

GROWTH CORRIDOR SUB-AREA PLAN

LYON COUNTY COMPREHENSIVE PLAN

This Growth Corridor Sub-Area Plan focuses on the area along and surrounding three key highway corridors in the Marshall Area that are experiencing development activity, which are shown on Figure 9-2, *Sub-Area Plan Corridors*:

- TH 23 – Extending from Green Valley on the north to County Road 68, and Camden State Park, on the south.
- U.S. 59 – Extending from County Road (CR) 8 on the north to County State Aid Highway (CSAH) 6 on the south.
- TH 19/68 – Extending from CSAH 9 on the east to CR 76 on the west.

Continued growth along these corridors poses many land use challenges. The strain between urbanization and the non-urbanized character of the corridor is at the forefront of this struggle. As cities grow and urban land uses extend into the neighboring townships, development pressure is placed on the surrounding agricultural and natural areas. Thus, future land use, environmental protection and annexation dynamics have become increasingly important for the county and the cities and townships within these corridors.

Growth along these corridors also has an impact on the existing transportation system both in terms of increased traffic volumes and increased demand for access to support land development along the highways. Increased development along these corridors also can, and has, contributed to safety issues, congestion and concern from the community about the aesthetics of some commercial strip-like developments. Better management of access to and from the highways can help to reduce congestion and delays, and improve safety conditions while providing property owners with safe access to and across the highway.

Thus, this Sub-Area Plan includes an analysis of land use and growth, transportation systems and sewer and water systems within the areas within the Growth Corridors. It includes a set of policies and recommendations for land use and access management. Also, a market study that assesses potential growth needs for housing, commercial and industrial development within the Sub-Area was also prepared. This is included as Appendix F.

LAND USE AND GROWTH

The Long Range Land Use Plan and associated map (Figure 8-3) contained in the Land Use, Growth and Zoning chapter, describe the different future land use designations for Lyon County. These land use designations will directly translate into county zoning districts. Figure 9-3, *Future Land Use, Sub-Area Growth Corridor* shows a close up of the countywide Future Land Use map for just the Growth Corridor areas.

This Sub-Area Plan provides a more detailed level of analysis and planning within the key Growth Corridors. In addition to the broad land use designations contained in the countywide Land Use Plan, this Sub-Area plan identifies anticipated future urban land uses within the Planned Growth Areas around Marshall and Lynd. (Figures 9-4a and 9-4b, *Future Land Use Assumptions* for Marshall and Lynd, respectively.)

These detailed land uses are general anticipated land uses, and do not constitute an official Land Use Plan map. Unlike the other countywide land use designations, these will not translate into county zoning districts. They were developed as part of this planning process for two purposes. The first was to establish a general framework to guide the cities of Marshall and Lynd in developing/updating their official future land use plans and maps. Second, they were developed to serve as a basis for estimating future traffic demands on the key highway corridors within the Sub-Area. This, in turn, was used in identifying future roadway needs and access management strategies for the key highway corridors. (See the Transportation section of this chapter.)

This Plan stresses coordination and cooperation between cities and their surrounding townships when looking at land use planning and growth issues. Therefore, the process established for developing growth areas and planning land uses within them drew heavily on existing planning efforts and encouraged communities to work cooperatively to identify these areas. It was based on the premise that cities and townships should identify those areas around cities that are going to be needed for urban development and work cooperatively to address all of the issues that arise as a result of that growth.

Following is a description of the process used in identifying future growth areas and land uses within the Growth Corridors.

METHODOLOGY

When planning for future growth, a community should consider three essential questions:

- *How much* are we going to grow?
- *Where*, or in what direction, should we direct growth?
- How are we going to provide *services* to the growth areas?

Each of these questions was assessed and considered in developing the Planned Growth Areas within the Growth Corridors.

1. Estimate Future Growth

Two primary factors, demographic/economic growth and density, affect a community's estimation of *how much* land it will need for future urban development. Market projections for residential, commercial and industrial space can tell us how much demand for these uses we can expect in the future. By applying various density scenarios, one can estimate the amount of land that will be needed to meet this demand.

A market study completed as part of this project (See Appendix F), estimated future demand for residential, commercial and industrial development within the Growth Corridor communities. These projections along with input from local communities served as the basis for identifying how much and what types of land would be needed for growth within the Sub-Area.

2. Identify Growth Areas

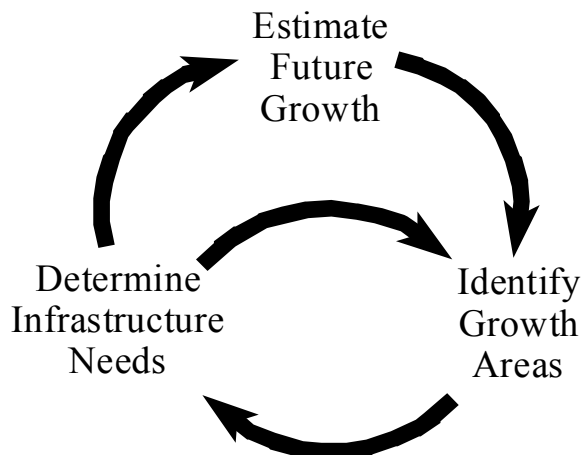
Both development constraints and land use compatibility should be considered when deciding *where* to direct growth. In identifying the growth areas within the Sub-Area, existing land uses, environmental constraints and amenities, and other physical amenities and barriers were considered.

3. Determine Infrastructure Needs

When exploring alternative growth directions, it is important for a community to examine whether it has the community facilities and infrastructure in place to support that growth. One such example is a city's wastewater treatment system capacity. The consultant team analyzed the wastewater and water service systems and capacities within the Sub-Area. This is discussed below under "Wastewater and Water Infrastructure".

