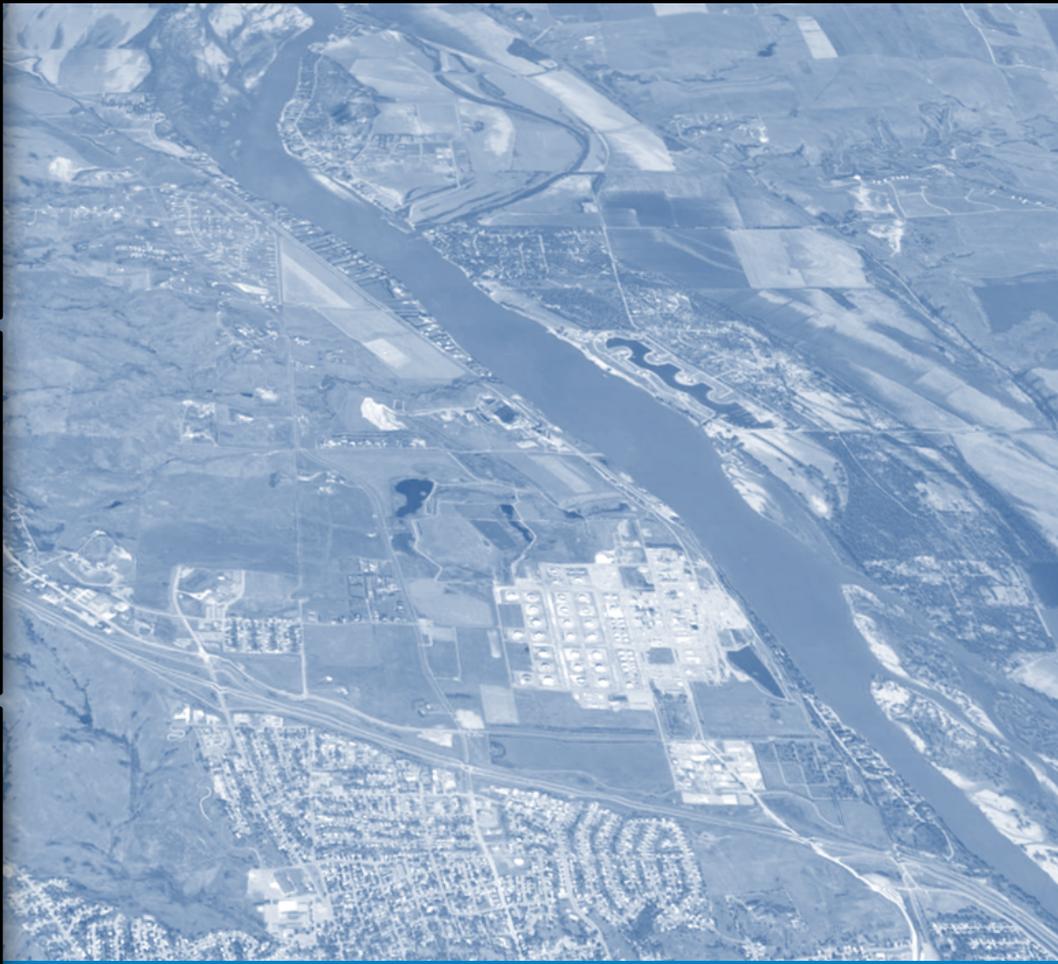




# North Mandan Subarea Transportation Study Executive Summary

August 2013



# **North Mandan Subarea Transportation Study**

## ***Executive Summary***

**Prepared for:  
Bismarck-Mandan Metropolitan Planning Organization  
221 North 5<sup>th</sup> Street  
Bismarck, ND 58701**

August 13, 2013

# Executive Summary

## Introduction

The purpose of completing the North Mandan Subarea Transportation Study is to identify multimodal transportation improvements needed to support the current and proposed levels of development within and influencing the study area. Figure 1 displays the study area limits which encompass areas within and outside the city from north of I-94 to Square Butte Drive (north end of the Schlosser Addition) and from the Missouri River to approximately 47<sup>th</sup> Avenue NW.

