
4.0 Social, Economic, and Environmental Impacts – Affected Environment and Environmental Consequences

The purpose of this section is to present the impacts of the proposed alternatives on the social, economic, and natural environments. The relationship between local short-term uses of the human environment and the maintenance and enhancement of long-term productivity, as well as any irreversible and irretrievable commitments of resources involved in the proposed action, is addressed as appropriate throughout this section.

4.1 Social and Community Impacts

4.1.1 Land Use

Affected Environment

The project study area is approximately 3.5 miles in length and is located in Kandiyohi County, Minnesota. From the north, the project corridor extends from the Highway 23/71 split in Dovre Township to the southern split of Highway 23/71 and Highway 294 in the City of Willmar. Within the project area, Trunk Highway 23 shares a common alignment with U.S. Highway 71 for approximately 3.5 miles. This rural, four-lane divided section of highway is nestled between several lakes, notably Eagle, Point, Skataas, Swan, and Willmar Lakes. The lakes are ringed with resort and year-round residential development. Low density commercial development is generally located on the west side of the highway, and large parcels of open developable properties lie on both sides of Highway 23/71. Commercial development on the west side of the highway is characterized primarily by businesses that depend on highway visibility for sales and businesses whose merchandise is displayed or stored outside on large tracts of land, many of whom are oriented to outdoor recreation and construction. There are also businesses that represent auto-oriented services, including repairs and convenience gas/retail, office uses, and one institutional use with religious affiliation.

The majority of non-urbanized land within the study area is used for agricultural purposes. There are large expanses of farmland surrounding the residential areas ringed the lakes and highway commercial businesses near Highway 23/71. The land is rural with sparse single-family residential units and farmsteads.

On the northern end of the project area, gravel mining operations (existing and proposed) are located northeast of the Highway 23/71 divergence. The proposed Eagle Lake West gravel mining operation will be located west of U.S. Highway 71 and north of the Highway 23/71 gore area, in the vicinity of the North End Connection Alternatives.

Adjacent to the project area is the community of Willmar, which serves as a regional center for the surrounding areas. A variety of important public and private services are centered in Willmar including retail, professional, and commercial services; county and municipal government offices; restaurants; parks and recreation facilities; and schools. Willmar also serves as a regional center for employment.

4.1.2 Environmental Consequences

Consistency with Existing Land Use Plans and Studies

Kandiyohi County Comprehensive Plan

Build Alternatives

The Kandiyohi County Comprehensive Plan was updated in 2001. There is a chapter that describes Dovre Township's existing zoning (Figure 7), but no existing or future land use. As an interim step and surrogate to an officially adopted land use plan and to form the basis for 2030 traffic forecasts for the study area, a 2030 land use estimate was prepared for the project by SEH, Inc., a multidisciplinary design firm with qualified land use and transportation planners. The 2030 land use plan was prepared under the review and guidance of Kandiyohi County and City of Willmar agency staff. The land use plan prepared for the project is intended to be used as a vehicle to confirm 2030 land use, traffic forecast, and roadway design needs for the project under the build alternatives, and therefore does not supplement or constitute a replacement for a locally adopted land use plan that may be prepared in the future. The 2030 land use plan prepared for the project is illustrated in Figure 8 and is further described later in this section of the DEIS.

The Kandiyohi County Plan does address access management needs along Highway 23 north of the project area. The plan encourages proper access spacing and planning for safe intersections. With local official's acceptance of the study area's 2030 land use plan developed for the preparation of traffic forecasts, and statements made in the plan recommending access management and safety improvements on principal arterial highways including Highway 23/71 in Kandiyohi County, the build alternatives are deemed to be consistent with the existing land use plan.

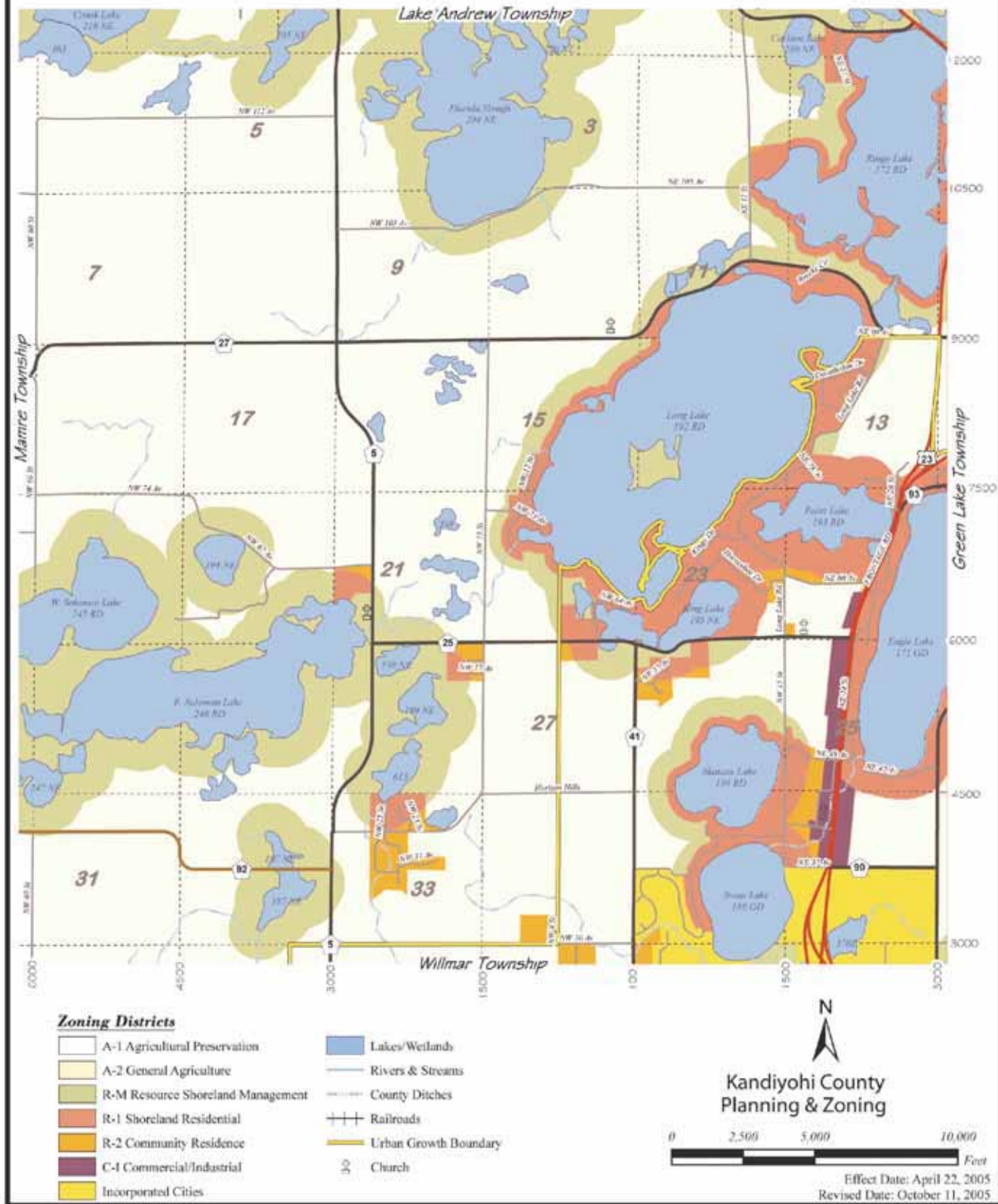
Alternative 3 – No Build

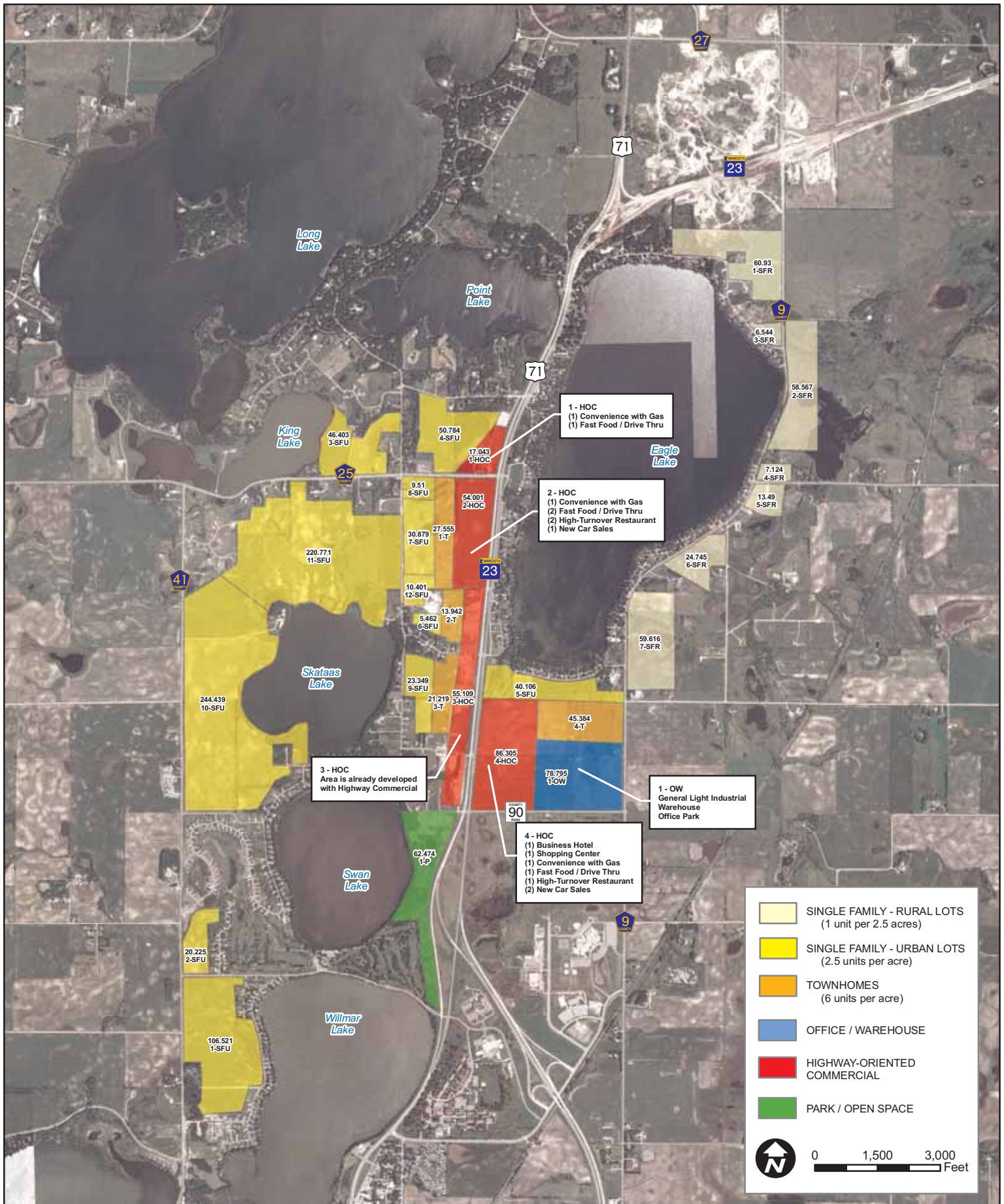
Alternative 3 does not promote access management and improved safety along the Highway 23/71 Corridor. Therefore, the no build alternative is perceived to be inconsistent with the Kandiyohi County Comprehensive Plan.

Dovre Township Guiding Principles

In 2006, Dovre Township established a series of guiding principles for new development within the Township to assist in the evaluation of land use proposals. The Township is considering specific policy considerations for economic, agricultural, residential, commercial, and industrial developments, as well as environmental stewardship, water quality, and infrastructure (water and sewer). Dovre Township is also considering its policies related to annexations vs. incorporation. The Township's guiding principles will serve as a starting point for comprehensive land use planning. The No Build and Build Alternatives of the Highway 23/71 project will be evaluated with the Township's continued policy development in the aforementioned specific areas and continued interpretation of its guiding principles. Mn/DOT will continue to work with the Township throughout the planning, design, and construction stages of the Highway 23/71 project to ensure consistency with the Township's guiding principles.

Dovre Township Zoning Districts





	SINGLE FAMILY - RURAL LOTS (1 unit per 2.5 acres)
	SINGLE FAMILY - URBAN LOTS (2.5 units per acre)
	TOWNHOMES (6 units per acre)
	OFFICE / WAREHOUSE
	HIGHWAY-ORIENTED COMMERCIAL
	PARK / OPEN SPACE

0 1,500 3,000 Feet

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FIGURE 8 FUTURE LAND USE / GROWTH AREAS



City of Willmar 2030 Facilities Plan: Wastewater Collection and Treatment Facilities

The City of Willmar completed a Facilities Plan to address the community's 2030 wastewater conveyance and treatment planning needs. The proposed Highway 23/71 project is located within the future service area of Willmar's new wastewater treatment plant. The proposed project is not mentioned in the plan; however, much of the anticipated growth in the Highway 23/71 study area will occur within the future service area's boundaries. As the 2030 land use planning exercise was completed, city officials reviewed this future service area to ensure that the plan and the future land uses are compatible.

Potential Impacts to Existing Land Uses

Alternative 1A – Relocated CR 90 Interchange (Northern Alignment)

Right-of-way acquisition will impact several commercial businesses in the Sunray Commercial Area. The right-of-way required to construct a relocated CR 90 interchange and relocated CSAH 25 along the existing 15th Street NE alignment will require right-of-way widening and farmland and wetland acquisition. In addition, a 50 mph curve for a relocated CSAH 25 will be constructed on new alignment to connect the new two-lane roadway with the new interchange at a relocated CR 90. There is the potential for the improved interchange area to attract additional development in the area. It is anticipated that development would occur on either side of the interchange, in existing commercial areas west of the highway, and in new commercial areas east of the highway.

Alternative 1B – Relocated CR 90 Interchange (Southern Alignment)

Right-of-way acquisition will impact a portion of a property owned by a church by aligning the interchange farther south in comparison to Alternative 1A. However, no businesses will be directly impacted by this alternative. West of the new interchange, this alternative will have the same impacts as Alternative 1A.

Alternative 2A – Relocated CR 90 Interchange (Northern Alignment) and CSAH 25 Interchange

Right-of-way acquisition will be required to construct the CSAH 25 interchange's ramps and bridge approach roadways. In addition to currently vacant land or land engaged in agricultural production, one residence and two businesses located in the northwest quadrant of the current intersection of CSAH 25 and Highway 23/71 will be displaced. At the relocated CR 90 interchange, existing land use impacts are the same as Alternative 1A (without the impacts associated with the relocation of CSAH 25).

Alternative 2B – Relocated CR 90 Interchange (Southern Alignment) and CSAH 25 Interchange

Right-of-way acquisition for Alternative 2B will be the same as Alternative 2A, with the exception of land use impacts associated with a relocated CSAH 25. Land use impacts at the relocated CR 90 interchange are the same as Alternative 1B.

North Access Connection Alternatives

N1 – Connection to Long Lake Road

Right-of-way acquisition will be required for existing farmland for this access connection.

N2 – Connection to CSAH 27

Right-of-way acquisition will be required for existing farmland and one farmstead for this access connection.

N3 – Connection to County Road 93 (Eagle Road N.)

Three manufactured residences east of Highway 23/71 will need to be acquired for this access connection. These three residences occupy one residential lot, which will also need to be acquired. Additional land will also need to be acquired for private property west of the highway for the roadway/tunnel access connection.

N4 – Connection to CSAH 25 and 66th Avenue NE

Connection N4 utilizes existing right-of-way from Highway 23/71 and 26th Street NE, and also requires the acquisition of private property for new right-of-way for the connection to CSAH 25. Point Lake will also need to be bridged or filled on its eastern shore to accommodate the proposed connection, which will affect its water quality and potentially affect a species of special concern (sea naiad). The reader is referred to DEIS Sections 4.2.5, 4.2.6, and 4.2.9 for additional discussion on potential impacts to Point Lake.

Alternative 3 – No-Build

The No-Build Alternative will have little impact on existing land use in the project area. Minor improvements could require some additional right-of-way; however, the No-Build Alternative will not create a substantial change in land use.

Highway 23/71 Future Land Use Analysis

Highway 23/71 future land use projections were prepared to develop the 2030 turning movement traffic forecasts along Highway 23/71 in Dovre Township. As previously mentioned, this analysis was completed as a surrogate for Dovre Township's future land use plan, which was not available for review. The study area is within the city of Willmar's Urban Growth Area. This means that using historical growth trends for the corridor might lead to a design that is under capacity if the City of Willmar grows at a faster rate. Land use changes were studied in order to properly "grow" the local traffic that uses the corridor.

The projections assumed that there will be a 50 percent build out of the total land use area shown in Figure 8. This percentage corresponds in magnitude to the total number of housing units forecasted in the 2003 Willmar Transportation Study. The land use was evaluated by the local governments and agreed upon as a reliable forecasting resource. Highway commercial land uses along the corridor include fuel stations, fast food and sit down -type restaurants, car/RV/boat sales, small retail centers and a business hotel. A large Office/Warehouse development adjacent to CSAH 9 and CR 90 was also assumed.

The availability of public infrastructure and proximity to abutting urban development continue to support the long-range potential for urban development to occur in the Highway 23/71 Corridor.

The greatest potential impact on future land use relates to the possibility that current public development policies may substantially change depending on the build alternative selected and the long-term ability of the area to remain engaged in agricultural

production. The viability of existing commercial businesses provided with one or two major points of access also will also potentially affect the rate of future commercial developments in the corridor.

Mitigation

Controlling the potential land use impacts of the proposed improvements will be accomplished primarily by the local government zoning authority and effective highway access management. All build alternatives will be constructed to limit access to Highway 23/71 to the extent practical and in accordance with Mn/DOT Access Management Guidelines. Further discussions will occur with local units of government to outline future land use and transportation planning efforts and any mitigation commitments once the preferred alternative has been identified. Mitigation commitments, if needed, may include land use plan and zoning map modifications made by local governments.

4.1.3 Social and Community Environment

Affected Environment

Population

Kandiyohi County’s population increased by approximately 7.2 percent from 38,761 to 41,203 between 1990 and 2000. During the same time period, the city of Willmar grew by 9.9 percent. Kandiyohi County’s Comprehensive Plan indicates that Dovre Township is expected to grow by nearly 30 percent in the next 20 years. Table 11 illustrates the 1990 and 2000 populations and growth rate changes of Dovre Township, Kandiyohi County and Willmar in comparison to the State of Minnesota.

**Table 11
Population**

	Dovre Township	Kandiyohi County	City of Willmar	State of Minnesota
1990 Population	1,746	38,761	17,531	4,375,099
2000 Population	1,968	41,203	18,351	4,919,479
% Change – 1990-2000	11.0	7.2	9.9	11.0

Source: 1990 and 2000 U.S. Census Bureau Data

The reasons for this population growth are varied. There has been a large influx of minorities over the past 10 years in the City of Willmar. In 1990, about 4 percent of the total population of Willmar was minority. By 2000, the percentage of minority groups in the overall population increased to nearly 12 percent according to the 2000 Census.

As noted above, substantial racial diversity is evident within the City of Willmar. Table 12 illustrates racial diversity of Dovre Township, Kandiyohi County, and the City of Willmar, as recorded by the 2000 Census.

**Table 12
Population by Race, 2000**

Population by Race	Dovre Township		Kandiyohi County		Willmar	
	Number	Percent	Number	Percent	Number	Percent
Total Population	1,968	100.00	41,203	100.0	18,351	100.0
One Race	1,960	99.6	40,827	99.1	18,101	98.6
White	1,946	98.9	38,576	93.7	16,171	88.1
Black or African American	7	0.4	209	0.6	165	0.9
American Indian and Alaska Native	2	0.1	138	0.4	84	0.5
Asian	2	0.1	158	0.4	98	0.5
Native Hawaiian and Other Pacific Islander	0	0.0	27	0.1	20	0.1
Some other race	3	0.2	1,719	4.2	1,563	8.5
Two or more races	8	0.4	376	1.0	250	1.4
Hispanic or Latino (of any race)	19	1.0	3,295	8.0	2,911	15.9

Source: U.S. Census, Census 2000

Housing

Table 13 provides a summary of current housing units and their occupancy status, according to the 2000 Census.

**Table 13
Housing Units and Occupancy**

	Dovre Township	Kandiyohi County	Willmar
Housing Units	736	18,415	7,789
Occupied (%)	708 (96.2)	15,936 (86.5)	7,302 (93.7)
Owner-occupied (% of occupied)	651 (91.9)	12,052 (75.6)	4,598 (63.0)
Renter-occupied (% of occupied)	57 (8.1)	3,884 (24.4)	2,704 (37.0)
Vacant (%)	3.8	13.5	6.3

Source: U.S. Census, Census 2000

Community Resources

The majority of the community resources in the project vicinity are located within the community of Willmar (see Figures 8A and 8B). Community resources include schools, churches, cemeteries, libraries, hospitals, etc.

4.1.4 Environmental Consequences

Build Alternatives

Alternatives 1B and 2B will require acquisition of property from Grace Baptist church located south of the relocated CR 90 interchange. The church's building and its parking lot will not be impacted.

The existing CR 90 intersection with Highway 23/71 is currently a preferred route for school traffic destined for the Willmar High School campus. This intersection will be closed and a relocated CR 90 will be constructed. Access will be managed and traffic controlled in the vicinity of the interchange, which may represent additional travel time for school traffic destined to/from the high school campus. However, the build

alternatives' managed, grade-separated intersection, in comparison to the existing uncontrolled intersection, will provide greater safety benefits.

Alternative 3 – No-Build

The No-Build Alternative will have no affect on community resources. Indirect impacts to these resources could include decreased access and extended travel time between homes and community resources.

School traffic using the existing CR 90 intersection will continue to present safety problems for traffic crossing the highway. This is particularly relevant during the school's start and release periods when intersection traffic queues are greatest.

4.1.5 Environmental Justice

This section has been prepared in accordance with the Executive Order 12898, Federal Action to Address Environmental Justice in Minority and Low-Income Populations, dated February 11, 1994. Executive Order 12898 requires each federal agency (e.g. FHWA), to the greatest extent practicable and permitted by law, and consistent with principals set forth in the report on the National Performance Review, to achieve environmental justice as part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

4.1.6 Project Area Demographics

Demographic statistics from the 1990 and 2000 Census were compiled at the most refined level practical and used to characterize the population in the Highway 23/71 project area. For purposes of the Environmental Justice assessment, the most refined level for practical comparison is Dovre Township.

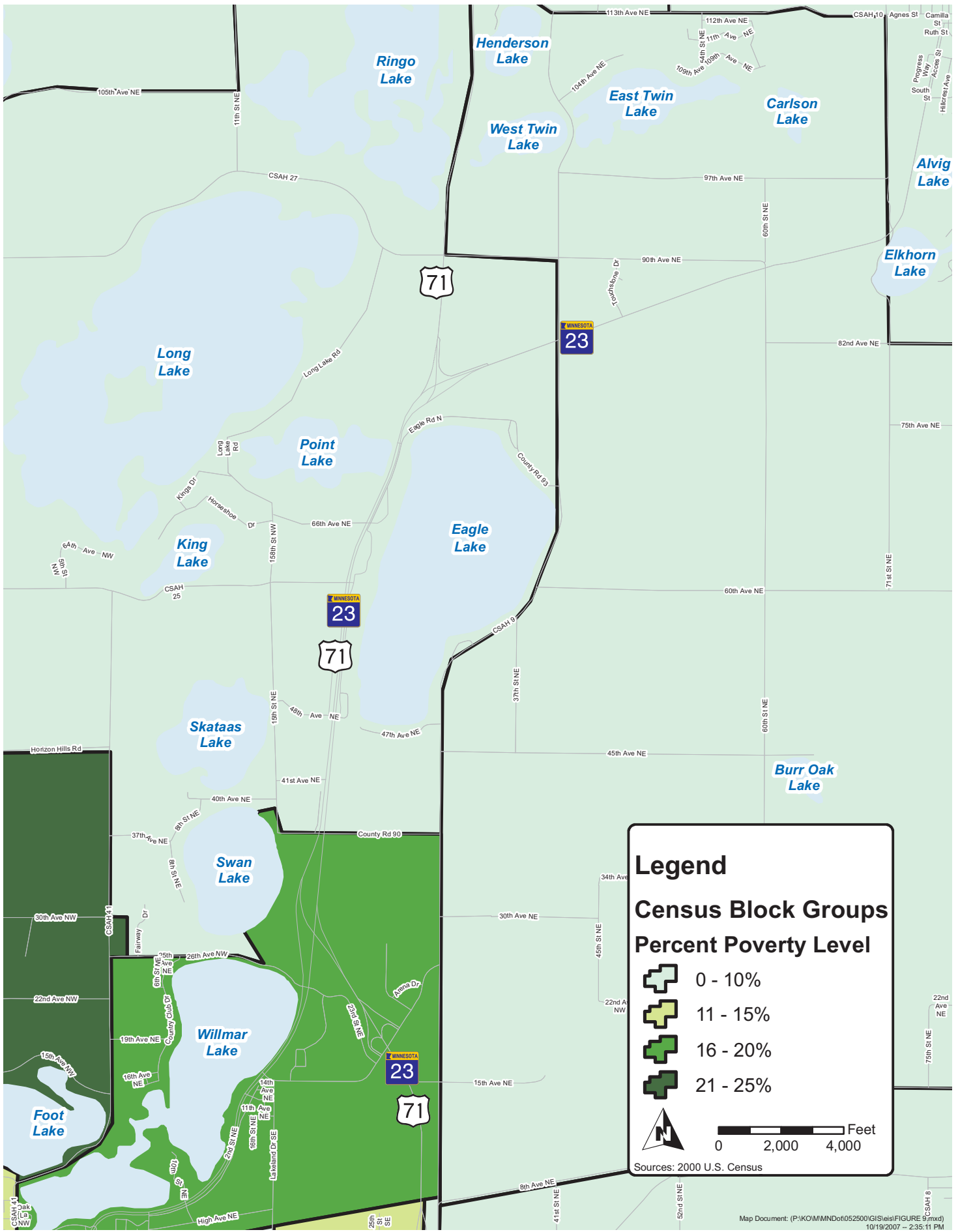
Tables 11 and 12 defined population and racial composition for the Highway 23/71 Study Area. Table 14 presents poverty status of households and individuals in the Highway 23/71 Study Area (Dovre Township) in comparison to the Willmar, Kandiyohi County, State of Minnesota, and the U.S. Figures 9 and 10 illustrate the percentage of persons below the poverty level and minority populations by census block group, respectively, in the Highway 23/71 Study Area.

There are no substantial differences in the percent of residents below the poverty level between the project alternatives. The proposed project's location in Dovre Township provides a much lower percentage of households and individuals for whom poverty status is determined compared to the city of Willmar, Kandiyohi County, the State of Minnesota, and the U.S.

