

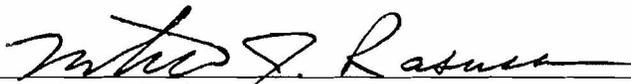
County State Aid Highway 21
From
County State Aid Highway 18 to County State Aid Highway 42
And Transit Station
Scott County, Minnesota

Minnesota Project: *[Not Yet Assigned]*
State Project Number: SP 70-621-24

DRAFT
ENVIRONMENTAL IMPACT STATEMENT

Submitted Pursuant to 42 U.S.C. 4332(2)(c), 23 U.S.C. 138,
And Minn. Stat., Chapt. 116D

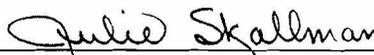
By
U.S. Department of Transportation,
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And
Minnesota Department of Transportation
And
Scott County
And
Cooperating Agency
U.S. Army Corps of Engineers


Scott County Engineer

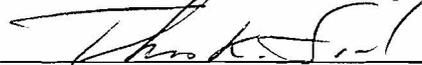
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Scott County proposes to extend CSAH 21 between CSAH 42 in Prior Lake, Minnesota and CSAH 18 at Southbridge Parkway in Shakopee, Minnesota, a distance of approximately three miles. The proposed CSAH 21 project is intended to provide a needed link in the countywide roadway system to properly manage traffic resulting from current and planned development in Scott County. The facility is proposed as a four-lane expressway for the majority of the corridor with three options at the CSAH 21/CSAH 18 intersection under consideration, including a four-lane at-grade intersection option, a six-lane at-grade intersection option, and a four-lane interchange option. Two alignment options for a portion for the Build Alternative are also under consideration. Finally, the proposed project includes a 500-space surface transit station (sometimes referred to as a park-and-ride) in the southwest quadrant of the CSAH 21/CSAH 16 intersection.

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1.0 EXECUTIVE SUMMARY

Scott County proposes to extend County State Aid Highway 21 between CSAH 42 in Prior Lake, Minnesota and CSAH 18 at Southbridge Parkway in Shakopee, Minnesota, a distance of approximately three miles. (See Chapter 2, Figure 2-1) The proposed CSAH 21 project is intended to provide a needed link in the countywide roadway system to properly manage traffic resulting from current and planned development in Scott County. The facility is proposed as a four-lane expressway for the majority of the corridor with three options at the CSAH 21/CSAH 18 intersection under consideration, including a four-lane at-grade intersection option, a six-lane at-grade intersection option, and a four-lane interchange option. In addition, two alignment options within the same Build Alternative corridor between CSAH 42 and CSAH 16 are under consideration. Finally, the proposed project includes a 500-space surface transit station (sometimes referred to as a park-and-ride) in the southwest quadrant of the CSAH 21/CSAH 16 intersection.

The need for the extension of CSAH 21 was originally identified in 1990 with a corridor study for CSAH 18 and CSAH 21 as part of the planning related to the new Trunk Highway (TH) 169/Bloomington Ferry Bridge and TH 169 bypass. The study identified the need for an additional north-south roadway between CSAH 83 and CSAH 18 based on Metropolitan Council roadway spacing criteria for developing areas. The scoping process that resulted in selection of a Build Alternative for analysis in the Draft Environmental Impact Statement (DEIS) is documented in the *Scoping Document/Draft Scoping Decision Document (SD/DSDD)*, dated April 2003. The need for the transit station is documented in the *Scott County Unified Transit Management Plan 2005 (UTMP)* and the *Metropolitan Council's Regional Park-and-Ride Study*.

The U.S. Army Corps of Engineers (COE) was invited by the Federal Highway Administration (FHWA) to be a “cooperating agency” for the project including the Environmental Impact Statement (EIS) pursuant to the Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) (40 CFR, Part 1501.6) and the Corps of Engineers permit authority under Section 404 of the Clean Water Act (33 CFR 320-330).

A Technical Advisory Committee (TAC) was formed to guide the EIS process. The committee includes representatives from federal, state, regional, tribal, and local agencies/governments. The DEIS process also included coordination with several natural and cultural resources agencies and numerous opportunities for public and agency comments.

1.1 PURPOSE OF THE CSAH 21 PROJECT

The need for the CSAH 21 extension between CSAH 42 in Prior Lake, Minnesota and CSAH 18 at Southbridge Parkway in Shakopee, Minnesota was originally established during planning related to the new TH 169/Bloomington Ferry Bridge and TH 169 bypass. Since that time, additional transportation policies, studies and forecasts have reconfirmed and strengthened the need for improvements to the transportation system connection between CSAH 42 and CSAH 18. The proposed CSAH 21 project is consistent with the current adopted Scott County

Comprehensive Plan. The proposed transit station is consistent with the Scott County UTMP and the *Metropolitan Council's Regional Park-and-Ride Study*. Problems and needs to be addressed by the proposed project include:

- Functional Classification/Spacing

Scott County has concluded that to meet growing needs and the metropolitan functional classification roadway spacing criterion, an additional north-south arterial should be constructed between the two existing north-south arterial roadways in the study area, CSAH 18 and CSAH 83, which are three miles apart.

- Travel Demand/Capacity

Scott County is the fastest growing county in the Twin Cities Metropolitan Area. The regional development framework and City and County plans indicate that rapid development will continue resulting in additional traffic on the roadway system. Travel forecasts completed during both the scoping study (year 2025 forecast) and the DEIS study (year 2030 forecast) demonstrated that the CSAH 21 extension will relieve traffic on the parallel roadways including CSAH 83, CSAH 18, TH 13 and the connection between TH 169 and TH 13. The proposed project would serve the communities of Shakopee, Prior Lake and Spring Lake Township.

- Continuity

Continuous north-south arterials throughout Scott County allow for efficient movement through the County from a wide range of origins to a wide range of destinations. The existing segment of CSAH 21 provides continuity from one side of Prior Lake to the other and between Prior Lake and Lakeville/I-35. The proposed CSAH 21 extension would extend this continuity north to the metropolitan highway system. The existing roadways (CSAH 21 south of the proposed project and CSAH 18 north of Southbridge Parkway) were designed in anticipation of the proposed project in order to allow for a smooth transition between the existing and proposed roadway segments.

- Increased Transit Use

Unmet transit demand in the southern metropolitan area, Minneapolis corridor, along TH 169 in the year 2010 is 400 riders, as identified in the *Metropolitan Council's Park-and-Ride Facility Plan*. The Scott County UTMP recommends construction of a park-and-ride site in the vicinity of TH 169 and CSAH 18 to remove single occupancy vehicles from freeways during peak periods through increased transit use.

1.2 ALTERNATIVES

Process of Developing CSAH 21 Alternatives

The process of developing alternatives for the CSAH 21 extension has included a number of studies and an increasing level of refinement of alternative concepts over the past 15 years. The scoping process for the project began with a 1990 study that recommended extension of CSAH 21 as the long-term solution to meet the need for a new north-south arterial in the study area bounded by the TH 101/Shakopee bypass on the north, CSAH 42 on the south, CSAH 83 on the west and TH 13 on the east (see Chapter 3, Figures 3-1 and 3-2).

Scoping continued in 1992 with a follow-up study to define a preferred alignment (see Chapter 3, Figures 3-3 and 3-4).

In 2002-2003, the County conducted a study to document the scoping process that was initiated in 1990, to update relevant traffic and environmental issues and to identify alternatives and social, economic and environmental issues to be addressed in the DEIS. The *Scoping Decision Document* (SDD) dated July 22, 2003, describes the No Build and Build Alternative analyzed in the DEIS. Figure 2-1 in Chapter 2 identifies the study area and the existing transportation system.

The County initiated work on the DEIS in November 2003. The initial task was refinement of the 2003 Build Alternative identified in the SDD. Several Build alignment/design iterations were generated and evaluated against the key objectives of (1) safe and efficient road design, (2) minimized grading impacts, (3) vegetation/habitat preservation, (4) wetland protection, and (5) minimized property impacts. Four sub-alternatives (two south of CSAH 16) and two north of CSAH 16 were developed during this stage of study and presented for public review. One alternative south and one alternative north of CSAH 16 were carried forward for further study in the DEIS. The County also reviewed three design options for the CSAH 21/CSAH 18 intersection. Following public review, all three design options were carried forward for further study.

Following is a brief description of the resulting Build Alternative and CSAH 21/CSAH 18 intersection design options studied in the DEIS.

Build Alternative:

- South of CSAH 16: An urban section with a reduced design speed and alignment to avoid impacts to a Minnesota Department of Natural Resources (DNR) wetland. Refinement during the DEIS also allowed for a lower design speed from CSAH 42 through the upper bluff which will avoid property impacts south of CSAH 42, avoid the need to reconstruct the entire CSAH 21/CSAH 42 intersection and further protect wetlands and vegetation while minimizing property and grading impacts. (Sub-Alternative 8)

South of CSAH 16 Alignment Options:

Note: These options diverge from one another approximately 1,000 feet north of CSAH 42 and approximately 1,600 feet south of CSAH 16, a distance of approximately one-half mile. The maximum distance (centerline to centerline) between the two alignment options is 325 feet.

- **West Alignment:** Follows existing topography to minimize impacts to forest core vegetation and wildlife habitat.
- **East Alignment:** Follows the property line to balance impacts to affected properties, including Shakopee Mdewankanton Sioux Community (SMSC) and YMCA Camp lands.

- North of CSAH 16: An urban section with the alignment shifted to the south within the existing County right of way in order to avoid tree impacts and to maximize the buffer between the Southbridge residential development and the proposed roadway. (Sub-Alternative 4)

CSAH 21/CSAH 18 Intersection Design Options:

Note: Each of these options has the same design elements as the Build Alternative from CSAH 42 to CSAH 16.

- **Four-lane at-grade intersection**: At-grade intersection with double left-turn lanes on all four approaches to the intersection, double right-turn lanes on northbound CSAH 18 to northbound CSAH 21 and two through lanes in each direction on CSAH 21, CSAH 18 and Southbridge Parkway. This option also includes 12-foot wide bus-only shoulder lanes north of CSAH 16 (compared to 10-foot wide shoulders south of CSAH 16).
- **Six-lane at-grade intersection**: At-grade intersection with three through lanes in each direction on CSAH 21, two through lanes on CSAH 18 and Southbridge Parkway, double left-turn lanes on all four approaches to the intersection and double right-turn lanes on northbound CSAH 18 to northbound CSAH 21. The transition from two to three lanes on CSAH 21 occurs approximately 2,000 feet west of CSAH 18. This option also includes 12-foot wide bus-only shoulder lanes north of CSAH 16 (compared to 10-foot wide shoulders south of CSAH 16).
- **Four-lane interchange**: Interchange with two through lanes in each direction on CSAH 21, a compact diamond design, close spacing of ramp intersections with specific traffic signal phasing, double left-turn lanes on the CSAH 21 exit ramps, double right-turn lanes on northbound CSAH 18 to the northbound CSAH 21 on-ramp and CSAH 21 bridging over Southbridge Parkway/CSAH 18. This option does not include special bus-only shoulders (i.e., shoulders are 10-feet wide).

CSAH 21 Alternatives Evaluated in the DEIS

The No Build Alternative would perpetuate the existing CSAH 18 designation as the County's north-south principal arterial within the study area. County State Aid Highway 21 would continue to terminate at CSAH 42.

The Build Alternative selected for study in the DEIS considers two alignment options (western and eastern) within the Build Alternative Corridor, south of CSAH 16 and one alignment option within the Build Alternative Corridor north of CSAH 16, it also includes three options (two at-grade intersections and one grade-separated interchange) for the CSAH 21/CSAH 18 intersection. The Build Alternative represents an urban cross-section design that is divided into a four-lane expressway with two 12-foot lanes of traffic in each direction with protected left turn lanes at intersecting roadways. The proposed cross-section includes a trail along the east side of the roadway and two grade-separated wildlife crossings, a large one at the south edge of the bluff and a smaller one included as part of a pedestrian crossing (underpass) north of CSAH 16.

Transit Station Location Alternatives

Scott County completed a major comprehensive transit study (the Unified Transit Management Plan – UTMP in July 2005) that integrates and combines the findings of several transportation studies completed in the region. The principal goal of the study is to provide a blueprint for Scott County and its communities to follow in bringing about public transit improvements over the next 20 years.

The study envisions the establishment transit facilities in the vicinity of proposed CSAH 21 due to its accessibility to TH 169. In addition to the transit station planned for the CSAH 21/CSAH 16 intersection, southwest quadrant, a number of sites for an additional location were under consideration during the DEIS preparation. Analysis was conducted to assess the effect of transit facilities (at five locations) on intersection operations in the study area, as well as the effect of location on peak hour bus travel time and peak hour vehicle hours of travel. The five transit station locations are shown in Chapter 4, Figure 4-1.

1.3 COSTS/FUNDING

Preliminary cost estimates for the DEIS alternatives have been prepared and are shown in the following table. The table includes cost estimates for construction of the proposed improvements and right of way acquisition costs. These estimates are in 2005 dollars.

Depending upon which alignment option is selected south of CSAH 16 and which intersection design option is selected north of CSAH 16, the total cost of the roadway portion of the project is estimated to range from \$14,901,057 to \$21,400,057. The estimated cost of the transit station portion of the project is \$2,350,000.

Funding sources have yet to be identified; however, it is anticipated that funding will be a combination of County and state and additional federal funds. The County has utilized approximately \$1,000,000 in federal high priority project demonstration funds (SP 70-621-22) to acquire an approximately 103-acre parcel, a portion of which will be right of way (under protective purchase provision). The City of Shakopee has collaborated on this acquisition.

**TABLE 1-1
COST ESTIMATES FOR CSAH 21 EXTENSION**

	With 4-Lane at-grade at CSAH 21/ CSAH 18	With 6-Lane at-grade at CSAH 21/ CSAH 18	With 4-Lane interchange at CSAH 21/ CSAH 18
Construction Cost Western/Eastern	\$12,715,709/\$12,223,557	\$14,813,603	\$18,197,557
Right of Way Cost* Western/Eastern	\$2,772,000/\$2,677,500	\$2,835,000/\$2,740,500	\$3,202,500/\$3,108,000
Total Cost Western/Eastern	\$15,487,709/\$14,901,057	\$17,648,603/\$17,554,103	\$21,400,057/\$21,305,557

*Right of way estimate reflects a blended value of \$105,000/acre based on recent sales.

1.4 SCHEDULE

The following is the anticipated schedule for completion of the environmental review process and project construction:

**TABLE 1-2
PROJECT SCHEDULE**

Task/Activity	Completion Date
DEIS release for public review and comment	July 2006
Public Hearing	August 2006
DEIS comment period concludes	August 2006
Selection of Preferred Alternative	Fall 2006
FEIS release	2007
FHWA Record of Decision (ROD) and Scott County Adequacy Determination	2007
Right of Way Acquisition	2007-2008
Plan Preparation and Review	2008
Construction	2009

1.5 POTENTIAL IMPACTS

Following is a summary of the potential impacts identified in the DEIS. These impacts may be able to be further minimized through avoidance and minimization efforts during final project design, but represent a reasonable basis for comparison among alternatives for the purpose of identifying a preferred alternative. The impacts are described in greater detail in Chapters 4 through 11.

Impacts discussed throughout the Draft Environmental Impact Statement (DEIS) relate to the roadway portion of the project, not the transit station component, except where impacts related specifically to the transit station are noted.

Transportation System Impacts

- Traffic Operations

It is estimated that, in the Build year (2030), the proposed new segment of CSAH 21 between CSAH 42 and CSAH 16 will carry a daily traffic volume of 26,000 and that the segment between CSAH 16 and CSAH 18 will carry 30,000 vehicles per day under either of the CSAH 21/CSAH 16 at-grade intersection options or 32,000 vehicles per day under the CSAH 21/CSAH 18 interchange option. Compared to No Build conditions, a new segment of CSAH 21 reduces traffic on the following parallel roadways: CSAH 83, CSAH 18, the connection between TH 169 and TH 13, and TH 13.

The results of the No Build analysis indicate that under the No Build Alternative, the intersections of CSAH 18/Southbridge Parkway and CSAH 18/CSAH 42 will continue to operate at acceptable overall level of service (LOS) during the a.m. peak hour; however, they would operate at unacceptable LOS in the p.m. peak hour. In addition, the intersections of CSAH 18/CSAH 16 (west leg) and CSAH 21/CSAH 42 are expected to operate at unacceptable levels during both the a.m. and p.m. peak hours, with existing geometrics and traffic controls. Installation of a traffic signal at the CSAH 18/CSAH 16 intersection would improve operations at that intersection to LOS C or better.

The results of the Build analysis indicate that, under the Build Alternative (2030), the CSAH 18/CSAH 16 (west leg) intersection and the CSAH 21/CSAH 18 four-lane at-grade intersection option are expected to operate at unacceptable overall LOS in both the a.m. and p.m. peak hour. Installation of a traffic signal at the CSAH 18/CSAH 16 intersection would improve operations at that intersection to LOS C or better. All other key intersections are expected to operate at acceptable LOS.

The segment of CSAH 21 between TH 169 and CSAH 18 may require two design modifications as traffic volumes increase. In the northbound direction, the ramp from CSAH 21 to northbound TH 169 will need to be modified to accommodate two lanes from CSAH 21. In the southbound direction, an acceleration lane from the northbound TH 169 ramp to CSAH 21 may need to be considered. These two locations should be monitored to determine when recommended improvements may be needed.

Operations analysis was conducted for a.m. and p.m. peak hours at seven study area intersections for the planned transit station at CSAH 21/CSAH 16 and for the four potential transit station locations. Each of the Build options for the CSAH 21/CSAH 18 intersection was analyzed for each transit station location. Location of a transit station at the planned CSAH 21/CSAH 16 site as well as at three of the potential sites analyzed resulted in acceptable LOS D or better at all studied intersections in the a.m. and p.m. peak hours. Location Number 1 (southwest quadrant of CSAH 18/TH 169) causes the Southbridge Parkway/Old Carriage Hills Court intersection to operate at an unacceptable LOS E (level of service) under the four-lane intersection option during the a.m. peak hour and to operate at an unacceptable LOS F under each of the three intersection options during the p.m. peak hour. All other key intersections are expected to operate at acceptable LOS during the a.m. and p.m. peak hours for each intersection option and each transit site location.

- Transit

Scott County recently completed a major comprehensive transit study with the goal of providing a blueprint for Scott County and its communities to follow in bringing about public transit improvements over the next 20 years. The project includes a transit station at the CSAH 21/CSAH 16 intersection (southwest quadrant). In addition, a transit facility is being considered for the southeast quadrant of CSAH 18/TH 169. While the facility at CSAH 21/CSAH 18 is not proposed as part of the CSAH 21 extension project, analysis was conducted to assess the effect of both the planned and future transit facilities (at five sites

including the planned site) on intersection operations in the study area, as well as the effect of location on peak hour bus travel time and peak hour vehicle hours of travel. The analysis found that the location of a transit station at the planned site resulted in LOS D or better at all studied intersections in the a.m. and p.m. peak hours.

Coordination with a representative of the Mystic Lake Casino concluded that its shuttle service would not use the proposed CSAH 21 extension. Therefore, the construction of this project is not expected to affect transit service to and from the Casino.

- Access

The proposed project would result in changes in access to the existing county road system, the existing and planned city road systems and to TH 169. County State Aid Highway 21 would not provide access to individual properties. The Build Alternative does not eliminate existing access to any non-agricultural developed parcels. It severs two farms. The western alignment option south of CSAH 16 severs land owned by the Shakopee Mdewakanton Sioux Community (SMSC). Where access to any property is severely compromised, acquisition of the severed portion of the lot will occur or appropriate damages will be paid.

The six-lane at-grade intersection and four-lane interchange options at CSAH 21/CSAH 18 both remove current southbound CSAH 18 right-in access to Shakopee Crossings. Access to Shakopee Crossings from southbound CSAH 18 will still be available via Southbridge Parkway to Old Carriage Hills Court. The four-lane at-grade intersection design option for the CSAH 21/CSAH 18 intersection would retain the existing right-in Shakopee Crossings access off of southbound CSAH 18.

- Pedestrian/Bicycle Traffic

The proposed project includes construction of a trail along the east side of the roadway. The project provides for a grade-separated pedestrian crossing (underpass) between a proposed park west of CSAH 21 and future residential development east of CSAH 21. The project provides for pedestrian crossings at signalized intersections in the corridor. Currently, there is a pedestrian/bicycle trail along CSAH 42 that will connect to the new trail along CSAH 21. There are currently no formal snowmobile facilities in the project area.

Social and Economic Impacts

- Social

The project corridor is largely undeveloped and the proposed roadway extension would not divide any existing neighborhoods. No impact to community cohesion regarding existing or planned neighborhoods is anticipated. The Build Alternative would improve connectivity between Prior Lake and the areas north of CSAH 42 and generally increase accessibility to community facilities and services. The planned transit station would help address the unmet transit demand in the southern metropolitan area.

The western alignment option south of CSAH 16 would sever land owned by the SMSC located in the upper forested bluff portion of the project area, removing 8.3 acres of land from the total holdings (over 2,000 acres) of the tribe in the Shakopee and Prior Lake area. It is assumed that the severed portions of land would be acquired (or appropriate damages paid) in addition to the necessary right of way. No individuals would be displaced. SMSC staff has advised that the affected wooded area that is intended as a passive nature preserve has been used for student education (e.g., maple syruping) opportunities.

The eastern alignment option south of CSAH 16 would acquire 3.3 acres of land owned by the SMSC along its property line. The eastern alignment option would also acquire 2.1 acres of land owned by the Greater Minneapolis YMCA and used as a day camp. A trail is located on the affected YMCA land.

Note that SMSC has a pending application to the Bureau of Indian Affairs (BIA) to convert the affected land currently owned in fee to land held in trust. If the application is approved, the County could not acquire the property through its power of eminent domain.

The SMSC is represented on the project Technical Advisory Committee (TAC) and its representatives have attended most of the meetings that have occurred since the scoping process began in 2002.

Consistent with Executive Order 12898, the proposed project was reviewed to determine if there are disproportionately high or adverse effects on any minority or low-income population. It was concluded that the proposed project will not have a disproportionate adverse impact on low-income or minority populations. There are no known concentrations of low income persons within the project area. As noted, SMSC owns affected land some of which it intends to develop for residential use by its members, though no residential lots are affected. The western alignment option south of CSAH 16 has greater impact to SMSC land than does the eastern alignment. Under either option, right of way, noise and visual impacts are neither predominately borne by SMSC members nor are more severe than those experienced by others in the study area.

- Land Use

The Build Alternative would have direct impact (i.e., conversion of land to highway use) on agricultural and undeveloped land. There would be relatively minor impacts on commercial land for the six-lane at-grade and four-lane interchange design options (see Table 1-3). No existing structures would be affected. The following is a table that identifies the right of way impacts associated with each of the Build Alternatives.

All 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, and effective April 1989. The proposed project will not provide direct access to property, and is accounted for in future land use plans of the two affected cities, and is therefore not expected to have indirect land use impacts.

**TABLE 1-3
RIGHT OF WAY IMPACTS**

SOUTH OF CSAH 16*	Western Alignment		Eastern Alignment	
Land Use				
Acres				
Agricultural	8.6		8.4	
Commercial	0.0		0.0	
Residential	9.5		11.7	
Public/Semi-Public (YMCA)	0.0		2.1	
SMSC	8.3		3.3	
Total - South of CSAH 16	26.4		25.5	
Property Owners	6		8	
NORTH OF CSAH 16				
	4-Lane At-Grade Intersection**	6-Lane At-Grade Intersection**	4-Lane Interchange**	
Land Use				
Acres				
Agricultural	0.0	0.0		0.0
Commercial	0.0	0.6		4.1
Residential	0.0	0.0		0.0
Total - North of CSAH 16	0.0	0.6		4.1
Property Owners	0	1		1
Total Right of Way Western/Eastern Alignment	26.4/25.5	27.0/26.1	30.5/29.6	

* Right of way required between CSAH 42 and CSAH 16

** Additional right of way required north of CSAH 16

- Economic Impacts

The Build Alternative involves no total acquisitions and therefore will result in no loss of employment or the need to allocate for relocation costs. There will be some effect on the tax base due to the conversion of some private property to public ownership. It is premature however to anticipate the effect, or to estimate the change in property values associated with the proximity to the proposed project and increased access. Regardless of the effect of the project on the value of any individual property, in comparison to the total taxes payable for the two affected communities and the County, the effect is anticipated to be minimal.

Physical and Natural Environmental Impacts

- Air Quality

No specific long-range mitigation measures for the roadway project are necessary to maintain air quality standards because projected carbon monoxide (CO) levels for the worst-case conditions are below state and federal standards. The roadway project is included in the regional

conformity determination; no region-wide CO analysis is required. The planned transit station at CSAH 21/CSAH 16 will remove 500 vehicles from the freeway during peak periods. A quantitative analysis of CO, NO_x and VOC was conducted for the planned transit station. Results indicate that the total emission reduction from the project is 530.49 kg/day.

- Noise

Over the next 30 years, development in and around the study area will lead to increased traffic on many of the roads in the study area. This increased traffic will lead to higher traffic noise for the residences adjacent to these roads by the year 2030 regardless of whether the Build Alternative is selected.

Depending on options, existing daytime L₁₀ noise levels vary from 40 decibels (dBA) in isolated areas away from existing traffic noise sources, to 66 dBA along CSAH 42. Increased traffic on CSAH 42, CSAH 16 and CSAH 18 by the year 2030 would result in No Build daytime L₁₀ noise levels increasing by up to eight dBA over existing noise levels within the project area. Construction of the proposed project would result in an 18 dBA increase of L₁₀ noise levels over existing conditions in areas close to existing high volume roadways and up to 29 dBA in isolated areas currently not exposed to traffic noise.

Under Minnesota law, County roads such as the proposed CSAH 21 extension are exempt from state noise standards. However, highway projects with federal involvement must conform with Federal Highway Administration standards, including requirements for noise mitigation. Mitigation measures were studied in the areas where Build noise levels approached or exceeded federal threshold criteria or where there was a “substantial increase” (5 dBA or more) over existing conditions.

Using the Minnesota Department of Transportation’s (Mn/DOT) cost effectiveness analysis methodology, noise barriers have been found to be cost effective at four receptors (R8, R10, R11, and R13, see Figure 6-1). Based on these results, the County will propose noise mitigation in areas where it has been found to be reasonable as defined by Mn/DOT and FHWA. In addition to cost effectiveness (economic reasonableness), other factors may influence the noise mitigation plan. These other factors include feasibility of constructing barriers. Feasibility relates to physical and engineering constraints such as access to right of way, the presence of utilities, and soil conditions. Additionally, the effectiveness of reducing noise impacts and reducing the view of traffic will be evaluated against the potentially negative visual impacts of these barriers on the neighborhood. Consultation with residents and local governments will occur before any decisions are made regarding noise barriers.

- Prime and Statewide Important Farmland

The Build Alternative will acquire 8.6 acres (western alignment option) or 8.4 acres (eastern alignment option) of agricultural land affecting three farming operations. There is no difference in impacts to farmland among the three design options for the CSAH 21/CSAH 18 intersection. The Natural Resource Conservation Service (NRCS), in 2005, calculated that 18 acres of prime or unique farmland would be impacted by the proposed project. Since that time, a large farm has been sold to a developer thus reducing the amount of agricultural land affected by the proposed project. Refer to Appendix A for information on the AD 1006 results from 2005.

- Contaminated Properties

There are no sites within the project area that have been identified as having a high potential for contamination. A dump site in the vicinity of the proposed transit station and storm pond in the southwest quadrant of the CSAH 21/CSAH 16 intersection will need to be investigated further prior to construction. The site has been identified as a potential pond site. If necessary, the pond could be lined to protect the groundwater from potential contamination. Additionally, the site plan for the transit station may allow for the opportunity to integrate stormwater treatment via rain gardens.

- Vegetation, Wildlife, and Fisheries

Impacts of the Build Alternative would result in the conversion of vegetated areas to impervious surfaces and grassed medians within the roadway right of way. Approximately 22 acres of the identified Regionally Significant Ecological Area (RSEA) by Dean Lake will be impacted by the Build Alternative. RSEA designation is given to areas that have been found to have intact native plant communities or native animal habitat and that provide ecological functions such as connectivity, habitat and biological diversity. Under the western alignment option, the Build Alternative will impact approximately 23.6 acres of forest of which 0.8 acres have been determined to be maple-basswood forest core. Under the eastern alignment options, the Build Alternative will impact approximately 22.8 acres of forest of which 2.3 acres have been determined to be maple-basswood forest core. Construction of the Build Alternative would directly impact some wildlife habitat and potentially create a barrier to wildlife movement. Construction of the Build Alternative would cross the channel connecting Dean Lake with Pike Lake, which is used as a seasonal travel route for migrating fish. The Build Alternative would be designed with a culvert across the channel. Several opportunities for mitigation of impacts to vegetation, wildlife, and fisheries have been identified, as described in Section 6.5.

- State and Federal Threatened and Endangered Species

The Build Alternative will affect wetland habitat in the southern portion of the project corridor and the northern portion near Dean Lake. According to the Minnesota Department of Natural Resources (DNR), the proposed project will avoid most of the natural communities with the exception of the emergent marsh community. It is not anticipated that the project will have a direct impact on species of concern found in the area, Plains Pocket Mouse (*Perognathus flavescens*) Gopher Snake (*Pituophis catenifer*), or Rhombic-Petaled Evening primrose (*Oenothera rhombipetala*). Indirect impacts to other natural communities include isolation/fragmentation, or the introduction of invasive species.

In 2002 United States Fish and Wildlife Service (USFWS) determined that given the location and type of activity proposed, the project is not likely to adversely affect any federally listed or proposed threatened or endangered species or adversely modify their critical habitat. That determination by the USFWS was updated in correspondence dated July 20, 2005. (See Appendix A)

Measures to avoid impacts to the emergent marsh community in the project were incorporated during development of the Build Alternative. No other direct impacts are anticipated to result; however, if during construction protected plant or animal species are discovered, measures will be taken to avoid, minimize or alleviate the impact.

Best management practices (BMPs) will be implemented during construction to minimize disturbance to the project area. Vehicular disturbance will be minimized and materials will not be stockpiled in the area, if possible. Erosion control measures such as silt fences and straw bales will be used to reduce runoff during construction. Revegetation of disturbed soil will be completed as soon after construction as possible to reduce erosion and runoff and decrease the opportunity for invasion by exotic species. Other measures, such as proper construction equipment cleaning before entering the project area may also be implemented to decrease the opportunity for exotic species.

- Visual Impacts

The Build Alternative will introduce views of pavement and traffic to the visual setting for neighbors (where those views are not buffered by landscaping). In addition, the project will introduce views of the transit station, bike racks, bike lockers and lighting. Trees located within the City-owned buffer strip between the rear lot lines and the existing right of way, as well as trees that can be preserved along the right of way will partially screen views of the roadway from residents at the Southbridge development. Headlights from northbound traffic may be visible from selected locations at the Southbridge development, which is at a lower elevation than CSAH 21 to the south.

The construction of the proposed roadway will change the landscape by grading and introduction of pavement and other structural roadway features through currently undisturbed and wooded bluffs and farm fields. While urban roadway design may be less visually compatible than rural design with the existing rural landscape, the proposed design will not be inconsistent with the future plans for the area, which anticipate suburban development.

The six-lane at-grade intersection option will have more lanes than the four-lane at-grade intersection option and will therefore have a greater visual impact. The four-lane interchange option will bridge CSAH 21 over CSAH 18 and will be 27 feet above the current elevation of CSAH 18.

The visual effect of the project is mitigated in part by design and alignment features selected to minimize the cross section (i.e., urban design) and maximize the buffer between residential lots and the roadway on the north end. The transit station will provide landscaped buffers.

- Parks and Trails

The Build Alternative has no direct impact on any existing public parks, trails, or recreation areas. The eastern alignment option impacts a trail on the YMCA camp property. As noted, the proposed roadway will include a trail along its east side that will provide the opportunity for connections from the existing trails along CSAH 42 and CSAH 21 in Prior Lake to proposed trails at Dean Lake and the planned trails in the Southbridge development in Shakopee. A grade-separated crossing is also planned north of CSAH 16 to provide for pedestrian (as well as wildlife) movement between the proposed park west of CSAH 21 and future residential development east of CSAH 21.

Noise impacts to the proposed park were analyzed. The nearest receptor to the proposed park in the northwest quadrant of the CSAH 21/CSAH 16 intersection is R12. Because this area is adjacent to a highly traveled study area roadway, CSAH 16, noise levels under 2030 Build conditions at this receptor would be only one decibel higher than existing noise levels.

- Geology and Soils

The Build Alternative proposes to construct the CSAH 21 extension through areas of steep slopes. Potential impacts include erosion issues in the bluff areas, impacts to groundwater, and impacts of construction on soils in the northern portion of the study area. During the preliminary design process, the minimization of impacts to topography and landscape were considered. The existing roadway alignment was selected to follow the existing topography and minimize the need for grading. Current estimates for excavation and fill/borrow have been identified as follows:

**TABLE 1-4
EXCAVATION AND FILL QUANTITIES**

	Build Alternative With Four-lane At-grade Intersection at CSAH 21/CSAH 18	Build Alternative With Six-lane At-grade Intersection at CSAH 21/CSAH 18	Build Alternative With Four-lane Interchange at CSAH 21/CSAH 18
Excavation (Cubic Yards)	378,800/515,800 Western Align/Eastern Align	385,000	482,500
Fill/Borrow (Cubic Yards)	591,700/40,000 Western Align/Eastern Align	596,000	197,000

During construction, BMPs will be used to minimize the impacts of erosion and sedimentation resulting from grading of the project area.

- Water Resources

For the Build Alternative, new impervious surfaces would be created south of CSAH 18 in an area where none currently exist, thereby decreasing infiltration, and increasing the quantity of stormwater runoff. County State Aid Highway 21 will exhibit an urban design, utilizing curb, gutter and storm sewer to convey runoff from the roadway. The southern portion of the roadway will be predominantly in a cut section in which stormwater from the adjacent slopes drains onto the roadway and into the proposed storm sewer. However, the majority of the roadway will be on embankment, in which case only the runoff from the proposed pavement will enter the storm sewer.

A concern of the Lower Minnesota River Watershed District, as stated in their Water Management Plan (September 1999), is that the future flow rates into Dean Lake will substantially increase due to future development upstream of the lake and on adjacent tribal lands. As previously noted, the primary inflow to Dean Lake originates from the Prior Lake outlet channel.

No stormwater runoff from the project site will drain to the Boiling Springs (a sensitive natural resource located at Eagle Creek, north and east of the intersection of CSAH 16 and CSAH 18) and regional groundwater flow is to the north and therefore carries project-related infiltrated stormwater away from the Boiling Springs. There are no anticipated impacts to this resource.

Stormwater quality ponds and infiltration areas are being proposed in strategic locations to reduce proposed peak discharge rates to existing rates as required by the watershed districts. These ponds, infiltration areas and other BMPs will be carefully designed to mitigate the water quantity impacts related to this project consistent with local, state and federal requirements. Special attention in terms of water quality protection will also be required to protect two bluff areas in the project corridor. The Prior Lake – Spring Lake Watershed District requires that BMPs must be incorporated upstream of Pike Lake to control water surface level fluctuations. These BMPs will likely include stormwater retention ponds and infiltration areas to reduce stormwater runoff rates prior to discharging to Pike Lake. All BMPs used as part of the project will conform to the most recent version of “Protecting Water Quality in Urban Areas” (MPCA 2000).

- Groundwater

Grading for the project construction may intersect the water table during excavation at the northerly bluff near an identified seep. Additionally minor dewatering may be necessary near the wetlands in the project area.

An increase in impervious surface area can impede groundwater recharge. However, the proposed project would not likely have any regional affect on groundwater recharge due to the relatively narrow area of impact in the overall watershed.

On-site transport, storage and transfer of fuels for construction equipment have the potential to impact groundwater. Following construction of CSAH 21, traffic-related spills can impact the groundwater. Permeable soils and the consequent susceptibility of groundwater to contamination from surface spills in the northern two-thirds of the project area is a complicating factor.

In addition to contaminants, road runoff can contain various organic and mineral pollutants. It is considered a non-point source of pollution with relatively low concentrations of pollutants, generally measured in the parts per million. Therefore, road runoff is not considered a major source of groundwater contamination due to the relatively low concentrations and the ability of soil to filter these pollutants as water infiltrates through the soil layers.

The implementation of BMPs during and following construction will allow for the minimization and/or mitigation of groundwater impacts.

- Wetlands

The Build Alternative would impact approximately 7.03 to 7.07 acres of wetlands. There is no difference in wetland impacts between the two alignment options south of CSAH 16 or the three

intersection design options north of CSAH 16. A sequencing process was completed to avoid and then minimize the potential wetland impacts. At the conclusion of the sequencing process, it was determined the impacts could not be further avoided or minimized and as such will be mitigated for, consistent with state and federal regulations.

Wetland mitigation under the Minnesota Wetland Conservation Act (WCA) would occur – consistent with availability of mitigation sites - at locations following this priority order:

- 1) On-site or in the same minor watershed as the affected wetland
- 2) In the same watershed as the affected wetland
- 3) In the same county as the affected wetland
- 4) In an adjacent watershed or county
- 5) Statewide

At a 2:1 mitigation ratio, the area of impact for the project will necessitate approximately 14.06 to 14.14 acres of wetland mitigation (at least three-fourths of which must be created or new replacement wetlands in accordance with Army Corps of Engineers policy under WCA which requires a minimum 1.5:1 new wetland replacement wetland area). If wetland regulations change during the course of project implementation, the required mitigation may change.

On-site mitigation is preferable to off-site; however, the amount of wetlands located on site creates a difficult challenge for on-site mitigation. Discussions between the City of Shakopee and the County include coordination to locate off-site opportunities for mitigation within the same watershed, creating one large mitigation site to cover all wetland impacts from CSAH 21 and Pike Lake Road. Coordination efforts to find acceptable off-site mitigation for these two projects may include development of a mitigation bank, designated specifically for these projects.

During final design, a wetland mitigation plan for replacement of the affected wetland areas will be developed. That plan will reassess the areas of wetland impacts (and mitigation needed) based on final design plans, wetland delineations, and the current and applicable wetland mitigation guidelines and regulations in effect at that time. The intent of the wetland mitigation plan will be to replace lost wetland functions in the project area where possible and possibly create an off-site wetland mitigation area to accomplish the remainder of the required mitigation. While not serving as replacement of wetland area, the stormwater management plan will replace and improve water quality and floodwater storage functions in the project corridor.

Cultural Resources

The Build Alternative will not affect any National Register of Historic Places (NRHP) listed or eligible properties/resources.

Cumulative Impacts

A review was completed of the potential for cumulative impacts that may result from past, present and future actions in the project area. The following conclusions were determined and are provided by resource.

- Wetlands

Together with future planned actions in the study area, the proposed project is anticipated to result in adverse cumulative impacts to the area's wetland resources. Wetlands in Minnesota are protected by Federal law (the Clean Water Act – Section 404) and State law (Minnesota Wetland Conservation Act and Executive Order) that mandate the “no net loss” concept of wetland functions and values. These laws require the avoidance of wetland impacts when possible. When avoidance is not possible, impacts must be minimized and mitigated. Both the DNR and the WCA require mitigation of wetland impacts on at least a 2:1 ratio.

- Vegetation, Wildlife, and Habitat

In association with future planned actions for the study area, the loss of additional vegetation and wildlife habitat is probable. The proposed project has been located to minimize impacts. It can be anticipated that the future actions including roadway and trail construction and residential development will include preliminary studies to avoid, minimize and mitigate impacts to vegetation, wildlife and habitat.

- Land Use/Right of Way/Farmland/Indirect Impacts

The proposed project area encompasses a substantial portion of undeveloped land. The Cities of Shakopee and Prior Lake and the SMSC have plans for development of these areas. The Build Alternative would have direct impacts (i.e., conversion of land to highway and transit use) on residential and agricultural land, and open space. Both alignment options affect land owned by the SMSC. The eastern alignment option affects land owned by the YMCA and used as a day camp. Additionally, there would be relatively minor impacts on commercial land for the six-lane at-grade option at the CSAH 21/CSAH 18 intersection. The four-lane interchange option would result in 4.1 acres of impact to commercial land. No impacts result in removal of structures.

The proposed project and the future actions planned for the area are not anticipated to result in an adverse cumulative impact to the project area. Future land development will be reviewed for its consistency with the local comprehensive land use plans. 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, and effective April 1989.

Since the proposed project will not provide direct access to property, and is accounted for in the future land use plans of the two affected cities, it is not expected to have indirect land use impacts.

- Traffic Noise

Future development has been assumed in the Build traffic volumes, therefore future development has been accounted for in the analysis and mitigation for noise impacts.

- Visual

The project area has and will continue to change to a more suburban landscape as development progresses. Land use plans for the project area include low to medium density residential development and potential community park development.

Visual impacts can be mitigated by design features such as minimization of roadway cross sections and landscaped buffers. Mitigation measures have been addressed with the proposed project and are anticipated to be considered as part of regulatory reviews for future planned actions in the study area. The study area is changing from a rural to an urban landscape.

1.6 OTHER MAJOR GOVERNMENTAL ACTIONS IN THE DEIS STUDY AREA

- Construction of Pike Lake Road

The City of Shakopee plans to construct Pike Lake Road from CSAH 16 to the CSAH 21 extension/Southbridge Boulevard

- Extension of Crossing Boulevard

The City of Shakopee plans to extend the existing portion of Crossing Boulevard (just east of CSAH 18) to the portion of Pike Lake Road, previously identified. The local roadway would be a two-lane section.

- Extension of Valley View Road

Valley View Road would be extended east into the project area and connect with the proposed CSAH 21 extension

- Development of Community Park

A community park is planned in the northwest quadrant of the proposed CSAH 21/CSAH 16 intersection

- Southbridge Transit Station

A 500-stall park-and-ride transit station at TH 169 and CSAH 18 to complement the planned transit station at CSAH 21/CSAH 16.