Figure 1. Study Area Boundaries



Through the 2040 planning horizon, approximately 60 percent of the anticipated urban residential development and 65 percent of the commercial increment of development

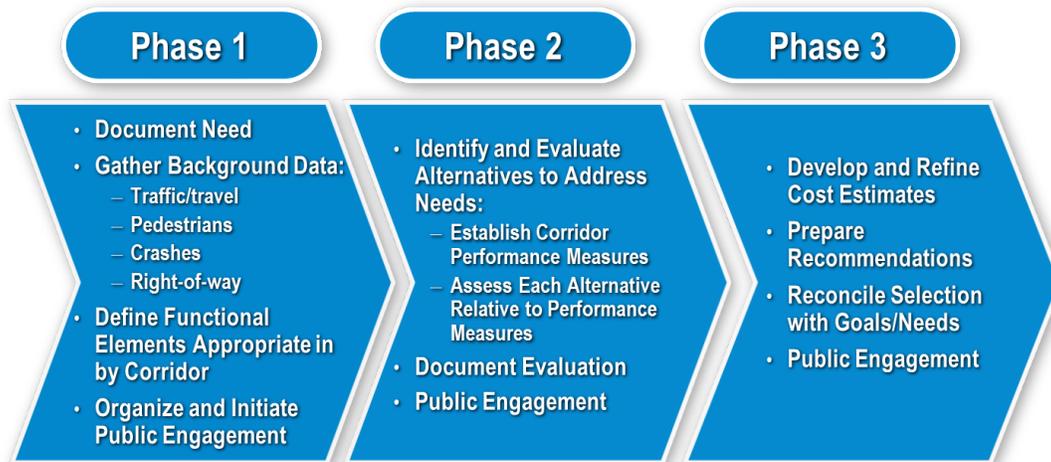
anticipated to occur in Mandan and Morton County has been allocated to the North Mandan study area.

Development in the study area cannot continue at the current pace without additional investment into the transportation infrastructure. Looking again at developments over the last five years, the vast majority have come onboard with very little expansion of the transportation infrastructure. To this point in time, the reserve capacity drawdown has not resulted in a substantial increase in congestion across the study area, however, traffic volumes at a number of intersections adjacent to the interstate are approaching their acceptable capacity. Unless system/network expansion is coordinated with developments coming on line, the increasing congestion levels observed at intersections adjacent to the interstate will spread outward to other areas, reducing the quality of service for travelers.

## Corridor Study Process

Analysis of the North Mandan subarea was divided into three inter-related phases/stages, displayed in Figure 2.

Figure 2. Corridor Study Process



## Purpose and Need for Action in the Study Area

The purpose of conducting the North Mandan Subarea Study, and subsequently identifying multimodal improvements is to support the orderly investment into transportation infrastructure to meet the following goals:

- Provide a safe transportation system.
- Provide a transportation system that meets the demand.
- Support the forecasted level of development through the planning horizon (2040).

- Promote a multimodal transportation system.
- Balance maintaining the current system with expansion that supports new development in the study area.

Study area needs were identified through a combination of the outreach/engagement program (Figure 3) and technical analysis of a range of data collected. Meeting with and discussing travel in the North Mandan study area with local, state and federal agency staff, stakeholders with an interest in the study area and the public at large was an initial step in the overall study process. Technical assessment of traffic operations, roadway geometrics and crashes supplemented the information gathered from various local sources to provide a complete picture of the current conditions. The results of the current conditions technical assessments are displayed in Figure 4.

## Household and Employment Growth (2010 to 2040)

Over the most recent three years, the level of new housing starts, new commercial business construction and expansion of the industrial sector has far outpaced the historical growth. The MPO Policy Board recognized in approving the 2040 population and employment projections that the next 20 to 25 years is more likely to reflect the recent trends than it is to reflect the longer term and pre-oil production forecasts. Table 1 provides documentation of the base year (2010), intermediate year (2025) and 2040 horizon estimates of growth for the region and the North Mandan Subarea Study limits.