**Table 14
Poverty Status of Households and Individuals**

Criterion	Dovre Township	City of Willmar	Kandiyohi County	Minnesota
Households	719	7,326	15,973	1,896,209
Households Below Poverty Level	29	977	1,552	150,204
Percent Households Below Poverty Level	4.1	13.4	10.8	7.9
Percent of Individuals in Poverty Status	4.7	13.1	9.2	7.9

Source: U.S. Census Bureau, Census 2000; Summary File 3



Legend

Census Block Groups

Percent Poverty Level

- 0 - 10%
- 11 - 15%
- 16 - 20%
- 21 - 25%

Sources: 2000 U.S. Census

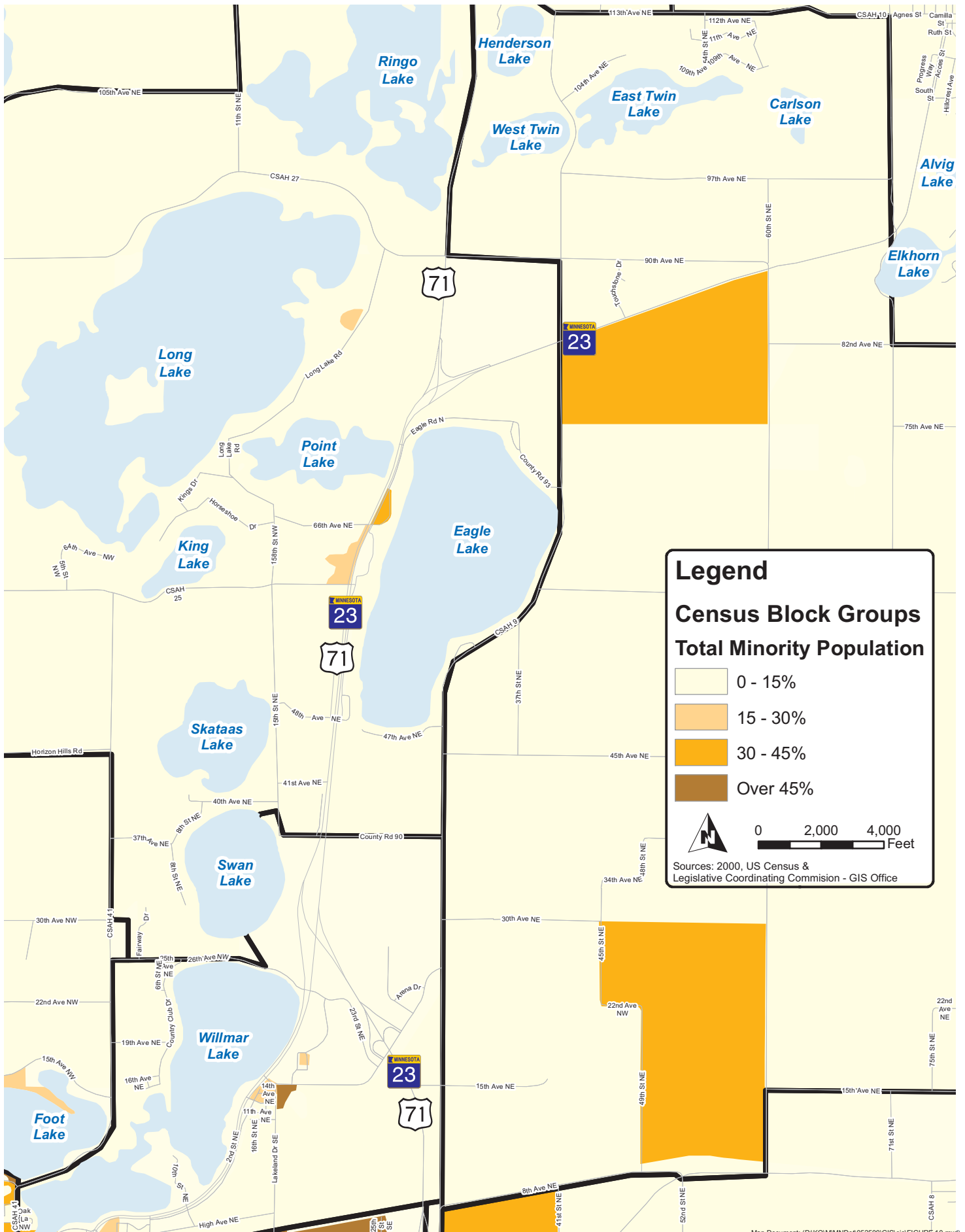


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FIGURE 9 PERCENT OF PERSONS BELOW POVERTY LEVEL



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FIGURE 10 PERCENT MINORITY



Public Involvement/Outreach

From the beginning of the project, Mn/DOT has been committed to public involvement efforts aimed at reaching all individuals and groups located within or having an interest in, the project area. These efforts are discussed in greater detail below.

Project Advisory Committee (PAC)

The PAC was formed to establish a communication link with the affected communities, organizations, and agencies. The PAC for the EIS phase of the project is a combination of the TAC and PAC from the Scoping process. The committee represents a wide range of special interest groups that are able to communicate their concerns through their PAC representative to ensure that their community values/interests are being considered.

Public Open Houses

On July 14, 2006, an Open House was held near the project corridor at the Kandiyohi County Health & Human Services building. The purpose of the meeting was to inform individuals of the upcoming planning efforts, provide opportunities to get involved in the Highway 23/71 project, and gather information from the public regarding the range of potential alternatives being studied in the scoping phase of the project. A second open house was held on June 27, 2007, to provide the public with additional details on the DEIS alternatives evaluation and environmental review process. Future public meetings will be conducted to provide up-to-date information on the project, receive verbal and written comments and suggestions, and respond to questions.

Project Newsletters

A series of informational newsletters have been and will be prepared with the intent of providing project-related information to the public. As of fall 2007, three newsletters have been distributed to a list of over 900 property and business owners in the project area.

Project Web Page

An informational project web page has been established on the Internet at (http://projects.dot.state.mn.us/seh/23_71). The site provides an additional means of distributing information and gathering input with an e-mail reply feature. The site is periodically updated to reflect project updates, planning/design changes, and to address new issues.

4.1.7 Environmental Justice Determination

To supplement the minority and economic information provided by the U.S. Census Bureau, direct contacts were made with local government offices to assist in determining if there are any readily identifiable minority or low-income populations living in close geographic proximity of the project area. Contacts included the City of Willmar Community Development Department and the Kandiyohi County Family Services Department.

As a result of the information obtained in the interviews with these offices and from the demographic statistics, it is reasonable to assume that the study area does not contain identifiable minority and low-income populations.

It can also be concluded based on the information collected that the remainder of the study area outside of Dovre Township does not include readily identifiable minority or low-income populations. Given this, the environmental justice assessment focuses solely on the portions of the proposed improvement alternatives (Alternatives 1A, 1B, 2A, 2B, and North End Connection Alternatives within Dovre Township in Kandiyohi County.

4.1.8 Right-of-Way and Relocation

Affected Environment

The right-of-way acquisition needs for the build alternatives were determined by subtracting the existing roadway right-of-way from the required right-of-way with each of the following project components and assumptions:

- Additional right-of-way will be needed for Highway 23/71 interchange bridges, ramps, and approach roadways associated with a relocated CR 90 and CSAH 25
- 120 feet is generally needed for CSAH or CR right-of-way; 200 feet is needed for a CSAH or CR near/at interchange
- 66 feet is needed for frontage roads in confined areas and 80 feet is needed for frontage roads in unrestricted areas
- 80 feet is needed for the North Connection alternative roadways
- 50 feet from the centerline of the ramps to the outside is needed for interchange footprints

Environmental Consequences

Build Alternatives

The build alternatives will require additional right-of-way to accommodate the proposed improvements. The amount of right-of-way needed varies considerably among the build alternatives, and also if a partial acquisition will be needed compared to a total acquisition per land parcel. Estimated right-of-way requirements for each alternative are presented in Table 15.

**Table 15
Potential Right-of-Way Acquisition**

Highway 23/71 Build Alternative	Partial Acquisitions (parcels)	Partial Acquisitions (acres)	Total Acquisition (parcels)	Total Acquisition (Acres)
Alternative 1A	93	43.9	5	9.9
Alternative 1B	88	52.6	3	5.4
Alternative 2A	69	30.1	7	8.8
Alternative 2B	62	35.8	5	4.3
N1	8	6.1	0	0.0
N2	11	6.7	0	0.0
N3	10	1.8	1	0.6
N4	10	1.4	0	0.0

Alternative 3 – No-Build

The No-Build Alternative will require no additional right-of-way.

Relocation

Highway reconstruction often requires the relocation of residential, commercial, and farm properties. The acquisition of property is one of the most obvious impacts associated with highway construction. The identification of potential relocations was completed by overlaying the alternative alignments onto aerial photographs. The same right-of-way corridor widths were used, and only properties where the required right-of-way impacted the building itself were included.

Build Alternatives

The number of properties impacted and, consequently, the total acquisition and relocation costs, varies with each alternative. The alignment of the preferred alternative may be shifted in the design phase to limit these impacts. Table 16 illustrates the number of residences and businesses that will be affected by the project alternatives. The estimated number of persons per household and employees that would need to be relocated is also included. (It is noted that in some cases, there is more than one residence and business per parcel that may need to be acquired, as reported in Table 15. For example, one commercial property may have several tenant businesses on one parcel.)

Table 16
Residential and Commercial Business Impacts

Highway 23/71 Build Alternative	Number of Residential Units	Estimated Number of Persons Displaced	Number of Businesses	Estimated Number of Employees Displaced
Alternative 1A	8	18	5	32
Alternative 1B	8	18	0	0
Alternative 2A	3	9	7	38
Alternative 2B	3	9	2	6
North Connection N1	0	0	0	0
North Connection N2	1	3	0	0
North Connection N3	3	8	0	0
North Connection N4	0	0	0	0

Alternative 3 – No-Build

There are no residential or commercial business acquisitions associated with the No-Build Alternative.

Mitigation

The uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended and 49 CFR Part 24 provide that assistance be granted to persons, businesses, farms, and non-profit organizations that may be displaced by public improvements such as the Highway 23/71 project.

Mn/DOT will provide relocation assistance for persons displaced by the Highway 23/71 project without discrimination. Advisors are available to explain relocation details, policies, and procedures with potentially displaced individuals. The advisors will work directly with property occupants to assist with their specific relocation plans.

Residential displacees are eligible for reimbursement of some of the costs associated with relocation, including moving costs and replacement housing costs. The method for computing a possible replacement housing payment is determined by the displacee's residential status as an owner or tenant. Comparable replacement housing, based on the number of rooms, amount of living space, location, etc., will be made available to each residential displacee. The replacement dwelling to which a displacee relocates must be "decent, safe, and sanitary," meaning it must meet all the minimum requirements established by federal regulations and conform to all housing and occupancy codes. If necessary, Last Resort Housing provisions will be implemented to ensure that comparable replacement housing is available to each displacee. These provisions may include increased replacement housing payments or other alternate methods based on reasonable costs.

A survey of the available replacement housing in and near the project area indicated there is an adequate supply of available housing. As of October, 2007, there were 143 single family homes for sale either through the Multiple Listing Service or classified

advertisements in the Willmar area. This includes properties in Dovre Township, where the potential residential displacements will occur. The median price of these listings is approximately \$167,000. The potential replacement housing supply has been relatively stable during 2007 and increased slightly since September 2007. The median price of the supply also increased slightly (1.6 percent) since September 2007.

Potentially displaced businesses include a vehicle salvage business, a vehicle sales and repair business, a vehicle repair business, a landscaping business with leased office space, mini-storages, and outdoor storage. The property of a church (but not the church and its parking lot) would also be potentially acquired. Potentially impacted commercial structures can be reconstructed as most are single story structures comprised of prefabricated sheet metal-clad pole buildings on concrete slab foundations, typically with overhead garage doors. Those businesses with open yards typically use the property for vehicle parking or salvage and goods storage, for which minimal additional property improvements exist. These types of businesses are typically located in highway commercially-zoned districts with identification signage visible from an adjacent street or highway and therefore are limited to these types of locations in a community setting. There are approximately 137 acres of vacant adjacent properties for sale as of October 2007 in the Highway 23/71 Corridor that are presently zoned and marketed for commercial development. These properties could reasonably be concluded to potentially accommodate displaced businesses that would prefer to stay in the Highway 23/71 Corridor. Other commercial corridors in the Willmar area located within 10 miles of the project area that may offer accommodation for potentially displaced businesses include vacant and commercially-zoned properties along Highway 12 in Willmar and east of the community of Willmar, locations at interchanges near the Willmar Bypass (Highway 23/71 freeway, south of the project area), and Highway 71 South in Willmar.

Relocation assistance will also be made available to businesses, farms, and non-profit organizations. In addition to advisory services, payment may be made for:

- Moving costs
- Loss of tangible personal property as a result of relocation or discontinuance of a business
- Business reestablishment expenses
- Costs incurred in searching for a replacement site

Fixed payment in lieu of moving and reestablishment costs

Compensation is available to all displaced people without discrimination.

The design phase of the preferred alternative will focus efforts to minimize relocation impacts to the extent possible.

4.1.9 Economic Environment Affected Environment

Economy

Serving as the regional trade center and County Seat, Willmar is served by three US or Minnesota Trunk Highways (12, 23, and 71) and is a key contributor to the local economy. Highway 23 is identified by Mn/DOT as a Medium Priority Interregional Corridor route. Additional transportation resources in the area include the Willmar

Regional Airport and the Burlington Northern Railroad. Excellent access to these various transportation resources supports a manufacturing based economy dependent on travel and transportation of goods to and from West Central Minnesota.

The economy of Willmar and Kandiyohi County has grown modestly over the past two decades. The growth has been led by service industries, followed by growth in government, retail trade, manufacturing, wholesale trade, construction, finance/real estate, and transportation/communication/utilities. Other business attractions include Willmar's communications infrastructure. As an equal access market, the community has attracted current technologies such as ISDFN, T1, and fiber optics lines, provided by several companies.

As shown by gross receipts, the Willmar Lakes Area has a healthy economic base with employment spread across several diverse industries, including manufacturing, education services, health care services, retail and merchandise stores, financial services, and construction.

The 200-acre Willmar Industrial Park has reached near capacity, which has created interest in the new 38-acre Harvest States Business Park in northwest Willmar. Willmar's airport construction will bring an additional 350 acres of industrial park expansion.

Major employers in the Willmar area and type of business include the following:

- Jennie-O Turkey Store – poultry slaughtering & processing;
- Willmar Public Schools – elementary & secondary schools;
- Rice Memorial Hospital – general medical & surgical hospitals;
- Willmar Regional Treatment Center – outpatient care centers;
- Affiliated Community Medical Centers – offices of physicians;
- Kandiyohi County – executive, legislative & other general government support;
- Bethesda Homes – nursing care facilities;
- Ridgewater College Willmar Campus – colleges, universities and professional Schools;
- Minnesota Department of Transportation – administration of state roadway programs;
- Willmar Poultry Company – poultry & egg production;
- Burlington Northern-Santa Fe Railroad – rail transportation;
- Wal-Mart – department stores;
- Molenaar, Inc. – resin, synthetic, rubber & artificial synthetic fiber & fill manufacturing;
- Infinia – nursing care facilities; and,
- West Central Steel/Central MN Fabricating – fabricated metal products/manufacturing.

Environmental Consequences

Build Alternatives

The conversion of agricultural land to roadway will impact the incomes of area farmers from crop production/sales and cash rentals. Landowners will be compensated for their land (see Right-of-Way and Relocation section of this Draft EIS), but the annual income from the land will be lost. The net effect of this transaction is dependent on several factors, as discussed in the Farmland section of this document, and will vary among landowners. Some landowners may experience a net gain, while others may see a net loss. The loss in tax receipts is expected to be minor relative to the county tax base.

The acquisition of right-of-way for the majority of the proposed build alternatives will impact commercial and residential properties and involve the relocation or loss of several businesses and homes in the project corridor. This could marginally affect the overall tax base, as well as employment opportunities. However, the proposed improved highway may attract new businesses that will compensate for such losses.

Minor indirect impacts to existing businesses may occur as a result of construction activities including delays and detours.

Alternative 3 – No-Build

The No-Build Alternative will have no direct economic impact in the project study area. Indirect impacts to the local economy may result from increased roadway congestion and safety problems.

Mitigation

No mitigation measures are proposed.

4.1.10 Parks and Public Recreational Areas

Affected Environment

There are several unique park and recreation areas within the Highway 23/71 project area.

The Glacial Lakes Trail is located on the eastern perimeter of the project area south and east of Eagle Lake. The segment of the 40 mile trail in the project area is paved and used primarily during the summer months for hiking, bicycling, horseback riding (on the grass tread way next to the trail), and inline skating. During the winter months, the trail is groomed for snowmobile use.

The DNR maintains a 127 acre wildlife management area (WMA) east and south of the Highway 23/71 and CR 90 junction in the study area within the city limits of Willmar. The WMA contains several mature woody cover plantings, several wetlands, and native/non-native grass covered fields. The WMA is open to the public for wildlife observation and hiking. The DNR also maintains a boat launch on Point Lake. The launch and dock area is the only public waters access to Point Lake. A small, unsurfaced parking and maneuvering area is currently maintained with access to 26th Avenue NE and Highway 23/71.

The Eagle Creek Golf Course is an 18-hole regulation length course open to the public and located at 1000 26th Avenue NE, between Swan and Willmar Lakes. The golf course opened in 1931 and includes a driving range, clubhouse/restaurant, and paved surface parking lot.

Environmental Consequences

Build Alternatives

The only recreational resource potentially impacted by the proposed build alternatives is the Point Lake public waters access owned and operated by the Minnesota Department of Natural Resources. Because of the build alternatives' required access closure at 26th Street, persons desiring access to the boat launch facility will need to gain entry from one of four North Connection Alternatives (N1, N2, N3, or N3) associated with the project's build alternatives. There would be no land acquisition associated with the access closure for the Point Lake public waters access area.

Alternative 3 – No-Build

The No-Build Alternative will have no impacts on parks or recreational areas.

Mitigation

New access to the Point Lake public waters access will be provided from 26th Avenue NE with its closure at Highway 23/71 using one of the aforementioned connection alternatives. Further evaluation of potential impacts to the Point Lake area will be completed upon selection of a preferred alternative and included in the Final EIS. The Final EIS will also propose mitigation measures for any adverse impacts.

4.1.11 Section 4(f)/6(f)

Affected Environment

The Section 4(f) legislation as established under the Department of Transportation Act of 1966 (49 USC 303, 23 USC 138) provides protection for publicly owned parks, recreation areas, historic sites, and wildlife and/or waterfowl refuges from conversion to other use. Additional protection is provided for outdoor recreational lands under the Section 6(f) legislation (16 USC 4602-8(f) (30)) where Land and Water Conservation (LAWCON) funds were used for the planning, acquisition, or development of the property.

Section 4(f)/6(f) properties in the vicinity of the project include the Glacial Lakes Trail, the DNR Boat Launch on Point Lake, and the Eagle Creek Golf Course.

Environmental Consequences

The proposed project will not impact any properties eligible for protection under Section 4(f)/6(f) legislation.

Mitigation

No mitigation measures are required since the project will not impact any 4(f) or 6(f) properties.

4.1.12 Pedestrian and Bicycle Movements

Affected Environment

Besides the pedestrian/bicycle trails described in the Parks and Public Recreational Areas section of this Draft EIS, regular pedestrian and bicycle movements in the project area are limited to those associated with the residential neighborhoods ringing the area lakes. Residents, hikers, and bicyclists from the lakes neighborhoods are frequently seen walking on existing public rights-of-way adjacent to the lakes. At public meetings, desires for safer pedestrian and bicyclist crossings of Highway 23/71 have been expressed, particularly to provide better connectivity to the Glacial Lakes trail. In addition, as proposed improvements have been discussed at public meetings, interested persons have expressed interest in trail facilities where roadway improvements or reconstructions will be required with the implementation of a build alternative.

Environmental Consequences

Build Alternatives

The proposed improvements will provide opportunities to improve safety for pedestrian and bicycle movements in the project area. With the presence of the Glacial Lakes Trail, a regional trail corridor located near the project area, an adjoining trail corridor within the Highway 23/71 right of way will not be considered. Adequate right-of-way will be available to develop a trail with proposed improvements to CSAH 25 or a relocated CR 90, in addition to pedestrian facilities for bridge crossings over Highway 23/71. Local streets that must be upgraded as a part of the project will also be considered for sidewalks or trails, if needs are present, adequate right-of-way is available, and local governments support such improvements in the project area.

Alternative 3 – No-Build

The No-Build Alternative will not have a direct effect on pedestrian and bicycle movements that currently exist in the project area. However, increased congestion and deterioration of highway safety may lead to further safety concerns for pedestrians and bicyclists.

Mitigation

Upon selection of the preferred alternative, the potential to enhance pedestrian and bicycle accessibility and safety in the project area will be considered and adjoining trail needs will become part of the local roadway planning, particularly on higher traveled routes that will be provided with access to Highway 23/71, such as a relocated CSAH 25 or CR 90. All pedestrian facilities will be designed in accordance with the Americans with Disabilities Act (ADA). Detailed mitigation measures will be further evaluated in the Final EIS.

4.1.13 Transit Services

Affected Environment

Kandiyohi County and the City of Willmar manage public transportation in the project area. Kandiyohi Area Transit (KAT) provides public transportation in the Willmar area, as well as dial-a-ride service in several other Kandiyohi County cities. Monday through Saturday service is offered with stops at major employment, institutional, and retail destinations. Southwest Tours/Willmar Bus Company also offers coach and school

transportation services in the Willmar area. Greyhound and Jefferson Lines also provide bus transit service with stops in Willmar.

Environmental Consequences

Build Alternatives

As a result of improved traffic conditions, each of the build alternatives would potentially have a positive impact on the quality of transit service along the corridor and beyond. Short-term adverse impacts to transit services may result from construction activities including minor detours or construction delays.

Alternative 3 – No-Build

The No-Build Alternative could have an adverse impact on transit services by not addressing existing and future safety problems.

Mitigation

Once the preferred alternative is selected, the effects of the highway improvements will be further evaluated to determine impacts to transit services. Measures to minimize any adverse impacts will be considered at that time.

4.1.14 Utilities

Affected Environment

There are several local and regional utility lines and distribution and/or transmission facilities within the project area. These utilities include local electric and telephone distribution lines, and natural gas pipelines. The following utility agencies or companies have been identified in the general project area or have been issued permits to place utility infrastructure within the Highway 23/71 project corridor:

- Willmar Municipal Utilities Commission
- Center Point Energy (Minnegasco)
- Qwest Communications
- Midwest Wireless
- Onvoy
- EN-TEL Communications
- Sunray area local water storage and distribution system
- Eagle Lake Sanitary District (City of Willmar)

Environmental Consequences

Build Alternatives

To various degrees, each the build alternatives will require some level of local and regional utility relocation and disruption in services. Future or replacement sanitary sewer facilities in the project area will be planned in accordance with the Willmar 2030 Facilities Plan for Wastewater Collection and Treatment.

Alternative 3 – No-Build

There would be no direct effects to utilities as a result of the No-Build Alternative.

Mitigation

Coordination and cooperation with the utility service providers will be established upon selection of a preferred alternative. These efforts will help minimize potential impacts from the proposed roadway improvements.

4.2 Natural Environment

4.2.1 Farmland

Affected Environment

The Federal Farmland Protection and Policy Act and the Minnesota Agricultural Land Preservation and Conservation Policy Act, Minnesota Statute §17.80-17.84, were enacted to ensure that impacts to agricultural lands and operations are integrated into the decision-making process at the EIS level. These laws are also intended to minimize, to the extent reasonable, actions that result in unnecessary and irreversible conversion of farmland to non-agricultural purposes.

The project area includes a mixture of farmland, residential housing and commercial development. The long range projection for this area is for continued growth of residential and commercial development. Much of the farmland adjacent to the project is broken into smaller parcels. If the cities of Willmar and Spicer continue to grow this fragmentation of farmland will continue within the project area.

The Natural Resources Conservation Service (NRCS) Kandiyohi County Field Office was contacted to discuss the project in general and to obtain information on the types and extent of prime and unique farmland in the project area. NRCS staff suggested that a majority of the farmland in the project area is classified as prime farmland. This was confirmed upon further evaluations of the soils in the project area. The staff at the NRCS Kandiyohi County Field Office are engaged as one of the project's Participating Agencies in accordance with SAFETEA-LU guidance.

The project area was evaluated to identify the total amount of farmland, prime and unique farmland, and farmland of statewide and/or local importance as classified by the NRCS. The NRCS National Soil Survey Handbook, Title 430-VI, 1993, establishes definitions, purpose, rules, and policy for determining prime farmland soils. The Kandiyohi County Soil Survey, NRCS Web Soil Survey (WSS), and the NRCS electronic Field Office Technical Guide (eFOTG) were referenced to identify the soil classifications.

No unique farmland soils are found in the project area. Only prime farmland, statewide important farmlands, and prime (if drained) farmland are present in the study area. Approximately 75 percent of the farmland in the study area is classified as prime farmland. The majority of the production farmland in the project area is cropped on a corn-soybean rotation. Smaller tracts of small grains and grasses are also present.

Several soil types present in the study area are classified as prime farmland soils only under artificially drained conditions. Based on information from NRCS staff all cropped farmland in the study area is tiled and drained. Therefore, for the purposes of this study, all soils classified as prime only under drained conditions were assumed to be prime farmland. A preliminary review of the study area soils identified seven soil types that are

not classified as prime farmland soil. These soil types encompass approximately 25 percent of the farmland areas in the project area.

Environmental Consequences

The direct loss of farmland and prime farmland (in acres) per alternative is shown in Table 17. Data were calculated by taking the difference between the existing and proposed right-of-way widths overlain on maps showing soils and land use.

**Table 17
Direct Farmland Loss**

Alternative	Total Farmland Loss (acres)	Prime Farmland Loss (acres)
1A	32.0	12.0
1B	35.0	17.0
2A	22.0	11.0
2B	23.0	15.0
North Connection N1	5.0	3.0
North Connection N2	6.0	2.0
North Connection N3	0.0	0.0
North Connection N4	0.3	0.0

Additional impacts to farmland include severance, triangulation and isolation of farmland, and relocation or displacement of home or farm structures. Each of these impacts was evaluated for the seven alternatives by overlaying the alignments on a land use map and aerial photograph of the project area. Additional farmland impacts are reported in Table 18.

Severed Farms

A severed farm is defined as a parcel of land that is split by the proposed roadway into separate parcels of farmland making it more difficult to farm, in part because an additional crossing or multiple crossings of the new roadway would be required for farm equipment. For the purposes of this analysis, the data reported in Table 18 represents only newly severed parcels. That is, if the farmland was already severed by a roadway and the proposed project simply moved the location of the severance, then this would not be considered a newly severed parcel. To the extent possible at this preliminary review phase, realignments of county road crossings were also considered when evaluating severed farms.

Table 18
Summary of Additional Farmland Impacts

Alternative	Farms Severed	Farms Triangulated	Triangulated Prime Farmland acres lost	Farms Isolated	Structure Relocations	Farmstead/Homes Displaced
1A	4	1	8.0	0	0	0
1B	5	3	10.0	0	0	0
2A	2	0	0	0	0	0
2B	2	0	0	0	0	0
North Connection N1	1	1	0.5	0	0	0
North Connection N2	3	0	0	1	1	0
North Connection N3	0	0	0	0	0	0
North Connection N4	0	0	0	0	0	0

Triangulated Farms

A triangulated farm is defined as a severed parcel that is too small to farm. It is common to consider a severed parcel of up to 3 acres as triangulated, depending on the row requirements for typical farm implements (plows, planters, etc.) The specific geometry of the parcel was also considered for this evaluation. For example, it may still be economically feasible to farm a 5-acre rectangular parcel using a 16-row implement, but not with a 24-row implement. Using the same 16-row or 24-row implement on a 9-acre triangular parcel would most likely not be feasible.

The majority of cropped farmland in the area is farmed using 16 or 24-row implements. To the extent possible at this stage, realignments of county road crossings were considered when evaluating triangulated farms. Table 18 summarizes the impacts from triangulation for the various alignments.

Isolated Farms

Isolated farms occur when a farmstead is physically separated from its associated farmland. Essentially, the farm operator would need to cross the new roadway when traveling from the farmstead to the severed parcel. Cases where a new roadway alignment would require a landowner to cross to the opposite side of the highway and then cross again (back-track) to access his or her farmland were also considered isolated farmlands. Only newly isolated parcels were considered in this study. That is, if the farmland was already isolated from the farmstead and the proposed roadway simply changed the location of the isolation, it would not be considered a newly isolated parcel. Isolated farms resulting from the proposed alternatives are shown in Table 18.

Structure Relocations

Structure relocations result when the proposed right-of-way infringes on an existing building or farm structure that can physically be relocated. The data reported in Table 18 represents the number of farmsteads where relocation would be required and not the total

number of structures at the farmsteads. For example, a farmstead with three structures within the proposed right-of-way is reported as a single relocation for the purposes of this study. In general, the alternative alignments avoid existing farmsteads and homes where possible. To obtain a more accurate assessment of the actual number of structure relocations, further evaluation should be completed as the alternative alignments are refined.

Farmstead/Home Displacements

Home displacements result when the proposed right-of-way infringes on an existing home such that the home must be permanently removed or relocated on the existing site. Based on the land use and farmstead/home location information available, there are no homes that would be displaced (see Table 18).