Financial and geopolitical constraints make it unlikely that urban wastewater and water infrastructure will be provided to all development within the Growth Corridors. Thus, the Comprehensive Plan identifies not only the Planned Growth Areas, but also Rural Residential Areas. (A description of these land use designations can be found in the Land Use, Growth and Zoning Chapter.) Planned Growth Areas are more likely to eventually be annexed and served with municipal systems. However, the Rural Residential Areas are in locations where city services are not expected to be extended in the foreseeable future, but where development pressure exists due to the presence of high natural resources amenities. In these areas, lot sizes will need to be large enough to accommodate on-site septic systems, unless development is clustered and community septic systems are utilized. Alternative disposal systems, such as community septic systems, will also be encouraged in these areas to accommodate larger developments and allow for smaller lot sizes and clustering.

Figure 9-1: Growth Planning Process



As Figure 9-1 illustrates, planning for future growth is a dynamic process. *Where* a community chooses to direct its growth will impact its future infrastructure needs, but a community's infrastructure capacity also impacts where it chooses to direct its growth. Over time, changes in population projections or public attitudes toward any of the essential components of demographic growth, land use and infrastructure capacity will require a community to reexamine its growth strategy.

Thus, the growth areas and other land use designations contained in the Plan should be reviewed periodically and updated if necessary.

WASTEWATER AND WATER INFRASTRUCTURE

Providing sanitary sewer and water services to the growth areas is essential to realizing the area's full development potential; and planning for the extension of these services is an important component in guiding and managing the county's growth. The greatest growth within Lyon County is occurring near and between the cities of Marshall and Lynd. These two cities are the best prepared to serve orderly growth and expansion that will take place in this area. However, because financial and geopolitical concerns make it unlikely that these cities would provide services to the entire Sub-Area, on-site systems and rural water services will be important in supporting development in the area as well.

Following is an overview of various wastewater and water systems within the Sub-Area as well as an assessment of the capacity of these systems to accommodate future growth within this area.

MUNICIPAL UTILITIES

Public, private or a combination of both provide for the water and wastewater needs within the county. Those who live in a city generally have public wastewater and water service provided by the municipality. In small towns and rural areas, these services are either provided privately on-site or in combination with partial service from a public entity. The Lincoln-Pipestone Rural Water Association is an example of a public entity that provides water to both cities and rural users.

LINCOLN-PIPESTONE RURAL WATER

The southwest portion of Minnesota is generally water poor in terms of quality groundwater resources. Hence, in 1979 the Lincoln-Pipestone Rural Water System (LPRW) was established to "enhance the quality of life for the people in the southwest Minnesota area by acquiring and providing reliable, high-quality, affordable water in an environmentally sensitive manner through a publicly-owned system". LPRW provides water service to Lyon, Lac qui Parle, Lincoln, Murray, Nobles, Pipestone, Rock, and Yellow Medicine Counties. They currently have approximately 2,700 rural customers and 120 rural large water users, 20 incorporated cities, 4 unincorporated community water systems and supplements water to the Marshall Municipal Utilities and Red Rock Rural Water System.

The LPRW produced an average of 3,462,000 gallons per day (gpd) of water in 2000. Water is drawn from three well fields located in Burr (Yellow Medicine County), Verdi (Lincoln County) and Holland (Pipestone County). The water produced at both the Burr and Holland well fields is treated while the supply at the Verdi well field remains at such a quality that treatment is not required. Water is produced nearly equally at all three well fields. The water is pumped through an extensive distribution system across the service area and provides water for over 2,800 customers and an estimated population of nearly 16,000 people.

The city of Marshall has a contract with the LPRW to supply a minimum of 300,000 gpd to supplement their system. The city of Lynd is anticipating a connection to the LPRW in the near future to supplement their existing well. This connection is anticipated to add an additional 40,000 gpd to their supply.

CITY OF LYND

The city of Lynd is currently providing for its water demand from a single free flowing well that produces approximately 30 gallons per minute (gpm). The water is stored in a 75,000-gallon ground storage reservoir and pumped into the distribution system to supply the users. Chlorine and Fluoride are added to the water after it is treated and prior to being distributed into the system. The current average day demand is approximately 25,000 gpd. The existing well does not provide enough capacity for the typical maximum day demand assuming a peaking factor of two to three times the average day demand. The lack of a backup well is not a major issue for Lynd as they have an artesian or free flowing well. However, any malfunction to the head works or contamination would require the City to provide another source for its customers. The connection to the LPRW should eliminate these deficiencies.

The distribution system consists largely of 6" water main. This size does not provide for a large amount of growth or fire flow protection without a larger trunk feeding the laterals. Once again, the connection to the LPRW system with a 12-14" trunk may provide an adequate volume for fire flows. The improvements that Lynd is considering will provide a sound foundation to accommodate the city and it's growth in the future.

The city has a fairly new wastewater collection and treatment system. These improvements, constructed in 1987, removed the city's reliance on on-site systems. Stabilization lagoons provide treatment for Lynd with a capacity of 35,000 gpd. The current average day demand is 23,000 gpd. Capacity exists in the lagoons for an additional 120-150 people or 45-55 single-family dwellings on average. Development that exceeds the current plant capacity will require a plant expansion. A 65-lot development already exists in the city limits that would exceed the plant capacity if fully developed. The collection system consists of 8-10" gravity lines with a lift station and force main that conveys the waste to the stabilization ponds. The collection system is adequate for growth in the foreseeable future. The water treatment plant and lift station have emergency power backup for periods when power is lost.

CITY OF MARSHALL

The city of Marshall is the largest city in Lyon County and is also the county seat. Marshall has a large investment in public infrastructure some of which dates back nearly 100 years. The city has mechanical water and wastewater treatment facilities. The average daily water demand and wastewater loading are 3.5 million gallons per day (mgd) and 3.0 mgd respectively. Large industrial users are the bulk of the demands placed on the city's systems.

The city draws its water supply from twelve (12) municipal wells and a dedicated connection to the LPRW system. The wells produce an average of 3,600 gpm and are supplemented by a 300,000-gpd connection with LPRW. This connection is a dedicated source to the Minnesota Corn Producers plant. The agreement with LPRW does not have maximum capacity allowed, but rather is governed by it's ability to provide anything over 300,000 gpd based on the demand in the entire system. The water produced at the city's wells is treated at a municipal water plant via a partial lime softening process.

