring results were as expected and did not reveal anything concerning needing further investigation.

10. The initial estimated cost to achieve the TMDLs is \$103 million dollars over the next 20 years. Costs estimates are based on past construction costs, published and monitored treatment levels, and were developed in 2023 as part of the Comprehensive Plan.
11. An evaluation of 68 crossings and potential barriers to aquatic organism passage on the aquatic life impaired reaches of Coon and Sand Creeks identified 22 barriers impacting aquatic organism passage.
12. MPCA Stream Habitat Assessment completed on 40% of the public ditch system for qualitative aquatic habitat information identified habitat variability ranging from 25-72 (out of 100) throughout the ditch system enabling managers to better target aquatic habitat improvement strategies and efforts.

Aquatic Invasive Species

13. Districtwide reconnaissance activities found one new population of invasive phragmites in August 2023 which initiated a rapid response herbicide treatment in September.
14. Follow-up monitoring of previously treated phragmites infestations revealed 98% of the infested area is now under control.
15. Lake vegetation surveys in fall 2023 found invasive hybrid Eurasian watermilfoil exceeding the threshold triggering lake wide treatment for the first time since the highly successful whole lake treatment in 2016; a repeat lake wide fluoridone treatment was initiated in November.

WATER QUANTITY

16. FEMA and DNR have delayed the review of the District's hydrologic model and effort to revise floodplain mapping to be more accurate.
17. MPCA Stream Habitat Assessment completed on 40% of the public ditch system for qualitative aquatic habitat information identified habitat variability ranging from 25-72 (out of 100) throughout the ditch system enabling managers to better target aquatic habitat improvement strategies and efforts.

WETLANDS

18. Water levels in all reference wetlands remain depressed and approaching minimal levels for continued classification as jurisdictional wetlands according to the mandatory technical criteria in the 1987 wetland delineation manual and considering atypical conditions and problem wetlands.

ASSESSMENT OF THE 2024-25 OPERATING ENVIRONMENT

This section concerns the District's ability to anticipate structural changes in the operating environment early enough to adapt the District's strategy and planned budget. The Operating Environment is a composite of conditions, circumstances, and influences that affect the District's capabilities and strongly influence the decisions made by a Board or Manager.

The section is designed to encourage the purposeful preparation of the District to budget and pursue implementation of the comprehensive plan goals and objectives in 2025. For the highly collaborative effort in effect within the watershed, thinking through the most important conditions in a changing world can mean the difference between success and failure, and the needless expenditure of public funds, versus the judicious and prudent application of both to manage and sustain our water resources.

Our intent is to describe the likely operating environment through December of 2025 and project implications of change for water management, so the District, and collaborating agencies, can anticipate and prepare budget and work needs. To do this, we pose and then explore three foundational questions. Answers to these questions describe the operating environment and suggest ways the District, and its collaborators, might prepare for the future. These questions are:

1. What trends and conditions will shape the future water resource environment?
2. How will trends and conditions intersect to change the future character of water management? (What can we expect to see – in all probability)
3. What projects will the District and our collaborators need to conduct in 2025 and 2026?

EXPECT TO SEE: TRENDS AND CONDITIONS SHAPING WATER MANAGEMENT IN 2024-25

Economic Environment

- Inflation is expected to continue to ease gradually, as cost pressures moderate. A surplus in the general fund in FY 2024-25 of \$3.7 Billion
- Continued economic growth.
- A decrease in inflation in 2024 and 2025 with the Consumer Price Index falling an additional 1.9% in 2024 before it begins a 2.3% rise in 2025.

- Unemployment is expected to rise from 2.9% in December 2023 to approximately 4% by December 2024
- Wages and salary disbursements are forecasted to rise 5% in 2024 and 4.2% in 2025.

Information and Technology

- The rate of technological change is moderately high.
- Technology will remain a driving force in evolving workplace changes.
- Increased ability to collaborate
- Technological innovations—including automation, online collaboration tools, artificial intelligence, and additive manufacturing—will reshape some fundamental aspects of how and where people work.

Infrastructure

- A focus on “enhancing” asset utilization and optimizing performance to extend asset use.
- Increasing questions about the ‘resilience’ of stormwater assets by citizens, government grant makers and insurance companies.

Management Environment

- Increased difficulty in attracting and retaining qualified staff is already upon us and is expected to continue based on the number of graduates and the difficulty being experienced by sister and collaborating agencies.
- The increased complexity of the legal and financial environments, combined with a scarcity of qualified and dedicated staff will heighten the risk of miscalculation that could result in an acceleration of adverse conditions.
- Scarcity will be more apparent and the insistence of State agencies to address economic problems with ecological solutions versus ecological problems with economic solutions is compounding problems.
- Communities that share a single water source will begin to feel and/or exhibit increasing concern and/or pressure to claim a use of that resource over their neighbors in response to real or perceived well or other interference.

Physical Environment

- Precipitation will likely occur irregularly and in high intensity short duration events.
- Continued long periods of excessively dry conditions (drought).

- A few cases of well interference will probably occur in private wells less than 50 to 150 feet deep.
- Increased likelihood of introduction of new aquatic invasive species.
- Increased occurrence of chloride in base flows in the southern portion of the watershed.
- Increased likelihood of contaminants or emerging concerns.
- All lakes show steady conditions and are not declining.

Political Environment

- Efforts to increase regulation of local water management authorities particularly drainage authorities.
- Increased challenges to the existing local water management model catalyzing a reshaping of local water management.
- An occurrence of geopolitical water politics between cities due to water issues most likely ground water.
- Water insecurity/scarcity is likely going to get worse. Water insecurity will have material impacts on cities, industrial and agricultural production, and communities with vulnerable water supplies.

Social

- An increase in public concern about drinking water supply and water quality.
- An increase in public activism that will involve more direct public action.
- An increase in expectation of government transparency and customer service.

Permit Application Review Report
Date: 4/17/2024

Applicant/Landowner:

City of Coon Rapids
Attn: Mark Hansen
11155 Robinson Dr
Coon Rapids, MN 55433

Project Name: Coon Rapids Street Reconstruction Project 24-1

Project PAN: P-24-008

Project Purpose: Pavement reconstruction and addition of 6-foot-wide sidewalks

Project Location: Streets in the Woodcrest neighborhood, Streets around the Coon Rapids Post Office, the cul-de-sac streets of 90th Avenue and Norway Street east of East River Road, Coon Rapids

Site Size: size of disturbed area - 15.1 acres; size of regulated impervious surface - 10.99 acres

Applicable District Rule(s): Rule 2, Rule 3, Rule 4

Recommendation: Approve with 1 Condition and 2 Stipulations

Description: The City of Coon Rapids has submitted this application which proposes to reconstruct streets within the Woodcrest neighborhood, streets around the Coon Rapids Post Office, and the cul-de-sac streets of 90th Avenue and Norway Street east of East River Road and south of TH 610. Watermain pipe replacements are also proposed for streets within the Woodcrest neighborhood, and some areas within the project will include the addition of 6-foot-wide sidewalks. The plan proposed to disturb 15.1 acres and create 10.99 acres of regulated (new and reconstructed) impervious. All project areas are in the Lower Coon Creek subwatershed. The relevant water resource issues are stormwater management and erosion and sediment control, which correlate with District Rules 3 and 4. See attached Figure 1: Project Location and Figure 2: Site Plan.

Conditions to be Met Before Permit Issuance:

Rule 4.0 – Soils and Erosion Control

1. Update the erosion and sediment control plan to include a note that soils and soil stockpiles will be stabilized within 24 hours of inactivity.

Stipulations: The permit will be issued with the following stipulations as conditions of the permit. By accepting the permit, the applicant agrees to these stipulations:

1. If dewatering is required, provide DNR dewatering permit prior to construction. If a DNR permit is not required, provide well-field location, rates, discharge location, schedule and quantities prior to construction.
2. Submittal of as-builts for the stormwater management practices and associated structures listed in Tables 2 and 3, including volume, critical elevations and proof of installation for hydrodynamic separators.

Exhibits:

Exhibit Type	Exhibit Author	Signature Date	Received Date
NPDES Coverage	Coon Rapids	02/15/2024	02/21/2024
SAFL Baffle Detail		01/21/2020	03/05/2024
SHSAM Calculations	Coon Rapids	03/19/2024	03/19/2024
SWPPP	Coon Rapids	02/22/2024	02/22/2024
Permit Narrative	Coon Rapids	03/19/2024	03/19/2024
Construction Plans	Coon Rapids	02/27/2024	03/05/2024

Findings

Fees and Escrows (Rule 2.7):

The applicant is a government agency and is therefore exempt from an application fee or a review and inspection fee deposit. The applicant has submitted a performance escrow in the amount of \$9,550.00. This corresponds to a base escrow of \$2,000, plus an additional \$500/acre of disturbance (15.1 acres of land disturbance proposed).

Stormwater Management (Rule 3.0):

Rule 3.0 applies to the proposed project because it is a public linear project where the sum of the new and fully reconstructed impervious surface equals one or more acres. This does not include the proposed new sidewalk impervious, which is exempt under CCWD Rule 3.2.2 and does not require stormwater treatment.

Rate Control:

Peak stormwater flow rate at each point of site discharge does not increase from the pre-development condition. The plan does not propose an increase in impervious or change in drainage patterns. Therefore, the rate control standard is met.

Volume Control:

The plan does not propose any volume control or equivalent Stormwater Management Practices. The applicant has made a good faith effort to analyze all potential options for treatment and adequately demonstrated that a stormwater BMP is not feasible due to the following site constraints: high groundwater, fully developed area and lack of treatment space, poor soils, and utility conflicts. The volume control standard has been met to the maximum extent practicable.

Water Quality:

Stormwater treatment on site must remove at least 80% of the average annual post development TSS per discharge location. The following TSS removal has been provided:

Discharge Point	TSS Removal Provided
Norway St	76
Frontage Road	34
Quince St	38

Table 4.

The plan proposes 4 6-foot-deep and 6-foot-wide sumps with SAFL baffles upstream of the Frontage Road and Quince St discharge. Additional upstream structures were considered, and they would not meaningfully increase the removal efficiency enough to justify their additional cost. This is due to the large size of the drainage areas (17 acres and 27 acres respectively). The TSS removal standard is met to the maximum extent practicable as shown in Table 4.

Discharges to Wetlands: Stormwater from the proposed project is not being discharged into any wetlands, therefore this section does not apply.

Landlocked Basins: The proposed drainage system does not outlet to a landlocked basin, therefore

this section does not apply.

Low Floor Freeboard: The proposed project is not considered new development with buildings and habitable structures; therefore, this section does not apply.

Maintenance:

Access: Sufficient maintenance access has been provided on the plans for all stormwater management practices.

Maintenance Agreements: All proposed stormwater management practices will be maintained as part of standard municipal public work activities. Therefore, no maintenance agreement will be required.

Soils and Erosion Control (Rule 4.0)

Rule 4.0 applies to the proposed project because it is a land disturbing activity that requires a permit under another District rule.

The proposed project drains to Lower Coon Creek. The soils affected by the project include Zimmerman, Isanti, Lino and Sartell which have a soil erodibility factor of 0.15 or greater. Disturbed areas are not proposed to be stabilized within 24 hours, as required. The proposed erosion and sediment control plan includes inlet protection and street sweeping. The erosion control plan does not meet District requirements because soils and soil stockpiles are not proposed to be stabilized within 24 hours of inactivity.

Wetlands (Rule 5.0)

The proposed project does not include activities which result in the filling, draining, excavating, or otherwise altering the hydrology of a wetland. Rule 5.0 does not apply.

Floodplain (Rule 6.0)

The proposed project does not include land disturbing activities within the floodplain as mapped and modeled by the District. Rule 6.0 does not apply.

Drainage, Bridges, Culverts, and Utility Crossings (Rule 7.0)

The proposed project does not include land disturbing activities which construct, improve, repair, or alter the hydraulic characteristics of a bridge profile control or culvert structure on a creek, public ditch, or major watercourse. The proposed project does not include land disturbing activities which involve a pipeline or utility crossing of a creek, public ditch, or major watercourse.

The proposed project does not include land disturbing activities which construct, improve, repair or alter the hydraulic characteristics of a conveyance system that extends across two or more parcels of record not under common ownership and has a drainage area of 200 acres or greater. Rule 7.0 does not apply.

Buffers (Rule 8.0)

The proposed project does not include a land disturbing activity on land adjacent or directly contributing to a Public Water, Additional Waters, High or Outstanding Ecological Value Waters, a Public Ditch, or Impaired Waters/waters exceeding state water quality standards. Rule 8.0 does not apply.

Variances (Rule 10.2)

The proposed project does not request a variance from the District's rules, regulations, and policies. Rule 10.2 does not apply.

P-24-008

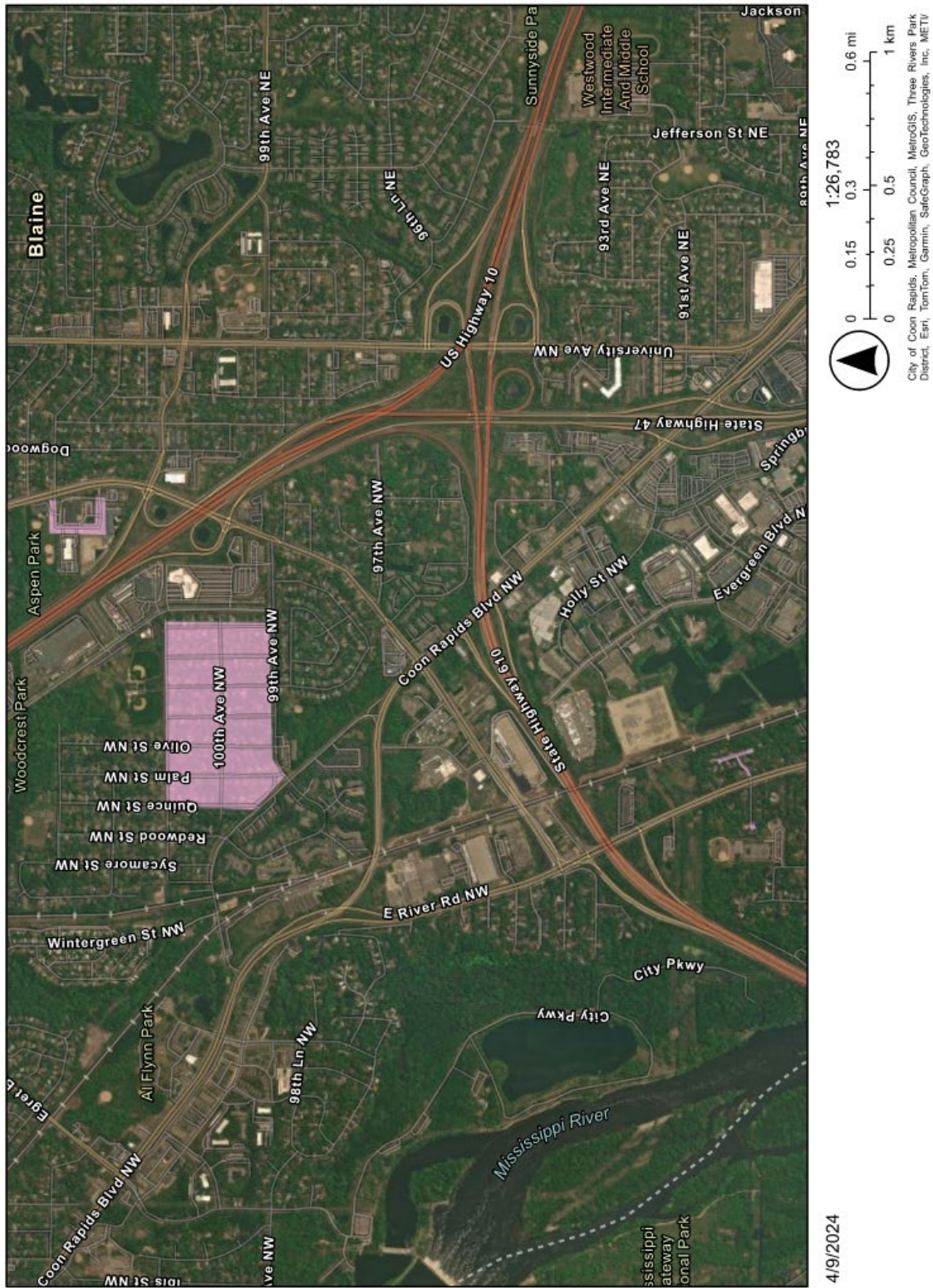


Figure 1: Project Location

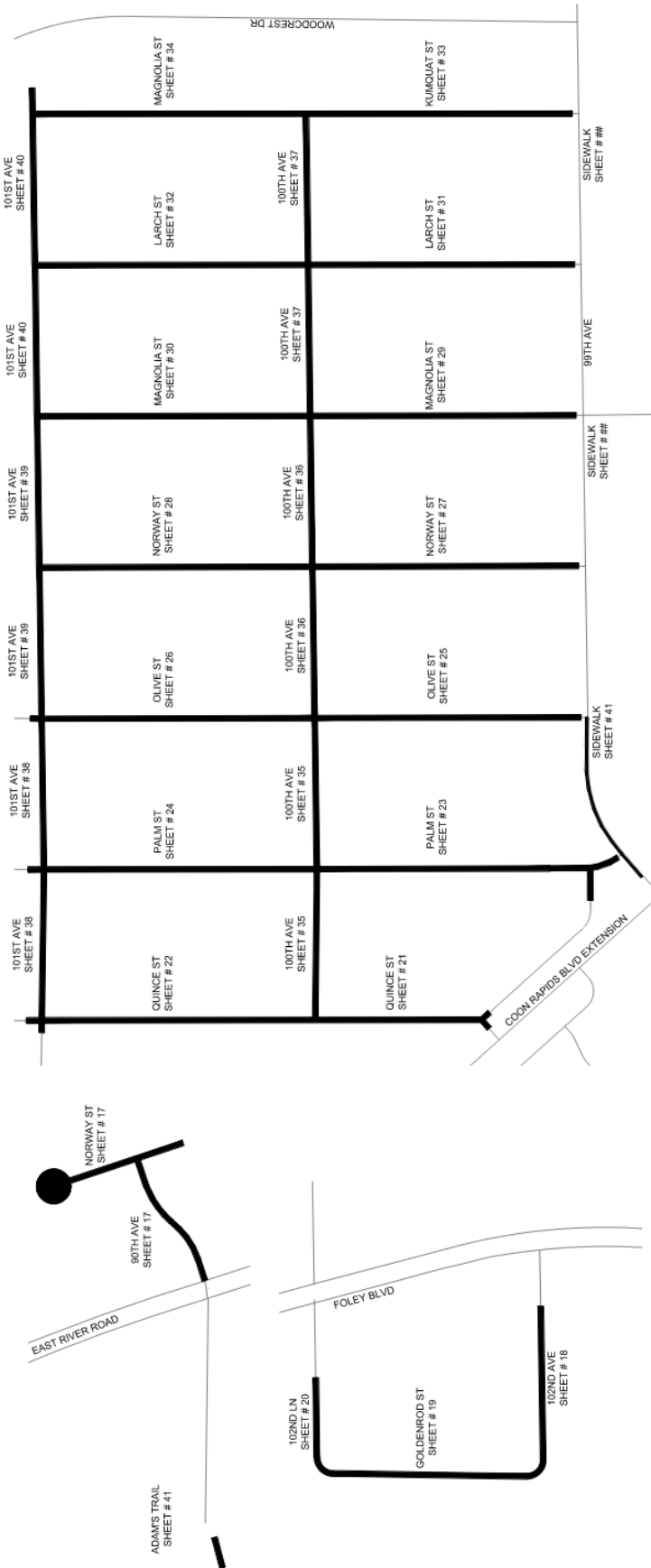


Figure 2: Site Plan

COON CREEK WATERSHED DISTRICT
Request for Board Action

MEETING DATE: April 22, 2024
AGENDA NUMBER: 9
ITEM: 2025 Economic Forecast & Revenue Estimates

AGENDA: Discussion

ACTION REQUESTED

Discuss and receive the report.

PURPOSE

The forecast is intended to give the Board of Managers time to analyze and incorporate some of the effects of recent major legislation and events. To accomplish this, we need to:

1. Review 2024 budget performance and outlook
2. Look into those key factors affecting the District's financial and economic operating environment.
3. Reaffirm where the Board wants to take the District.
4. Determine if the District is effective at doing the right things and if management is doing those things in the most efficient and effective manner.

In the end the Board should gain insights into possible outcomes, reductions in risk to the public health, safety and welfare, and opportunities to increase the chances of District success in fulfilling its statutory mission.

SCOPE

The projections provided reflect the financial reserves of the District as of April 1, 2024, and reflect the current legal requirements and the fiscal capacity and capability of the watershed district. The forecast assumes the continuation of current laws and reasonable estimates of projected variable revenues and costs.

Long range forecasts draw from forecasts performed by the State of Minnesota, Minnesota Council of Economic Advisors, Minnesota Builders Association and the Minnesota Association of Realtors. These data have been distilled and integrated, where convenient and valid, with District data and records.

Unless noted otherwise, the projections in the report do not reflect economic developments, legislative actions or actions taken by either the State of Federal governments after September 11, 2023, or the adoption of the 2024 budget.

BACKGROUND/CONTEXT

Below is an assessment of the 2024 budget conditions and outlook and a forecast of economic circumstances expected for 2025. The assessment analyzes expected revenues and expenditures through fiscal year 2024. This forecast assumes the continuation of

current laws and reasonable estimates of projected growth in the District economy measured primarily through permit applications.

Revenue must be estimated for all sources provided for in current law. Expenditures are estimated for all obligations imposed by law and those projected to occur because of inflation and variables outside the control of the Board of Managers.

The District uses a Planning, Programming, Budgeting and Execution system to organize, plan and fund pursuit and fulfillment of both its legislative responsibilities and mandates. The budget reflects decisions to tax and spend to fund an orderly pursuit of the District’s mission, goals, and objectives. Those decisions define the size of the District operations and its role in the local economy. Policymakers use the budget process to establish spending priorities and identify revenues to pay for those activities.

BUDGET OUTLOOK: 2024

The District’s General Fund Balance as of 3/31/24 was \$5,606,769. Revenue for 2024 are projected to be 5% (\$270,243) less than the May 2023 forecast and adopted budget. The adopted budget reserve balance of \$1,170,737 and cash flow account balance of \$3.05 million are unchanged from January levels.

Revenue Source	Adopted Budget	Projected	Variance	Pct Variance
Property Taxes	\$ 4,965,765	\$ 4,965,765	\$ -	0%
Special Assesments	-	-	-	#DIV/0!
Fees & Charges	298,423	159,180	(139,243)	-47%
Grants	314,536	314,539	3	0%
Other Revenue	28,042	(162,995)	(191,037)	-681%
Total	\$ 5,606,766	\$ 5,276,489	\$ (330,277.00)	-6%
Expenditre Sources	Adopted Budget	Actual	Variance	Pct Variance
Slaries & Benefits	\$ 1,981,605	\$ 1,951,881	\$ (29,724)	-1%
Professional Services	1,515,000	1,515,000	-	0%
Operating Expenses	1,294,651	1,204,025	(90,626)	-7%
Program Expenses	2,810,642	2,389,046	(421,596)	-15%
capital Equipment	166,708	161,707	(5,001)	-3%
Total	\$ 7,768,606	\$ 7,221,659	\$ 546,947	7%

Revenues

Total general fund revenues for 2024 are now forecast to be \$330,243 (-6%) less than prior estimates. The forecast for the District’s largest revenue source (property tax) is expected to be as levied. Revenue from fees is projected to be \$139,243 (-47%) less than forecast due to structural problems in the home building industry. The increase in Other revenue primarily reflects “carry over” of funds from 2023 and 2022 for multi-year projects.

Expenditures.

Expenditures planned for 2024 are similar in aggregate to the adopted budget and budgets of the past. Total general fund expenditures are now projected to be \$4,310,272 (-5%) less than was budgeted. Spending is marginally less than the adopted budget, again due primarily to the multi-year nature of construction and the difference between budgeted year and when full costs are realized.

Budgetary Growth and Changes.

When the 2024 budget was adopted (9/11/23) and implemented in January 2024, the budget reserve and surplus were at the amounts needed to meet the required Fund Equity. That balance was leveraged with the emergency funds for Aquatic Invasive Species Rapid Response and Emergency Response Funds to reduce the amount of cash held by the district. After the close of FY 2023, the actual surplus that carried forward was \$1,170,737. Three months into the new budget year we are seeing reductions in Permit Application fees from what was forecast and the timing of the receipt of grants have resulted in additional revenue appropriated from the fund balances (Where the reserves are held and accounted for) resulting in greater expenditures from that fund than planned.

On the expenditure side, both the rollover of 24 funds for incomplete or multi-year projects and the forecast for the remaining of the budget year, based on three months of largely variable costs in program and project expenditures, has led to an imbalance in the presentation of the forecasted budget. The budgetary impact of these timing and variation explains the structural imbalance in the 2024 budget as reported above.

ECONOMIC OUTLOOK: 2024-2025

The near-term economic outlook for Minnesota for the remainder of 2024 and all of 2025 has improved since the state's full Budget and Economic Forecast prepared in November 2023 and updated in January 2024. Unexpected growth in real GDP in late 2023, combined with the impacts of easing financial conditions since December have improved the outlook for the Minnesota economy. These improvements in macroeconomic conditions positively impact the economic outlook for Minnesotans and the District.

In the State's April forecast, the strengthened economic outlook for 2024 raises our expectation for growth in Minnesota's employment and wages. Beyond 2024, the demographic realities of an aging work force acts as the largest contributor to constraining employment growth and contributing to average wage growth (growth in wage and salary income per worker) through the extent of this forecast.

Four key economic issues have direct bearing and deserve consideration as the Board develops the budget for 2025.

1. Labor Market

Anoka County's February unemployment rate was 3.3%, 0.4% higher than the state average and 0.5% lower than the national average.

Minnesota's labor force participation rate, the share of the over-16 population that is either working or looking for work, was 68.1 percent in December, 5.6 percentage points above the U.S. rate and the fifth highest among states.

Minnesota over the year (OTY) payroll employment growth stood at 37,565 or 1.3%, up from January's 1.2% growth. The private sector added 15,274 jobs, or 0.6% in February, the same as January's 0.6% growth.

However, Minnesota's labor force declined by 6,600 people in December 2023 alone, the third consecutive month of labor force declines. The state economist has indicated that in December 2023, Minnesota's labor force was 28,400 below its level at the onset of the pandemic in February 2020.

Implications for 2025

- The labor force appears to be shrinking making it harder to find and attract qualified labor.
- Layoffs because of rises in costs, including taxes, would be unlikely.

2. Demographics

Since the pandemic the District's population growth has slowed due to a combination of factors, including deaths from COVID-19, fewer births, reduced international immigration, and less favorable net domestic migration. The slowing can be seen in the number of permit reviews performed by the Board since that time. In 2023, Minnesota's population growth returned to healthier levels, although it is still lower than in the 2010s. In 2023, 23,600 people are estimated to have been added to the state, compared to 7,400 in 2021 and -3,700 in 2022 (State of Minnesota, April 2024).

Minnesota's population growth is comprised of three parts:

- 1) International Migration was the primary driver of Minnesota's population growth in 2023, with 14,600 international immigrants added to Minnesota, on net, in 2023.
- 2) Natural Population Increase was the second driver of population growth in 2023 was the difference between the number of births and the number of deaths in the state. The natural population increased by nearly 14,000 people in 2023.
- 3) Net Domestic Migration in Minnesota tends to be positive, as gains in international immigration into Minnesota offset domestic net out-migration, the difference between residents that leave Minnesota for other states and those who move to Minnesota from other states.

Implications for 2025:

- Together, the impact of international migration and movement of residents around the U.S. resulted in an overall net increase of nearly 10,000 Minnesotans many have found their way to the north metro area.

- The District is experiencing a slight increase in cultural diversity and should begin to evolve its messaging and public information and outreach on a small scale.

3. **Wage and Salary Income**

A crucial part of budgeting and fulfilling District responsibilities is Salary and benefits. With the shortage of qualified personnel, the District will need to work hard to retain staff and invest in technologies that enhance productivity, wage and salary income per worker—or average wage income.

In November, the state forecasted that total wage income, the sum of all wages distributed, would increase 4.8 percent in 2024. In April they now expect wages to increase 5.0 percent in 2025 and decelerate to an average annual growth rate of 4.2% in 2026 - 2027.

Implications for 2025

- With only moderate growth in Minnesota employment in this forecast, average wage growth (growth in wage and salary income per worker) is expected to be the primary driver of growth in total nominal wage income through our forecast horizon of 2027.
- The forecasted amount exceeds forecasted average rates of inflation over the same period, implying improvements in real wages on average.

4. **Homebuilding Activity**

Demand:

High borrowing costs, rising sales prices, and limited inventory are keeping potential homebuyers on the sidelines.

- The 30-year fixed mortgage interest rate recently approached 8 percent for the first time since 2000 and has remained above 6 percent since September 2022.
- High rates have discouraged buyers of both new and existing homes and have “locked in” owners of existing homes, who could lose lower rates on their current mortgages if they sell in such a high-rate environment.
- Sales of existing Minnesota homes decreased 16.6 percent in 2023, and new listings in Minnesota decreased by 10.9 percent.

Supply:

As total home inventory remains constrained, Minnesota home prices continue to rise. The median sales prices for both metro-area homes and homes in greater Minnesota have continued to increase despite higher interest rates, declines in new listings, and declines in pending and closed sales.

- In January, the median price for metro-area homes was \$353,570, 3.1 percent higher than one year ago.

According to data through December from the U.S. Census Bureau, the total number of authorized residential building permits (not seasonally adjusted) in Minnesota fell from 31,883 in 2022 to 23,789 in 2023, a decline of 25.4 percent. The change is due

to a 12.7 percent decline in single-family housing permits and a 34.8 percent decrease in multi-family permits.

Implications for 2025

- The combination of higher interest rates and rising home prices are challenging affordability.
- In this forecast, the State economist estimates that national housing affordability reached a low point at the end of 2023 and will improve gradually through 2027.
- Minnesota Realtors Association estimates that the 30-Year fixed mortgage rate peaked at 7.3 percent in the fourth quarter of 2023 and will fall below 5.0 percent in 2027.
- The State and the Minnesota Association of Realtors and the Minnesota Builders Association expect total housing permits to remain the same 2024-2027.

ISSUES/CONCERNS/OPPORTUNITIES

1. 2024 Budget Outlook: Planning Estimates.

The forecast conducted for the Comprehensive Plan Capital indicates an expected increase in revenue for FY 2025 & 26, while program activities, presented as balanced in the comprehensive plan, are highly variable and likely to increase faster than the increase in large variable revenues such as grants. Revenues needed to implement the comprehensive plan and achieve the 2045 TMDL are projected to be \$5.3 million in 2025, \$5.8 million in 2026 and \$6.9 million in 2027.

	FY 2025	FY 2026	FY 2027
Planned Revenue	\$ 5,328,829	\$ 5,851,491	\$ 6,960,810
Planned Tax Levy	\$ 2,762,035	\$ 3,528,933	\$ 3,991,016
Pct Tax Levy	52%	60%	57%
Projected Costs	\$ 5,328,829	\$ 5,851,491	\$ 6,960,810
Water Quality Capital Expense	\$ 3,009,808	\$ 3,930,407	\$ 5,020,514
Pct Water Quality (TMDL) targeted costs	56%	67%	72%

NOTE 1: The planning estimates for FY 2026 & 27 inherently carry a higher degree of uncertainty than estimates for FY 2025. Revenue projections for FY 2026-27 are based on the November 2023 forecasts of the cost to address the TMDLs by 2045 and continue existing and scheduled operations. Expenditure projections assume that current law funding levels and policies continue unchanged, adjusted for caseload and enrollment changes authorized in law, as well as formula-driven growth.

NOTE 2: Planning estimates are not intended to predict surpluses or deficits three years into the future; rather, their purpose is to assist in determining how closely

ongoing expenditures are likely to projected future revenues based on trends in the economy and the level of spending that is needed to maintain programs and services. The FYs 2026 and 2027 planning estimates provide an important baseline against which the longer-term impacts and affordability of budget decisions can be measured.

2. **District Mission:** The District now operates under six state and federal mandates and is further directed, constrained, and restrained by another 70 statutes, rules and permits. At present, our largest challenge is achieving the Total Maximum Daily Loads (TMDLs) for the Impaired waters within the District by 2045.

A staff forecast developed in the fall of 2023 estimated a cost of more than \$103 million to achieve the TMDL or at least show a good faith effort by 2045. The financial and capital improvement plan, submitted for state review and approval, used an escalating investment approach to push capital investments beyond 2027. This approach is an effort to buy time and seek alternatives to extend the due date of 2045 and seek additional state and federal investment to reduce the impact to local taxpayers. This means that the District faces three years of gradually escalating costs, budgets and tax levies before those costs accelerate exponentially.

The question at hand for the Board is: As a special purpose unit of government focused on Comprehensive Water Management is the current mission, methods and means where the Board wants to take the District?

3. **District Performance and Trajectory:** The annual report provided a snap shot into District activities relative to overarching water resource management goals. The 2025 budget represents the financial commitment to the second and final year of phase 1 of the comprehensive plans. Phase 1 has been characterized by an emphasis on:
 - 1) Organizing, concentrating, and positioning District and city staff and programs, budgeting, authorization, and staffing expertise in an effort to advantageously place and position water management staff and organizations within the watershed.
 - 2) Conducting watershed wide monitoring, surveys, and inspections to establish and provide the ongoing information and intelligence needed for efficient and effective planning, programing, budget development and program and project execution to make progress on legislative goals.

The Board needs to discuss:

- Are we on the right path, are we doing the right things, or do we need to adjust?
- Is management doing those things in the most efficient and effective manner?

IMPLICATIONS FOR RESOURCE/ORGANIZATION

Possible Outcomes:

1. Stay the Course: Goal is to achieve TMDL. Budget reflects gradual increase in investment with focus on maintaining, protecting, and restoring the District water resources for the next 3 years and probably beyond. Administration involves keen situational awareness of opportunities and threats.

Domain	Implication/Outcome
Physical Resource	<ul style="list-style-type: none"> • Existing functions and services (such as drainage and flood mitigation) continue. • Obvious water quality improvements and restoration are put in place with measurable results 6-10 years in the future.
Social Setting	<ul style="list-style-type: none"> • Increasing number of people aware and generally supportive of explainable efforts and goals • Probable increase in complaints about cost and government overreach
Political/Economic/Managerial	<ul style="list-style-type: none"> • Potential amnesia by appointing authority and discomfort with rising tax levy. • Expressed discomfort with cost and rising property taxes.

2. Maintain Minimum Effort: Goal is to minimize and/or pace investment. Budget reflects changes in consumer price index and responsive investments to immediate tangible problems. Budget growth varies. Administration involves reaction to well defined problems.

Domain	Implication/Outcome
Physical Resource	<ul style="list-style-type: none"> • Tangible utilitarian uses and services such as drainage and flood control would thrive. • Intangible uses and threats to public health (such as water quality and wildlife) would suffer and probably get worse.
Social Setting	<ul style="list-style-type: none"> • Public willingness to pay would thrive until a tangible or mega problem or issue occurred. • District could become focus of growing broader environmental concern detracting from focused water resource management.
Political/Economic/Managerial	<ul style="list-style-type: none"> • Short term political satisfaction • Ultimately increased political volatility

Reductions In Risk To The Public Health, Safety And Welfare:

Staff believes that “Staying the course” provides the best risk management option available to the District. Included in the option is an annual assessment of performance and the operating environment which provide a rational and evidenced based approach to projecting costs and the public’s willing-to-pay

Emerging Opportunities to increase the chances of District success in fulfilling its statutory mission:

A recent trend in state grants has been the rise in monies available for projects that foster “resiliency.”

CONCLUSIONS

1. The 2024 Budget is fine and does not need amendment currently.
2. Although permit application revenues are down, there are significant concerns with their adequacy to cover cost and the adequacy of the escrow held to stabilize and, in some cases, complete projects such as wetland mitigation sites.
3. It will be economically important to retain existing staff and increase investment in training.
4. The District will continue to grow and become slightly more diverse, but at a slower rate than forecast in 2022 & 2023.
5. Most citizens within the District should experience rises in household income and a significantly decreased chance of layoffs. Such conditions typically translate into increased demand for the full breadth of beneficial water uses.
6. Home values will increase significantly.
7. To implement the comprehensive plan will require significant increases in the District levy for 2025, 26 and 27.

BUDGET DEVELOPMENT GUIDELINES

The following are District’s General Budget Development guidelines established by the Board of Manager in the Comprehensive Plan and used by District Staff while preparing the rough draft operating budgets. The guidelines are presented with a brief description of the outcome of each guideline as part of the budget process:

Budget Guidelines

- 1) The Board commits to a District Tax Capacity Rate that meets the needs of the organization and positions the District for long-term effectiveness using sustainable revenue sources and operational efficiencies.

Note: Tax Capacity rates of the District have increased decreased 46% since 2020. Owners of the median home in the District (\$407,440) pay \$74.62, or \$26.72 more than they did in 2023.

2) A fiscal goal that works toward establishing a General Fund balance for working capital at no less than 45% of planned 2025 General Fund expenditures and the preservation of emergency fund balances (emergency and disaster relief, facility management and information technology) through targeting revenue enhancements or expenditure limitations in the 2024 adopted budget.

Note: These fund balances have followed state auditor recommendations and are identified and designated at the first Board meeting of each year. The District also has in place Emergency Fund Balances such as the rapid response and AIS funds to address specific situations, but are not intended to provide for a complete solution.

3) A comprehensive review of the condition of capital equipment to ensure that the most cost-effective replacement schedule is followed. Equipment is be replaced based on a cost benefit analysis rather than a year-based replacement schedule.

Note: An annual review of Capital Equipment condition and need is scheduled for the May 27 Board meeting.

4) The use of long-term financial models that identify anticipated trends in community growth and financial resources that will help designate appropriate capital resources for future District needs. The financial models will be used in the budget planning process to ensure that key short-term fiscal targets are in line with long-term fiscal projections.

Note: The District annually prepares a qualitative assessment of the District's operating environment, a quantitative assessment and forecast of the District's existing budget and projected economic factors to determine the long-term impacts of present-day expenditures and financing decisions. Fiscal assumptions are based upon various financial indicators including growth factors, tax capacity valuations, and per capita spending.

5) A team approach that encourages strategic planning to meet immediate and long-term operational, staffing, infrastructure and facility needs.

Note: An annual report and assessment of watershed condition and District capability and capacity are performed during preparation of the annual report. The direction provided in that document is being integrated into various department work plans and budgets.

6) A management philosophy that actively supports the funding and implementation of the District's Comprehensive Plan as well as Board policies and goals, and a commitment to being responsive to changing community conditions, concerns and demands in a cost-effective manner.

Note: The Board of Manager formally adopted a District Mission statement in 2023 and approved a new DRAFT comprehensive plan in for public review and comment at the same time. Management, through these goals and values, pays special attention to fiscal trends, commercial & residential development, collaboration opportunities, service delivery, management assets and the sustainability of the water and related resources of the watershed.

RECOMMENDATION

1. Discuss report, Findings and Conclusions
 - a. Are we doing the right things to fulfill our legislative and social responsibilities?
 - i. If so why.
 - ii. If not, why not?
 - b. Are we being efficient and effective in the conduct of our business?
 - i. If so why.
 - ii. If not, why not?
2. Receive report.

COON CREEK WATERSHED DISTRICT
Request for Board Action

MEETING DATE: April 22, 2024
AGENDA NUMBER: 10
ITEM: Draft 2025 Budget Assumptions

AGENDA: Discussion

ACTION REQUESTED

Review and discuss.

PURPOSE & SCOPE OF ITEM

These budget assumptions Pertain to development of the 2025 budget. Budget assumptions are the underlying factors that influence the budget projections and estimates for 2025.

BACKGROUND

These budget assumptions are extensions of the qualitative projects articulated in the assessment of the 2024-25 operating environment and the more quantitative assessments and forecast made in the budget update and economic forecast. They also draw from the Budget guidelines offered at the end of the 2024-25 forecast.

To develop a DRAFT budget for 2025 the District will draw on both the quantitative and qualitative forecasts for the District's operating environment, the budget guidelines and the following assumptions:

ASSUMPTIONS

Assumptions, for our purposes are conditions or beliefs we will use to construct best guess estimates the revenues and costs needed to achieve the District's goals. To that end we will assume that:

1. **Economic Entity:** The activities (expenditures) of the District are separate from the activities of its Board and all other water resource agencies.
2. **Mandates, and Standards:** The existing adopted mandates and standards will remain in effect and not significantly alter the projected costs identified in the budget.
3. **Fiscal Period:** The activities and projects funded by the 2025 budget will occur during the period dating from January 1 to December 31, 2025.
4. **District Operations:** That the Board of Managers intends the District to operate and pursue its statutory responsibilities for the 2025 fiscal period.

5. **Inflation**: That an inflation rate of 3.3% will occur for the remainder of 2024 and a rate of 1.9% will occur during 2025.

Resource Assumptions:

6. **2055 Beginning Balance**: That there will be a zero-fund balance on January 1, 2025. This balance is due to current uncertainty.
7. **Property Taxes**: There will be a significant increase in property taxes on the order of 55%-63% increase almost all of which is identified in the district Draft capital improvement plan and targeted toward water quality and achieving the TMDLs by 2045.
8. **Fees**: That development that requires fees will remain the same leaving revenue flat from this source.
 - a. **Note**: Revenue from fees and charges, and permits, is based upon current activity levels and review of historic activity to ensure reasonableness.
9. **Grants**: The District will receive either the allotted portion at the beginning of an awarded grant or the balance of a completed whose project is scheduled to begin or complete during fiscal year 2025. The District will not count revenues applied for due to uncertainty in the receipt and/or realization of that revenue source.

Expenditure Assumptions:

10. **Salaries**: The District will assume and use a salary increase factor of 5.3% in its projection from today's dollars to provide for forecasted changes in the consumer price index and expected changes and factors in the labor market
11. **Professional Services**: The District will be retaining six professional services in 2025. Each service has different contracts and the proposed changes in rates are unknown at this moment.
12. **Operating Costs**: Fixed operating costs can be expected to increase by 2%. Variable cost will be estimated based on past and/or projected usage.
13. **Program and Capital Outlay Costs**: Estimated costs for these projects and activities will not be available until June.

RECOMMENDATION

1. Review and discuss.
2. Board could adopt or modify and adopt if the Board feels comfortable

**DRAFT ALTERNATIVE URBAN AREAWIDE REVIEW
NORTHTOWN MALL AND SURROUNDING AREA REDEVELOPMENT**

For:

City of Blaine



BlaineMN.gov

March 2024

By:



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I. EXECUTIVE SUMMARY

INTRODUCTION / BACKGROUND

In 2021, the City of Blaine initiated a study of redevelopment opportunities for the area of and around the aging Northtown Mall. Development and market trends involving aging commercial/retail areas are ever evolving and the city determined that planning for the future of this study area was a necessity. The city identified 245 acres in the southwest corner of the city as the study area. At the center of the district is the mall itself, which is generally surrounded by retail/commercial development. There is one existing multi-family residential (senior) project within the study area.

In 2022, with the assistance of Damon Farber Landscape Architects, the city adopted the Northtown District Vision Plan. The Vision Plan that was adopted provides a framework for future development of this study area that includes commercial/office uses, and medium and high density residential uses.

To prepare this area for future development, the City has elected to generate an AUAR for the study area so future developers can accurately predict approval processes and environmental concerns. Two development scenarios are being studied. Scenario 1 is consistent with the land uses in the existing comprehensive plan (as amended in 2023 for this area) and Scenario 2 is the land use plan that was produced through the visioning process and that is included in the Northtown District Vision Plan document. Both scenarios have varying amounts of retail/office and residential development Table 1.

Table 1 – Overview of Development Scenarios.

Land Use	Scenario 1 – Comprehensive Plan	Scenario 2 – Vision Plan
CC-Community Commercial	1,361,163 square feet	884,268 square feet
MDR-Medium Density Residential	29 units	97 units
MDR/CC-Medium Density Residential/Community Commercial	176 units/178,683 square feet	143 units/145,142 square feet
HDR-2/PC- High Density Residential Planned Commercial	660 units/134,165 square feet	2,011 units/408,837 square feet

II. SUMMARY OF MITIGATION MEASURES

A summary of mitigation measures by AUAR section is provided below.

COMPATIBILITY WITH LAND USE REGULATIONS MITIGATION PLAN

10.1	Rezoning of study area to reflect new zoning districts
10.2	Comprehensive Plan Amendment for Scenario 2 development

WATER, WASTEWATER, AND STORMWATER MITIGATION PLAN

12.1	A wetland delineation will be required prior to development of each site, as it develops.
12.2	Stormwater will meet the City of Blaine, Coon Creek Watershed District (CCWD), and the National Pollutant Discharge Elimination System (NPDES) stormwater permit requirements.
12.3	The stormwater management system will consist of ponding to meet stormwater requirements along with water reuse or filtration if infiltration is not possible.
12.4	Temporary erosion and sediment control measures will be implemented during the construction that meet the City of Blaine, CCWD, and NPDES permit requirements.
12.5	Improvements will be made at the intersection of University Avenue and Anoka County Road 10 to reduce flooding and better capture and convey stormwater from the area.
12.6	Depending on the final redevelopment layout, some sanitary sewers and watermains may need to be reconfigured and reconstructed.
12.7	Groundwater wells will be properly sealed by a licensed contractor prior to redevelopment.
12.8	A chloride management plan will be implemented by each site developer, if required by state and local rules..
12.9	Stormwater that is directed to on-site wetlands will be treated prior to discharge into the wetlands.
12.10	Wastewater capacity in Metropolitan Council Environmental Services (MCES) Interceptor 4-SL-534 should be verified with MCES prior to the Sanitary Sewer Extension Permit application, and any billing adjustments for that unmetered service area should be coordinated with MCES and the City of Spring Lake Park as development progresses.

CONTAMINATION/HAZARDOUS MATERIALS/ WASTES MITIGATION PLAN

13.1	If building demolition involves removal of regulated wastes, waste will be hauled to a facility licensed to handle such waste.
13.2	A Response Action Plan will be prepared by developers during site planning to mitigate the potential for encountering contamination.
13.3	Construction-related waste will be recycled or disposed of in approved facilities, as appropriate. Toxic or hazardous substances used during project construction or operations (i.e., petroleum products, hydraulic fluid, and other chemical products) will be stored and disposed of following local and state guidelines.
13.4	Recycling for residential units and commercial buildings in the study area will be in accordance with the 2016 Recycling Law (Minnesota Statutes Chapter 115A, Section 115A.151 and Section 115A.552), and City Leg. Code § 357.09 that requires source separation and curbside pick-up within the City.

FISH, WILDLIFE, PLANT COMMUNITIES, AND SENSITIVE ECOLOGICAL RESOURCES

14.1	Follow current USFWS guidelines for tree removal to avoid impacts to NLEB.
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14.2	Plant native, weed-free, species in re-vegetated areas, where deemed appropriate through development review.
14.3	Incorporate pollinator species into landscaped planting areas, where deemed appropriate through development review.
14.4	Invasive species will be controlled during site construction by inspecting and decontaminating equipment when moving between sites.
14.5	Utilize wildlife-friendly erosion control blanket to avoid entanglement, where deemed appropriate through development review..

GEOLOGY, SOILS, AND TOPOGRAPHY MITIGATION PLAN

11.1	Obtain Watershed District permits
11.2	Prepare SWPPP and Erosion and Sediment Control Plans for each development site.

VISUAL IMPACT MITIGATION PLAN

16.1	A lighting and photometric plan will be developed and submitted to the City of Blaine during the site planning review and approval stage.
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AIR MITIGATION PLAN

17.1	During construction, dust emissions will be controlled by watering, sprinkling, or calcium chloride applications, as necessary.
17.2	During construction, contractors will maintain streets, alleys, sidewalks, and other public spaces adjacent to construction activities to keep them free from dust, litter, and other debris in accordance with Blaine City Ordinance.

GHG MITIGATION PLAN

18.1	Developers will consider design strategies and sustainability measures that could reduce emissions.
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NOISE MITIGATION PLAN

19.1	Construction activities will be conducted in compliance with the City of Blaine noise ordinances to minimize noise levels and disturbances, and construction activities will cease from 10:00 pm to 7:00 am.
19.2	The study area will be constructed so that noise sensitive areas (i.e., residential units) will have sufficient setbacks from noise sources to limit noise disturbances.

TRANSPORTATION MITIGATION PLAN

20.1	<p>Implement intersection improvements outlined in traffic study at:</p> <ul style="list-style-type: none"> • CSAH 10 and the new 85th Avenue Extension • TH 47 & 85th Avenue • CSAH 10 & University Avenue • University Avenue & 89th Avenue • University Avenue & 91st Avenue • CSAH 10 & Able Street • CSAH 10 & 85th Avenue Extension • CSAH 10 & 7th Street • Jefferson Street & Mall Entrance • TH 47 Northbound Ramp & CSAH 10 • TH 47 Southbound Ramp & CSAH 10 • CSAH 10 & Jefferson Street
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20.2	Implement proposed Transit plans as outlined in the Vision Plan (Scenario 2)
20.3	Construct trail and sidewalk connections within the study area and to the surrounding network.
20.4	Traffic studies will be updated, as needed, as development progresses.

III. DRAFT AUAR

PROJECT TITLE

Northtown Mall and Surrounding Area Redevelopment

PROPOSER

Proposer: City of Blaine
Contact Person: Erik Thorvig
Title: Community Development Director
Address: 10801 Town Square Drive NE
City, State, Zip: Blaine, MN 55449
Phone: 763.785.6147
Email: ethorvig@blainemn.gov

RGU

RGU: City of Blaine
Contact Person: Sheila Sellman
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Email: ssellman@blainemn.gov

REASON FOR EAW PREPARATION

AUAR Guidance: Not applicable to AUAR

PROJECT LOCATION

County: Anoka
City/Township: City of Blaine
PLS Location (¼, ¼, Section, Township, Range): SW ¼ SW ¼, S31, T31N, R23W
Watershed (81 major watershed scale): Mississippi River Twin Cities
GPS Coordinates: X: -93.262258, Y: 45.128072
Tax Parcel Number(s):

313123320006	313123230008	313123230058
313123330011	313123340003	313123330008
313123430007	313123310017	313123320009
313123440111	313123310011	313123320005
313123430050	313123430002	313123330001
313123310009	313123430047	313123430049
313123310014	313123430055	313123230059
313123230057	313123230010	313123310016
313123230003	313123310013	313123340010
313123330005	313123320019	313123340008
313123430005	313123430044	313123230011
313123430056	313123310021	313123340009
313123430045	313123230043	313123320018
313123440006	313123320013	313123320020
313123230004	313123330009	313123340011

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313123310019	313123310020	313123330014
313123440021	313123230001	313123330015
313123230042	313123320011	
313123230009	313123330007	

Each of the following are included in the AUAR:

- Figure 1 – Project Location
- Figure 2 – USGS Topographic Survey
- Figure 3 – Existing Land Use (conforms to Scenario 1)
- Figure 6 – Zoning Map

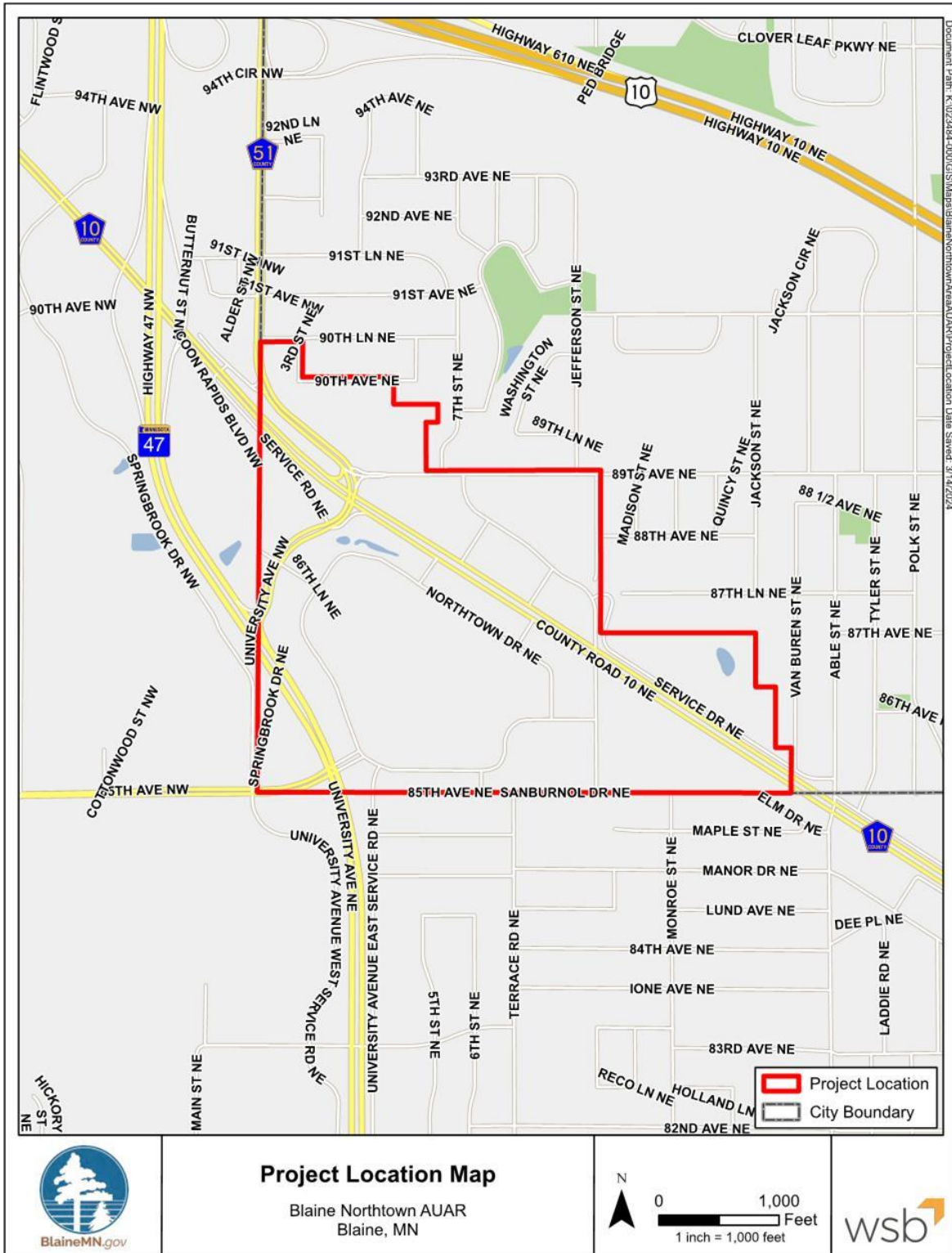


Figure 1 - Project Location

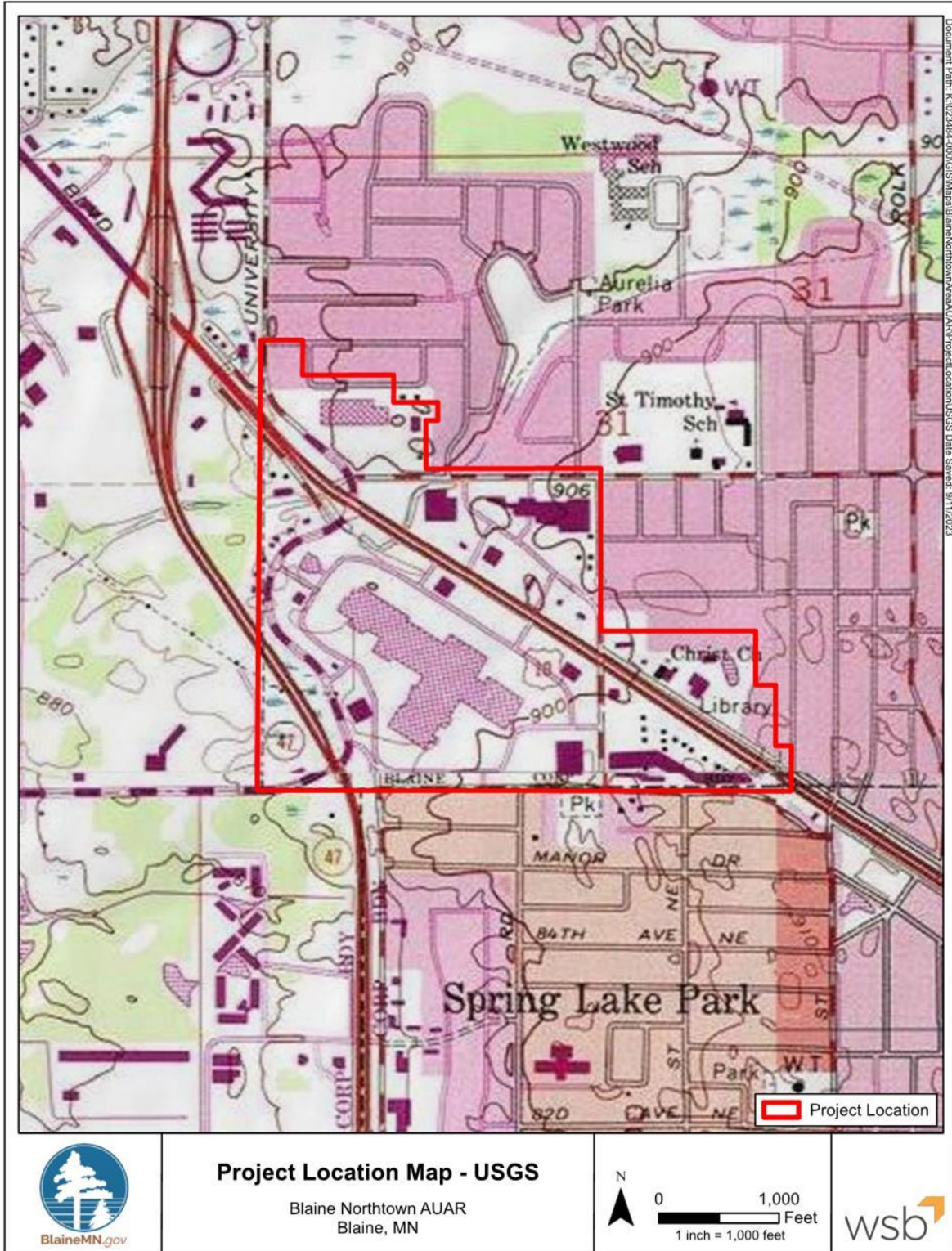


Figure 2 - Project Location - USGS

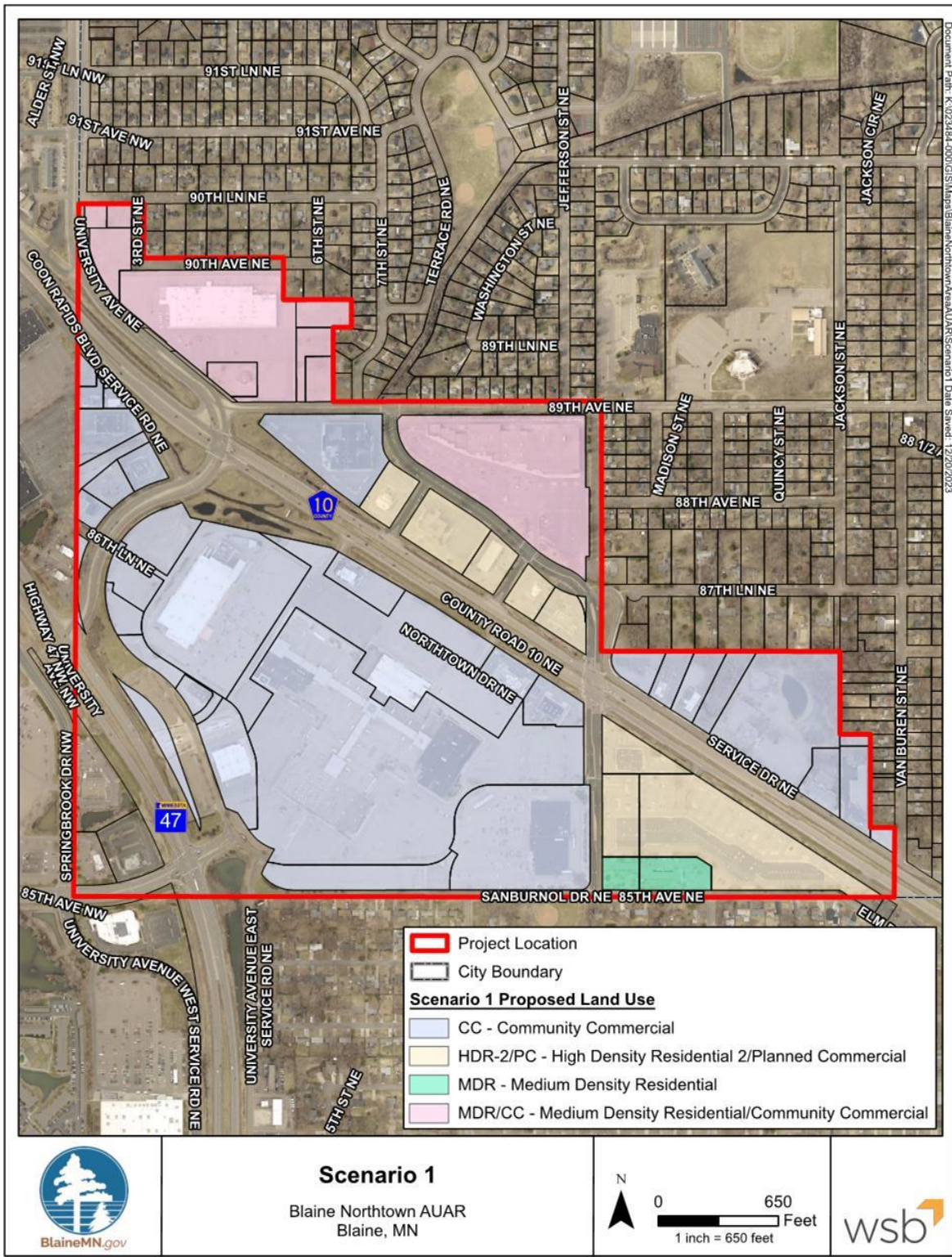


Figure 3 - Scenario 1: Proposed Land Use

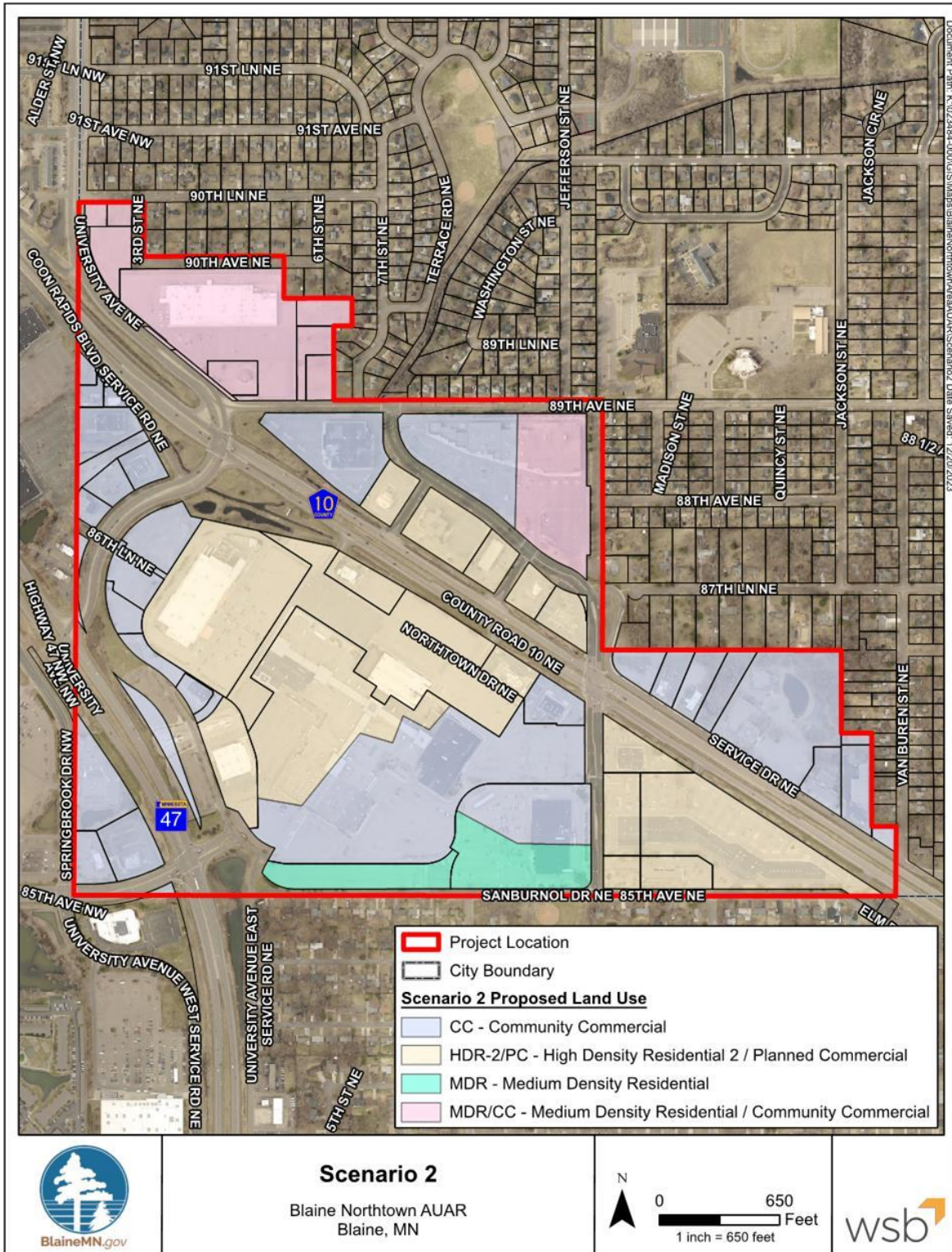


Figure 4 - Scenario 2: Proposed Land Use

DESCRIPTION

AUAR Guidance: Instead of the information called for on the EAW form, the description section of an AUAR should include the following elements for each major development scenario included:

- *Anticipated types and intensity (density) of residential and commercial/warehouse/light industrial development throughout the AUAR area.*
- *Infrastructure planned to serve development (roads, sewers, water, stormwater system, etc.). Roadways intended primarily to serve as adjoining land uses within an AUAR area are normally expected to be reviewed as part of an AUAR. More “arterial” types of roadways that would cross an AUAR area are an optional inclusion in the AUAR analysis; if they are included, a more intensive level of review, generally including an analysis of alternative routes, is necessary.*
- *Information about the anticipated staging of various developments, to the extent known, and of the infrastructure, and how the infrastructure staging will influence the development schedule.*

Important Note: Every AUAR document MUST review one or more development scenarios based on and consistent with the RGU’s Comprehensive Plan in effect when the AUAR is officially ordered. (This is equivalent to reviewing the “no-build” alternative in an EIS.) If an RGU expects to amend its existing Comprehensive Plan, it has the options of deferring the start of the AUAR until after adopting the amended plan or reviewing developments based on both the existing and amended comprehensive plans; however, it cannot review only a development based on an expected amendment to the existing plan. Also, the rules require that one or more development scenarios analyzed must be consistent with known development plans of property owners within the AUAR area.

The City of Blaine identified the Northtown District as an area for redevelopment that would reflect changing needs of retailers and the changing multi-family residential market. The Northtown District was the topic of the redevelopment study driven by the city with the help of Damon Farber Landscape Architects. The goal of this study was to determine how the area should look upon future redevelopment and the final plan includes transforming the district into a vibrant mixed-use neighborhood. The final Northtown District Vision Plan reflects public input from citizens and elected and appointed officials of the city.

The AUAR study area (Northtown District) is located in the southwest corner of the city and it consists of the area of and around Northtown Mall (245 acres). Within the study area, there is a multi-story senior housing building and the Anoka County Library across County Highway 10. The Northtown Mall Shopping Center is at the center of the district and is surrounded by surface parking lots and retail shops. The district is dominated by single story commercial buildings surrounded by low density residential areas outside of the study area.

The City is proposing to redevelop the area of and surrounding the Northtown Mall into a mixed use neighborhood. Two development scenarios have been evaluated in this AUAR Table 2. Both scenarios have similar land uses but contemplate different development intensities or block lengths.

Scenario 1 is consistent with the existing Comprehensive Plan (including an amendment in 2023). It includes community commercial, medium - high density residential, and planned commercial developments.

Scenario 2 is consistent with the City’s Northtown District Vision Plan and would develop the study area to include community commercial, medium-high density residential, planned

commercial and community commercial mixed with medium-high density residential. The proposed densities between the two scenarios are summarized in Table 2.

Table 2 - Overview of Development Scenarios

Land Use	Scenario 1 – Comprehensive Plan	Scenario 2 – Vision Plan
CC-Community Commercial	1,361,163 square feet	884,268 square feet
MDR-Medium Density Residential	29 units	97 units
MDR/CC-Medium Density Residential/Community Commercial	176 units/178,683 square feet	143 units/145,142 square feet
HDR-2/PC- High Density Residential Planned Commercial	660 units/134,165 square feet	2,011 units/408,837 square feet

Improvements to infrastructure within the study area will serve the needs of the proposed developments in all scenarios.

Either of the development scenarios will require modifications to utility services (i.e., water, sanitary sewer, electric, gas, and telecommunications). Future developers will work with the City of Blaine to construct the public utilities for the proposed actions. All utilities will be constructed underground per Blaine ordinances. Stormwater management will be developed to manage run-off and treatment (please see **Section 11**).

Improvements to infrastructure or new infrastructure will be consistent with City of Blaine requirements and all applicable standards. New infrastructure construction may include new stormwater piping, stormwater basins, public roadways, trails, and sidewalks and potential rerouting of watermain and sanitary sewer.

Development within the Northtown study area is expected to begin when the market dictates the creation of the elements of the plan. Full build out is anticipated to be complete in 15-20 years.

In either scenario, the goal is to reduce the carbon footprint of the development, provide responsible material and waste stream management, and create effective, integrated, and visible stormwater treatment. The development plans will be evaluated to reduce as much as practicable the carbon footprint of the new development.

CLIMATE ADAPTATION AND RESILIENCE

Describe the climate trends in the general location of the project (see guidance: Climate Adaptation and Resilience) and how climate change is anticipated to affect that location during the life of the project.

For the general project location, trends in precipitation, temperature, flood risk, and cooling degree days have been analyzed and described below. Some of the climate projections

summarized below use Representative Concentration Pathways (RCPs), which are greenhouse gas concentration scenarios used by the Intergovernmental Panel on Climate Change.¹

Precipitation

According to the Minnesota Climate Explorer, the historic average precipitation level in Anoka County between 2000 and 2022 was 31.5 inches with the lowest range in 2021 (21.94 inches) and the highest average in 2002 (41.01 inches).² Average annual precipitation in Anoka County from 2040-2059 is projected to be 32.79 inches under RCP 4.5. From 2080-2099, average annual precipitation is projected to be 33.62 inches under RCP 4.5 and 35.87 inches under RCP 8.5.

Temperature

According to the Minnesota Climate Explorer, the historic average temperature in Anoka County between 2001 and 2021 was approximately 45.01°F with the lowest average in 2014 (40.93°F) and the highest average in 2012 (48.38°F). The average annual temperature in Anoka County is projected to increase to 48.42°F from 2040 to 2059 under RCP 4.5 (intermediate emissions pathway). In 2080-2099, average annual temperature is projected to further increase to 50.84°F and 54.58°F under RCP 4.5 and 8.5 (high emissions pathway), respectively.

Urban Heat Island

Surfaces and structures such as roads, parking lots, and buildings absorb and re-emit more heat from the sun than natural landscapes. This can significantly raise air temperature and overall extreme heat vulnerability in urban areas where there are dense concentrations of these surfaces. This is referred to as urban heat island effect. According to the Metropolitan Council's Extreme Heat Map Tool, the AUAR study area is located in an area of medium heat vulnerability.³

Flood Risk

Climate change can exacerbate the frequency and intensity of extreme rainfall events and associated flooding in some locations. According to Flood Factor, a tool that identifies a property's risk of flooding, the study area has a minimal risk of flooding despite increases in extreme rainfall events.⁴ However, due to local information we know that this area experiences moderate and severe localized flooding, so this AUAR will identify potential mitigation measures.

Cooling Degree Days

Degree days are based on the assumption that when the outside temperature is 65°F, heating or cooling is not needed to be comfortable, as defined by the National Weather Service. Degree days are the difference between the daily temperature mean and 65°F. If the temperature mean is above 65°F, 65 is subtracted from the mean and the result is the cooling degree days. For example, if the mean temperature over a 24-hour period is 70°F, then there have been 5 cooling degree days.⁵ Cooling degree days are used as a proxy to estimate cooling needs for buildings.

¹ RCP 4.5 is an intermediate scenario in which emissions decline after peaking around 2040, and RCP 8.5 is a worst-case scenario in which emissions continue to rise through the 21st century. Climate Explorer Metadata available at:

<https://www.dnr.state.mn.us/climate/climate-explorer-metadata.html>

² Available at: <https://arcgis.dnr.state.mn.us/climateexplorer/main/historical>

³ Available at: <https://metro council.org/Communities/Planning/Local-Planning-Assistance/CVA/Tools-Resources.aspx>

⁴ Available at: https://riskfactor.com/property/398-northtown-drive-blaine-mn-55434/270744360_fsid

⁵ Available at: https://www.weather.gov/key/climate_heat_cool

According to Heat Vulnerability in Minnesota, the number of cooling days in 2019 for Anoka County was 379. The number of cooling days in 2050 for Anoka County is projected to be 453 and 598 for RCP 4.5 and 8.5, respectively.⁶

For each Resource Category in the table below: Describe how the project’s proposed activities and how the project’s design will interact with those climate trends. Describe proposed adaptations to address the project effects identified Table 3.

Table 3 - Climate Considerations

Resource Category	Climate Considerations	Project Information	
		Climate Change Risks and Vulnerabilities	Adaptations
Project Design	Aspects of building architecture/materials choices and site design may impact urban heat island conditions in the surrounding area, including changing climate zones, temperature trends, and potential for extended heat waves.	In the coming decades, the location of the study area is anticipated to experience: <ul style="list-style-type: none"> • Increased annual precipitation and more frequent heavy rainfall events • Increased annual temperatures • Increased freeze thaw cycles • Medium urban heat island effect 	<ul style="list-style-type: none"> • Buildings could be constructed with rooftop-ready infrastructure for green roof or solar power generation • Building shells could be energy efficient • Proposed climate smart tree plantings and landscaping will reduce runoff and mitigate urban heat island effect
Land Use	No critical facilities (i.e., facilities necessary for public health and safety, those storing hazardous materials, or those with housing occupants who may be insufficiently mobile) are proposed.	Portions of the proposed development may experience flooding during extreme rain events.	<ul style="list-style-type: none"> • Design of the site and stormwater management facilities will be completed to reduce the risk of flooding in the AUAR study area. • Buildings will be set at elevations to maintain clearance above flood elevations per Blaine City code. • Infiltration areas may be used and would improve water quality and stormwater runoff in the project vicinity.
Water Resources	Current Minnesota climate trends and	Water resources in the general project area may	<ul style="list-style-type: none"> • Developer will consider using native plants and

⁶ Available at: https://maps.umn.edu/climatehealthtool/heat_app/

	<p>anticipated climate change in the general location of the project may influence water resources.</p>	<p>become warmer, more polluted, and change in volume due to increased temperatures and runoff. There may be more evaporation and water available when it rains leading to an increase in the flood potential. It is projected that there will be more severe storm events with high, intense rain amounts which will require drainage systems to be adequately maintained to accommodate for the increase in water volume.</p>	<p>perennials for landscaping and stormwater features will absorb water and reduce the water demand for irrigation.</p> <ul style="list-style-type: none"> Stormwater BMPs will be designed to weather a 100-year storm event in accordance with City/Watershed requirements as the property is developed.
<p>Contamination / Hazardous Materials/Wastes</p>	<p>Current Minnesota climate trends and anticipated climate change in the general location of the project may influence the potential environmental effects of generation/use/storage of hazardous waste and materials.</p>	<p>The proposed development is not anticipated to generate hazardous waste or materials.</p>	<p>Not applicable.</p>
<p>Fish, wildlife, plant communities, and sensitive ecological resources (rare features)</p>	<p>Current Minnesota climate trends and anticipated climate change in the general location of the project may influence the local species and suitable habitat.</p>	<p>Suitable habitat for species may become unsuitable due to land use changes, increased temperature, and runoff.</p>	<ul style="list-style-type: none"> Native plantings and stormwater BMPs will provide suitable habitat for small mammals, insects, and bird species that currently utilize the existing developed area.

COVER TYPES

AUAR Guidance: The following information should be provided:

- *A cover type map, at least at the scale of a USGS topographic map, depicting:*
 - *Wetlands (identified by Circular 39 type)*
 - *Watercourses (rivers, streams, creeks, ditches)*
 - *Lakes (identify public waters status and shoreland management classification)*
 - *Woodlands (break down by classes where possible)*
 - *Grassland (identify native and old field)*
 - *Cropland*
 - *Current development*

- An “overlay” map showing anticipated development in relation to the cover types. This map should also depict any “protection areas,” existing or proposed, that will preserve sensitive cover types. Separate maps for each major development scenario should be generally provided.

The study area encompasses approximately 245 acres. The existing and proposed land cover types and their respective acreages are provided in Table 4.

Table 4 - Overview of Existing and Proposed Land Uses

Land Use	Existing Conditions (acres)	Scenario 1 – Comprehensive Plan (acres)	Scenario 2 – Vision Plan (acres)
Open Space	17	8.8	8.8
Lawn/landscaping	30.5	97.2	97.2
Impervious Surface	195	132	132
Bodies of Water	2.5	7	7
Other (describe)	0	0	0
Total	245	245	245

PERMITS AND APPROVALS

AUAR Guidance: A listing of major approvals (including any comprehensive plan amendments and zoning amendments) and public financial assistance and infrastructure likely to be required by the anticipated types of development projects should be given for each major development scenario. This list will help orient reviewers to the framework that will protect environmental resources. The list can also serve as a starting point for the development of the implementation aspects of the mitigation plan to be developed as part of the AUAR.

The anticipated government permits and approvals required for the proposed actions are provided in Table 5.

Table 5 - Anticipated Permits and Approvals

Unit of Government	Type of Application	Status
Federal		
US Army Corps of Engineers	Section 404 Permit	To be applied for
	Wetland delineation concurrence	
State		
MN Department of Transportation	Right-of-Way Permit	To be applied for
Pollution Control Agency	National Pollutant Discharge Elimination System Construction Storm Water Permit	To be applied for
	Sanitary Sewer Permit	To be applied for
	Section 401 Water Quality Certification Permit	To be applied for if Section 404 permit is needed
Department of Natural Resources	Temporary dewatering for construction (Public Works Permit)	To be applied for
	Long-term DNR Water Appropriation Permit if dewatering or sump pumping in volumes that exceed 10,000 gallons per day or one million gallons per year.	To be reviewed and applied for if threshold is anticipated to be met
Department of Health	Well sealing / abandonment permit	To be applied for
	Watermain plan review	To be applied for
	Asbestos abatement/removal	To be applied for, if needed

Regional/ County/ Local		
Anoka County	Right-of-Way Permits	To be applied for
	Road access permit	To be applied for
City of Blaine	Alternative Urban Area-wide Review	In process
	Site plan review	To be applied for
	Rezoning and other required land use applications as may be required	To be applied for
	Preliminary and final plat approvals	To be applied for
	Development agreements	To be applied for
	Utility Construction permits	To be applied for
	Earth Removal/Land Reclamation permits	To be applied for
	Driveway and Construction Right of Way permits	To be applied for
	Certificate of Occupancy	To be applied for
	Building Permit	To be applied for
	Permit for construction of public improvements	To be applied for
	Right-of-way excavation and obstruction permits	To be applied for
	Sanitary sewer utility connection permits	To be applied for
	Storm sewer connection permit	To be applied for
Watershed District	Permit for stormwater management, erosion and sediment control, drainage, etc.	To be applied for
	Wetland Conservation Act approval	To be applied for
Metropolitan Council Environmental Service	Sanitary sewer extension permit	To be applied for

LAND USE

a. Existing and Planned Land Uses and Zoning

Existing land use of the site as well as areas adjacent to and near the site, including parks, trails, prime or unique farmlands.

The existing land use in the study area is primarily community commercial development surrounded by surface parking lots. At the center of the area is the Northtown Mall which was opened in 1972. The Northtown Mall encompasses a large portion of the footprint of the site and is a large contributor to the impervious surface with its surrounding parking lots. Major arterial roadways that serve the site include TH 47 and CR 10. The site includes a multi-story senior housing building and the Anoka County Library. The mall, senior housing building, and library are surrounded by retail/commercial shops and services on-site.

Residential areas to the north, west and south are located outside of the study area. There is a range of local parks nearby including Springbrook Nature Center located approximately 0.10 miles to the west. Sanburnol Park is a Spring Lake Park city park located adjacent to the site to the south. A paved city trail borders the site to the north and connects to Blaine city parks to the north. The trail facilities connect to sidewalks in the surrounding area that provide access to some parks and open space, however there are few parks or trailways within the existing study area itself (Figure 5). There is no farmland within or adjacent to the study area.

Current zoning on the site is largely B-3 (Regional Commercial), with some B-2 (Community Commercial) parcels (Figure 6). The senior housing development on the southwest side of the study area is zoned RF (Residential Flex), which is the city's version of a Planned Unit Development. A new Highway 10 Mixed Use zoning district is being proposed for the site.

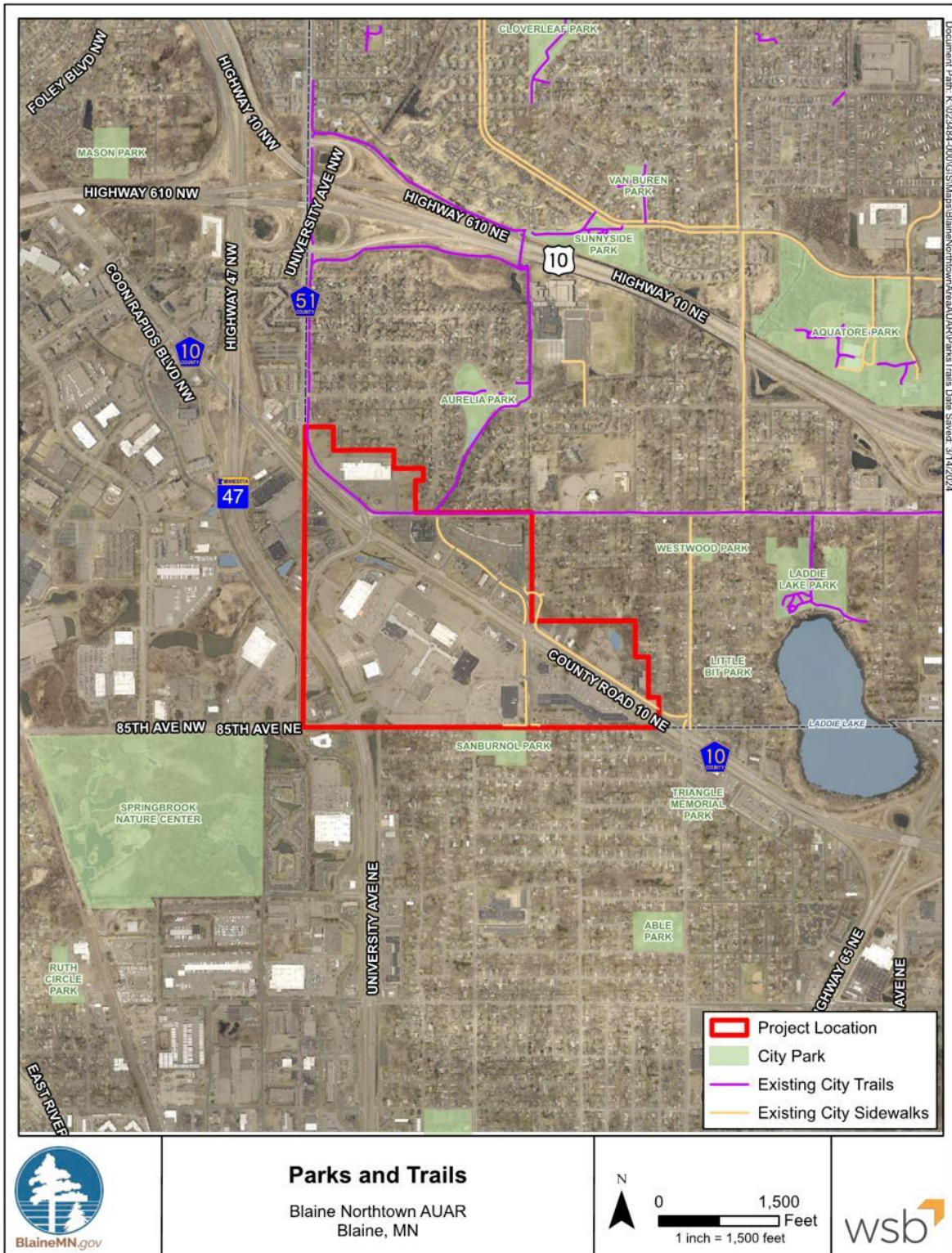


Figure 5 - Parks and Trails

Zoning Map

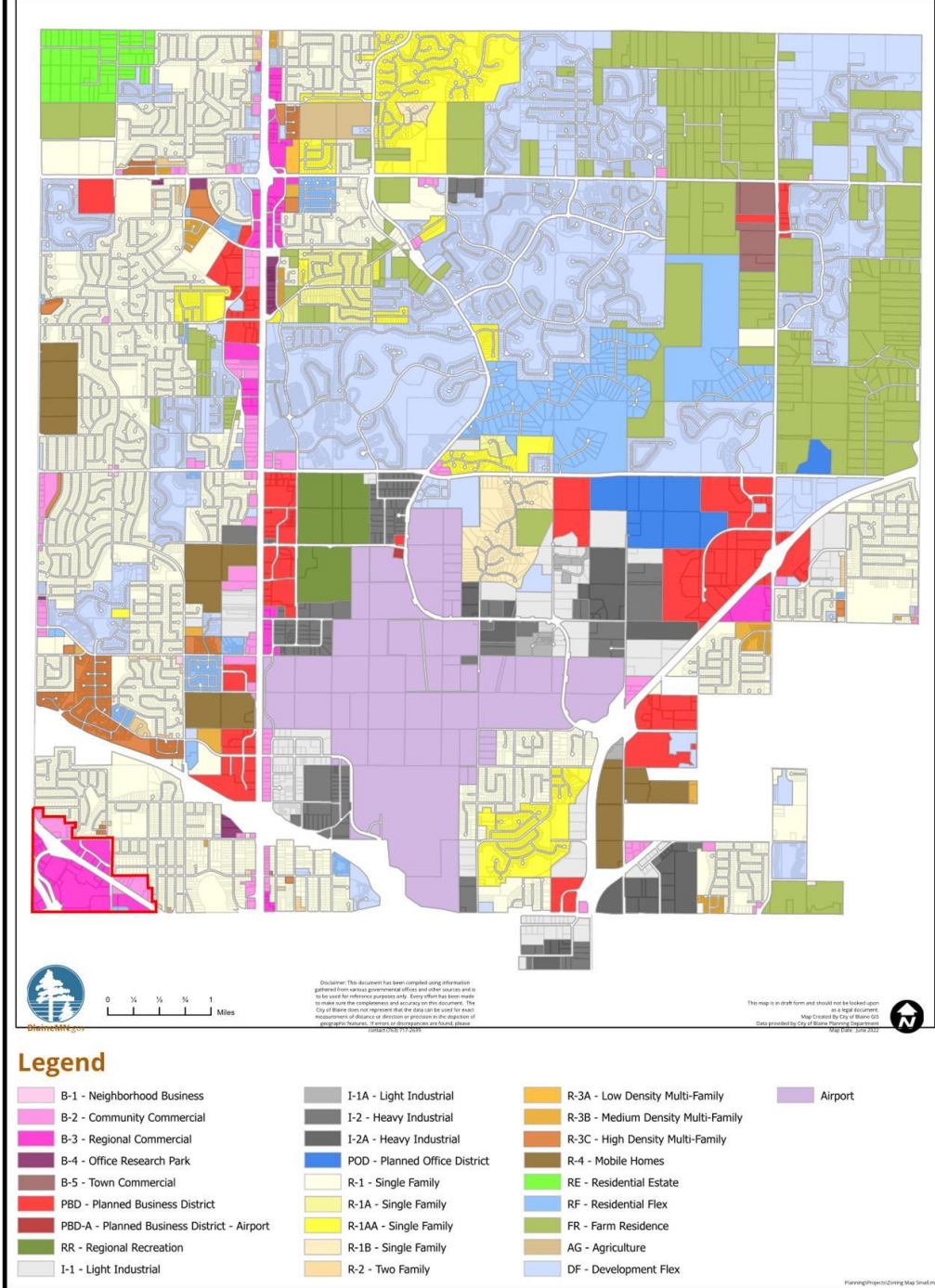


Figure 6 – Zoning Map

Planned land use. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

The scenarios proposed within the study area provide a mix of commercial, office and residential land uses. Scenario 1 (existing Comprehensive Plan) incorporates more commercial uses than residential uses, though both medium and high-density residential uses have been planned for in this scenario. Scenario 2 (Northtown District Vision Plan) includes a more mixed-use vision, which incorporates the commercial, retail, office and residential uses with parks, open spaces and parking incorporated both above and below ground. Small blocks and connected streets are planned to make the area more accessible for walking and biking while parks and open spaces will create gathering spaces for residents and visitors. Select streets are extended into the site to help distribute traffic into and through the area.

Scenario 2 calls for a mixed-use center at the core of the site while smaller retail establishments will be incorporated into the design with housing uses located above. In both scenarios, a medium density residential node will be located in the northwest quadrant of the site.

Development in the study area will conform with the City's stormwater management program as well as the Coon Creek Watershed District (CCWD) plan and policies.

Of note in Scenario 2 is a reimagined County Road 10 which runs northwest to southeast across the study area. The plan envisions a narrower and more compactly developed County Road 10, with more urban street fronts, wide pedestrian sidewalks and trails, tree plantings, lighting and signage.

Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The study area is currently zoned B-2 (Community Commercial) in the northwest and southeast portions of the site, B-3: Regional Commercial through the central portion of the site, and a small block zoned RF: Residential Flex along the southern boundary of the site. Spring Lake Park has zoned the adjacent areas directly south of the study area as primarily Single Family Residential with some small areas of Neighborhood and Service Center Commercial along CR 10. To the west, the city of Coon Rapids has zoned the adjacent parcels Community Commercial and General Commercial. Fridley has zoned the adjacent areas southwest of the study area as General Business District.

A FEMA Flood Hazard Zone can be found within the site along CR 10 NE at the intersection of University Avenue. This feature is attributed to Anoka County Ditch 17, otherwise known as Springbrook Creek, that runs through the area. Some sections of Ditch 17 (Springbrook Creek) are daylight while others are piped and flow through the City of Fridley and eventually to the Mississippi River.

Upon redevelopment, it is likely that parcels will need to be rezoned to reflect new zoning districts established for this area (at a later date), or they will be rezoned to Highway 10 Mixed Use District.

b. Compatibility with Plans

AUAR Guidance: Water-related land use management districts should be delineated on appropriate maps, and the land use restrictions applicable in those districts should be described.

If any variances or deviations from these restrictions within the AUAR area are envisioned, this should be discussed.

Scenario 1 is in conformance with the current Comprehensive Plan. Scenario 2 reflects the Northtown District Vision Plan that was approved by the City Council in 2022. Scenario 2 would require an amendment to the Comprehensive Plan.

The City of Spring Lake Park has the areas directly south of the study area planned for Low Density Residential with areas of Commercial along CH 10⁷. The City of Coon Rapids has planned Commercial Mixed Use (~30% Residential, 10 to 50 housing units/acre) for the areas directly west of the study area⁸. The City of Fridley has planned Commercial for the parcels directly southwest of the study area⁹.

The proposed land uses in all scenarios are compatible with the adjacent land uses.

c. Measures to Mitigate Incompatibility

Any zoning inconsistencies and mitigation measures for any of the development scenarios will be addressed through the City’s land use approval process. Proposed project plans will address relevant mitigation measures before final approval by the City.

Item No.	Mitigation Description
10.1	Rezoning of study area to reflect new zoning districts
10.2	Comprehensive Plan Amendment for Scenario 2 development

GEOLOGY, SOILS, AND TOPOGRAPHY

AUAR Guidance: A map should be included to show any groundwater hazards identified. A standard soils map for the area should be included.

- a. Geology: Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.**

Information from the Anoka County Geologic Atlas, the Anoka County Soil Survey, and the Minnesota Well Index were used for this analysis.

According to the 2018 Minnesota Geologic Survey maps, the AUAR study area lies above Paleozoic bedrock, and the bedrock formation generally lies within the upper Cambrian and lower Ordovician systems. The bedrock depth varies at the site between 101 and 400 feet below grade and consists predominantly of the Prairie du Chien Group, with the Jordan sandstone in the northern and southeastern portions of the study area. The Prairie du Chien Group consists of medium to thick bedded dolostone, sandy dolostone, and sandstone and the Jordan sandstone consists of medium to coarse grained friable, quartzose sandstone.

⁷ [Spring Lake Park Comprehensive Plan](#)
⁸ [Coon Rapids Comprehensive Plan - Chapter 2 Land Use](#)
⁹ [Fridley Comprehensive Plan - Chapter 1 Land Use](#)

There are no known sinkholes, unconfined/shallow aquifers, or karst conditions located within the study area.

- b. Soils and Topography: Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability, or other soil limitations, such as steep slopes or highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections, or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii.**

AUAR Guidance: The number of acres to be graded and number of cubic yards of soil to be moved need not be given; instead, a general discussion of the likely earthmoving needs for development of the area should be given, with an emphasis on unusual or problem areas. In discussing mitigation measures, both the standard requirements of the local ordinances and any special measures that would be added for AUAR purposes should be included. A standard soils map for the area should be included.

The site soil information was retrieved from the U.S. Department of Agriculture Web Soil Survey database. According to the Web soil survey, the study area is comprised of 7 different soil types with textures ranging from fine sand to mucky peat Table 6. The hydric soils rating indicates that the majority (73.1 percent) of the study area is comprised of non-hydric or predominantly non-hydric soils and the remaining (26.8 percent) soils are all hydric and predominantly hydric soils. The erosion hazard rating indicates that the study area is entirely comprised of non-highly erodible soils, meaning that some erosion is not likely, but erosion-control measures may be needed (Figure 7).

Table 6 - Soil Types and Respective Coverages

Map unit symbol	Map unit name	Acres within study area	Percent of study area	Percent hydric	Erosion hazard rating	Farmland Classification
lw	Isanti fine sandy loam	46.9	19.1	93	Non-Highly Erodible	Not Prime Farmland
LnA	Lino loamy fine sand, 0 to 4 percent slopes	56.1	22.9	5	Non-Highly Erodible	Farmland of Statewide Importance
Mk	Millerville mucky peat	19	7.7	100	Non-Highly Erodible	Not Prime Farmland
SbB	Sartell fine sand, 2 to 6 percent slopes	88.1	35.90	1	Non-Highly Erodible	Not Prime Farmland
Un	Urban land-Lino complex, 0 to 3 percent slopes	0.6	0.2	0	Non-Highly Erodible	Not Prime Farmland

UzB	Urban land-Zimmerman complex, 0 to 8 percent slopes	3.1	1.20	0	Non-Highly Erodible	Not Prime Farmland
ZmB	Zimmerman fine sand, 1 to 6 percent slopes	31.6	12.9	2	Non-Highly Erodible	Not Prime Farmland
Total	--	245.4	100.0	--	--	--

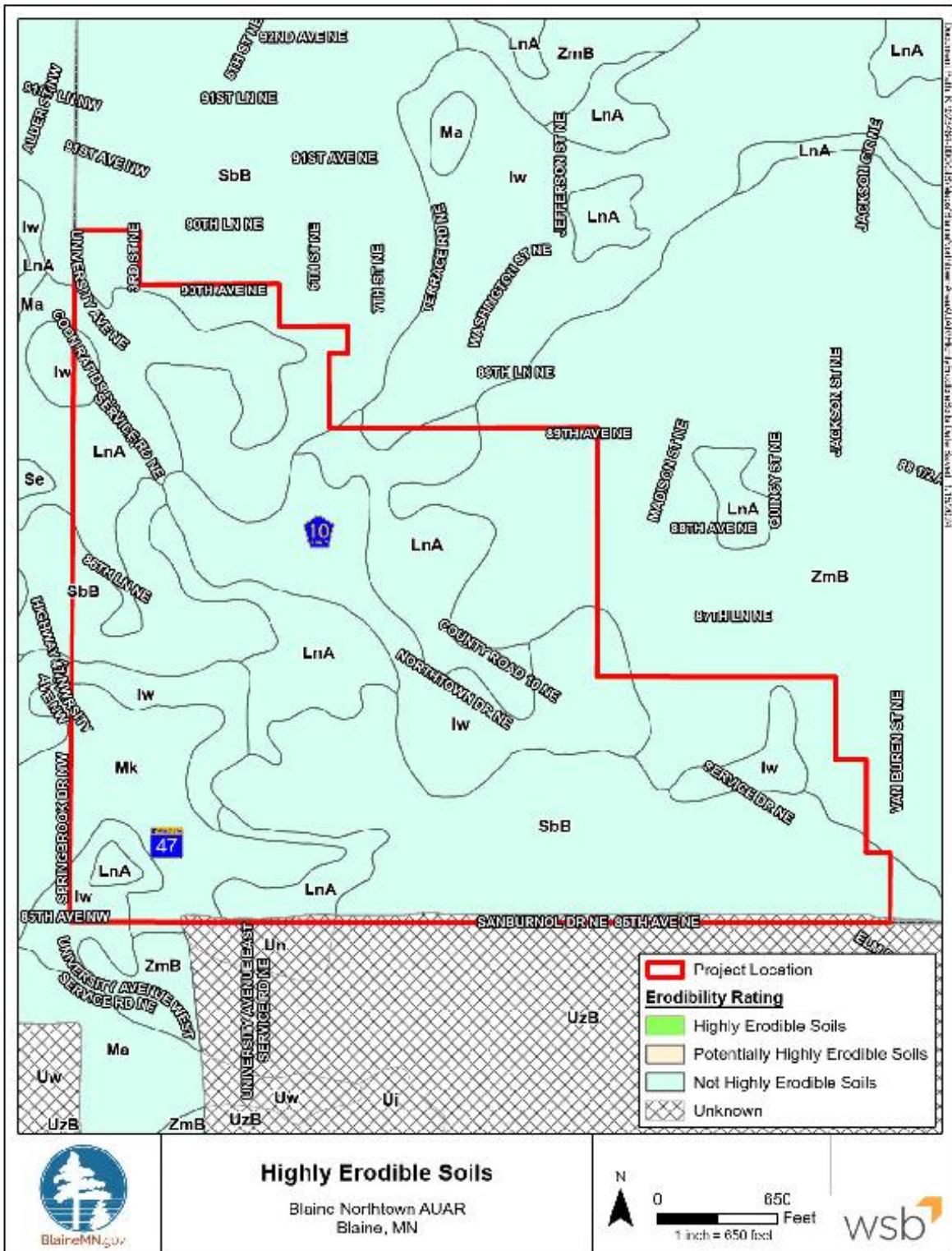


Figure 7 - Highly Erodible Soils

The existing topography within the study area is generally flat, varying from approximately 880 feet above mean sea level in the southwestern portion of the area to 910 feet above mean sea level in the southeastern portion of the site. The site generally drains southwest towards stormwater ponds or along roadside ditches. Earthwork is expected to be generally balanced on site.

The proposed developments within the study area will be required to adhere to the Coon Creek Watershed District and the City of Blaine’s erosion and sediment control standards. Erosion control will be in place prior to construction on each development site.

Item No.	Mitigation Description
11.1	Obtain NPDES Construction Stormwater permit
11.2	Obtain Watershed District permits
11.3	Prepare SWPPP and Erosion and Sediment Control Plans for each development site.

WATER RESOURCES

AUAR Guidance: The information called for on the EAW form should be supplied for any of the infrastructure associated with the AUAR development scenarios, and for any development expected to physically impact any water resources. Where it is uncertain whether water resources will be impacted depending on the exact design of future development, the AUAR should cover the possible impacts through a “worst case scenario” or else prevent impacts through the provisions of the mitigation plan.

a. Surface Water and Groundwater Features:

Surface Water: Lakes, streams, wetlands, intermittent channels, and county/judicial ditches. All surface water features should be described and identified on a map of the project area. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within one mile of the project. Include DNR Public Waters Inventory number(s), if any.

The National Wetland Inventory (NWI), Public Waters Inventory (PWI), FEMA Floodplain Map and a map of county ditches were reviewed for existing water resources within the study area (Figure 8). Based on the review, there are 8 wetlands totaling approximately 2.5 acres occur within the study area and one watercourse. Most of the wetlands identified by NWI are classified as excavated, shallow open water wetlands, suggesting they may have been created for the purpose of stormwater management during development of the area. A wetland delineation will need to occur prior to redevelopment to formally identify and define the boundaries of these resources. Each site developer will be responsible for completing this during the development review process.

County Ditch 17 (Springbrook Creek) flows through the site through a combination of piped and daylit channels and is listed on the Minnesota Pollution Control Agency (MPCA) 303d list of impaired waters. This stream reach, which eventually drains to the Mississippi River, is impaired for aquatic life and aquatic recreation due to high levels of E. coli and poor conditions for fish and aquatic insects. There are no other MPCA 303d listings within one mile of the study area. A

March 2024

Federal Emergency Management Agency (FEMA) 100-year floodplain is also associated with Springbrook Creek.