Safety and Access

Safety and access issues are primarily a result of increased traffic speeds and volumes and the potential for additional crossings of the highway by agricultural vehicles to access fields. Safety and access related impacts have been evaluated relative to the existing conditions and are based, in part, on discussions with farmland owners attending open house meetings.

The primary safety concerns are additional crossings of roadway improvements to access fields and non-farm traffic passing farm traffic. For two-lane alternatives, access to fields is not expected to be considerably different than existing conditions. New roadway for CSAH 25 (Alternatives 1A and 1B) will create additional access difficulties and safety concerns for farmers with fields on both sides of the existing alignments, as farmers would be required to use new, high-speed travel lanes to access the same field. To some extent, safety and access impacts for all options will be offset by improvements in sight distance and improved road crossings.

The exact number and location of field access points and highway crossings is unknown at this time. However, the number of access points and highway crossings is not expected to increase, but are generally expected to decrease in accordance with Mn/DOT standards. In general, a reduction in the number of access points will require farm machinery to travel greater distances to cross build alternatives for Highway 23/71, but safety at these crossings is expected to improve due to the additional right-of-way width available to enter the highway.

Farmland Impacts Rating – Form AD1006

Staff personnel from the NRCS Kandiyohi County Field Office were contacted in spring 2007 to discuss completion of farmland impact ratings. NRCS personnel completed a Farmland Conversion Impact Rating Form (AD1006) on each recommended alignment for the proposed project. The results of the farmland conversion ratings are included in DEIS Appendix D.

Mitigation

Measures will be taken to minimize harm to farmland, especially through severance or triangulation in accordance with the Farmland Protection Policy Act the Minnesota Agricultural Land Preservation and Conservation Policy Act. Safe and convenient access to farmland will be considered during the design of the preferred alternative.

4.2.2 Noise

Affected Environment

Minnesota Noise Standards

Minnesota Rules Chapter 7030 provides the Minnesota standards for noise. These standards describe the limiting levels of sound established on the basis of present knowledge for the preservation of health and welfare. These standards are designed to be consistent with sleep, speech, annoyance, and hearing conversation requirements for receivers within areas grouped according to land use activities. Sound levels are expressed in dBA. A dBA is a unit of sound level expressed in decibels and weighted for the purpose of determining the human response to sound. The Minnesota standards are as follows:

Noise Area Classification	Daytime dBA		Nighttime dBA	
	7:00 a.m. to 10:00 p.m.		10:00 p.m. to 7:00 a.m.	
	L ₁₀ *	L ₅₀ **	L ₁₀ *	L ₅₀ **
NAC-1 (Residential)	65	60	55	50
NAC-2 (Commercial)	70	65	70	65
NAC-3 (Industrial)	80	75	80	75

* L₁₀ means the sound level that is exceeded for 10 percent of the time for a one-hour period.

** L₅₀ means the sound level that is exceeded 50 percent of the time for a one-hour period.

Federal Noise Abatement Criteria

Projects receiving federal funding are required to determine and analyze expected noise impacts and noise abatement criteria contained in 23 CFR Part 772. The rule provides procedures for noise studies and noise abatement measures to help protect the public health and welfare, describes noise abatement criteria, and establishes requirements for information to be given to local officials for use in planning and design.

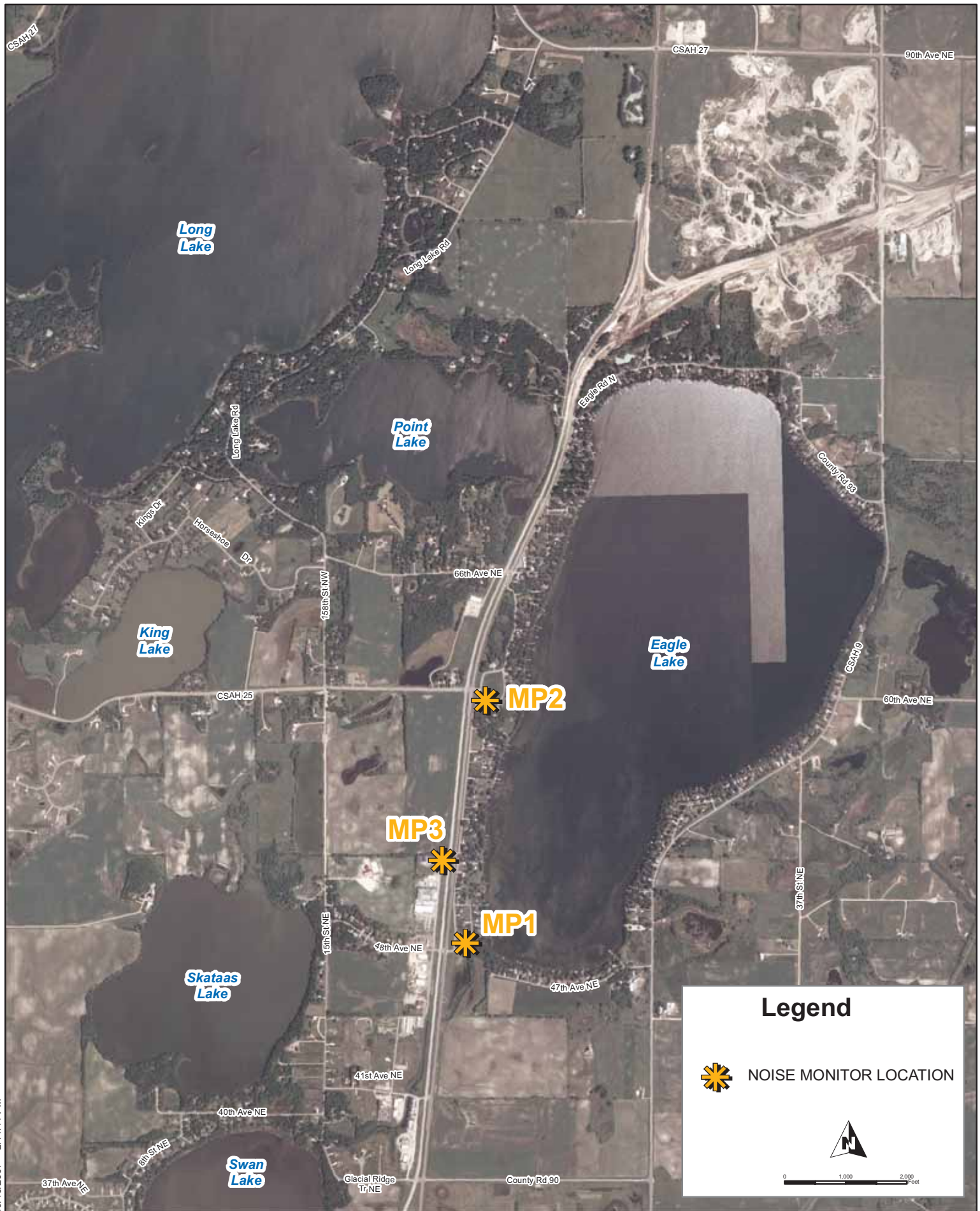
Federal noise abatement criteria require mitigation to be considered when the post-development noise levels for nearby sensitive receptors approach or exceed 70 dBA or a substantial increase (5 dBA). The modeled L₁₀ noise level for the worst case hour should be used for comparison to this standard.

Existing Traffic Noise

Noise level monitoring is commonly performed during a noise study to document existing noise levels. Existing noise levels can be used as a baseline against which future scenarios are compared. In addition, when studying future noise levels projected with computer models, monitored noise levels for existing conditions are compared to modeled results for existing conditions to validate the computer modeling techniques and results.

The existing noise levels along Highway 23/71 were monitored on October 19 and 26, 2006 to establish base case conditions and to assist in validating the noise prediction model. Three noise receptor monitoring locations were chosen for modeling within the project area (See Figure 11). Monitoring results for existing noise levels (2006) are provided in Table 19. Sound levels are expressed in dBA.

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TH 23 / 71 DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE 11 NOISE MONITORING LOCATIONS



**Table 19
Monitored Noise Levels**

Monitoring Receptor	Monitoring Locations	Monitoring Hours	Monitored Noise Level (dBA)	
			L ₁₀	L ₅₀
MP1	200 feet east of Frontage Road at 22nd Ave, East of Highway 23/71	3:06- 4:06 PM (Daytime)	62	57
		3:48-4:48 AM (Nighttime)	61	58
MP2	Frontage Road at CSAH 25, 150 feet east of Highway 23/71, 150 feet	4:10-5:10 PM (Daytime)	69	63
		4:59-5:59 AM (Nighttime)	64	60
MP3	Frontage Road between Sites MP1 and MP2, West Side, 150 feet east of Highway 23/71	5:15-6:15 PM (Daytime)	72	66
		6:05-7:05 AM (Nighttime)	69	65

Shaded cells represent noise levels currently above MPCA State standards

Almost all of the monitored results exceed the State’s noise guidelines with the exception of the daytime, L₅₀ metrics, at MP1 and MP2. Model results for MP1, MP2, and MP3 have been shown to be within 3dBA of the modeling results.

Model

Traffic noise impacts were assessed by modeling noise levels at residential receptor sites along the corridor likely to be most affected by changes in roadway alignment resulting from construction of the proposed project. Modeled receptor locations are shown on Figure 12. All receptor sites are classified within the definition of State of Minnesota NAC-1 and Federal Land Use Category B.

Noise modeling was completed using the MINNOISE Noise Prediction Program, a version of the FHWA STAMINA model adapted by Mn/DOT. This model uses vehicle numbers, speed, class of vehicle, and the typical characteristics of the roadway being analyzed. As noted above, adjustments were made to receptor sites to bring predicted and existing monitoring levels into agreement.

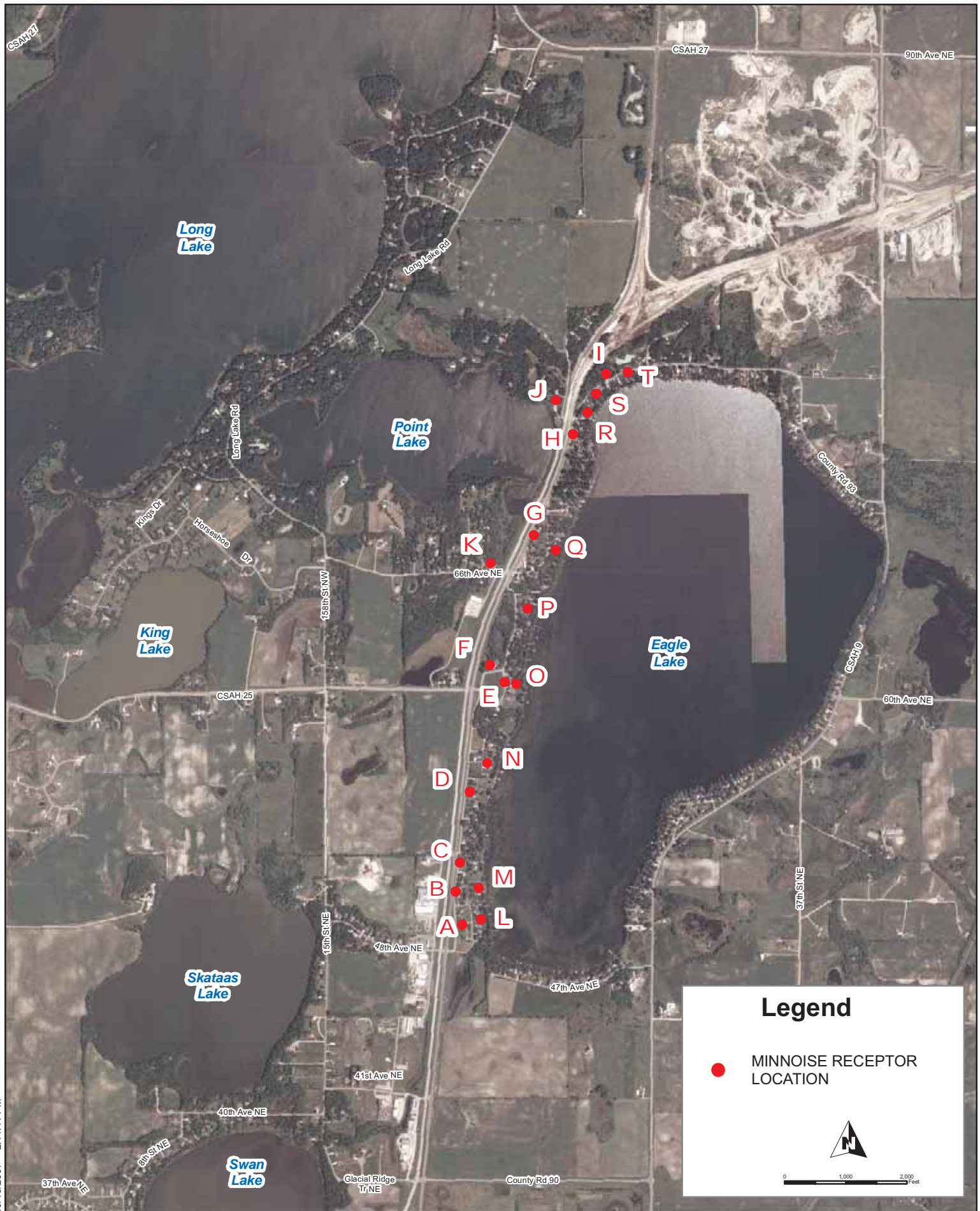
Environmental Consequences

The probable noise impacts of the project alternatives under consideration have been analyzed and documented in the Highway 23/71 Traffic Noise Analysis Report. This section will summarize the findings of that analysis. A copy of the complete report is available for review at the Mn/DOT District 8 Office in Willmar, Minnesota.

MINNOISE Model Results

The augmented FHWA noise prediction software MINNOISE was used to predict noise levels at 11 receptor sites within the study area. Figure 12 illustrates modeled noise receptor locations. These receptors were placed in and around the locations where the noise monitoring took place. Two receptors represent residential housing in the project area, with an additional receptor representing park setting. Tables 20 and 21 show the results of the noise modeling analysis for the existing (2006) daytime and nighttime, 2030 No-Build, and 2030 Build alternative scenarios.

Map Document: (P:\KOMM\NDot\052500\GIS\eis\FIGURE 11.mxd)
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TH 23 / 71 DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE 12
MINNOISE RECEPTOR SITES



The model predicts several receptors potentially exceed the MPCA state noise standards as well as approach or exceed the FHWA NAC under the existing (2007) conditions, the 2030 No-Build, and the Build (Alternatives 1A, 1B and 2A, 2B) condition for both the daytime and nighttime periods. Traffic noise impacts occur when traffic noise levels approach or exceed the FHWA NAC-1 (70 dBA) level by one decibel or when impacts are modeled exceeding state noise guidelines, or those which exceed the FHWA criteria of 5dBA or more. The models also shows several receptors experiencing a substantial increase (greater than 5 dBA) in noise levels.

Table 20
Modeled Noise Levels Daytime (dBA)

MINNOISE Receiver	Daytime				
	Existing L ₁₀ (dBA)	Year 2030 L ₁₀ No-Build (dBA)	dBA Difference Existing vs. No-Build	Year 2030 L ₁₀ Build	dBA Difference Existing vs. Build
A	67	67	0	69	2
B	74	74	0	75	1
C	73	73	0	75	2
D	71	72	1	74	3
E	62	63	1	65	3
F	67	68	1	70	3
G	71	73	2	73	2
H	70	72	2	72	2
I	64	64	0	66	2
J	68	70	2	71	3
K	67	69	2	71	4

Shaded values represent those locations exceeding the State noise standards.

Table 21
Modeled Noise Levels Nighttime (dBA)

MINNOISE Receiver	Nighttime				
	Existing L ₁₀ (dBA)	Year 2030 L ₁₀ No-Build (dBA)	dBA Difference Existing vs. No-Build	Year 2030 L ₁₀ Build	dBA Difference Existing vs. Build
A	67	70	3	71	4
B	74	75	1	75	1
C	73	74	1	75	2
D	71	72	1	74	3
E	62	63	1	64	2
F	67	68	1	70	3
G	71	72	1	73	2
H	70	72	2	72	2
I	64	66	2	67	3
J	68	70	2	71	2
K	67	69	2	71	4

Shaded values represent those locations exceeding the State noise standards. **Bold** values represent noise levels that approach or exceed the FHWA Criteria.

Mitigation

In areas where a potential noise impact is identified, the feasibility of providing noise mitigation must be investigated. The decision on whether or not noise mitigation is provided as part of the construction of the preferred alternative and what type of mitigation is appropriate is a function of several criteria. Following selection of a preferred alternative, a detailed noise mitigation plan will be developed. The following is a discussion of the criteria that will be used to determine if noise mitigation is feasible, and the alternative types of noise mitigation that will be considered.

Noise mitigation will be provided when noise impacts exist or will exist if it can be shown that the mitigation is feasible and reasonable. The feasibility of noise mitigation relates to engineering considerations – is it physically possible to construct or implement effective noise mitigation? Reasonableness is a subjective criterion and may consider a number of factors including the following:

- **Future Noise Level in Relation to Standards and Criteria:** As identified in the noise impact analysis, there are a number of locations along the alignment alternatives where future noise levels are expected to exceed state noise standards, federal noise abatement criteria levels, or experience a substantial increase in noise levels. These are the primary areas where noise mitigation would be considered.
- **Existing Noise Levels:** The change in noise levels caused by the proposed project is a consideration in determining the reasonableness of noise mitigation. As described in the noise impact analysis, future noise levels are anticipated to exceed state and federal noise standards at several residential sites under all proposed alternatives, including the No-Build Alternative.
- **Views of Affected Residents:** Noise barriers may have a perceived negative visual or aesthetic impact. The views of the people who would be affected by barriers must be considered.
- **Amount of Noise Reduction:** Generally, noise mitigation will only be provided if a substantial noise reduction (5 dBA or more) can be provided to a number of sensitive receptors. In some cases, a substantial noise reduction may not be possible due to the physical relationship of the receptors to the highway. In general, a noise barrier must block the line of sight between the roadway and the receiver to achieve a substantial noise reduction. However, if the receiver is affected by multiple roadway noise sources or is relatively far from the roadway, blocking the line of sight may not provide substantial noise reduction.
- **Number of Sensitive Receivers Protected:** The reasonableness of noise mitigation is related to the number of sites protected by a particular noise mitigation measure.
- **Cost:** The cost of noise mitigation must be considered in relation to the potential benefits of the mitigation. The cost of constructing noise mitigation to protect a small number of receptors can be prohibitive and may not be considered reasonable. Mn/DOT cost effectiveness criteria is \$3,250 per dBA reduction per residence. A residence is used in the calculation only if the reduction due to the mitigation is 5 dBA or more.
- **Zoning/Land Use Planning:** The zoning and future land use development plan should be considered prior to constructing noise mitigation. A noise barrier blocking the view of the highway would generally not be considered desirable for commercial land uses dependent on highway visibility. In an area with mixed residential and

commercial land uses, the expected future land use in the area should be considered when determining if noise mitigation is warranted.

The noise mitigation options are limited within the project area due to the close proximity of residences to the roadway, the sparsely spaced residents in rural areas, the limited roadway right-of-way, and the potential for multiple driveway and/or roadway access points. Typical noise mitigation and abatement options that can be considered by Mn/DOT include:

- **Noise Barriers:** Noise walls and/or earthen berms can be used to screen adjacent residential areas. Generally, noise walls are not cost effective in sparsely developed areas. Earthen berms require considerable right-of-way width for the side slopes. Also, to be effective, noise walls and earthen berms should be high enough to block the line of sight between the roadway and the receiver, and should be continuous with few gaps, which often conflicts with local property access needs.
- Noise barriers will be considered in areas where noise levels exceed Minnesota Noise Standards or experience a substantial increase in noise. According to Mn/DOT's Noise Policy, a barrier must meet the cost effectiveness criteria, which require a minimum of five dBA reduction at a residence and shall not exceed \$3,250 per dBA per residence.
- **Vegetation:** Vegetative screens can have some effectiveness in reducing noise impacts, but they require a substantial amount of space. A stand of extremely dense vegetation 15 to 20 feet high and 100 feet wide with no line of sight to the roadway can reduce noise by approximately five dBA.
- **Truck Bans:** Medium and heavy trucks dominate the higher noise levels generated by roadways. However, this section of Highway 23/71 provides a major link between regional trade centers, as well as access to local businesses for shipping and receiving goods and services. A truck ban is not a practical option given that Highway 23/71 is designated an IRC.
- **Speed Limits:** There is a direct correlation between faster speeds and higher tire noise from vehicles. Speed limit postings will be determined for the preferred alternative following completion of the improvements to determine actual driver speeds. In general, speed limits are anticipated to be similar to existing conditions (65 mph) after the construction of a build alternative.

Noise mitigation and abatement options that can be considered by local units of government include:

- **Buffering Via Zoning Ordinance:** Roadway right-of-way and building setback requirements can be used within zoning ordinances to increase the distance of development from the highway. This would help prevent future impacts; however, existing development would not benefit unless redevelopment occurred.
- **Acoustical Site Planning:** Site planning can be used for the arrangement of buildings to shield more sensitive land uses from noise impacts. Residences can also be oriented away from the noise source. Acoustical construction techniques include installing triple-pane windows, designing floor layouts to place bedrooms away from exterior walls facing the highway, and reconstructing buildings to eliminate windows or other openings, and incorporating increased wall thickness.

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- **Coordination with Local Officials:** The Highway 23/71 Noise Analysis Report is available for review at Mn/DOT District 8 Offices in Willmar, Minnesota. Appropriate comments on the DEIS will be incorporated into the preliminary design plans for the preferred alternative and into the Final EIS.

Noise Mitigation Analysis

Noise barriers are considered where residential and/or commercial locations have modeled future (2030) noise levels above the federal criteria and/or state standards, or a substantial increase. The only locations in the Highway 23/71 project area identified for analyzing a barrier were those homes east of Highway 23/71 and west of Eagle Lake.

Noise barrier construction decisions are based on a study of feasibility and reasonableness. Feasibility is determined by physical and/or engineering constraints (i.e., whether a noise barrier could feasibly be constructed on the site). Reasonableness is a more subjective measure and is based on a number of factors. For a noise barrier to be considered acoustically effective, it must achieve a noise reduction of 5 dBA or more. To be considered cost-effective, the cost per dBA of reduction per residence should be equal to or less than \$3,250. Cost-effectiveness of the barrier is calculated by dividing the cost of the noise barrier (\$15 per square foot for noise walls) by the product of the average decibel reduction and the total number of residences affected. The result of this calculation is a cost per decibel per residence. This overall approach is outlined in Mn/DOT Noise Policy for Type I and Type II Federal-Aid Projects as per 23 CFR 772. If noise mitigation is found to be cost-effective, additional reasonableness factors, such as the desires of affected property owners, are considered.

Taking these factors into consideration, there are numerous residences within this noise analysis that merit noise mitigation consideration (A through K represent multiple homes). A 20-foot noise wall (Mn/DOT maximum) and a 10-foot noise wall, 9,940-feet long were placed in the eastern edge of Highway 23/71 and modeled separately to gauge their effectiveness in decreasing noise level on the receptors. Additionally, and for Alternative 2A and 2B (one intersection at CSAH 25), two separate noise walls, 20 -foot and 10-foot high and broken at CSAH 25, were modeled to gauge effectiveness.

Finally, seven additional receptors were added to the mitigation model to represent, and gauge impact of noise walls on those homes within the second row east and along the Eagle Lake shoreline. These new receptors are labeled “L through T”.

Tables 22, 23, 24, and 25 present the complete noise impact survey including existing conditions, FHWA NAC noise impact values, MINNOISE modeled noise values, resulting differences, and noise wall reduction values.

Table 22
20-Foot Noise Wall Analysis
Alternatives 1A and 1B, No Intersection, Continuous Wall

MINNOISE Receiver	Protected Residences	L₁₀ 2030 Build Levels (Daytime)	L₁₀ 2030 Build Levels With 20-Foot Wall (Daytime)	L₁₀ Reduction with 20-Foot Wall	Total Noise Reduction
A	4	69	60	9	36
B	3	75	62	13	39
C	5	75	61	14	70
D	9	74	60	14	126
E	4	65	56	11	44
F	4	70	59	11	44
G	6	73	60	13	78
H	6	72	60	12	72
I	5	66	63	<5	0
J	3	71	71	<5	0
K	2	71	71	<5	0
L	5	64	57	7	35
M	5	66	57	9	45
N	6	67	57	10	60
O	4	62	55	7	28
P	6	64	56	8	48
Q	7	64	55	9	63
R	10	67	58	9	90
S	5	66	59	7	40
T	5	62	60	<5	0
Totals		N/A	N/A	N/A	918
Length of Walls: 10,520 feet		Cost of 20-foot walls (@\$15/sq.ft) =\$3,156,000			\$3,437

(1) Daytime, or PM standards, were used in this analysis because the greatest impact from noise along the corridor was experienced during these conditions.

Table 23
10-Foot Noise Wall Analysis
Alternatives 1A and 1B, No Intersection, Continuous Wall

MINNOISE Receiver	Protected Residences	L₁₀ 2030 Build Levels (Daytime)	L₁₀ 2030 Build Levels With 10-Foot Wall (Daytime)	L₁₀ Reduction with 10-Foot Wall	Total Noise Reduction
A	4	69	65	<5	0
B	3	75	68	7	21
C	5	75	68	7	35
D	9	74	66	8	72
E	4	65	62	<5	0
F	4	70	65	5	20
G	6	73	67	6	36
H	6	72	66	6	36
I	5	66	64	<5	0
J	3	71	71	<5	0
K	2	71	71	<5	0
L	5	64	62	<5	0
M	5	66	62	<5	0
N	6	67	62	5	30
O	4	62	60	<5	0
P	6	64	62	<5	0
Q	7	64	61	<5	0
R	10	67	63	<5	0
S	5	66	63	<5	0
T	5	62	61	<5	0
Totals		N/A	N/A	N/A	250
Length of Wall: 10,520 feet		Cost of 10-foot walls (@\$15/sq.ft) =\$1,578,000			\$6,312

(1) Daytime, or PM standards, were used in this analysis because the greatest impact from noise along the corridor was experienced during these conditions.

Table 24
20-Foot Noise Wall Analysis
Alternatives 2A and 2B, One Intersection, Broken Wall

MINNOISE Receiver	Protected Residences	L ₁₀ 2030 Build Levels (Daytime)	L ₁₀ 2030 Build Levels With 20-Foot Broken Wall (Daytime)	L ₁₀ Reduction with 20-Foot Wall	Total Noise Reduction
A	4	69	59	10	40
B	3	75	62	13	39
C	5	75	61	14	70
D	9	74	60	14	126
E	4	65	60	5	20
F	4	70	61	9	36
G	6	73	61	12	72
H	6	72	60	12	72
I	5	66	66	<5	0
J	3	71	71	<5	0
K	2	71	71	<5	0
L	5	64	57	7	35
M	5	66	57	9	45
N	6	67	57	10	60
O	4	62	57	5	20
P	6	64	57	7	42
Q	7	64	56	8	56
R	10	67	62	5	50
S	5	66	65	<5	0
T	5	62	61	<5	0
Totals		N/A	N/A	N/A	783
Length of Walls: 10,372 feet		Cost of 20-foot walls (@\$15/sq.ft) =\$3,111,600			\$3,974

(1) Daytime, or PM standards, were used in this analysis because the greatest impact from noise along the corridor was experienced during these conditions.

Table 25
10-Foot Noise Wall Analysis
Alternatives 2A and 2B, One Intersection, Broken Wall

MINNOISE Receiver	Protected Residences	L ₁₀ 2030 Build Levels (Daytime)	L ₁₀ 2030 Build Levels With 10-Foot Broken Wall (Daytime)	L ₁₀ Reduction with 20-Foot Wall	Total Noise Reduction
A	4	69	65	<5	0
B	3	75	68	7	21
C	5	75	68	7	35
D	9	74	66	8	72
E	4	65	63	<5	0
F	4	70	66	<5	0
G	6	73	67	6	36
H	6	72	66	6	36
I	5	66	66	<5	0
J	3	71	71	<5	0
K	2	71	71	<5	0
L	5	64	62	<5	0
M	5	66	62	<5	0
N	6	67	62	5	30
O	4	62	61	<5	0
P	6	64	62	<5	0
Q	7	64	62	<5	0
R	10	67	64	<5	0
S	5	66	65	<5	0
T	5	62	61	<5	0
Totals		N/A	N/A	N/A	230
Length of Walls: 10,372 feet		Cost of 10-foot walls (@\$15/sq.ft) = \$1,555,800			\$6,764

(1) Daytime, or PM standards, were used in this analysis because the greatest impact from noise along the corridor was experienced during these conditions.