This plant was just constructed in the last few years and has a capacity of 8 mgd, over two times the existing demand. The city is also exploring a new well field for source water near the city of Cottonwood. This source looks very promising as a future or backup source to provide for the city's needs.

The city has a total water storage capacity of 6.1 million gallons (mg). Storage is split between 1.6 mg of elevated storage and the remaining 4.5 mg being ground storage. The total storage is well beyond the recommended storage of the average day demand by the Minnesota Department of Health. The city has a peak water demand of approximately 5 mgd. This is a peaking factor of 1.7. This is low compared to a typical peaking factor of 2-3 and is due to the large industrial water users that have consistent usage. Higher peaks are typically due to lawn watering from residential uses.

The water distribution system is very robust in all areas of the city. The city of Marshall has installed an extensive trunk grid system that distributes the water efficiently around the city. This is evident by the location of the water plant from which nearly all water emanates in the south end of the city compared to the large water users located in the north end of the city. Supplying water to these large users has not been a problem for the city. The location of the water treatment plant and trunk distribution system from the plant provides a solid foundation for growth in that end of the city. Additionally, the water system is routinely upgraded and repaired to keep it in peak operating condition. The city has replaced approximately 100,000' of water main over the last 20 years and continues to do repairs on an annual basis.

The city's wastewater collection and conveyance system is comprised of gravity trunks and laterals and lift stations and forcemains. A trickling filter provides wastewater treatment with activated sludge facility. The plant is located in the north end of the city.

The city's wastewater treatment facility has a design capacity of 4.5 million gallons per day (mgd). The current average day demand is approximately 3.0 mgd, thus the plant is operating at about 2/3 capacity. The peak hydraulic demands at the plant are approaching 6.5 mgd. This provides a peaking factor of about 2.2 (peak/average demands), which is well within the typical operating range for that rate of flow. The current Biological Oxygen Demand (BOD) loadings at the plant are 75 percent of the plant capacity with the Total Suspended Solids (TSS) currently being over the plant capacity. The BOD and TSS are the two primary design parameters for wastewater plants. Thus, the city of Marshall must reduce their TSS loadings or upgrade the plant to handle the additional loads.

The City is currently working with the local industries to develop specific sewer use agreements to get a handle on the loadings that can be generated from the various partners. The plant is designed to be upgraded for additional capacity if this is ultimately required now or in the future and the land is available to grow on-site.

The collection and conveyance system is generally in average to good condition throughout the city. The city has experienced higher than anticipated flows due to infiltration and inflow (I/I) in the system. They have undertaken an I/I study to try and identify the I/I sources so that repair and rehabilitation can be done. I/I robs the entire wastewater system of capacity by allowing "clear" water to use up the capacity. "Clear" water is typically rainfall, snowmelt or groundwater. The early indications from the city point to inflow as the main problem. Inflow is rain or snowmelt runoff entering the system in some fashion.

A relatively new trunk system, called the Southside Trunk, was installed in 1994. This trunk system is designed to collect wastewater from the south and southwest areas of the city with capacity built in for additional growth. The trunk system is 12" at the upstream end and gradually increases to a 30" before it is discharged into a lift station. The lift station conveys the wastewater directly to the treatment plant via 2 14"

force mains. The lift station is design for four pumps, but is currently only operating with two. There is capacity of a large amount of growth in this system.

SUMMARY

In summary, both Marshall and Lynd generally have average to above average infrastructure to meet the needs of those they serve. Both are preparing for the future by implementing upgrades to their systems. The city of Lynd currently has wastewater limitations for any substantial growth, but may be able to expand to meet those needs if they arise. The city of Marshall is well equipped to provide solid service to existing and future customers. They have ample reserve capacity to handle a substantial amount of growth particularly along the south and southwest sides of the city. Both communities are doing a good job on maintaining their respective utilities.

TRANSPORTATION

INTRODUCTION

The major objective of the Trunk Highway (TH) growth corridor studies is the creation and approval of a land use and access management plan for the identified study corridors. These corridors are illustrated on Figure 9-5 and the termini are described below.

- TH 23 – Extending from County State Aid Highway (CSAH) 8 in Green Valley, thence extending southerly to County Road 68, at Camden State Park, on the south.
- U.S. 59 – North Segment – Extends from CSAH 33, thence northerly to CSAH 8.
- U.S. 59 – South Segment – Extends from TH 23, thence southerly to CSAH 6.
- TH 68 – Extends from the flood diversion channel on the northwest edge of Marshall, thence northwesterly to County Road 76.
- TH 68/19 – Extends from TH 23, thence easterly to CSAH 9.

STUDY PROCESS

The study process for the TH growth corridors involves the “bringing together” of land use planning, corridor operations, and access management. Add to this the task of having each affected government agency “buying” into the process and results of the studies. These, and other elements, play an important role in the development of a land use and access management plan that will serve to improve future transportation operations in each affected corridor.

The study process is outlined below for the land use and transportation related aspects of the studies.

REVIEW OF EXISTING PLANS, STUDIES, AND OTHER RESOURCES

- Researched existing land uses, planning, and zoning studies as available, and conducted other research and interviews to ascertain background information relating to land use and related issues within the corridor study area.

REVIEW EXISTING LAND USE INVENTORY

- Using existing soils data and aerial photographs, a land coverage map was prepared and refined with the help of County staff into an inventory of existing land use along and within a reasonable distance outside the corridor study area. The land use inventory considered basic categories of land use that might affect traffic activity and character of the corridor.

MARKET STUDY

- An analysis of growth trends, demographic characteristics and an assessment of potential growth needs for housing, commercial and industrial development was provided.

DATA COLLECTION – LAND USE DEVELOPMENT

- Available mapping was obtained.
- An inventory and map of existing general land use along the corridors was accomplished.
- Property owners along the corridors were inventoried (in the planned growth areas) and property lines were shown on the base map.
- Key freight generating facilities in Lyon County were identified.
- Conducted a survey of these key freight generators to help identify existing and future business and freight generating plans.
- Planned/proposed land use proposals in the corridor were identified.
- Met with appropriate units of government to identify and map existing and future (20-year) urban growth boundaries, rural residential areas, agricultural, and any other area land use components.