1.7 PERMITS AND APPROVALS

The following federal, state and local permits/approvals/concurrences have been or will likely be required for construction of the proposed project:

**TABLE 1-5
PERMITS AND APPROVALS**

Agency	Type of Permit/ Approval/Concurrence
Federal	
Federal Highway Administration (FHWA)	DEIS Review/Approval FEIS Approval/Record of Decision
U.S. Army Corps of Engineers (COE)	Section 404 Permit (if >5 acres of impact)
State	
State Historic Preservation Office (SHPO)	Section 106 Concurrence
Minnesota Department of Transportation –Cultural Resources Unit (Mn/DOT-CRU)	Section 106 Review/Determination
Minnesota Department of Transportation (Mn/DOT)	DEIS Review/Approval FEIS Adequacy Determination
Minnesota Pollution Control Agency (MPCA)	Section 401 Water Quality Certification, if Section 404 Permit and National Pollutant Discharge Elimination-State Disposal System (NPDES-SDS) permit
Metropolitan Council	Transportation Improvement Plan
Minnesota Department of Natural Resources (DNR)	Public Waters Permit, if necessary, and Water Appropriation Permit, if necessary
Local	
City of Prior Lake	Municipal Consent, if applicable
City of Shakopee	Municipal Consent, if applicable
Shakopee Mdewakanton Sioux Community (SMSC)	Land Acquisition
Watershed District	
Spring Lake/Prior Lake Watershed District	Surface Water Plan Review, if applicable
Lower Minnesota River Watershed District	Surface Water Plan Review, if applicable

1.8 POTENTIAL AREAS OF CONTROVERSY AND UNRESOLVED ISSUES

Throughout the planning process for the proposed project, Scott County has made extensive efforts at agency, local government and public involvement, in order to identify and resolve potentially controversial issues during the development of the DEIS alternatives. This effort has been generally successful in addressing concerns of stakeholders in the project area, however priorities and interests will always vary among different agencies and different sectors of the public. The DEIS document is intended to document the transportation, social, economic and environmental issues that may affect different parties' level of support for the project to better inform the process of selecting a preferred alternative.

Issues related to impacts of the two alignment options south of CSAH 16 and of the three design options north at the CSAH 21/CSAH 18 intersection will be resolved as part of the preferred alternative selection.

The proposed project affects land owned by the Shakopee Mdewakantan Sioux Community (SMSC) land that would need to be acquired for the project is 8.3 acres under the western alignment design option and 3.3 acres under the eastern alignment design option. The affected land is included in an application by SMSC to the Bureau of Indian Affairs (BIA) to take 753 acres of land now owned in fee into trust. The application was pending when this DEIS was approved for publication.

2.0 PURPOSE OF AND NEED FOR ACTION

2.1 PROJECT LOCATION AND SETTING

The proposed project is located in the cities of Shakopee and Prior Lake in Scott County (see Figure 2-1). Scott County is the fastest growing county in the Twin Cities Metropolitan Area. Residential and commercial development has caused substantial population and employment increases resulting in increased traffic and congestion. Providing continuity from one side of Prior Lake to the other, County State Aid Highway (CSAH) 21 currently exists as a four-lane minor arterial between CSAH 42 and Texas Avenue and a two-lane minor arterial between Texas Avenue and the eastern boundary of Scott County. The roadway continues east as a minor arterial into Dakota County (turning into CSAH 60) just west of Interstate 35 (I-35).

2.2 PROJECT HISTORY

Scott County initiated planning for the proposed extension of CSAH 21 in 1990 with a corridor study for CSAH 18 and CSAH 21 as part of the planning related to the new Trunk Highway (TH) 169/Bloomington Ferry Bridge and TH 169 Bypass. This study identified the need for an additional north-south roadway between CSAH 83 and CSAH 18 based on the Metropolitan Council's roadway spacing criteria for developing areas. The study evaluated design and environmental concerns for three "Build" alternatives and a "No Build" Alternative. The study recommended both a connection of CSAH 18 to TH 169 as the initial construction stage, (which was completed in 1996), and construction of the CSAH 21 extension as the long-range preferred alternative. A 1992 follow-up feasibility study also evaluated design and environmental considerations and identified the preferred alignment of CSAH 21.

A summary of the 1990 study corridor alternatives and the 1992 alignment alternatives is presented in Section 3.1. Additional detail is presented in the CSAH 21 *Scoping Document and Draft Scoping Decision Document (SD/DSDD)*, discussed below.

The extension of CSAH 21 was included in both the 1996 and 2001 adopted Scott County transportation plans. The proposed project is included in the County's current Transportation Improvement Program for 2008 and 2009.

The County began preparation of a scoping document for an Environmental Impact Statement (EIS) in 2002. The SD/DSDD was released April 28, 2003. The County hosted a public information meeting on May 21, 2003 to solicit comments regarding the project. The scoping process was concluded when the Scott County Board of Commissioners formally adopted the Scoping Decision on July 22, 2003. This is documented in the *Scoping Decision Document (SDD)*.

Chapter 3 describes the alternatives developed and selected for evaluation in the Draft Environmental Impact Statement (DEIS) as identified in the SDD.

2.3 PURPOSE OF THE DEIS

This document has been prepared to meet the requirements of two federal acts and one state legislative act that call for the objective analysis of impacts from proposed federally-funded activities resulting on the human and natural environment. Federal legislation includes the National Environmental Policy Act (NEPA) of 1969 and Council on Environmental Quality (CEQ) regulations for NEPA documentation that require this examination from an environmental perspective. The Minnesota Environmental Policy Act (MEPA) requires environmental review procedures for all governmental actions and decisions.

This DEIS has been prepared pursuant to the environmental documentation requirements of both NEPA and MEPA and rules adopted by the Minnesota Environmental Quality Board (EQB) for preparation of state EIS documents.

2.4 NEED FOR THE PROPOSED PROJECT

The northern portion of Scott County, including portions of the cities of Shakopee and Prior Lake, and all of the City of Savage, is encompassed by the Metropolitan Urban Service Area (MUSA) and is considered a “developing area” by the Metropolitan Council. Development in Scott County has been influenced by the Minnesota River, which separates the County from much of the greater metropolitan area, including the cities of Minneapolis and St. Paul. The Scott County transportation system has been shaped in part by the location of river crossings, particularly in the northern part of the County. The 1995 completion of the new river crossing at TH 169 (the Bloomington Ferry Bridge) provided northern Scott County with greater accessibility to the central portion of the Twin Cities metropolitan area.

The proposed project is needed to respond to existing and forecasted increases in travel demand on the existing roadway system. Specifically, the project is needed to help complete an appropriately functioning roadway system in northern Scott County that efficiently moves traffic by providing adequate capacity for projected travel and transit demand. The following discusses the project need in relation to a functional highway system, forecast travel demand versus capacity of existing roads, and system continuity.

2.4.1 Functional Classification/Spacing

A safe and efficient transportation system requires location and design of specific roadways based on the functions of mobility (e.g. freeways carrying no local-access traffic) and access to property (e.g. a cul-de-sac providing only for local-access traffic), with provision of the functional gradations between these two extremes (e.g. arterials, collectors, and local streets). Spacing, design, and access control criteria are established that facilitate the appropriate functioning of various roadway classifications within the transportation network as a whole.

The County functional classification plan for its existing and future roadway network is developed in coordination with its local communities and in the context of the metropolitan transportation system. In anticipation of the increasing demand on the existing roadway system due to development, Scott County has assessed the existing roadway network against the updated Metropolitan Council *Transportation Policy Plan* (December 2004) criteria for establishing a

functional classification of roadways in support of the metropolitan highway system. The Metropolitan Council criteria indicate that for developing areas, medium to short trips can be accommodated on minor arterial roadways spaced approximately one to two miles apart and collector roadways spaced about one-half to one mile apart. The County has concluded that to meet growing needs and the metropolitan functional classification roadway spacing criterion, an additional north-south arterial should be constructed between the two existing north-south arterial roadways in the study area, CSAH 18 and CSAH 83, which are three miles apart.

This recommendation was supported in the *Scott County Transportation Plan* (1996), and the *Scott County Transportation Plan* (2001) which specifically proposes future designation of CSAH 21 between CSAH 42 and CSAH 18/TH 169 as a principal arterial, warranted by its intended function as an important commuter route for County residents, particularly from development areas in Prior Lake and Shakopee to employment centers north of the Minnesota River (see Figure 2-2). County State Aid Highway 18 is currently designated in the Transportation Plan as a principal arterial for this purpose, but the plan indicates that it would revert to a minor arterial upon completion of the proposed CSAH 21 extension.

Proposed CSAH 21 north of CSAH 42 is identified as a principal arterial in the Shakopee Transportation Plan and as an “A” minor arterial-expander in the Prior Lake Comprehensive Plan. An “A” minor arterial is part of the region-wide system of roadways designated by the Metropolitan Council that provides inter-community connections and alternative routes in congested corridors.

2.4.2 Travel Demand/Capacity

Scott County is the fastest growing county in Minnesota, and City and County plans indicate this rapid development will continue, resulting in additional traffic on the roadway system. Travel forecasts were prepared for roadways within the study area during both the scoping study (Year 2025 forecast) and the DEIS study (Year 2030 forecast) in order to assess how future travel demand would affect the system with (Build) and without (No Build) the proposed project. (Section 4.1 provides additional information on travel forecast methodology and results.) Figures 2-3, 2-4, 2-5 and 2-6 present ADT for existing, No Build, Build with an intersection option at CSAH 21/CSAH 18 and Build with an interchange option at CSAH 21/CSAH 18.

In addition, a selected link analysis was conducted during the scoping study (using 2025 forecast data) that identifies how trips generated within the travelshed of the proposed segment of CSAH 21 would be distributed on the remaining roadways in the network if CSAH 21 is not built. (See Figures 2-7 and 2-8.)

Together these analyses show that proposed CSAH 21 would primarily serve the communities of Shakopee, Prior Lake, and Spring Lake Township, with the travelshed of CSAH 21 being elongated north-south and centered on CSAH 21 south of the river and on TH 169 north of the river. Compared to No Build conditions, a new segment of CSAH 21 reduces traffic on the following parallel roadways: CSAH 83, CSAH 18, the connection between TH 169 and TH 13, and TH 13. CSAH 83 is a rural, two-lane undivided roadway between CSAH 42 and CSAH 16 and four lanes to the north; TH 13 and CSAH 18 are both four-lane divided, limited access routes. Table 2-1 presents the anticipated growth in traffic and differences in traffic on area roadways between No Build and Build conditions.

**TABLE 2-1
NO BUILD AND BUILD AVERAGE DAILY TRAFFIC VOLUMES (ADT)**

	Existing (2002-3) ADT	No Build (2030) ADT	Build (2030) ADT Intersection	Build (2030) ADT Interchange
CSAH 21 (north of CSAH 16)	-	-	30,000	32,000
(south of CSAH 16)			26,000	27,500
CSAH 83 (north of CSAH 16)	15,700	40,000	37,500	37,500
(south of CSAH 16)	13,700	35,000	32,500	32,500
CSAH 18 (north of CSAH 16)	12,000	33,000	25,000	25,000
(south of CSAH 16)	9,000	18,000	13,500	13,500
TH 13 (north of CSAH 16)	16,000	33,000	27,000	27,000
(south of CSAH 16)	17,000	34,000	26,500	26,500
Connection between TH 169/CSAH 101 and TH 13		72,000	67,000	67,000
CSAH 42 (west of CSAH 21)	9,000	25,000	22,500	23,000
(east of CSAH 21)	15,100	27,000	24,000	24,000

The *Scott County Transportation Plan* indicates that CSAH 83 and the connection between TH 169 and TH 13 will be congested (operating at level of service (LOS) “E” or worse) in 2020, even with the assumption of CSAH 21 construction. Without the construction of CSAH 21, these roadways will experience additional congestion. Without CSAH 21, traffic levels on CSAH 18 will approach capacity. In addition, as congestion builds on parallel routes, some of the traffic appropriately carried on the arterial system is expected to divert to local/collector roadways (i.e. McKenna Road and Pike Lake Road).

A traffic operations analysis of 2030 No Build conditions (discussed in detail in Section 4.1) indicates that under 2030 No Build conditions, the CSAH 18/Southbridge Parkway and CSAH 21/CSAH 42 intersections will operate at unacceptable LOS in the p.m. peak hour, while the CSAH 18/CSAH 16 (west leg) and CSAH 18/CSAH 42 intersections will operate at unacceptable LOS in both a.m. and p.m. peak hours.

2.4.3 Continuity

A stated goal of the *Scott County Transportation Plan* is to provide continuous north-south arterials throughout the County to allow efficient movement through the County from a wide range of origins to a wide range of destinations. The existing segment of CSAH 21, from CSAH 42 in Scott County to CSAH 60 in Dakota County, provides continuity from one side of Prior Lake to the other and between downtown Prior Lake and Lakeville. The current Transportation Plan, as well as the previous plan, includes the extension of CSAH 21 from CSAH 42 to CSAH 18/TH 169 to extend this continuity to the north. The existing roadways (CSAH 21 south of the proposed extension and CSAH 18 north of Southbridge Parkway) were designed in anticipation of the proposed project to allow the smooth transition between existing and proposed roadway segments.

2.4.4 Land Use Considerations

The need for a link in the countywide roadway system to manage traffic resulting from current and planned development in the County has been well documented in past project-related studies, and City and County land use and transportation plans. The County prepared early studies to inform local planning for future land development. This work was done in consultation with the cities of Shakopee and Prior Lake. As a result, the proposed extension of CSAH 21 is consistent with comprehensive plans for the surrounding cities and counties. Furthermore, the cities have proceeded with land development planning that supports and is supported by the proposed project.

A key requirement of sound development planning is the provision of safe and efficient access to and circulation within developed neighborhoods. The City of Shakopee approved the development of the Southbridge neighborhood, which comprises 850 housing units, a large commercial node and an elementary school, with two access points for Southbridge Parkway, a two-lane divided parkway with turning lanes at intersections, that serves the neighborhood. The eastern access, the intersection of Southbridge Parkway and CSAH 18, is currently in place. The western access is planned at the future intersection of Southbridge Parkway and CSAH 21. Southbridge Parkway currently terminates in a cul-de-sac.

2.4.5 Transit Need

Scott County is served by Scott County Transit, which has regular and express services operating Mondays through Fridays, bringing riders to local shopping areas and connecting riders to transit hubs that are serviced by Southwest Metro Transit and the Minnesota Valley Transit Authority. Public transit is also provided by Laker Lines in the City of Prior Lake, which runs two express routes to and from downtown Minneapolis each weekday.

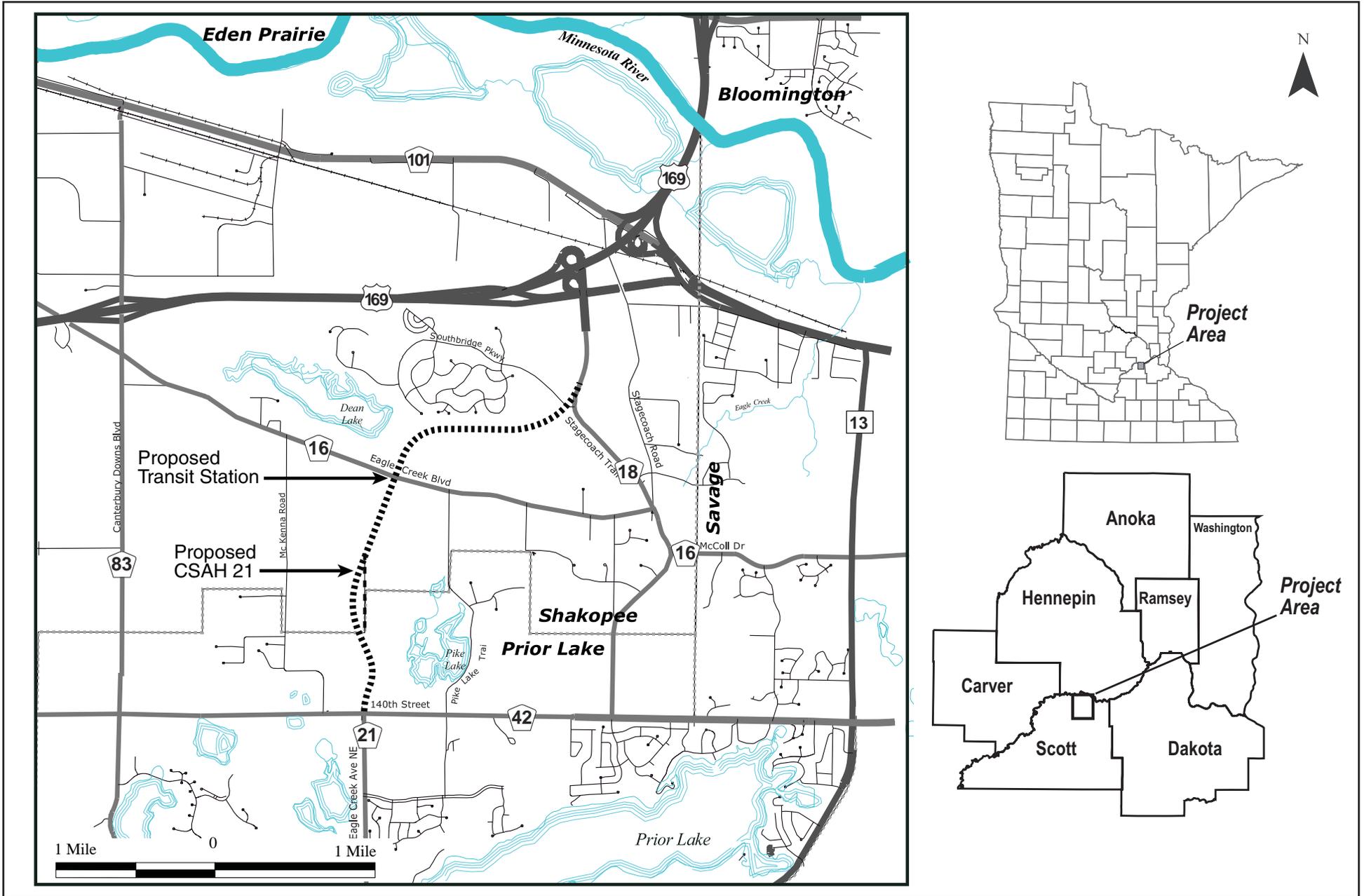
Scott County recently completed a major comprehensive transit study that will integrate and combine the findings of several transportation studies completed in the region. The Unified Transit Management Plan (UTMP) was completed in July 2005 and is a cooperative effort involving the County, Metropolitan Council, the Scott County Housing and Redevelopment Authority, the Minnesota Valley Transit Authority, the Shakopee Mdewakanton Sioux Community and the Cities of Prior Lake, Savage and Shakopee. The principal goal of the UTMP is to provide a blueprint for Scott County and its communities to follow in bringing about public transit improvements over the next 20 years. The UTMP envisions the establishment a transit facilities in the vicinity of proposed CSAH 21 due to its accessibility to TH 169. In addition to the transit station planned for the CSAH 21/CSAH 16 intersection, southwest quadrant, a number of sites for an additional location were under consideration during the DEIS preparation.

According to the Metropolitan Council's Park-and-Ride Facility Plan, there is an unmet transit demand of 400 riders in the southern metropolitan area, Minneapolis Corridor, along TH 169 in the year 2010. By adding transit stations, the goal is to reduce single occupancy vehicle trips during peak periods through increased transit use.

2.5 SUMMARY OF PROJECT NEED/PURPOSE

The proposed project will:

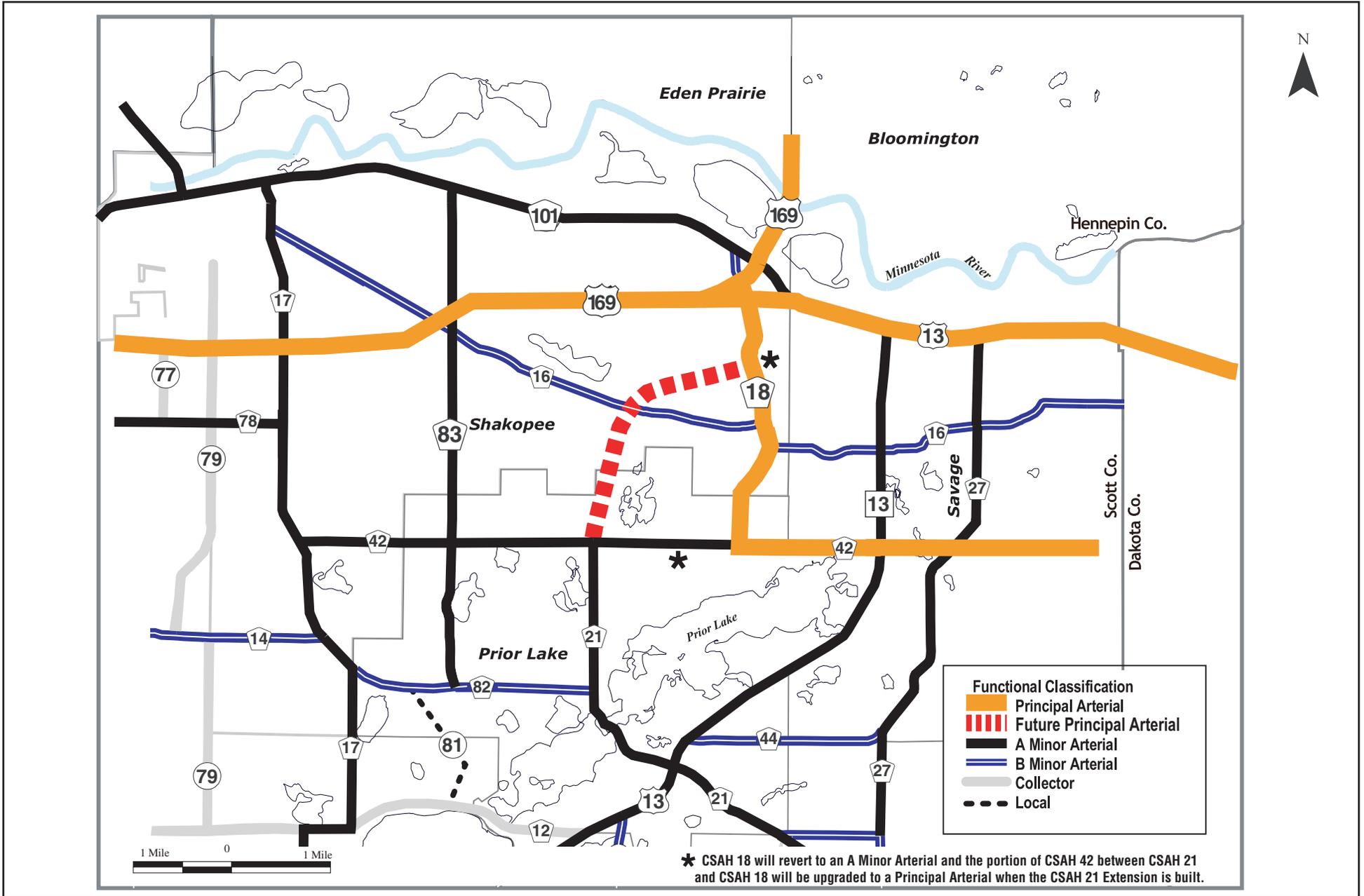
- Address the functional needs identified in the *Scott County Transportation Plan* and will meet the criteria outlined in the Metropolitan Council's *Transportation Policy Plan* (December 2004).
- Reduce traffic on CSAH 83, CSAH 18, the connection between TH 169 and TH 13, and TH 13, as well as local roadways, and alleviate congestion at area intersections that experience congestion under No Build conditions.
- Provide continuous north-south arterials throughout the County to allow efficient movement through the County from a wide range of origins to a wide range of destinations.
- Address unmet transit demand in the southern metropolitan area.



PROJECT LOCATION

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
Scott County, Minnesota

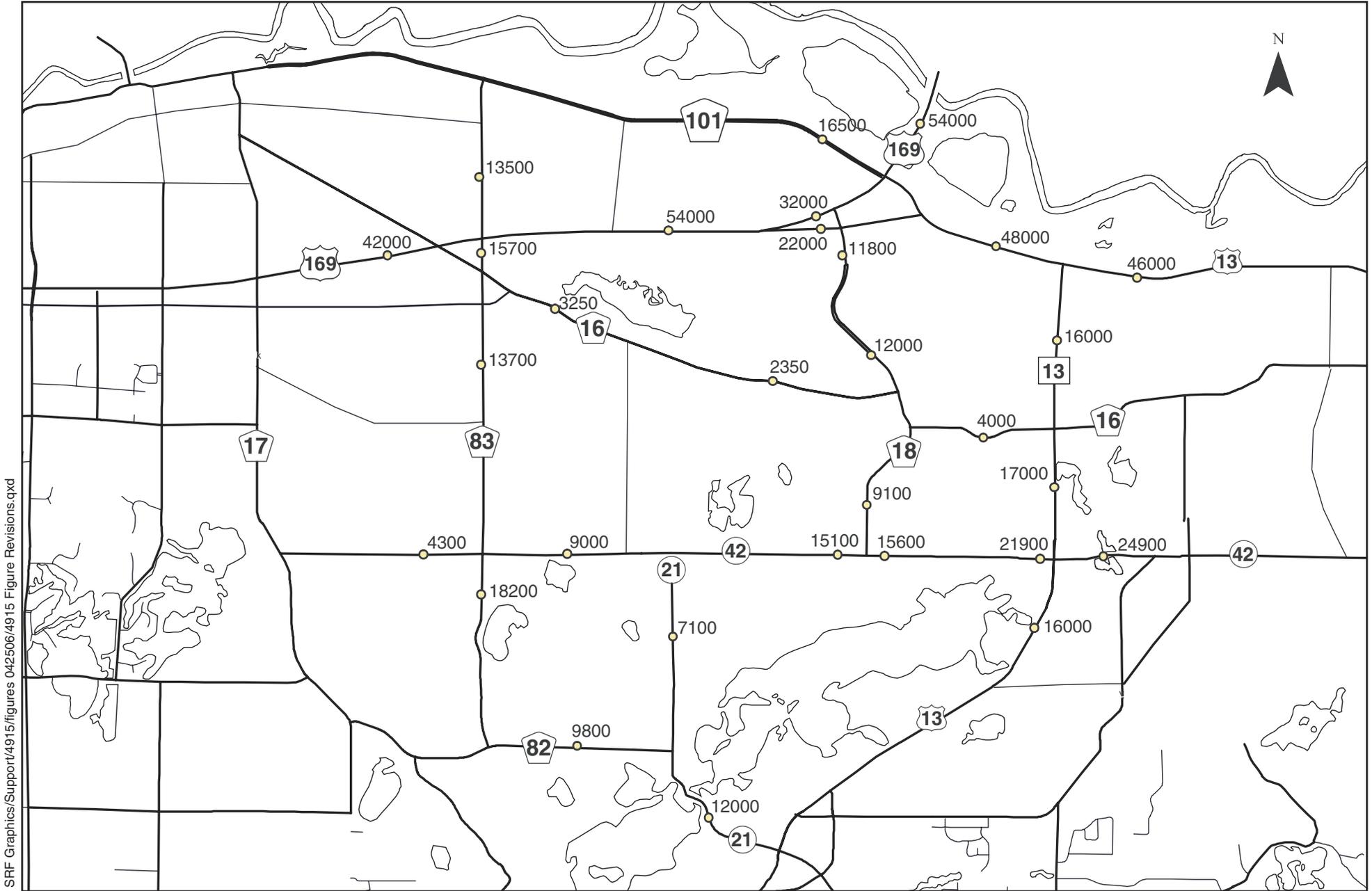
Figure 2-1



2020 TRANSPORTATION PLAN (NORTHEAST SCOTT COUNTY)

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 2-2

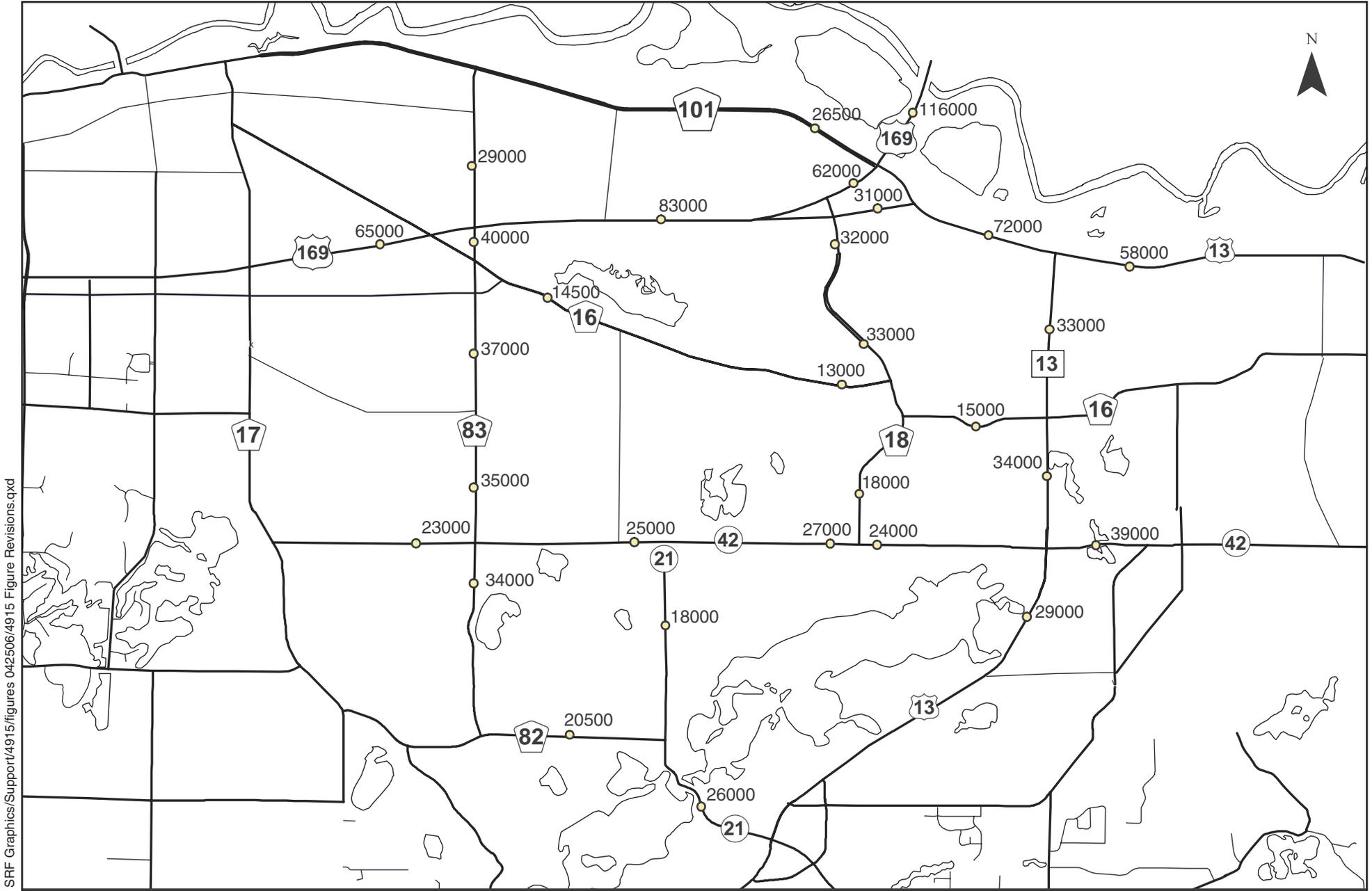


Source: 2003 Scott County Traffic Volumes and 2002 Mn/DOT Traffic Flow Maps.

EXISTING DAILY TRAFFIC VOLUMES (2002-2003)

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 2-3

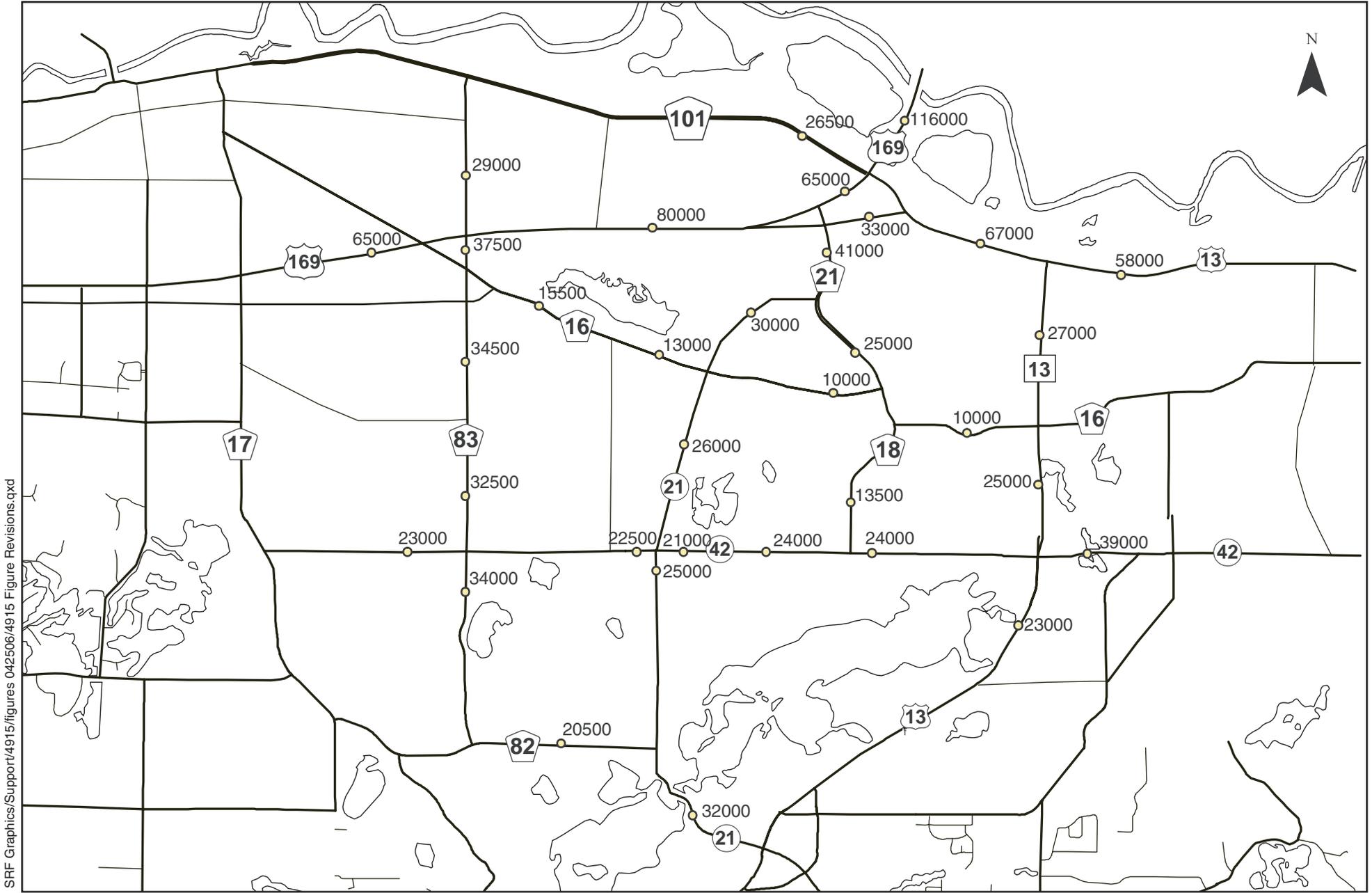


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NO BUILD - DAILY TRAFFIC VOLUMES (2030)

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 2-4

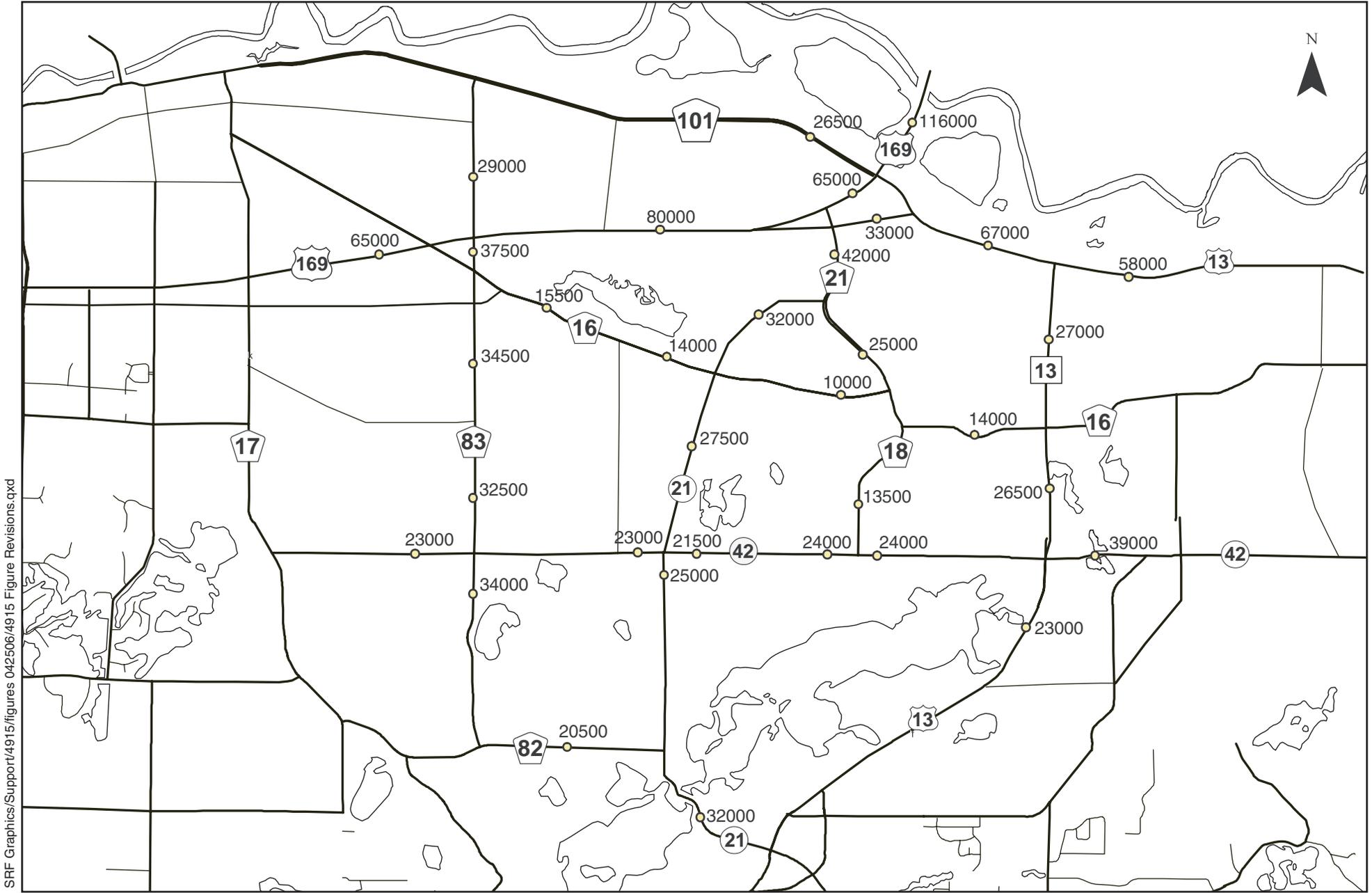


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BUILD (INTERSECTION DESIGN) DAILY TRAFFIC VOLUMES (2030)

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 2-5

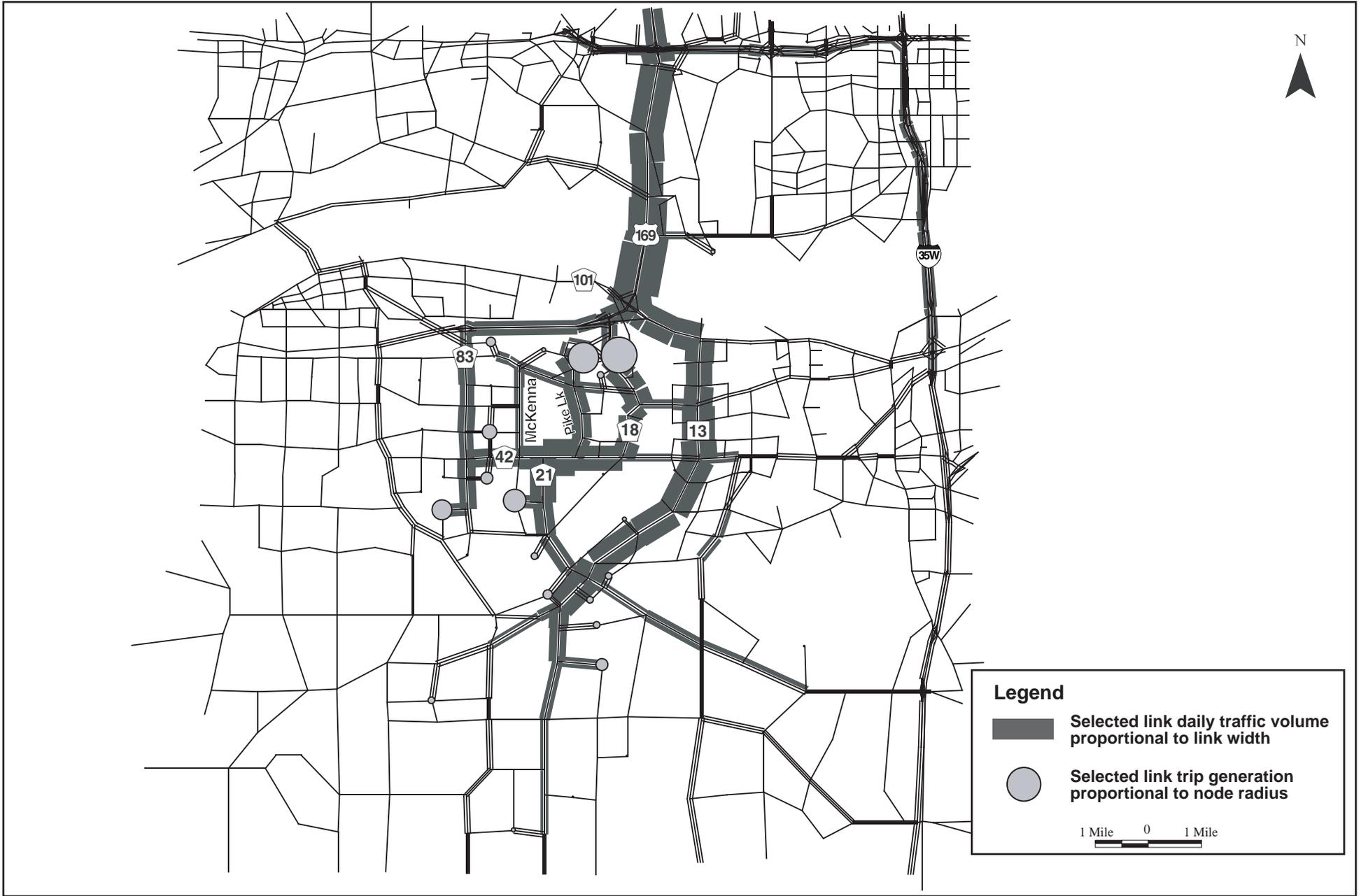


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BUILD (INTERCHANGE DESIGN) DAILY TRAFFIC VOLUMES (2030)

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 2-6



NO BUILD SELECTED LINKS VOLUMES AND TRIP ENDS (2025)

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
Scott County, Minnesota

Figure 2-7



BUILD SELECTED LINKS VOLUMES AND TRIP ENDS (2025)

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
Scott County, Minnesota

Figure 2-8

3.0 ALTERNATIVES

This chapter of the DEIS presents a summary of the alternative development process, including early alternative locations studied and documented in the *Scott County Transportation Study: County Road 18 Corridor Alternatives* (1990 Study), the *Scott County CSAH 18 and CSAH 21 Feasibility Study* (1992 Study), the *CSAH 21 Scoping Document/Draft Scoping Decision Document* (SD/DSDD), and the *CSAH 21 Scoping Decision Document* (SDD). This chapter also discusses the refinement of alternative alignments that has occurred during the DEIS process, including consideration of sub-alternatives. Finally this chapter provides a description of the alternatives that are analyzed in detail in this DEIS.