As Tables 22, 23, 24 and 25 illustrate, a 20-foot noise wall and a 10-foot noise wall placed within the model to maximize decibel reduction at impacted receptors reduces noise levels at a majority of the receptors. However, considering the size of either a broken wall, or one continuous wall, there is not a great density of homes which would be positively affected. Additionally, reductions at homes less than 5dBA are not included within the total noise reduction amount per Mn/DOT policy.

Results from the MINNOISE model show cost feasibility (wall construction cost divided by decibel reduction) for a continuous 20-foot noise wall of \$3,437 per decibel reduction and \$6,312 for a 10-foot wall. For two walls, broken at the CSAH 25 intersection, the cost ratio worsens due to the opening and loss of protection for those homes situated there. For two 20-foot walls, the cost feasibility is \$3,974 and for 10-foot walls in the same configuration, the cost feasibility is \$6,764.

The Final EIS will revisit the noise analysis based on the selection of a preferred alternative.

4.2.3 Wetlands

Affected Environment

Preliminary data was gathered and reviewed prior to the initiation of jurisdictional wetland delineations to identify the potential wetland habitats in the project area. These data sources included the following:

- The National Wetlands Inventory (NWI)
- The Soil Survey of Kandiyohi County, Minnesota
- The Hydric Soils List for Kandiyohi County Minnesota
- The Minnesota Protected Waters Inventory (Minnesota Department of Natural Resources)
- Aerial photographs
- U.S. Geological Service Quadrangle Maps

Jurisdictional wetland delineations were conducted in the field in August of 2006. The wetland delineations followed the U.S. Army Corps of Engineers (USACE) guidance document Identifying Wetlands of the United States (1987) also known as the 1987 Wetland Delineation Manual. The three parameters of soils, vegetation and hydrology were confirmed for each delineated wetland and recorded on USACE Routine Onsite Determination (RODM) datasheets. At a minimum, one wetland sample and one upland sample point RODM was completed for each wetland. Additional RODMs were completed if a wetland was complex, large or a problem area. The delineated wetland boundaries that occurred within the project limits were flagged and surveyed with a Global Positioning System (GPS). If it extended beyond the project limits, the remaining wetland boundary was photo interpreted to establish an approximate wetland basin size.

Each delineated wetland was typed and classified in accordance with the U.S. Fish and Wildlife Service (USFWS) publications Circular 39 Wetlands of the United States and the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et. al., USFWS/OBS 79/31).

Wetland functions and values were assessed using the Minnesota Routine Assessment Method Version 3.0 (MNRAM 3.0), the standard functional assessment tool in Minnesota. Results of the MNRAM 3.0 assessments will be used to identify key wetlands and values functions for each delineated wetland, to assist with wetland impact avoidance and minimization, and to establish a baseline data set to measure wetland mitigation objectives and goals.

Additional data gathered on each delineated wetland included the identification of any inlet and outlet features and hydrological connectivity indicators. Topographic setting, when possible, was also determined in accordance with the settings described in the Minnesota Wetland Conservation Act (WCA). Land uses adjacent to and surrounding each delineated wetland were also described. Each delineated wetland was assigned a unique identification number.

Descriptions and summaries of the delineated wetlands and assessment data are described below within the wetland impacts section and tabulated in Table 26.

Environmental Consequences

Affected Environment

The project area is surrounded by a mixture of farmland, pockets of woodland, residential and commercial development. The residential development is concentrated near the lakes and/or associated woodlots found in the general area. Residential development can also be found adjacent to the local connecting roadways. The commercial development is concentrated in an area along the TH 23/71 corridor. The farmland comprises the area between the existing roadways and the developments.

The wetlands within the project area are either isolated wetlands or ditches connected to road right of way. Nearly all of the wetlands of this local geographic area are dominated with invasive species, primarily reed canary grass (*Phalaris arundinacea*) and cattail species (*Typha* spp.) in the herbaceous layer. Small remnant stands of sedges (*Carex* spp.) are found in portions of these wetlands and other native forbs are often imbedded or persistent as well. The upland portions of the wetlands are dominated by either farmland or weedy trees and shrubs such as eastern cottonwood (*Populus deltoides*), boxelder (*Acer negundo*) and/or buckthorn species (*Rhamnus* spp.).

Regulatory Framework

Wetlands are subject to regulation under Section 404 of the Federal Clean Water Act (33 USC 1344) as administered by the U.S. Army Corps of Engineers (USACE), the Minnesota Wetland Conservation Act (WCA) (M.R. Ch. 8420), and the MNDNR Protected Waters Rules (M.R. Ch. 6615). Projects that receive federal funding through the FHWA are also subject to federal Executive Order 11990 concerning No Net Loss Wetland Protection. Mn/DOT is the designated Local Government Unit (LGU) for the WCA.

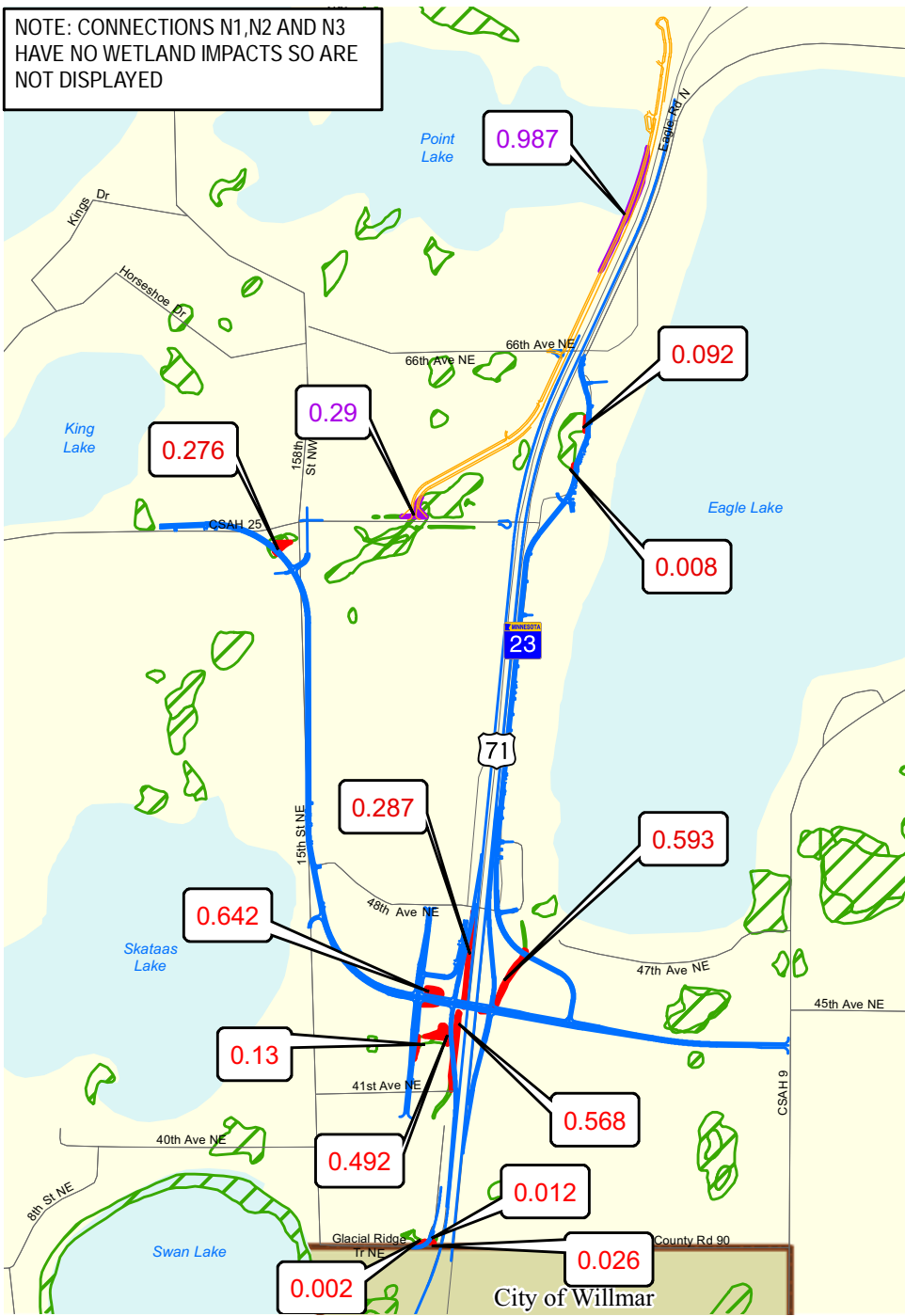
Affected Wetlands

Preliminary wetland impacts have been estimated for the different alternatives and are illustrated on Figure 13A and shown in Table 26. Using preliminary design level plans, these wetland impacts should be a relatively accurate representation of the project alternatives' effects on wetlands. The wetland impacts in the vicinity of the North Connection Alternatives have been labeled with the letter N as a prefix. The North Connection Alternatives - area wetlands were classified by interpretation of aerial photographs. The impacted wetlands associated with the remaining project build alternatives were delineated in the field.

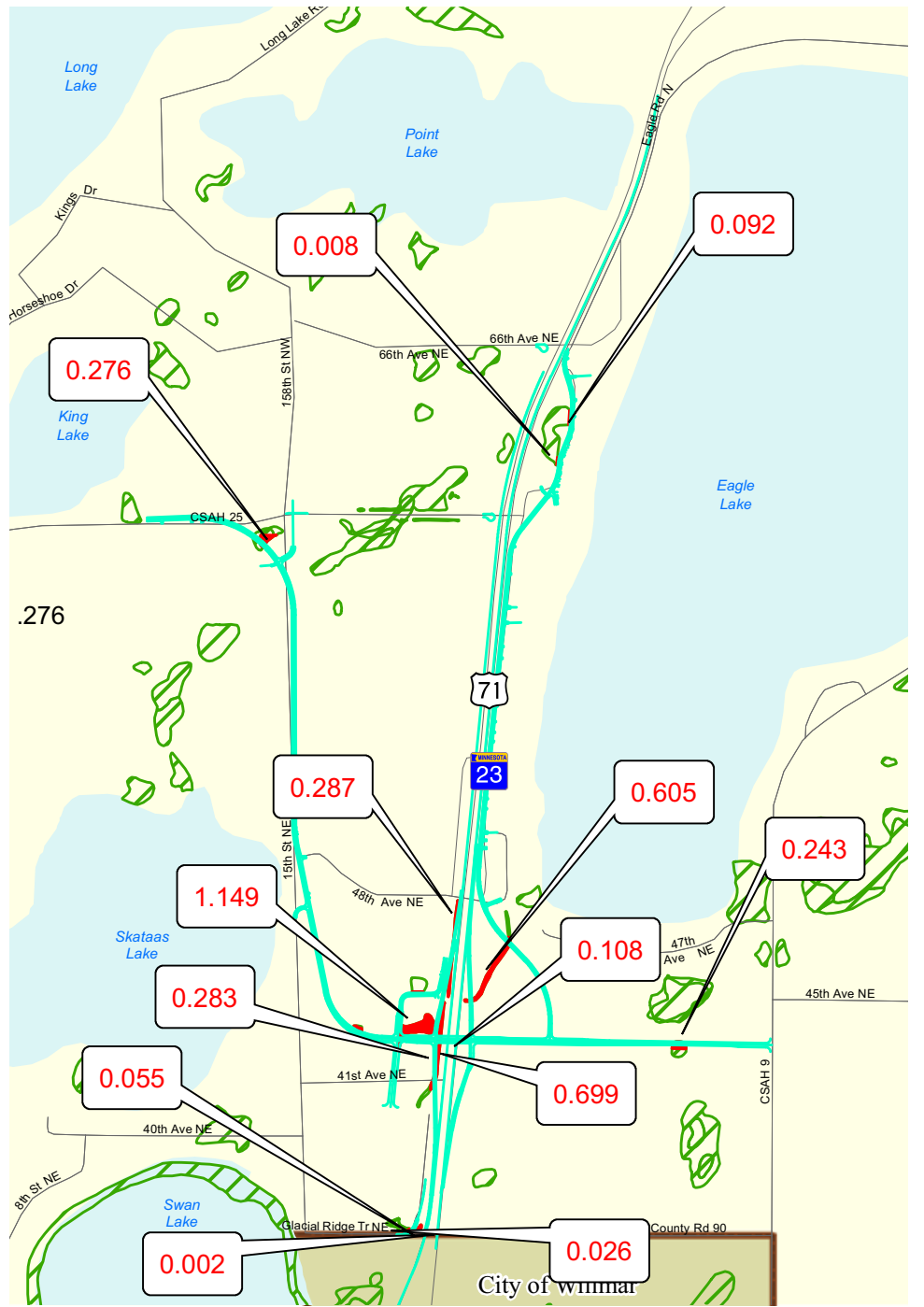
The wetlands located within the project area have a similar classification. The vast majority of the wetlands are classified as Type2 (PEMB) or Type 2/3 (PEMB/PEMC). The MNDNR ECS codes for these wetland types include a Northern Wet Meadow/Carr (WMn82) or the Prairie Mixed Cattail Marsh (MRp83). The wetlands within the road right of ways are dominated by non-native invasive vegetation and do not represent pristine examples of the ECS codes.

ALTERNATI E A N

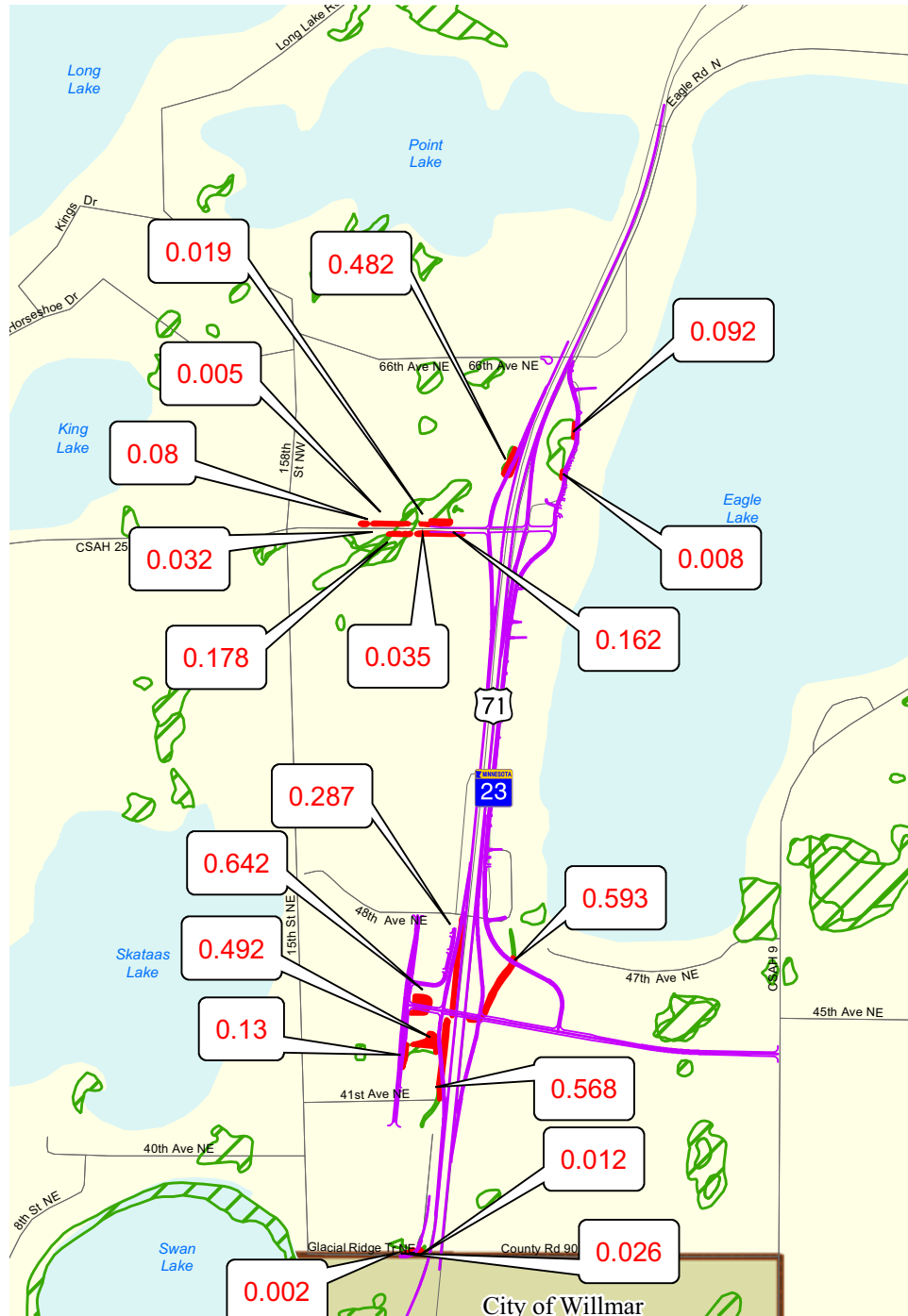
NOTE: CONNECTIONS N1,N2 AND N3 HAVE NO WETLAND IMPACTS SO ARE NOT DISPLAYED



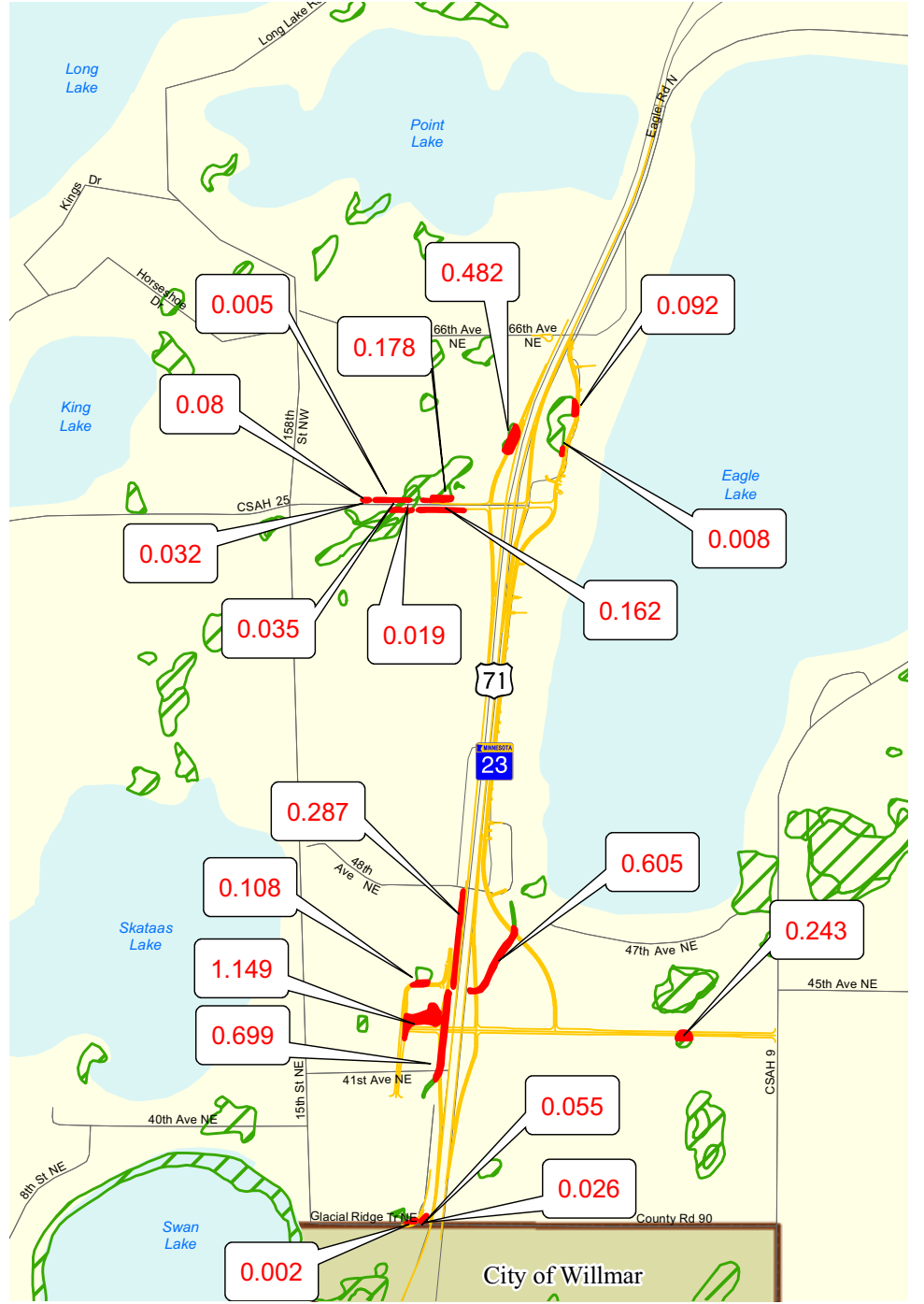
ALTERNATI E B



ALTERNATI E A



ALTERNATI E B



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FIGURE 13A ACRES OF WETLANDS IMPACTED

- Impacted Wetlands
- NWI Boundary (non-Lake)



Table 26
Descriptions and Summaries of the Delineated Wetlands and Assessment Data

Alternative Number	Wetland Type	Dominant Vegetation	Affected Wetlands (Total Acres)	MNDNR ECS	Wetland Impacts (Acres)
1A	Type 2/3 PEMB PEMC	Reed Canary Grass Cattail	7.195	MRp83b WMn82	3.129
1B	Type 2/3 PEMB PEMC	Reed Canary Grass Cattail	8.07	MRp83b WMn82	3.83
2A	Type 2/3 PEMB PEMC	Reed Canary Grass Cattail	13.479	MRp83b WMn82	3.853
2B	Type 2/3 PEMB PEMC	Reed Canary Grass Cattail	14.00	MRp83b WMn82	4.281
N1	(none)	(none)	(none)	(none)	0.0
N2	(none)	(none)	(none)	(none)	0.0
N3	(none)	(none)	(none)	(none)	0.0
N4	Type 2 LIUBH PEMC	Reed Canary Grass Cattail	176.946 (includes Point Lake)	MRp83b WMn82	1.26

Wetland Functions and Values

Wetland functions and values were measured using the Minnesota Routine Assessment Method, Version 3.0 (MNRAM 3.0).

Wetland Sequencing

The implementation of wetland sequencing or the measures taken to avoid, minimize and ultimately mitigate for wetland impacts has been initiated during the Scoping Study and preliminary design phases and will be continued through and after completion of the project. Wetland avoidance was implemented along with other criteria for alternatives analysis during the Scoping Study to screen alternatives. Wetland avoidance measures continue to be implemented during the preparation of the EIS and the related public involvement and agency coordination. Avoidance primarily involves practical shifting or placing preliminary road alignments and configurations outside of wetlands. Avoidance measures implemented during the course of the project will be described in the wetland permit application under “wetland sequencing measures”. Wetland sequencing measures include alignment shifts and design measures that avoid direct wetland impacts (i.e., avoidance) and/or side slope reductions, retaining walls, culverts and guard rails, and slight alignment shifts or design features to reduce impacts to wetlands that are unavoidable (i.e., minimization).

The implementation of wetland impact minimization measures has been implemented sparingly when needed during the pre-design and planning stages, but will be implemented thoroughly during the final design for the project as various minimization practices are detail design level elements. Reasonable wetland impact minimization measures that are best suited for and may be implemented for this project include:

-
- Road shoulder sideslope reductions from a 4:1 ratio to a 2:1 sideslope.
 - Culverts, bridging, and guard rails to minimize impact footprint
 - Slight geometric changes to reduce an unavoidable wetland impact

Wetland mitigation, the last step in the implementation of sequencing, is discussed below under the wetland mitigation section.

Wetland Permitting and Mitigation

A Combined Wetland Permit Application and Replacement Plan will be prepared at the conclusion of the final design phase for the project. The permit application will address the wetland sequencing measures that were applied to date or will be implemented subsequently, wetland impacts, and the anticipated permit approvals requested. Wetland impacts described above may be refined as the final design details are completed prior to the submittal of the permit application. A Wetland Replacement Plan is required under WCA with the wetland mitigation plan(s) as a subcomponent satisfying the USACE requirements for mitigation implementation. Implementation of wetland mitigation will follow the wetland mitigation policies and requirements of Mn/DOT, the BWSR, and the St. Paul District of the USACE. The FEIS will provide greater detail of proposed wetland impact mitigation.

4.2.4 Floodplains

Affected Environment

The Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) and associated floodway maps for the City of Willmar, Minnesota were used to determine that there are no regulatory floodplains present in the project area.

Summary

Based on the above floodplain assessment, no floodplain impacts are expected.

4.2.5 Surface Water Drainage

Affected Environment

Watershed Area and Surface Drainage

The entire project area is within the Minnesota River Watershed. The Hydrologic Unit Code (HUC) level 4 (2500) watershed is the Hawk Creek – Yellow Medicine River watershed.

The watersheds are primarily made up of agricultural land, lakes and wetlands, residential property, commercial property, and roadways. The residential and commercial property is mostly located in close proximity to the surface transportation routes and along the lake shores.

Culverts

The location and size of the major culverts were collected using a Trimble ProXR GPS unit. Table 27 summarizes the major culvert information.

**Table 27
Culvert Data**

Culvert ID	Size (inches)	Type	Comments
1043524a	24	CMP	18-inch cast iron inlet control structure at Point Lake, to 24 inch CMP outlet at Eagle Lake
1043524e	30	concrete	(No comments)
1043525b	24	CMP	Under CSAH 25
1043525g	30	concrete	Drains to Eagle Lake
1043525k	24	CMP	Under west frontage road, into right of way
1043525l	36 in. SPAN	CMPA	Arch; under 48th Ave
1043536a	72-78	concrete	Hawk Creek
1043536c	60	CMP	West Hawk Creek under 41st Avenue
1043536d	42	CMP	East Hawk Creek under 41st Avenue

Lakes

Lakes within the immediate vicinity of the project area include Eagle Lake, Point Lake, Skataas Lake, Swan Lake, and Long Lake.

Storm water from the project area flows either directly or indirectly to each of these lakes. Figure 13B illustrates area lakes, subwatershed areas, and the hydrologic routing, respectively. Table 28 identifies all surface waters in the Highway 23/71 project area.