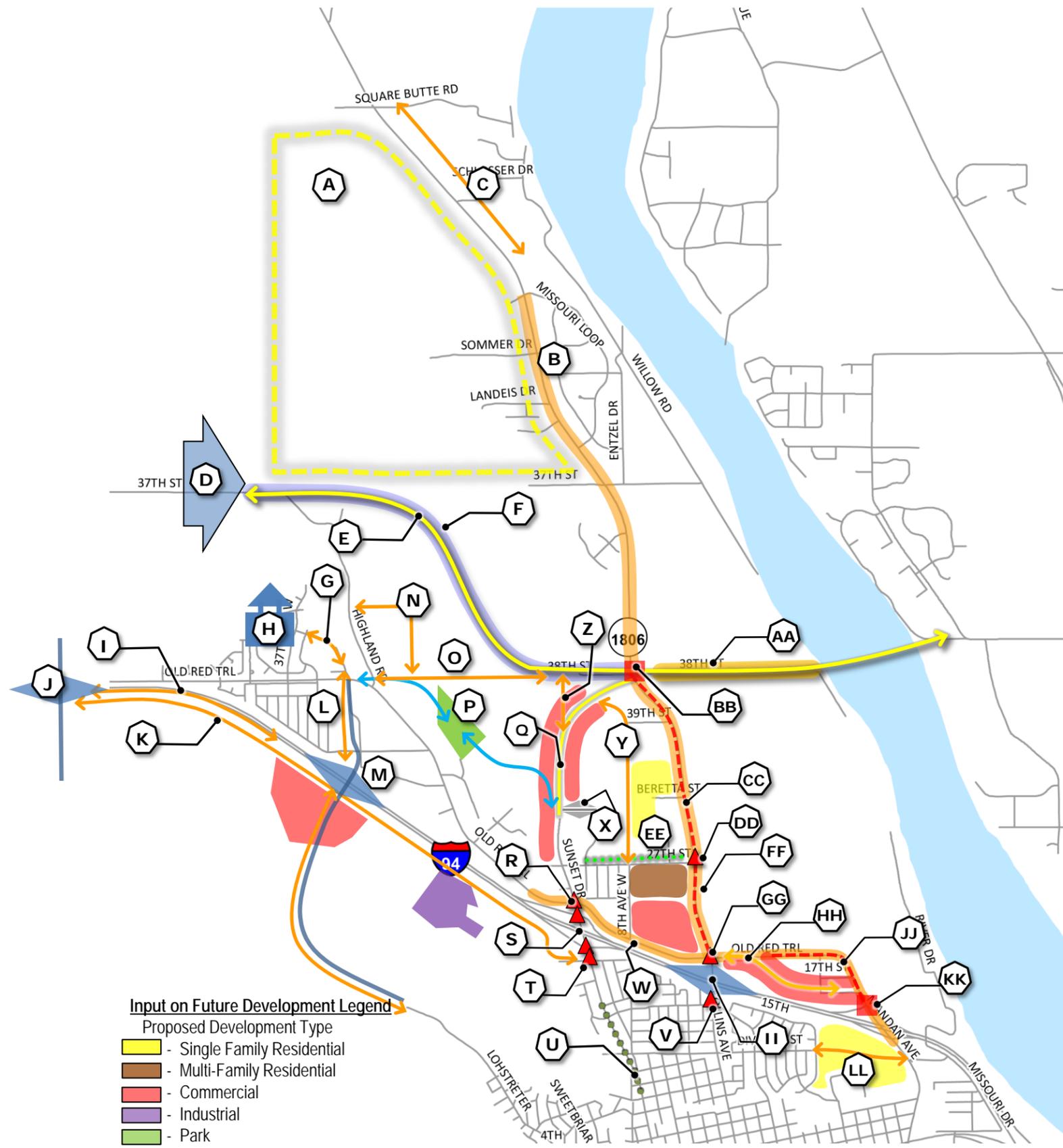
**Table 1. Change in Socioeconomic Data Estimates**

Variable	Period					
	2010		2025		2040	
	Region	Study Area	Region	Study Area	Region	Study Area
Population	108,600	2,280	159,000		191,600	
Households	41,800	1,080	64,400	2,670	73,100	3,890
Employment	64,300	2,270	99,900	5,440	124,500	8,290

Source: Bismarck-Mandan MPO

## 2040 Peak Hour Traffic and Traffic Operations

The projected increases in traffic along the arterial and collector corridors in the study area will change dramatically the relatively uncongested conditions observed today. Figure 5 displays the forecasted morning and afternoon peak hour intersection operations with 2040 forecasted volume on what is essentially the current roadway system.