DATA COLLECTION – TRANSPORTATION

- Obtained and reviewed previous, pertinent transportation studies within Lyon County.
- Reviewed available traffic data along the corridors.
- Identified key intersections along the corridor.
- Obtained three years of crash data along the corridors and conducted a crash analysis of these corridors.
- Collected existing and future operations data of the BNSF rail corridor that parallels TH 23.
- Conducted a field inventory of identified crossing safety issues.
- Conducted an inventory and mapped existing access locations, both public and private, along the study corridors.

DEVELOP ACCESS MANAGEMENT/ROAD NETWORK PLANS

- Future Land Use Base Map – A base map illustrating the future urban/rural land use potentials was prepared and used as the base for developing roadway systems alternatives.
- 20-Year Volume Projections – Future 20-year volume projections were developed for the corridors.
- Develop Land Use Access Scenarios - Alternative roadway system scenarios were developed to support the planned/proposed development areas. Mn/DOT access guidelines were used for these access scenarios.
- Corridor Improvements – Based upon the future volume projections and land use scenarios, improvement recommendations to the corridors were developed.
- Alternatives Evaluation – The alternatives developed were reviewed by the Task Force.
- Recommended Plan – Based upon the above review and analysis a preferred plan was developed.

LAND USE MANAGEMENT

Based on the plan recommendations, various land use policies and strategies were revised/created in order to support the roadway systems recommendations.

- Land Use Policies – Existing land use policies, zoning, and subdivision regulations were reviewed for those urban/rural growth areas along the corridor.
- Growth Management – Applicable growth management strategies for the projected growth areas were discussed.

GOALS AND POLICIES

The Minnesota Department of Transportation (Mn/DOT) developed a series of goals and policies to help guide in the planning and investment decisions for interregional corridors. These goals and policies are summarized below, and a policy has been added, as they may relate to the growth corridor studies in Lyon County.

There are seven policy “umbrellas” as noted below:

Policy 1 – Corridor Plan Development

Policy 2 – Land Use Planning

Policy 3 – Right-of-Way Preservation

Policy 4 – Prioritization and Investments

Policy 5 – Uniformity of Performance

Policy 6 – Safety Targets

Policy 7 – Growth Management

Within these general policies, Mn/DOT developed goals and policy statements that are summarized below. Some adjustments and additions have been made to these regional corridor policies/goals to reflect the analysis and planning for the studies in Lyon County.

Policy 1: Corridor Plan Development

Goal: To develop corridor vision and management plans that preserve or improve corridor performance.

Policy: Mn/DOT will work with state and local partners to develop corridor visions and management plans for the growth corridors.

Policy 2: Land Use Planning

Goal: Encourage responsible land use, transportation, and access decisions through local long-range plans that preserve mobility of the corridors.

Policy: Mn/DOT, Lyon County, cities, and townships will promote and encourage the integrated development of local land use, transportation, and access plans that support mobility on the corridors. In the absence of an agreed-upon corridor management plan, Mn/DOT will review and approve access changes based on established access guidelines.

Policy 3: Right-of-Way Preservation

Goal: Pursue timely right-of-way preservation and acquisition to positively benefit long-term corridor mobility, to reduce cost, and improve community benefits.

Policy: Refine the process for identifying right-of-way and setback requirements to ensure timely preservation and acquisitions so as to protect corridor performance. Provide adequate resources for right-of-way planning, preservation, and acquisition to optimize investments and minimize impacts on communities, natural resources, the physical environment, and private property.

Policy 4: Prioritization and Investments

Goal: Collaborate with Mn/DOT, cities and townships to improve corridor performance.

Policy: Collaboration with affected government units will determine investment in corridors and priorities based on performance criteria and development activity.

Policy 5: Uniformity of Performance

Goal: Collaborate with Mn/DOT and cities to preserve and improve the mobility and performance of corridors by consistently applying access controls to eliminate the need for unwarranted traffic signals.

Policy: Corridors should perform at or above acceptable levels with minimal interruption to traffic flow. Additional traffic signals should be considered only after other management and access options have been exhausted. If it is determined that a signal is required for safety or other reasons, it should conform to the corridor vision and management plan.

Policy 6: Safety Targets

Goal: With the objective of improving safety along the corridors, work with Mn/DOT and the cities to develop projects that improve safety along the corridors and for roadways intersecting the corridor.

Policy: Lyon County will work with Mn/DOT to improve safety along the corridors and along County roadways that intersect the corridors.

Policy 7: Growth Management

Goal: Lyon County shall consider future safety and growth management issues when developing its transportation capital improvements program for the Trunk Highway 23, and other Trunk Highway growth corridors.

Policy: In order to develop the necessary supporting road network for the growth area, the County will work with MnDOT, cities, townships and developers within the growth-corridor to ensure the development of the future collector road system by the appropriate parties.

Policy: The development of the future collector road system should be timed so as to protect the safe and efficient traffic movement along the Trunk Highway corridors.

BACKGROUND INFORMATION

ROADWAY LANES

TH 23 contains a four-lane segment in the Marshall area from a location north of TH 19/68 thence southerly to approximately CSAH 5 near Lynd. The remainder of the TH 23 study segment is a two-lane highway. The total length of the TH 23 study segment is approximately 19 miles.

U.S. Highway 59, both the north and south study segments, are two-lane highways with a short four-lane segment just south of TH 23. The north study segment is approximately 3-miles in length while the south study segment is approximately 2 miles in length.

The TH 68 and TH 19/68 study segments are also two-lane highway facilities; with the exception of a short segment east of TH 23, which is a four-lane section. The TH 68 study segment, on the northwest edge of Marshall, is approximately 1.5 miles in length. The TH 19/68 study segment on the east side of Marshall is approximately 3 miles in length.