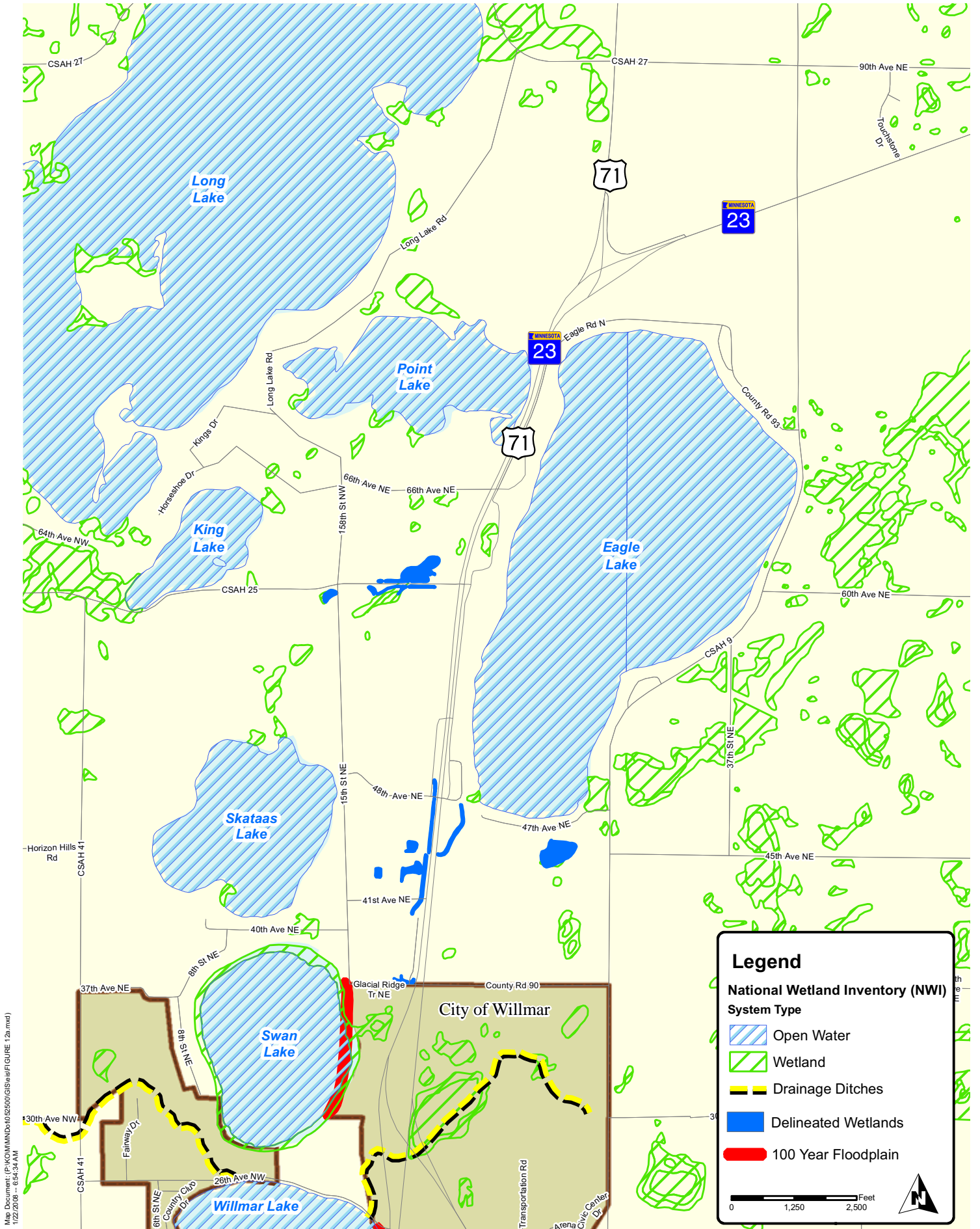
Point Lake is hydrologically connected to Eagle Lake via a culvert that Kandiohy County controls by a manually operated valve. County personnel open the valve to release water from Point Lake periodically throughout the year.

The western length of Eagle Lake is located adjacent to the Highway 23/71 corridor and is hydrologically downstream of the project alternatives. Water from Eagle Lake flows to Swan Lake via Hawk Creek.

Swan Lake is hydrologically downstream of the all project alternatives and Skataas Lake. Skataas Lake is located hydrologically upstream of Swan Lake.

**Table 28
Surface Waters**

Name	Public Waters Inventory (PWI)				MPCA Impaired Waters	
	Number	Section	Township	Range	Impaired	Pollutant
Eagle Lake	34-171	19,30;24,25	120	34;35	Yes	Mercury
Swan Lake	34-186	2;35,36	119;120	35	No	None
Long Lake	34-192	11-15,22,23,26,27	120	35	Yes	Mercury; Nutrients
Point Lake	34-193	23,24	120	35	No	None
King Lake	34-195	23,26	120	35	No	None
Skataas Lake	34-196	26,35	120	35	No	None
Unnamed Creek	from 196 to186	35	120	35	No	None
Hawk Creek	from 171 to180	25	120	35	No	None



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FIGURE 13B HYDROLOGICAL FEATURES



Hawk Creek

Hawk Creek flows from Eagle Lake south and west to Swan Lake. Highway 23/71 currently crosses Hawk Creek located between Eagle and Swan Lakes. Hawk Creek flows south from Eagle Lake and turns to cross under Highway 23/71 near the proposed County Road 90 interchange, and runs along the western side of the highway before meandering west to Swan Lake. Hawk Creek is a natural waterway under the jurisdiction of the MnDNR that was engineered to divert water flow from Eagle Lake during the 1930's as a Works Progress Administration (WPA) project. All of the project build alternatives will impact the existing creek channel.

Environmental Consequences

Build Alternatives

All of the build alternatives (1A, 1B, 2A, and 2B) require rerouting of Hawk Creek in the vicinity of the proposed Highway 23/71 relocated CR 90 interchange. Figures 14A and 14B illustrate the Highway 23/71 build alternatives overlain on the area's minor watersheds.

Watershed Area and Surface Drainage

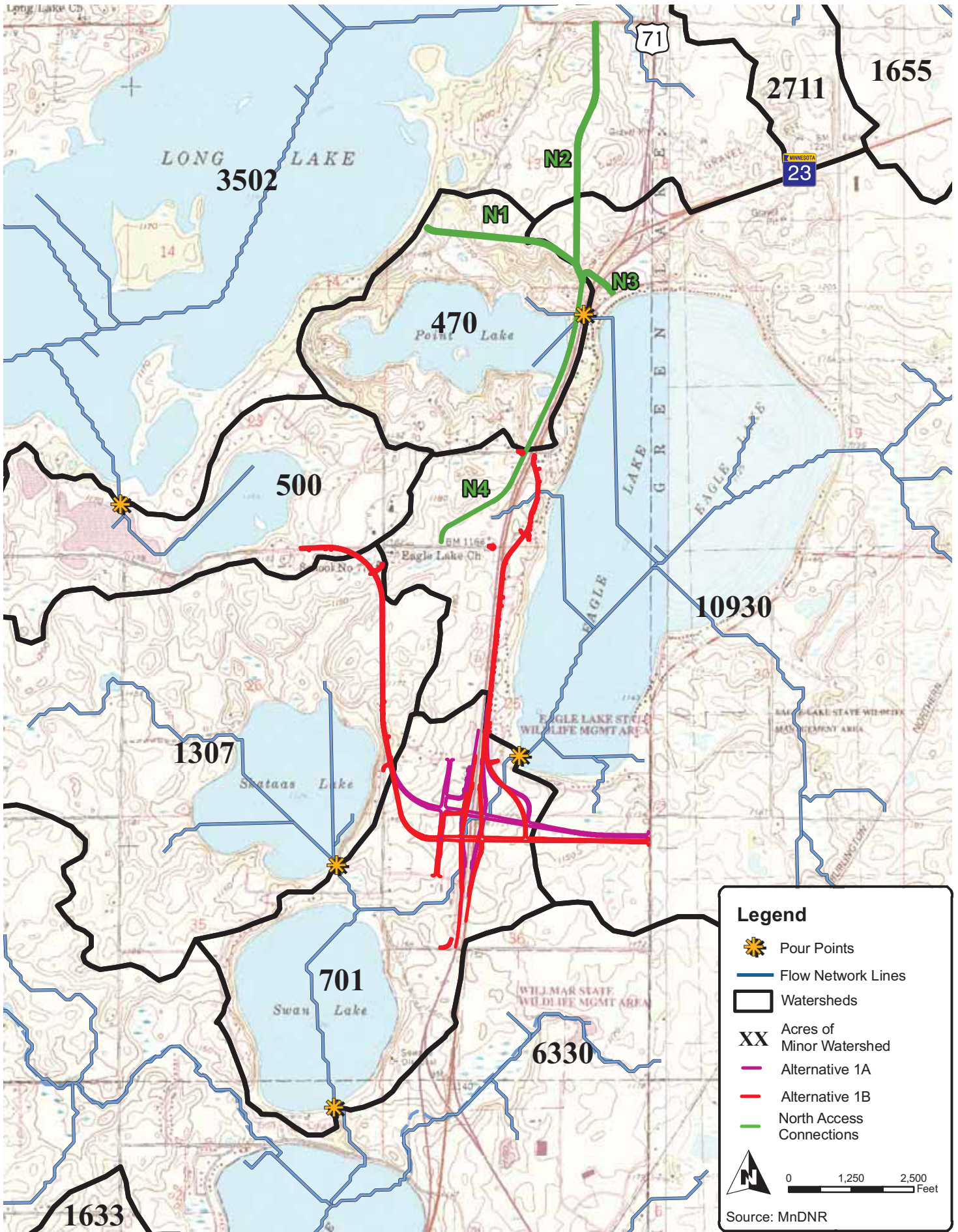
In general, the proposed alternatives will have minimal impacts on the actual watershed areas and their boundaries. Culverts and ditches will be incorporated into the final design in order to maintain existing drainage patterns. Storm water ponds will be used to maintain pre-development flow rates where economically feasible; however, some areas may experience higher peak flows at culvert crossings as a result of an increase in impervious surface.

Lakes

The hydrologic connections between the lakes will not change as part of any of the project alternatives. Lakes hydrologically downstream of the project will receive increased surface runoff rates and volumes as a result of adding impervious surfaces.







Culverts


Each of the proposed alternatives for Highway 23/71 may affect some portion of the drainage system as described below and depicted in Figures 14A and 14B. Several new culverts and ditches would need to be constructed in order to maintain existing drainage patterns, depending on the alternatives selected. Nearly all of the existing culverts would need some type of extension or replacement to accommodate wider roadways. Tables 29 and 30 summarize the number of major culvert crossings (culverts 24 inches and larger) and major culverts requiring replacement for each build alternative.



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Legend

-  Pour Points
-  Flow Network Lines
-  Watersheds
- XX** Acres of Minor Watershed
-  Alternative 1A
-  Alternative 1B
-  North Access Connections

 0 1,250 2,500 Feet

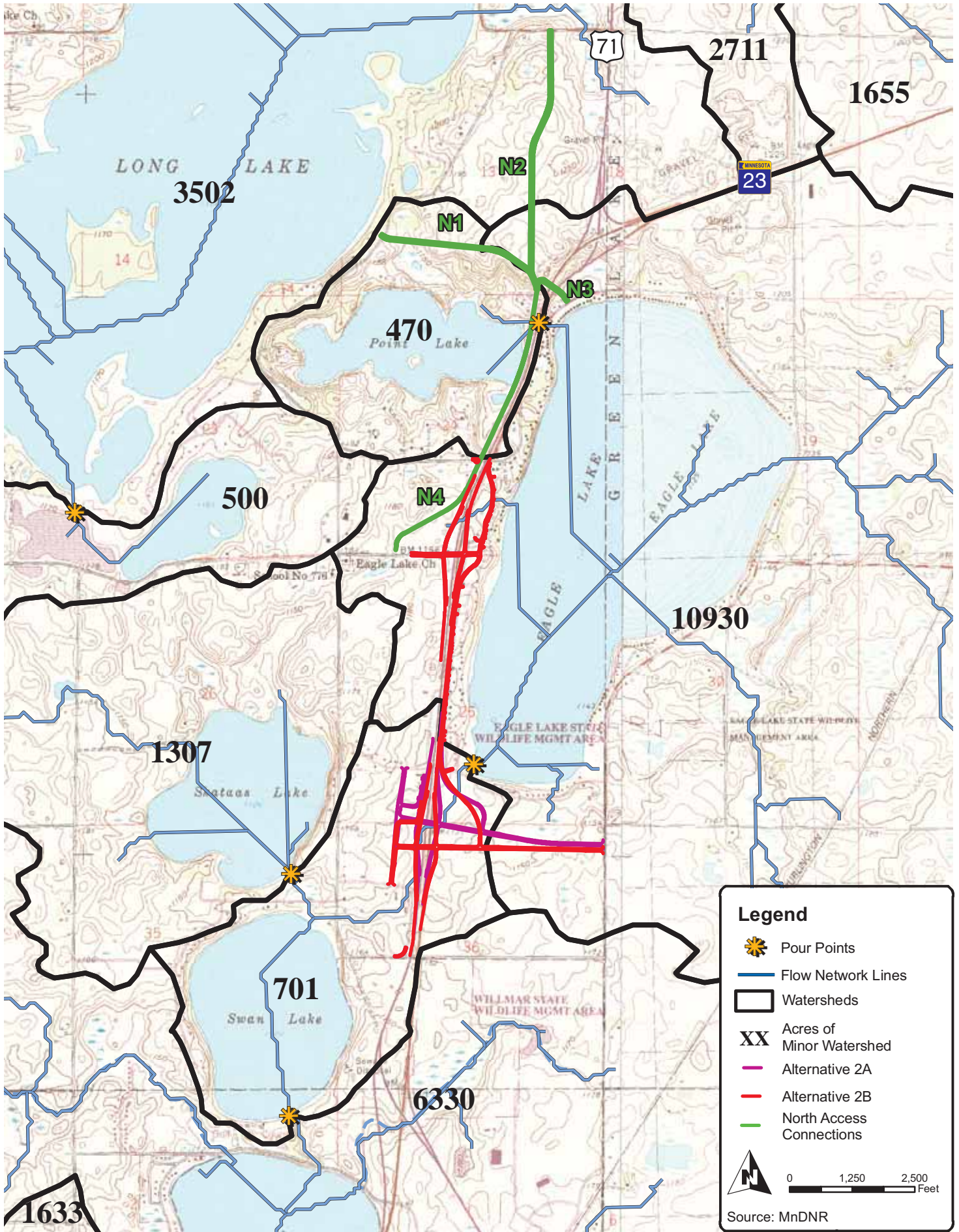
Source: MnDNR



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FIGURE 14A
MINOR WATERSHEDS
ALTERNATIVES 1A & 1B






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Legend

-  Pour Points
-  Flow Network Lines
-  Watersheds
- XX** Acres of Minor Watershed
-  Alternative 2A
-  Alternative 2B
-  North Access Connections

 0 1,250 2,500 Feet

Source: MnDNR



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FIGURE 14B MINOR WATERSHEDS ALTERNATIVES 2A & 2B



**Table 29
Culvert Analysis**

Culvert ID	Size In Inches	Alternative Analysis			
		1A	1B	2A	2B
1043524a	24	keep	keep	keep	keep
1043524e	30	keep	keep	keep	keep
1043525b	24	remove	remove	replace	replace
1043525g	30	replace	replace	replace	replace
1043525k	24	keep	keep	keep	keep
1043525l	36 SPAN	remove	remove	remove	remove
1043536a	72-78	replace	replace	replace	replace
1043536c	60	keep	keep	keep	keep
1043536d	42	keep	keep	keep	keep

**Table 30
Culvert Impacts**

Alternative		Mainline Culvert Crossings	Culverts Requiring Replacement	Culverts to be Removed
Alternative 1A		9	2	2
Alternative 1B		9	2	2
Alternative 2A		9	3	1
Alternative 2B		9	3	1
North Connection Alternatives	N1	0	0	0
	N2	0	0	0
	N3	0	0	0
	N4	1	1	0
Alternative 3 – No-Build		9	0	0

There are a number of driveway culverts and minor culverts (under 24 inches) that would need to be replaced as part of the project also.

If increased capacity is needed for the culverts, this could be achieved by larger or multiple culverts, increased grade on culverts, and/or more hydraulically efficient inlets. Any culvert improvements would need to consider stream slope, erosion potential, upstream and downstream conditions, and watercourse capacity.

Alternative 1A – CR 90 Interchange (Northern Alignment)

Hawk Creek will require rerouting. Five culverts could be removed in areas where current TH 23/71 connections will be closed. Nine culverts will require replacement. In addition, any new road construction will require culverts to facilitate drainage.

Alternative 1B – CR 90 Interchange (Southern Alignment)

Alternative 1B will have impacts similar to Alternative 1A (CR 90 northern alignment). However, the alignment of CR 90 is shifted to the south, which would require the Hawk Creek realignment to be slightly different than it would be under Alternative 1A.

Alternative 2A – CR 90 Interchange (Northern Alignment) and CSAH 25 Interchange

Hawk Creek will require rerouting. Three culverts could be removed at closed intersections with Highway 23/71. Twelve culverts will require replacement. In addition, any new road construction will require culverts to facilitate drainage.

Alternative 2B – CR 90 Interchange (Southern Alignment) and CSAH 25 Interchange

Alternative 2B will have impacts similar to Alternative 2A (CR 90 northern alignment). However, the alignment of CR 90 is shifted to the south, which would require the Hawk Creek realignment to be slightly different than it would be under Alternative 2A.

North Connection Alternatives

Connection Alternatives N1 through N4 include new road construction and will require culverts and drainage design in order to maintain existing drainage patterns. In addition, Connection N4 would require extending or replacing minor culverts along the west side of Highway 23/71 and drainage structures where N4 would intersect CSAH 25.

No-Build Alternative

Other than regular maintenance and repairs, no culverts would need to be removed or replaced.

Mitigation

All of the alternatives (1A, 1B, 2A, and 2B) require rerouting at the portion of Hawk creek that flows under Highway 23/71 to accommodate the new CR 90 interchange. Options include installing a long skewed culvert under the proposed roadway, or shorter perpendicular culverts crossing the highway with portions of a realigned channel.

The lost stream channel length and associated creek overflow area will be mitigated through new meandered stream reaches and excavated areas adjacent to the stream for replacement of floodplain storage areas. The mitigation features will be designed to maintain the existing flood profiles, meaning that the 100-year high water levels under the existing conditions will not be increased under the proposed project.

The design of the preferred alternative is anticipated to include Best Management Practices (BMPs) such as detention ponds, vegetated drainage swales that outlet into wetlands or treatment ponds, and curbs and catch basins in any urban design segments. The intent of these systems will be to maintain existing flow rates, volumes, and drainage patterns to the maximum extent practicable.

4.2.6 Water Quality

Affected Environment

Existing Watercourses and Water Bodies

The major watercourse that could be directly impacted by this project is Hawk Creek. Other water bodies that could be impacted by this project include Eagle Lake, Point Lake, and Swan Lake as they will receive storm water runoff from the project area.

Long Lake is impaired for nutrients and for excessive Mercury. Eagle Lake is also designated by the Minnesota Pollution Control Agency (MPCA) as impaired for Mercury. Total Maximum Daily Loads (TMDLs) have not been established for Long Lake or Eagle Lake.

Environmental Consequences

All Alternatives

Temporary and permanent changes in land use can lead to impacts on receiving waters.

Land disturbing activities associated with the construction of the project could contribute to erosion and sedimentation, which could cause increased turbidity and nutrient levels in the receiving lakes and creek.

An elevated level of highway runoff and associated contaminants including sediments, nutrients, heavy metals, oil, grease, and deicing chemicals could result from the project on a more permanent basis. The water quality of Point Lake, Eagle Lake, Hawk Creek, Swan Lake, and Skataas Lake could be impacted as a result of the additional impervious surfaces and contaminants associated with runoff from these surfaces. However, these impacts are expected to be minimal since water quality mitigation is included as part of the NPDES Construction Storm Water Permit Program, which is required for the construction of the Highway 23/71 project. These impacts are typically mitigated through wet sedimentation basins, infiltration practices, filtration ditches, and structural pollution control devices.

Table 31 shows the existing and proposed impervious surfaces (in acres) that would be created for each alternative. Existing acreage values from impervious surfaces include public roadway-related surfaces in the project area that would be affected by the project alternatives, including township and county roadways within the perimeter of the project area. These values include new and upgraded existing roadways associated with the project, including gravel and paved roadway surfaces, shoulders, and ditch slopes. Values do not include private driveways, buildings, or parking lots.

Table 31
Existing and Proposed Impervious Surface Area by Alternative

Existing Impervious Roadway Surface	Alternative	Proposed Increase (acres)	Total Impervious Surface by Alternative
27.8 acres <i>(from CSAH 25 to the southern project limits)</i>	1A	27.6	55.4
	1B	27.0	54.8
	2A	26.7	54.5
	2B	25.2	53.0
	3	0.0	27.8
0.96 acres <i>(from CSAH 25 to the northern project limits)</i>	N1	4.5	5.45
	N2	6.0	6.96
	N3	2.0	2.96
	N4	6.7	7.66

Alternative 1A – CR 90 Interchange (Northern Alignment)

The runoff associated with the construction of a new road connecting the relocated CR 90 to CSAH 25 along 15th Street NW would create elevated levels of runoff and could impact the water quality of Skaatas Lake, Hawk Creek, and Swan Lake.

Alternative 1B – CR 90 Interchange (Southern Alignment)

Water quality impacts would be approximately the same as Alternative 1A.

Alternative 2A – CR 90 Interchange (Northern Alignment) and CSAH 25 Interchange

The runoff associated with the construction of a new road connecting the relocated CR 90 would create elevated levels of runoff and could impact the water quality of Skaatas Lake, Hawk Creek, and Swan Lake.

The interchange at CSAH 25 would create elevated levels of runoff and could impact the water quality of the small intermittent streams that ultimately flow into wetlands and Eagle Lake.

Alternative 2B – CR 90 Interchange (Southern Alignment) and CSAH 25 Interchange

Water quality impacts would be approximately the same as Alternative 2A.

North Connection Alternatives

N1 – The erosion and sedimentation associated with the construction of a new road connecting 26th Street to Long Lake Road would create elevated levels of runoff and could impact the water quality of Point Lake and Eagle Lake.

N2 – The erosion and sedimentation associated with the construction of a new road connecting 26th Street to CSAH 27 would create elevated levels of runoff and could impact the water quality of Long Lake, Point Lake, and Eagle Lake. This is the only alternative that would impact the Long Lake watershed which is listed as an impaired water for mercury and nutrients.

N3 – The erosion and sedimentation associated with the construction of a new road and overpass connecting 26th Street to County Road 93/Eagle Road North would create elevated levels of runoff and could impact the water quality of Point Lake and Eagle Lake.

N4 – The construction of a new road connecting 26th Street to CSAH 25 as a western frontage road would require filling of the east side of Point Lake. Erosion, sedimentation, and runoff associated with the construction and operation of this new road would create elevated levels of runoff and could impact the water quality of Point Lake.

No-Build Alternative

This alternative will have no increased impacts on the water quality of the existing watercourses or water bodies over the existing condition.

Mitigation

Since this project disturbs one or more acres of land area, a National Pollutant Discharge Elimination System (NPDES) permit is required by the MPCA to ensure

that potential damage from erosion and sedimentation will not impact water quality adversely. Development of a storm water pollution prevention plan (SWPPP), as required by the NPDES permit, will help define Best Management Practices (BMPs) to mitigate effects of storm water runoff and erosion during construction and after completion of the proposed roadway improvements.

Ponding will likely take place on partial parcels of land that become isolated because of limited access and size. Storm water ponds should be strategically placed in order to capture substantial amounts of the roadway runoff for treatment. Roadway ditches will collect the remainder of the roadway runoff, since the project is in a rural roadway section in most places, it is not feasible or economical to capture and treat all of the storm water from the roadway.

Additional impervious surfaces created by this project could have negative effects on the receiving waters, and mitigation for this should be accomplished at more feasible locations within the tributary watershed. For example, there is a subwatershed with one acre of impervious surface within the project area, and land acquisition will be required in order to build a pond to treat the runoff prior to entering a water body. If there were an area outside of the project area where a pond could be created to treat a subwatershed of the water body with ten acres of impervious surface at the same cost or with reduced impacts, then that option will be explored. The example situation may not be possible, however, and land acquisition may therefore be required for storm water BMPs.

Permitting Requirements

MPCA-NPDES Construction Storm Water Permit

The project will involve disturbing one or more acres of land area, which requires that an NPDES Construction Storm Water Permit (#MN R110000) be obtained from the MPCA. A permit application must be submitted seven days prior to conducting any construction activity.

This permit has both temporary directives used primarily during construction, as well as permanent requirements that the project must meet. The requirements of the permit are intended to minimize the erosion and sedimentation caused by construction activities and impervious surfaces. The following is a brief summary of the most notable requirements:

Develop a Storm Water Pollution Prevention Plan (SWPPP)

1. Address the potential for discharge of sediment and/or other potential pollutants from the site.
2. Identify a person knowledgeable and experienced in the application of erosion prevention and sediment control BMPs to oversee SWPPP implementation.
3. A narrative describing the timing for installation of all erosion prevention and sediment control BMPs required by the permit.
4. Location and type of all temporary and permanent erosion prevention and sediment control BMPs.
5. Site maps showing existing and final grades, pre and post-construction storm water runoff drainage areas and directions, and impervious surfaces and soil types.

-
6. Identify areas not to be disturbed and areas of phased construction to minimize duration of exposed soils.
 7. Identify surface waters and existing wetlands.
 8. Identify storm water mitigation measures required.

Erosion Control

1. Use of horizontal slope grading, construction phasing, and other techniques designed to reduce erosion.
2. Implementation of temporary protection controls to protect exposed soil areas such as temporary wood chip cover, seeding and mulching, straw bale checks, silt fences, and stabilization of steep slopes.
3. Ditch bottoms must be stabilized within 100 feet of any Water of the State within 24 hours.
4. Prior to any connection of a pipe or outfall structure to a Water of the State, temporary energy dissipation methods to control the outfall water must be implemented.
5. Implementation of permanent stabilization such as turf establishment.
6. Implementation of energy dissipation practices in areas of concentrated flow.

Sediment Control

1. Sediment control BMPs shall be in place on all down gradient perimeters before up gradient construction disturbance begins.
2. There shall be minimization of vehicle soil tracking on to paved surfaces.
3. Implementation of temporary and permanent storm water ponds.
4. Implementation of bioretention and infiltration practices.

It should be noted that a new NPDES Construction Storm Water Permit will be issued in August 2008. The new permit may have additional or different requirements. If the final design of the project begins after the new permit is issued, then the provisions of the new permit will be required.

MPCA-TMDL

If runoff from the site discharges to an impaired water which has an approved TMDL implementation plan containing requirements for construction storm water discharges, the following must be part of the Storm water Pollution Prevention Plan:

1. Identify the receiving water and the areas of the site discharging to it; and,
2. BMPs that are appropriate for the site and sufficient to comply with all applicable requirements of the TMDL implementation plan.

Currently, TMDLs have not been established for any of the receiving waters. If a TMDL is established for any of the project's receiving waters prior to final design, the proper controls will need to be integrated into the design to meet the TMDL.

All of the project alternatives will have impacts on Eagle Lake which is listed as an impaired water for mercury by the MPCA. Only Connection Alternative N2 would

have impacts in the Long Lake watershed which is listed as impaired for mercury and nutrients by the MPCA.

A mercury TMDL would not apply to a project of this type. A nutrient TMDL could impact the design of the storm water BMPs, but would be ultimately dictated by the findings of the TMDL study.

MnDNR – Public Waters Permit

A Public/Protected Waters Work Permit is required from the Minnesota Department of Natural Resources (MnDNR) for any work that is done below the Ordinary High Water level.

Watershed District Permits

The project is situated in the Minnesota River Watershed and more specifically the Hawk Creek – Yellow Medicine River Watershed. However, there is no watershed district that governs water quality or storm water controls for the project area.

4.2.7 Geology/Groundwater/Aquifers

Affected Environment

The surface topography is typically flat to gently sloping with numerous lakes, hills, and low ridges. The land surface results from the glacial history and deposits related to the Alexandria and Altamont Moraine complex associations. The Alexandria Moraine was formed during the late Pleistocene era when ice of the Wadena Lobe glacier stagnated in place, leaving ice buried beneath and within supraglacial materials. These deposits resulted in the formation of numerous lakes and ponds as large blocks of ice which melted out forming kettles, eskers, swales and kames. The Wadena lobe till material tends to be calcareous with very little shale and typically has a sandy to clayey texture. The Alexandria Moraine deposits were later modified when ice from the Des Moines Lobe later overrode the stagnant ice moraine and deposited a gray silty to clayey till (generally greater than 50 percent fines). These later deposits typically contain relatively high percentage of shale clasts and are mapped within the corridor area and are known as the Altamont Moraine Association.

The thickness of the glacial deposits is on the order of 200 to 500 feet thick in the project area and are typically 250 feet thick based on well logs within the corridor. In many areas, the glacial tills are buried beneath lacustrine and outwash deposits that formed during the final episodes of the Des Moines Lobe (Altamont Moraine) stage. The uppermost bedrock underlying the glacial deposits consists of undifferentiated Cretaceous shale. Precambrian gneissic and granitic rocks have been mapped in some locations within Kandiyohi County and may subcrop locally through the shale under the glacial deposits.