3.1 SUMMARY OF ALTERNATIVES DEVELOPMENT PROCESS

The reader should note that designations of area roadways have changed during the time that planning and the environmental process for the proposed project have taken place. Since 1990, TH 169 and the Bloomington Ferry Bridge have been constructed, CSAH 18 has been realigned, and the jurisdiction and roadway designations of roadways in the study area have changed. In the discussion of the studies and plans that have been a part of the alternatives development process, the text will refer to the roadway designations that were current at the time the studies and plans were prepared. Table 3-1 provides a comparison of these references by date:

**TABLE 3-1
CSAH 21 ALTERNATIVES DEVELOPMENT PROCESS
ROADWAY DESIGNATIONS – 1990, 1992 AND 2002 – PRESENT**

1990, 1992	2002 – Present
TH 101	CSAH 101
TH 101/Shakopee Bypass	TH 169
CSAH 18 River Crossing	TH 169 Bloomington Ferry Bridge
CR 18 (north of CSAH 16)	Stagecoach Road
CR 18 (south of CSAH 16)	CSAH 18
Proposed CSAH 18 connection	CSAH 18
CR 83	CSAH 83

3.1.1 1990 Scott County Transportation Study: County Road 18 Alternatives

The scoping process began in 1990 with the study documented in the report, *Scott County Transportation Study: County Road 18 Corridor Alternatives* (1990 Study). The 1990 Study was conducted under the guidance of the County Road 18 Transportation Study Group, which consisted of representatives from the County Road 18 Citizens Committee, the Cities of Shakopee, Prior Lake and Savage, and the Scott County Highway Department. Public meetings were held during the study process to gather input from and share findings with area residents.

The purpose of the 1990 Study was to assist Scott County in determining the best location for a north-south arterial roadway in the study area bounded by the TH 101/Shakopee bypass on the north, CSAH 42 on the south, CR 83 on the west and TH 13 on the east, and how to best connect this roadway to the TH 101/Shakopee bypass and CSAH 18 river crossing that were being designed at the time.

The 1990 Study compared the existing highway network in the study area against Metropolitan Council guidelines for spacing of arterials within a highway functional classification system and found that the spacing of north-south arterial roadways in the existing system did not meet these guidelines. The 1990 Study included year 2010 traffic forecasts which also supported the need for an additional north-south four-lane facility to handle traffic in the study area.

Traffic forecasts and analyses done for the 1990 Study assumed no change to the 1990 location of the MUSA, and noted that most of the study area was not located within the MUSA boundary. The 1990 Study noted that if the MUSA boundary were to be revised to allow for more intense development, the forecast traffic volumes would need to be adjusted upward and that should this development occur, two or more north-south facilities may be required.

Since 1990, the MUSA has expanded to include the Southbridge development area south of TH 169. The City of Shakopee *Comprehensive Plan Update* (2004) proposes extension of the MUSA to encompass the majority of the CSAH 21 study area within the Shakopee City limits.

The City of Prior Lake states in its Comprehensive Plan that it will utilize the concept of an “undesignated MUSA Reserve” rather than designate a MUSA boundary and provides a number of criteria for extension of sewer services to allow for urban development. The Plan indicates areas that have a potential to be included in the MUSA by 2020, including the portion of the CSAH 21 study area immediately north of the proposed CSAH 21/CSAH 42 intersection; the Plan proposes this area as business office park and urban high density residential. The Plan proposes urban low and medium density residential toward the northern City limits. These land use assumptions are included in the most recent traffic analysis described in Section 4.1.

The 1990 Study identified three Build Alternatives designed to meet the need for an additional north-south facility and a No Build Alternative (1990 Study Alternatives). Figures 3-1 and 3-2 show 1990 Study Alternatives 3 and 4; Alternative 2 is not depicted because it was constructed in 1992 as a short-term solution and subsequently became the No-Build Alternative. Further detailed information about these alternatives can be found in the SD/DSDD.

- 1990 Study Alternative 1: No Build. This alternative assumed no new north-south roadway within the study area, and included a diamond interchange at the TH 101/Shakopee Bypass and CR 18 alignment and a direct at-grade connection to TH 101. The alternative assumed no direct connection between CR 18 and the CSAH 18 river crossing.
- 1990 Study Alternative 2: New CR 18 alignment north of CSAH 16. This alternative included the relocation of CR 18 west of its alignment north of CSAH 16 and full access from CR 18 to the TH 101/Shakopee Bypass and to the CSAH 18 river crossing via new interchanges. Alternative 2 assumed that local access would be maintained to TH 101.

- 1990 Study Alternative 3: CSAH 21 extension to TH 101/Shakopee Bypass; separate CR 18/TH 101 interchange. This alternative extended CSAH 21 from its intersection with CSAH 42 northeast in a diagonal alignment to Pike Lake Road approximately one-quarter mile south of CSAH 16 and then directly north to a full interchange access at the TH 101/Shakopee Bypass. The alternative also included a diamond interchange at CR 18 and the TH 101/Shakopee Bypass, a direct connection of CR 18 to TH 101, and no direct access from CR 18 to the CSAH 18 river crossing.
- 1990 Study Alternative 4: CSAH 21 extension to TH 101/Shakopee Bypass; full access interchange per Alternative 2; connection between CR 18 and CSAH 21 south of interchange. This alternative extended CSAH 21 from its intersection with CSAH 42 northeast in a diagonal alignment to Pike Lake Road approximately one-quarter mile south of CSAH 16, then directly north for a distance of approximately three-quarter mile, then eastward for a distance of approximately one-half mile, and then north to connect to the TH 101/Shakopee Bypass and the CSAH 18 river crossing. It assumed a connection between CSAH 21 and CR 18 immediately south of the interchange area and a connection of CR 18 to existing TH 101.

The 1990 Study evaluated the alternatives for design feasibility, environmental concerns, safety, and their ability to meet current design standards.

The 1990 Study concluded that neither Alternative 1 (No Build) nor Alternative 2 (upgrading CR 18 on its existing alignment from CSAH 21 to CSAH 16 and then reconstructing CR 18 west of its alignment north of CSAH 16) would adequately serve the long-term traffic demand and would be likely to result in greater noise and safety impacts than 1990 Study Alternatives 3 and 4.

The evaluation also concluded that either Alternative 3 or Alternative 4 would fulfill the need for an additional north-south roadway and that the connection to existing CSAH 21 made these alternatives good choices for a future arterial serving northern Scott County.

The 1990 Study favored Alternative 4 over Alternative 3 (even though Alternative 4 involved construction of a longer roadway and the need for a connection between CR 18 and CSAH 21, resulting in slightly greater wetland and woodland impacts) because of cost and feasibility concerns about the interchange location assumed for Alternative 3. As noted, Alternative 4 includes east-west portions of the roadway to connect CR 18 to CSAH 21 to provide better local access and avoid the conflicts associated with the interchange proposed in Alternative 3. The funding and construction for the Alternative 4 interchange was included in the CR 18 river crossing project.

The 1990 Study characterized Alternative 4 as a long-range planning goal, with initial construction to include a TH 169/CR 18 interchange. County Road 18 (relocated west of its 1990 alignment per Alternative 2) would provide for short-term traffic demands and CSAH 21 would be extended at a later date as development occurred in the county.

3.1.2 1992 Scott County CSAH 18 and CSAH 21 Feasibility Study

Scoping continued in 1992 with a follow-up study documented in the report entitled, *Scott County CSAH 18 and CSAH 21 Feasibility Study* (1992 Study). The study was conducted under the direction of the Scott County Highway Department. The results of the 1992 Study were presented at a public meeting in Spring 1992.

The 1992 Study had two purposes. First, it further defined the proposed CSAH 18 alignment (the short-term arterial connection to TH 169 recommended in the 1990 Study) so that the interchange could be provided for in the TH 169 preliminary and final design plans. Second, the 1992 Study further evaluated alignments for CSAH 21 and recommended a preferred alignment so that the County could set aside right of way as development occurred along the proposed corridor. The study identified social, economic, and environmental issues as they affected the feasibility and selection among the proposed CSAH 21 alignments. These issues included access and right of way, wetlands, water quality, air quality and noise. The 1992 Study also identified pertinent design criteria. Further information is presented in the SD/DSDD.

The 1992 Study Alternatives for CSAH 21 included:

- 1992 Study Alternative A: Easterly alignment. This alternative was similar to the southern portion of 1990 Study Alternative 3 and Alternative 4 between CSAH 42 and Pike Lake Road, in that proposed CSAH 21 would have extended diagonally northeast from CSAH 42. Unlike the 1990 Study Alternatives, Alternative A continued the diagonal alignment through property owned by the YMCA just west of Pike Lake and also crossed numerous individual properties, for the length of the corridor and then connected to the planned CSAH 18/TH 101 Bypass/river crossing junction. (See Figure 3-3)
- 1992 Study Alternative B: Westerly alignment. This alternative provided for a less direct alignment than Alternative A. The alignment extended generally north/northeast from CSAH 42 to a point north of CSAH 16 and then followed an east-west alignment similar to the northern portion of 1990 Study Alternative 4 to connect to the TH 101/Shakopee Bypass interchange. Alternative B was located to take advantage of a natural ravine in the bluff line north of the YMCA property, to minimize wetland impacts in the southern portion of the project area, and to maximize the distance between the proposed roadway and two homes located near the bluff. (See Figure 3-4)

The 1992 Study evaluated the two alignments for design feasibility, environmental concerns, safety, and their ability to meet current design standards.

The 1992 Study concluded that the two alignments had wetland impacts of a similar order of magnitude, and would not adversely affect air or water quality. It also concluded that it was premature to accurately assess noise impacts of the two alternatives. The study found that Alternative B, although more circuitous, avoided most of the access and right of way impacts associated with Alternative A. The study also found that the future transportation network would be more efficient to develop and better meet standards with Alternative B because the intersection would be more at right angles than with the diagonal route of Alternative A. Therefore, the 1992 Study recommended Alternative B as the Preferred Alternative. The Scott County Board of Commissioners approved Alternative B on May 26, 1992.

3.1.3 Relevant Project History (1992-2002)

Between the 1992 approval of Alternative B as the Preferred Alternative for the project and the preparation of the SD/DSDD, the following activities occurred:

- In 1996, Scott County adopted a countywide transportation plan, which included the extension of CSAH 21.
- In 1998, the City of Shakopee included the extension of CSAH 21 to CSAH 16 as a future principal arterial roadway in its *Transportation Plan*.
- In 1998, the County acquired approximately 4,600 linear feet of right of way along the Southbridge residential development property between the west terminus of Southbridge Parkway and CSAH 18.
- In 1998, the area east of Dean Lake was approved for development (Southbridge) with 850 housing units, a school, and a large commercial node at the intersection of Southbridge Parkway and CSAH 18. Design features of the development that are relevant to the proposed project include a 58-foot buffer between the County right of way and residential lots and the elementary school property, and the design of Southbridge Parkway for future connection to CSAH 21 to provide additional access to/from the development.
- In 1999, the City of Prior Lake completed its *2020 Comprehensive Plan*, which included the CSAH 21 extension as a programmed improvement, and designated the general project corridor for urban land use.
- In 1999, the City of Shakopee adopted a *Comprehensive Plan* that reflected residential development east of Dean Lake west of CSAH 18 and adjacent to future CSAH 21 (see below).
- In 2001, Scott County adopted an updated comprehensive plan including urban expansion areas for the cities of Shakopee and Prior Lake and countywide transportation plan, which again included the extension of CSAH 21.

3.1.4 CSAH 21 Scoping Documentation Process

In 2002-2003, the County conducted a study to document the scoping process that was initiated in 1990, to update relevant traffic and environmental issues, and to identify alternatives and social, economic, and environmental (SEE) impacts to be addressed in the DEIS.

Identification of SEE issues during scoping utilized a number of information sources including city and county comprehensive plans, as well as local and state agencies. Local governments and public resource regulatory agencies provided input on potential issues during early project correspondence, public meetings, the project Technical Advisory Committee (TAC) meetings, and individual contacts. The general public was given the opportunity to identify potential SEE impacts related to the project during and following a public open house meeting held September 26, 2002.

The SD/DSDD was released on April 28, 2003. The general public was again given the opportunity to comment on the project and the SD/DSDD at a public scoping meeting held on May 21, 2003. The scoping process was concluded with the formal adoption of the Scoping Decision by the Scott County Board of Commissioners on July 22, 2003. This decision was published in the SDD, which identified the 2003 Build Alternative to be studied in the DEIS.

3.1.5 Draft Environmental Impact Statement (DEIS) Build Alternative Refinement

The County initiated work on the DEIS in November 2003. The initial task was the refinement of the 2003 Build Alternative based upon more detailed design, environmental considerations and traffic operational analysis. This refinement generated and evaluated several alignment/design iterations, all within the basic parameters of the 2003 Build Alternative concept, as presented in the SDD.

3.1.5.1 Alternative Refinement Objectives

Within the basic parameters and based on the issues specific to this project corridor, the key objectives that guided the alternative refinement process included (1) safe and efficient road design, (2) minimize grading impacts, (3) vegetation/habitat preservation, (4) wetland protection, and (5) minimize property impacts. These are discussed below.

1. Safe and Efficient Design

Design criteria are as follows:

- The proposed project will meet the capacity, drainage, safety, and County's trail requirements while controlling cost.
- Based on the traffic operations analysis detailed in Section 4.1, the Build Alternative is defined as a four-lane expressway from CSAH 42 to Southbridge Parkway West, connecting to one of three design options at the CSAH 21/CSAH 18 intersection (discussion in Section 3.1.5.2).
- The planned intersections of proposed CSAH 21 with CSAH 42, proposed Valley View Road, CSAH 16, Southbridge Parkway West and CSAH 18 are designed to avoid skewed intersections, creating intersections that are as close to right angles as possible.
- Design standards (horizontal and vertical curves) will be for a proposed design speed of 60 mph to the extent possible. An exception occurs from CSAH 42 through the wooded bluff immediately to the north, where standards for a design speed of 55 mph are utilized in order to minimize natural resource impacts.
- The alternative refinement process considered the trade-offs between urban (i.e., curb and gutter) and rural (i.e., drainage ditch) designs for various segments of the project, with urban design minimizing cross-section width, and rural design generally having lower construction costs. Urban design was selected for the entire corridor in order to minimize property and natural resource impacts and to help facilitate stormwater treatment/conveyance.

2. Minimized Grading Impacts (cut and fill)

The topography within the project corridor is characterized by steep slopes in two key locations –the upper bluff north of CSAH 42 and the lower river bluff area just north of CSAH 16. Regardless of the specific alignment, construction of proposed CSAH 21 will require cutting into steep slopes and filling in areas where the elevation is lower, resulting in potential for erosion and substantial land acquisition and disturbance impacts.

As described in Section 3.1.5.2, two alignment options are under consideration south of CSAH 16. The western alignment option follows the existing topography to the greatest extent possible to minimize impacts from grading. The eastern alignment provides more balanced property/social impacts. In addition, regardless of alignment option, the urban cross-section design was selected to minimize grading impacts (as well as vegetation impacts as noted below). The intersection with CSAH 16 was lowered to better balance cuts and fills as the roadway traverses the steep slope north of CSAH 16.

3. Vegetation/Habitat/Wildlife Preservation

The proposed project corridor is primarily undeveloped; vegetation types include cultivated and pastured farm fields, wooded/forested areas, and non-native grasslands. Two wooded areas that were of particular concern during the refinement of the Build Alternative are discussed below.

A sizeable maple-basswood-oak forest is located on the upper river bluff in the southern portion of the project area. The maple/basswood forest is home for several animals including deer, squirrels and many songbirds. Cooper's hawks have also been sighted in this area. The maple-basswood forest is adjacent to wetlands in the project area and can provide habitat to amphibians and reptiles that are dependent on both wetland and upland habitat.

Key to maintaining healthy habitat within a resource of this nature is to preserve the integrity of the "forest core". The forest core within the maple-basswood forest is calculated to be 20 acres in size (based on mapping methodology that has been approved by the Minnesota Department of Natural Resources (DNR). From east to west, it is approximately 1,700 feet wide at the southern edge. From north to south, the direction where the proposed alignment would cross, its narrowest segment is approximately 120 feet wide on the western side; the widest swath of core is approximately 950 feet wide in the middle of the core segment. Refer to Section 6.5.1 for additional information. South of CSAH 16, the western alignment option is designed to minimize impacts to this habitat by curving west to the narrowest portion of the forest core. The eastern alignment option, which provides more balanced property/social impacts, has somewhat higher vegetation impacts but still avoids the widest part of the forest core area. Regardless of alignment, the Build Alternative impacts to habitat are also minimized by the urban cross-section design.

Agency resource staff has also identified the forested bluff area as a wildlife corridor. Wildlife corridors are generally linear habitats within relatively developed land (i.e., forest strips in between farmed fields, or riparian wetlands in between commercial developments) that connect two or more larger blocks of habitat. They are important to wildlife because they provide access to resources (such as food in one area and nesting sites in another) in the larger blocks of habitat that would otherwise be cut off by intervening development. The proposed project incorporates two grade-separated wildlife crossings in order to maintain the opportunity for safe passage of wildlife through the forested bluff corridor.

The second major resource of concern during the alternative refinement process is the stand of oak forest, north of CSAH 16 and south of Southbridge development which has, along with the Dean Lake complex, been identified as a RSEA/high biodiversity site by the DNR. In order to minimize impacts to vegetation in this area, the proposed project utilizes an urban cross-section and, in the east-west segment between Southbridge Parkway West and CSAH 21, locates the roadway as far away from the wooded area as possible without encroaching on planned development to the south. The planned development to the south, as well as the Southbridge development to the north, were planned to occur around the planned CSAH 21 extension as a result of transportation and land use planning by the City of Shakopee and Scott County. In addition, the design incorporates a grade-separated crossing in the wooded bluff area that can provide safe movement for wildlife, as well as pedestrians.

4. Wetland Protection

Wetlands within the project corridor include a DNR-protected pond and other small National Wetland Inventory (NWI) wetlands just north of CSAH 21, the Prior Lake outlet channel which is also a DNR-protected water, and the Dean Lake wetland complex as well as other NWI wetlands north of CSAH 16. Federal, state, and local wetland regulatory agencies were contacted to provide input regarding these resources.

- The refined alignment and urban design were selected to avoid impacts to the DNR-protected wetland. Note, the divergence between the western and eastern alignment options occurs approximately 1,000 feet north of this wetland.
- The proposed roadway would cross the Prior Lake outlet channel regardless of alignment. A culvert will be placed under the road.
- Alternative concepts to the 2003 Build Alternative were investigated specifically to determine the potential for wetland impact avoidance/minimization in the portion of the project area east of Dean Lake. It was determined that the 2003 Build Alternative represents the least impact on wetlands of the practicable alignments. As is the case with other resources, the selection of an urban cross-section that occurred during the alternative refinement process has further minimized impacts to area wetlands.

The wetland-related alignment investigation, specifically the sequencing of avoidance, minimization, and compensation, is detailed in Section 7.6.

5. Minimized Property Impacts

The project affects owners and users of property directly through conversion and segmenting of land due to right of way acquisition and indirectly through proximity impacts (e.g., noise, air quality, views). The project corridor itself includes relatively large parcels in agricultural, rural residential, private recreational and natural use. At the south end, properties near the corridor are rural residential or vacant. At the north end, the corridor is adjacent to urban development (Southbridge), specifically single-family homes, townhouses, an elementary school, and commercial development.

- The selection of an urban design minimizes property acquisition impacts. South of CSAH 16, the western alignment option requires somewhat more right of way compared to the eastern alignment; it segments an additional property. The eastern alignment requires right of way from an additional property. The refined alignment minimizes property segmenting to the extent feasible in consideration of other project objectives. Regardless of alignment or intersection design option, no structures are affected and no total parcel acquisitions/relocations are required.
- As noted in Section 3.1.3, the Southbridge development was planned with design features that anticipated the construction of CSAH 21, including a City-owned buffer between the development and the assumed location of the proposed roadway. In addition, development south of the proposed roadway was also planned to occur in recognition of the proposed project. The CSAH 21 design refinement process investigated options that varied the distance between the Southbridge buffer and the curblineline of the roadway; the selected alignment and urban section design maximizes this distance while keeping the roadway from encroaching on planned development to the south.

3.1.5.2 Sub-Alternatives Evaluated During the EIS Process

As noted, numerous alignment/design iterations were generated and evaluated during the DEIS alternative refinement process, resulting in four sub-alternatives (two south of CSAH 16 and two north of CSAH 16) that were presented to the public at an open house, January 8, 2004. Following this meeting and in consideration of project objectives and public input, the County initially selected one sub-alternative south of CSAH 16 and one sub-alternative north of CSAH 16 to be defined as the Build Alternative for detailed evaluation in the DEIS.

Upon review of detailed traffic analysis, it was determined that the Build Alternative identified by the County following the January 8, 2004 open house would operate at acceptable LOS (LOS D) in the analysis year 2025; however, the CSAH 21/CSAH 18 would be operating near 50 seconds of delay per vehicle. The border between LOS operation D (acceptable) and LOS E (unacceptable) is 55 seconds of delay. Because it was anticipated that proposed four-lane, at-grade intersection at CSAH 21/CSAH 18 would become congested shortly after the 2025 analysis year, the County developed and reviewed three design options for the CSAH 21/CSAH 18 intersection (four-lane at-grade intersection, six-lane at-grade intersection, and four-lane interchange) and presented them to the public at an open house on March 3, 2005. Following the open house, the County decided to evaluate all three of the design options in the DEIS.

Following consultation with the SMSC during 2005 and 2006, the County decided to further develop one of the earlier alignment iterations that had been generated for the portion of the project south of CSAH 16, and evaluate this option in the DEIS. This option is described as Eastern Alignment Option below. The following discussion describes the sub-alternatives that were reviewed with the public and the explanation as to why each was eliminated or retained for detailed analysis, are described below.

Sub-Alternative 5B (South of CSAH 16)

Sub-Alternative 5B extends CSAH 21 north from the existing CSAH 21/CSAH 42 intersection. The roadway is designed as a rural section with the alignment following the natural topography of the bluff. This alignment was designed to minimize the amount of fill needed for construction (as compared to sub-alternatives that followed a straight north south alignment, these sub-alternatives were eliminated from further consideration early in the DEIS process). Sub-Alternative 5B would, however, involve impact to the DNR-protected wetland located north of CSAH 42.

Following the January 2004 public meeting, Sub-Alternative 5B was eliminated from further consideration because it had greater grading impacts, impacts to vegetation and the forest core, and wetland impacts compared to Sub-Alternative 8.

Sub-Alternative 8/Western Alignment Option (South of CSAH 16)

Sub-Alternative 8 is designed as an urban section, with a lower design speed and alignment shifted slightly to the east to avoid impacts to the DNR-protected wetland. This alignment minimizes grading impacts by following the natural topography of the river bluff, and minimizes impacts to vegetation and forest core habitat.

Following presentation at the January 2004 public open house, this design was further refined to allow for a lower design speed of 55 mph from CSAH 42 through the upper bluff in order to avoid property impacts south of CSAH 42, to avoid the need to reconstruct the entire CSAH 21/CSAH 42 intersection, and to further protect wetlands and vegetation and minimize property and grading impacts. This was deemed to be feasible as the posted speed on CSAH 21 south of CSAH 42 is 50 mph.

As discussed previously, the County subsequently decided to include a second, eastern, alignment option south of CSAH 16 which is discussed below. Sub-Alternative 8, as refined, is the western alignment option for the Build Alternative (south of CSAH 16) analyzed in the DEIS.

Eastern Alignment Option

This option diverges from the western option described above between approximately 1,000 feet north of CSAH 42 and 1,600 feet south of CSAH 16, a distance of approximately one-half mile. The maximum distance (centerline to centerline) between the two alignment options is 325 feet. This alignment follows the property line to balance impacts to affected properties, including SMSC and YMCA camp lands.

This option was one of the numerous alignment options developed during the DEIS alternative review process that was initially eliminated from further consideration but subsequently further developed and evaluated following consultation with the SMSC.

Sub-Alternative 4 (North of CSAH 16)

Sub-Alternative 4 is designed as an urban section with curb and gutter and the alignment is shifted to the south within the existing County right of way in order to avoid tree impacts and to maximize the buffer between the Southbridge residential development and the proposed roadway. Sub-Alternative 4 is the Build Alternative (between CSAH 16 and each of the CSAH 21/CSAH 18 intersection options) analyzed in the DEIS.

Sub-Alternative 5A (North of CSAH 16)

Sub-Alternative 5A is a rural section centered within the existing County right of way. Sub-Alternative 5A was eliminated from further consideration because it had greater vegetation impacts and closer proximity to existing development than Sub-Alternative 4.

CSAH 21/CSAH 18 Intersection Options

Each of the following CSAH 21/CSAH 18 options is analyzed in the DEIS. Design differences to CSAH 21 among these options extend approximately 3,200 feet west of CSAH 18.

Four-Lane At-Grade Intersection

Under this option, the CSAH 21/CSAH 18 intersection is at-grade with double left-turn lanes on CSAH 21 and Southbridge Parkway approaches, double right-turn lanes on the CSAH 18 approach, and two through lanes in each direction on CSAH 21, CSAH 18 and Southbridge Parkway. This option also includes 12-foot wide bus-only shoulder lanes north of CSAH 16 (compared to 10-foot wide shoulders south of CSAH 16).

Six-Lane At-Grade Intersection

Under this option, the CSAH 21/CSAH 18 intersection is at-grade with three through lanes in each direction on CSAH 21, two through lanes on CSAH 18, double left-turn lanes on all four approaches to the intersection, and double right-turn lanes on northbound CSAH 18 to northbound CSAH 21. The transition from two to three lanes on CSAH 21 occurs approximately 2,000 feet west of CSAH 18. This option also includes 12-foot wide bus-only shoulder lanes north of CSAH 16 (compared to 10-foot wide shoulders south of CSAH 16).

Four-Lane Interchange

Under this option, the CSAH 21/CSAH 18 intersection is an interchange with two-through lanes in each direction on CSAH 21, a compact diamond design, close spacing of ramp intersections with specific traffic signal phasing, double left-turn lanes east-bound on Southbridge Parkway to northbound CSAH 21, double left-turn lanes on CSAH 21 exit ramps, double right-turn lanes on northbound CSAH 18 to northbound CSAH 21 on-ramp, and CSAH 21 bridging over Southbridge Parkway/CSAH 18. This option does not include special bus-only shoulders.

Wetland Avoidance Alternatives

While developing plans and layouts for the Build Alternative, potential alignment and design details that avoided wetlands was evaluated. These are discussed in Section 7.6.3.

3.1.6 Transit Station Alternatives

All five of the proposed transit stations identified at the beginning of the process are evaluated for effect on intersection operations and transit in the DEIS. This is because the proposed transit station locations evaluated in the DEIS are located at each of the intersections, existing or future, along new CSAH 21; a transit station is most likely to be sited at an intersection to provide the best access, operations, and visibility for individual users and bus operators. The planned transit station at the southwest quadrant of CSAH 21/CSAH 16 is evaluated for transportation effects along with the other four potential station locations.

3.2 ALTERNATIVES EVALUATED IN THE DEIS

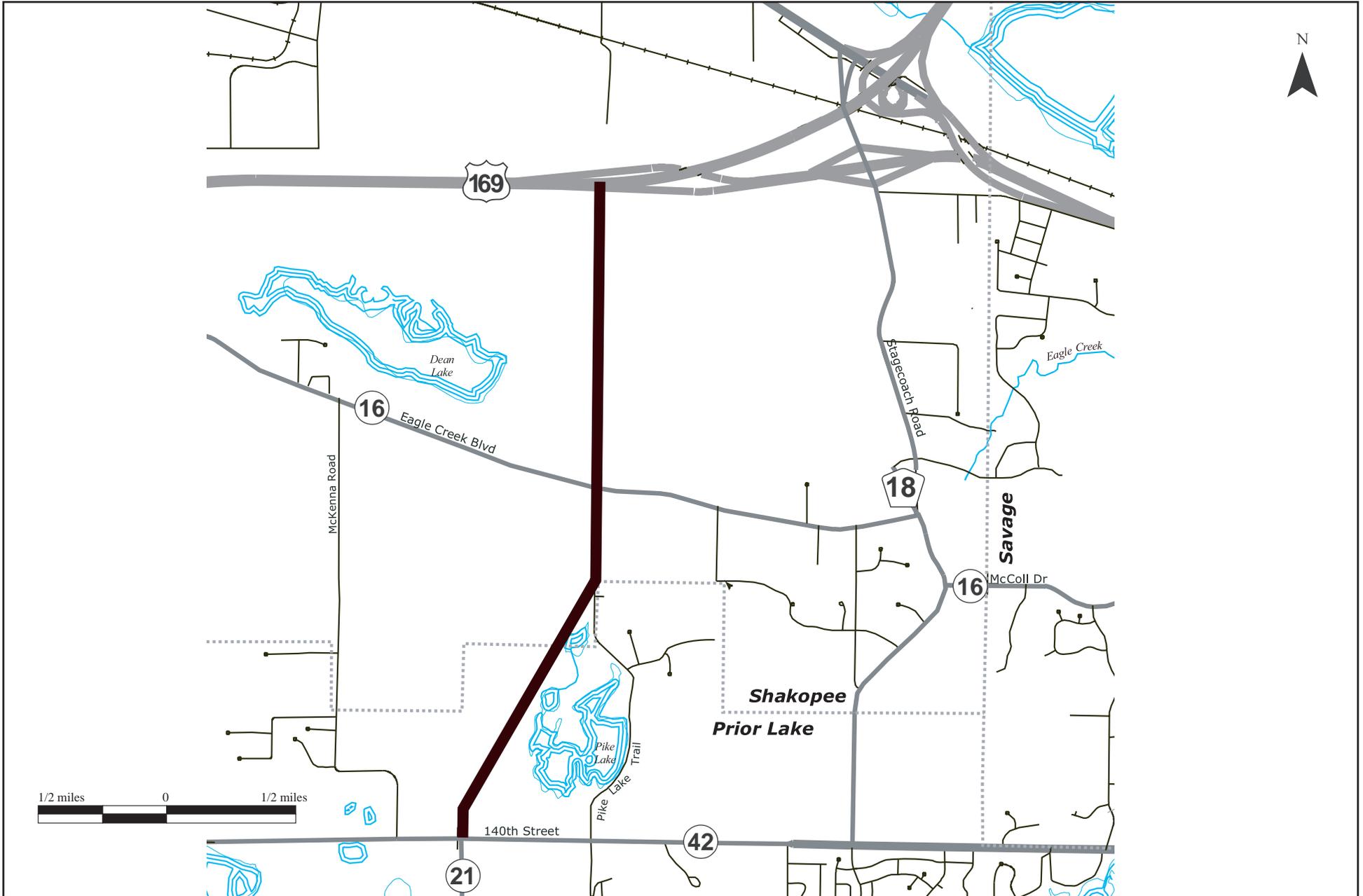
3.2.1 No Build Alternative

The No Build Alternative would perpetuate the existing CSAH 18 designation as the County's north-south principal arterial within the study area. County State Aid Highway 21 would continue to terminate at CSAH 42.

3.2.2 Build Alternative

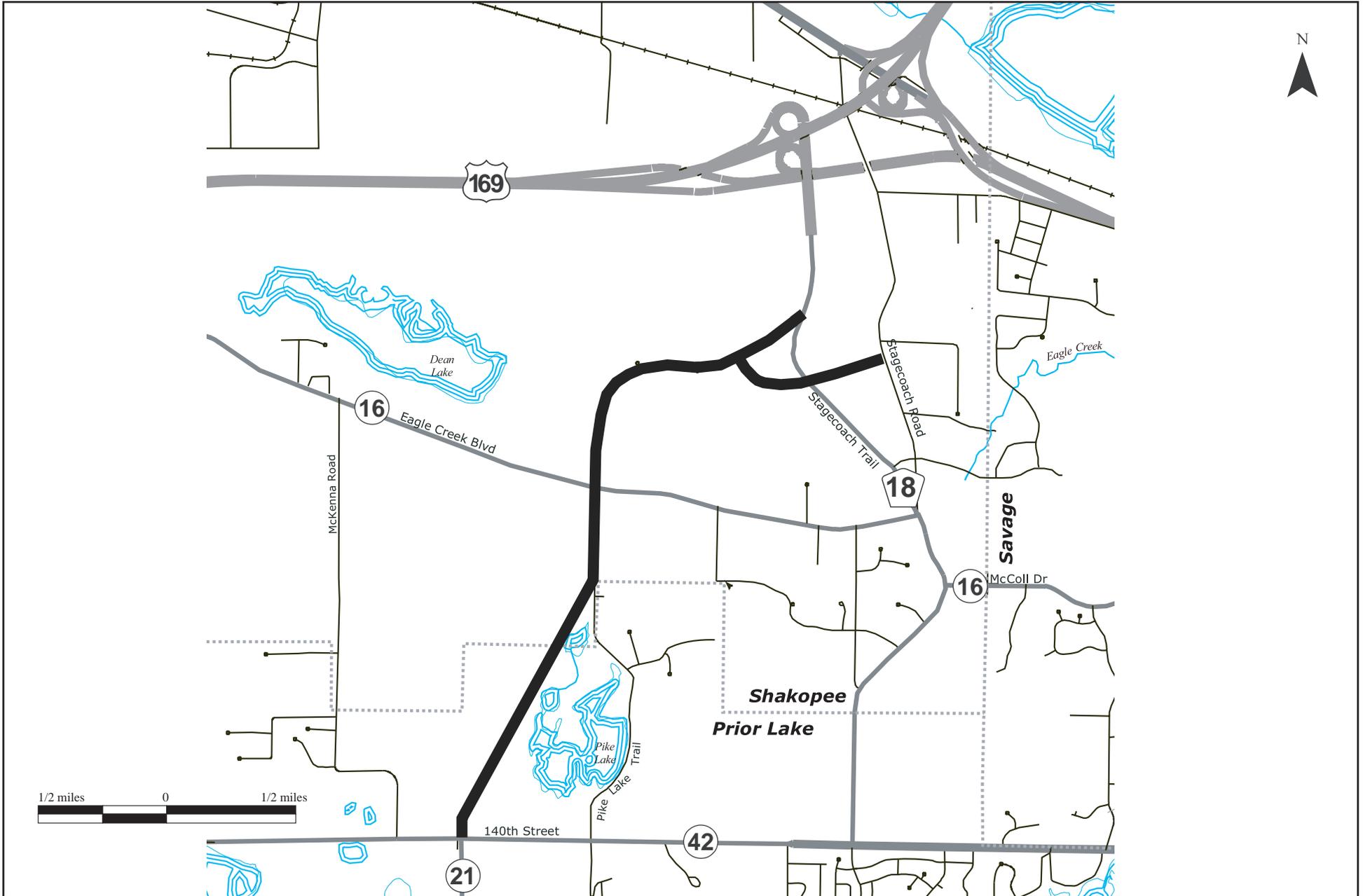
Section 3.1.5.2 discusses the development and evaluation of sub-alternatives which resulted in the DEIS Build Alternative that combines Sub-Alternative 8, including two alignment options (western and eastern) south of CSAH 16, with Sub-Alternative 4 north of CSAH 16. (See Figures 3-5 through 3-8) The Build Alternative includes a transit station at the southwest quadrant of the CSAH 21/CSAH 16 intersection and three options for the intersection of CSAH 21 and CSAH 18: a four-lane at-grade intersection, a six-lane at-grade intersection, and a four-lane interchange. (See Figures 3-9 through 3-11)

The Build Alternative represents an urban cross-section design that is a divided four-lane expressway, with two 12-foot lanes of traffic in each direction with a protected left turn lane at intersecting roadways; turn lanes for the CSAH 21/CSAH 18 intersection options and design for the CSAH 21/CSAH 18 interchange option as described in Section 3.1.5.2. The proposed cross-section includes a trail along the east side of the roadway and two grade-separated wildlife crossings, a large one at the south edge of the bluff and a smaller one included as part of a pedestrian crossing (underpass) north of CSAH 16. Additionally, to facilitate bus movement, the proposed CSAH 21 cross-section (with the four-lane and six-lane at-grade intersection options at CSAH 21/CSAH 18) includes 12-foot wide bus-only shoulders north of CSAH 16. (See Figure 3-12)



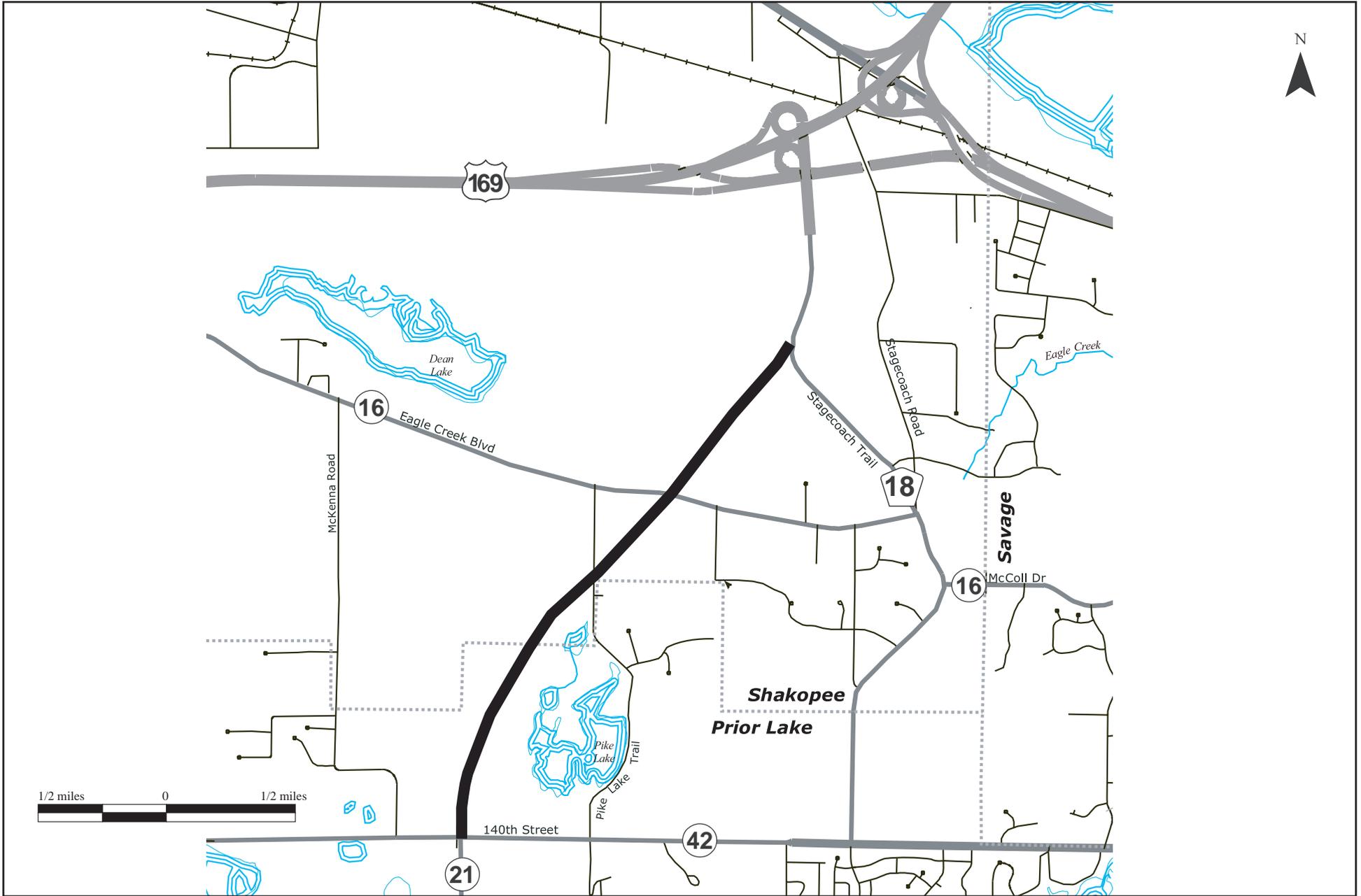
1990 STUDY ALTERNATIVE 3
CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
Scott County, Minnesota