Item	Description	Priority Hierarchy Preference Votes			
		Highest	2nd Highest	3rd Highest	4th Highest
A	Low density development – Not much traffic				
B	ND 1806 – Congested in peaks (need more lanes)			1	
C	Develop a Truck Route Away from School/Residential				3
D	Need to address traffic from developments outside study area		1		
E	What are impacts/costs of Northern Bridge improvements?			1	1
F	Consider west portion of Northern Bridge as separate project	1		2	
G	Provide collector connection				
H	Need to address pedestrian and bus impacts of new school				
I	Need truck by-pass				
J	Add New Interchange at 56th Avenue		1		
K	Frontage road needed to provide access to potential development sites				
L	Consider new Interstate grade crossing (not interchange)		2		1
M	Need a new interchange at 30th Avenue W		1	2	1
N	Additional Access to/from Highland Road			1	
O	Create new arterial corridor from Highland Rd to ND 1806			1	2
P	Trail connections needed to new park area			1	
Q	Extend Sunset Drive North to ND 1806		3	1	
R	Old Red Trail/Sunset Drive – Highly congested	3			
S	Interchange ramp intersections congested	10	3		
T	Sunset Drive/Boundary Road – Congested				
U	Reconstructing Sunset Drive, but no added capacity/signals – Hard getting out of driveways				
V	Collins Avenue/14th Street – Congested	2			
W	Old Red Trail– Widen to 4 Lanes for Safety and Capacity	1			
X	Need to consider land uses between Middle School and commercial (transition buffer)				
Y	Extend 8th Avenue W as collector to extended Sunset Drive (as develops)				
Z	Sunset Drive extension should go directly north to 38th Street				
AA	38th Street – Widen to 4 Lanes			1	
BB	Configuration/Safety at Future ND 1806/Sunset/Northern Bridge Crossing intersection?			1	3
CC	Need access management along ND 1806 – As more development comes in				
DD	ND 1806/27th Street Add a Signal			2	
EE	27th Street – Need to address pedestrian access from Middle School to neighborhood				
FF	Collins Avenue – Congested: Needs to be 5-lanes		1	1	
GG	Old Red Trail/Collins Avenue – Congested	1	1	2	2
HH	Alternate alignment of Old Red Trail – Opens are for development, reduces auto-truck conflicts, closely spaced Mandan to I-94 intersection	2	1		
II	Need new interchange at Collins Avenue	2	1		
JJ	Safety concern with auto-truck mixing along Old Red Trail			1	
KK	Safety (Intersection Skew)/Congestion At Mandan Avenue/I-94		2	1	1
LL	Division Street Should be Extended to Mandan Avenue		1		

People attending the meetings were asked to:

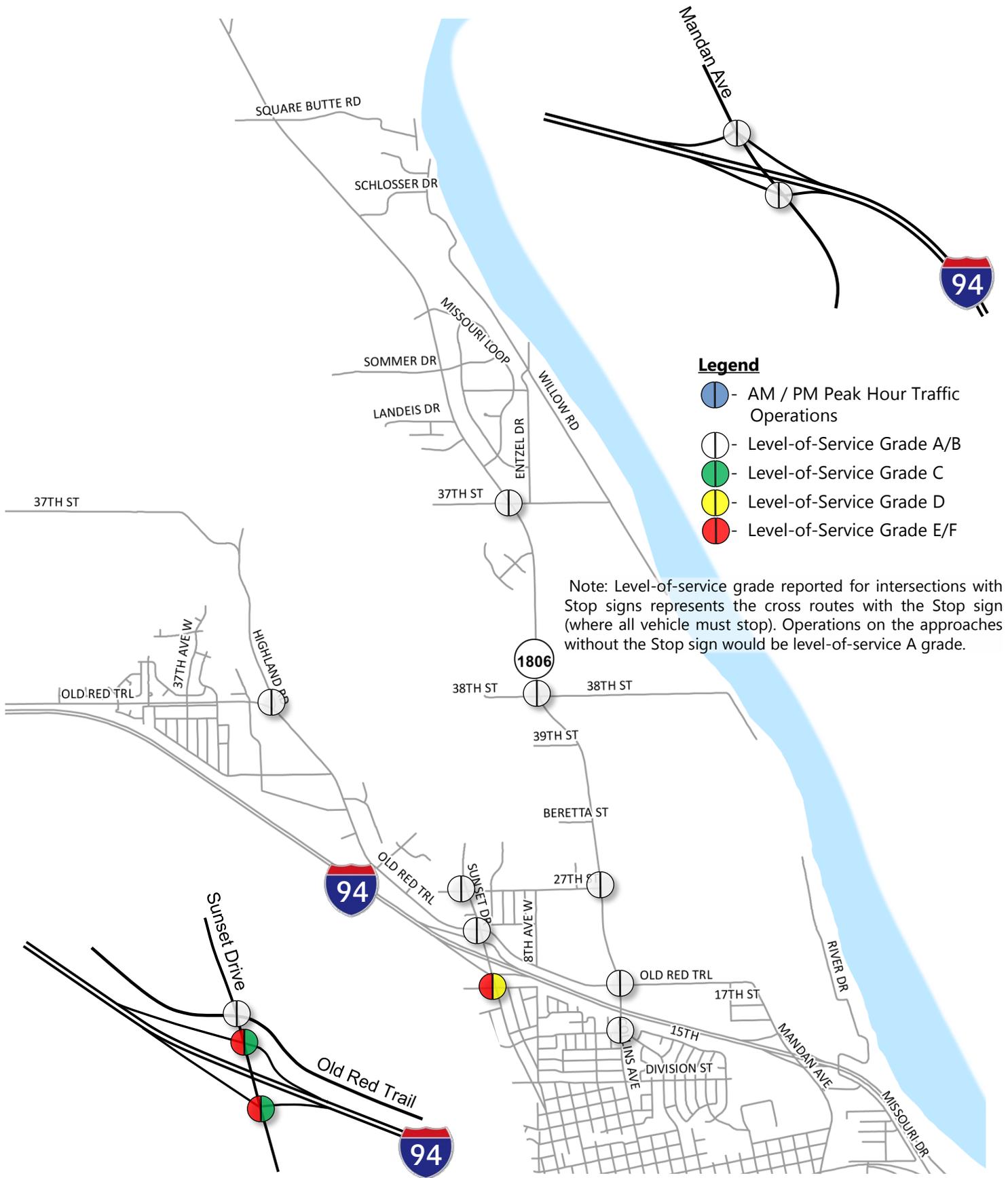
- Identify issues/needs they see in the study area.
- Rank by importance to them resolution of the need/issue relative all identified..