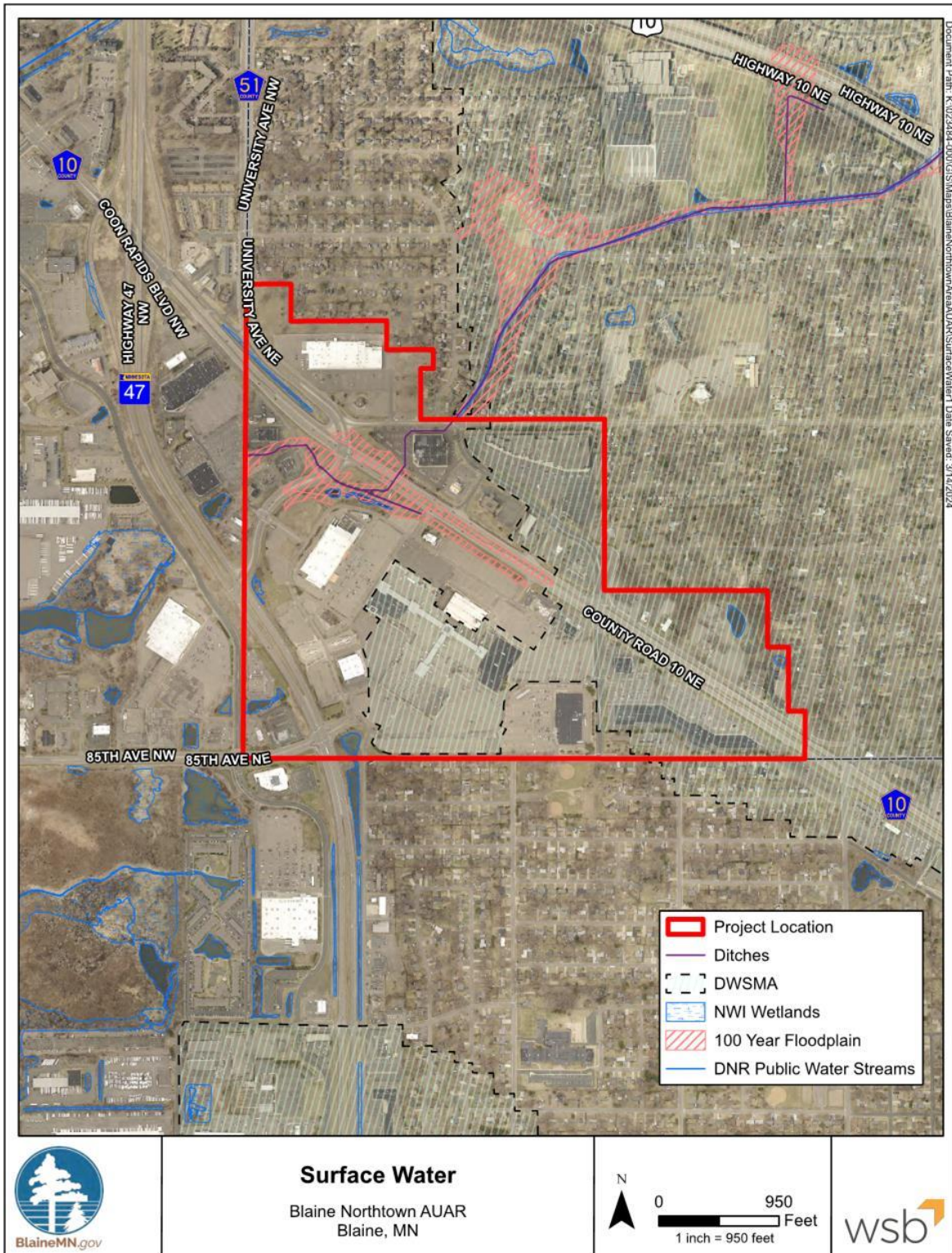


Figure 8 - Surface Water

Groundwater: aquifers, springs, and seeps. Include 1) depth to groundwater; 2) if project is within a MDH well protection area; and 3) identification of any onsite and/or nearby wells, including unique numbers and well logs, if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

The groundwater elevation within the study area varies from 6 to 70 feet below the surface. The depth of groundwater used for potable water sources surrounding the study area is 220 ft to over 700 ft below the surface in the Jordan-St. Lawrence aquifer.

According to the Minnesota Department of Health Minnesota Well Index, there are 2 wells located in the study area. Both are active wells being used as an elevator or commercial well. These wells are listed in Table 7, and the well logs are attached in **Appendix A**. There are 58 wells listed within one mile of the study area. If required, groundwater wells will be property sealed by a licensed contractor prior to redevelopment.

Table 7 - Wells Located within the Study Area

No.	Unique Well ID	Aquifer Name	Depth (ft)	Type	Status	Static Water Level
01	564350		27	Elevator	Active	6 ft
02	406302	Jordan-St Lawrence	245	Commercial	Active	70 ft

A portion of the study site surrounding the Northtown Mall is located within the Moderate Vulnerability portion of the Minneapolis Drinking Water Supply Management Area (DWSMA). Any occupants with a higher probability of potential contaminant sources, such as chemical storage tanks, should be prioritized for northern and western portions of the study area.

b. Project Effects on Water Resources and Measures to Minimize or Mitigate the Effects

AUAR Guidance: Observe the following points of guidance on an AUAR:

- Only domestic wastewater should be considered in an AUAR—industrial wastewater would be coming from industrial uses that are excluded from review through an AUAR process.
- Wastewater flows should be estimated by land use subareas of the AUAR area; the basis of flow estimates should be explained.
- The major sewer system features should be shown on a map and the expected flows should be identified.
- If not explained under Item 6, the expected staging of the sewer system construction should be described.
- The relationship of the sewer system extension to the RGU’s comprehensive sewer plan and (for metro area AUARs) to Metropolitan Council regional systems plans, including MUSA expansions, should be discussed. For non-metro area AUARs, the AUAR must discuss the capacity of the RGU’s wastewater treatment system compared to the flows from the AUAR area; any necessary improvements should be described.
- If on-site systems will serve part of the AUAR, the guidance in the February 2000 edition of the EAW Guidelines on page 16 regarding item 18b under Residential development should be followed.

Wastewater: For each of the following, describe the sources, quantities, and composition of all sanitary, municipal/domestic, and industrial wastewaters projected or treated at the site.

1) Wastewater Subsurface Sewer Treatment Systems (If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.)

The study area is served by the City of Blaine sanitary sewer collection system and the Metropolitan Council Environmental Services (MCES) regional collection and treatment system. The system conveys flow via gravity sewer lines to the MCES interceptor system and eventually to the Metropolitan Wastewater Treatment Plant (Metro WWTP). The Metro WWTP is an advanced secondary treatment plant with chlorination/dechlorination which discharges treated effluent to the Mississippi River. As of May 2023, the Metro WWTP treats an average of 180 million gallons of wastewater per day and has a capacity of 314 million gallons per day.

The wastewater generated in the project area will collect at two different MCES sanitary interceptors. Wastewater generated north of U.S. 10 will flow north and then west to gravity interceptor 4-NS-522. Wastewater produced south of U.S. 10 will flow south to the city boundary and interceptor 4-SL-534 which continues south through Spring Lake Park. The MCES Program 8086 North Area Interceptor (NAI) Rehabilitation project includes inspection and rehabilitation of these interceptors. Because the flows from Blaine to interceptor 4-SL-534 are unmetered at the city boundary and are instead metered downstream together with flows from Spring Lake Park, any MCES billing adjustments for this area will need to be updated as development progresses.

Two scenarios were considered in this analysis: Scenario 1: Comprehensive Plan, and Scenario 2: Vision Plan. The projected wastewater flows were calculated for existing conditions and for each scenario to identify the additional sanitary sewer flows. The estimated existing wastewater flows are shown in Table 8.

Table 8 - Existing - Wastewater Flows

Land Use	Commercial Area (sf)	Commercial MCES SAC Factor	Commercial SAC Units	Residential Units	Total SAC Units	Average Flow (gpd)	Peak Factor	Peak Flow (gpd)
Commercial	1,474,500	3,050	483		483	86,940	3.25	282,555
High Density Residential				54	54	9,720	3.25	31,590
Total	1,474,500		483	54	537	96,660	3.25	314,145

gpd = gallons per day

The projected flows for Scenario 1: Comprehensive Plan are shown in Table 9. This development scenario is consistent with the City’s planned sanitary sewer usage as identified in the 2040 Comprehensive Plan.

Table 9 - Scenario 1: Comprehensive Plan - Wastewater Flows

Land Use	Commercial Area (sf)	Commercial MCES SAC Factor	Commercial SAC Units	Residential Units	Total SAC Units	Average Flow (gpd)	Peak Factor	Peak Flow (gpd)
Community Commercial	1,361,163	3,050	446	0	446	80,280	3.25	260,910
Medium Density Residential	0	3,050	0	29	29	5,220	3.25	16,965
Medium Density Residential / Community Commercial	178,683	3,050	59	176	235	42,300	3.25	137,475
High Density Residential / Planned Commercial	134,165	3,050	44	660	704	126,720	3.15	399,168
Total	1,674,011		549	865	1,414	254,520	3.05	776,286

gpd = gallons per day

The projected flows for Scenario 2 Vision Plan are shown in Table 10.

Table 10 - Scenario 2: Vision Plan - Wastewater Flows

Land Use	Commercial Area (sf)	Commercial MCES SAC Factor	Commercial SAC Units	Residential Units	Total SAC Units	Average Flow (gpd)	Peak Factor	Peak Flow (gpd)
Community Commercial	884,268	3,050	290	0	290	52,200	3.25	169,650
Medium Density Residential	0	3,050	0	97	97	17,460	3.25	56,745
Medium Density Residential / Community Commercial	145,142	3,050	48	143	191	34,380	3.25	111,735
High Density Residential / Planned Commercial	408,837	3,050	134	2011	2,145	386,100	2.95	1,138,995
Total	1,438,247		472	2,251	2,723	490,140	2.85	1,396,899

gpd = gallons per day

Based on a capacity analysis of the existing gravity mains between the site and the MCES interceptors for each scenario, accounting for the division of flow north and south of U.S. 10, the City of Blaine’s existing sanitary sewers on and off site will not require upsizing in any locations to accommodate the additional flows for either scenario. However, depending on

the final redevelopment layout, some on-site sanitary sewers may need to be reconfigured and reconstructed.

No land uses are identified that would generate wastewater requiring pretreatment.

- 2) Wastewater Discharge to Surface Water (If the wastewater discharge is to a subsurface sewage treatment system (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.)**

Not applicable.

- 3) If the wastewater discharge is to surface water, identify the wastewater treatment methods, discharge points, and proposed effluent limitations to mitigation impacts. Discuss any effects to surface or groundwater from wastewater discharges.**

Not applicable.

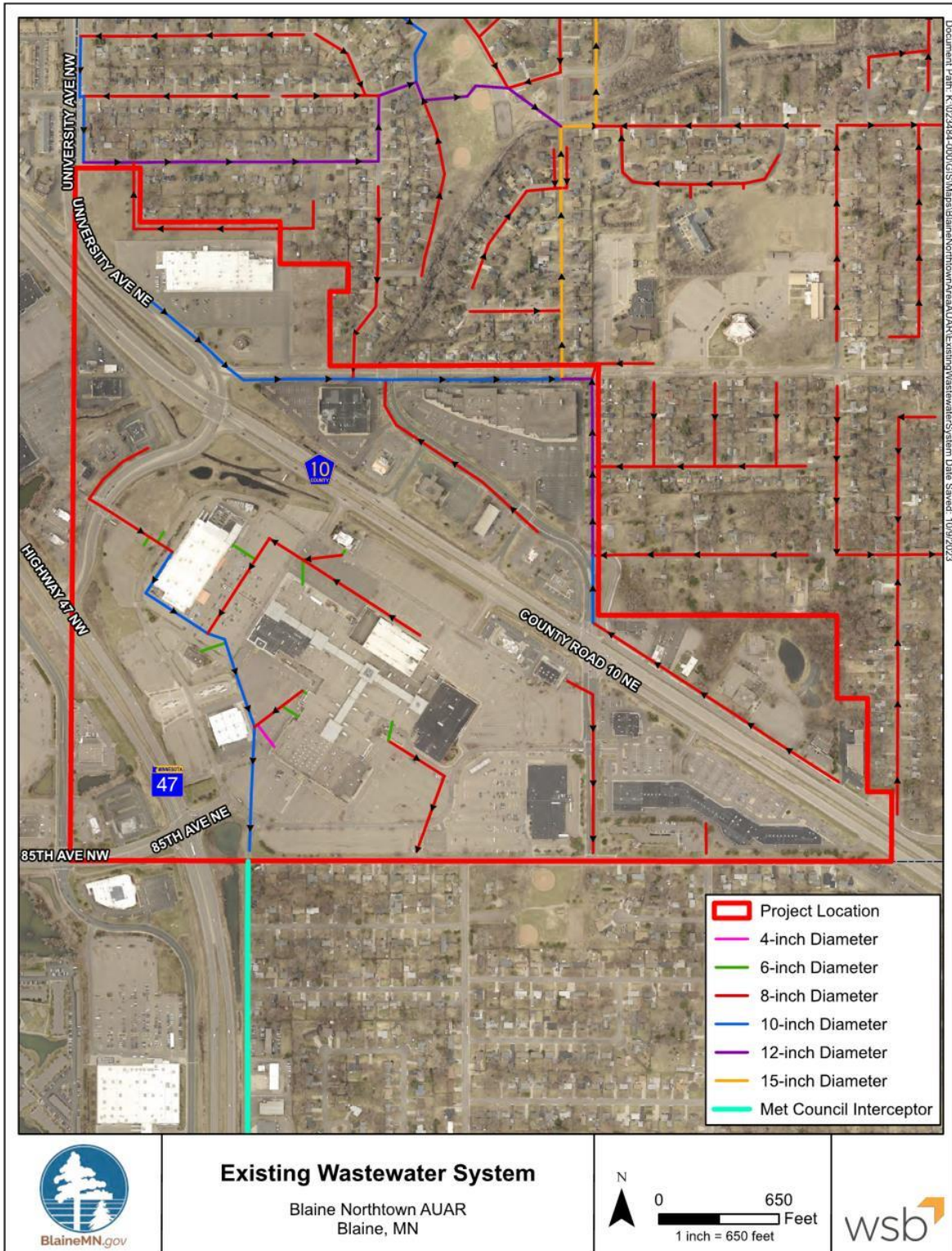


Figure 9 - Existing Wastewater System

Stormwater: Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control, or stabilization measures to address soil limitations during and after project construction.

AUAR Guidance: For an AUAR the following additional guidance should be followed in addition to that in EAW Guidelines:

- *It is expected that an AUAR will have a detailed analysis of stormwater issues.*
- *A map of the proposed stormwater management system and of the water bodies that will receive stormwater should be provided.*
- *The description of the stormwater systems would identify on-site and “regional” detention ponding and also indicate whether the various ponds will be new water bodies or converted existing ponds or wetlands. Where on-site ponds will be used but have not yet been designed, the discussion should indicate the design standards that will be followed.*
- *If present in or adjoining the AUAR area, the following types of water bodies must be given special analyses:*
- *Lakes: Within the Twin Cities metro area, a nutrient budget analysis must be prepared for any “priority lake” identified by the Metropolitan Council. Outside of the metro area, lakes needing a nutrient budget analysis must be determined by consultation with the MPCA and DNR staffs.*
- *Trout streams: If stormwater discharges will enter or affect a trout stream, an evaluation of the impacts on the chemical composition and temperature regime of the stream and the consequent impacts on the trout population (and other species of concern) must be included.*

Existing Conditions

The area is currently serviced by a network of wetlands and a riverine feature called County Ditch 17 (Springbrook Creek). There are six discharge points from the study area (Figure 10). Water flows east to west and drains to existing wetlands, ponds and the County Ditch 17 through existing culverts and storm sewer at County Road 10 NE, Highway 47 NW, and Springbrook Drive NE. There is a portion of the area that drains south to existing wetlands and ponds at 85th Avenue NW and University Avenue NE.

Sections along County Highway and University Avenue NE, particularly in the central part of the study area, exhibit moderate and severe flood severity risks. In the northeast portion along 89th Avenue NE, flooding issues and sinkholes have been identified, prompting the installation of a temporary culvert to alleviate existing problems. The Springbrook Creek Watershed - Load Reduction and Flood Mitigation Plan (2021) further notes that the southern part of the project area is characterized by a high total phosphorus (TP) loading. To address these issues, some stormwater mitigation systems, including underground, infiltration, filtration, and rain garden systems, have been strategically implemented throughout the area. These measures aim to enhance the overall resilience of the environment and mitigate the potential adverse impacts of stormwater in the affected regions.

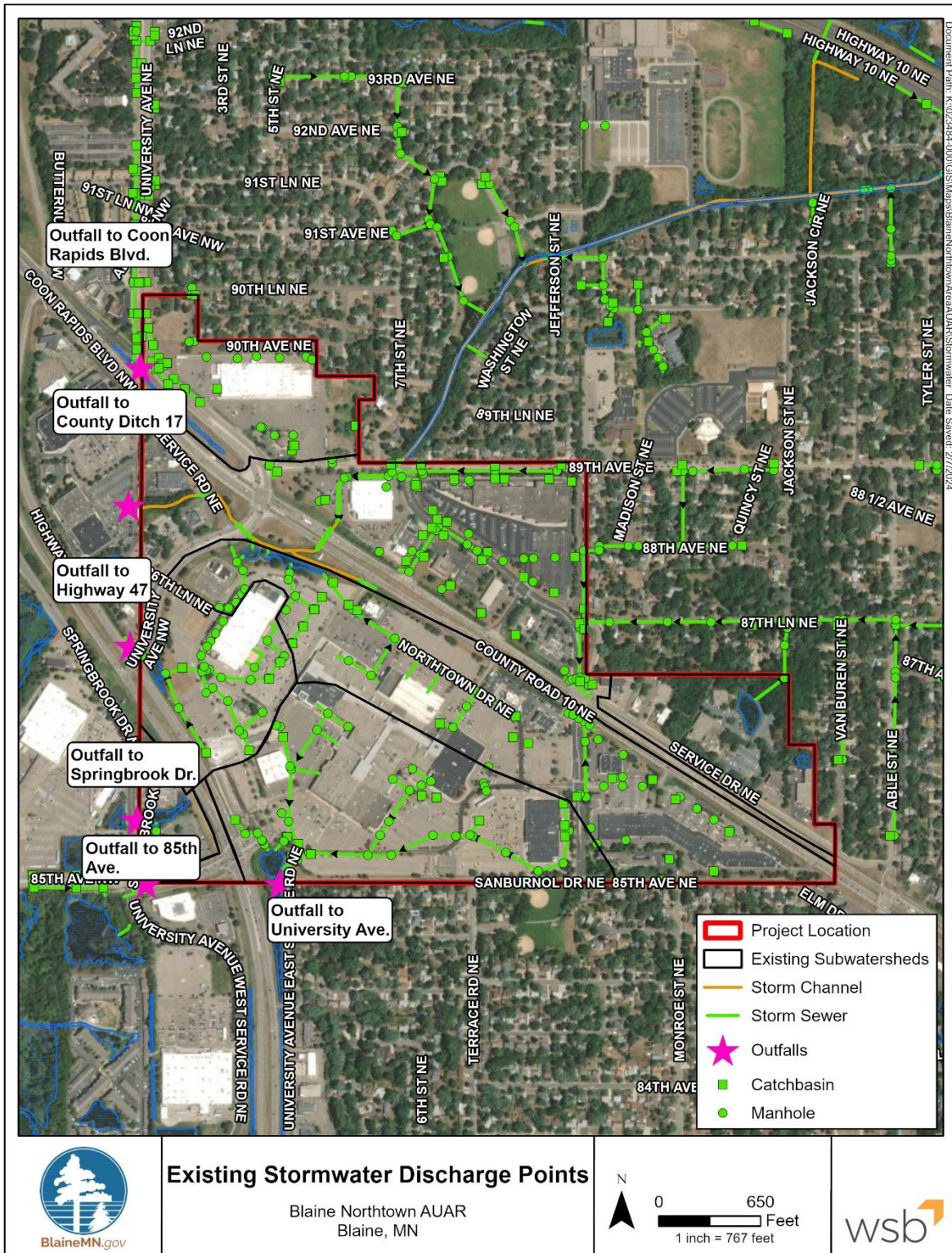


Figure 10 - Existing Stormwater Discharge Points

The County Ditch 17 (Springbrook Creek) and the storm sewer system from the entire project area outflows to the Mississippi River. This stream channel, which eventually drains to the Mississippi River, is impaired for aquatic life and aquatic recreation due to high levels of E. coli and poor conditions for fish and aquatic insects.

The total stormwater discharge to each of the six points was used to determine rate control for each of the storm events modeled Table 11.

Table 11 - Existing Conditions Modeled - Stormwater Discharge Rates at Discharge Points

Outfall Direction	Atlas-14 2-year 24-hour discharge rate (cfs)	Atlas-14 10-year 24-hour discharge rate (cfs)	Atlas-14 100-year 24-hour discharge rate (cfs)
West (Coon Rapids Blvd)	48.9	86.7	155
West (County Ditch 17)	280.5	465.9	791.8
West (Highway 47)	7.5	19.2	33.6
West (Springbrook Dr)	9.3	24.2	43.8
West (85 th Ave)	4.9	9.3	17.8
South (University Ave)	42.8	61.4	287.8

Proposed Conditions

Under either scenario, the study area will be designed to meet the most restrictive requirements of the City of Blaine, CCWD, and the National Pollutant Discharge Elimination System (NPDES) that are in place at the time of redevelopment. The following results consider the most restrictive of current stormwater requirements.

Rate Control:

The City of Blaine stormwater management rules state that drainage from proposed site designs must not exceed the pre-developed rates and will not adversely affect neighboring properties. All stormwater runoff shall be pre-treated prior to discharge to any surface water.

The CCWD requires the peak stormwater flow rate at each point of site discharge to not increase from the pre-development condition for the 24-hour precipitation event with a return frequency of 2-, 10-, 100-years.

For projects that may impact Drainage-Sensitive Use Areas as identified and mapped by the District, the post-development 100-year peak flow rate shall not exceed predevelopment 25-year peak flow rate.

When an existing regional stormwater management practice is proposed to manage stormwater runoff, the applicant shall show that the regional stormwater management practice has capacity to manage the stormwater runoff from the project site using Atlas 14 precipitation modeling standards; the applicant has permission to utilize any remaining capacity in the stormwater

management practice; the stormwater management practice is subject to maintenance obligations enforceable by the District; and it is being maintained to its original design.

Water Quality:

The City of Blaine requires stormwater volume management practices to be the equivalent of infiltrating or retaining the first 1.1 inch of precipitation over the impervious surface of the site. With a projected impervious area of 132 acres, this translates to a total volume requirement of 527,076 cubic feet of water to be retained onsite.

CCWD stormwater rules requires the following water quality standards to apply:

1. The water quality volume required by section 3.3.3 of these rules must be captured and treated for total phosphorus using a stormwater management practice listed in Appendix C.
2. Runoff from undisturbed impervious surface not being treated prior to the same receiving water or required by section 3.3.3 may be treated in-kind for new or fully reconstructed impervious surface. Except for Public Linear projects, the in-kind area may not exceed 15 percent of the proposed new or fully reconstructed impervious surface.
3. For all untreated surface subject to regulation under this rule, total suspended solids (TSS) and total phosphorus (TP) must be removed to the maximum extent practicable.
4. Total water quality volume for the project must be provided in aggregate pursuant to subsection 3.3.3. For Public Linear Projects, water quality treatment volume for fully reconstructed impervious surface, if required by section 3.3.3, must be provided only to the extent feasible.
5. Provide stormwater treatment practices to remove 80% of the average annual post development TSS per discharge location unless otherwise specified by a TMDL or non-degradation requirement and provide TP removal per watershed district rule.
6. Stormwater discharges to critical areas with sensitive resources or where a TMDL is in place may be subject to additional performance standards or may need to utilize or restrict certain stormwater management practices.
7. For public linear projects, where the entire water quality volume cannot be treated within the existing right-of-way, a reasonable attempt to obtain additional right-of-way, easement, or other permission to treat the stormwater during the project planning process must be made. Volume reduction practices must be considered first. Volume reduction practices are not required if the practices cannot be provided cost-effectively. If additional right-of-way, easements, or other permission cannot be obtained, the applicant must maximize the treatment of the water quality volume prior to discharge from the District.
8. For non-linear projects, where the full water quality volume cannot cost effectively be treated on the site of the original construction activity, the applicant must identify locations where off-site treatment projects can be completed. If the entire water quality volume is not addressed on site, the remaining water quality volume must be addressed through off-site treatment in accordance with the following:
 - Off-site treatment areas are selected in the following order of preferences:
 - locations that yield benefits to the same receiving water that receives runoff from the original construction activity;
 - Locations within the same Department of Natural Resources (DNR) catchment area as the original construction activity
 - Locations in the next adjacent DNR catchment area up-stream; or
 - Locations anywhere within the District.
 - Off-site treatment must involve the creation of new structural stormwater management practices or the retrofit of existing structural stormwater management practices, or the use of a properly designed structural stormwater management practice which has the capacity to treat the remaining water quality volume.

- Off-site treatment projects must be completed no later than 24 months after the start of the original construction activity.

The NPDES permit requires treatment of 1-inch of runoff for the new impervious area as more than one acre of disturbance will occur. Infiltration is required to be considered first under the NPDES permit; however other stormwater BMPs can be used if site conditions make infiltration infeasible.

City of Blaine and CCWD rules are more stringent than NPDES regarding water quality treatment of new impervious surfaces and require 1.1 inch of runoff from new and fully reconstructed impervious surface to be captured and infiltrated or otherwise treated. For public linear projects, the water quality volume equal to 1 inch from new impervious surfaces or 0.5 inches of runoff from the sum of new and fully reconstructed impervious area, whichever is greater, must be captured and infiltrated or otherwise treated.

Potential Infiltration Limitations:

Most soils within the study area are Hydrologic Soil Group (HSG) A and A/D. The groundwater elevation within the study area varies from 6 to 70 feet below the surface and DWSMAs were found in the study area. Consequently, there may be limitations on infiltration. Tests will be conducted to substantiate the soil and groundwater data.

Stormwater Management Concepts:

Stormwater management infrastructure will be built within the study area to help achieve the appropriate rate control and water quality treatment. Construction of this infrastructure will be dependent upon the timing and phase of development throughout the site. Development scenarios could include a continuous, linear stormwater management system along University Avenue, County Highway 10, as well as within interior roads to collect and manage stormwater from the adjacent public right-of-way and from some private parcels. It is anticipated that the stormwater systems will comply with all City and CCWD design standards and maintenance requirements.

Based upon lack of volume control and water quality treatment in the area, different green infrastructure practices such as filtration basins, underground stormwater systems, raingarden, etc. may be utilized as part of the stormwater management for the proposed sites and along Springbrook Creek. Opportunities to daylight the creek may also be considered under Scenario 2.

The project will work in conjunction with various entities, including the County, neighboring cities, the Minnesota Department of Transportation (MNDOT), and other partners. This strategic collaboration aims to proactively address and mitigate potential issues that may arise during the project's execution.

To manage stormwater runoff from the development sites within the study area, it is expected that individual site owners will design and maintain stormwater methods. Opportunities for regional stormwater management will also be implemented, where feasible.

Temporary erosion and sediment control measures will be implemented during construction meeting the City, CCWD, and NPDES permit requirements.

Water Appropriation: Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use, and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

AUAR Guidance: If the area requires new water supply wells, specific information about that appropriation and its potential impacts on groundwater levels should be given; if groundwater levels would be affected, any impacts resulting on other resources should be addressed.

Construction Dewatering or Permanent Dewatering

Construction dewatering may be required for development of the study area because groundwater is present up to 6 feet below the ground surface in some areas. Any temporary dewatering will require a MNDNR Temporary Water Appropriations General Permit 1997-0005 if less than 50 million gallons per year and less than one year in duration. It is anticipated that the temporary dewatering would only occur during utility installation and potential construction of building footings.

As part of development review and permitting, it will be determined if underground structures will need permanent dewatering. If this is determined to be needed, it will be evaluated through the permitting process with the DNR.

Water Supply

Water supply for the site will be from the City of Blaine municipal water supply and distribution system. Blaine utilizes 21 wells and 4 water treatment plants to produce drinking water. The wells located around the city range from 500 to 700 feet deep. These wells pump the water to one of 4 water towers that each hold 1 to 2 million gallons of water. Additionally, Blaine contains one reservoir that holds 5 million gallons of water and is equipped with three booster pumps.

Once the water is pumped into the towers, the water elevation in the towers will determine the water pressure. Blaine reports an average water pressure of 62 psi.

The average daily water demand for the city is 6.9 million gallons with a max day demand of roughly 14.9 million gallons during hot summer days.

Two scenarios were considered in this analysis: Scenario 1 Comprehensive Plan and Scenario 2 Vision Plan. The projected water demands were calculated for existing conditions and for each scenario to identify the additional water demands. Stormwater reuse may be considered and studied to determine whether it can sustain part or all of the irrigation water demand.

The estimated existing water demands are shown in Table 12.

Table 12 - Existing - Water Demand

Land Use	Commercial Area (sf)	Commercial MCES SAC Factor	Commercial SAC Units	Residential Units	Total SAC Units	Average Day Demand (gpd)	Max Day Demand Factor	Max Day Demand (gpd)
Commercial	1,474,500	3,050	483		483	108,675	2.2	239,085
High Density Residential				54	54	12,150	2.2	26,730
Total	1,474,500		483	54	537	120,825	2.2	265,815

gpd = gallons per day

The Scenario 1 Comprehensive Plan water demands are shown in Table 13.

Table 13 - Scenario 1: Comprehensive Plan - Water Demand

Land Use	Commercial Area (sf)	Commercial MCES SAC Factor	Commercial SAC Units	Residential Units	Total SAC Units	Average Day Demand (gpd)	Max Day Demand Factor	Max Day Demand (gpd)
Community Commercial	1,361,163	3,050	446	0	446	100,350	2.2	220,770
Medium Density Residential	0	3,050	0	29	29	6,525	2.2	14,355
Medium Density Residential / Community Commercial	178,683	3,050	59	176	235	52,875	2.2	116,325
High Density Residential / Planned Commercial	134,165	3,050	44	660	704	158,400	2.2	348,480
Total	1,674,011		549	865	1,414	318,150	2.2	699,930

gpd = gallons per day

The Scenario 2 Vision Plan water demands are shown in Table 14.

Table 14 - Scenario 2: Vision Plan - Water Demand

Land Use	Commercial Area (sf)	Commercial MCES SAC Factor	Commercial SAC Units	Residential Units	Total SAC Units	Average Day Demand (gpd)	Max Day Demand Factor	Max Day Demand (gpd)
Community Commercial	884,268	3050	290	0	290	65,250	2.2	143,550
Medium Density Residential	0	3,050	0	97	97	21,825	2.2	48,015
Medium Density Residential / Community Commercial	145,142	3,050	48	143	191	42,975	2.2	94,545
High Density Residential / Planned Commercial	408,837	3,050	134	2,011	2,145	482,625	2.2	1,061,775
Total	1,438,247		472	2,251	2,723	612,675	2.2	1,347,885

gpd = gallons per day

The City's existing well firm capacity is 27.8 million gallons per day (MGD), which easily satisfies the existing max day demand of 14.9 MGD plus the additional max day demand from either scenario above. The City's existing storage volume is 10 million gallons (MG), which also easily

satisfies the existing average day demand of 6.9 MGD plus the additional average day demand for either scenario. Therefore, these scenarios will not trigger the need for any immediate water infrastructure expansion. However, depending on the final redevelopment layout, some on-site water mains may need to be reconfigured and reconstructed.

Surface Waters

- 1) Wetlands: Describe any anticipated physical effects or alterations to wetland features, such as draining, filling, permanent inundation, dredging, and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed and identify those probable locations.**

A wetland delineation will be required prior to development of the area. Based on a review of the NWI, many wetlands in the area may have been created for the purpose of stormwater management, and therefore may not be regulated. Wetland jurisdictional status and impacts will continue to be evaluated and refined as redevelopment occurs. All wetland impacts will be minimized to the extent practicable; the intent of all scenarios is to replace wetland impacts with 2:1 mitigation via wetland bank credits.

The proposed redevelopment will need to meet the wetland requirements of CCWD's Wetland Management rules. CCWD governs wetland buffers. This CCWD rule is in addition to the WCA rules.

Some stormwater will be directed to wetlands that remain on site. Stormwater that is directed to on-site wetlands will be treated prior to discharge into the wetlands. State and local water quality treatment and flood attenuation requirements will be achieved prior to discharge to any of the site's wetlands. Wetlands will serve to attenuate flood water and augment water quality treatment beyond what is required.

- 2) Other Surface Waters: Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal, and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.**

AUAR Guidance: Water surface use need only be addressed if the AUAR area would include or adjoin recreational water bodies.

If either scenario proposes impacts to Springbrook Creek the developers would need to obtain approvals from the DNR and US Army Corps of Engineers prior to construction.

Floodplain mitigation may be required at a 1:1 ratio if redevelopment results in filling within the designated floodplain.

All development will implement erosion control practices throughout construction, including redundant protections above surface waters, to minimize the potential for impacts. If required, a chloride management plan will also be prepared by individual developers to mitigate impacts associated with salt usage.

Item No.	Mitigation Description
12.1	A wetland delineation will be required prior to development of each site, as it develops.
12.2	Stormwater will meet the City of Blaine, Coon Creek Watershed District (CCWD), and the National Pollutant Discharge Elimination System (NPDES) stormwater permit requirements.
12.3	The stormwater management system will consist of ponding to meet stormwater requirements along with water reuse or filtration if infiltration is not possible.
12.4	Temporary erosion and sediment control measures will be implemented during the construction that meet the City of Blaine, CCWD, and NPDES permit requirements.
12.5	Improvements will be made at the intersection of University Avenue and Anoka County Road 10 to reduce flooding and better capture and convey stormwater from the area.
12.6	Depending on the final redevelopment layout, some sanitary sewers and watermains may need to be reconfigured and reconstructed.
12.7	Groundwater wells will be property sealed by a licensed contractor prior to redevelopment.
12.8	A chloride management plan will be implemented by each site developer, if required by state and local rules.
12.9	Stormwater that is directed to on-site wetlands will be treated prior to discharge into the wetlands.
12.10	Wastewater capacity in Metropolitan Council Environmental Services (MCES) Interceptor 4-SL-534 should be verified with MCES prior to the Sanitary Sewer Extension Permit application, and any billing adjustments for that unmetered service area should be coordinated with MCES and the City of Spring Lake Park as development progresses.

CONTAMINATION/HAZARDOUS MATERIALS/WASTES

- a. **Pre-Project Site Conditions: Describe existing contamination or potential environmental hazards on or in close proximity to the project site, such as soil or groundwater contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize, or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.**

The City provided a copy of a 2019 Phase I Environmental Site Assessment (ESA) completed for Anoka County Parcel 31-31-23-31-0016 located at the northern portion of the Project Location. No recognized environmental conditions (RECs) were identified for the parcel.

A Desktop Contamination Review was completed for the remainder of the study area, and sites located within 500 feet of the study area. The Desktop Contamination Review consisted of evaluating available public database information to identify sites that pose a contamination risk to the study area. The following online databases were reviewed from October 20 through October 23, 2023:

- Minnesota Department of Agriculture (MDA) What's in My Neighborhood
- Minnesota Pollution Control Agency (MPCA) What's in My Neighborhood

MPCA What's in My Neighborhood Listings

A total of 72 MPCA What's In My Neighborhood (WIMN) listings were identified at and within 500 feet of the study area (Figure 11). The plotted listings are approximate and were not moved/replotted by WSB from their provided location on the MPCA WIMN database.

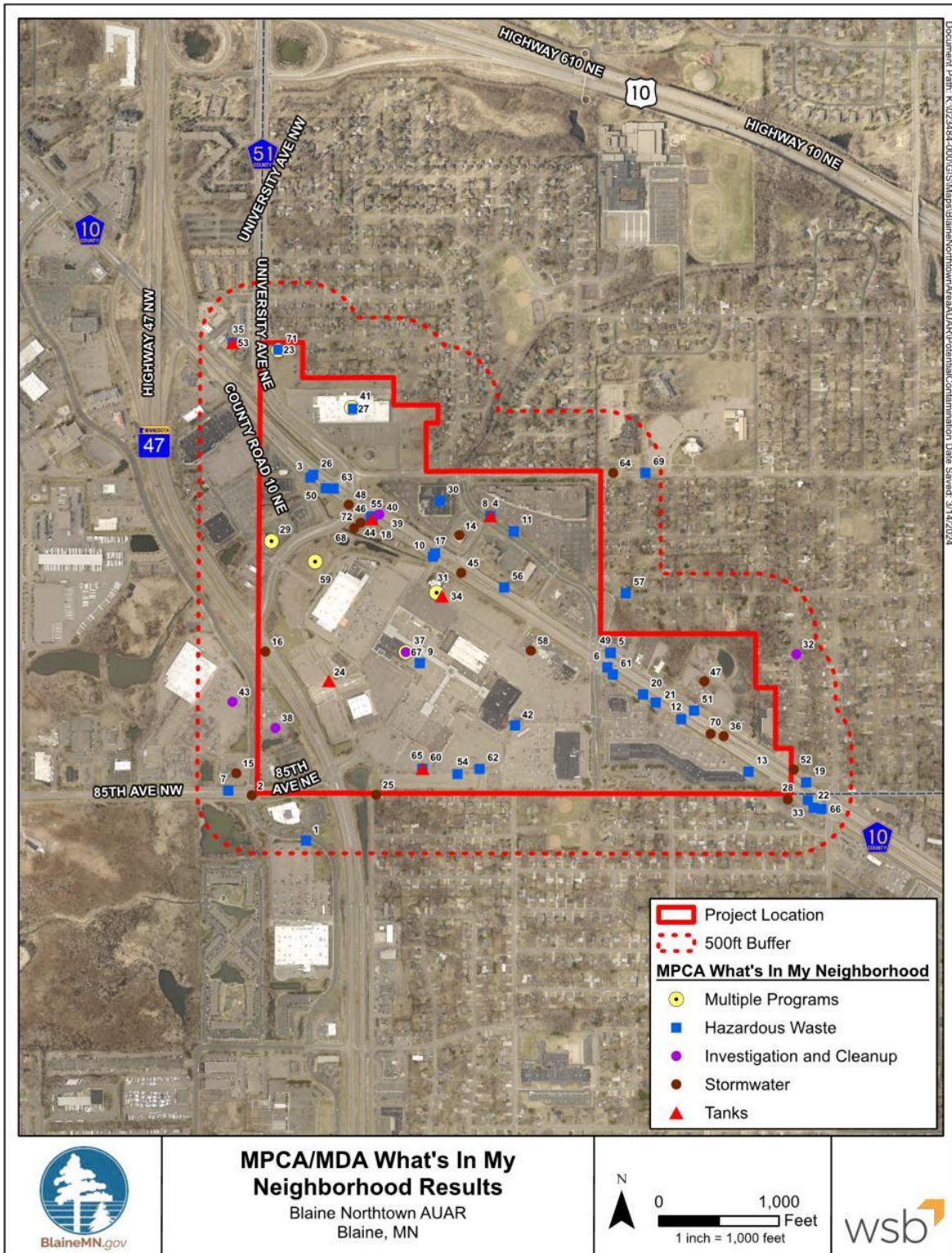


Figure 11 - MPCA/MDA What's In My Neighborhood Results

Based on proximity to the study area and the listing type, the following listings were determined to pose a contamination risk to the Project Location:

Site 4 – Rainbow Foods – 551 NE 87th Ln, Blaine, MN 55434

- Aboveground Tanks (TS0125479) – A 1,500-gallon aboveground storage tank (AST) containing diesel fuel is located at the site. The status is reported as active.

Site 24 – Circle K Store 2746700 – 589 Northtown Dr, Blaine, MN 55434

- Underground Tanks (TS0125055) – Four underground storage tanks (USTs) (one, 20,000-gallon UST containing E10 gasoline, one, 12,000-gallon UST containing diesel fuel, one, 8,000-gallon UST containing E10 gasoline, and one, 8,000-gallon UST containing E10 (10% ethanol and 90% gas)) are located at the site. The status is reported as active.

Site 29 – Firestone Tire & Rubber Co Blaine – 8630 University Ave NE, Blaine, MN 55434

- Aboveground Tanks (TS0004620) – Three ASTs (one, 300-gallon AST containing used oil, one, 250-gallon AST containing motor oil, and one, 150-gallon AST containing antifreeze) are located at the site. The status of the three ASTs is reported as active.
- Underground Tanks (TS0004620) – One, 300-gallon UST containing used/waste oil was located at the site. The status of the UST is reported as removed.

Site 32 – Private Residence – 8650 Van Buren St, Blaine, MN 55434

- Leak Site (LS0002583) – A petroleum leak was reported on May 22, 1990, at the site. The leak was reported as fuel oil #1 and #2 and impacts to groundwater is unknown. A Petroleum Tank Release/No Corrective Action Required letter was issued for the site, and the site was closed on May 1, 1995. Site closure does not mean that the site is free of contamination.

Site 34 – Carson Pirie Scott – 105 NE Northtown Dr, Blaine, MN 55434

- Underground Tanks (TS0000166) – One, 12,000-gallon UST containing fuel oil was located at the site. The status of the UST is reported as removed.

Site 35 – Valvoline Rapid Oil Change – 25 Coon Rapids Blvd NW, Blaine, MN 55434

- Aboveground Tanks (TS0054443) – Three ASTs (one, 850-gallon AST containing used oil, one, 530-gallon AST containing motor oil, and one, 336-gallon AST containing motor oil) are located at the site. The status of the ASTs is listed as active.

Site 37 – Northtown Mall – 398 Northtown Dr NE, Blaine, MN 55434

- VIC Program (VP3480) – The site was enrolled into the VIC program on December 23, 1992, until the site closure date of November 9, 1996. A No Action Letter was issued on September 9, 1993, and June 12, 1994.

Site 38 – Discovery #340 – 8601 Springbrook Dr, Coon Rapids, MN 55433

- VIC Program (VP12380) – The site was enrolled into the VIC program on November 22, 1999, until the closure date of March 21, 2001. A No Action Letter was issued on January 13, 2000.

Site 39 – Wholesale Transmission Service – 30 County Road 10 NE, Blaine, MN 55434

- Aboveground Tanks (TS0125763) – One 550-gallon AST containing used oil is located at the site. The status of the AST is listed as active.

Site 40 – Carson Pirie Scott – 105 NE Northtown Dr, Blaine, MN 55434

- Leak Site (LS0008091) – A petroleum leak was discovered and reported on October 19, 1994, at the site. The leak was reported as fuel oil #1 and #2 and groundwater

was not impacted. The site was closed on March 3, 1995. Site closure does not mean the site is free of contamination.

Site 41 – AutoZone #4384/K Mart #3031 – 8949 University Ave NE, Blaine, MN 55434

- Underground Tanks (TS0000162) – Two USTs (one, 5,000-gallon UST containing fuel oil and one, 1,000-gallon UST containing used/waste oil) were present at the site. The status of the USTs is listed as removed.

Site 43 – Blaine-Northtown Dump – Coon Rapids, MN 55434

- Site Assessment (SA0007073) – The site was registered as a Site Assessment site on January 1, 1987 and closed on December 21, 1999. The site is currently listed as inactive. No additional information was provided.

Site 59 – Former Auto Express – 99 Northtown Dr NE, Blaine, MN 55434

- Leak Site (LS0015196) – A petroleum leak was discovered on March 5, 2003, and reported on April 21, 2003. The leak was reported as diesel fuel and hydraulic fluid and was discovered upon tank removal. Groundwater was reportedly not impacted. A Phase II ESA was reviewed, and the site was closed on September 12, 2007. Site closure does not mean the site is free of contamination.
- Underground Tanks (TS0004600) – 11 USTs (three, 10,000-gallon USTs containing gasoline, one, 10,000-gallon UST containing fuel oil, one, 1,000-gallon UST containing used/waste oil, two, 1,000-gallon USTs containing motor oil, two, 2,000-gallon USTs containing motor oil, one, 20,000-gallon UST containing fuel oil, and one, 6,000-gallon UST containing fuel oil) were once present at the site address. The status of all USTs is listed as removed.

Site 65 – Northtown Mall – 398 Northtown Dr NE, Blaine, MN 55434

- Aboveground Tanks (TS0000247) – Three, 12,000-gallon ASTs containing fuel oil #1 are listed as active for the site address.
- Underground Tanks (TS0000247) – Three USTs (one, 15,000-gallon UST containing fuel oil, one, 2,000-gallon UST containing gasoline, and one, 1,000-gallon UST containing used/waste oil) were once present at the site address. The 2,000-gallon UST and 1,000-gallon UST are reported as removed and the 15,000-gallon UST is reported as closed in-place.

Site 67 – Northtown Transit HUB – Blaine, MN 55434

- VIC Program (VP3481) – The site was enrolled into the VIC Program from October 20, 1995, until the site closure date of March 8, 1998. The status is reported as inactive.

Site 71 – Gas Plus – 9021 University Ave NE, Blaine, MN 55434

- Underground Tanks (TS0000199) – Three USTs (two, 12,000-gallon USTs containing alcohol blend and one, 12,000-gallon UST containing gasoline) were once present at the site address. The three USTs are listed as removed. A citation warning was given on September 1, 2006, and closed on December 11, 2006. No additional information was provided.
- Leak Site (LS0019118) – An unknown product leak was discovered and reported on May 15, 2013. Approximately 11 cubic yards of soil was excavated and treated at MSW landfill on August 14, 2013, and groundwater was reported to be contaminated at the site. An excavation report was reviewed, and the site was closed on August 20, 2013. The site was closed on September 9, 2013. Site closure does not mean the site is free of contamination.
- Leak Site (LS0015506) – A petroleum leak was discovered at the site on October 29, 2003. The leak was reported as unleaded gasoline and groundwater at the site was

reported as contaminated. The site was closed on November 7, 2005. Site closure does not mean the site is free of contamination.

MDA What's in My Neighborhood Listings

No listings were identified within 500 feet of the study area.

Based on the desktop contamination review, Sites 4, 24, 29, 32, 34, 35, 37, 38, 39, 40, 41, 43, 59, 65, 67, and 71 pose a contamination risk to the study area. Based on the results of this desktop review, it is recommended that additional environmental investigation is completed at proposed excavation/improvements areas near the above-mentioned sites with documented and potential contamination. The investigation should include advancing environmental borings and the collection and analysis of soil, groundwater, and soil vapor samples. The results of the environmental investigation will be useful for future environmental planning and budgeting purposes.

If contamination or regulated materials are present, it's recommended that a Response Action Plan (RAP) be developed for the proposed study area improvements. The RAP should be tailored to the site redevelopment and the future land uses. Further, the RAP should be overseen by and environmental consultant to document the screening and management of regulated materials during site redevelopment activities.

- b. Project Related Generation/Storage of Solid Wastes: Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage, and disposal. Identify measures to avoid, minimize, or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.**

AUAR Guidance: Generally, only the estimated total quantity of municipal solid waste generated and information about any recycling or source separation programs of the RGU need to be included.

Construction-related waste materials (i.e., wood, concrete, metals, plastics, etc.) will be generated under both development scenarios. Construction-related waste will be recycled or disposed of in approved facilities, as appropriate. Toxic or hazardous substances used during project construction or operations (i.e., petroleum products, hydraulic fluid, and other chemical products) will be stored and disposed of following local and state guidelines. If any regulated wastes are present within the demolished buildings, the MPCA will be notified if required and materials will be disposed of at facilities licensed to handle regulated wastes.

The 2018 Anoka County Solid Waste Management Master Plan¹⁰ ensures that Anoka County will comply with applicable laws, rules, and ordinances related to the management of solid and hazardous wastes per Minnesota Statutes, section 473.811. Recycling for residential units and commercial buildings in the study area will be in accordance with the 2016 Recycling Law (Minnesota Statutes Chapter 115A, Section 115A.151 and Section 115A.552), and City Leg. Code § 357.09 that requires source separation and curbside pick-up within the City.

The proposed development scenarios will generate new solid waste management and sanitation services demands within the study area. Estimates for annual residential municipal solid waste generation for Scenario 1 is 2,367 tons and Scenario 2 is 6,159 tons. Conservative annual estimates of non-residential (commercial/industrial) municipal solid waste ranges from 1,542 tons (Scenario 1) to 1,325 tons (Scenario 2).

¹⁰ [Anoka County Solid Waste Management Master Plan](#)

- c. **Project Related Use/Storage of Hazardous Materials: Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location, and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spills or releases of hazardous materials. Identify measures to avoid, minimize, or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.**

AUAR Guidance: Not required for an AUAR. Potential locations of storage tanks associated with commercial uses in the AUAR should be identified (e.g., gasoline tanks at service stations).

Diesel fuel tanks may be needed for emergency generators for the commercial or residential buildings under either development scenario. The actual location of these tanks will be determined as design progresses and the location and use of storage tanks will comply with all state and local rules and regulations.

- d. **Project Related Generation/Storage of Hazardous Wastes: Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize, or mitigate adverse effects from the generation/storage of hazardous wastes including source reduction and recycling.**

AUAR Guidance: Not required for an AUAR.

Not applicable.

Item No.	Mitigation Description
13.1	If building demolition involves removal of regulated wastes, waste will be hauled to a facility licensed to handle such waste.
13.2	A Response Action Plan will be prepared by developers during site planning to mitigate the potential for encountering contamination.
13.3	Construction-related waste will be recycled or disposed of in approved facilities, as appropriate. Toxic or hazardous substances used during project construction or operations (i.e., petroleum products, hydraulic fluid, and other chemical products) will be stored and disposed of following local and state guidelines.
13.4	Recycling for residential units and commercial buildings in the study area will be in accordance with the 2016 Recycling Law (Minnesota Statutes Chapter 115A, Section 115A.151 and Section 115A.552), and City Leg. Code § 357.09 that requires source separation and curbside pick-up within the City.

FISH, WILDLIFE, PLANT COMMUNITIES, AND SENSITIVE ECOLOGICAL RESOURCES (RARE FEATURES)

- a. **Fish and Wildlife Resources**

AUAR Guidance: The description of fish and wildlife resources should be related to the habitat types depicted on the cover types of maps. Any differences in impacts between development scenarios should be highlighted in the discussion.

Vegetation within the study area includes lawn and landscaping near buildings and roadways and a wooded area surrounding the library in the northeast portion of the site. Wildlife species that may occur within the study area include those known to use human-disturbed habitats, such as

the Canada goose (*Branta canadensis*), American robin (*Turdus migratorius*), gray squirrel (*Sciurus niger*), and raccoon (*Procyon lotor*). Based on the water resources available within the study area there may be fish species in Ditch 17 (Springbrook Creek) historically and minnow species may be present in some of the wetland areas.

Current land use within the study area is nearly 80% impervious with non-contiguous areas of open space scattered throughout the site. Open space includes lawn/landscaping, wooded area, and bodies of water. The area wooded in the south-east quadrant of the study area is nearly 17 acres and may provide habitat for wildlife. The two development scenarios aim to maintain many of the mature trees that are currently on-site and enhance or expand open space throughout the site.

b. Rare Features

AUAR Guidance: For an AUAR, prior consultation with the DNR Division of Ecological Resources for information about reports of rare plant and animal species in the vicinity is required. Include the reference numbers called for on the EAW form in the AUAR and include the DNR's response letter. If such consultation indicates the need, an on-site habitat survey for rare species in the appropriate portions of the AUAR area is required. Areas of on-site surveys should be depicted on a map, as should any "protection zones" established as a result.

Information from the MNDNR (Correspondence # MCE 2023-00863) Natural Heritage Inventory (NHI) is included in **Appendix B**. WSB also reviewed the MNDNR NHI data (License Agreement 1003, September 2022). This information indicates there two records of state threatened species within one mile of the project area. The records are of a Blanding's turtle (*Emydoidea blandingii*) and beach heather (*Hudsonia tomentosa*). The beach heather record is immediately adjacent to the project area. There are also records of the special concern gophersnake (*Pituophis catenifer*) that overlaps the project area and extends into the one mile buffer. There are also records of the special concern trumpeter swan (*Cygnus buccinator*) and plains hog-nosed snake (*Heterodon nasicus*) within one mile of the project area. The proposed activities are not expected to impact any of these species given the current land use in the immediate vicinity of the project site.

The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) service indicated that the federally threatened northern long-eared bat (NLEB; *Myotis septentrionalis*), federally endangered rusty patched bumble bee (RPBB, *Bombus affinis*), and candidate species for listing monarch butterfly (*Danaus plexippus*) may occur within or near the study area. The IPaC report is included in **Appendix B**.

Northern Long Eared Bat

Suitable NLEB summer habitat consists of a variety of forested or wooded habitats where they roost, forage, and travel and may also include some adjacent non-forested habitats such as emergent wetlands, edges of agricultural fields, old fields, or pastures. Summer habitat includes forests and woodlots containing potential roosts (i.e., live trees or snags greater than or equal to three inches diameter at breast height (dbh) that have exfoliating bark, cracks, crevices, or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. During winter months NLEB hibernate in caves or abandoned mines and tend to be found in deep crevices. Males and non-reproductive females may also roost in caves or mines. There are no known NLEB hibernacula within 10 miles of the study area.

Rusty Patched Bumblebee

RPBB occur in a variety of habitats including prairies, woodlands, marshes, agricultural landscapes, and residential parks and gardens. RPBB require areas that support sufficient food (nectar and pollen from diverse and abundant flowers), undisturbed nesting sites in proximity to floral resources, and overwintering sites for hibernating queens. Nesting sites include underground and abandoned rodent cavities or clumps of grass (i.e., bunchgrasses), and overwintering sites include patches of undisturbed soil along woodland edges. The USFWS

adapted a habitat connectivity model to identify the zones around current (2007-2017) records where there is a high potential for RPBB to occur. The zones are referred to as High Potential Zones or Low Potential Zones. High Potential Zones contain known locations and the surrounding area and are considered to have the greatest potential for species presence. RPBB presence is assumed within High Potential Zones where suitable habitat is present. The entire study area is within the RPBB High Potential Zone. Based on current land cover, there may be suitable overwintering habitat for RPBB near the wooded wetlands within the study area.

Monarch Butterfly

Monarch butterflies use fields and parks where native milkweed (*Asclepias* spp.) and other plant species are common. Monarch larvae are milkweed obligates, however adults feed on a variety of flowering plants.

c. Effects on Fish, Wildlife, Plant Communities, Rare Features, and Ecosystems

There are no Minnesota Biological Survey (MBS) sites of biodiversity significance or MNDNR native plant communities (NPCs) within the study area. Within one mile of the site, Springbrook Nature Center and surrounding area is listed in the MBS as a site of moderate biodiversity significance (Figure 12). The construction activities associated with the proposed redevelopments should not impact the MBS sites of biodiversity or the NPCs that are within one mile of the study area.

Although there are records of special status species within or near the study area, state and federal guidelines will be followed to prevent adverse impacts to special status species. Mitigation measures will include avoiding impacting habitat during certain times of the year or conducting a species study of the area if habitat avoidance isn't feasible. The wildlife species that currently use the study area are likely to continue to use the study area after the area is redeveloped as they are common, ubiquitous, and are associated with human-disturbed habitats. To avoid impacts during construction, wildlife-friendly erosion control BMPs should be utilized. Impacts to habitat can further be minimized by ensuring invasive species don't spread through construction practices and planting disturbed areas with native, weed-free, seed mixes.

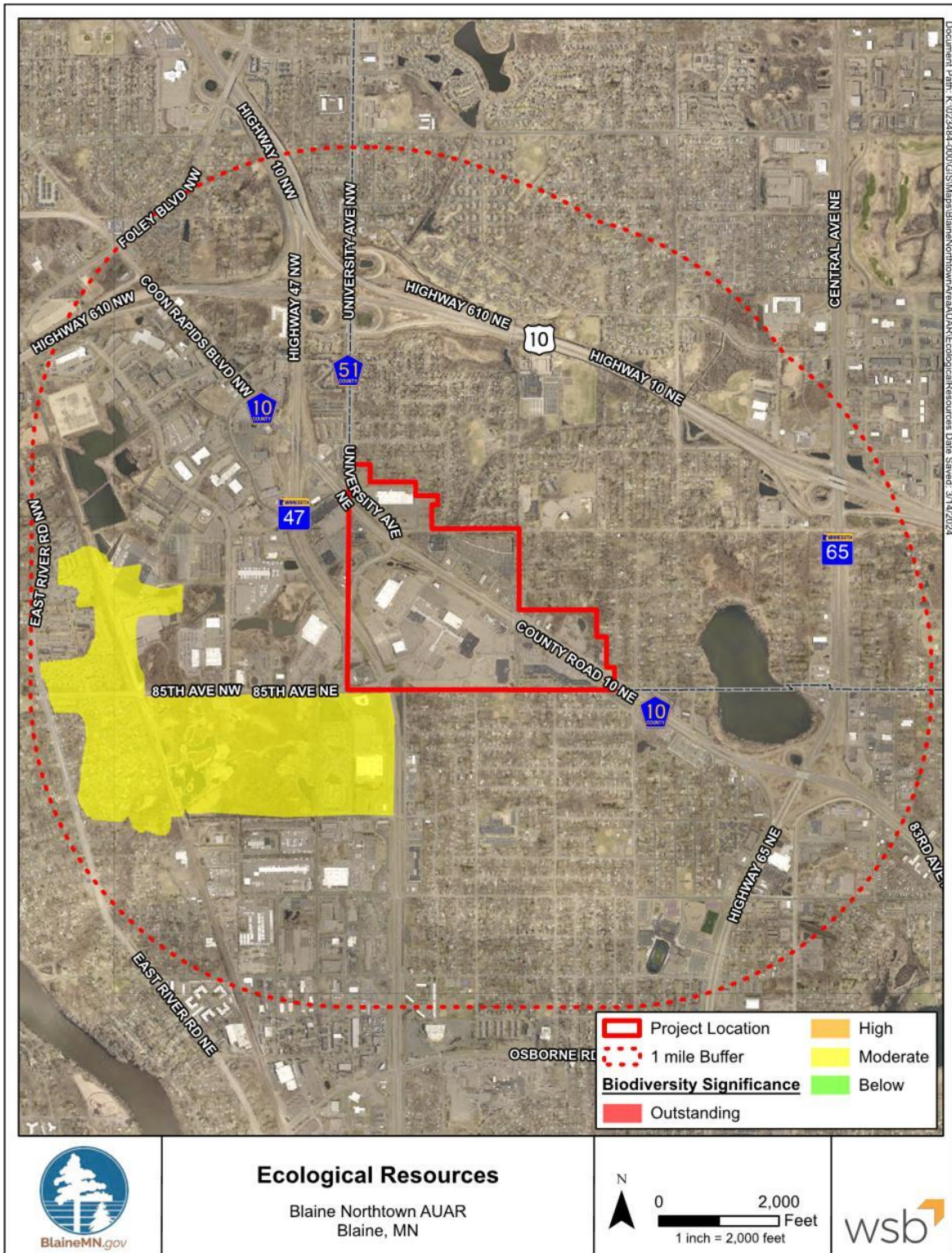


Figure 12 - Ecological Resources

d. Measures to Avoid, Minimize, or Mitigate Adverse Effects (to fish, wildlife, plant communities, and sensitive ecological resources)

Both development scenarios may impact wildlife and habitats in the study area. To minimize impacts, the following measures will be implemented during site development:

Item No.	Mitigation Description
14.1	Follow current USFWS guidelines for tree removal to avoid impacts to NLEB.
14.2	Plant native, weed-free, species in re-vegetated areas where deemed appropriate through development review.
14.3	Incorporate pollinator species into landscaped planting areas, where deemed appropriate through development review.
14.4	Invasive species will be controlled during site construction by inspecting and decontaminating equipment when moving between sites.
14.5	Utilize wildlife-friendly erosion control blanket to avoid entanglement, where deemed appropriate through development review.

HISTORICAL PROPERTIES

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include 1) historic designations; 2) known artifact areas; and 3) architectural features. Attach letter received from the Minnesota State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

AUAR Guidance: Contact with the State Historic Preservation Office and State Archaeologist is required to determine whether there are areas of potential impacts to these resources. If any exist, an appropriate site survey of high probability areas is needed to address the issue in more detail. The mitigation plan must include mitigation for any impacts identified.

A database request was submitted to the Minnesota State Historic Preservation Office (SHPO) and was received on November 27, 2023 (**Appendix C**). SHPO's public map, MNSHIP, was also reviewed.

Existing Conditions

No known archaeological sites were identified within the study area based on the results of the review. Trunk Highway 10, located north of the study area, and TH 47, located west of the study area, are identified as a potential historic resource.

Proposed Conditions

The two scenarios would redevelop the study area into a mixed i, residential, retail and commercial use development. No impacts to the TH 10 or TH 47 would occur as part of this project. No impacts are anticipated, and no mitigation measures are proposed.

VISUAL

Scenic views or vistas may include spectacular viewing points along lakes, rivers or bluffs; virgin timber tracts; prairie remnants; geological features; waterfalls; specimen trees; or plots of wildflowers. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

AUAR Guidance: Any impacts on scenic views and vistas present in the AUAR should be addressed. This would include both direct physical impacts and impacts on visual quality or integrity. If any non-routine visual impacts would occur from the anticipated development this should be discussed here along with appropriate mitigation.

No significant views as identified by the Comprehensive Plan are within or near the study area.

Site lighting under each scenario will be consistent with the City of Blaine zoning ordinances. A lighting and photometric plan will be developed and submitted to the City of Blaine during the site planning review and approval stage.

Item No.	Mitigation Description
16.1	A lighting and photometric plan will be developed and submitted to the City of Blaine during the site planning review and approval stage for each individual development.

AIR

- a. Stationary Source Emissions: Describe the type, sources, quantities, and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health, or applicable regulatory criteria. Include a discussion of any methods used to assess the project’s effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.**

AUAR Guidance: This item is not applicable to an AUAR. Any stationary air emissions source large enough to merit environmental review requires individual review.

Not applicable.

- b. Vehicle Emissions: Describe the effect of the project’s traffic generation on air emissions. Discuss the project’s vehicle-related emissions effect on air quality. Identify measures (e.g., traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.**

AUAR Guidance: Although the MPCA no longer issues Indirect Source Permits, traffic-related air quality may still be an issue if the analysis in Item 18 indicates that development would cause or worsen traffic congestion. The general guidance from the EAW form should still be followed. Questions about the details of air quality analysis should be directed to MPCA staff.

Motor vehicles emit airborne pollutants (such as mobile source air toxics [MSATs]), thereby affecting air quality. The Environmental Protection Agency (EPA) regulates air pollutants including ozone, particulate matter, carbon monoxide, nitrogen dioxide, lead, and sulfur dioxide. Potential impacts resulting from these pollutants are assessed by comparing estimated concentrations to National Ambient Air Quality Standards (NAAQS). Advances in vehicle technology and fuel regulations will result in reduced vehicle emissions.

- c. Dust and Odors: Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under Item 16a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.**

AUAR Guidance: Dust and odors need not be addressed in an AUAR, unless there is some unusual reason to do so. The RGU might want to discuss as part of the mitigation plan, however, any dust control ordinances in effect.

Fugitive dust will be generated during the construction phase of all proposed development scenarios. Dust emissions will be controlled by watering, sprinkling, or calcium chloride applications, as necessary. Contractors will maintain streets, alleys, sidewalks, and other public spaces adjacent to construction activities to keep them free from dust, litter, and other debris in accordance with Blaine City Ordinance (Ord. No. 287). Dust emissions are not expected during the operational phase of any of the proposed development scenarios.

Item No.	Mitigation Description
17.1	During construction, dust emissions will be controlled by watering, sprinkling, or calcium chloride applications, as necessary.

Item No.	Mitigation Description
17.2	During construction, contractors will maintain streets, alleys, sidewalks, and other public spaces adjacent to construction activities to keep them free from dust, litter, and other debris in accordance with Blaine City Ordinance.

GREENHOUSE GAS (GHG) EMISSION/CARBON FOOTPRINT

- a. *GHG Quantification: For all proposed projects, provide quantification and discussion of project GHG emissions. Include additional rows in the tables as necessary to provide project-specific emission sources. Describe the methods used to quantify emissions. If calculation methods are not readily available to quantify GHG emissions for a source, describe the process used to come to that conclusion and any GHG emission sources not included in the total calculation.*

Analyses for GHG emissions for the study area under existing conditions, Scenario 1, and Scenario 2 were prepared; each is shown in **Appendix C**. Project-specific emission sources and references to the methods used to quantify emissions are included within the calculation tables in the appendix.

b. **GHG Assessment**

- i. Describe any mitigation considered to reduce the project’s GHG emissions.

During this phase in site planning, plans are concept-level; exploration and development of potential mitigation practices is dependent on further development planning and design. Proposed land use change scenarios increase housing density and availability of shops and live-work units. Pedestrian, bicycle, and public transit infrastructure will accommodate this increased density. These changes may encourage non-vehicle travel which would reduce GHG emissions. The following are potential design strategies and sustainability measures that could be considered for the proposed development to reduce emissions:

- Use energy efficient appliances, equipment, and lighting,
- Energy efficient building shells,
- Implement waste best management practices; recycle and compost appropriate material when applicable,
- On-site native landscaping to reduce potable water and pesticide use, along with the inclusion of trees and tree trenches to improve local air quality, absorb greenhouse gas emissions, and reduce local urban heat island effect,
- Provide on-site electric vehicle charging infrastructure,
- On-site solar PV installations,
- Purchase of off-site carbon sequestration credits,
- Grid-based wind and solar power purchases,
- Other

Implementation of the above strategies will be evaluated on a case-by-case basis based on feasibility, schedule, code requirements, and tenant considerations.

- ii. Describe and quantify reductions from selected mitigation, if proposed to reduce the project's GHG emissions. Explain why the selected mitigation was preferred.

This level of detail is not known due to the high-level nature of this analysis and uncertainty of any specific future development.

Both Scenarios significantly increase density of all uses, including housing;

Table 15 shows a summary of proposed land use changes. This table expands on Table 1 under the assumption of 1,000 square feet per residential unit in each proposed scenario.

Table 15 - Development Scenarios for GHG Analysis

Land Use	Existing		Scenario 1		Scenario 2	
	Res Units	Area (sqft)	Res Units	Area (sqft)	Res Units	Area (sqft)
CC	-	1,603,350	-	1,361,163	-	884,268
MDR	54	65,000	29	29,000	97	97,000
MDR/CC	MDR	-	176	176,000	143	143,000
	CC	-	-	178,683	-	145,142
HDR-2/CC	HDR-2	-	660	660,000	2,011	2,011,000
	CC	-	-	134,165	-	408,837
Residential Total	54	65,000	865	865,000	2251	2,251,000
Commercial Total	-	1,603,350	-	1,674,011	-	1,438,247

Compared to existing conditions, Scenario 1 proposes a 70,000 sq ft increase in commercial use area and Scenario 2 proposes a decrease of 165,000 sq ft. Compared to existing residential use, Scenario 1 proposes an 811-unit increase to residential units in the project area (800,000 sq ft increase) and Scenario 2 proposes a 2,197-unit increase (2,186,000 sq ft increase).

It is understood that mixed-use zones (allowing retail and commercial establishments near housing) allow people to drive less and thus emit less greenhouse gases. Reductions from other potential voluntary mitigation measures could also contribute to reducing overall GHG emissions. In addition to these proposed mitigation efforts, the project may consider additional strategies as it continues to move through the design process.

The Scenarios will support modes of transportation besides single-occupancy vehicle travel. The Northtown Transit Center is located at the Northtown Mall and currently provides a hub for public transportation users within the Northtown Mall District. In both Scenarios, increasing residential density may improve ridership and service among the transit routes that serve this area. Additionally, in each Scenario, improved trail and sidewalk connections to the surrounding network will be provided. Each Scenario's potential impact on transportation and reduction to single-occupancy vehicle travel is not accounted for in the emissions analysis above.

The City of Blaine’s 2040 Comprehensive Plan cites opportunities for the city to incorporate measures for energy use reduction and energy-related greenhouse gas emission reduction.

- In residential areas, education campaigns, promoting recycling and composting opportunities, efficient appliances and lighting incentives, renewable energy subscription incentives, rooftop solar, and native plant sales are identified as measures the city may incorporate into its community planning.
- In business and industrial (commercial) areas, energy-efficient construction and demolitions incentives, lighting upgrades, renewable energy use, and green infrastructure requirements are identified as measures the city may incorporate into its community planning.

These potential programs and greenhouse gas reduction strategies were not explicitly incorporated within the modeling methods; however, incorporating greenhouse gas mitigation measures such as those mentioned above may further reduce greenhouse gas emissions beyond what is provided in the Scenario estimates.

- iii. Quantify the proposed projects predicted net lifetime GHG emissions (total tons/#of years) and how those predicted emissions may affect achievement of the Minnesota Next Generation Energy Act goals and/or other more stringent state or local GHG reduction goals.

Minnesota’s Next Generation Energy Act requires the state to reduce greenhouse gas emissions in the state by 80% between 2005 and 2050, while supporting clean energy, energy efficiency, and supplementing other renewable energy standards in Minnesota. Within the city’s 2040 Comprehensive Plan, among the sustainable energy action items, it is identified that the city aims to maximize and incentivize renewable energy where feasible and develop a CO2 emissions reduction goal and plan for city buildings, services, and vehicles.

Methods for modeling air emissions were completed in accordance with EAW (Environmental Assessment Worksheet) standards. The expected lifespan of the project is 50 years. The project’s predicted net GHG emissions over the project’s lifespan (compared to existing conditions) are estimated at 6,461 CO2e metric tons per year for Scenario 1 or 13,629 CO2e metric tons per year for Scenario 2 Appendix C. Table 16 presents a summary of modeled emissions for existing and proposed development Scenarios.

Table 16 - GHG Emissions Summary

	Total Emissions (tonnes/yr)	Net Total Emissions (tonnes/yr)	Building Area (sqft)	Total Emissions per Building Area (kg/yr/sqft)
Existing	14,191	-	1,668,350	8.5
Scenario 1	20,652	6,461	2,539,011	8.1
Scenario 2	27,820	13,629	3,689,247	7.5

The proposed Scenarios will significantly increase housing density and maintain commercial uses within the project area. For each proposed Scenario, the total emissions

are reduced per square foot of building area. These estimates do not account for future integration of energy or transportation goals that are referenced in the city’s Comprehensive Plan.

Developments within each Scenario could also implement any applicable state or local GHG goals as determined by the City or project proposers. The proposer may explore additional sustainability measures such as the examples listed above to reduce operational emissions to the extent practicable. The proposed project will be built in compliance with state regulations and city building codes.

Item No.	Mitigation Description
18.1	Developers will consider design strategies and sustainability measures that could reduce emissions.

NOISE

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area; 2) nearby sensitive receptors; 3) conformance to state noise standards; and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

AUAR Guidance: Construction noise need not be addressed in an AUAR, unless there is some unusual reason to do so. The RGU might want to discuss as part of the mitigation plan, however, any construction noise ordinances in effect.

- *If the area will include or adjoin major noise sources, a noise analysis is needed to determine if any noise levels in excess of standards would occur, and if so, to identify appropriate mitigation measures. With respect to traffic-generated noise, the noise analysis should be based on the traffic analysis of Item 18. It is expected that an AUAR will have a detailed analysis of stormwater issues.*
- *A map of the proposed stormwater management system and of the water bodies that will receive stormwater should be provided.*
- *The description of the stormwater systems would identify on-site and “regional” detention ponding and also indicate whether the various ponds will be new water bodies or converted existing ponds or wetlands. Where on-site ponds will be used but have not yet been designed, the discussion should indicate the design standards that will be followed.*
- *If present in or adjoining the AUAR area, the following types of water bodies must be given special analyses:*
- *Lakes: within the Twin Cities metro area a nutrient budget analysis must be prepared for any “priority lake” identified by the Metropolitan Council. Outside of the metro area, lakes needing a nutrient budget analysis must be determined by consultation with the MPCA and DNR staffs.*
- *Trout streams: if stormwater discharges will enter or affect a trout stream an evaluation of the impacts on the chemical composition and temperature regime of the stream and the consequent impacts on the trout population (and other species of concern) must be included.*

Per the AUAR guidelines, construction noise does not need to be addressed unless there are unusual circumstances that warrant it. No unusual circumstances are anticipated that would

warrant a detailed noise analysis. Construction activities will be conducted in compliance with the City of Blaine noise ordinances (50-201 thru 50-203) to minimize noise levels and disturbances, and construction activities will cease from 10:00 pm to 7:00 am. The study area will be constructed so that noise sensitive areas (i.e., residential units) will have sufficient setbacks from noise sources to limit noise disturbances. Specifics regarding setback distances will be determined as the project develops. Permits related to construction noise will be obtained prior to the start of construction.

A sound level increase of 3 dBA is barely discernible to the human ear, a 5 dBA increase is clearly discernible, and a 10 dBA increase is perceived as being twice as loud. For example, if the sound level of light traffic is 60 dBA and the sound level of heavy traffic is 70 dBA, the heavy traffic will be perceived as twice as loud as the light traffic.

The change in traffic sound levels is not anticipated to be readily perceptible.

Item No.	Mitigation Description
19.1	Construction activities will be conducted in compliance with the City of Blaine noise ordinances to minimize noise levels and disturbances, and construction activities will cease from 10:00 pm to 7:00 am.
19.2	The study area will be constructed so that noise sensitive areas (i.e., residential units) will have sufficient setbacks from noise sources to limit noise disturbances.

TRANSPORTATION

- a. **Describe Traffic. Describe traffic-related aspects of project construction. Include 1) existing and proposed additional parking space; 2) estimate total average daily traffic generated; 3) estimate maximum peak hour traffic generated and time of occurrence; 4) source of trip generation rates used in the estimate; and 5) availability of transit and/or other alternative transportation modes.**
- b. **Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on regional transportation system.**
- c. **Identify measures that will be taken to minimize project related transportation effects.**

AUAR Guidance: For AUAR reviews, a detailed traffic analysis will be needed, conforming to the MnDOT guidance as listed on the EAW form. The results of the traffic analysis must be used in the response to Items 16 and 17

A Traffic Analysis has been completed for the proposed study area. The following sections provide a summary of the Traffic Study. The full Traffic Study can be found in **Appendix D**.

EXISTING CONDITIONS

Existing Roadways

The six roadways that currently provide access to or are adjacent to the site are TH 47, University Avenue (CSAH 3/CSAH 51), CSAH 10, Jefferson Street NE, 85th Avenue, and CR 132. TH 47 is a four-lane divided north-south state highway with a Minor Arterial functional classification. Shoulders are present along TH 47. The existing Average Daily Traffic (ADT) on TH 47 is 18,400 vehicles per day (vpd) north of University Avenue and 31,500 vpd south of University Avenue within the study area. The roadway has a posted speed limit of 65 mph north of University Avenue, and 55 mph to the south.

University Avenue is a four-lane divided north-south Anoka County roadway with a Minor Arterial functional classification. No shoulders or sidewalks are present along University Avenue. The existing ADT on University Avenue is 15,000 vpd between TH 47 and CSAH 10 within the study area. The roadway has a posted speed limit of 35 mph.

CSAH 10 is a four-lane divided east-west Anoka County roadway with a Minor Arterial functional classification. Shoulders are present along CSAH 10, but no sidewalks currently exist. The existing ADT on CSAH 10 is 20,400 vpd between TH 47 and University Avenue, and 20,000 vpd between University Avenue and TH 65 within the study area. The roadway has a posted speed limit of 50 mph.

Jefferson Street NE is a two-lane section from 85th Avenue to the Northtown Mall entrance, and a four-lane divided section from the Northtown Mall entrance to Washington Street NE, where it turns into 87th Lane NE. Jefferson Street NE is a north-south roadway with a Major Collector functional classification. No shoulders are present along Jefferson Street, but there is a sidewalk along the west side of the road. The existing ADT on Jefferson Street NE is 7,728 vpd within the study area. The roadway has a posted speed limit of 30 mph.

85th Avenue NE/ Sanburnol Drive NE is a two-lane east-west roadway with a Major Collector functional classification. No shoulders are present along 85th Avenue NE/ Sanburnol Drive NE, but there is a sidewalk along the south side of the road between Terrace Road and Monroe Street NE. The existing ADT on 85th Avenue NE/ Sanburnol Drive NE ranges between 1,400 and 2,674 vpd within the study area. The roadway has a posted speed limit of 30 mph.

CR 132 is a four-lane divided east-west roadway with a Major Collector functional classification. No shoulders are present along 85th Avenue NE, but there is a sidewalk along the south side of the road

between East River Road and TH 47. The existing ADT on 85th Avenue NE ranges between 4,945 (east of TH 47) and 15,600 vpd (west of TH 47) within the study area. The roadway has a posted speed limit of 35 mph east of Springbrook Drive and 50 mph west of Springbrook Drive.

Existing Traffic Volumes

Weekday and weekend peak hour turning movement traffic volumes were collected as part of the traffic analysis. Turning movement count data was collected during the time period of September 24th through October 7, 2023. The PM peak hour varied across the network, between 3:00 PM and 5:00 PM, and the Saturday peak hour was between 1:00 PM and 2:45 PM. **Appendix D** contains detailed information about existing traffic volumes.

Existing Transit Routes

The Northtown Transit Center is located at the Northtown Mall and currently provides a hub for public transportation users within the Northtown Mall District. Metro Transit local bus routes that can be accessed at the hub are routes 10, 25, 805, 831, a limited bus stop route 824, and express service route 852 (Figure 13). These routes in the area closest to the site include transportation for the following:

- Route 10 is a local bus route from Downtown Minneapolis to Fridley or Blaine via University Avenue and Central Avenue.
- Route 25 is a local bus route from St Louis Park or Downtown Minneapolis to Mounds View or Blaine via Silver Lake Road, Stinson Parkway, Hennepin Avenue, and Nicollet Mall.
- Route 805 is a local bus route from Blaine to Anoka via Coon Rapids. or Downtown Minneapolis to Mounds View or Blaine via Silver Lake Road, Stinson Parkway, Hennepin Avenue, and Nicollet Mall.

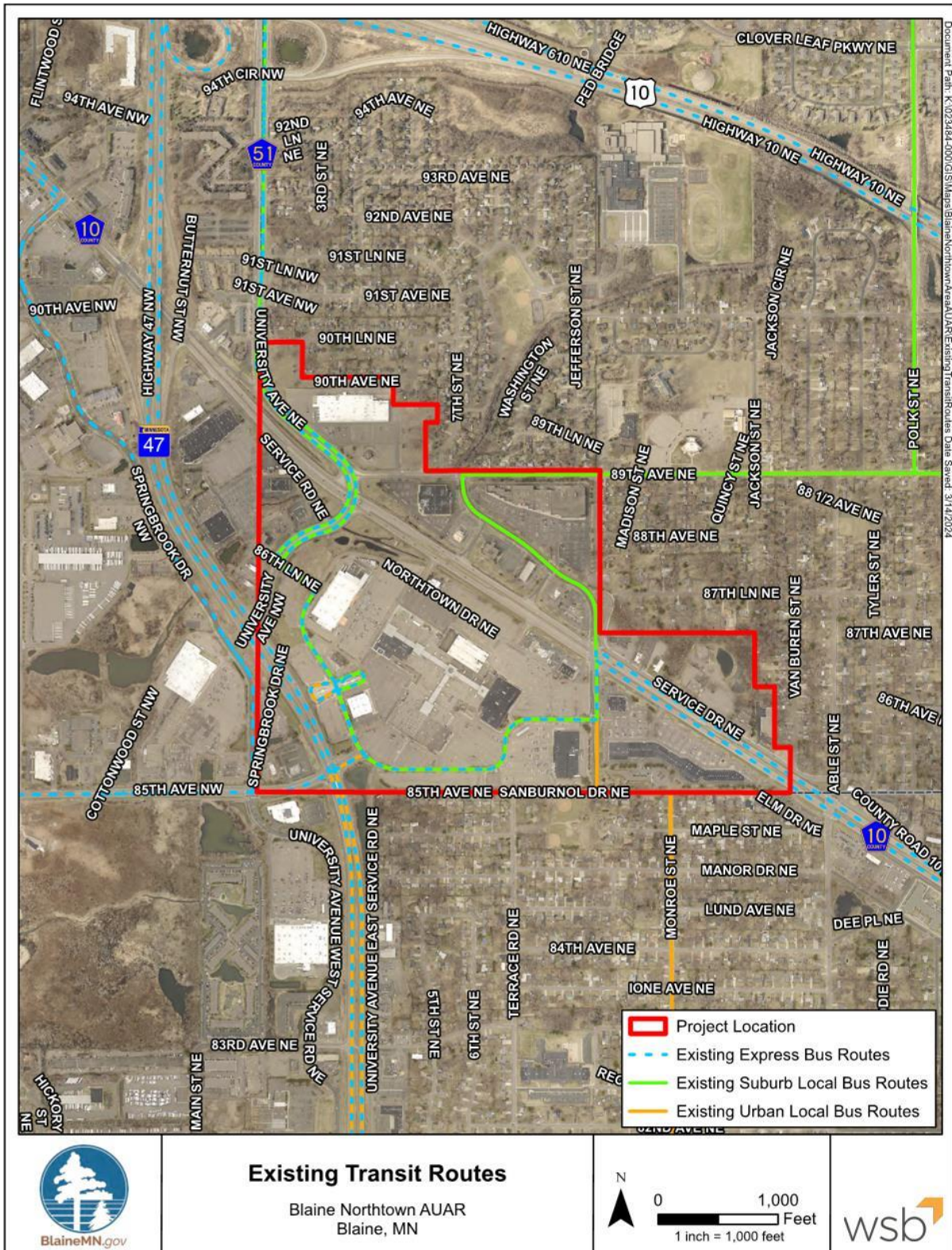


Figure 13 - Existing Transit Routes

Existing Bicycle and Pedestrian Facilities

In the study area there is a lack of pedestrian and bike facilities that provide access to the site. The only sidewalks/trails adjacent to the site are:

- Sidewalk on the south side of 85th Avenue between Terrace Road and Able Street.
- Sidewalks on the west side of Able Street south of the CSAH 10 Frontage Road, and north of CSAH 10 on the east sides of Able Street.
- Sidewalk on the west/south side of Jefferson Street between 85th Avenue and 89th Avenue.
- Trail on the north side of 89th Avenue that connects to a trail north of 87th Lane.
- Sidewalk on the east side of University Avenue, north of 89th Avenue.
- Sidewalk on the south side of CR 132, west of TH 47.

All signalized intersections within the study area, except TH 47 and University Avenue, provide crosswalks and pedestrian ramps, but a majority do not have sidewalks in any quadrant.

The primary destinations for pedestrians in the area are the fast food and retail businesses located throughout the existing site. Most of the businesses are unreachable for pedestrians, as CSAH 10, University Avenue, and TH 47 do not provide sidewalks adjacent to the site. The neighborhoods to the south of the site do have sidewalks on major north-south routes such as Terrace Road and Monroe Street, but not along residential streets. The only sidewalks within the neighborhoods to the north and east are 89th Avenue and Able Street, that connect to the existing site.

Figure 5 shows the existing pedestrian and bike facilities including existing sidewalk gaps.

PROPOSED CONDITIONS

Two development land use scenarios have been included in the AUAR. Scenario 1 is anticipated to include a mix of residential and commercial uses. Scenario 2 is also anticipated to include a mix of residential and commercial uses, with a higher residential use density.

Proposed Bike / Pedestrian Facilities

With either scenario, trail and sidewalk connections to the surrounding network will be provided.

As discussed previously, the study area is currently lacking pedestrian and bicycle facilities within the site and connections to nearby bike facilities. Both scenarios would propose a comprehensive network of sidewalks and trails to better connect the study area to surrounding neighborhoods and provide alternative modes of transportation. Goals include:

- Create safer roadway crossings at signalized intersections with high volumes
- Prioritize accessibility for pedestrians and bicyclists
- Provide a comprehensive system of sidewalks trails, and on-street bike lanes as redevelopment occurs
- Connect proposed internal trails to existing nearby community/ regional trails, neighborhoods, parks, community destinations
- Create a wayfinding signage program for pedestrians/bicyclists
- Provide bicycle facilities such as bike parking, pump and repair stations, lockers and showers
- Provide ADA compliant pedestrian crossings and routes
- Provide safe and accessible connections to transit

Transit Connections

With either scenario, the future transit station for the future Metro F Line (BRT) is planned to replace the existing transit station in the southwest area of the study area, with upgraded amenities and services. The F Line will provide an opportunity to incorporate transit-orientated development (TOD) and increased ridership in the redeveloped area. The Metro F Line is planned to serve the north metro area along the TH 65 corridor, essentially replacing Route 10 from Northtown Mall to downtown Minneapolis via TH 47 and TH 65.

Traffic Projections

In order to analyze the land use scenarios and determine the appropriate lane configuration and traffic control needs on the area roadways and intersections; projected traffic volumes were determined. Projections were prepared for the 2040 horizon year. The following sections outline the projected background traffic growth, traffic generation from the study area, as well as the traffic distribution and projected traffic volumes.

The estimated trip generation for both of the proposed development scenarios is shown in Table 17 and Table 18. The trip generation rates used to estimate the proposed area traffic is based on similar land uses as documented in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. Additional information about the methods used in this analysis is included in **Appendix D**.

Table 17 - Scenario 1: Trip Generation

Trip Generation- Scenario 1. Comp Plan												
Site #	Land Use	ITE Code/Description	# of Units	Unit Type	PM Trips			Weekend Peak Trips			Weekday Trips	
					In	Out	Total	In	Out	Total		
A	MDR	215-Single-Family Attached Housing	99	Dwelling Units	33	23	56	27	29	56	713	
	CC	821-Shopping Center (40-150k)	101	KSF	436	472	908	475	457	932	9,508	
					Mixed-Use Reduction (20% of Retail)	(87)	(94)	(182)	(95)	(91)	(186)	(1,902)
					Retail Pass-by (40% Weekday, 31% Weekend)	(174)	(189)	(363)	(147)	(142)	(289)	(3,803)
				Subtotal Site A New Trips	207	212	419	260	253	513	4,516	
B	CC	821-Shopping Center (40-150k)	58	KSF	253	274	527	276	265	541	5,520	
	PC	712-Small Office Building	8	KSF	6	12	18	-	-	-	120	
	HDR	221-Multifamily Housing (Low Rise)	41	Dwelling Units	13	8	21	8	8	16	276	
					Mixed-Use Reduction (20% of Retail)	(51)	(55)	(105)	(55)	(53)	(108)	(1,104)
				Retail Pass-by (40% Weekday, 31% Weekend)	(101)	(110)	(211)	(86)	(82)	(168)	(2,208)	
				Subtotal Site B New Trips	120	130	250	143	138	281	2,605	
C	CC	821-Shopping Center (40-150k)	78	KSF	336	364	700	366	352	718	7,330	
	MDR	215-Single-Family Attached Housing	76	Dwelling Units	26	18	44	21	23	44	547	
					Mixed-Use Reduction (20% of Retail)	(67)	(73)	(140)	(73)	(70)	(144)	(1,466)
					Retail Pass-by (40% Weekday, 31% Weekend)	(134)	(146)	(280)	(113)	(109)	(223)	(2,932)
				Subtotal Site C New Trips	160	164	324	200	195	396	3,479	
D	PC	710-General Office Building	24	KSF	6	29	35	7	6	13	265	
	HDR	221-Multifamily Housing (Low Rise)	120	Dwelling Units	39	23	62	25	25	50	809	
				Subtotal Site D New Trips	45	52	97	32	31	63	1,074	
E	PC	710-General Office Building	15	KSF	4	17	21	4	4	8	158	
	HDR	221-Multifamily Housing (Low Rise)	72	Dwelling Units	23	14	37	15	15	30	485	
				Subtotal Site E New Trips	27	31	58	19	19	38	643	
F	CC	820-Shopping Center (>150k)	201	KSF	329	356	685	461	426	887	7,457	
					Mixed-Use Reduction (20% of Retail)	(66)	(71)	(137)	(92)	(85)	(177)	(1,491)
					Retail Pass-by (40% Weekday, 31% Weekend)	(132)	(142)	(274)	(143)	(132)	(275)	(2,983)
					Subtotal Site F New Trips	132	142	274	226	209	435	2,983
G	CC	821-Shopping Center (40-150k)	76	KSF	328	355	683	357	343	700	7,145	
					Mixed-Use Reduction (20% of Retail)	(66)	(71)	(137)	(71)	(69)	(140)	(1,429)
					Retail Pass-by (40% Weekday, 31% Weekend)	(131)	(142)	(273)	(111)	(106)	(217)	(2,858)
					Subtotal Site G New Trips	131	142	273	175	168	343	2,858
H	CC	820-Shopping Center (>150k)	1,026	KSF	1,675	1,814	3,489	2,348	2,167	4,515	37,977	
					Mixed-Use Reduction (20% of Retail)	(335)	(363)	(698)	(470)	(433)	(903)	(7,595)
					Retail Pass-by (40% Weekday, 31% Weekend)	(670)	(726)	(1,396)	(728)	(672)	(1,400)	(15,191)
					Subtotal Site H New Trips	670	726	1,396	1,151	1,062	2,212	15,191
I	MDR	215-Single-Family Attached Housing	29	Dwelling Units	10	7	17	8	9	17	209	
	HDR	221-Multifamily Housing (Low Rise)	427	Dwelling Units	137	81	218	88	88	176	2,878	
	PC	710-General Office Building	24	KSF	6	29	35	7	6	13	265	
				Subtotal Site I New Trips	153	117	270	103	103	206	3,352	
				Total New Trips	1,646	1,715	3,361	2,309	2,178	4,487	36,700	

Source: Institute of Transportation Engineers; Trip Generation Manual, 11th Edition

Table 18 - Scenario 2: Trip Generation

Trip Generation- Scenario 2. Vision Plan											
Site #	Land Use	ITE Code/Description	# of Units	Unit Type	PM Trips			Weekend Peak Trips			Weekday Trips
					In	Out	Total	In	Out	Total	
A	MDR	215-Single-Family Attached Housing	99	Dwelling Units	33	23	56	27	29	56	713
	CC	821-Shopping Center (40-150k)	101	KSF	436	472	908	475	457	932	9,508
		Mixed-Use Reduction (20% of Retail)			(87)	(94)	(182)	(95)	(91)	(186)	(1,902)
		Retail Pass-by (40% Weekday, 31% Weekend)			(174)	(189)	(363)	(147)	(142)	(289)	(3,803)
		Subtotal Site A New Trips			207	212	419	260	253	513	4,516
B	CC	821-Shopping Center (40-150k)	58	KSF	253	274	527	276	265	541	5,520
	PC	712-Small Office Building	8	KSF	6	12	18	-	-	-	120
	HDR	221-Multifamily Housing (Low Rise)	41	Dwelling Units	13	8	21	8	8	16	276
		Mixed-Use Reduction (20% of Retail)			(51)	(55)	(105)	(55)	(53)	(108)	(1,104)
		Retail Pass-by (40% Weekday, 31% Weekend)			(101)	(110)	(211)	(86)	(82)	(168)	(2,208)
		Subtotal Site B New Trips			120	130	250	143	138	281	2,605
C	CC	821-Shopping Center (40-150k)	116	KSF	504	546	1,050	550	528	1,078	10,995
	MDR	215-Single-Family Attached Housing	38	Dwelling Units	13	9	22	10	11	21	274
		Mixed-Use Reduction (20% of Retail)			(101)	(109)	(210)	(110)	(106)	(216)	(2,199)
		Retail Pass-by (40% Weekday, 31% Weekend)			(202)	(218)	(420)	(171)	(164)	(334)	(4,398)
		Subtotal Site C New Trips			215	227	442	280	270	549	4,671
D	PC	710-General Office Building	24	KSF	6	29	35	7	6	13	265
	HDR	221-Multifamily Housing (Low Rise)	120	Dwelling Units	39	23	62	25	25	50	809
		Subtotal Site D New Trips			45	52	97	32	31	63	1,074
E	PC	710-General Office Building	15	KSF	4	17	21	4	4	8	158
	HDR	221-Multifamily Housing (Low Rise)	72	Dwelling Units	23	14	37	15	15	30	485
		Subtotal Site E New Trips			27	31	58	19	19	38	643
F	CC	820-Shopping Center (>150k)	201	KSF	329	356	685	461	426	887	7,457
		Mixed-Use Reduction (20% of Retail)			(66)	(71)	(137)	(92)	(85)	(177)	(1,491)
		Retail Pass-by (40% Weekday, 31% Weekend)			(132)	(142)	(274)	(143)	(132)	(275)	(2,983)
		Subtotal Site F New Trips			132	142	274	226	209	435	2,983
G	CC	821-Shopping Center (40-150k)	76	KSF	328	355	683	357	343	700	7,145
		Mixed-Use Reduction (20% of Retail)			(66)	(71)	(137)	(71)	(69)	(140)	(1,429)
		Retail Pass-by (40% Weekday, 31% Weekend)			(131)	(142)	(273)	(111)	(106)	(217)	(2,858)
		Subtotal Site G New Trips			131	142	273	175	168	343	2,858
H	CC	820-Shopping Center (>150k)	477	KSF	778	843	1,621	1,091	1,007	2,098	17,650
	HDR	221-Multifamily Housing (Low Rise)	1,292	Dwelling Units	415	244	659	265	265	530	8,708
	MDR	215-Single-Family Attached Housing	103	Dwelling Units	35	24	59	28	31	59	742
	PC	710-General Office Building	263	KSF	64	314	378	75	64	139	2,848
		Mixed-Use Reduction (20% of Retail/Rest)			(156)	(169)	(324)	(218)	(201)	(420)	(3,530)
		Retail Pass-by (40% Weekday, 31% Weekend)			(311)	(337)	(648)	(338)	(312)	(650)	(7,060)
		Subtotal Site H New Trips			825	919	1,744	903	853	1,756	19,358
I	PC	710-General Office Building	99	KSF	24	118	142	28	24	52	1,070
	HDR	221-Multifamily Housing (Low Rise)	486	Dwelling Units	156	92	248	100	100	200	3,276
		Subtotal Site I New Trips			180	210	390	128	124	252	4,346
		Total New Trips			1,882	2,065	3,948	2,165	2,065	4,230	43,054

Source: Institute of Transportation Engineers; Trip Generation Manual, 11th Edition

Proposed Development Area Traffic Distribution

Area generated trips were distributed to the adjacent roadway system based on several factors including the information in the Traffic Study, anticipated origins and destinations for the residential land use, existing travel patterns with the commercial land use, and future roadway connections. Based on these parameters, the following general traffic distribution was used to distribute the projected traffic volumes to the area roadway network:

Commercial distribution:

- 20% to/from the northwest on CSAH 10
- 20% to/from the southeast on CSAH 10
- 15% to/from the west on CR 132
- 15% to/from the north on TH 47
- 15% to/from the south on TH 47
- 5% to/from the east on 89th Avenue
- 5% to/from the north on University Avenue
- 5% to/from the south on various neighborhood roadways

Residential distribution:

- 10% to/from the northwest on CSAH 10
- 40% to/from the southeast on CSAH 10
- 10% to/from the west on CR 132
- 10% to/from the north on TH 47
- 30% to/from the south on TH 47

Projected Traffic Volumes

Traffic forecasts were prepared for the 2040 No-Build and Build conditions. The 2040 No-Build traffic forecasts were prepared by adding the projected annual background traffic growth (0.9% annual growth based on the Blaine 2040 Comprehensive Plan) to the existing traffic volumes. The 2040 Build volumes were forecasted by removing the estimated existing land use-related trips from the project area, adding the projected annual background traffic growth to the reduced adjusted traffic volumes and adding the anticipated area development site traffic generation for each Build Scenario. Scenario 2 also identifies a reconfiguration of CSAH 10 and Washington Avenue NE, with an 85th Avenue extension connecting to the intersection with CSAH 10 and full access being provided. Trips were redistributed from the adjacent full access CSAH 10 intersections with University Avenue and Jefferson Street and from the TH 47 and 85th Avenue intersection to the new CSAH 10 and 85th Avenue extension intersection.

TRAFFIC OPERATIONS ANALYSIS

Existing and/or forecasted traffic operations were evaluated at the impacted area intersections in the study area. The analysis was conducted for the following scenarios.

1. Existing Conditions
2. Projected 2040 No-Build
3. Projected 2040 Build Scenario 1 (Comprehensive Plan)
4. Projected 2040 Build Scenario 2 (Vision Plan)

The methodology and more information for this analysis is included in **Appendix D**.

2040 No-Build Analysis

Table 19 summarizes the LOS and delays at the primary intersections in the study area based on the current lane geometry, traffic control and projected 2040 traffic volumes without any area redevelopment. The traffic signal timing was optimized for the analysis at all signalized intersections within the study area.

Table 19 - 2040 No-Build Traffic Operations Summary

Control	Intersection	Saturday Peak Hour		PM Peak Hour	
		LOS	Delay ⁽¹⁾ (sec/veh)	LOS	Delay ⁽¹⁾ (sec/veh)
Signal	Springbrook Dr & 85 th Ave	B	14	B	17
Signal	TH 47 & 85 th Ave	C	28	C	32
Signal	TH 47 & University Ave	B	12	B	11
Signal	86 th Ln & University Ave	B	12	B	11
Signal	University Ave & CSAH 10	C	34	D	46
TWSC	University Ave & 89 th Ave	B	13	C	15
Signal	University Ave & 91 st Ave	A	7	A	8
Signal	87 th Ln & 89 th Ave	B	10	B	11
Signal	Jefferson St & CSAH 10	C	30	D	39
Signal	Able St & CSAH 10	C	31	D	41
TWSC	Washington St & CSAH 10	A	7	B	10
TWSC	7th St & CSAH 10	A	7	B	10
Signal	Jefferson St & Washington St	A	8	A	8
AWS	85 th Ave & Jefferson St	A	6	A	6
Signal	Jefferson St & Mall Ent	B	12	B	11
Signal	TH 47 NB Ramp & CSAH 10	C	32	D	37
Signal	TH 47 SB Ramp & CSAH 10	C	28	C	23

C = Overall LOS, (D) = Worst movement LOS, (1) = Overall Delay (worst movement for thru-stop intersections)

The analysis results show that all intersections are expected to operate similar to existing conditions with a slight increase in delay, but at an acceptable overall LOS C or better during the weekday PM peak hour and overall LOS D or better during the Saturday peak hour. All movements will be operating at LOS D or better except the following movements expected to operate at a LOS E/F:

- TH 47 and 85th Avenue
 - Saturday and PM Peak Hour
 - Northbound left-turn movement
- University Avenue and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement
 - Eastbound through movement
- CSAH 10 and Able Street
 - PM Peak Hour
 - Eastbound left-turn movement
- TH 47 Northbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement
- TH 47 Southbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Westbound left-turn movement

2040 Build Analysis – Scenario 1 (Comprehensive Plan)

Table 20 summarizes the LOS and delays at the primary intersections in the study area based on the existing lane geometry, traffic control and projected 2040 traffic volumes with full development of the area assuming Scenario 1 (Comprehensive Plan). The traffic signal timing was optimized for the analysis at all signalized intersections within the study area.

Table 20 - 2040 Build Traffic Operations Summary: Scenario 1

Control	Intersection	Saturday Peak Hour		PM Peak Hour	
		LOS	Delay ⁽¹⁾ (sec/veh)	LOS	Delay ⁽¹⁾ (sec/veh)
Signal	Springbrook Dr & 85 th Ave	B	17	C	20
Signal	TH 47 & 85 th Ave	D	37	D	41
Signal	TH 47 & University Ave	B	15	B	16
Signal	86 th Ln & University Ave	B	16	B	18
Signal	University Ave & CSAH 10	D	47	E	55
TWSC	University Ave & 89 th Ave	C	19	C	16
Signal	University Ave & 91 st Ave	A	8	A	7
Signal	87 th Ln & 89 th Ave	B	12	B	12
Signal	Jefferson St & CSAH 10	D	35	D	40
Signal	Able St & CSAH 10	C	31	D	37
TWSC	Washington St & CSAH 10	A	7	B	10
TWSC	7th St & CSAH 10	C	20	E	44
Signal	Jefferson St & Washington St	A	8	A	7
AWS	85 th Ave & Jefferson St	A	6	A	6
Signal	Jefferson St & Mall Ent	A	9	A	7
Signal	TH 47 NB Ramp & CSAH 10	C	31	D	36
Signal	TH 47 SB Ramp & CSAH 10	C	28	C	26

C = Overall LOS, (D) = Worst movement LOS, (1) = Overall Delay (worst movement for thru-stop intersections)

The analysis results show that all intersections are expected to operate similar to 2040 No-Build conditions with a slight increase in delay. All intersections are expected to operate at an overall LOD D or better during peak hours, except for the intersection of CSAH 10 and University Avenue which is expected to operate at a LOS E during the PM peak hour. All movements will be operating at LOS D or better except the following movements expected to operate at a LOS E/F:

- TH 47 and 85th Avenue
 - Saturday and PM Peak Hour
 - Northbound left-turn movement (no change from 2040 No-Build)
 - Saturday and PM Peak Hour
 - Southbound left-turn movement
- University Avenue and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)

- Eastbound through movement (no change from 2040 No-Build)
 - PM Peak Hour
 - Northbound left-turn movement
 - Northbound through movement
 - Westbound through movement
 - Southbound left-turn movement
- CSAH 10 and Jefferson Street
 - PM Peak Hour
 - Eastbound left-turn movement
 - Westbound left-turn movement
- CSAH 10 and Able Street
 - PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
 - Westbound left-turn movement
- CSAH 10 and 7th Street
 - PM Peak Hour
 - Southbound right-turn movement
- TH 47 Northbound Ramp and CSAH 10
 - PM Peak Hour
 - Eastbound left-turn movement (change from LOS E in 2040 No-Build to LOS F)
 - Saturday Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
- TH 47 Southbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Westbound left-turn movement (no change from 2040 No-Build)
 - PM Peak Hour
 - Southbound through movement

To improve the delay and level of service at the intersections with movements at LOS E/F or queuing issues, mitigation improvements were analyzed. The mitigation included a traffic signal at CSAH 10 and the new 85th Avenue Extension, as well as:

- TH 47 & 85th Avenue
 - Dual left turns on all approaches
 - Extending the eastbound right-turn lane length to 300 feet
- CSAH 10 & University Avenue
 - Extending the eastbound right-turn lane length to 550 feet
- University Avenue & 89th Avenue
 - Extending the southbound left-turn lane length to 200 feet
- University Avenue & 91st Avenue
 - Extending the eastbound and westbound right-turn lane lengths to 100 feet
- CSAH 10 & Able Street
 - Extending the northbound left-turn lane and right-turn lane lengths to 150 feet
 - Add a southbound right-turn lane
 - Extending the southbound left-turn lane to 150 feet
- CSAH 10 & 85th Avenue Extension
 - Extending the westbound left-turn lane length to 400 feet
 - Extending the northbound right-turn lane to 200 feet
- CSAH 10 & 7th Street
 - Add a westbound acceleration lane for the southbound right turn that turns into a drop lane at University Avenue
- Jefferson Street & Mall Entrance
 - Extending the eastbound left-turn lane length to 150 feet
- TH 47 Northbound Ramp & CSAH 10
 - Extending the eastbound left-turn lane length to 300 feet
- TH 47 Southbound Ramp & CSAH 10

- Extending the southbound left-turn lane length to 300 feet
- Extending the eastbound right-turn lane length to 300 feet
- Extending the westbound left-turn lane length to 300 feet

The results of the analysis are included in Table 21 and show that all overall intersections and minor approach movements would be operating at LOS D or better.

Table 21 - 2040 Build Traffic Operations Summary - Scenario 1 with Mitigation

Control	Intersection	Saturday Peak Hour		PM Peak Hour	
		LOS	Delay ⁽¹⁾ (sec/veh)	LOS	Delay ⁽¹⁾ (sec/veh)
Signal	TH 47 & 85 th Ave	C	26	C	27
Signal	University Ave & CSAH 10	D	39	D	44
TWSC	University Ave & 89 th Ave	C	17	C	16
Signal	University Ave & 91 st Ave	A	7	A	8
Signal	Able St & CSAH 10	C	32	D	36
Signal	85 th Ave Ext & CSAH 10	C	28	C	31
TWSC	7th St & CSAH 10	B	10	C	15
Signal	Jefferson St & Mall Ent	A	7	A	6
Signal	TH 47 NB Ramp & CSAH 10	D	35	D	35
Signal	TH 47 SB Ramp & CSAH 10	C	30	C	27

C=Overall LOS, (D) = Worst movement LOS, (1) = Overall Delay (worst movement for thru-stop intersections)
 (2) = Optimized signal timing

2040 Build Analysis – Scenario 2 (Vision Plan)

Table 22 summarizes the LOS and delays at the primary intersections in the study area based on the existing lane geometry, traffic control and projected 2040 traffic volumes with full development of the area assuming Land Use Scenario 2 (Vision Plan).