TRAFFIC CONTROLS

There aren't any traffic signals along any of the study corridors. There are two all way stop controlled intersections, located along TH 23 at the intersections TH 19/68 and with U.S. Highway 59. All other public roadways are controlled by stop signs as they intersect with the study corridors.

FUNCTIONAL CLASSIFICATION

The study segments are functionally classified, in the Lyon County plan, as follows:

- TH 23 – Principal Arterial
- U.S. 59 – North Segment – Minor Arterial
- U.S. 59 – South Segment – Principal Arterial
- TH 68 – Minor Arterial
- TH 19/68 – Principal Arterial

The statewide Interregional Corridor (IRC) System classifies the study segments as follows:

- TH 23 – Medium Priority IRC
- U.S. 59 – South Segment – High Priority Regional Corridor
- TH 19/68 – High Priority Regional Corridor

The other two study segments are shown only as Trunk Highways without an IRC or Regional Classification.

TRAFFIC VOLUMES

The most recent traffic volume data for the corridors was provided by Mn/DOT in the form of average annual daily traffic (AADT) for the year 2000. Those volumes were shown on Figure 6-3. Utilizing 10 years of historic data provided by Mn/DOT, the AADT has been projected to the year 2020. The historic data is for the same roadway segments that are being analyzed. The year 2000 data and the 2020 volume projections are shown below. The table illustrates the projections using 10 years of historic data and also contains a column, which indicates the projection using the state-aid 20-year projection factor of 1.6.

**Table 9-1
TH Study Corridor Volumes**

Route	Location	Year 2000 AADT	Projected Year 2020 AADT (Historic Data)	Projected Year 2020 AADT (Using 1.6 Factor)
TH 23	South of Green Valley	4,350	7,500	6,950
TH 23	North of TH 19	6,700	14,600	10,700
TH 23	Southwest of U.S. 59	6,900	16,000	11,040
TH 23	West of CSAH 7	6,100	11,000	9,760
TH 23	Near Lynd	4,300	7,700	6,880
TH 19/68	East of TH 23	3,450	5,200	5,520
TH 68	Northwest of Marshall	3,800	4,650	6,080
U.S. 59	North of CSAH 8	2,100	4,600	3,360
U.S. 59	South of TH 23	5,300	9,500	8,480

ROADWAY CAPACITY

The capacity of a facility is defined as the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point of uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions¹. For general future planning purposes, the capacity of a two-lane rural roadway ranges from 10,000 to 12,000 vehicles per day although some agencies would begin planning for improvements when the roadway ADT reaches 7,500 – 8,000 vehicles. A four lane undivided roadway can accommodate an ADT of 15,000 to 20,000 vehicles while a four lane divided roadway will accommodate daily volumes up to 30,000 vehicles per day. These general capacity-planning values when compared to the projected 20-year volumes indicates that roadway capacity should not be a problem along the study corridors.

¹ Highway Capacity Manual, Special Report 209, Transportation Research Board, 1994.

CRASH DATA

The crash history along the majority of the study corridors has been provided by Mn/DOT. Four years of crash data was provided for the U.S. 59 and TH 68/19 segments. Eleven years of data was provided for the majority of the TH 23 study segment. Utilizing this data, the crash rates have been calculated for the study segments. The results of the calculations are shown on the following table. Crash and severity rates are contained in Appendix G.

**Table 9-2
TH Study Corridors Crash Rates**

Route	Termini	Crash Time Period (Years)	Length (Miles)	Crash Rate
TH 23	CR 74 to U.S. 59	11	4.679	1.60
TH 23	U.S. 59 to TH 19	11	1.41	1.92
TH 23	TH 19 to CSAH 33	11	1.511	0.77
TH 19/68	TH 23 to CSAH 9	4	3.124	1.14
U.S. 59	CSAH 6 to TH 23	4	1.902	2.90
U.S. 59	CSAH 33 to CSAH 8	4	4.064	1.12
TH 68	Flood Diversion Channel to CSAH 33	4	1.364	1.40

Roadway section average crash rate data has been tabulated for all of the Mn/DOT districts in the state. These crash rates have been calculated for various three year periods including 1995 to 1997, 1996 to 1998, and 1997 to 1999. They have been calculated rural 2-lane, urban 2-lane, rural expressway, as well as other freeway and urban expressways. The 1997 to 1999 crash rates for some of these facilities, those that relate to facilities in Mn/DOT District 8 of which Lyon County is a part, are shown below:

<u>Category</u>	<u>1997 – 1999 Crash Rate (District 8)</u>
Rural 2-Lane (ADT < 1,500)	1.0
Rural 2-Lane (ADT 1,500 to 4,999)	0.8
Rural 2-Lane (ADT 5,000 to 7,999)	1.0
Urban 2-Lane (ADT 1,500 to 4,999)	2.7
Urban 2-Lane (ADT 5,000 to 7,999)	3.9
Rural Expressway	1.4

The crash rates for the TH study segments, when compared to the Mn/DOT District 8 crash rates indicate some sections to be greater than the averages and some are less. Classifying the categories becomes difficult given the 2nd 4 lane, rural and urban study sections.

The TH 23 (CR 74 to U.S. 59) crash rate of 1.60 is slightly greater than the rural expressway rate of 1.4. The TH 23 segment from U.S. 59 to TH 19 has a 1.92 crash rate, which exceeds the rural expressway rate. The TH 23 segment from TH 19 to CSAH 33 has a crash rate that is slightly less than the rural 2-lane rate. All other rates are also slightly higher than the averages. These higher than average crash rates indicate that access management will be of value in reducing the crash rates along the study routes.

ACCESS INVENTORY

An inventory of access along each study segment was completed by the Lyon County Department of Public Works. The inventory was transferred to aerial photos and is shown on Figures 9-6 to 9-11. This inventory, which locates all public and private access points along the study segments, is an important element of information upon which an access management plan can be built.

ACCESS MANAGEMENT

The Minnesota Department of Transportation has been very active in the past few years in the area of access management. It has been shown that roadways with fewer driveways or public street openings will exhibit a lesser crash rate than similar roadways with more driveways or public street openings. Additionally, roadways with more access will normally experience a lesser capacity value when compared to the same roadway with fewer access openings. In general terms, better access management leads to a reduced crash rate and increased roadway capacity and mobility.