The primary aquifer is in the surficial outwash sands and regional groundwater is present at shallow depths. The overall groundwater flow direction tends to be south, southwest through the corridor. The largest lakes within the project area include Point Lake and Eagle Lake. Other lakes within one-half mile of the project area include Ringo Lake, Long Lake, King Lake, Skataas Lake, Swan Lake, and Willmar Lake.

According to the 1972 USGS Hydrogeologic Atlas “Water Resources of the Minnesota River-Hawk Creek Watershed, Southwestern Minnesota”, the surficial deposits at the site consist of quaternary sands and gravel. Glacial till and buried sand

and gravel underlie surface deposits. Uppermost bedrock in the area is Cretaceous Shale, encountered at approximately 900 feet above mean sea level. Cretaceous rocks are approximately 200 feet thick and are underlain by Precambrian granite. Aquifers in the area include unconsolidated sand and gravel and Cretaceous Sandstone. The water table is at approximately 1125 to 1150 feet above mean sea level. Shallow groundwater flow is expected to be to the south-southwest.

Environmental Consequences

Build Alternatives

Impacts to aquifers from construction of these alternatives would be negligible due to the confining layers of loam to clay loam overlying the aquifers. Potential minor impacts could occur near areas where streams or other surface waters, such as wetlands, may have connections to surficial sand and gravel aquifers. It is also anticipated that all of the build alternatives would require the abandonment of private wells and impact drain tile systems as a result of right-of-way acquisitions and relocations.

Alternative 3 – No-Build

This alternative will not impact site geology or groundwater.

Mitigation

The abandonment of any wells will be conducted in accordance with Minnesota Department of Health requirements. Drain tile systems will be maintained during and after construction. Further mitigation measures will be described in the Final EIS for the preferred alternative if necessary.

4.2.8 Wild and Scenic Rivers

Affected Environment

There are no wild and scenic rivers in the project area.

Environmental Consequences

None of the proposed alternatives will impact wild and scenic rivers.

Mitigation

No mitigation measures are necessary since there are no wild and scenic rivers impacted by the proposed project.

4.2.9 State/Federal Threatened & Endangered Species

Affected Environment

State

State listed Endangered, Threatened and Special Concern species are regulated under the Minnesota Endangered Species Statute (M.S. Sec. 84.0895) as administered by the MNDNR. Records of state listed species occurrences and unique natural resources are maintained in the MNDNR Natural Heritage Information System (NHIS) database. A review request of the NHIS was submitted to the MNDNR and the response is included in Appendix B and discussed below under environmental consequences.

The MNDNR response to the NHIS search request showed 4 occurrences of state listed species or unique natural resources within a one mile radius of the project area. Three of these occurrences are beyond the immediate project area, including;

- A bald eagle nesting area located on the northwest shore of Long Lake approximately 2 miles northwest of the project limits and across a large lake.
- A colonial water bird nesting area also located on Long Lake
- The state and federally listed western-prairie-fringed orchid located on the west side of Spicer approximately 3 miles north of the north project terminus. Although it is beyond the one mile search area of the NHIS, this occurrence was provided due to its status as a federally Threatened species.

Habitats or conditions within the project limits for these three occurrences are limited. Habitats and conditions for bald eagles are widespread throughout the project area and for that matter the northern half of Kandiyohi County with its widespread and abundant lakes and forest cover. Suitable nest trees are scattered around Point and Eagle Lakes, as well as the tens of dozens of lakes in the area. The nature of the project is such that little to no impacts on these suitable habitat elements will occur. The potential for suitable potential nesting water bird habitat is low due to the lack of islands or other predator free landforms in Point and Nest Lakes. There is no remnant prairie or suitable existing habitat within or adjacent to the project for the western-prairie-fringed orchid.

The fourth and only NHIS occurrence in the immediate project area is for an aquatic plant species occurring in Point Lake, the sea naiad (*Najas mariana* – state status, Special Concern Species). The sea naiad’s preferred habitat is littoral zones of open water, areas restricted to the lake.

Federal

The federal Endangered Species Act of 1973, as amended (USC 1531 – 1544) regulates federal Threatened and Endangered Species as administered by the U.S. Fish and Wildlife Service (USFWS). Projects that receive federal funding or involve a federal agency action are required to consider and if necessary, implement Section 7 Consultation as defined under the Act. The USFWS reviews proposed projects, makes a “determination of effect” and issues a decision on the need for a Biological Assessment for a Biological Opinion prepared under Section 7 Consultation for the project.

The project county is located within the breeding range of the bald eagle (*Haliaeetus leucocephalus* – recently delisted as a Threatened species, however, still protected by the Bald Eagle Protection Act) and the distributional range of the western prairie fringed orchid (*Lespedeza leptostachya* – Threatened). Records of occurrences of these species in the County are available on the MNDNR Natural Heritage Information System (NHIS) database and from the USFWS.

Mn/DOT acting as the non-federal representative for the FHWA, has determined that the action (project) may affect, but is not likely to adversely affect federally listed species or designated critical habitat and requested concurrence from the USFWS that consultation under Section 7 of the Endangered Species Act, as amended, is complete. The Mn/DOT letter is provided in Appendix C.

Environmental Consequences

State

The only NHIS occurrence in the immediate project area that will be potentially affected by a project alternative is the sea naiad, a plant species occurring in Point Lake (*Najas mariana* – state status, Special Concern Species). This resource will be potentially affected by Connection Alternative N4, which would require fill along the eastern shoreline of Point Lake to construct the access alternative. The sea naiad's reported sighting in Point Lake was not in the vicinity of North Access Alternative N4's potential fill area; however, the MnDNR indicated it prefers shallow waters and therefore any shoreline area may contain the species.

Federal

The USFWS concurred that the action (project) may affect, but is not likely to adversely affect federally listed species or designated critical habitat and concurred that consultation under Section 7 of the Endangered Species Act, as amended, is complete. Because the project will not be constructed for several years, the concurrence was reached with the condition that the consultation process will need to be revisited and the action re-evaluated in the future closer to the start of construction.

Mitigation

State

Avoidance of impacts to the sea naiad's habitat in Point Lake will be implemented by avoiding dredge and fill impacts to the lake below the ordinary high water level (OHWL). This is the extent of the mitigation necessary for the sea naiad and is based on the advisement of the MnDNR through the early agency coordination process.

Federal

Although no adverse affects (impacts) to federally listed species are anticipated according to the USFWS, due to potential for construction several years from now, the Section 7 Consultation process will be revisited and reevaluated at a later date closer to construction.

4.2.10 Fish & Wildlife

Affected Environment

Regulatory Background

Applicable federal rules and policies on fish and wildlife resources include the Fish and Wildlife Coordination Act (USC 661 – 667) requiring federal projects to coordinate for fish and wildlife resources, the Migratory Bird Treaty Act as administered by the USFWS, and FHWA policies on fish passage, wildlife/transportation conflicts, and other relevant environmental topics. Also included as issues under fish and wildlife resources include federally set aside National Wildlife Refuges, Waterfowl Production Areas (WPAs), and federal easements for fish and wildlife habitats. Transportation related wildlife mortality (vehicle-animal conflicts) is also an issue under the FHWA guidance addressed under the federal subject.

Existing Conditions

There are no concentrations of road killed animals or an existing road kill problem within the project limits. This is largely an artifact of autecology and geography. There are no animals that herd or with concentrated movements or migrations across the landscape, nor any geographic features that funnel or concentrate animal movement. Minnesota's wildlife is diffusely and evenly distributed across the landscape, especially white tailed deer, the most important animal in the state for vehicle-animal conflicts. Deer road kill occurs "anywhere" in the state and is usually not concentrated enough to warrant special measures to reduce road kill. The Blanding's turtle is a state Threatened species that is vulnerable to road kill, but none are known to occur in this region of the state.

At the state level, regulated fish and wildlife resources include MNDNR Wildlife Management Areas (WMAs), State Wildlife Refuges, State Natural Areas (SNAs), designated Shallow Game Management Lakes, and Designated Trout Streams. Public boat accesses provide access to lakes, public waters, and navigable waters many of which are also managed fisheries by the MNDNR. Other important fish and wildlife resources include Nature Conservancy preserves, County owned wildlife refuges, and designated public bird sanctuaries.

Fish and wildlife habitats in the project area are representative of west central Minnesota. A field reconnaissance of the project area was conducted by a biologist during the wetland delineation to characterize and ground truth the habitats under the MNDNR Ecological Classification System (ECS). At the highest level of the ECS, the project is geographically located within the Minnesota River Subsection of the North Central Glaciated Plain (CGP) Section of the Prairie Parkland Province. The project is near the eastern edge of the Province in close proximity to the Eastern Deciduous Forest Province.

The majority of the project area is farmland and residential lots for which there are no ECS codes. ECS codes only reflect presettlement ecological conditions. ECS based upland habitats found within the project include Southern Mesic-Oak Basswood Forest (MHs38), Southern Mesic Maple-Basswood Forest (MHs39), Southern Wet-Mesic Hardwood Forest (MHs49), and cropland and old field habitats that were most likely native prairie in the presettlement condition. Lakeshore habitats found along the margins of the lakes in the project area include the Inland Lake Sand/Gravel/Cobble Shore (LKi32) and Inland Lake Clay/Mud Shore/Mud Shore (LKi54) habitats. Wetland ECS habitats in the project area include Prairie Mixed Cattail Marsh (MRp83) and Northern Wet Meadow/Carr (WMn82).

Environmental Consequences

Project Effects and Findings

The project area was inspected for nesting swallow colonies per the Migratory Bird Treaty Act requirements. No colonies or suitable habitat elements for colony establishment were documented. No existing bridges over or near water are present within the project limits. Hawk Creek, the channelized creek hydrologically connecting Eagle and Swan Lakes, is the only potential fish passage waterway within the project limits. Anecdotal data indicates that the ditched creek may be utilized during the spring high water spawning period, in particular by northern pike (*Esox*

lucius) a managed species. Presently, there is limited existing fish passage under the existing alignment.

There are no federal National Wildlife Refuges, National Preserves or Wilderness Areas, or Waterfowl Production Areas within or immediately adjacent to the project area. The wetland located southeast of the intersection of CSAH 25 and 15th Street NE, originally was enhanced with the use of federal money and the USFWS staff. The federal money was used in the construction of the water control structure and vegetating of the upland buffer. In a conversation with staff of the USFWS office in Litchfield, Minnesota, it was confirmed there was no federal easement on this wetland. USFWS did not foresee any jurisdictional complications if the wetland was impacted for this construction project.

There are no MNDNR WMAs, State Wildlife Refuges, SNAs, designated Shallow Game Management Lakes, and Designated Trout Streams within or immediately adjacent to the project limits. A WMA located approximately ¼ mile south of the southern project terminus in the southwest quadrant of the TH 23/71 and County Road 90 intersection will not be affected by the project. A MnDNR Public Access is located at the south end of Eagle Lake but will not be affected by the proposed project. There are no other public or privately owned important designated fish and wildlife habitats or elements within or immediately adjacent to the project limits. Wildlife habitats affected by the project are primarily farmland and existing highway right-of-way habitats.

Mitigation

Although no migratory bird nesting concentrations were present, the Mn/DOT policy on minimizing potential impacts to migratory birds during highway construction will be followed if nesting concentrations are encountered prior to construction. Mn/DOT's policy conforms to the Federal Migratory Bird Treaty Act, which requires a depredation permit if active nests and/or harassment of nesting birds occurs.

Fish passage solutions for Hawk Creek will rely on additional and ongoing dialogue with the Mn/DNR Fisheries Biologist participating in the early agency coordination. If the data indicates that fish passage measures are necessary, then the appropriate fish passage measures will be identified in the Final EIS and implemented during the final design phase for implementation during and after construction. FHWA and Mn/DOT fish passage guidance and standards will be followed if effective fish passage implementation is determined to be a project need.

4.2.11 Vegetation

Affected Environment

Background

Federal Executive Order 13112 establishes that federal agencies, through their actions, implement measures and means to prevent the spread of invasive species, in particular vegetative species. Other important vegetative issues include native prairies, substantial trees and landscaping, and areas including right-of-way subjected to vegetation management activities.

Existing Conditions

Invasive vegetative species are commonplace in west-central Minnesota's landscapes, in particular the following species; reed canary grass (*Phalaris arundinacea*), purple loosestrife (*Lythrum salicaria*), green leafy spurge (*Euphorbia esula*), and Eurasian buckthorn (*Rhamnus cathartica*). Reed canary grass is locally abundant within the wetlands of the project area and methods to control the species are poorly developed and have had limited success. On a more positive note, effective techniques have been developed and widely implemented to control green leafy spurge, purple loosestrife and buckthorn species. Mn/DOT has incorporated these treatment and control methods into their right-of-way vegetative management plans for almost two decades. MnDOT has successfully eliminated or controlled invasive species on much of their right-of-ways including within the existing project area.

No remnant or restored native prairies are present within or immediately adjacent to the project area with one exception, the wetland located southeast of the intersection of CSAH 25 and 15th Street NE includes a planted upland buffer with a native prairie species seed mix.

There are no existing substantial trees within the project limits. This includes champion trees, rare forested habitats listed on the MNDNR NHIS, timber production areas, or high value harvest trees. Through geological time and in the presettlement condition, Kandiyohi County has been located within the prairie province of the MNDNR ECS. Trees and woody species expanded into the region via fire suppression and intentional planting by settlers. Most of the tree cover within and adjacent to the project area is reflective of the trend comprised of successional species including Eastern cottonwood (*Populus deltoides*), green ash (*Fraxinus pennsylvanicus*), and boxelder (*Acer negundo*). Extensions of the eastern hardwood forest communities are also found nearby, mostly along the shores of the lakes in the project area. These are comprised of native oak, maple and basswood species and represent a vegetative community that was sporadically found in the County in the presettlement condition.

Environmental Consequences

Mitigation

Invasive species control will continue to be a Mn/DOT priority for managing vegetation within the future right-of-way of the project. The appropriate MnDOT seed mixes will be applied to the graded new right-of-way and will be subjected to MnDOT's long term vegetation management to control and manage invasive species.

Tree and landscape mitigation will follow Mn/DOT and FHWA policies and guidance for compensating owners and replacing impacted vegetation. Compensation will be determined through the Mn/DOT right-of-way process.

4.2.12 Air Quality

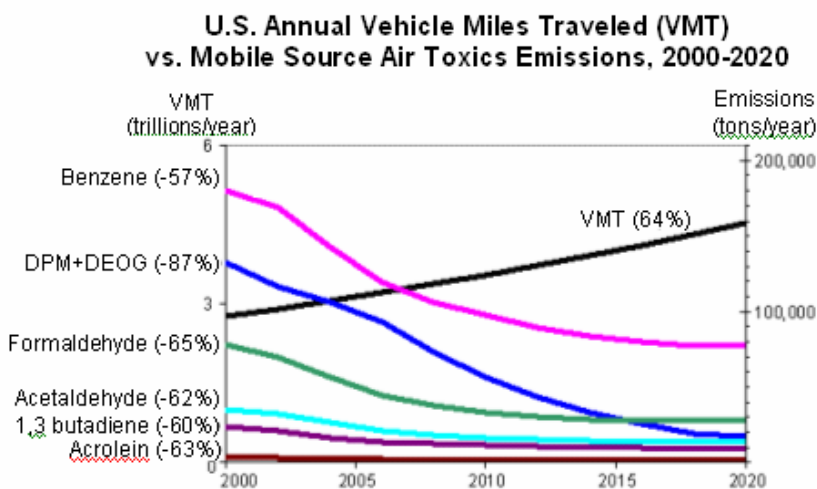
Affected Environment

The project is not located in an area in which conformity requirements apply. However, in addition to the criteria air pollutants for which there are National Ambient Air Quality Standards (NAAQS), the Environmental Protection Agency (EPA) also regulates air toxics. Most air toxics originate from human-made sources,

including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries).

Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead Federal agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources. 66 FR 17229 (March 29, 2001). This rule was issued under the authority in Section 202 of the Clean Air Act. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 percent to 65 percent, and will reduce on-highway diesel PM emissions by 87 percent, as shown in the following graph:



Notes: For on-road mobile sources. Emissions factors were generated using MOBILE6.2. MTBE proportion of market for oxygenates is held constant, at 50%. Gasoline RVP and oxygenate content are held constant. VMT: Highway Statistics 2000, Table VM-2 for 2000, analysis assumes annual growth rate of 2.5%. "DPM + DEOG" is based on MOBILE6.2-generated factors for elemental carbon, organic carbon and SO4 from diesel-powered vehicles, with the particle size cutoff set at 10.0 microns

As a result, EPA concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs. The agency is preparing another rule under authority of CAA Section 202(l) that will address these issues and could make adjustments to the full 21 and the primary six MSATs.

Unavailable Information for Project Specific MSAT Impact Analysis

This DEIS includes a basic analysis of the likely MSAT emission impacts of this project. However, available technical tools do not enable us to predict the project specific health impacts of the emission changes associated with the alternatives in this DEIS. Due to these limitations, the following discussion is included in accordance with CEQ regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information.

Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

Emissions. The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE 6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE 6.2 is a trip-based model--emission factors are projected based on a typical trip of 7.5 miles, and on average speeds for this typical trip. This means that MOBILE 6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE 6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects, and cannot adequately capture emissions effects of smaller projects. For particulate matter, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE 6.2 for both particulate matter and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, EPA has identified problems with MOBILE6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations.

Dispersion. The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of carbon monoxide to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. The NCHRP is conducting research on best practices in applying models and other technical methods

in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project specific MSAT background concentrations.

Exposure Levels and Health Effects. Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways, and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs

Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or State level.

The EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at <http://www.epa.gov/iris>. The following toxicity information for the six prioritized MSATs was taken from the IRIS database Weight of Evidence Characterization summaries. This information is taken verbatim from EPA's IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

-
- **Benzene** is characterized as a known human carcinogen.
 - The potential carcinogenicity of **acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
 - **Formaldehyde** is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
 - **1,3-butadiene** is characterized as carcinogenic to humans by inhalation.
 - **Acetaldehyde** is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
 - **Diesel exhaust (DE)** is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.
 - **Diesel exhaust** also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a non-profit organization funded by EPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes -- particularly respiratory problems¹. Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants. The FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable us to perform a more comprehensive evaluation of the health impacts specific to this project.

Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of impacts based upon theoretical approaches or research methods generally accepted in the scientific community

Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. While available tools do allow us to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the

¹ South Coast Air Quality Management District, Multiple Air Toxic Exposure Study-II (2000); Highway Health Hazards, The Sierra Club (2004) summarizing 24 Studies on the relationship between health and air quality); NEPA's Uncertainty in the Federal Legal Scheme Controlling Air Pollution from Motor Vehicles, Environmental Law Institute, 35 ELR 10273 (2005) with health studies cited therein.

alternatives would have significant adverse impacts on the human environment relative to MSATs.

Environmental Consequences (Qualitative Analysis)

As discussed above, technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project. However, even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project, and give a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at:

www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm

For each alternative in this DEIS, the amount of MSATs emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. Because the VMT estimated for the No Build Alternative is higher than for any of the Build Alternatives, higher levels of regional MSATs are not expected from any of the Build Alternatives compared to the No Build. In addition, because the estimated VMT under each of the Build Alternatives are nearly the same, varying by less than 2 percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent from 2000 to 2020. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations.

Because of the specific characteristics of the project alternatives, under each alternative there may be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced along the new roadway sections that would be built under the Build alternatives, including interchanges (ramps and bridges) and connecting roadways. However, even if these increases do occur, they too will be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations.

In summary, under all Build Alternatives in the design year it is expected there would be reduced MSAT emissions in the immediate area of the project, relative to the No Build Alternative, due to the reduced VMT associated with more direct routing, and due to EPA's MSAT reduction programs. In comparing various project alternatives, MSAT levels could be higher in some locations than others, but current tools and science are not adequate to quantify them. However, on a regional basis, EPA's

vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region wide MSAT levels to be significantly lower than today.

4.2.13 Energy

Affected Environment

Highway construction projects consume energy both directly and indirectly. Direct energy impacts consist of the fuel consumed by vehicles using the roadway, as well as fuel consumed using alternate routes in the vicinity. Fuel usage is affected by types of vehicles, roadway grades and geometric characteristics, speed, congestion, and queuing caused by high traffic volumes and delays at cross-street intersections. Indirect impacts include the energy required to construct and maintain the road network, the energy required to manufacture and maintain vehicles using the system, and the energy required to convert land to transportation use. Energy models can typically predict energy impacts within an error margin of approximately 10 percent. Therefore, differences between alternatives of less than 10 percent are not considered to be substantial. A detailed energy analysis was not performed for this project because total energy differences between the total VMT in the project area is predicted to be within 10 percent for all alternatives. In fact, the difference in VMT is less than or equal to 6 percent for every alternative, including the no-build alternative.

Environmental Consequences

Build Alternatives

All the build alternatives are expected to consume less direct energy than the No-Build Alternative, due to the improved traffic flow, reduced delays, less queuing at intersections, and acceleration/deceleration reduction. However, this difference is expected to be less than 10 percent. In addition, differences in direct energy requirements between build alternatives are expected to be unsubstantial because the total number of VMT in the project area is predicted to be within 10 percent for all alternatives. The VMT difference among the build alternatives is between 0 and 6 percent.

Overall, direct operational energy savings for the build alternatives are expected to offset their initial indirect energy requirements, generally resulting in long-term net energy savings when averaged over the design life of the project. Predicted differences in overall energy consumption between alternatives are, therefore, not expected to be substantial.

Alternative 3 – No-Build

The No-Build Alternative would consume less indirect energy than any other alternative because no initial construction is required. Periodic roadway maintenance, such as resurfacing and patching, would occur over time. However, operational energy consumed would be greatest under the No-Build Alternative because of traffic congestion, increased vehicle delays, and inefficient operations at intersections. All the alternatives, however, would consume similar amounts of indirect energy for highway maintenance and for vehicle manufacture and maintenance.

Mitigation

Due to the fact that the energy differences among the alternatives are expected to be less than 10 percent, energy impacts are not considered to be substantial. Since all the build alternatives are expected to result in long-term net energy savings when averaged over the design life of the project, measures to mitigate energy impacts are not necessary.

4.2.14 Visual Quality

The Six-Step Visual Impact Assessment process developed by Mn/DOT and recommended by FHWA was utilized to determine the affected environment, environmental consequences, and mitigation for adverse impacts to visual quality that would be caused by the build alternatives, as well as the opportunity to enhance existing visual quality through improvements proposed for the Highway 23/71 Project Area.

Affected Environment

Natural Environment

The natural environment is composed of a gently rolling landscape covered primarily with farm fields. Wetlands and ponds occupy some depressions, but many depressions have been drained to create expansive areas for planting crops. Point and Eagle Lakes, the largest lakes in the immediate project study corridor, can be partially glimpsed from Highway 23/71 through a thin veneer of tree coverage and built structures adjacent to the highway corridor. Trees, shrubs, and grasses occur where the land use does not allow farming – in commercial and residential areas, along roadways and fences, and next to wetlands. Large non-native spruce and pine trees occur in windbreaks on farmsteads and create dominant features of the natural environment, particularly in winter. Formal plantings, except on private property, are rare. Native animals other than birds are not easily observed and, except for a horse stable and riding area between 15th Street NE and the TH 23/71 highway corridor, domesticated farm animals are currently rare. Resources of the natural environment are more visibly evident along the CR 90 and CSAH 25 routes, including the Willmar Wildlife Management Area on the southern edge of the project area than the existing route.

Cultural Environment

The cultural environment is composed of commercial and residential structures and outdoor wholesale, retail, and salvage goods storage. The largest structures are the commercial buildings along the west side of the Highway 23/71 corridor, between existing CR 90 and a highway frontage road north of 48th Avenue NE. Most commercial structures are single stories and comprised of prefabricated sheet metal-clad pole buildings typically with large overhead doors. Typically, commercial structures sit centered on their lots buffered by sometimes hundreds of feet of open yard between structures. The open yard is typically used for parking or storage of automotive, landscaping, marine/recreation, agriculturally-oriented or industrial products or equipment. Several salvage, mini-storage, and outdoor product storage yards, ineffectively screened, border the existing highway where there are also some travel-oriented businesses, such as truck plaza/ convenience gas/grocery stores. Other miscellaneous destination-oriented commercial businesses and institutional uses exist along the highway, including a hair salon and spa, a yoga/fitness center, and a church. Recently closed businesses include a music store and photography shop.

Residential structures are clustered primarily around the area lakes or scattered as isolated farmhouses on the larger natural landscape. Many residential structures are single- and two-story frame structures, including most newer construction. There are scattered factory-built portable homes. Older, isolated farmhouses and some houses in older residential neighborhoods tend to be larger two-story structures. Most houses are constructed of wood or brick, except factory-built portable structures, which are typically metal. Apart from the Highway 23/71 corridor structures and occupied residential subdivisions adjacent to the lakes, there is also one rural church, cemetery, and former school house that has been converted into residential apartments.

Highway Environment

Visual resources of the highway environment are limited to those resources in the existing or proposed right-of-way that were created by highway authorities. The existing highway is a four-lane concrete structure with asphalt overlays, typically with paved shoulders, and a grassy drainage swale. The highway geometrics appropriately reflect the design speed and function of the highway and are generally straight with large sweeping curves at the north and south convergences of Highways 23 and 71, from which the common section unites to frame the project corridor.

Environmental Consequences

Build Alternatives

Each of the build alternatives will include grade-separated crossings at either a relocated CR 90 independently or in conjunction with CSAH 25. Grade-separated structures will introduce bridges across the highway corridor where none have existed before. With the added third dimension of elevated bridge structures over Highway 23/71, visual impacts to residential and commercial neighbors and travelers would be less adverse and more beneficial if aesthetic treatments with a uniform design theme in the project corridor were integrated into the bridge walls and abutments. This would create an opportunity to enhance the cultural order and highway coherence for neighbors and travelers is greater if the existing alignment is selected.

For necessary improvements to associated roadways away from the Highway 23/71 Corridor, including CSAH 25 and a relocated CR 90, the adverse impacts to natural harmony for neighbors is much greater where new roadway alignments are introduced, particularly a relocation of a new CSAH 25 along existing 15th Street NE, which is currently a low-speed unimproved route that collects primarily local neighborhood trips. Impacts to the natural harmony for Alternatives 1A and 1B would be severe for local residents along 15th Street NE and 48th Avenue NE, especially, whose residents are accustomed to low volumes of local traffic with no direct connection to Highway 23/71.

Alternative 3 – No-Build

The No-Build Alternative would have no impact, beneficial or adverse, on visual resources in the project area.

Mitigation

Highway 23/71 Corridor

Visual quality could be enhanced and adverse impacts minimized if an urban corridor design plan is developed as part of this project that incorporates an aesthetic plan for the appearance of bridges and structures. The Highway 23/71 project corridor serves as the northern entry into the Willmar community from other communities in the Willmar - Kandiyohi County North Lakes area, Spicer-New London, to I-94 (St. Cloud) on the Highway 23 Interregional Corridor. Landscape plans for the roadway improvements along frontage/backage roads in commercial areas, including curb and gutter, sidewalk, lighting, and boulevard plantings would help unify the appearance of the commercial businesses and announce a traveler entry to Willmar. Replacing impacted vegetation is necessary and augmenting it with additional boulevard trees, vegetative screens, and flowering gateways would further enhance natural harmony.

Associated Roadway Improvements in the Project Area

For areas particularly affected by a relocated CR 90 and/or CSAH 25, adverse impacts to natural harmony can be minimized by using standard grading techniques that blend the grading for the highway into the terrain of the surrounding countryside. The vegetation of the corridor could be enhanced through the use of native prairie plants.

Visual quality can be enhanced and adverse impacts minimized if the CR 90 and CSAH 25 relocation aspects of the build alternatives are properly treated. There are opportunities to improve the natural harmony, cultural order, and highway cohesion. The natural harmony could be enhanced by providing separate trail facilities in the roadway right-of-way, uniform boulevard tree plantings near residential areas, and appropriate intersection lighting. The cultural order could be enhanced by screening disorderly commercial properties and using vegetation to frame natural vistas.

Upon identification of a preferred alternative, a plan for enhancement of visual quality will be developed and included in the Final EIS.