Table 22 - 2040 Build Traffic Operations Summary - Scenario 2

Control	Intersection	Saturday Peak Hour		PM Peak Hour	
		LOS	Delay ⁽¹⁾ (sec/veh)	LOS	Delay ⁽¹⁾ (sec/veh)
Signal	Springbrook Dr & 85 th Ave	B	14	B	14
Signal	TH 47 & 85 th Ave	D	36	D	39
Signal	TH 47 & University Ave	B	18	B	18
Signal	86 th Ln & University Ave	B	14	B	17
Signal	University Ave & CSAH 10	D	45	E	59
TWSC	University Ave & 89 th Ave	C	16	C	20

Signal	University Ave & 91 st Ave	A	7	A	7
Signal	87 th Ln & 89 th Ave	B	12	B	12
Signal	Jefferson St & CSAH 10	D	35	D	44
Signal	Able St & CSAH 10	C	33	D	44
TWSC	Washington St & CSAH 10	A	9	B	13
TWSC	7th St & CSAH 10	F	50	F	114
Signal	Jefferson St & Washington St	A	8	A	8
AWS	85 th Ave & Jefferson St	A	6	A	6
Signal	Jefferson St & Mall Ent	A	8	A	9
Signal	TH 47 NB Ramp & CSAH 10	C	31	D	35
Signal	TH 47 SB Ramp & CSAH 10	C	26	C	25

C = Overall LOS, (D) = Worst movement LOS, (1) = Overall Delay (worst movement for thru-stop intersections)

The analysis results show that all intersections are expected to operate similar to 2040 No-Build Conditions with a slight increase in delay. All intersections are expected to operate at an overall LOD D or better during peak hours, except for the intersection of CSAH 10 and University Avenue which is expected to operate at a LOS E during the PM peak hour. All movements will be operating at LOS D or better except the following movements expected to operate at a LOS E/F:

- TH 47 and 85th Avenue
 - Saturday and PM Peak Hour
 - Northbound left-turn movement (change from LOS E in 2040 No-Build to LOS F for Saturday Peak)
 - Westbound left-turn movement
 - Westbound through movement
 - Southbound left-turn movement
 - Northbound left-turn movement
- University Avenue and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement (change from LOS E in 2040 No-Build to LOS F)
 - Eastbound through movement (no change from 2040 No-Build)
 - PM Peak Hour
 - Northbound left-turn movement
 - Northbound through movement
 - Westbound left-turn movement
 - Southbound left-turn movement
- CSAH 10 and Jefferson Street
 - PM Peak Hour
 - Westbound left-turn movement
 - Westbound through movement
 - Eastbound left-turn movement
- CSAH 10 and Able Street
 - PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
 - Westbound left-turn movement
- CSAH 10 and 7th Street
 - Saturday and PM Peak Hour
 - Southbound right-turn movement
- TH 47 Northbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
- TH 47 Southbound Ramp and CSAH 10
 - Saturday and PM Peak Hour

- Westbound left-turn movement (no change from 2040 No-Build)

To improve the delay and level of service at the intersections with movements at LOS E/F or queuing issues, mitigation improvements were analyzed. The mitigation included all mitigation options described for Scenario 1, as well as:

- CSAH 10 & Jefferson Street
 - Extending the northbound left-turn lane length to 300 feet
- CSAH 10 & Able Street
 - Extending the westbound right-turn lane to 350 feet
- CSAH 10 & 85th Avenue Extension
 - Extending the northbound left-turn lane length to 200 feet
 - Extending the northbound right-turn lane to 250 feet
- Jefferson Street & Mall Entrance
 - Extending the westbound right-turn lane length to 150 feet
- TH 47 Northbound Ramp & CSAH 10
 - Extending the northbound left-turn lane length to 300 feet

The results of the analysis are included in Table 23 and show that all overall intersections and minor approach movements would be operating at LOS D or better.

Table 23 - 2040 Build Traffic Operations Summary - Scenario 2 with Mitigation

Control	Intersection	Saturday Peak Hour		PM Peak Hour	
		LOS	Delay ⁽¹⁾ (sec/veh)	LOS	Delay ⁽¹⁾ (sec/veh)
Signal	TH 47 & 85 th Ave	C	25	C	28
Signal	University Ave & CSAH 10	D	38	D	44
TWSC	University Ave & 89 th Ave	C	15	C	16
Signal	University Ave & 91 st Ave	A	7	A	7
Signal	Jefferson St & CSAH 10	C	34	D	40
Signal	Able St & CSAH 10	C	30	D	41
Signal	85 th Ave Ext & CSAH 10	C	27	C	27
TWSC	7th St & CSAH 10	A	8	C	16
Signal	Jefferson St & Mall Ent	A	7	A	8
Signal	TH 47 NB Ramp & CSAH 10	D	35	D	35
Signal	TH 47 SB Ramp & CSAH 10	C	31	C	26

C = Overall LOS, (D) = Worst movement LOS, (1) = Overall Delay (worst movement for thru-stop intersections)

Item No.	Mitigation Description
20.1	Implement intersection improvements outlined in traffic study at: <ul style="list-style-type: none"> • CSAH 10 and the new 85th Avenue Extension • TH 47 & 85th Avenue • CSAH 10 & University Avenue • University Avenue & 89th Avenue • University Avenue & 91st Avenue • CSAH 10 & Able Street • CSAH 10 & 85th Avenue Extension • CSAH 10 & 7th Street • Jefferson Street & Mall Entrance • TH 47 Northbound Ramp & CSAH 10 • TH 47 Southbound Ramp & CSAH 10 • CSAH 10 & Jefferson Street
20.2	Implement proposed Transit plans as outlined in the Vision Plan (Scenario 2)
20.3	Construct trail and sidewalk connections within the study area and to the surrounding network.
20.4	Traffic studies will be updated, as needed, as development progresses.

CUMULATIVE POTENTIAL EFFECTS

AUAR Guidance: Because the AUAR process by its nature is intended to deal with cumulative potential effects from all future developments within the AUAR area, it is presumed that the responses to all items on the EAW form automatically encompass the impacts from all anticipated developments within the AUAR area.

Cumulative effects are impacts on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of whom undertakes said actions. Areas considered for cumulative effects are those that are adjacent to the study area and considers projects that would be constructed in the foreseeable future.

In the area surrounding the study area, two recently completed commercial building projects have been built and one, a carwash, is upcoming. In neighboring Coon Rapids, approximately 180,000 square feet of light industrial uses and a 184-unit multifamily building have been recently constructed or are approved near the AUAR study area. Each of these developments were reviewed for the impacts to the surrounding environment, transportation, and utility networks. Required mitigation measures, if any, have been incorporated into those development plans. None of the recent developments or known future developments are anticipated to cumulate with the actions proposed in this AUAR to create cumulative effects, if the mitigation measures identified are implemented. Impacts from future developments adjacent to the study area will be addressed through permitting and approval processes and will be independently mitigated to minimize cumulative impacts.

OTHER POTENTIAL ENVIRONMENTAL EFFECTS

If the project may cause any additional environmental effects not addressed by Items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

In both scenarios the goal is to pursue responsible material and waste stream management, and effective, integrated, and visible stormwater treatment.

No other potential environmental effects are anticipated as a result of the construction and operation of any of the proposed development scenarios.

March 2024

APPENDIX A
WELL LOGS

406302

County Anoka
Quad Coon
Quad ID 120AMINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031Entry Date 04/15/1991
Update Date 04/07/2023
Received Date

Well Name TIRES PLUS	Township 31	Range 23	Dir Section W 31	Subsection BCCDC	Well Depth 245 ft.	Depth Completed 245 ft.	Date Well Completed 12/04/1984
Elevation 886 ft.	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Non-specified Rotary	Drill Fluid	
Address C/W 30 COONRAPIDS BL BLAINE MN 55434					Use commercial	Status Active	
Stratigraphy Information					Well Hydrofractured? Yes <input type="checkbox"/> No <input type="checkbox"/>	From	To
Geological Material	From	To (ft.)	Color	Hardness	Casing Type Single casing	Joint Threaded	
SAND	0	15	BROWN		Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Above/Below 1 ft.	
CLAY	15	135	GRAY		Casing Diameter 4 in.	Weight 182 ft. 10.7 lbs./ft.	Hole Diameter 6.2 in. To 182 ft. 4 in. To 245 ft.
SHALE	135	157	YELLOW	SOFT	Open Hole From 182 ft. To 245 ft.		
SANDSTONE	157	182	WHITE	SOFT	Screen? <input type="checkbox"/>	Type	Make
SANDSTONE	182	245	WHITE	HARD	Static Water Level 70 ft. land surface Measure 12/04/1984		
Pumping Level (below land surface) 80 ft. 2 hrs. Pumping at 50 g.p.m.							
Wellhead Completion Pitless adapter manufacturer MONITOR Model SNAPPY <input type="checkbox"/> Casing Protection <input checked="" type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)							
Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified Material Amount From To bentonite 0 ft. 182 ft.							
Nearest Known Source of Contamination 20 feet East Direction Septic tank/drain field Type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							
Pump <input type="checkbox"/> Not Installed Date Installed 12/06/1984 Manufacturer's name RED JACKET Model Number CN 95C HP 0.5 Volt 230 Length of drop pipe 80 ft Capacity 10 g.p. Typ Submersible							
Abandoned Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No							
Variance Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No							
Miscellaneous First Bedrock Prairie Du Chien-Jordan Aquifer Jordan-St. Last Strat Jordan-St.Lawrence Depth to Bedrock 135 ft Located by Minnesota Geological Survey Locate Method Digitized - scale 1:24,000 or larger (Digitizing Table) System UTM - NAD83, Zone 15, Meters X 479098 Y 4997651 Unique Number Verification Information from Input Date 01/01/1990							
Angled Drill Hole							
Well Contractor Mork Well Co. 02133 TORGERSON, R. Licensee Business Lic. or Reg. No. Name of Driller							
Remarks							

564350County Anoka
Quad Coon
Quad ID 120AMINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING REPORT
Minnesota Statutes Chapter 1031Entry Date 06/18/1996
Update Date 02/14/2014
Received Date 08/07/1995

Well Name TARGET/MERVY 31	Township 23	Range W 31	Dir Section CDBBDC	Subsection CDBBDC	Well Depth 27 ft.	Depth Completed 25 ft.	Date Well Completed 04/19/1995
Elevation 896 ft.	Elev. Method 7.5 minute topographic map (+/- 5 feet)				Drill Method Cable Tool	Drill Fluid	
Address					Use elevator	Status Active	
Contact 33 6TH ST S MINNEAPOLIS MN 55440					Well Hydrofractured? Yes <input type="checkbox"/> No <input type="checkbox"/> From To		
Well 301 NORTHTOWN DR NE BLAINE MN					Casing Type Single casing Joint Welded		
Stratigraphy Information					Drive Shoe? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Above/Below -4 ft.		
Geological Material From To (ft.) Color Hardness					Casing Diameter Weight		
SILTY SAND 0 27 GRAY MEDIUM					16 in. To 25 ft. 62.5 lbs./ft.		
					Open Hole From ft. To ft.		
					Screen? <input type="checkbox"/> Type Make		
					Static Water Level		
					6 ft. land surface Measure 04/19/1995		
					Pumping Level (below land surface)		
					Wellhead Completion		
					Pitless adapter manufacturer Model		
					<input type="checkbox"/> Casing Protection <input type="checkbox"/> 12 in. above grade		
					<input type="checkbox"/> At-grade (Environmental Wells and Borings ONLY)		
					Grouting Information Well Grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Specified		
					Material Amount From To		
					neat cement 2 Sacks 25 ft. 27 ft.		
					Nearest Known Source of Contamination		
					feet Direction Type		
					Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No		
					Pump <input type="checkbox"/> Not Installed Date Installed		
					Manufacturer's name		
					Model Number HP Volt		
					Length of drop pipe ft Capacity g.p. Typ		
					Abandoned		
					Does property have any not in use and not sealed well(s)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
					Variance		
					Was a variance granted from the MDH for this well? <input type="checkbox"/> Yes <input type="checkbox"/> No		
					Miscellaneous		
					First Bedrock Aquifer		
					Last Strat sand+silt-gray Depth to Bedrock ft		
					Located by Minnesota Geological Survey		
					Locate Method Digitization (Screen) - Map (1:12,000) (>15 meters)		
					System UTM - NAD83, Zone 15, Meters X 479508 Y 4997132		
					Unique Number Verification Address verification Input Date 02/08/2010		
					Angled Drill Hole		
					Well Contractor		
					Midwest Drilling L0002 STANGRET, B.		
					Licensee Business Lic. or Reg. No. Name of Driller		
Remarks PIT 4' BELOW GRADE							
Minnesota Well Index Report				564350		Printed on 11/08/2023 HE-01205-15	

March 2024

APPENDIX B
AGENCY COORDINATION



Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

February 8, 2024

Correspondence # MCE 2023-00863

Lucas Wandrie
WSB & Associates, Inc.

RE: Natural Heritage Review of the proposed **Blaine Northtown AUAR**,
T30N R24W Section 2, T31N R23W Section 31, T31N R24W Section 36; Anoka County

Dear Lucas Wandrie,

As requested, the Minnesota Natural Heritage Information System has been reviewed to determine if the proposed project has the potential to impact any rare species or other significant natural features. Based on the project details provided with the request, the following rare features may be impacted by the proposed project:

Ecologically Significant Areas

- The Minnesota Biological Survey (MBS) has identified **Springbrook Nature Center** as a Site of Moderate Biodiversity Significance in the vicinity of the proposed project. Sites of Biodiversity Significance have varying levels of native biodiversity and are ranked based on the relative significance of this biodiversity at a statewide level. Sites ranked as Moderate contain occurrences of rare species and/or moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery.

We encourage you to consider project alternatives that would avoid or minimize disturbance to this ecologically significant area. Actions to minimize disturbance may include, but are not limited to, the following recommendations:

- As much as possible, operate within already-disturbed areas.
- Retain a buffer between proposed activities and the MBS Site.
- Use effective erosion prevention and sediment control measures.
- Inspect and clean all equipment prior to bringing it to the Site to prevent the introduction and spread of invasive species.

- Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible.
- Use only weed-free mulches, topsoils, and seed mixes. Of particular concern are birdsfoot trefoil (*Lotus corniculatus*) and crown vetch (*Coronilla varia*), two invasive species that are sold commercially and are problematic in prairies and disturbed open areas.

MBS Sites of Biodiversity Significance and DNR Native Plant Communities can be viewed using the Explore page in Minnesota Conservation Explorer or their GIS shapefiles can be downloaded from the MN Geospatial Commons. Please contact the NH Review Team if you need assistance accessing the data. Reference the MBS Site Biodiversity Significance and Native Plant Community websites for information on interpreting the data. To receive a list of MBS Sites of Biodiversity Significance and DNR Native Plant Communities in the vicinity of your project, create a Conservation Planning Report using the Explore Tab in Minnesota Conservation Explorer.

State-listed Species

- Blanding's turtles (*Emydoidea blandingii*), a state-listed threatened species, have been reported from the vicinity of the proposed project. Given the land use in the immediate vicinity of the project area, impacts to this rare turtle are not anticipated. In the unlikely event that a Blanding's turtle is found on site, please remember that the destruction of threatened or endangered species is prohibited by state law and rules, except under certain prescribed conditions. If turtles are in imminent danger, they must be moved by hand out of harm's way, otherwise they are to be left undisturbed. Directions on how to move turtles safely can be found here: Helping Turtles Across the Road.

If project details change and impacts are expected for wetlands within the project area, contact Review.NHIS@state.mn.us with subject line MCE-2023-00863 as additional avoidance measures may be required.

- Please visit the DNR Rare Species Guide for more information on the habitat use of these species and recommended measures to avoid or minimize impacts.

Federally Protected Species

- To ensure compliance with federal law, conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.

Environmental Review and Permitting

- Please include a copy of this letter and the MCE-generated Final Project Report in any state or local license or permit application. Please note that measures to avoid or minimize disturbance to the above rare features may be included as restrictions or conditions in any required permits or licenses.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location and project description provided with the request. **If project details change or the project has not occurred within one year, please resubmit the project for review within one year of initiating project activities.**

The Natural Heritage Review does not constitute project approval by the Department of Natural Resources. Instead, it identifies issues regarding known occurrences of rare features and potential impacts to these rare features. Visit the [Natural Heritage Review website](#) for additional information regarding this process, survey guidance, and other related information. For information on the environmental review process or other natural resource concerns, you may contact your [DNR Regional Environmental Assessment Ecologist](#).

Thank you for consulting us on this matter and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

A handwritten signature in black ink that reads "Molly Barrett". The signature is written in a cursive, flowing style.

Molly Barrett
Natural Heritage Review Specialist
Molly.Barrett@state.mn.us

Cc: [Melissa Collins](#), Regional Environmental Assessment Ecologist, Region 3 (Central)



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
3815 American Blvd East
Bloomington, MN 55425-1659
Phone: (952) 858-0793 Fax: (952) 646-2873

In Reply Refer To:
Project Code: 2024-0046968
Project Name: Northtown AUAR

February 08, 2024

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

This response has been generated by the Information, Planning, and Conservation (IPaC) system to provide information on natural resources that could be affected by your project. The U.S. Fish and Wildlife Service (Service) provides this response under the authority of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), the Migratory Bird Treaty Act (16 U.S.C. 703-712), and the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*).

Threatened and Endangered Species

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance

Please refer to our [Section 7 website](#) for guidance and technical assistance, including [step-by-step instructions](#) for making effects determinations for each species that might be present and for specific guidance on the following types of projects: projects in developed areas, HUD, CDBG, EDA, USDA Rural Development projects, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

We recommend running the project (if it qualifies) through our **Minnesota-Wisconsin Federal Endangered Species Determination Key (Minnesota-Wisconsin ("D-key"))**. A [demonstration video](#) showing how-to access and use the determination key is available. Please note that the Minnesota-Wisconsin D-key is the third option of 3 available d-keys. D-keys are tools to help Federal agencies and other project proponents determine if their proposed action has the potential to adversely affect federally listed species and designated critical habitat. The Minnesota-Wisconsin D-key includes a structured set of questions that assists a project proponent in determining whether a proposed project qualifies for a certain predetermined consultation outcome for all federally listed species found in Minnesota and Wisconsin (except for the northern long-eared bat- see below), which includes determinations of "no effect" or "may affect, not likely to adversely affect." In each case, the Service has compiled and analyzed the best available information on the species' biology and the impacts of certain activities to support these determinations.

If your completed d-key output letter shows a "No Effect" (NE) determination for all listed species, print your IPaC output letter for your files to document your compliance with the Endangered Species Act.

For Federal projects with a "Not Likely to Adversely Affect" (NLAA) determination, our concurrence becomes valid if you do not hear otherwise from us after a 30-day review period, as indicated in your letter.

If your d-key output letter indicates additional coordination with the Minnesota-Wisconsin Ecological Services Field Office is necessary (i.e., you get a "May Affect" determination), you will be provided additional guidance on contacting the Service to continue ESA coordination outside of the key; ESA compliance cannot be concluded using the key for "May Affect" determinations unless otherwise indicated in your output letter.

Note: Once you obtain your official species list, you are not required to continue in IPaC with d-keys, although in most cases these tools should expedite your review. If you choose to make an effects determination on your own, you may do so. If the project is a Federal Action, you may want to review our section 7 step-by-step instructions before making your determinations.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of "There are no listed species found within the vicinity of the project," then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **no effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.
2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see below) – then project proponents must determine if proposed activities will have **no effect** on or **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain [Life History Information for Listed and Candidate Species](#) on our office website. If no impacts will occur to a species on the IPaC species list (e.g., there is no habitat present in the project area), the appropriate determination is **no effect**. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.

3. Should you determine that project activities **may affect** any federally listed, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

Northern Long-Eared Bats

Northern long-eared bats occur throughout Minnesota and Wisconsin and the information below may help in determining if your project may affect these species.

This species hibernates in caves or mines only during the winter. In Minnesota and Wisconsin, the hibernation season is considered to be November 1 to March 31. During the active season (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥ 3 inches dbh for northern long-eared bat that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, northern long-eared bats could be affected.

Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas,
- Trees found in highly developed urban areas (e.g., street trees, downtown areas),
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees, and
- A monoculture stand of shrubby vegetation with no potential roost trees.

If IPaC returns a result that northern long-eared bats are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** this species **IF** one or more of the following activities are proposed:

- Clearing or disturbing suitable roosting habitat, as defined above, at any time of year,
- Any activity in or near the entrance to a cave or mine,
- Mining, deep excavation, or underground work within 0.25 miles of a cave or mine,
- Construction of one or more wind turbines, or
- Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on the northern long-eared bat. Concurrence from the Service is not required for **No**

Effect determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.

If any of the above activities are proposed, and the northern long-eared bat appears on the user's species list, the federal project user will be directed to either the range-wide northern long-eared bat D-key or the Federal Highways Administration, Federal Railways Administration, and Federal Transit Administration Indiana bat/ Northern long-eared bat D-key, depending on the type of project and federal agency involvement. Similar to the Minnesota-Wisconsin D-key, these d-keys helps to determine if prohibited take might occur and, if not, will generate an automated verification letter.

Please note: On November 30, 2022, the Service published a proposal final rule to reclassify the northern long-eared bat as endangered under the Endangered Species Act. On January 26, 2023, the Service published a 60-day extension for the final reclassification rule in the Federal Register, moving the effective listing date from January 30, 2023, to March 31, 2023. This extension will provide stakeholders and the public time to preview interim guidance and consultation tools before the rule becomes effective. When available, the tools will be available on the Service's northern long-eared bat website (<https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis>). Once the final rule goes into effect on March 31, 2023, the 4(d) D-key will no longer be available (4(d) rules are not available for federally endangered species) and will be replaced with a new Range-wide NLEB D-key (range-wide d-key). For projects not completed by March 31, 2023, that were previously reviewed under the 4(d) d-key, there may be a need for reinitiation of consultation. For these ongoing projects previously reviewed under the 4(d) d-key that may result in incidental take of the northern long-eared bat, we recommend you review your project using the new range-wide d-key once available. If your project does not comply with the range-wide d-key, it may be eligible for use of the Interim (formal) Consultation framework (framework). The framework is intended to facilitate the transition from the 4(d) rule to typical Section 7 consultation procedures for federally endangered species and will be available only until spring 2024. Again, when available, these tools (new range-wide d-key and framework) will be available on the Service's [northern long-eared bat website](#).

Whooping Crane

Whooping crane is designated as a non-essential experimental population in Wisconsin and consultation under Section 7(a)(2) of the Endangered Species Act is only required if project activities will occur within a National Wildlife Refuge or National Park. If project activities are proposed on lands outside of a National Wildlife Refuge or National Park, then you are not required to consult. For additional information on this designation and consultation requirements, please review "[Establishment of a Nonessential Experimental Population of Whooping Cranes in the Eastern United States.](#)"

Other Trust Resources and Activities

Bald and Golden Eagles - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Should bald or golden eagles occur within or near the project area please contact our office for further coordination. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA to proactively prevent the

mortality of migratory birds whenever possible and we encourage implementation of [recommendations that minimize potential impacts to migratory birds](#). Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed [voluntary guidelines for minimizing impacts](#).

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to [guidelines](#) developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's [Wind Energy Guidelines](#). In addition, please refer to the Service's [Eagle Conservation Plan Guidance](#), which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

State Department of Natural Resources Coordination

While it is not required for your Federal section 7 consultation, please note that additional state endangered or threatened species may also have the potential to be impacted. Please contact the Minnesota or Wisconsin Department of Natural Resources for information on state listed species that may be present in your proposed project area.

Minnesota

[Minnesota Department of Natural Resources - Endangered Resources Review Homepage](#)

Email: Review.NHIS@state.mn.us

Wisconsin

[Wisconsin Department of Natural Resources - Endangered Resources Review Homepage](#)

Email: DNRERReview@wi.gov

We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Minnesota-Wisconsin Ecological Services Field Office

3815 American Blvd East

Bloomington, MN 55425-1659

(952) 858-0793

PROJECT SUMMARY

Project Code: 2024-0046968
Project Name: Northtown AUAR
Project Type: Mixed-Use Construction
Project Description: Proposed redevelopment site.
Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@45.13054155000004,-93.26135580900915,14z>



Counties: Anoka County, Minnesota

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Whooping Crane <i>Grus americana</i> Population: U.S.A. (AL, AR, CO, FL, GA, ID, IL, IN, IA, KY, LA, MI, MN, MS, MO, NC, NM, OH, SC, TN, UT, VA, WI, WV, western half of WY) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/758	Experimental Population, Non- Essential

CLAMS

NAME	STATUS
Salamander Mussel <i>Simpsonaias ambigua</i> There is proposed critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6208	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act¹ and the Migratory Bird Treaty Act².

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats³, should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "[Supplemental Information on Migratory Birds and Eagles](#)".

-
1. The [Bald and Golden Eagle Protection Act](#) of 1940.
 2. The [Migratory Birds Treaty Act](#) of 1918.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

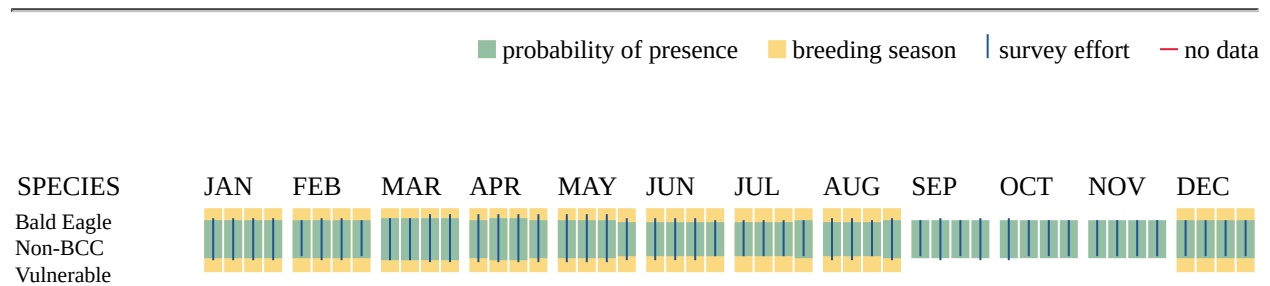
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (—)

A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>

- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats³ should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "[Supplemental Information on Migratory Birds and Eagles](#)".

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
<p>American Golden-plover <i>Pluvialis dominica</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10561</p>	Breeds elsewhere
<p>Bald Eagle <i>Haliaeetus leucocephalus</i></p> <p>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626</p>	Breeds Dec 1 to Aug 31
<p>Black Tern <i>Chlidonias niger</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093</p>	Breeds May 15 to Aug 20
<p>Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399</p>	Breeds May 15 to Oct 10

NAME	BREEDING SEASON
Bobolink <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9454	Breeds May 20 to Jul 31
Canada Warbler <i>Cardellina canadensis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9643	Breeds May 20 to Aug 10
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Golden-winged Warbler <i>Vermivora chrysoptera</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8745	Breeds May 1 to Jul 20
Henslow's Sparrow <i>Ammodramus henslowii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds May 1 to Aug 31
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Long-eared Owl <i>asio otus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15
Pectoral Sandpiper <i>Calidris melanotos</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Ruddy Turnstone <i>Arenaria interpres morinella</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/10633	Breeds elsewhere

NAME	BREEDING SEASON
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9478	Breeds elsewhere
Western Grebe <i>aechmophorus occidentalis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
Wood Thrush <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9431	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)

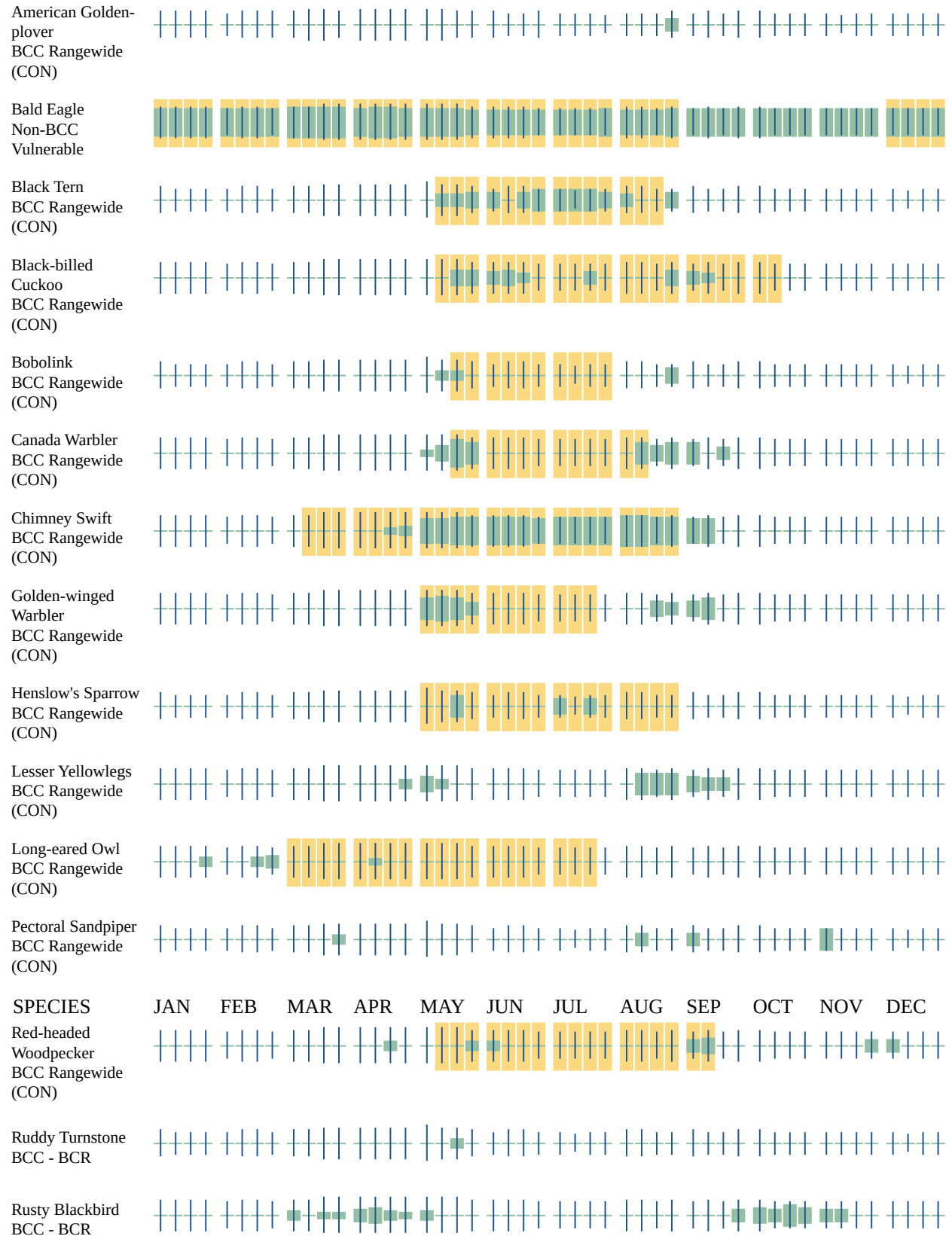
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

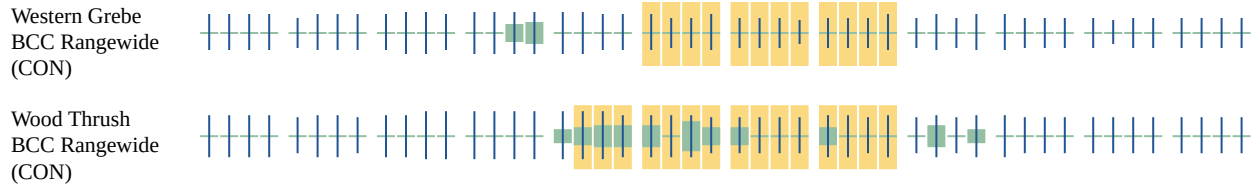
No Data (—)

A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort — no data

SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC





Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- R4SBC

FRESHWATER POND

- PUBHx
- PABHx
- PUBFx

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1C

IPAC USER CONTACT INFORMATION

Agency: WSB

Name: Lucas Wandrie

Address: 701 Xenia Ave S, Ste 300

City: Golden Valley

State: MN

Zip: 55416

Email: lwandrie@wsbeng.com

Phone: 6124520540

Alison Harwood

From: MN_MNIT_Data Request SHPO <DataRequestSHPO@state.mn.us>
Sent: Monday, November 27, 2023 1:32 PM
To: Mary Newman
Subject: RE: Data Request: Northtown mall and surrounding area AUAR preparation
Attachments: History.xls

EXTERNAL EMAIL

See attached for the results of your search request. There are no previously documented archaeological sites in the location you requested. As stated below, this data request email is not the same thing as consulting with SHPO under state or federal preservation laws. Please take a look at the [Environmental Review Program Website](#) for more information about that.

Later this year, SHPO will launch the Minnesota Statewide Historic Property Inventory Portal (MnSHIP) where you will be able to obtain information about aboveground historic properties. Please visit our [MnSHIP website](#) to learn more.

The [OSA Portal](#) is a web viewer for archaeological site information. Please note that information on whether a site is listed in the National Register of Historic Places, Determined Eligible for Listing, or SHPO has concurred a site is eligible must be obtained from SHPO and is not currently available via the OSA Portal.

Lucy Harrington
Environmental Review Archaeologist | (651) 201-3283



SHPO Data Requests
Minnesota State Historic Preservation Office
50 Sherburne Avenue, Suite 203
Saint Paul, MN 55155
datarequestshpo@state.mn.us

Notice: This email message simply reports the results of the cultural resources database search you requested. The database search is only for previously known archaeological sites and historic properties. **IN NO CASE DOES THIS DATABASE SEARCH OR EMAIL MESSAGE CONSTITUTE A PROJECT REVIEW UNDER STATE OR FEDERAL PRESERVATION LAWS** – please see our [Environmental Review Program Website](#) for further information regarding our Environmental Review Process.

Because the majority of archaeological sites in the state and many historic/architectural properties have not been recorded, important sites or properties may exist within the search area and may be affected by development projects within that area. Additional research, including field surveys, may be necessary to adequately assess the area's potential to contain historic properties or archaeological sites.

Properties that are listed in the National Register of Historic Places (NRHP) or have been determined eligible for listing in the NRHP are indicated on the reports you have received, if any. The following codes may be on those reports:

NR – National Register listed. The properties may be individually listed or may be within the boundaries of a National Register District.

CEF – Considered Eligible Findings are made when a federal agency has recommended that a property is eligible for listing in the National Register and MN SHPO has accepted the recommendation for the purposes of the Environmental Review Process. These properties need to be further assessed before they are officially listed in the National Register.

COUNTY
Multiple

CITYTWP

PROPNAME

ADDRESS

TOWNRANGISECQUARTER:USGS

REPORTNUM/NRHCEDOI/INVENTNUM

Trunk Highway 10

TH 10

31 23 31

XX-2020-4H

XX-ROD-040

March 2024

APPENDIX C
GHG ANALYSIS

Existing Greenhouse Gas Emissions, Blaine Northtown A Project Components

Use	Size (sq ft)	Units
Uses:		
Commercial	1,603,350	
Residential:		54
Residential Building	65,000	
Average sq. ft. per unit	1,204	

Existing Greenhouse Gas Emissions, Blaine Northtown AUAR

Emission Source	Scope*	Data Source Notes**	Amount	Units	Site Energy Use Index (kBtu/sq. ft.) ³	Emission Factors	GHG (tonnes)	GHG (kg/sq. ft.)	Percent of Total GHG
Uses and project average daily vehicle miles traveled (ADVMT):									
Operational emissions, mobile equipment, after project is operational	1	2	43,160	ADVMT		0.44	6,959	4.17	49%
Combustion, stationary equipment, natural gas (therms/sq. ft./yr.):	1			therms					
Commercial		3	1,603,350	sq. ft.	20.3	0.20	1,725	1.08	
Dwelling units (54 units)		3	65,000	sq. ft.	48.4	0.48	167	2.57	
Subtotal			1,668,350	sq. ft.			1,892	1.13	13%
Combustion area (diesel, back-up generators, GHG kg/gal.)	1	1 & 2	223	gallons		10.74	2		0.0%
Off-site electricity, Xcel 2021 (GHG kg/sq. ft.)	2			kWh					
Commercial		3	1,603,350	sq. ft.	35.3	10.35	4,753	2.96	
Dwelling units (54 units)		3	65,000	sq. ft.	25.9	7.59	141	2.18	
Subtotal			1,668,350	sq. ft.			4,894	2.93	34%
Off-site waste management	3	2	1,791	tons of waste			443	0.28	3%
Total emissions (tonnes)							14,191	8.5	100%

*Scope:

For an explanation of Emissions scopes, please reference the following:

- Scope 1: "Scope 1 emissions are direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organization (e.g., emissions associated with fuel combustion in boilers, furnaces, vehicles)." (EPA, <http://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance>)
- Scope 2: "Scope 2 emissions are indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling." (EPA, <http://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance>)
- Scope 3: "Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly impacts in its value chain. Scope 3 emissions include all sources not within an organization's scope 1 and 2 boundary. The scope 3 emissions for one organization are the scope 1 and 2 emissions of another organization. Scope 3 emissions, also referred to as value chain emissions, often represent the majority of an organization's total GHG emissions." (EPA: <https://www.epa.gov/climateleadership/scope-3-inventory-guidance>)

** Data Source Notes:

- 1 EPA Simplified GHG Emissions Calculator ("the Calculator"), <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>
- 2 Refer to the sheet "Mobile Equipment." ADVMT = Average Daily Vehicle Miles Travelled.
- 3 Source (Zip Code: 55434): US EPA Energy Star Portfolio Manager Target Finder. Refer to Energy Finder sheet. https://www.energystar.gov/buildings/resources_audience/service_product_providers/commercial_new_construction/target_finder

Existing Greenhouse Gas Emissions, Blaine Northtown AUAR

Waste Generation

Solid Waste Generation	Data Source	Amount	Units	Emission Factor (tonnes/ton)	Waste Amounts	Waste (kg per sq. ft.)
New uses:						
Commercial (kg @ 0.921 kg/sq. ft./yr.)	2	1,603,350	sq. ft.		1,476,685	0.9
Dwelling units (kg @ 228 kg/unit/month)	3	54	units		147,744	2.3
Subtotals		1,603,350			1,624,429	1.0
Waste (tons)					1,791	
Landfilled waste, 42% (tons) and emission factor	4, 5, 6	752		0.54	406	
Waste to energy, 4% (tons) and emission factor	4, 5, 6	72		0.52	37	
Subtotal emissions (tonnes)					443	

Notes:

2 Source: Table 21, "Targeted Statewide Waste Characterization Study: Waste Disposal and Diversion Findings for Selected Industry Groups , 2006. <https://www2.calrecycle.ca.gov/Publications/Details/1184>

Apartments: Assumes 1.5 cu. yd. of mixed trash per unit per month. Source:

3 https://www.wastecare.com/usefulinfo/Waste_Generated_by_Industry_Cubic_Yards.htm. At 335 lbs. per cubic yard and 2.2 pounds per kg, the average is about 228 kg per month. Source: <https://www.solidwaste.com/doc/bolton-on-landfill-management-converting-cubi-0001>

4 Source: "2021 SCORE REPORT," Anoka County 2020 and 2021 average waste generation, MPCA Data Services, <https://public.tableau.com/app/profile/mpca.data.services/viz/2021SCOREReport/2021SCOREReport?:tabs=n>

5 Source for emission factor for landfilled waste: "Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM), Organic Materials Chapters," Exhibit 1-10, U.S. Environmental Protection Agency Office of Resource Conservation and Recovery, February 2016. <https://www.epa.gov/warm/documentation-chapters-greenhouse-gas-emission-energy-and-economic-factors-used-waste>

6 Source for emissions from the Hennepin Energy Recovery Center: <https://www.pca.state.mn.us/air/permitted-facility-air-emissions-data>. Source for tons processed by the HERC: <https://www.pca.state.mn.us/waste/report-2019-score-programs>

Existing Greenhouse Gas Emissions, Blaine Northtown AUAR

Backup Generator Fuel Consumption

Building	Size	Generator Size (kW) ¹	Diesel Consumption (gal.) ²	GHG (kg)
Non-Residential Land Uses (sq. ft.)	1,603,350	8,067	174	1,871
Residential Building (sqft)	65,000	375	49	522
Total			223	2,392

Notes:

- 1 Backup generator: Assume 50 kW + 5 W per sq. ft. (source: <https://woodstockpower.com/blog/how-to-size-a-generator-for-commercial-building/>).
- 2 Diesel consumption per hour from chart below. Monthly testing for 30 minutes (source: <https://www.health.state.mn.us/facilities/regulation/engineering/docs/lscgensets.pdf>)

Generator Size	1/4 Load (gal/hr)	1/2 Load (gal/hr)	3/4 Load (gal/hr)	Full Load (gal/hr)
20	0.6	0.9	1.3	1.6
30	1.3	1.8	2.4	2.9
40	1.6	2.3	3.2	4.0
60	1.8	2.9	3.8	4.8
75	2.4	3.4	4.6	6.1
100	2.6	4.1	5.8	7.4
125	3.1	5.0	7.1	9.1
135	3.3	5.4	7.6	9.8
150	3.6	5.9	8.4	10.9
175	4.1	6.8	9.7	21.7
200	4.7	7.7	11.0	14.4
230	5.3	8.8	12.5	16.6
250	5.7	9.5	13.6	18.0
300	6.8	11.3	16.1	21.5
350	7.9	13.1	18.7	25.1
400	8.9	14.9	21.3	28.6
500	11.0	18.5	26.4	35.7
600	13.2	22.0	31.5	42.8
750	16.3	27.4	39.3	53.4
1000	21.6	36.4	52.1	71.1
1250	26.9	45.3	65.0	88.8
1500	32.2	54.3	77.8	106.5
1750	37.5	63.2	90.7	124.2
2000	42.8	72.2	103.5	141.9
2250	48.1	81.1	116.4	159.6

Source: <https://www.uspeglobal.com/pages/resources>

Existing Greenhouse Gas Emissions, Blaine Northtown AUAR

Average daily vehicle miles traveled (ADVMT) in the vicinity of the site

Category	ADVMT	GHG (kg)
Current ADVMT	43,160	6,958,944

Scenario 1 Greenhouse Gas Emissions, Blaine Northtown
Project Components

Use	Size (sq ft)	Units
Uses:		
Commercial (combined CC+PC)		
Commercial	1,674,011	
Residential (combined MDR+HDR-2):		865
Residential Building	865,000	
Average sq. ft. per unit	1,000	

Emission Source	Scope*	Data Source Notes**	Amount	Units	Site Energy Use Index (kBtu/sq. ft.) ³	Emission Factors	GHG (tonnes)	GHG (kg/sq. ft.)	Percent of Total GHG
Uses and project average daily vehicle miles traveled (ADVMT):									
Operational emissions, mobile equipment, after project is operational	1	2	53,960	ADVMT		0.44	8,700	3.43	42%
Combustion, stationary equipment, natural gas (therms/sq. ft./yr.):	1			therms					
Commercial		3	1,674,011	sq. ft.	20.3	0.20	1,801	1.08	
Dwelling units (865 units)		3	865,000	sq. ft.	48.4	0.48	2,222	2.57	
Subtotal			2,539,011	sq. ft.			4,023	1.58	19%
Combustion area (diesel, back-up generators, GHG kg/gal.)	1	1 & 2	1,665	gallons		10.74	18		0.1%
Off-site electricity, Xcel 2021 (GHG kg/sq. ft.)	2			kWh					
Commercial		3	1,674,011	sq. ft.	35.3	10.35	4,963	2.96	
Dwelling units (865 units)		3	865,000	sq. ft.	25.9	7.59	1,882	2.18	
Subtotal			2,539,011	sq. ft.			6,844	2.70	33%
Off-site waste management	3	2	4,308	tons of waste			1,067	0.64	5%
Total emissions (tonnes)							20,652	8.1	100%

***Scope:**

For an explanation of Emissions scopes, please reference the following:

- Scope 1: "Scope 1 emissions are direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organization (e.g., emissions associated with fuel combustion in boilers, furnaces, vehicles)." (EPA, <http://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance>)
- Scope 2: "Scope 2 emissions are indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling." (EPA, <http://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance>)
- Scope 3: "Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly impacts in its value chain. Scope 3 emissions include all sources not within an organization's scope 1 and 2 boundary. The scope 3 emissions for one organization are the scope 1 and 2 emissions of another organization. Scope 3 emissions, also referred to as value chain emissions, often represent the majority of an organization's total GHG emissions." (EPA: <https://www.epa.gov/climateleadership/scope-3-inventory-guidance>)

**** Data Source Notes:**

- 1 EPA Simplified GHG Emissions Calculator ("the Calculator"), <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>
- 2 Refer to the sheet "Mobile Equipment." ADVMT = Average Daily Vehicle Miles Travelled.
- 3 Source (Zip Code: 55434): US EPA Energy Star Portfolio Manager Target Finder. Refer to Energy Finder sheet. https://www.energystar.gov/buildings/resources_audience/service_product_providers/commercial_new_construction/target_finder

Scenario 1 Greenhouse Gas Emissions, Blaine Northtown AUAR

Waste Generation

Solid Waste Generation	Data Source	Amount	Units	Emission Factor (tonnes/ton)	Waste Amounts	Waste (kg per sq. ft.)
New uses:						
Commercial (kg @ 0.921 kg/sq. ft./yr.)	2	1,674,011	sq. ft.		1,541,764	0.9
Dwelling units (kg @ 228 kg/unit/month)	3	865	units		2,366,640	2.7
Subtotals (kg)		1,674,011			3,908,404	2.3
Waste (tons)					4,308	
Landfilled waste, 42% (tons) and emission factor	4, 5, 6	1,809	tons	0.54	977	
Waste to energy, 4% (tons) and emission factor	4, 5, 6	172	tons	0.52	90	
Subtotal emissions (tonnes)					1,067	

Notes:

2 Source: Table 21, "Targeted Statewide Waste Characterization Study: Waste Disposal and Diversion Findings for Selected Industry Groups , 2006. <https://www2.calrecycle.ca.gov/Publications/Details/1184>

Apartments: Assumes 1.5 cu. yd. of mixed trash per unit per month. Source:

3 https://www.wastecare.com/usefulinfo/Waste_Generated_by_Industry_Cubic_Yards.htm. At 335 lbs. per cubic yard and 2.2 pounds per kg, the average is about 228 kg per month. Source: <https://www.solidwaste.com/doc/bolton-on-landfill-management-converting-cubi-0001>

4 Source: "2021 SCORE REPORT," Anoka County 2020 and 2021 average waste generation, MPCA Data Services, <https://public.tableau.com/app/profile/mpca.data.services/viz/2021SCOREReport/2021SCOREReport?:tabs=n>

5 Source for emission factor for landfilled waste: "Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM), Organic Materials Chapters," Exhibit 1-10, U.S. Environmental Protection Agency Office of Resource Conservation and Recovery, February 2016. <https://www.epa.gov/warm/documentation-chapters-greenhouse-gas-emission-energy-and-economic-factors-used-waste>

6 Source for emissions from the Hennepin Energy Recovery Center: <https://www.pca.state.mn.us/air/permitted-facility-air-emissions-data>. Source for tons processed by the HERC: <https://www.pca.state.mn.us/waste/report-2019-score-programs>

Scenario 1 Greenhouse Gas Emissions, Blaine Northtown AUAR
Backup Generator Fuel Consumption

Building	Size	Generator Size (kW) ¹	Diesel Consumption (gal.) ²	GHG (kg)
Non-Residential Land Uses (sq. ft.)	1,674,011	8,420	1,091	11,715
Residential Building (sqft)	865,000	4,375	567	6,087
Total			1,665	17,872

Notes:

- 1 Backup generator: Assume 50 kW + 5 W per sq. ft. (source: <https://woodstockpower.com/blog/how-to-size-a-generator-for-commercial-building/>).
- 2 Diesel consumption per hour from chart below. Monthly testing for 30 minutes (source: <https://www.health.state.mn.us/facilities/regulation/engineering/docs/lscgensets.pdf>)

Generator Size	1/4 Load (gal/hr)	1/2 Load (gal/hr)	3/4 Load (gal/hr)	Full Load (gal/hr)
20	0.6	0.9	1.3	1.6
30	1.3	1.8	2.4	2.9
40	1.6	2.3	3.2	4.0
60	1.8	2.9	3.8	4.8
75	2.4	3.4	4.6	6.1
100	2.6	4.1	5.8	7.4
125	3.1	5.0	7.1	9.1
135	3.3	5.4	7.6	9.8
150	3.6	5.9	8.4	10.9
175	4.1	6.8	9.7	21.7
200	4.7	7.7	11.0	14.4
230	5.3	8.8	12.5	16.6
250	5.7	9.5	13.6	18.0
300	6.8	11.3	16.1	21.5
350	7.9	13.1	18.7	25.1
400	8.9	14.9	21.3	28.6
500	11.0	18.5	26.4	35.7
600	13.2	22.0	31.5	42.8
750	16.3	27.4	39.3	53.4
1000	21.6	36.4	52.1	71.1
1250	26.9	45.3	65.0	88.8
1500	32.2	54.3	77.8	106.5
1750	37.5	63.2	90.7	124.2
2000	42.8	72.2	103.5	141.9
2250	48.1	81.1	116.4	159.6

Source: <https://www.uspeglobal.com/pages/resources>

Scenario 1 Greenhouse Gas Emissions, Blaine Northtown AUAR

Average daily vehicle miles traveled (ADVMT) in the vicinity of the site

Category	ADVMT	GHG (kg)
Current ADVMT	53,960	8,700,292

Notes:

Scenario 2 Greenhouse Gas Emissions, Blaine Northtown
Project Components

Use	Size (sq ft)	Units
Uses:		
Commercial (combined CC+PC)		
Commercial	1,438,247	
Residential (combined MDR+HDR-2):		2,251
Residential Building	2,251,000	
Average sq. ft. per unit	1,000	

Scenario 2 Greenhouse Gas Emissions, Blaine Northtown AUAR

Emission Source	Scope*	Data Source Notes**	Amount	Units	Site Energy Use Index (kBtu/sq. ft.) ³	Emission Factors	GHG (tonnes)	GHG (kg/sq. ft.)	Percent of Total GHG
Uses and project average daily vehicle miles traveled (ADVMT):									
Operational emissions, mobile equipment, after project is operational	1	2	57,445	ADVMT		0.44	9,262	2.51	33%
Combustion, stationary equipment, natural gas (therms/sq. ft./yr.):	1			therms					
Commercial		3	1,438,247	sq. ft.	20.3	0.20	1,548	1.08	
Dwelling units (2251 units)		3	2,251,000	sq. ft.	48.4	0.48	5,781	2.57	
Subtotal			3,689,247	sq. ft.			7,329	1.99	26%
Combustion area (diesel, back-up generators, GHG kg/gal.)	1	1 & 2	2,410	gallons		10.74	26		0.1%
Off-site electricity, Xcel 2021 (GHG kg/sq. ft.)	2			kWh					
Commercial		3	1,438,247	sq. ft.	35.3	10.35	4,264	2.96	
Dwelling units (2251 units)		3	2,251,000	sq. ft.	25.9	7.59	4,897	2.18	
Subtotal			3,689,247	sq. ft.			9,161	2.48	33%
Off-site waste management	3	2	8,249	tons of waste			2,042	1.42	7%
Total emissions (tonnes)							27,820	7.5	100%

*Scope:

For an explanation of Emissions scopes, please reference the following:

- Scope 1: "Scope 1 emissions are direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organization (e.g., emissions associated with fuel combustion in boilers, furnaces, vehicles)." (EPA, <http://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance>)
- Scope 2: "Scope 2 emissions are indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling." (EPA, <http://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance>)
- Scope 3: "Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly impacts in its value chain. Scope 3 emissions include all sources not within an organization's scope 1 and 2 boundary. The scope 3 emissions for one organization are the scope 1 and 2 emissions of another organization. Scope 3 emissions, also referred to as value chain emissions, often represent the majority of an organization's total GHG emissions." (EPA: <https://www.epa.gov/climateleadership/scope-3-inventory-guidance>)

** Data Source Notes:

- 1 EPA Simplified GHG Emissions Calculator ("the Calculator"), <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>
- 2 Refer to the sheet "Mobile Equipment." ADVMT = Average Daily Vehicle Miles Travelled.
- 3 Source (Zip Code: 55434): US EPA Energy Star Portfolio Manager Target Finder. Refer to Energy Finder sheet. https://www.energystar.gov/buildings/resources_audience/service_product_providers/commercial_new_construction/target_finder

Scenario 2 Greenhouse Gas Emissions, Blaine Northtown AUAR

Waste Generation

Solid Waste Generation	Data Source	Amount	Units	Emission Factor (tonnes/ton)	Waste Amounts	Waste (kg per sq. ft.)
New uses:						
Commercial (kg @ 0.921 kg/sq. ft./yr.)	2	1,438,247	sq. ft.		1,324,625	0.9
Dwelling units (kg @ 228 kg/unit/month)	3	2,251	units		6,158,736	2.7
Subtotals (kg)		1,438,247			7,483,361	5.2
Waste (tons)					8,249	
Landfilled waste, 42% (tons) and emission factor	4, 5, 6	3,465	tons	0.54	1,871	
Waste to energy, 4% (tons) and emission factor	4, 5, 6	330	tons	0.52	172	
Subtotal emissions (tonnes)					2,042	

Notes:

2 Source: Table 21, "Targeted Statewide Waste Characterization Study: Waste Disposal and Diversion Findings for Selected Industry Groups , 2006. <https://www2.calrecycle.ca.gov/Publications/Details/1184>

Apartments: Assumes 1.5 cu. yd. of mixed trash per unit per month. Source:

3 https://www.wastecare.com/usefulinfo/Waste_Generated_by_Industry_Cubic_Yards.htm. At 335 lbs. per cubic yard and 2.2 pounds per kg, the average is about 228 kg per month. Source: <https://www.solidwaste.com/doc/bolton-on-landfill-management-converting-cubi-0001>

4 Source: "2021 SCORE REPORT," Anoka County 2020 and 2021 average waste generation, MPCA Data Services, <https://public.tableau.com/app/profile/mpca.data.services/viz/2021SCOREReport/2021SCOREReport?:tabs=n>

5 Source for emission factor for landfilled waste: "Documentation for Greenhouse Gas Emission and Energy Factors Used in the Waste Reduction Model (WARM), Organic Materials Chapters," Exhibit 1-10, U.S. Environmental Protection Agency Office of Resource Conservation and Recovery, February 2016. <https://www.epa.gov/warm/documentation-chapters-greenhouse-gas-emission-energy-and-economic-factors-used-waste>

6 Source for emissions from the Hennepin Energy Recovery Center: <https://www.pca.state.mn.us/air/permitted-facility-air-emissions-data>. Source for tons processed by the HERC: <https://www.pca.state.mn.us/waste/report-2019-score-programs>

Scenario 2 Greenhouse Gas Emissions, Blaine Northtown AUAR
Backup Generator Fuel Consumption

Building	Size	Generator Size (kW) ¹	Diesel Consumption (gal.) ²	GHG (kg)
Non-Residential Land Uses (sq. ft.)	1,438,247	7,241	938	10,075
Residential Building (sqft)	2,251,000	11,305	1,465	15,729
Total			2,410	25,874

Notes:

- 1 Backup generator: Assume 50 kW + 5 W per sq. ft. (source: <https://woodstockpower.com/blog/how-to-size-a-generator-for-commercial-building/>).
- 2 Diesel consumption per hour from chart below. Monthly testing for 30 minutes (source: <https://www.health.state.mn.us/facilities/regulation/engineering/docs/lscgensets.pdf>)

Generator Size	1/4 Load (gal/hr)	1/2 Load (gal/hr)	3/4 Load (gal/hr)	Full Load (gal/hr)
20	0.6	0.9	1.3	1.6
30	1.3	1.8	2.4	2.9
40	1.6	2.3	3.2	4.0
60	1.8	2.9	3.8	4.8
75	2.4	3.4	4.6	6.1
100	2.6	4.1	5.8	7.4
125	3.1	5.0	7.1	9.1
135	3.3	5.4	7.6	9.8
150	3.6	5.9	8.4	10.9
175	4.1	6.8	9.7	21.7
200	4.7	7.7	11.0	14.4
230	5.3	8.8	12.5	16.6
250	5.7	9.5	13.6	18.0
300	6.8	11.3	16.1	21.5
350	7.9	13.1	18.7	25.1
400	8.9	14.9	21.3	28.6
500	11.0	18.5	26.4	35.7
600	13.2	22.0	31.5	42.8
750	16.3	27.4	39.3	53.4
1000	21.6	36.4	52.1	71.1
1250	26.9	45.3	65.0	88.8
1500	32.2	54.3	77.8	106.5
1750	37.5	63.2	90.7	124.2
2000	42.8	72.2	103.5	141.9
2250	48.1	81.1	116.4	159.6

Source: <https://www.uspeglobal.com/pages/resources>

Scenario 2 Greenhouse Gas Emissions, Blaine Northtown AUAR

Average daily vehicle miles traveled (ADVMT) in the vicinity of the site

Category	ADVMT	GHG (kg)
Current ADVMT	57,445	9,262,200

APPENDIX D
TRAFFIC STUDY

Memorandum

To: Sheila Sellman, City of Blaine

From: Mallori Fitzpatrick, PE, PTOE, WSB
Sean Delmore, PE, PTOE, WSB

Copy: Alison Harwood, WSB

Date: January 4, 2024

Re: Traffic Analysis
Northtown AUAR
Blaine, Minnesota
WSB Project No. 023484-000

INTRODUCTION

The City of Blaine is proposing to redevelop the Northtown District area located in the southeast quadrant of Anoka County State-Aid Highway (CSAH) 10 and Minnesota Trunk Highway (TH) 47 in the City of Blaine. The study area which is approximately 163 acres, is covered in the final **Northtown District Vision Plan (Northtown District VP)** which was prepared for the City of Blaine. The redevelopment of the existing mall area is anticipated to include a mixed use of residential, office, parks, and commercial uses consistent with the Northtown District VP. **Figure 1** shows the project location.

The following sections of this memorandum document the existing traffic conditions, development scenarios, traffic projections, traffic operations analysis, mitigation analysis and study conclusions and recommendations.

EXISTING CONDITIONS

The transportation and traffic impacts from the Northtown Mall site were evaluated for the adjacent facilities and at the following study intersections.

- 1) 85th Avenue NW (County Road 132) and Springbrook Drive – Traffic Signal Controlled
- 2) TH 47 and 85th Avenue NW – Traffic Signal Controlled
- 3) TH 47 and University Avenue NE (CSAH 3) – Traffic Signal Controlled
- 4) University Avenue NE and 86th Lane NE – Traffic Signal Controlled
- 5) University Avenue NE and CSAH 10 (Coon Rapids Boulevard) – Traffic Signal Controlled
- 6) University Avenue NE (CSAH 51) and 89th Avenue NE - Side Street Stop Controlled
- 7) University Avenue NE and 91st Avenue NE - Traffic Signal Controlled
- 8) 89th Avenue NE and 87th Lane NE – Traffic Signal Controlled
- 9) CSAH 10 and Jefferson Street NE – Traffic Signal Controlled
- 10) CSAH 10 and Able Street NE – Traffic Signal Controlled
- 11) CSAH 10 and Washington Avenue NE - Side Street Stop Controlled, Right-in, Right-out (RIRO)
- 12) CSAH 10 and 7th Street NE - Side Street Stop Controlled, Right-in, Right-out (RIRO)
- 13) Washington Avenue NE and 87th Lane NE – Traffic Signal Controlled
- 14) Jefferson Street NE and 85th Avenue NE – All-Way Stop Controlled
- 15) Jefferson Street NE and Mall Entrance – Traffic Signal Controlled
- 16) CSAH 10 and TH 47 East Ramp – Traffic Signal Controlled
- 17) CSAH 10 and TH 47 West Ramp – Traffic Signal Controlled



Figure 1 – Location Map

Blaine Northtown AUAR
Blaine, MN

Roadway Characteristics

The five roadways that currently provide access to or are adjacent to the site are TH 47, CSAH 3, CSAH 10, Jefferson Street NE, and 85th Avenue. Each is discussed below:

TH 47: TH 47 is a four-lane divided north-south state highway with a Minor Arterial functional classification. Shoulders are present along TH 47. The existing Average Daily Traffic (ADT) on TH 47 is 18,400 vehicles per day (vpd) north of CSAH 3 and 31,500 vpd south of CSAH 3 within the study area. The roadway has a posted speed limit of 65 mph north of CSAH 3, and 55 mph to the south.

CSAH 3 (University Avenue NE): CSAH 3 is a four-lane divided north-south Anoka County roadway with a Minor Arterial functional classification. No shoulders or sidewalks are present along CSAH 3. The existing ADT on CSAH 3 is 15,000 vpd between TH 47 and CSAH 10 within the study area. The roadway has a posted speed limit of 35 mph.

CSAH 10 (Coon Rapids Boulevard): CSAH 10 is a four-lane divided east-west Anoka County roadway with a Minor Arterial functional classification. Shoulders are present along CSAH 10, but no sidewalks currently exist. The existing ADT on CSAH 10 is 20,400 vpd between TH 47 and CSAH 3, and 20,001 vpd between CSAH 3 and TH 65 within the study area. The roadway has a posted speed limit of 50 mph.

Jefferson Street NE: Jefferson Street NE is a two-lane section from 85th Avenue to the Northtown Mall entrance, and a four-lane divided section from the Northtown Mall entrance to Washington Street NE, where it turns into 87th Lane NE. Jefferson Street NE is a north-south roadway with a Major Collector functional classification. No shoulders are present along Jefferson Street, but there is a sidewalk along the west side of the road. The existing ADT on Jefferson Street NE is 7,728 vpd within the study area. The roadway has a posted speed limit of 30 mph.

85th Avenue NE/ Sanburnol Drive NE (east of TH 47): 85th Avenue NE/ Sanburnol Drive NE is a two-lane east-west roadway with a Major Collector functional classification. No shoulders are present along 85th Avenue NE/ Sanburnol Drive NE, but there is a sidewalk along the south side of the road between Terrace Road and Monroe Street NE. The existing ADT on 85th Avenue NE/ Sanburnol Drive NE ranges between 1,400 and 2,674 vpd within the study area. The roadway has a posted speed limit of 30 mph.

85th Avenue NE (west of TH 47): 85th Avenue NE (County Road 132) is a four-lane divided east-west roadway with a Major Collector functional classification. No shoulders are present along 85th Avenue NE, but there is a trail/shared use path along the south side of the road between East River Road and TH 47. The existing ADT on 85th Avenue NE ranges between 4,945 (east of TH 47) and 15,600 vpd (west of TH 47) within the study area. The roadway has a posted speed limit of 35 mph east of Springbrook Drive and 50 mph west of Springbrook Drive.

Existing Traffic Volumes

Weekday and weekend peak hour turning movement traffic volumes were collected as part of the traffic analysis. Turning movement count data was collected during the time period of September 24th through October 7, 2023. The PM peak hour varied across the network, between 3:00 PM and 5:00 PM, and the Saturday peak hour was between 1:00 PM and 2:45 PM. **Figures 2a-2d** show the existing area intersections that were analyzed as part of this study, with the existing PM and Saturday peak hour traffic volumes. **Appendix A** includes the existing turning movement traffic volumes.

Existing Pedestrian / Bike Facilities

There is a lack of pedestrian and bike facilities that provide access to the site within the study area. The only sidewalks/trails adjacent to the site are:

- Sidewalk on the south side of 85th Avenue between Terrace Road and Able Street.
- Sidewalks on the west side of Able Street south of the CSAH 10 Frontage Road, and north of CSAH 10 on the east sides of Able Street.
- Sidewalk on the west/south side of Jefferson Street between 85th Avenue and 89th Avenue.
- Trail on the north side of 89th Avenue that connects to a trail north of 87th Lane.
- Sidewalk on the east side of University Avenue, north of 89th Avenue.
- Sidewalk on the south side of 85th Avenue, west of TH 47.

All signalized intersections within the study area, except TH 47 and CSAH 3, provide crosswalks and pedestrian ramps, but the majority of intersections do not have sidewalks in any quadrant.

The primary destinations for pedestrians in the area are the fast food and retail businesses located throughout the existing site. Most of the businesses are not easily accessible for pedestrians, as CSAH 10, University Avenue, and TH 47 do not provide sidewalks adjacent to the site. The routes are indirect, unclear/poorly marked, unsafe, and in poor condition. The neighborhoods to the south of the site do have sidewalks on major north-south routes such as Terrace Road and Monroe Street, but not along residential streets. The only sidewalks within the neighborhoods to the north and east are 89th Avenue and Able Street, that connect to the existing site.

Figure 3 shows the existing pedestrian and bike facilities including existing City Park areas.

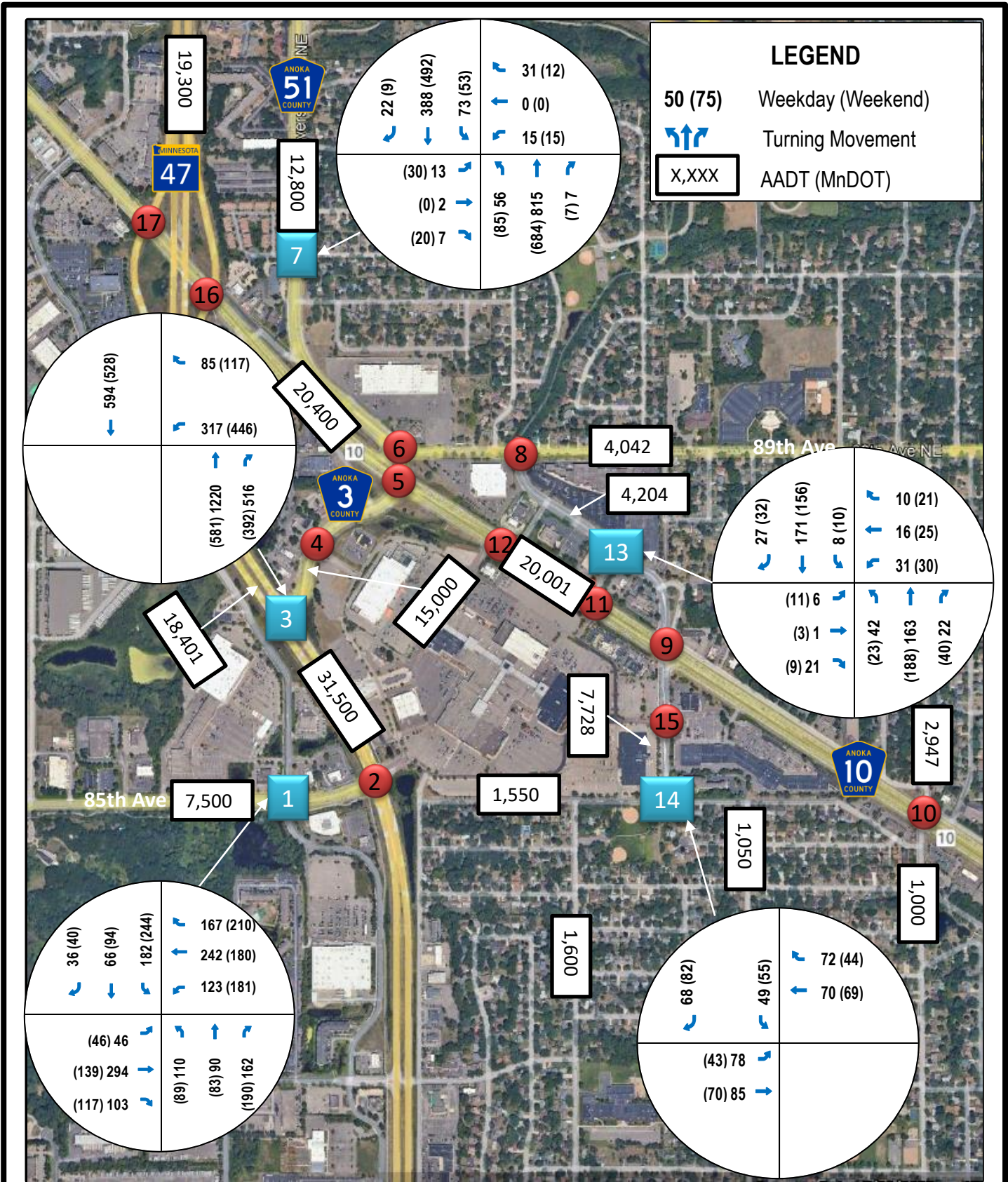


Figure 2a – Existing Traffic Volumes

Blaine Northtown AUAR
Blaine, MN



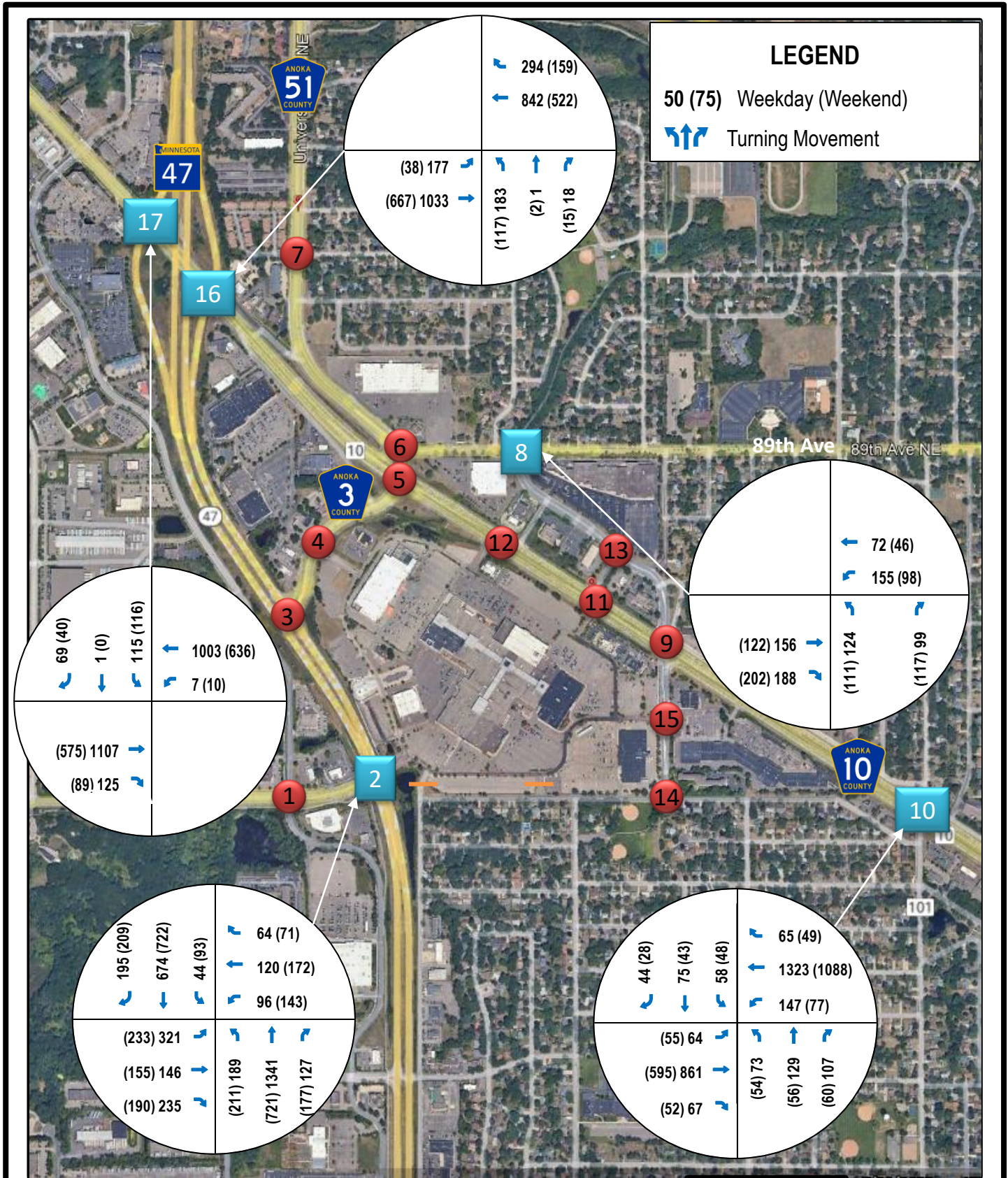


Figure 2b – Existing Traffic Volumes

Blaine Northtown AUAR
Blaine, MN



LEGEND

50 (75) Weekday (Weekend)

Turning Movement




Figure 2c – Existing Traffic Volumes

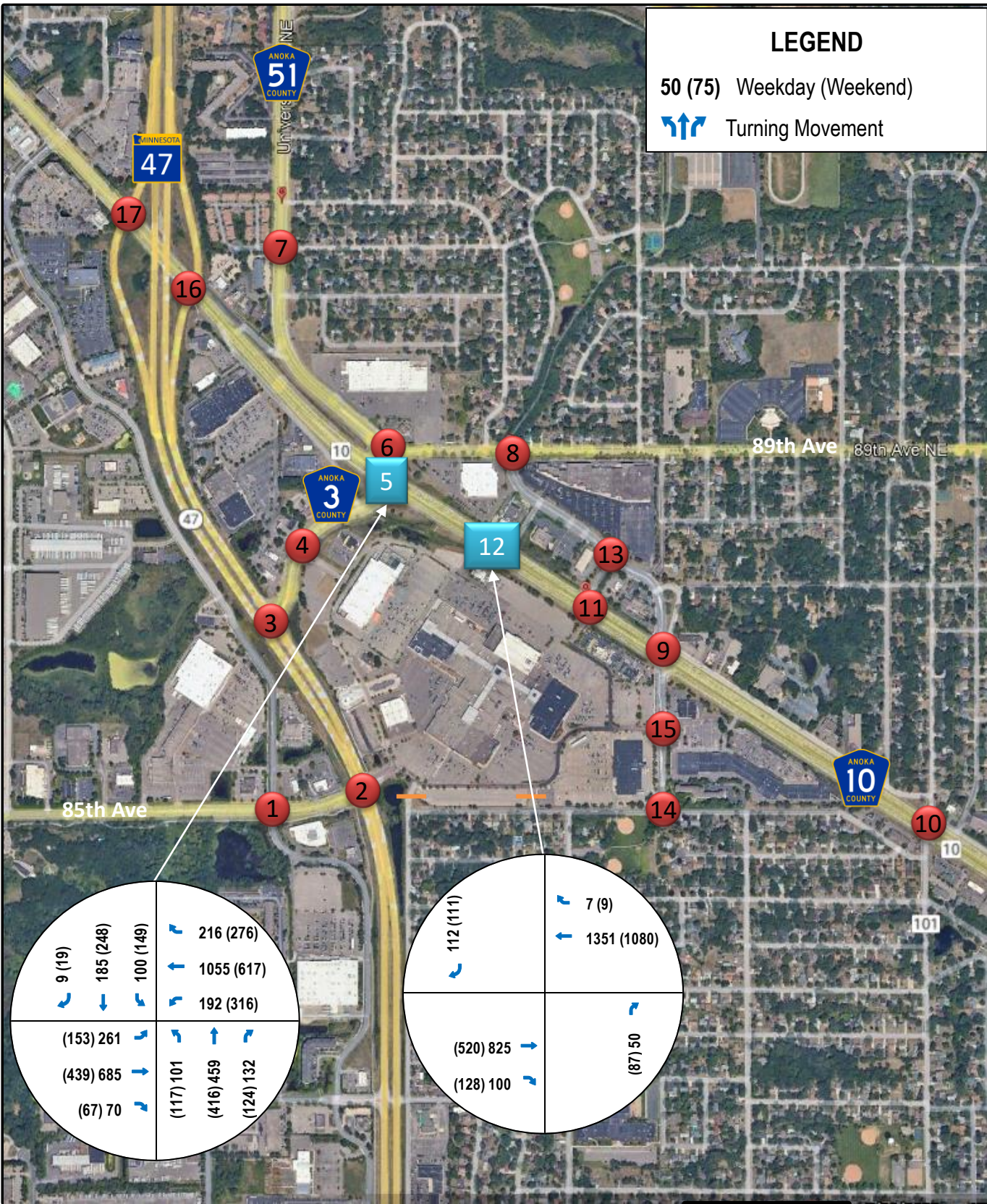
Blaine Northtown AUAR
Blaine, MN












LEGEND

50 (75) Weekday (Weekend)

 Turning Movement



9 (19)	185 (248)	100 (149)	 216 (276)
 (153) 261	 (439) 685	 (67) 70	 192 (316)
 (117) 101	 (416) 459	 (124) 132	 1055 (617)







 112 (111)	 7 (9)
 (520) 825	 1351 (1080)
 (128) 100	 (87) 50

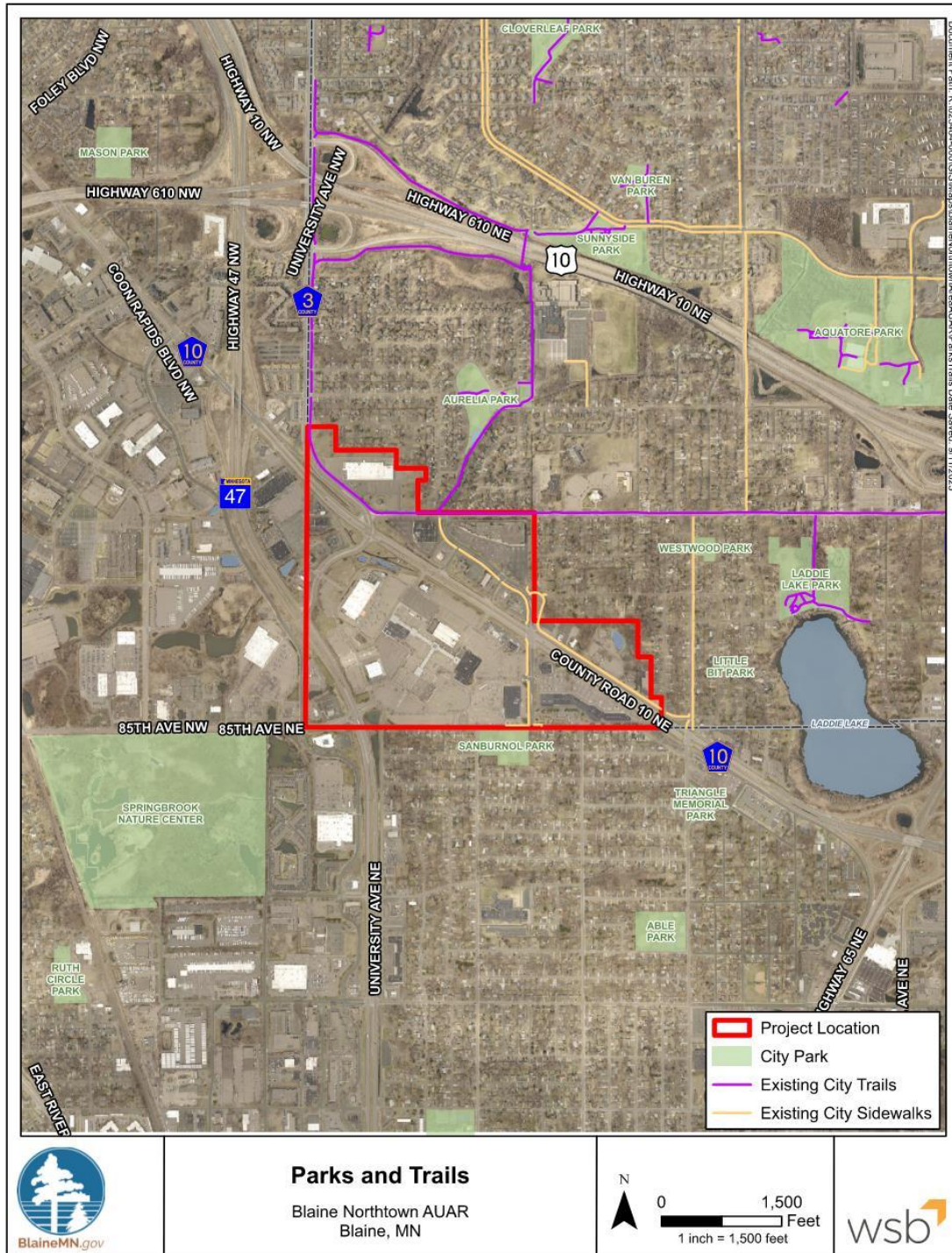


Figure 2d – Existing Traffic Volumes

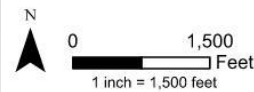
Blaine Northtown AUAR
Blaine, MN



Figure 3 – Existing Pedestrian and Bike Facilities



Parks and Trails
 Blaine Northtown AUAR
 Blaine, MN



Existing Transit Routes

Figure 4 shows the existing transit routes surrounding the site. The Northtown Transit Center is located at the Northtown Mall and currently provides a hub for public transportation users within the Northtown Mall District. Metro Transit local bus routes that can be accessed at the hub are routes 10, 25, 805, a limited bus stop route 824, and express service route 852. These routes in the area closest to the site include transportation for the following:

- **Route 10** is a local bus route from Downtown Minneapolis to Fridley or Blaine via University Avenue and Central Avenue.
- **Route 25** is a local bus route from St Louis Park or Downtown Minneapolis to Mounds View or Blaine via Silver Lake Road, Stinson Parkway, Hennepin Avenue, and Nicollet Mall.
- **Route 805** is a local bus route from Blaine to Anoka via Coon Rapids. or Downtown Minneapolis to Mounds View or Blaine via Silver Lake Road, Stinson Parkway, Hennepin Avenue, and Nicollet Mall.
- **Route 824** is a limited bus route from Northtown Mall to Downtown Minneapolis via 2nd Avenue and University Avenue.
- **Route 852** is an express service bus route from Anoka to Downtown Minneapolis via Coon Rapids Boulevard.

DEVELOPMENT LAND USE SCENARIOS

Two redevelopment land use scenarios have been included in the AUAR. The redevelopment is anticipated to include a mix of retail, dining, residential, office, lodging, and entertainment uses.

Table 1 summarizes the land use and density for each Scenario. These scenarios are consistent with the **Northtown District VP** and **Blaine 2040 Comprehensive Plan**. The two scenarios have similar land uses based on coverages; however, Scenario 2 proposes a denser residential development plan than Scenario 1. **Figures 5a and 5b** show the proposed Land Use areas. Community Commercial is described as retail and services that serve larger areas, from neighborhood to regional scale. Typical uses include apparel, food, financial services and furniture. Planned retail is described as commercial, retail and office uses in a planned, cohesive style of development. Planned commercial areas are in areas with good visibility and access from major roadways and are sufficiently sized to accommodate a larger-scale planned design and concept.

Table 1 – Development Scenario Land Use

Land Use	Scenario 1 Comp Plan	Scenario 2 Vision Plan
Community Commercial	1,539,846 sf	1,029,410 sf
Planned Commercial	134,165 sf	408,837 sf
Multi-family residential	865 units	2,251 units
<i>Medium Density</i>	<i>205 units</i>	<i>240 units</i>
<i>High Density</i>	<i>660 units</i>	<i>2,011 units</i>

Figure 4 – Existing Transit Routes

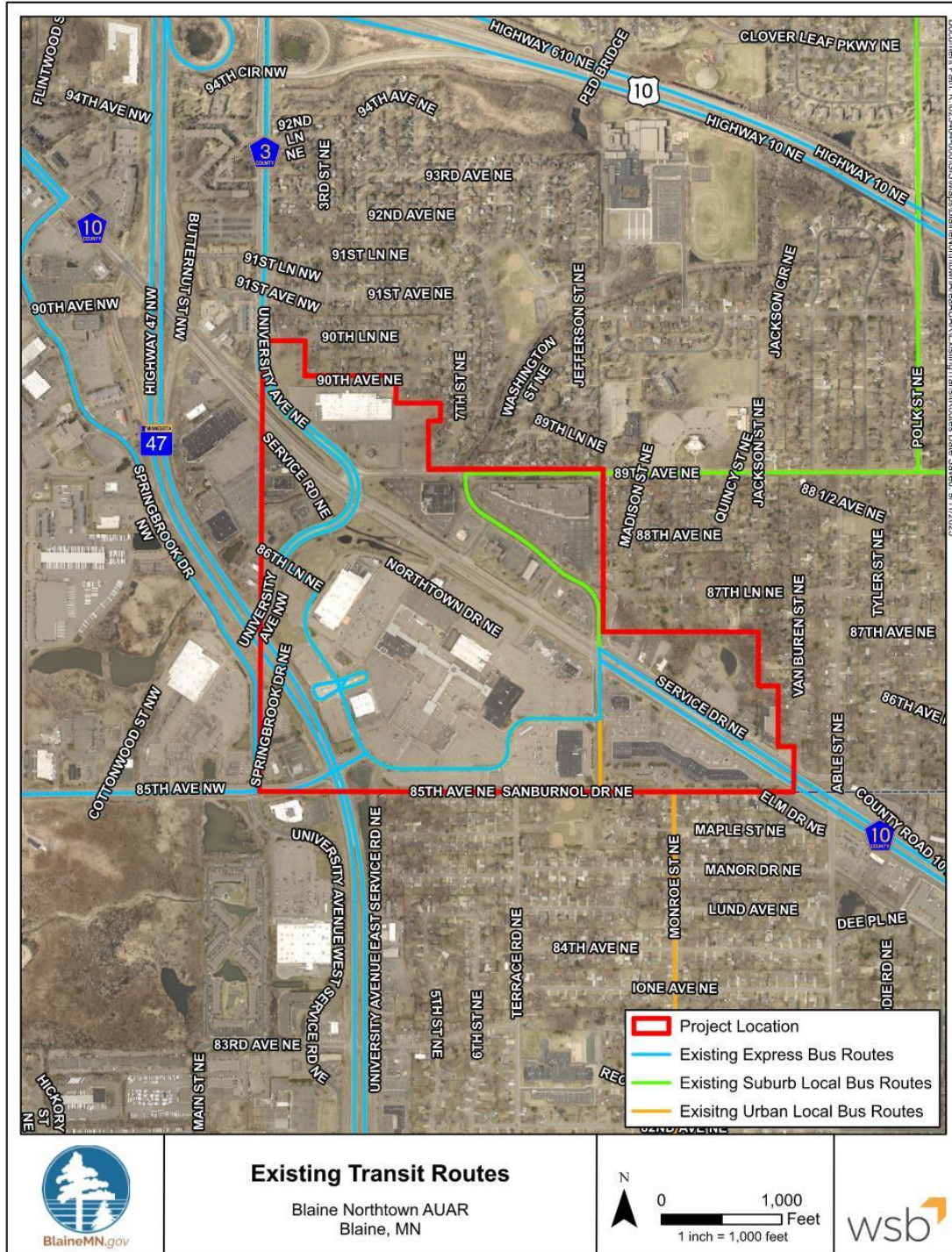


Figure 5a – Scenario 1 (Comp Plan)

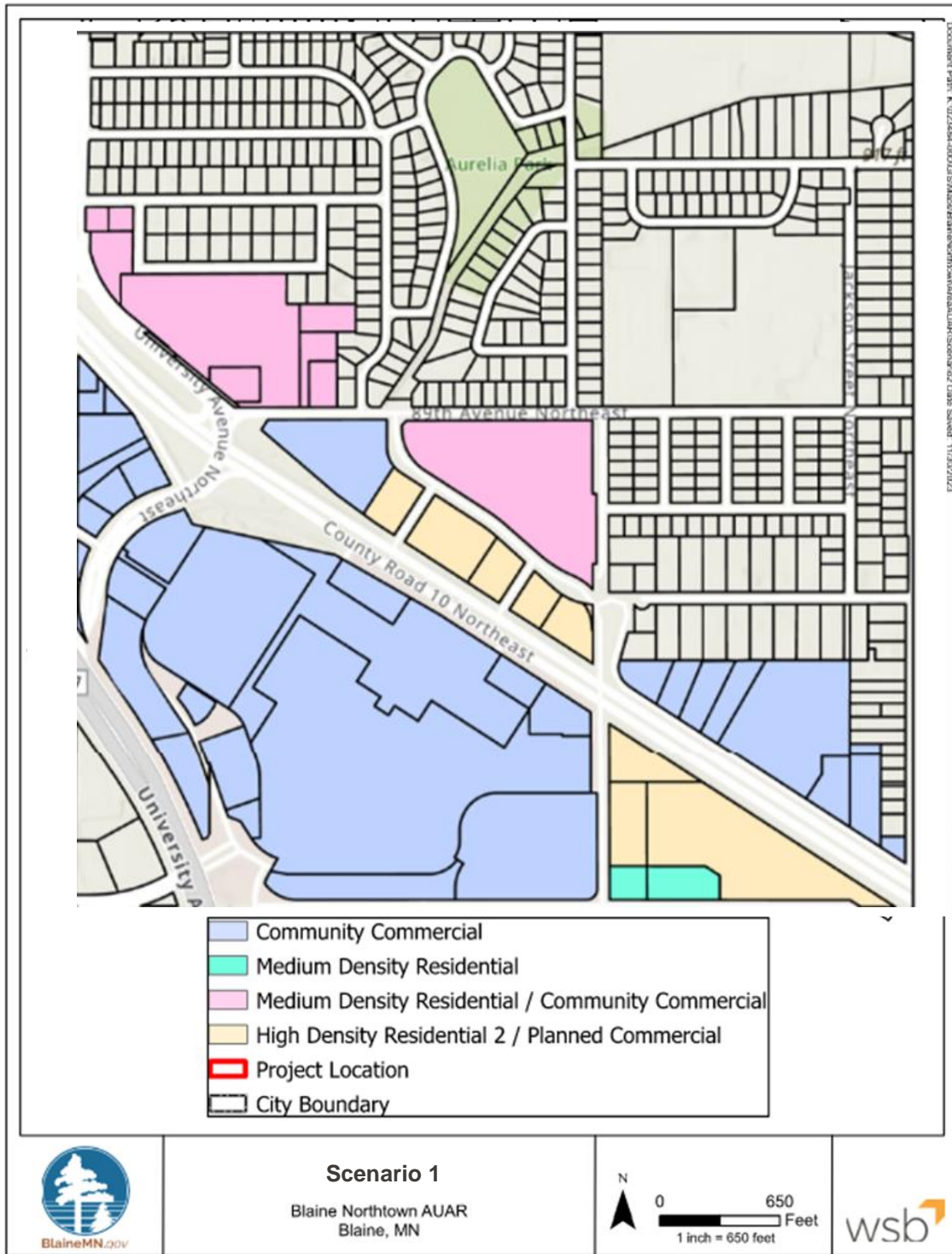
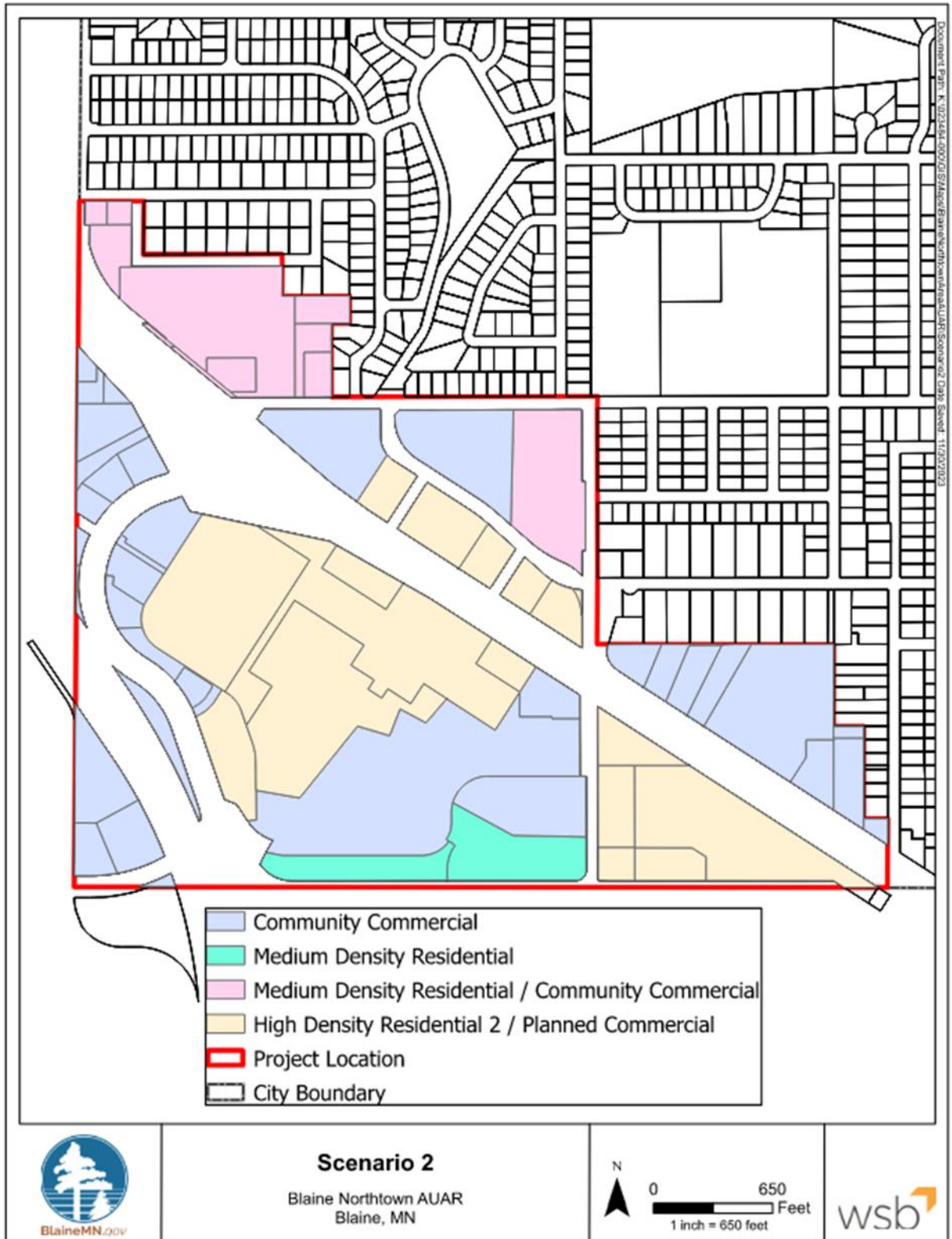


Figure 5b – Scenario 2 (Vision Plan)



BIKE / PEDESTRIAN FACILITIES

With Scenario 2 (Vision Plan), trail and sidewalk connections within the site to the surrounding network will be provided.

As discussed previously and shown in **Figure 3**, the study area is currently lacking pedestrian and bicycle facilities within the site and connections to nearby bike facilities. As shown in the **Northtown District VP**, a multi-use trail and sidewalk are proposed along CSAH 10 and University Avenue as well as along the full internal network grid of the redeveloped site. The plan proposes a comprehensive network of sidewalks and trails to better connect the Northtown Mall District to surrounding neighborhood and provide alternative modes of transportation. Goals of the plan also include:

- Create safer roadway crossings at signalized intersections with high volumes
- Prioritize accessibility for pedestrians and bicyclists
- Provide a comprehensive system of sidewalks trails, and on-street bike lanes as redevelopment occurs
- Connect proposed internal trails to existing nearby community/ regional trails, neighborhoods, parks, community destinations
- Create a wayfinding signage program for pedestrians/bicyclists
- Provide bicycle facilities such as bike parking, pump and repair stations, lockers and showers
- Provide ADA compliant pedestrian crossings and routes
- Provide safe and accessible connections to transit

TRANSIT IMPROVEMENTS

The future transit station for the future Metro F Line (BRT) as shown in the Vision Plan is planned to replace the existing transit station in the southwest area of the Northtown site, with upgraded amenities and services. The F Line will provide an opportunity to incorporate transit-orientated development (TOD) and increased ridership in the redeveloped area. The Metro F Line is planned to serve the north metro area along the TH 65 corridor, essentially replacing Route 10 from Northtown Mall to downtown Minneapolis via TH 47 and TH 65.

TRAFFIC PROJECTIONS

In order to analyze the land use scenarios and determine the appropriate lane configuration and traffic control needs on the area roadways and intersections; projected traffic volumes were determined. Projections were prepared for the 2040 horizon year. The following sections outline the projected background traffic growth, traffic generation from the study area, as well as the traffic distribution and projected traffic volumes. For proposed development conditions, trips from the existing land uses were estimated based on existing land uses and replaced with proposed land use-related trips.

Background Traffic Growth

Traffic growth in the vicinity of the proposed site will occur between existing conditions and any given future year due to other developments within the region. This background growth must be accounted for and included in future year traffic forecasts. Based on the forecasts in the Blaine 2040 Comprehensive Plan, a 0.9% annual growth rate was applied to the Existing through traffic volumes on adjacent roadways to determine the 2040 peak hour No-Build traffic volumes.

Proposed Development Area Traffic Generation

The estimated trip generation from each of the proposed development scenarios is shown in **Tables 2a – 2b**. The trip generation rates used to estimate the proposed area traffic is based on other similar land uses as documented in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. The tables show the Daily, PM peak and Saturday peak hour trip generation for each development scenario.

The traffic generation also includes mixed-use internal trip reduction and pass-by trips for retail uses. The internal trip reduction rate was calculated based on the ITE Trip Generation Manual guideline to determine a percentage of trips that would be destined to another land use within the site and not utilize the exterior roadways. Pass-by trips were also calculated based on the ITE Trip Generation Manual studies to determine a percentage of trips that would enter/exit a site from a driveway that was already on their original route.

Trips from the existing development were also estimated to account for the removal of existing Northtown Mall area-related trips in the Build scenarios. **Table 2c** shows the estimated existing trips based on current land uses. In comparing the estimated trips to actual peak hour trips in/out of the development area, these trips were reduced by approximately 50%.

Proposed Development Area Traffic Distribution

Area generated trips were distributed to the adjacent roadway system based on several factors including the anticipated origins and destinations for the residential land use, and existing travel patterns on the network. Based on these parameters the following general traffic distribution was used to distribute the projected traffic volumes to the area roadway network for commercial and residential land uses, also shown in **Figure 6a – Figure 6b**.

Commercial distribution:

- 20% to/from the northwest on CSAH 10
- 20% to/from the southeast on CSAH 10
- 15% to/from the west on 85th Avenue
- 15% to/from the north on TH 47
- 15% to/from the south on TH 47
- 5% to/from the east on 89th Avenue
- 5% to/from the north on CSAH 51
- 5% to/from the south on various neighborhood roadways (Terrace Road, Monroe Street, etc.)

Residential distribution:

- 10% to/from the northwest on CSAH 10
- 40% to/from the southeast on CSAH 10
- 10% to/from the west on 85th Avenue
- 10% to/from the north on TH 47
- 30% to/from the south on TH 47

Projected Traffic Volumes

Traffic forecasts were prepared for the 2040 No-Build and Build conditions. The 2040 peak hour No-Build traffic forecasts were prepared by adding the projected annual background traffic growth to the existing traffic volumes. The 2040 Build volumes were forecasted by removing the estimated existing land use-related trips from the project area, adding the projected annual background traffic growth to the reduced adjusted traffic volumes and adding the anticipated area development site

traffic generation for each Build Scenario. The Vision Plan also identifies a reconfiguration of intersection 11, with an 85th Avenue extension connecting to the intersection with CSAH 10 and full access being provided. Trips were redistributed from the adjacent full access CSAH 10 intersections with CSAH 3 and Jefferson Street and from the TH 47 and 85th Avenue intersection to the new CSAH 10 and 85th Avenue extension intersection.

Figures 7a – Figure 11d show the 2040 No-Build and 2040 Build traffic volumes for each scenario. Two Build alternatives were analyzed per scenario, one with the existing intersection geometry and traffic control, and another with a traffic signal and full-access at the CSAH 10 and 85th Avenue extension intersection.