Mn/DOT has been preparing an access management manual. This immense undertaking involves many issues and parameters that all play a role in access management. One of the chapters of the document, which is a draft document, discusses an access category system and spacing guidelines. The access categories include seven primary categories and four sub-categories. The primary categories are based on the functional classification of the roadway and its strategic importance within the statewide highway system. The sub-categories are used to address specific facility types and differing land use patterns that surround the primary roadway system. A table from the draft document follows - that table provides a summary of access categories.

**Table 9-3
Summary of Access Categories**

Category	Area Type	Functional Classification	Statewide Strategic Importance	Typical Posted Speed
1	High Priority Interregional Corridors			
1F	All Areas	Interstate Highways	High Priority Interregional Corridor	55 - 70 mph
1A-F	All Areas	Principal Arterials	High Priority Interregional Corridor	55 - 65 mph
1A	All Areas	Principal Arterials	High Priority Interregional Corridor	55 - 65 mph
2	Medium Priority Interregional Corridors			
2A-F	All Areas	Principal Arterials	Medium Priority Interregional Corridor	55 - 65 mph
2A	Rural/Exurban/Bypass	Principal Arterials	Medium Priority Interregional Corridor	55 - 65 mph
2B	Urban/Urbanizing	Principal Arterials	Medium Priority Interregional Corridor	40 - 55 mph
2C	Urban Core	Principal Arterials	Medium Priority Interregional Corridor	30 - 40 mph
3	High Priority Regional Corridors			
3A-F	All Areas	Principal Arterials	High Priority Regional Corridor	55 - 65 mph
3A	Rural/Exurban/Bypass	Principal/Minor Arterials	High Priority Regional Corridor	45 - 65 mph
3B	Urban/Urbanizing	Principal/Minor Arterials	High Priority Regional Corridor	40 - 45 mph
3C	Urban Core	Principal/Minor Arterials	High Priority Regional Corridor	30 - 40 mph
4	Principal Arterials in the Metro Area and in Primary Trade Centers			
4A-F	All Areas	Principal Arterials	Metro/Major Urban	55 - 65 mph
4A	Rural/Exurban/Bypass	Principal Arterials	Metro/Major Urban	45 - 55 mph
4B	Urban/Urbanizing	Principal Arterials	Metro/Major Urban	40 - 45 mph
4C	Urban Core	Principal Arterials	Metro/Major Urban	30 - 40 mph
5	Minor Arterials on all Systems			
5A	Rural/Exurban/Bypass	Minor Arterials		45 - 55 mph
5B	Urban/Urbanizing	Minor Arterials		40 - 45 mph
5C	Urban Core	Minor Arterials		30 - 40 mph
6	Collectors on all Systems			
6A	Rural/Exurban/Bypass	Collectors		45 - 55 mph
6B	Urban/Urbanizing	Collectors		40 - 45 mph
6C	Urban Core	Collectors		30 - 40 mph
7	Special Access Plan			
7	All	All	All	All

Source: Mn/DOT Draft Access Management Manual, 9-27-2001.

The seven primary access categories shown in the previous table are defined in the Draft Access Management Manual. These definitions are extracted from the draft access management manual dated 9/27/01.

PRIMARY CATEGORY DESCRIPTIONS

CATEGORY 1 – HIGH PRIORITY INTERREGIONAL CORRIDORS

Access Category 1 is intended for High Priority Interregional Corridors that connect Primary Trade Centers with the Twin Cities Metropolitan Area. According to the Interregional Corridor System plan, these roadways are key corridors providing interstate and intrastate travel. Performance measures for High Priority Interregional Corridors have been established and are based on an average peak hour corridor travel speed of 60+ miles per hour. Access management along these corridors strongly emphasizes mobility. The functional class of these roadways is either Interstate or Principal Arterial.

CATEGORY 2 – MEDIUM PRIORITY INTERREGIONAL CORRIDORS

Access Category 2 is intended for Medium Priority Interregional Corridors that connect the Secondary Trade Centers to the Primary Centers. According to the Interregional Corridor System plan, these roadways are corridors of significant importance, providing interstate and intrastate travel. Performance measures for Medium Priority Interregional Corridors have been established and are based on average peak hour corridor travel speeds of 55+ miles per hour. Access management along these corridors strongly emphasizes mobility. The functional class of roadways within this access category is Principal Arterial.

CATEGORY 3 – HIGH PRIORITY REGIONAL CORRIDORS

Access Category 3 is intended for Regional Corridors that connect the smaller trade centers to the rest of the state. The primary function of these roadways is to provide mobility between the smaller communities within the state, though in some cases, where a supporting road network or a hierarchical grid pattern has not been established, these roadways will also provide accessibility to adjacent properties. Regional Corridors are expected to operate at an average peak hour speed of 50+ miles per hour. The functional classification of these roadways may be either a Principal Arterial or a Minor Arterial.

CATEGORY 4 – PRINCIPAL ARTERIALS IN THE METRO AREA AND IN PRIMARY TRADE CENTERS

Access Category 4 is intended primarily for roadways designated as Principal Arterials within the Twin Cities Metro Area and primary regional trade centers. These roadways are intended to provide the mobility element of a larger roadway network. Lower category roadways feed into these roadways. Within the Twin Cities Metropolitan Area, an average corridor travel speed of 40 miles per hour is the desired performance target. These roadways range from fully grade-separated facilities to two-lane urban streets.

CATEGORY 5 – MINOR ARTERIALS ON ALL SYSTEMS

Access Category 5 is intended primarily for roadways designated as Minor Arterials. These roadway segments can serve both as mobility corridors and as the primary road for accessibility. There is great variability among the roadways in Minnesota that are functionally classified as Minor Arterials. In fully developed urban cores and central business districts, they tend to carry high volumes of traffic and provide a high degree of land access as well. As a result, posted speeds may be in the range of 30-35 miles per hour with much lower peak hour operating speeds due to congestion. In rural areas having a much less dense development and a supporting road network, minor arterials may be required to accommodate higher travel speeds while also providing direct access to adjacent properties.