Figure 3-1



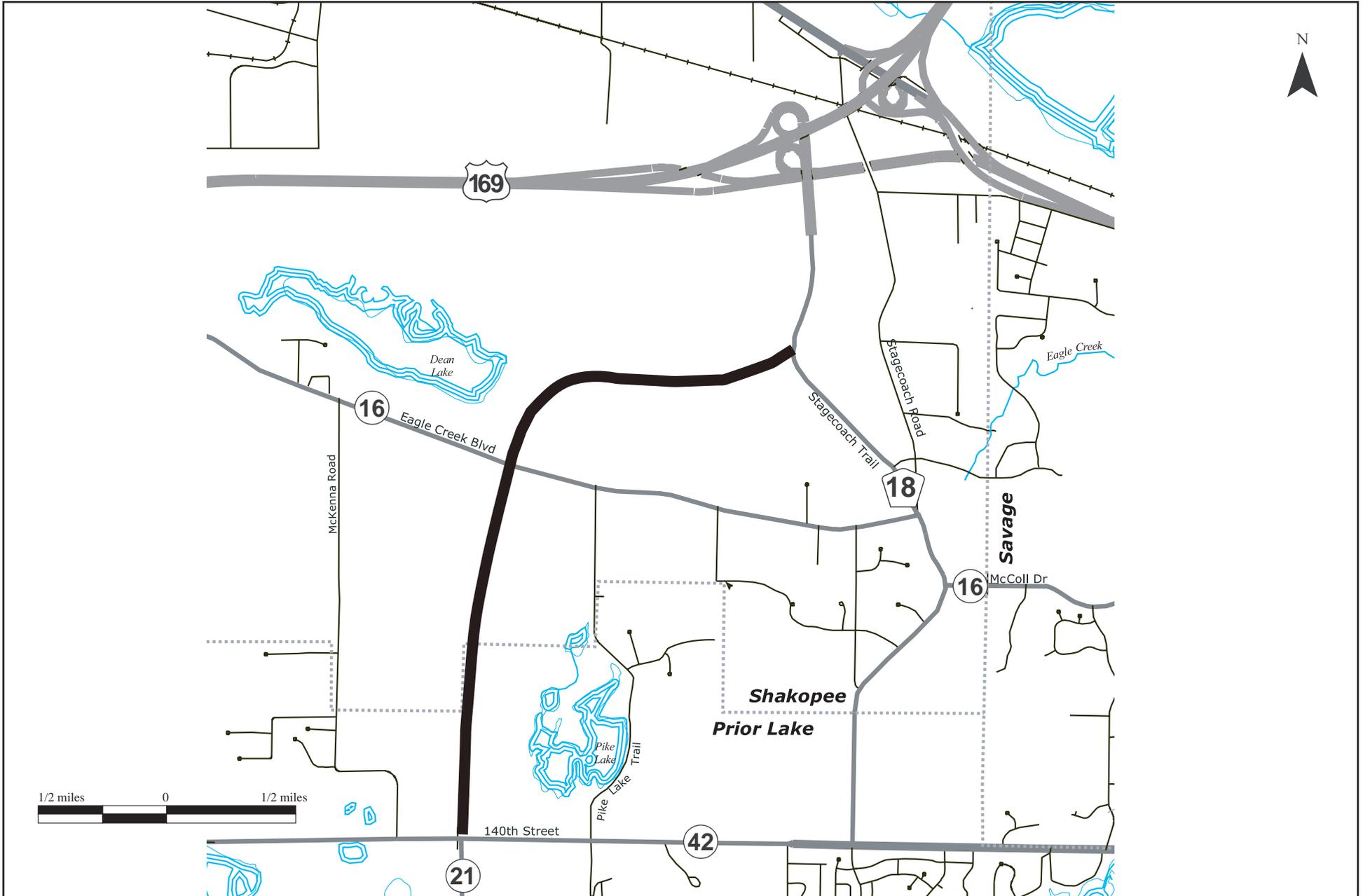
1990 STUDY ALTERNATIVE 4
CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
Scott County, Minnesota

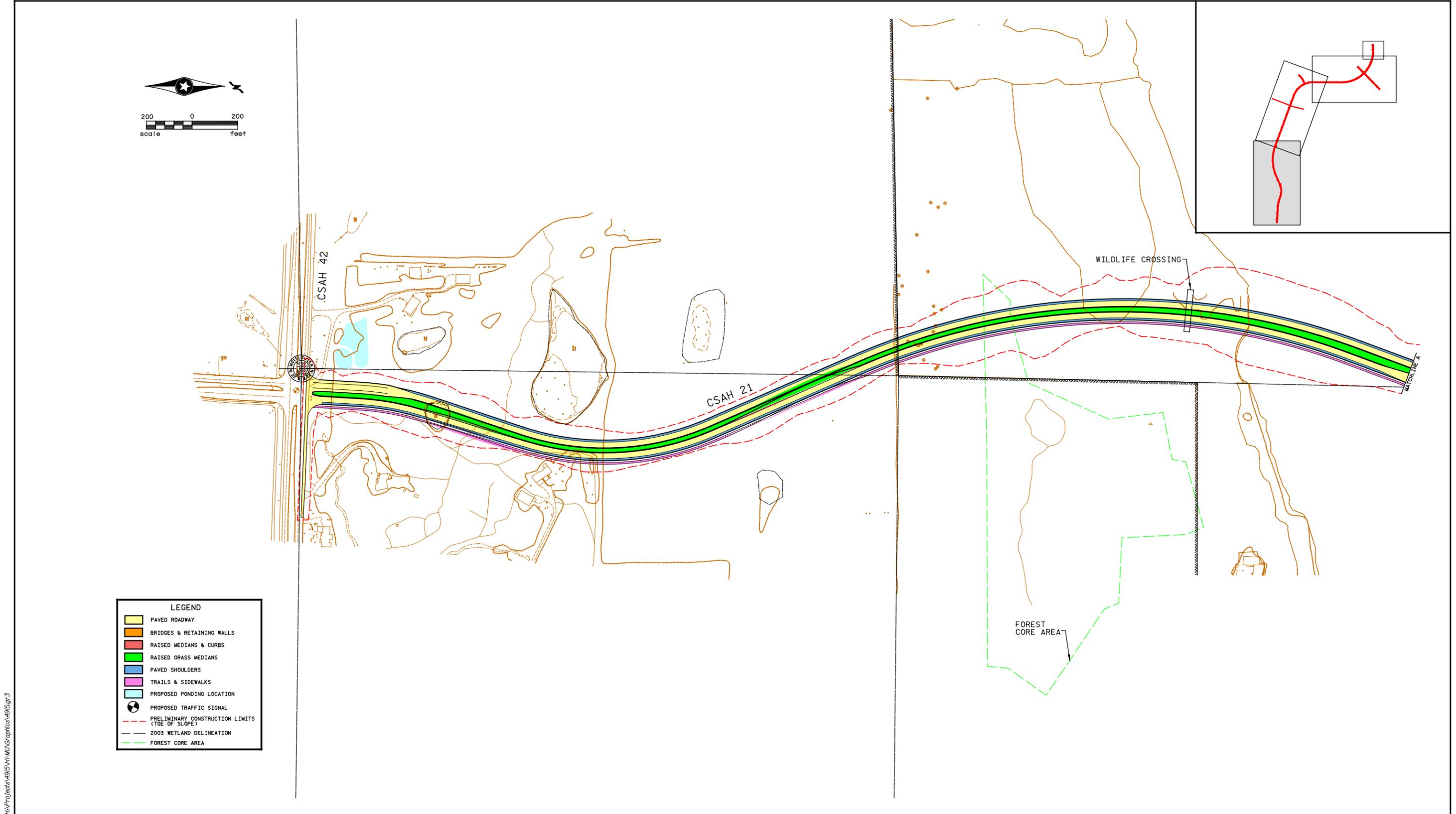
Figure 3-2



1992 STUDY ALTERNATIVE A
CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
Scott County, Minnesota

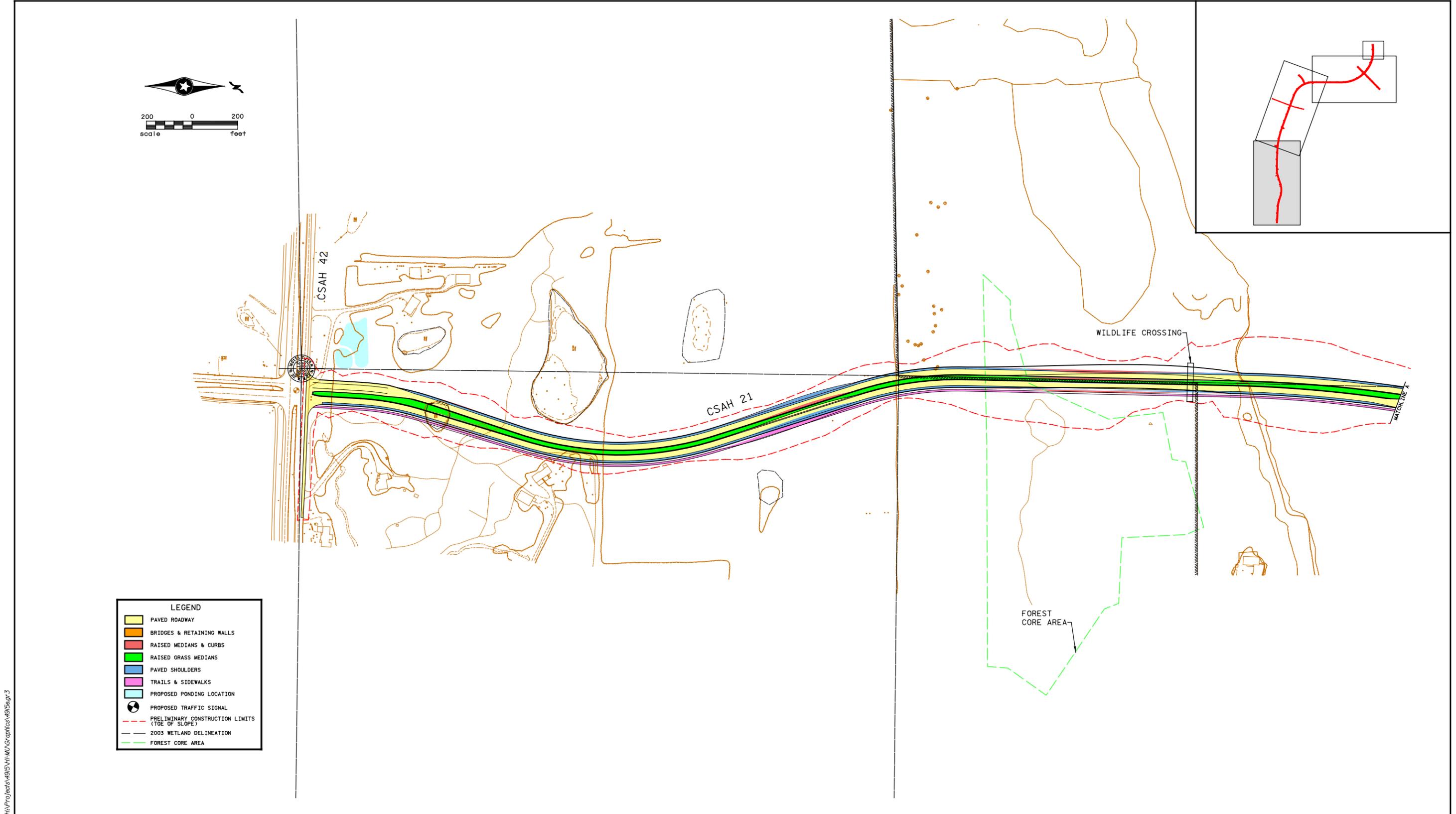
Figure 3-3





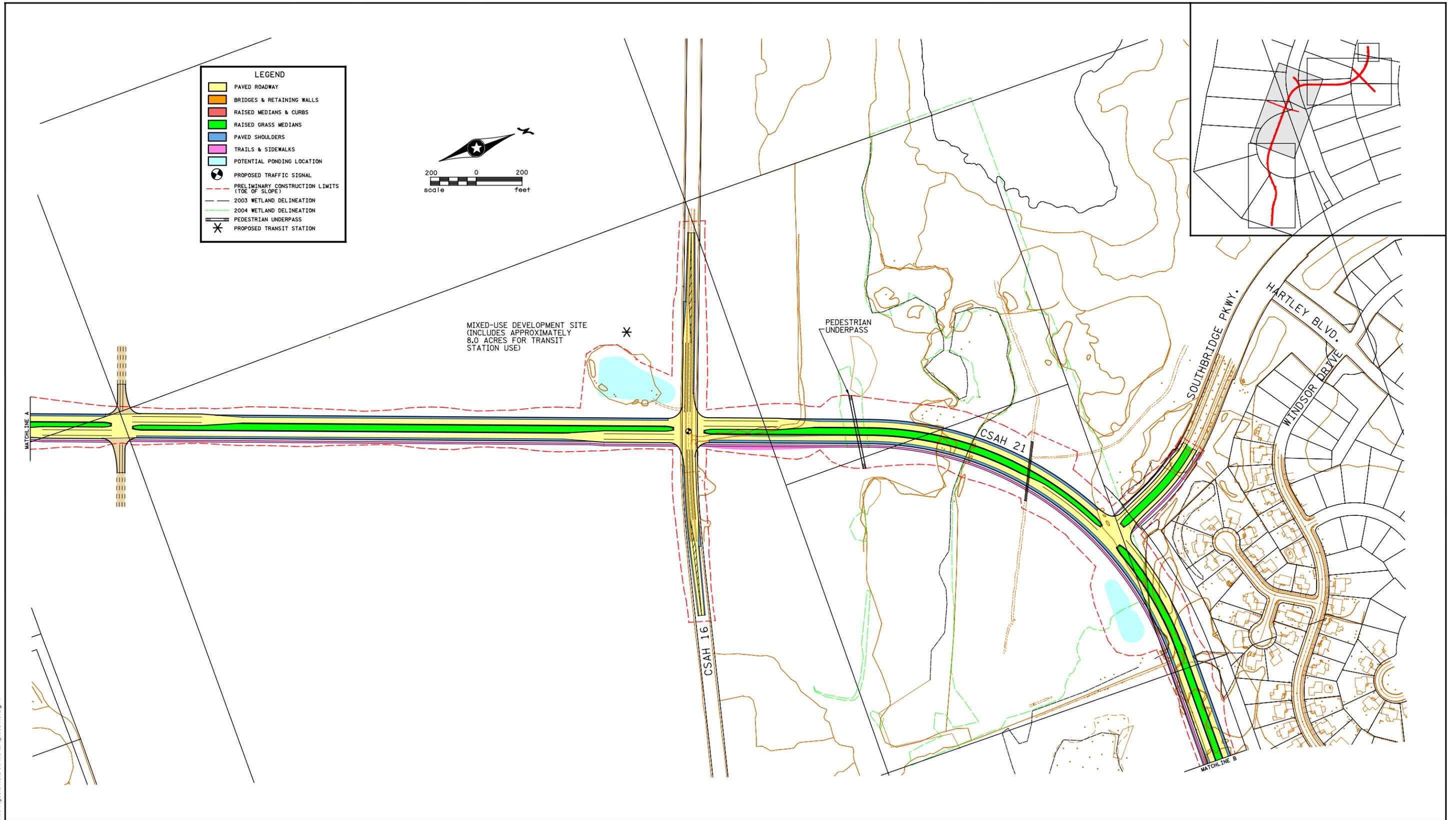
PROPOSED IMPROVEMENTS (WEST ALIGNMENT)
 CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 3-5



PROPOSED IMPROVEMENTS (EAST ALIGNMENT)
 CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

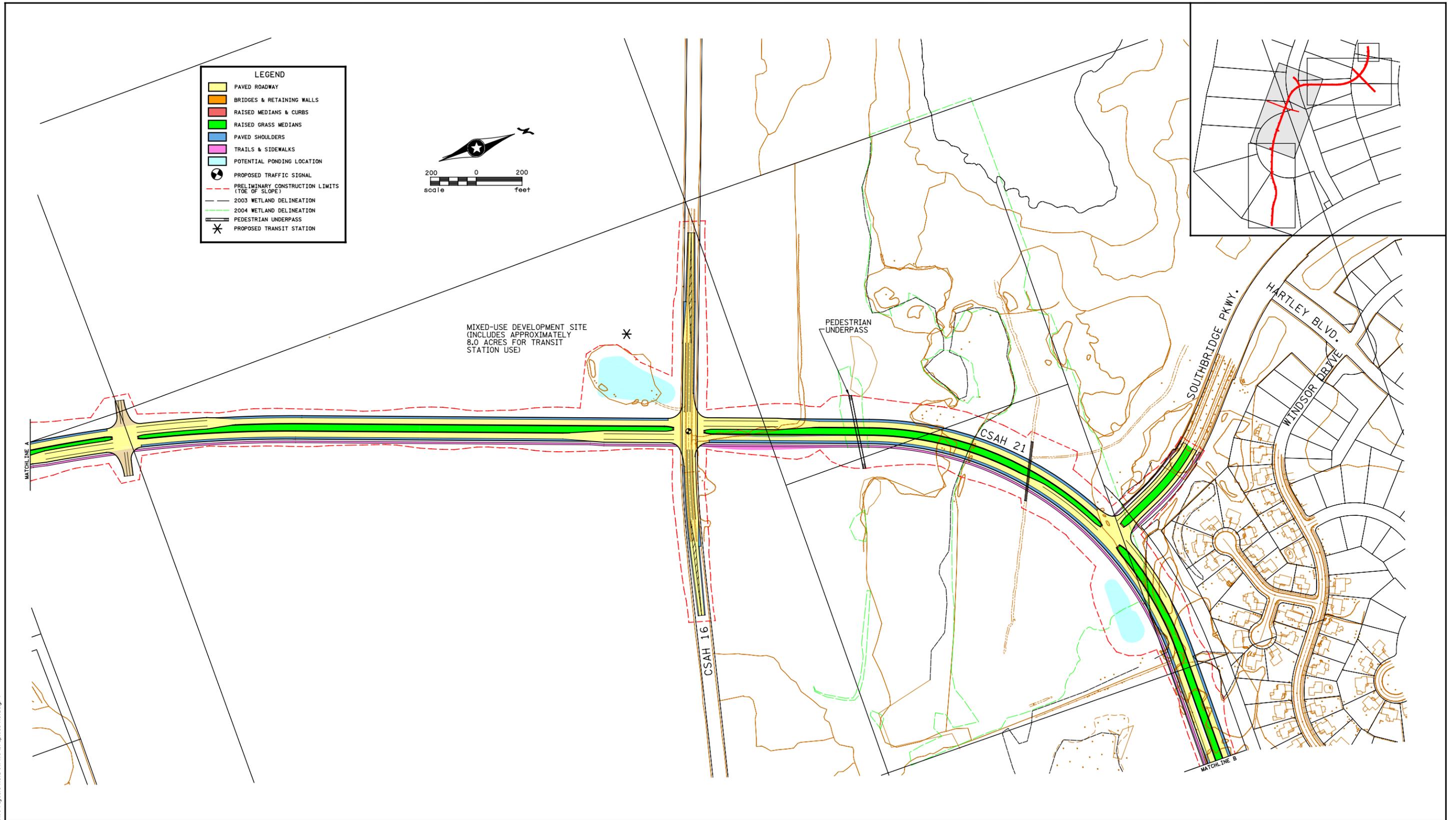
Figure 3-6



PROPOSED IMPROVEMENTS (WEST ALIGNMENT)
 CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 3-7

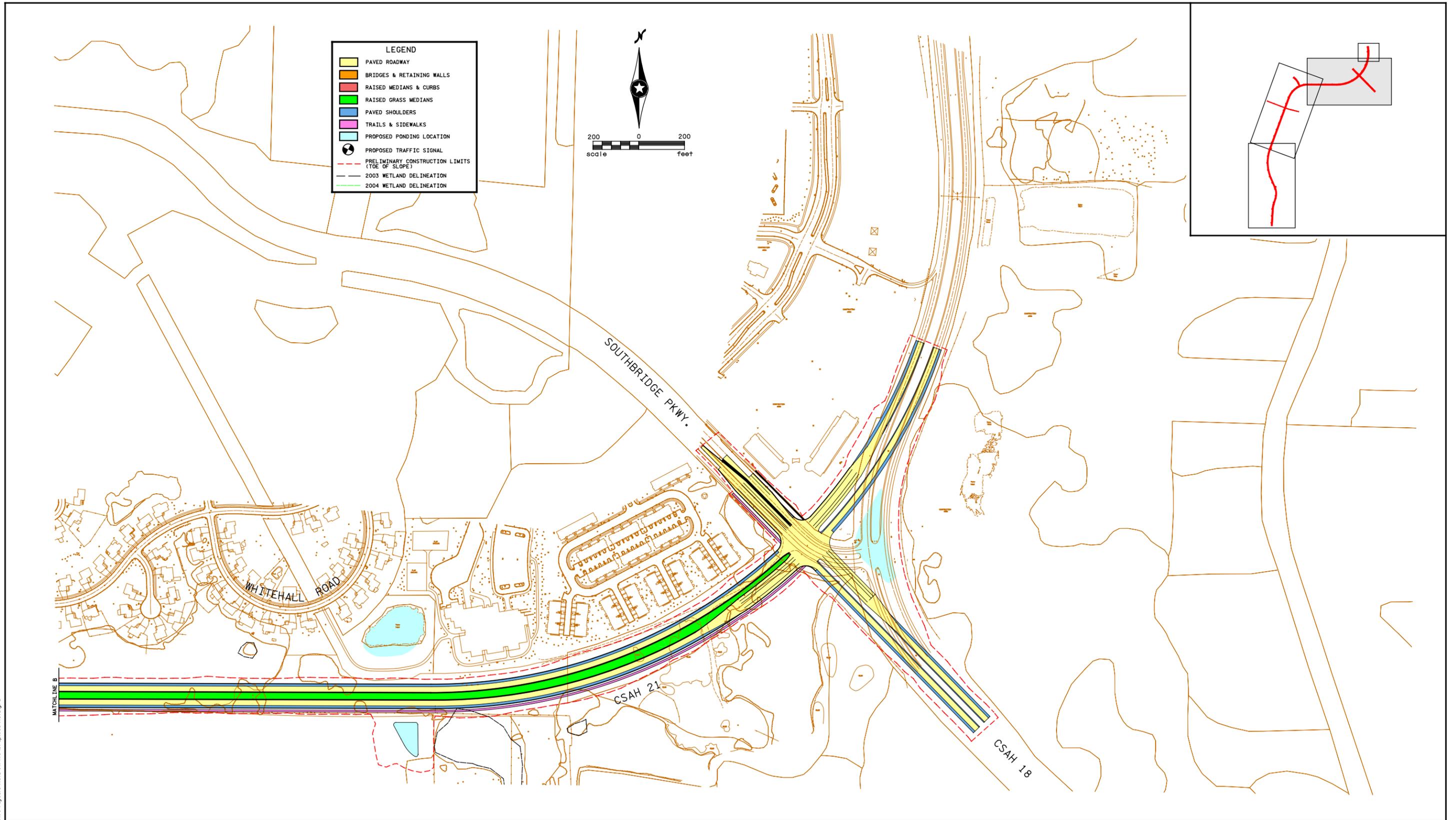
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PROPOSED IMPROVEMENTS (EAST ALIGNMENT)
 CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 3-8

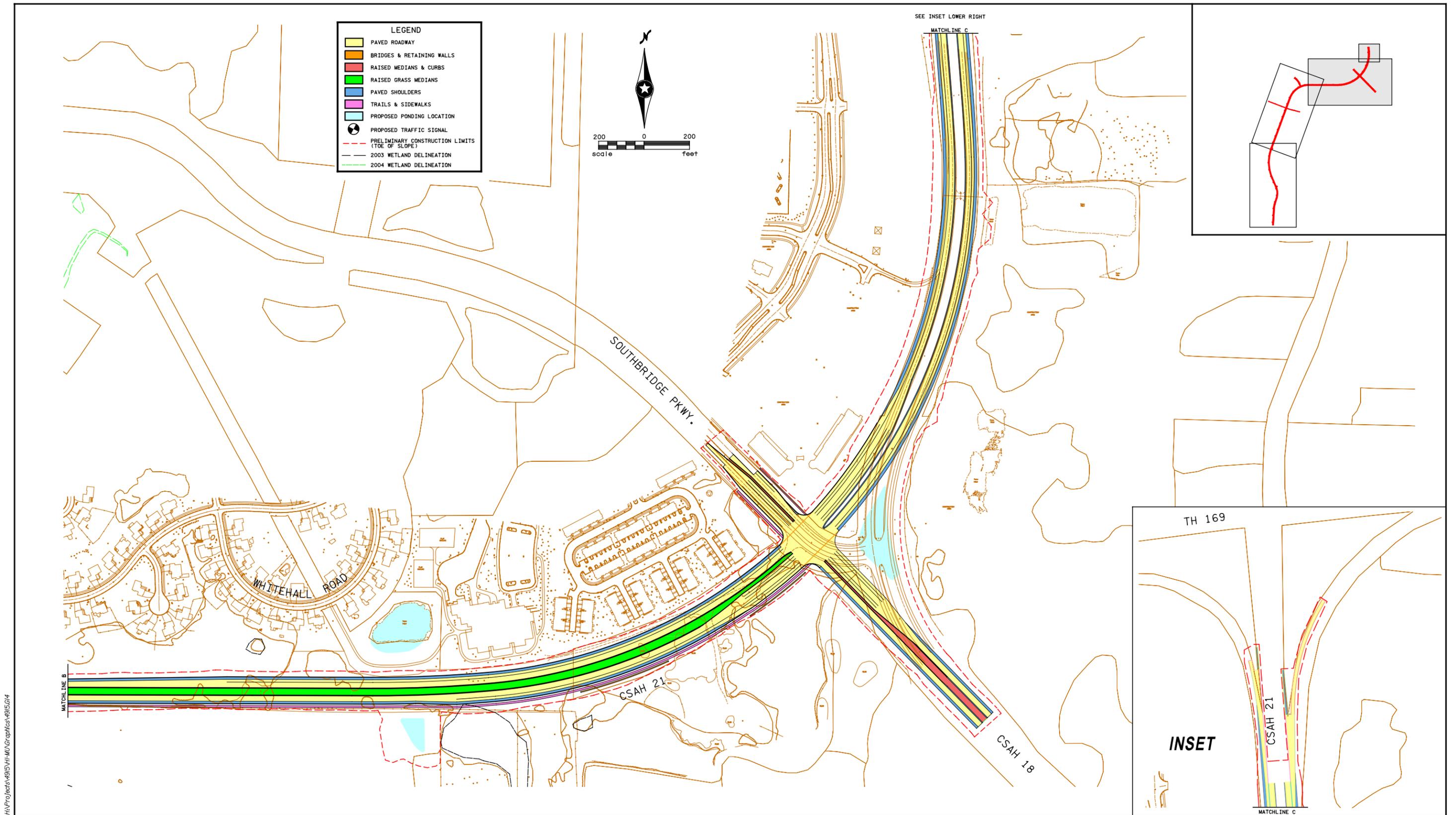
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PROPOSED IMPROVEMENTS-4 LANE AT-GRADE INTERSECTION-CSAH 21 / CSAH 18
 CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 3-9

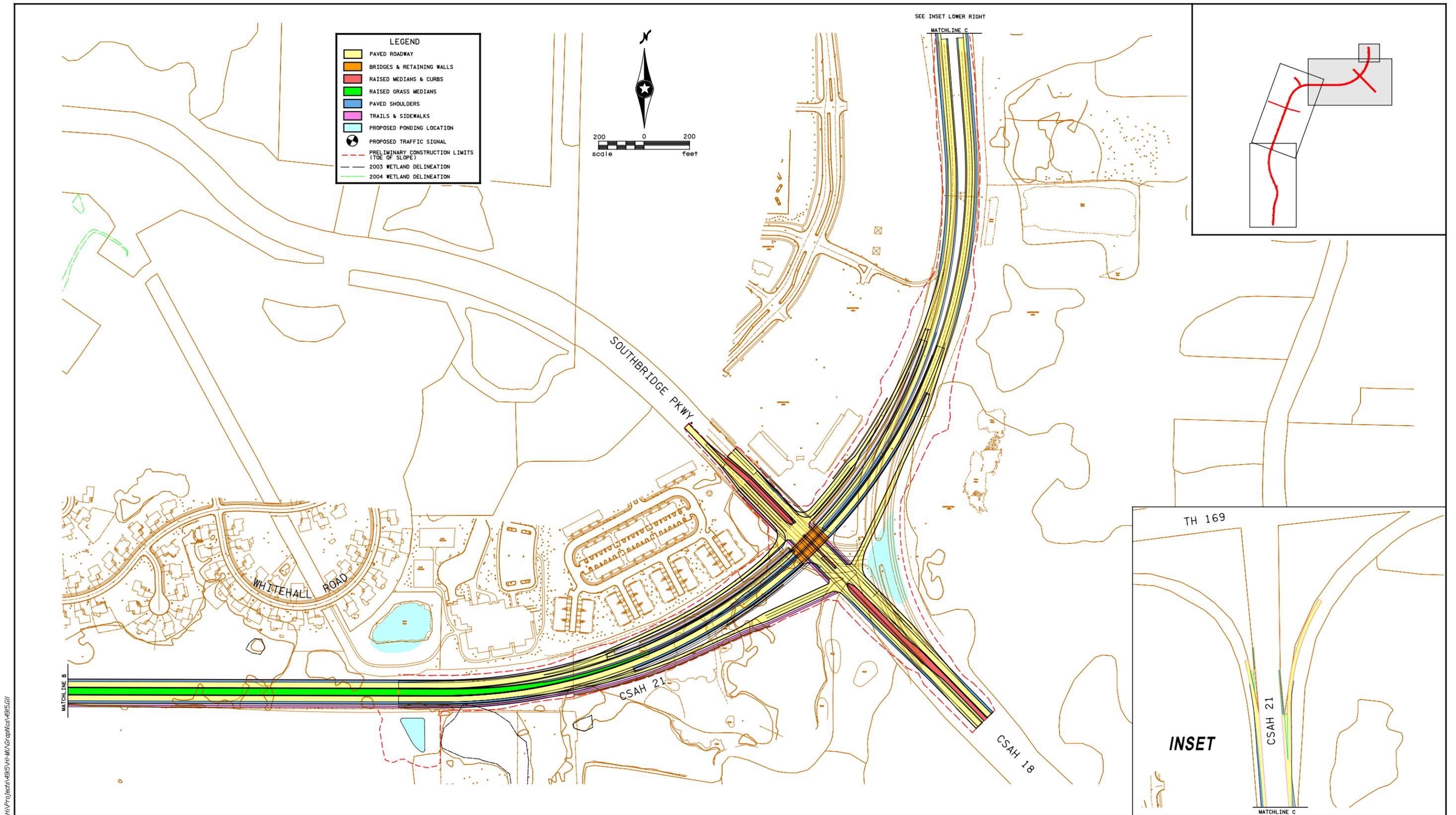
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PROPOSED IMPROVEMENTS-6 LANE AT-GRADE INTERSECTION-CSAH 21 / CSAH 18
 CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

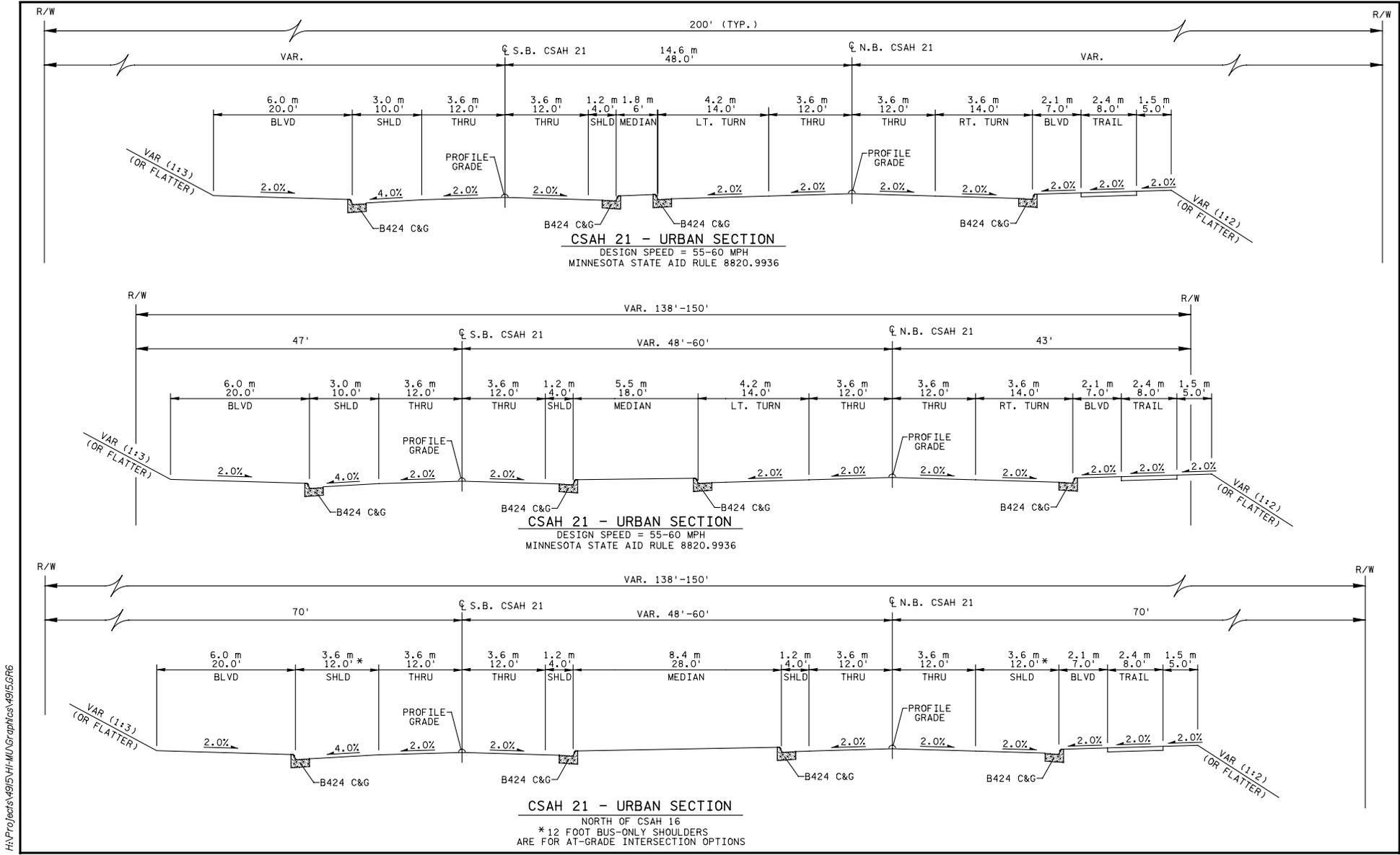
Figure 3-10

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PROPOSED IMPROVEMENTS-4 LANE INTERCHANGE-CSAH 21 / CSAH 18
 CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 3-11



TYPICAL SECTIONS

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 3-12

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4.0 TRANSPORTATION SYSTEM IMPACTS

4.1 ROADWAYS

Major roads that provide north-south access in the study area include CSAH 83, McKenna Road, Pike Lake Road, CSAH 18 and TH 13. Study area roads that provide west-east access include CSAH 42, CSAH 16, TH 169 and the CSAH 101 connection to TH 13.

4.1.1 Existing Traffic Volumes and Operations

4.1.1.1 Existing Traffic Volumes

Figure 2-3 presents existing (2002-2003) average daily traffic (ADT) volumes in the study area.

4.1.1.2 Existing Traffic Operations

An existing traffic operations analysis was conducted for the a.m. and p.m. peak hours at four key intersections (CSAH 18/Southbridge Parkway, CSAH 18/CSAH 16, CSAH 18/CSAH 42, and CSAH 21/CSAH 42). Capacity analysis results identify a level of service (LOS) which indicates the quality of traffic flow through an intersection. Intersections are given a ranking from LOS A through LOS F. LOS A indicates the best traffic operations, with vehicles experiencing minimal delays. LOS F indicates an intersection where demand exceeds capacity, or a breakdown of traffic flow. LOS A through D are generally considered acceptable by drivers. LOS E indicates that an intersection is operating at, or very near its capacity and that vehicles experience substantial delays. Results of the analysis are shown in Table 4-1.

**TABLE 4-1
EXISTING PEAK HOUR CAPACITY ANALYSIS
LEVEL OF SERVICE RESULTS**

INTERSECTION	LOS	
	A.M. Peak	P.M. Peak
CSAH 18/Southbridge Parkway	B	C
CSAH 18/CSAH 16 (west leg)*	A/C	A/E
CSAH 18/CSAH 42	B	C
CSAH 21/CSAH 42	B	C

* Indicates an unsignalized intersection. The overall LOS is shown followed by the worst approach LOS.

4.1.2 Future Traffic Volumes and Operations

4.1.2.1 Future Traffic Volumes

Average daily traffic forecasts were produced for year 2030 for the proposed extension of CSAH 21 north from CSAH 42 in Prior Lake to CSAH 18 in Shakopee using the Metropolitan Council's new Twin Cities regional travel demand forecasting model. The regional highway network was modified to include all arterial and many collector streets in Prior Lake and Shakopee and included future roads and changes in functional classification. Household and employment data used in the analysis were based on the Metropolitan Council 2030 Regional

Development Framework. Higher trip generation values for the Shakopee Crossing area (commercial node at CSAH 18 and Southbridge Parkway) were used based on the analysis presented in a recently completed traffic study rather than the regional model.

Daily traffic volumes were developed from forecast turning movement volumes, with the assumption that the p.m. peak hour traffic forecasts consist of ten percent of the daily traffic volumes. A review of current volumes reflected higher growth in the study area than originally assumed. Therefore, the updated year 2030 base volumes were adjusted to account for this higher growth. In addition, as noted, updated volumes assume more specific information on the locations of development within the Traffic Analysis Zones (TAZs) than what is included in the regional travel forecasting model.

It is estimated that, in the Build year (2030), the proposed new segment of CSAH 21 will carry the following volumes: between CSAH 42 and CSAH 16 it will carry a daily volume of 26,000 under either of the CSAH 21/CSAH 18 at-grade intersection options; between CSAH 42 and CSAH 16 it will carry a daily volume of 27,500 under the CSAH 21/CSAH 18 interchange option; between CSAH 16 and CSAH 18 it will carry 30,000 vehicles per day under either of the CSAH 21/CSAH 16 at-grade intersection options; between CSAH 16 and CSAH 18 it will carry 32,000 vehicles per day under the CSAH 21/CSAH 18 interchange option. No difference in traffic volumes between the western and eastern alignment options south of CSAH 16 is expected. Compared to No Build conditions, a new segment of CSAH 21 reduces traffic on the following parallel roadways: CSAH 83, CSAH 18, the connection between TH 169 and TH 13, and TH 13. See Figures 2-5 and 2-6.

4.1.2.2 Future Traffic Operations

A future (Year 2030) traffic operations analysis was conducted for the a.m. and p.m. peak hours for the No Build and Build Alternatives. Intersections analyzed are highlighted in Figure 4-1. Signalized intersections were analyzed using the Synchro/SimTraffic Software, and the unsignalized intersection of CSAH 18/CSAH 16 (west leg) was analyzed using the Highway Capacity Software.

**TABLE 4-2
NO BUILD PEAK HOUR CAPACITY ANALYSIS (2030)
LEVEL OF SERVICE RESULTS**

INTERSECTION	LOS	
	A.M. Peak	P.M. Peak
CSAH 18/Southbridge Parkway	C/C (EB)	E/F (SB)
CSAH 18/CSAH 16 (west leg)*	F/F (EB)	F/F (EB)
CSAH 18/CSAH 42	E/F (EB)	E/E (EB)
CSAH 21/CSAH 42	C/C (EB)	E/F (NB)

C/C (EB) = Overall LOS/Worst Approach LOS (Approach that experiences worst LOS)

* Indicates an unsignalized intersection. With the installation of a traffic signal operations are expected to improve to an overall LOS C or better.

No Build Alternative

The results of this analysis shown in Table 4-2 indicate that under the No Build Alternative, the intersections of CSAH 18/Southbridge Parkway and CSAH 21/CSAH 42 will continue to operate at acceptable overall LOS during the a.m. peak hour; however, they would operate at

unacceptable LOS in the p.m. peak hour. In addition, the intersections of CSAH 18/CSAH 16 (west leg) and CSAH 18/CSAH 42 are expected to operate at unacceptable levels during both the a.m. and p.m. peak hours, with existing geometrics and traffic controls.

Build Alternative

Results of the analysis indicate that, under the Build Alternative (2030), the CSAH 18/CSAH 16 (west leg) intersection and the CSAH 21/CSAH 18 four-lane at-grade intersection option are expected to operate at unacceptable overall LOS in both the a.m. and p.m. peak hour. All other key intersections are expected to operate at acceptable LOS. See Table 4-3.