DRAFT

Table 2a – Scenario 1 Trip Generation

Trip Generation- Scenario 1. Comp Plan											
Site #	Land Use	ITE Code/Description	# of Units	Unit Type	PM Trips			Weekend Peak Trips			Weekday Trips
					In	Out	Total	In	Out	Total	
A	MDR	215-Single-Family Attached Housing	99	Dwelling Units	33	23	56	27	29	56	713
	CC	821-Shopping Center (40-150k)	101	KSF	436	472	908	475	457	932	9,508
	Mixed-Use Reduction (20% of Retail)				(87)	(94)	(182)	(95)	(91)	(186)	(1,902)
	Retail Pass-by (40% Weekday, 31% Weekend)				(174)	(189)	(363)	(147)	(142)	(289)	(3,803)
Subtotal Site A New Trips					207	212	419	260	253	513	4,516
B	CC	821-Shopping Center (40-150k)	58	KSF	253	274	527	276	265	541	5,520
	PC	712-Small Office Building	8	KSF	6	12	18	-	-	-	120
	HDR	221-Multifamily Housing (Low Rise)	41	Dwelling Units	13	8	21	8	8	16	276
	Mixed-Use Reduction (20% of Retail)				(51)	(55)	(105)	(55)	(53)	(108)	(1,104)
Retail Pass-by (40% Weekday, 31% Weekend)				(101)	(110)	(211)	(86)	(82)	(168)	(2,208)	
Subtotal Site B New Trips					120	130	250	143	138	281	2,605
C	CC	821-Shopping Center (40-150k)	78	KSF	336	364	700	366	352	718	7,330
	MDR	215-Single-Family Attached Housing	76	Dwelling Units	26	18	44	21	23	44	547
	Mixed-Use Reduction (20% of Retail)				(67)	(73)	(140)	(73)	(70)	(144)	(1,466)
	Retail Pass-by (40% Weekday, 31% Weekend)				(134)	(146)	(280)	(113)	(109)	(223)	(2,932)
Subtotal Site C New Trips					160	164	324	200	195	396	3,479
D	PC	710-General Office Building	24	KSF	6	29	35	7	6	13	265
	HDR	221-Multifamily Housing (Low Rise)	120	Dwelling Units	39	23	62	25	25	50	809
	Subtotal Site D New Trips					45	52	97	32	31	63
E	PC	710-General Office Building	15	KSF	4	17	21	4	4	8	158
	HDR	221-Multifamily Housing (Low Rise)	72	Dwelling Units	23	14	37	15	15	30	485
	Subtotal Site E New Trips					27	31	58	19	19	38
F	CC	820-Shopping Center (>150k)	201	KSF	329	356	685	461	426	887	7,457
	Mixed-Use Reduction (20% of Retail)				(66)	(71)	(137)	(92)	(85)	(177)	(1,491)
	Retail Pass-by (40% Weekday, 31% Weekend)				(132)	(142)	(274)	(143)	(132)	(275)	(2,983)
	Subtotal Site F New Trips					132	142	274	226	209	435
G	CC	821-Shopping Center (40-150k)	76	KSF	328	355	683	357	343	700	7,145
	Mixed-Use Reduction (20% of Retail)				(66)	(71)	(137)	(71)	(69)	(140)	(1,429)
	Retail Pass-by (40% Weekday, 31% Weekend)				(131)	(142)	(273)	(111)	(106)	(217)	(2,858)
	Subtotal Site G New Trips					131	142	273	175	168	343
H	CC	820-Shopping Center (>150k)	1,026	KSF	1,675	1,814	3,489	2,348	2,167	4,515	37,977
	Mixed-Use Reduction (20% of Retail)				(335)	(363)	(698)	(470)	(433)	(903)	(7,595)
	Retail Pass-by (40% Weekday, 31% Weekend)				(670)	(726)	(1,396)	(728)	(672)	(1,400)	(15,191)
	Subtotal Site H New Trips					670	726	1,396	1,151	1,062	2,212
I	MDR	215-Single-Family Attached Housing	29	Dwelling Units	10	7	17	8	9	17	209
	HDR	221-Multifamily Housing (Low Rise)	427	Dwelling Units	137	81	218	88	88	176	2,878
	PC	710-General Office Building	24	KSF	6	29	35	7	6	13	265
	Subtotal Site I New Trips					153	117	270	103	103	206
Total New Trips					1,646	1,715	3,361	2,309	2,178	4,487	36,700

Source: Institute of Transportation Engineers
Trip Generation Manual, 11th Edition

Table 2b – Scenario 2 Trip Generation

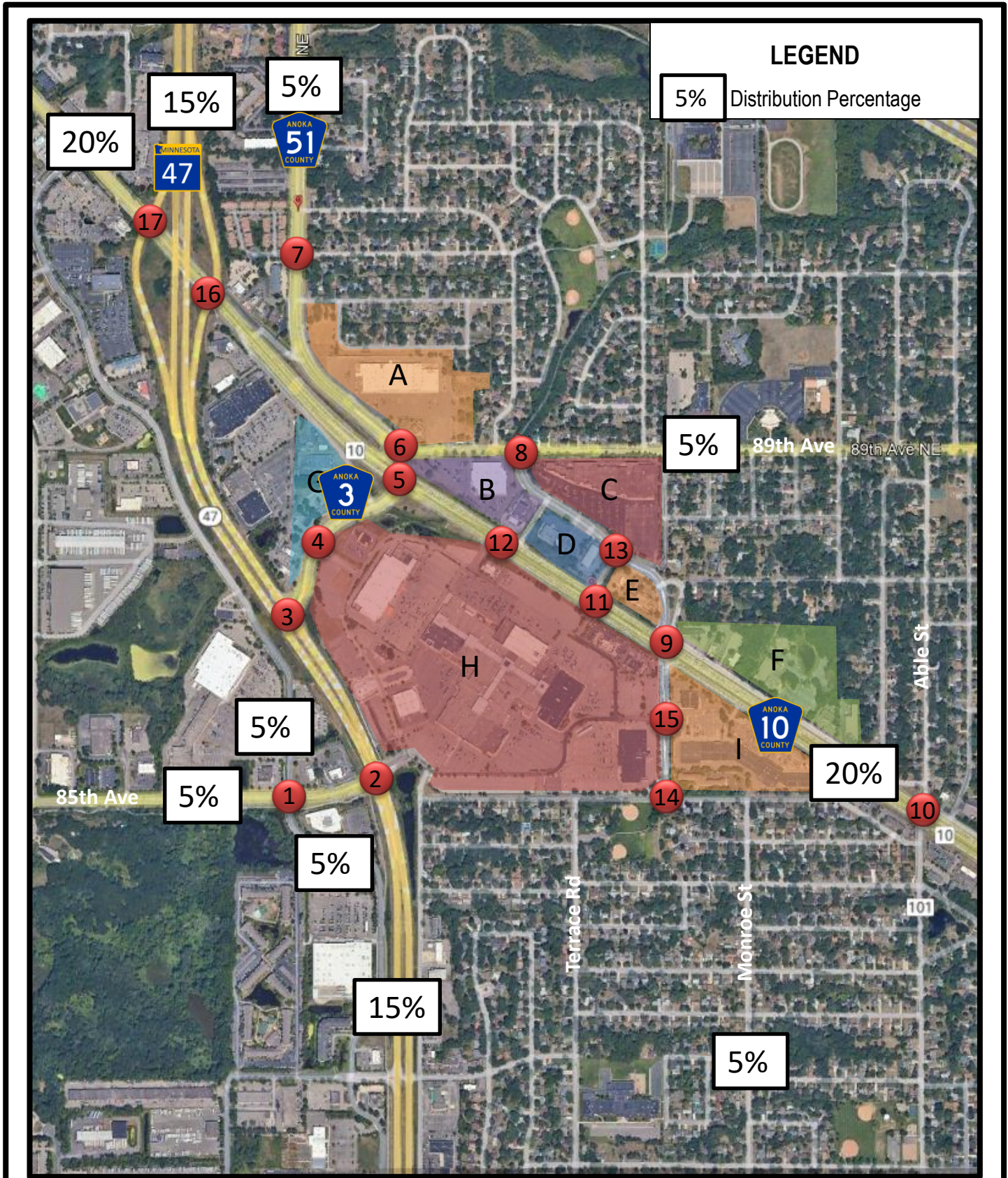
Trip Generation- Scenario 2. Vision Plan											
Site #	Land Use	ITE Code/Description	# of Units	Unit Type	PM Trips			Weekend Peak Trips			Weekday Trips
					In	Out	Total	In	Out	Total	
A	MDR	215-Single-Family Attached Housing	99	Dwelling Units	33	23	56	27	29	56	713
	CC	821-Shopping Center (40-150k)	101	KSF	436	472	908	475	457	932	9,508
Mixed-Use Reduction (20% of Retail)					(87)	(94)	(182)	(95)	(91)	(186)	(1,902)
Retail Pass-by (40% Weekday, 31% Weekend)					(174)	(189)	(363)	(147)	(142)	(289)	(3,803)
Subtotal Site A New Trips					207	212	419	260	253	513	4,516
B	CC	821-Shopping Center (40-150k)	58	KSF	253	274	527	276	265	541	5,520
	PC	712-Small Office Building	8	KSF	6	12	18	-	-	-	120
	HDR	221-Multifamily Housing (Low Rise)	41	Dwelling Units	13	8	21	8	8	16	276
Mixed-Use Reduction (20% of Retail)					(51)	(55)	(105)	(55)	(53)	(108)	(1,104)
Retail Pass-by (40% Weekday, 31% Weekend)					(101)	(110)	(211)	(86)	(82)	(168)	(2,208)
Subtotal Site B New Trips					120	130	250	143	138	281	2,605
C	CC	821-Shopping Center (40-150k)	116	KSF	504	546	1,050	550	528	1,078	10,995
	MDR	215-Single-Family Attached Housing	38	Dwelling Units	13	9	22	10	11	21	274
Mixed-Use Reduction (20% of Retail)					(101)	(109)	(210)	(110)	(106)	(216)	(2,199)
Retail Pass-by (40% Weekday, 31% Weekend)					(202)	(218)	(420)	(171)	(164)	(334)	(4,398)
Subtotal Site C New Trips					215	227	442	280	270	549	4,671
D	PC	710-General Office Building	24	KSF	6	29	35	7	6	13	265
	HDR	221-Multifamily Housing (Low Rise)	120	Dwelling Units	39	23	62	25	25	50	809
Subtotal Site D New Trips					45	52	97	32	31	63	1,074
E	PC	710-General Office Building	15	KSF	4	17	21	4	4	8	158
	HDR	221-Multifamily Housing (Low Rise)	72	Dwelling Units	23	14	37	15	15	30	485
Subtotal Site E New Trips					27	31	58	19	19	38	643
F	CC	820-Shopping Center (>150k)	201	KSF	329	356	685	461	426	887	7,457
Mixed-Use Reduction (20% of Retail)					(66)	(71)	(137)	(92)	(85)	(177)	(1,491)
Retail Pass-by (40% Weekday, 31% Weekend)					(132)	(142)	(274)	(143)	(132)	(275)	(2,983)
Subtotal Site F New Trips					132	142	274	226	209	435	2,983
G	CC	821-Shopping Center (40-150k)	76	KSF	328	355	683	357	343	700	7,145
Mixed-Use Reduction (20% of Retail)					(66)	(71)	(137)	(71)	(69)	(140)	(1,429)
Retail Pass-by (40% Weekday, 31% Weekend)					(131)	(142)	(273)	(111)	(106)	(217)	(2,858)
Subtotal Site G New Trips					131	142	273	175	168	343	2,858
H	CC	820-Shopping Center (>150k)	477	KSF	778	843	1,621	1,091	1,007	2,098	17,650
	HDR	221-Multifamily Housing (Low Rise)	1,292	Dwelling Units	415	244	659	265	265	530	8,708
	MDR	215-Single-Family Attached Housing	103	Dwelling Units	35	24	59	28	31	59	742
	PC	710-General Office Building	263	KSF	64	314	378	75	64	139	2,848
Mixed-Use Reduction (20% of Retail/Rest)					(156)	(169)	(324)	(218)	(201)	(420)	(3,530)
Retail Pass-by (40% Weekday, 31% Weekend)					(311)	(337)	(648)	(338)	(312)	(650)	(7,060)
Subtotal Site H New Trips					825	919	1,744	903	853	1,756	19,358
I	PC	710-General Office Building	99	KSF	24	118	142	28	24	52	1,070
	HDR	221-Multifamily Housing (Low Rise)	486	Dwelling Units	156	92	248	100	100	200	3,276
Subtotal Site I New Trips					180	210	390	128	124	252	4,346
Total New Trips					1,882	2,065	3,948	2,165	2,065	4,230	43,054

Source: Institute of Transportation Engineers
Trip Generation Manual, 11th Edition

Table 2c – Existing Trip Generation

Trip Generation- Existing										
Site #	ITE Code/Description	# of Units	Unit Type	PM Trips			Weekend Peak Trips			Weekday Trips
				In	Out	Total	In	Out	Total	
A	843 - Automobile Parts Sales	39.0	KSF	92	99	191	229	220	449	2,128
	Health/ Fitness Club	35.0	KSF	69	52	121	55	57	112	1,208
	879 - Arts and Crafts Store	16.0	KSF	46	54	100	46	54	100	905
	435 - Multipurpose Rec Facility	20.5	KSF	40	33	73	40	33	73	734
	932-High-Turnover (Sit-Down) Restaurant	2.8	KSF	15	10	25	12	11	23	300
	Retail Pass-by (40% Weekday, 31% Weekend)			(55)	(61)	(116)	(85)	(85)	(170)	(940)
Subtotal Site A Trips				101	97	198	98	98	196	1,939
B	911 - Walk-in Bank	3.0	KSF	16	20	36	-	-	-	364
	918 - Hair Salon	8.0	KSF	2	10	12	15	26	41	116
	815 - Free-Standing Discount Store	44	KSF	106	106	212	156	150	306	2,343
	Retail Pass-by (40% Weekday, 31% Weekend)			(42)	(42)	(85)	(48)	(47)	(95)	179
Subtotal Site B Trips				82	94	175	123	130	252	3,002
C	815 - Free-Standing Discount Store	25	KSF	61	61	122	90	86	176	1,347
	934 - Fast-Food Restaurant w/ Drive-Through Window	1	KSF	24	22	46	39	38	77	654
	933 - Fast-Food Restaurant w/out Drive-Through Window	1.5	KSF	25	25	50	41	41	82	676
	918 - Hair Salon	5	KSF	4	4	8	9	16	25	71
	876 - Apparel Store	2	KSF	4	4	8	5	5	10	133
	712 - Small Office Building	2	KSF	1	3	4	-	-	-	26
	Fast Food Pass-by (55%)			(27)	(26)	(53)	(44)	(43)	(87)	(732)
Subtotal Site C Trips				92	93	185	140	143	283	2,175
D	912 - Drive-in Bank	12	KSF	126	126	252	-	-	-	1,204
	899 - Liquor Store	11	KSF	91	91	182	53	49	102	1,179
	Bank dRive thru Pass-by (35%)			(44)	(44)	(88)	-	-	-	(421)
Subtotal Site D Trips				173	173	346	53	49	102	1,962
E	912 - Drive-in Bank	8.5	KSF	89	89	178	-	-	-	853
	934 - Fast-Food Restaurant w/ Drive-Through Window	2.5	KSF	43	40	83	70	68	138	1,169
	Bank dRive thru Pass-by (35%)			(31)	(31)	(62)	-	-	-	(299)
	Fast Food Pass-by (55%)			(24)	(22)	(46)	(39)	(37)	(76)	(643)
Subtotal Site E Trips				77	76	153	32	31	62	1,080
F	590-Library	30	KSF	118	127	245	200	178	378	2,162
	890 - Furniture Store	22	KSF	5	6	11	13	11	24	137
	934 - Fast-Food Restaurant w/ Drive-Through Window	3	KSF	52	48	100	85	81	166	1,402
	640 - Animal Hospital/ Veterinary Clinic	4.0	KSF	6	8	14	-	-	-	86
	712 - Small Office Building	8	KSF	6	12	18	-	-	-	117
Fast Food Pass-by (55%)			(29)	(26)	(55)	(47)	(45)	(91)	(771)	
Subtotal Site F Trips				158	175	333	251	225	477	3,132
G	934 - Fast-Food Restaurant w/ Drive-Through Window	5.0	KSF	86	79	165	141	135	276	2,337
	943 - Automobile Parts and Service Center	5.5	KSF	4	7	11	4	7	11	91
	930 - Fast Casual Restaurant	7	KSF	48	40	88	126	103	229	680
	812 - Building Materials and Lumber Store	15	KSF	16	18	34	73	70	143	256
	640 - Animal Hospital/ Veterinary Clinic	3.4	KSF	5	7	12	-	-	-	73
	942 - Automobile Care Center	2.5	KSF	4	4	8	4	4	8	59
	Fast Food Pass-by (55%)			(74)	(65)	(139)	(147)	(131)	(278)	(1,660)
Subtotal Site G Trips				89	90	179	201	188	389	1,837
H	850 - Shopping Center	740	KSF	1,208	1,308	2,516	1,693	1,563	3,256	27,387
	862 - Home Improvement Store	110	KSF	123	128	251	245	236	481	3,381
	934 - Fast-Food Restaurant w/ Drive-Through Window	10.0	KSF	172	159	331	282	271	553	4,675
	436 - Trampoline Park	30.0	KSF	22	23	45	113	70	183	450
	930 - Fast Casual Restaurant	5	KSF	35	28	63	90	73	163	486
	912 - Drive-in Bank	4.0	KSF	42	42	84	-	-	-	401
	850 - Supermarket	80.0	KSF	358	358	716	404	404	808	7,507
	Fast Food Pass-by (55%)			(95)	(87)	(182)	(155)	(149)	(304)	(2,571)
	Bank dRive thru Pass-by (35%)			(15)	(15)	(29)	-	-	-	(140)
	Retail Pass-by (40% Weekday, 31% Weekend)			(483)	(523)	(1,006)	(525)	(485)	(1,009)	(8,490)
Subtotal Site H Trips				1,368	1,421	2,788	2,147	1,983	4,130	33,086
I	881 - Pharmacy/Drugstore with Drive-Through Window	15	KSF	77	77	154	64	67	131	1,626
	821 - Shopping Plaza	97	KSF	247	257	504	314	290	604	6,549
	Retail Pass-by (40% Weekday, 31% Weekend)			(130)	(134)	(263)	(117)	(111)	(228)	(3,270)
Subtotal Site I Trips				194	200	395	261	246	507	4,905
Total Existing Trips				2,334	2,418	4,752	3,305	3,093	6,398	53,119
Total Existing Trips w/ 50% Reduction				1,167	1,209	2,376	1,653	1,546	3,199	26,560

Source: Institute of Transportation Engineers
 Trip Generation Manual, 11th Edition



**Figure 6a –
Commercial Distribution**

Blaine Northtown AUAR
Blaine, MN



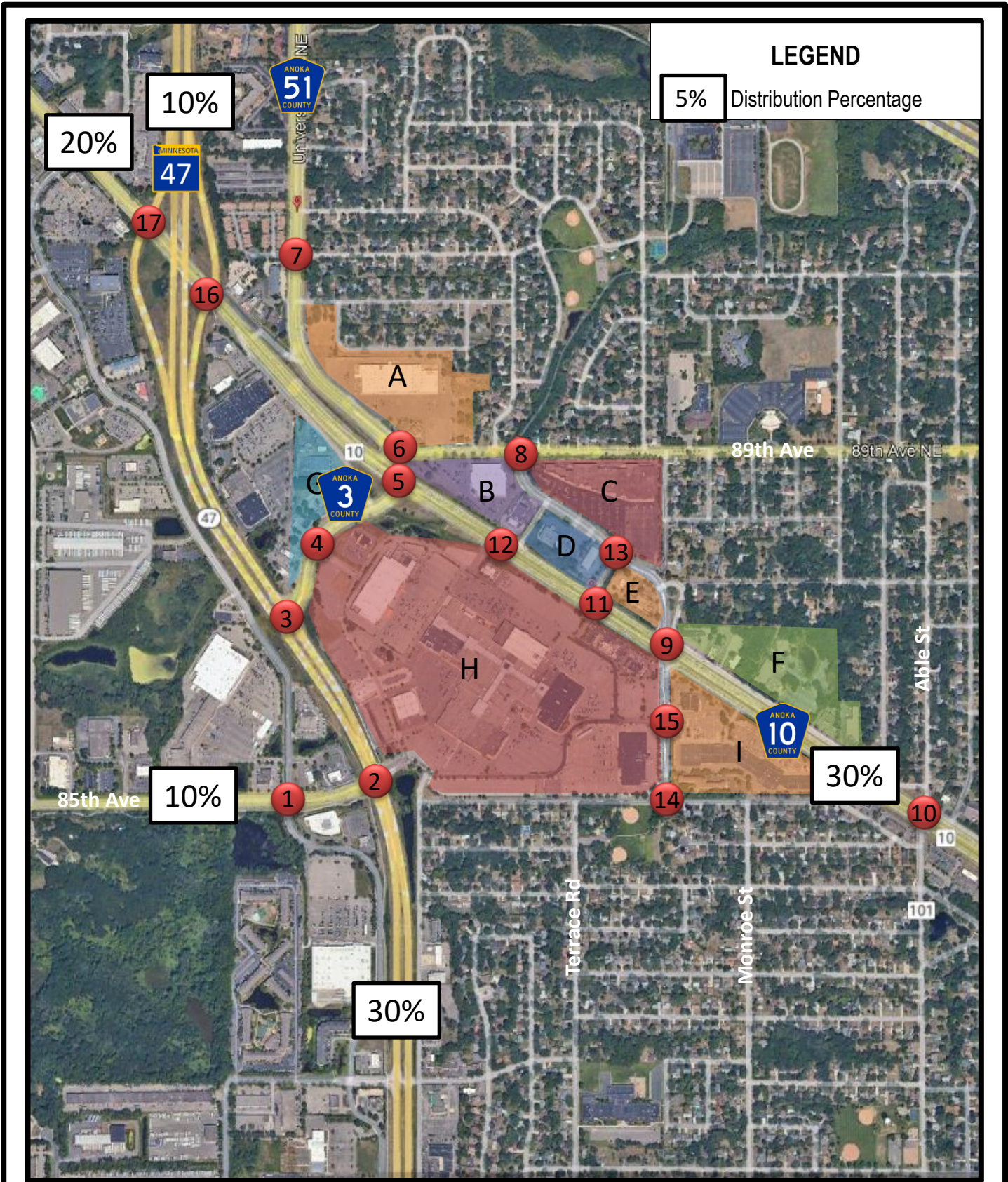



Figure 6b – Residential Distribution

Blaine Northtown AUAR
Blaine, MN



LEGEND

50 (75) Weekday (Weekend)

 Turning Movement

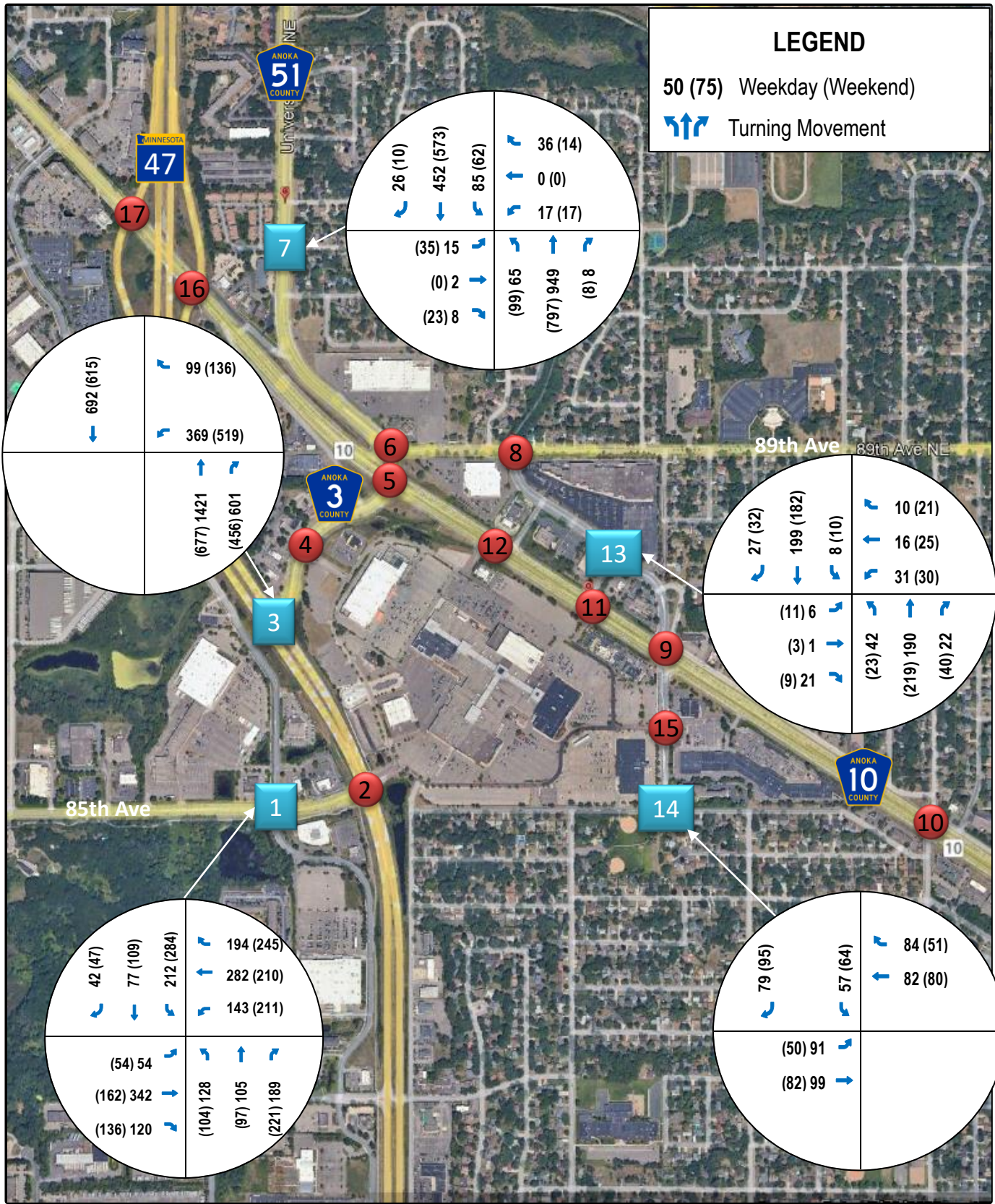


Figure 7a – 2040 No-Build Traffic Volumes
 Blaine Northtown AUAR
 Blaine, MN



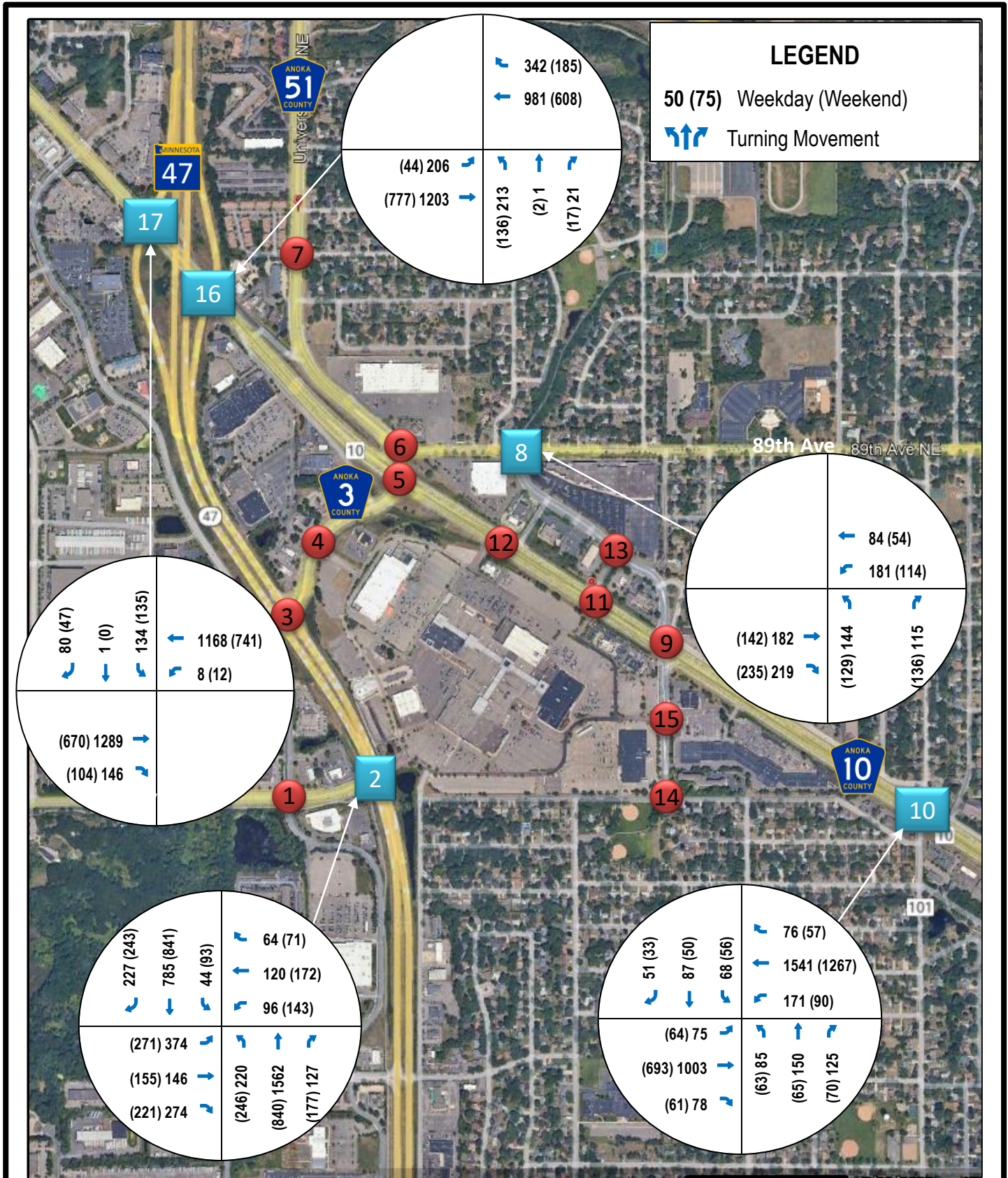


Figure 7b – 2040 No-Build Traffic Volumes

Blaine Northtown AUAR
Blaine, MN



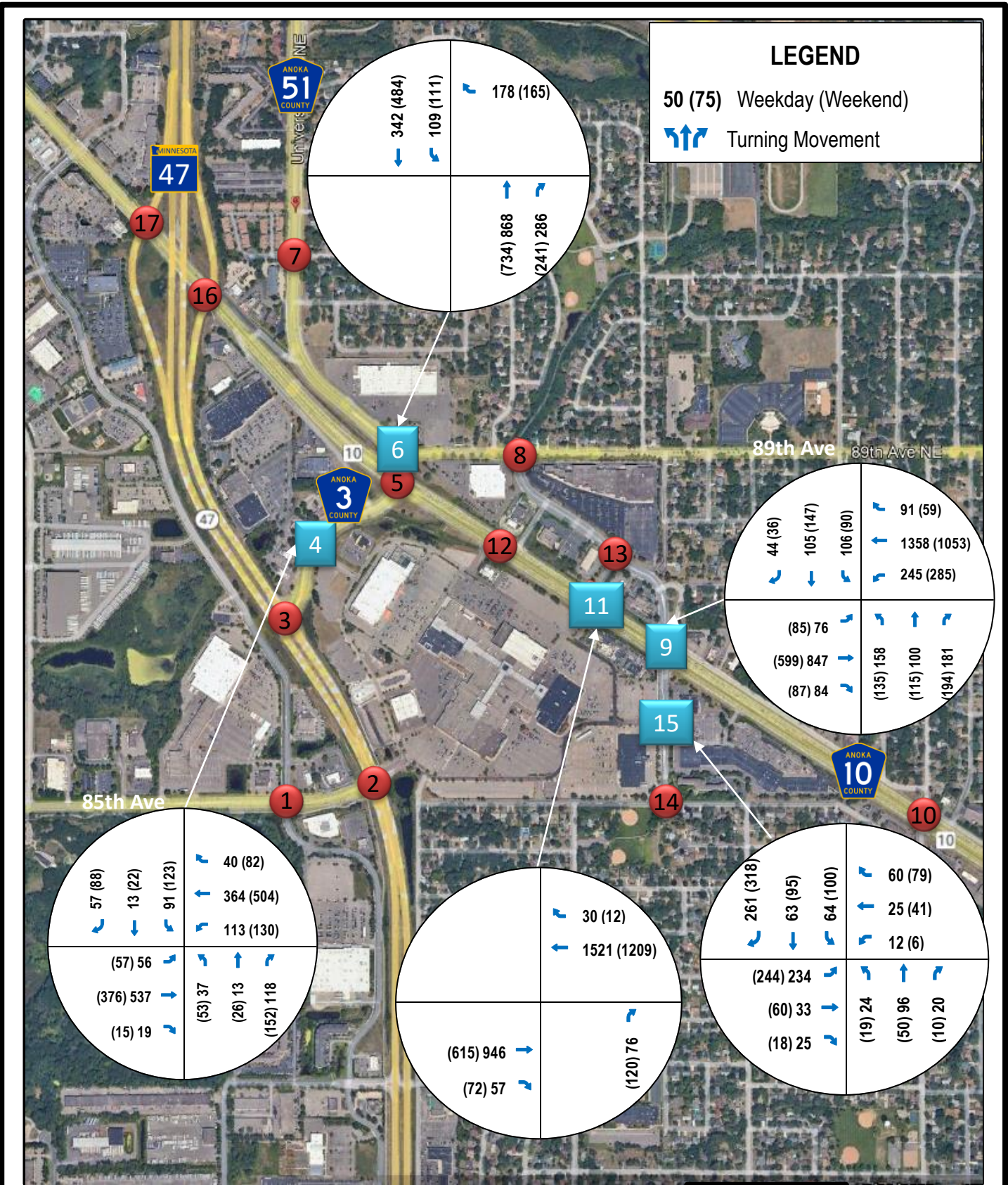



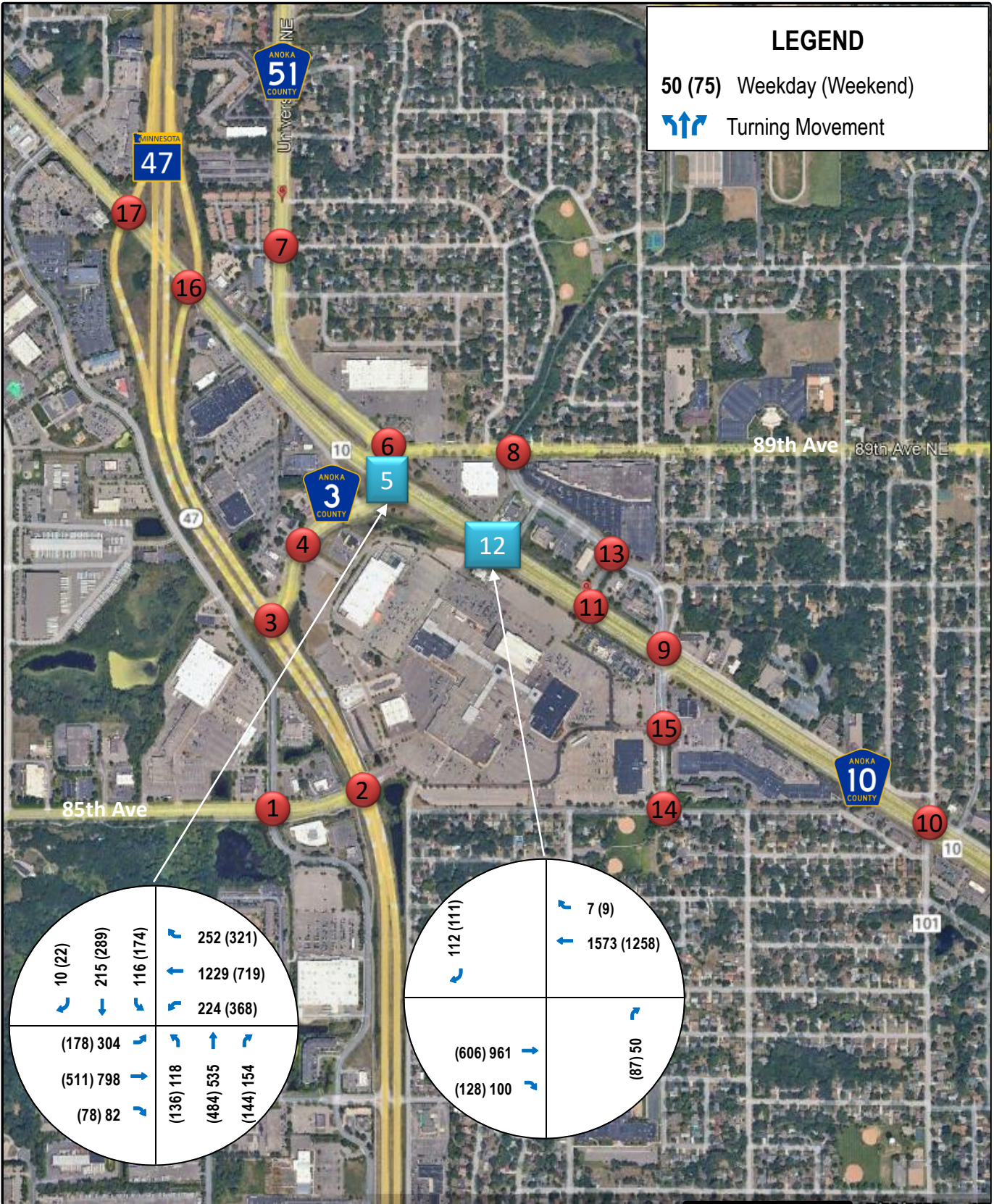
Figure 7c – 2040 No-Build Traffic Volumes
 Blaine Northtown AUAR
 Blaine, MN








LEGEND

50 (75) Weekday (Weekend)

 Turning Movement



10 (22)	215 (289)	116 (174)	252 (321)
			
(178) 304	(511) 798	(136) 118	1229 (719)
(78) 82		(484) 535	224 (368)
		(144) 154	




112 (111)	7 (9)
	
(606) 961	1573 (1258)
(128) 100	
	(87) 50



Figure 7d – 2040 No-Build Traffic Volumes

Blaine Northtown AUAR
Blaine, MN



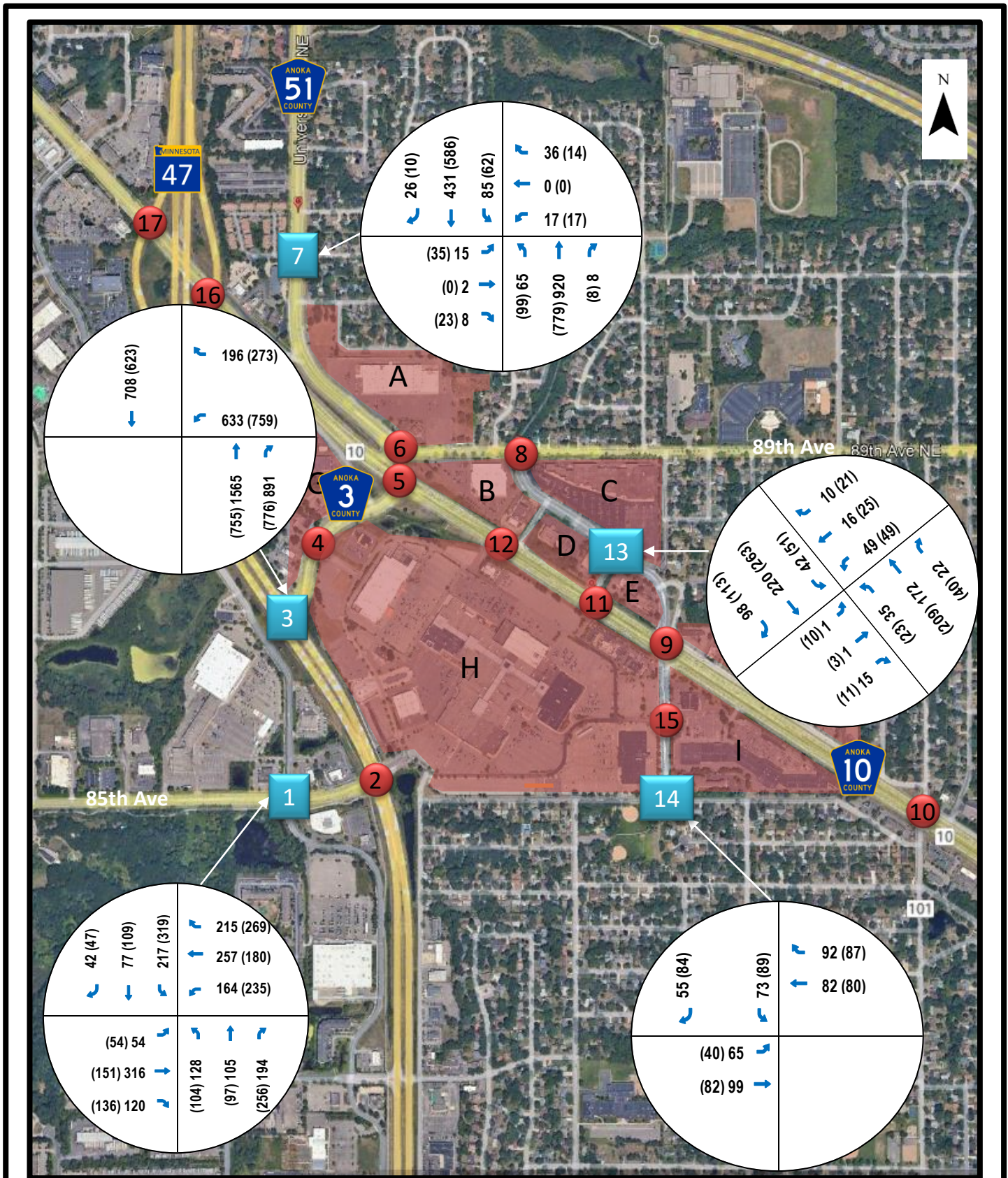


Figure 8a – 2040 Forecast Scenario 1 Volumes
Blaine Northtown AUAR
Blaine, MN



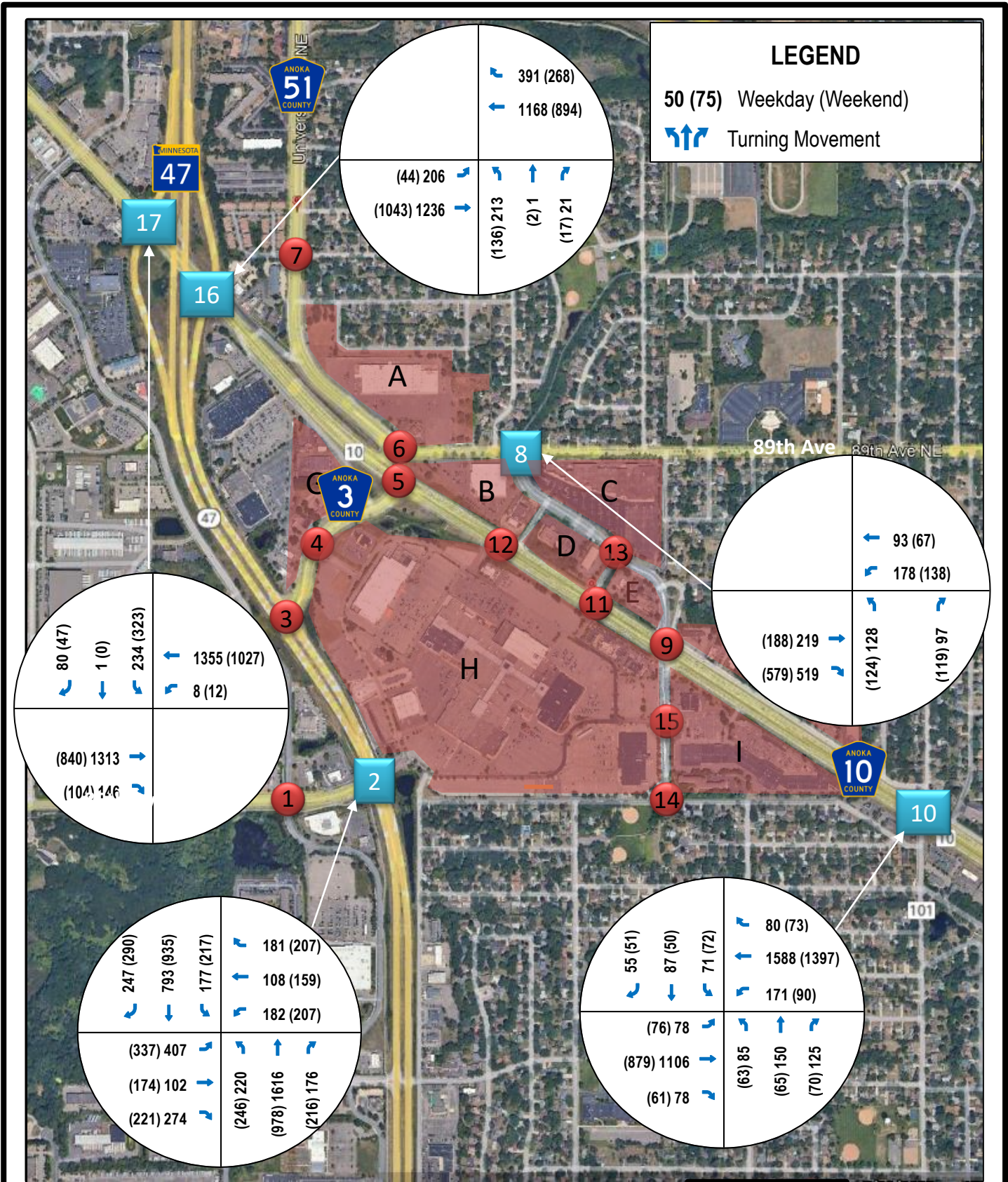


Figure 8b – 2040 Forecast Scenario 1 Volumes

Blaine Northtown AUAR
Blaine, MN



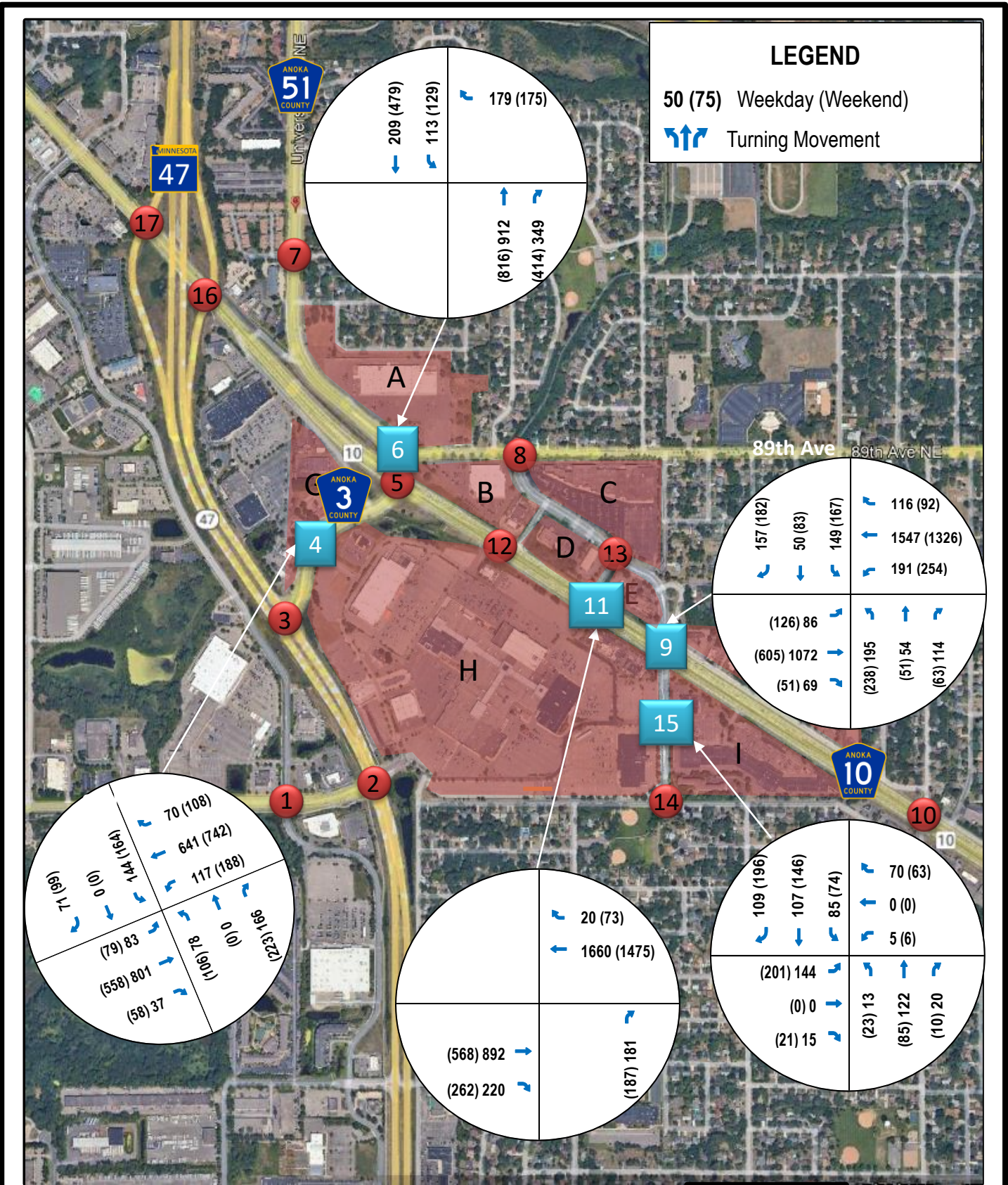



Figure 8c – 2040 Forecast Scenario 1 Volumes

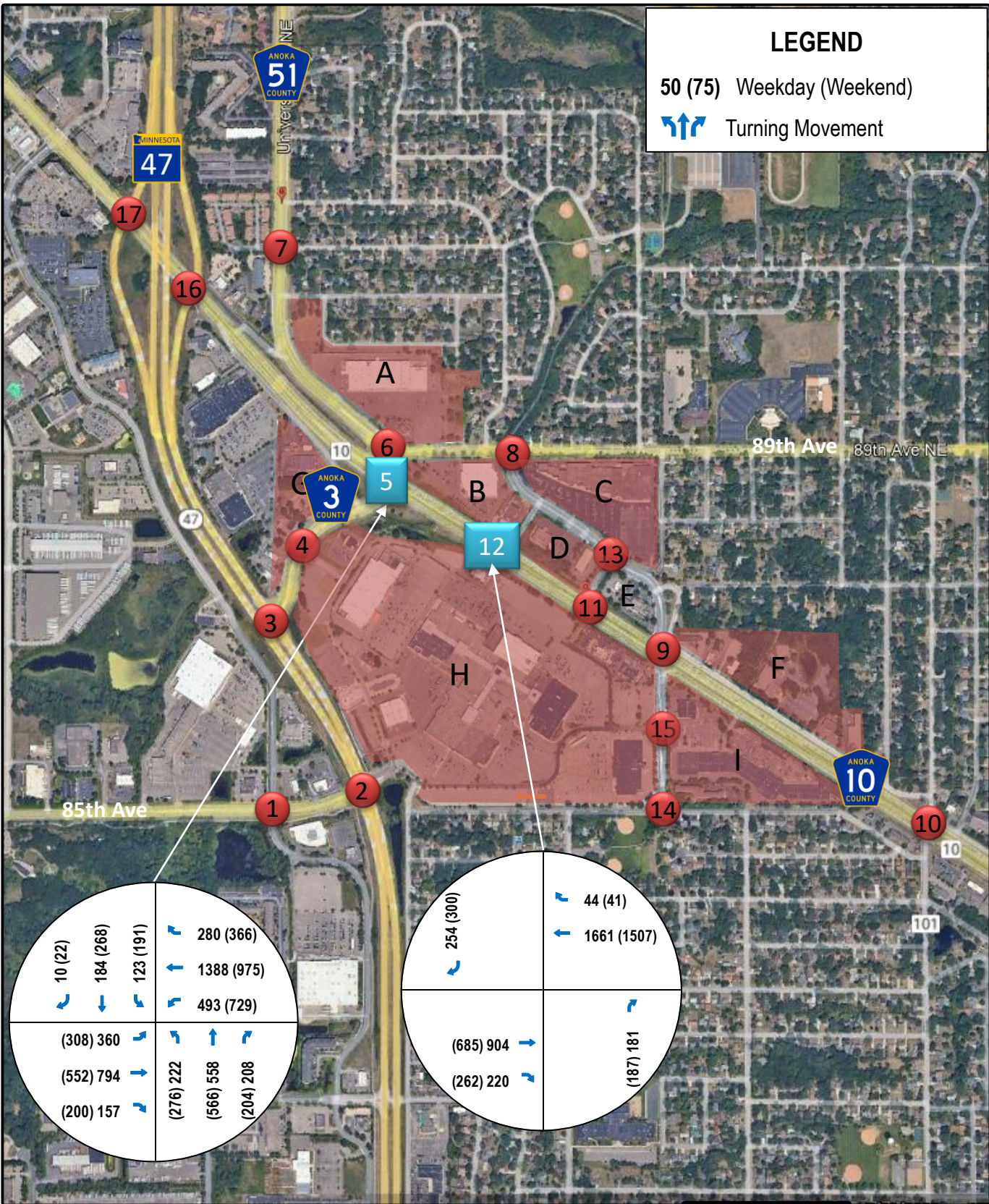
Blaine Northtown AUAR
Blaine, MN























LEGEND

50 (75) Weekday (Weekend)

 Turning Movement



10 (22)	184 (268)	123 (191)	 280 (366)
			 1388 (975)
(308) 360			 493 (729)
(552) 794			
(200) 157			 (276) 222
			 (566) 558
			 (204) 208













 254 (300)	 44 (41)
	 1661 (1507)
	
 (685) 904	
 (262) 220	
	 (187) 181



Figure 8d – 2040 Forecast Scenario 1 Volumes
Blaine Northtown AUAR
Blaine, MN



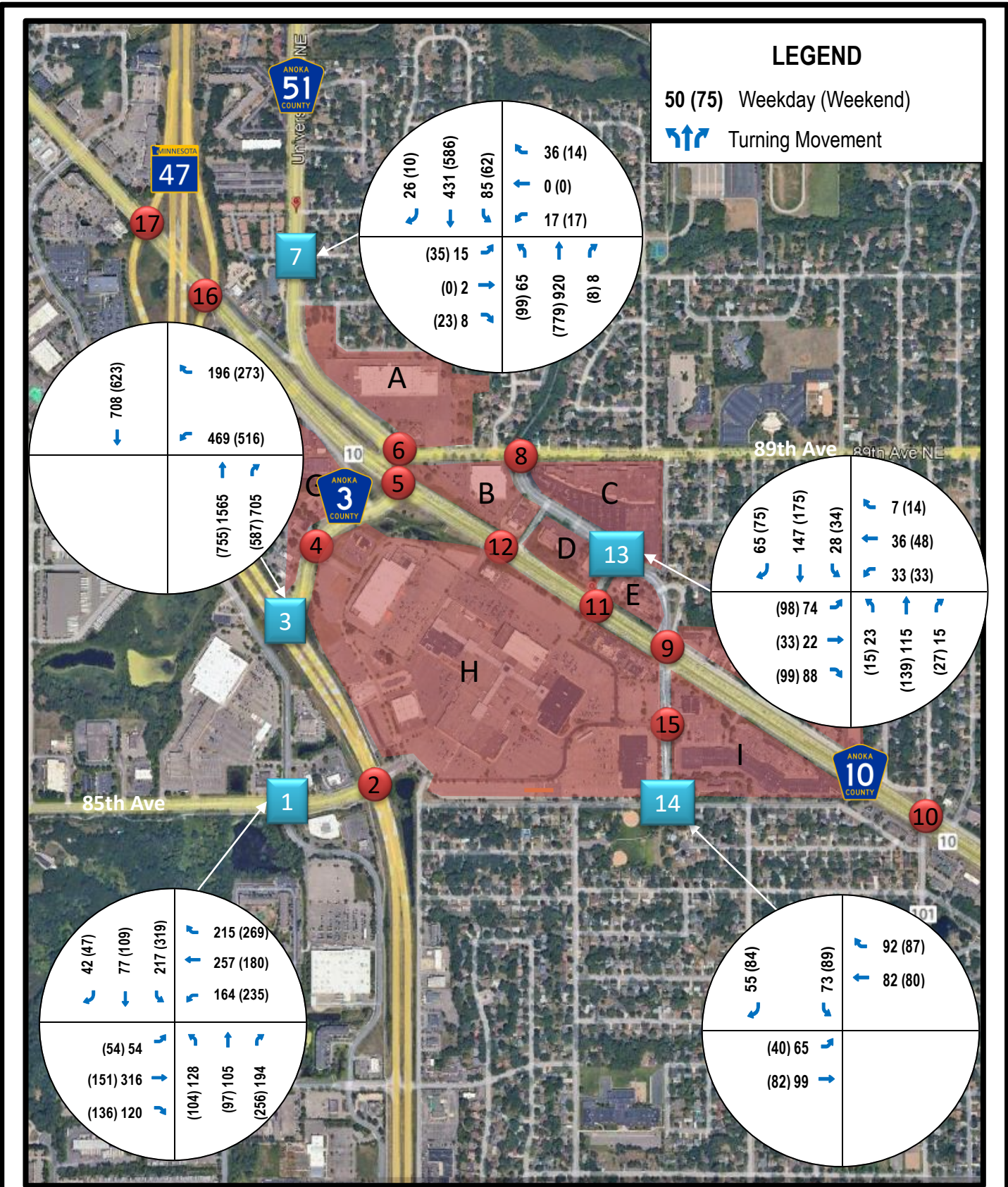


Figure 9a – 2040 Forecast Scenario 1
Volumes- 85th Ave Extension
 Blaine Northtown AUAR
 Blaine, MN



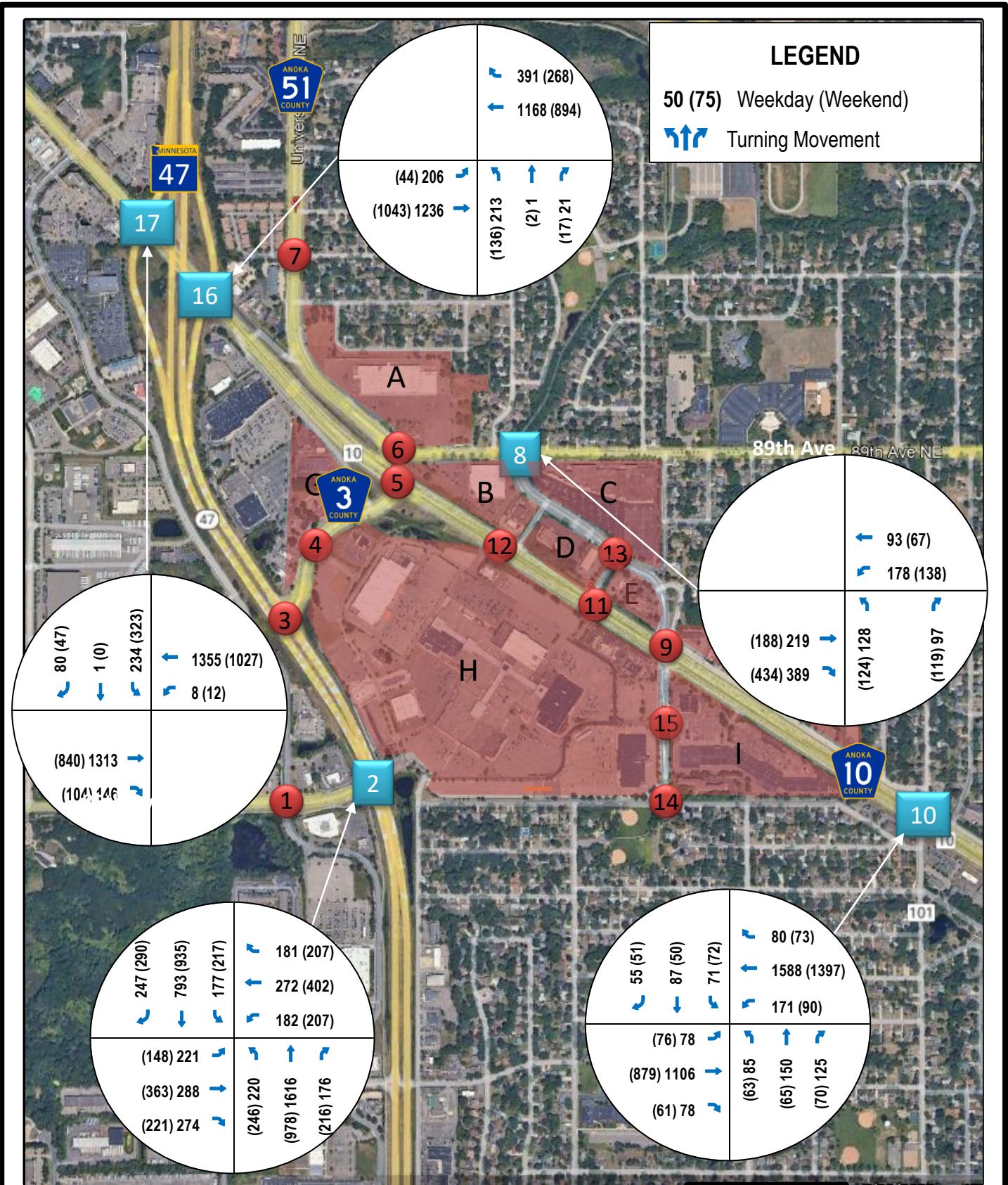


Figure 9b – 2040 Forecast Scenario 1
Volumes- 85th Ave Extension
 Blaine Northtown AUAR
 Blaine, MN



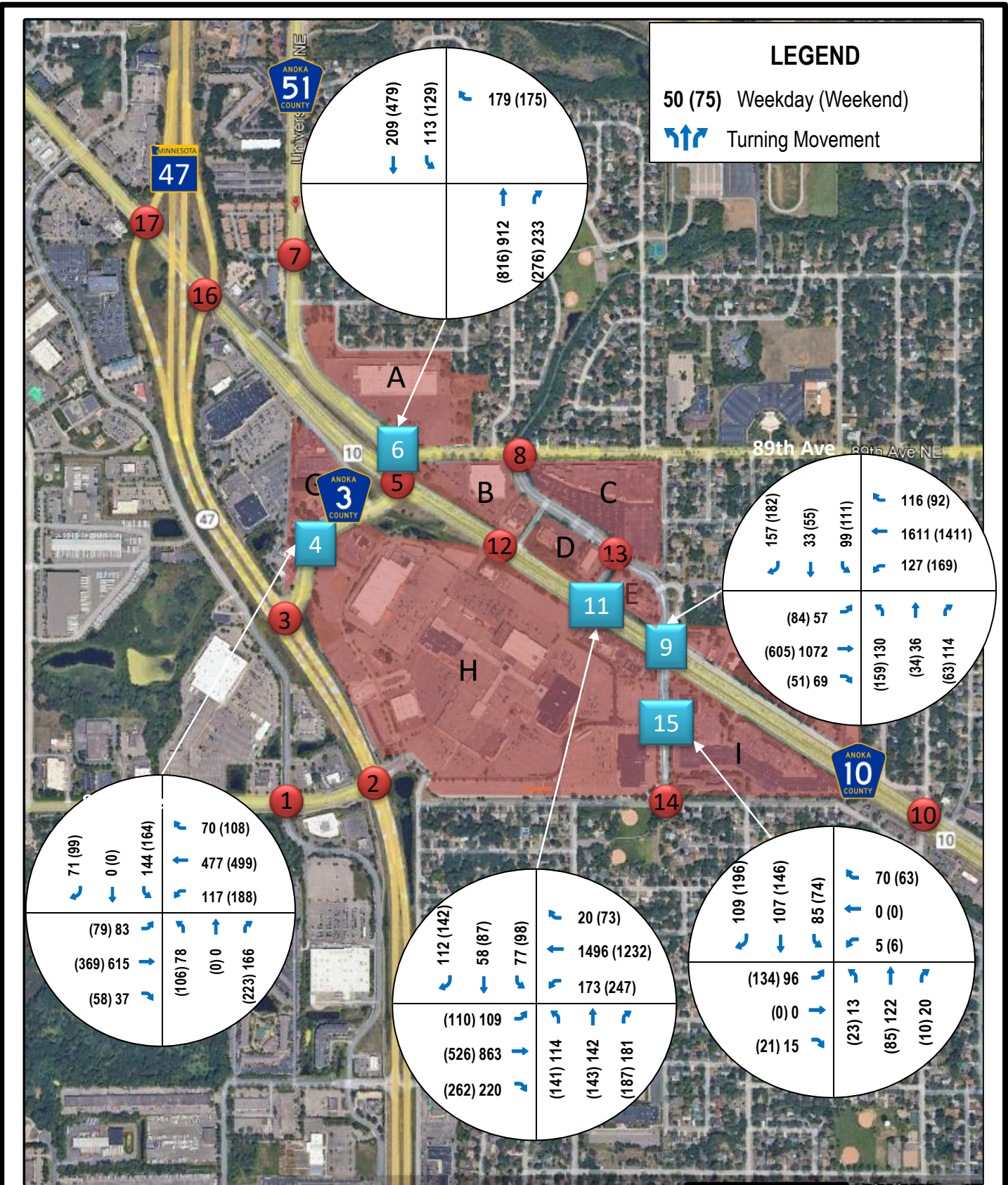



Figure 9c – 2040 Forecast Scenario 1
Volumes- 85th Ave Extension
 Blaine Northtown AUAR
 Blaine, MN












LEGEND

50 (75) Weekday (Weekend)

 Turning Movement



10 (22)	123 (179)	82 (127)	 280 (366)
 (205) 240	 (655) 914	 (200) 157	 (184) 148
	 (377) 372	 (204) 208	 1388 (975)
			 329 (486)






254 (300)	 44 (41)
 (788) 1024	 1497 (1264)
 (262) 220	 (187) 181



Figure 9d – 2040 Forecast Scenario 1
Volumes- 85th Ave Extension
 Blaine Northtown AUAR
 Blaine, MN



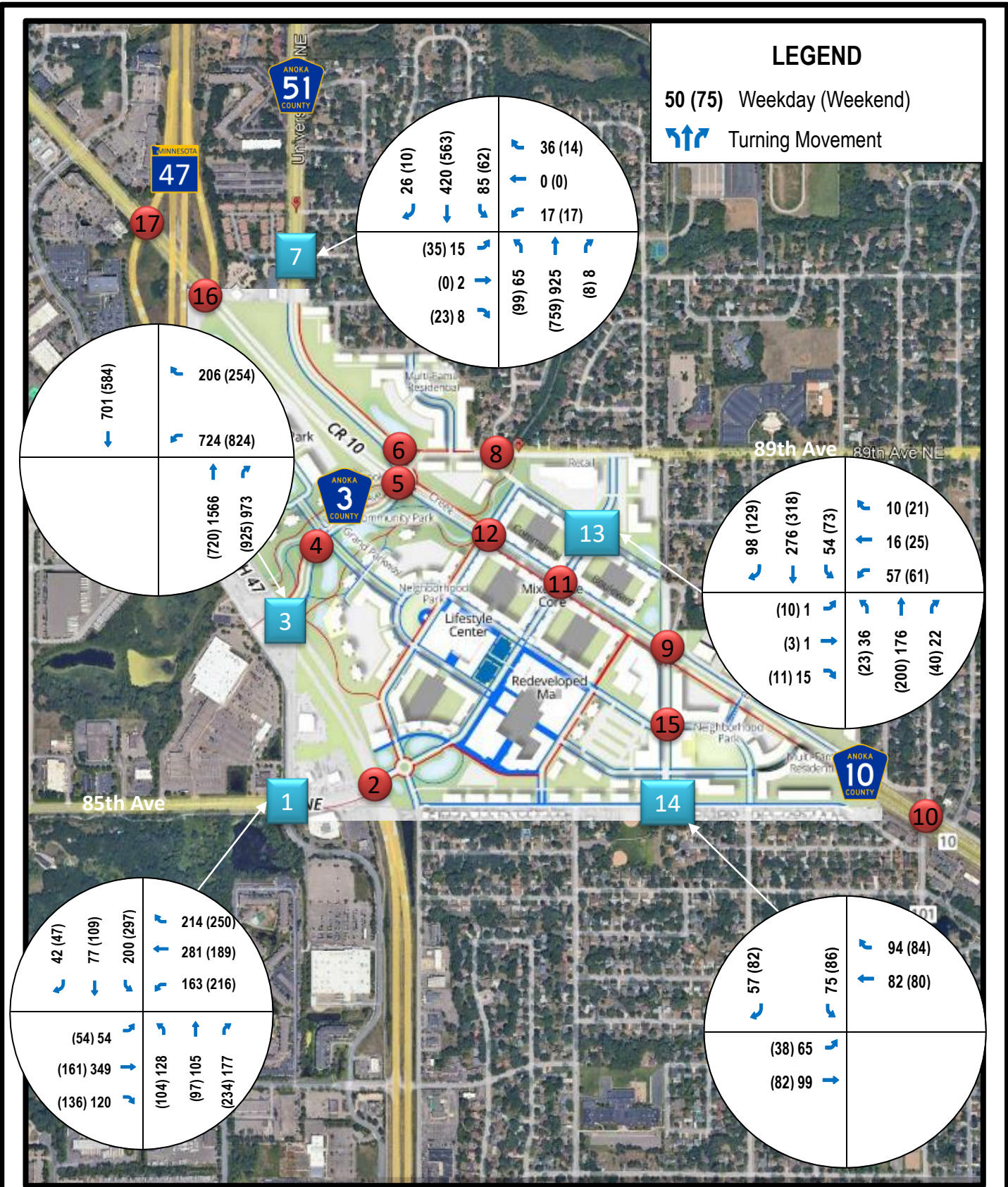


Figure 10a – 2040 Forecast Scenario 2 Volumes

Blaine Northtown AUAR
Blaine, MN



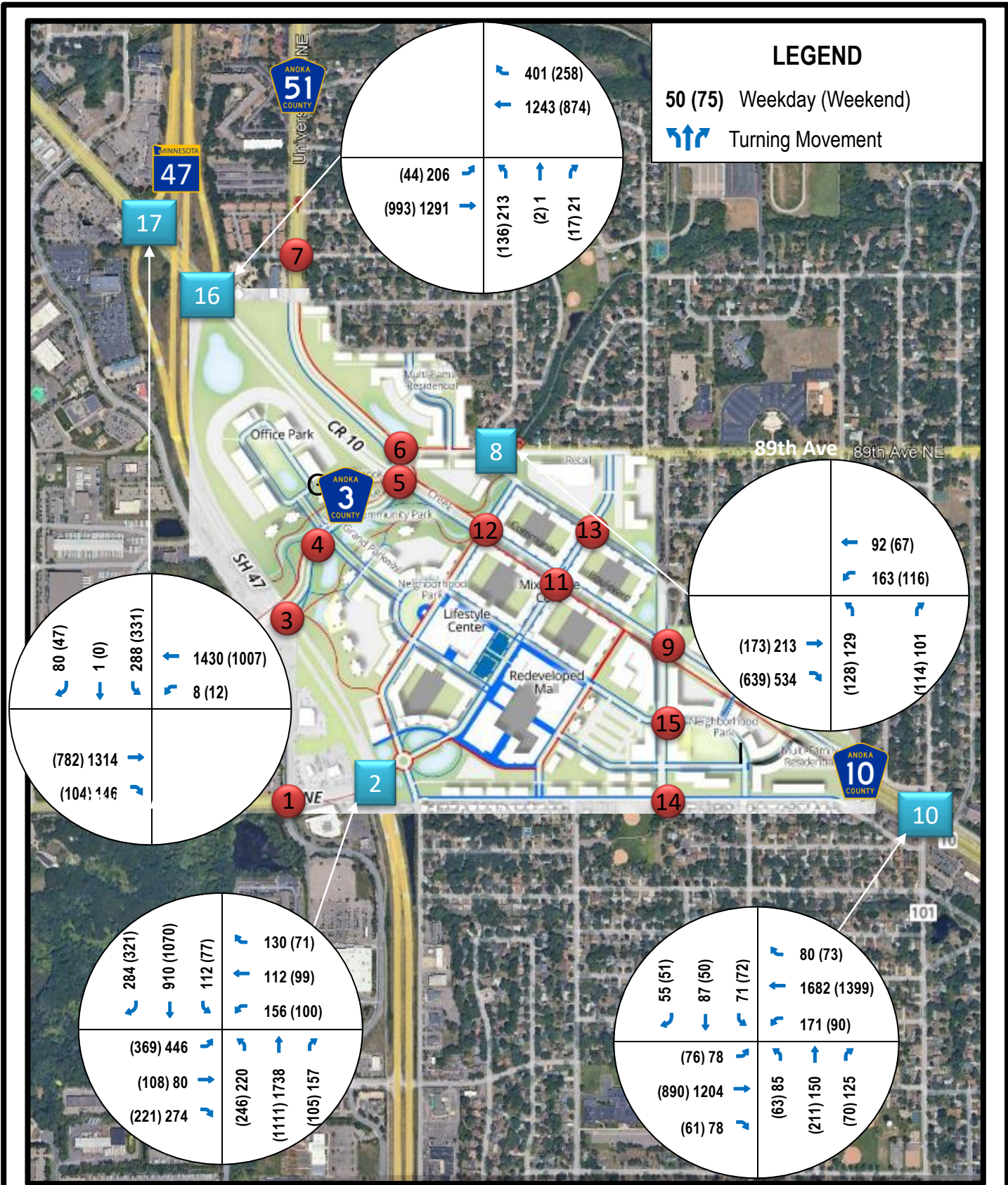


Figure 10b – 2040 Forecast Scenario 2 Volumes

Blaine Northtown AUAR
Blaine, MN



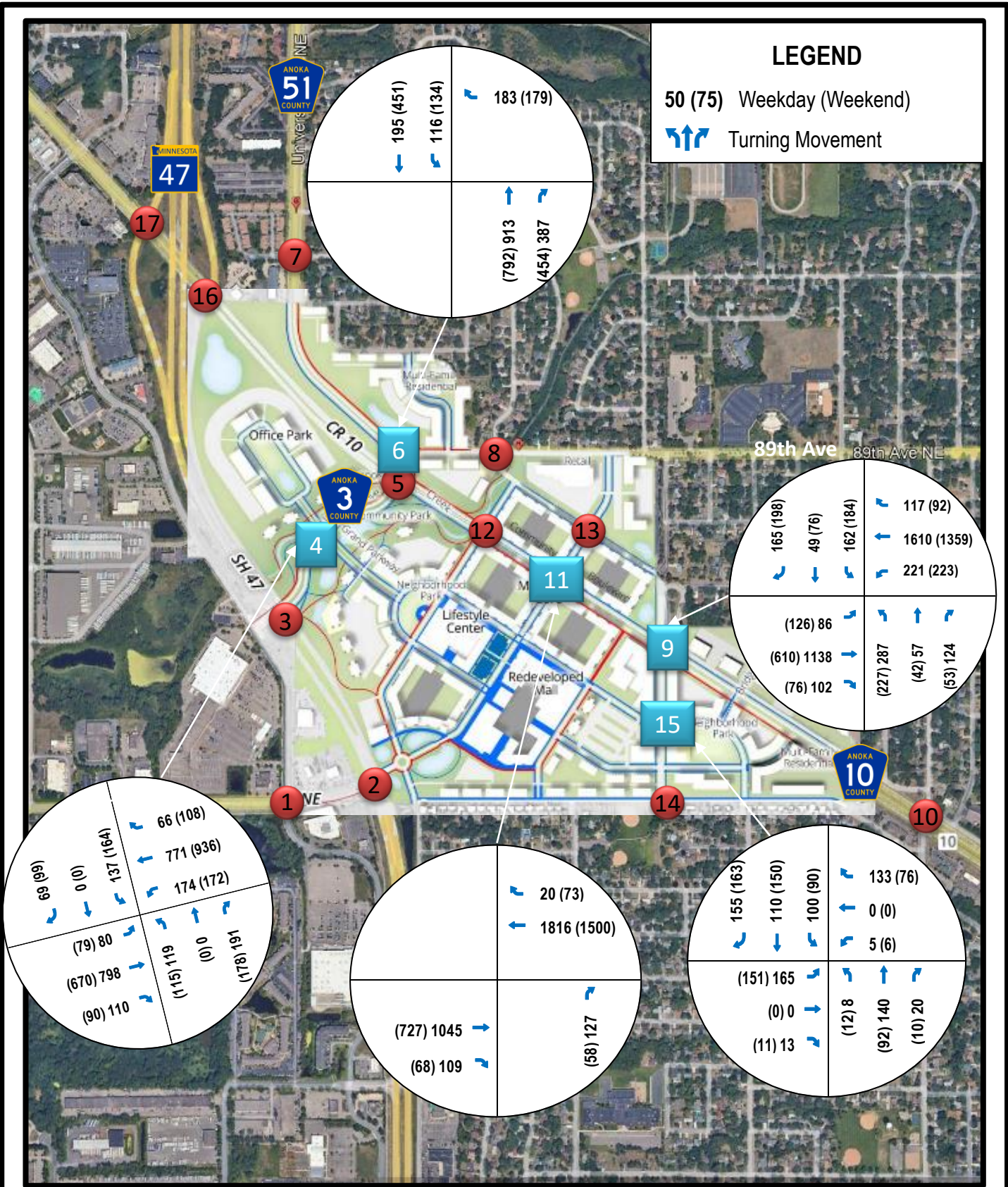


Figure 10c – 2040 Forecast Scenario 2 Volumes
 Blaine Northtown AUAR
 Blaine, MN



LEGEND

50 (75) Weekday (Weekend)

 Turning Movement

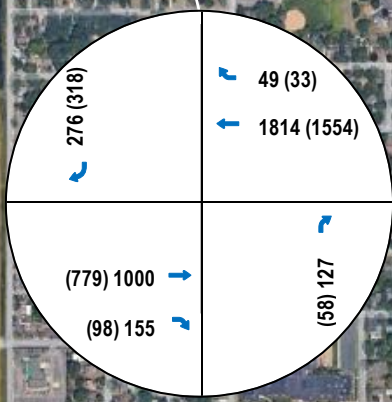
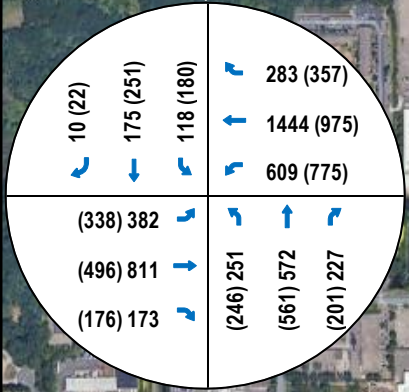
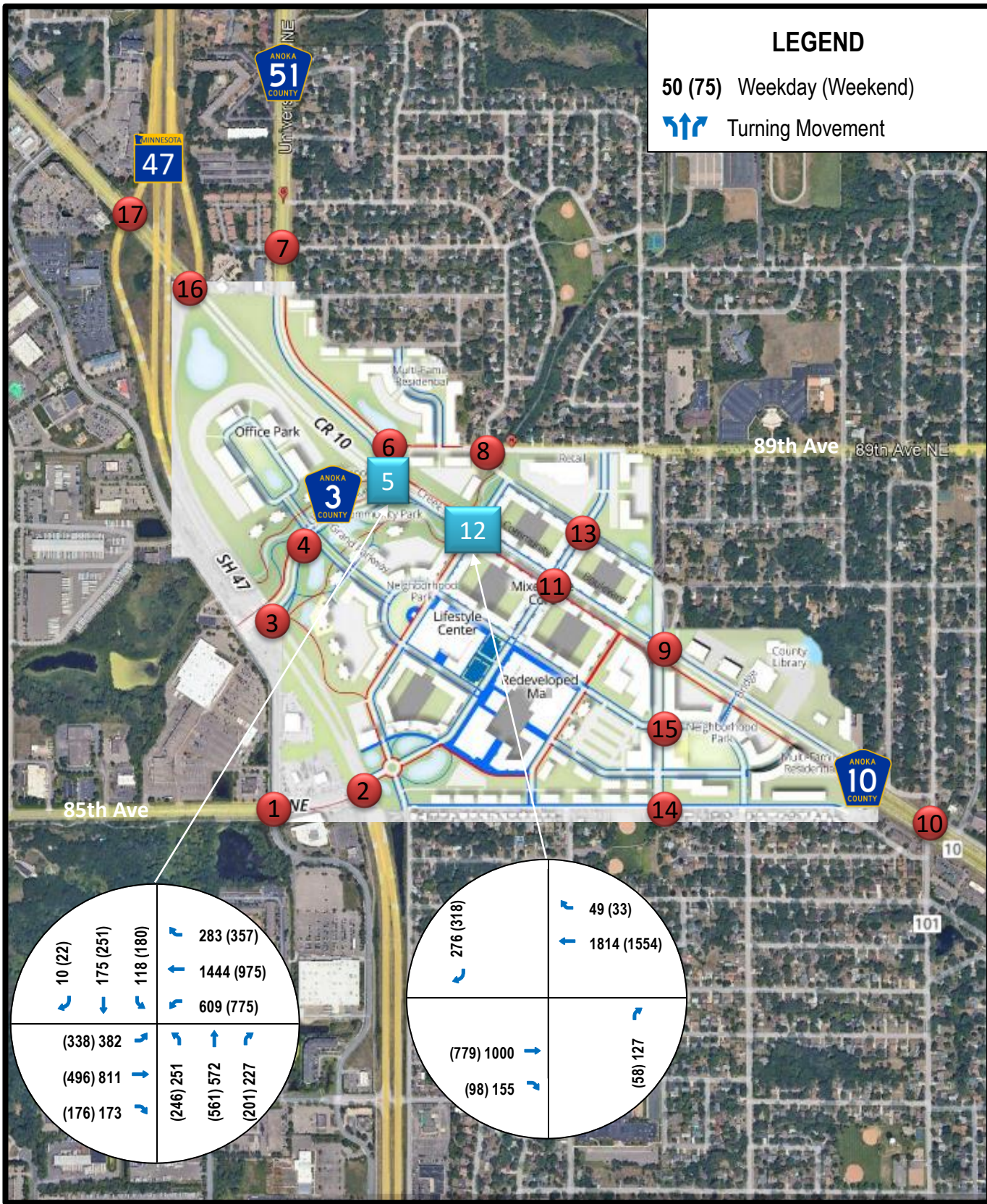


Figure 10d – 2040 Forecast Scenario 2 Volumes

Blaine Northtown AUAR
Blaine, MN



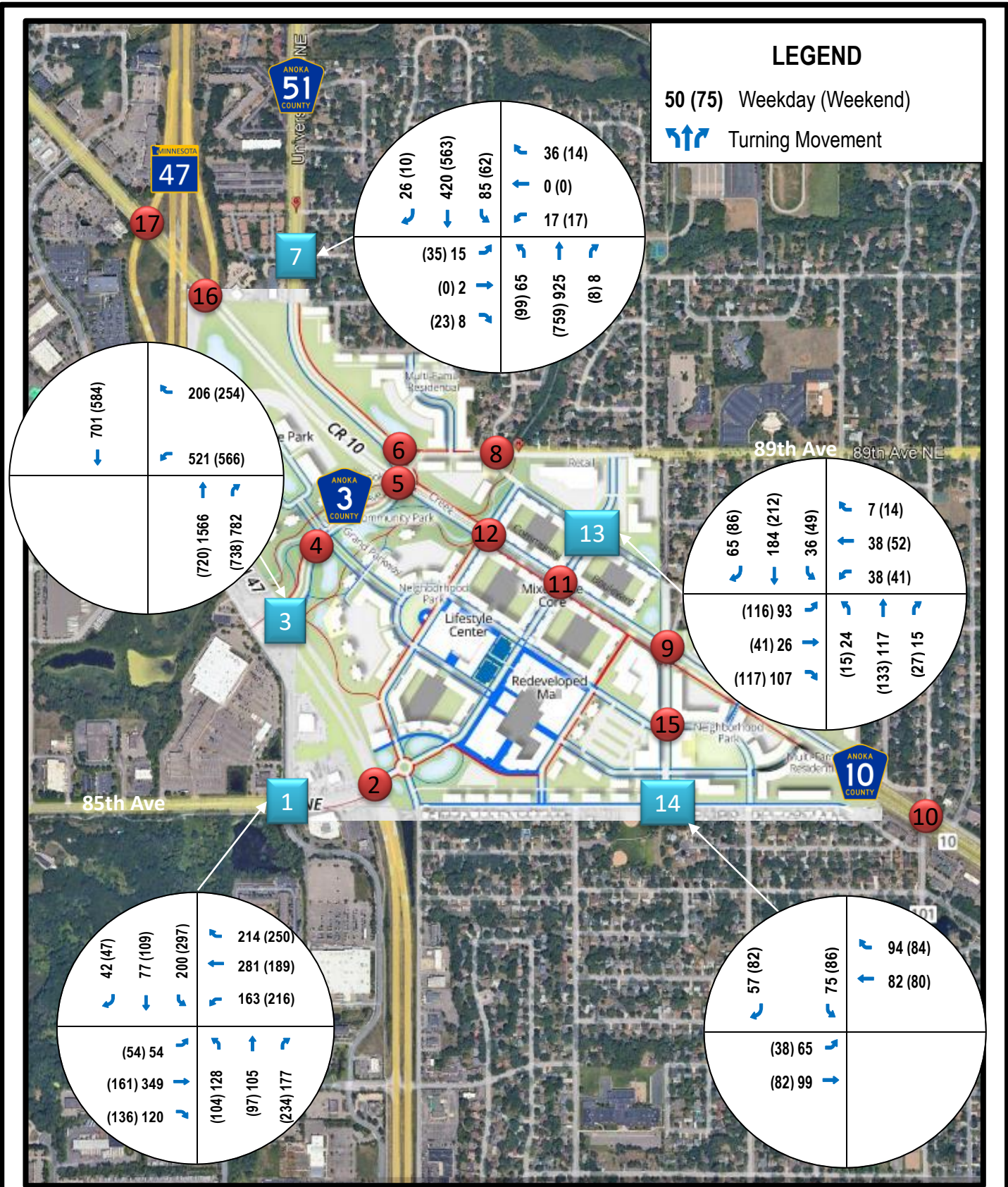


Figure 11a – 2040 Forecast Scenario 2
Volumes- 85th Ave Extension
 Blaine Northtown AUAR
 Blaine, MN



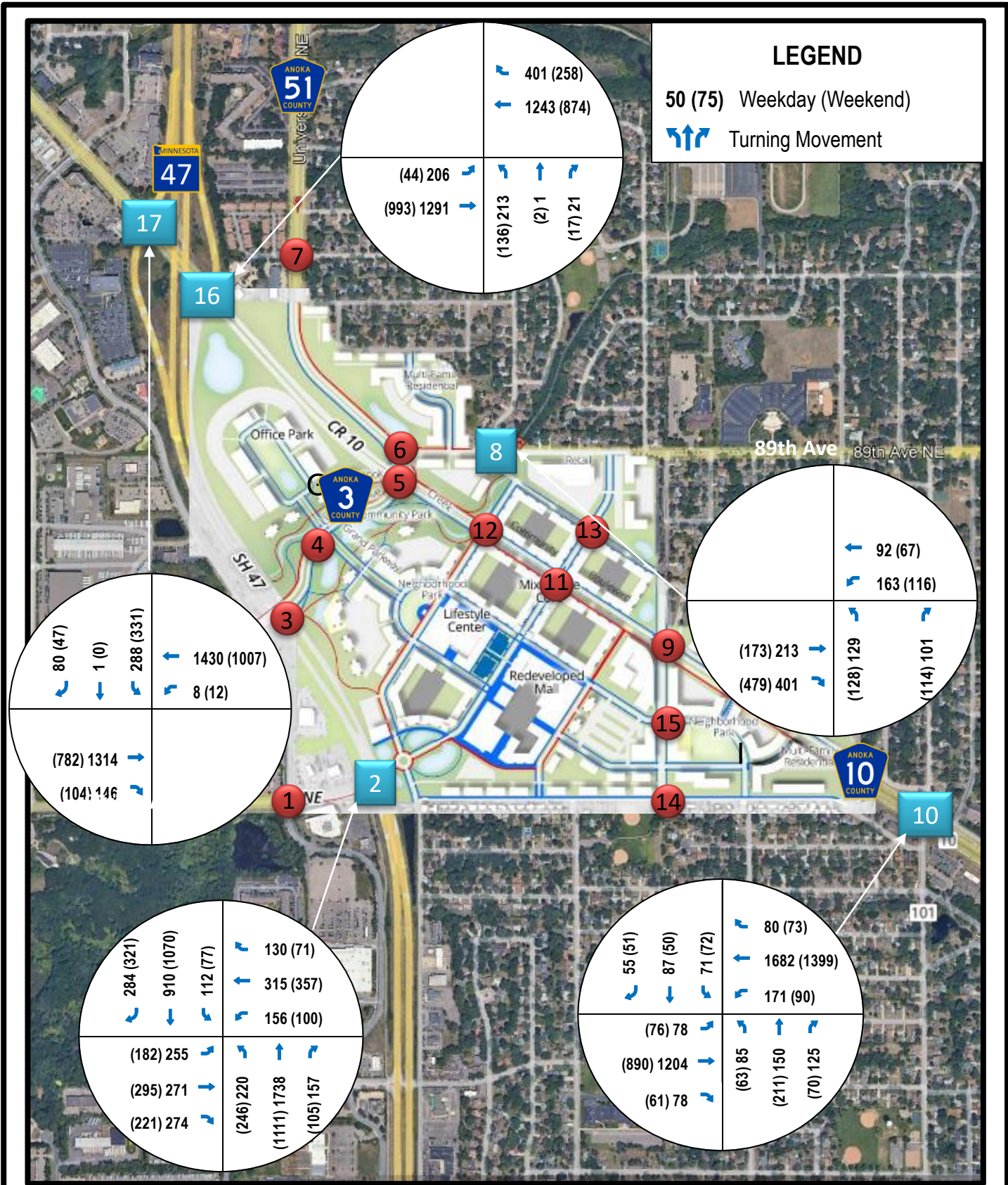


Figure 11b – 2040 Forecast Scenario 2
Volumes- 85th Ave Extension
 Blaine Northtown AUAR
 Blaine, MN



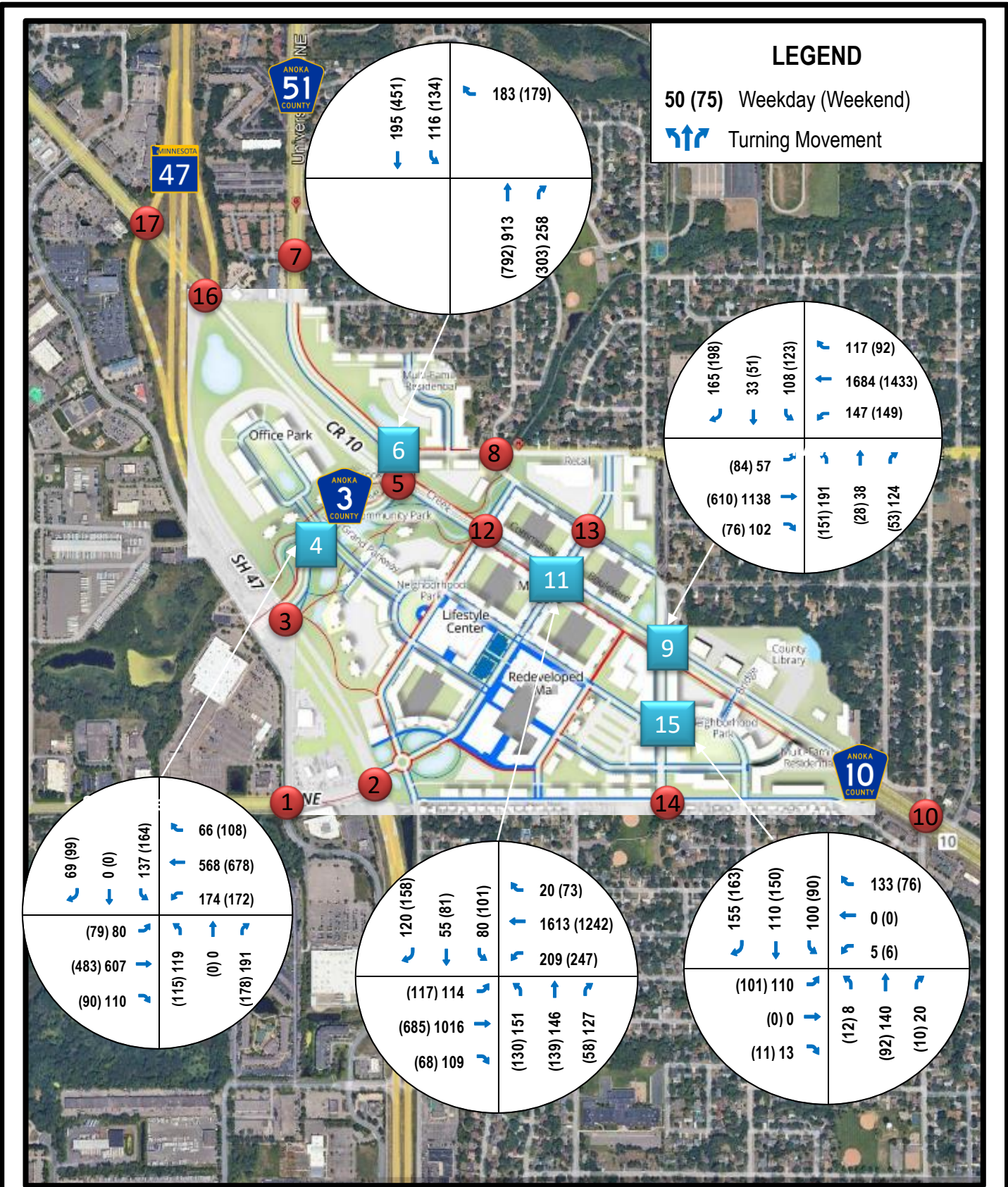



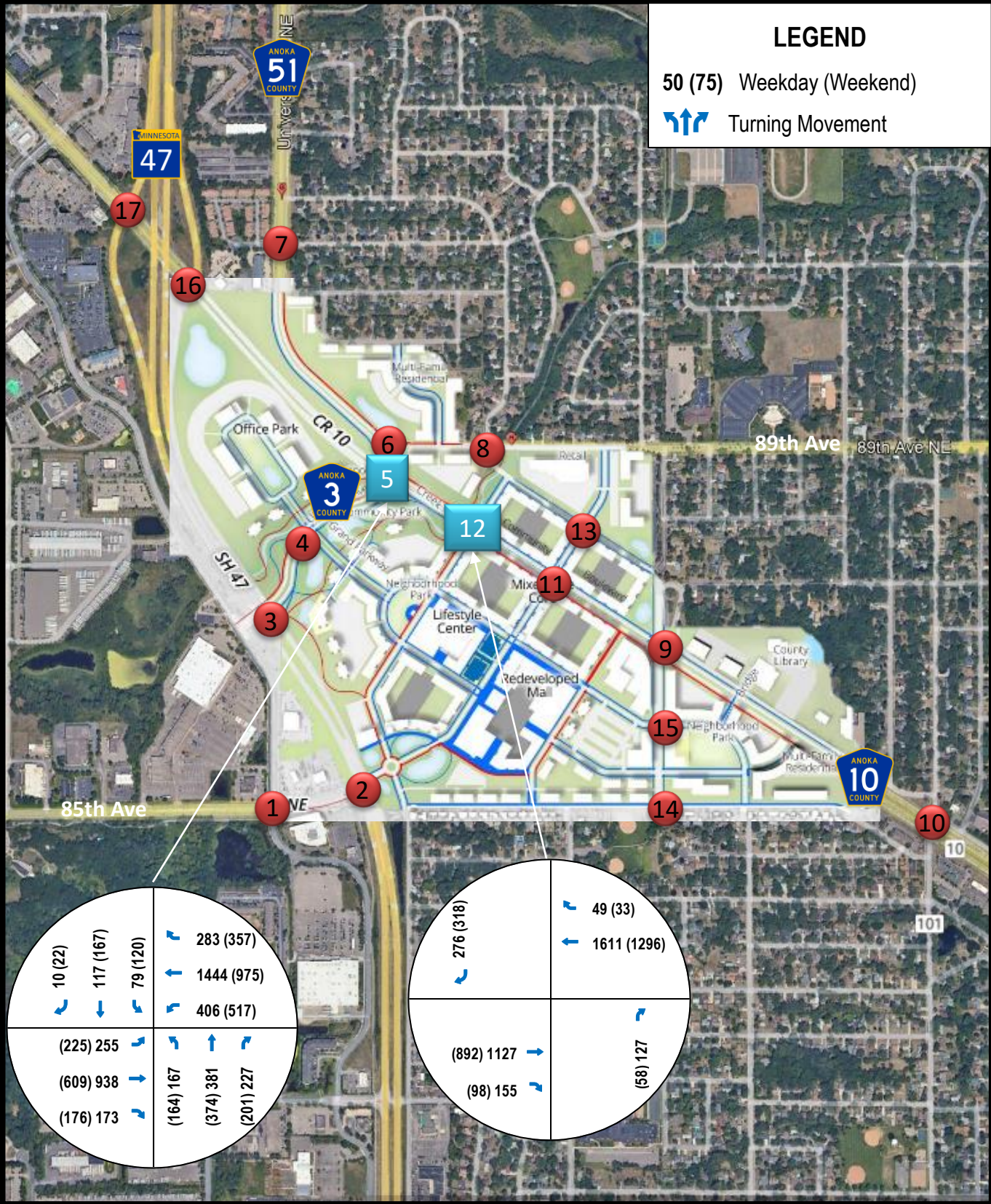
Figure 11c – 2040 Forecast Scenario 2
Volumes- 85th Ave Extension
 Blaine Northtown AUAR
 Blaine, MN



















LEGEND

50 (75) Weekday (Weekend)

 Turning Movement



10 (22)	117 (167)	79 (120)	283 (357)
			
(225) 255			1444 (975)
(609) 938			406 (517)
(176) 173			
(164) 167			
(374) 381			
(201) 227			







276 (318)		49 (33)
		1611 (1296)
(892) 1127		
(98) 155		
		(58) 127



Figure 11d – 2040 Forecast Scenario 2
Volumes- 85th Ave Extension
 Blaine Northtown AUAR
 Blaine, MN



TRAFFIC OPERATIONS ANALYSIS

Existing and/or forecasted traffic operations were evaluated at the impacted area intersections in the study area. The analysis was conducted for the following scenarios.

1. Existing Conditions
2. Projected 2040 No-Build
3. Projected 2040 Build Scenario 1 – Comp Plan
 - a. Existing Geometry and Traffic Control
 - b. Full Access Signal at CSAH 10 and 85th Avenue Extension
4. Projected 2040 Build Scenario 2 – Vision Plan
 - a. Existing Geometry and Traffic Control
 - b. Full Access Signal at CSAH 10 and 85th Avenue Extension

The following sections describe the methodology used to assess the operations and provide a summary of traffic operations for each scenario.

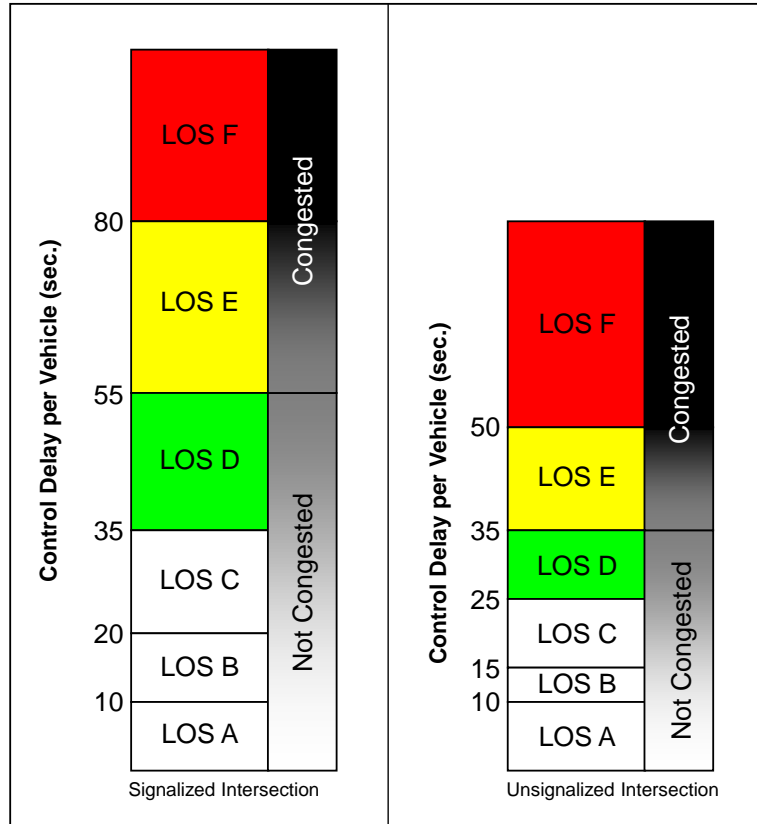
Methodology

The intersections in the study area were evaluated during the PM and Saturday peak hours using Synchro/SimTraffic microsimulation software. The results are derived from established methodologies documented in the Highway Capacity Manual (HCM). The software was used to evaluate the characteristics of the roadway network including lane geometrics, turning movement volumes, traffic control, and signal timing. In addition, the signal timing parameters for future year conditions were optimized using Synchro. This information was then transferred to SimTraffic, the traffic simulation model, to estimate average peak hour vehicle delays and queues. Due to the stochastic nature of the simulation models, there can be minor variations in the Measures of Effectiveness (MOEs) reported by the model between various runs. MOEs at the signal are similar in Synchro and SimTraffic, but adjacent intersections show varying MOEs because SimTraffic accounts for queuing and blocking more realistically than Synchro.

One of the primary measures of effectiveness used to evaluate intersection traffic operations, as defined in the HCM, is Level of Service (LOS) – a qualitative letter grade, A – F, based on seconds of vehicle delay due to a traffic control device at an intersection. LOS A conditions represent high quality operations (i.e., motorists experience very little delay or interference) and LOS F conditions represent very poor operations (i.e., extreme delay or severe congestion). For side street stop intersections, the overall intersection LOS is reported as the worst side street movement.

Figure 12 depicts a graphical interpretation of delay times that define level of service. The delay thresholds are lower for un-signalized intersections than signalized intersections due to the public's perception of acceptable delays for different traffic controls as indicated in the HCM. In accordance with the Minnesota Department of Transportation (MnDOT) guidelines, this analysis used the LOS D/E boundary as an indicator of acceptable traffic operations.

Figure 12: LOS Ranges for Signalized and Un-signalized Intersections



SOURCE: Level of Service thresholds from the Highway Capacity Manual, 2000.

LOS and other Measures of Effectiveness (MOEs) were calculated from the models and are discussed in the following sections for each scenario. The capacity analysis tables are included in **Appendix B**.

Existing Conditions

The existing traffic operations were evaluated at intersections in the study area for the PM and Saturday peak hours. The traffic volumes shown in **Figure 2a-2d** were used in the Existing Conditions analysis. **Table 3** summarizes the existing LOS and delays at the primary intersections in the study area based on the current lane geometry, traffic control and existing traffic volumes. The traffic signal timing was optimized for the analysis at the signalized intersections within the study area.

Table 3 – Existing Traffic Operations Summary

Control	Intersection		Saturday Peak				PM Peak			Intersection Delay* (LOS)
	Location	Approach	Movement Delay* (LOS)			Intersection Delay* (LOS)	Movement Delay* (LOS)			
			Left	Thru	Right		Left	Thru	Right	
Signalized	Springbrook Dr & 85th Ave	NB	13 (B)	17 (B)	6 (A)	15 (B)	13 (B)	17 (B)	7 (A)	17 (B)
		WB	23 (C)	21 (C)	8 (A)		24 (C)	23 (C)	7 (A)	
		SB	13 (B)	11 (B)	5 (A)		13 (B)	14 (B)	6 (A)	
		EB	23 (C)	30 (C)	6 (A)		22 (C)	29 (C)	6 (A)	
Signalized	TH 47 & 85th Ave	NB	41 (D)	19 (B)	5 (A)	24 (C)	54 (D)	22 (C)	6 (A)	25 (C)
		WB	39 (D)	37 (D)	8 (A)		40 (D)	40 (D)	11 (B)	
		SB	53 (D)	25 (C)	11 (B)		51 (D)	26 (C)	10 (B)	
		EB	36 (D)	32 (C)	4 (A)		37 (D)	30 (C)	4 (A)	
Signalized	TH 47 & University Ave	NB		5 (A)	7 (A)	11 (B)		7 (A)	8 (A)	9 (A)
		WB	33 (C)		4 (A)		35 (D)		3 (A)	
		SB		5 (A)				4 (A)		
Signalized	86th Ln & University Ave	NB	15 (B)	16 (B)	5 (A)	12 (B)	16 (B)	14 (B)	5 (A)	11 (B)
		WB	30 (C)	8 (A)	4 (A)		26 (C)	8 (A)	4 (A)	
		SB	18 (B)	19 (B)	5 (A)		16 (B)	16 (B)	5 (A)	
		EB	27 (C)	10 (B)	5 (A)		23 (C)	9 (A)	4 (A)	
Signalized	University Ave & CSAH 10	NB	38 (D)	24 (C)	4 (A)	32 (C)	47 (D)	32 (C)	5 (A)	41 (D)
		WB	30 (C)	32 (C)	13 (B)		37 (D)	43 (D)	16 (B)	
		SB	33 (C)	17 (B)	3 (A)		44 (D)	23 (C)	3 (A)	
		EB	64 (E)	63 (E)	16 (B)		79 (E)	53 (D)	18 (B)	
Thru-Stop	University Ave & 89th Ave	NB		3 (A)	3 (A)	4 (A)	0 (A)	3 (A)	3 (A)	6 (A)
		WB			7 (A)				8 (A)	
		SB	11 (B)	5 (A)			12 (B)	14 (B)		
Signalized	University Ave & 91st Ave	NB	18 (B)	5 (A)	5 (A)	6 (A)	19 (B)	6 (A)	6 (A)	15 (B)
		WB	16 (B)	0 (A)	5 (A)		54 (D)	0 (A)	16 (B)	
		SB	18 (B)	4 (A)	2 (A)		31 (C)	27 (C)	15 (B)	
		EB	17 (B)	0 (A)	5 (A)		19 (B)	14 (B)	23 (C)	
Signalized	87th Ln & 89th Ave	NB	6 (A)		3 (A)	9 (A)	7 (A)		3 (A)	10 (B)
		WB	13 (B)	9 (A)			13 (B)	9 (A)		
		EB		17 (B)	7 (A)			19 (B)	8 (A)	
Signalized	Jefferson St NE & CSAH 10	NB	18 (B)	17 (B)	3 (A)	30 (C)	23 (C)	19 (B)	3 (A)	35 (D)
		WB	32 (C)	41 (D)	11 (B)		46 (D)	42 (D)	13 (B)	
		SB	20 (C)	20 (C)	4 (A)		24 (C)	27 (C)	4 (A)	
		EB	37 (D)	35 (D)	7 (A)		46 (D)	38 (D)	9 (A)	
Signalized	Able St & CSAH 10	NB	25 (C)	23 (C)	7 (A)	28 (C)	30 (C)	33 (C)	10 (B)	34 (C)
		WB	42 (D)	27 (C)	6 (A)		47 (D)	31 (C)	9 (A)	
		SB	39 (D)	39 (D)	19 (B)		42 (D)	46 (D)	27 (C)	
		EB	41 (D)	33 (C)	12 (B)		49 (D)	39 (D)	15 (B)	
Thru-Stop	Washington St NE & CSAH 10	NB			5 (A)	5 (A)			9 (A)	6 (A)
		WB		7 (A)	6 (A)			8 (A)	6 (A)	
		SB			2 (A)				2 (A)	
		EB		1 (A)	1 (A)			2 (A)	1 (A)	
Thru-Stop	7th St & CSAH 10	NB			5 (A)	4 (A)			7 (A)	5 (A)
		WB		2 (A)	1 (A)			3 (A)	1 (A)	
		SB			2 (A)				2 (A)	
		EB		7 (A)	7 (A)			8 (A)	8 (A)	
Signalized	Jefferson St NE/87th Ln & Washington St NE	NB	12 (B)	11 (B)	5 (A)	8 (A)	13 (B)	10 (B)	5 (A)	7 (A)
		WB	6 (A)	5 (A)	2 (A)		6 (A)	5 (A)	2 (A)	
		SB	12 (B)	6 (A)	4 (A)		8 (A)	6 (A)	4 (A)	
		EB	6 (A)	6 (A)	2 (A)		6 (A)	2 (A)	2 (A)	
All-Way St	85th Ave NE & Jefferson St NE	WB		7 (A)	3 (A)	5 (A)		7 (A)	4 (A)	6 (A)
		SB	6 (A)		4 (A)		6 (A)		4 (A)	
		EB	5 (A)	6 (A)			6 (A)	7 (A)		
Signalized	Jefferson St NE & Mall Ent	NB	11 (B)	8 (A)	2 (A)	12 (B)	12 (B)	9 (A)	3 (A)	10 (B)
		WB	27 (C)	28 (C)	6 (A)		22 (C)	25 (C)	5 (A)	
		SB	11 (B)	9 (A)	5 (A)		11 (B)	9 (A)	6 (A)	
		EB	20 (C)	19 (B)	8 (A)		16 (B)	15 (B)	5 (A)	
Signalized	TH 47 NB Ramp & CSAH 10	NB	13 (B)	4 (A)	8 (A)	33 (C)	25 (C)	30 (C)	19 (B)	37 (D)
		WB		36 (D)	8 (A)			43 (D)	11 (B)	
		EB	57 (E)	40 (D)			72 (E)	34 (C)		
Signalized	TH 47 SB Ramp & CSAH 10	WB	57 (E)	41 (D)		30 (C)	57 (E)	31 (C)		25 (C)
		SB	11 (B)	0 (A)	6 (A)		22 (C)	39 (D)	15 (B)	
		EB		27 (C)	5 (A)			22 (C)	6 (A)	

* Delay measured in seconds per vehicle

The analysis results show that all intersections are operating at an acceptable overall LOS D or better during the weekday PM peak hour and a LOS C or better during the Saturday peak hour. Nearly all movements are operating at LOS D or better except at the University Avenue/ CSAH 10 intersection and the two TH 47 ramp intersections with CSAH 10, where several left-turn or through movements are operating at a LOS E during peak hours.