CATEGORY 6 – COLLECTOR ON ALL SYSTEMS

Access Category 6 is intended primarily for roadways as Collectors. Their primary function is to provide access to the adjacent land by serving as connection between the local street network and the arterial roadways. Like minor arterials, in rural areas, collectors may be required to accommodate both higher speed travel and direct property access.

CATEGORY 7 – SPECIFIC ACCESS PLANS

This category is intended to address roadway segments where a specific access management plan has been developed. The management plan should include all existing and proposed points of access, traffic signals, and roadway design elements. Existing and proposed land use and zoning, and supporting roadway network proposals should also be included. The management plan should specify existing non-conforming access points and the conditions under which such accesses shall be brought into compliance with the proposed management plan. Category 7 Plans must be officially endorsed by Mn/DOT and the local land use and road authorities.

The **access sub-categories** address differing land use characteristics along each primary roadway category. The definitions of the access sub-categories follow:

SUB-CATEGORY F – FREEWAY

This sub-category is intended for roadway segments designated as Interstate Highways. This access designation is independent of the surrounding land use. No private access is permitted and public access will be permitted only at grade-separated interchanges.

SUB-CATEGORY A-F – FULL GRADE SEPARATION

This sub-category is intended for those roadway segments planned or designed as fully grade separated segments. This access designation is independent of the surrounding land use. No private access is permitted and public access will be restricted to interchanges only. This sub-category will typically be associated with a segment of a four lane divided expressway as it passes through or around an urban center.

SUB-CATEGORY A – RURAL/EXURBAN/BYPASS AREAS

This sub-category is intended for road segments extending through agricultural or forested areas with limited development. It is also appropriate for areas planned as long-term low-density exurban areas characterized by scattered large lot residential development (5-10 acre lots). This sub-category is also intended for roadway segments that have been designed and constructed as high-speed urban bypasses. Roadways in this sub-category will generally be expected to operate at higher speeds (50+ mph).

SUB-CATEGORY B – URBAN/URBANIZING AREAS

This sub-category will be considered for those areas outside of urban cores that are either developed or planned for urbanization with a full range of urban services (sewer, water, local streets). This sub-category will generally not apply to areas outside municipal boundaries unless the area is planned for urban services under an orderly annexation agreement or some other urban service agreement. In assigning Sub-Category B designations to trunk highways, Mn/DOT will consider the adopted plans, development regulations, and local street extension plans and policies of the local community. This sub-category is not intended to be assigned to short roadway segments serving individual, isolated developments. Roadways in this sub-category will generally be expected to operate at a somewhat reduced speed compared to the overall corridor.

SUB-CATEGORY C – URBAN CORE

In general, this designation is intended only for roadways extending through fully developed town centers and central business districts, characterized by short blocks and a grid system of intersecting streets. Individual lots will typically be small (1/4 acre or less) with little or no on-site parking. Buildings will usually be situated close to the street. Sidewalks and on-street parking are common. In some larger urban areas, the major thoroughfare through the urban core no longer serves as the primary mobility corridor but has been supplemented by the construction of additional highways, arterials, and/or bypasses. Jurisdiction of the older roadway may have been transferred from Mn/DOT to the city or county. In some smaller communities or regional centers, however, additional roadways and bypasses will not be present due to the lack of overall travel demand or environmental constraints, and the major thoroughfare must serve to accommodate both local and through trips. In this case, lower speeds on the highway through the urban core can be expected.

If a community desires to promote a new pedestrian-oriented urban core, such an area should be designed and oriented to attain access to the larger roadway network via lower category roads—collectors and perhaps some minor arterials. Therefore, in general, new or expanded urban core area sub-category will only be assigned to roadways within Access Category 5 and 6.

The draft access management document develops “access levels”. Five levels have been created and are shown on the following table by a definition of each level.

**Table 9-4
Summary of Access Levels**

Access Level	Access Type	Access Description
I	Residential/Agricultural/ Field Access	For access to single family dwellings, Multi-family dwellings of 3 or less dwelling units, Agricultural land and Field Entrances.
II	Minor Private Entrances	Small Commercial, Industrial, Institutional Developments, and Small Residential Complexes and Subdivisions (less than 500 trips per day)
III	Major Private Entrances	Large Commercial, Industrial, Institutional, Developments, Shopping Centers, Industrial Parks, Office Parks, Colleges, and Large Residential Complexes and Subdivisions (more than 500 trips per day)
IV	Minor Public Roads	New Public Streets and Roads with a Projected 20-year Traffic Volume less than 2,500 ADT
V	Major Public Roads	New Public Streets and Roads with a Projected 20-year Traffic Volume greater than or equal to 2,500 ADT

ACCESS LEVEL 1 – RESIDENTIAL, AGRICULTURAL AND FIELD ENTRANCES

Access Level 1 is intended for private access to single-family residences, multi-family residential dwellings of three dwelling units or less, and field or agricultural entrances. These access points may serve either small lots or large tracts of agricultural land, but they always generate low traffic volumes. In most cases, these access points are designed as driveways or entrances.

ACCESS LEVEL II – MINOR PRIVATE ENTRANCES

Access Level II is intended for private access to small commercial, industrial, or institutional developments, and small residential complexes and subdivisions. Developments designated, as Access Level II should generate less than 500 trips per day. These access points may be designed as driveways, entrances, or in some cases, private streets.

ACCESS LEVEL III – MAJOR PRIVATE ENTRANCES

Access Level III is intended for private access to large commercial, industrial, or institutional developments, and large residential complexes and subdivisions. Developments designated, as Access Level III should generate more than 500 trips per day. These access points may be designed as driveways, entrances, or private streets.

ACCESS LEVEL IV – MINOR PUBLIC ROADWAYS

Access Level IV is intended for new public streets and roadways with a projected 20-year traffic volume of less than 2,500 average daily trips. These public streets are intended to be part of a larger street network and to serve multiple properties. These access points should be designed as public intersections.