4.2.15 Architectural and Archaeological Resources

Consultation

The part of the National Historic Preservation Act of 1966 (amended June 17, 1999) that requires federal agencies to take into account the effects of their undertakings on historic properties is commonly referred to as the Section 106 process. By definition, historic properties (including landmarks) are eligible for or listed on the National Register of Historic Places (NRHP). Federal undertakings refer to any federal involvement including funding, permitting, licensing, or approval. Section 106 sets up an orderly review consultation (advisory) process whereby a federal agency consults with the State Historic Preservation Office (SHPO), other parties, and the public to identify, evaluate, assess effects, and mitigate any historic properties affected by their undertaking. Depending on the issues, the Advisory Council on Historic Preservation may become involved in the process.

Native American groups who have expressed interest in reviewing projects in this part of Minnesota were also consulted. The groups included the Santee Sioux Nation, the Shakopee Mdewakanton Sioux Community, the Turtle Mountain Band of Chippewa, the Upper Sioux Community, the Flandreau Santee Sioux Tribe, the Lower Sioux

Indian Community, the Prairie Island Indian Community, the Sisseton-Wahpeton Oyate, the Spirit Lake Dakota Sioux, the Northern Cheyenne Tribe, and the Fort Peck tribe. The Flandreau Santee Sioux Tribe responded that they had no objection to the project. The other tribal groups did not respond.

Affected Environment (Area of Potential Effect)

Because a preferred alternative has not been identified, the Area of Potential Effect (APE) includes all the alternatives under consideration. The APE measured 200 feet from the centerline of the existing highway and the proposed alternatives. This width is adequate to include all properties near the roadway, as well as assessment of the visual and audible effects of the proposed improvements to NRHP eligible properties.

Environmental Consequences

Build Alternatives

Portions of the APE had moderate to high potential for containing archaeological sites, so an archaeological survey was completed. Two archaeological sites were identified (see Figure 15); however, neither site produced diagnostic cultural materials or retained sufficient archaeological integrity to yield information important to our understanding of the past, and therefore, they were recommended as ineligible for the National Register of Historic Places (NRHP). Three parcels were not accessible for landowner permission for survey, including the westernmost portion of an upland area associated with North Connection Alternative N1; an area near a topographic rise west of Eagle Lake (east of the CSAH 25 intersection), and an area located immediately adjacent to the Hawk Creek waterway on the southwest corner of Eagle Lake (see Figure 15). These areas will require additional survey and evaluation if the preferred alternative for the project requires property acquisition in these areas.

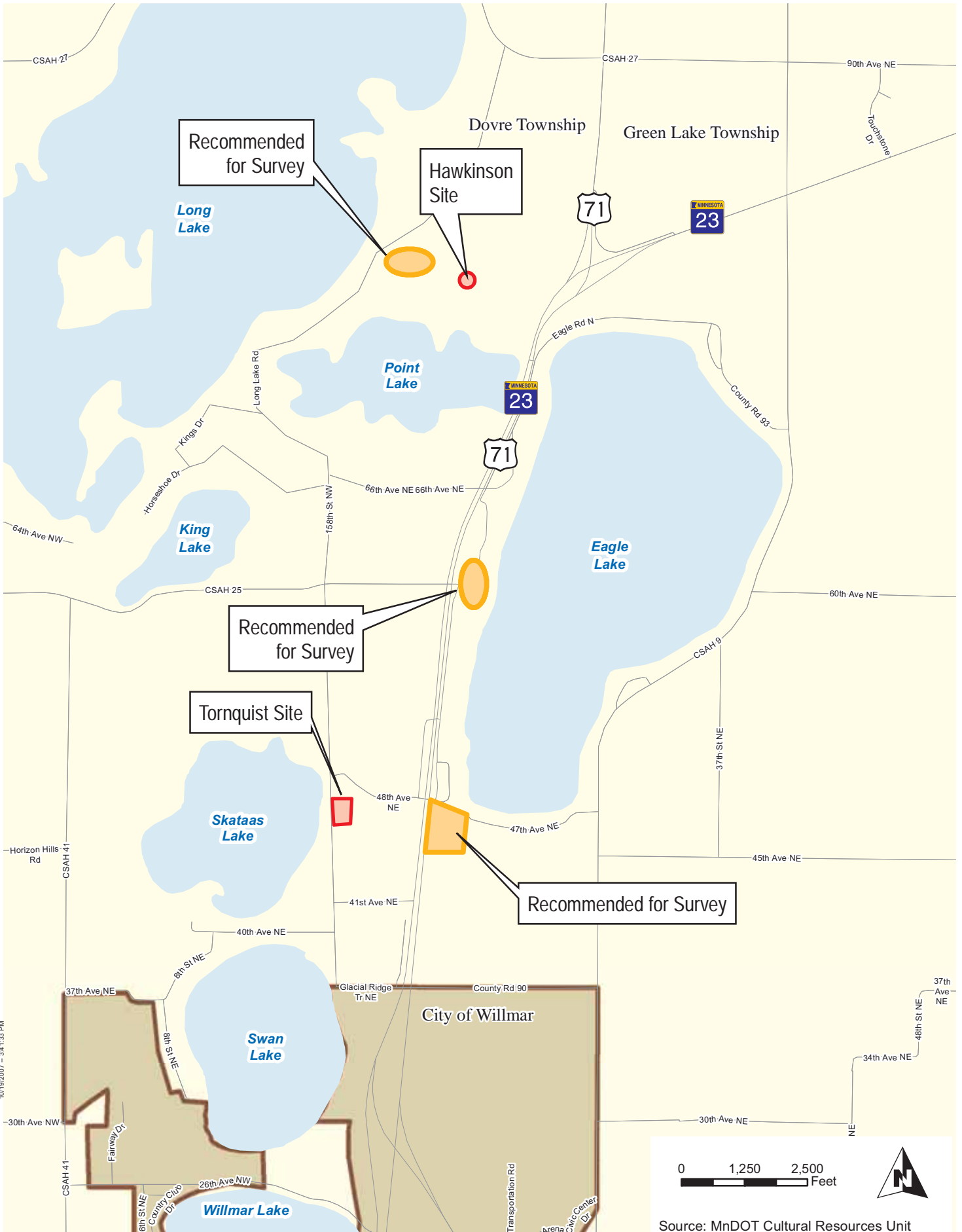
A Phase I and II Architectural History survey of properties in the APE was also conducted. No previously determined eligible or listed properties were located within the APE.

Alternative D – No-Build

The No-Build Alternative will have no impacts to architecture or archeology in the area.

Mitigation

A determination was made by Mn/DOT's Cultural Resources Unit staff that there are no historic properties affected by the project as it is currently proposed, and therefore, no mitigation is required. This determination is included in Appendix E. A programmatic agreement that exists between the Federal Highway Administration and the State Historic Preservation Office (SHPO) indicates that the project is in compliance with Section 106 and therefore no SHPO comment period and response are required.



TH 23 / 71 DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE 15
ARCHAEOLOGICAL RESOURCES



4.2.16 Contaminated Properties Affected Environment

The presence of potentially contaminated properties (defined as properties, at which soil and/or groundwater are impacted with pollutants, contaminants, or hazardous wastes) is a concern in the development of highway projects because of potential liabilities associated with ownership of such properties, potential cleanup costs, and potential safety concerns associated with construction personnel encountering unsuspected wastes or contaminated soil or groundwater.

A Phase I Environmental Site Assessment (Phase I ESA) provides information on potentially contaminated properties. These properties are identified through review of historic land use records and air photos, federal EPA, MPCA, and county/City records, as well as through a reconnaissance of current property conditions. Sites of potential concern identified by the Phase I are categorized as having a high, medium, or low risk for contaminant releases to soil and/or groundwater. In general, sites with high environmental risks are properties that have documented releases of chemicals or other strong evidence of contamination, such as soil staining or storage of large volumes of petroleum or other chemicals. Sites of medium environmental risk include properties at which smaller volumes of petroleum, chemicals, or hazardous materials are stored but at which no evidence of spills or releases exists or properties with documented releases that have been “closed” (no further cleanup action deemed necessary) by the MPCA. A “closed” site is considered a medium risk, because it may still have residual soil or groundwater contamination. Low environmental risk sites include properties at which small volumes of chemicals or hazardous materials have been used or stored.

A Phase I ESA was performed in the Highway 23/71 project area in 2007. The Phase I ESA Report is on file at Mn/DOT’s District 8 headquarters in Willmar.

Environmental Consequences

Contaminated materials encountered during highway construction projects must be properly handled and treated in accordance with state and federal regulations. Improper handling of contaminated materials can worsen their impact on the environment. Contaminated materials also cause adverse impacts to highway projects by increasing construction costs and causing construction delays, which also can increase project costs.

The Phase I ESA identified a total of 26 such potentially contaminated sites within the Phase I project area; the Phase I project area and the site locations are depicted on Figure 16. Of these sites, one was categorized as having a high risk, 11 were categorized as having a medium risk, and 14 were categorized as having a low risk for contaminant releases.

For each alternative, these potentially contaminated properties will be evaluated for their likelihood to be impacted by construction and/or acquired as right-of-way. Sites that have a potential to be impacted by the project because of their proximity to the proposed project limits for the preferred alternative will be identified and further described in the Final EIS.

Any contaminated property with the potential to incur excessive cleanup costs or expose the purchaser to unacceptable environmental liability may need to be avoided if possible. Such properties will be further described in the Final EIS.

Mitigation

Prior to construction, any properties with a potential to be impacted by construction of the preferred alternative will be investigated (through detailed review of MPCA project files and/or by collection and laboratory analysis of soil and groundwater samples) to determine the extent and magnitude of contaminated soil or groundwater in the areas of concern. The results of the drilling investigation will be used to determine if the contaminated materials can be avoided or the project's impacts to the properties minimized. If necessary, a plan will be developed for properly handling and treating contaminated soil and/or groundwater during construction. Low risk sites may also be addressed at the time of construction through a contingency plan.

In addition, coordination and consultation with the MPCA VIC Unit, the Voluntary Petroleum Investigation and Cleanup Unit, the Petroleum Remediation Unit, and the Minnesota Department of Agriculture Voluntary Cleanup/Technical Assistance Program (VCTAP) will take place as appropriate, to obtain assurances that contaminated site cleanup work, and/or contaminated site acquisition, will not result in long-term environmental liability for the contamination, and to obtain contaminated soil and/or groundwater handling and cleanup plan approvals.

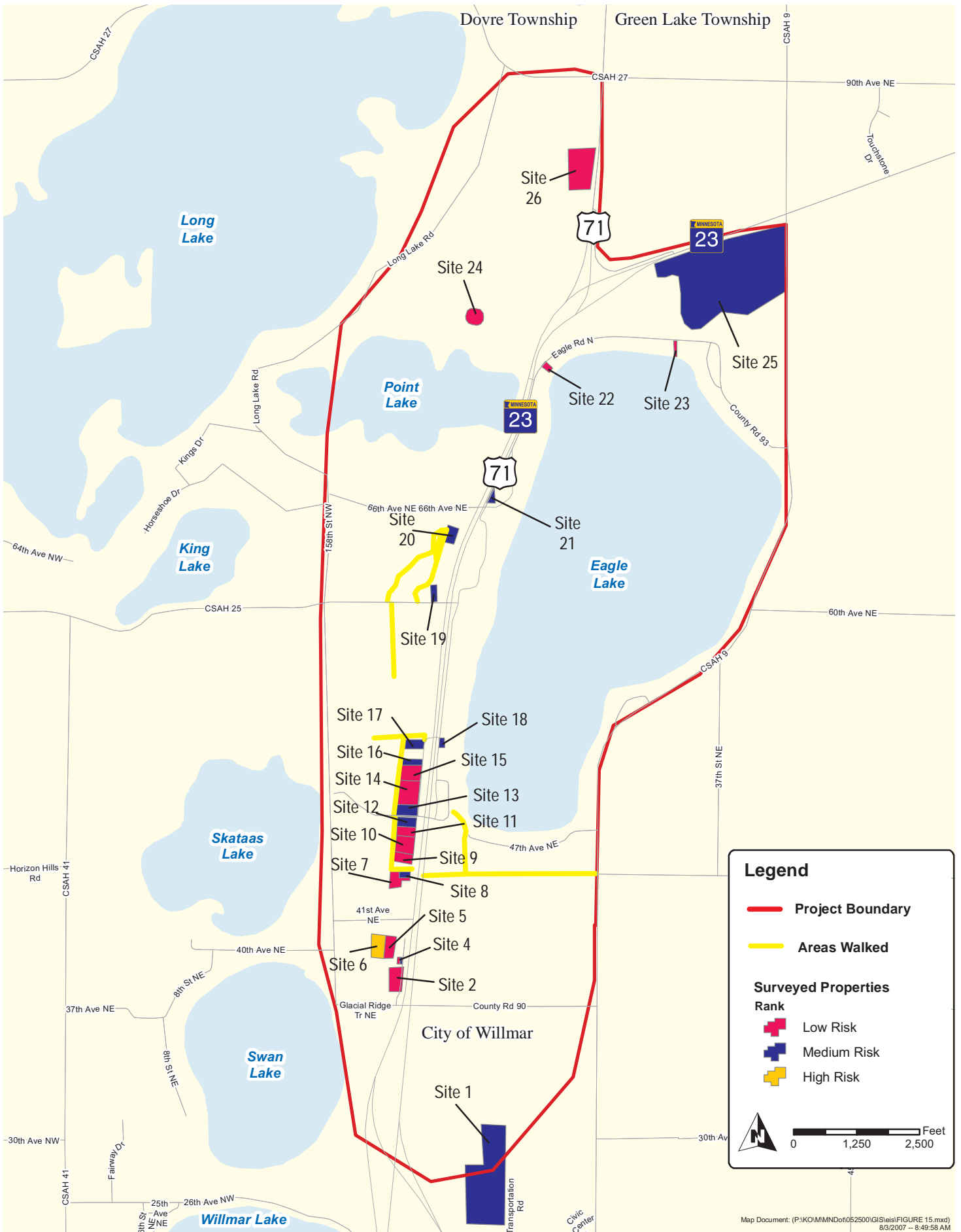
4.2.17 Construction Impacts

All applicable precautions will be taken to limit impacts connected with highway and bridge construction activities. Major environmental effects associated with construction include traffic congestion, noise, air quality, water quality and soil erosion, traffic detours, economics, borrow or excess materials, utility disruption, and earth borne vibrations. A detailed discussion of potential construction impacts will be provided upon identification of the preferred alternative.

Traffic Congestion

It is expected that construction of the project will be in stages with each portion taking two to three years to complete. Construction of the proposed action is likely to cause traffic delays and make it more difficult to get to development adjacent to the highway during construction. This may result in added congestion within the project area while construction is being completed. A construction staging plan will be developed that will further assess potential traffic congestion problems associated with construction. The staging plan will attempt to balance the need for property access, while minimizing the total length of construction time.

Short-term adverse impacts to transit services may also result from construction activities.



Legend

- Project Boundary
- Areas Walked

Surveyed Properties

Rank

- Low Risk
- Medium Risk
- High Risk

Scale: 0, 1,250, 2,500 Feet



TH 23 / 71 DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIGURE 16 POTENTIALLY CONTAMINATED PROPERTIES



Map Document: (P:\K\IMMNDot052500\GIS\el\FIGURE 15.mxd) 8/3/2007 - 8:49:58 AM

Noise

Noise would be generated by construction equipment used in the construction of the highway improvements. Noise levels due to construction activities in the project area would vary depending on the types of equipment used, the location of the equipment, and the operating mode. During a typical work cycle, construction equipment may be idling, preparing to perform tasks, or operating under a full load. Equipment may be congregated in a specific location or spread out over a larger area. Some construction could potentially occur in close proximity to existing noise-sensitive land uses. Adverse impacts resulting from construction noise are expected to be localized and temporary. All construction equipment will be properly equipped to minimize potential construction noise impacts.

Air Quality

The project is not located in an area where conformity requirements apply, and the scope of the project does not indicate that air quality impacts would be expected. Therefore, no further air quality analysis is necessary.

Water Quality and Soil Erosion

The potential for soil erosion impacts on water quality are greatest at the time a project requires removal of vegetation and topsoil for initial clearing, grubbing, and grading activities. Areas adjacent to lakes, streams, and wetlands have the highest potential for adverse impacts. Erosion control measures, as suggested by the MPCA's "Protecting Water Quality in Urban Areas, Best Management Practices for Dealing with Storm Water Runoff from Urban, Suburban, and Developing Areas of Minnesota (March 2000)" and in conformance with Mn/DOT Standard Specifications, will be designed to minimize potential soil erosion impacts from construction activities. These practices may include, but are not limited to, the following: sedimentation basins, silt control devices (silt fences, hay bails), slope drains, and rapid revegetation of exposed construction areas. An erosion control plan will be developed as part of the final design plans of the preferred alternative.

Traffic Detours

A construction staging plan will be completed during the final design stage of the project, which will identify potential detours. This plan will attempt to minimize disruptions to traffic patterns while maximizing directness of detoured routes, which will minimize short-term impacts on emergency services (police, fire, rescue) and transit services throughout the project area.

Economic (Business Access)

The proposed project is expected to generate both direct construction jobs and indirect jobs to support construction related activities. The exact number of jobs cannot be determined at this time. Existing businesses within the project area may experience negative short-term impacts during construction. As part of the construction staging plan, efforts will be made to ensure that traffic movements and access to businesses will be maintained.

Borrow or Excess Material

Selection of borrow material that may be required for the construction of the proposed improvements will be the responsibility of the construction contractor, and possible sites will be identified in the contract special provisions. Any new borrow sites would be subject to environmental reviews under Minnesota Rule Chapter 4410.4300, Subp. 12 and may require an archeological survey of the site. Archeological reviews of these areas are conducted by the Cultural Resources Unit at Mn/DOT. The disposal of excess material will be conducted in accordance with Mn/DOT specifications and according to a project disposal plan that will be in accordance with WCA requirements.

Utility Disruption

Construction activities may result in temporary impacts to local utilities. Potential impacts cannot be evaluated until a preferred alternative is identified; however, it is anticipated that all the build alternatives will result in some temporary impacts to local utilities. Coordination and cooperation with the local service providers will be established and maintained throughout the design phase of the project.

Earth Borne Vibrations

Earth borne vibrations are defined in the Mn/DOT Highway Project Development Process Manual as impacts that are caused by:

1. Blasting
2. Pile driving or heavy construction activities (e.g., pavement breaking, vibratory compacting) within 500 feet of buildings
3. Structures (frail or historic) with high susceptibility to vibration damage
4. Operations susceptible to vibrations (e.g., surgery in hospitals, lithography, computer use)

Potential for earth borne vibration impacts have been considered, but due to the nature of the planned work and affected environment, no substantial impacts are anticipated for any of the project alternatives.

Temporary Impacts

Within the project area, construction activities could disrupt a portion of the farmland or farm businesses such that planting, growing, and/or harvesting of crops is temporarily impacted. Temporary impacts could also result from loss of productivity of croplands directly adjacent to construction activities or loss of customers to a farm-related business due to traffic detours during construction. Temporary impacts include soil compaction from construction equipment, removal and replacement of drainage tile, and the removal of crops and topsoil for staging areas and construction preparation. Clearly, some loss in yield will occur from soil compaction in these areas or from loss of drain tile efficiencies. Soil compaction impacts are expected to last no more than one to two years following completion of construction and field drain tile systems will be replaced or restored to pre-construction effectiveness. These impacts are considered minor relative to the permanent loss of cropland from new right-of-way. No substantial difference in the extent of temporary impacts is expected between the various alternative alignments.

4.2.18 Relationship of Local Short-Term Uses Versus Long-Term Productivity

All highway projects require the investment or commitment of some portion of resources found in the existing environment. Short-term refers to the immediate consequences of the project whereas long-term relates to its direct or indirect (secondary) effects on future generations.

Environmental Consequences

Build Alternatives

Short-term consequences of the Build alternatives could include:

- Relocation of residences and businesses
- Removal of private properties from tax rolls, causing a reduction in property tax base
- Conversion of wetland, upland (forest) habitat to transportation use
- Inconvenience to residents, business owners/suppliers, employees, and travelers during construction

Long-term productivity that may be realized by the Build alternatives include:

- Improved motorist safety, convenience, and energy use
- Greater potential for area economic development because of improved transportation links between regional trade centers (i.e., Willmar and St. Cloud)
- Potential for new tax base in the project area
- Enhanced opportunity for commercial development and associated employment growth for the region, including increased wages and salaries

Improvements to Highway 23/71 are based on comprehensive transportation planning that considers the need for present and future traffic movement within the context of present and future land use development and the environment. Therefore, the local short-term impacts and use of resources by the proposed action are consistent with the maintenance and enhancement of long-term productivity.

Alternative 3 - No Build Alternative

Alternative 3 would avoid all of the short-term and localized construction impacts. However, projected traffic growth in the project area would further reduce the operation of the existing road, resulting in reduced traffic safety (higher number of crashes and fatalities) and mobility, in addition to the potential loss of economic growth opportunities.

4.2.19 Irreversible and Irretrievable Commitments of Resources

Environmental Consequences

Build Alternatives

Constructing roadways in the project area involves committing a range of natural, physical, human, and fiscal resources. Land acquired for constructing the proposed project is considered an irreversible commitment during the time period the land is

used for highway purposes. Right-of-way requirements would convert land from residential, agricultural, commercial, and natural environmental resource uses.

Considerable amounts of fossil fuel, labor, and highway construction materials such as steel, cement, aggregate, and asphalt would be required. In addition, considerable labor and natural resources are used in fabricating and preparing construction materials. Those resources are generally not retrievable, but their use will not have a substantial adverse effect on continued availability.

Construction of an alternative would involve irretrievable federal, state, and local funding. Land converted from private to public uses would displace local tax revenues.

Committing resources is based on the concept that residents in the project area, region, and state would benefit by the improved safety and mobility that would result from the proposed improvements. The benefits such as improved safety and access to business and community services, residential areas, and planned land uses as traffic volumes grow over the next 20 years are expected to outweigh the commitment of resources in the long term.

Alternative 3 - No Build Alternative

The financial resources, time, and highway user hardship related to the anticipated higher crash rate associated with Alternative 3 (No Build Alternative). The cost and time associated with the decreasing level of service for traffic movement in the project area by local and interregional corridor traffic would also result in an irretrievable commitment of these resources.

4.2.20 Indirect Impacts

Background

This section is intended to account for an array of potential actions and their potential impacts that are related to secondary (indirect) effects of the proposed action, except to the extent that their impacts may, in combination with the impacts of the proposed action, result in adverse impacts. Indirect impacts are defined by the Council on Environmental Quality as the following:

“Effects that are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water or other natural systems, including ecosystems.” (40 CFR 1508.8(b))

Environmental Consequences

Indirect Impacts

Planning to accommodate future land uses is one of the key purposes for the proposed project. In addition to the need to control existing accesses, the need to serve the growing population in Kandiyohi County with improved regional transportation facilities has been documented by a 30-year population growth rate of 35 percent, which is higher than the state’s growth rate of 29 percent over the same 30-year period. Kandiyohi County’s Comprehensive Plan recognizes the need to plan for future development so that increased traffic use, road maintenance, and safety issues

can be addressed¹ In addition, the study area is included in the City of Willmar's Urban Growth Boundary. It is expected that over the long-term development plan for the proposed Highway 23/71 project, municipal services will be extended as portions of the study area are potentially annexed by the City of Willmar.

Infrastructure planning continues to occur in Kandiyohi County and Dovre Township to accommodate proposed growth. The expected growth and proposed development is anticipated in the project corridor without the proposed roadway improvements. The current growth rate suggests that new traffic growth associated with future development will continue to erode the project corridor's safety and mobility goals if no improvements are made and Alternative 3 (No Build) is the chosen action. The build alternatives for the proposed project are therefore responsive to planning for future land uses as an integrated measure to respond to future traffic growth that will be generated from future developments in the corridor. The proposed project is, in effect, a simultaneous public works action that will help manage, rather than induce, imminent growth.

There are, however, potential short-term and long-term indirect impacts that will result from direct right-of-way taking impacts that may be attributed to the project's build alternatives. These impacts are summarized in the following paragraphs.

Build Alternatives

Potential indirect impacts resulting from the proposed alternatives include:

- Impact on local economy of relocating existing businesses
- The effects of increased travel time for some area residents and business patrons, where at least seven access consolidations for build alternatives on Highway 23/71 will require additional travel time to and from either one or two future points of access along the highway
- Potential for speculative development, especially at new interchanges near a relocated CR 90 and CSAH 25
- Short-term economic benefit of increased private sector income during construction
- Farmland and agricultural business productivity

Each of these potential indirect impacts is further discussed in the following paragraphs.

Business Relocation and Impact on the Local Economy

The effect of displaced businesses affected by the build alternatives, including a vehicle salvage business, a vehicle sales and repair business, a vehicle repair business, a landscaping business with leased office space, mini-storages, and outdoor storage will create a temporary disruption in the local economy. With the availability of properties within local commercial highway corridors, it is likely that the auto-oriented and landscaping businesses will desire to stay in the Willmar area and relocate to other properties along the same highway or along other highway corridors in the community with appropriate sites. Therefore, services and products offered by

¹ Kandiyohi County. 2001. *Kandiyohi County Comprehensive Plan*, Chapter 6, page 8

these businesses may be temporarily disrupted while relocation assistance and site development occurs; however, the effects of business disruption will be short-term. In addition, the potential for relocated businesses also provides opportunity for potential business expansion, depending on the relocation site's ability to accommodate growth desires.

Increased Travel Time (Non-Emergency)

Non-emergency travel time will increase for residents and businesses that will no longer have direct highway access. Similar to emergency service responders, residents and business patrons will be required to travel longer distances to the points of highway access, adding up to approximately five minutes per trip, depending on the build alternative, speed limits, stopping conditions, and traveler destination. However, additional travel time and expenses associated with access closures are expected to be offset by the benefits of improved safety over time provided by controlled access intersections. Improvements in safety are expected to lower the overall crash rate which will, in turn, lower associated costs for vehicle insurance claims, lawsuits, personal property damage, emergency service fees, hospitalization, and lost wages.

Speculative Development

Although new development is expected within the quadrants of the planned interchange locations of the build alternatives, the desire to occupy the site may precede the ability to extend orderly municipal services to the site. This may result in longer utility lines until contiguous development can "catch up" to the property desiring services. The desire to occupy these locations can also artificially raise land prices and may affect property values of undeveloped adjoining parcels.

Short-term economic benefits from construction

Short-term economic benefits from construction include the purchase of local goods and services to construct the project. This includes such items as purchase of supplies and construction materials, and payment of skilled labor over the course of several construction periods. The sale of local goods and services to construction workers from outside the community is also a short-term economic benefit.

Farmland and Agricultural Business Productivity

Indirect impacts of the build alternatives can include the likelihood of the project to induce urban development in agricultural areas, farmers' loss of capital costs from installing property improvements, such as tiling systems, buildings and fencing, agricultural traffic safety, field access considerations, and temporary impacts resulting from construction activities.

Alternative 3 – No-Build

Indirect impacts of Alternative 3 may include the economic impacts of gradually worsening safety and mobility issues in the highway corridor.

4.2.21 Cumulative Impacts

This section describes the potential for cumulative impacts from the Build alternatives in combination with other past, present, and future actions. Cumulative impacts analysis considers an array of potential actions and their impacts that are unrelated to the proposed action (Build Alternatives), except to the extent that their impacts may,

in combination with the impacts from the proposed action, result in adverse impacts. Cumulative impacts are defined in the Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) when implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended:

The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. (40 CFR 1508.7)

Direct and indirect impacts of the project alternatives were previously discussed in the DEIS. Cumulative impacts are not causally linked to the project alternatives, but are the total effect of actions with similar impacts in a broader geographic area. The purpose of a cumulative impacts analysis is to identify impacts that may be minimal and therefore neither significant nor adverse when examined within the context of the proposed action, but that may accumulate and become both significant and adverse over a large number of actions.

Some induced development may occur as a result of any of the build alternatives. The potential for convenience stores, gas stations, or other businesses being established at the new interchanges with Highway 23/71 were accounted for in the development of a future land use map for the project (DEIS Section 4.1). Relative to the permanent farmland impacts, loss of farmland and other farm related impacts, due to induced development, are expected to be minimal, as the project area is slated for continued urban growth.