2040 No-Build Analysis

Table 4 shown below, summarizes the LOS and delays at the primary intersections in the study area based on the current lane geometry, traffic control and projected 2040 peak hour traffic volumes shown in **Figure 7** without any area redevelopment. The traffic signal timing was optimized for the analysis at the signalized intersections within the study area.

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Table 4 – 2040 No-Build Traffic Operations Summary

Control	Intersection		Saturday Peak				PM Peak			
	Location	Approach	Movement Delay* (LOS)			Intersection Delay* (LOS)	Movement Delay* (LOS)			Intersection Delay* (LOS)
			Left	Thru	Right		Left	Thru	Right	
Signalized	Springbrook Dr & 85th Ave	NB	13 (B)	17 (B)	7 (A)	14 (B)	16 (B)	20 (C)	8 (A)	17 (B)
		WB	22 (C)	17 (B)	7 (A)		22 (C)	21 (C)	7 (A)	
		SB	17 (B)	13 (B)	7 (A)		15 (B)	17 (B)	8 (A)	
		EB	18 (B)	23 (C)	6 (A)		20 (C)	29 (C)	6 (A)	
Signalized	TH 47 & 85th Ave	NB	59 (E)	21 (C)	6 (A)	28 (C)	87 (F)	30 (C)	7 (A)	32 (C)
		WB	41 (D)	37 (D)	9 (A)		41 (D)	39 (D)	12 (B)	
		SB	53 (D)	32 (C)	15 (B)		54 (D)	37 (D)	14 (B)	
		EB	42 (D)	27 (C)	4 (A)		38 (D)	28 (C)	5 (A)	
Signalized	TH 47 & University Ave	NB		5 (A)	7 (A)	12 (B)		9 (A)	8 (A)	11 (B)
		WB	33 (C)		4 (A)		36 (D)		4 (A)	
		SB		7 (A)				4 (A)		
Signalized	86th Ln & University Ave	NB	16 (B)	15 (B)	5 (A)	12 (B)	15 (B)	17 (B)	6 (A)	11 (B)
		WB	33 (C)	9 (A)	5 (A)		25 (C)	8 (A)	4 (A)	
		SB	17 (B)	15 (B)	5 (A)		15 (B)	18 (B)	5 (A)	
		EB	25 (C)	11 (B)	5 (A)		26 (C)	10 (B)	4 (A)	
Signalized	University Ave & CSAH 10	NB	39 (D)	26 (C)	4 (A)	34 (C)	51 (D)	45 (D)	6 (A)	46 (D)
		WB	32 (C)	34 (C)	16 (B)		44 (D)	48 (D)	19 (B)	
		SB	35 (D)	18 (B)	3 (A)		54 (D)	29 (C)	3 (A)	
		EB	73 (E)	65 (E)	19 (B)		82 (F)	55 (E)	22 (C)	
Thru-Stop	University Ave & 89th Ave	NB		3 (A)	3 (A)	5 (A)		3 (A)	3 (A)	5 (A)
		WB			8 (A)				10 (B)	
		SB	13 (B)	7 (A)				15 (C)	7 (A)	
Signalized	University Ave & 91st Ave	NB	20 (C)	6 (A)	6 (A)	7 (A)	21 (C)	7 (A)	5 (A)	8 (A)
		WB	18 (B)	0 (A)	6 (A)		20 (C)	0 (A)	7 (A)	
		SB	19 (B)	5 (A)	2 (A)		19 (B)	4 (A)	2 (A)	
		EB	18 (B)	0 (A)	5 (A)		18 (B)	22 (C)	4 (A)	
Signalized	87th Ln & 89th Ave	NB	8 (A)		4 (A)	10 (B)	9 (A)		4 (A)	11 (B)
		WB	12 (B)	8 (A)			14 (B)	8 (A)		
		EB		18 (B)	8 (A)			21 (C)	9 (A)	
Signalized	Jefferson St NE & CSAH 10	NB	23 (C)	21 (C)	3 (A)	30 (C)	30 (C)	30 (C)	4 (A)	39 (D)
		WB	39 (D)	36 (D)	11 (B)		45 (D)	48 (D)	14 (B)	
		SB	23 (C)	28 (C)	5 (A)		27 (C)	32 (C)	5 (A)	
		EB	33 (C)	32 (C)	7 (A)		44 (D)	40 (D)	12 (B)	
Signalized	Able St & CSAH 10	NB	29 (C)	27 (C)	8 (A)	31 (C)	41 (D)	44 (D)	16 (B)	41 (D)
		WB	42 (D)	33 (C)	8 (A)		52 (D)	42 (D)	16 (B)	
		SB	39 (D)	37 (D)	24 (C)		47 (D)	48 (D)	34 (C)	
		EB	43 (D)	29 (C)	12 (B)		71 (E)	39 (D)	18 (B)	
Thru-Stop	Washington St NE & CSAH 10	NB			6 (A)	5 (A)			10 (B)	6 (A)
		WB		7 (A)	5 (A)			8 (A)	6 (A)	
		SB			2 (A)				2 (A)	
		EB		1 (A)	1 (A)			2 (A)	1 (A)	
Thru-Stop	7th St & CSAH 10	NB			5 (A)	4 (A)			10 (B)	6 (A)
		WB		3 (A)	2 (A)			4 (A)	1 (A)	
		SB			2 (A)				2 (A)	
		EB		7 (A)	7 (A)			9 (A)	9 (A)	
Signalized	Jefferson St NE/87th Ln & Washington St NE	NB	12 (B)	11 (B)	5 (A)	8 (A)	13 (B)	10 (B)	6 (A)	8 (A)
		WB	5 (A)	5 (A)	2 (A)		5 (A)	6 (A)	2 (A)	
		SB	11 (B)	6 (A)	4 (A)		11 (B)	6 (A)	4 (A)	
		EB	6 (A)	4 (A)	2 (A)		6 (A)	2 (A)	2 (A)	
All-Way St	85th Ave NE & Jefferson St NE	NB		7 (A)	4 (A)	6 (A)		7 (A)	4 (A)	6 (A)
		SB	6 (A)		5 (A)		6 (A)		4 (A)	
		EB	5 (A)	7 (A)			6 (A)	7 (A)		
Signalized	Jefferson St NE & Mall Ent	NB	12 (B)	9 (A)	3 (A)	12 (B)	10 (B)	8 (A)	3 (A)	11 (B)
		WB	25 (C)	27 (C)	5 (A)		22 (C)	26 (C)	5 (A)	
		SB	12 (B)	10 (B)	6 (A)		10 (B)	6 (A)	6 (A)	
		EB	19 (B)	18 (B)	7 (A)		17 (B)	16 (B)	5 (A)	
Signalized	TH 47 NB Ramp & CSAH 10	NB	16 (B)	10 (B)	9 (A)	32 (C)	32 (C)	21 (C)	25 (C)	37 (D)
		WB		36 (D)	8 (A)			44 (D)	12 (B)	
		EB	61 (E)	38 (D)			74 (E)	32 (C)		
Signalized	TH 47 SB Ramp & CSAH 10	NB				28 (C)				23 (C)
		WB	58 (E)	38 (D)			57 (E)	25 (C)		
		SB	14 (B)	0 (A)	8 (A)		28 (C)	25 (C)	16 (B)	
		EB		26 (C)	6 (A)		23 (C)	8 (A)		

* Delay measured in seconds per vehicle

The analysis results show that all intersections are expected to operate similar to existing conditions with a slight increase in delay, but at an acceptable overall LOS C or better during the weekday PM peak hour and overall LOS D or better during the Saturday peak hour. All movements will be operating at LOS D or better except the following movements expected to operate at a LOS E/F:

- TH 47 and 85th Avenue
 - Saturday and PM Peak Hour
 - Northbound left-turn movement
- University Avenue and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement
 - Eastbound through movement
- CSAH 10 and Able Street
 - PM Peak Hour
 - Eastbound left-turn movement
- TH 47 Northbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement
- TH 47 Southbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Westbound left-turn movement

2040 Build Analysis – Scenario 1 (Comp Plan)- Existing Geometry and Traffic Control

Table 5 summarizes the LOS and delays at the primary intersections in the study area based on the existing lane geometry, traffic control and projected 2040 traffic volumes with full development of the area assuming Land Use Scenario 1 (Comp Plan) (**Figures 8a-8d**). The traffic signal timing was optimized for the analysis at all signalized intersections within the study area.

Table 5 – 2040 Build Traffic Operations Summary – Scenario 1- Existing Geometry and Traffic Control

Control	Intersection		Saturday Peak				Intersection Delay* (LOS)	PM Peak				Intersection Delay* (LOS)
	Location	Approach	Movement Delay* (LOS)			Movement Delay* (LOS)						
			Left	Thru	Right	Left		Thru	Right			
Signalized	Springbrook Dr & 85th Ave	NB	15 (B)	24 (C)	8 (A)	17 (B)	16 (B)	20 (C)	7 (A)	20 (C)		
		WB	27 (C)	22 (C)	8 (A)		28 (C)	27 (C)	8 (A)			
		SB	18 (B)	16 (B)	7 (A)		16 (B)	16 (B)	7 (A)			
		EB	25 (C)	33 (C)	8 (A)		28 (C)	38 (D)	7 (A)			
Signalized	TH 47 & 85th Ave	NB	72 (E)	33 (C)	8 (A)	36 (D)	70 (E)	48 (D)	11 (B)	41 (D)		
		WB	49 (D)	44 (D)	14 (B)		49 (D)	49 (D)	21 (C)			
		SB	63 (E)	38 (D)	18 (B)		93 (F)	32 (C)	15 (B)			
		EB	47 (D)	33 (C)	4 (A)		53 (D)	45 (D)	5 (A)			
Signalized	TH 47 & University Ave	NB		9 (A)	10 (B)	15 (B)		12 (B)	11 (B)	16 (B)		
		WB	34 (C)		4 (A)		42 (D)		4 (A)			
		SB		10 (B)				8 (A)				
Signalized	86th Ln & University Ave	NB	27 (C)	0 (A)	9 (A)	16 (B)	35 (D)	0 (A)	11 (B)	18 (B)		
		WB	34 (C)	11 (B)	6 (A)		45 (D)	11 (B)	6 (A)			
		SB	28 (C)	0 (A)	7 (A)		39 (D)	0 (A)	8 (A)			
		EB	40 (D)	15 (B)	6 (A)		47 (D)	14 (B)	5 (A)			
Signalized	University Ave & CSAH 10	NB	42 (D)	52 (D)	7 (A)	47 (D)	55 (E)	68 (E)	13 (B)	55 (E)		
		WB	45 (D)	42 (D)	22 (C)		52 (D)	57 (E)	27 (C)			
		SB	40 (D)	28 (C)	3 (A)		57 (E)	36 (D)	2 (A)			
		EB	87 (F)	80 (F)	28 (C)		94 (F)	60 (E)	26 (C)			
Thru-Stop	University Ave & 89th Ave	NB		4 (A)	4 (A)	8 (A)	0 (A)	3 (A)	3 (A)	5 (A)		
		WB			10 (B)				10 (B)			
		SB	19 (C)	13 (B)			16 (C)	5 (A)				
Signalized	University Ave & 91st Ave	NB	19 (B)	6 (A)	5 (A)	7 (A)	20 (C)	6 (A)	6 (A)	7 (A)		
		WB	16 (B)	0 (A)	7 (A)		19 (B)	0 (A)	7 (A)			
		SB	20 (C)	6 (A)	1 (A)		19 (B)	4 (A)	2 (A)			
		EB	18 (B)	0 (A)	5 (A)		18 (B)	19 (B)	3 (A)			
Signalized	87th Ln & 89th Ave	NB	13 (B)		4 (A)	12 (B)	10 (B)		4 (A)	12 (B)		
		WB	14 (B)	8 (A)			14 (B)	8 (A)				
		EB		18 (B)	11 (B)			19 (B)	11 (B)			
Signalized	Jefferson St NE & CSAH 10	NB	29 (C)	27 (C)	3 (A)	35 (D)	35 (D)	37 (D)	3 (A)	40 (D)		
		WB	44 (D)	47 (D)	13 (B)		57 (E)	53 (D)	16 (B)			
		SB	26 (C)	38 (D)	6 (A)		32 (C)	38 (D)	5 (A)			
		EB	44 (D)	26 (C)	5 (A)		55 (E)	33 (C)	9 (A)			
Signalized	Able St & CSAH 10	NB	32 (C)	34 (C)	11 (B)	31 (C)	47 (D)	46 (D)	19 (B)	37 (D)		
		WB	49 (D)	35 (D)	10 (B)		57 (E)	40 (D)	15 (B)			
		SB	41 (D)	39 (D)	25 (C)		51 (D)	52 (D)	37 (D)			
		EB	51 (D)	24 (C)	9 (A)		69 (E)	29 (C)	15 (B)			
Thru-Stop	Washington St NE & CSAH 10	NB			5 (A)	6 (A)			8 (A)	7 (A)		
		WB		9 (A)	7 (A)			10 (B)	7 (A)			
		SB			2 (A)				2 (A)			
		EB		2 (A)	2 (A)			3 (A)	2 (A)			
Thru-Stop	7th St & CSAH 10	NB			7 (A)	7 (A)			10 (B)	10 (B)		
		WB		4 (A)	4 (A)			5 (A)	4 (A)			
		SB			20 (C)				44 (E)			
		EB		9 (A)	9 (A)			10 (B)	11 (B)			
Signalized	Jefferson St NE/87th Ln & Washington St NE	NB	12 (B)	13 (B)	6 (A)	8 (A)	12 (B)	11 (B)	6 (A)	7 (A)		
		WB	7 (A)	7 (A)	2 (A)		7 (A)	6 (A)	2 (A)			
		SB	10 (B)	5 (A)	5 (A)		11 (B)	4 (A)	5 (A)			
		EB	7 (A)	1 (A)	2 (A)		7 (A)	1 (A)	3 (A)			
All-Way St	85th Ave NE & Jefferson St NE	WB		7 (A)	4 (A)	6 (A)		7 (A)	4 (A)	6 (A)		
		SB	7 (A)		5 (A)		6 (A)		4 (A)			
		EB	6 (A)	7 (A)			6 (A)	7 (A)				
Signalized	Jefferson St NE & Mall Ent	NB	8 (A)	6 (A)	3 (A)	9 (A)	8 (A)	6 (A)	3 (A)	7 (A)		
		WB	25 (C)	0 (A)	5 (A)		23 (C)	0 (A)	5 (A)			
		SB	9 (A)	8 (A)	5 (A)		8 (A)	6 (A)	3 (A)			
		EB	15 (B)	0 (A)	4 (A)		14 (B)	0 (A)	3 (A)			
Signalized	TH 47 NB Ramp & CSAH 10	NB	23 (C)	29 (C)	21 (C)	31 (C)	39 (D)	23 (C)	35 (D)	36 (D)		
		WB		36 (D)	9 (A)			40 (D)	10 (B)			
		EB	64 (E)	32 (C)			86 (F)	31 (C)				
Signalized	TH 47 SB Ramp & CSAH 10	WB	69 (E)	35 (D)		28 (C)	62 (E)			26 (C)		
		SB	19 (B)	0 (A)	15 (B)		34 (C)	60 (E)	26 (C)			
		EB		26 (C)	7 (A)			24 (C)	9 (A)			

* Delay measured in seconds per vehicle

The analysis results show that all intersections are expected to operate similar to 2040 No-Build conditions with a slight increase in delay. All intersections are expected to operate at an overall LOS D or better during peak hours, except for the intersection of CSAH 10 and University Avenue which is expected to operate at LOS E during the PM peak hour. All movements will be operating at LOS D or better except the following movements expected to operate at LOS E/F:

- TH 47 and 85th Avenue
 - Saturday and PM Peak Hour
 - Northbound left-turn movement (no change from 2040 No-Build)
 - Saturday and PM Peak Hour
 - Southbound left-turn movement
- University Avenue and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
 - Eastbound through movement (no change from 2040 No-Build)
 - PM Peak Hour
 - Northbound left-turn movement
 - Northbound through movement
 - Westbound through movement
 - Southbound left-turn movement
- CSAH 10 and Jefferson Street
 - PM Peak Hour
 - Eastbound left-turn movement
 - Westbound left-turn movement
- CSAH 10 and Able Street
 - PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
 - Westbound left-turn movement
- CSAH 10 and 7th Street
 - PM Peak Hour
 - Southbound right-turn movement
- TH 47 Northbound Ramp and CSAH 10
 - PM Peak Hour
 - Eastbound left-turn movement (change from LOS E in 2040 No-Build to LOS F)
 - Saturday Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
- TH 47 Southbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Westbound left-turn movement (no change from 2040 No-Build)
 - PM Peak Hour
 - Southbound through movement

2040 Build Analysis – Scenario 1 (Comp Plan)- Full Access Signal at CSAH 10 and 85th Avenue Extension

Table 6 summarizes the LOS and delays at the primary intersections in the study area based on the existing lane geometry, traffic control at 16 of the 17 intersections and projected 2040 traffic volumes with full development of the area assuming Land Use Scenario 1 (Comp Plan) (**Figures 9a-9d**). This scenario also assumes a full-access signal at CSAH 10 and the 85th Avenue Extension (previously Washington Street). The traffic signal timing was optimized for the analysis at all signalized intersections within the study area.

Table 6 – 2040 Build Traffic Operations Summary – Scenario 1- Full Access Signal at CSAH 10 and 85th Avenue Extension

Control	Intersection		Saturday Peak				Intersection Delay* (LOS)	PM Peak			Intersection Delay* (LOS)
	Location	Approach	Movement Delay* (LOS)			Movement Delay* (LOS)					
			Left	Thru	Right	Left		Thru	Right		
Signalized	Springbrook Dr & 85th Ave	NB	12 (B)	16 (B)	7 (A)	14 (B)	13 (B)	16 (B)	7 (A)	14 (B)	
		WB	25 (C)	9 (A)	8 (A)		22 (C)	13 (B)	7 (A)		
		SB	19 (B)	14 (B)	7 (A)		14 (B)	14 (B)	6 (A)		
		EB	17 (B)	23 (C)	7 (A)		16 (B)	21 (C)	6 (A)		
Signalized	TH 47 & 85th Ave	NB	61 (E)	29 (C)	7 (A)	33 (C)	58 (E)	38 (D)	9 (A)	34 (C)	
		WB	57 (E)	36 (D)	12 (B)		57 (E)	36 (D)	15 (B)		
		SB	56 (E)	39 (D)	19 (B)		58 (E)	33 (C)	15 (B)		
		EB	41 (D)	32 (C)	5 (A)		43 (D)	31 (C)	5 (A)		
Signalized	TH 47 & University Ave	NB		7 (A)	9 (A)	12 (B)		11 (B)	9 (A)	12 (B)	
		WB	32 (C)		4 (A)		37 (D)		4 (A)		
		SB		7 (A)				5 (A)			
Signalized	86th Ln & University Ave	NB	16 (B)	0 (A)	6 (A)	13 (B)	14 (B)	0 (A)	7 (A)	12 (B)	
		WB	27 (C)	10 (B)	5 (A)		30 (C)	10 (B)	5 (A)		
		SB	19 (B)	0 (A)	6 (A)		16 (B)	0 (A)	5 (A)		
		EB	28 (C)	12 (B)	6 (A)		25 (C)	11 (B)	5 (A)		
Signalized	University Ave & CSAH 10	NB	43 (D)	35 (D)	5 (A)	41 (D)	64 (E)	29 (C)	6 (A)	45 (D)	
		WB	42 (D)	40 (D)	20 (C)		53 (D)	48 (D)	23 (C)		
		SB	41 (D)	16 (B)	3 (A)		55 (E)	35 (D)	3 (A)		
		EB	70 (E)	68 (E)	27 (C)		73 (E)	54 (D)	24 (C)		
Thru-Stop	University Ave & 89th Ave	NB		3 (A)	3 (A)	5 (A)	0 (A)	3 (A)	2 (A)	5 (A)	
		WB			11 (B)				10 (B)		
Signalized	University Ave & 91st Ave	NB	15 (C)	5 (A)		7 (A)	13 (B)	3 (A)		7 (A)	
		WB	17 (B)	6 (A)	4 (A)		21 (C)	6 (A)	6 (A)		
		SB	17 (B)	0 (A)	5 (A)		19 (B)	0 (A)	8 (A)		
		EB	19 (B)	5 (A)	2 (A)		19 (B)	4 (A)	2 (A)		
Signalized	87th Ln & 89th Ave	NB	9 (A)		4 (A)	11 (B)	11 (B)		4 (A)	11 (B)	
		WB	13 (B)	8 (A)			14 (B)	9 (A)			
		EB		18 (B)	9 (A)			18 (B)	8 (A)		
		NB	27 (C)	14 (B)	3 (A)		34 (C)	26 (C)	3 (A)		
Signalized	Jefferson St NE & CSAH 10	WB	45 (D)	46 (D)	13 (B)	34 (C)	58 (E)	53 (D)	16 (B)	37 (D)	
		SB	28 (C)	37 (D)	6 (A)		34 (C)	45 (D)	8 (A)		
		EB	46 (D)	21 (C)	6 (A)		52 (D)	23 (C)	7 (A)		
		NB	33 (C)	34 (C)	10 (B)		46 (D)	47 (D)	18 (B)		
Signalized	Able St & CSAH 10	WB	50 (D)	36 (D)	9 (A)	32 (C)	61 (E)	39 (D)	15 (B)	37 (D)	
		SB	39 (D)	40 (D)	25 (C)		54 (D)	53 (D)	37 (D)		
		EB	48 (D)	25 (C)	8 (A)		63 (E)	29 (C)	13 (B)		
		NB	30 (C)	30 (C)	8 (A)		39 (D)	40 (D)	13 (B)		
Signalized	85th Ave Extension & CSAH 10	WB	60 (E)	29 (C)	13 (B)	28 (C)	73 (E)	33 (C)	16 (B)	32 (C)	
		SB	27 (C)	30 (C)	16 (B)		35 (D)	41 (D)	22 (C)		
		EB	43 (D)	28 (C)	12 (B)		54 (D)	26 (C)	10 (B)		
		NB			10 (B)				16 (C)		
Thru-Stop	7th St & CSAH 10	WB		5 (A)	4 (A)	7 (A)		7 (A)	5 (A)	11 (B)	
		SB			15 (C)				37 (E)		
		EB		8 (A)	9 (A)			9 (A)	10 (B)		
		NB	13 (B)	10 (B)	6 (A)		13 (B)	8 (A)	4 (A)		
Signalized	Jefferson St NE/87th Ln & Washington St NE	WB	7 (A)	5 (A)	2 (A)	6 (A)	6 (A)	5 (A)	1 (A)	6 (A)	
		SB	10 (B)	4 (A)	4 (A)		11 (B)	4 (A)	4 (A)		
		EB	7 (A)	3 (A)	4 (A)		7 (A)	3 (A)	4 (A)		
		NB		7 (A)	4 (A)			7 (A)	4 (A)		
All-Way St	85th Ave NE & Jefferson St NE	WB		7 (A)	4 (A)	6 (A)		7 (A)	4 (A)	6 (A)	
		SB	6 (A)		4 (A)		6 (A)		4 (A)		
		EB	6 (A)	7 (A)			6 (A)	7 (A)			
Signalized	Jefferson St NE & Mall Ent	NB	8 (A)	5 (A)	2 (A)	6 (A)	7 (A)	5 (A)	2 (A)	6 (A)	
		WB	21 (C)	0 (A)	4 (A)		26 (C)	0 (A)	4 (A)		
		SB	7 (A)	5 (A)	3 (A)		6 (A)	4 (A)	2 (A)		
		EB	16 (B)	0 (A)	4 (A)		15 (B)	0 (A)	3 (A)		
Signalized	TH 47 NB Ramp & CSAH 10	NB	22 (C)	13 (B)	15 (B)	33 (C)	37 (D)	26 (C)	28 (C)	37 (D)	
		WB		41 (D)	9 (A)			47 (D)	11 (B)		
		EB	68 (E)	33 (C)			80 (F)	29 (C)			
Signalized	TH 47 SB Ramp & CSAH 10	WB	70 (E)	36 (D)		28 (C)	78 (E)	26 (C)		25 (C)	
		SB	19 (B)	0 (A)	15 (B)		34 (C)	25 (C)	25 (C)		
		EB		25 (C)	7 (A)			23 (C)	10 (B)		

* Delay measured in seconds per vehicle

The analysis results show that all intersections are expected to operate similar to 2040 No-Build Conditions with a slight increase in delay, but overall, less delay than the scenario without a signal at CSAH 10 and the 85th Avenue Extension. All intersections are expected to operate at a LOS D or better during the weekday PM peak hour and Saturday peak hour. All movements will be operating at LOS D or better except the following movements expected to operate at a LOS E/F:

- TH 47 and 85th Avenue
 - Saturday and PM Peak Hour
 - Northbound left-turn movement (no change from 2040 No-Build)
 - Southbound left-turn movement
 - Westbound left-turn movement
- University Avenue and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
 - PM Peak Hour
 - Eastbound through movement (no change from 2040 No-Build)
 - Northbound left-turn movement
 - Southbound left-turn movement
- CSAH 10 and Jefferson Street
 - PM Peak Hour
 - Westbound left-turn movement
- CSAH 10 and Able Street
 - PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
 - Westbound left-turn movement
- CSAH 10 and 85th Avenue Extension
 - PM Peak Hour
 - Westbound left-turn movement
- CSAH 10 and 7th Street
 - PM Peak Hour
 - Southbound right-turn movement
- TH 47 Northbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement (change from LOS E in 2040 No-Build to LOS F)
- TH 47 Southbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Westbound left-turn movement (no change from 2040 No-Build)

2040 Build Analysis – Scenario 2 (Vision Plan)- Existing Geometry and Traffic Control

Table 7 summarizes the LOS and delays at the primary intersections in the study area based on the existing lane geometry, traffic control and projected 2040 traffic volumes with full development of the area assuming Land Use Scenario 2 (Vision Plan) (**Figures 10a-10d**). The traffic signal timing was optimized for the analysis at all signalized intersections within the study area.

Table 7 – 2040 Build Traffic Operations Summary – Scenario 2- Existing Geometry and Traffic Control

Control	Intersection		Saturday Peak				Intersection Delay* (LOS)	PM Peak			Intersection Delay* (LOS)
	Location	Approach	Movement Delay* (LOS)			Movement Delay* (LOS)					
			Left	Thru	Right	Left		Thru	Right		
Signalized	Springbrook Dr & 85th Ave	NB	13 (B)	15 (B)	7 (A)	14 (B)	14 (B)	16 (B)	8 (A)	14 (B)	
		WB	22 (C)	15 (B)	7 (A)		23 (C)	16 (B)	6 (A)		
		SB	17 (B)	12 (B)	6 (A)		16 (B)	14 (B)	6 (A)		
		EB	17 (B)	22 (C)	6 (A)		17 (B)	21 (C)	5 (A)		
Signalized	TH 47 & 85th Ave	NB	106 (F)	25 (C)	7 (A)	36 (D)	71 (E)	41 (D)	11 (B)	39 (D)	
		WB	57 (E)	56 (E)	18 (B)		55 (E)	58 (E)	22 (C)		
		SB	77 (E)	33 (C)	17 (B)		103 (F)	32 (C)	15 (B)		
		EB	57 (E)	41 (D)	5 (A)		57 (E)	44 (D)	5 (A)		
Signalized	TH 47 & University Ave	NB		9 (A)	11 (B)	18 (B)			14 (B)	18 (B)	
		WB	42 (D)		4 (A)		48 (D)		4 (A)		
		SB		12 (B)				9 (A)			
Signalized	86th Ln & University Ave	NB	17 (B)	0 (A)	8 (A)	14 (B)	17 (B)	0 (A)	10 (B)	17 (B)	
		WB	28 (C)	13 (B)	7 (A)		29 (C)	11 (B)	6 (A)		
		SB	18 (B)	0 (A)	8 (A)		20 (C)	0 (A)	6 (A)		
		EB	30 (C)	13 (B)	6 (A)		33 (C)	21 (C)	9 (A)		
Signalized	University Ave & CSAH 10	NB	43 (D)	49 (D)	7 (A)	45 (D)	71 (E)	94 (F)	22 (C)	59 (E)	
		WB	44 (D)	42 (D)	25 (C)		56 (E)	50 (D)	26 (C)		
		SB	48 (D)	29 (C)	2 (A)		63 (E)	37 (D)	2 (A)		
		EB	87 (F)	70 (E)	23 (C)		107 (F)	59 (E)	25 (C)		
Thru-Stop	University Ave & 89th Ave	NB		4 (A)	4 (A)	6 (A)	0 (A)	3 (A)	4 (A)	5 (A)	
		WB			8 (A)				9 (A)		
Signalized	University Ave & 91st Ave	NB	19 (B)	5 (A)	6 (A)	7 (A)	22 (C)	6 (A)	6 (A)	7 (A)	
		WB	14 (B)	0 (A)	5 (A)		20 (C)	0 (A)	7 (A)		
		SB	18 (B)	5 (A)	2 (A)		20 (C)	4 (A)	2 (A)		
		EB	17 (B)	0 (A)	4 (A)		20 (C)	22 (C)	4 (A)		
Signalized	87th Ln & 89th Ave	NB	11 (B)		4 (A)	12 (B)	12 (B)		5 (A)	12 (B)	
		WB	13 (B)	8 (A)			14 (B)	8 (A)			
		EB		18 (B)	13 (B)			19 (B)	11 (B)		
Signalized	Jefferson St NE & CSAH 10	NB	31 (C)	32 (C)	3 (A)	35 (D)	42 (D)	38 (D)	3 (A)	44 (D)	
		WB	44 (D)	46 (D)	13 (B)		55 (E)	56 (E)	17 (B)		
		SB	28 (C)	37 (D)	6 (A)		33 (C)	50 (D)	9 (A)		
		EB	40 (D)	27 (C)	6 (A)		59 (E)	39 (D)	11 (B)		
Signalized	Able St & CSAH 10	NB	38 (D)	42 (D)	18 (B)	33 (C)	53 (D)	52 (D)	24 (C)	44 (D)	
		WB	46 (D)	39 (D)	12 (B)		58 (E)	53 (D)	25 (C)		
		SB	40 (D)	42 (D)	24 (C)		52 (D)	51 (D)	39 (D)		
		EB	49 (D)	23 (C)	9 (A)		64 (E)	31 (C)	16 (B)		
Thru-Stop	Washington St NE & CSAH 10	NB			6 (A)	6 (A)			13 (B)	7 (A)	
		WB		9 (A)	8 (A)			10 (B)	7 (A)		
		SB			3 (A)				2 (A)		
		EB		1 (A)	1 (A)			3 (A)	2 (A)		
Thru-Stop	7th St & CSAH 10	NB			6 (A)	11 (B)			11 (B)	16 (C)	
		WB		5 (A)	3 (A)			5 (A)	4 (A)		
		SB			50 (F)				114 (F)		
		EB		8 (A)	8 (A)			10 (B)	10 (B)		
Signalized	Jefferson St NE/87th Ln & Washington St NE	NB	14 (B)	13 (B)	8 (A)	8 (A)	13 (B)	11 (B)	6 (A)	8 (A)	
		WB	8 (A)	8 (A)	2 (A)		7 (A)	8 (A)	2 (A)		
		SB	10 (B)	6 (A)	5 (A)		10 (B)	5 (A)	5 (A)		
		EB	7 (A)	1 (A)	3 (A)		0 (A)	1 (A)	2 (A)		
All-Way St	85th Ave NE & Jefferson St NE	WB		7 (A)	4 (A)	6 (A)		7 (A)	4 (A)	6 (A)	
		SB	6 (A)		5 (A)		7 (A)		5 (A)		
		EB	5 (A)	7 (A)			6 (A)	7 (A)			
Signalized	Jefferson St NE & Mall Ent	NB	9 (A)	6 (A)	2 (A)	8 (A)	12 (B)	8 (A)	3 (A)	9 (A)	
		WB	24 (C)	0 (A)	5 (A)		23 (C)	0 (A)	6 (A)		
		SB	8 (A)	6 (A)	4 (A)		10 (B)	8 (A)	4 (A)		
		EB	15 (B)	0 (A)	3 (A)		17 (B)	0 (A)	3 (A)		
Signalized	TH 47 NB Ramp & CSAH 10	NB	20 (C)	20 (C)	15 (B)	31 (C)	38 (D)	22 (C)	40 (D)	35 (D)	
		WB		38 (D)	8 (A)			42 (D)	10 (B)		
		EB	62 (E)	31 (C)			78 (E)	29 (C)			
Signalized	TH 47 SB Ramp & CSAH 10	WB	73 (E)	30 (C)		26 (C)	75 (E)	25 (C)		25 (C)	
		SB	18 (B)	0 (A)	14 (B)		36 (D)	51 (D)	29 (C)		
		EB		26 (C)	6 (A)			23 (C)	8 (A)		

* Delay measured in seconds per vehicle

The analysis results show that all intersections are expected to operate similar to 2040 No-Build Conditions with a slight increase in delay. All intersections are expected to operate at an overall LOD D or better during peak hours, except for the intersection of CSAH 10 and University Avenue which is expected to operate at a LOS E during the PM peak hour. All movements will be operating at LOS D or better except the following movements expected to operate at a LOS E/F:

- TH 47 and 85th Avenue
 - Saturday and PM Peak Hour
 - Northbound left-turn movement (change from LOS E in 2040 No-Build to LOS F for Saturday Peak)
 - Westbound left-turn movement
 - Westbound through movement
 - Southbound left-turn movement
 - Northbound left-turn movement
- University Avenue and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement (change from LOS E in 2040 No-Build to LOS F)
 - Eastbound through movement (no change from 2040 No-Build)
 - PM Peak Hour
 - Northbound left-turn movement
 - Northbound through movement
 - Westbound left-turn movement
 - Southbound left-turn movement
- CSAH 10 and Jefferson Street
 - PM Peak Hour
 - Westbound left-turn movement
 - Westbound through movement
 - Eastbound left-turn movement
- CSAH 10 and Able Street
 - PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
 - Westbound left-turn movement
- CSAH 10 and 7th Street
 - Saturday and PM Peak Hour
 - Southbound right-turn movement
- TH 47 Northbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
- TH 47 Southbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Westbound left-turn movement (no change from 2040 No-Build)

2040 Build Analysis – Scenario 2 (Vision Plan)- Full Access Signal at CSAH 10 and 85th Avenue Extension

Table 8 summarizes the LOS and delays at the primary intersections in the study area based on the existing lane geometry, traffic control at 16 of the 17 intersections and projected 2040 traffic volumes with full development of the area assuming Land Use Scenario 2 (Vision Plan) (**Figures 11a-11d**). This scenario also assumes a full-access signal at CSAH 10 and the 85th Avenue Extension (previously Washington Street). The traffic signal timing was optimized for the analysis at all signalized intersections within the study area.

Table 8 – 2040 Build Traffic Operations Summary – Scenario 2- Full Access Signal at CSAH 10 and 85th Avenue Extension

Control	Intersection		Saturday Peak				PM Peak			Intersection Delay* (LOS)
	Location	Approach	Movement Delay* (LOS)			Intersection Delay* (LOS)	Movement Delay* (LOS)			
			Left	Thru	Right		Left	Thru	Right	
Signalized	Springbrook Dr & 85th Ave	NB	12 (B)	16 (B)	8 (A)	13 (B)	13 (B)	15 (B)	7 (A)	14 (B)
		WB	22 (C)	9 (A)	7 (A)		23 (C)	12 (B)	7 (A)	
		SB	16 (B)	11 (B)	6 (A)		16 (B)	14 (B)	7 (A)	
		EB	17 (B)	23 (C)	6 (A)		18 (B)	21 (C)	6 (A)	
Signalized	TH 47 & 85th Ave	NB	56 (E)	21 (C)	6 (A)	30 (C)	62 (E)	37 (D)	10 (B)	36 (D)
		WB	52 (D)	35 (D)	12 (B)		48 (D)	35 (D)	16 (B)	
		SB	57 (E)	34 (C)	19 (B)		72 (E)	37 (D)	18 (B)	
		EB	48 (D)	29 (C)	4 (A)		49 (D)	30 (C)	5 (A)	
Signalized	TH 47 & University Ave	NB		7 (A)	10 (B)	14 (B)		12 (B)	10 (B)	14 (B)
		WB	31 (C)		4 (A)		34 (C)		4 (A)	
		SB		7 (A)				5 (A)		
Signalized	86th Ln & University Ave	NB	17 (B)	0 (A)	6 (A)	13 (B)	17 (B)	0 (A)	7 (A)	13 (B)
		WB	24 (C)	12 (B)	6 (A)		26 (C)	11 (B)	5 (A)	
		SB	18 (B)	0 (A)	6 (A)		18 (B)	0 (A)	6 (A)	
		EB	27 (C)	12 (B)	6 (A)		28 (C)	14 (B)	6 (A)	
Signalized	University Ave & CSAH 10	NB	43 (D)	27 (C)	5 (A)	40 (D)	55 (E)	36 (D)	6 (A)	44 (D)
		WB	43 (D)	42 (D)	22 (C)		55 (E)	45 (D)	24 (C)	
		SB	41 (D)	14 (B)	3 (A)		55 (E)	37 (D)	3 (A)	
		EB	71 (E)	65 (E)	22 (C)		67 (E)	47 (D)	21 (C)	
Thru-Stop	University Ave & 89th Ave	NB		3 (A)	3 (A)	5 (A)	0 (A)	3 (A)	3 (A)	5 (A)
		WB			10 (B)				11 (B)	
Signalized	University Ave & 91st Ave	NB	14 (B)	5 (A)		7 (A)	14 (B)	3 (A)		7 (A)
		WB	19 (B)	6 (A)	4 (A)		22 (C)	6 (A)	5 (A)	
		SB	16 (B)	0 (A)	6 (A)		20 (C)	0 (A)	7 (A)	
		EB	17 (B)	5 (A)	2 (A)		19 (B)	3 (A)	2 (A)	
Signalized	87th Ln & 89th Ave	NB	9 (A)		4 (A)	10 (B)	9 (A)		4 (A)	11 (B)
		WB	13 (B)	7 (A)			14 (B)	8 (A)		
		SB		17 (B)	10 (B)			18 (B)	9 (A)	
		EB	27 (C)	14 (B)	3 (A)		38 (D)	23 (C)	3 (A)	
Signalized	Jefferson St NE & CSAH 10	NB	45 (D)	45 (D)	13 (B)	33 (C)	59 (E)	60 (E)	17 (B)	41 (D)
		WB	29 (C)	36 (D)	7 (A)		39 (D)	29 (C)	9 (A)	
		SB	50 (D)	21 (C)	6 (A)		55 (E)	26 (C)	9 (A)	
		EB	38 (D)	43 (D)	16 (B)		51 (D)	51 (D)	21 (C)	
Signalized	Able St & CSAH 10	NB	48 (D)	36 (D)	11 (B)	33 (C)	68 (E)	48 (D)	21 (C)	43 (D)
		WB	42 (D)	42 (D)	25 (C)		49 (D)	52 (D)	41 (D)	
		SB	51 (D)	26 (C)	8 (A)		62 (E)	35 (D)	16 (B)	
		EB	27 (C)	32 (C)	7 (A)		42 (D)	45 (D)	16 (B)	
Signalized	85th Ave Extension & CSAH 10	NB	60 (E)	30 (C)	15 (B)	28 (C)	69 (E)	32 (C)	16 (B)	29 (C)
		WB	24 (C)	32 (C)	17 (B)		38 (D)	46 (D)	28 (C)	
		SB	40 (D)	32 (C)	9 (A)		59 (E)	28 (C)	10 (B)	
		EB			9 (A)				13 (B)	
Thru-Stop	7th St & CSAH 10	NB			6 (A)	10 (B)			7 (A)	11 (B)
		WB			4 (A)				6 (A)	
		SB			34 (D)				49 (E)	
		EB		8 (A)	7 (A)				9 (A)	
Signalized	Jefferson St NE/87th Ln & Washington St NE	NB	14 (B)	10 (B)	6 (A)	7 (A)	14 (B)	9 (A)	4 (A)	6 (A)
		WB	8 (A)	6 (A)	2 (A)		7 (A)	6 (A)	2 (A)	
		SB	10 (B)	5 (A)	5 (A)		11 (B)	4 (A)	5 (A)	
		EB	9 (A)	5 (A)	5 (A)		8 (A)	5 (A)	5 (A)	
All-Way St	85th Ave NE & Jefferson St NE	WB		7 (A)	4 (A)	6 (A)		7 (A)	4 (A)	6 (A)
		SB	6 (A)		4 (A)		6 (A)		4 (A)	
		EB	6 (A)	7 (A)			6 (A)	7 (A)		
Signalized	Jefferson St NE & Mall Ent	NB	7 (A)	5 (A)	2 (A)	7 (A)	9 (A)	7 (A)	2 (A)	8 (A)
		WB	19 (B)	0 (A)	4 (A)		18 (B)	0 (A)	5 (A)	
		SB	7 (A)	5 (A)	3 (A)		7 (A)	6 (A)	3 (A)	
		EB	16 (B)	0 (A)	3 (A)		17 (B)	0 (A)	3 (A)	
Signalized	TH 47 NB Ramp & CSAH 10	NB	20 (C)	14 (B)	17 (B)	33 (C)	40 (D)	38 (D)	37 (D)	35 (D)
		WB		40 (D)	9 (A)			45 (D)	11 (B)	
		EB	69 (E)	32 (C)			74 (E)	25 (C)		
Signalized	TH 47 SB Ramp & CSAH 10	WB	60 (E)	32 (C)		26 (C)	63 (E)	27 (C)		26 (C)
		SB	19 (B)	0 (A)	16 (B)		39 (D)	35 (D)	31 (C)	
		EB		25 (C)	7 (A)			25 (C)	9 (A)	

* Delay measured in seconds per vehicle

The analysis results show that all intersections are expected to operate similar to 2040 No-Build Conditions with a slight increase in delay, but overall, less delay than the scenario without a signal at CSAH 10 and the 85th Avenue Extension. All intersections are expected to operate at a LOS D or better during the weekday PM peak hour and Saturday peak hour. All movements will be operating at LOS D or better except the following movements expected to operate at a LOS E:

- TH 47 and 85th Avenue
 - Saturday and PM Peak Hour
 - Northbound left-turn movement (no change from 2040 No-Build)
 - Southbound left-turn movement
- University Avenue and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
 - Saturday
 - Eastbound through movement (no change from 2040 No-Build)
 - PM Peak Hour
 - Northbound left-turn movement
 - Southbound left-turn movement
 - Westbound left-turn movement
- CSAH 10 and Jefferson Street
 - PM Peak Hour
 - Westbound left-turn movement
 - Westbound through movement
 - Eastbound left-turn movement
- CSAH 10 and Able Street
 - PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
 - Westbound left-turn movement
- CSAH 10 and 85th Avenue Extension
 - Saturday and PM Peak Hour
 - Westbound left-turn movement
 - PM Peak Hour
 - Eastbound left-turn movement
- CSAH 10 and 7th Street
 - PM Peak Hour
 - Southbound right-turn movement
- TH 47 Northbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Eastbound left-turn movement (no change from 2040 No-Build)
- TH 47 Southbound Ramp and CSAH 10
 - Saturday and PM Peak Hour
 - Westbound left-turn movement (no change from 2040 No-Build)

The **Northtown District VP** identified potential improvements to the network including several roundabouts along CSAH 10. As daily volumes are expected to increase on CSAH 10 with redevelopment traffic and background growth, roundabout alternatives are likely not a feasible option for this corridor. The future intersection of CSAH 10 and 85th Avenue Extension was analyzed as an example using HCS2023 software using 2040 Build Scenario 2 forecasted volumes, as shown in **Table 9**. Conflicting flow volumes are too high for this intersection to operate at an acceptable level and maximum queues would back up into adjacent intersections to the north and east.

Table 9 – 2040 Build Traffic Operations Summary – Scenario 2- 2x2 Roundabout at CSAH 10 and 85th Avenue Extension

Intersection			Sat Peak		PM Peak	
Control	Location	Approach	Approach Delay*	Intersection Delay*	Approach Delay*	Intersection Delay*
Roundabout	CSAH 10 & 85th Ave Extension	NB	14	50	62	128
		WB	51		121	
		SB	138		608	
		EB	12		24	

* Delay measured in seconds per vehicle

2040 Build Analysis – Mitigation Options

To improve the delay and level of service at the intersections with movements at LOS E/F or queuing issues, mitigation improvements were analyzed for Scenario 1 and 2. The mitigation alternatives are assuming the traffic signal at CSAH 10 and 85th Avenue Extension is implemented, as this improvement improves the network and traffic flow. The following mitigation improvements for Scenario 1 included:

- TH 47 & 85th Avenue
 - Dual left turns on all approaches
 - Extending the eastbound right-turn lane length to 300 feet
- CSAH 10 & University Avenue
 - Extending the eastbound right-turn lane length to 550 feet
- University Avenue & 89th Avenue
 - Extending the southbound left-turn lane length to 200 feet
- University Avenue & 91st Avenue
 - Extending the eastbound and westbound right-turn lane lengths to 100 feet
- CSAH 10 & Able Street
 - Extending the northbound left-turn lane and right-turn lane lengths to 150 feet
 - Add a southbound right-turn lane
 - Extending the southbound left-turn lane to 150 feet
- CSAH 10 & 85th Avenue Extension
 - Extending the westbound left-turn lane length to 400 feet
 - Extending the northbound right-turn lane to 200 feet
- CSAH 10 & 7th Street
 - Add a westbound acceleration lane for the southbound right turn that turns into a drop lane at University Avenue
- Jefferson Street & Mall Entrance
 - Extending the eastbound left-turn lane length to 150 feet
- TH 47 Northbound Ramp & CSAH 10
 - Extending the eastbound left-turn lane length to 300 feet
- TH 47 Southbound Ramp & CSAH 10
 - Extending the southbound left-turn lane length to 300 feet
 - Extending the eastbound right-turn lane length to 300 feet
 - Extending the westbound left-turn lane length to 300 feet

The results of the mitigation analysis for Scenario 1 are included in **Table 10** and show that all intersections and movements would be operating at LOS E or better. Although not all movements

can be brought up to a LOS D or higher due to high traffic volumes and longer cycle lengths, overall delays and maximum queue lengths would be reduced with the proposed improvements.

Table 10 – 2040 Build Traffic Operations Summary – Scenario 1 with Mitigation

Intersection			Saturday Peak				PM Peak			
Control	Location	Approach	Movement Delay* (LOS)			Intersection Delay* (LOS)	Movement Delay* (LOS)			Intersection Delay* (LOS)
			Left	Thru	Right		Left	Thru	Right	
Signalized	TH 47 & 85th Ave	NB	40 (D)	23 (C)	7 (A)	26 (C)	42 (D)	26 (C)	8 (A)	27 (C)
		WB	55 (E)	27 (C)	11 (B)		61 (E)	35 (D)	15 (B)	
		SB	46 (D)	27 (C)	16 (B)		51 (D)	24 (C)	13 (B)	
		EB	35 (D)	25 (C)	4 (A)		39 (D)	31 (C)	5 (A)	
Signalized	University Ave & CSAH 10	NB	43 (D)	33 (C)	4 (A)	39 (D)	58 (E)	29 (C)	6 (A)	44 (D)
		WB	39 (D)	38 (D)	16 (B)		50 (D)	51 (D)	17 (B)	
		SB	41 (D)	16 (B)	3 (A)		59 (E)	37 (D)	3 (A)	
		EB	70 (E)	68 (E)	21 (C)		71 (E)	52 (D)	15 (B)	
Thru-Stop	University Ave & 89th Ave	NB		3 (A)	3 (A)	5 (A)	0 (A)	3 (A)	3 (A)	5 (A)
		WB			10 (B)				12 (B)	
		SB	17 (C)	5 (A)			16 (C)	4 (A)		
Signalized	University Ave & 91st Ave	NB	18 (B)	6 (A)	6 (A)	7 (A)	22 (C)	7 (A)	6 (A)	8 (A)
		WB	15 (B)	0 (A)	4 (A)		20 (C)	0 (A)	8 (A)	
		SB	20 (C)	5 (A)	2 (A)		19 (B)	4 (A)	2 (A)	
		EB	17 (B)	0 (A)	4 (A)		22 (C)	23 (C)	4 (A)	
Signalized	Able St & CSAH 10	NB	33 (C)	34 (C)	9 (A)	32 (C)	42 (D)	45 (D)	17 (B)	36 (D)
		WB	45 (D)	38 (D)	11 (B)		55 (E)	37 (D)	13 (B)	
		SB	42 (D)	41 (D)	21 (C)		48 (D)	49 (D)	24 (C)	
		EB	45 (D)	24 (C)	7 (A)		60 (E)	30 (C)	12 (B)	
Signalized	85th Ave Extension & CSAH 10	NB	30 (C)	30 (C)	7 (A)	28 (C)	36 (D)	40 (D)	12 (B)	31 (C)
		WB	59 (E)	29 (C)	12 (B)		69 (E)	33 (C)	15 (B)	
		SB	24 (C)	29 (C)	16 (B)			42 (D)	23 (C)	
		EB	44 (D)	29 (C)	13 (B)		51 (D)	26 (C)	10 (B)	
Thru-Stop	7th St & CSAH 10	NB			10 (B)	7 (A)			15 (C)	8 (A)
		WB		5 (A)	4 (A)			7 (A)	5 (A)	
		SB			3 (A)				3 (A)	
		EB		9 (A)	8 (A)			9 (A)	9 (A)	
Signalized	Jefferson St NE & Mall Ent	NB	8 (A)	6 (A)	2 (A)	7 (A)	7 (A)	5 (A)	2 (A)	6 (A)
		WB	25 (C)	0 (A)	4 (A)		19 (B)	0 (A)	4 (A)	
		SB	8 (A)	6 (A)	3 (A)		6 (A)	5 (A)	2 (A)	
		EB	16 (B)	0 (A)	4 (A)		17 (B)	0 (A)	4 (A)	
Signalized	TH 47 NB Ramp & CSAH 10	NB	19 (B)	24 (C)	16 (B)	35 (D)	38 (D)	11 (B)	32 (C)	35 (D)
		WB		44 (D)	9 (A)			47 (D)	12 (B)	
		EB	53 (D)	35 (D)			71 (E)	26 (C)		
Signalized	TH 47 SB Ramp & CSAH 10	WB	57 (E)	39 (D)		30 (C)	65 (E)	30 (C)		27 (C)
		SB	19 (B)	0 (A)	14 (B)		31 (C)	58 (E)	25 (C)	
		EB		26 (C)	6 (A)			25 (C)	7 (A)	

* Delay measured in seconds per vehicle

The following mitigation improvements for Scenario 2 included:

- All mitigation improvements analyzed in Scenario 1
- CSAH 10 & Jefferson Street
 - Extending the northbound left-turn lane length to 300 feet
- CSAH 10 & Able Street
 - Extending the westbound right-turn lane to 350 feet
- CSAH 10 & 85th Avenue Extension
 - Extending the northbound left-turn lane length to 200 feet
 - Extending the northbound right-turn lane to 250 feet
- Jefferson Street & Mall Entrance

- Extending the westbound right-turn lane length to 150 feet
- TH 47 Northbound Ramp & CSAH 10
 - Extending the northbound left-turn lane length to 300 feet

The results of the mitigation analysis for Scenario 2 are included in **Table 11** and show that all intersections and movements would be operating at LOS E or better. Although not all movements can be brought up to a LOS D or higher due to high traffic volumes and longer cycle lengths, overall delays and maximum queue lengths would be reduced with the proposed improvements.

Table 11 – 2040 Build Traffic Operations Summary – Scenario 2 with Mitigation

Control	Intersection		Saturday Peak				PM Peak			
	Location	Approach	Movement Delay* (LOS)			Intersection Delay* (LOS)	Movement Delay* (LOS)			Intersection Delay* (LOS)
			Left	Thru	Right		Left	Thru	Right	
Signalized	TH 47 & 85th Ave	NB	44 (D)	18 (B)	6 (A)	25 (C)	42 (D)	29 (C)	9 (A)	28 (C)
		WB	55 (E)	30 (C)	12 (B)		53 (D)	30 (C)	14 (B)	
		SB	49 (D)	23 (C)	15 (B)		45 (D)	26 (C)	15 (B)	
		EB	45 (D)	25 (C)	4 (A)		38 (D)	27 (C)	5 (A)	
Signalized	University Ave & CSAH 10	NB	46 (D)	29 (C)	5 (A)	38 (D)	62 (E)	36 (D)	6 (A)	44 (D)
		WB	39 (D)	39 (D)	15 (B)		49 (D)	43 (D)	17 (B)	
		SB	42 (D)	15 (B)	3 (A)		56 (E)	35 (D)	3 (A)	
		EB	71 (E)	68 (E)	20 (C)		74 (E)	55 (E)	17 (B)	
Thru-Stop	University Ave & 89th Ave	NB		3 (A)	3 (A)	5 (A)	0 (A)	3 (A)	3 (A)	5 (A)
		WB			11 (B)				12 (B)	
		SB	15 (C)	5 (A)			16 (C)	4 (A)		
Signalized	University Ave & 91st Ave	NB	20 (C)	6 (A)	3 (A)	7 (A)	21 (C)	6 (A)	6 (A)	7 (A)
		WB	17 (B)	0 (A)	5 (A)		18 (B)	0 (A)	7 (A)	
		SB	19 (B)	5 (A)	2 (A)		18 (B)	4 (A)	2 (A)	
		EB	17 (B)	0 (A)	5 (A)		20 (C)	18 (B)	4 (A)	
Signalized	Jefferson St NE & CSAH 10	NB	28 (C)	11 (B)	3 (A)	34 (C)	36 (D)	19 (B)	3 (A)	40 (D)
		WB	47 (D)	46 (D)	12 (B)		58 (E)	58 (E)	16 (B)	
		SB	28 (C)	35 (D)	6 (A)		37 (D)	29 (C)	9 (A)	
		EB	48 (D)	22 (C)	7 (A)		53 (D)	28 (C)	9 (A)	
Signalized	Able St & CSAH 10	NB	35 (D)	40 (D)	11 (B)	30 (C)	48 (D)	53 (D)	20 (C)	41 (D)
		WB	48 (D)	33 (C)	8 (A)		60 (E)	48 (D)	18 (B)	
		SB	44 (D)	42 (D)	18 (B)		50 (D)	51 (D)	26 (C)	
		EB	44 (D)	24 (C)	7 (A)		58 (E)	32 (C)	14 (B)	
Signalized	85th Ave Extension & CSAH 10	NB	31 (C)	31 (C)	7 (A)	27 (C)	40 (D)	42 (D)	15 (B)	27 (C)
		WB	60 (E)	28 (C)	13 (B)		70 (E)	28 (C)	16 (B)	
		SB	28 (C)	28 (C)	16 (B)		37 (D)	46 (D)	28 (C)	
		EB	40 (D)	33 (C)	10 (B)		57 (E)	29 (C)	9 (A)	
Thru-Stop	7th St & CSAH 10	NB			7 (A)	6 (A)			16 (C)	7 (A)
		WB		5 (A)	4 (A)			6 (A)	5 (A)	
		SB			3 (A)				3 (A)	
		EB		8 (A)	8 (A)			9 (A)	8 (A)	
Signalized	Jefferson St NE & Mall Ent	NB	7 (A)	5 (A)	2 (A)	7 (A)	8 (A)	7 (A)	3 (A)	8 (A)
		WB	21 (C)	0 (A)	5 (A)		24 (C)	0 (A)	5 (A)	
		SB	6 (A)	5 (A)	2 (A)		7 (A)	5 (A)	3 (A)	
		EB	16 (B)	0 (A)	3 (A)		18 (B)	0 (A)	4 (A)	
Signalized	TH 47 NB Ramp & CSAH 10	NB	20 (C)	16 (B)	18 (B)	35 (D)	39 (D)	22 (C)	32 (C)	35 (D)
		WB		45 (D)	10 (B)			46 (D)	10 (B)	
		EB	50 (D)	33 (C)			71 (E)	26 (C)		
Signalized	TH 47 SB Ramp & CSAH 10	WB	69 (E)	41 (D)		31 (C)	63 (E)	28 (C)		26 (C)
		SB	18 (B)	0 (A)	16 (B)		35 (D)	15 (B)	29 (C)	
		EB		26 (C)	5 (A)			23 (C)	7 (A)	

* Delay measured in seconds per vehicle

RECOMMENDATION / PROPOSED MITIGATION

Based on the analysis and conclusions documented in this study for each land use scenario, the following is a summary of the 2040 Build transportation recommendations and proposed mitigation for each. As redevelopment occurs and if land uses or densities change, intersections should be monitored for additional improvements and analysis.

1. Roadway Improvements - Land Use Scenario 1 (Comp Plan)

- A. Install a traffic signal and full access at the proposed intersection of CSAH 10 and 85th Avenue Extension.
- B. Install dual left turn-lanes on all approaches of the TH 47 and 85th Avenue intersection and extend the eastbound right-turn lane length to 300 feet.
- C. Extend the eastbound right-turn lane length to 550 feet at the intersection of CSAH 10 and University Avenue.
- D. Extend the southbound left-turn lane length to 200 feet at the intersection of University Avenue and 89th Avenue.
- E. Extend the eastbound and westbound right-turn lane lengths to 100 feet at the intersection of University Avenue & 91st Avenue.
- F. At the intersection of CSAH 10 and Able Street: Extend the northbound left-turn lane and right-turn lane lengths to 150 feet, add a southbound right-turn lane, and extend the southbound left-turn lane to 150 feet.
- G. Extend the westbound left-turn lane length to 400 feet and extend the northbound right-turn lane to 200 feet at the intersection of CSAH 10 and 85th Avenue Extension.
- H. Add a westbound acceleration lane for the southbound right turn at the intersection of CSAH 10 and 7th Street that turns into a drop lane at University Avenue.
- I. Extend the eastbound left-turn lane length to 150 feet at the intersection of Jefferson Street and Mall Entrance.
- J. Extend the eastbound left-turn lane length to 300 feet at the intersection of TH 47 Northbound Ramp and CSAH 10.
- K. At the intersection of TH 47 Southbound Ramp & CSAH 10: Extend the southbound left-turn lane length to 300 feet, extend the eastbound right-turn lane length to 300 feet, extend the westbound left-turn lane length to 300 feet.

2. Roadway Improvements - Land Use Scenario 2 (Vision Plan)

- A. All improvements analyzed in Scenario 1.
- B. Extend the northbound left-turn lane length to 300 feet at the intersection of CSAH 10 and Jefferson Street.
- C. Extend the westbound right-turn lane to 350 feet at the intersection of CSAH 10 and Able Street.

- D. Extend the northbound left-turn lane length to 200 feet and extend the northbound right-turn lane to 250 feet at the intersection of CSAH 10 and 85th Avenue Extension.
- E. Extend the westbound right-turn lane length to 150 feet at the intersection of Jefferson Street and Mall Entrance.
- F. Extend the northbound left-turn lane length to 300 feet at the intersection of TH 47 Northbound Ramp and CSAH 10.

DRAFT

APPENDIX A – EXISTING TURNING MOVEMENT VOLUMES

DRAFT



701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CR 137 & Springbrook Dr
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 1-CR 137 & Springbrook Dr-Thursday
 Site Code : 1
 Start Date : 10/5/2023
 Page No : 1

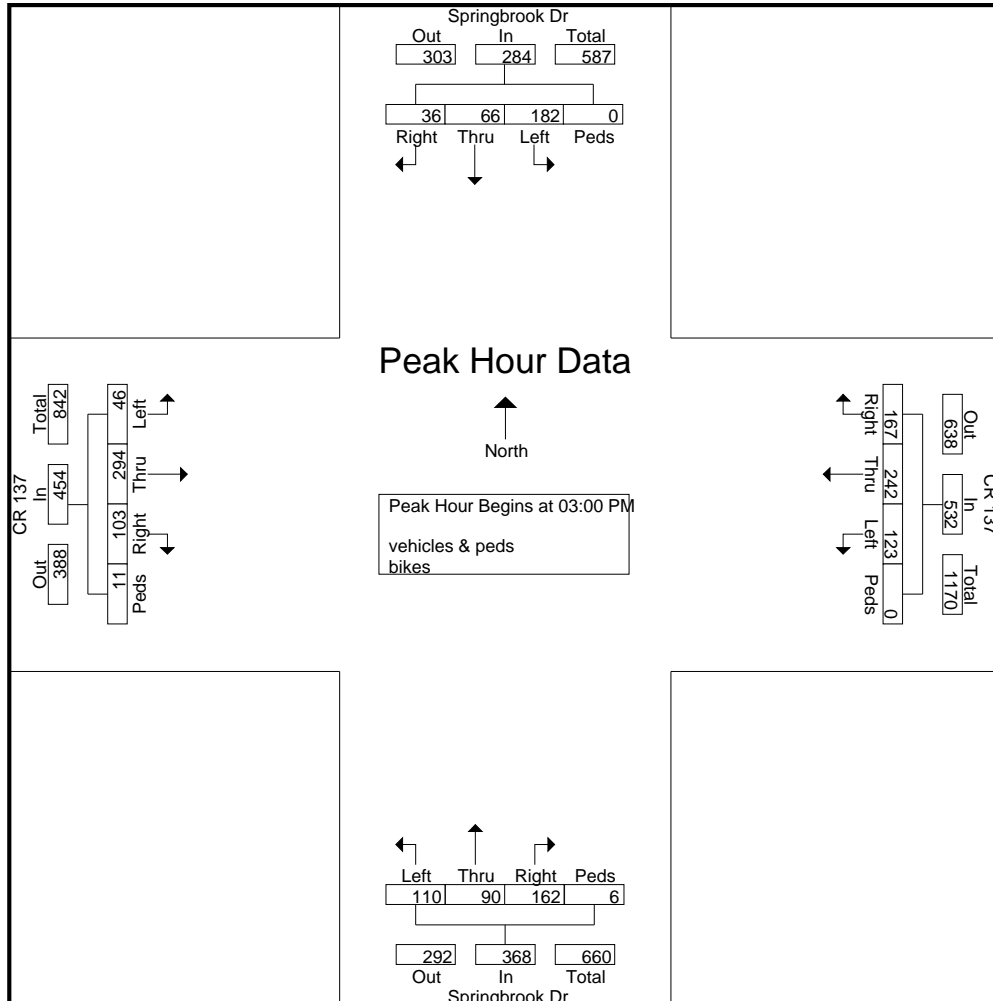
Groups Printed- vehicles & peds - bikes

Start Time	Springbrook Dr From North					CR 137 From East					Springbrook Dr From South					CR 137 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	8	15	42	0	65	36	63	32	0	131	40	20	26	1	87	22	60	14	3	99	382
03:15 PM	7	19	44	0	70	49	75	33	0	157	41	21	28	3	93	27	57	5	1	90	410
03:30 PM	7	16	47	0	70	47	47	24	0	118	36	24	28	2	90	29	120	15	2	166	444
03:45 PM	14	16	49	0	79	35	57	34	0	126	45	25	28	0	98	25	57	12	5	99	402
Total	36	66	182	0	284	167	242	123	0	532	162	90	110	6	368	103	294	46	11	454	1638
04:00 PM	16	29	65	0	110	43	35	19	0	97	54	18	28	0	100	30	79	13	2	124	431
04:15 PM	13	13	56	0	82	58	50	28	0	136	44	19	23	0	86	24	60	9	0	93	397
04:30 PM	12	18	50	1	81	48	50	39	0	137	49	27	38	0	114	30	80	10	1	121	453
04:45 PM	12	20	54	0	86	48	52	38	0	138	51	39	30	0	120	23	77	11	0	111	455
Total	53	80	225	1	359	197	187	124	0	508	198	103	119	0	420	107	296	43	3	449	1736
05:00 PM	16	17	67	0	100	55	50	41	0	146	42	21	26	2	91	22	44	10	1	77	414
05:15 PM	11	13	48	0	72	40	50	37	0	127	38	23	28	0	89	35	42	11	0	88	376
05:30 PM	13	9	53	0	75	43	42	31	0	116	52	24	20	2	98	18	46	10	2	76	365
05:45 PM	14	20	44	0	78	47	45	26	0	118	47	18	16	1	82	18	40	9	1	68	346
Total	54	59	212	0	325	185	187	135	0	507	179	86	90	5	360	93	172	40	4	309	1501
Grand Total	143	205	619	1	968	549	616	382	0	1547	539	279	319	11	1148	303	762	129	18	1212	4875
Apprch %	14.8	21.2	63.9	0.1		35.5	39.8	24.7	0		47	24.3	27.8	1		25	62.9	10.6	1.5		
Total %	2.9	4.2	12.7	0	19.9	11.3	12.6	7.8	0	31.7	11.1	5.7	6.5	0.2	23.5	6.2	15.6	2.6	0.4	24.9	
vehicles & peds	143	205	619	0	967	549	616	382	0	1547	539	279	319	11	1148	303	762	129	8	1202	4864
% vehicles & peds	100	100	100	0	99.9	100	100	100	0	100	100	100	100	100	100	100	100	100	44.4	99.2	99.8
bikes	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	11
% bikes	0	0	0	100	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	55.6	0.8	0.2

CR 137 & Springbrook Dr
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 1-CR 137 & Springbrook Dr-Thursday
Site Code : 1
Start Date : 10/5/2023
Page No : 2

Start Time	Springbrook Dr From North					CR 137 From East					Springbrook Dr From South					CR 137 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	8	15	42	0	65	36	63	32	0	131	40	20	26	1	87	22	60	14	3	99	382
03:15 PM	7	19	44	0	70	49	75	33	0	157	41	21	28	3	93	27	57	5	1	90	410
03:30 PM	7	16	47	0	70	47	47	24	0	118	36	24	28	2	90	29	120	15	2	166	444
03:45 PM	14	16	49	0	79	35	57	34	0	126	45	25	28	0	98	25	57	12	5	99	402
Total Volume	36	66	182	0	284	167	242	123	0	532	162	90	110	6	368	103	294	46	11	454	1638
% App. Total	12.7	23.2	64.1	0		31.4	45.5	23.1	0		44	24.5	29.9	1.6		22.7	64.8	10.1	2.4		
PHF	.643	.868	.929	.000	.899	.852	.807	.904	.000	.847	.900	.900	.982	.500	.939	.888	.613	.767	.550	.684	.922





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CR 137 & Springbrook Dr
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 1-CR 137 & Springbrook Dr-Saturday
 Site Code : 1
 Start Date : 10/14/2023
 Page No : 1

Groups Printed- vehicles & peds - bikes

Start Time	Springbrook Dr From North					CR 137 From East					Springbrook Dr From South					CR 137 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	10	21	46	0	77	50	53	38	2	143	55	17	21	1	94	21	32	13	1	67	381
01:15 PM	12	21	55	1	89	41	38	43	0	122	66	22	18	0	106	27	41	6	0	74	391
01:30 PM	15	15	56	0	86	46	39	49	0	134	51	19	19	1	90	28	31	7	0	66	376
01:45 PM	9	27	58	0	94	57	54	52	0	163	46	19	23	1	89	31	48	8	0	87	433
Total	46	84	215	1	346	194	184	182	2	562	218	77	81	3	379	107	152	34	1	294	1581
02:00 PM	11	22	59	0	92	48	45	46	0	139	46	18	18	1	83	31	35	17	0	83	397
02:15 PM	7	21	64	0	92	52	44	37	1	134	53	24	20	1	98	27	28	9	2	66	390
02:30 PM	13	24	63	0	100	53	37	46	0	136	45	22	28	1	96	28	28	12	0	68	400
02:45 PM	7	19	74	1	101	52	46	48	1	147	52	32	29	0	113	16	25	13	3	57	418
Total	38	86	260	1	385	205	172	177	2	556	196	96	95	3	390	102	116	51	5	274	1605
Grand Total	84	170	475	2	731	399	356	359	4	1118	414	173	176	6	769	209	268	85	6	568	3186
Apprch %	11.5	23.3	65	0.3		35.7	31.8	32.1	0.4		53.8	22.5	22.9	0.8		36.8	47.2	15	1.1		
Total %	2.6	5.3	14.9	0.1	22.9	12.5	11.2	11.3	0.1	35.1	13	5.4	5.5	0.2	24.1	6.6	8.4	2.7	0.2	17.8	
vehicles & peds	84	170	475	2	731	399	356	359	0	1114	414	173	176	3	766	209	268	85	6	568	3179
% vehicles & peds	100	100	100	100	100	100	100	100	0	99.6	100	100	100	50	99.6	100	100	100	100	100	99.8
bikes	0	0	0	0	0	0	0	0	4	4	0	0	0	3	3	0	0	0	0	0	7
% bikes	0	0	0	0	0	0	0	0	100	0.4	0	0	0	50	0.4	0	0	0	0	0	0.2

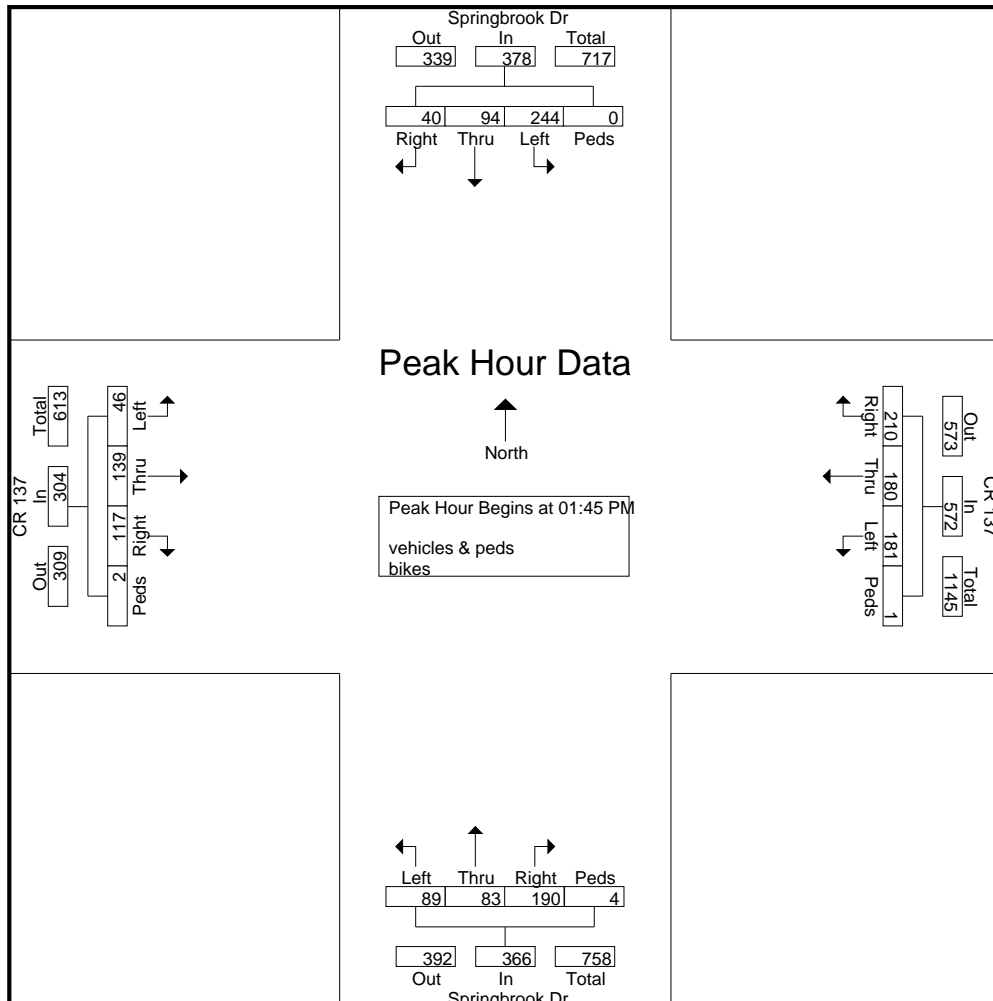


701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CR 137 & Springbrook Dr
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 1-CR 137 & Springbrook Dr-Saturday
 Site Code : 1
 Start Date : 10/14/2023
 Page No : 2

Start Time	Springbrook Dr From North					CR 137 From East					Springbrook Dr From South					CR 137 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:45 PM																					
01:45 PM	9	27	58	0	94	57	54	52	0	163	46	19	23	1	89	31	48	8	0	87	433
02:00 PM	11	22	59	0	92	48	45	46	0	139	46	18	18	1	83	31	35	17	0	83	397
02:15 PM	7	21	64	0	92	52	44	37	1	134	53	24	20	1	98	27	28	9	2	66	390
02:30 PM	13	24	63	0	100	53	37	46	0	136	45	22	28	1	96	28	28	12	0	68	400
Total Volume	40	94	244	0	378	210	180	181	1	572	190	83	89	4	366	117	139	46	2	304	1620
% App. Total	10.6	24.9	64.6	0		36.7	31.5	31.6	0.2		51.9	22.7	24.3	1.1		38.5	45.7	15.1	0.7		
PHF	.769	.870	.953	.000	.945	.921	.833	.870	.250	.877	.896	.865	.795	1.00	.934	.944	.724	.676	.250	.874	.935





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

TH 47 & 85th Ave
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 2-TH 47 & 85th Ave-Thursday
 Site Code : 2
 Start Date : 10/5/2023
 Page No : 1

Groups Printed- vehicles & peds - bikes

Start Time	TH 47 From North					85th Ave From East					TH 47 From South					85th Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	62	137	9	1	209	13	22	19	0	54	30	307	56	4	397	40	36	98	0	174	834
03:15 PM	72	172	10	0	254	12	33	18	0	63	30	259	47	2	338	29	39	70	0	138	793
03:30 PM	45	178	12	6	241	15	29	28	0	72	36	374	47	2	459	63	33	80	2	178	950
03:45 PM	50	164	13	2	229	17	32	31	0	80	28	296	45	2	371	69	42	93	2	206	886
Total	229	651	44	9	933	57	116	96	0	269	124	1236	195	10	1565	201	150	341	4	696	3463
04:00 PM	42	155	6	2	205	17	19	21	1	58	31	362	41	3	437	54	38	88	0	180	880
04:15 PM	58	177	13	1	249	15	40	16	0	71	32	309	56	0	397	49	33	60	3	145	862
04:30 PM	64	158	6	5	233	8	24	28	2	62	39	346	52	1	438	62	42	82	1	187	920
04:45 PM	65	174	12	2	253	10	36	20	1	67	27	287	52	0	366	57	39	82	0	178	864
Total	229	664	37	10	940	50	119	85	4	258	129	1304	201	4	1638	222	152	312	4	690	3526
05:00 PM	56	134	10	1	201	17	33	32	0	82	28	319	64	2	413	60	37	80	1	178	874
05:15 PM	66	173	9	3	251	18	26	22	0	66	33	269	41	0	343	48	31	64	1	144	804
05:30 PM	53	135	10	0	198	11	30	23	1	65	26	228	41	1	296	46	34	57	0	137	696
05:45 PM	43	133	9	0	185	14	21	34	0	69	27	172	51	0	250	44	44	65	1	154	658
Total	218	575	38	4	835	60	110	111	1	282	114	988	197	3	1302	198	146	266	3	613	3032
Grand Total	676	1890	119	23	2708	167	345	292	5	809	367	3528	593	17	4505	621	448	919	11	1999	10021
Apprch %	25	69.8	4.4	0.8		20.6	42.6	36.1	0.6		8.1	78.3	13.2	0.4		31.1	22.4	46	0.6		
Total %	6.7	18.9	1.2	0.2	27	1.7	3.4	2.9	0	8.1	3.7	35.2	5.9	0.2	45	6.2	4.5	9.2	0.1	19.9	
vehicles & peds	676	1890	119	19	2704	167	345	292	4	808	367	3528	593	16	4504	621	448	919	8	1996	10012
% vehicles & peds	100	100	100	82.6	99.9	100	100	100	80	99.9	100	100	100	94.1	100	100	100	100	72.7	99.8	99.9
bikes	0	0	0	4	4	0	0	0	1	1	0	0	0	1	1	0	0	0	3	3	9
% bikes	0	0	0	17.4	0.1	0	0	0	20	0.1	0	0	0	5.9	0	0	0	0	27.3	0.2	0.1

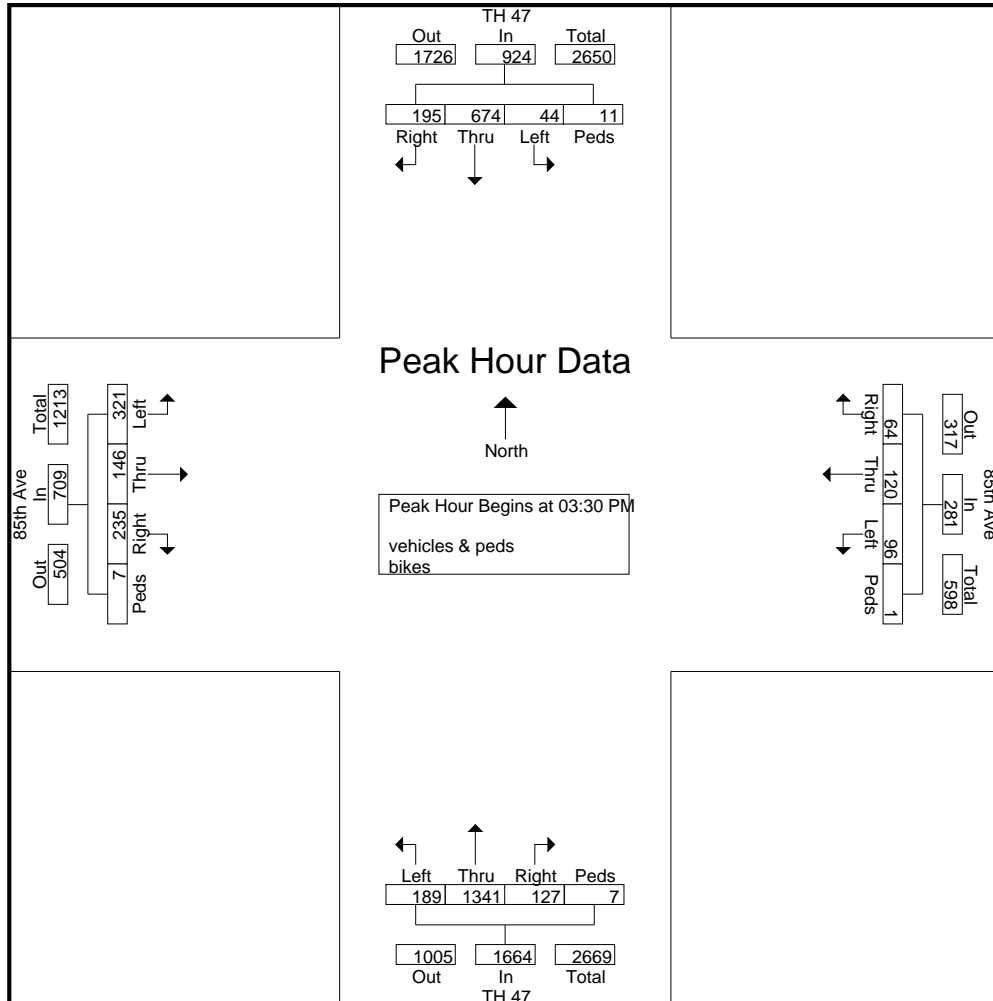


701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

TH 47 & 85th Ave
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 2-TH 47 & 85th Ave-Thursday
 Site Code : 2
 Start Date : 10/5/2023
 Page No : 2

Start Time	TH 47 From North					85th Ave From East					TH 47 From South					85th Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:30 PM																					
03:30 PM	45	178	12	6	241	15	29	28	0	72	36	374	47	2	459	63	33	80	2	178	950
03:45 PM	50	164	13	2	229	17	32	31	0	80	28	296	45	2	371	69	42	93	2	206	886
04:00 PM	42	155	6	2	205	17	19	21	1	58	31	362	41	3	437	54	38	88	0	180	880
04:15 PM	58	177	13	1	249	15	40	16	0	71	32	309	56	0	397	49	33	60	3	145	862
Total Volume	195	674	44	11	924	64	120	96	1	281	127	1341	189	7	1664	235	146	321	7	709	3578
% App. Total	21.1	72.9	4.8	1.2		22.8	42.7	34.2	0.4		7.6	80.6	11.4	0.4		33.1	20.6	45.3	1		
PHF	.841	.947	.846	.458	.928	.941	.750	.774	.250	.878	.882	.896	.844	.583	.906	.851	.869	.863	.583	.860	.942





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

TH 47 & 85th Ave
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 2-TH 47 & 85th Ave-Saturday
 Site Code : 2
 Start Date : 10/7/2023
 Page No : 1

Groups Printed- vehicles & peds - bikes

Start Time	TH 47 From North					85th Ave From East					TH 47 From South					85th Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	63	167	17	2	249	15	38	39	0	92	35	151	37	1	224	54	43	54	0	151	716
01:15 PM	60	160	23	1	244	11	34	28	0	73	31	212	35	1	279	54	35	57	1	147	743
01:30 PM	48	146	17	5	216	15	37	26	0	78	42	202	60	5	309	43	40	70	4	157	760
01:45 PM	64	156	21	4	245	19	40	37	0	96	42	178	65	0	285	44	41	62	1	148	774
Total	235	629	78	12	954	60	149	130	0	339	150	743	197	7	1097	195	159	243	6	603	2993
02:00 PM	55	211	17	3	286	16	39	38	3	96	48	167	55	3	273	46	41	55	1	143	798
02:15 PM	53	174	21	2	250	19	43	31	1	94	54	183	51	3	291	57	35	57	1	150	785
02:30 PM	49	174	28	3	254	10	45	43	0	98	36	173	43	1	253	46	43	61	3	153	758
02:45 PM	52	163	27	3	245	26	45	31	0	102	39	198	62	1	300	41	36	60	2	139	786
Total	209	722	93	11	1035	71	172	143	4	390	177	721	211	8	1117	190	155	233	7	585	3127
Grand Total	444	1351	171	23	1989	131	321	273	4	729	327	1464	408	15	2214	385	314	476	13	1188	6120
Apprch %	22.3	67.9	8.6	1.2		18	44	37.4	0.5		14.8	66.1	18.4	0.7		32.4	26.4	40.1	1.1		
Total %	7.3	22.1	2.8	0.4	32.5	2.1	5.2	4.5	0.1	11.9	5.3	23.9	6.7	0.2	36.2	6.3	5.1	7.8	0.2	19.4	
vehicles & peds	444	1351	171	18	1984	131	321	273	3	728	327	1464	408	11	2210	385	314	476	11	1186	6108
% vehicles & peds	100	100	100	78.3	99.7	100	100	100	75	99.9	100	100	100	73.3	99.8	100	100	100	84.6	99.8	99.8
bikes	0	0	0	5	5	0	0	0	1	1	0	0	0	4	4	0	0	0	2	2	12
% bikes	0	0	0	21.7	0.3	0	0	0	25	0.1	0	0	0	26.7	0.2	0	0	0	15.4	0.2	0.2

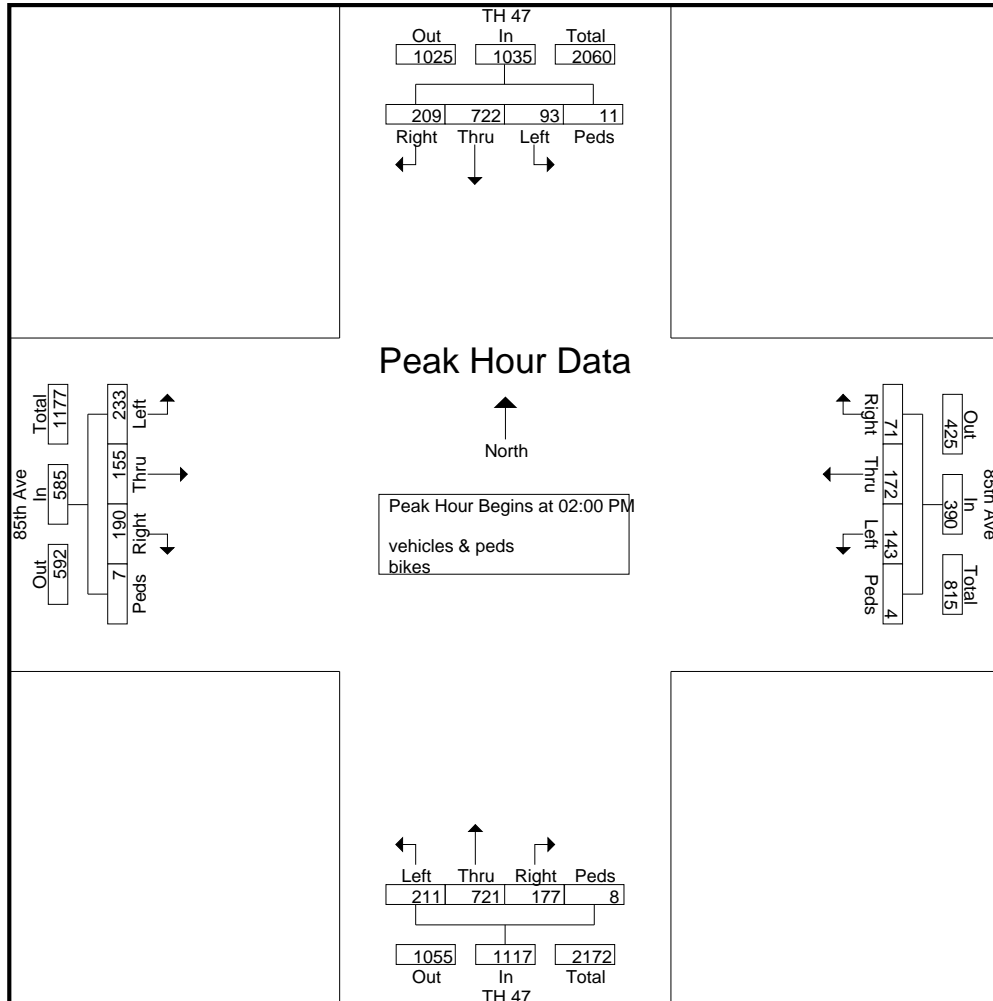


701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

TH 47 & 85th Ave
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 2-TH 47 & 85th Ave-Saturday
 Site Code : 2
 Start Date : 10/7/2023
 Page No : 2

Start Time	TH 47 From North					85th Ave From East					TH 47 From South					85th Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:00 PM																					
02:00 PM	55	211	17	3	286	16	39	38	3	96	48	167	55	3	273	46	41	55	1	143	798
02:15 PM	53	174	21	2	250	19	43	31	1	94	54	183	51	3	291	57	35	57	1	150	785
02:30 PM	49	174	28	3	254	10	45	43	0	98	36	173	43	1	253	46	43	61	3	153	758
02:45 PM	52	163	27	3	245	26	45	31	0	102	39	198	62	1	300	41	36	60	2	139	786
Total Volume	209	722	93	11	1035	71	172	143	4	390	177	721	211	8	1117	190	155	233	7	585	3127
% App. Total	20.2	69.8	9	1.1		18.2	44.1	36.7	1		15.8	64.5	18.9	0.7		32.5	26.5	39.8	1.2		
PHF	.950	.855	.830	.917	.905	.683	.956	.831	.333	.956	.819	.910	.851	.667	.931	.833	.901	.955	.583	.956	.980





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

TH 47 & CSAH 3
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 3-CSAH 47 & CSAH 3-Thursday
 Site Code : 3
 Start Date : 10/5/2023
 Page No : 1

Groups Printed- vehicles & peds - bikes

Start Time	TH 47 From North					CSAH 3 From East					TH 47 From South					From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	0	143	0	0	143	15	0	83	0	98	124	283	0	0	407	0	0	0	0	0	648
03:15 PM	0	176	0	1	177	23	0	83	0	106	101	247	0	1	349	0	0	0	0	0	632
03:30 PM	0	162	0	0	162	24	0	67	0	91	132	326	0	0	458	0	0	0	0	0	711
03:45 PM	0	146	0	0	146	14	0	81	0	95	131	289	0	0	420	0	0	0	0	0	661
Total	0	627	0	1	628	76	0	314	0	390	488	1145	0	1	1634	0	0	0	0	0	2652
04:00 PM	0	143	0	2	145	29	0	87	0	116	135	333	0	0	468	0	0	0	0	0	729
04:15 PM	0	143	0	0	143	18	0	82	0	100	118	272	0	0	390	0	0	0	0	0	633
04:30 PM	0	133	0	0	133	17	0	94	0	111	137	290	0	0	427	0	0	0	0	0	671
04:45 PM	0	166	0	0	166	26	0	83	0	109	117	260	0	0	377	0	0	0	0	0	652
Total	0	585	0	2	587	90	0	346	0	436	507	1155	0	0	1662	0	0	0	0	0	2685
05:00 PM	0	145	0	1	146	27	0	80	0	107	119	284	0	0	403	0	0	0	0	0	656
05:15 PM	0	147	0	0	147	16	0	84	0	100	123	238	0	0	361	0	0	0	0	0	608
05:30 PM	0	125	0	0	125	18	0	75	0	93	93	202	0	0	295	0	0	0	0	0	513
05:45 PM	0	113	0	2	115	17	0	70	0	87	90	162	0	0	252	0	0	0	0	0	454
Total	0	530	0	3	533	78	0	309	0	387	425	886	0	0	1311	0	0	0	0	0	2231
Grand Total	0	1742	0	6	1748	244	0	969	0	1213	1420	3186	0	1	4607	0	0	0	0	0	7568
Apprch %	0	99.7	0	0.3		20.1	0	79.9	0		30.8	69.2	0	0		0	0	0	0		
Total %	0	23	0	0.1	23.1	3.2	0	12.8	0	16	18.8	42.1	0	0	60.9	0	0	0	0	0	
vehicles & peds	0	1742	0	3	1745	244	0	969	0	1213	1420	3186	0	1	4607	0	0	0	0	0	7565
% vehicles & peds	0	100	0	50	99.8	100	0	100	0	100	100	100	0	100	100	0	0	0	0	0	100
bikes	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
% bikes	0	0	0	50	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

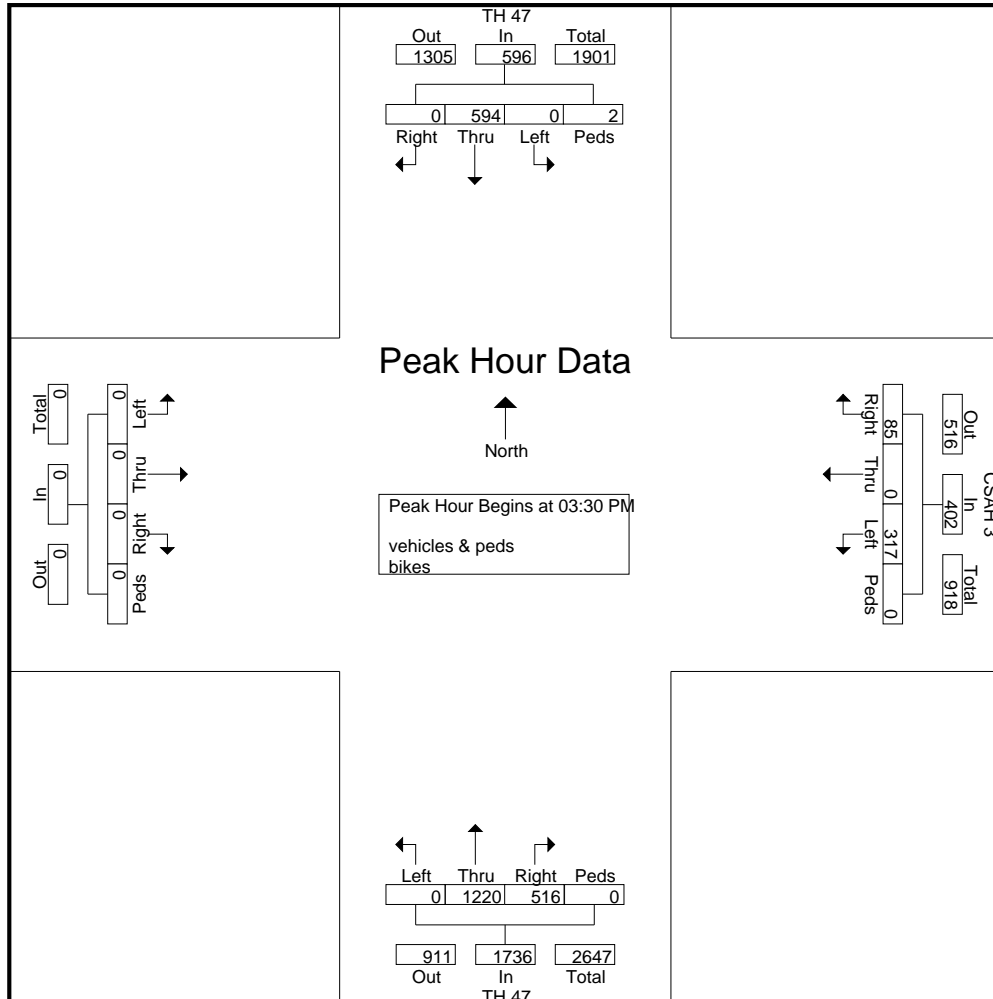
wsb

701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

TH 47 & CSAH 3
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 3-CSAH 47 & CSAH 3-Thursday
 Site Code : 3
 Start Date : 10/5/2023
 Page No : 2

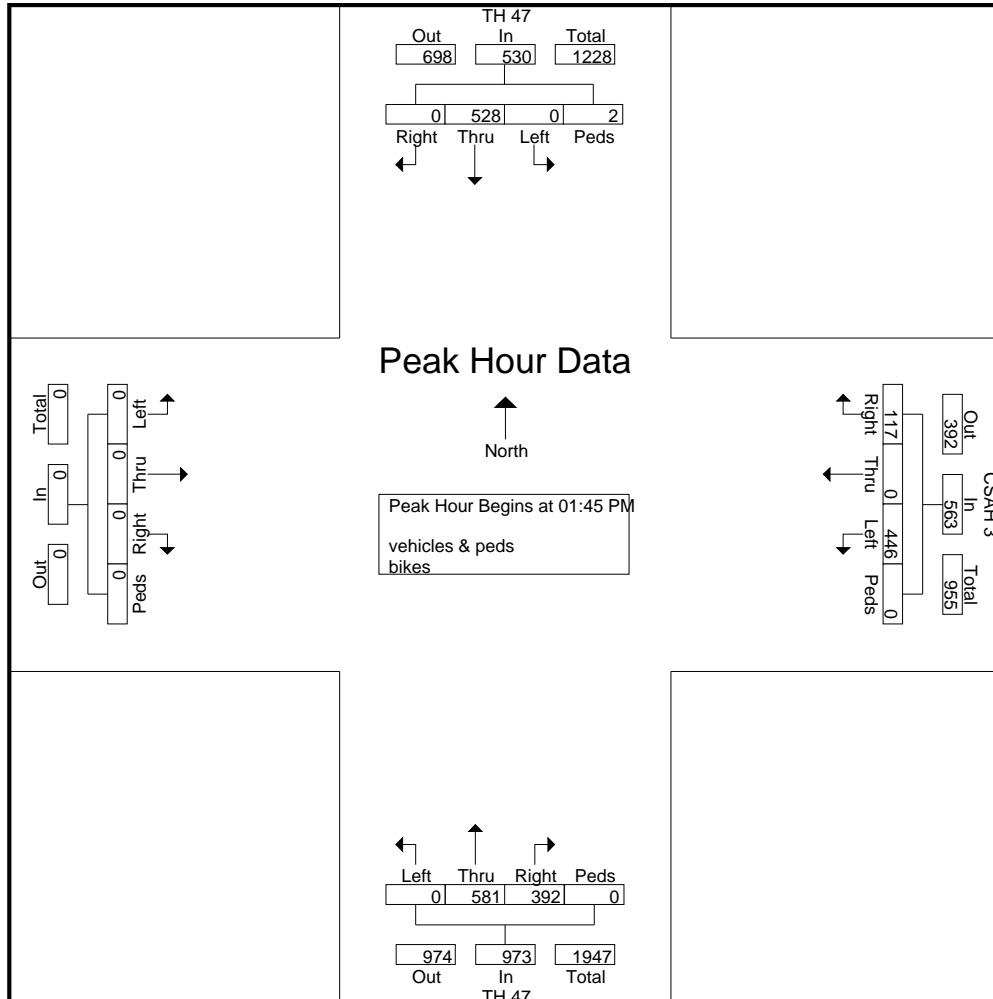
Start Time	TH 47 From North					CSAH 3 From East					TH 47 From South					From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:30 PM																					
03:30 PM	0	162	0	0	162	24	0	67	0	91	132	326	0	0	458	0	0	0	0	0	711
03:45 PM	0	146	0	0	146	14	0	81	0	95	131	289	0	0	420	0	0	0	0	0	661
04:00 PM	0	143	0	2	145	29	0	87	0	116	135	333	0	0	468	0	0	0	0	0	729
04:15 PM	0	143	0	0	143	18	0	82	0	100	118	272	0	0	390	0	0	0	0	0	633
Total Volume	0	594	0	2	596	85	0	317	0	402	516	1220	0	0	1736	0	0	0	0	0	2734
% App. Total	0	99.7	0	0.3		21.1	0	78.9	0		29.7	70.3	0	0		0	0	0	0		
PHF	.000	.917	.000	.250	.920	.733	.000	.911	.000	.866	.956	.916	.000	.000	.927	.000	.000	.000	.000	.000	.938



TH 47 & CSAH 3
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 3-TH 47 & CSAH 3-Saturday
 Site Code : 3
 Start Date : 10/14/2023
 Page No : 2

Start Time	TH 47 From North					CSAH 3 From East					TH 47 From South					From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:45 PM																					
01:45 PM	0	124	0	1	125	32	0	112	0	144	94	169	0	0	263	0	0	0	0	0	532
02:00 PM	0	135	0	0	135	27	0	121	0	148	97	112	0	0	209	0	0	0	0	0	492
02:15 PM	0	143	0	1	144	31	0	113	0	144	92	153	0	0	245	0	0	0	0	0	533
02:30 PM	0	126	0	0	126	27	0	100	0	127	109	147	0	0	256	0	0	0	0	0	509
Total Volume	0	528	0	2	530	117	0	446	0	563	392	581	0	0	973	0	0	0	0	0	2066
% App. Total	0	99.6	0	0.4		20.8	0	79.2	0		40.3	59.7	0	0		0	0	0	0		
PHF	.000	.923	.000	.500	.920	.914	.000	.921	.000	.951	.899	.859	.000	.000	.925	.000	.000	.000	.000	.000	.969





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 3 & 86th Ln
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 4-CSAH 3 & 86th Ln-Thursday
 Site Code : 4
 Start Date : 10/5/2023
 Page No : 1

Groups Printed- vehicles & peds - bikes

Start Time	86th Ln From North					CSAH 3 From East					86th Ln From South					CSAH 3 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	13	1	27	0	41	9	79	19	1	108	22	4	7	0	33	3	105	11	0	119	301
03:15 PM	12	1	13	0	26	12	80	32	2	126	26	9	4	1	40	4	93	9	2	108	300
03:30 PM	14	2	18	0	34	12	62	30	1	105	25	4	9	0	38	3	114	13	1	131	308
03:45 PM	9	2	22	0	33	16	79	31	1	127	32	0	7	1	40	6	120	16	0	142	342
Total	48	6	80	0	134	49	300	112	5	466	105	17	27	2	151	16	432	49	3	500	1251
04:00 PM	19	5	26	0	50	3	77	30	2	112	35	2	10	1	48	4	117	7	2	130	340
04:15 PM	16	1	19	0	36	10	79	25	0	114	25	5	10	3	43	5	108	16	4	133	326
04:30 PM	13	5	24	1	43	11	78	27	1	117	26	6	10	0	42	4	116	17	1	138	340
04:45 PM	15	3	25	1	44	8	77	27	1	113	33	5	15	1	54	3	107	14	1	125	336
Total	63	14	94	2	173	32	311	109	4	456	119	18	45	5	187	16	448	54	8	526	1342
05:00 PM	16	4	21	0	41	8	71	20	0	99	43	5	8	0	56	4	97	15	1	117	313
05:15 PM	11	4	16	0	31	5	74	18	0	97	21	4	11	0	36	1	113	12	1	127	291
05:30 PM	14	4	21	0	39	12	55	18	0	85	16	1	8	0	25	2	83	8	0	93	242
05:45 PM	15	2	25	1	43	13	66	30	0	109	22	7	9	0	38	5	75	12	0	92	282
Total	56	14	83	1	154	38	266	86	0	390	102	17	36	0	155	12	368	47	2	429	1128
Grand Total	167	34	257	3	461	119	877	307	9	1312	326	52	108	7	493	44	1248	150	13	1455	3721
Apprch %	36.2	7.4	55.7	0.7		9.1	66.8	23.4	0.7		66.1	10.5	21.9	1.4		3	85.8	10.3	0.9		
Total %	4.5	0.9	6.9	0.1	12.4	3.2	23.6	8.3	0.2	35.3	8.8	1.4	2.9	0.2	13.2	1.2	33.5	4	0.3	39.1	
vehicles & peds	167	34	257	0	458	119	877	307	5	1308	326	52	108	4	490	44	1248	150	8	1450	3706
% vehicles & peds	100	100	100	0	99.3	100	100	100	55.6	99.7	100	100	100	57.1	99.4	100	100	100	61.5	99.7	99.6
bikes	0	0	0	3	3	0	0	0	4	4	0	0	0	3	3	0	0	0	5	5	15
% bikes	0	0	0	100	0.7	0	0	0	44.4	0.3	0	0	0	42.9	0.6	0	0	0	38.5	0.3	0.4