**Input by Issue Type legend**

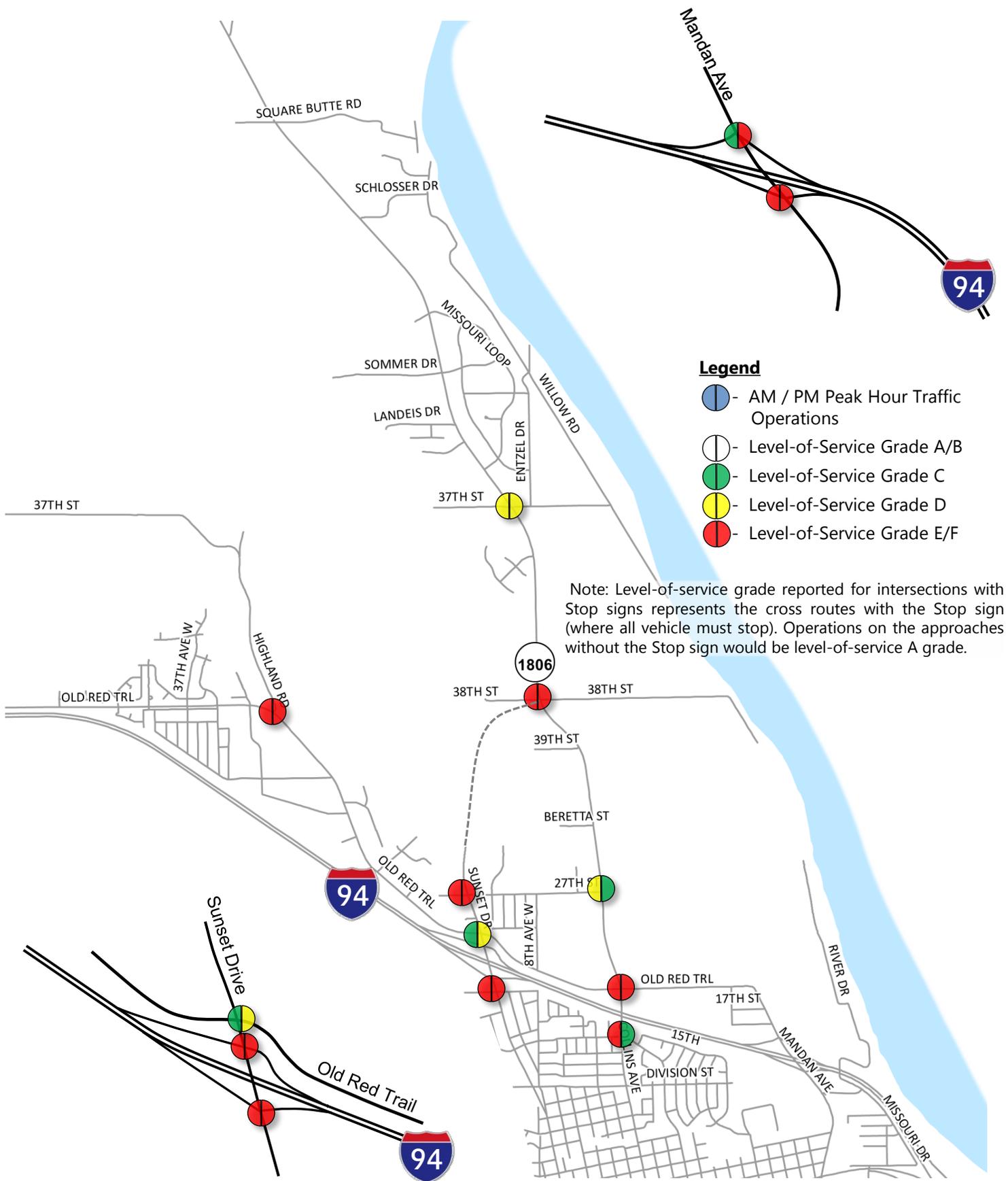
- Congested Intersection
- Congested Corridor
- Need for New Vehicle Connection
- New Interchange/Connection Desired
- Safety Concerns in Corridor
- Intersection Safety Concern (No Capacity Issue)
- New Corridor Discussed in LRTP or Other Studies

- Highest Priority/Most Important to Address
- Second Most Important
- Third Most Important
- Fourth Most Important

**Figure 3**  
**Transportation System Needs and/or Issues Identified by Stakeholders Committee and/or Public**  
 (Information from meetings held on November 27 and 28, 2012)



**Figure 4**  
**Current (2012) Conditions Morning and Afternoon Peak Traffic Intersection Operations**



**Figure 5**  
**Forecasted 2040 Conditions Morning and Afternoon Peak Traffic**  
**Intersection Operations (Existing Plus Committed Network)**



## Alternatives to Address Current and Future Issues/Needs

Alternatives developed as part of this study include the following range of concepts:

- **Transportation System Management (TSM) Alternatives:** These alternatives include intersection improvements such as additional turn lanes, traffic signal improvements, and corridor access management.
- **Transportation System Expansion:** These concepts are larger-scale improvements that increase capacity and/or address safety concerns in the study area by adding through lanes to an existing roadway corridor, adding a new interchange or crossing of the interstate or adding an entirely new corridor
- **Non-Motorized Facilities:** These alternatives include new or improved pedestrian and bicycle facilities within and crossing the study area.

The alternatives retained at the conclusion of the screening assessment are displayed in the following figures:

- Roadway/highway improvements – Figure 6.
- Non-motorized system improvements – Figure 7.
- Transit system improvements – Figure 8.