Cumulative Impact Methodology

This discussion of cumulative impacts will assess the effects of the Build Alternatives as described in previous sections of the DEIS for their potential to combine with the impacts of other foreseeable activities in the past, present, and future which, when combined, have the potential to create further adverse impacts. This section describes attempts to anticipate the impacts of other actions with similar impacts and to assess the cumulative impacts of those actions in combination with the direct and indirect impacts of the Build Alternatives.

The cumulative impacts analysis includes the following five steps:

1. Identify the geographic area to be studied for each resource
2. Establish a timeframe for the analysis
3. Identify past, present and future conditions
4. Identify past actions
5. Identify future actions anticipated

A description of each of these steps follows:

Geographic Area to be Studied for Each Resource

Section 4.0 of the DEIS analyzes the social, economic, and environmental consequences that would occur within and immediately adjacent to the construction limits of the four build alternatives and four north connection alternatives. The land encompassing the environment occupied by the Build Alternatives and the connecting

roadways, land parcels, and natural features adjacent to the Build Alternatives (see Figures 2A and 2B) was selected as the broadest geographic area for the cumulative impact analysis as it relates to land development, social impacts, traffic noise, vegetation and wildlife, water quantity and quality, visual quality, parks, trails, and outdoor recreation facilities, and cultural resources. Hereafter, this area will be referred to as the Area of Potential Effect (APE).

Time Frame for the Analysis

Many of the potential impacts considered in this analysis are related to direct or indirect effects of changes to, and intensification of, land uses and associated infrastructure. Cumulative impacts analysis suggests considering past conditions and activities, current day actions as well as reasonably foreseeable future actions. Therefore, the period between 1970 and 2030 was defined for all resources being studied.

The timeframe of the analysis considers previous impacts that have occurred to resources since the 1970's, the time when the rate of development became more accelerated in the project area. Information about existing conditions is based on the most recent data available, typically resources that were prepared during the period 2000-2007. For example, 2000 U.S. Census data and 2006-2007 field survey conditions are considered to be reliable resources to describe existing conditions. Year 2030 was selected as the future conditions analysis year because that was the year selected to analyze future traffic conditions and also the end of the forecast period for most planning studies and reports prepared for the project area.

Past, Present, and Future Conditions

Cumulative impacts are defined as those impacts resulting from the proposed project combined with those from other past, present, or reasonably foreseeable future actions. The conversion of rural, agricultural, or open space land to residential, commercial, industrial, or infrastructure land uses is an example of past and present actions. Accounting for a known land conversion proposals (i.e., those in imminent development stages) as well as proposed future land uses guided by either comprehensive planning or zoning are examples of reasonably foreseeable future actions.

Past and Present Actions

Since 1970, the "Willmar North Lakes" area of Dovre Township, as it is locally known in Kandiyohi County, is located north of the city of Willmar. The Willmar North Lakes area continues to transition from a predominantly rural, agricultural based area with seasonal residential housing around area lakes, to low-density, residential platted developments and year-round lakeshore housing, as well as commercial development (highway-oriented retail uses) along Highway 23/71. From 1970 to 2000, Dovre Township's population increased from 797 to 1,968, an increase of nearly 60 percent. Recent actions in the APE include residential construction around local lakes (Eagle, Point, Skataas, Swan, and Long Lakes), residential plat infill north of Point Lake, and new commercial business developments west of Highway 23/71.

Future Actions

The proposed project will occur in an area that continues to urbanize. Residential development has occurred and will continue to occur adjacent to area lakes, where

developable lots are becoming fully occupied with year-round low-density residential uses. Commercial development infill in current commercially-zoned areas will also continue to occur. The Kandiyohi County Comprehensive Plan's existing zoning classifications illustrating permitted land uses (illustrated on DEIS Figure 7) and the future land use map of the APE created for the project's traffic forecasting process (DEIS Figure 8) document the potential area and types of urban land use conversions in the future. This includes land use conversions of primarily single family dwelling units (density of 2.5 units per acre), highway-oriented commercial development, and lesser amounts of medium density residential (townhomes at 6.0 units per acre) and office park/warehousing developments. The 2020 projected population of Dovre Township is expected to be 2,822 residents, an increase of more than 30 percent since 2000.

The APE includes the expansion of a gravel mining area north of Point Lake. The Eagle Lake West Gravel Mining operation is located immediately west of US 71 north of the Highway 23/71 diverge. The proposed mining operation will be operable for 10 years, beginning in 2007 and closing with a reclamation plan of natural turf rather than other types of development. The mine's proposed schedule will allow the construction of project improvements on the south side of the Highway 23/71 Corridor to occur first. The potential for cumulative impacts may occur with the proposed construction of the CSAH 25 interchange associated with Build Alternatives 2A or 2B and the Northern Connections (N1, N2, N3, or N4), principally due to construction activities and gravel mining and trucking operations occurring in the same corridor. This situation would present itself, however, only if the roadway construction occurs during the mining operation period. The proposed gravel mining operation's Environmental Assessment Worksheet (EAW) indicated that no adverse impacts to the Highway 23/71 Corridor would result or be induced by the proposed gravel mining project. In addition, the proposed north connection alternative improvements will not likely be constructed prior to 2020, indicating the gravel mining reclamation will be completed by that time.

Effects on Resources

To the degree practical given available information and resources, the following steps were taken to analyze the potential for cumulative impacts:

- Summarize the existing conditions of each potentially affected resource and determine how it has been affected by other actions, public or private.
- Summarize impacts to the affected resource from the Build Alternatives.
- Identify other present actions and reasonably foreseeable future actions and their possible impacts on that resource.
- Summarize the impacts to the affected resources from reasonably foreseeable future actions. Discuss the potential for cumulative impacts to the resource based on consideration of effects of all past, present, and future actions as well as considerations of special designations or standards that relate to the resource, ongoing regulatory authority, policies, or plans that afford some measure of protection to the affected resources, and measures that could avoid or minimize negative effects on the resource.

Resources Analyzed

The section discusses cumulative impacts to the following:

- Land development and conversion of agricultural and open spaces to more intensive uses;
- Social Environment (including community cohesion, accessibility, Environmental Justice, and community facilities);
- Traffic noise;
- Visual quality;
- Vegetation and wildlife;
- Wetlands;
- Water Quality and Quantity;
- Parks, trails, outdoor recreation facilities; and,
- Cultural Resources

Land Development and Conversion of Agricultural and Open Spaces to More Intensive Uses

Past and Existing Conditions

Since the 1970's, the project area has continued to develop in intensity around area lakes, commercially-zoned parcels in the Highway 23/71 Corridor, and, more recently in large-lot platted subdivisions adjacent to lakeshore property. Lakeshore development has included infill and residential property reconstruction. The original commercial development in the Highway 23/71 Corridor included auto-oriented businesses such as repair and salvage yards, and in recent years, new businesses that are land-intensive, such as those requiring outdoor storage, have begun to occupy large tracts of land immediately west of the highway. The highway corridor has also attracted seasonal and recreational businesses. Businesses occupying former residential properties on both sides of the highway also exist.

Impacts from the Proposed Action

The proposed action will result in direct impacts due to acquisition of land for right-of-way, including land currently used for residential, commercial, agricultural, and public purposes (see DEIS Table 15). Build alternatives will require the acquisition of between 22 to 41 acres of land currently classified as agricultural affecting up to 8 property owners. The affected properties are either in current cultivation or are open space.

Dovre Township has adopted guiding principles for new developments (see DEIS Section 4.1.2) and with Kandiyohi County's 2001 Comprehensive Plan guidance, considers locally-adopted policies related to economic, agricultural, residential, and industrial developments as they are petitioned, and relies on the County's current zoning ordinance to review permitted land uses. Forecasted 2030 land uses prepared for the project's traffic forecasting process (see DEIS Figure 8) in the absence of a local, officially-adopted future land use plan indicates agricultural or vacant properties will continue to convert to urban uses. In addition, the City of Willmar's 2030

Facilities Plan indicates much of the APE is included in the City of Willmar's 2030 wastewater conveyance and treatment planning future service area (see DEIS Section 4.1.2).

One of the key reasons for completing the project, stated in the Purpose and Need section of the DEIS (Section 2.6.2), is to address transportation system accessibility for future land uses. The proposed project is not expected to change the projected population growth in the APE compared with the No-Build alternative since the same assumptions were used for the No-Build and Build alternatives. The construction of the proposed project will, therefore, facilitate and enhance planned residential and commercial growth projected in the project's APE.

Impacts from Other Future Actions

Impacts from other future actions will include the continued intensification of land uses and urbanized development over the forecasted (2030) period. This growth is provided for in comprehensive planning and growth guidance documentation to implement local development policies.

Potential for Cumulative Impacts

The proposed project will result in cumulative impacts to land uses as the impacts from the proposed project combine with those from other past and future actions to create a substantial change in agricultural and vacant lands by 2030. While this is a cumulative impact, it is not an adverse impact because a key component of the project's Purpose and Need is to address future land use accessibility, and more intensified land uses have been anticipated in comprehensive planning and growth guidance documentation. The proposed project will require conversion of farmland and open space for right-of-way, the amount varying depending on the alternative chosen as preferred for construction. The Build alternatives, in combination with other land development and roadway projects, could result in intensification of land use in already developed areas, and could encourage development of areas previously used for agriculture and open space. Planned roadway improvements will improve the perceived accessibility of growth areas if existing transportation routes are improved.

Land development is guided by city and county comprehensive plans and zoning regulations. These plans document consideration of the benefits and negative impacts of land development and prescribe patterns of development that are conducive to the goals of the community. Through zoning regulations, these same entities can control the intensification of development and protection of agricultural land uses and open space from further development. Development of local transportation facilities are also guided by local comprehensive plans and are evaluated based on coordination, compatibility, and consistency with each other. Such planning coordination among local, county, and regional agencies should continue in order to avoid disorderly development known as "sprawl".

All future right-of-way acquisition would be completed in accordance with the Uniform Relocation and Real Property Acquisition Act of 1970, as amended by the Surface Transportation and Uniform Relocation Assistance Act of 1987 and 49 Code of Federal Regulations, Part 24, effective April 1989. The Federal Farmland Protection and Policy Act (FPPA) of 1981 and the Minnesota Agricultural Land Preservation and Conservation Policy Act (M.S. 17.80-17.84) have been enacted to ensure that impacts upon agricultural lands are minimized to a reasonable extent.

Social Environment

Past and Existing Conditions

The social environment includes residential and business neighborhoods in the APE. These neighborhoods include lakeshore residential areas that are more densely concentrated and belonging to lake or homeowners associations, and businesses characterized as belonging to the Willmar Chamber of Commerce. Presently, none of these neighborhoods is located within an incorporated community. Depending on neighborhood type and location, past impacts include the effects of new residential plats adjoining older neighborhoods, new businesses adjoining older ones, and traffic volume increases on local roadways and regional highways.

Impacts from the Proposed Action

Each of the build alternatives requires acquisition of businesses and residential properties. These impacts are detailed in DEIS Section 4.1.8. Existing or planned local roadway connections that are impacted by the proposed project will be functionally restored via grade separation and/or local roadway realignment, with the exception of at-grade accesses from Highway 23/71 to existing frontage roads, which will be eliminated with the project's Build alternatives. The proposed project's goals of improving future safety and mobility conditions with plans to remove direct highway access does result in increased travel time for emergency service vehicles and residents/business patrons and employees located within the APE that will be required to travel greater distances to controlled points of entry and exit for highway access. The increased travel time does vary by alternative (i.e., greater travel time with the single interchange alternatives in comparison to the two interchange alternatives). Impacts caused by increased travel times are considered to be most acute for emergency service providers (see DEIS Section 3.4.3). However, local responders noted that at least two of the four project build alternatives would perhaps provide the most appropriate balance between long-term corridor traveler safety and mobility needs with emergency service vehicle accessibility.

Impacts from Other Future Actions

Impacts from other future actions include the impacts of the proposed Eagle Lake West Gravel Mining's proposed 10-year operation plan in the APE northwest of the Highway 23/71 north gore area. The mining operation has a reclamation plan that will restore the disturbed property to open space at the conclusion of mining operations in approximately 2017; however, during this time, residents and travelers in the area will be subjected to temporary increases in truck traffic, noise, and dust from the mining activities. Proposed mitigation for the mining activities is described in the project's Environmental Assessment Worksheet (EAW) available for inspection from Kandiyohi County. The proposed Highway 23/71 project is planned to be constructed in stages, starting on the south end first, and the mining operation will be completed by the time the northern section of the project (adjacent to the mining activity) is planned for construction (post 2020).

Potential for Cumulative Impacts

The proposed action, in conjunction with future actions, could have a cumulative impact on the social environment. Increased travel times for APE residents,

businesses, and business employees/patrons will result from substantially reducing current points of access from Highway 23/71.

Traffic noise

Past and Existing Conditions

Generally, noise levels in the APE have increased as the transition from an agricultural setting to an urbanizing environment has occurred and traffic volumes in the Highway 23/71 Corridor have grown. Existing daytime L₁₀ noise levels measured in the Highway 23/71 Corridor in October 2006 range from 62 dBA to 72 dBA. These noise levels currently exceed the Minnesota Pollution Control Agency (MPCA) standards for residential and commercial noise area classifications (NAC-1 and NAC-2).

Impacts from the Proposed Action

Noise impacts would result from construction of any of the Build alternatives. Construction of the proposed project would result in an increase in daytime L₁₀ noise levels from 0 to 13 dBA over existing conditions in areas close to the existing highway corridor. Most of the increase in highway noise from the Build alternatives will affect the neighborhoods occupying the western side of Eagle Lake.

Impacts from Other Future Actions

The general increase in growth and urbanization of the APE will result in increased noise levels. Anticipated land development will increase the number of sensitive receptors (i.e., residential uses) and the number of roadways that will generate traffic noise. The most notable change in noise levels will be observed in the land areas being converted over time to urban uses.

Potential for Cumulative Impacts

Traffic volumes from future development were assumed in the forecasting model developed for the build alternatives, and therefore, cumulative impacts were accounted for in the analysis. The number of sensitive receptors experiencing noise levels exceeding state standards is expected to increase in the APE as development and traffic levels increase. As development in the APE occurs in the future, local governments have opportunities to create buffers to decrease noise impacts by planning for the least noise-sensitive land uses (i.e., commercial and industrial uses) near locations that originate traffic noise. Where feasible and reasonable, noise mitigation (noise walls or barriers) along Highway 23/71 and potentially other roadways can continue to be monitored by the local governments and Mn/DOT.

Two physical characteristics of noise reduce the potential for cumulative impacts. Noise does not grow proportionately with the amount of traffic growth. A doubling of traffic volumes along a roadway will typically increase the sound level by 3 dBA, which is barely audible by the human ear. Traffic noise levels are also generally localized and tend to disburse over relatively short distances.

Visual Quality

The natural environment is comprised on those visual elements not constructed by humans. Natural elements within the APE include forested areas, wetlands and lakes. The cultural environment includes visual elements that are the result of human

modification of the natural landscape or construction activities such as clearing and grading for agriculture and construction of homes, businesses, and roadways.

Past and Existing Conditions

Visual conditions in the APE vary and include natural and agricultural areas, and developed areas. The visual setting includes shoreland residential development around area lakes, clusters of isolated residential neighborhoods and single farmsteads, clusters of low-rise strip commercial buildings, roadway pavement and associated right-of-way features (ditches, signs, etc.), and large expanses of farmland.

Impacts from the Proposed Action

Each of the build alternatives would impact, in varying degrees, the viewsheds of visual corridors within the APE by introducing views of vehicular traffic, pavement, bridges and other structural roadway features, and new lighting.

Impacts from Other Future Actions

Additional development and associated roadway construction may affect the visual qualities of the APE as it continues to transition from a predominantly rural landscape to an urban landscape. While some individuals may value the aesthetic qualities of natural and rural environments, other individuals equally value orderly and well-designed developed areas. Local controls may affect the visual quality of development.

Potential for Cumulative Impacts

Anticipated future development and the proposed action are anticipated in the 2030 Land Use Plan developed for the project APE and by policy guidance in the Kandiyohi County Comprehensive Plan, and therefore, no cumulative impacts are anticipated. Individuals who value natural environments may view further development in the APE as a degradation of visual quality, while others value orderly and well-designed developments. These differences in values cannot be clearly interpreted as adverse impacts.

Vegetation and wildlife

Past and Existing Conditions

Where development has occurred, including agricultural production areas, impacts to vegetation and wildlife have also occurred. Impacts are the greatest where natural areas are developed and trees, vegetation, and wildlife habitat are impacted. The health and abundance of wildlife populations is largely dependent on the quality and quantity of habitat available to support them. Past and present development has fragmented and reduced the quality of wildlife habitat.

Vegetative resources within the APE include successional species including Eastern cottonwoods, green ashes, and box elders, and extensions of the eastern hardwood forest communities are also found primarily along the shores of the area's lakes, where native oak, maple, and basswood species that is sporadically found in Kandiyohi County. The only Minnesota Department of Natural Resources Natural Heritage Information Systems (NHIS) occurrence in the APE is a State-listed species of special

concern, the sea naiad, located in Point Lake. There are no Federally-listed threatened and endangered species in the APE.

Impacts from the Proposed Action

The build alternatives impact wetlands, native vegetation, and agricultural lands. One of the North Connection Alternatives (Alternative N4) affects the sea naiad, a State-listed species of special concern. Areas impacted by the build alternatives would experience exposure to the new roadway including impacts from bridge abutments, piers, and storm water ponds and channels. The build alternatives would also introduce trash, debris and salt spray for winter deicing as an impact to vegetation resources.

Impacts from Other Future Actions

Future anticipated developments on undeveloped lands in the APE could result in the loss of native vegetation, wooded areas and wetlands, and wildlife habitat. Future actions that require environmental review processes under Federal and/or the State of Minnesota's Environmental Protection Act (MEPA) are expected to identify and potentially avoid or minimize impacts to wildlife habitat. Where impacts are unavoidable, it is likely that exercise of land use controls through project review and permitting requirements by the appropriate regulatory agencies would include use of design considerations to reduce the overall impact.

Potential for Cumulative Impacts

The proposed action, in combination with other foreseeable actions in the area, could result in cumulative impacts on vegetation and wildlife habitat resources regardless of the build alternative chosen for construction. Development controls available to the local governments to protect vegetation and wildlife within the APE from cumulative impacts include conservation easements, shoreland zoning ordinance enforcement, and Minnesota Wetland Conservation Act (WCA) rules.

Wetlands

Past and Existing Conditions

Historically, many of the wetlands in the project APE have been filled, drained, or disturbed by human activity associated with agricultural production or land development for residential or commercial developments.

Wetlands in Minnesota are federally regulative by Executive Order 11990, U.S. DOT Administrative Order related to the impacts of transportation projects on wetlands and by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. In addition to the Federal regulation, Minnesota wetlands are also regulated by the Governor's Executive Oder 91-3, the Minnesota WCA rules, and the Minnesota Department of Natural Resources Division of Waters.

Wetlands in the project APE are either isolated wetlands or ditches connected to roadway right of way. Nearly all of the wetlands in the project APE are dominated by invasive species, primarily reed canary grass and cattails. Small remnant stands of sedges are found in portions of these wetlands and other native forbs are often imbedded or persistent as well. Upland portions of the wetlands are dominated by

either farmland or weedy trees and shrubs such as eastern cottonwood, box elder, and/or buckthorn species.

Impacts from the Proposed Action

As described in DEIS Table 26, the build alternatives would directly affect wetlands as follows:

Alternative 1A:	3.129 acres
Alternative 1B:	3.83 acres
Alternative 2A:	3.853 acres
Alternative 2B:	4.281 acres
Alternative N1:	0.00 acres
Alternative N2:	0.00 acres
Alternative N3:	0.00 acres
Alternative N4:	1.26 acres

Wetland functions and attributes include vegetation diversity, wildlife habitat and food, flood/storm water discharge, sediment and nutrient retention, aesthetics/recreation and groundwater recharge and discharge. Impacts to wetlands caused by construction can diminish these functions and affect the benefits these unique ecosystems contribute to landscapes.

Impacts from Other Future Actions

The continued growth and development associated with the trend of urbanization throughout the APE is likely to have a corresponding continued impact on wetlands through filling. Similarly, expansion of existing or construction of new roadways may impact wetlands.

Potential indirect impacts on wetlands from residential and commercial development could occur from storm water discharges into wetlands. Increased flow into wetlands could alter hydrology, causing changes in plant communities and disrupting life cycles of wetland inhabitants. Increases in storm water flow and increased nutrients and sediment also could result in wetland degradation. Fragmentation of wildlife habitat could also occur with increase development since many animals use both wetlands and uplands during their life cycles.

Potential for Cumulative Impacts

The impact to wetlands from past and future development in this area, which has been and will continue to experience urbanizing development, is anticipated to result in cumulative impacts to the area's wetland resources. There are extensive regulations in place to protect wetlands in Minnesota; still, there are some limitations of the wetland protection system that allow for exemptions to the regulations that may result in wetland loss.

Water Quality and Quantity

Past and Existing Conditions

Two of the five area lakes in the project APE have various levels of recorded impairment. Long Lake is impaired for nutrients and for excessive mercury. Eagle Lake is has been designated by the Minnesota Pollution Control Agency (MPCA) as impaired for mercury. Swan Lake, Skataas Lake, and Point Lake are not classified as impaired waters. Total Maximum Daily Loads (TDMLs) have not been established for Long Lake or Eagle Lake. Other water courses and receiving waters that could be affected by the proposed project include Hawk Creek. The project APE is located within the Minnesota River Watershed and the Hydrologic Unit Code (HCU) level four (2500) watershed is Hawk Creek - Yellow Medicine River watershed.

Storm water from the project APE flows either directly or indirectly to Point Lake, Eagle Lake, Swan Lake, Skataas Lake, and Long Lake. Point Lake is hydrologically connected to Eagle Lake via a culvert that Kandiyohi County controls by a manually operated valve. County personnel open the valve periodically throughout the year to release water from Point Lake. Water from Eagle Lake flows via Hawk Creek to Swan Lake. Skataas Lake is hydrologically upstream from Swan Lake. With the exception of Swan Lake, all project build alternatives are located hydrologically downstream of the lakes in the APE.

Conversion of open lake open land to impervious surface increases runoff that may carry pollution and sediments and cause erosion as it discharges into surface water bodies. Degrading water quality can adversely affect fish, waterfowl, wildlife, and plant life sustained by the affected water body.

Impacts from the Proposed Action

Each of the build alternatives will have minimal impacts on the actual watershed boundaries. Culverts, ditches, and storm water ponds will be incorporated into the final design in order to maintain existing drainage patterns. Lakes hydrologically downstream of the project will receive increased surface runoff rates and volumes as a result of adding impervious surface.

As described in DEIS Section 4.2.6, any of the build alternatives would incorporate design features to effectively treat roadway and bridge storm water runoff prior to discharge into surface waters. In addition to permanent storm water runoff treatment and permanent erosion control, temporary erosion control and temporary storm water pollution preventions measures would be used during construction. Water quality mitigation is included as a part of the National Pollutant Discharge Elimination System (NPDES) Construction Storm Water Permit program. The NPDES permit will address potentially elevated levels of highway runoff and associated contaminants, including sediments, nutrients, heavy metals, oil, grease, and deicing chemicals.

Impacts from Other Future Actions

In general, urbanization of existing agricultural land uses is expected to result in increased impervious surfaces. As the percent of impervious surface increases in a watershed, the volume of storm water runoff increases. Increased runoff, if not properly managed, can have a variety of adverse impacts on receiving water bodies. These potential impacts include increased changes of flooding, erosion of

drainageways, warming of stream waters, and decreased groundwater based flow due to less infiltration. Storm water management practices are routinely used to reduce the magnitude of these potential impacts.

Potential for Cumulative Impacts

Given the design standards and management controls available for protecting the quality and quantity of surface waters and groundwater, it is likely that potential impacts of the project, along with other foreseeable actions, would be minimized or mitigated to a substantial degree, and therefore cumulative impacts on water quality and quantity are not anticipated.

Parks, Trails, and Outdoor Recreation Facilities

Past and Existing Conditions

On the eastern perimeter of the project APE is the Glacial Lakes Trail, a 40 mile multipurpose paved trail used for hiking, bicycling, horseback riding, inline skating, and snowmobiling during winter months. A 127 acre wildlife management area (WMA) containing several mature woody cover plantings, several wetlands, and native/non-native grass covered fields, is immediately adjacent to the Highway 23/71 Corridor. A boat launch, dock, and small parking area associated with a public waters access of Point Lake is also located immediately adjacent to the Highway 23/17 Corridor. Each of these facilities is managed by the Minnesota Department of Natural Resources. In addition, Eagle Creek Golf Course, an 18-hole regulation course open to the public is located between Swan and Willmar Lakes on the western perimeter of the project APE.

Impacts from the Proposed Action

Patrons using the Point Lake Public Waters boat launch will be potentially impacted by the closure of Highway 23/71's access at 26th Street NE. Access to the boat launch and other properties using 26th Street NE will be provided by one of four North Connection alternatives (N1, N2, N3 or N4) such that no land acquisition of the Point Lake public waters access will occur. However, to maintain access to the boat launch as well as other properties that currently use the direct Highway 23/71 access from 26th Street NE, new roadways must be constructed, each with adverse impacts on various resources and varying levels of severity.

Impacts from Other Future Actions

There are no anticipated actions that will impact these resources.

Potential for Cumulative Impacts

To maintain access for the boat launch, residential and commercial properties that use access provided by 26th Avenue NE, cumulative impacts may result from the proposed action if a build alternative is chosen that is adjoined with a North Connection Alternative that also has adverse impacts. North Connection Alternatives N1, N2, N3, or N4 each requires the commitment of non-renewable resources to prevent the acquisition of residential and business properties and potential closure of the boat launch due to the Highway 23/71 access closure at 26th Avenue NE. In the case of Alternative N4, the consequences of potentially filling a small portion of Point Lake to

accommodate a new service road represent an extremely adverse effect to the lake's resources, including a DNR-protected species, to maintain this access.

Cultural Resources

Past and Existing Conditions

Three archaeological resources exist within the project APE that demonstrated a high potential for containing archaeological sites that could be eligible for the National Register of Historic Places (NRHP). Property access was not granted to make eligibility determinations for these properties.

There were no historic resources identified within the project APE that could be considered eligible for the NRHP.

Impacts from the Proposed Action

As describe in DEIS Section 4.2.15, the three properties that were not able to be evaluated will require additional survey and evaluation if the project's preferred alternative requires land acquisition in these areas.

Impacts from Other Future Actions

There are no anticipated actions that will impact these resources.

Potential for Cumulative Impacts

The proposed action, in combination with past and future actions, may result in cumulative impacts to archaeological sites, if any of the three unsurveyed properties yields archaeological resources determined to be eligible for the NRHP. Cumulative impacts to archaeological properties are identified in conjunction with the criteria of adverse effect in 36 CRF 800.5(a)(1), noting that adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

Conclusions

The greatest potential for cumulative impacts exists in the issue areas related to land development, vegetation and wildlife, and wetlands. Table 32 summarizes potential cumulative impacts by issue area according to likelihood of impact. Potential impacts to these resources resulting from development projects are typically considered through local and county comprehensive planning efforts, permitting regulations and environmental review processes of NEPA and MEPA. In addition to permitting processes that engage legislation protecting resources such as wetlands, many of these potentially cumulative impacts can be avoided or minimized through the continued application and enforcement of land use planning, land development controls (zoning and subdivision ordinances), and roadway access restrictions.

Table 32
Summary of Potential Cumulative Impacts

Resource / Issue	Potential for Cumulative Impacts	
	Higher Potential	Lower Potential
Land Development - conversion of agricultural uses to more intensive uses	●	
Social Environment		●
Traffic Noise		●
Visual Quality		●
Vegetation, Wildlife, and Threatened & Endangered Species	●	
Wetlands	●	
Water Quality and Quantity		●
Parks, Trails, and Outdoor Recreation Areas	●	
Cultural Resources	●	