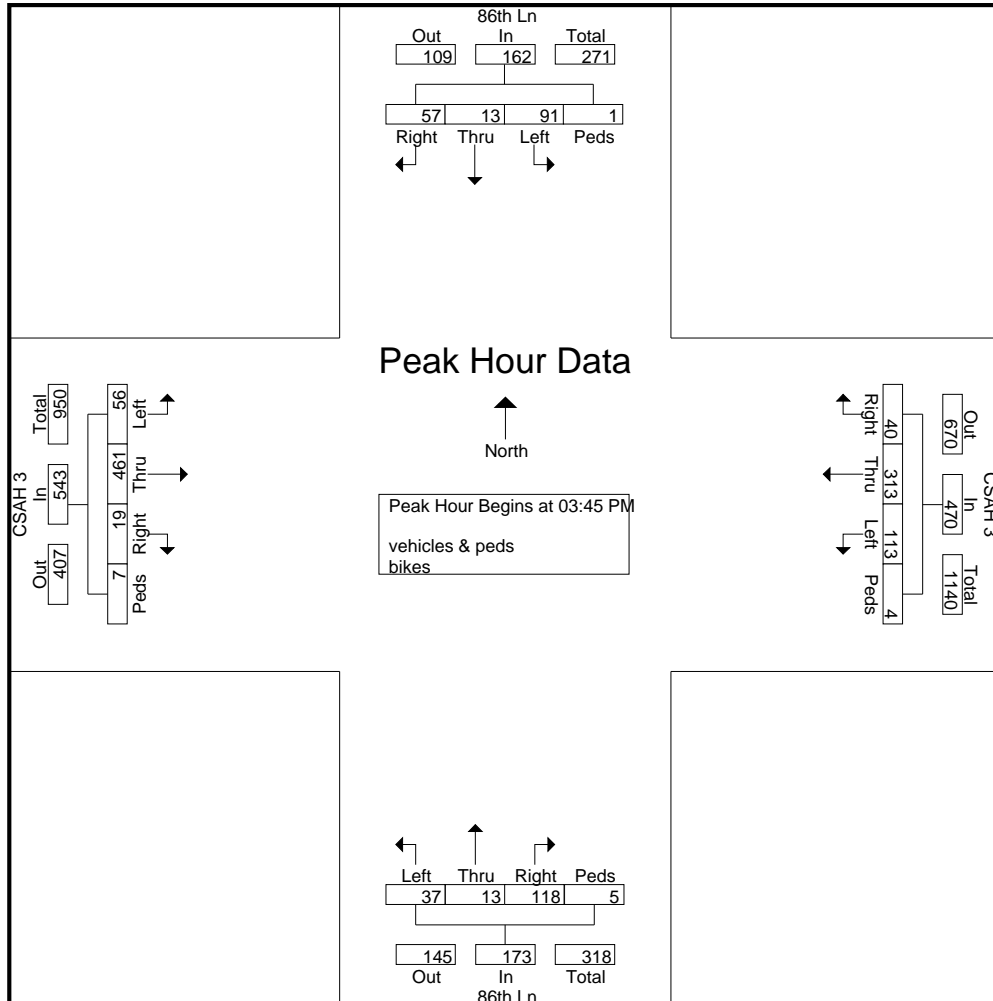


701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 3 & 86th Ln
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 4-CSAH 3 & 86th Ln-Thursday
 Site Code : 4
 Start Date : 10/5/2023
 Page No : 2

Start Time	86th Ln From North					CSAH 3 From East					86th Ln From South					CSAH 3 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	9	2	22	0	33	16	79	31	1	127	32	0	7	1	40	6	120	16	0	142	342
04:00 PM	19	5	26	0	50	3	77	30	2	112	35	2	10	1	48	4	117	7	2	130	340
04:15 PM	16	1	19	0	36	10	79	25	0	114	25	5	10	3	43	5	108	16	4	133	326
04:30 PM	13	5	24	1	43	11	78	27	1	117	26	6	10	0	42	4	116	17	1	138	340
Total Volume	57	13	91	1	162	40	313	113	4	470	118	13	37	5	173	19	461	56	7	543	1348
% App. Total	35.2	8	56.2	0.6		8.5	66.6	24	0.9		68.2	7.5	21.4	2.9		3.5	84.9	10.3	1.3		
PHF	.750	.650	.875	.250	.810	.625	.991	.911	.500	.925	.843	.542	.925	.417	.901	.792	.960	.824	.438	.956	.985





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 3 & 86th Ln
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 4-CSAH 3 & 86th Ln-Saturday
 Site Code : 4
 Start Date : 10/14/2023
 Page No : 1

Groups Printed- vehicles & peds - bikes

Start Time	86th Ln From North					CSAH 3 From East					86th Ln From South					CSAH 3 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	17	3	28	0	48	13	115	30	1	159	41	10	16	0	67	3	89	15	0	107	381
01:15 PM	18	5	24	0	47	18	88	40	0	146	29	1	7	0	37	0	71	11	9	91	321
01:30 PM	10	1	29	1	41	13	88	34	0	135	40	6	12	0	58	6	64	15	3	88	322
01:45 PM	24	6	27	0	57	28	107	30	0	165	49	7	12	0	68	3	86	10	0	99	389
Total	69	15	108	1	193	72	398	134	1	605	159	24	47	0	230	12	310	51	12	385	1413
02:00 PM	20	7	37	1	65	16	119	38	1	174	31	5	17	0	53	4	72	15	0	91	383
02:15 PM	14	5	27	0	46	22	113	33	0	168	39	8	15	0	62	1	66	19	2	88	364
02:30 PM	30	4	32	1	67	16	94	29	0	139	33	6	9	0	48	7	99	13	4	123	377
02:45 PM	18	6	30	0	54	19	84	48	1	152	48	9	10	0	67	4	94	13	0	111	384
Total	82	22	126	2	232	73	410	148	2	633	151	28	51	0	230	16	331	60	6	413	1508
Grand Total	151	37	234	3	425	145	808	282	3	1238	310	52	98	0	460	28	641	111	18	798	2921
Apprch %	35.5	8.7	55.1	0.7		11.7	65.3	22.8	0.2		67.4	11.3	21.3	0		3.5	80.3	13.9	2.3		
Total %	5.2	1.3	8	0.1	14.5	5	27.7	9.7	0.1	42.4	10.6	1.8	3.4	0	15.7	1	21.9	3.8	0.6	27.3	
vehicles & peds	151	37	234	0	422	145	808	282	2	1237	310	52	98	0	460	28	641	111	17	797	2916
% vehicles & peds	100	100	100	0	99.3	100	100	100	66.7	99.9	100	100	100	0	100	100	100	100	94.4	99.9	99.8
bikes	0	0	0	3	3	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	5
% bikes	0	0	0	100	0.7	0	0	0	33.3	0.1	0	0	0	0	0	0	0	0	5.6	0.1	0.2

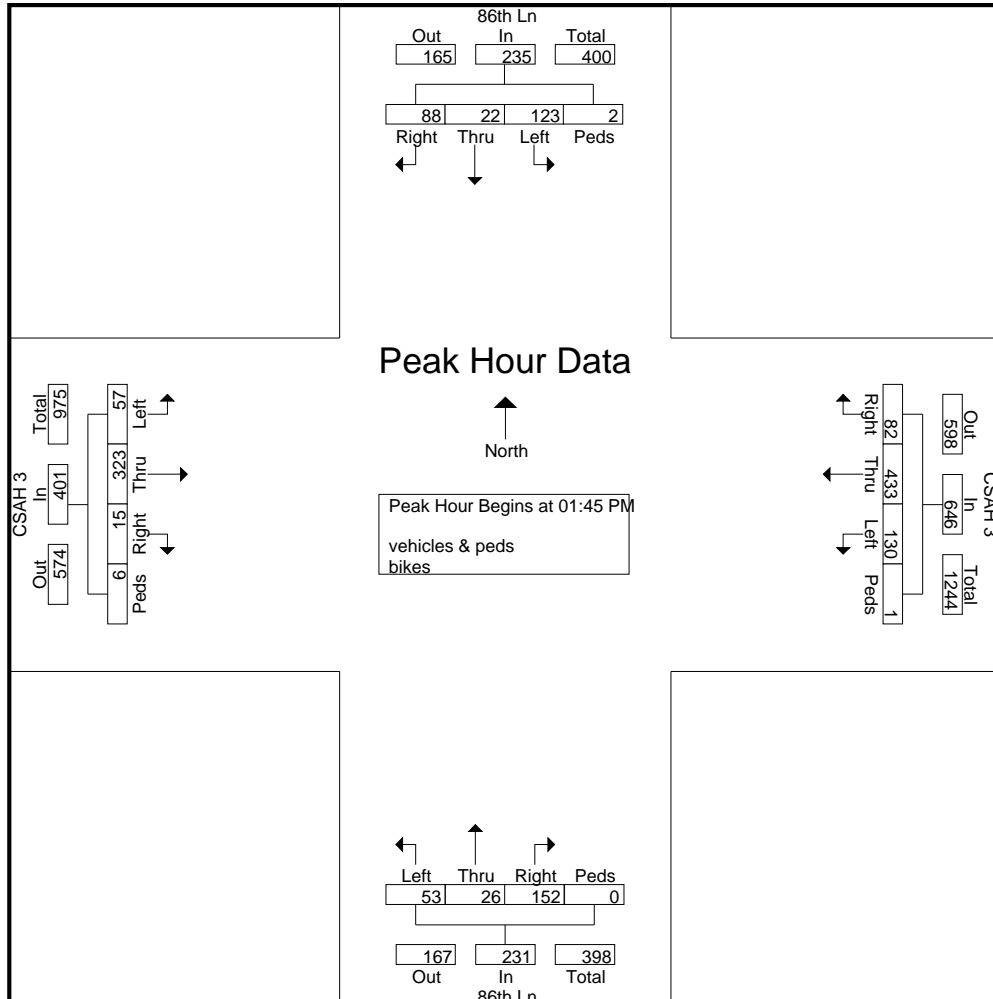


701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 3 & 86th Ln
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 4-CSAH 3 & 86th Ln-Saturday
 Site Code : 4
 Start Date : 10/14/2023
 Page No : 2

Start Time	86th Ln From North					CSAH 3 From East					86th Ln From South					CSAH 3 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:45 PM																					
01:45 PM	24	6	27	0	57	28	107	30	0	165	49	7	12	0	68	3	86	10	0	99	389
02:00 PM	20	7	37	1	65	16	119	38	1	174	31	5	17	0	53	4	72	15	0	91	383
02:15 PM	14	5	27	0	46	22	113	33	0	168	39	8	15	0	62	1	66	19	2	88	364
02:30 PM	30	4	32	1	67	16	94	29	0	139	33	6	9	0	48	7	99	13	4	123	377
Total Volume	88	22	123	2	235	82	433	130	1	646	152	26	53	0	231	15	323	57	6	401	1513
% App. Total	37.4	9.4	52.3	0.9		12.7	67	20.1	0.2		65.8	11.3	22.9	0		3.7	80.5	14.2	1.5		
PHF	.733	.786	.831	.500	.877	.732	.910	.855	.250	.928	.776	.813	.779	.000	.849	.536	.816	.750	.375	.815	.972



wsb

701 Xenia Ave S, Suite 300
Minneapolis, MN 55416

CSAH 10 & CSAH 3
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 5-CSAH 10 & CSAH 3-Thursday
Site Code : 5
Start Date : 10/5/2023
Page No : 1

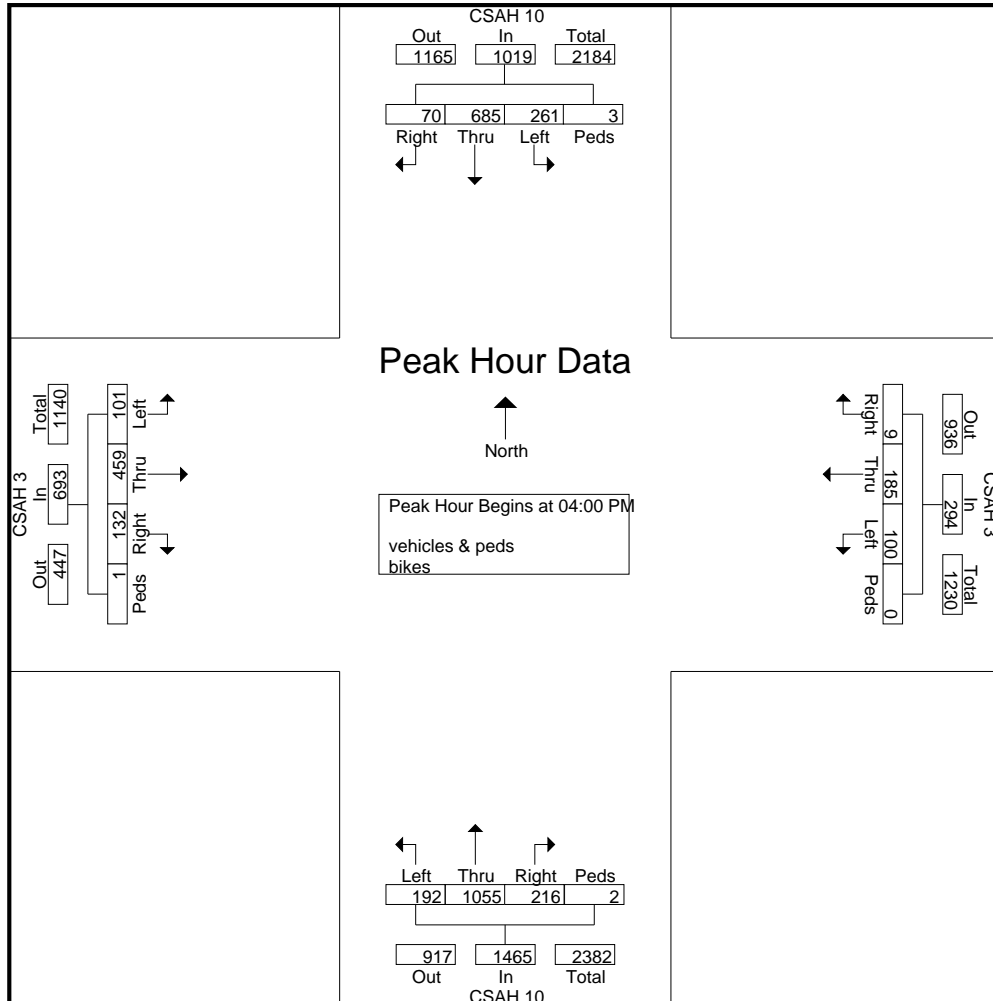
Groups Printed- vehicles & peds - bikes

Start Time	CSAH 10 From North					CSAH 3 From East					CSAH 10 From South					CSAH 3 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	15	131	64	0	210	3	50	24	1	78	34	169	48	0	251	20	114	29	0	163	702
03:15 PM	12	130	56	1	199	2	39	30	0	71	34	221	67	0	322	28	93	20	1	142	734
03:30 PM	16	182	68	1	267	2	42	23	1	68	35	209	45	3	292	24	116	11	0	151	778
03:45 PM	19	174	71	0	264	1	45	21	1	68	44	225	66	0	335	28	139	10	0	177	844
Total	62	617	259	2	940	8	176	98	3	285	147	824	226	3	1200	100	462	70	1	633	3058
04:00 PM	18	155	63	0	236	2	43	28	0	73	55	262	48	0	365	27	143	26	0	196	870
04:15 PM	21	186	74	1	282	0	43	20	0	63	51	283	43	1	378	31	93	26	1	151	874
04:30 PM	19	181	60	1	261	7	49	22	0	78	61	249	51	0	361	35	110	29	0	174	874
04:45 PM	12	163	64	1	240	0	50	30	0	80	49	261	50	1	361	39	113	20	0	172	853
Total	70	685	261	3	1019	9	185	100	0	294	216	1055	192	2	1465	132	459	101	1	693	3471
05:00 PM	7	149	58	1	215	4	38	24	1	67	54	212	58	1	325	33	100	26	0	159	766
05:15 PM	10	120	44	0	174	2	45	23	0	70	41	224	51	0	316	31	115	11	0	157	717
05:30 PM	9	134	45	0	188	4	35	29	0	68	27	209	38	2	276	24	90	11	0	125	657
05:45 PM	16	109	35	0	160	4	40	23	0	67	40	144	48	0	232	34	83	14	0	131	590
Total	42	512	182	1	737	14	158	99	1	272	162	789	195	3	1149	122	388	62	0	572	2730
Grand Total	174	1814	702	6	2696	31	519	297	4	851	525	2668	613	8	3814	354	1309	233	2	1898	9259
Apprch %	6.5	67.3	26	0.2		3.6	61	34.9	0.5		13.8	70	16.1	0.2		18.7	69	12.3	0.1		
Total %	1.9	19.6	7.6	0.1	29.1	0.3	5.6	3.2	0	9.2	5.7	28.8	6.6	0.1	41.2	3.8	14.1	2.5	0	20.5	
vehicles & peds	174	1814	702	2	2692	31	519	297	3	850	525	2668	613	7	3813	354	1309	233	0	1896	9251
% vehicles & peds	100	100	100	33.3	99.9	100	100	100	75	99.9	100	100	100	87.5	100	100	100	100	0	99.9	99.9
bikes	0	0	0	4	4	0	0	0	1	1	0	0	0	1	1	0	0	0	2	2	8
% bikes	0	0	0	66.7	0.1	0	0	0	25	0.1	0	0	0	12.5	0	0	0	0	100	0.1	0.1

CSAH 10 & CSAH 3
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 5-CSAH 10 & CSAH 3-Thursday
Site Code : 5
Start Date : 10/5/2023
Page No : 2

Start Time	CSAH 10 From North					CSAH 3 From East					CSAH 10 From South					CSAH 3 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	18	155	63	0	236	2	43	28	0	73	55	262	48	0	365	27	143	26	0	196	870
04:15 PM	21	186	74	1	282	0	43	20	0	63	51	283	43	1	378	31	93	26	1	151	874
04:30 PM	19	181	60	1	261	7	49	22	0	78	61	249	51	0	361	35	110	29	0	174	874
04:45 PM	12	163	64	1	240	0	50	30	0	80	49	261	50	1	361	39	113	20	0	172	853
Total Volume	70	685	261	3	1019	9	185	100	0	294	216	1055	192	2	1465	132	459	101	1	693	3471
% App. Total	6.9	67.2	25.6	0.3		3.1	62.9	34	0		14.7	72	13.1	0.1		19	66.2	14.6	0.1		
PHF	.833	.921	.882	.750	.903	.321	.925	.833	.000	.919	.885	.932	.941	.500	.969	.846	.802	.871	.250	.884	.993





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 10 & CSAH 3
 1-3pm
 vehicles,peds,bikes
 Thursday

File Name : site 5-CSAH 10 & CSAH 3-Saturday
 Site Code : 5
 Start Date : 10/7/2023
 Page No : 1

Groups Printed- vehicles & peds - bikes

Start Time	CSAH 10 From North					CSAH 3 From East					CSAH 10 From South					CSAH 3 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	17	105	37	1	160	4	62	39	0	105	77	149	80	0	306	27	84	31	0	142	713
01:15 PM	17	135	30	0	182	5	59	41	1	106	59	130	48	1	238	35	111	28	0	174	700
01:30 PM	14	121	43	0	178	3	63	42	0	108	77	137	62	1	277	26	111	28	0	165	728
01:45 PM	13	108	37	0	158	8	63	40	1	112	72	163	86	1	322	33	111	32	0	176	768
Total	61	469	147	1	678	20	247	162	2	431	285	579	276	3	1143	121	417	119	0	657	2909
02:00 PM	23	106	37	1	167	7	56	26	0	89	68	159	83	2	312	35	99	32	0	166	734
02:15 PM	17	104	36	0	157	1	66	41	0	108	59	158	85	0	302	30	95	25	0	150	717
02:30 PM	15	107	48	1	171	0	54	33	0	87	54	151	76	0	281	29	89	27	0	145	684
02:45 PM	21	112	36	0	169	4	56	46	0	106	71	143	62	6	282	32	105	37	1	175	732
Total	76	429	157	2	664	12	232	146	0	390	252	611	306	8	1177	126	388	121	1	636	2867
Grand Total	137	898	304	3	1342	32	479	308	2	821	537	1190	582	11	2320	247	805	240	1	1293	5776
Apprch %	10.2	66.9	22.7	0.2		3.9	58.3	37.5	0.2		23.1	51.3	25.1	0.5		19.1	62.3	18.6	0.1		
Total %	2.4	15.5	5.3	0.1	23.2	0.6	8.3	5.3	0	14.2	9.3	20.6	10.1	0.2	40.2	4.3	13.9	4.2	0	22.4	
vehicles & peds	137	898	304	0	1339	32	479	308	2	821	537	1190	582	7	2316	247	805	240	1	1293	5769
% vehicles & peds	100	100	100	0	99.8	100	100	100	100	100	100	100	100	63.6	99.8	100	100	100	100	100	99.9
bikes	0	0	0	3	3	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	7
% bikes	0	0	0	100	0.2	0	0	0	0	0	0	0	0	36.4	0.2	0	0	0	0	0	0.1

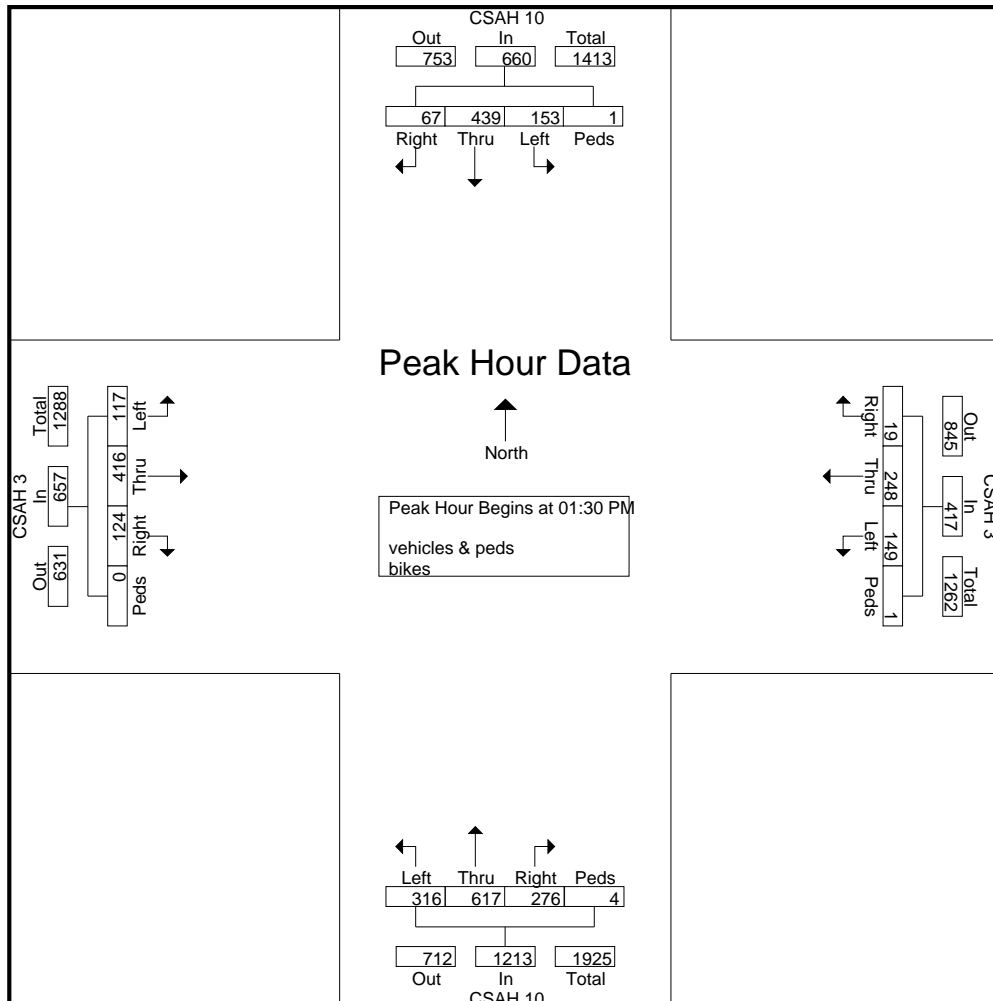


701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 10 & CSAH 3
 1-3pm
 vehicles,peds,bikes
 Thursday

File Name : site 5-CSAH 10 & CSAH 3-Saturday
 Site Code : 5
 Start Date : 10/7/2023
 Page No : 2

Start Time	CSAH 10 From North					CSAH 3 From East					CSAH 10 From South					CSAH 3 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:30 PM																					
01:30 PM	14	121	43	0	178	3	63	42	0	108	77	137	62	1	277	26	111	28	0	165	728
01:45 PM	13	108	37	0	158	8	63	40	1	112	72	163	86	1	322	33	111	32	0	176	768
02:00 PM	23	106	37	1	167	7	56	26	0	89	68	159	83	2	312	35	99	32	0	166	734
02:15 PM	17	104	36	0	157	1	66	41	0	108	59	158	85	0	302	30	95	25	0	150	717
Total Volume	67	439	153	1	660	19	248	149	1	417	276	617	316	4	1213	124	416	117	0	657	2947
% App. Total	10.2	66.5	23.2	0.2		4.6	59.5	35.7	0.2		22.8	50.9	26.1	0.3		18.9	63.3	17.8	0		
PHF	.728	.907	.890	.250	.927	.594	.939	.887	.250	.931	.896	.946	.919	.500	.942	.886	.937	.914	.000	.933	.959



wsb

701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 51 & 89th Ave
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 6-CSAH 51 & 89th Ave - Thursday-redo
 Site Code : 6
 Start Date : 10/5/2023
 Page No : 1

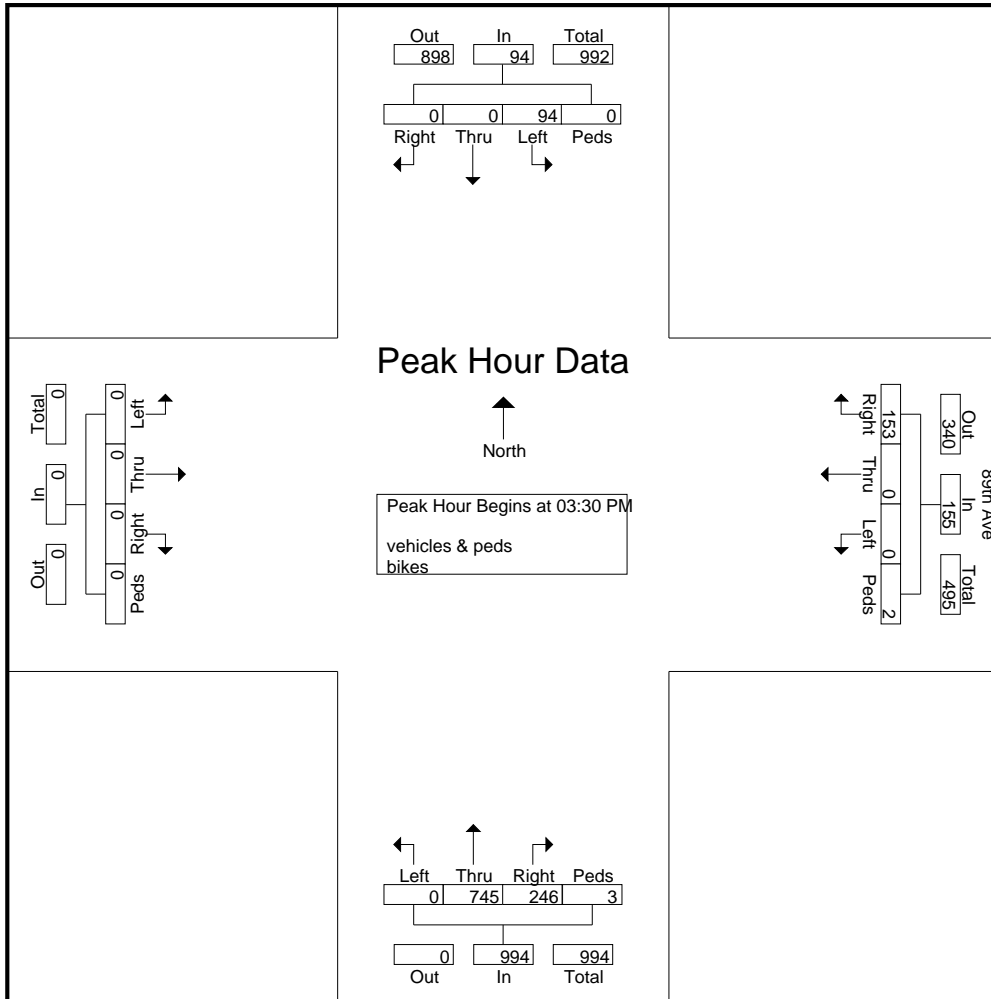
Groups Printed- vehicles & peds - bikes

Start Time	From North					89th Ave From East					From South					From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	0	0	17	0	17	36	0	0	0	36	62	148	0	0	210	0	0	0	0	0	0
03:15 PM	0	0	31	0	31	37	0	0	0	37	49	131	0	0	180	0	0	0	0	0	0
03:30 PM	0	0	27	0	27	39	0	0	0	39	63	204	0	0	267	0	0	0	0	0	0
03:45 PM	0	0	27	0	27	41	0	0	1	42	49	200	0	1	250	0	0	0	0	0	0
Total	0	0	102	0	102	153	0	0	1	154	223	683	0	1	907	0	0	0	0	0	0
04:00 PM	0	0	17	0	17	33	0	0	0	33	59	202	0	1	262	0	0	0	0	0	0
04:15 PM	0	0	23	0	23	40	0	0	1	41	75	139	0	1	215	0	0	0	0	0	0
04:30 PM	0	0	20	0	20	42	0	0	0	42	51	172	0	0	223	0	0	0	0	0	0
04:45 PM	0	0	23	0	23	32	0	0	0	32	45	184	0	1	230	0	0	0	0	0	0
Total	0	0	83	0	83	147	0	0	1	148	230	697	0	3	930	0	0	0	0	0	0
05:00 PM	0	0	21	0	21	31	0	1	0	32	44	165	0	0	209	0	0	0	0	0	0
05:15 PM	0	0	25	0	25	31	0	0	0	31	42	154	0	0	196	0	0	0	0	0	0
05:30 PM	0	0	14	0	14	23	0	1	2	26	53	109	0	0	162	0	0	0	0	0	0
05:45 PM	0	0	13	0	13	28	0	0	0	28	47	109	0	0	156	0	0	0	0	0	0
Total	0	0	73	0	73	113	0	2	2	117	186	537	0	0	723	0	0	0	0	0	0
Grand Total	0	0	258	0	258	413	0	2	4	419	639	1917	0	4	2560	0	0	0	0	0	3237
Apprch %	0	0	100	0		98.6	0	0.5	1		25	74.9	0	0.2		0	0	0	0		
Total %	0	0	8	0	8	12.8	0	0.1	0.1	12.9	19.7	59.2	0	0.1	79.1	0	0	0	0	0	0
vehicles & peds	0	0	258	0	258	413	0	2	4	419	639	1917	0	4	2560	0	0	0	0	0	3237
% vehicles & peds	0	0	100	0	100	100	0	100	100	100	100	100	0	100	100	0	0	0	0	0	100
bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

CSAH 51 & 89th Ave
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 6-CSAH 51 & 89th Ave - Thursday-redo
Site Code : 6
Start Date : 10/5/2023
Page No : 2

Start Time	From North					89th Ave From East					From South					From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:30 PM																					
03:30 PM	0	0	27	0	27	39	0	0	0	39	63	204	0	0	267	0	0	0	0	0	333
03:45 PM	0	0	27	0	27	41	0	0	1	42	49	200	0	1	250	0	0	0	0	0	319
04:00 PM	0	0	17	0	17	33	0	0	0	33	59	202	0	1	262	0	0	0	0	0	312
04:15 PM	0	0	23	0	23	40	0	0	1	41	75	139	0	1	215	0	0	0	0	0	279
Total Volume	0	0	94	0	94	153	0	0	2	155	246	745	0	3	994	0	0	0	0	0	1243
% App. Total	0	0	100	0		98.7	0	0	1.3		24.7	74.9	0	0.3		0	0	0	0		
PHF	.000	.000	.870	.000	.870	.933	.000	.000	.500	.923	.820	.913	.000	.750	.931	.000	.000	.000	.000	.000	.933





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 51 & 89th Ave
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 6-CSAH 51 & 89th Ave - Saturday-redo
 Site Code : 6
 Start Date : 10/7/2023
 Page No : 1

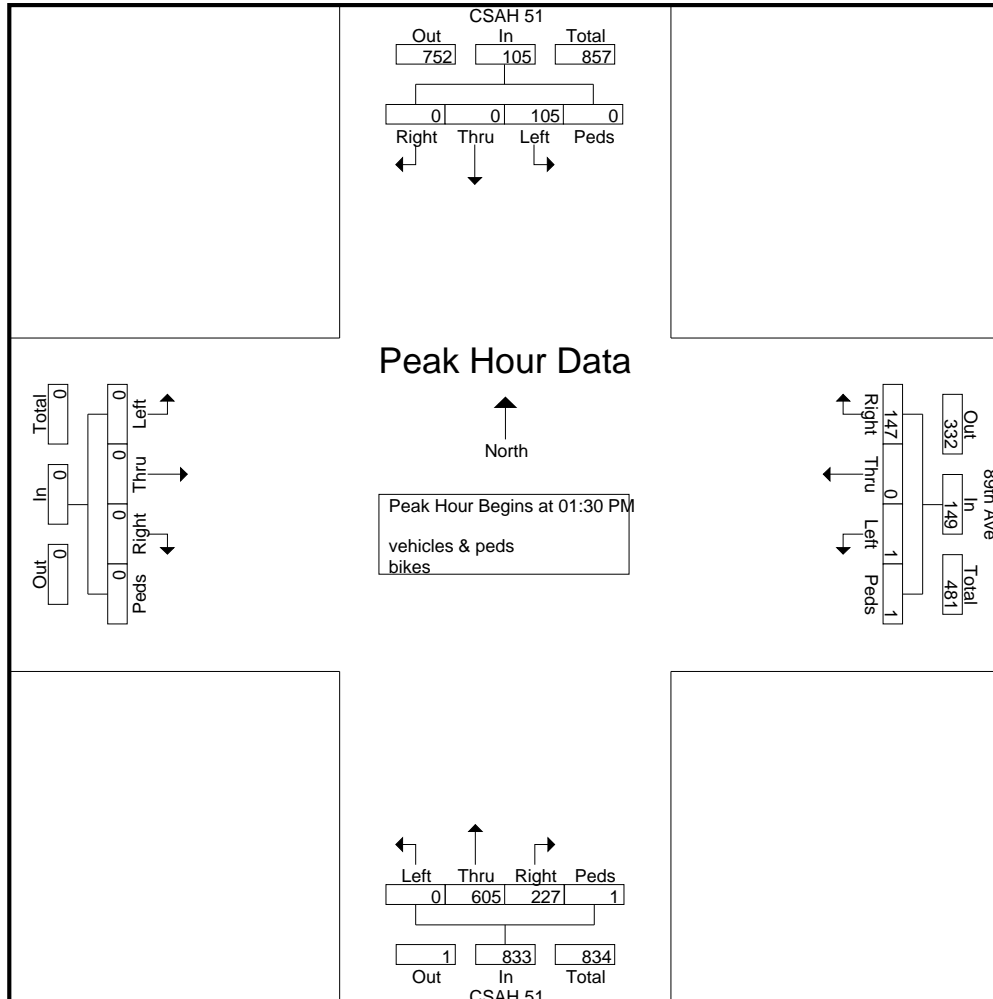
Groups Printed- vehicles & peds - bikes

Start Time	CSAH 51 From North					89th Ave From East					CSAH 51 From South					From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	0	0	26	0	26	46	0	0	0	46	42	157	0	0	199	0	0	0	0	0	271
01:15 PM	0	0	20	0	20	30	0	0	0	30	45	148	0	1	194	0	0	0	0	0	244
01:30 PM	0	0	24	0	24	37	0	0	1	38	63	162	0	0	225	0	0	0	0	0	287
01:45 PM	0	0	25	0	25	29	0	0	0	29	57	163	0	0	220	0	0	0	0	0	274
Total	0	0	95	0	95	142	0	0	1	143	207	630	0	1	838	0	0	0	0	0	1076
02:00 PM	0	0	26	0	26	37	0	0	0	37	56	146	0	0	202	0	0	0	0	0	265
02:15 PM	0	0	30	0	30	44	0	1	0	45	51	134	0	1	186	0	0	0	0	0	261
02:30 PM	0	0	19	0	19	36	0	0	1	37	53	134	0	0	187	0	0	0	0	0	243
02:45 PM	0	0	23	0	23	36	0	0	2	38	53	154	0	0	207	0	0	0	0	0	268
Total	0	0	98	0	98	153	0	1	3	157	213	568	0	1	782	0	0	0	0	0	1037
Grand Total	0	0	193	0	193	295	0	1	4	300	420	1198	0	2	1620	0	0	0	0	0	2113
Apprch %	0	0	100	0		98.3	0	0.3	1.3		25.9	74	0	0.1		0	0	0	0		
Total %	0	0	9.1	0	9.1	14	0	0	0.2	14.2	19.9	56.7	0	0.1	76.7	0	0	0	0	0	
vehicles & peds	0	0	193	0	193	295	0	1	2	298	420	1198	0	2	1620	0	0	0	0	0	2111
% vehicles & peds	0	0	100	0	100	100	0	100	50	99.3	100	100	0	100	100	0	0	0	0	0	99.9
bikes	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2
% bikes	0	0	0	0	0	0	0	0	50	0.7	0	0	0	0	0	0	0	0	0	0	0.1

CSAH 51 & 89th Ave
1-3pm
vehicles,peds,bikes
Saturday

File Name : site 6-CSAH 51 & 89th Ave - Saturday-redo
Site Code : 6
Start Date : 10/7/2023
Page No : 2

Start Time	CSAH 51 From North					89th Ave From East					CSAH 51 From South					From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:30 PM																					
01:30 PM	0	0	24	0	24	37	0	0	1	38	63	162	0	0	225	0	0	0	0	0	287
01:45 PM	0	0	25	0	25	29	0	0	0	29	57	163	0	0	220	0	0	0	0	0	274
02:00 PM	0	0	26	0	26	37	0	0	0	37	56	146	0	0	202	0	0	0	0	0	265
02:15 PM	0	0	30	0	30	44	0	1	0	45	51	134	0	1	186	0	0	0	0	0	261
Total Volume	0	0	105	0	105	147	0	1	1	149	227	605	0	1	833	0	0	0	0	0	1087
% App. Total	0	0	100	0		98.7	0	0.7	0.7		27.3	72.6	0	0.1		0	0	0	0		
PHF	.000	.000	.875	.000	.875	.835	.000	.250	.250	.828	.901	.928	.000	.250	.926	.000	.000	.000	.000	.000	.947





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 51 & 91st Ave
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 7-CSAH 51 & 91st Ln-Thursday
 Site Code : 7
 Start Date : 10/5/2023
 Page No : 1

Groups Printed- vehicles & peds - bikes

Start Time	CSAH 51 From North					91st Ave From East					CSAH 51 From South					91st Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	4	102	15	0	121	3	0	5	1	9	3	160	25	1	189	4	0	5	3	12	331
03:15 PM	5	111	22	0	138	14	0	1	1	16	1	144	15	0	160	4	1	2	0	7	321
03:30 PM	2	95	23	1	121	12	0	7	1	20	2	195	12	2	211	5	0	1	3	9	361
03:45 PM	6	98	14	0	118	7	0	6	0	13	1	222	18	3	244	0	0	3	0	3	378
Total	17	406	74	1	498	36	0	19	3	58	7	721	70	6	804	13	1	11	6	31	1391
04:00 PM	4	88	22	0	114	7	0	5	0	12	1	206	12	1	220	2	0	1	2	5	351
04:15 PM	6	98	15	0	119	8	0	1	0	9	4	179	11	0	194	2	2	6	0	10	332
04:30 PM	6	104	22	0	132	9	0	3	1	13	1	208	15	0	224	3	0	3	1	7	376
04:45 PM	3	109	16	2	130	7	1	4	1	13	2	203	12	1	218	1	0	7	1	9	370
Total	19	399	75	2	495	31	1	13	2	47	8	796	50	2	856	8	2	17	4	31	1429
05:00 PM	5	102	16	0	123	6	0	4	1	11	1	191	14	0	206	4	0	3	0	7	347
05:15 PM	5	94	11	1	111	3	0	1	1	5	3	135	21	0	159	2	1	1	0	4	279
05:30 PM	0	92	12	0	104	3	1	3	1	8	0	149	13	0	162	2	0	1	0	3	277
05:45 PM	0	90	19	0	109	4	0	4	2	10	4	120	10	1	135	3	0	1	1	5	259
Total	10	378	58	1	447	16	1	12	5	34	8	595	58	1	662	11	1	6	1	19	1162
Grand Total	46	1183	207	4	1440	83	2	44	10	139	23	2112	178	9	2322	32	4	34	11	81	3982
Apprch %	3.2	82.2	14.4	0.3		59.7	1.4	31.7	7.2		1	91	7.7	0.4		39.5	4.9	42	13.6		
Total %	1.2	29.7	5.2	0.1	36.2	2.1	0.1	1.1	0.3	3.5	0.6	53	4.5	0.2	58.3	0.8	0.1	0.9	0.3	2	
vehicles & peds	46	1183	207	0	1436	83	2	44	2	131	23	2112	178	5	2318	32	4	34	7	77	3962
% vehicles & peds	100	100	100	0	99.7	100	100	100	20	94.2	100	100	100	55.6	99.8	100	100	100	63.6	95.1	99.5
bikes	0	0	0	4	4	0	0	0	8	8	0	0	0	4	4	0	0	0	4	4	20
% bikes	0	0	0	100	0.3	0	0	0	80	5.8	0	0	0	44.4	0.2	0	0	0	36.4	4.9	0.5

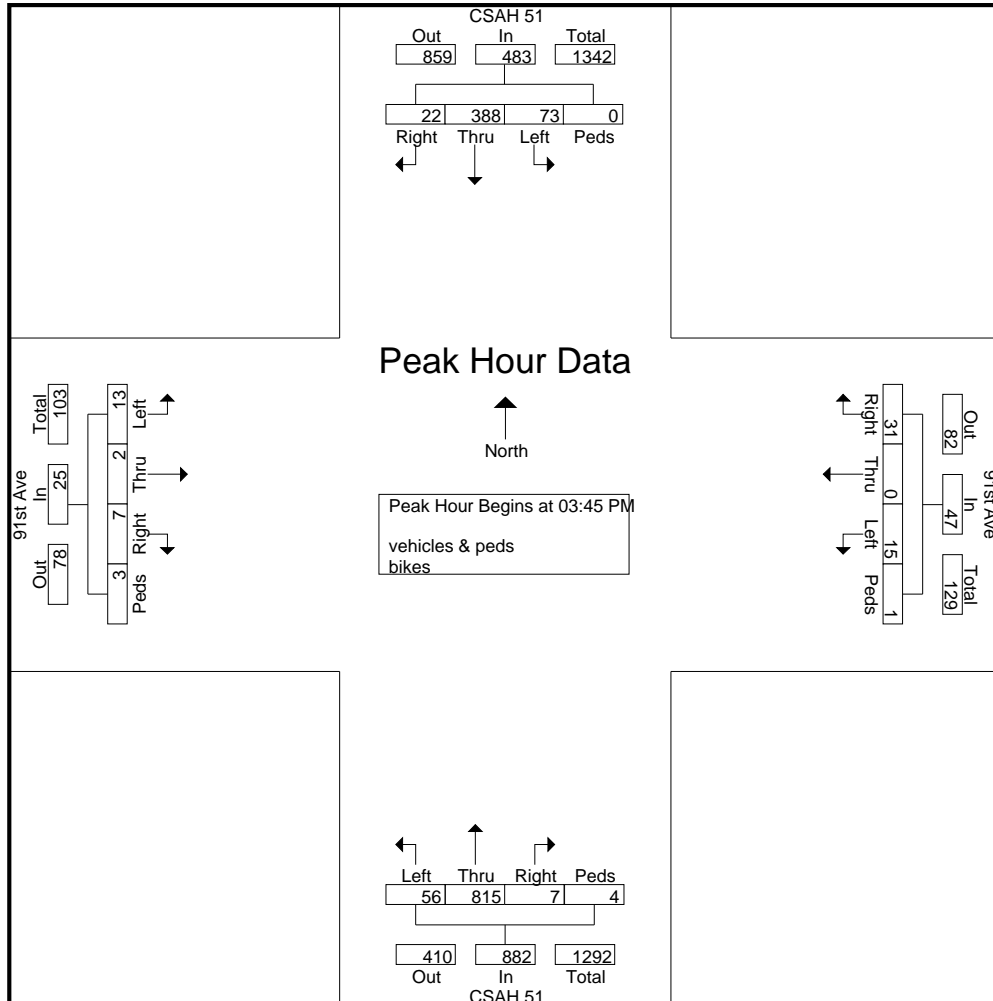


701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 51 & 91st Ave
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 7-CSAH 51 & 91st Ln-Thursday
 Site Code : 7
 Start Date : 10/5/2023
 Page No : 2

Start Time	CSAH 51 From North					91st Ave From East					CSAH 51 From South					91st Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	6	98	14	0	118	7	0	6	0	13	1	222	18	3	244	0	0	3	0	3	378
04:00 PM	4	88	22	0	114	7	0	5	0	12	1	206	12	1	220	2	0	1	2	5	351
04:15 PM	6	98	15	0	119	8	0	1	0	9	4	179	11	0	194	2	2	6	0	10	332
04:30 PM	6	104	22	0	132	9	0	3	1	13	1	208	15	0	224	3	0	3	1	7	376
Total Volume	22	388	73	0	483	31	0	15	1	47	7	815	56	4	882	7	2	13	3	25	1437
% App. Total	4.6	80.3	15.1	0		66	0	31.9	2.1		0.8	92.4	6.3	0.5		28	8	52	12		
PHF	.917	.933	.830	.000	.915	.861	.000	.625	.250	.904	.438	.918	.778	.333	.904	.583	.250	.542	.375	.625	.950





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 51 & 91st Ln
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 7-CSAH 51 & 91st Ln-Saturday
 Site Code : 7
 Start Date : 10/7/2023
 Page No : 1

Groups Printed- vehicles & peds - bikes

Start Time	CSAH 51 From North					91st Ave From East					CSAH 51 From South					91st Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	4	123	16	0	143	4	0	2	0	6	3	176	23	0	202	7	0	17	0	24	375
01:15 PM	0	120	11	0	131	3	0	5	0	8	2	168	22	0	192	5	0	3	0	8	339
01:30 PM	4	122	15	0	141	1	0	5	0	6	1	177	20	0	198	4	0	3	0	7	352
01:45 PM	1	127	11	0	139	4	0	3	2	9	1	163	20	2	186	4	0	7	0	11	345
Total	9	492	53	0	554	12	0	15	2	29	7	684	85	2	778	20	0	30	0	50	1411
02:00 PM	6	108	10	0	124	3	0	2	2	7	2	179	23	0	204	3	0	4	0	7	342
02:15 PM	6	142	12	0	160	7	0	3	0	10	2	166	16	0	184	7	0	6	1	14	368
02:30 PM	4	114	8	0	126	7	0	5	0	12	1	154	17	0	172	1	0	6	2	9	319
02:45 PM	4	116	15	1	136	7	0	3	5	15	0	140	25	1	166	1	1	5	2	9	326
Total	20	480	45	1	546	24	0	13	7	44	5	639	81	1	726	12	1	21	5	39	1355
Grand Total	29	972	98	1	1100	36	0	28	9	73	12	1323	166	3	1504	32	1	51	5	89	2766
Apprch %	2.6	88.4	8.9	0.1		49.3	0	38.4	12.3		0.8	88	11	0.2		36	1.1	57.3	5.6		
Total %	1	35.1	3.5	0	39.8	1.3	0	1	0.3	2.6	0.4	47.8	6	0.1	54.4	1.2	0	1.8	0.2	3.2	
vehicles & peds	29	972	98	0	1099	36	0	28	2	66	12	1323	166	2	1503	32	1	51	5	89	2757
% vehicles & peds	100	100	100	0	99.9	100	0	100	22.2	90.4	100	100	100	66.7	99.9	100	100	100	100	100	99.7
bikes	0	0	0	1	1	0	0	0	7	7	0	0	0	1	1	0	0	0	0	0	9
% bikes	0	0	0	100	0.1	0	0	0	77.8	9.6	0	0	0	33.3	0.1	0	0	0	0	0	0.3

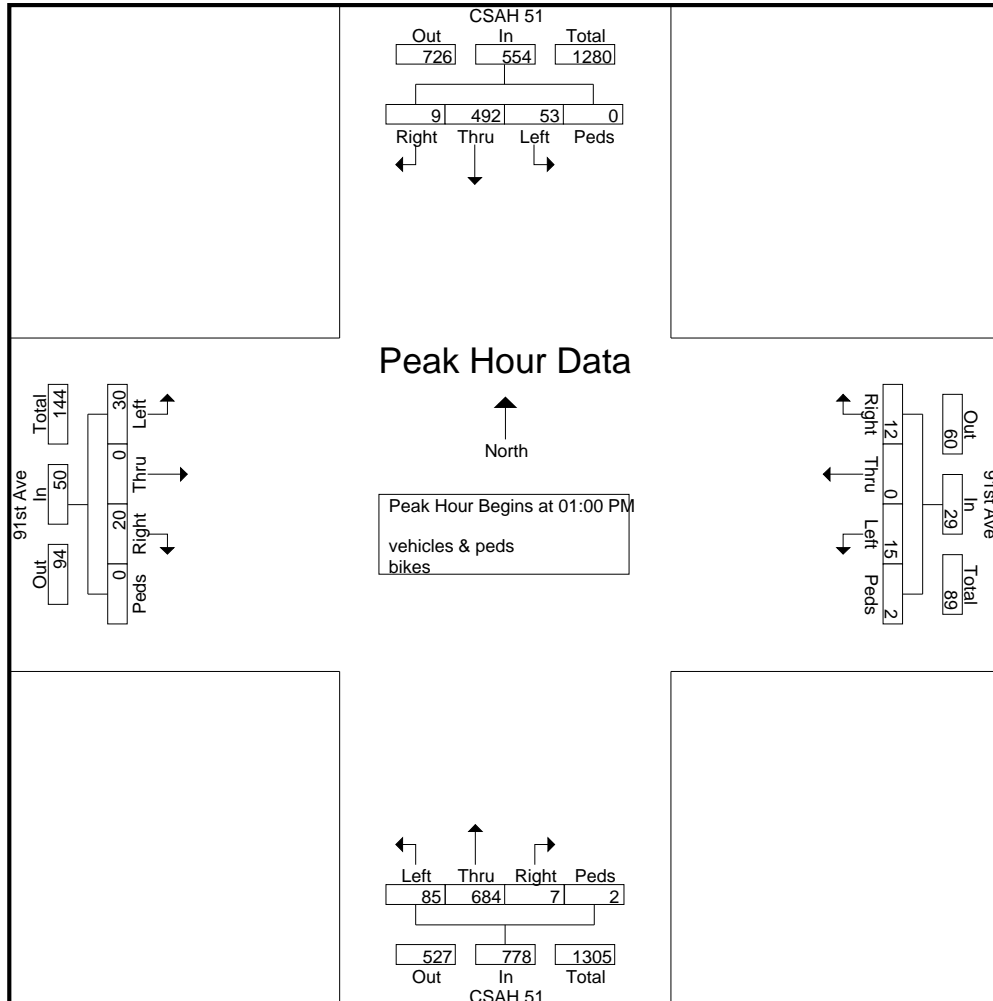


701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 51 & 91st Ln
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 7-CSAH 51 & 91st Ln-Saturday
 Site Code : 7
 Start Date : 10/7/2023
 Page No : 2

Start Time	CSAH 51 From North					91st Ave From East					CSAH 51 From South					91st Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	4	123	16	0	143	4	0	2	0	6	3	176	23	0	202	7	0	17	0	24	375
01:15 PM	0	120	11	0	131	3	0	5	0	8	2	168	22	0	192	5	0	3	0	8	339
01:30 PM	4	122	15	0	141	1	0	5	0	6	1	177	20	0	198	4	0	3	0	7	352
01:45 PM	1	127	11	0	139	4	0	3	2	9	1	163	20	2	186	4	0	7	0	11	345
Total Volume	9	492	53	0	554	12	0	15	2	29	7	684	85	2	778	20	0	30	0	50	1411
% App. Total	1.6	88.8	9.6	0		41.4	0	51.7	6.9		0.9	87.9	10.9	0.3		40	0	60	0		
PHF	.563	.969	.828	.000	.969	.750	.000	.750	.250	.806	.583	.966	.924	.250	.963	.714	.000	.441	.000	.521	.941





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

89th Ave & 87th Ln
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 8-89th Ave & 87th Ln-Thursday
 Site Code : 8
 Start Date : 10/5/2023
 Page No : 1

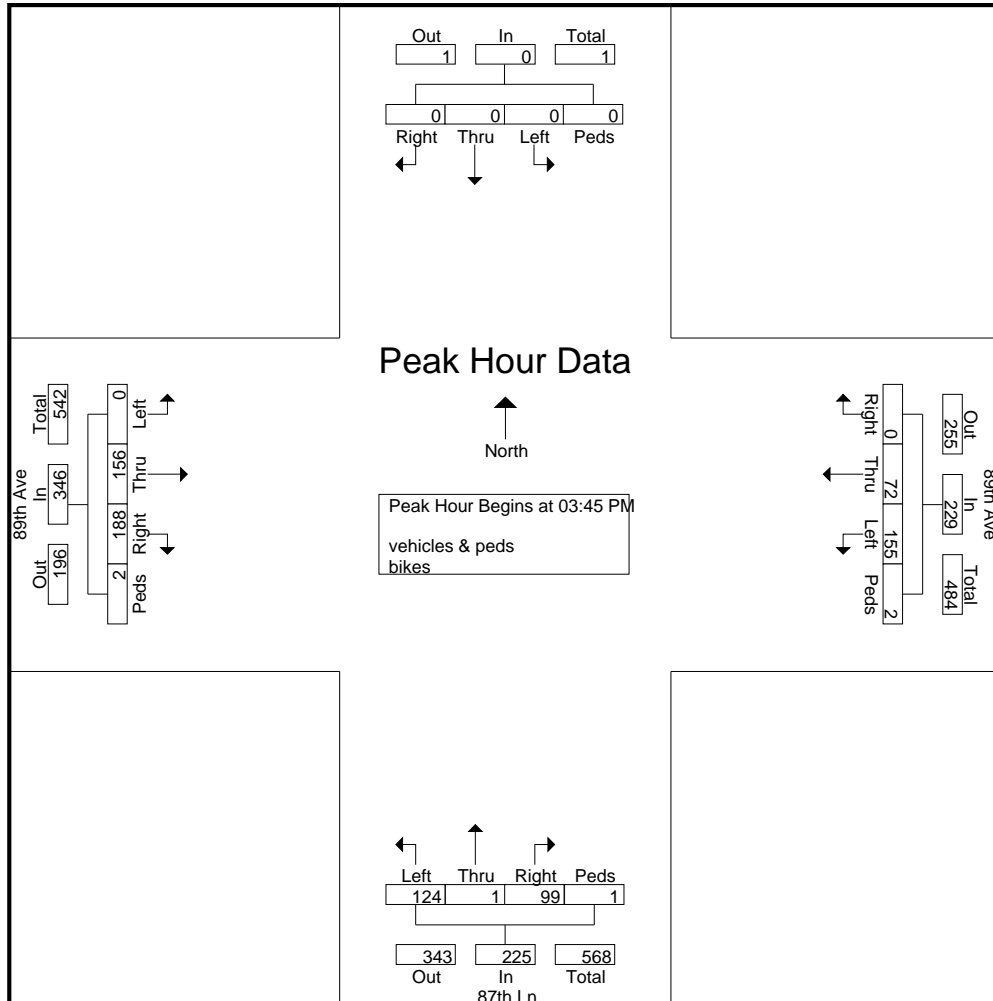
Groups Printed- vehicles & peds - bikes

Start Time	From North					89th Ave From East					87th Ln From South					89th Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	0	0	0	0	0	0	16	21	1	38	27	0	31	0	58	46	32	0	0	78	174
03:15 PM	0	0	0	0	0	0	22	44	0	66	22	0	25	0	47	45	40	0	0	85	198
03:30 PM	0	0	0	0	0	0	26	35	0	61	9	0	34	0	43	49	32	0	0	81	185
03:45 PM	0	0	0	0	0	0	19	38	0	57	31	1	29	0	61	45	40	0	1	86	204
Total	0	0	0	0	0	0	83	138	1	222	89	1	119	0	209	185	144	0	1	330	761
04:00 PM	0	0	0	0	0	0	19	45	1	65	31	0	27	0	58	44	40	0	0	84	207
04:15 PM	0	0	0	0	0	0	14	28	0	42	19	0	34	1	54	49	50	0	1	100	196
04:30 PM	0	0	0	0	0	0	20	44	1	65	18	0	34	0	52	50	26	0	0	76	193
04:45 PM	0	0	0	0	0	0	17	34	0	51	26	0	28	0	54	41	29	0	0	70	175
Total	0	0	0	0	0	0	70	151	2	223	94	0	123	1	218	184	145	0	1	330	771
05:00 PM	0	0	0	0	0	0	11	22	0	33	22	0	21	0	43	38	35	0	1	74	150
05:15 PM	0	0	0	0	0	0	14	26	0	40	27	0	32	0	59	32	26	0	1	59	158
05:30 PM	0	0	0	0	0	0	10	15	0	25	19	0	26	0	45	36	34	0	1	71	141
05:45 PM	0	0	0	0	0	0	14	28	3	45	20	0	17	0	37	39	23	0	2	64	146
Total	0	0	0	0	0	0	49	91	3	143	88	0	96	0	184	145	118	0	5	268	595
Grand Total	0	0	0	0	0	0	202	380	6	588	271	1	338	1	611	514	407	0	7	928	2127
Apprch %	0	0	0	0		0	34.4	64.6	1		44.4	0.2	55.3	0.2		55.4	43.9	0	0.8		
Total %	0	0	0	0	0	0	9.5	17.9	0.3	27.6	12.7	0	15.9	0	28.7	24.2	19.1	0	0.3	43.6	
vehicles & peds	0	0	0	0	0	0	202	380	0	582	271	1	338	1	611	514	407	0	4	925	2118
% vehicles & peds	0	0	0	0	0	0	100	100	0	99	100	100	100	100	100	100	100	0	57.1	99.7	99.6
bikes	0	0	0	0	0	0	0	0	6	6	0	0	0	0	0	0	0	0	3	3	9
% bikes	0	0	0	0	0	0	0	0	100	1	0	0	0	0	0	0	0	0	42.9	0.3	0.4

89th Ave & 87th Ln
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 8-89th Ave & 87th Ln-Thursday
Site Code : 8
Start Date : 10/5/2023
Page No : 2

Start Time	From North					89th Ave From East					87th Ln From South					89th Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	0	0	0	19	38	0	57	31	1	29	0	61	45	40	0	1	86	204
04:00 PM	0	0	0	0	0	0	19	45	1	65	31	0	27	0	58	44	40	0	0	84	207
04:15 PM	0	0	0	0	0	0	14	28	0	42	19	0	34	1	54	49	50	0	1	100	196
04:30 PM	0	0	0	0	0	0	20	44	1	65	18	0	34	0	52	50	26	0	0	76	193
Total Volume	0	0	0	0	0	0	72	155	2	229	99	1	124	1	225	188	156	0	2	346	800
% App. Total	0	0	0	0	0	0	31.4	67.7	0.9		44	0.4	55.1	0.4		54.3	45.1	0	0.6		
PHF	.000	.000	.000	.000	.000	.000	.900	.861	.500	.881	.798	.250	.912	.250	.922	.940	.780	.000	.500	.865	.966





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

89th Ave & 87th Ln
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 8-89th Ave & 87th Ln-Saturday
 Site Code : 8
 Start Date : 10/7/2023
 Page No : 1

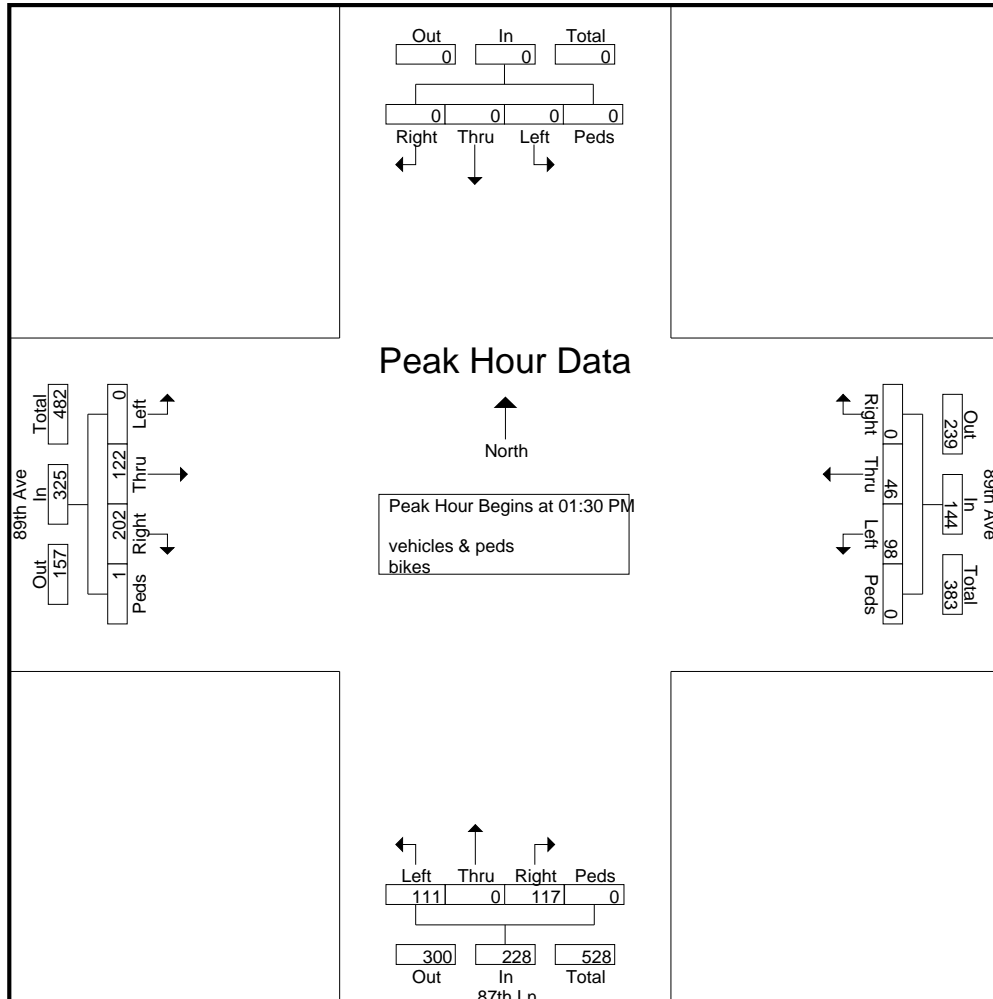
Groups Printed- vehicles & peds - bikes

Start Time	From North					89th Ave From East					87th Ln From South					89th Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	0	0	0	0	0	0	15	23	0	38	35	0	33	0	68	40	34	0	3	77	183
01:15 PM	0	0	0	0	0	0	15	25	0	40	30	0	23	0	53	33	34	0	0	67	160
01:30 PM	0	0	0	0	0	0	13	27	0	40	25	0	29	0	54	49	32	0	0	81	175
01:45 PM	0	0	0	0	0	0	8	24	0	32	33	0	23	0	56	56	28	0	0	84	172
Total	0	0	0	0	0	0	51	99	0	150	123	0	108	0	231	178	128	0	3	309	690
02:00 PM	0	0	0	0	0	0	12	21	0	33	30	0	24	0	54	49	29	0	0	78	165
02:15 PM	0	0	0	0	0	0	13	26	0	39	29	0	35	0	64	48	33	0	1	82	185
02:30 PM	0	0	0	0	0	0	14	32	0	46	31	0	22	0	53	48	25	0	0	73	172
02:45 PM	0	0	0	0	0	0	11	30	0	41	28	0	21	1	50	39	31	0	2	72	163
Total	0	0	0	0	0	0	50	109	0	159	118	0	102	1	221	184	118	0	3	305	685
Grand Total	0	0	0	0	0	0	101	208	0	309	241	0	210	1	452	362	246	0	6	614	1375
Apprch %	0	0	0	0	0	0	32.7	67.3	0	309	53.3	0	46.5	0.2	452	59	40.1	0	1	614	1375
Total %	0	0	0	0	0	0	7.3	15.1	0	22.5	17.5	0	15.3	0.1	32.9	26.3	17.9	0	0.4	44.7	1375
vehicles & peds	0	0	0	0	0	0	101	208	0	309	241	0	210	1	452	362	246	0	0	608	1369
% vehicles & peds	0	0	0	0	0	0	100	100	0	100	100	0	100	100	100	100	100	0	0	99	99.6
bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6
% bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	1	0.4

89th Ave & 87th Ln
1-3pm
vehicles,peds,bikes
Saturday

File Name : site 8-89th Ave & 87th Ln-Saturday
Site Code : 8
Start Date : 10/7/2023
Page No : 2

Start Time	From North					89th Ave From East					87th Ln From South					89th Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:30 PM																					
01:30 PM	0	0	0	0	0	0	13	27	0	40	25	0	29	0	54	49	32	0	0	81	175
01:45 PM	0	0	0	0	0	0	8	24	0	32	33	0	23	0	56	56	28	0	0	84	172
02:00 PM	0	0	0	0	0	0	12	21	0	33	30	0	24	0	54	49	29	0	0	78	165
02:15 PM	0	0	0	0	0	0	13	26	0	39	29	0	35	0	64	48	33	0	1	82	185
Total Volume	0	0	0	0	0	0	46	98	0	144	117	0	111	0	228	202	122	0	1	325	697
% App. Total	0	0	0	0	0	0	31.9	68.1	0		51.3	0	48.7	0		62.2	37.5	0	0.3		
PHF	.000	.000	.000	.000	.000	.000	.885	.907	.000	.900	.886	.000	.793	.000	.891	.902	.924	.000	.250	.967	.942





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 10 & Jefferson St
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 9-CSAH 10 & Jefferson St-Thursday
 Site Code : 9
 Start Date : 9/28/2023
 Page No : 1

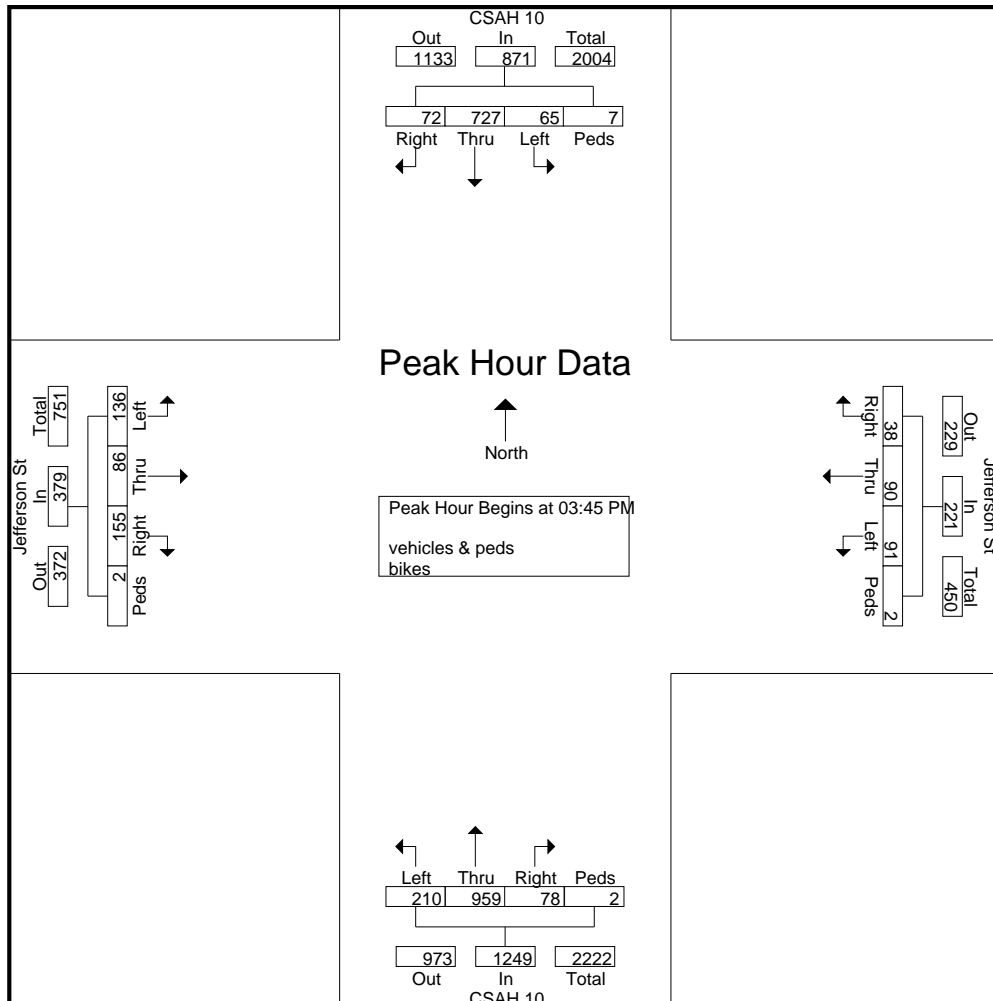
Groups Printed- vehicles & peds - bikes

Start Time	CSAH 10 From North					Jefferson St From East					CSAH 10 From South					Jefferson St From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	26	183	15	4	228	11	25	15	1	52	21	223	36	0	280	41	26	27	0	94	654
03:15 PM	23	167	21	3	214	7	31	20	2	60	29	189	51	0	269	36	21	36	1	94	637
03:30 PM	16	178	21	0	215	11	28	19	0	58	16	208	49	0	273	29	13	25	0	67	613
03:45 PM	14	165	12	0	191	11	25	21	2	59	19	259	42	0	320	39	24	40	1	104	674
Total	79	693	69	7	848	40	109	75	5	229	85	879	178	0	1142	145	84	128	2	359	2578
04:00 PM	19	179	16	1	215	9	17	23	0	49	12	196	57	0	265	32	20	33	0	85	614
04:15 PM	17	159	19	3	198	10	25	27	0	62	23	282	65	0	370	41	20	32	0	93	723
04:30 PM	22	224	18	3	267	8	23	20	0	51	24	222	46	2	294	43	22	31	1	97	709
04:45 PM	14	174	11	0	199	8	22	19	0	49	16	236	51	0	303	23	18	25	1	67	618
Total	72	736	64	7	879	35	87	89	0	211	75	936	219	2	1232	139	80	121	2	342	2664
05:00 PM	24	195	18	3	240	8	22	21	0	51	16	208	46	0	270	26	29	28	0	83	644
05:15 PM	24	154	18	2	198	5	22	25	0	52	17	203	37	0	257	26	39	33	0	98	605
05:30 PM	16	149	21	2	188	10	27	17	0	54	11	224	49	0	284	32	21	32	2	87	613
05:45 PM	13	121	16	1	151	9	24	19	1	53	23	165	54	0	242	36	25	40	0	101	547
Total	77	619	73	8	777	32	95	82	1	210	67	800	186	0	1053	120	114	133	2	369	2409
Grand Total	228	2048	206	22	2504	107	291	246	6	650	227	2615	583	2	3427	404	278	382	6	1070	7651
Apprch %	9.1	81.8	8.2	0.9		16.5	44.8	37.8	0.9		6.6	76.3	17	0.1		37.8	26	35.7	0.6		
Total %	3	26.8	2.7	0.3	32.7	1.4	3.8	3.2	0.1	8.5	3	34.2	7.6	0	44.8	5.3	3.6	5	0.1	14	
vehicles & peds	228	2048	206	10	2492	107	291	246	3	647	227	2615	583	0	3425	404	278	382	3	1067	7631
% vehicles & peds	100	100	100	45.5	99.5	100	100	100	50	99.5	100	100	100	0	99.9	100	100	100	50	99.7	99.7
bikes	0	0	0	12	12	0	0	0	3	3	0	0	0	2	2	0	0	0	3	3	20
% bikes	0	0	0	54.5	0.5	0	0	0	50	0.5	0	0	0	100	0.1	0	0	0	50	0.3	0.3

CSAH 10 & Jefferson St
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 9-CSAH 10 & Jefferson St-Thursday
Site Code : 9
Start Date : 9/28/2023
Page No : 2

Start Time	CSAH 10 From North					Jefferson St From East					CSAH 10 From South					Jefferson St From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	14	165	12	0	191	11	25	21	2	59	19	259	42	0	320	39	24	40	1	104	674
04:00 PM	19	179	16	1	215	9	17	23	0	49	12	196	57	0	265	32	20	33	0	85	614
04:15 PM	17	159	19	3	198	10	25	27	0	62	23	282	65	0	370	41	20	32	0	93	723
04:30 PM	22	224	18	3	267	8	23	20	0	51	24	222	46	2	294	43	22	31	1	97	709
Total Volume	72	727	65	7	871	38	90	91	2	221	78	959	210	2	1249	155	86	136	2	379	2720
% App. Total	8.3	83.5	7.5	0.8		17.2	40.7	41.2	0.9		6.2	76.8	16.8	0.2		40.9	22.7	35.9	0.5		
PHF	.818	.811	.855	.583	.816	.864	.900	.843	.250	.891	.813	.850	.808	.250	.844	.901	.896	.850	.500	.911	.941





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 10 & Jefferson St
 1-3pm
 vehicles,bikes,peds
 Saturday

File Name : site 9-CSAH 10 & Jefferson St-Saturday
 Site Code : 9
 Start Date : 9/30/2023
 Page No : 1

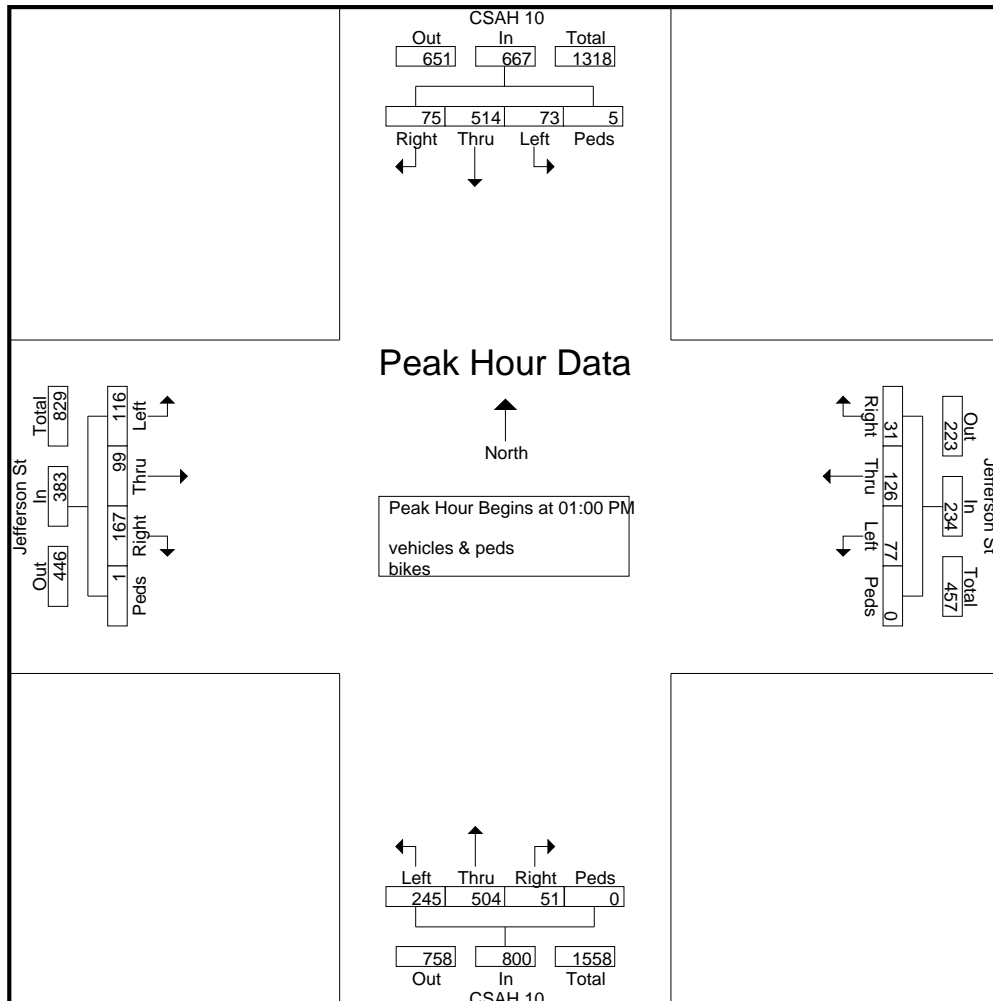
Groups Printed- vehicles & peds - bikes

Start Time	CSAH 10 From North					Jefferson St From East					CSAH 10 From South					Jefferson St From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	17	122	23	0	162	8	40	15	0	63	17	123	55	0	195	49	22	33	1	105	525
01:15 PM	18	137	16	1	172	7	27	25	0	59	12	115	59	0	186	41	30	30	0	101	518
01:30 PM	21	126	18	4	169	5	29	18	0	52	12	136	62	0	210	36	22	28	0	86	517
01:45 PM	19	129	16	0	164	11	30	19	0	60	10	130	69	0	209	41	25	25	0	91	524
Total	75	514	73	5	667	31	126	77	0	234	51	504	245	0	800	167	99	116	1	383	2084
02:00 PM	21	122	20	6	169	5	22	19	0	46	8	96	48	0	152	40	20	28	0	88	455
02:15 PM	25	117	21	2	165	7	23	14	0	44	11	120	57	0	188	32	22	25	0	79	476
02:30 PM	30	116	15	1	162	6	25	12	1	44	12	123	43	0	178	39	27	29	1	96	480
02:45 PM	18	113	16	3	150	8	21	19	0	48	10	103	58	0	171	22	32	31	1	86	455
Total	94	468	72	12	646	26	91	64	1	182	41	442	206	0	689	133	101	113	2	349	1866
Grand Total	169	982	145	17	1313	57	217	141	1	416	92	946	451	0	1489	300	200	229	3	732	3950
Apprch %	12.9	74.8	11	1.3		13.7	52.2	33.9	0.2		6.2	63.5	30.3	0		41	27.3	31.3	0.4		
Total %	4.3	24.9	3.7	0.4	33.2	1.4	5.5	3.6	0	10.5	2.3	23.9	11.4	0	37.7	7.6	5.1	5.8	0.1	18.5	
vehicles & peds	169	982	145	13	1309	57	217	141	1	416	92	946	451	0	1489	300	200	229	1	730	3944
% vehicles & peds	100	100	100	76.5	99.7	100	100	100	100	100	100	100	100	0	100	100	100	100	33.3	99.7	99.8
bikes	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	6
% bikes	0	0	0	23.5	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	66.7	0.3	0.2

CSAH 10 & Jefferson St
 1-3pm
 vehicles,bikes,peds
 Saturday

File Name : site 9-CSAH 10 & Jefferson St-Saturday
 Site Code : 9
 Start Date : 9/30/2023
 Page No : 2

Start Time	CSAH 10 From North					Jefferson St From East					CSAH 10 From South					Jefferson St From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	17	122	23	0	162	8	40	15	0	63	17	123	55	0	195	49	22	33	1	105	525
01:15 PM	18	137	16	1	172	7	27	25	0	59	12	115	59	0	186	41	30	30	0	101	518
01:30 PM	21	126	18	4	169	5	29	18	0	52	12	136	62	0	210	36	22	28	0	86	517
01:45 PM	19	129	16	0	164	11	30	19	0	60	10	130	69	0	209	41	25	25	0	91	524
Total Volume	75	514	73	5	667	31	126	77	0	234	51	504	245	0	800	167	99	116	1	383	2084
% App. Total	11.2	77.1	10.9	0.7		13.2	53.8	32.9	0		6.4	63	30.6	0		43.6	25.8	30.3	0.3		
PHF	.893	.938	.793	.313	.969	.705	.788	.770	.000	.929	.750	.926	.888	.000	.952	.852	.825	.879	.250	.912	.992





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 10 & Able St
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 10-CSAH 10 & Able St-thursday
 Site Code : 10
 Start Date : 9/28/2023
 Page No : 1

Groups Printed- vehicles & peds - bikes

Start Time	CSAH 10 From North					Able St From East					CSAH 10 From South					Able St From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	23	182	13	2	220	2	16	14	0	32	16	206	35	0	257	50	46	39	0	135	644
03:15 PM	21	214	21	1	257	8	24	16	0	48	10	232	20	0	262	29	43	28	0	100	667
03:30 PM	23	205	11	0	239	9	17	17	0	43	19	241	23	1	284	21	22	20	0	63	629
03:45 PM	16	198	23	2	239	7	28	15	0	50	17	285	49	0	351	26	35	17	0	78	718
Total	83	799	68	5	955	26	85	62	0	173	62	964	127	1	1154	126	146	104	0	376	2658
04:00 PM	22	213	9	0	244	12	15	15	0	42	21	256	26	0	303	27	37	24	0	88	677
04:15 PM	13	190	13	0	216	6	17	16	0	39	13	320	39	0	372	29	26	15	0	70	697
04:30 PM	16	260	19	0	295	19	15	12	0	46	14	255	33	0	302	25	31	17	1	74	717
04:45 PM	14	179	20	3	216	4	17	12	3	36	21	293	39	1	354	30	27	10	1	68	674
Total	65	842	61	3	971	41	64	55	3	163	69	1124	137	1	1331	111	121	66	2	300	2765
05:00 PM	20	215	13	3	251	5	21	18	0	44	18	242	25	1	286	22	32	23	0	77	658
05:15 PM	15	205	10	1	231	7	16	21	2	46	14	258	29	0	301	37	25	17	0	79	657
05:30 PM	17	153	17	5	192	10	13	22	0	45	11	224	39	0	274	26	27	22	0	75	586
05:45 PM	13	171	10	0	194	8	8	12	0	28	13	219	24	0	256	13	17	29	0	59	537
Total	65	744	50	9	868	30	58	73	2	163	56	943	117	1	1117	98	101	91	0	290	2438
Grand Total	213	2385	179	17	2794	97	207	190	5	499	187	3031	381	3	3602	335	368	261	2	966	7861
Apprch %	7.6	85.4	6.4	0.6		19.4	41.5	38.1	1		5.2	84.1	10.6	0.1		34.7	38.1	27	0.2		
Total %	2.7	30.3	2.3	0.2	35.5	1.2	2.6	2.4	0.1	6.3	2.4	38.6	4.8	0	45.8	4.3	4.7	3.3	0	12.3	
vehicles & peds	213	2385	179	13	2790	97	207	190	5	499	187	3031	381	2	3601	335	368	261	1	965	7855
% vehicles & peds	100	100	100	76.5	99.9	100	100	100	100	100	100	100	100	66.7	100	100	100	100	50	99.9	99.9
bikes	0	0	0	4	4	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	6
% bikes	0	0	0	23.5	0.1	0	0	0	0	0	0	0	0	33.3	0	0	0	0	50	0.1	0.1

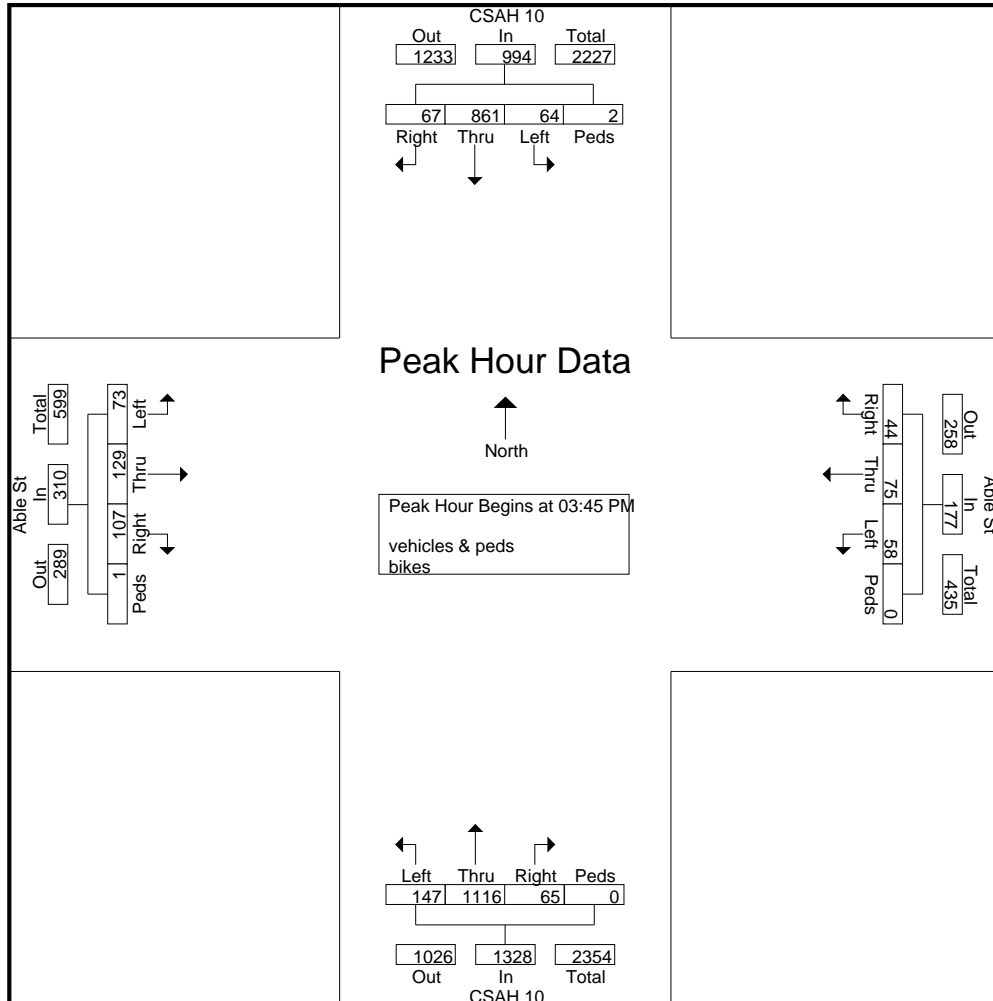


701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 10 & Able St
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 10-CSAH 10 & Able St-thursday
 Site Code : 10
 Start Date : 9/28/2023
 Page No : 2

Start Time	CSAH 10 From North					Able St From East					CSAH 10 From South					Able St From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	16	198	23	2	239	7	28	15	0	50	17	285	49	0	351	26	35	17	0	78	718
04:00 PM	22	213	9	0	244	12	15	15	0	42	21	256	26	0	303	27	37	24	0	88	677
04:15 PM	13	190	13	0	216	6	17	16	0	39	13	320	39	0	372	29	26	15	0	70	697
04:30 PM	16	260	19	0	295	19	15	12	0	46	14	255	33	0	302	25	31	17	1	74	717
Total Volume	67	861	64	2	994	44	75	58	0	177	65	1116	147	0	1328	107	129	73	1	310	2809
% App. Total	6.7	86.6	6.4	0.2		24.9	42.4	32.8	0		4.9	84	11.1	0		34.5	41.6	23.5	0.3		
PHF	.761	.828	.696	.250	.842	.579	.670	.906	.000	.885	.774	.872	.750	.000	.892	.922	.872	.760	.250	.881	.978





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 10 & Able St
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 10-CSAH 10 & Able St-Saturday
 Site Code : 10
 Start Date : 9/30/2023
 Page No : 1

Groups Printed- vehicles & peds - bikes

Start Time	CSAH 10 From North					Able St From East					CSAH 10 From South					Able St From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	9	132	17	0	158	7	15	14	0	36	12	178	14	0	204	10	10	11	1	32	430
01:15 PM	10	166	12	0	188	9	15	13	0	37	12	154	26	0	192	15	11	12	2	40	457
01:30 PM	15	142	9	0	166	6	5	9	0	20	13	186	21	0	220	22	19	14	0	55	461
01:45 PM	18	155	17	0	190	6	8	12	0	26	12	170	16	0	198	13	16	17	3	49	463
Total	52	595	55	0	702	28	43	48	0	119	49	688	77	0	814	60	56	54	6	176	1811
02:00 PM	12	147	15	0	174	7	6	12	0	25	12	140	12	1	165	13	15	3	0	31	395
02:15 PM	15	137	10	0	162	5	14	14	1	34	13	149	15	0	177	17	16	9	0	42	415
02:30 PM	20	197	17	0	234	6	29	12	0	47	8	157	26	0	191	26	9	11	0	46	518
02:45 PM	25	160	14	2	201	8	31	14	0	53	7	156	24	0	187	13	14	7	0	34	475
Total	72	641	56	2	771	26	80	52	1	159	40	602	77	1	720	69	54	30	0	153	1803
Grand Total	124	1236	111	2	1473	54	123	100	1	278	89	1290	154	1	1534	129	110	84	6	329	3614
Apprch %	8.4	83.9	7.5	0.1		19.4	44.2	36	0.4		5.8	84.1	10	0.1		39.2	33.4	25.5	1.8		
Total %	3.4	34.2	3.1	0.1	40.8	1.5	3.4	2.8	0	7.7	2.5	35.7	4.3	0	42.4	3.6	3	2.3	0.2	9.1	
vehicles & peds	124	1236	111	0	1471	54	123	100	0	277	89	1290	154	0	1533	129	110	84	3	326	3607
% vehicles & peds	100	100	100	0	99.9	100	100	100	0	99.6	100	100	100	0	99.9	100	100	100	50	99.1	99.8
bikes	0	0	0	2	2	0	0	0	1	1	0	0	0	1	1	0	0	0	3	3	7
% bikes	0	0	0	100	0.1	0	0	0	100	0.4	0	0	0	100	0.1	0	0	0	50	0.9	0.2

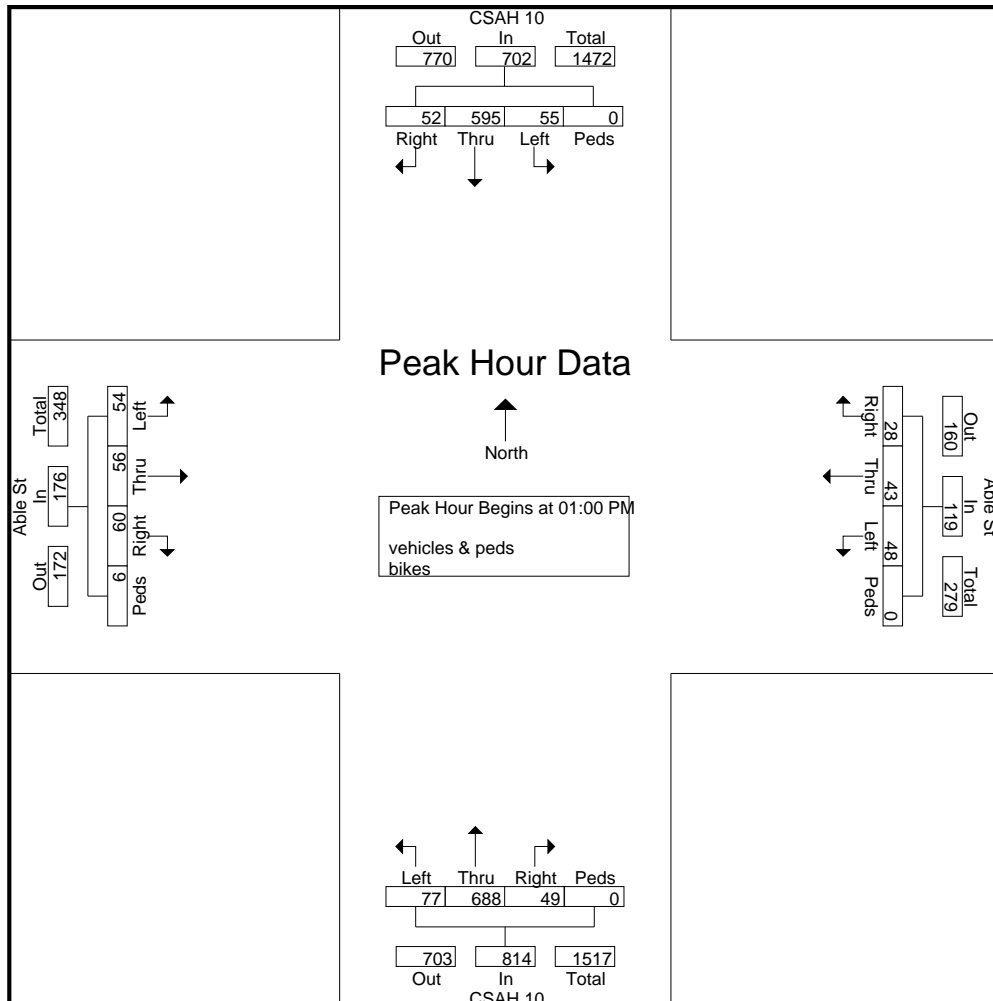


701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 10 & Able St
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 10-CSAH 10 & Able St-Saturday
 Site Code : 10
 Start Date : 9/30/2023
 Page No : 2

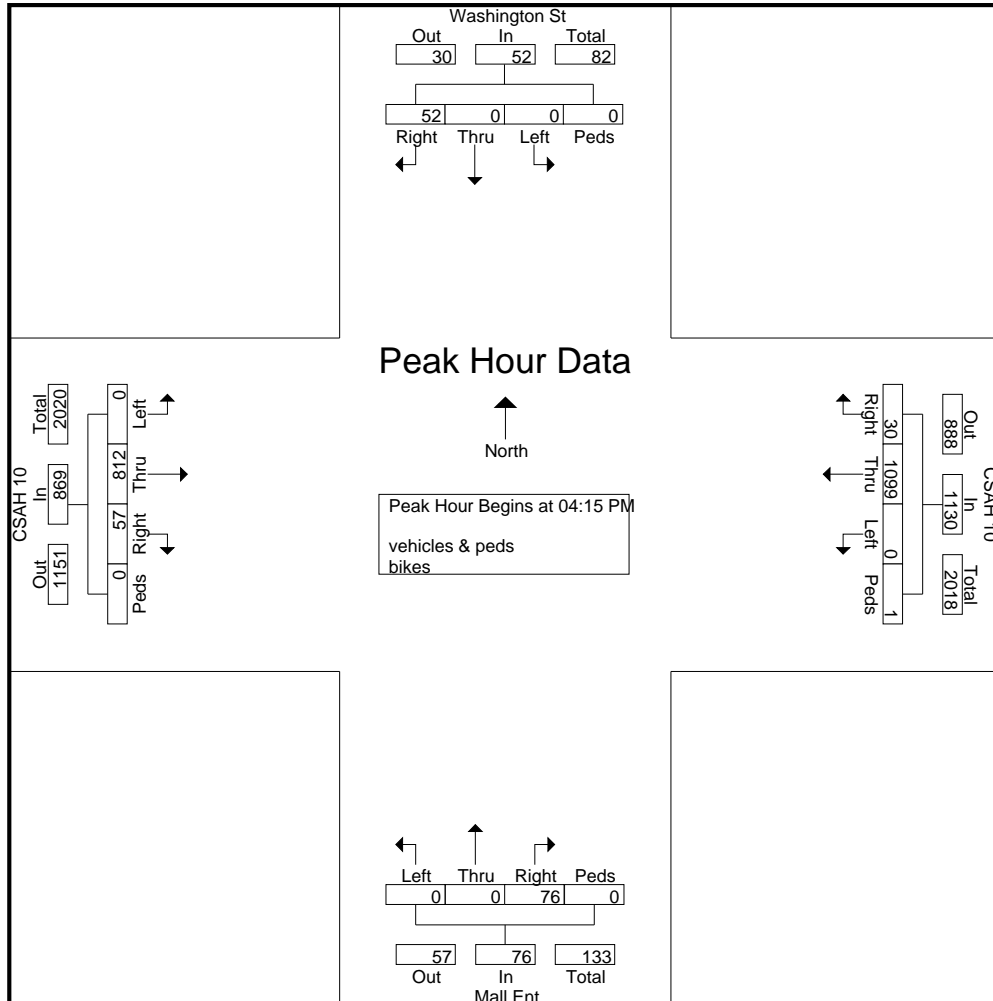
Start Time	CSAH 10 From North					Able St From East					CSAH 10 From South					Able St From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	9	132	17	0	158	7	15	14	0	36	12	178	14	0	204	10	10	11	1	32	430
01:15 PM	10	166	12	0	188	9	15	13	0	37	12	154	26	0	192	15	11	12	2	40	457
01:30 PM	15	142	9	0	166	6	5	9	0	20	13	186	21	0	220	22	19	14	0	55	461
01:45 PM	18	155	17	0	190	6	8	12	0	26	12	170	16	0	198	13	16	17	3	49	463
Total Volume	52	595	55	0	702	28	43	48	0	119	49	688	77	0	814	60	56	54	6	176	1811
% App. Total	7.4	84.8	7.8	0		23.5	36.1	40.3	0		6	84.5	9.5	0		34.1	31.8	30.7	3.4		
PHF	.722	.896	.809	.000	.924	.778	.717	.857	.000	.804	.942	.925	.740	.000	.925	.682	.737	.794	.500	.800	.978



CSAH 10 & Washington St/mall Ent
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 11-CSAH 10 & Washington St-Mall Ent-Thursday
 Site Code : 11
 Start Date : 9/28/2023
 Page No : 2

Start Time	Washington St From North					CSAH 10 From East					Mall Ent From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	8	0	0	0	8	7	323	0	0	330	19	0	0	0	19	14	172	0	0	186	543
04:30 PM	15	0	0	0	15	10	258	0	0	268	10	0	0	0	10	8	250	0	0	258	551
04:45 PM	20	0	0	0	20	2	275	0	0	277	19	0	0	0	19	18	182	0	0	200	516
05:00 PM	9	0	0	0	9	11	243	0	1	255	28	0	0	0	28	17	208	0	0	225	517
Total Volume	52	0	0	0	52	30	1099	0	1	1130	76	0	0	0	76	57	812	0	0	869	2127
% App. Total	100	0	0	0		2.7	97.3	0	0.1		100	0	0	0		6.6	93.4	0	0		
PHF	.650	.000	.000	.000	.650	.682	.851	.000	.250	.856	.679	.000	.000	.000	.679	.792	.812	.000	.000	.842	.965





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 10 & Washington st/Mall Ent
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 11-CSAH 10 & Washington St-Mall Ent-Saturday
 Site Code : 11
 Start Date : 10/7/2023
 Page No : 1

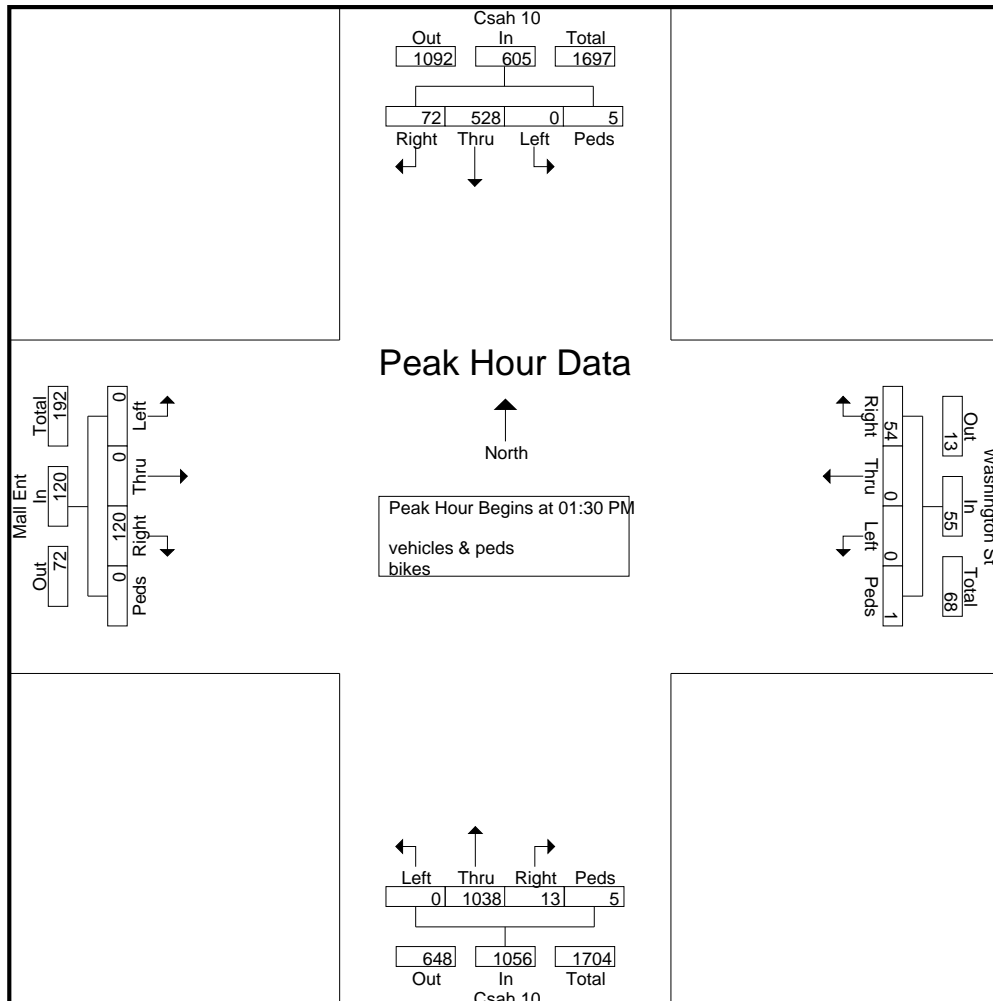
Groups Printed- vehicles & peds - bikes

Start Time	Csah 10 From North					Washington St From East					Csah 10 From South					Mall Ent From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	18	128	0	1	147	11	0	0	0	11	5	241	0	0	246	35	0	0	1	36	440
01:15 PM	17	138	0	1	156	13	0	0	0	13	4	224	0	0	228	31	0	0	0	31	428
01:30 PM	11	128	0	0	139	18	0	0	0	18	5	253	0	0	258	36	0	0	0	36	451
01:45 PM	20	144	0	0	164	10	0	0	1	11	2	266	0	2	270	22	0	0	0	22	467
Total	66	538	0	2	606	52	0	0	1	53	16	984	0	2	1002	124	0	0	1	125	1786
02:00 PM	25	120	0	1	146	13	0	0	0	13	4	251	0	1	256	35	0	0	0	35	450
02:15 PM	16	136	0	4	156	13	0	0	0	13	2	268	0	2	272	27	0	0	0	27	468
02:30 PM	17	132	0	2	151	16	0	0	0	16	3	250	0	0	253	27	0	0	1	28	448
02:45 PM	8	132	0	2	142	8	0	0	0	8	5	261	0	0	266	21	0	0	0	21	437
Total	66	520	0	9	595	50	0	0	0	50	14	1030	0	3	1047	110	0	0	1	111	1803
Grand Total	132	1058	0	11	1201	102	0	0	1	103	30	2014	0	5	2049	234	0	0	2	236	3589
Apprch %	11	88.1	0	0.9		99	0	0	1		1.5	98.3	0	0.2		99.2	0	0	0.8		
Total %	3.7	29.5	0	0.3	33.5	2.8	0	0	0	2.9	0.8	56.1	0	0.1	57.1	6.5	0	0	0.1	6.6	
vehicles & peds	132	1058	0	7	1197	102	0	0	0	102	30	2014	0	3	2047	234	0	0	1	235	3581
% vehicles & peds	100	100	0	63.6	99.7	100	0	0	0	99	100	100	0	60	99.9	100	0	0	50	99.6	99.8
bikes	0	0	0	4	4	0	0	0	1	1	0	0	0	2	2	0	0	0	1	1	8
% bikes	0	0	0	36.4	0.3	0	0	0	100	1	0	0	0	40	0.1	0	0	0	50	0.4	0.2