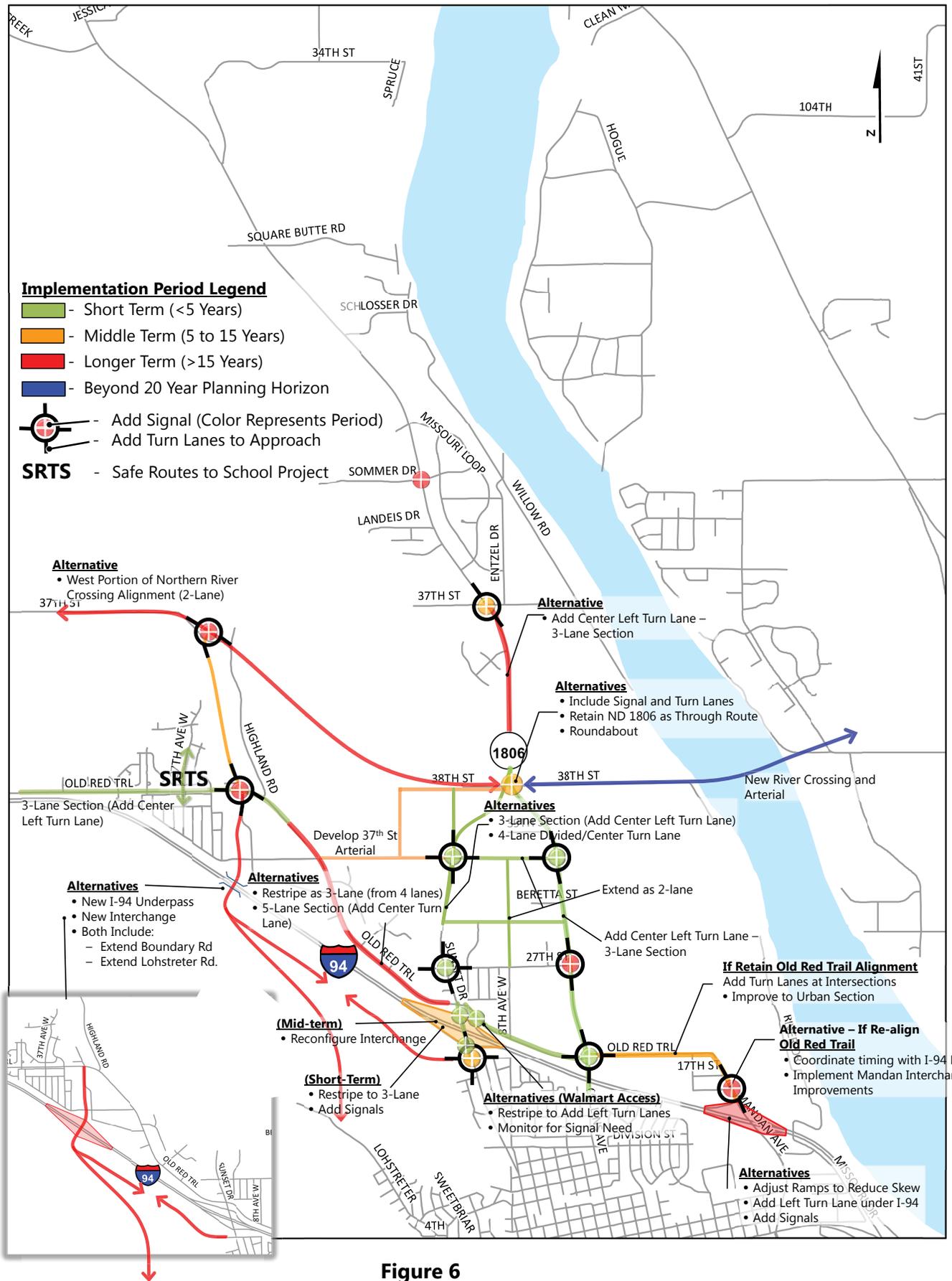
## Conclusions

The North Mandan Subarea Study is an initial stage of a multi-step process for identifying, designing, approving and implementing multimodal transportation system improvements that meet identified needs in the focus area. Two critical elements of next steps in the short and longer term planning process are:

- Develop a program for integrating a traffic impact study process into project development.
- Advance the list of technically feasible projects through the planning and funding process, whether it is a local/county/state funded or a federally funded project.

## Traffic Impact Study Process

A traffic impact analysis is a study through which the effects of a particular development, or group of developments, have on the transportation network in the community. The primary goal of a traffic impact study is to identify what type of transportation improvements may be necessary to accommodate site generated traffic. Traffic impact studies should accompany developments which have the potential to impact the transportation network and should be considered an important tool in assisting the City in making land use decisions.