**TABLE 4-3
BUILD PEAK HOUR CAPACITY ANALYSIS (2030)
LEVEL OF SERVICE RESULTS**

INTERSECTION	LOS	
	A.M. Peak	P.M. Peak
CSAH 21/CSAH 18	D/E (NB)	D/F (WB)
CSAH 21/Southbridge Parkway	D/D (SB)	D/D (SB)
CSAH 21/CSAH 16	D/E (WB)	D/D (WB)
CSAH 21/Valley View Road	B/D (EB)	C/D (EB)
CSAH 21/CSAH 42	D/E (EB)	D/E (SB)
CSAH 18/CSAH 16 (west leg)*	E/F (EB)	F/F (EB)
CSAH 18/CSAH 42	C/C (SB)	C/D (EB)

C/C (EB) = Overall LOS/Worst Approach LOS (Approach that experiences worst LOS)

* Indicates an unsignalized intersection. With the installation of a traffic signal operations are expected to improve to an overall LOS C or better.

**TABLE 4-4
CSAH 21/CSAH 18
GEOMETRIC ALTERNATIVE ANALYSIS
2030 BUILD VOLUMES**

Measures	AM PEAK			PM PEAK		
	4-Lane CSAH 21	6-Lane CSAH 21	Interchange	4-Lane CSAH 21	6-Lane CSAH 21	Interchange
Intersection Delay (sec/veh.) - LOS	55 s - D/E	40 s - D	15 s/15 s - B/B ⁽¹⁾	45 s - D	35 s - D	25 s/20 s - C/C ⁽¹⁾
Capacity Used ⁽²⁾						
- CSAH 21	95%	80%	30%	85%	70%	30%
- CSAH 18	95%	80%	65%	85%	70%	75%
Vehicle Stops ⁽³⁾						
- CSAH 21	2020	1925	0	2475	2475	0
- CSAH 18	1550	1550	2175	1925	1825	3700
- Total	3570	3475	2175	4400	4300	3700
CSAH 21 - Travel Time Increase ⁽⁴⁾						
- Northbound	45 s	35 s	0 s	35 s	35 s	0 s
- Southbound	20 s	20 s	0 s	40 s	30 s	0 s
Vehicle Hours of Travel (VHT) ⁽⁵⁾						
- Study area total travel time	180 hrs	175 hrs	160 hrs	215 hrs	205 hrs	215 hrs

⁽¹⁾ The intersection delay and LOS shown is for the west/east ramp respectively under the interchange alternative.

⁽²⁾ Capacity used refers to critical lane capacity at the CSAH 21/CSAH 18 intersection.

⁽³⁾ Vehicle stops refer to the number of stops for each respective roadway (each bidirectional).

⁽⁴⁾ Travel time was taken from Pike Lake Road to the TH 13 exit ramp.

⁽⁵⁾ VHT references the total VHT for the study area.

(Study area extends from Pike Lake Road to the north CSAH 21/TH 169 Ramp; and Old Carriage Hills Court to Crossing Boulevard).

Table 4-4 provides additional comparison of the three CSAH 21/CSAH 18 intersection options against operation measures including intersection delay, capacity used, number of vehicular stops, travel time differences on CSAH 21 (increase for at-grade options compared to the interchange option), and vehicle hours of travel (VHT).

Table 4-5 below provides the seconds of delay for all movements (a.m. and p.m. peak) at the CSAH 21/CSAH 18 intersection for each of the three designs.

**TABLE 4-5
CSAH 21/CSAH 18
GEOMETRIC ALTERNATIVE ANALYSIS
2030 BUILD VOLUMES, MOVEMENT CONTROL DELAY**

Roadway	Heading	AM PEAK			PM PEAK		
		4-Lane CSAH 21	6-Lane CSAH 21	Interchange ⁽¹⁾	4-Lane CSAH 21	6-Lane CSAH 21	Interchange ⁽¹⁾
CSAH 21	NBL	60 s	55 s	30 s	70 s	60 s	30 s
	NBT	45 s	35 s	0 s	35 s	35 s	0 s
	NBR	5 s	5 s	15 s	5 s	5 s	25 s
CSAH 21	SBL	75 s	50 s	65 s	55 s	50 s	80 s
	SBT	20 s	20 s	0 s	40 s	30 s	0 s
	SBR	5 s	5 s	5 s	5 s	5 s	20 s
Southbridge Pkwy	EBL	70 s	60 s	30 s	55 s	55 s	25 s
	EBT	45 s	45 s	45 s	50 s	50 s	50 s
	EBR	10 s	10 s	5 s	35 s	20 s	5 s
CSAH 18	WBL	65 s	60 s	35 s	70 s	60 s	70 s
	WBT	50 s	50 s	35 s	50 s	50 s	45 s
	WBR	50 s	50 s	10 s	30 s	25 s	5 s

⁽¹⁾ Please note that the interchange movement control delay takes into account the additional delay for a particular movement to pass through each interchange intersection where necessary (i.e., WBL must go through the east interchange intersection as a WBT before passing through the west interchange intersection as a WBL). Additionally, note that the northbound and/or southbound right-turn movement may incur slightly more delay under the interchange alternative due to changes in the signal timing of the ramp intersections (mainline along CSAH 18/Southbridge Parkway) versus the signal timing of the lone CSAH 21/CSAH 18 intersection (mainline along CSAH 21).

No Build Alternative

The key intersections would operate at unacceptable LOS for the p.m. peak period. Additionally, two intersections, CSAH 18/CSAH 16 and CSAH 18/CSAH 42, would operate at unacceptable LOS for the a.m. peak period.

Build Alternatives

The four-lane alternative would be at or very near capacity and at the threshold of acceptable LOS by year 2030. The concern is this alternative may not provide enough capacity for future years, or even to the forecast year.

The six-lane alternative would provide adequate capacity and LOS beyond year 2030. The additional lane in each direction provides more capacity through the CSAH 21/CSAH 18 intersection.

The four-lane interchange alternative would provide adequate capacity and LOS well beyond year 2030. This alternative provides the best operation of CSAH 21, by reducing stops and travel time.

4.1.2.3 Connection to TH 169

The segment of CSAH 21 between TH 169 and CSAH 18 may require two design modifications as traffic volumes increase. In the northbound direction, the ramp from CSAH 21 to northbound TH 169 will need to be modified to accommodate two lanes from CSAH 21. In the southbound direction, an acceleration lane from the ramp from northbound TH 169 to CSAH 21 may need to be considered. These two locations should be monitored to determine when recommended improvements may be needed.

4.1.3 Existing and Future Functional Classification

The functional classification of roadways depends primarily on the roadway's ability to serve the two competing functions of land access and mobility. Existing CSAH 21 from TH 13 to CSAH 42 is designated as a minor arterial roadway and provides continuity from one side of Prior Lake to the other. The minor arterial system is intended to provide easy movement between concentrations of commercial business, growth centers, or other areas of activity where the traffic demand is approximately 5,000 to 30,000 vehicles per day (in an urban area). The *Scott County Transportation Plan* proposes that the extension of CSAH 21 be classified as a principal arterial, as proposed CSAH 21 would provide an important connection from the developing area of Prior Lake to TH 169. Once the proposed project is built, CSAH 18, which is currently classified as a principal arterial, would be reverted to a minor arterial.

4.2 TRANSIT SERVICES

Scott County is served by Scott County Transit, which has regular and express services operating Mondays through Fridays, bringing riders to local shopping areas and connecting riders to transit hubs that are serviced by Southwest Metro Transit and the Minnesota Valley Transit Authority. Public transit is also provided by Laker Lines in the City of Prior Lake, which runs two express routes to and from downtown Minneapolis each weekday.

Scott County has recently completed a major comprehensive transit study that will integrate and combine the findings of several transportation studies completed in the region. The Unified Transit Management Plan (UTMP) was completed in July 2005 and is a cooperative effort involving the County, Metropolitan Council, the Scott County Housing and Redevelopment Authority, the Minnesota Valley Transit Authority, the Shakopee Mdewakanton Sioux Community and the Cities of Prior Lake, Savage and Shakopee. The principal goal of the UMTMP is to provide a blueprint for Scott County and its communities to follow in bringing about public transit improvements over the next 20 years.

The UTMP envisions the establishment of transit facilities in the vicinity of proposed CSAH 21 due to its accessibility to TH 169. In addition to the planned transit station at CSAH 21/CSAH 16, a number of sites were under consideration during the DEIS preparation for an additional location. Analysis was conducted to assess the effect of a transit facility (at five locations) on intersection operations in the study area, as well as the effect of location on peak hour bus travel time and peak hour vehicle hours of travel. The five locations are shown in Figure 4-1.

Tables 4-6 and 4-7 present the results of the operations analysis conducted for a.m. and p.m. peak hours at seven study area intersections for the planned transit station at CSAH 21/CSAH 16 and for each of the four potential transit station locations. Each of the Build options for the CSAH 21/CSAH 18 intersection was analyzed for each transit station location. Location Number 1 (southwest quadrant of CSAH 18/TH 169) causes the Southbridge Parkway/Old Carriage Hills Court intersection to operate at an unacceptable LOS E under the four-lane intersection option during the a.m. peak hour and to operate at an unacceptable LOS F under each of the three intersection options during the p.m. peak hour. Location of a transit facility at any of the other three potential sites analyzed resulted in acceptable LOS D or better at all studied intersections in the a.m. and p.m. peak hours. All other key intersections are expected to operate at acceptable LOS during the a.m. and p.m. peak hours for each intersection option and each transit site location.

**TABLE 4-6
YEAR 2030 A.M. PEAK HOUR CAPACITY ANALYSIS
LEVEL OF SERVICE RESULTS – TRANSIT STATION LOCATION ALTERNATIVES**

Transit Station Location	Intersection	CSAH 21 Alternative		
		4-Lane	6-Lane	Interchange
Location No. 1 (SW Quadrant CSAH 18/TH 169)	Southbridge Pkwy/Old Carriage Hills Ct	C	C	C
	CSAH 21/CSAH 18	E	D	West B/East C
	CSAH 18/Crossing Blvd	D	C	D
	CSAH 21/Pike Lake Road	D	C	D
	CSAH 16/Transit Station No. 4	A	A	A
	CSAH 21/CSAH 16	C	C	C
	CSAH 16/Transit Station No. 5	A	A	A
Location No. 2 (SE Quadrant CSAH 18/TH 169)	Southbridge Pkwy/Old Carriage Hills Ct	B	B	B
	CSAH 21/CSAH 18	D	D	West C/East C
	CSAH 18/Crossing Blvd	C	C	D
	CSAH 21/Pike Lake Road	D	C	D
	CSAH 16/Transit Station No. 4	A	A	A
	CSAH 21/CSAH 16	C	C	C
	CSAH 16/Transit Station No. 5	A	A	A
Location No. 3 (Pike Lake Road south of CSAH 21)	Southbridge Pkwy/Old Carriage Hills Ct	B	B	B
	CSAH 21/CSAH 18	D	C	West B/East B
	CSAH 18/Crossing Blvd	C	C	D
	CSAH 21/Pike Lake Road	C	C	C
	CSAH 16/Transit Station No. 4	A	A	A
	CSAH 21/CSAH 16	C	C	C
	CSAH 16/Transit Station No. 5	A	A	A
Location No. 4 (SW Quadrant CSAH 21/16)	Southbridge Pkwy/Old Carriage Hills Ct	B	B	B
	CSAH 21/CSAH 18	D	C	West B/East B
	CSAH 18/Crossing Blvd	C	C	C
	CSAH 21/Pike Lake Road	C	C	C
	CSAH 16/Transit Station No. 4	B	B	B
	CSAH 21/CSAH 16 ⁽¹⁾	D	D	D
	CSAH 16/Transit Station No. 5	A	A	A
Location No. 5 (SE Quadrant CSAH 21/16)	Southbridge Pkwy/Old Carriage Hills Ct	B	B	B
	CSAH 21/CSAH 18	D	C	West B/East B
	CSAH 18/Crossing Blvd	C	C	C
	CSAH 21/Pike Lake Road	C	B	C
	CSAH 16/Transit Station No. 4	A	A	A
	CSAH 21/CSAH 16	C	C	C
	CSAH 16/Transit Station No. 5	B	B	B

* A.M. peak hour represents outbound buses.

⁽¹⁾ Dual northbound left-turn lanes added under each CSAH 21 alternative.

**TABLE 4-7
YEAR 2030 P.M. PEAK HOUR CAPACITY ANALYSIS
LEVEL OF SERVICE RESULTS – TRANSIT STATION LOCATION ALTERNATIVES**

Transit Station Location	Intersection	CSAH 21 Alternative		
		4-Lane	6-Lane	Interchange
Location No. 1 (SW Quadrant CSAH 18/TH 169)	Southbridge Pkwy/Old Carriage Hills Ct	F	F	F
	CSAH 21/CSAH 18	D	D	West D/East C
	CSAH 18/Crossing Blvd	C	C	D
	CSAH 21/Pike Lake Road	D	C	D
	CSAH 16/Transit Station No. 4	A	A	A
	CSAH 21/CSAH 16	C	C	C
Location No. 2 (SE Quadrant CSAH 18/TH 169)	Southbridge Pkwy/Old Carriage Hills Ct	C	C	C
	CSAH 21/CSAH 18	D	C	West C/East C
	CSAH 18/Crossing Blvd ⁽¹⁾	D	D	C ⁽²⁾
	CSAH 21/Pike Lake Road	D	C	D
	CSAH 16/Transit Station No. 4	A	A	A
	CSAH 21/CSAH 16	C	C	C
Location No. 3 (Pike Lake Road south of CSAH 21)	Southbridge Pkwy/Old Carriage Hills Ct	C	C	C
	CSAH 21/CSAH 18	D	C	West C/East C
	CSAH 18/Crossing Blvd	C	C	D
	CSAH 21/Pike Lake Road	D ⁽³⁾	D	D ⁽³⁾
	CSAH 16/Transit Station No. 4	A	A	A
	CSAH 21/CSAH 16	C	C	C
Location No. 4 (SW Quadrant CSAH 21/16)	Southbridge Pkwy/Old Carriage Hills Ct	C	C	C
	CSAH 21/CSAH 18	D	C	West C/East C
	CSAH 18/Crossing Blvd	C	C	D
	CSAH 21/Pike Lake Road	D	C	C
	CSAH 16/Transit Station No. 4	B	B	B
	CSAH 21/CSAH 16	D	C	D
Location No. 5 (SE Quadrant CSAH 21/16)	Southbridge Pkwy/Old Carriage Hills Ct	C	C	C
	CSAH 21/CSAH 18	D	C	West C/East C
	CSAH 18/Crossing Blvd	C	C	D
	CSAH 21/Pike Lake Road	D	C	D
	CSAH 16/Transit Station No. 4	A	A	A
	CSAH 21/CSAH 16 ⁽⁴⁾	D	C	D
	CSAH 16/Transit Station No. 5	B	B	B

* P.M. peak hour represents inbound buses.

⁽¹⁾ Dual southbound right-turn lanes added under each CSAH 21 alternative.

⁽²⁾ Dual northwest bound left-turn lanes added on bridge at the west ramp. Additional storage then added southeast of the east ramp.

⁽³⁾ Dual northbound left-turn lanes added.

⁽⁴⁾ Dual westbound left-turn lanes added under each CSAH 21 alternative.

Table 4-8 presents the year 2030 a.m. and p.m. peak hour bus travel times for each of the five transit locations for each of the CSAH 21/CSAH 18 intersection options. Table 4-9 presents the year 2030 a.m. and p.m. peak hour vehicle hours of travel for the study area for each of the five transit locations for each CSAH 21/CSAH 18 intersection options. As shown, the resulting travel times of any combination of transit station location and design option varies between a.m. and p.m. peak. The station locations furthest away (to the south) from the CSAH 21/CSAH 18 intersection have the lowest overall vehicle hours of travel.

**TABLE 4-8
YEAR 2030 PEAK HOUR TRAVEL TIME ANALYSIS
TRANSIT OPERATIONS VIEW**

Peak Hour	Transit Station Location	CSAH 21 Alternative		
		4-Lane	6-Lane	Interchange
AM (Outbound Bus)	No. 1	215 s	205 s	185 s
	No. 2	175 s	175 s	160 s
	No. 3	155 s	145 s	120 s
	No. 4	235 s	205 s	180 s
	No. 5	185 s	180 s	165 s
PM (Inbound Bus)	No. 1	120 s	115 s	135 s
	No. 2	235 s	235 s	280 s
	No. 3	200 s	180 s	170 s
	No. 4	185 s	175 s	165 s
	No. 5	245 s	225 s	230 s

* Travel time is based on respective outbound or inbound buses from each transit station location to/from the TH 13 exit ramp.

**TABLE 4-9
YEAR 2030 PEAK HOUR VEHICLE HOURS OF TRAVEL* – STUDY AREA**
TOTAL TRANSIT USER VIEW**

Peak Hour	Transit Station Location	CSAH 21 Alternative		
		4-Lane	6-Lane	Interchange
AM (Inbound Vehicles)	No. 1	340 hrs	340 hrs	330 hrs
	No. 2	335 hrs	315 hrs	335 hrs
	No. 3	305 hrs	300 hrs	305 hrs
	No. 4	305 hrs	305 hrs	300 hrs
	No. 5	300 hrs	280 hrs	300 hrs
PM (Outbound Vehicles)	No. 1	425 hrs	405 hrs	435 hrs
	No. 2	430 hrs	415 hrs	425 hrs
	No. 3	375 hrs	375 hrs	405 hrs
	No. 4	370 hrs	370 hrs	400 hrs
	No. 5	365 hrs	365 hrs	400 hrs

* Vehicle hours of travel depicts the total network travel time.

**Study area extends from south of CSAH 21/CSAH 16 to north CSAH 21/TH 169 ramp, east and west of CSAH 21 on CSAH 16 (approx. 1000 feet each, and east and west of CSAH 21 on CSAH 18 and Southbridge Pkwy (approx. 1500 feet each).

To facilitate bus movement to and from future transit facilities, the proposed CSAH 21 cross-section (with the four-lane and six-lane at-grade intersection options at CSAH 21/CSAH 18) includes 12-foot wide bus-only shoulders north of CSAH 16. (See Figure 3-12)

Mystic Lake Casino offers free daily shuttle bus service from areas throughout the Twin Cities Metropolitan Area to the casino. Seven to 10 buses operate during the matinee hours and again in the evening hours. During the day, buses arrive at Mystic Lake at approximately noon and leave the casino at approximately 5:00 p.m. Evening buses arrive at the casino at approximately 6:00 p.m. and leave at 11:00 p.m. Sunday through Thursday and 12:00 a.m. on Friday and Saturday.

Mystic Lake Casino representatives indicated that most of the shuttle service to the casino travels from the Twin Cities area south on TH 169 to CSAH 83. Buses traveling from southeast of the casino take CSAH 42 to CSAH 83. It was the opinion of the Casino officials contacted for this study that the shuttle service would not use the proposed CSAH 21 extension. Therefore, construction of this project is not expected to affect transit service operated by the Casino.

No-Build Alternative

Under No-Build conditions buses would be subject to delays as indicated in the discussion under Section 4.1.2.2.

Build Alternatives

Under Build conditions, improvement in intersection operations would benefit transit. The intersection LOS, transit operations travel time and transit user travel times vary depending on the station location, CSAH 21 alternative and bus direction/time of day. No one proposed transit stop location or CSAH 21 alternative appears preferable based on the traffic operations analysis, except that Station Location 1 would cause unacceptable LOS at an intersection.

4.3 SAFETY

As noted in Section 3.1.5, safety is among the key objectives that have guided the design of the Build Alternative. In addition to application of appropriate geometric design standards, the proposed project limits access to major intersections in accordance with County arterial spacing standards to minimize safety conflicts as well as maintain operations. There is no residential access to/from the proposed roadway.

To compare the relative safety of the three options at the CSAH 21/CSAH 18 intersection, an analysis was conducted assuming crash rates of 0.65 per million vehicles for a channelized four leg signal controlled intersection and 0.33 per million vehicles for a signal controlled ramp intersection. (Hennepin County crash rates; Scott County does not have county wide crash rate data.) This analysis indicated that the interchange design results in fewer crashes of lesser severity per year than the at-grade designs, with five incidents of lesser severity per year for the interchange and 11 high severity crashes per year for the two at-grade intersections (see Table 4-10).

**TABLE 4-10
PROJECTED NUMBER OF CRASHES AT CSAH 21/CSAH 18 INTERSECTION**

	Roadway Alternative		
	4-Lane At-Grade Intersection	6-Lane At-Grade Intersection	4-Lane Interchange
Estimated crash rate	0.65	0.65	0.33
Projected daily entering volume	47,000	47,000	41,000
Projected crashes per year	11	11	5

A trail is proposed along the extension of CSAH 21 and trails exist in the project area at the CSAH 21/CSAH 42 intersection. A county trail is proposed that would cross the CSAH 21 extension at CSAH 16. These trail crossings will be marked to minimize the potential for vehicular and pedestrian/bicycle traffic conflict. City of Shakopee plans for the area just north of proposed CSAH 21 include a community park immediately west of CSAH 21 and residential development east of CSAH 21. The proposed project includes a grade-separated pedestrian crossing (underpass) to facilitate safe access to the park site from the east.

The proposed roadway crosses two wildlife corridors (upper bluff and lower bluff) posing potential safety concerns due to conflicts between motorists and animals. As discussed in Section 3.1.5, measures are proposed to help avoid vehicle/wildlife conflicts including the incorporation of a larger wildlife crossing in the upper bluff area to maintain the opportunity for safe passage of wildlife; the smaller grade-separated crossing at the lower bluff area will also provide for safer animal movement.

The proposed project is adjacent to the Red Oak Elementary School property. As noted, the proposed roadway alignment is located as far south (away from the school property) as possible without encroaching on planned development to the south. The north curb line is approximately 60 feet away from the school property line. The school playground is located over 300 feet north of the school property line and is buffered by an existing stormwater pond.

Currently a pathway exists close to the existing right of way. This pathway connects the school property to Whitehall Road. The entire roadway will be fenced, where necessary, for safety.

No Build Alternative

The No Build Alternative would increase safety concerns as intersections become congested. The intersections would be over-capacity creating long queues and drivers becoming impatient. The increase in rear-end crashes and right angle crashes would be expected with the poor operation conditions.

Build Alternatives

The Build Alternatives would reduce the chance for crashes compared to the No Build Alternative. The interchange alternative would further improve safety by removing the conflict of CSAH 21 through traffic. The projected number of crashes for the interchange alternative is expected to be nearly half of those for the at-grade alternatives.

4.4 ACCESS CHANGES

Construction of the proposed project would result in changes in access to the existing county road system, the existing and planned city road systems, and to TH 169. As noted in Section 4.3, CSAH 21 would not provide access to individual properties. Where access to any properties severed by the project is substantially compromised, acquisition of the severed portion of the lot will occur or appropriate damages will be paid.

The six-lane at-grade intersection and four-lane interchange options at CSAH 21/CSAH 18 both remove the current southbound CSAH 18 right-in access to Shakopee Crossings. Access to Shakopee Crossings from southbound CSAH 18 will still be available via Southbridge Parkway to Old Carriage Hills Court. The four-lane at-grade intersection option retains the right-in access.

4.5 PEDESTRIAN AND BICYCLE TRAFFIC

There is a pedestrian/bicycle trail along the north side of CSAH 42. Because it is relatively undeveloped, there are no provisions elsewhere in the proposed project corridor area for pedestrian, bicycle, or snowmobile traffic (other than on private land). However, Scott County indicates in their *2020 Comprehensive Plan Update* (2004) the need for a countywide trail system to address the growing demands in the areas of transportation, recreation, and public safety. The County, along with the City of Shakopee and the City of Prior Lake, has identified interest in future plans for trails near the project area.

Scott County adopted the *Interim Scott County Parks, Trails, and Open Space System Policy Plan* in June 2004 that includes proposed county trail corridors along the following roadways:

- Proposed CSAH 21 alignment connecting to CSAH 18 and ultimately to the Minnesota River Valley Trail
- CSAH 42 between the easterly county limit and CSAH 17
- CSAH 16 between the easterly county limit to CSAH 83

There is a neighborhood park preserve site in the Southbridge residential development between TH 169 and Southbridge Parkway. The *Deans Lake Area Park, Open Space, and Trail Master Plan*, adopted by the Shakopee City Council in 2001, includes plans for trails throughout this site and the Southbridge area.

The closest regional trail corridor, which is planned to connect three regional parks and the Minnesota Valley National Wildlife Refuge and Recreation Area, is several miles to the south and southeast of the project corridor and includes snowmobile trails as mapped by the DNR. A portion of the Minnesota River Valley Trail is northwest of the proposed project. The trail follows the Minnesota River between Belle Plaine and Shakopee. The Prior Lake Spring Lake Watershed District Board of Managers has indicated support for a potential greenway/trail to connect the Cleary Lake Trail with the Minnesota River Valley Trail.

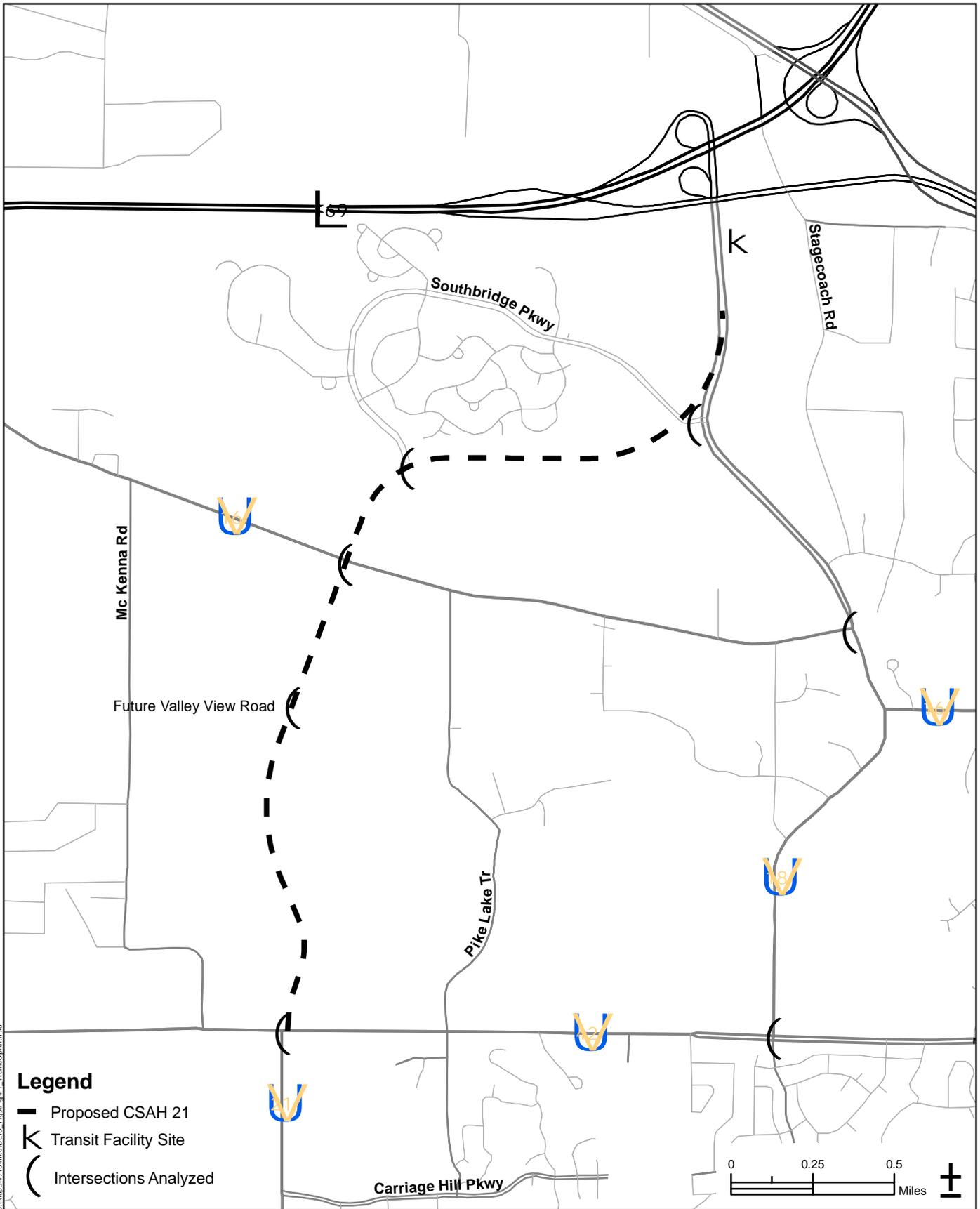
No-Build Alternative

The No Build Alternative will not affect existing bicycle/pedestrian traffic. It may result in missed opportunity to achieve the goals of local and county plans to expand trail connections in the area.

Build Alternative

The Build Alternative will improve accessibility for bicycles and pedestrian traffic by adding a trail along the east side of the proposed CSAH 21 extension. This trail will provide the opportunity for future connection to Dean Lake trails. If there are any future trail crossings of the proposed roadway extension, they will be marked to minimize the potential for conflicts with vehicular traffic. As noted in Section 4.3, a grade-separated pedestrian crossing (underpass) is incorporated into the proposed project in the lower bluff area to facilitate safe access to the future community park from residential areas east of the proposed CSAH 21.

The three intersection options at CSAH 21/CSAH 18 were evaluated in relationship to pedestrian/bicycle safety/comfort. The six-lane at-grade intersection option will result in a wider intersection, and, therefore, a longer pedestrian/bicycle crossing than either the four-lane at-grade intersection or the four-lane interchange options.



TRAFFIC OPERATIONS ANALYSIS

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT

Scott County, Minnesota

Figure 4-1

5.0 SOCIAL AND ECONOMIC IMPACTS

As described in Section 2.1, the study area stretches between CSAH 42 in Prior Lake, Minnesota and CSAH 18 at Southbridge Parkway in Shakopee, Minnesota in Scott County. This chapter describes the socioeconomic conditions within the study area and potential effects on those conditions. Included is information on population and economic characteristics and trends, including tribal and community facility presence. This chapter describes population trends affecting transportation needs in the study area, as well as population growth expectations in the area more directly impacted by the proposed project.

5.1 SOCIAL IMPACTS

5.1.1 Affected Environment

5.1.1.1 Population

Table 5-1 presents population and household trends for the Cities of Shakopee and Prior Lake and Scott County.

**TABLE 5-1
POPULATION AND HOUSEHOLD FORECASTS**

	1990	2000	2010	2020	2030
City of Shakopee					
-population	11,739	20,568	39,500	48,500	52,000
-household	4,163	7,540	15,000	19,500	21,500
City of Prior Lake*					
-population	11,482	15,917	36,357	41,796	43,215
-household	3,901	5,645	14,288	17,077	17,980
Scott County					
-population	57,846	89,498	145,770	185,350	220,940
-household	19,367	30,692	53,820	71,920	87,250

Source: Metropolitan Council, except as noted below

* Prior Lake Population and Households data are from Prior Lake Transportation Plan and include future annexation areas

The Metropolitan Council, in consultation with municipalities, develops population, household and employment projections at the traffic analysis zone (TAZ) level as inputs to the regional travel forecast model. This provides the most localized data for describing the existing and projected population in the immediate project area.

Growth in all County TAZs affects future traffic as was accounted for in the traffic forecasts and operational analysis. The immediate study area comprises 10 TAZs, shown in Figure 5-1. In total, this study area had a population of 1,700 (580 households) in 2000. Since that time, over 500 households have been added to the area with the Southbridge development and other housing development that is currently underway. The 2030 projected population is 13,885 (5,654 households).

Prior Lake and Shakopee City staff were contacted to identify the presence of any special groups such as minority, low-income, elderly, or disabled residing in the project area. Staff was not aware of any special population groups currently residing in the project area; however land owned by the Shakopee Mdewakanton Sioux Community (SMSC) in the corridor is in the process of being developed for residential use by SMSC members. In addition, a residential mixed-use development that includes, among other residential and community uses, assisted living and nursing home use is under construction on land north and west of the CSAH 21/CSAH 42 intersection. Section 5.1.2.4 discusses low-income and minority populations in more detail in response to federal Environmental Justice evaluation requirements. Section 5.1.1.2 discusses issues related to the SMSC.

5.1.1.2 Shakopee Mdewakanton Sioux Community

The SMSC is a federally recognized Indian tribe that currently owns over 2,000 acres of land located in Prior Lake and Shakopee, within or near the original 250-acre reservation established for the tribe in the 1880s. Tribal members are lineal descendants of the Mdewakanton Dakota people who resided in villages near the banks of the Lower Minnesota River. The SMSC is a sovereign government, represented by a three member Business Council that is elected by the General Council (enrolled members over age 18) of the tribe. According to the United States Department of Interior, Bureau of Indian Affairs *2003 Labor Force Report*, there are currently 354 enrolled members, the majority of whom reside on tribally owned lands. The SMSC provides health, social, land administration, public works, and fire services, and offers educational programs.

The SMSC owns over 1,000 acres of land between CSAH 42 and CSAH 16 (see Figure 5-2). A portion of this land north of the upper bluff is currently being developed with a new subdivision (East Village) that will have 58 residential lots. Existing development on SMSC land is concentrated south of CSAH 42 and east of CSAH 83. The SMSC owns and operates the Mystic Lake Casino and Hotel located southwest of the study area on CSAH 83, as well as a golf course, fitness club, childcare business, recreational vehicle (RV) park and campground.

5.1.1.3 Community Facilities and Services

Community facilities that are adjacent to the Build Alternative include the following and are shown in Figure 5-2:

Camp Kici Yapi (13220 Pike Lake Road) is a 79-acre facility located in Prior Lake and owned by the YMCA. The day camp offers summer activity programs such as horseback riding, arts and crafts, canoeing, swimming, hiking, and camping for children between the ages of 4 and 14. The camp serves families from the communities of: Minneapolis, Bloomington, Edina, Burnsville, Prior Lake, Shakopee, Richfield, and Eden Prairie.

Red Oak Elementary School (7700 Old Carriage Court) is a part of Shakopee Independent School District #720 and serves children in grades kindergarten through 4th grade. According to district staff, 910 students were enrolled at the school in April 2005. Safety in relation to this school is discussed in Section 4.3. Noise impacts to this facility are addressed in Section 6.2.

The closest park land is west of the proposed project and includes Dean Lake and surrounding open space. Within Southbridge, there is one neighborhood park and several small parcels of public land that are maintained as open space. According to the *Deans Lake Area Park, Open Space and Trail Master Plan*, a 50-acre neighborhood park preserve is also planned.

The City of Shakopee has acquired land immediately west of the proposed project to be developed as a community park. Noise impacts to this facility are addressed in Section 6.2. Additional discussion of park resources is included in Section 6.8.

The City of Shakopee is currently considering a site at the southeast quadrant of proposed CSAH 21/proposed Pike Lake Road for a fire station.

As noted in Section 5.1.1.1, there is a mixed-use development under construction north and west of the CSAH 21/CSAH 42 intersection. This development includes a church, nursing home, and assisted living.

The following community facilities are not in the immediate project area but provide services for or are readily available to households within the project area.

Schools

Shakopee ISD 720

Sun Path Elementary (2250 17th Avenue East, Shakopee)
Shakopee Junior High School (1137 South Marschall Road, Shakopee)
Shakopee Senior High School (200 East Tenth Avenue, Shakopee)

Prior Lake-Savage ISD 719

Five Hawks Elementary School (16620 Five Hawks Avenue, Prior Lake)
Grainwood Elementary School (5061 Minnesota Street, Prior Lake)
Pond's Edge Kindergarten (4540 Tower Street Southeast, Prior Lake)
Westwood Elementary (5370 Westwood Drive, Prior Lake)
Hidden Oaks Middle School (15855 Fish Point Road Southeast, Prior Lake)
Prior Lake High School (7575 150th Avenue West, Savage)

Churches

Assemblies of God Church (911 Shakopee Avenue East, Shakopee)
Christ Lutheran Church (1053 Jefferson Street South, Shakopee)
Cross of Peace Lutheran Church (1506 Wood Duck Trail, Shakopee)
Faith Lutheran Church (150 130th Street West, Shakopee)
Jehovah's Witnesses Shakopee Congregation (13066 Old Brick Yard Road, Shakopee)
Light of the World Church (502 1st Avenue East, Shakopee)
Living Hope Lutheran Church (8600 Horizon Drive Northeast, Shakopee)
Living Water Christian Center (911 Shakopee Avenue East, Shakopee)
Mt. Olive Evangelical Lutheran Church (833 Marschall Road, Shakopee)
Meadow Spring Community Church (140 Holmes Street South, Shakopee)
River of Life Community Church (1124 Minnesota Street South, Shakopee)
Russian Evangelical Christian Church (1205 10th Avenue East, Shakopee)
Shakopee Presbyterian Church (909 Marschall Road, Shakopee)
Shakopee United Methodist Church (2488 Vierling Drive East, Shakopee)
St. John's Lutheran Church (119 8th Avenue West, Shakopee)
St. Mark's Catholic Church (350 Atwood Street South, Shakopee)

St. Mary's Catholic Church (15850 Marystown Road, Shakopee)
Valleyview Church (1980 10th Avenue West, Shakopee)
Christ Community Church (16679 Dublin Road Southeast, Prior Lake)
Faith Evangelical Lutheran Church (16840 Highway 13 South, Prior Lake)
Holy Cross Lutheran Church (14085 Pike Lake Road Northeast, Prior Lake)
Holy Trinity United Methodist Church (16150 Arcadia Avenue Southeast, Prior Lake)
Immanuel Lutheran Church (20200 Fairlawn Avenue, Prior Lake)
Jehovah's Witnesses Prior Lake Congregation (17901 Langford Boulevard, Prior Lake)
Bethesda Church (15033 Highway 13 South, Prior Lake)
Minnesota Valley Community Church (5995 Timber Trail Southeast, Prior Lake)
Prior Lake Assembly of God (6880 Boudin Street Northeast, Prior Lake)
Prior Lake Baptist Church (5690 Credit River Road Southeast, Prior Lake)
St. Michael Catholic Church (16311 Duluth Avenue Southeast, Prior Lake)
St. Paul's Lutheran Church (5634 Luther Drive Southeast, Prior Lake)

Libraries

Shakopee Public Library (235 South Lewis Street, Shakopee)
Shakopee Public Library (1255 Fuller Street South, Shakopee)
Prior Lake Library (16210 Eagle Creek Avenue Southeast, Prior Lake)

Hospitals

St. Francis Regional Medical Center (1455 St. Francis Avenue, Shakopee)

Nursing Homes/Assisted Living

Friendship Manor Nursing Home (1340 3rd Avenue West, Shakopee)
St. Gertrude's Health Center (1850 Sarazin Street, Shakopee)
Dignified Living (16433 Franklin Trail, Prior Lake)

Senior Services

Shakopee Senior Citizens Club (1100 East 4th Avenue, Shakopee)
200 Levee Drive Senior Citizens Club (200 Levee Drive, Shakopee)
Senior Dining (200 Levee Drive, Shakopee)
Senior Dining (16049 Franklin Trail Southeast, Prior Lake)

Emergency Services

Prior Lake Fire Station (16776 Fish Point Road, Prior Lake)
Fire Station #50 (334 Second Avenue West, Shakopee)
Fire Station #51 (2700 Vierling Drive East, Shakopee)
SMSC Fire Station (2525 Flandreau Trail, Prior Lake)
Prior Lake Police Department (16200 Eagle Creek Avenue, Prior Lake)
Shakopee Police Department (476 Gorman Street, Shakopee)

Finally, as noted in Section 5.1.1.2, SMSC provides several community services to its members.

5.1.2 Environmental Consequences

5.1.2.1 Community Cohesion

No Build Alternative

The No Build Alternative will perpetuate the existing condition. There would be no severing of properties.

Build Alternative

The Build Alternative will improve connectivity between Prior Lake and areas north of CSAH 42. As noted, the project corridor is largely undeveloped and the proposed roadway extension will not divide any existing neighborhoods. The Build Alternative is adjacent to the existing Southbridge neighborhood at the north end of the project; the land immediately south of the proposed CSAH 21 alignment in this area is developing as residential. No impact to community cohesion regarding the existing or planned neighborhoods is anticipated. The Southbridge development was designed with the proposed project assumed and includes a future connection of Southbridge Parkway to CSAH 21 as well as a 58-foot strip of land south of the residences and elementary school to buffer it from the anticipated location of the project. The developing neighborhoods to the south are being reviewed with recognition of the proposed project.

The Build Alternative–western alignment option would segment land currently owned in fee by the SMSC located in the upper forested bluff of the project area, removing 8.3 acres of land from the total holdings of the tribe. It is assumed that severed portions of land would be acquired (or appropriate damages paid) in addition to the necessary right of way. The Build Alternative–eastern alignment option would not segment the SMSC, but would acquire 3.3 acres of land. No individuals would be displaced for either of the two alignment options. Impacts to the physical resources associated with this land are addressed in Chapter 6.0.

The Build Alternative south of Southbridge Parkway West will affect three agricultural properties, residential property, and, as noted above, land owned in fee by SMSC. The eastern alignment option would affect the land noted above as well as land owned by the YMCA and an additional residential property. North of Southbridge Parkway West the four-lane at-grade intersection option would be within the existing County right of way and would not impact additional properties, while the six-lane at-grade intersection option and the four-lane interchange option will acquire an additional 0.6 and 4.1 acres, respectively.

5.1.2.2 Access

No Build Alternative

The No Build Alternative will perpetuate the existing condition. As congestion increases on other facilities, general regional and sub-regional access, as well as access to/from existing properties, would be more difficult.

Build Alternative

The Build Alternative is designed as a limited access expressway, with intersections at CSAH 42, future Valley View Road, CSAH 16, Southbridge Parkway, and CSAH 18. The Build Alternative will generally improve sub-regional access by reducing congestion on existing facilities and providing for a roadway network more consistent with spacing criteria. It will also help to address unmet transit demand in the area with the planned transit station.

The Build Alternative does not eliminate existing access to any non-agricultural developed parcels. It segments three farms and land owned by the SMSC that is currently being developed for 58 residential lots. Where access to any properties severed by the project is severely compromised, acquisition of the severed portion of the lot will occur or appropriate damages will be paid.

The Build Alternative will provide additional access to the Southbridge residential area, which includes approximately 850 residential units, thereby improving access for emergency, street maintenance, snowplowing, and school bus services.