CSAH 10 & Washington st/Mall Ent
1-3pm
vehicles,peds,bikes
Saturday

File Name : site 11-CSAH 10 & Washington St-Mall Ent-Saturday
Site Code : 11
Start Date : 10/7/2023
Page No : 2

Start Time	Csah 10 From North					Washington St From East					Csah 10 From South					Mall Ent From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:30 PM																					
01:30 PM	11	128	0	0	139	18	0	0	0	18	5	253	0	0	258	36	0	0	0	36	451
01:45 PM	20	144	0	0	164	10	0	0	1	11	2	266	0	2	270	22	0	0	0	22	467
02:00 PM	25	120	0	1	146	13	0	0	0	13	4	251	0	1	256	35	0	0	0	35	450
02:15 PM	16	136	0	4	156	13	0	0	0	13	2	268	0	2	272	27	0	0	0	27	468
Total Volume	72	528	0	5	605	54	0	0	1	55	13	1038	0	5	1056	120	0	0	0	120	1836
% App. Total	11.9	87.3	0	0.8		98.2	0	0	1.8		1.2	98.3	0	0.5		100	0	0	0		
PHF	.720	.917	.000	.313	.922	.750	.000	.000	.250	.764	.650	.968	.000	.625	.971	.833	.000	.000	.000	.833	.981





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 Minneapolis, MN 55416

CSAH 10 & 7th St/Mall Ent
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 12-CSAH 10 & 7th St-mall ent-Thursday
 Site Code : 12
 Start Date : 9/28/2023
 Page No : 1

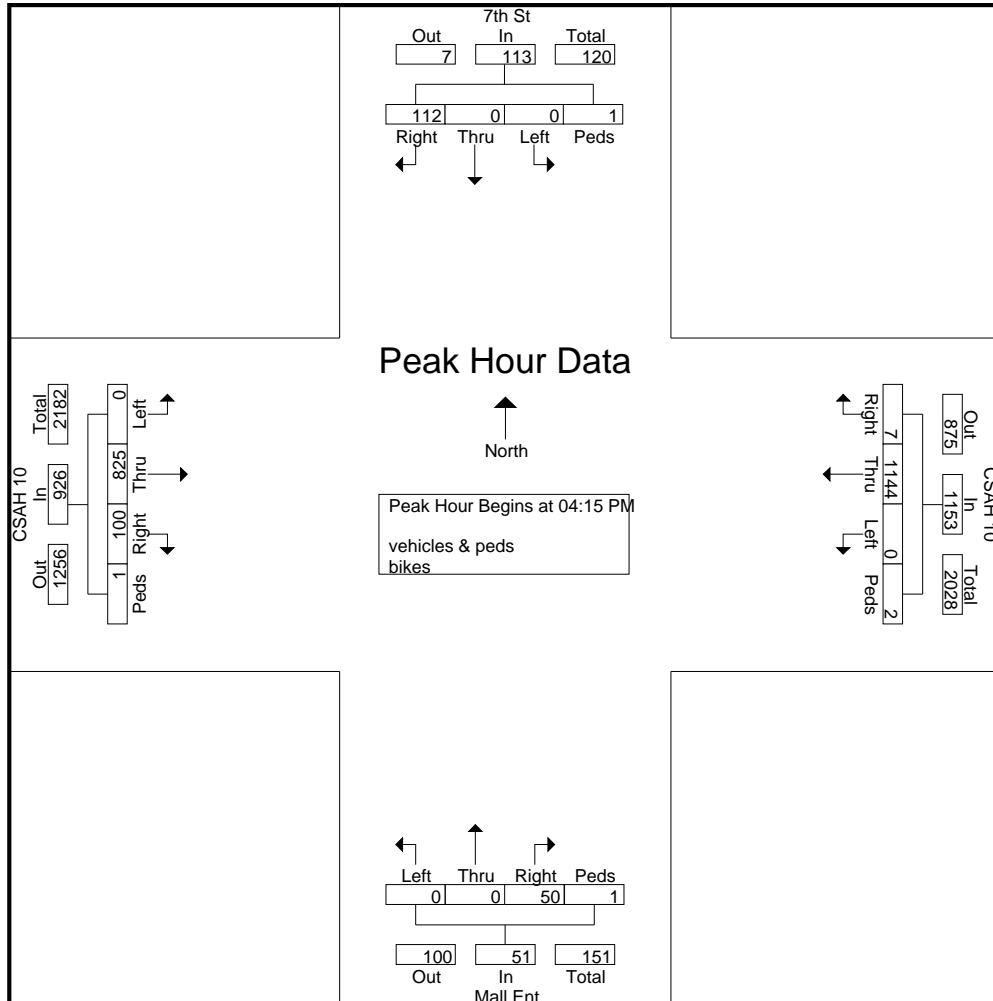
Groups Printed- vehicles & peds - bikes

Start Time	7th St From North					CSAH 10 From East					Mall Ent From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	35	0	0	0	35	4	272	0	0	276	10	0	0	0	10	23	213	0	0	236	557
03:15 PM	42	0	0	0	42	2	243	0	0	245	18	0	0	0	18	23	178	0	0	201	506
03:30 PM	28	0	0	0	28	1	249	0	0	250	13	0	0	0	13	19	194	0	0	213	504
03:45 PM	27	0	0	0	27	3	322	0	0	325	9	0	0	0	9	24	178	0	0	202	563
Total	132	0	0	0	132	10	1086	0	0	1096	50	0	0	0	50	89	763	0	0	852	2130
04:00 PM	27	0	0	0	27	1	245	0	0	246	12	0	0	0	12	21	204	0	0	225	510
04:15 PM	24	0	0	0	24	4	321	0	0	325	18	0	0	0	18	22	178	0	0	200	567
04:30 PM	29	0	0	0	29	1	279	0	1	281	10	0	0	1	11	26	243	0	0	269	590
04:45 PM	27	0	0	0	27	2	285	0	1	288	11	0	0	0	11	29	191	0	0	220	546
Total	107	0	0	0	107	8	1130	0	2	1140	51	0	0	1	52	98	816	0	0	914	2213
05:00 PM	32	0	0	1	33	0	259	0	0	259	11	0	0	0	11	23	213	0	1	237	540
05:15 PM	35	0	0	0	35	3	242	0	1	246	12	0	0	0	12	11	175	0	1	187	480
05:30 PM	27	0	0	0	27	1	268	0	0	269	14	0	0	0	14	20	173	0	0	193	503
05:45 PM	36	0	0	0	36	1	223	0	0	224	6	0	0	1	7	15	135	0	0	150	417
Total	130	0	0	1	131	5	992	0	1	998	43	0	0	1	44	69	696	0	2	767	1940
Grand Total	369	0	0	1	370	23	3208	0	3	3234	144	0	0	2	146	256	2275	0	2	2533	6283
Apprch %	99.7	0	0	0.3		0.7	99.2	0	0.1		98.6	0	0	1.4		10.1	89.8	0	0.1		
Total %	5.9	0	0	0	5.9	0.4	51.1	0	0	51.5	2.3	0	0	0	2.3	4.1	36.2	0	0	40.3	
vehicles & peds	369	0	0	0	369	23	3208	0	1	3232	144	0	0	1	145	256	2275	0	1	2532	6278
% vehicles & peds	100	0	0	0	99.7	100	100	0	33.3	99.9	100	0	0	50	99.3	100	100	0	50	100	99.9
bikes	0	0	0	1	1	0	0	0	2	2	0	0	0	1	1	0	0	0	1	1	5
% bikes	0	0	0	100	0.3	0	0	0	66.7	0.1	0	0	0	50	0.7	0	0	0	50	0	0.1

CSAH 10 & 7th St/Mall Ent
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 12-CSAH 10 & 7th St-mall ent-Thursday
Site Code : 12
Start Date : 9/28/2023
Page No : 2

Start Time	7th St From North					CSAH 10 From East					Mall Ent From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	24	0	0	0	24	4	321	0	0	325	18	0	0	0	18	22	178	0	0	200	567
04:30 PM	29	0	0	0	29	1	279	0	1	281	10	0	0	1	11	26	243	0	0	269	590
04:45 PM	27	0	0	0	27	2	285	0	1	288	11	0	0	0	11	29	191	0	0	220	546
05:00 PM	32	0	0	1	33	0	259	0	0	259	11	0	0	0	11	23	213	0	1	237	540
Total Volume	112	0	0	1	113	7	1144	0	2	1153	50	0	0	1	51	100	825	0	1	926	2243
% App. Total	99.1	0	0	0.9		0.6	99.2	0	0.2		98	0	0	2		10.8	89.1	0	0.1		
PHF	.875	.000	.000	.250	.856	.438	.891	.000	.500	.887	.694	.000	.000	.250	.708	.862	.849	.000	.250	.861	.950



wsb

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Minneapolis, MN 55416

CSAH 10 & 7th St/Mall Ent
1-3pm
vehicles,peds,bikes
Saturday

File Name : site 12-CSAH 10 & 7th St-mall ent-Saturday
Site Code : 12
Start Date : 9/30/2023
Page No : 1

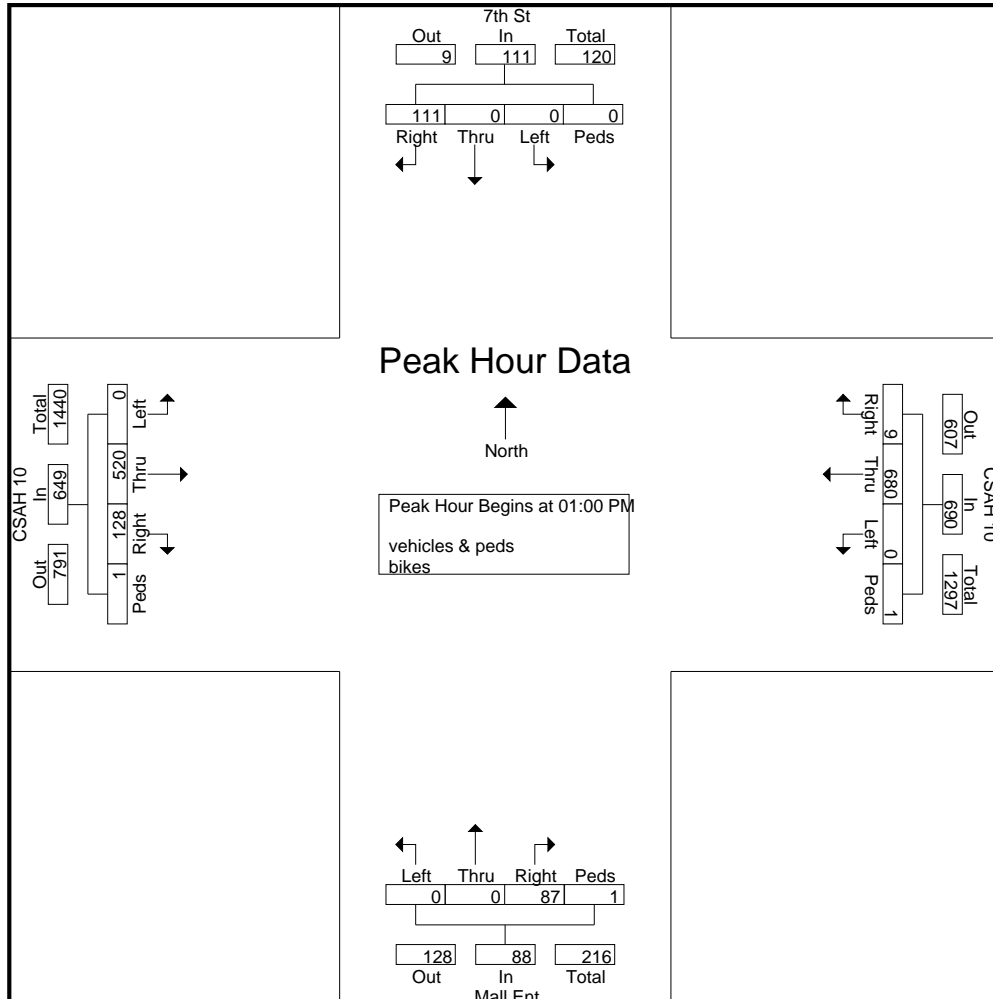
Groups Printed- vehicles & peds - bikes

Start Time	7th St From North					CSAH 10 From East					Mall Ent From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	35	0	0	0	35	1	173	0	0	174	29	0	0	1	30	32	118	0	0	150	389
01:15 PM	24	0	0	0	24	0	170	0	0	170	22	0	0	0	22	30	133	0	0	163	379
01:30 PM	28	0	0	0	28	2	162	0	1	165	19	0	0	0	19	42	122	0	1	165	377
01:45 PM	24	0	0	0	24	6	175	0	0	181	17	0	0	0	17	24	147	0	0	171	393
Total	111	0	0	0	111	9	680	0	1	690	87	0	0	1	88	128	520	0	1	649	1538
02:00 PM	15	0	0	0	15	0	159	0	1	160	23	0	0	0	23	27	121	0	0	148	346
02:15 PM	15	0	0	1	16	1	171	0	1	173	19	0	0	1	20	33	135	0	0	168	377
02:30 PM	14	0	0	0	14	2	163	0	2	167	18	0	0	0	18	31	135	0	1	167	366
02:45 PM	21	0	0	0	21	1	156	0	1	158	28	0	0	1	29	28	119	0	1	148	356
Total	65	0	0	1	66	4	649	0	5	658	88	0	0	2	90	119	510	0	2	631	1445
Grand Total	176	0	0	1	177	13	1329	0	6	1348	175	0	0	3	178	247	1030	0	3	1280	2983
Apprch %	99.4	0	0	0.6		1	98.6	0	0.4		98.3	0	0	1.7		19.3	80.5	0	0.2		
Total %	5.9	0	0	0	5.9	0.4	44.6	0	0.2	45.2	5.9	0	0	0.1	6	8.3	34.5	0	0.1	42.9	
vehicles & peds	176	0	0	1	177	13	1329	0	3	1345	175	0	0	1	176	247	1030	0	2	1279	2977
% vehicles & peds	100	0	0	100	100	100	100	0	50	99.8	100	0	0	33.3	98.9	100	100	0	66.7	99.9	99.8
bikes	0	0	0	0	0	0	0	0	3	3	0	0	0	2	2	0	0	0	1	1	6
% bikes	0	0	0	0	0	0	0	0	50	0.2	0	0	0	66.7	1.1	0	0	0	33.3	0.1	0.2

CSAH 10 & 7th St/Mall Ent
1-3pm
vehicles,peds,bikes
Saturday

File Name : site 12-CSAH 10 & 7th St-mall ent-Saturday
Site Code : 12
Start Date : 9/30/2023
Page No : 2

Start Time	7th St From North					CSAH 10 From East					Mall Ent From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	35	0	0	0	35	1	173	0	0	174	29	0	0	1	30	32	118	0	0	150	389
01:15 PM	24	0	0	0	24	0	170	0	0	170	22	0	0	0	22	30	133	0	0	163	379
01:30 PM	28	0	0	0	28	2	162	0	1	165	19	0	0	0	19	42	122	0	1	165	377
01:45 PM	24	0	0	0	24	6	175	0	0	181	17	0	0	0	17	24	147	0	0	171	393
Total Volume	111	0	0	0	111	9	680	0	1	690	87	0	0	1	88	128	520	0	1	649	1538
% App. Total	100	0	0	0		1.3	98.6	0	0.1		98.9	0	0	1.1		19.7	80.1	0	0.2		
PHF	.793	.000	.000	.000	.793	.375	.971	.000	.250	.953	.750	.000	.000	.250	.733	.762	.884	.000	.250	.949	.978





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

Washington St & 87th Ln
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 13-Washington St & 87th Ln-Thursday
 Site Code : 13
 Start Date : 10/5/2023
 Page No : 1

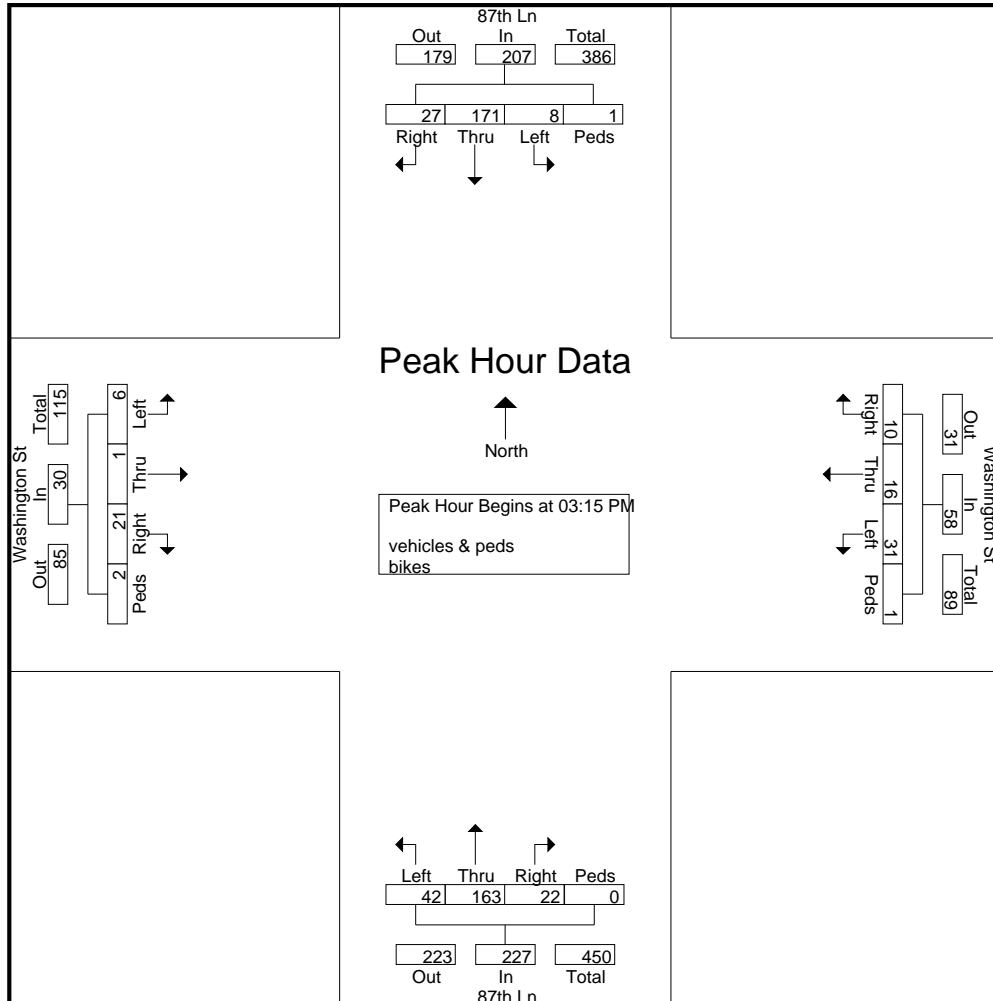
Groups Printed- vehicles & peds - bikes

Start Time	87th Ln From North					Washington St From East					87th Ln From South					Washington St From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	6	20	0	1	27	4	0	4	0	8	5	44	7	0	56	4	1	1	1	7	98
03:15 PM	5	44	3	1	53	2	1	9	1	13	3	29	13	0	45	6	1	2	0	9	120
03:30 PM	6	36	2	0	44	3	4	8	0	15	6	33	11	0	50	7	0	0	2	9	118
03:45 PM	10	57	3	0	70	2	8	5	0	15	5	51	11	0	67	4	0	2	0	6	158
Total	27	157	8	2	194	11	13	26	1	51	19	157	42	0	218	21	2	5	3	31	494
04:00 PM	6	34	0	0	40	3	3	9	0	15	8	50	7	0	65	4	0	2	0	6	126
04:15 PM	4	35	1	0	40	2	2	2	0	6	5	38	9	0	52	1	0	1	1	3	101
04:30 PM	11	38	5	0	54	3	2	8	1	14	6	43	6	1	56	3	3	0	1	7	131
04:45 PM	10	35	3	0	48	3	8	8	0	19	8	42	10	0	60	10	0	3	0	13	140
Total	31	142	9	0	182	11	15	27	1	54	27	173	32	1	233	18	3	6	2	29	498
05:00 PM	6	39	1	0	46	5	3	2	0	10	8	31	6	0	45	2	1	2	0	5	106
05:15 PM	4	25	1	0	30	8	3	6	0	17	7	36	10	0	53	3	0	1	0	4	104
05:30 PM	5	30	2	0	37	4	5	6	0	15	5	27	5	0	37	4	1	6	1	12	101
05:45 PM	6	29	2	0	37	3	2	5	0	10	4	28	6	0	38	6	0	1	2	9	94
Total	21	123	6	0	150	20	13	19	0	52	24	122	27	0	173	15	2	10	3	30	405
Grand Total	79	422	23	2	526	42	41	72	2	157	70	452	101	1	624	54	7	21	8	90	1397
Apprch %	15	80.2	4.4	0.4		26.8	26.1	45.9	1.3		11.2	72.4	16.2	0.2		60	7.8	23.3	8.9		
Total %	5.7	30.2	1.6	0.1	37.7	3	2.9	5.2	0.1	11.2	5	32.4	7.2	0.1	44.7	3.9	0.5	1.5	0.6	6.4	
vehicles & peds	79	422	23	2	526	42	41	72	0	155	70	452	101	1	624	54	7	21	7	89	1394
% vehicles & peds	100	100	100	100	100	100	100	100	0	98.7	100	100	100	100	100	100	100	100	87.5	98.9	99.8
bikes	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	1	1	3
% bikes	0	0	0	0	0	0	0	0	100	1.3	0	0	0	0	0	0	0	0	12.5	1.1	0.2

Washington St & 87th Ln
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 13-Washington St & 87th Ln-Thursday
Site Code : 13
Start Date : 10/5/2023
Page No : 2

Start Time	87th Ln From North					Washington St From East					87th Ln From South					Washington St From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:15 PM																					
03:15 PM	5	44	3	1	53	2	1	9	1	13	3	29	13	0	45	6	1	2	0	9	120
03:30 PM	6	36	2	0	44	3	4	8	0	15	6	33	11	0	50	7	0	0	2	9	118
03:45 PM	10	57	3	0	70	2	8	5	0	15	5	51	11	0	67	4	0	2	0	6	158
04:00 PM	6	34	0	0	40	3	3	9	0	15	8	50	7	0	65	4	0	2	0	6	126
Total Volume	27	171	8	1	207	10	16	31	1	58	22	163	42	0	227	21	1	6	2	30	522
% App. Total	13	82.6	3.9	0.5		17.2	27.6	53.4	1.7		9.7	71.8	18.5	0		70	3.3	20	6.7		
PHF	.675	.750	.667	.250	.739	.833	.500	.861	.250	.967	.688	.799	.808	.000	.847	.750	.250	.750	.250	.833	.826





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

Washington St & 87th Ln
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 13-Washington St & 87th Ln-Saturday
 Site Code : 13
 Start Date : 10/7/2023
 Page No : 1

Groups Printed- vehicles & peds - bikes

Start Time	87th Ln From North					Washington St From East					87th Ln From South					Washington St From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	7	29	4	0	40	8	4	6	0	18	10	62	6	1	79	1	2	4	2	9	146
01:15 PM	2	35	2	0	39	5	8	9	0	22	6	35	8	1	50	2	0	2	0	4	115
01:30 PM	10	37	4	0	51	8	3	10	0	21	9	36	8	0	53	1	0	2	0	3	128
01:45 PM	9	43	5	0	57	2	2	7	1	12	12	51	5	1	69	0	0	1	1	2	140
Total	28	144	15	0	187	23	17	32	1	73	37	184	27	3	251	4	2	9	3	18	529
02:00 PM	7	32	2	0	41	7	7	10	0	24	8	42	9	0	59	2	3	3	2	10	134
02:15 PM	7	39	2	0	48	8	7	7	0	22	7	50	2	1	60	3	0	2	1	6	136
02:30 PM	9	42	1	0	52	4	9	6	0	19	13	45	7	0	65	4	0	5	0	9	145
02:45 PM	7	34	3	1	45	3	4	6	0	13	10	33	7	0	50	6	1	1	2	10	118
Total	30	147	8	1	186	22	27	29	0	78	38	170	25	1	234	15	4	11	5	35	533
Grand Total	58	291	23	1	373	45	44	61	1	151	75	354	52	4	485	19	6	20	8	53	1062
Apprch %	15.5	78	6.2	0.3		29.8	29.1	40.4	0.7		15.5	73	10.7	0.8		35.8	11.3	37.7	15.1		
Total %	5.5	27.4	2.2	0.1	35.1	4.2	4.1	5.7	0.1	14.2	7.1	33.3	4.9	0.4	45.7	1.8	0.6	1.9	0.8	5	
vehicles & peds	58	291	23	1	373	45	44	61	1	151	75	354	52	3	484	19	6	20	3	48	1056
% vehicles & peds	100	100	100	100	100	100	100	100	100	100	100	100	100	75	99.8	100	100	100	37.5	90.6	99.4
bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	5	5	6
% bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0.2	0	0	0	62.5	9.4	0.6

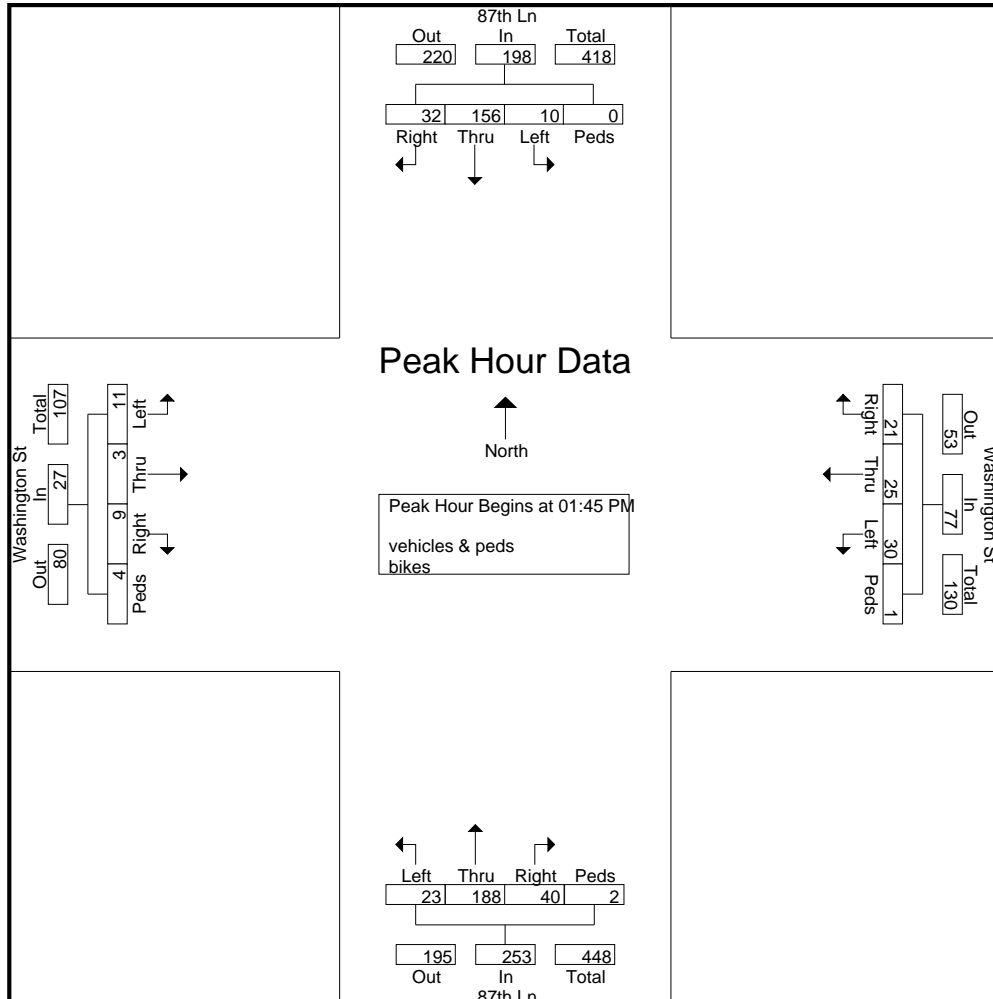


701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

Washington St & 87th Ln
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 13-Washington St & 87th Ln-Saturday
 Site Code : 13
 Start Date : 10/7/2023
 Page No : 2

Start Time	87th Ln From North					Washington St From East					87th Ln From South					Washington St From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:45 PM																					
01:45 PM	9	43	5	0	57	2	2	7	1	12	12	51	5	1	69	0	0	1	1	2	140
02:00 PM	7	32	2	0	41	7	7	10	0	24	8	42	9	0	59	2	3	3	2	10	134
02:15 PM	7	39	2	0	48	8	7	7	0	22	7	50	2	1	60	3	0	2	1	6	136
02:30 PM	9	42	1	0	52	4	9	6	0	19	13	45	7	0	65	4	0	5	0	9	145
Total Volume	32	156	10	0	198	21	25	30	1	77	40	188	23	2	253	9	3	11	4	27	555
% App. Total	16.2	78.8	5.1	0		27.3	32.5	39	1.3		15.8	74.3	9.1	0.8		33.3	11.1	40.7	14.8		
PHF	.889	.907	.500	.000	.868	.656	.694	.750	.250	.802	.769	.922	.639	.500	.917	.563	.250	.550	.500	.675	.957





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

Jefferson St & 85th Ave
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 14-Jefferson St & 85th Ave-Thursday
 Site Code : 14
 Start Date : 10/5/2023
 Page No : 1

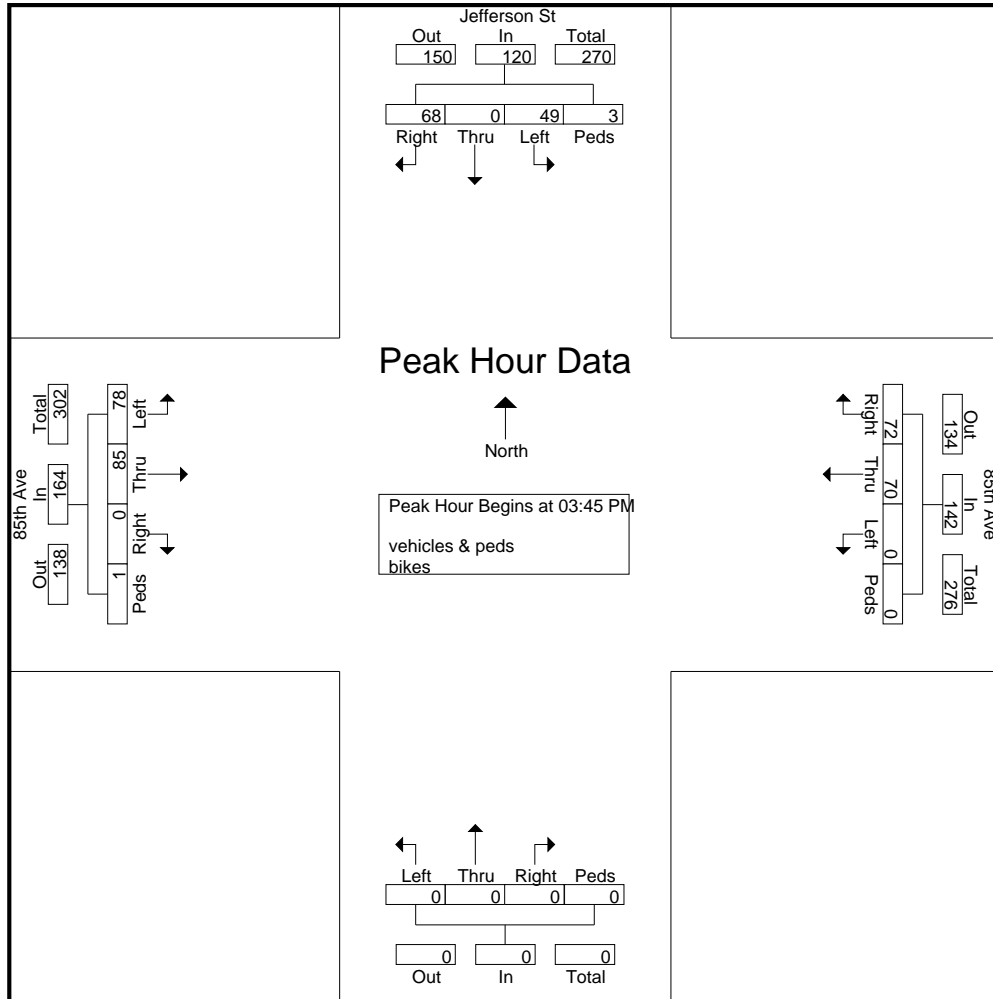
Groups Printed- vehicles & peds - bikes

Start Time	Jefferson St From North					85th Ave From East					From South					85th Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	8	0	7	0	15	26	20	0	0	46	0	0	0	0	0	0	14	14	1	29	90
03:15 PM	13	0	18	1	32	11	13	0	0	24	0	0	0	0	0	0	20	14	0	34	90
03:30 PM	21	0	15	0	36	8	13	0	0	21	0	0	0	0	0	0	25	23	0	48	105
03:45 PM	24	0	11	0	35	21	18	0	0	39	0	0	0	0	0	0	17	19	0	36	110
Total	66	0	51	1	118	66	64	0	0	130	0	0	0	0	0	0	76	70	1	147	395
04:00 PM	15	0	15	0	30	16	22	0	0	38	0	0	0	0	0	0	21	25	0	46	114
04:15 PM	13	0	8	1	22	17	16	0	0	33	0	0	0	0	0	0	19	19	1	39	94
04:30 PM	16	0	15	2	33	18	14	0	0	32	0	0	0	0	0	0	28	15	0	43	108
04:45 PM	9	0	15	1	25	26	12	0	0	38	0	0	0	0	0	0	18	20	2	40	103
Total	53	0	53	4	110	77	64	0	0	141	0	0	0	0	0	0	86	79	3	168	419
05:00 PM	13	0	6	2	21	17	16	0	0	33	0	0	0	0	0	0	26	20	0	46	100
05:15 PM	10	0	12	0	22	13	21	0	0	34	0	0	0	0	0	0	14	13	0	27	83
05:30 PM	14	0	18	0	32	9	12	0	0	21	0	0	0	0	0	0	16	9	0	25	78
05:45 PM	9	0	12	1	22	14	10	0	1	25	0	0	0	0	0	0	11	7	0	18	65
Total	46	0	48	3	97	53	59	0	1	113	0	0	0	0	0	0	67	49	0	116	326
Grand Total	165	0	152	8	325	196	187	0	1	384	0	0	0	0	0	0	229	198	4	431	1140
Apprch %	50.8	0	46.8	2.5		51	48.7	0	0.3		0	0	0	0		0	53.1	45.9	0.9		
Total %	14.5	0	13.3	0.7	28.5	17.2	16.4	0	0.1	33.7	0	0	0	0	0	0	20.1	17.4	0.4	37.8	
vehicles & peds	165	0	152	4	321	196	187	0	1	384	0	0	0	0	0	0	229	198	4	431	1136
% vehicles & peds	100	0	100	50	98.8	100	100	0	100	100	0	0	0	0	0	0	100	100	100	100	99.6
bikes	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
% bikes	0	0	0	50	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4

Jefferson St & 85th Ave
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 14-Jefferson St & 85th Ave-Thursday
Site Code : 14
Start Date : 10/5/2023
Page No : 2

Start Time	Jefferson St From North					85th Ave From East					From South					85th Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	24	0	11	0	35	21	18	0	0	39	0	0	0	0	0	0	17	19	0	36	110
04:00 PM	15	0	15	0	30	16	22	0	0	38	0	0	0	0	0	0	21	25	0	46	114
04:15 PM	13	0	8	1	22	17	16	0	0	33	0	0	0	0	0	0	19	19	1	39	94
04:30 PM	16	0	15	2	33	18	14	0	0	32	0	0	0	0	0	0	28	15	0	43	108
Total Volume	68	0	49	3	120	72	70	0	0	142	0	0	0	0	0	0	85	78	1	164	426
% App. Total	56.7	0	40.8	2.5		50.7	49.3	0	0		0	0	0	0		0	51.8	47.6	0.6		
PHF	.708	.000	.817	.375	.857	.857	.795	.000	.000	.910	.000	.000	.000	.000	.000	.000	.759	.780	.250	.891	.934





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

Jefferson St & 85th Ave
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 14-Jefferson St & 85th Ave-Saturday
 Site Code : 14
 Start Date : 10/7/2023
 Page No : 1

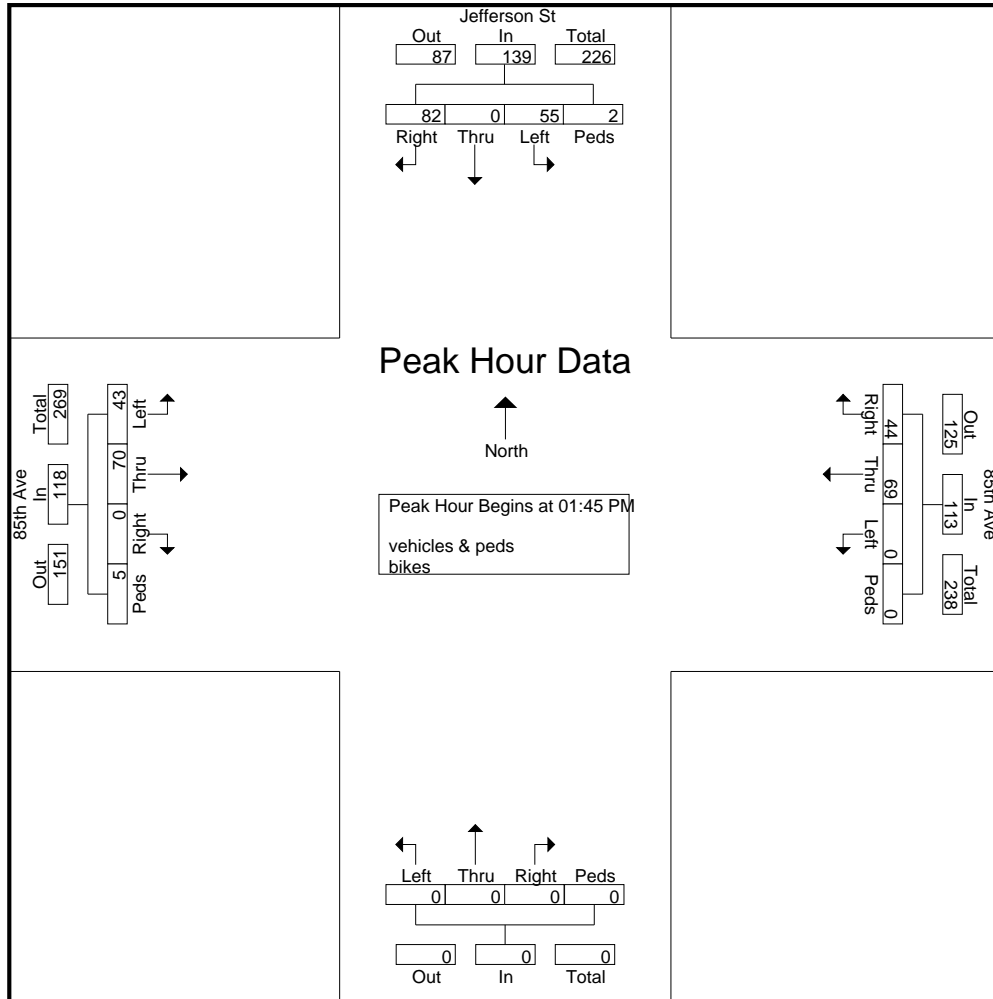
Groups Printed- vehicles & peds - bikes

Start Time	Jefferson St From North					85th Ave From East					From South					85th Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	20	0	18	0	38	14	11	0	0	25	0	0	0	0	0	0	28	9	2	39	102
01:15 PM	11	0	10	1	22	12	12	0	0	24	0	0	0	0	0	0	18	12	0	30	76
01:30 PM	15	0	8	1	24	16	22	0	0	38	0	0	0	0	0	0	14	9	1	24	86
01:45 PM	20	0	14	0	34	13	18	0	0	31	0	0	0	0	0	0	17	14	3	34	99
Total	66	0	50	2	118	55	63	0	0	118	0	0	0	0	0	0	77	44	6	127	363
02:00 PM	25	0	11	0	36	14	14	0	0	28	0	0	0	0	0	0	14	6	2	22	86
02:15 PM	19	0	13	2	34	8	16	0	0	24	0	0	0	0	0	0	17	9	0	26	84
02:30 PM	18	0	17	0	35	9	21	0	0	30	0	0	0	0	0	0	22	14	0	36	101
02:45 PM	19	0	11	1	31	12	17	0	0	29	0	0	0	0	0	0	17	9	3	29	89
Total	81	0	52	3	136	43	68	0	0	111	0	0	0	0	0	0	70	38	5	113	360
Grand Total	147	0	102	5	254	98	131	0	0	229	0	0	0	0	0	0	147	82	11	240	723
Apprch %	57.9	0	40.2	2		42.8	57.2	0	0		0	0	0	0	0	0	61.2	34.2	4.6		
Total %	20.3	0	14.1	0.7	35.1	13.6	18.1	0	0	31.7	0	0	0	0	0	0	20.3	11.3	1.5	33.2	
vehicles & peds	147	0	102	4	253	98	131	0	0	229	0	0	0	0	0	0	147	82	5	234	716
% vehicles & peds	100	0	100	80	99.6	100	100	0	0	100	0	0	0	0	0	0	100	100	45.5	97.5	99
bikes	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	7
% bikes	0	0	0	20	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	54.5	2.5

Jefferson St & 85th Ave
1-3pm
vehicles,peds,bikes
Saturday

File Name : site 14-Jefferson St & 85th Ave-Saturday
Site Code : 14
Start Date : 10/7/2023
Page No : 2

Start Time	Jefferson St From North					85th Ave From East					From South					85th Ave From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:45 PM																					
01:45 PM	20	0	14	0	34	13	18	0	0	31	0	0	0	0	0	0	17	14	3	34	99
02:00 PM	25	0	11	0	36	14	14	0	0	28	0	0	0	0	0	0	14	6	2	22	86
02:15 PM	19	0	13	2	34	8	16	0	0	24	0	0	0	0	0	0	17	9	0	26	84
02:30 PM	18	0	17	0	35	9	21	0	0	30	0	0	0	0	0	0	22	14	0	36	101
Total Volume	82	0	55	2	139	44	69	0	0	113	0	0	0	0	0	0	70	43	5	118	370
% App. Total	59	0	39.6	1.4		38.9	61.1	0	0		0	0	0	0		0	59.3	36.4	4.2		
PHF	.820	.000	.809	.250	.965	.786	.821	.000	.000	.911	.000	.000	.000	.000	.000	.000	.795	.768	.417	.819	.916





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

Jefferson St & Mall Ent
 3-6pm
 vehicles,peds,bikes
 Thursday

File Name : site 15-Jefferson St & Mall Ent-Thursday
 Site Code : 15
 Start Date : 10/5/2023
 Page No : 1

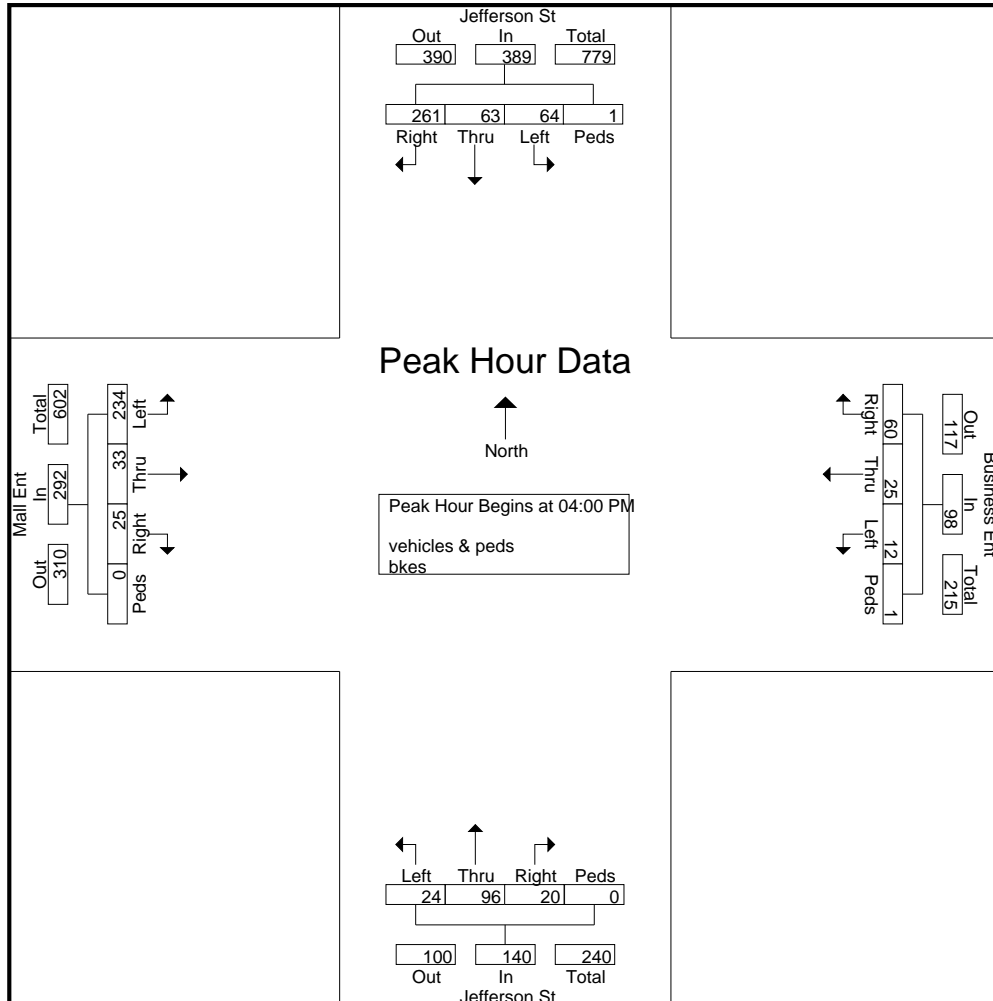
Groups Printed- vehicles & peds - bkes

Start Time	Jefferson St From North					Business Ent From East					Jefferson St From South					Mall Ent From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	40	9	18	2	69	13	6	6	0	25	6	22	9	0	37	1	12	51	0	64	195
03:15 PM	54	18	9	3	84	18	4	2	0	24	0	12	6	0	18	7	12	39	0	58	184
03:30 PM	52	23	19	1	95	11	5	2	0	18	4	21	3	0	28	7	8	38	0	53	194
03:45 PM	60	26	16	1	103	11	5	2	0	18	6	23	8	0	37	4	5	59	0	68	226
Total	206	76	62	7	351	53	20	12	0	85	16	78	26	0	120	19	37	187	0	243	799
04:00 PM	59	19	17	0	95	16	9	3	0	28	5	30	6	0	41	8	3	68	0	79	243
04:15 PM	57	12	14	1	84	9	3	3	0	15	2	21	4	0	27	7	13	53	0	73	199
04:30 PM	66	17	16	0	99	16	9	5	1	31	5	20	7	0	32	6	9	49	0	64	226
04:45 PM	79	15	17	0	111	19	4	1	0	24	8	25	7	0	40	4	8	64	0	76	251
Total	261	63	64	1	389	60	25	12	1	98	20	96	24	0	140	25	33	234	0	292	919
05:00 PM	59	14	12	0	85	16	7	1	0	24	9	17	7	0	33	3	2	59	0	64	206
05:15 PM	56	16	14	1	87	15	10	0	0	25	3	14	7	0	24	5	10	61	1	77	213
05:30 PM	63	22	9	0	94	9	3	2	0	14	3	13	3	0	19	8	5	50	0	63	190
05:45 PM	46	16	17	0	79	7	9	2	0	18	7	11	2	0	20	4	5	55	0	64	181
Total	224	68	52	1	345	47	29	5	0	81	22	55	19	0	96	20	22	225	1	268	790
Grand Total	691	207	178	9	1085	160	74	29	1	264	58	229	69	0	356	64	92	646	1	803	2508
Apprch %	63.7	19.1	16.4	0.8		60.6	28	11	0.4		16.3	64.3	19.4	0		8	11.5	80.4	0.1		
Total %	27.6	8.3	7.1	0.4	43.3	6.4	3	1.2	0	10.5	2.3	9.1	2.8	0	14.2	2.6	3.7	25.8	0	32	
vehicles & peds	691	207	178	9	1085	160	74	29	0	263	58	229	69	0	356	64	92	646	0	802	2506
% vehicles & peds	100	100	100	100	100	100	100	100	0	99.6	100	100	100	0	100	100	100	100	0	99.9	99.9
bkes	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	2
% bkes	0	0	0	0	0	0	0	0	100	0.4	0	0	0	0	0	0	0	0	100	0.1	0.1

Jefferson St & Mall Ent
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 15-Jefferson St & Mall Ent-Thursday
Site Code : 15
Start Date : 10/5/2023
Page No : 2

Start Time	Jefferson St From North					Business Ent From East					Jefferson St From South					Mall Ent From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	59	19	17	0	95	16	9	3	0	28	5	30	6	0	41	8	3	68	0	79	243
04:15 PM	57	12	14	1	84	9	3	3	0	15	2	21	4	0	27	7	13	53	0	73	199
04:30 PM	66	17	16	0	99	16	9	5	1	31	5	20	7	0	32	6	9	49	0	64	226
04:45 PM	79	15	17	0	111	19	4	1	0	24	8	25	7	0	40	4	8	64	0	76	251
Total Volume	261	63	64	1	389	60	25	12	1	98	20	96	24	0	140	25	33	234	0	292	919
% App. Total	67.1	16.2	16.5	0.3		61.2	25.5	12.2	1		14.3	68.6	17.1	0		8.6	11.3	80.1	0		
PHF	.826	.829	.941	.250	.876	.789	.694	.600	.250	.790	.625	.800	.857	.000	.854	.781	.635	.860	.000	.924	.915





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

Jefferson St & Mall Ent
 1-3pm
 vehicles,peds,bikes

File Name : site 15-Jefferson St & Mall Ent-Saturday
 Site Code : 15
 Start Date : 10/7/2023
 Page No : 1

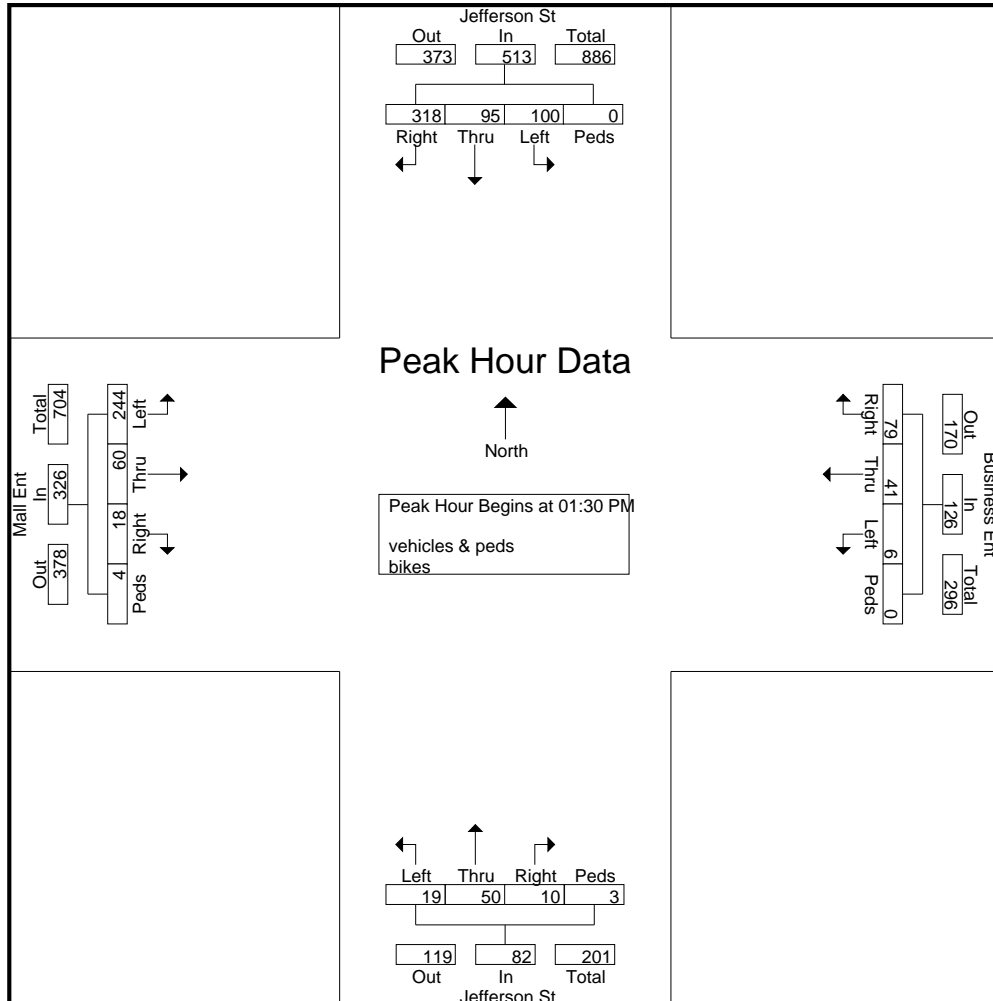
Groups Printed- vehicles & peds - bikes

Start Time	Jefferson St From North					Business Ent From East					Jefferson St From South					Mall Ent From West					Int. Total	
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total		
01:00 PM	74	24	14	0	112	15	10	2	1	28	4	9	5	1	19	7	10	66	2	85	244	
01:15 PM	71	22	20	1	114	17	7	2	0	26	4	15	3	1	23	0	9	48	1	58	221	
01:30 PM	67	14	33	0	114	21	9	0	0	30	2	14	7	1	24	8	12	71	1	92	260	
01:45 PM	89	31	28	0	148	20	13	4	0	37	4	15	2	1	22	2	23	68	1	94	301	
Total	301	91	95	1	488	73	39	8	1	121	14	53	17	4	88	17	54	253	5	329	1026	
02:00 PM	78	29	16	0	123	20	11	0	0	31	1	11	5	1	18	4	13	52	0	69	241	
02:15 PM	84	21	23	0	128	18	8	2	0	28	3	10	5	0	18	4	12	53	2	71	245	
02:30 PM	84	23	13	0	120	19	9	2	0	30	2	14	2	1	19	7	16	59	1	83	252	
02:45 PM	75	28	27	0	130	16	12	0	0	28	6	10	6	0	22	4	13	60	2	79	259	
Total	321	101	79	0	501	73	40	4	0	117	12	45	18	2	77	19	54	224	5	302	997	
Grand Total	622	192	174	1	989	146	79	12	1	238	26	98	35	6	165	36	108	477	10	631	2023	
Apprch %	62.9	19.4	17.6	0.1		61.3	33.2	5	0.4		15.8	59.4	21.2	3.6		5.7	17.1	75.6	1.6			
Total %	30.7	9.5	8.6	0	48.9	7.2	3.9	0.6	0	11.8	1.3	4.8	1.7	0.3	8.2	1.8	5.3	23.6	0.5	31.2		
vehicles & peds	622	192	174	1	989	146	79	12	0	237	26	98	35	3	162	36	108	477	4	625	2013	
% vehicles & peds	100	100	100	100	100	100	100	100	0	99.6	100	100	100	50	98.2	100	100	100	40	99	99.5	
bikes	0	0	0	0	0	0	0	0	1	1	0	0	0	3	3	0	0	0	0	6	6	10
% bikes	0	0	0	0	0	0	0	0	100	0.4	0	0	0	50	1.8	0	0	0	60	1	0.5	

Jefferson St & Mall Ent
1-3pm
vehicles,peds,bikes

File Name : site 15-Jefferson St & Mall Ent-Saturday
Site Code : 15
Start Date : 10/7/2023
Page No : 2

Start Time	Jefferson St From North					Business Ent From East					Jefferson St From South					Mall Ent From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:30 PM																					
01:30 PM	67	14	33	0	114	21	9	0	0	30	2	14	7	1	24	8	12	71	1	92	260
01:45 PM	89	31	28	0	148	20	13	4	0	37	4	15	2	1	22	2	23	68	1	94	301
02:00 PM	78	29	16	0	123	20	11	0	0	31	1	11	5	1	18	4	13	52	0	69	241
02:15 PM	84	21	23	0	128	18	8	2	0	28	3	10	5	0	18	4	12	53	2	71	245
Total Volume	318	95	100	0	513	79	41	6	0	126	10	50	19	3	82	18	60	244	4	326	1047
% App. Total	62	18.5	19.5	0		62.7	32.5	4.8	0		12.2	61	23.2	3.7		5.5	18.4	74.8	1.2		
PHF	.893	.766	.758	.000	.867	.940	.788	.375	.000	.851	.625	.833	.679	.750	.854	.563	.652	.859	.500	.867	.870



wsb

701 Xenia Ave S, Suite 300
Minneapolis, MN 55416

CSAH 10 & TH 47 E Ramp
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 16-CSAH 10 & TH 47 E Ramp-Thursday
Site Code : 16
Start Date : 9/28/2023
Page No : 1

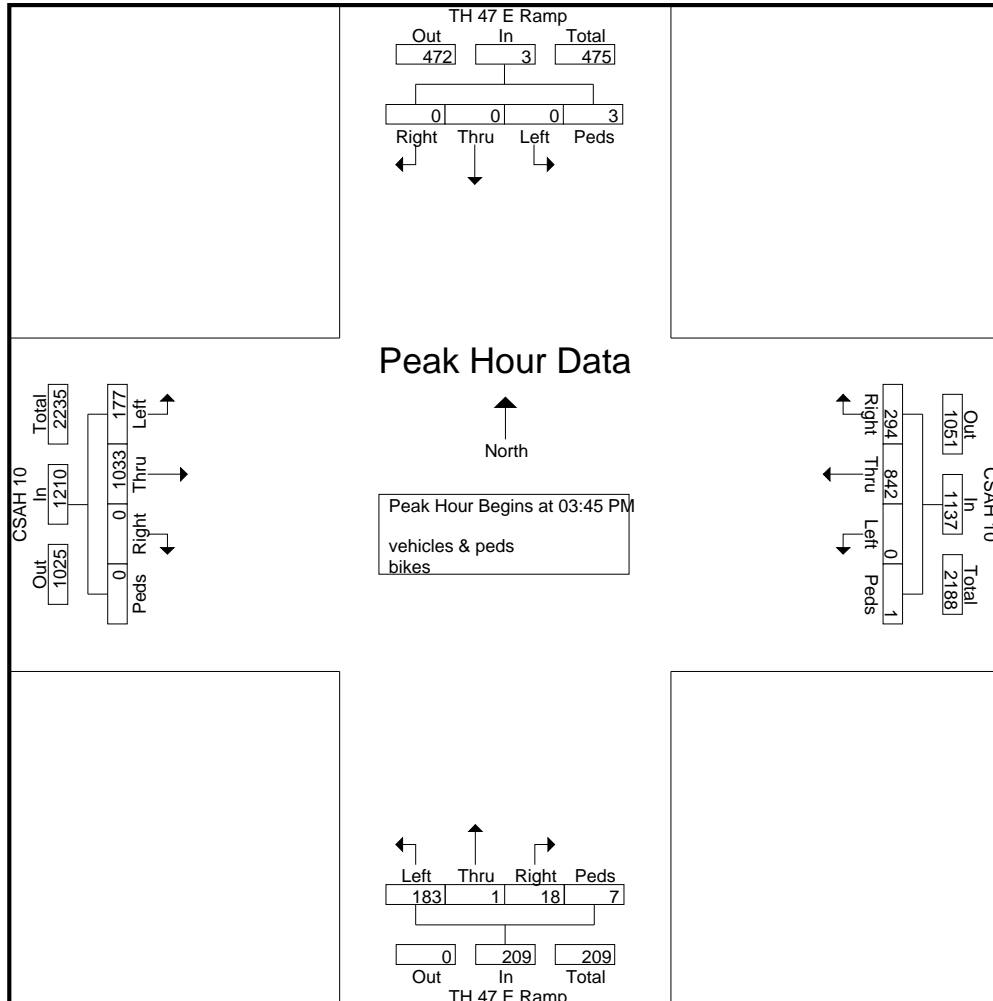
Groups Printed- vehicles & peds - bikes

Start Time	TH 47 E Ramp From North					CSAH 10 From East					TH 47 E Ramp From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	0	0	0	1	1	54	182	0	2	238	5	1	38	0	44	0	234	29	0	263	546
03:15 PM	0	0	0	0	0	61	199	0	0	260	1	1	42	2	46	0	215	25	0	240	546
03:30 PM	0	0	0	1	1	73	199	0	1	273	5	0	47	0	52	0	276	59	0	335	661
03:45 PM	0	0	0	2	2	73	190	0	0	263	7	0	53	0	60	0	245	39	0	284	609
Total	0	0	0	4	4	261	770	0	3	1034	18	2	180	2	202	0	970	152	0	1122	2362
04:00 PM	0	0	0	0	0	68	202	0	0	270	6	1	41	3	51	0	257	57	0	314	635
04:15 PM	0	0	0	0	0	71	236	0	0	307	4	0	48	2	54	0	221	33	0	254	615
04:30 PM	0	0	0	1	1	82	214	0	1	297	1	0	41	2	44	0	310	48	0	358	700
04:45 PM	0	0	0	1	1	55	186	0	1	242	5	0	44	2	51	0	242	23	0	265	559
Total	0	0	0	2	2	276	838	0	2	1116	16	1	174	9	200	0	1030	161	0	1191	2509
05:00 PM	0	0	0	0	0	68	166	0	0	234	3	1	44	3	51	0	246	39	0	285	570
05:15 PM	0	0	0	3	3	70	202	0	1	273	1	0	32	1	34	0	204	39	0	243	553
05:30 PM	0	0	0	1	1	43	175	0	0	218	0	0	50	0	50	0	182	18	0	200	469
05:45 PM	0	0	0	0	0	46	188	0	1	235	4	1	32	1	38	0	172	11	0	183	456
Total	0	0	0	4	4	227	731	0	2	960	8	2	158	5	173	0	804	107	0	911	2048
Grand Total	0	0	0	10	10	764	2339	0	7	3110	42	5	512	16	575	0	2804	420	0	3224	6919
Apprch %	0	0	0	100		24.6	75.2	0	0.2		7.3	0.9	89	2.8		0	87	13	0		
Total %	0	0	0	0.1	0.1	11	33.8	0	0.1	44.9	0.6	0.1	7.4	0.2	8.3	0	40.5	6.1	0	46.6	
vehicles & peds	0	0	0	5	5	764	2339	0	2	3105	42	5	512	5	564	0	2804	420	0	3224	6898
% vehicles & peds	0	0	0	50	50	100	100	0	28.6	99.8	100	100	100	31.2	98.1	0	100	100	0	100	99.7
bikes	0	0	0	5	5	0	0	0	5	5	0	0	0	11	11	0	0	0	0	0	21
% bikes	0	0	0	50	50	0	0	0	71.4	0.2	0	0	0	68.8	1.9	0	0	0	0	0	0.3

CSAH 10 & TH 47 E Ramp
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 16-CSAH 10 & TH 47 E Ramp-Thursday
Site Code : 16
Start Date : 9/28/2023
Page No : 2

Start Time	TH 47 E Ramp From North					CSAH 10 From East					TH 47 E Ramp From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	2	2	73	190	0	0	263	7	0	53	0	60	0	245	39	0	284	609
04:00 PM	0	0	0	0	0	68	202	0	0	270	6	1	41	3	51	0	257	57	0	314	635
04:15 PM	0	0	0	0	0	71	236	0	0	307	4	0	48	2	54	0	221	33	0	254	615
04:30 PM	0	0	0	1	1	82	214	0	1	297	1	0	41	2	44	0	310	48	0	358	700
Total Volume	0	0	0	3	3	294	842	0	1	1137	18	1	183	7	209	0	1033	177	0	1210	2559
% App. Total	0	0	0	100		25.9	74.1	0	0.1		8.6	0.5	87.6	3.3		0	85.4	14.6	0		
PHF	.000	.000	.000	.375	.375	.896	.892	.000	.250	.926	.643	.250	.863	.583	.871	.000	.833	.776	.000	.845	.914





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 10 & TH 47 E Ramp
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 16-CSAH 10 & TH 47 E Ramp-Saturday
 Site Code : 16
 Start Date : 9/30/2023
 Page No : 1

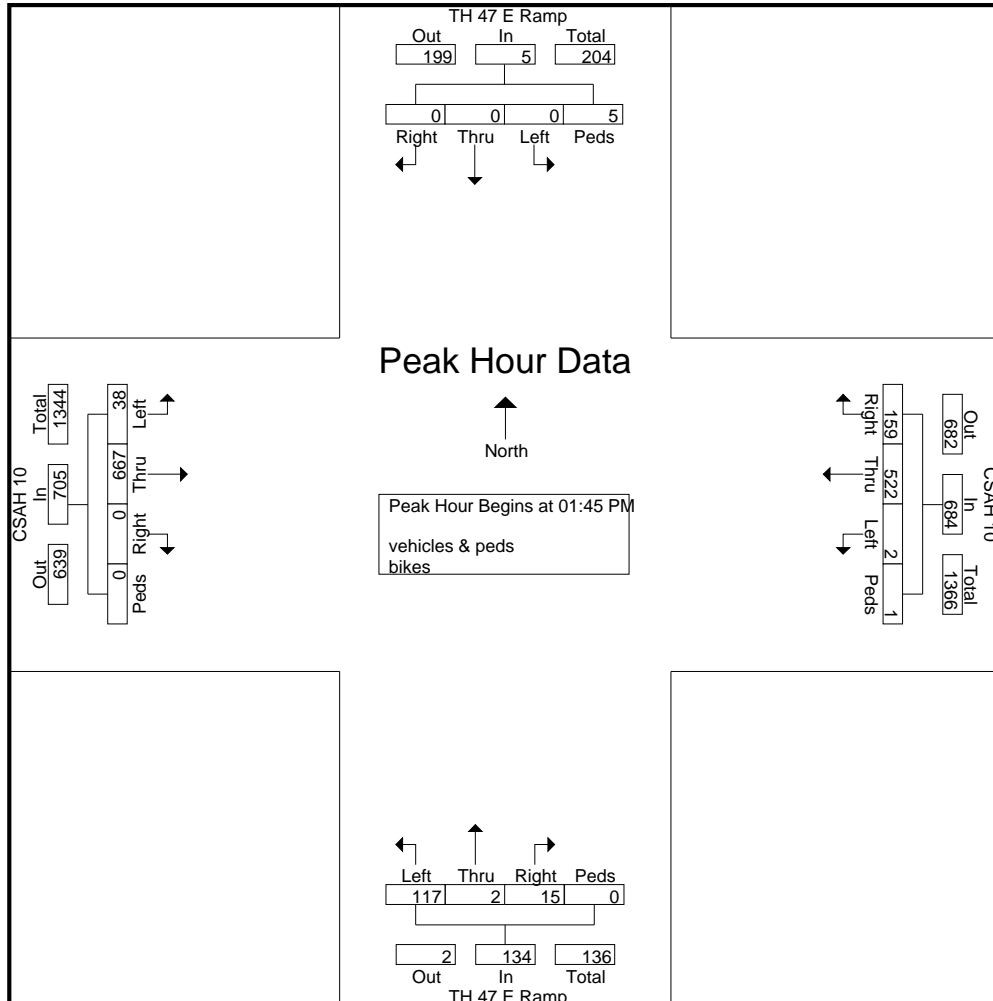
Groups Printed- vehicles & peds - bikes

Start Time	TH 47 E Ramp From North					CSAH 10 From East					TH 47 E Ramp From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	0	0	0	0	0	42	134	0	0	176	2	0	35	2	39	0	139	12	0	151	366
01:15 PM	0	0	0	0	0	42	98	0	2	142	6	1	29	2	38	0	157	15	0	172	352
01:30 PM	0	0	0	0	0	44	135	1	0	180	1	0	32	0	33	0	159	12	0	171	384
01:45 PM	0	0	0	1	1	42	145	1	0	188	0	0	23	0	23	0	171	7	0	178	390
Total	0	0	0	1	1	170	512	2	2	686	9	1	119	4	133	0	626	46	0	672	1492
02:00 PM	0	0	0	2	2	45	129	0	0	174	2	0	31	0	33	0	162	6	0	168	377
02:15 PM	0	0	0	2	2	35	124	1	0	160	3	0	30	0	33	0	170	10	0	180	375
02:30 PM	0	0	0	0	0	37	124	0	1	162	10	2	33	0	45	0	164	15	0	179	386
02:45 PM	0	0	0	0	0	34	106	0	1	141	5	0	20	0	25	0	153	14	0	167	333
Total	0	0	0	4	4	151	483	1	2	637	20	2	114	0	136	0	649	45	0	694	1471
Grand Total	0	0	0	5	5	321	995	3	4	1323	29	3	233	4	269	0	1275	91	0	1366	2963
Apprch %	0	0	0	100		24.3	75.2	0.2	0.3		10.8	1.1	86.6	1.5		0	93.3	6.7	0		
Total %	0	0	0	0.2	0.2	10.8	33.6	0.1	0.1	44.7	1	0.1	7.9	0.1	9.1	0	43	3.1	0	46.1	
vehicles & peds	0	0	0	4	4	321	995	3	1	1320	29	3	233	0	265	0	1275	91	0	1366	2955
% vehicles & peds	0	0	0	80	80	100	100	100	25	99.8	100	100	100	0	98.5	0	100	100	0	100	99.7
bikes	0	0	0	1	1	0	0	0	3	3	0	0	0	4	4	0	0	0	0	0	8
% bikes	0	0	0	20	20	0	0	0	75	0.2	0	0	0	100	1.5	0	0	0	0	0	0.3

CSAH 10 & TH 47 E Ramp
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 16-CSAH 10 & TH 47 E Ramp-Saturday
 Site Code : 16
 Start Date : 9/30/2023
 Page No : 2

Start Time	TH 47 E Ramp From North					CSAH 10 From East					TH 47 E Ramp From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:45 PM																					
01:45 PM	0	0	0	1	1	42	145	1	0	188	0	0	23	0	23	0	171	7	0	178	390
02:00 PM	0	0	0	2	2	45	129	0	0	174	2	0	31	0	33	0	162	6	0	168	377
02:15 PM	0	0	0	2	2	35	124	1	0	160	3	0	30	0	33	0	170	10	0	180	375
02:30 PM	0	0	0	0	0	37	124	0	1	162	10	2	33	0	45	0	164	15	0	179	386
Total Volume	0	0	0	5	5	159	522	2	1	684	15	2	117	0	134	0	667	38	0	705	1528
% App. Total	0	0	0	100		23.2	76.3	0.3	0.1		11.2	1.5	87.3	0		0	94.6	5.4	0		
PHF	.000	.000	.000	.625	.625	.883	.900	.500	.250	.910	.375	.250	.886	.000	.744	.000	.975	.633	.000	.979	.979



wsb

701 Xenia Ave S, Suite 300
Minneapolis, MN 55416

CSAH 10 & TH 47 W Ramp
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 17-CSAH 10 & TH 47 W Ramp-Thursday
Site Code : 17
Start Date : 9/28/2023
Page No : 1

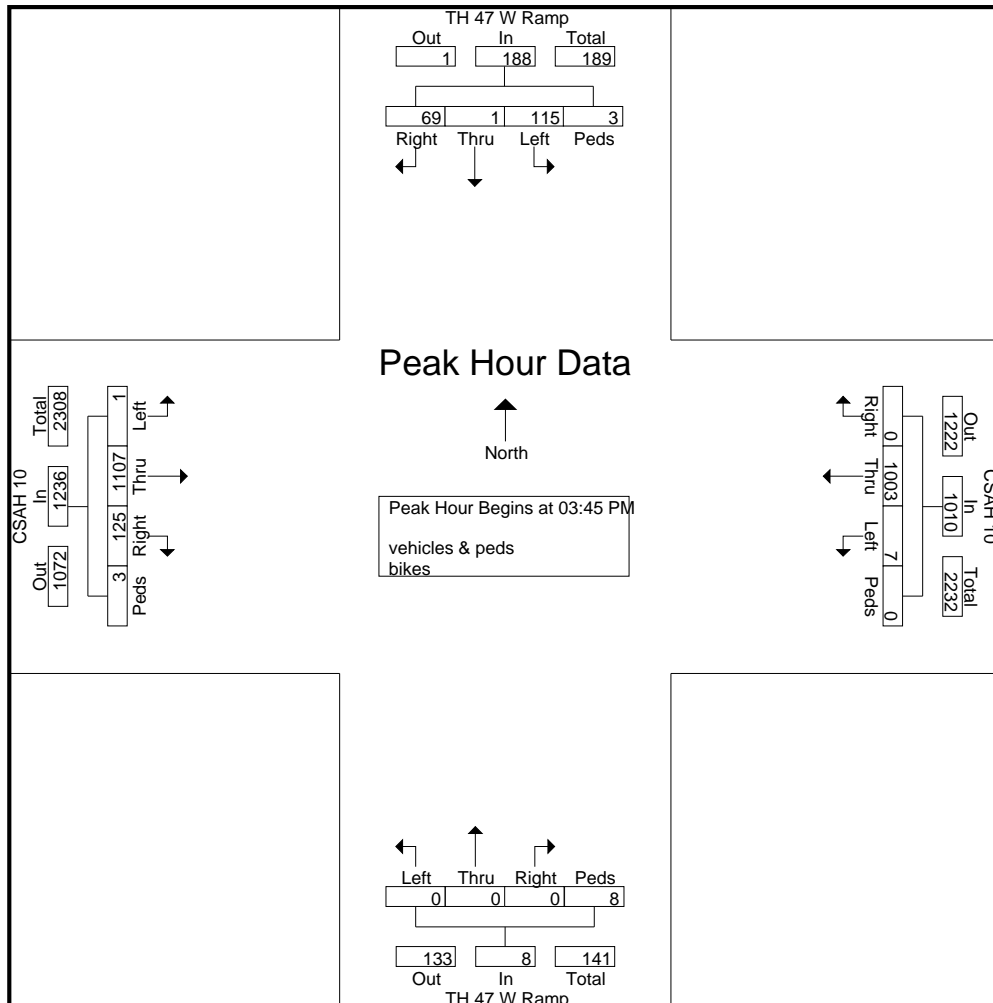
Groups Printed- vehicles & peds - bikes

Start Time	TH 47 W Ramp From North					CSAH 10 From East					TH 47 W Ramp From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
03:00 PM	15	0	22	1	38	0	216	1	0	217	0	0	0	0	0	20	234	0	0	254	509
03:15 PM	22	0	27	0	49	0	243	1	0	244	0	0	0	2	2	21	214	0	1	236	531
03:30 PM	21	2	25	1	49	0	241	2	0	243	0	0	0	0	0	28	305	0	0	333	625
03:45 PM	27	0	32	2	61	0	229	1	0	230	0	0	0	0	0	29	249	0	1	279	570
Total	85	2	106	4	197	0	929	5	0	934	0	0	0	2	2	98	1002	0	2	1102	2235
04:00 PM	13	0	24	0	37	0	256	3	0	259	0	0	0	4	4	33	296	0	1	330	630
04:15 PM	16	0	26	0	42	0	269	1	0	270	0	0	0	1	1	29	224	1	0	254	567
04:30 PM	13	1	33	1	48	0	249	2	0	251	0	0	0	3	3	34	338	0	1	373	675
04:45 PM	23	0	22	0	45	0	233	1	0	234	0	0	0	3	3	28	232	0	0	260	542
Total	65	1	105	1	172	0	1007	7	0	1014	0	0	0	11	11	124	1090	1	2	1217	2414
05:00 PM	16	0	31	1	48	0	198	0	0	198	0	0	0	3	3	29	263	0	3	295	544
05:15 PM	21	0	21	2	44	0	238	2	0	240	0	0	0	1	1	24	222	0	0	246	531
05:30 PM	28	1	31	1	61	0	212	4	0	216	0	0	0	0	0	21	164	0	0	185	462
05:45 PM	19	0	27	0	46	0	227	0	0	227	0	0	0	1	1	17	157	1	0	175	449
Total	84	1	110	4	199	0	875	6	0	881	0	0	0	5	5	91	806	1	3	901	1986
Grand Total	234	4	321	9	568	0	2811	18	0	2829	0	0	0	18	18	313	2898	2	7	3220	6635
Apprch %	41.2	0.7	56.5	1.6		0	99.4	0.6	0		0	0	0	100		9.7	90	0.1	0.2		
Total %	3.5	0.1	4.8	0.1	8.6	0	42.4	0.3	0	42.6	0	0	0	0.3	0.3	4.7	43.7	0	0.1	48.5	
vehicles & peds	234	4	321	3	562	0	2811	18	0	2829	0	0	0	4	4	313	2898	2	2	3215	6610
% vehicles & peds	100	100	100	33.3	98.9	0	100	100	0	100	0	0	0	22.2	22.2	100	100	100	28.6	99.8	99.6
bikes	0	0	0	6	6	0	0	0	0	0	0	0	0	14	14	0	0	0	5	5	25
% bikes	0	0	0	66.7	1.1	0	0	0	0	0	0	0	0	77.8	77.8	0	0	0	71.4	0.2	0.4

CSAH 10 & TH 47 W Ramp
3-6pm
vehicles,peds,bikes
Thursday

File Name : site 17-CSAH 10 & TH 47 W Ramp-Thursday
Site Code : 17
Start Date : 9/28/2023
Page No : 2

Start Time	TH 47 W Ramp From North					CSAH 10 From East					TH 47 W Ramp From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	27	0	32	2	61	0	229	1	0	230	0	0	0	0	0	29	249	0	1	279	570
04:00 PM	13	0	24	0	37	0	256	3	0	259	0	0	0	4	4	33	296	0	1	330	630
04:15 PM	16	0	26	0	42	0	269	1	0	270	0	0	0	1	1	29	224	1	0	254	567
04:30 PM	13	1	33	1	48	0	249	2	0	251	0	0	0	3	3	34	338	0	1	373	675
Total Volume	69	1	115	3	188	0	1003	7	0	1010	0	0	0	8	8	125	1107	1	3	1236	2442
% App. Total	36.7	0.5	61.2	1.6		0	99.3	0.7	0		0	0	0	100		10.1	89.6	0.1	0.2		
PHF	.639	.250	.871	.375	.770	.000	.932	.583	.000	.935	.000	.000	.000	.500	.500	.919	.819	.250	.750	.828	.904





701 Xenia Ave S, Suite 300
 Minneapolis, MN 55416

CSAH 10 & TH 47 W Ramp
 1-3pm
 vehicles,peds,bikes
 Saturday

File Name : site 17-CSAH 10 & TH 47 W Ramp-Saturday
 Site Code : 17
 Start Date : 9/30/2023
 Page No : 1

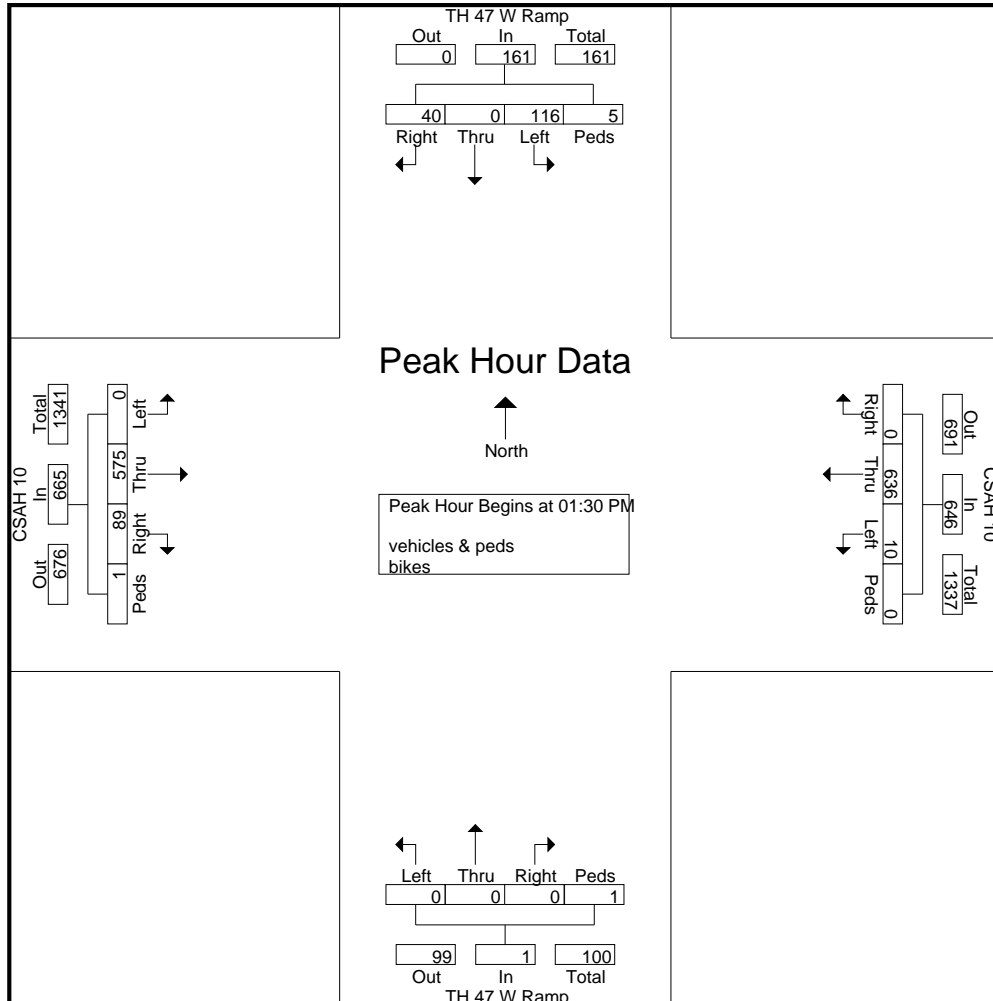
Groups Printed- vehicles & peds - bikes

Start Time	TH 47 W Ramp From North					CSAH 10 From East					TH 47 W Ramp From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
01:00 PM	10	0	27	0	37	0	162	4	0	166	0	0	0	2	2	23	120	0	0	143	348
01:15 PM	10	0	24	0	34	0	125	4	0	129	0	0	0	1	1	34	152	0	0	186	350
01:30 PM	16	0	24	0	40	0	162	1	0	163	0	0	0	1	1	27	144	0	0	171	375
01:45 PM	8	0	32	2	42	0	170	3	0	173	0	0	0	0	0	22	141	0	0	163	378
Total	44	0	107	2	153	0	619	12	0	631	0	0	0	4	4	106	557	0	0	663	1451
02:00 PM	11	0	25	1	37	0	155	3	0	158	0	0	0	0	0	19	149	0	0	168	363
02:15 PM	5	0	35	2	42	0	149	3	0	152	0	0	0	0	0	21	141	0	1	163	357
02:30 PM	6	1	28	0	35	0	145	4	0	149	0	0	0	0	0	19	149	1	0	169	353
02:45 PM	11	0	40	0	51	0	125	7	0	132	0	0	0	0	0	23	129	0	0	152	335
Total	33	1	128	3	165	0	574	17	0	591	0	0	0	0	0	82	568	1	1	652	1408
Grand Total	77	1	235	5	318	0	1193	29	0	1222	0	0	0	4	4	188	1125	1	1	1315	2859
Apprch %	24.2	0.3	73.9	1.6		0	97.6	2.4	0		0	0	0	100		14.3	85.6	0.1	0.1		
Total %	2.7	0	8.2	0.2	11.1	0	41.7	1	0	42.7	0	0	0	0.1	0.1	6.6	39.3	0	0	46	
vehicles & peds	77	1	235	4	317	0	1193	29	0	1222	0	0	0	0	0	188	1125	1	1	1315	2854
% vehicles & peds	100	100	100	80	99.7	0	100	100	0	100	0	0	0	0	0	100	100	100	100	100	99.8
bikes	0	0	0	1	1	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	5
% bikes	0	0	0	20	0.3	0	0	0	0	0	0	0	0	100	100	0	0	0	0	0	0.2

CSAH 10 & TH 47 W Ramp
1-3pm
vehicles,peds,bikes
Saturday

File Name : site 17-CSAH 10 & TH 47 W Ramp-Saturday
Site Code : 17
Start Date : 9/30/2023
Page No : 2

Start Time	TH 47 W Ramp From North					CSAH 10 From East					TH 47 W Ramp From South					CSAH 10 From West					Int. Total
	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	Right	Thru	Left	bikes	App. Total	
Peak Hour Analysis From 01:00 PM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:30 PM																					
01:30 PM	16	0	24	0	40	0	162	1	0	163	0	0	0	1	1	27	144	0	0	171	375
01:45 PM	8	0	32	2	42	0	170	3	0	173	0	0	0	0	0	22	141	0	0	163	378
02:00 PM	11	0	25	1	37	0	155	3	0	158	0	0	0	0	0	19	149	0	0	168	363
02:15 PM	5	0	35	2	42	0	149	3	0	152	0	0	0	0	0	21	141	0	1	163	357
Total Volume	40	0	116	5	161	0	636	10	0	646	0	0	0	1	1	89	575	0	1	665	1473
% App. Total	24.8	0	72	3.1		0	98.5	1.5	0		0	0	0	100		13.4	86.5	0	0.2		
PHF	.625	.000	.829	.625	.958	.000	.935	.833	.000	.934	.000	.000	.000	.250	.250	.824	.965	.000	.250	.972	.974



APPENDIX B – CAPACITY ANALYSIS TABLES

DRAFT

Table 1a. Existing Sat MOEs

Control	Intersection		Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Average & Maximum Traffic Queueing (feet)									
	Location	Appr	L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS	Left-Turn			Through			Right-Turn			
																	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	
Signalized	1: Springbrook Dr & 85th Ave	NB	89	83	190	362	13	17	6	B	B	A	10	B	15	B	NB	37	84	140	35	91		43	103	140
		WB	181	180	210	571	23	21	8	C	C	A	17	B			WB	80	170	155	48	125		50	127	155
		SB	244	94	40	378	13	11	5	B	B	A	12	B			SB	73	162	330	31	83				
		EB	46	139	117	302	23	30	6	C	C	A	20	C			EB	29	78	300	43	94		34	70	330
Signalized	2: TH 47 & 85th Ave	NB	211	721	177	1109	41	19	5	D	B	A	21	C	24	C	NB	119	211	560	88	179				
		WB	143	172	71	386	39	37	8	D	D	A	32	C			WB	87	154	130	69	216		30	66	145
		SB	93	722	209	1024	53	25	11	D	C	B	25	C			SB	62	141	270	104	199		43	121	270
		EB	233	155	190	578	36	32	4	D	C	A	24	C			EB	128	243	300	42	82		3	52	115
Signalized	3: TH 47 & University Ave	NB	0	581	392	973	0	5	7	A	A	A	6	A	11	B	NB				16	61		1	21	293
		WB	446	0	117	563	33	1	4	C	A	A	27	C			WB	123	216							
		SB	0	528	0	528	0	5	0	A	A	A	5	A			SB				44	116				
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB									
Signalized	4: 86th Ln & University Ave	NB	53	26	152	231	15	16	5	B	B	A	9	A	12	B	NB				34	91		37	73	
		WB	130	433	82	645	30	8	4	C	A	A	12	B			WB	62	143	360	48	132		18	62	170
		SB	123	22	88	233	18	19	5	B	B	A	13	B			SB				61	130		34	95	100
		EB	57	323	15	395	27	10	5	C	B	A	12	B			EB	34	76	220	54	128		8	37	220
Signalized	5: University Ave & CSAH 10	NB	117	416	124	657	38	24	4	D	C	A	23	C	32	C	NB	50	88	280	94	183				
		WB	316	617	276	1209	30	32	13	C	C	B	27	C			WB	91	177	520	156	253		56	153	430
		SB	149	248	19	416	33	17	3	C	B	A	22	C			SB	56	74		52	83		8	56	200
		EB	153	439	67	659	64	63	16	E	E	B	58	E			EB	59	151	550	186	358		14	279	300
Thru-Stop	6: University Ave & 89th Ave	NB	0	630	207	837	0	3	3	A	A	A	3	A	4	A	NB				32	112				
		WB	0	0	142	142	0	1	7	A	A	A	7	A			WB							43	91	
		SB	95	416	0	511	11	5	0	B	A	A	6	A			SB	33	86	90	24	104				
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB									
Signalized	7: University Ave & 91st Ave	NB	85	684	7	776	18	5	5	B	A	A	6	A	6	A	NB	34	81	280	39	96		2	32	100
		WB	15	0	12	27	16	0	5	B	A	A	11	B			WB				9	30		11	39	30
		SB	53	492	9	554	18	4	2	B	A	A	5	A			SB	26	68	365	40	102		2	18	265
		EB	30	0	20	50	17	0	5	B	A	A	12	B			EB				21	73		12	49	40
Signalized	8: 87th Ln & 89th Ave	NB	111	0	117	228	6	0	3	A	A	A	4	A	9	A	NB	28	89					25	86	
		WB	98	46	0	144	13	9	0	B	A	A	12	B			WB	42	89	190	17	60				
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB									
		EB	0	122	202	324	0	17	7	A	B	A	11	B			EB				49	100		44	81	190
Signalized	9: Jefferson St NE & CSAH 10	NB	116	99	167	382	18	17	3	B	B	A	11	B	30	C	NB	39	105	185	24	72		2	28	140
		WB	245	904	51	1200	32	41	11	C	D	B	38	D			WB	66	166	915	224	341		2	24	780
		SB	77	126	31	234	20	20	4	C	C	A	18	B			SB	32	102	220	36	121				
		EB	73	514	75	662	37	35	7	D	D	A	32	C			EB	15	69	670	112	236		3	38	250
Signalized	10: Able St & CSAH 10	NB	54	56	60	170	25	23	7	C	C	A	18	B	28	C	NB	20	77	100	29	98		28	80	80
		WB	77	1088	49	1214	42	27	6	D	C	A	27	C			WB	28	104	780	165	305		4	110	250
		SB	48	43	28	119	39	39	19	D	D	B	34	C			SB	30	77	70	51	118				
		EB	55	595	52	702	41	33	12	D	C	B	32	C			EB	18	89	780	103	227		1	18	320
Thru-Stop	11: Washington St NE & CSAH 10	NB	0	0	120	120	0	0	5	A	A	A	5	A	5	A	NB									
		WB	0	1038	12	1050	0	7	6	A	A	A	7	A			WB									
		SB	0	0	54	54	0	1	2	A	A	A	2	A			SB								11	
		EB	0	528	72	600	0	1	1	A	A	A	1	A			EB								36	62
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	87	87	0	0	5	A	A	A	5	A	4	A	NB								29	73
		WB	0	1080	9	1089	0	2	1	A	A	A	2	A			WB									
		SB	0	0	111	111	0	0	2	A	A	A	2	A			SB									
		EB	0	520	128	648	0	7	7	A	A	A	7	A			EB									
Signalized	13: Jefferson St NE/87th Ln & Washington St NE	NB	23	188	40	251	12	11	5	B	B	A	10	B	8	A	NB	14	45	160	39	96				
		WB	30	25	21	76	6	5	2	A	A	A	5	A			WB				15	55		7	30	150
		SB	10	156	32	198	12	6	4	B	A	A	6	A			SB	7	32	90	31	76				
		EB	11	3	9	23	6	6	2	A	A	A	4	A			EB				6	37				
All-Way Stop	14: 85th Ave NE & Jefferson St NE	NB	0	0	0	0	0	0	0	A	A	A	0	A	5	A	NB									
		WB	0	69	44	113	0	7	3	A	A	A	5	A			WB				36	64				
		SB	55	0	82	137	6	0	4	A	A	A	5	A			SB	30	60	180				34	70	
		EB	43	70	0	113	5	6	0	A	A	A	6	A			EB				37	64				
Signalized	15: Jefferson St NE & Mall Ent	NB	19	50	10	79	11	8	2	B	A	A	8	A	12	B	NB	10	42	110	19	78		4	31	110
		WB	6	41	79	126	27	28	6	C	C	A	14	B			WB				34	101		34	84	70
		SB	100	95	318	513	11	9	5	B	A	A	7	A			SB	35	96	160	25	93		55	151	
		EB	244	60	18	322	20	19	8	C	B	A	19	B			EB	83	104	80	61	216				
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	117	2	15	134	13	4	8	B	A	A	12	B	33	C	NB	4	53	140	43	126				
		WB	0	522	159	681	0	36	8	A	D	A	29	C			WB				112	205		12	62	
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB									
		EB	38	667	0	705	57	40	0	E	D	A	41	D			EB	32	120	170	184	336				
Signalized	17: TH 47 SB Ramp & CSAH 10	NB	0	0	0	0	0	0	0	A	A	A	0	A	30	C	NB									
		WB	10	636	0	646	57	41	0	E	D	A	41	D			WB	12	76	200	217	418				
		SB	116	0	40	156	11</																			

Table 1b. Existing PM MOEs

Control	Intersection		Average & Maximum Traffic Queuing (feet)																										
	Location	Appr	Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Appr	Left-Turn			Through			Right-Turn					
			L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS		Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage			
Signalized	1: Springbrook Dr & 85th Ave	NB	110	90	162	362	13	17	7	B	B	A	11	B	17	B	NB	44	102	140	35	94				38	91	140	
		WB	123	242	167	532	24	23	7	C	C	A	18	B			WB	63	144	155	58	114				42	95	155	
		SB	182	66	36	284	13	14	6	B	B	A	12	B			SB	59	120	330	29	99							
		EB	46	294	103	443	22	29	6	C	C	A	23	C			EB	30	81	300	89	177				31	67	330	
Signalized	2: TH 47 & 85th Ave	NB	189	1341	127	1657	54	22	6	D	C	A	24	C	25	C	NB	128	291	560	152	259							
		WB	96	120	64	280	40	40	11	D	D	B	33	C			WB	60	130	130	45	98				30	85	145	
		SB	44	674	195	913	51	26	10	D	C	B	24	C			SB	31	116	270	112	202				42	117	270	
		EB	321	146	235	702	37	30	4	D	C	A	24	C			EB	175	306	300	40	146				2	52	115	
Signalized	3: TH 47 & University Ave	NB	0	1220	516	1736	0	7	8	A	A	A	7	A	9	A	NB					22	70						
		WB	317	0	85	402	35	1	3	D	A	A	28	C			WB	103	172										
		SB	0	594	0	594	0	4	0	A	A	A	4	A			SB					37	99						
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB												
Signalized	4: 86th Ln & University Ave	NB	37	13	118	168	16	14	5	B	B	A	8	A	11	B	NB				24	61				31	73		
		WB	113	313	40	466	26	8	4	C	A	A	12	B			WB	55	136	360	41	96				10	44	170	
		SB	91	13	57	161	16	16	5	B	B	A	12	B			SB					47	98				25	58	100
		EB	56	461	19	536	23	9	4	C	A	A	10	B			EB	37	81	220	68	141				6	33	220	
Signalized	5: University Ave & CSAH 10	NB	101	459	132	692	47	32	5	D	C	A	29	C	41	D	NB	46	86	280	115	216							
		WB	192	1055	216	1463	37	43	16	D	D	B	38	D			WB	59	123	520	299	417				49	198	430	
		SB	100	185	9	294	44	23	3	D	C	A	30	C			SB	39	72			46	86				3	45	200
		EB	261	685	70	1016	79	53	18	E	D	B	57	E			EB	111	274	550	240	506				47	325	300	
Thru-Stop	6: University Ave & 89th Ave	NB	0	745	246	991	0	3	3	A	A	A	3	A	6	A	NB												
		WB	0	0	153	153	0	1	8	A	A	A	8	A			WB										45	105	
		SB	94	294	0	388	12	14	0	B	B	A	14	B			SB	34	96	90	28	103							
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB												
Signalized	7: University Ave & 91st Ave	NB	56	815	7	878	19	6	6	B	A	A	7	A	15	B	NB	26	68	280	54	159				2	31	100	
		WB	15	0	31	46	54	0	16	D	A	B	28	C			WB					17	91				22	53	30
		SB	73	388	22	483	31	27	15	C	C	B	27	C			SB	35	117	365	71	330				5	71	265	
		EB	13	2	7	22	19	14	23	B	B	C	20	C			EB					11	45				7	48	40
Signalized	8: 87th Ln & 89th Ave	NB	124	0	99	223	7	0	3	A	A	A	5	A	10	B	NB	34	91										
		WB	155	72	0	227	13	9	0	B	A	A	12	B			WB	57	110	190	28	73							
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB												
		EB	0	156	188	344	0	19	8	A	B	A	13	B			EB					55	132				46	106	190
Signalized	9: Jefferson St NE & CSAH 10	NB	136	86	155	377	23	19	3	C	B	A	14	B	35	D	NB	56	139	185	25	92				3	54	140	
		WB	210	1166	78	1454	46	42	13	D	D	B	41	D			WB	75	178	915	296	456				3	23	780	
		SB	91	90	38	219	24	27	4	C	C	A	22	C			SB	38	99	220	38	116							
		EB	65	727	72	864	46	38	9	D	D	A	36	D			EB	14	67	670	202	391				39	274	250	
Signalized	10: Able St & CSAH 10	NB	73	129	107	309	30	33	10	C	C	B	24	C	34	C	NB	34	119	100	75	207				45	105	80	
		WB	147	1323	65	1535	47	31	9	D	C	A	32	C			WB	77	163	780	217	417				20	220	250	
		SB	58	75	44	177	42	46	27	D	D	C	40	D			SB	39	94	70	82	203							
		EB	64	861	67	992	49	39	15	D	D	B	38	D			EB	28	99	780	144	393				10	216	320	
Thru-Stop	11: Washington St NE & CSAH 10	NB	0	0	76	76	0	0	9	A	A	A	9	A	6	A	NB												
		WB	0	1306	30	1336	0	8	6	A	A	A	8	A			WB												
		SB	0	0	52	52	0	1	2	A	A	A	2	A			SB												
		EB	0	812	57	869	0	2	1	A	A	A	2	A			EB					1	20						
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	50	50	0	0	7	A	A	A	7	A	5	A	NB												
		WB	0	1351	7	1358	0	3	1	A	A	A	3	A			WB										20	49	
		SB	0	0	112	112	0	0	2	A	A	A	2	A			SB												
		EB	0	825	100	925	0	8	8	A	A	A	8	A			EB												
Signalized	13: Jefferson St NE/87th Ln & Washington St NE	NB	42	163	22	227	13	10	5	B	B	A	10	B	7	A	NB	25	67	160	32	84							
		WB	31	16	10	57	6	5	2	A	A	A	5	A			WB					14	62				4	29	150
		SB	8	171	27	206	8	6	4	A	A	A	6	A			SB	4	27	90	35	99							
		EB	6	1	21	28	6	2	2	A	A	A	3	A			EB					10	39						
All-Way Stop	14: 85th Ave NE & Jefferson St NE	NB	0	0	0	0	0	0	0	A	A	A	0	A	6	A	NB												
		WB	0	70	72	142	0	7	4	A	A	A	5	A			WB												
		SB	49	0	68	117	6	0	4	A	A	A	5	A			SB	27	62	180							30	70	
		EB	78	85	0	163	6	7	0	A	A	A	7	A			EB												
Signalized	15: Jefferson St NE & Mall Ent	NB	24	96	20	140	12	9	3	B	A	A	9	A	10	B	NB	14	39	110	34	100				9	40	110	
		WB	12	25	60	97	22	25	5	C	C	A	12	B			WB					27	75				29	53	70
		SB	64	63	261	388	11	9	6	B	A	A	7	A			SB	28	74	160	17	64				53	128		
		EB	234	33	25	292	16	15	5	B	B	A	15	B			EB	71	101	80	31	129							
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	183	1	18	202	25	30	19	C	C	B	24	C	37	D	NB	16	118	140	83	156							
		WB	0	842	294	1136	0	43	11	A	D																		

Table 2a. 2040 No-Build Sat MOEs

Control	Intersection		Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Average & Maximum Traffic Queueing (feet)											
	Location	Appr	L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS	Left-Turn			Through			Right-Turn					
																	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage			
Signalized	1: Springbrook Dr & 85th Ave	NB	104	97	221	422	13	17	7	B	B	A	11	B	14	B	NB	37	84	140	41	103		50	104	140		
		WB	211	210	245	666	22	17	7	C	B	A	15	B			WB	88	166	155	47	104		54	124	155		
		SB	284	109	47	440	17	13	7	B	B	A	15	B			SB	86	206	330	41	99						
		EB	54	162	136	352	18	23	6	B	C	A	16	B			EB	28	78	300	43	90		35	71	330		
Signalized	2: TH 47 & 85th Ave	NB	246	840	177	1263	59	21	6	E	C	A	26	C	28	C	NB	167	322	560	108	199						
		WB	143	172	71	386	41	37	9	D	D	A	33	C			WB	82	147	130	63	182		27	68	145		
		SB	93	841	243	1177	53	32	15	D	C	B	30	C			SB	63	153	270	148	280		62	168	270		
		EB	271	155	221	647	42	27	4	D	C	A	25	C			EB	153	288	300	43	210		5	79	115		
Signalized	3: TH 47 & University Ave	NB	0	677	456	1133	0	5	7	A	A	A	6	A	12	B	NB				19	77		1	16	585		
		WB	519	0	136	655	33	0	4	C	A	A	27	C			WB	149	251									
		SB	0	615	0	615	0	7	0	A	A	A	7	A			SB			60	134							
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB											
Signalized	4: 86th Ln & University Ave	NB	53	26	152	231	16	15	5	B	B	A	9	A	12	B	NB				32	89		37	87			
		WB	130	504	82	716	33	9	5	C	A	A	13	B			WB	70	156	360	64	139		17	52	170		
		SB	123	22	88	233	17	15	5	B	B	A	12	B			SB				59	115		34	91	100		
		EB	57	376	15	448	25	11	5	C	B	A	13	B			EB	33	83	220	65	127		7	32	220		
Signalized	5: University Ave & CSAH 10	NB	136	484	144	764	39	26	4	D	C	A	24	C	34	C	NB	63	112	280	118	205						
		WB	368	719	321	1408	32	34	16	C	C	B	29	C			WB	111	189	520	180	271		84	200	430		
		SB	174	289	22	485	35	18	3	D	B	A	23	C			SB	60	73		62	92		14	56	200		
		EB	178	511	78	767	73	65	19	E	E	B	62	E			EB	72	172	550	209	364		28	266	300		
Thru-Stop	6: University Ave & 89th Ave	NB	0	734	241	975	0	3	3	A	A	A	3	A	5	A	NB				50	138						
		WB	0	0	165	165	0	1	8	A	A	A	8	A			WB							48	105			
		SB	111	484	0	595	13	7	0	B	A	A	8	A			SB	42	98	90	30	175						
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB											
Signalized	7: University Ave & 91st Ave	NB	99	797	8	904	20	6	6	C	A	A	8	A	7	A	NB	42	130	280	52	125				2	35	100
		WB	17	0	14	31	18	0	6	B	A	A	13	B			WB				12	52		13	44	30		
		SB	62	573	10	645	19	5	2	B	A	A	6	A			SB	31	79	365	51	130		2	19	265		
		EB	35	0	23	58	18	0	5	B	A	A	13	B			EB				19	74		14	40	40		
Signalized	8: 87th Ln & 89th Ave	NB	129	0	136	265	8	0	4	A	A	A	6	A	10	B	NB	33	118							50	92	190
		WB	114	54	0	168	12	8	0	B	A	A	11	B			WB	47	91	190	21	70						
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB											
		EB	0	142	235	377	0	18	8	A	B	A	12	B			EB				54	96		50	92	190		
Signalized	9: Jefferson St NE & CSAH 10	NB	135	115	194	444	23	21	3	C	C	A	14	B	30	C	NB	52	118	185	28	79					9	140
		WB	285	1053	59	1397	39	36	11	D	D	B	36	D			WB	71	180	915	227	353		2	22	780		
		SB	90	147	36	273	23	28	5	C	C	A	23	C			SB	38	118	220	54	135						
		EB	85	599	87	771	33	32	7	C	C	A	29	C			EB	15	61	670	128	221		5	50	250		
Signalized	10: Able St & CSAH 10	NB	63	65	70	198	29	27	8	C	C	A	21	C	31	C	NB	32	83	100	34	106				28	87	80
		WB	90	1267	57	1414	42	33	8	D	C	A	33	C			WB	33	120	780	226	418		22	275	250		
		SB	56	50	33	139	39	37	24	D	D	C	35	D			SB	38	94	70	52	126						
		EB	64	693	61	818	43	29	12	D	C	B	29	C			EB	23	82	780	105	221		1	28	320		
Thru-Stop	11: Washington St NE & CSAH 10	NB	0	0	120	120	0	0	6	A	A	A	6	A	5	A	NB									41	90	
		WB	0	1209	12	1221	0	7	5	A	A	A	7	A			WB											
		SB	0	0	54	54	0	1	2	A	A	A	2	A			SB								11			
		EB	0	615	72	687	0	1	1	A	A	A	1	A			EB											
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	87	87	0	0	5	A	A	A	5	A	4	A	NB									27	66	
		WB	0	1258	9	1267	0	3	2	A	A	A	3	A			WB											
		SB	0	0	111	111	0	0	2	A	A	A	2	A			SB											
		EB	0	606	128	734	0	7	7	A	A	A	7	A			EB											
Signalized	13: Jefferson St NE/87th Ln & Washington St NE	NB	23	219	40	282	12	11	5	B	B	A	10	B	8	A	NB	15	54	160	48	99						
		WB	30	25	21	76	5	5	2	A	A	A	4	A			WB				15	54		7	30	150		
		SB	10	182	32	224	11	6	4	B	A	A	6	A			SB	7	32	90	37	81						
		EB	11	3	9	23	6	4	2	A	A	A	4	A			EB				10	43						
All-Way Stop	14: 85th Ave NE & Jefferson St NE	NB	0	0	0	0	0	0	0	A	A	A	0	A	6	A	NB											
		WB	0	80	51	131	0	7	4	A	A	A	6	A			WB				38	56						
		SB	64	0	95	159	6	0	5	A	A	A	5	A			SB	29	58	180				35	68			
		EB	50	82	0	132	5	7	0	A	A	A	6	A			EB				43	73						
Signalized	15: Jefferson St NE & Mall Ent	NB	19	58	10	87	12	9	3	B	A	A	9	A	12	B	NB	12	43	110	25	73				4	30	110
		WB	6	41	79	126	25	27	5	C	C	A	13	B			WB				35	88		35	78	70		
		SB	100	111	318	529	12	10	6	B	B	A	8	A			SB	38	84	160	31	101		61	141			
		EB	244	60	18	322	19	18	7	B	B	A	18	B			EB	75	104	80	55	212						
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	136	2	17	155	16	10	9	B	B	A	15	B	32	C	NB	6	77	140	51	134						
		WB	0	608	185	793	0	36	8	A	D	A	29	C			WB				139	243		13	56			
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB											
		EB	44	777	0	821	61	38	0	E	D	A	39	D			EB	44	194	170	213	381						
Signalized	17: TH 47 SB Ramp & CSAH 10	NB	0	0	0	0	0	0	0	A	A	A	0	A	28													