ACCESS LEVEL V – MAJOR PUBLIC ROADWAYS

Access Level V is intended for new public streets and roadways with a projected 20-year traffic volume of more than 2,500 average daily trips. Access points generating traffic volumes in this range may require signalization. These public streets are intended to be part of a larger street network and to serve multiple properties. These access points should be designed as public intersections.

LYON COUNTY STUDY SEGMENT CATEGORIES

A review of the categorical data from the Draft Access Management Manual indicates that TH 23 fits two Categories – 2A and 2B. It would seem that the area in Marshall would be a 2B category and rural area segment of the roadway would be a 2A category.

The TH 19/68 study segment east of Marshall fits Category 3A as does U.S. 59 south of Marshall. It could be argued that a “short” portion of each of these, east and south of TH 23 could be 3B (urbanizing) categories for a short stretch.

The segment of U.S. 59 north of Marshall would fit into the 5A category while the TH 68 segment northwest of Marshall would also fit as a 5A route. The following table, from the Mn/DOT draft document, lists the categories, routes, and spacing.

**Table 9-5
Summary of Recommended Access Spacing**

Category	Area or Facility Type	Typical Functional Class	Intersection Spacing		Signal Spacing	Private Access
			Full Movement I/S	Conditional I/S		
1	High Priority Interregional Corridors					
1F	Freeway	Principal Arterials	Interchange Access Only			
1A-F	Full Grade Separation		Interchange Access Only			
1A	Rural ExUrban By Pass		1 Mile		INTERIM ONLY By Deviation Only	Only If No Alternative is Available Subject to Conditions
2	Medium Priority Interregional Corridors					
2A-F	Full Grade Separation	Principal Arterials	Interchange Access Only			
2A	Rural ExUrban By Pass		1 Mile	½ Mile	STRONGLY DISCOURAGED By Deviation Only	Only If No Alternative is Available Subject to Conditions
2B	Urban Urbanizing		½ Mile	¼ Mile	STRONGLY DISCOURAGED By Deviation Only	Subject to Conditions
2C	Urban Core		300-660 feet dependent upon block length		¼ Mile	Permitted Subject to Conditions
3	High Priority Regional Corridors					
3A-F	Full Grade Separation	Principal & Minor Arterials	Interchange Access Only			
3A	Rural ExUrban By Pass		1 Mile	½ Mile	1 Mile	Only If No Alternative is Available Subject to Conditions
3B	Urban Urbanizing		½ Mile	¼ Mile	½ Mile	Subject to Conditions
3C	Urban Core		300-660 feet dependent upon block length		¼ Mile	Permitted Subject to Conditions
4	Principal Arterials in Metro Area and In Primary Trade Centers					
4A-F	Full Grade Separation	Principal Arterials	Interchange Access Only			
4A	Rural ExUrban By Pass		1 Mile	½ Mile	1 Mile	Only If No Alternative is Available Subject to Conditions
4B	Urban Urbanizing		½ Mile	¼ Mile	½ Mile	Subject to Conditions
4C	Urban Core		300-660 feet dependent upon block length		¼ Mile	Permitted Subject to Conditions
5	Minor Arterials on All Systems					
5A	Rural ExUrban By Pass	Minor Arterials	½ Mile	¼ Mile	½ Mile	Only If No Alternative is Available Subject to Conditions
5B	Urban Urbanizing		¼ Mile	1/8 Mile	¼ Mile	Subject to Conditions
5C	Urban Core		300-660 feet dependent upon block length		¼ Mile	Permitted Subject to Conditions
6	Collectors on All Systems					
6A	Rural ExUrban By Pass	Collectors	½ Mile	¼ Mile	½ Mile	Permitted Subject to Conditions
6B	Urban Urbanizing		1/8 Mile	Not Applicable	¼ Mile	
6C	Urban Core		300-660 feet dependent upon block length		1/8 Mile	
7	Specific Access Plan					
7	All	All	By Adopted Plan			

SOURCE: DRAFT ACCESS MANAGEMENT MANUAL - MN/DOT - 12/18/01

ACCESS MANAGEMENT PLAN

Utilizing the access management guidelines volume and accident data, and the land use planning completed along the corridors, access management scenarios have been prepared. These plan scenarios have undergone detailed discussion by the project Technical Advisory Committee (TAC) and the Comprehensive Plan Task Force. The recommended access management plans are shown on Figures 9-12 through 9-17.

The access management plan, as shown on the aerial graphics is intended to locate the future allowable access points to the study system. This system also illustrates full movement and restricted access (right turn in, right turn out) locations. The access locations are then, for the most part, connected by a series of frontage or backage roads dependent upon the type of development that occurs.

It is not intended that existing access be closed until the access system, within a specified area, is planned and constructed as funding becomes available. This is to say the plan is a plan that can be implemented as development occurs. The plan allows those choosing to develop a specific area to know where their access will be located as to the area they propose to develop. Provision of an access roadway will, in all probability be a function of a developer, Mn/DOT and/or the local government agency in which the development is taking place. Existing field access locations are not noted on the plan but it is noted that those access locations would be closed as the access management system is constructed in the areas of any particular field access.

There are three locations along TH 23 that are noted as potential future interchange locations. These are at the existing intersections with CSAH 7, County Road 67 (Saratoga Street) and CSAH 33.

The identification of these locations as potential future interchanges will help to preserve appropriate right-of-way as future development is proposed to occur in those areas.

Insert Figure 9-2, *Sub-Area Plan Corridors*

Insert Figure 9-3, *Future Land Use, Sub-Area Growth Corridor*

Insert Figure 9-4a, *Future Land Use Assumptions, City of Marshall*

Insert Figure 9-4b, *Future Land Use Assumptions, City of Lynd*

Insert Figure 9-5

Insert Figure 9-6

Insert Figure 9-7

Insert Figure 9-8

Insert Figure 9-9

Insert Figure 9-10

Insert Figure 9-11

Insert Figure 9-12

Insert Figure 9-13

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Insert Figure 9-17