Both the four-lane interchange and six-lane at-grade intersection options for the CSAH 21/CSAH 18 intersection remove the current southbound CSAH 18 right-in access to Shakopee Crossings. Access to Shakopee Crossings from southbound CSAH 18 will still be available via Southbridge Parkway. The four-lane at-grade intersection option retains the existing southbound CSAH 18 right-in access to Shakopee Crossings.

5.1.2.3 Community Facilities and Services

No Build Alternative

The No Build Alternative will not impact community facilities.

Build Alternative

The Build Alternative will generally increase accessibility to community facilities and services.

The Build Alternative will not directly impact Red Oak Elementary School or the proposed park in the northwest quadrant of the CSAH 21/CSAH 16 intersection, in that no right of way will be acquired from these properties, nor will access to these properties be affected. The western alignment option south of CSAH 16 will not directly impact the YMCA Camp facility. The eastern alignment option will directly impact the YMCA camp facility, requiring 2.1 acres of land for right of way and affecting an existing trail. Potential noise and visual impacts to existing or planned community facilities are discussed in Chapter 6. As described in the discussion of air quality in Section 6.1, predicted maximum carbon monoxide (CO) concentrations are well below both state and federal standards and construction of the project is not likely to cause elevated CO concentrations or exceedances of CO standards.

The Build Alternative will not affect community facilities and services provided by SMSC, as well, as these are not located in the project area. SMSC staff has indicated that land in the wooded area affected by the Build alternative intended as a passive nature preserve has been used for student education (e.g., “maple syruping”) opportunities.

5.1.2.4 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, issued in 1994, requires that environmental justice be addressed in all federal planning and programming activities. In compliance with this Executive Order, low-income and minority populations in the study area were identified through review of 2000 Census data and contacts with the affected municipalities.

The steps for defining environmental justice impacts include:

- Identification of the location of low-income population and/or minority population in the project area.
- Identification of the impacts of the project upon the identified low-income population and/or minority population.
- Determination of whether or not the impacts are disproportionately high or adverse.

Identification of Low-Income or Minority Populations

For purposes of environmental justice, a low-income population or minority population is defined as a population of people or households located in close geographic proximity meeting the racial or income criteria set forth in Executive Order 12898. Information on population characteristics of the corridor was obtained primarily from 2000 Census data and discussions with local staff. For purposes of this analysis, data was examined for the smallest geographical area for which it is available (i.e., the block group level). Block groups in the study area are shown in Figure 5-1 and include the following:

- Census Tract 809.05, Block Group 1
- Census Tract 803.02, Block Group 2
- Census Tract 803.01, Block Group 2

Representatives of the Cities of Prior Lake and Shakopee and SMSC were consulted to supplement minority and/or economic information available from the Census.

Low-Income

For the purposes of this document, low-income populations are defined as persons with incomes below poverty level. The responses of households reporting income data are weighted to reflect the entire population. The disadvantage of this is that estimates for small groups such as block groups are less exact. However, the data are adequate for purposes of indicating the relative concentration of low-income persons in the study area. Table 5-2 presents poverty data for the Census tract block groups for the project corridor.

There is no subsidized housing within the project area, and no known use of Section 8 housing certificates. Discussion with staff representing the cities of Prior Lake and Shakopee and SMSC indicated that no known concentrations of low-income populations are located in the study area.

**TABLE 5-2
INCOME AND POVERTY (2000 CENSUS)**

Census Tract, Block Group	Total Population Providing Income Data, 1999	Persons with Incomes Below Poverty Level, 1999	
		Number	Percent
809.05, BG1	205	0	0.0
803.02, BG2	1,310	10	0.7
803.01, BG2	657	17	2.6
Shakopee	20,003	695	3.5
Prior Lake	15,898	569	3.6
Scott County	88,411	2,979	3.4

Minority Population

Table 5-3 presents race/ethnicity data for the Census tract block groups, including total, non-white, and Hispanic populations.

**TABLE 5-3
HOUSEHOLD, POPULATION, AND RACE (2000 CENSUS)**

Census Tract, Block Group	Total Population Providing Race/Ethnicity Data	Non-white persons (includes non-white Hispanic persons)		Hispanic (white and non-white)	
		Number	Percent	Number	Percent
809.05, BG1	190	4	2.1	0	0.0
803.02, BG2	1,299	131	10.1	30	2.3
803.01, BG2	712	88	12.4	23	3.2
Shakopee	20,568	1,726	8.4	906	4.4
Prior Lake	15,917	871	5.5	177	1.1
Scott County	89,498	5,685	6.4	2,381	2.7

The percentage of non-white persons in CT 803.02, BG 2 and 803.01, BG 2 exceeds 10 percent which is higher than the citywide averages for Prior Lake and Shakopee. However, most of the population in these two block groups is located outside of the project area. City staff contacted stated that they were unaware of minority populations currently residing in the study area itself.

As noted in Section 5.1.1.2, SMSC owns fee land in the project corridor and is platting land immediately west of the proposed corridor for single-family residential development with approximately 58 lots planned. Native Americans are among the minority populations defined in Executive Order 12898.

Public Involvement

Public involvement and outreach was conducted in order to ensure that all interested persons, including special population groups, were informed and had an opportunity to comment on the project. Two public information open houses were held during the scoping phase, one on

September 26, 2002, and one on May 21, 2003. Two public information open houses were also held during the DEIS preparation phase, January 8, 2004 and March 3, 2005. The public was given the opportunity to provide written comments at and following all meetings. The public hearing on the DEIS will provide additional opportunity for public input. Public involvement is further detailed in Section 12.2.

As noted, SMSC is represented on the Technical Advisory Committee (TAC) for the project.

Impacts of the Build Alternative on Low-Income Populations or Minority Populations

If any minority or low-income populations are found in the study area, Executive Order 12898 requires that the proposed actions be reviewed to determine if there are disproportionately high or adverse effects on these populations. Disproportionate is defined in two ways: the impact is “predominantly borne” by the minority and low-income population group, or the impact is “more severe” than that experienced by non-minority or non-low-income populations.

Based on the Census data and city staff input, there are currently no concentrations of low-income persons or minorities currently residing in the project area. A new residential development adjacent to CSAH 21 will be occupied by members of the SMSC.

As noted, the Build Alternative–western alignment option would acquire 8.3 acres of land owned by the SMSC that is located in the upper forested bluff portion of the project area, removing land from the total holdings (fee and trust) of the tribe. The Build Alternative–eastern alignment option would acquire 3.3 acres of SMSC land. With either alignment option, the acquisition of land is not a disproportionate impact because the proposed project will also acquire land (approximately 20 to 28 acres) from five to seven additional private landowners who are not minority persons, (for both alignment options), and, for the eastern alignment option from a non-profit organization which serves a broad clientele. In addition, because the affected SMSC land is not developed, the project results in no displacement or direct health or environmental impacts on members of the tribe. The project will not impact any proposed residential lots. As noted in Section 5.1.2, the proposed project results in no impacts on tribal community cohesion, facilities, and services, with a limited impact related to the reported past SMSC use of the affected land for student educational opportunities. Impacts on the physical resources associated with the affected land are discussed in Chapter 6.

Because the land being developed by the SMSC is currently not adjacent to a major roadway, this area will experience increases in L_{10} daytime noise levels from existing conditions of up to 29 dB(A) under year 2030 Build conditions. Refer to Section 6.2 for additional information regarding noise impacts and mitigation.

Environmental Justice Determination

The proposed project will not have a disproportionate adverse impact on low-income or minority populations. There are no known concentrations of low income persons. Right of way, noise, and visual impacts are neither predominately borne by SMSC members nor are more severe than those experienced by others in the study area.

5.1.3 Mitigation of Social and Community Impacts

Section 5.1.2.1 identifies no adverse impact on community cohesion access or community services. No mitigation is required.

As reported, the Build Alternative with the western alignment option has no impact on community facilities. The eastern alignment option has an impact on the YMCA Camp facility. This impact would be mitigated by compensation for the acquired right of way and assistance in restoration of the affected trail.

Mitigation for the acquisition of land owned in fee by the SMSC is described in Section 5.2.3.2.

5.2 LAND USE

5.2.1 Affected Environment

5.2.1.1 Existing Land Use

The project corridor includes land (including the alignment and adjacent or nearby property) in the cities of Prior Lake and Shakopee. Existing land uses include residential (rural, single family and townhome), an elementary school, agricultural, open space and private recreational uses. Commercial development is located in the northwest and northeast quadrants of the proposed CSAH 21/CSAH 18 intersection. The YMCA camp is located immediately adjacent to the proposed project corridor.

5.2.1.2 Land Use Planning

Land use in the project area is regulated by the cities of Prior Lake and Shakopee. Both cities have comprehensive plans that address future land use and transportation. The project corridor falls within the 2020 MUSA, specifically within the Urban Reserve area, as defined by the Metropolitan Council.

The City of Shakopee's *Comprehensive Plan Update* (2004) designates the area near the project corridor as low-density residential development and also as a park search area. Additionally, the plan identifies a greenway corridor in the vicinity of the proposed CSAH 21 corridor from Prior Lake to the Minnesota River.

As noted, residential development north of CSAH 16 and east of CSAH 21 in the City of Shakopee is pending.

The Prior Lake *Comprehensive Land Use Plan* (1999) has designated the area near the existing CSAH 21/CSAH 42 intersection for business and urban high-density land uses. Land within Prior Lake, north of the intersection is designated as urban low to medium density residential. As noted, a mixed residential and community-use development north and west of CSAH 21/CSAH 42 in the City of Prior Lake is pending.

The SMSC *2000 Comprehensive Land Use Plan* (update planned for 2008) identifies other long range plans in the area of the project that include:

- Management of the forest area to improve wildlife habitat and reduce impacts of past land use. This area is part of a planned natural area for the SMSC intended to complement the adjacent housing and retain natural wildlife habitat.

- Stream and wetland restoration and improvement west of the project area.
- Additional housing planned for the 80 acres immediately adjacent to the project. As noted, this development is now being platted.

5.2.2 Environmental Consequences

5.2.2.1 Land Use Consequences

No Build Alternative

The No Build Alternative would perpetuate existing land use of the proposed project alignment. However, it is likely that much of the land currently planned for roadway would be incorporated into urban development over time.

Build Alternative

Direct Impacts

As shown in Table 5-4, the Build Alternative would have direct impacts (i.e., conversion of land to highway use) on residential and agricultural land. Additionally, there would be relatively minor impacts on commercial land for the six-lane at-grade option at the CSAH 21/CSAH 18 intersection. The four-lane interchange option would result in 4.1 acres of impact to commercial land. No impacts result in removal of structures.

Indirect (Secondary) Impacts

The Council on Environmental Quality (CEQ) regulations (40 CFR 15888.8) distinguishes between direct and indirect effects. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects, or secondary impacts, are reasonably foreseeable effects caused by the action that occur later in time or farther in distance. Secondary impacts 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 and other natural systems, including ecosystems.

Since the proposed project will not provide direct access to property it is not expected to have indirect land use impacts. Additionally, the proposed extension of CSAH 21 is consistent with transportation and comprehensive plans for the County and surrounding cities. The need for a link in the countywide roadway system to manage traffic resulting from past, current and planned development in the County has been well documented. The need for a transit station in the study area has been documented as well.

5.2.2.2 Right of Way and Relocation

The Build Alternative would require acquisition of property for right of way. There would not be any total acquisitions and no relocation would be required. As shown in Table 5-4, and depending upon which alignment option is chosen south of CSAH 16, the Build Alternative south of CSAH 16 would acquire land from eight to ten parcels (six to eight land owners) for a total of 25.5 to 26.4 acres to be acquired, including 8.4 to 8.6 acres of agricultural property

and 9.5 to 11.7 acres of residential property. The total cost of right of way acquisition south of CSAH 16 is estimated to be between \$2,677,500 and \$2,772,000, depending upon alignment and intersection options chosen. No additional acquisition north of CSAH 16 would be required for the four-lane at-grade intersection option.

Acquisition for the CSAH 21/CSAH 18 six-lane at-grade intersection option includes all of the acquisition listed previously for the Build Alternative but would also affect two parcels of commercial land (one property owner). This intersection option would require acquisition of an additional 0.6 acres. The total cost of right of way acquisition for this option is estimated to be between \$2,740,500 and \$2,835,000, depending upon the alignment chosen.

Acquisition for the four-lane interchange option includes all of the acquisition listed previously for the Build Alternative but would also affect four parcels of commercial land (one property owner). This option would require the acquisition of an additional 4.1 acres. The total cost of right of way acquisition for this option is estimated to be between \$3,108,000 and \$3,202,500, depending upon the alignment chosen.

In addition, the planned transit station would require approximately eight acres of land on property adjacent to a mixed-use development site (housing and transit-oriented commercial use).

**TABLE 5-4
RIGHT OF WAY IMPACTS**

SOUTH OF CSAH 16*	Western Alignment		Eastern Alignment	
Land Use				
Acres				
Agricultural	8.6		8.4	
Commercial	0.0		0.0	
Residential	9.5		11.7	
Public/Semi-Public (YMCA)	0.0		2.1	
SMSC	8.3		3.3	
Total - South of CSAH 16	26.4		25.5	
Property Owners	6		8	
<hr/>				
NORTH OF CSAH 16	4-Lane At-Grade Intersection**	6-Lane At-Grade Intersection**	4-Lane Interchange**	
Land Use				
Acres				
Agricultural	0.0	0.0	0.0	0.0
Commercial	0.0	0.6	4.1	
Residential	0.0	0.0	0.0	0.0
Total - North of CSAH 16	0.0	0.6	4.1	
Property Owners	0	1	1	
Total Right of Way Western/Eastern Alignment	26.4/25.5	27.0/26.1	30.5/29.6	

* Right of way required between CSAH 42 and CSAH 16

** Additional right of way required north of CSAH 16

5.2.3 Mitigation

5.2.3.1 Land Use

Direct Impacts

The extension of CSAH 21 is anticipated in current land use plans. Mitigation for right of way impacts is discussed in Section 5.2.3.2.

Indirect (Secondary) Impacts

Because the extension is anticipated in current land use plans, there are no expected indirect impacts as a result of the proposed project and therefore no mitigation is required.

5.2.3.2 Right of Way

If the Build Alternative is chosen as the preferred alternative, all acquisition of property due to the proposed project will be conducted 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, and effective April 1989 (revised January 2005).

Where access to any properties severed by the project is substantially compromised, acquisition of the severed portion of the lot will occur or appropriate damages will be paid.

5.3 ECONOMIC IMPACTS

This section provides a qualitative discussion of the potential for impacts to the employment and tax base in the project area.

5.3.1 Affected Environment

As noted in Section 5.1, TAZ level data developed by the Metropolitan Council in consultation with municipalities, provides the most localized information regarding existing and projected employment in the immediate project area. Employment within the 10 TAZs that comprise the study area in 2000 was 710. Since then, a substantial amount of retail development has occurred at and near the Southbridge development. By 2030, employment within this area is estimated to be approximately 8,550, a 1,104 percent increase.

The total 2006 taxes payable for all properties in the City of Shakopee equals \$9,512,367 and for the City of Prior Lake equals \$7,196,847. The total 2006 taxes payable for all properties in Scott County equals \$38,359,060.

5.3.2 Environmental Consequences

No Build Alternative

The No Build Alternative will perpetuate existing conditions. The general accessibility to and from employment centers will be unchanged; peak hour conditions however, will become more congested as demand increases, as discussed in Section 4.1. No private land will be converted to highway use.

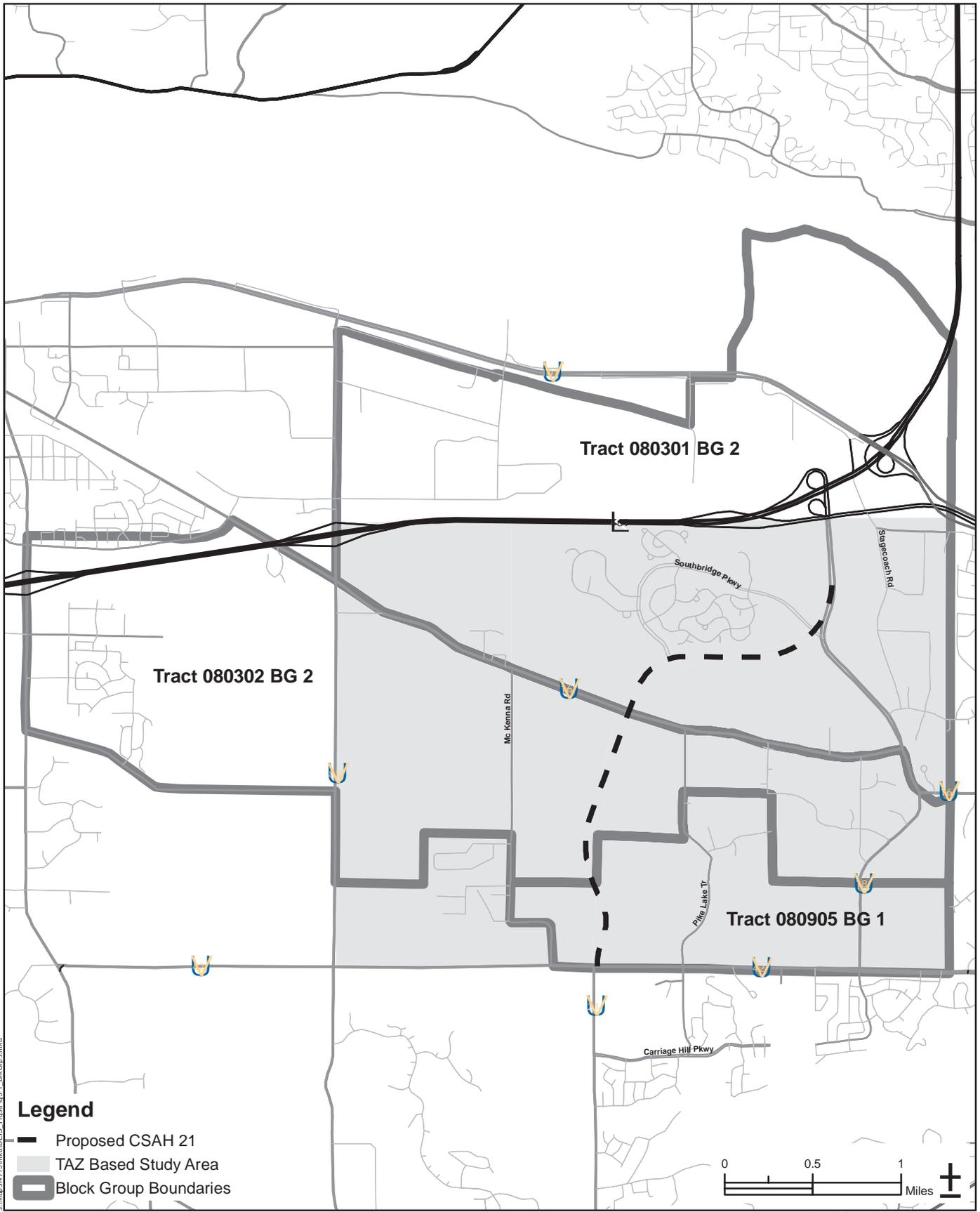
Build Alternative

The Build Alternative involves no total acquisitions; therefore there will be no employment loss or relocation costs. There will likely be some effect on property taxes payable due to the removal of between 25.5 and 30.5 acres of land from private ownership; however, it is premature to quantify the effect. It should be noted that the 2.1 acres that would be acquired from the YMCA with the eastern alignment option is currently tax-exempt. The 3.3 to 8.3 acres of SMSC property that would be acquired, depending upon the chosen alignment option south of CSAH 16, is currently owned in fee and is taxable. Note that SMSC has a pending application to the Bureau of Indian Affairs to convert the affected land currently owned in fee to land held in trust. If the application is approved, the County could not acquire the property through its power of eminent domain. It is also premature to account for the change in property value that can be attributed to increased access or roadway proximity. The countervailing beneficial (improved access) and adverse (noise and visual) effects of a roadway on the values of affected properties are generally not quantifiable with any level of reliability. However, regardless of the effect of the project on the value of any individual property, in comparison to the total taxes payable for the two affected communities and Scott County, the effect will be minimal.

The proposed project will improve accessibility which may have a positive effect on area businesses and employment growth. As noted in Section 5.2.1.2, Prior Lake and Shakopee have developed land use plans including plans for commercial/industrial growth in their communities with the assumption of the extension of CSAH 21.

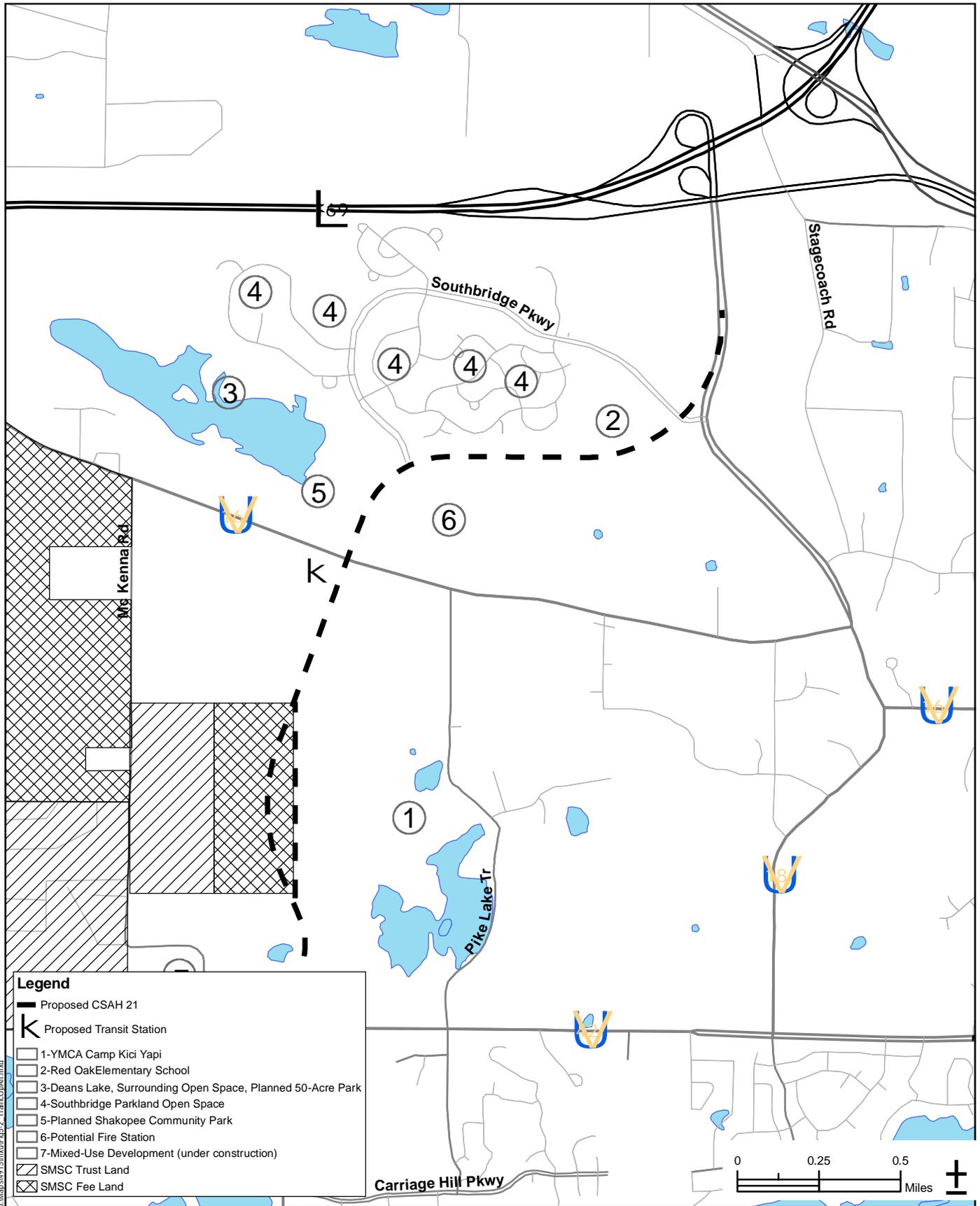
5.3.3 Mitigation

There will likely be some effect on property taxes payable due to the removal of land from private ownership. There will also likely be some impact on property values resulting from adverse noise and visual effects of a roadway. Any adverse economic impact is mitigated by the positive impact due to improved accessibility and reduction in congestion and improved connectivity between transit and area highways.



CENSUS 2000 BLOCK GROUPS AND TAZ BASED STUDY AREA

Figure 5-1



COMMUNITY FACILITIES AND SERVICES AND SHAKOPEE MDEWAKANTON SIOUX COMMUNITY LAND

Figure 5-2

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT

Scott County, Minnesota

6.0 PHYSICAL AND NATURAL ENVIRONMENTAL IMPACTS

This chapter describes the natural resources in the project area and the potential impacts to those resources that could result from the No Build and Build Alternatives. Where relevant, potential measures to mitigate identified impacts are also discussed.

6.1 AIR QUALITY

6.1.1 Regulatory Overview

The Clean Air Act of 1970 established six “criteria pollutants” and required the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for these pollutants. The Intermodal Surface Transportation Efficiency Act of 1991 states that a federal agency cannot approve or fund a transportation project unless it conforms to the State Implementation Plan (SIP). The SIP contains procedures to monitor, control, maintain, and enforce compliance with the NAAQS. To conform to the SIP, the proposed project cannot cause or contribute to a new violation of any NAAQS, increase the frequency or severity of any existing NAAQS violation, or delay the timely attainment of any NAAQS or any required interim emissions reductions or other milestones.

If an area does not meet the air quality standard for one of the six criteria pollutants, it may be designated by the EPA as a non-attainment area. If an area is designated as non-attainment, its attainment status can be regained by fulfilling specific requirements showing that standards are no longer exceeded. Minnesota does not currently have any non-attainment areas. However, the Twin Cities Metropolitan Area was reclassified from non-attainment to attainment status for carbon monoxide in 1999 and is considered a maintenance area. The SIP includes information on how this maintenance area will continue to meet federal air quality standards.

6.1.2 Affected Environment

Motorized vehicles affect air quality by emitting airborne pollutants. Changes in traffic volumes, travel patterns, and roadway locations affect air quality by changing the number of vehicles in an area and the congestion levels. The effect of the project on air quality was assessed by considering the changes in specific airborne pollutants that result from motorized vehicles. The air quality impacts from the project are analyzed by addressing criteria pollutants. The six criteria pollutants established in the Clean Air Act of 1970 are: particulates, lead, ozone, nitrogen dioxide, sulfur dioxide, and carbon monoxide. Potential impacts resulting from these pollutants are assessed by comparing projected concentrations to NAAQS.

Particulate Matter: Particulate matter (PM) is categorized by the size of the particles being measured. For example, the PM_{2.5} value is the measurement of the particles smaller than 2.5 microns (a micron is one millionth of a meter) in a particular volume of air. Based on recent (1995) ambient monitoring data conducted by the MPCA, Minnesota meets existing air quality standards except for a small area of St. Paul that exceeded particulate standards in 1995.

As stated in the U.S. Department of Energy's Transportation Energy Data Book, in 1999, highway-related sources of particulate matter contributed to the nation's total particulates by 0.8 percent for PM10 and by 2.5 percent for PM2.5.

Because particulate matter impacts from vehicular traffic would be limited in both distribution and magnitude, the project would not be expected to substantially increase particulate concentrations within the project area. Therefore, particulate matter modeling was not conducted for this project.

Lead: Due to the phase out of leaded gasoline, lead is no longer a pollutant associated with vehicular emissions.

Ozone: Volatile organic compounds (VOCs) and nitrogen oxides (NOx) react in the presence of sunlight to form ozone. Transportation sources emit VOCs and nitrogen oxides. Ozone concentrations in the lower atmosphere are influenced by a complex relationship of precursor concentrations, meteorological conditions and regional influences on background concentrations. The MPCA has determined that the contribution of a single roadway project to ozone concentrations on an area-wide basis is negligible and difficult to accurately quantify. The State of Minnesota is classified by the EPA as an ozone attainment area. Ozone levels in the Twin Cities Metropolitan Area currently meet state and federal standards. Because of these factors, ozone modeling was not conducted for this project.

Nitrogen Oxides: Nitrogen oxides (NOx) are the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Nitrogen oxides form when fuel is burned at high temperatures, as in a combustion process. The primary sources of NOx are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels. In addition to being a precursor of ozone, NOx can cause respiratory irritation in sensitive individuals and contribute to acid rain.

The State of Minnesota is classified by the EPA as an attainment area for nitrogen dioxide. Nitrogen dioxide levels in the Twin Cities Metropolitan Area currently meet state and federal standards. Because of these factors, ozone modeling was not conducted for this project.

Sulfur Dioxide: Sulfur dioxide (SO₂) and other sulfur oxide gases (SOx) are formed when fuel containing sulfur, such as coal, oil and diesel fuel is burned. Over 65 percent of SO₂ released to the air comes from electric utilities, especially those that burn coal. In 1994, transportation sources, mainly highway vehicles, accounted for 4.7 percent of total sulfur dioxide emissions in Minnesota.

Emissions of sulfur from transportation sources are a small component of overall emissions and continue to decline due to the desulphurization of fuels. The State of Minnesota is classified by the EPA as an attainment area for sulfur dioxide. Sulfur dioxide levels in the Twin Cities Metropolitan Area currently meet state and federal standards. Because of these factors, SO₂ modeling was not conducted for this project.

Carbon Monoxide: Carbon monoxide (CO) is the traffic-related pollutant of most concern in urban areas. Concentrations of CO are generally highest at intersections with poor LOS and, consequently, more idling vehicles. The EPA has approved a screening method to determine

which intersections need hot-spot analysis. A hot-spot analysis is typically performed on the intersection in the study area operating at the lowest LOS. Intersections operating above LOS D are not anticipated to exceed state standards. The MPCA has established state standards (or maximum permissible concentrations) for CO of 30 parts per million (ppm) for a 1-hour period (average concentration) and 9 ppm for an 8-hour period (average concentration). The MPCA 1-hour standard is more stringent than the federal standard of 35 ppm.

Air Toxics: NAAQS only exist for the six criteria pollutants above. However, many pollutants may be emitted into the air from motorized vehicles. A large group of these pollutants are collectively referred to as air toxics. While no comprehensive list of air toxics has been developed, the EPA has refined the list of air toxics to 188 hazardous air pollutants (HAPs) and further to 33 priority air toxics.

Based on emissions inventory of statewide air toxics emissions performed by the MPCA for calendar year 1996, on-road vehicles contributed to 43 percent of total emissions of air toxics. Both the EPA and the MPCA have required a number of control strategies that have reduced mobile source air toxics in the past and will likely continue to reduce air toxics into the foreseeable future. These reductions are due to the impacts of promulgated mobile source control programs, including the reformulated gasoline program, the national low emission vehicle standards, the Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and the heavy-duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements.

While studies have shown that there may be a correlation between health effects and proximity to roads with dense traffic, there remains a great deal of uncertainty associated with quantifying specific impacts and health risks associated with potential highway projects.

There are no EPA standards for air toxics (to use for comparison of emission levels in order to assess potential for health impacts) and no accepted method for modeling future concentrations at specific receptors. The FHWA and EPA are in the process of developing potential methods to address this issue but have not yet issued any formal guidelines. For these reasons, an analysis of air toxics was not conducted for this project.

6.1.3 Environmental Consequences

The effects of the proposed project on air quality were examined through analysis of the modeled impacts on CO concentrations for year 2010 and 2019, one and ten years after project completion, respectively. Air quality analysis requires knowledge of background pollutant concentrations. Background CO concentrations are needed for air quality analysis purposes to represent conditions without the influences of nearby vehicles. By definition, the background CO concentration in any particular area is that concentration which exists independently of direct contributions from nearby traffic. The background concentrations are added to intersection-scale modeled results to yield predicted CO levels.

Year 2004 default maximum background concentrations (3.0 ppm and 2.0 ppm for 1-hour and 8-hours, respectively), provided by the MPCA staff were used for this analysis to provide

conservative (high) modeling results. Year 2009 was assumed as the completion year. Traffic volumes used in the 2010 analysis reflect the forecast traffic resulting from complete construction of the project. The year 2010 analysis uses worst case emissions data due to the trend in lower emissions over time as the vehicle fleet is replaced with newer vehicles with lower emissions. The year 2019 analysis uses lower emission rates but increased traffic is present due to additional background traffic growth. Current background concentrations were adjusted for increases in traffic volumes and vehicle emissions based on factors used for the traffic analysis. The adjustment factor for vehicle emissions was based on the MOBILE6 emissions model, which incorporates anticipated decreases in CO emissions from motor vehicles due to emission controls. The results of the background calculation are summarized in Table 6-1.

**TABLE 6-1
CALCULATION OF CO BACKGROUND CONCENTRATIONS**

Factor	2010		2019	
	1-Hour	8-Hour	1-Hour	8-Hour
2004 Default Concentration (ppm)	3.0	2.0	3.0	2.0
Background Traffic Volume Adjustment Factor	1.17	1.17	1.50	1.50
Emission Adjustment Factor	0.70	0.70	0.52	0.52
Adjusted Background Concentration (ppm)	2.46	1.64	2.34	1.56

6.1.3.1 Carbon Monoxide Analysis

The analysis presented includes modeling future CO concentrations at the worst-case intersection in the project area using standard modeling methods and procedures used for CO analysis. Carbon monoxide concentrations were predicted using traffic volumes from the traffic study as well as intersection geometrics and controls described in Chapter 4. Based on guidance from the MPCA, the worst case intersection in the project area was analyzed for one and ten years after project completion (2010 and 2019). The computer models used in the analysis are those accepted by the MPCA as standard models for use in Minnesota: the U.S. EPA MOBILE6 emission model and the U.S. EPA CAL3QHC dispersion model.

Air quality analyses were performed for the years 2010 and 2019 afternoon peak hour Build conditions at the “worst case” intersection in the project area. The worst case intersection was identified by comparing total delay and traffic volumes at all intersections in the project area and was determined to be CSAH 21/ CSAH 18 (under the four-lane at-grade intersection option).

The modeling assumptions used in this analysis were as follows in Table 6-2:

**TABLE 6-2
CARBON MONOXIDE MODELING ASSUMPTIONS**

Analysis Years:	2010 and 2019
Analysis Month:	January
Cruising Speed:	Posted Speed Limits
Traffic Mix:	National Default Values
Wind Speed:	1 meter/second (3.3 feet/second)
Temperature:	16 to 38 degrees Fahrenheit daily
Surface Roughness ⁽¹⁾ :	108 centimeters (42.5 inches)
Stability Class ⁽²⁾ :	D
Inspection Maintenance:	No
Oxygenated Fuel:	Ethanol with 2.7% Oxygen Content by Weight and 100% Marketshare
8-Hour Persistence Factor ⁽³⁾ :	0.7
Wind Direction:	36 directions at 10 degree increments

Notes: The Surface Roughness, Stability Class and 8-Hour Persistence Factor are discussed in *Guidelines for Air Quality Maintenance Planning and Analysis Volume 9 (Revised): Evaluating Indirect Sources*, U.S. EPA, 1978, and are summarized below.

- (1) Surface Roughness indicates the initial ground level turbulence into which the exhaust plume will be released. Generally, the higher the roughness, the lower the concentration. The number used here is conservatively low (results in a worst-case).
- (2) Stability Class characterizes the mixing potential of the atmosphere. Stability Class D is used as a worst-case in suburban and urban areas.
- (3) The 8-Hour Persistence Factor is used to determine 8-hour localized CO contributions, and takes into account fluctuating wind directions, temperature and traffic, which are more likely to occur over eight hours than during one hour. The factor is multiplied by the 1-hour modeling result.

The “sidewalk averaging” technique was used to calculate intersection worst-case CO concentrations at the analyzed intersection. The modeling “sidewalks” are located adjacent to each approach leg and departure leg at the location closest to the vehicles stopped at the traffic signal. Each sidewalk location is represented by two receptors: one receptor 10 meters from the intersection and one receptor 50 meters from the intersection. In this method, the CO concentrations from the two receptors are averaged. The sidewalk averaging method was used because there are no existing locations near the intersection that would be used as a human occupancy area. While there are no existing sidewalks at the intersection, they may be constructed in the future. The worse case wind direction (of the 36 directions modeled) for each pair of sidewalk receptors was used to determine the maximum concentration for each pair of sidewalk receptors. The reported result is the maximum concentration of CO using the sidewalk “averaging” technique.

6.1.3.2 Results and Discussion

Modeled carbon monoxide concentrations are presented in Table 6-3.

**TABLE 6-3
CARBON MONOXIDE MODELING RESULTS**

CSAH 21 at CSAH 18	2010		2019	
	1-hour Average (ppm)	8-hour Average (ppm)	1-hour Average (ppm)	8-hour Average (ppm)
<i>Modeled CO Concentration</i>	5.8 ⁽¹⁾	4.0 ⁽¹⁾	5.3 ⁽¹⁾	3.7 ⁽¹⁾
<i>Background CO Concentration</i>	2.5	1.6	2.3	1.6
<i>Total Predicted CO Concentration</i>	<u>8.3</u>	<u>5.6</u>	<u>7.6</u>	<u>5.3</u>
State Standard	30.0	9.0	30.0	9.0
Federal Standard	35.0	9.0	35.0	9.0

Notes: CO concentrations are in parts per million (ppm).
(1) Results are for wind direction of 30 degrees

Predicted maximum CO concentrations adjacent to the intersection of CSAH 21 at CSAH 18 range from 5.3 to 8.3. These concentrations are well below both state and federal standards. The results represent the predicted worst case intersection and therefore, would be the highest CO concentrations in the project area. Construction of the project is not likely to cause elevated CO concentrations or exceedances of CO standards.

The planned transit station at CSAH 21/CSAH 16 will remove 500 vehicles from the freeway during peak periods. A quantitative analysis of CO, NO_x and VOC was conducted for the planned transit station. Results indicate that the total emission reduction from the project is 530.49 kg/day.

6.1.4 Air Quality Conformity

The 1990 Clean Air Act Amendments require that State Implementation Plans (SIPs) must demonstrate how states with nonattainment and maintenance areas will meet federal air quality standards. The EPA has designated all of Hennepin, Ramsey, Anoka and portions of Carver, Scott, Dakota, Washington and Wright counties as a maintenance area for carbon monoxide (CO). This area includes the project area, which is in Scott County.

The U.S. Environmental Protection Agency (EPA) issued final rules on transportation conformity (amended as 40 CFR 93 in 1999) which describe the methods required to demonstrate SIP compliance for transportation projects. These guidelines indicate that non-

exempt transportation projects such as this project may need to be included in a regional emissions analysis to demonstrate the project would not increase regional CO emissions and would not increase the frequency or severity of existing violations. The regional analysis must be part of the metropolitan planning organization's long range plan and the three-year Transportation Improvement Program (TIP).

Accordingly, this project is consistent with the 2005 Twin Cities Metropolitan Council's Transportation Policy Plan (TPP), and in the current September 14, 2005 Twin Cities TIP. This project is included in the transportation conformity section of the TPP and/or the TIP. The regional analysis shows that emissions are below the EPA-established emissions budget for the region. This project does not interfere with implementation of any transportation control measures included in the SIP.

The TPP was determined to conform with the requirements of the 1990 Clean Air Act (per 40 CFR 51 and 93) by the Federal Highway Administration and the Federal Transit Administration on August 24, 2004. A TIP conformity determination was made by those agencies on September 14, 2005. The project's design concept and scope are not significantly different from that used in the TIP and TPP conformity analyses.

As demonstrated by the above information, this project conforms to the requirements of the Clean Air Act Amendments and to the Conformity Rules, 40 CFR 93.

6.1.5 Mitigation

No specific long-range mitigation measures for this project are necessary to maintain air quality standards because projected CO levels for the worst-case conditions are below state and federal standards. Temporary construction impacts on air quality are discussed in Chapter 9.

The planned transit station at CSAH 21/CSAH 16 will remove 500 vehicles from the freeway during peak periods. A quantitative analysis of CO, NO_x and VOC was conducted for the planned transit station. Results indicate that the total emission reduction from the project is 530.49 kg/day.

6.2 NOISE

6.2.1 Affected Environment

6.2.1.1 Traffic Noise

This section provides an analysis of the noise impacts that would result from the proposed project. A detailed noise analysis was completed to assess existing traffic noise levels in the project area and to determine what effect the proposed project would have on future noise levels. Construction of the project would create a new traffic noise source along the proposed alignment and could change traffic volumes along existing roadways.

The noise analysis consisted of monitoring existing noise levels at receptor sites and predicting future noise levels using computer modeling. Noise receptors consist of low density residential land uses and a YMCA camp along the southern portion of the project and medium to high density residential developments along the northern portion of the project corridor. There is also a proposed City park site along the corridor. There are several existing roadways in the noise study area with traffic volumes high enough to be considered sources of traffic noise, including CSAH 42, CSAH 16 and CSAH 18.

6.2.1.2 Noise Analysis

Noise is defined as any unwanted sound. Traffic is a common source of noise near high-volume roadways. Sound travels in a wave motion and produces a sound pressure level. This sound pressure level is commonly measured in decibels. Decibels (dB) represent the logarithmic increase in sound energy relative to a reference energy level. A sound increase of 3 dB is barely perceptible to the human ear, a 5 dB increase is clearly noticeable, and a 10 dB increase is heard as twice as loud. For example, if the sound energy is doubled (e.g., the amount of traffic doubles), there is a 3 dB increase in noise, which is just barely noticeable to most people. On the other hand, if traffic increases to where there is 10 times the sound energy level over a reference level, then there is a 10 dB increase and it is heard as twice as loud.

To approximate the way that an average person hears sound, an adjustment, or weighting, of the high- and low- pitched sounds is made. The adjusted sound levels are stated in units of “A-weighted decibels” (dBA). In Minnesota, traffic noise impacts are evaluated by measuring and/or modeling the traffic noise levels that are exceeded 10 percent and 50 percent of the time during the hours of the day and/or night that have the heaviest traffic. These numbers are identified as the L₁₀ and L₅₀ levels. For example, an L₁₀ value of 65 decibels means that the noise level was at or greater than 65 decibels during 10 percent of the measurement period (i.e., more than 6 minutes per hour). Common noise levels from various indoor and outdoor sources are listed in Table 6-4.