Table 2b. 2040 No-Build PM MOEs

Control	Intersection		Forecast Volumes											Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Average & Maximum Traffic Queueing (feet)								
	Location	Appr	Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Left-Turn			Through			Right-Turn									
			L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage							
Signalized	1: Springbrook Dr & 85th Ave	NB	128	105	189	422	16	20	8	B	C	A	13	B	17	B	NB	54	136	140	48	136		46	131	140						
		WB	143	282	194	619	22	21	7	C	C	A	17	B			WB	62	139	155	64	124		45	102	155						
		SB	212	77	42	331	15	17	8	B	B	A	15	B			SB	71	172	330	35	105										
		EB	54	342	120	516	20	29	6	C	C	A	23	C			EB	32	70	300	96	175		33	66	330						
Signalized	2: TH 47 & 85th Ave	NB	220	1562	127	1909	87	30	7	F	C	A	35	D	32	C	NB	200	372	560	204	370										
		WB	96	120	64	280	41	39	12	D	D	B	34	C			WB	62	135	130	44	97		33	67	145						
		SB	44	785	227	1056	54	37	14	D	D	B	33	C			SB	31	127	270	60	275		59	206	270						
		EB	374	146	274	794	38	28	5	D	C	A	25	C			EB	203	320	300	54	311		12	136	115						
Signalized	3: TH 47 & University Ave	NB	0	1421	601	2022	0	9	8	A	A	A	9	A	11	B	NB															
		WB	369	0	99	468	36	0	4	D	A	A	29	C			WB	114	226													
		SB	0	692	0	692	0	4	0	A	A	A	4	A			SB				45	110										
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB															
Signalized	4: 86th Ln & University Ave	NB	37	13	118	168	15	17	6	B	B	A	9	A	11	B	NB				22	49		34	75							
		WB	113	364	40	517	25	8	4	C	A	A	11	B			WB	57	120	360	46	116		10	43	170						
		SB	91	13	57	161	15	18	5	B	B	A	12	B			SB				49	123		26	95	100						
		EB	56	537	19	612	26	10	4	C	B	A	11	B			EB	35	93	220	74	146		7	33	220						
Signalized	5: University Ave & CSAH 10	NB	118	535	154	807	51	45	6	D	D	A	38	D	46	D	NB	56	115	280	166	338										
		WB	224	1229	252	1705	44	48	19	D	D	B	43	D			WB	79	182	520	368	466		112	455	430						
		SB	116	215	10	341	54	29	3	D	C	A	37	D			SB	55	78		56	89		4	56	200						
		EB	304	798	82	1184	82	55	22	F	E	C	60	E			EB	135	444	550	273	602		53	325	300						
Thru-Stop	6: University Ave & 89th Ave	NB	0	868	286	1154	0	3	3	A	A	A	3	A	5	A	NB				60	157										
		WB	0	0	178	178	0	1	10	A	A	B	10	B			WB							55	121							
		SB	109	342	0	451	15	7	0	C	A	A	9	A			SB	43	92	90	25	99										
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB															
Signalized	7: University Ave & 91st Ave	NB	65	949	8	1022	21	7	5	C	A	A	8	A	8	A	NB	29	92	280	60	150		1	13	100						
		WB	17	0	36	53	20	0	7	C	A	A	11	B			WB				12	53		26	63	30						
		SB	85	452	26	563	19	4	2	B	A	A	6	A			SB	36	94	365	38	109		4	23	265						
		EB	15	2	8	25	18	22	4	B	C	A	14	B			EB				13	38		6	40	40						
Signalized	8: 87th Ln & 89th Ave	NB	144	0	115	259	9	0	4	A	A	A	7	A	11	B	NB	45	133					27	84							
		WB	181	84	0	265	14	8	0	B	A	A	12	B			WB	73	159	190	25	83										
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB															
		EB	0	182	219	401	0	21	9	A	C	A	14	B			EB				71	143		49	91	190						
Signalized	9: Jefferson St NE & CSAH 10	NB	158	100	181	439	30	30	4	C	C	A	19	B	39	D	NB	71	162	185	30	91		5	112	140						
		WB	245	1358	91	1694	45	48	14	D	D	B	46	D			WB	78	189	915	375	588		2	24	780						
		SB	106	105	44	255	27	32	5	C	C	A	25	C			SB	47	138	220	45	135										
		EB	76	847	84	1007	44	40	12	D	D	B	38	D			EB	17	84	670	246	484		72	275	250						
Signalized	10: Able St & CSAH 10	NB	85	150	125	360	41	44	16	D	D	B	34	C	41	D	NB	53	123	100	112	263		64	105	80						
		WB	171	1541	76	1788	52	42	16	D	D	B	42	D			WB	94	227	780	324	579		59	275	250						
		SB	68	87	51	206	47	48	34	D	D	C	44	D			SB	47	94	70	102	233										
		EB	75	1003	78	1156	71	39	18	E	D	B	40	D			EB	39	149	780	172	375		14	223	320						
Thru-Stop	11: Washington St NE & CSAH 10	NB	0	0	76	76	0	0	10	A	A	B	10	B	6	A	NB							36	87							
		WB	0	1521	30	1551	0	8	6	A	A	A	8	A			WB															
		SB	0	0	52	52	0	1	2	A	A	A	2	A			SB															
		EB	0	946	57	1003	0	2	1	A	A	A	2	A			EB				6											
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	50	50	0	0	10	A	A	B	10	B	6	A	NB							21	71							
		WB	0	1573	7	1580	0	4	1	A	A	A	4	A			WB															
		SB	0	0	112	112	0	0	2	A	A	A	2	A			SB							3	78							
		EB	0	961	100	1061	0	9	9	A	A	A	9	A			EB															
Signalized	13: Jefferson St NE/87th Ln & Washington St NE	NB	42	190	22	254	13	10	6	B	B	A	10	B	8	A	NB	22	62	160	40	86										
		WB	31	16	10	57	5	6	2	A	A	A	5	A			WB				12	54		4	30	150						
		SB	8	199	27	234	11	6	4	B	A	A	6	A			SB	5	27	90	41	88										
		EB	6	1	21	28	6	2	2	A	A	A	3	A			EB				10	35										
All-Way Stop	14: 85th Ave NE & Jefferson St NE	NB	0	0	0	0	0	0	0	A	A	A	0	A	6	A	NB															
		WB	0	82	84	166	0	7	4	A	A	A	5	A			WB				44	83										
		SB	57	0	79	136	6	0	4	A	A	A	5	A			SB	30	65	180				34	74							
		EB	91	99	0	190	6	7	0	A	A	A	7	A			EB				46	81										
Signalized	15: Jefferson St NE & Mail Ent	NB	24	112	20	156	10	8	3	B	A	A	8	A	11	B	NB	11	42	110	37	98		9	31	110						
		WB	12	25	60	97	22	26	5	C	C	A	13	B			WB				29	74		30	74	70						
		SB	64	73	261	398	10	6	6	B	A	A	7	A			SB	28	91	160	20	74		52	129							
		EB	234	33	25	292	17	16	5	B	B	A	16	B			EB	71	104	80	37	168										
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	213	1	21	235	32	21	25	C	C	C	31	C	37	D	NB	40	163	140	104	208										
		WB	0	981	342	1323	0	44	12	A	D	B	36	D			WB				217	422		42	194							
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB															
		EB	206	1203	0	1409	74	32	0	E	C	A	38	D			EB	151	195	170	302	662										
Signalized	17: TH 47 SB Ramp & CSAH 10	NB	0	0	0	0	0	0	0	A	A	A	0	A	23	C	NB															
		WB	8	1168	0	1176	57	25	0	E	C	A	25	C			WB	10	150													

Table 3a. 2040 Build Sat- Scenario 1 MOEs

Control	Intersection		Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Appr	Average & Maximum Traffic Queueing (feet)									
	Location	Appr	L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS		Left-Turn			Through			Right-Turn			
																		Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	
Signalized	1: Springbrook Dr & 85th Ave	NB	104	97	256	457	15	24	8	B	C	A	13	B	17	B	NB	40	90	140	47	104		56	132	140	
		WB	235	180	269	684	27	22	8	C	C	A	18	B			WB	104	179	155	49	206		54	125	155	
		SB	319	109	47	475	18	16	7	B	B	A	16	B			SB	108	245	330	44	132					
		EB	54	151	136	341	25	33	8	C	C	A	22	C			EB	32	87	300	55	130		40	91	330	
Signalized	2: TH 47 & 85th Ave	NB	246	978	216	1440	72	33	8	E	C	A	36	D	36	D	NB	196	353	560	189	294					
		WB	207	159	207	573	49	44	14	D	D	B	35	D			WB	121	154	130	95	289		70	152	145	
		SB	217	935	290	1442	63	38	18	E	D	B	38	D			SB	142	283	270	174	362		91	294	270	
		EB	337	174	221	732	47	33	4	D	C	A	31	C			EB	209	321	300	61	355		14	136	115	
Signalized	3: TH 47 & University Ave	NB	0	755	776	1531	0	9	10	A	A	B	10	B	15	B	NB				54	116					
		WB	759	0	273	1032	34	0	4	C	A	A	26	C			WB	198	313								
		SB	0	623	0	623	0	10	0	A	B	A	10	B			SB				80	159					
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB										
Signalized	4: 86th Ln & University Ave	NB	106	0	223	329	27	0	9	C	A	A	15	B	16	B	NB				53	122		60	120		
		WB	188	742	108	1038	34	11	6	C	B	A	15	B			WB	96	185	360	119	244		28	192	170	
		SB	164	0	99	263	28	0	7	C	A	A	20	C			SB				90	180		49	123	100	
		EB	79	558	58	695	40	15	6	D	B	A	17	B			EB	54	113	220	107	212		19	92	220	
Signalized	5: University Ave & CSAH 10	NB	276	566	204	1046	42	52	7	D	D	A	41	D	47	D	NB	100	199	280	191	342		28	294	270	
		WB	729	975	366	2070	45	42	22	D	D	C	40	D			WB	196	299	520	235	351		84	186	430	
		SB	191	268	22	481	40	28	3	D	C	A	32	C			SB	67	90		66	98		11	56	200	
		EB	308	552	200	1060	87	80	28	F	F	C	72	E			EB	140	289	550	231	496		85	289	300	
Thru-Stop	6: University Ave & 89th Ave	NB	0	816	414	1230	0	4	4	A	A	A	4	A	8	A	NB				74	154					
		WB	0	0	175	175	0	1	10	A	A	B	10	B			WB							54	149		
		SB	129	479	0	608	19	13	0	C	B	A	14	B			SB	55	102	90	61	262					
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB										
Signalized	7: University Ave & 91st Ave	NB	99	779	8	886	19	6	5	B	A	A	7	A	7	A	NB	38	90	280	50	120		2	35	100	
		WB	17	0	14	31	16	0	7	B	A	A	12	B			WB				10	39		12	44	30	
		SB	62	586	10	658	20	6	1	C	A	A	7	A			SB	32	76	365	59	146		1	17	265	
		EB	35	0	23	58	18	0	5	B	A	A	13	B			EB				24	79		15	59	40	
Signalized	8: 87th Ln & 89th Ave	NB	124	0	119	243	13	0	4	B	A	A	9	A	12	B	NB	50	149								
		WB	138	67	0	205	14	8	0	B	A	A	12	B			WB	56	115	190	21	74					
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB										
		EB	0	188	579	767	0	18	11	A	B	B	13	B			EB				65	151		93	187	190	
Signalized	9: Jefferson St NE & CSAH 10	NB	238	51	63	352	29	27	3	C	C	A	24	C	35	D	NB	109	190	185	20	100					
		WB	254	1328	92	1672	44	47	13	D	D	B	45	D			WB	72	157	915	343	534		4	32	780	
		SB	167	83	182	432	26	38	6	C	D	A	20	C			SB	74	177	220	54	199					
		EB	126	605	51	782	44	26	5	D	C	A	28	C			EB	30	80	670	114	206			8	250	
Signalized	10: Able St & CSAH 10	NB	63	65	70	198	32	34	11	C	C	B	25	C	31	C	NB	29	81	100	41	149					
		WB	90	1397	73	1560	49	35	10	D	D	B	35	D			WB	40	116	780	258	471		31	275	250	
		SB	72	50	51	173	41	39	25	D	D	C	36	D			SB	47	92	70	66	187					
		EB	76	879	61	1016	51	24	9	D	C	A	25	C			EB	36	124	780	98	247			10	320	
Thru-Stop	11: Washington St NE & CSAH 10	NB	0	0	187	187	0	0	5	A	A	A	5	A	6	A	NB										
		WB	0	1475	73	1548	0	9	7	A	A	A	9	A			WB								48	99	
		SB	0	0	142	142	0	1	2	A	A	A	2	A			SB								5	79	
		EB	0	568	262	830	0	2	2	A	A	A	2	A			EB				1	16					
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	187	187	0	0	7	A	A	A	7	A	7	A	NB										
		WB	0	1507	41	1548	0	4	4	A	A	A	4	A			WB								45	108	
		SB	0	0	300	300	0	0	20	A	A	C	20	C			SB								89	296	
		EB	0	685	262	947	0	9	9	A	A	A	9	A			EB										
Signalized	13: Jefferson St NE/87th Ln & Washington St NE	NB	23	209	40	272	12	13	6	B	B	A	12	B	8	A	NB	16	50	160	53	126					
		WB	49	25	21	95	7	7	2	A	A	A	6	A			WB				25	67		10	30	150	
		SB	51	263	113	427	10	5	5	B	A	A	6	A			SB	23	51	90	52	104					
		EB	10	3	11	24	7	1	2	A	A	A	4	A			EB				10	40					
All-Way Stop	14: 85th Ave NE & Jefferson St NE	NB	0	0	0	0	0	0	0	A	A	A	0	A	6	A	NB										
		WB	0	80	87	167	0	7	4	A	A	A	5	A			WB				44	80					
		SB	89	0	84	173	7	1	5	A	A	A	6	A			SB	35	71	180				37	68		
		EB	40	82	0	122	6	7	0	A	A	A	7	A			EB				41	75					
Signalized	15: Jefferson St NE & Mall Ent	NB	23	85	10	118	8	6	3	A	A	A	6	A	9	A	NB	11	34	110	27	81		6	51	110	
		WB	6	0	63	69	25	0	5	C	A	A	7	A			WB				5	35		30	63	70	
		SB	74	146	196	416	9	8	5	A	A	A	7	A			SB	26	78	160	36	122		39	126		
		EB	201	0	21	222	15	0	4	B	A	A	14	B			EB	63	103	80	14	123					
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	136	2	17	155	23	29	21	C	C	C	23	C	31	C	NB	11	84	140	65	155					
		WB	0	894	268	1162	0	36	9	A	D	A	30	C			WB				192	340		22	99		
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB										
		EB	44	1043	0	1087	64	32	0	E	C	A	33	C			EB	45	168	170	267	587					
Signalized	17: TH 47 SB Ramp & CSAH 10																										

Table 3b. 2040 Build PM- Scenario 1 MOEs

Control	Intersection		Forecast Volumes												Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Average & Maximum Traffic Queueing (feet)								
	Location	Appr	Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Left-Turn			Through			Right-Turn										
			L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage								
Signalized	1: Springbrook Dr & 85th Ave	NB	128	105	194	427	16	20	7	B	C	A	13	B	20	C	NB	53	129	140	48	113			46	115	140						
		WB	164	257	215	636	28	27	8	C	C	A	21	C			WB	81	169	155	72	158			53	144	155						
		SB	217	77	42	336	16	16	7	B	B	A	15	B			SB	71	153	330	35	104											
		EB	54	316	120	490	28	38	7	C	D	A	29	C			EB	34	77	300	109	193			37	79	330						
Signalized	2: TH 47 & 85th Ave	NB	220	1616	176	2012	70	48	11	E	D	B	47	D	41	D	NB	190	369	560	326	463			50	394	370						
		WB	182	108	181	471	49	49	21	D	D	C	38	D			WB	112	154	130	82	282			74	166	145						
		SB	177	793	247	1217	93	32	15	F	C	B	37	D			SB	143	274	270	153	339			58	194	270						
		EB	407	102	274	783	53	45	5	D	D	A	35	D			EB	260	324	300	106	446			20	106	115						
Signalized	3: TH 47 & University Ave	NB	0	1565	891	2456	0	12	11	A	B	B	12	B	16	B	NB					112	182										
		WB	633	0	196	829	42	0	4	D	A	A	33	C			WB	208	358														
		SB	0	708	0	708	0	8	0	A	A	A	8	A			SB					88	167										
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB																
Signalized	4: 86th Ln & University Ave	NB	78	0	166	244	35	0	11	D	A	B	19	B	18	B	NB				46	112			52	122							
		WB	117	641	70	828	45	11	6	D	B	A	15	B			WB	81	173	360	94	230			19	162	170						
		SB	144	0	71	215	39	0	8	D	A	A	29	C			SB				94	189			46	123	100						
		EB	83	801	37	921	47	14	5	D	B	A	17	B			EB	66	144	220	138	268			17	167	220						
Signalized	5: University Ave & CSAH 10	NB	222	558	208	988	55	68	13	E	E	B	54	D	55	E	NB	145	252	280	295	500			109	295	270						
		WB	493	1388	280	2161	52	57	27	D	E	C	52	D			WB	218	511	520	434	691			201	455	430						
		SB	123	184	10	317	57	36	2	E	D	A	43	D			SB	53	73		51	84			4	45	200						
		EB	360	794	157	1311	94	60	26	F	E	C	65	E			EB	160	465	550	248	664			87	278	300						
Thru-Stop	6: University Ave & 89th Ave	NB	0	912	349	1261	0	3	3	A	A	A	3	A	5	A	NB					69	155										
		WB	0	0	179	179	0	1	10	A	A	B	10	B			WB								52	124							
		SB	113	209	0	322	16	5	0	C	A	A	9	A			SB	46	100	90	22	108											
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB																
Signalized	7: University Ave & 91st Ave	NB	65	920	8	993	20	6	6	C	A	A	7	A	7	A	NB	29	87	280	54	136			1	10	100						
		WB	17	0	36	53	19	0	7	B	A	A	11	B			WB				12	38			24	50	30						
		SB	85	431	26	542	19	4	2	B	A	A	6	A			SB	37	77	365	38	114			4	31	265						
		EB	15	2	8	25	18	19	3	B	B	A	13	B			EB				11	35			6	40	40						
Signalized	8: 87th Ln & 89th Ave	NB	128	0	97	225	10	0	4	B	A	A	7	A	12	B	NB	43	134					25	75								
		WB	178	93	0	271	14	8	0	B	A	A	12	B			WB	62	136	190	29	88											
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB																
		EB	0	219	519	738	0	19	11	A	B	B	13	B			EB					73	171			91	180	190					
Signalized	9: Jefferson St NE & CSAH 10	NB	195	54	114	363	35	37	3	D	D	A	25	C	40	D	NB	95	200	185	20	104			3	60	140						
		WB	191	1547	116	1854	57	53	16	E	D	B	51	D			WB	77	160	915	456	658			4	29	780						
		SB	149	50	157	356	32	38	5	C	D	A	21	C			SB	70	161	220	31	196											
		EB	86	1072	69	1227	55	33	9	E	C	A	33	C			EB	25	76	670	242	437			65	275	250						
Signalized	10: Able St & CSAH 10	NB	85	150	125	360	47	46	19	D	D	B	37	D	37	D	NB	66	124	100	153	283			69	105	80						
		WB	171	1588	80	1839	57	40	15	E	D	B	40	D			WB	112	323	780	322	570			70	275	250						
		SB	71	87	55	213	51	52	37	D	D	D	48	D			SB	54	95	70	117	234											
		EB	78	1106	78	1262	69	29	15	E	C	B	31	C			EB	44	111	780	125	295			1	16	320						
Thru-Stop	11: Washington St NE & CSAH 10	NB	0	0	181	181	0	0	8	A	A	A	8	A	7	A	NB								53	115							
		WB	0	1660	20	1680	0	10	7	A	B	A	10	B			WB								2	34							
		SB	0	0	112	112	0	1	2	A	A	A	2	A			SB																
		EB	0	892	220	1112	0	3	2	A	A	A	3	A			EB				1	24											
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	181	181	0	0	10	A	A	B	10	B	10	B	NB								53	142							
		WB	0	1661	44	1705	0	5	4	A	A	A	5	A			WB								150	320							
		SB	0	0	254	254	0	0	44	A	A	A	44	E			SB																
		EB	0	904	220	1124	0	10	11	A	B	B	10	B			EB																
Signalized	13: Jefferson St NE/87th Ln & Washington St NE	NB	35	172	22	229	12	11	6	B	B	A	11	B	7	A	NB	18	57	160	39	103			4	30	150						
		WB	49	16	10	75	7	6	2	A	A	A	6	A			WB				20	51											
		SB	42	220	98	360	11	4	5	B	A	A	5	A			SB	22	61	90	48	105											
		EB	1	1	15	17	7	1	3	A	A	A	3	A			EB				9	35											
All-Way Stop	14: 85th Ave NE & Jefferson St NE	NB	0	0	0	0	0	0	0	A	A	A	0	A	6	A	NB																
		WB	0	82	92	174	0	7	4	A	A	A	5	A			WB				46	86											
		SB	73	0	55	128	6	0	4	A	A	A	5	A			SB	34	60	180					28	65							
		EB	65	99	0	164	6	7	0	A	A	A	7	A			EB					44	77										
Signalized	15: Jefferson St NE & Mall Ent	NB	13	122	20	155	8	6	3	A	A	A	6	A	7	A	NB	7	31	110	29	74			9	31	110						
		WB	5	0	70	75	23	0	5	C	A	A	6	A			WB				4	31			32	55	70						
		SB	85	107	109	301	8	6	3	A	A	A	5	A			SB	27	83	160	21	84			18	59							
		EB	144	0	15	159	14	0	3	B	A	A	13	B			EB	52	92	80	9	46											
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	213	1	21	235	39	23	35	D	C	D	39	D	36	D	NB	62	165	140	127	224			35	156							
		WB	0	1168	391	1559	0	40	10	A	D	B	32	C			WB				241	521											
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB																
		EB	206	1236	0	1442	86	31	0	F	C	A	39	D			EB	169	195	170	361	709											
Signalized	17: TH 47 SB Ramp & CSAH 10	NB	0	0	0	0	0	0	0	A	A	A	0	A	26	C	NB																
		WB	8	1355	0	1363	62	28	0	E	C	A	28	C			WB	8	41	200	270	673											
		SB	234	1	80	315	34	60	26	C	E	C	32	C			SB	68	114	90	148	304											
		EB	0	1313	146	1459	0	24	9	A	C	A	22	C			EB				241												

Table 4a. 2040 Build Sat- Scenario 1 with Full Access Signal at CSAH 10 and 85th Ave Ext MOEs

Control	Intersection		Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Average & Maximum Traffic Queueing (feet)												
	Location	Appr	L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS	Left-Turn			Through			Right-Turn						
																	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage				
Signalized	1: Springbrook Dr & 85th Ave	NB	104	97	256	457	12	16	7	B	B	A	10	B	14	B	NB	36	72	140	39	97		58	121	140			
		WB	235	180	269	684	25	9	8	C	A	A	14	B			WB	97	173	155	43	120		56	144	155			
		SB	319	109	47	475	19	14	7	B	B	A	17	B			SB	104	217	330	41	103							
		EB	54	151	136	341	17	23	7	B	C	A	16	B			EB	30	67	300	44	101		40	83	330			
Signalized	2: TH 47 & 85th Ave	NB	246	978	216	1440	61	29	7	E	C	A	31	C	33	C	NB	173	289	560	156	267							
		WB	207	402	207	816	57	36	12	E	D	B	35	D			WB	125	155	130	153	340		72	168	145			
		SB	217	935	290	1442	56	39	19	E	D	B	38	D			SB	139	278	270	189	322		86	236	270			
		EB	148	363	221	732	41	32	5	D	C	A	26	C			EB	99	181	300	92	198		27	140	115			
Signalized	3: TH 47 & University Ave	NB	0	755	587	1342	0	7	9	A	A	A	8	A	12	B	NB				39	93							
		WB	516	0	273	789	32	0	4	C	A	A	22	C			WB	138	240										
		SB	0	623	0	623	0	7	0	A	A	A	7	A			SB				58	146							
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB												
Signalized	4: 86th Ln & University Ave	NB	106	0	223	329	16	0	6	B	A	A	9	A	13	B	NB				46	103		47	104				
		WB	188	499	108	795	27	10	5	C	B	A	13	B			WB	88	185	360	81	164		20	94	170			
		SB	164	0	99	263	19	0	6	B	A	A	14	B			SB				70	169		37	109	100			
		EB	79	369	58	506	28	12	6	C	B	A	14	B			EB	49	111	220	76	159		19	58	220			
Signalized	5: University Ave & CSAH 10	NB	184	377	204	765	43	35	5	D	D	A	29	C	41	D	NB	77	145	280	104	204		2	57	270			
		WB	486	975	366	1827	42	40	20	D	D	C	37	D			WB	139	224	520	236	350		84	180	430			
		SB	127	179	22	328	41	16	3	D	B	A	25	C			SB	54	79		59	113		6	58	200			
		EB	205	655	200	1060	70	68	27	E	E	C	61	E			EB	74	213	550	281	538		111	325	300			
Thru-Stop	6: University Ave & 89th Ave	NB	0	816	276	1092	0	3	3	A	A	A	3	A	5	A	NB				59	144							
		WB	0	0	175	175	0	1	11	A	A	B	11	B			WB							55	142				
		SB	129	479	0	608	15	5	0	C	A	A	7	A			SB	49	99	90	26	112							
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB												
Signalized	7: University Ave & 91st Ave	NB	99	779	8	886	17	6	4	B	A	A	7	A	7	A	NB	35	85	280	43	100		1	12	100			
		WB	17	0	14	31	17	0	5	B	A	A	12	B			WB				10	30		12	40	30			
		SB	62	586	10	658	19	5	2	B	A	A	6	A			SB	33	75	365	55	134		2	19	265			
		EB	35	0	23	58	18	0	5	B	A	A	13	B			EB				22	72		14	51	40			
Signalized	8: 87th Ln & 89th Ave	NB	124	0	119	243	9	0	4	A	A	A	7	A	11	B	NB	35	119							26	69		
		WB	138	67	0	205	13	8	0	B	A	A	11	B			WB	53	117	190	25	73							
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB												
		EB	0	188	434	622	0	18	9	A	B	A	12	B			EB				67	136		76	136	190			
Signalized	9: Jefferson St NE & CSAH 10	NB	159	34	63	256	27	14	3	C	B	A	19	B	34	C	NB	67	156	185	11	54					11	140	
		WB	169	1411	92	1672	45	46	13	D	D	B	44	D			WB	45	115	915	350	492		2	22	780			
		SB	111	55	182	348	28	37	6	C	D	A	18	B			SB	55	140	220	44	196							
		EB	84	605	51	740	46	21	6	D	C	A	23	C			EB	54	76	670	81	195		1	26	250			
Signalized	10: Able St & CSAH 10	NB	63	65	70	198	33	34	10	C	C	B	25	C	32	C	NB	33	97	100	37	125					33	92	80
		WB	90	1397	73	1560	50	36	9	D	D	A	36	D			WB	37	144	780	259	415		26	220	250			
		SB	72	50	51	173	39	40	25	D	D	C	35	D			SB	43	91	70	65	168							
		EB	76	879	61	1016	48	25	8	D	C	A	26	C			EB	36	120	780	121	249		4	320				
Signalized	11: 85th Ave Extension & CSAH 10	NB	141	143	187	471	30	30	8	C	C	A	21	C	28	C	NB	69	142	150	72	186					45	151	150
		WB	247	1232	73	1552	60	29	13	E	C	B	33	C			WB	185	315	300	206	423		27	164	300			
		SB	98	87	142	327	27	30	16	C	C	B	23	C			SB	52	101	150	51	112		57	104	150			
		EB	110	526	262	898	43	28	12	D	C	B	25	C			EB	80	176	300	140	244		71	141	300			
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	187	187	0	0	10	A	A	B	10	B	7	A	NB										52	112	
		WB	0	1264	41	1305	0	5	4	A	A	A	5	A			WB												
		SB	0	0	300	300	0	0	15	A	A	C	15	C			SB								84	276			
		EB	0	788	262	1050	0	8	9	A	A	A	8	A			EB												
Signalized	13: Jefferson St NE/87th Ln & Washington St NE	NB	15	139	27	181	13	10	6	B	B	A	10	B	6	A	NB	9	41	160	33	78							
		WB	33	48	14	95	7	5	2	A	A	A	5	A			WB				24	67		4	30	150			
		SB	34	175	75	284	10	4	4	B	A	A	5	A			SB	20	52	90	44	96							
		EB	98	33	99	230	7	3	4	A	A	A	5	A			EB				58	147							
All-Way Stop	14: 85th Ave NE & Jefferson St NE	NB	0	0	0	0	0	0	0	A	A	A	0	A	6	A	NB												
		WB	0	80	87	167	0	7	4	A	A	A	5	A			WB				43	72							
		SB	89	0	84	173	6	1	4	A	A	A	5	A			SB	36	68	180				34	60				
		EB	40	82	0	122	6	7	0	A	A	A	7	A			EB				40	76							
Signalized	15: Jefferson St NE & Mall Ent	NB	23	85	10	118	8	5	2	A	A	A	5	A	6	A	NB	12	44	110	22	69					4	31	110
		WB	6	0	63	69	21	0	4	C	A	A	5	A			WB				5	40		30	67	70			
		SB	74	146	196	416	7	5	3	A	A	A	4	A			SB	23	65	160	28	93		33	76				
		EB	134	0	21	155	16	0	4	B	A	A	14	B			EB	49	96	80	10	47							
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	136	2	17	155	22	13	15	C	B	B	21	C	33	C	NB	6	48	140	60	135							
		WB	0	894	268	1162	0	41	9	A	D	A	34	C			WB				192	328		27	123				
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB												
		EB	44	1043	0	1087	68	33	0	E	C	A	34																

Table 4b. 2040 Build PM- Scenario 1 with Full Access Signal at CSAH 10 and 85th Ave Ext MOEs

Control	Intersection	Location	Appr	Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Average & Maximum Traffic Queueing (feet)											
				L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS	Left-Turn			Through			Right-Turn					
				Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage																	
Signalized	1: Springbrook Dr & 85th Ave	NB	128	105	194	427	13	16	7	B	B	A	11	B	14	B	NB	48	114	140	43	128		45	106	140			
		WB	164	257	215	636	22	13	7	C	B	A	13	B			WB	74	158	155	55	123		45	104	155			
		SB	217	77	42	336	14	14	6	B	B	A	13	B			SB	68	151	330	33	88							
		EB	54	316	120	490	16	21	6	B	C	A	17	B			EB	28	76	300	64	124		34	92	330			
Signalized	2: TH 47 & 85th Ave	NB	220	1616	176	2012	58	38	9	E	D	A	38	D	34	C	NB	144	303	560	249	372		5	79	370			
		WB	182	272	181	635	57	36	15	E	D	B	36	D			WB	112	154	130	108	255		69	145	145			
		SB	177	793	247	1217	58	33	15	E	C	B	33	C			SB	111	200	270	150	275		66	192	270			
		EB	221	288	274	783	43	31	5	D	C	A	25	C			EB	135	251	300	71	146		19	137	115			
Signalized	3: TH 47 & University Ave	NB	0	1565	705	2270	0	11	9	A	B	A	10	B	12	B	NB							63	150		1	16	585
		WB	469	0	196	665	37	0	4	D	A	A	27	C			WB	137	228										
		SB	0	708	0	708	0	5	0	A	A	A	5	A			SB					52	133						
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB												
Signalized	4: 86th Ln & University Ave	NB	78	0	166	244	14	0	7	B	A	A	9	A	12	B	NB				34	86		41	97				
		WB	117	477	70	664	30	10	5	C	B	A	13	B			WB	60	120	360	65	170		15	46	170			
		SB	144	0	71	215	16	0	5	B	A	A	12	B			SB					58	114		27	76	100		
		EB	83	615	37	735	25	11	5	C	B	A	12	B			EB	50	105	220	91	186		12	41	220			
Signalized	5: University Ave & CSAH 10	NB	148	372	208	728	64	29	6	E	C	A	30	C	45	D	NB	78	156	280	125	207		9	123	270			
		WB	329	1388	280	1997	53	48	23	D	D	C	45	D			WB	151	512	520	395	659		171	455	430			
		SB	82	123	10	215	55	35	3	E	D	A	41	D			SB	37	75		36	79		4	55	200			
		EB	240	914	157	1311	73	54	24	E	D	C	54	D			EB	110	572	550	279	760		83	325	300			
Thru-Stop	6: University Ave & 89th Ave	NB	0	912	233	1145	0	3	2	A	A	A	3	A	5	A	NB												
		WB	0	0	179	179	0	1	10	A	A	B	10	B			WB												
		SB	113	209	0	322	13	3	0	B	A	A	7	A			SB	40	87	90	11	88							
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB												
Signalized	7: University Ave & 91st Ave	NB	65	920	8	993	21	6	6	C	A	A	7	A	7	A	NB	31	90	280	57	167		1	12	100			
		WB	17	0	36	53	19	0	8	B	A	A	12	B			WB					11	41		24	51	30		
		SB	85	431	26	542	19	4	2	B	A	A	6	A			SB	39	91	365	37	97		3	18	265			
		EB	15	2	8	25	19	26	4	B	C	A	15	B			EB					11	49		5	24	40		
Signalized	8: 87th Ln & 89th Ave	NB	128	0	97	225	11	0	4	B	A	A	8	A	11	B	NB	41	93							24	69		
		WB	178	93	0	271	14	9	0	B	A	A	12	B			WB	61	120	190	31	80							
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB												
		EB	0	219	389	608	0	18	8	A	B	A	12	B			EB					71	183		68	148	190		
Signalized	9: Jefferson St NE & CSAH 10	NB	130	36	114	280	34	26	3	C	C	A	20	C	37	D	NB	62	159	185	11	49				1	35	140	
		WB	127	1611	116	1854	58	53	16	E	D	B	51	D			WB	56	132	915	455	636		4	38	780			
		SB	99	33	157	289	34	45	8	C	D	A	21	C			SB	54	140	220	49	212							
		EB	57	1072	69	1198	52	23	7	D	C	A	23	C			EB	14	52	670	143	330							
Signalized	10: Able St & CSAH 10	NB	85	150	125	360	46	47	18	D	D	B	37	D	37	D	NB	65	124	100	137	292		69	105	80			
		WB	171	1588	80	1839	61	39	15	E	D	B	40	D			WB	105	230	780	320	565		65	275	250			
		SB	71	87	55	213	54	53	37	D	D	D	49	D			SB	55	95	70	120	249							
		EB	78	1106	78	1262	63	29	13	E	C	B	30	C			EB	41	119	780	129	300		3	80	320			
Signalized	11: 85th Ave Extension & CSAH 10	NB	114	142	181	437	39	40	13	D	D	B	29	C	32	C	NB	63	148	150	89	196				59	172	150	
		WB	173	1496	20	1689	73	33	16	E	C	B	37	D			WB	157	324	300	291	730		14	211	300			
		SB	77	58	112	247	35	41	22	D	D	C	31	C			SB	48	101	150	48	140		52	116	150			
		EB	109	863	220	1192	54	26	10	D	C	B	26	C			EB	102	270	300	182	506		69	290	300			
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	181	181	0	0	16	A	A	C	16	C	11	B	NB												
		WB	0	1497	44	1541	0	7	5	A	A	A	7	A			WB												
		SB	0	0	254	254	0	0	37	A	A	A	37	E			SB									138	300		
		EB	0	1024	220	1244	0	9	10	A	A	B	9	A			EB												
Signalized	13: Jefferson St NE/87th Ln & Washington St NE	NB	23	115	15	153	13	8	4	B	A	A	8	A	6	A	NB	15	49	160	27	81							
		WB	33	36	7	76	6	5	1	A	A	A	5	A			WB								2	23	150		
		SB	28	147	65	240	11	4	4	B	A	A	5	A			SB	13	44	90	41	81							
		EB	74	22	88	184	7	3	4	A	A	A	5	A			EB					48	156						
All-Way Stop	14: 85th Ave NE & Jefferson St NE	NB	0	0	0	0	0	0	0	A	A	A	0	A	6	A	NB												
		WB	0	82	92	174	0	7	4	A	A	A	5	A			WB								42	74			
		SB	73	0	55	128	6	0	4	A	A	A	5	A			SB	32	61	180					28	62			
		EB	65	99	0	164	6	7	0	A	A	A	7	A			EB								43	74			
Signalized	15: Jefferson St NE & Mall Ent	NB	13	122	20	155	7	5	2	A	A	A	5	A	6	A	NB	6	31	110	28	74				6	31	110	
		WB	5	0	70	75	26	0	4	C	A	A	5	A			WB								5	31	29	51	70
		SB	85	107	109	301	6	4	2	A	A	A	4	A			SB	23	61	160	18	68				16	52		
		EB	96	0	15	111	15	0	3	B	A	A	13	B			EB	41	87	80	8	51							
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	213	1	21	235	37	26	28	D	C	C	36	D	37	D	NB	60	163	140	124	210				46	172		
		WB	0	1168	391	1559	0	47	11	A	D	B	38	D			WB								255	655			
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB												
		EB	206	1236	0	1442	80	29																					

Table 5a. 2040 Build Sat- Scenario 2 MOEs

Control	Intersection Location	Appr	Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Appr	Average & Maximum Traffic Queueing (feet)										
			L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS		Left-Turn			Through			Right-Turn				
																				Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage
Signalized	1: Springbrook Dr & 85th Ave	NB	104	97	234	435	13	15	7	B	B	A	10	B	14	B	NB	40	99	140	39	106		50	111	140		
		WB	216	189	250	655	22	15	7	C	B	A	14	B			WB	90	170	155	47	108		56	135	155		
		SB	297	109	47	453	17	12	6	B	B	A	15	B			SB	94	200	330	38	83						
		EB	54	161	136	351	17	22	6	B	C	A	15	B			EB	28	74	300	48	105		38	81	330		
Signalized	2: TH 47 & 85th Ave	NB	246	1111	105	1462	106	25	7	F	C	A	37	D	36	D	NB	265	453	560	197	355						
		WB	100	99	71	270	57	56	18	E	E	B	46	D			WB	73	140	130	50	120		38	89	145		
		SB	77	1070	321	1468	77	33	17	E	C	B	32	C			SB	79	288	270	205	461		86	295	270		
		EB	369	108	221	698	57	41	5	E	D	A	38	D			EB	249	324	300	78	454		14	108	115		
Signalized	3: TH 47 & University Ave	NB	0	720	925	1645	0	9	11	A	A	B	10	B	18	B	NB				52	146						
		WB	824	0	254	1078	42	3	4	D	A	A	33	C			WB	266	411									
		SB	0	584	0	584	0	12	0	A	B	A	12	B			SB				94	184						
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB											
Signalized	4: 86th Ln & University Ave	NB	115	0	178	293	17	0	8	B	A	A	12	B	14	B	NB				49	134		45	94			
		WB	172	936	108	1216	28	13	7	C	B	A	15	B			WB	81	198	360	132	282		36	195	170		
		SB	164	0	99	263	18	0	8	B	A	A	14	B			SB				69	148		40	102	100		
		EB	79	670	90	839	30	13	6	C	B	A	14	B			EB	43	93	220	112	214		30	133	220		
Signalized	5: University Ave & CSAH 10	NB	246	561	201	1008	43	49	7	D	D	A	39	D	45	D	NB	89	167	280	184	320		8	228	270		
		WB	775	975	357	2107	44	42	25	D	D	C	40	D			WB	211	386	520	227	374		95	219	430		
		SB	180	251	22	453	48	29	2	D	C	A	35	D			SB	79	104		69	109						
		EB	338	496	176	1010	87	70	23	F	E	C	67	E			EB	138	275	550	159	344		40	195	300		
Thru-Stop	6: University Ave & 89th Ave	NB	0	732	454	1246	0	4	4	A	A	A	4	A	6	A	NB				88	171						
		WB	0	0	179	179	0	1	8	A	A	A	8	A			WB							47	104			
		SB	134	451	0	585	16	8	0	C	A	A	10	B			SB	54	131	120	41	141						
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB											
Signalized	7: University Ave & 91st Ave	NB	99	759	8	866	19	5	6	B	A	A	7	A	7	A	NB	38	94	280	48	115		3	57	100		
		WB	17	0	14	31	14	0	5	B	A	A	10	B			WB				9	29		13	41	30		
		SB	62	563	10	635	18	5	2	B	A	A	6	A			SB	29	69	365	52	111		2	18	265		
		EB	35	0	23	58	17	0	4	B	A	A	12	B			EB				21	62		11	54	40		
Signalized	8: 87th Ln & 89th Ave	NB	128	0	114	242	11	0	4	B	A	A	8	A	12	B	NB	41	107					28	84			
		WB	116	67	0	183	13	8	0	B	A	A	11	B			WB	47	100	190	24	62						
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB											
		EB	0	173	639	812	0	18	13	A	B	B	14	B			EB				61	166		108	207	190		
Signalized	9: Jefferson St NE & CSAH 10	NB	227	42	53	322	31	32	3	C	C	A	27	C	35	D	NB	99	199	185	19	99		8	140			
		WB	223	1359	92	1674	44	46	13	D	D	B	44	D			WB	67	142	915	343	512		3	28	780		
		SB	184	76	198	458	28	37	6	C	D	A	20	C			SB	84	175	220	54	182						
		EB	126	610	76	812	40	27	6	D	C	A	27	C			EB	27	74	670	126	220		2	25	250		
Signalized	10: Able St & CSAH 10	NB	63	211	70	344	38	42	18	D	D	B	36	D	33	C	NB	37	124	100	142	362		48	105	80		
		WB	90	1399	73	1562	46	39	12	D	D	B	38	D			WB	35	107	780	277	488		42	275	250		
		SB	72	50	51	173	40	42	24	D	D	C	36	D			SB	46	95	70	67	152						
		EB	76	890	61	1027	49	23	9	D	C	A	24	C			EB	37	121	780	101	280		8	320			
Thru-Stop	11: Washington St NE & CSAH 10	NB	0	0	58	58	0	0	6	A	A	A	6	A	6	A	NB							28	53			
		WB	0	1500	73	1573	0	9	8	A	A	A	9	A			WB							6	98			
		SB	0	0	158	158	0	1	3	A	A	A	3	A			SB											
		EB	0	727	68	795	0	1	1	A	A	A	1	A			EB				4							
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	58	58	0	0	6	A	A	A	6	A	11	B	NB							23	68			
		WB	0	1554	33	1587	0	5	3	A	A	A	5	A			WB											
		SB	0	0	318	318	0	0	50	A	A	F	50	F			SB							186	328			
		EB	0	779	98	877	0	8	8	A	A	A	8	A			EB											
Signalized	13: Jefferson St NE/87th Ln & Washington St NE	NB	23	200	40	263	14	13	8	B	B	A	12	B	8	A	NB	15	50	160	46	104						
		WB	61	25	21	107	8	8	2	A	A	A	7	A			WB				28	72		10	38	150		
		SB	73	318	129	520	10	6	5	B	A	A	6	A			SB	31	78	90	64	122						
		EB	10	3	11	24	7	1	3	A	A	A	4	A			EB				10	44						
All-Way Stop	14: 85th Ave NE & Jefferson St NE	NB	0	0	0	0	0	0	0	A	A	A	0	A	6	A	NB											
		WB	0	80	84	164	0	7	4	A	A	A	5	A			WB				41	74						
		SB	86	0	82	168	6	0	5	A	A	A	6	A			SB	35	74	180				36	77			
		EB	38	82	0	120	5	7	0	A	A	A	6	A			EB				39	89						
Signalized	15: Jefferson St NE & Mall Ent	NB	12	92	10	114	9	6	2	A	A	A	6	A	8	A	NB	6	35	110	26	81		3	30	110		
		WB	6	0	76	82	24	0	5	C	A	A	6	A			WB				5	36		31	58	70		
		SB	90	150	163	403	8	6	4	A	A	A	6	A			SB	27	71	160	28	90		29	90			
		EB	151	0	11	162	15	0	3	B	A	A	14	B			EB	54	96	80	6	43						
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	136	2	17	155	20	20	15	C	C	B	19	B	31	C	NB				193	344		20	103			
		WB	0	874	258	1132	0	38	8	A	D	A	31	C			WB											
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB											
		EB	44	993	0	1037	62	31	0	E	C	A	32	C			EB	42	194	170	223	471						
Signalized	17: TH 47 SB Ramp & CSAH 10	NB	0	0	0	0	0	0	0	A	A	A	0	A	26													

Table 5b. 2040 Build PM- Scenario 2 MOEs

Control	Intersection		Forecast Volumes											Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Average & Maximum Traffic Queueing (feet)								
	Location	Appr	Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Left-Turn			Through			Right-Turn									
			L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage							
Signalized	1: Springbrook Dr & 85th Ave	NB	128	105	177	410	14	16	8	B	B	A	12	B	14	B	NB	47	118	140	43	120		45	109	140						
		WB	163	281	214	658	23	16	6	C	B	A	14	B			WB	75	156	155	60	122		45	135	155						
		SB	200	77	42	319	16	14	6	B	B	A	14	B			SB	68	148	330	31	105										
		EB	54	349	120	523	17	21	5	B	C	A	17	B			EB	29	93	300	79	150		32	66	330						
Signalized	2: TH 47 & 85th Ave	NB	220	1738	157	2115	71	41	11	E	D	B	42	D	39	D	NB	167	353	560	310	458		52	395	370						
		WB	156	112	130	398	55	58	22	E	E	C	45	D			WB	102	154	130	69	229		65	150	145						
		SB	112	910	284	1306	103	32	15	F	C	B	34	C			SB	104	228	270	160	299		65	254	270						
		EB	446	80	274	800	57	44	5	E	D	A	38	D			EB	276	325	300	191	519		20	134	115						
Signalized	3: TH 47 & University Ave	NB	0	1566	973	2539	0	14	12	A	B	B	13	B	18	B	NB				116	408		1	38	293						
		WB	724	0	206	930	48	3	4	D	A	A	38	D			WB	247	384													
		SB	0	701	0	701	0	9	0	A	A	A	9	A			SB				87	174										
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB															
Signalized	4: 86th Ln & University Ave	NB	119	0	191	310	17	0	10	B	A	B	13	B	17	B	NB				48	120		55	119							
		WB	174	771	66	1011	29	11	6	C	B	A	14	B			WB	83	161	360	104	242		21	164	170						
		SB	137	0	69	206	20	0	6	C	A	A	15	B			SB				64	133		30	96	100						
		EB	80	798	110	988	33	21	9	C	C	A	21	C			EB	58	137	220	149	293		45	175	220						
Signalized	5: University Ave & CSAH 10	NB	251	572	227	1050	71	94	22	E	F	C	73	E	59	E	NB	160	305	280	356	592		143	295	270						
		WB	609	1444	283	2336	56	50	26	E	D	C	49	D			WB	207	425	520	440	688		158	455	430						
		SB	118	175	10	303	63	37	2	E	D	A	46	D			SB	57	84		41	84		4	45	200						
		EB	382	811	173	1366	107	59	25	F	E	C	68	E			EB	191	454	550	231	733		73	325	300						
Thru-Stop	6: University Ave & 89th Ave	NB	0	913	387	1300	0	3	4	A	A	A	3	A	5	A	NB															
		WB	0	0	183	183	0	1	9	A	A	A	9	A			WB								53	137						
		SB	116	195	0	311	20	7	0	C	A	A	12	B			SB	47	101	90	30	158										
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB															
Signalized	7: University Ave & 91st Ave	NB	65	925	8	998	22	6	6	C	A	A	7	A	7	A	NB	32	77	280	54	136		1	13	100						
		WB	17	0	36	53	20	0	7	C	A	A	11	B			WB				12	42		24	50	30						
		SB	85	420	26	531	20	4	2	C	A	A	6	A			SB	43	102	365	36	107		5	36	265						
		EB	15	2	8	25	20	22	4	C	C	A	15	B			EB				10	43		5	35	40						
Signalized	8: 87th Ln & 89th Ave	NB	129	0	101	230	12	0	5	B	A	A	9	A	12	B	NB	50	137											29	91	
		WB	163	92	0	255	14	8	0	B	A	A	12	B			WB	62	138	190	30	92										
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB															
		EB	0	213	534	747	0	19	11	A	B	B	13	B			EB				79	183		91	194	190						
Signalized	9: Jefferson St NE & CSAH 10	NB	287	57	124	468	42	38	3	D	D	A	31	C	44	D	NB	147	209	185	66	325		4	105	140						
		WB	221	1610	117	1948	55	56	17	E	E	B	54	D			WB	82	166	915	492	672		5	41	780						
		SB	162	49	165	376	33	50	9	C	D	A	25	C			SB	76	173	220	61	212										
		EB	86	1138	102	1326	59	39	11	E	D	B	38	D			EB	23	78	670	296	494		98	275	250						
Signalized	10: Able St & CSAH 10	NB	85	150	125	360	53	52	24	D	D	C	43	D	44	D	NB	64	124	100	154	351		72	105	80						
		WB	171	1682	80	1933	58	53	25	E	D	C	52	D			WB	95	302	780	435	736		91	275	250						
		SB	71	87	55	213	52	51	39	D	D	D	48	D			SB	56	95	70	113	225										
		EB	78	1204	78	1360	64	31	16	E	C	B	32	C			EB	40	112	780	156	348		1	12	320						
Thru-Stop	11: Washington St NE & CSAH 10	NB	0	0	127	127	0	0	13	A	A	B	13	B	7	A	NB															
		WB	0	1816	20	1836	0	10	7	A	B	A	10	B			WB								4	48						
		SB	0	0	120	120	0	1	2	A	A	A	2	A			SB															
		EB	0	1045	109	1154	0	3	2	A	A	A	3	A			EB				1	22										
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	127	127	0	0	11	A	A	B	11	B	16	C	NB													45	127	
		WB	0	1814	49	1863	0	5	4	A	A	A	5	A			WB															
		SB	0	0	276	276	0	0	114	A	A	A	114	F			SB								284	346						
		EB	0	1000	155	1155	0	10	10	A	B	B	10	B			EB															
Signalized	13: Jefferson St NE/87th Ln & Washington St NE	NB	36	176	22	234	13	11	6	B	B	A	11	B	8	A	NB	18	57	160	38	95										
		WB	57	16	10	83	7	8	2	A	A	A	7	A			WB				24	65		4	33	150						
		SB	54	276	98	428	10	5	5	B	A	A	6	A			SB	21	49	90	53	108										
		EB	1	1	15	17	0	1	2	A	A	A	2	A			EB				7	40										
All-Way Stop	14: 85th Ave NE & Jefferson St NE	NB	0	0	0	0	0	0	0	A	A	A	0	A	6	A	NB															
		WB	0	82	94	176	0	7	4	A	A	A	5	A			WB				45	85										
		SB	75	0	57	132	7	0	5	A	A	A	6	A			SB	37	77	180				30	59							
		EB	65	99	0	164	6	7	0	A	A	A	7	A			EB				43	76										
Signalized	15: Jefferson St NE & Mall Ent	NB	8	140	20	168	12	8	3	B	A	A	8	A	9	A	NB	5	31	110	44	100		9	31	110						
		WB	5	0	133	138	23	0	6	C	A	A	7	A			WB				6	56		40	79	70						
		SB	100	110	155	365	10	8	4	B	A	A	7	A			SB	36	111	160	32	132		29	79							
		EB	165	0	13	178	17	0	3	B	A	A	16	B			EB	59	103	80	11	104										
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	213	1	21	235	38	22	40	D	C	D	38	D	35	D	NB	54	162	140	126	216										
		WB	0	1243	401	1644	0	42	10	A	D	B	34	C			WB				255	565		40	177							
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB															
		EB	206	1291	0	1497	78	29	0	E	C	A	36	D			EB	161	195	170	325	694										
Signalized	17: TH 47 SB Ramp & CSAH 10	NB	0	0	0	0	0	0	0	A	A	A																				

Table 6a. 2040 Build Sat- Scenario 2 with Full Access Signal at CSAH 10 and 85th Ave Ext MOEs

Control	Intersection Location	Appr	Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Appr	Average & Maximum Traffic Queueing (feet)										
			L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS		Left-Turn			Through			Right-Turn				
			Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage																	
Signalized	1: Springbrook Dr & 85th Ave	NB	104	97	234	435	12	16	8	B	B	A	11	B	13	B	NB	39	91	140	38	110		57	134	140		
		WB	216	189	250	655	22	9	7	C	A	A	13	B			WB	89	178	155	45	151		50	117	155		
		SB	297	109	47	453	16	11	6	B	B	A	14	B			SB	88	200	330	35	90						
		EB	54	161	136	351	17	23	6	B	C	A	15	B			EB	32	74	300	43	84		36	76	330		
Signalized	2: TH 47 & 85th Ave	NB	246	1111	105	1462	56	21	6	E	C	A	26	C	30	C	NB	159	303	560	150	250						
		WB	100	99	71	270	52	35	12	D	D	B	35	D			WB	74	154	130	115	248		38	113	145		
		SB	77	1070	321	1468	57	34	19	E	C	B	32	C			SB	55	199	270	181	412		101	282	270		
		EB	369	108	221	698	48	29	4	D	C	A	31	C			EB	119	248	300	71	150		16	110	115		
Signalized	3: TH 47 & University Ave	NB	0	720	925	1645	0	7	10	A	A	B	9	A	14	B	NB				31	100						
		WB	824	0	254	1078	31	2	4	C	A	A	25	C			WB	151	269									
		SB	0	584	0	584	0	7	0	A	A	A	7	A			SB				62	147						
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB											
Signalized	4: 86th Ln & University Ave	NB	115	0	178	293	17	0	6	B	A	A	10	B	13	B	NB				48	117				40	90	
		WB	172	936	108	1216	24	12	6	C	B	A	13	B			WB	81	153	360	98	212		26	119	170		
		SB	164	0	99	263	18	0	6	B	A	A	13	B			SB				66	132		37	97	100		
		EB	79	670	90	839	27	12	6	C	B	A	13	B			EB	46	97	220	81	168		29	67	220		
Signalized	5: University Ave & CSAH 10	NB	246	561	201	1008	43	27	5	D	C	A	27	C	40	D	NB	64	124	280	95	182						
		WB	775	975	357	2107	43	42	22	D	D	C	39	D			WB	154	275	520	240	348		82	240	430		
		SB	180	251	22	453	41	14	3	D	B	A	24	C			SB	50	79		53	95		8	56	200		
		EB	338	496	176	1010	71	65	22	E	E	C	60	E			EB	90	173	550	224	420		68	324	300		
Thru-Stop	6: University Ave & 89th Ave	NB	0	732	454	1246	0	3	3	A	A	A	3	A	5	A	NB					68	150					
		WB	0	0	179	179	0	1	10	A	A	B	10	B			WB							53	135			
		SB	134	451	0	585	14	5	0	B	A	A	7	A			SB	48	94	90	20	106						
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB											
Signalized	7: University Ave & 91st Ave	NB	99	759	8	866	19	6	4	B	A	A	7	A	7	A	NB	40	90	280	43	108				1	11	100
		WB	17	0	14	31	16	0	6	B	A	A	11	B			WB				13	42		13	49	30		
		SB	62	563	10	635	17	5	2	B	A	A	6	A			SB	29	67	365	52	123		1	18	265		
		EB	35	0	23	58	17	0	5	B	A	A	12	B			EB				20	57		14	50	40		
Signalized	8: 87th Ln & 89th Ave	NB	128	0	114	242	9	0	4	A	A	A	7	A	10	B	NB	38	114							24	72	
		WB	116	67	0	183	13	7	0	B	A	A	11	B			WB	49	97	190	23	64						
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB											
		EB	0	173	639	812	0	17	10	A	B	B	11	B			EB				62	117			82	164	190	
Signalized	9: Jefferson St NE & CSAH 10	NB	227	42	53	322	27	14	3	C	B	A	21	C	33	C	NB	69	152	185	14	50						
		WB	223	1359	92	1674	45	45	13	D	D	B	43	D			WB	47	108	915	355	518		4	33	780		
		SB	184	76	198	458	29	36	7	C	D	A	21	C			SB	57	157	220	57	203						
		EB	126	610	76	812	50	21	6	D	C	A	24	C			EB	26	84	670	75	196		1	15	250		
Signalized	10: Able St & CSAH 10	NB	63	211	70	344	38	43	16	D	D	B	37	D	33	C	NB	48	124	100	150	304				53	105	80
		WB	90	1399	73	1562	48	36	11	D	D	B	36	D			WB	37	123	780	270	440		37	275	250		
		SB	72	50	51	173	42	42	25	D	D	C	37	D			SB	51	94	70	67	168						
		EB	76	890	61	1027	51	26	8	D	C	A	27	C			EB	32	102	780	118	245		1	15	320		
Signalized	11: 85th Ave Extension & CSAH 10	NB	0	0	58	58	27	32	7	C	C	A	7	A	28	C	NB	63	151	150	69	173				17	101	150
		WB	0	1500	73	1573	60	30	15	E	C	B	29	C			WB	177	321	300	224	549		34	220	300		
		SB	0	0	158	158	24	32	17	C	C	B	17	B			SB	49	111	150	53	132		61	113	150		
		EB	0	727	68	795	40	32	9	D	C	A	30	C			EB	79	207	300	186	350		35	223	300		
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	58	58	0	0	9	A	A	A	9	A	10	B	NB										26	68
		WB	0	1554	33	1587	0	6	4	A	A	A	6	A			WB								135	324		
		SB	0	0	318	318	0	0	34	A	A	D	34	D			SB											
		EB	0	779	98	877	0	8	7	A	A	A	8	A			EB											
Signalized	13: Jefferson St NE/87th Ln & Washington St NE	NB	23	200	40	263	14	10	6	B	B	A	10	B	7	A	NB	9	36	160	38	89						
		WB	61	25	21	107	8	6	2	A	A	A	6	A			WB				26	64		4	29	150		
		SB	73	318	129	520	10	5	5	B	A	A	6	A			SB	21	72	90	54	127						
		EB	10	3	11	24	9	5	5	A	A	A	7	A			EB				73	186						
All-Way Stop	14: 85th Ave NE & Jefferson St NE	NB	0	0	0	0	0	0	0	A	A	A	0	A	6	A	NB											
		WB	0	80	84	164	0	7	4	A	A	A	5	A			WB				44	87						
		SB	86	0	82	168	6	0	4	A	A	A	5	A			SB	34	67	180				33	63			
		EB	38	82	0	120	6	7	0	A	A	A	7	A			EB				40	77						
Signalized	15: Jefferson St NE & Mall Ent	NB	12	92	10	114	7	5	2	A	A	A	5	A	7	A	NB	8	35	110	26	77				4	25	110
		WB	6	0	76	82	19	0	4	B	A	A	5	A			WB				6	36		30	73	70		
		SB	90	150	163	403	7	5	3	A	A	A	5	A			SB	26	89	160	28	88		26	83			
		EB	151	0	11	162	16	0	3	B	A	A	15	B			EB	44	94	80	5	21						
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	136	2	17	155	20	14	17	C	B	B	20	C	33	C	NB	7	65	140	62	140						
		WB	0	874	258	1132	0	40	9	A	D	A	33	C			WB				197	348		22	132			
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB											
		EB	44	993	0	1037	69	32	0	E	C	A	34</															

Table 6b. 2040 Build PM- Scenario 2 with Full Access Signal at CSAH 10 and 85th Ave Ext MOEs

Control	Intersection		Average & Maximum Traffic Queueing (feet)																													
	Location	Appr	Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Average & Maximum Traffic Queueing (feet)															
			L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS	Left-Turn			Through			Right-Turn									
Signalized	1: Springbrook Dr & 85th Ave	NB	128	105	177	410	13	15	7	B	B	A	11	B	14	B	NB	44	104	140	40	113		42	88	140						
		WB	163	281	214	658	23	12	7	C	B	A	13	B			WB	72	151	155	59	120		46	99	155						
		SB	200	77	42	319	16	14	7	B	B	A	14	B			SB	67	141	330	36	94										
		EB	54	349	120	523	18	21	6	B	C	A	17	B			EB	31	73	300	71	140		35	78	330						
Signalized	2: TH 47 & 85th Ave	NB	220	1738	157	2115	62	37	10	E	D	B	38	D	36	D	NB	151	287	560	253	424		10	235	370						
		WB	156	112	130	398	48	35	16	D	D	B	34	C			WB	91	154	130	107	239		57	137	145						
		SB	112	910	284	1306	72	37	18	E	D	B	36	D			SB	90	224	270	177	331		86	244	270						
		EB	446	80	274	800	49	30	5	D	C	A	32	C			EB	166	284	300	73	166		26	137	115						
Signalized	3: TH 47 & University Ave	NB	0	1566	973	2539	0	12	10	A	B	B	11	B	14	B	NB				82	387		1	15							
		WB	724	0	206	930	34	2	4	C	A	A	27	C			WB	147	237													
		SB	0	701	0	701	0	5	0	A	A	A	5	A			SB				56	127										
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB															
Signalized	4: 86th Ln & University Ave	NB	119	0	191	310	17	0	7	B	A	A	11	B	13	B	NB				52	110		48	93							
		WB	174	771	66	1011	26	11	5	C	B	A	13	B			WB	79	178	360	81	178		14	76	170						
		SB	137	0	69	206	18	0	6	B	A	A	14	B			SB				63	135		29	94	100						
		EB	80	798	110	988	28	14	6	C	B	A	14	B			EB	52	134	220	99	184		32	72	220						
Signalized	5: University Ave & CSAH 10	NB	251	572	227	1050	55	36	6	E	D	A	34	C	44	D	NB	77	132	280	134	215				11	96	270				
		WB	609	1444	283	2336	55	45	24	E	D	C	45	D			WB	159	470	520	396	634		114	455	430						
		SB	118	175	10	303	55	37	3	E	D	A	43	D			SB	39	75		39	78		4	56	200						
		EB	382	811	173	1366	67	47	21	E	D	C	49	D			EB	96	501	550	222	707		55	325	300						
Thru-Stop	6: University Ave & 89th Ave	NB	0	913	387	1300	0	3	3	A	A	A	3	A	5	A	NB				59	149										
		WB	0	0	183	183	0	1	11	A	A	B	11	B			WB							58	115							
		SB	116	195	0	311	14	3	0	B	A	A	7	A			SB	40	79	90	11	68										
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB															
Signalized	7: University Ave & 91st Ave	NB	65	925	8	998	22	6	5	C	A	A	7	A	7	A	NB	28	86	280	53	130		1	10	100						
		WB	17	0	36	53	20	0	7	C	A	A	11	B			WB				12	52		27	53	30						
		SB	85	420	26	531	19	3	2	B	A	A	6	A			SB	39	89	365	31	89		4	22	265						
		EB	15	2	8	25	18	10	4	B	B	A	13	B			EB				11	43		5	40	40						
Signalized	8: 87th Ln & 89th Ave	NB	129	0	101	230	9	0	4	A	A	A	7	A	11	B	NB	41	104					26	83							
		WB	163	92	0	255	14	8	0	B	A	A	12	B			WB	56	109	190	30	83										
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB															
		EB	0	213	534	747	0	18	9	A	B	A	12	B			EB				74	168		68	135	190						
Signalized	9: Jefferson St NE & CSAH 10	NB	287	57	124	468	38	23	3	D	C	A	27	C	41	D	NB	98	198	185	16	54		2	36	140						
		WB	221	1610	117	1948	59	60	17	E	E	B	57	E			WB	57	382	915	520	820		30	341	780						
		SB	162	49	165	376	39	29	9	D	C	A	25	C			SB	63	167	220	45	206										
		EB	86	1138	102	1326	55	26	9	E	C	A	27	C			EB	13	53	670	165	436										
Signalized	10: Able St & CSAH 10	NB	85	150	125	360	51	51	21	D	D	C	41	D	43	D	NB	67	124	100	156	326		71	105	80						
		WB	171	1682	80	1933	68	48	21	E	D	C	49	D			WB	111	334	780	410	985		71	275	250						
		SB	71	87	55	213	49	52	41	D	D	D	48	D			SB	52	95	70	127	230										
		EB	78	1204	78	1360	62	35	16	E	D	B	35	D			EB	42	250	780	170	454		8	84	320						
Signalized	11: 85th Ave Extension & CSAH 10	NB	0	0	127	127	42	45	16	D	D	B	16	B	29	C	NB	93	169	150	111	251		50	172	150						
		WB	0	1816	20	1836	69	32	16	E	C	B	32	C			WB	185	298	300	287	730		11	147	300						
		SB	0	0	120	120	38	46	28	D	D	C	28	C			SB	51	100	150	47	126		59	112	150						
		EB	0	1045	109	1154	59	28	10	E	C	B	26	C			EB	114	284	300	212	436		53	228	300						
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	127	127	0	0	13	A	A	B	13	B	11	B	NB							47	122							
		WB	0	1814	49	1863	0	7	6	A	A	A	7	A			WB															
		SB	0	0	276	276	0	0	49	A	A	A	49	E			SB							268	342							
		EB	0	1000	155	1155	0	9	9	A	A	A	9	A			EB															
Signalized	13: Jefferson St NE/87th Ln & Washington St NE	NB	36	176	22	234	14	9	4	B	A	A	9	A	6	A	NB	14	37	160	27	74										
		WB	57	16	10	83	7	6	2	A	A	A	6	A			WB				22	68		3	23	150						
		SB	54	276	98	428	11	4	5	B	A	A	5	A			SB	19	45	90	43	100										
		EB	1	1	15	17	8	5	5	A	A	A	5	A			EB				68	186										
All-Way Stop	14: 85th Ave NE & Jefferson St NE	NB	0	0	0	0	0	0	0	A	A	A	0	A	6	A	NB															
		WB	0	82	94	176	0	7	4	A	A	A	5	A			WB				43	79										
		SB	75	0	57	132	6	0	4	A	A	A	5	A			SB	33	69	180				30	72							
		EB	65	99	0	164	6	7	0	A	A	A	7	A			EB				46	81										
Signalized	15: Jefferson St NE & Mall Ent	NB	8	140	20	168	9	7	2	A	A	A	7	A	8	A	NB	4	31	110	37	112		5	35	110						
		WB	5	0	133	138	18	0	5	B	A	A	5	A			WB				4	47		39	79	70						
		SB	100	110	155	365	7	6	3	A	A	A	5	A			SB	30	77	160	22	98		25	80							
		EB	165	0	13	178	17	0	3	B	A	A	16	B			EB	45	80	80	5	26										
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	213	1	21	235	40	38	37	D	D	D	40	D	35	D	NB	62	164	140	135	267				42	202					
		WB	0	1243	401	1644	0	45	11	A	D	B	37	D			WB				264	564										
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB															
		EB	206	1291	0	1497	74	25	0	E	C	A	32	C			EB	162	195	170	294	696										

Table 7a. 2040 Build Sat- Scenario 1 Mitigation MOEs

Intersection		Control	Appr	Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Average & Maximum Traffic Queueing (feet)																								
Location	L			T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS	Left-Turn			Through			Right-Turn																			
																	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage																	
2: TH 47 & 85th Ave	NB	246	978	216	1440	40	23	7	D	C	A	24	C	26	C	NB	76	142	560	130	219																					
	WB	207	402	207	816	55	27	11	E	C	B	30	C			WB	104	154	130	109	251				64	151	145															
	SB	217	935	290	1442	46	27	16	D	C	B	28	C			SB	66	128	270	147	246				75	187	270															
	EB	148	363	221	732	35	25	4	D	C	A	21	C			EB	60	119	300	77	145				5	106	300															
5: University Ave & CSAH 10	NB	184	377	204	765	43	33	4	D	C	A	28	C	39	D	NB	70	133	280	97	195												1	20	270							
	WB	486	975	366	1827	39	38	16	D	D	B	34	C			WB	152	271	520	273	519				99	316																
	SB	127	179	22	328	41	16	3	D	B	A	25	C			SB	51	73		56	104				10	59	200															
	EB	205	655	200	1060	70	68	21	E	E	C	60	E			EB	76	162	550	275	438				31	150	550															
6: University Ave & 89th Ave	NB	0	816	276	1092	0	3	3	A	A	A	3	A	5	A	NB																										
	WB	0	0	175	175	0	1	10	A	A	B	10	B			WB																										
	SB	129	479	0	608	17	5	0	C	A	A	8	A			SB	57	123	200	16	109																					
	EB	0	0	0	0	0	0	0	A	A	A	0	A			EB																										
7: University Ave & 91st Ave	NB	99	779	8	886	18	6	6	B	A	A	7	A	7	A	NB	36	91	280	47	116													1	33	100						
	WB	17	0	14	31	15	0	4	B	A	A	10	B			WB					11	38								7	22	100										
	SB	62	586	10	658	20	5	2	C	A	A	6	A			SB	32	82	365	50	109									2	17	265										
	EB	35	0	23	58	17	0	4	B	A	A	12	B			EB					21	62							12	32	100											
10: Able St & CSAH 10	NB	63	65	70	198	33	34	9	C	C	A	25	C	32	C	NB	28	78	150	36	86														29	74	150					
	WB	90	1397	73	1560	45	38	11	D	D	B	37	D			WB	41	250	780	284	541								44	275	250											
	SB	72	50	51	173	42	41	21	D	D	C	36	D			SB	37	99	150	33	90								33	79	150											
	EB	76	879	61	1016	45	24	7	D	C	A	25	C			EB	33	113	780	100	220									2	320											
11: 85th Ave Extension & CSAH 10	NB	141	143	187	471	30	30	7	C	C	A	21	C	28	C	NB	70	150	150	67	145														37	88	200					
	WB	247	1232	73	1552	59	29	12	E	C	B	33	C			WB	181	386	400	209	521								38	323	300											
	SB	98	87	142	327	24	29	16	C	C	B	22	C			SB	49	88	150	52	124								58	117	150											
	EB	110	526	262	898	44	29	13	D	C	B	26	C			EB	83	196	300	142	256								74	164	300											
12: 7th St & CSAH 10	NB	0	0	187	187	0	0	10	A	A	B	10	B	7	A	NB																				53	165					
	WB	0	1264	41	1305	0	5	4	A	A	A	5	A			WB																										
	SB	0	0	300	300	0	0	3	A	A	A	3	A			SB																										
	EB	0	788	262	1050	0	9	8	A	A	A	9	A			EB																										
15: Jefferson St NE & Mall Ent	NB	23	85	10	118	8	6	2	A	A	A	6	A	7	A	NB	12	35	110	26	65													3	30	110						
	WB	6	0	63	69	25	0	4	C	A	A	6	A			WB					6	31							28	62	70											
	SB	74	146	196	416	8	6	3	A	A	A	5	A			SB	26	69	160	32	102								30	85												
	EB	134	0	21	155	16	0	4	B	A	A	14	B			EB	54	127	150	8	26																					
16: TH 47 NB Ramp & CSAH 10	NB	136	2	17	155	19	24	16	B	C	B	19	B	35	D	NB	10	85	140	61	138																					
	WB	0	894	268	1162	0	44	9	A	D	A	36	D			WB					198	354							23	93												
	SB	0	0	0	0	0	0	0	A	A	A	0	A			SB																										
	EB	44	1043	0	1087	53	35	0	D	D	A	36	D			EB	40	272	300	276	528																					
17: TH 47 SB Ramp & CSAH 10	NB	0	0	0	0	0	0	0	A	A	A	0	A	30	C	NB																										
	WB	12	1027	0	1039	57	39	0	E	D	A	39	D			WB	22	223	300	294	607																					
	SB	323	0	47	370	19	0	14	B	A	B	18	B			SB	56	161	300	104	206																					
	EB	0	840	104	944	0	26	6	A	C	A	24	C			EB					167	328							20	105	300											

Table 7b. 2040 Build PM- Scenario 1 Mitigation MOEs

Control	Intersection		Appr	Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Average & Maximum Traffic Queueing (feet)																	
	Location	Appr		L	T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS	Left-Turn			Through			Right-Turn											
																		Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage									
Signalized	2: TH 47 & 85th Ave	NB	246	978	216	1440	40	23	7	D	C	A	24	C	26	C	NB	76	142	560	130	219													
		WB	207	402	207	816	55	27	11	E	C	B	30	C			WB	104	154	130	109	251			64	151	145								
		SB	217	935	290	1442	46	27	16	D	C	B	28	C			SB	66	128	270	147	246			75	187	270								
		EB	148	363	221	732	35	25	4	D	C	A	21	C			EB	60	119	300	77	145			5	106	300								
Signalized	5: University Ave & CSAH 10	NB	184	377	204	765	43	33	4	D	C	A	28	C	39	D	NB	70	133	280	97	195					1	20	270						
		WB	486	975	366	1827	39	38	16	D	D	B	34	C			WB	152	271	520	273	519			99	316									
		SB	127	179	22	328	41	16	3	D	B	A	25	C			SB	51	73		56	104			10	59	200								
		EB	205	655	200	1060	70	68	21	E	E	C	60	E			EB	76	162	550	275	438			31	150	550								
Thru-Stop	6: University Ave & 89th Ave	NB	0	816	276	1092	0	3	3	A	A	A	3	A	5	A	NB																		
		WB	0	0	175	175	0	1	10	A	A	B	10	B			WB									50	114								
		SB	129	479	0	608	17	5	0	C	A	A	8	A			SB	57	123	200	16	109													
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB																		
Signalized	7: University Ave & 91st Ave	NB	99	779	8	886	18	6	6	B	A	A	7	A	7	A	NB	36	91	280	47	116					1	33	100						
		WB	17	0	14	31	15	0	4	B	A	A	10	B			WB				11	38			7	22	100								
		SB	62	586	10	658	20	5	2	C	A	A	6	A			SB	32	82	365	50	109			2	17	265								
		EB	35	0	23	58	17	0	4	B	A	A	12	B			EB				21	62			12	32	100								
Signalized	10: Able St & CSAH 10	NB	63	65	70	198	33	34	9	C	C	A	25	C	32	C	NB	28	78	150	36	86					29	74	150						
		WB	90	1397	73	1560	45	38	11	D	D	B	37	D			WB	41	250	780	284	541			44	275	250								
		SB	72	50	51	173	42	41	21	D	D	C	36	D			SB	37	99	150	33	90			33	79	150								
		EB	76	879	61	1016	45	24	7	D	C	A	25	C			EB	33	113	780	100	220			2	320									
Signalized	11: 85th Ave Extension & CSAH 10	NB	141	143	187	471	30	30	7	C	C	A	21	C	28	C	NB	70	150	150	67	145					37	88	200						
		WB	247	1232	73	1552	59	29	12	E	C	B	33	C			WB	181	386	400	209	521			38	323	300								
		SB	98	87	142	327	24	29	16	C	C	B	22	C			SB	49	88	150	52	124			58	117	150								
		EB	110	526	262	898	44	29	13	D	C	B	26	C			EB	83	196	300	142	256			74	164	300								
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	187	187	0	0	10	A	A	B	10	B	7	A	NB																		
		WB	0	1264	41	1305	0	5	4	A	A	A	5	A			WB																		
		SB	0	0	300	300	0	0	3	A	A	A	3	A			SB																		
		EB	0	788	262	1050	0	9	8	A	A	A	9	A			EB																		
Signalized	15: Jefferson St NE & Mall Ent	NB	23	85	10	118	8	6	2	A	A	A	6	A	7	A	NB	12	35	110	26	65					3	30	110						
		WB	6	0	63	69	25	0	4	C	A	A	6	A			WB				6	31			28	62	70								
		SB	74	146	196	416	8	6	3	A	A	A	5	A			SB	26	69	160	32	102			30	85									
		EB	134	0	21	155	16	0	4	B	A	A	14	B			EB	54	127	150	8	26													
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	136	2	17	155	19	24	16	B	C	B	19	B	35	D	NB	10	85	140	61	138													
		WB	0	894	268	1162	0	44	9	A	D	A	36	D			WB				198	354			23	93									
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB																		
		EB	44	1043	0	1087	53	35	0	D	D	A	36	D			EB	40	272	300	276	528													
Signalized	17: TH 47 SB Ramp & CSAH 10	NB	0	0	0	0	0	0	0	A	A	A	0	A	30	C	NB																		
		WB	12	1027	0	1039	57	39	0	E	D	A	39	D			WB	22	223	300	294	607													
		SB	323	0	47	370	19	0	14	B	A	B	18	B			SB	56	161	300	104	206													
		EB	0	840	104	944	0	26	6	A	C	A	24	C			EB				167	328			20	105	300								

Table 8a. 2040 Build Sat- Scenario 2 Mitigation MOEs

Control	Intersection		Appr	Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Average & Maximum Traffic Queueing (feet)												
	Location	Forecast Volumes				Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Left-Turn			Through			Right-Turn								
		L		T	R	Total	L	T	R	L	T	R	Delay	LOS	Delay	LOS	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue	Storage					
Signalized	2: TH 47 & 85th Ave	Appr																												
		NB	246	1111	105	1462	44	18	6	D	B	A	22	C	25	C	NB	85	146	560	143	231								
		WB	100	99	71	270	55	30	12	E	C	B	35	D			WB	66	142	130	108	179			36	102	145			
		SB	77	1070	321	1468	49	23	15	D	C	B	23	C			SB	33	118	270	133	262			68	194	270			
		EB	369	108	221	698	45	25	4	D	C	A	29	C			EB	80	163	300	68	125			6	91	300			
Signalized	5: University Ave & CSAH 10	Appr																												
		NB	246	561	201	1008	46	29	5	D	C	A	28	C	38	D	NB	68	140	280	103	213			1	29	270			
		WB	775	975	357	2107	39	39	15	D	D	B	35	D			WB	161	278	520	276	549			87	212				
		SB	180	251	22	453	42	15	3	D	B	A	25	C			SB	55	73		55	95			7	56	200			
		EB	338	496	176	1010	71	68	20	E	F	C	61	E			EB	90	201	550	232	454			26	121	550			
Thru-Stop	6: University Ave & 89th Ave	Appr																												
		NB	0	792	454	1246	0	3	3	A	A	A	3	A	5	A	NB													
		WB	0	0	179	179	0	1	11	A	A	B	11	B			WB									57	141			
		SB	134	451	0	585	15	5	0	C	A	A	7	A			SB	51	115	200	16	106								
		EB	0	0	0	0	0	0	A	A	A	0	A			EB														
Signalized	7: University Ave & 91st Ave	Appr																												
		NB	99	759	8	866	20	6	3	C	A	A	8	A	7	A	NB	44	111	280	45	120			1	9	100			
		WB	17	0	14	31	17	0	5	B	A	A	12	B			WB				11	43			7	26	100			
		SB	62	563	10	635	19	5	2	B	A	A	6	A			SB	32	76	365	50	116			2	15	265			
		EB	35	0	23	58	17	0	5	B	A	12	B			EB				19	58			12	36	100				
Signalized	9: Jefferson St NE & CSAH 10	Appr																												
		NB	227	42	53	322	28	11	3	C	B	A	22	C	34	C	NB	67	152	300	7	48								
		WB	223	1359	92	1674	47	46	12	D	D	B	44	D			WB	47	114	915	362	524			3	36	780			
		SB	184	76	198	458	28	35	6	C	D	A	20	C			SB	57	147	220	47	203								
		EB	126	610	76	812	48	22	7	D	C	A	25	C			EB	23	80	670	75	229			5	84	250			
Signalized	10: Able St & CSAH 10	Appr																												
		NB	63	211	70	344	35	40	11	D	D	B	33	C	30	C	NB	35	174	150	125	258			45	175	150			
		WB	90	1399	73	1562	48	33	8	D	C	A	33	C			WB	39	108	780	249	425			8	156	350			
		SB	72	50	51	173	44	42	18	D	D	B	36	D			SB	41	119	150	33	96			33	77	150			
		EB	76	890	61	1027	44	24	7	D	C	A	24	C			EB	31	89	780	107	244			3	320				
Signalized	11: 85th Ave Extension & CSAH 10	Appr																												
		NB	0	0	58	58	31	31	7	C	C	A	7	A	27	C	NB	70	174	250	68	162			15	60	250			
		WB	223	1500	73	1573	60	28	13	E	C	B	27	C			WB	191	368	400	194	499			38	273	300			
		SB	0	0	158	158	28	28	16	C	C	B	16	B			SB	52	100	150	47	127			63	128	150			
		EB	0	727	68	795	40	33	10	D	C	B	31	C			EB	85	185	300	189	306			30	118	300			
Thru-Stop	12: 7th St & CSAH 10	Appr																												
		NB	0	0	58	58	0	0	7	A	A	A	7	A	6	A	NB										22	51		
		WB	0	1554	33	1587	0	5	4	A	A	A	5	A			WB					6								
		SB	0	0	318	318	0	0	3	A	A	A	3	A			SB													
		EB	0	779	98	877	0	8	8	A	A	A	8	A			EB													
Signalized	15: Jefferson St NE & Mall Ent	Appr																												
		NB	12	92	10	114	7	5	2	A	A	A	5	A	7	A	NB	8	35	110	20	78			4	30	110			
		WB	6	0	76	82	21	0	5	C	A	A	6	A			WB				6	32			33	78	150			
		SB	90	150	163	403	6	5	2	A	A	A	4	A			SB	24	72	160	23	97			21	67				
		EB	151	0	11	162	16	0	3	B	A	15	B			EB	42	97	150	6	21									
Signalized	16: TH 47 NB Ramp & CSAH 10	Appr																												
		NB	136	2	17	155	20	16	18	C	B	B	20	C	35	D	NB	11	119	300	64	163								
		WB	0	874	258	1132	0	45	10	A	D	B	37	D			WB				208	350			24	122				
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB													
		EB	44	993	0	1037	50	33	0	D	C	A	34	C			EB	42	267	300	251	504								
Signalized	17: TH 47 SB Ramp & CSAH 10	Appr																												
		NB	0	0	0	0	0	0	0	A	A	A	0	A	31	C	NB													
		WB	12	1007	0	1019	69	41	0	E	D	A	41	D			WB	19	210	300	303	616								
		SB	331	0	47	378	18	0	16	B	A	B	18	B			SB	64	165	300	102	205								
		EB	0	782	104	886	0	26	5	A	C	A	24	C			EB				164	294			18	42	300			

Table 8b. 2040 Build PM- Scenario 2 Mitigation MOEs

Control	Intersection		Forecast Volumes												Total Delay by Movement			LOS by Movement			LOS by Approach (Sec/Veh)		LOS by Intersection (Sec/Veh)		Average & Maximum Traffic Queueing (feet)											
	Location	Appr	L				T				R				L			T			R			Delay	LOS	Delay	LOS	Left-Turn			Through			Right-Turn		
			L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Ave Queue	Max Queue	Storage	Ave Queue	Max Queue					Storage	Ave Queue	Max Queue	Storage					
Signalized	2: TH 47 & 85th Ave	NB	220	1738	157	2115	42	29	9	D	C	A	29	C	28	C	NB	72	116	560	206	322				57	139	145								
		WB	156	112	130	398	53	30	14	D	C	B	34	C			WB	91	153	130	91	192				75	178	270								
		SB	112	910	284	1306	45	26	15	D	C	B	25	C			SB	37	82	270	139	238				12	164	300								
		EB	446	80	274	800	38	27	5	D	C	A	26	C			EB	86	167	300	61	118				13	136	270								
Signalized	5: University Ave & CSAH 10	NB	251	572	227	1050	62	36	6	E	D	A	36	D	44	D	NB	88	157	280	136	218				92	285									
		WB	609	1444	283	2336	49	43	17	D	D	B	41	D			WB	165	419	520	419	668				4	56	200								
		SB	118	175	10	303	56	35	3	E	D	A	42	D			SB	36	76		36	78				67	470	550								
		EB	382	811	173	1366	74	55	17	E	E	B	56	E			EB	112	497	550	254	693														
Thru-Stop	6: University Ave & 89th Ave	NB	0	913	387	1300	0	3	3	A	A	A	3	A	5	A	NB				74	156				54	125									
		WB	0	0	183	183	0	1	12	A	A	B	12	B			WB																			
		SB	116	195	0	311	16	4	0	C	A	A	8	A			SB	48	118	200	8	87														
		EB	0	0	0	0	0	0	0	A	A	A	0	A			EB																			
Signalized	7: University Ave & 91st Ave	NB	65	925	8	998	21	6	6	C	A	A	7	A	7	A	NB	29	82	280	50	140				1	8	100								
		WB	17	0	36	53	18	0	7	B	A	A	11	B			WB				12	47				16	48	100								
		SB	85	420	26	531	18	4	2	B	A	A	6	A			SB	39	95	365	35	108				5	36	265								
		EB	15	2	8	25	20	18	4	C	B	A	15	B			EB				12	39				6	23	100								
Signalized	9: Jefferson St NE & CSAH 10	NB	287	57	124	468	36	19	3	D	B	A	25	C	40	D	NB	97	205	300	12	59				2	38	140								
		WB	221	1610	117	1948	58	58	16	E	E	B	55	E			WB	61	264	915	506	750				24	184	780								
		SB	162	49	165	376	37	29	9	D	C	A	24	C			SB	58	133	220	53	211														
		EB	86	1138	102	1326	53	28	9	D	C	A	28	C			EB	16	52	670	173	442				21	226	250								
Signalized	10: Able St & CSAH 10	NB	85	150	125	360	48	53	20	D	D	C	40	D	41	D	NB	58	154	150	137	278				74	167	150								
		WB	171	1682	80	1933	60	48	18	E	D	B	48	D			WB	121	454	780	399	721				61	303	350								
		SB	71	87	55	213	50	51	26	D	D	C	44	D			SB	41	126	150	62	143				40	109	150								
		EB	78	1204	78	1360	58	32	14	E	C	B	32	C			EB	40	127	780	153	352				2	72	320								
Signalized	11: 85th Ave Extension & CSAH 10	NB	0	0	127	127	40	42	15	D	D	B	15	B	27	C	NB	89	178	250	105	221				43	139	250								
		WB	0	1816	20	1836	70	28	16	E	C	B	28	C			WB	184	424	400	240	646				7	39	300								
		SB	0	0	120	120	37	46	28	D	D	C	28	C			SB	53	100	150	50	124				61	119	150								
		EB	0	1045	109	1154	57	29	9	E	C	A	27	C			EB	116	324	300	226	442				56	323	300								
Thru-Stop	12: 7th St & CSAH 10	NB	0	0	127	127	0	0	16	A	A	C	16	C	7	A	NB									49	134									
		WB	0	1814	49	1863	0	6	5	A	A	A	6	A			WB				1	11														
		SB	0	0	276	276	0	0	3	A	A	A	3	A			SB																			
		EB	0	1000	155	1155	0	9	8	A	A	A	9	A			EB																			
Signalized	15: Jefferson St NE & Mall Ent	NB	8	140	20	168	8	7	3	A	A	A	7	A	8	A	NB	5	31	110	37	95				7	31	110								
		WB	5	0	133	138	24	0	5	C	A	A	6	A			WB				4	31				40	79	150								
		SB	100	110	155	365	7	5	3	A	A	A	5	A			SB	30	80	160	20	79				23	71									
		EB	165	0	13	178	18	0	4	B	A	A	17	B			EB	49	103	150	7	25														
Signalized	16: TH 47 NB Ramp & CSAH 10	NB	213	1	21	235	39	22	32	D	C	C	38	D	35	D	NB	62	169	300	129	200														
		WB	0	1243	401	1644	0	46	10	A	D	B	37	D			WB				259	614				40	170									
		SB	0	0	0	0	0	0	0	A	A	A	0	A			SB																			
		EB	206	1291	0	1497	71	26	0	E	C	A	32	C			EB	204	325	300	257	678														
Signalized	17: TH 47 SB Ramp & CSAH 10	NB	0	0	0	0	0	0	0	A	A	A	0	A	26	C	NB																			
		WB	8	1430	0	1438	63	28	0	E	C	A	28	C			WB	12	100	300	271	605														
		SB	288	1	80	369	35	15	29	D	B	C	34	C			SB	101	245	300	153	288														
		EB	0	1314	146	1460	0	23	7	A	C	A	21	C			EB				228	449				32	272	300								

**COON CREEK WATERSHED DISTRICT
Request for Board Action**

MEETING DATE: April 22, 2024
AGENDA NUMBER: 14
ITEM: Creek-Crossing Highway Signage

AGENDA Information

PURPOSE To inform the Board of a signage project to increase awareness of local creeks and Coon Creek Watershed District (CCWD) throughout the watershed district.

BACKGROUND/CONTEXT

In 2021 Board member McCullough asked about having highway signage with creek names at creek and ditch crossings to increase residents' knowledge of local waterbodies. By adding the CCWD logo, awareness of the CCWD would increase as well as our association with the creeks.

Anoka County Highway Department (ACHD) was contacted as to the feasibility and costs of sign fabrication and installation. They were given a list of potential crossing locations. They readily agreed that the project was feasible.

Project funding was proposed for 2023 but did not survive the budget process.

Project funding was proposed again for 2024. The project was approved.

- ACHD has provided an updated cost-list for which 48 of 64 total highway signs plus a separate CCWD logo sign for each creek sign.
- Signs will be installed throughout the summer and completed in fall by ACHD crews in 2024.

IMPLICATIONS FOR RESOURCE/ORGANIZATION

- Five subwatersheds with will be piloted: Coon Creek (24 of total 48 signs), Sand Creek, Prairie Creek, Springbrook Creek, and Knoll Creek.
- Future subwatersheds include: Oak Glen Creek, Peat Creek, Pleasure Creek, Stonybrook Creek, and Woodcrest Creek.
- Replacement costs are being factored into longer-term budgeting.
- By adding the CCWD logo, awareness of the CCWD would increase as well as be associated with the creeks.
- Input by staff and the CAC was obtained, all positive for the project.
- Final design mockup with single line of text and separate logo sign is below, followed by list of locations and cost:



**60x18" POST SPACING 36"
LOGO SIGN 12X12"
HEIGHT TO BOTTOM OF
SECONDARY SIGN 7'**

COON CREEK WATERSHED DISTRICT

Creek	Road Crossing	Road Crossing Type	Sign Type	# signs needed	Sign Cost	Total Cost
Coon Creek	Lexington@167th	Soil Shoulder	Road	2	\$209.83	\$419.66
	Lexington@146th	Soil Shoulder	Road	2	\$209.83	\$419.66
	Radisson@145th	Bridge	Road	2	\$209.83	\$419.66
	Hwy 65 @145th	Bridge	Highway	2	\$209.83	\$419.66
	Hanson@Coon Creek Park	Bridge	Road	2	\$209.83	\$419.66
	Bunker Lake Blvd	Bridge	Road	2	\$209.83	\$419.66
	Main Street	Bridge	Road	2	\$209.83	\$419.66
	Coon Creek Blvd	Bridge	Road	2	\$209.83	\$419.66
	Hanson@Lions Park	Soil Shoulder	Road	2	\$209.83	\$419.66
	Hwy 47/10	Soil Shoulder	Highway	2	\$209.83	\$419.66
	Coon Rapids Blvd	Soil Shoulder	Highway	2	\$209.83	\$419.66
	Northdale	Bridge	Road	2	\$209.83	\$419.66
Oak Glen Creek	East River Road	Soil Shoulder	Road	1	\$209.83	\$209.83
Peat Creek	Main Street	Bridge	Road	2	\$209.83	\$419.66
Pleasure Creek	99th Ave	Soil Shoulder	Road	2	\$209.83	\$419.66
	Coon Rapids Blvd	Soil Shoulder	Road	2	\$209.83	\$419.66
	East River Road	Soil Shoulder	Road	2	\$209.83	\$419.66
Prairie Creek	157th Ave NE	Soil Shoulder	Road	2	\$209.83	\$419.66
	Constance	Soil Shoulder	Road	2	\$209.83	\$419.66
	Hwy 65	Soil Shoulder	Highway	2	\$209.83	\$419.66
	Crosstown	Soil Shoulder	Road	2	\$209.83	\$419.66
Sand Creek	University @ 117th	Bridge	Road	2	\$209.83	\$419.66
	Hwy 65 @ 117th- HOLD for HWY 65 upgrade	Soil Shoulder	Highway	0	\$0.00	\$0.00
	109th Ave near NSC	Soil Shoulder	Highway	2	\$209.83	\$419.66

Springbrook Creek	89th Ave	Soil Shoulder	Road	1	\$209.83	\$209.83
	County Rd 10	Soil Shoulder	Highway	1	\$209.83	\$209.83
	University Ave	Soil Shoulder	Highway	2	\$209.83	\$419.66
	85th Ave	Soil Shoulder	Road	2	\$209.83	\$419.66
	East River Road	Soil Shoulder	Road	2	\$209.83	\$419.66
Stonybrook Creek	East River Road	Soil Shoulder	Road	2	\$209.83	\$419.66
Woodcrest Creek	Foley	Soil Shoulder	Road	2	\$209.83	\$419.66
	Hwy 47	Soil Shoulder	Highway	1	\$209.83	\$209.83
Knoll Creek	109th Ave near Polk St	Soil Shoulder	Highway	2	\$209.83	\$419.66
	University near 115th	Soil shoulder	Highway	2	\$209.83	\$419.66
Totals				62	\$209.83	\$13,009.46
TOTAL HIGHLIGHTED AREAS				48	\$209.83	\$10,071.84

292.32

Budget = \$11,000 **Total** \$10,364.16

Breakout		1 sign	2 signs	
		\$	\$	
Cost to make sign	18"x60"	46.35	92.70	
cost for post				
		\$	\$	
2 - 6x3lb, 2 -9'x3lb		61.50	123.00	
Est. cost for installation				
		\$	\$	
Labor (.75 hr for 2 signs)		46.00	92.00	
		\$	\$	
Equipment (.75 hr for 2 signs)		55.98	111.96	
		\$	\$	
Total for 18" x 60" signs		209.83	419.66	\$6.09
				48
				Total
				292.32

Page	Line	Text	Implications
WETLANDS			
76	76-20-76.24	<p>Subd. 17b. Wetland type. "Wetland type" means a wetland type classified according to Wetlands of the United States, United States Fish and Wildlife Service Circular 39 (1971 edition), as summarized in this subdivision or A Hydrogeomorphic Classification for Wetlands, United States Army Corps of Engineers (August 1993), including updates, supplementary guidance, and replacements, if any, as determined by the board</p>	Adds and recognizes the HGM method as a method for wetland typing.
	76.25-77.34		Deletes circular 39 definitions of wetland types
78	78.14 – 78.17	<p>(c) Notwithstanding paragraph (a), wetlands <u>includes' deepwater aquatic habitats that are not public waters or public waters wetlands.</u></p> <p>For purposes of this paragraph, "deepwater aquatic habitats" has the meaning given in Corps of Engineers Wetlands Delineation Manual, United States Army Corps of Engineers (January 1987)</p>	Extends/Expands jurisdiction of the Wetland Conservation Act to "deep water habitats" (Waters deeper than 2 meters)
86	86.10-86.13	<p>Subd. 9. De minimis. (a) Except as provided in paragraphs (d), (e), (f), (g), (h), and (i), a replacement plan for wetlands is not required for draining or filling impacts to the following amounts of wetlands, <u>excluding the permanently and semi-permanently flooded</u> areas of wetlands, as part of a project outside of the shoreland wetland protection zone.</p>	Broadens allowable impacts

Page	Line	Text	Implications
86	86.16- 86.18	(2) 5,000 square feet of type 1, 2, 6, or 7 wetland, excluding white cedar and tamarack 86.17 wetlands, one-tenth acre (4356 square feet) of wetland in a 50 to 80 percent area, except within the 11 county metropolitan area; or	Reduction of existing de minimus by 644 square feet
86	86.23 – 86.26	(b) Except as provided in paragraphs (e), (f), (g), (h), and (i), a replacement plan for wetlands is not required for draining or filling the following amounts of up to 100 square feet of impacts to wetlands as part of a project within the shoreland wetland protection zone beyond the shoreland building setback zone	Establishes a standard for ancillary impact
87	87.9-87.11	(d) Except as provided in paragraphs (b), (c), (e), (f), (g), (h), and (i), a replacement plan 87.10 is not required for draining or filling amounts up to 400 square feet of impacts to the 87.11 permanently and semipermanently flooded areas of wetlands as part of a project:	Establishes a minimum allowable impact
	87.29- 87.30	(f) When the total area of impacts to wetlands as part of a project exceeds the applicable 87.30 amount in this subdivision, a replacement plan is required for the entire amount	Clarifies standard by setting limit on size of exempt impact
88	88-14- 88.16	Rules: Must include provisions that protect, or mitigate impacts to, intermittent and perennial watercourses upstream of public waters identified under section 103G.005, subdivision 15, paragraph (a), clause (9) or (10); a	Extends WCA Jurisdiction over intermittent and perennial watercourses upstream of public waters

Page	Line	Text	Implications
89	89.10-89.20	<p>(b) For wetland boundary determinations, the panel shall must use the "United States Army Corps of Engineers Wetland Delineation Manual", United States Army Corps of Engineers (January 1987), including updates, supplementary guidance, and replacements, if any,</p> <p>For wetland type determinations, the panel must also use:</p> <ol style="list-style-type: none"> 1) Wetlands of the United States" (, United States Fish and Wildlife Service Circular 39, (1971 edition), and " 2) Classification of Wetlands and Deepwater Habitats of the United States" (1979 edition); 3) Classification of Wetlands and Deepwater Habitats of the United States, United States Fish and Wildlife Service (August 2013 edition); <p style="text-align: center;">or</p> <ol style="list-style-type: none"> 4) A Hydrogeomorphic Classification for Wetlands, United States Army Corps of Engineers (August 1993), according to rules authorized under this part and including updates, supplementary guidance, and replacements, if any, for any of these publications. 	<ol style="list-style-type: none"> 1. Expands and recognizes current and more accurate wetland classification systems. 2. Requires use of HGM approach in determining and describing wetland ecological function

[Local](#) 600360804

Minnesota to take the pulse of the Mississippi River, from the headwaters to Iowa border

State regulators will study Minnesota's entire 650-mile stretch of the river this year.

By [Greg Stanley](#) Star Tribune

April 22, 2024 — 3:21pm



Katrina Kessler, the commissioner of the Minnesota Pollution Control Agency, said Monday that the state will monitor pollution problems along Minnesota's entire 650-mile stretch of the Mississippi River.

For the first time, Minnesota will study the health of the state's entire stretch of the Mississippi River, from its headwaters near Bemidji to the bluff country where it enters Iowa.

The Minnesota Pollution Control Agency announced Monday that it will send teams to more than 50 sites on the Mississippi. The sampling will take five months and end in September, and marks the first time the state has assessed the whole of Minnesota's 650-mile stretch of the river in a single year.

That quick turnaround will give the state a better understanding of the quality of the water in the Mississippi, said Katrina Kessler, the commissioner of the agency.

Kessler spoke as the wind whipped through budding oak trees on the shore of the river at Hidden Falls Regional Park in St. Paul. She dipped a jar into the river, and pulled out what will be the first water sample of the effort. "The data collected will help direct resources for decades to come," she said.

The state has typically studied the Mississippi piecemeal, taking water quality and aquatic life samples along a few stretches of the river each year. It has taken the state about 10 years to get to

the entire river, causing some segments to be studied under vastly different conditions than others.

Over the last 10 years alone, Minnesota has swung from floods and record rains and snowfall to extreme drought and back. Changing water levels change the speed and force of the river, the concentrations of pollutants and the amount of manure, pesticides and erosion it carries.

Measuring the river over one spring and summer will provide a deeper understanding of where things stand, Kessler said.

"It will allow us to say under this type of flow condition what can we see in terms of aquatic life, chemistry, temperature, and what kinds of inputs are we getting from agricultural landscapes, urban landscapes, and industrial inputs, wastewater inputs and storm-water inputs," she said. "Measuring all those things over the course of one season shows us, at this moment of time, where have we come and where do we need to go."

The study will also mark the first time the state takes a comprehensive look at concentrations of PFAS in the river. Agency leaders couldn't say exactly how much the project will cost. The Pollution Control Agency receives about \$9 million a year from the state's Clean Water Fund to monitor rivers and lakes and it will be funded with those dollars.

Much of the Mississippi River has been on the state's [impaired waters](#) list for years, which typically happens when nutrients, chemicals, bacteria, toxic metals or other pollutants kill off too many fish and insects or make the water unsafe to swim or fish. Excessive nutrients, largely from crop fields and manure, have been one of the Mississippi's most persistent problems, pouring into the river for decades from Minnesota and other northern states and causing a massive dead zone where the river empties in the Gulf of Mexico.

Greg Stanley is an environmental reporter for the Star Tribune. He has previously covered water issues, development and politics in Florida's Everglades and in northern Illinois.

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