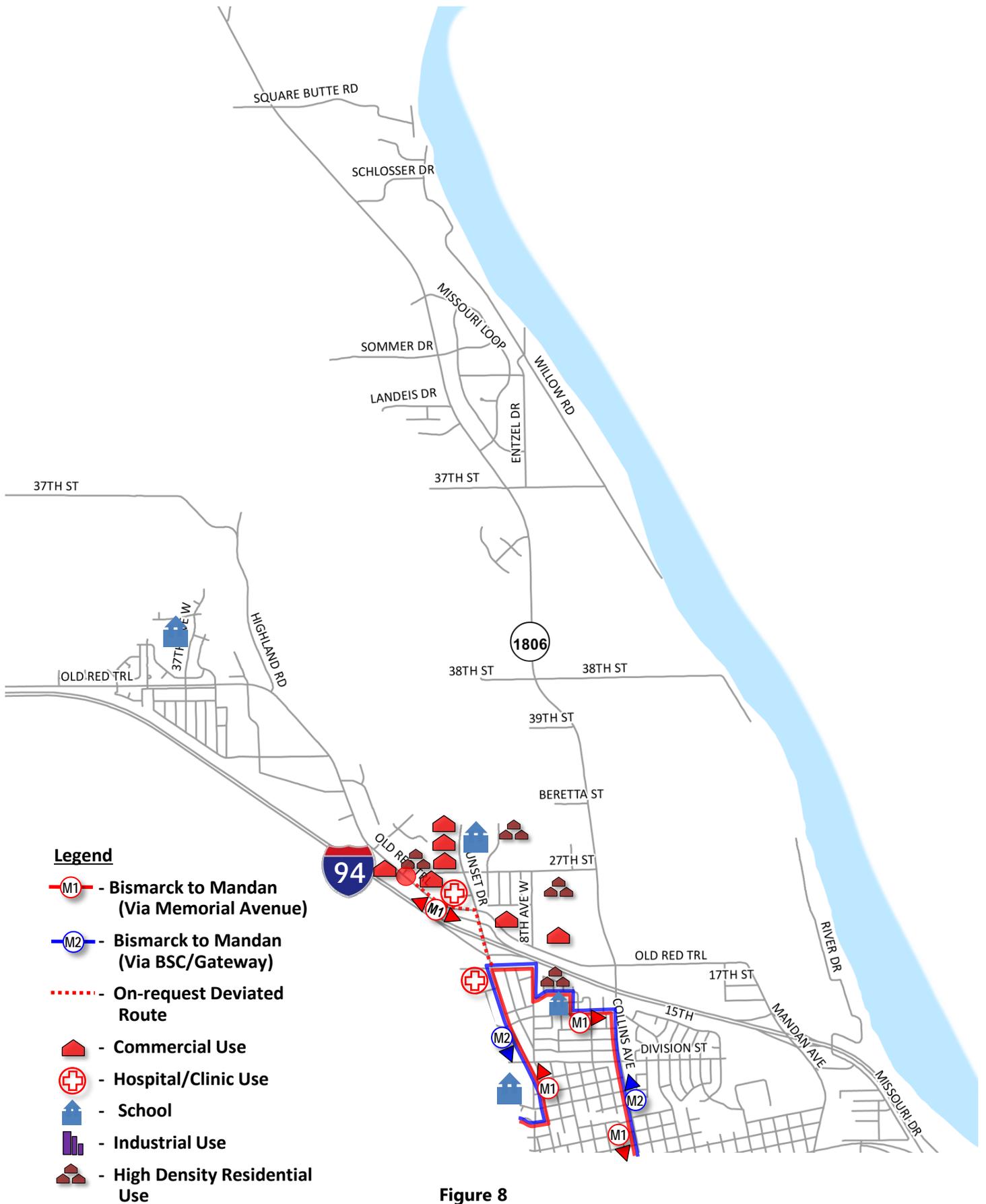


**Figure 6**  
**Technically Feasible Improvements and Implementation Plan**



Note: Sidewalks to be included with all future residential / local street development.

**Figure 7**  
**Future Trail and Sidewalk Extension Concepts**



**Figure 8**  
**2012 Transit Development Plan Recommended Routes/  
 Transit-Friendly Development Sites**

## Project Development Steps

The path the city, county or NDDOT take to selecting and implementing the preferred alternative will depend on a number of factors, with “how is the project being funded” as one of the critical determinants to the path to implementation. Figure 9 highlights the alternate next step paths for projects identified as technically feasible in the North Mandan Subarea Study.

Figure 9: Alternate Next Steps in Project Development Process