6.2.1.3 Regulatory Framework

Noise is regulated in Minnesota by the MPCA under Minnesota Statute 116.07, Subdivisions 2 and 4. The MPCA is the governmental regulatory agency responsible for implementing regulations controlling traffic noise in Minnesota. The Minnesota State standards for L₁₀ are 65 dBA for daytime and 55 dBA for nighttime; the standards for L₅₀ are 60 dBA for daytime (7 a.m. to 10 p.m.) and 50 dBA for nighttime (10 p.m. to 7 a.m.). Minnesota Statute 116.07, Subd. 2a. states that municipal and county roads, except for roadways for which full control of access has been acquired, are exempt from state noise standards. Within the study area, all roads are county or city roads and are therefore exempt from state standards.

**TABLE 6-4
NOISE LEVEL COMPARISONS**

COMMON OUTDOOR NOISE LEVELS	NOISE LEVEL dBA	COMMON INDOOR NOISE LEVELS
	110	Rock Band
Jet flying at 100 feet		
	100	Inside Subway Train (New York)
Gas Lawn Mower at 3 feet		
	90	Food Blender at 3 feet
Diesel Truck at 50 feet		
Noisy Urban Daytime	80	Garbage Disposal at 3 feet
Gas Lawn Mower at 100 feet	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime Quiet Suburban Nighttime	40	Small Theatre Large Conference Room (Background)
	30	Library
Quiet Rural Nighttime		Bedroom at Night
	20	Concert Hall (Background)
		Broadcast and Recording Studio
	10	
		Threshold of Hearing
	0	

Source: *Noise Control – New Standards*: W.R. Green: California Department of Transportation, Paper presented at AASHTO Annual Meeting; November 14, 1973.

Highway projects with federal involvement must be in conformance with FHWA noise standards. For residential uses (Federal Land Use Category B), the Federal L₁₀ noise abatement criterion is 70 dBA for both daytime and nighttime. Locations where noise levels are “approaching” (defined as being within one decibel of the criterion threshold, i.e., 69 dBA) or exceeding the criterion level must be evaluated for noise abatement feasibility. Federal Noise Abatement Criteria (NAC) are shown in Table 6-5.

**TABLE 6-5
FEDERAL NOISE ABATEMENT CRITERIA**

FHWA Noise Abatement Criteria		
Category	L ₁₀ dBA	Land Use
A	60	Special areas requiring serenity
B	70	Residential and recreational areas
C	75	Commercial and industrial areas
D	NA	Undeveloped areas
E	55*	Residential, hospitals, libraries, etc.

* Applies to interior noise levels. All other land uses are exterior levels.

In addition to the identified noise criteria, the FHWA also defines a noise impact as a “substantial increase” in the future noise levels over the existing noise levels. The Minnesota Noise Policy considers an increase of five dBA or greater a substantial noise level increase. Because federal funds are anticipated to be used as part of this project, the federal noise criteria would apply to the project area.

6.2.1.4 Noise Monitoring and Modeling Implications

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.

Existing noise levels were monitored at four sites in the project area, chosen to represent areas of outdoor human activity (i.e., residential yards) (see Table 6-6). Monitoring locations were chosen at residential sites adjacent to existing traffic noise sources and in areas close to proposed alignment that currently experience little to no traffic noise.

Noise levels were monitored in November 2003. Monitoring methods used in this study comply with state and federal guidelines. A trained noise monitoring technician was present at each session for the entire monitoring session to ensure correct operation of the instrumentation. Noise monitoring results are presented in Table 6-6. Monitoring results are presented along with the results of computer modeling for existing daytime noise conditions.

The monitored noise levels are within four decibels of modeled levels at receptors R2, R4, R10, considered a normal variation within acceptable calibration range. For receptor R6, monitored noise levels are 10-11 dBA higher than the existing modeled levels. This is likely due to several factors. For example, existing noise sources at the monitoring site could include occasional cars driving along the cul de sac, birds, tree leaves rustling, and other natural sounds that are not modeled by the noise prediction program used for modeling (“MINNOISE”, described in Section 6.2.2.1). Additionally, while MINNOISE is accurate at modeling noise at receptors that are relatively close (less than 1000 feet) to an existing source of constant traffic noise, the existing condition model for R6 does not include the adjacent cul de sac. The cul de sac was not included in the model since the peak traffic is so low. The closest sources of traffic noise to R6 in the existing model are CSAH 16 (approximately eight-tenths of a mile away) and CSAH 18. Use of the CSAH 16 and CSAH 18 traffic noise in place of the cul de sac therefore result in an under-representation of traffic noise when comparing monitored and modeled results.

In the Build model for R6, the new CSAH 21 alignment is a close constant traffic noise source, producing accurate results for the Build Alternative. Therefore, even though the model may be under-predicting noise for the existing condition, the noise predicted for the Build condition is considered accurate. Because there is a substantial increase in noise at this receptor, noise mitigation will be studied. Mitigation analysis is a comparison of noise levels with and without a barrier using the Build traffic volumes and roadway alignments. The noise wall analysis has been completed with the Build model which includes traffic sources close to the receptor. The results of which are judged to be valid.

6.2.2 Environmental Consequences

6.2.2.1 Modeled Receptor Sites

Traffic noise impacts were assessed by modeling noise levels at existing residences (R1 through R10) and planned development adjacent to the proposed alignment (R11 through R13) likely to be most affected by changes in roadway alignment resulting from construction of the proposed project. As noted in Section 5.2, planned development includes the SMSC residential development (R11), residential development north of CSAH 16 and east of CSAH 21 (R12), and Crossings Boulevard (Riverside Fields) (R13). Additionally, noise in a currently undeveloped area adjacent to proposed CSAH 21 was modeled at various distances (50, 100, 200, 400, and 800 feet; R14 through R18) from the proposed alignment according to FHWA guidelines. Figure 6-1 shows the location of noise modeling receptor sites.

Noise modeling was done using the noise prediction program MINNOISE, 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. Forecast No Build and Build traffic volumes were used to model noise for all receptors. The vehicle class percentages used for all roads were as follows: automobiles and light trucks, 97 percent; medium trucks, 2 percent; and heavy trucks, 1 percent. Posted and proposed speed limits were used to model all roadways.

Modeling Results

Noise monitoring and modeling results for existing residential, future residential and future park land receptors are presented in Table 6-6 (daytime) and Table 6-7 (nighttime). Results are shown in both L_{10} and L_{50} noise levels for the existing condition (year 2004) and for year 2030 for both No Build and Build Alternatives. While both L_{10} and L_{50} descriptors are shown in these tables, the discussions of modeling results presented below only reference the L_{10} values, since the L_{10} descriptor is used to define both the state and federal noise level regulatory thresholds.

Existing

The existing daytime noise levels in the study area range from 40 to 66 dBA. At the residential receptors near high-volume roadways, including CSAH 42, CSAH 16 and CSAH 18 (receptors R1-R5, R9, and R10), modeled results generally demonstrate L_{10} values of 60 dBA or greater. Only R3 at 66 dBA exceeds the state standard of 65 dBA and none of the receptors approaches the federal standard of 70 dBA. Existing daytime noise levels away from the high-volume roadways (receptors R6-R8 and R11-R13) are typically less than 50 dBA. Nighttime noise levels are generally a few decibels lower than daytime levels.

2030 No Build

The modeling results demonstrate the potential for up to an 8-dBA increase for those receptors along the high-volume roadways under the 2030 No Build scenario compared to existing (2004) modeled traffic noise. For those receptors away from the high-volume roadways, a similar increase is demonstrated up to 7 dBA compared to the existing noise levels. As a result of the increases that would be experienced under the No Build scenario, the results demonstrate that six receptors (receptors R1-R5 and R12) would exceed state daytime standards and 11 receptors would exceed state nighttime standards. In addition, noise levels at R4 and R5 would be exactly at the federal standard of 70 dBA.

2030 Build

The Build Alternative for the proposed project includes three options for the intersection of CSAH 21 and CSAH 18 (see Figures 3-3 through 3-5). The three options include: a four-lane at-grade intersection, a six-lane at-grade intersection and a four-lane interchange. The comparison of results for all three options concludes that while they differ from the No Build scenario, there is no discernable difference among the noise results for the three CSAH 21/CSAH 18 intersection options. At a few receptor locations, the options differ by one or two decibels; the average daytime level is identical; the average nighttime level is one decibel lower under the four-lane at-grade intersection option.

Modeling for the Build options demonstrates that while the project results in an overall increase in the number of receptors that would experience noise levels above state and federal standards (since there would be a road where one does not exist under existing or No Build conditions), noise levels at some of the receptors (receptors R3 [daytime and nighttime], R5 [daytime] and R12 [daytime and nighttime]) would actually be lower under the Build scenario than under the No Build scenario. Receptor R12 would decrease to below the state daytime standard and R12 would decrease from 70 dBA (the federal standard threshold) to just approaching the federal threshold.

Noise impacts to existing and proposed community facilities are represented by receptors R10 and R2 respectively. Receptor R10 represents Red Oak Elementary School. This receptor would experience up to an 18 decibel increase in noise over existing conditions under 2030 Build conditions. (Note that this represents peak hour conditions which do not coincide with school hours; the p.m. peak may coincide with recreational use of school playground facilities.) Receptor R2 is the closest receptor to the proposed assisted living and nursing home facility north and west of the CSAH 21/ CSAH 42 intersection. This receptor experiences a six decibel increase in noise over existing conditions under 2030 Build conditions. Mitigation analysis at these locations is discussed in Section 6.2.3.

The overall difference between existing, No Build and four-lane at-grade intersection Build option noise levels at existing receptors (R1-R13) is outlined below. Refer to Table 6-6 and 6-7 and Figure 6-1 for receptor-specific information.

**TABLE 6-6
NOISE MONITORING AND MODELING RESULTS DAYTIME**

Receptor*	Monitored (2003)		Existing (2004)		2030 No Build		Difference Between Existing (2004) and 2030 No Build		2030 Build Four-Lane At-Grade		Difference Between Existing (2004) and 2030 Build Four-Lane At-Grade		2030 Build Six-Lane At-Grade		Difference Between Existing (2004) and 2030 Build Six-Lane At-Grade		2030 Build Four-Lane Interchange		Difference Between Existing (2004) and 2030 Build Four-Lane Interchange	
	L10	L50	L10	L50	L10	L50	L10	L50	L10	L50	L10	L50	L10	L50	L10	L50	L10	L50	L10	L50
R1 (5)			62	56	66	62	4	6	66	62	4	6	66	62	4	6	66	62	4	6
R2 (3)	66	61	62	57	66	62	4	5	68	64	6	7	68	64	6	7	68	64	6	7
R3 (5)			66	60	68	64	2	4	67	62	1	2	67	62	1	2	67	62	1	2
R4 (5)	67	57	63	52	70	62	7	10	70	62	7	10	70	62	7	10	70	62	7	10
R5 (3)			62	53	70	63	8	10	69	62	7	9	69	62	7	9	69	62	7	9
R6 (8)	53	50	42	40	47	45	5	5	63	59	21	19	63	59	21	19	63	59	21	19
R7 (22)			43	41	46	44	3	3	60	57	17	16	60	57	17	16	60	57	17	16
R8 (10)			44	42	47	45	3	3	68	64	24	22	68	64	24	22	67	62	23	20
R9 (6)			51	48	52	50	1	2	64	61	13	13	64	62	13	14	64	61	13	13
R10 (6)	57	52	54	51	55	52	1	1	70	63	16	12	71	65	17	14	72	67	18	16
R11 (10) ⁽¹⁾			40	38	44	43	4	5	69	64	29	26	69	64	29	26	69	64	29	26
R11 (10) ⁽²⁾			40	38	44	43	4	5	63	59	23	25	64	60	24	22	65	62	25	24
R11A (1) ⁽¹⁾			40	39	44	43	4	4	56	54	16	15	56	54	16	15	56	54	16	15
R11A (1) ⁽²⁾			40	39	44	43	4	4	58	56	18	17	57	55	17	16	59	56	19	17
R12 (10)			61	52	68	61	7	9	62	59	1	7	62	59	1	7	62	59	1	7
R13 (10)			60	56	61	58	1	2	66	63	6	7	67	64	7	8	68	65	8	9
R14 [50]			49	43	55	51	6	8	74	69	25	26	74	69	25	26	74	69	25	26
R15 [100]			49	43	55	51	6	8	72	67	23	24	72	67	23	24	72	67	23	24
R16 [200]			49	43	55	51	6	8	69	65	20	22	69	65	20	22	69	65	20	22
R17 [400]			49	43	55	52	6	9	66	62	17	19	66	62	17	19	66	62	17	19
R18 [800]			50	44	56	52	6	8	62	59	12	15	62	59	12	15	62	59	12	15
R19 [50]			56	48	62	58	6	10	69	65	13	17	69	65	13	17	69	65	13	17
R20 [100]			56	48	62	58	6	10	67	63	11	15	67	63	11	15	67	63	11	15
R21 [200]			56	48	62	58	6	10	65	61	9	13	65	61	9	13	65	61	9	13
R22 [400]			56	48	62	57	6	9	61	59	5	11	61	59	5	11	61	59	5	11
R23 [800]			55	48	62	57	7	9	60	57	5	9	60	57	5	9	60	57	5	9
State Standards	65	60	65	60	65	60			65	60			65	60			65	60		
Federal Criteria	70	-	70	-	70	-			70	-			70	-			70	-		

Bold numbers are above state standards.

* Number in () in this column is the number of residences represented by receptor; number in [] in this column is the distance from proposed CSAH 21 right of way in feet.

⁽¹⁾ West alignment option.

⁽²⁾ East alignment option.

**TABLE 6-7
NOISE MONITORING AND MODELING RESULTS, NIGHTTIME**

Receptor*	Monitored (2003)		Existing (2004)		2030 No Build		Difference Between Existing (2004) and 2030 No Build		2030 Build Four-Lane At-Grade		Difference Between Existing (2004) and 2030 Build Four-Lane At-Grade		2030 Build Six-Lane At-Grade		Difference Between Existing (2004) and 2030 Build Six-Lane At-Grade		2030 Build Four-Lane Interchange		Difference Between Existing (2004) and 2030 Build Four-Lane Interchange	
	L10	L50	L10	L50	L10	L50	L10	L50	L10	L50	L10	L50	L10	L50	L10	L50	L10	L50	L10	L50
R1 (5)			60	53	64	59	4	6	64	59	4	6	64	59	4	6	64	59	4	6
R2 (3)	66	61	60	54	64	60	4	6	66	62	6	8	66	62	6	8	66	62	6	8
R3 (5)			63	57	66	61	3	4	65	60	2	3	65	60	2	3	65	60	2	3
R4 (5)	67	57	60	49	67	58	7	9	68	59	8	10	68	59	8	10	68	59	8	10
R5 (3)			60	50	67	59	7	9	68	60	8	10	68	60	8	10	68	60	8	10
R6 (8)	53	50	41	38	45	42	4	4	61	57	20	19	61	57	20	19	61	57	20	19
R7 (22)			41	39	44	42	3	3	58	55	17	16	58	55	17	16	58	55	17	16
R8 (10)			42	40	45	43	3	3	66	61	24	21	65	60	23	20	65	60	23	20
R9 (6)			50	47	51	48	1	1	62	58	12	11	62	59	12	12	62	59	12	12
R10 (6)	57	52	52	49	54	51	2	2	66	59	14	10	68	62	16	13	69	64	17	15
R11 (10) ⁽¹⁾			38	35	42	40	4	5	66	60	28	25	66	60	28	25	66	60	28	25
R11 (10) ⁽²⁾			38	35	42	40	4	5	63	59	25	24	61	57	28	27	64	60	26	25
R11A (1) ⁽¹⁾			38	36	42	41	4	5	55	52	17	16	55	52	17	16	55	52	17	16
R11A (1) ⁽²⁾			38	36	42	41	4	5	58	55	20	19	56	53	20	20	57	55	19	19
R12 (10)			58	49	65	57	7	8	60	57	2	8	60	57	2	8	60	57	2	8
R13 (10)			59	54	60	56	1	2	64	60	5	6	66	63	7	9	66	63	7	9
R14 [50]			47	40	52	48	5	8	72	66	25	26	72	66	25	26	72	66	25	26
R15 [100]			47	40	52	48	5	8	71	65	24	25	71	65	24	25	71	65	24	25
R16 [200]			47	40	52	48	5	8	68	62	21	22	68	62	21	22	68	62	21	22
R17 [400]			47	41	53	48	6	7	64	60	17	19	64	60	17	19	64	60	17	19
R18 [800]			48	41	53	49	5	8	60	56	12	15	60	56	12	15	60	56	12	15
R19 [50]			54	45	60	54	6	9	67	62	13	17	67	62	13	17	67	62	13	17
R20 [100]			54	45	60	54	6	9	65	61	11	16	65	61	11	16	65	61	11	16
R21 [200]			54	45	60	54	6	9	63	59	9	14	63	59	9	14	63	59	9	14
R22 [400]			53	45	60	54	7	9	60	57	7	12	60	57	7	12	60	57	7	12
R23 [800]			53	45	59	53	6	8	58	55	5	10	58	55	5	10	58	55	5	10
State Standards	55	50	55	50	55	50			55	50			55	50			55	50		

Bold numbers are above state standards.

* Number in () in this column is the number of residences represented by receptor; number in [] in this column is the distance from proposed CSAH 21 right of way in feet.

⁽¹⁾ West alignment option.

⁽²⁾ East alignment option.

- Existing (2004)
 - Receptors exceeding state daytime standards: one
 - Receptors exceeding state nighttime standards: seven
 - Receptors exceeding federal standards: none
 - Receptors approaching federal standards: none
- No Build (2030)
 - Receptors exceeding state daytime standards: six
 - Receptors exceeding state nighttime standards: eight
 - Receptors exceeding federal standards: two
 - Receptors approaching federal standards: none
- Build (2030)
 - Receptors exceeding state daytime standards: nine
 - Receptors exceeding state nighttime standards: thirteen
 - Receptors exceeding federal standards: two
 - Receptors approaching federal standards: two

In addition to comparing noise levels at existing receptors, and in accordance with FHWA guidelines for noise modeling, the noise study included modeling at various distances (50, 100, 200, 400, and 800 feet) at two locations in the study area where there are currently no receptors but where development is anticipated. This analysis not only allows for comparison of noise levels but provides information for planning future uses to minimize noise impacts.

The first location, represented by noise receptors R14-R18, is west of the proposed project and south of CSAH 16. It was chosen to represent future residential development. The results demonstrate that under Build conditions, noise levels at receptors 50 and 100 feet from the proposed roadway would exceed federal and state daytime standards, receptors 200 feet from the roadway would approach federal standards and exceed state daytime standards, and receptors 400 feet from the roadway would be within federal standards, but exceed state daytime standards. Receptors at 800 feet are within both federal and state daytime standards. (State nighttime standards are exceeded at all locations.)

The second location, represented by noise receptors R19–R23, is west of the proposed alignment and north of CSAH 16. It was chosen because it is the site of a proposed community park. The results demonstrate that under Build conditions, receptors 50 feet from the proposed roadway would approach federal standards and exceed state daytime standards and receptors 100 and 200 feet from the roadway would be within federal standards but exceed state daytime standards. Receptors at 400 and 800 feet would be within both federal and state daytime standards. (State nighttime standards are exceeded at all locations.)

The Build Alternative for the proposed project includes two alignment options for a distance of one-half mile in the vicinity of property boundary between land owned in fee by the SMSC and land owned by the YMCA and used as a camp. Receptor R11 is located along the west side of the project corridor; Receptor R11A is located along the east side of the project corridor. At Receptor R11, traffic noise levels were between four dBA to six dBA greater under the west alignment option compared to the east alignment option (daytime L₁₀). At Receptor R11A, traffic noise levels were between one dBA to three dBA lower under the west alignment option compared to the east alignment option (daytime L₁₀). The proposed park-and-ride will generate minimal amounts of traffic noise due to the low traffic speeds within the facility and the lack of heavy trucks traveling within the facility. The closest residence to the proposed park-and-ride is approximately 1,200 feet away. Traffic noise from CSAH 21 and CSAH 16 would be a more dominant and constant noise source.

6.2.3 Mitigation

As noted in Section 6.2.1.3, under Minnesota law, County roads such as the proposed CSAH 21 extension are exempt from state noise standards. However, highway projects with federal involvement must conform with FHWA standards, including requirements for noise mitigation. Mitigation measures were studied in the areas where a noise impact was identified under Build conditions. As noted in Section 6.2.1.3, locations where Build noise levels are “approaching” or exceeding the Federal NAC must be evaluated for noise abatement feasibility. In Minnesota, 69 dBA (L₁₀) is considered approaching the Federal NAC for Category B (e.g., residential) land uses. Noise impacts are also defined where a “substantial increase” in the future noise levels over existing noise levels occur. For the State of Minnesota, Mn/DOT considers an increase of five dBA or greater over existing conditions a substantial increase.

This analysis included an evaluation of the reasonableness of noise mitigation. This analysis was only conducted at locations where receptors currently exist. In addition, because much of the land in the project corridor is currently vacant, guidance for local governments regarding potential noise mitigation measures such as recommended set-back distances from the highway corridor for proposed developments is provided.

Noise Barriers Analysis

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 criterion and is based on a number of factors. Economic reasonableness or cost-effectiveness is the first consideration in determining the reasonableness of proposed noise barriers. If noise mitigation is found to be cost-effective, additional reasonableness factors such as the desires of affected property owners are considered.

For a noise barrier to be considered acoustically effective, it must achieve a noise reduction of five dBA or more. To be considered cost-effective, the cost per dBA of reduction per residence should be less than or equal to \$3,250. The following formula can be used to determine the cost-effectiveness of the barrier:

$$\frac{\text{Cost of noise barrier}^1 \text{ divided by the}}{\text{Average decibel reduction multiplied by the total number of residences affected}}$$

¹The cost of a noise wall is calculated using \$15 per square foot of wall.

Only residences that experience a five or greater decibel decrease in noise following construction of a noise barrier are considered in this analysis. The result of the above formula is a cost per decibel per residence. This overall approach is outlined in Minnesota Noise Policy for Type I and Type II Federal-Aid Projects as per 23 CFR 772.

Results of the noise barrier study are shown in Table 6-8. Results of the noise mitigation cost-effectiveness studies are shown in Table 6-9. Because Minnesota's noise barrier cost-effectiveness analysis methodology uses L10 levels to determine cost-effectiveness, only those results are shown.

Noise Mitigation Results

The following are the results of the cost-effectiveness analysis performed. For the analysis, 2030 Build Alternative (with six-lane at-grade intersection option) noise levels with a 20-foot noise wall are compared to 2030 Build Alternative (with four-lane interchange) noise levels without a 20-foot noise wall in order to determine the effectiveness of the wall. The six-lane at-grade intersection option noise levels were used for the cost-effectiveness analysis as there were a few locations where they were higher than those for the other two Build options.

Receptor R2

This receptor represents three residences. A 20-foot-high and 400-foot-long barrier placed between the residence and CSAH 21 would not result in a five dB(A) average reduction. Therefore noise mitigation would not be effective and is not proposed.

Receptor R4

This receptor represents five residences. A 20-foot-high and 270-foot-long barrier placed between the residence and CSAH 21 would not result in a five dB(A) average reduction. Therefore noise mitigation would not be effective and is not proposed.

Receptor R5

This receptor represents three residences. A 20-foot-high and 140-foot-long barrier placed between the residence and CSAH 21 would not result in a five dB(A) average reduction. Therefore noise mitigation would not be effective and is not proposed.

Receptor R6

This receptor represents 8 residences. It is predicted to experience a six-decibel decrease in noise with a 20-foot-high and 550-foot-long barrier placed between the residences and CSAH 21. The cost-effectiveness of the barrier is \$3,750 per decibel per residence; this is above Mn/DOT's criterion of \$3,250. Therefore a barrier in this area would not be reasonable and is not proposed.

Receptor R7

This receptor represents 22 residences. A 20-foot-high and 1,600-foot-long barrier placed between the residence and CSAH 21 would not result in a five dB(A) average reduction. Therefore noise mitigation would not be effective and is not proposed.

Receptor R8

This receptor represents ten residences. It is predicted to experience a seven-decibel decrease in noise with a 20-foot-high and 650-foot-long barrier placed between the residences and CSAH 21. The cost-effectiveness of the barrier is \$2,671 per decibel per residence; this is below Mn/DOT's criterion of \$3,250. Therefore noise mitigation in this area would be reasonable.

Receptor R9

This receptor represents five residences and Red Oak Elementary School. It is predicted to experience a six-decibel decrease in noise with a 20-foot-high and 1,000-foot-long barrier placed between the residences and CSAH 21. The cost-effectiveness of the barrier is \$8,929 per decibel per residence; this is above Mn/DOT's criterion of \$3,250. Therefore a barrier in this area would not be reasonable and is not proposed.

Receptor R10

This receptor represents six residences. It is predicted to experience a ten-decibel decrease in noise with a 20-foot-high and 400-foot-long barrier placed between the residence and CSAH 21. The cost-effectiveness of the barrier is \$1,942 per decibel per residence; this is below Mn/DOT's criterion of \$3,250. Therefore noise mitigation in this area would be reasonable.

Receptor R11

Receptor R11 is located in an area that is currently undeveloped, but planned for residential land uses. This receptor represents ten planned residences along the west side of the proposed CSAH 21 roadway. For the west alignment option, Receptor R11 is predicted to experience a five-decibel decrease in noise with a 20-foot-high and 200-foot-long barrier placed between the residences and CSAH 21. The cost-effectiveness of the barrier is \$1,250 per decibel per residence; this is below Mn/DOT's criterion of \$3,250.

Based on the cost effectiveness calculation alone, noise mitigation in this area would be considered reasonable. However, other factors should be considered when evaluating the reasonableness of noise mitigation. One such factor is the date of the development relative to the highway construction. Because the proposed CSAH 21 construction will occur within a similar time frame as the proposed residential development at R11, noise mitigation can be considered less than reasonable because the residents have not been exposed to a traffic noise impact over a long period of time. Additional consultation with the local government should occur prior to any decision regarding noise barriers at Receptor R11.

Receptor R11A

This receptor represents one residence east of the Build Alternative alignment. This residence is located over 700 feet from the Build Alternative alignment. Noise barriers are most effective in reducing traffic noise when the receptor location is within 500 feet of a roadway. Subsequently, for the east alignment option, this receptor is anticipated to experience only a 3 dBA decrease with a 20-foot high and 1,750 foot-long barrier placed between the residence and the proposed roadway. Therefore, a noise barrier would not be effective at this location and is not proposed.

Receptor R13

This receptor represents approximately ten residences. It is predicted to experience a six-decibel decrease in noise with a 20-foot-high and 500 foot-long barrier placed between the residences and CSAH 21 and CSAH 18. The cost-effectiveness of the barrier is \$2,727 per decibel per residence; this is below Mn/DOT's criterion of \$3,250. Therefore a barrier in this area would be reasonable.

**TABLE 6-8
NOISE BARRIER STUDY RESULTS (DAYTIME L₁₀)**

Receptor*	Build 2030 (No Barrier)	Build 2030 (with 20 ft. Barrier)	Reduction (in dBA)**
R2 (3)	68	66	2
R4 (5)	70	66	4
R5 (3)	69	66	4
R6 (8)	63	57	6
R7 (22)	60	56	4
R8 (10)	67	60	7
R9 (6)	64	58	6
R10 (6)	71	61	10
R11 (10)	69	64	5
R11A (1)	58	55	3
R13 (10)	68	62	6

*Number in () in this column is the number of residents represented by receptor.

**TABLE 6-9
NOISE BARRIER COST-EFFECTIVENESS STUDY RESULTS (DAYTIME L₁₀)**

Receptor*	Build 2030 (No Barrier)	Build 2030 (with 20 ft. Barrier)	Reduction (in dBA)**	Length of noise barrier (ft)	Total cost of noise barrier	Cost per dBA per residence**
R6 (8)	63	57	6	550	\$ 165,000	\$ 3,750
R8 (10)	67	60	7	650	\$ 195,000	\$ 2,671
R9 (6)	64	58	6	1000	\$ 300,000	\$ 8,929
R10 (6)	71	61	10	400	\$ 120,000	\$ 1,942
R11 (10)	69	64	5	200	\$ 60,000	\$ 1,250
R13 (10)	68	62	6	500	\$ 150,000	\$ 2,727

*Number in () in this column is the number of residents represented by receptor.

Numbers in **bold meet acoustic or cost effectiveness criteria.

Land Use Controls

As discussed above, noise levels at receptors in the undeveloped area south of CSAH 16 that are located within 200 feet of the proposed edge of right of way approach federal noise standards. It is recommended that governments responsible for land use regulations in this portion of the study area (currently the City of Shakopee and Prior Lake) consider this information as development proposals come forward for approvals.

It was also noted that noise levels at receptors in the proposed community park are immediately west of CSAH 21 north of CSAH 16 that are located 50 feet from the proposed roadway approach federal standards. It is recommended that the City of Shakopee consider this information during planning of uses at the park site.

Alternative Noise Abatement

Noise abatement measures other than noise barriers were considered for the proposed project. Such measures included traffic control devices, signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, exclusive land use designations, and other methods as listed in 23 CFR 772.13c. It was determined that these types of measures would not be feasible or practical for this project. To limit the vehicle types, time of use, and speeds on the roadway would not be consistent with the function of CSAH 21. In undeveloped areas along the proposed CSAH 21 corridor, it is recommended that future residences or other sensitive uses be located over 200 feet from the edge of the roadway right of way south of CSAH 16 and over 50 feet from the edge of the roadway right of way north of CSAH 16 in order to meet federal noise standards.

6.2.4 Conclusions

Over the next 30 years, development in and around the study area will lead to increased traffic on many of the roads in the study area. This increased traffic will lead to higher traffic noise for the residences adjacent to these roads by the year 2030 under both No Build and Build conditions.

Existing daytime L_{10} noise levels vary from 40 dB(A) in isolated areas away from existing traffic noise sources, to 66 dB(A) along CSAH 42. Increased traffic on CSAH 42, CSAH 16 and CSAH 18 by the year 2030 would result in 2030 No Build daytime L_{10} noise levels within the project area increasing by up to 18 dB(A) over existing noise levels. Construction of the proposed project would result in an eight dB(A) increase of L_{10} daytime noise levels over existing conditions in areas close to existing high volume roadways and up to 29 dBA in isolated areas currently not exposed to traffic noise. Nighttime noise levels would have similar increases.

Using Mn/DOT's cost effectiveness analysis methodology, noise barriers have been found to be cost effective at four receptors (R8, R10, R11, and R13). Based on these results, the County proposes noise mitigation in those areas where it has been found to be reasonable. In addition to cost effectiveness (economic reasonableness) other factors may influence the noise mitigation plan. These other factors include feasibility of constructing barriers. Feasibility relates to physical and engineering constraints such as access to right of way, the presence of utilities, and soil conditions. Additionally, the effectiveness of reducing noise impacts and reducing the view of traffic will be evaluated against the potentially negative visual impacts of these barriers on the neighborhood. Consultation with residents and municipalities will occur before any decisions are made regarding noise barriers and will be documented in the FEIS.

6.3 PRIME AND STATEWIDE IMPORTANT FARMLAND

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 on agricultural lands and operations are integrated into the decision-making process, and that impacts upon agricultural land are minimized to a reasonable extent. The study area

was evaluated to identify any soils classified by the Natural Resources Conservation Service (NRCS) as being prime and unique farmland or statewide and local important farmland. In addition, the study area was reviewed for land held under state and/or federal easement or protection programs.

6.3.1 Affected Environment

There are three farms adjacent to the project corridor. The Scott County NRCS office of the U.S. Department of Agriculture was contacted during early coordination to obtain information on the location of prime and unique and statewide and local important farmland in the county and to identify whether any lands within the study area were held under state and/or federal easement.

6.3.2 Environmental Consequences

No Build Alternative

The No Build Alternative will not affect any agricultural land in the study area.

Build Alternative

As noted in Section 5.2, the Build Alternative would acquire between 8.4 and 8.6 acres of agricultural land affecting three farming operations, depending upon which alignment south of CSAH 16 is chosen. There is no difference in impacts to farmland among the three design options for the CSAH 21/CSAH 18 intersection. The affected land is either under cultivation or retained as open space. No farm buildings would be removed. Right of way acquisition for the proposed project would segment two of the three affected farms. It appears that alternate access could be provided to the severed parcels. While the proposed project results in a reduction in total farm acreage and more circuitous access, these effects are not expected to substantially harm the viability of farm operations.

Scott County and the City of Shakopee have acquired a portion of a large farm, for use by the County as right of way for this project and for use by the City for a future community park, the Pike Lake Road project and a potential fire station. The balance of land from the farm was acquired by a development company and is being converted to residential use. The remaining farm properties affected by the project are planned for development within the local plan timeframe.

As identified in Section 6.3.1, the NRCS office, in 2005, was requested to provide assistance with the completion of the AD 1006 form (the Federal Farmland Conversion Impact Rating form used for proposed conversions of farmland to non-agricultural uses). According to the AD 1006 approximately 18 acres of prime or unique farmland would be impacted by the Build Alternative, see Appendix A for the AD 1006 results. This impact does not represent a substantial portion of farmland in Scott County. Note: since completion of the AD 1006 a large farm, as noted above, has been sold to a development company and is being converted to residential use over the next two years thus reducing the amount of farmland affected by the proposed project. In addition, there is a transition in land use occurring in the corridor with the current construction of 58 residential lots on land owned by the SMSC.

6.3.3 Mitigation

Mitigation for right of way impacts is discussed in Section 5.2.3. Where access to any properties severed by the project is substantially compromised, acquisition of the severed portion of the lot will occur or appropriate damages will be paid.

6.4 CONTAMINATED PROPERTIES

The presence of potentially contaminated properties is a concern in the development of highway projects because of potential cleanup costs and public health concerns associated with encountering unexpected wastes or contaminated soil or groundwater. Potentially contaminated sites were identified early during project development to avoid and/or minimize impact.

6.4.1 Affected Environment

A Phase I Environmental Site Assessment (ESA) of the study area was conducted in December 2003 in general conformance with the scope and limitations of ASTM Practice E 1527-00. The Phase I ESA categorized sites of potential concern into three risk areas: high, medium, and low environmental risk, defined in Table 6-10.

**TABLE 6-10
ENVIRONMENTAL RISK**

Environmental Risk	Definition
Low	<ul style="list-style-type: none">• Properties with known or inferred small or very small quantities of chemicals used or stored on-site
Medium	<ul style="list-style-type: none">• Properties within <1/8 mile from project corridor, which have had documented releases• Properties located adjacent to the corridor with risk potential based on historic land use
High	<ul style="list-style-type: none">• Properties which present strong indications suggesting environmental impacts• Properties reported to have documented releases

The Phase I ESA used the following methods in the analysis:

- Review of reasonably ascertainable and practically reviewable regulatory information published by state and federal agencies, health, and/or environmental agencies.
- A review of the history of the project corridor, including aerial photographs, fire insurance maps, directories, and other readily available corridor development data.
- A reconnaissance and environmental review of the project corridor, including an assessment of the area for indications of hazardous materials, petroleum products, polychlorinated biphenyls, wells, storage tanks, solid waste disposal, pits and sumps, and utilities.

- An area reconnaissance including a brief review of adjacent property uses and any pertinent environmental information noted in the project corridor vicinity.
- Interviews with current owners and/or occupants of the property.
- Interviews with local government officials or agencies having jurisdiction over hazardous waste disposal or other environmental matters in the area of the corridor.

The Phase I ESA identified three known or potentially contaminated properties near the project corridor. Figure 6-2 shows the location of these three sites. Each identified property was rated as having high, medium, or low potential for contamination (as defined in Table 6-10). Two of these sites were identified as having a low environmental risk and one site was identified as having medium environmental risk. No properties were identified as having a high environmental risk. Potentially contaminated properties are as follows:

- An underground storage tank (UST) at 1575 County Road 18 with low environmental risk based on no evidence of soil and/or groundwater contamination.
- A hazardous waste generator located at 1513 County Rd 18 with low environmental risk based on no evidence of soil and/or groundwater contamination.
- A MPCA Voluntary Investigative Cleanup (VIC) at 1410 County Road 18 with medium environmental risk due to a documented release and current, or historical, land use. According to the County, this site was capped as part of the development of the Southbridge residential development.

In addition, the Scott County Environmental Health Department identified an old dump site that received street sweepings, yard waste and other deposits located in the southwest quadrant of the proposed CSAH 21/CSAH 16 intersection. The actual extent of disposal at this site is unknown. See Figure 6-2.

6.4.2 Environmental Consequences

No Build Alternative

Because the No Build Alternative would not involve new construction, it would not have impacts on potentially contaminated sites.

Build Alternative

The Build Alternative (including the three design options) will have no impact on any of the sites identified in the Phase I ESA, however, it will affect the dump site identified by Scott County Environmental Health Department. The dump site is in the area where the planned transit station and proposed ponding site are located. The dump site has been identified as a potential pond site.

6.4.3 Mitigation

There are no sites within the project area that have been identified as having a high potential for contamination. It is recognized that the dump site will need to be investigated prior to construction.

If contamination is found, the problem will be reported to the MPCA. If any necessary cleanup of the site is not completed prior to acquisition, the County will evaluate costs and cleanup methods for the site. If the cleanup costs and method(s) are determined to be acceptable, the County will undertake necessary actions to complete the cleanup as required by the MPCA.

Once further investigation of the dump site is completed, it will be determined whether the potential pond should be lined to avoid groundwater impacts. Refer to Section 7.5 for additional discussion.

6.5 VEGETATION, WILDLIFE, AND FISHERIES

6.5.1 Affected Environment

6.5.1.1 Vegetation

The project corridor contains forests, wetlands, grasslands, and farmlands.

In the southern portion of the project corridor (i.e., south of CSAH 16), primary types of vegetation include cultivated and pastured farm fields and a stand of maple-basswood oak forest on the YMCA camp property and the SMSC-owned land. This forest is characterized by a closed canopy of trees dominated by sugar maples of various sizes, many larger than 10 inches. Aside from the southernmost area of the project corridor (near CSAH 42), the maple-basswood forests in the project area appear healthy. The shrub layer is absent or sparse and invasive species such as buckthorn and prickly ash are not present. The oak forests in the project area are mixed deciduous forest dominated by oaks, with lesser amounts of ash and elms. These forests generally show signs of degradation such as an overgrown understory shrub layer dominated by buckthorn.

In the northern portion of the project corridor there are stands of oak forest on the ridge just north of CSAH 16. Adjacent to the Southbridge residential development is a wooded/wetland area with oak trees and non-native wetland grasses. This area, approximately 40 acres, has been designated by the DNR as a Regionally Significant Ecological Area (RSEA). This designation is given to areas that have been found to have intact native plant communities or native animal habitat and that provide ecological functions such as connectivity, habitat and biological diversity (see Figure 6-3). RSEAs are not granted any special protections.

Grasslands in the project area are located primarily south of CSAH 16, and are used as hayfields and pasture land. Consequently, the grasslands have low vegetative diversity and are dominated by pasture grasses.

Wetland vegetation is discussed in Section 7.6.

According to the DNR in a letter dated November 10, 2003, the northern portion of the proposed extension passes through an area identified by the Minnesota County Biological Survey as a "Site of High Biodiversity Significance" (see Figure 6-3). Natural communities occurring in this area are: Dry Oak Savanna, Dry Prairie, Oak Woodland-Brushland, Emergent Marsh and Rhombic-Petaled Evening primrose (*Oenothera rhombipetala*). It is not anticipated that the project will have a direct impact on species of concern found in the area. Refer to Section 6.6 for additional discussion.

The SMSC has been inventorying tribally-owned lands using the Minnesota Land Cover Classification System (MLCCS), as developed by the DNR. This system seeks to define habitats based on vegetation type, soil type, amount of impervious area, and other natural resource indices. Under the MLCCS, the forest in the southern portion of the project area is designated as a maple-basswood forest, with pre-settlement conditions. SMSC staff indicated that the maple-basswood habitat had the potential to contain some state-listed rare or significant plant species, (species that are or are likely to be in danger of extinction, or that deserve special monitoring in Minnesota) because of its relatively undisturbed quality. As discussed in Section 6.6, to date no state or federal- listed plant species have been found in either the SMSC property or the adjacent YMCA property. However, several species of trillium have been found scattered throughout the forest. Trillium are found in the interior, or core, areas of forests, and their presence indicates intact, undisturbed tracts of relatively dense woods.

The size of the forest core can be an important indicator of habitat health and diversity for plants. The DNR, when developing the ecological models used to define their RSEAs within the seven county metropolitan area, defines the forest core as the interior that is at least 394 feet from the dense forest edge. Large areas of forest core are important for many types of vegetation because they protect them from edge effects. Edge effects for plants include intrusion by weedy, invasive species that out-compete native species. The forest core within the maple-basswood forest is calculated to be 20 acres in size based on mapping methodology that has been approved by the DNR as well as natural resource staff from SMSC. From east to west, the forest core is approximately 1,700 feet wide at the southern edge. From north to south, the direction where the proposed alignment would cross, its narrowest segment is approximately 120 feet wide on the western side; the widest swath of core is approximately 950 feet wide in the middle of the core segment.

6.5.1.2 Wildlife and Fisheries

The forests, wetlands, grasslands and farmland noted in Section 3.1.5.1, provide habitat for wildlife. Native plant communities in the project corridor are shown on Figure 6-3.

The maple/basswood forest in the southern portion of the project area is home for several animals including deer, squirrels and many songbirds. Cooper's hawks have also been sighted in this area. The maple-basswood forest is adjacent to wetlands in the project area and can provide habitat to amphibians and reptiles that are dependent on both wetland and upland habitat.

The 20-acre maple-basswood forest core (discussed in the above section) is also an important resource for wildlife. Large areas of core can protect animals from edge effects such as increased predation on offspring that can occur with habitat fragmentation.

Agency resource staff has identified the forested bluff area as a wildlife corridor. Wildlife corridors are generally linear habitats within relatively developed land (i.e., forest strips in between farmed fields, or riparian wetlands in between commercial developments) that connect two or more larger blocks of habitat. They are important to wildlife because they provide access to resources (such as food in one area and nesting sites in another) in the larger blocks of habitat that would otherwise be cut off by intervening development.

Oak forest throughout the project area can provide habitat to wildlife species such as songbirds, deer and other small mammals.

The SMSC staff has completed four years of a five year breeding bird atlas study on the SMSC property in the project corridor. The SMSC staff has also conducted one year of study in the adjacent YMCA property. Consultation with SMSC staff indicated that no bird species listed by the DNR as threatened, endangered, or of special concern (species that are or are likely to be in danger of extinction, or that deserve special monitoring in Minnesota) have been identified in the forest on these properties.

Wetlands in the project area can provide habitat to waterfowl, reptiles, and amphibians. Wetlands that provide suitable wildlife habitat are usually located adjacent to undisturbed uplands, have diverse flora communities and have varied hydrologic regimes. The Prior Lake outlet channel (and any associated wetlands) that runs from Pike Lake to Dean Lake likely serves as a wildlife corridor, as it connects the wetland habitat associated with Dean Lake with upland forests.

Grasslands in the project area are primarily pasture grasses, considered to have degraded habitat value. However, they may provide habitat to small mammals such as mice, voles and gophers.

Fisheries near the project corridor include Prior Lake (crappies, sunfish, northern pike, walleye, bullhead, and perch), Pike Lake (perch and bullheads), Eagle Creek (trout), the Minnesota River, and Dean Lake. Although Dean Lake is a relatively shallow, marshy lake and cannot support overwintering fish populations, it is connected to Pike Lake, which in turn is connected to Prior Lake. Staff of the DNR indicated that fish populations from Prior and Pike Lakes migrate seasonally into Dean Lake. Therefore the system of channels connecting these waterbodies is an important fisheries resource because the system provides access to additional habitat, food sources, and potential breeding grounds.

6.5.2 Environmental Consequences

No Build Alternative

Under the No Build Alternative there would be no impacts to vegetation, wildlife habitat, or fisheries.

Build Alternative

Impacts of the Build Alternative would result in the conversion of vegetated areas to impervious surfaces and grassed medians within the roadway and transit station right of way.

Approximately 22 acres of the RSEA by Dean Lake will be impacted by the Build Alternative. The Build Alternative -western alignment option will impact approximately 23.6 acres of forest of which 0.8 acres has been determined to be maple-basswood forest core (as described in Section 6.5.1). The eastern alignment option will impact approximately 22.8 acres of forest of which 2.3 acres has been determined to be maple-basswood forest core. In addition to this direct impact on wildlife habitat, construction of the Build Alternative would potentially create a barrier to wildlife movement, especially in the wildlife corridors discussed in

Section 6.5.1.2. The potential for impacts to threatened and endangered species is discussed in Section 6.6. Impacts to wetland habitat are described in Section 7.6. Construction of the Build Alternative would cross the channel connecting Dean Lake with Pike Lake, which is used as a seasonal travel route for migrating fish.

6.5.3 Mitigation

The Build Alternative alignment has been located to minimize impacts to vegetation and wildlife habitat by following existing topography and by utilizing an urban section that minimizes the construction limits. In the southern portion of the project area, the alignment was designed to curve east to avoid impact to the DNR wetland just north of the CSAH 21/CSAH 42 intersection and then to curve west to minimize impacts to forested area generally and, in particular, the core of the maple-basswood forest.

In the northern portion of the project area, where the corridor turns into an east-west alignment (between Southbridge Parkway West and CSAH 18), the Build alignment is placed to the south edge of the existing right of way in order to preserve trees that are located along the northern portion of the right of way. Impacts to the RSEA in this area are minimized by creating a perpendicular crossing at a narrow point and skirting the northern edge.

Where impacts to vegetation and wildlife are unavoidable, the effect of the impacts will be minimized through design features. Trees removed as part of the project will be replaced in accordance with applicable Prior Lake and Shakopee City ordinances. Disturbed areas would be re-vegetated with native plants and land in the right of way would be managed to have diverse grassy vegetation with trees and shrubs outside the required roadway clear zone. To minimize wildlife/vehicular conflicts in the upper bluff wildlife corridor, a fence could be constructed along the right of way. Two grade-separated wildlife crossings would be incorporated into this project: a large one along the northern edge of the maple-basswood forest, and a smaller one along the base of the northern oak forest that borders the wetland corridor southeast of Dean Lake. These locations were chosen as crossing points because they are in corridors of likely wildlife movement, i.e., at the base of bluffs along the forest edge where wildlife can easily travel and be near cover.

The wildlife crossing adjacent to the maple-basswood forest would be designed according to the standards described in the USDA Forest Service's Wildlife Crossing Toolkit. The underpass crossing would be approximately 185 feet long; the opening would be wide enough (25 feet wide and 10 feet tall) to avoid a "tunnel effect" that could discourage wildlife from entering. Precast concrete long span arches would be used, and as noted above, fencing along the right of way 1,000 feet to either side of the crossing would be constructed in order to funnel wildlife toward the safe crossing. Small mammals, reptiles, and larger mammals such as deer would be able to use the crossing in this area.

The crossing located south of the Dean Lake wetland complex is much longer (almost twice as long) than the southern crossing. It would be impractical in this site to conform exactly to the recommendations for the ratio of length to width of opening. The box culvert would be 12 feet wide by 10 feet tall, and would incorporate a pedestrian trail to link the forest and the proposed park use on the western side of the road to proposed residential land uses on the east. With such a relatively long underpass, it is possible that wildlife such as deer may be hesitant to use this corridor. However, it would still be an important safe crossing opportunity for smaller wildlife.

To mitigate the potential impact of the proposed project on fisheries and other wetland habitat, best management practices (BMPs) will be implemented during construction to control erosion and sediment discharge to water bodies. As described in Section 7.2, permanent stormwater treatment would be included in project design, to avoid long-term impacts to water quality. The crossing of the Prior Lake channel southeast of Dean Lake would be designed to facilitate continued seasonal fish migration through the channel. If necessary, a culvert could be designed to slow flow and create pools to provide resting sites for fish as they swim through. The details will be determined during final design and coordination with appropriate agencies will occur.

As outlined in Section 7.6, impacts to wetlands would be mitigated through creation of new wetlands.

6.6 STATE AND FEDERAL THREATENED AND ENDANGERED SPECIES

6.6.1 Regulatory Overview

This section provides a summary of the presence of threatened and endangered species of plants, animals and aquatic species and their habitat in the study area and regulatory protection of these resources.

6.6.1.1 The Federal Endangered Species Act

The Federal Endangered Species Act was passed into law in 1973. The Act provides broad protection for species of animals and plants that are listed as threatened or endangered in the U.S. or elsewhere. Provisions include granting the Secretary of the Interior authorization to develop and implement recovery plans and the designation of critical habitat for each listed species. The Act outlines procedures for federal agencies to follow when taking actions that may jeopardize listed species and contains exceptions and exemptions.

6.6.1.2 State Endangered Species Act of 1974

Efforts by the federal government to recognize and protect endangered species through legislation were followed in many cases by supportive legislation at the state level. In Minnesota, the state legislature passed the State Endangered Species Act of 1974. The Act states that a species' range in Minnesota should be a factor in determining its status. This statement legally guarantees that a list be developed and maintained specifically for species experiencing problems in Minnesota regardless of their national status. The DNR, in conjunction with other plant and animal experts, developed the state list of endangered, threatened and special concern species.

6.6.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 is the domestic law that implements the United States' commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource. The MBTA was originally framed to put an end to commercial trade in birds and their feathers. The Act regulates hunting, killing, taking or commerce in any part, nest, or egg of selected birds unless permitted by license or regulations. The Act includes a list of protected species as well as provisions for fines/penalties for illegal takes.

6.6.1.4 Implementation

The United States Fish and Wildlife Service (USFWS) is responsible for review and consultation regarding actions that could potentially impact federally listed threatened and endangered species. Section 7 of the federal Endangered Species Act offers guidelines for interagency coordination that are used when a project may affect a federally protected species. Through this coordination, the USFWS issues guidance and thresholds for determining avoidance and minimization strategies for particular species (e.g., bald eagle nest protection zones).

The Minnesota endangered species program is coordinated and enforced through the DNR. Initial project coordination is typically accomplished through a review of the Natural Heritage Information System database. If needed, follow-up coordination with DNR or other agency staff is performed.

The U.S. Department of the Interior is responsible for enforcement of the MBTA. Section 704 of the MBTA states that the Secretary of the Interior is authorized and directed to determine if, and by what means, the take of migratory birds should be allowed and to adopt suitable regulations permitting and governing take.

6.6.2 Affected Environment

The DNR Natural Heritage Program and USFWS were consulted to evaluate whether rare or endangered species are present in the study area.

According to the DNR in a letter dated November 10, 2003, the northern portion of the proposed extension passes through an area identified by the Minnesota County Biological Survey as a “Site of High Biodiversity Significance”, which are areas with varying levels of native biodiversity that may contain high quality native plant communities, rare plants, rare animals, and/or animal aggregations (see Figure 6-3). Natural communities occurring in this area are: Dry Oak Savanna, Dry Prairie, Oak Woodland-Brushland, and Emergent Marsh. Several special concern species including Rhombic-Petaled Evening primrose (*Oenothera rhombipetala*), Plains Pocket Mouse (*Perognathus flavescens*), and the Gopher Snake (*Pituophis catenifer*) have been documented in the project area. The DNR confirmed this information in a letter dated May 10, 2005.

The USFWS, in a letter dated September 4, 2002, determined that given the location and type of activity proposed, the project is not likely to adversely affect any federally listed or proposed threatened or endangered species or adversely modify their critical habitat. That determination by the USFWS was updated in correspondence dated July, 20, 2005. (See Appendix A)

6.6.3 Environmental Consequences

No Build Alternative

The No Build Alternative proposes no new construction and will not adversely affect any state or federal threatened or endangered species.

Build Alternative

The Build Alternative will affect wetland habitat in the southern portion of the project corridor and the northern portion near Dean Lake. According to the DNR in a letter dated November 10, 2003, the proposed project will avoid most of the natural communities with the exception of the emergent marsh community. It is not anticipated that the project will have a direct impact on species of concern found in the area, Plains Pocket Mouse (*Perognathus flavescens*), Gopher Snake (*Pituophis catenifer*), or Rhombic-Petaled Evening primrose (*Oenothera rhombipetala*). The DNR confirmed this finding in a letter dated May 10, 2005. Potential indirect impacts to other natural communities may include isolation/fragmentation as a result of the new roadway (i.e., a potential barrier). Additionally, the potential for introduction of invasive species may be an indirect effect. Construction equipment brought from other project sites have the potential to carry invasive species. Refer to Section 9.2.2 for additional discussion of invasive species.

6.6.4 Mitigation

Measures to avoid impacts to the emergent marsh community in the project area have been incorporated during preliminary design. No other direct impacts are anticipated to result; however, if during construction protected plant or animal species are discovered, measures will be taken to avoid, minimize or alleviate the impact.

BMPs will be implemented during construction to minimize disturbance to the project area. Vehicular disturbance will be minimized and materials will not be stockpiled in the area, if possible. Erosion control measures such as silt fences, straw bales and/or other BMPs will be used to reduce runoff during construction. Revegetation of disturbed soil will be done as soon after construction as possible to reduce erosion and runoff and decrease the opportunity for invasion by exotic species. Other measures, such as proper construction equipment cleaning before entering the project area will also be implemented to decrease the opportunity for exotic species.

6.7 VISUAL IMPACTS

This section examines the existing visual environment in the study area, who would be affected by visual changes, what visual impacts would result from implementation of a No Build or Build Alternative and the possible mitigation measures.

6.7.1 Affected Environment

6.7.1.1 Visual Elements

This section describes the existing visual elements in the vicinity of the project corridor. The visual elements of the study area can be divided into two groups: natural and cultural, which together combine to create the visual landscapes affected by the proposed project.

The natural environment is composed of those visual elements not constructed by humans. Natural elements within the project corridor include the maple-basswood and oak forests,

grasslands, wetlands and lakes (Dean Lake and Pike Lake). The cultural environment includes those visual elements that are the result of human modification of the natural landscape or construction activities such as clearing and grading for agriculture (i.e., the farms north and south of CSAH 16) and construction of homes, businesses and existing roadways (particularly the Southbridge area).

Together the natural and cultural environments combine to create a general rural landscape in the southern project area, dominated by agricultural and rural residential cultural elements such as pastures, fields, barns, and houses, and wooded river bluffs, and a suburban landscape in the northernmost portion of the project area. The project area has and will continue to change to a more suburban landscape as development progresses. Land use plans for the project area include low to medium density residential development and potential community park development.

6.7.1.2 Affected Viewers

Viewers are those persons who experience the natural and cultural visual elements of the study area. Two groups of viewers have been identified. The first, *neighbors*, includes residents, farmers and employees and patrons of commercial businesses adjacent to the corridor. This category of viewers also includes YMCA campers, Red Oak Elementary School students and staff, and users of any parks or trails (existing and future) in the area. The second group, *travelers*, includes local travelers using the roadway for short trips, regional travelers using the roadway system for commercial and commuting purposes and recreational travelers traveling to and through the area.

6.7.2 Environmental Consequences

No Build Alternative

The No Build Alternative proposes no new construction and therefore, results in no visual impacts.

Build Alternative

The Build Alternative will introduce views of pavement and traffic to the visual setting for neighbors (where those views are not buffered by landscaping). In addition, the project will introduce views of the transit station, bike racks, bike lockers and lighting. Views of the roadway will be partially screened from residents at Southbridge by trees located within the City-owned buffer strip between the rear lot lines and the existing right of way, as well as trees that can be preserved along the right of way. Headlights from northbound traffic may be visible from selected locations within the Southbridge development, which is at a lower elevation than proposed CSAH 21 to the south. The transit station will provide landscaped buffers.

Travelers' views along existing roadways will include new intersections at CSAH 21/CSAH 42, CSAH 21/CSAH 16, and CSAH 21/CSAH 18. Travelers along the new roadway in the southern project corridor will have views of agricultural uses, the developing SMSC East Village subdivision, and undeveloped land. In the northern project corridor near the Southbridge development, travelers on CSAH 21 will have limited views of homes, where they are not screened from view by trees or other landscaping. As travelers approach CSAH 18, they will have views of commercial development and traffic along the existing roadways.

The construction of the proposed roadway will change the landscape by grading and introduction of pavement and other structural roadway features through currently undisturbed and wooded bluffs and farm fields. While the urban design proposed for the Build Alternative may be less visually compatible than rural design with the existing rural landscape, the proposed design will not be inconsistent with the future plans for much of the area, which anticipate suburban development.

The four-lane interchange option will bridge CSAH 21 over CSAH 18 and will be 27 feet above the current elevation of CSAH 18. This option, which includes 26-foot high retaining walls, will be more visible to adjacent neighbors (including Red Oak Elementary School) than the two at-grade intersection options. The six-lane at-grade intersection option will have more pavement and therefore greater visual impact than the four-lane at-grade intersection option.

6.7.3 Mitigation

The visual effect is mitigated in part by design and alignment features selected to minimize the cross section (i.e., urban design) and maximize the buffer between residential lots and the roadway on the north end. It is also mitigated by the provision of a grassy median and landscaping.

6.8 PARKS AND TRAILS

6.8.1 Affected Environment

6.8.1.1 Parkland

The closest existing parkland to the proposed project is owned by the City of Shakopee and is located west of the proposed roadway alignment. The land includes Dean Lake and surrounding open space. This parkland is largely undeveloped. There is one neighborhood park in the Southbridge development, which is developed with amenities that include picnic area and play area. The strip of land owned by the City of Shakopee along the south edge of Southbridge is not designated as parkland.

Within the Southbridge residential development there are several small parcels of public land that are planned to be maintained as natural open space, with amenities such as trail access, benches, and picnic tables. According to the *Deans Lake Area Park, Open Space, and Trail Master Plan*, a 50-acre neighborhood park preserve is also planned on the northern edge of Southbridge just south of TH 169, with amenities such as trails, a nature interpretive area, a play area, and basketball and tennis courts.

As noted in Section 5.1.1.3, the City of Shakopee is in the process of acquiring land near the intersection of the proposed CSAH 21 and CSAH 16 for development as a community park.

6.8.1.2 Trails

Section 4.5 describes future plans for pedestrian and bicycle trails in the area.

The closest existing trails are located along CSAH 42 and CSAH 21 in the City of Prior Lake. The CSAH 42 trail extends from CSAH 83 to the eastern limit of the county. The CSAH 21 trail extends from the eastern border of the County to CSAH 42.

Trails are planned within the Southbridge development to provide access from individual neighborhoods to open spaces and parks. The *Deans Lake Area Park, Open Space, and Trail Master Plan* calls for trails along Southbridge Parkway and the CSAH 21 extension as well as along CSAH 16. Future plans include connecting the Southbridge trails to other proposed city trails.

Trails exist within the YMCA Camp, but are not available for public use.

6.8.2 Environmental Consequences

No Build Alternative

The No Build Alternative proposes no new construction and will not affect any parks, trails, or recreational areas. It may result in missed opportunity to achieve local and county plan objectives to expand trail opportunities in the area.

Build Alternative

The Build Alternative has no direct impact on any existing public parks, trails, or recreation areas. The western alignment option impacts a trail within the YMCA Camp. As noted, the proposed roadway will include a trail that will provide the opportunity for connections from the existing trails along CSAH 42 and CSAH 21 in Prior Lake to proposed trails at Dean Lake and the planned trails in the Southbridge development in Shakopee. In addition, there has been discussion of the potential development of a greenway trail along the Prior Lake outlet channel. A grade-separated pedestrian crossing (underpass) is also planned north of CSAH 16.

Noise impacts to the future park were analyzed as discussed in Section 6.2. The nearest receptor to the proposed park in the northwest quadrant of the CSAH 21/CSAH 16 intersection is R12. Because this area is adjacent to an existing roadway, CSAH 16, noise levels under 2030 Build conditions would be only one decibel higher than existing noise levels.

6.9 GEOLOGY AND SOILS

6.9.1 Affected Environment

Information presented in this section was taken from: the Scott County Ground Water Protection Plan adopted March 22, 1999; the Soil Survey for Scott County issued in October 1959; and the Geologic Atlas for Scott County prepared by the University of Minnesota in 1982.

The project corridor is characterized by unconsolidated sedimentary deposits including till deposits, outwash deposits, middle-terrace deposits, peat deposits, lower-terrace deposits, and dune sediment deposits. Surficial deposits range in thickness from roughly 40 feet to almost 500 feet over a buried river channel. The upper most bedrock unit in the vicinity of the project corridor is the Prairie Du Chien Group. The regional groundwater flow direction within the unconsolidated deposits is generally north to the Minnesota River and the depth to bedrock ranges from 40 to 500 feet.

The soil complexes in the northern portion of the project corridor include the Hubbard, Estherville, Waukegan, and Zimmerman. As a soil association these soils tend to be level to gently sloping loamy and sandy soils. Other than in wetland areas, this area generally has high infiltration and water transmission rates resulting in low runoff potential. In the southern portion of the project corridor, soil complexes include loamy and sandy soils such as Burnsville, Hayden, Kingsley, and Scandia. In general, this area has moderate infiltration and water transmission rates.

Steep slopes, greater than 10 percent grade, are located along both the lower (just north of CSAH 16) and upper bluff areas (the area northwest of Pike Lake).

Soil borings were performed at 11 locations between the proposed CSAH 21/CSAH 18 and CSAH 21/CSAH 16 intersections. The results document that a majority of this area is characterized by poorly graded sand with silt. Those borings performed in areas within or adjacent to delineated wetland areas encountered peat, in some cases up to 14 feet deep, above the poorly graded sand with silt. Groundwater was observed between two feet and 14 feet along this portion of the proposed project area. The most westerly soil boring encountered bedrock at 10.5 feet (just northeast of the proposed CSAH 21/CSAH 16 intersection).

6.9.2 Environmental Consequences

No Build Alternative

The No Build Alternative proposes no new construction and there would be no impact to soils in the project area.

Build Alternative

The Build Alternative proposes to construct the CSAH 21 extension through the areas of steep slopes. Potential impacts include erosion issues in the bluff areas, impacts to groundwater, and impacts of construction on soils in the northern portion of the study area. Table 6-11 lists the approximate excavation and fill (or borrow) quantities anticipated for the Build Alternative with each of the three CSAH 21/CSAH 18 intersection design options.

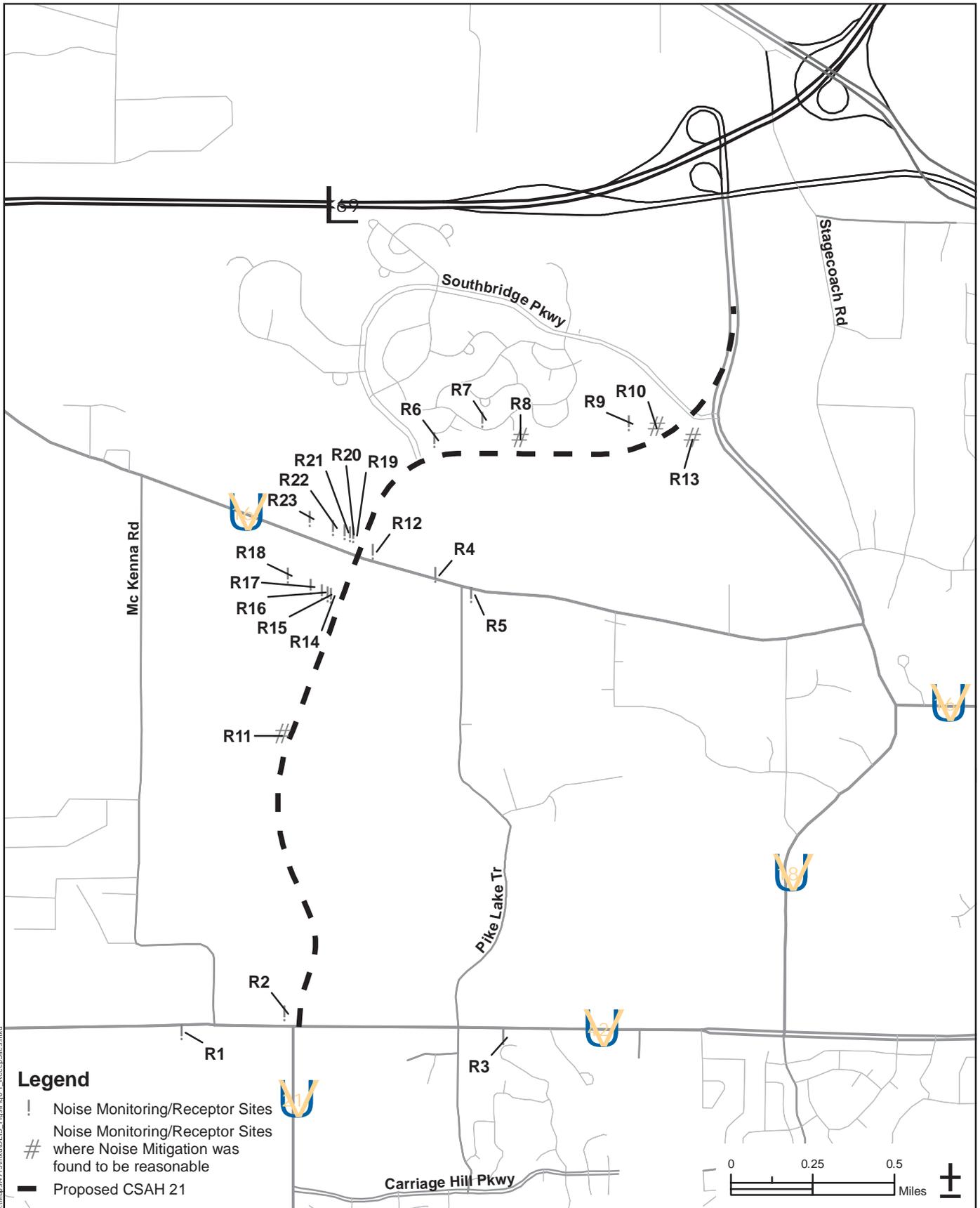
**TABLE 6-11
EXCAVATION AND FILL QUANTITIES**

	Build Alternative With Four-lane At-grade Intersection at CSAH 21/CSAH 18	Build Alternative With Six-lane At-grade Intersection at CSAH 21/CSAH 18	Build Alternative With Four-lane Interchange at CSAH 21/CSAH 18
Excavation (Cubic Yards)	378,800/515,800 Western Align/Eastern Align	385,000	482,500
Fill/Borrow (Cubic Yards)	591,700/40,000 Western Align/Eastern Align	596,000	197,000

6.9.3 Mitigation

During the design process the minimization of impact to topography and landscape were considered. As noted in Section 3.1.5.1, the existing roadway alignment was selected to follow the existing topography and minimize the need for grading.

During construction, BMPs will be used to minimize the impacts of erosion and sedimentation resulting from grading of the project area.



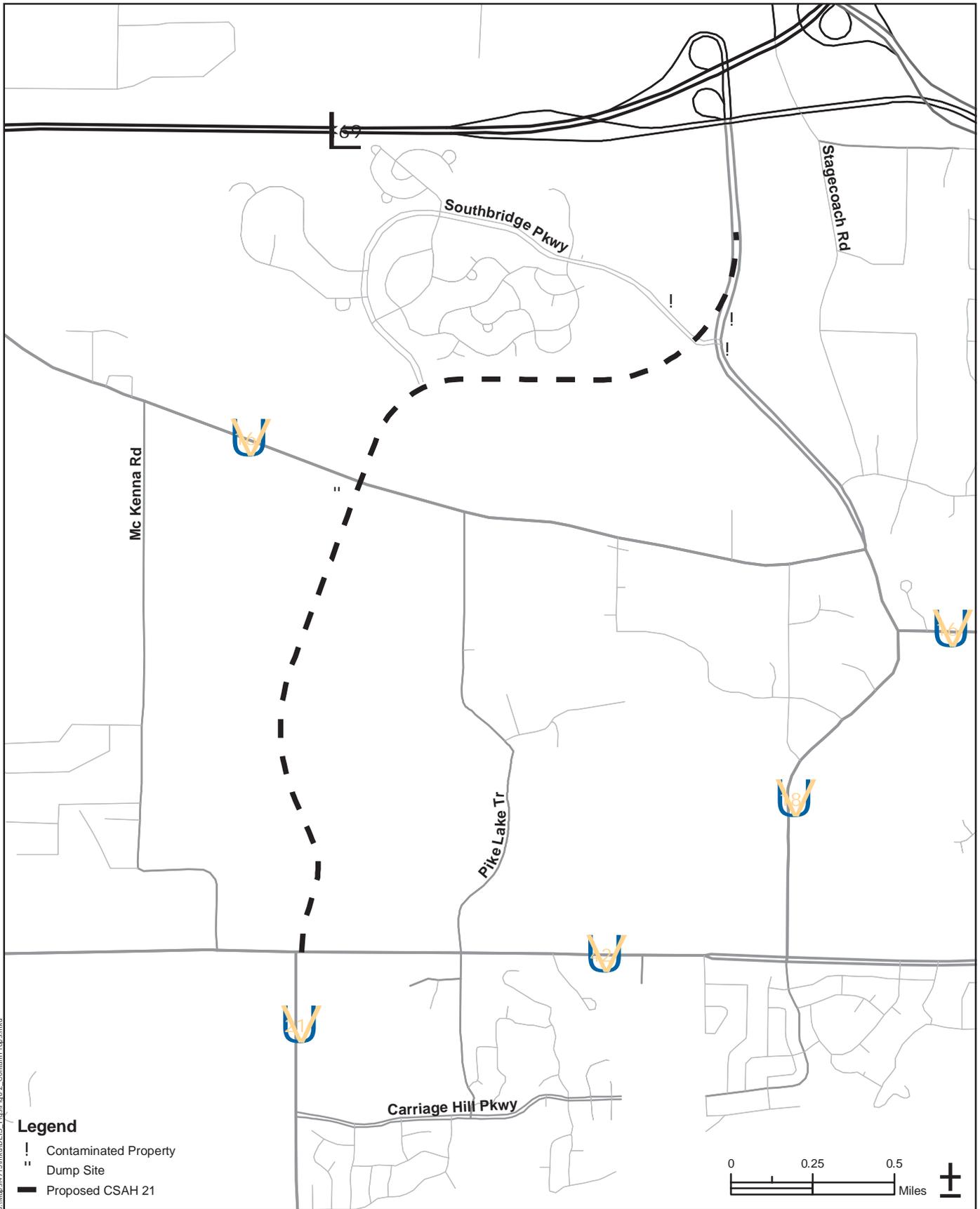
NOISE MONITORING / RECEPTOR SITES

Figure 6-1

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT

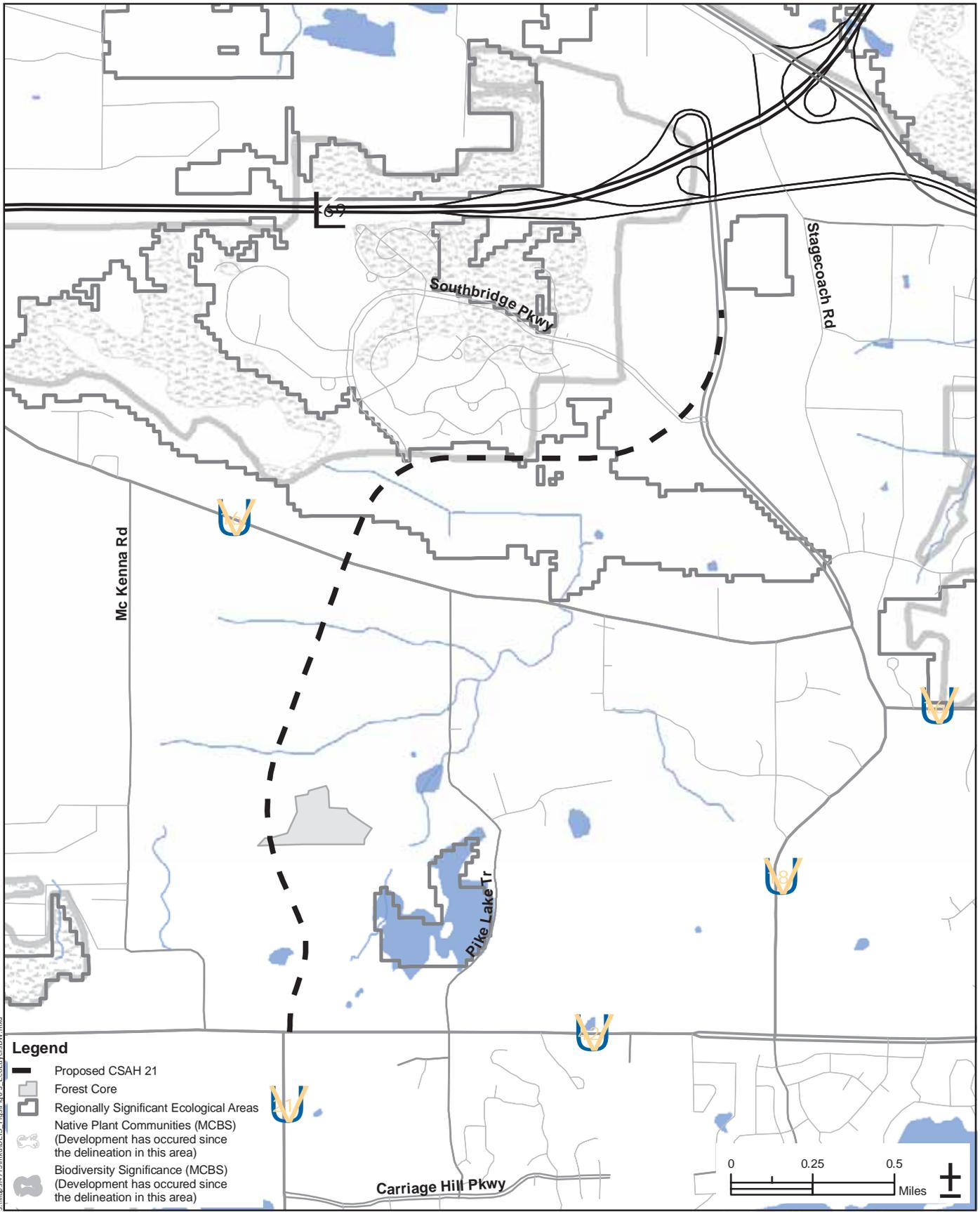
Scott County, Minnesota

08/16/05



CONTAMINATED PROPERTIES AND DUMP SITE

Figure 6-2



NATURAL RESOURCE AREAS

Figure 6-3

7.0 WATER RESOURCES

The following sections describe the surface and groundwater water resources of the project area and the potential impacts on these resources that could result from the Build Alternative. Further, based on applicable rules and regulations, this chapter outlines the effects the proposed project will have on the environment, the environmental consequences of these effects, and what mitigation will be necessary to comply with the stated rules and regulations. Where relevant, measures that could mitigate possible impacts are also discussed.

7.1 INTRODUCTION

Stormwater runoff from the southern three-fourths of the proposed project will drain towards Dean Lake, while the northern fourth of the project will drain towards Eagle Creek. Ultimately, according to the Lower Minnesota River Watershed District (LMRWD) *Water Management Plan* (September, 1999), all of the project runoff enters the Minnesota River, which drains an area of 16,900 square miles prior to its confluence with the Mississippi River. The total area within the construction limits for this project is roughly 93 to 103 acres (depending on the CSAH 21/CSAH 18 intersection option).

The topography of the project area varies dramatically from flat, low wet areas to steep wooded terrain. The project area is in close proximity to Pike Lake, Dean Lake, Eagle Creek, and the proposed alignment crosses the Prior Lake and the Blue Lake Channels in Shakopee. The corridor traverses agricultural land, wetlands, and forested areas and borders a residential/commercial development (within the City of Shakopee) at the north end. In addition, the proposed alignment will cross a 35-acre (based on the delineation of the wetland on the former Shutrop property, see Section 7.6) wetland complex on the east side of Dean Lake, which has an area of 216 acres. Note that the total project area affecting Dean Lake within the construction limits is roughly 65 acres.

7.1.1 Regulatory Environment

The regulatory environment for water resources surrounding the proposed project is based on the rules of the following regulatory agencies (see Figure 7-1 for a representation of agency regulatory boundaries within the study area):

- Scott Watershed Management Organization (SWMO)
- City of Prior Lake
- City of Shakopee
- Lower Minnesota River Watershed District (LMRWD)
- Prior Lake-Spring Lake Watershed District (PLSLWD)
- Minnesota Pollution Control Agency via the National Pollutant Discharge Elimination System - State Disposal System (NPDES-SDS)

Each of these governing bodies has varying rules and regulations, which are typically based on the receiving water body, for the following standards:

- Wetlands/Protected Waters
- Water Quality
- Water Quantity
- Best Management Practices
- Pond Design/Outlet Structure Design
- Floodplains
- Erosion Control
- Storm Sewer and Culvert Crossings

To ensure that adequate construction limits and right of way requirements are set, this project will attempt to meet the most stringent of the various criteria in all cases. It should be noted that the SWMO does not have regulatory authority within incorporated areas. However, all cities within Scott County were required to come into compliance with the *SWMO Rules* (May 2005) by February 2006.

Table 7-1 provides a summary of the specific regulatory framework surrounding the proposed project. The rules and regulations that apply to the proposed project concerning each of the standards listed above will be defined for the proposed project as applicable.

7.2 SURFACE WATER QUANTITY

7.2.1 Affected Environment

There are multiple channel crossings, various wetlands and lakes within the project corridor. Identification of the surface water resources was based on a review of aerial photography, U.S. Geological Survey (USGS) maps, Minnesota Department of Natural Resources (DNR) public waters maps, and field investigations.

Existing land uses along the project corridor consist of agriculture, wooded areas, intermittent streams that normally run dry except during spring snowmelt and precipitation, wetlands, lakes, and roadways that cross the proposed alignment. The southern three-fourths of the stormwater runoff will drain towards Dean Lake (primarily via the Prior Lake outlet channel). The northern fourth of the project will drain towards Eagle Creek (see Figure 7-1).

Four primary drainage areas influence the water resource aspects of this project. The southernmost drainage area is the Pike Lake subwatershed, which encompasses 2.20 square miles. The drainage from the southern 0.5-mile portion of the project will make its way to Pike Lake after being treated. Pike Lake discharges ultimately to Dean Lake via the Prior Lake outlet channel. The Dean Lake drainage area (2.93 square miles) will be directly affected by this project, as the proposed roadway will cut through the eastern portion of the lake's adjacent wetland. In addition, this subwatershed will receive the majority of the stormwater runoff generated from the project area. To the east and north of the Dean Lake subwatershed is the Rice Lake East subwatershed covering approximately 1.8 square miles. Approximately 0.25 miles of the project corridor falls within the Rice Lake East drainage area. The northernmost drainage area is Eagle Creek, which is 1.24 square miles in size. Eagle Creek ultimately discharges to Rice Lake. Drainage from this project will flow to Eagle Creek after it has been treated by various proposed and existing BMPs.

**TABLE 7-1
WATER RESOURCES REGULATORY FRAMEWORK FOR CSAH 21**

CRITERIA	SOURCE
<p>Water Quality</p> <p><u>Wet detention basins:</u></p> <ol style="list-style-type: none"> 1. Sediment basins must be used on all drainage areas over 5 acres. 2. Dead storage > runoff from the 2.5-inch storm event 3. 60-percent total phosphorus removal <p><u>Outlet Structures:</u></p> <ol style="list-style-type: none"> 1. Skim up to the 5-year storm event. Skimming velocities < 0.5 fps. 2. Outlet velocities < 4 fps. 	<ol style="list-style-type: none"> 1. Shakopee 2. Prior Lake and PLSLWD 3. Prior Lake and PLSLWD <ol style="list-style-type: none"> 1. Shakopee and LMRWD 2. LMRWD
<p>Water Quantity</p> <p><u>Runoff rates:</u></p> <ol style="list-style-type: none"> 1. Match existing rates for the 2-year, 10-year, and 100-year storm events. 2. Storage facilities should accommodate the 100-year storm event. 3. New developments within the Blue Lake Drainage System have a maximum allowable peak discharge of 0.10 CFS per acre in the 100-year storm and should attempt to limit the 10-year peak discharge to 0.05 CFS per acre. <p>Volume reduction is a goal and will be used to the extent practical and feasible.</p> <p>Analyze the impact to the downstream systems due to the proposed runoff rates and volumes.</p>	<ol style="list-style-type: none"> 1. SWMO, Prior Lake and PLSLWD 2. Shakopee and LMRWD 3. Shakopee <p>SWMO</p> <p>SWMO</p>
<p>Storm sewer</p> <p>Full-flow capacity = 10-year peak discharge</p>	<p>SWMO and Shakopee</p>
<p>Erosion and sediment control</p> <p>Erosion control plans shall comply with the MPCA’s NPDES-SDS Phase II general permit.</p> <p>Proposed land disturbing or development activity shall not cause:</p> <ul style="list-style-type: none"> • Accelerated channel erosion. • Erosion, sedimentation or damage to water and soil resources on and off site <p>Erosion and sediment control plans must be signed by a registered professional engineer.</p> <p>NPDES-SDS Phase II Permit and a Stormwater Pollution Prevention Plan (SWPPP) are required for any construction activity disturbing one acre or more of land. Construction activity includes clearing, grading and excavation.</p> <p>Additional BMPs and enhanced runoff controls are required for discharges to special waters. The BMPs identified for each special water are required for those areas of the project draining to a discharge point on the project that is within 2000 feet of a special water and flows to that special water. There are NO special waters within 2000 feet of this project.</p>	<p>LMRWD</p> <p>SWMO</p> <p>SWMO</p> <p>NPDES-SDS</p> <p>NPDES-SDS</p>

The Pike Lake and portions of the other three drainage areas fall under the jurisdiction of the PLSLWD. The remainder of the Dean Lake, Rice Lake East and Eagle Creek subwatersheds are within the LMRWD. Eagle Creek is groundwater dependent and has been identified by the DNR as a trout stream. In addition, it provides the outlet for Boiling Springs, which is a sensitive natural resource (see Section 7.2.2). The DNR, with assistance of the LMRWD, created the Eagle Creek Aquatic Management Area in order to mitigate possible impacts to the trout stream and Boiling Springs.

The proposed project will tie into the existing roadway north of the proposed intersection to CSAH 18.

7.2.2 Environmental Consequences

No Build Alternative

The No Build Alternative would not increase the amount of impervious roadway surface in the project area and would not alter the existing drainage conditions with regards to patterns and quantity of stormwater runoff.

Build Alternative

Under the Build Alternative, new impervious surfaces would be created south of CSAH 18 in an area where none currently exist, thereby decreasing infiltration, and increasing the quantity of stormwater runoff. The proposed project will exhibit an urban design, utilizing curb, gutter and storm sewer to convey runoff from the roadway. The southern portion of the roadway will be predominantly in a cut section in which stormwater from the adjacent slopes drains onto the roadway and into the proposed storm sewer. However, the majority of the roadway will be on embankment, in which case only the runoff from the proposed pavement will enter the storm sewer. In addition to the proposed roadway, a transit station is planned for the southwest quadrant of the CSAH 21 and CSAH 16 intersection.

A concern of the Lower Minnesota River Watershed District (LMRWD), as stated in their Water Management Plan (September 1999), is that the future flow rates into Dean Lake will substantially increase due to future development upstream of the lake and on adjacent tribal lands. As previously noted, the primary inflow to Dean Lake originates from the Prior Lake outlet channel.

Boiling Springs is an environmental phenomenon caused by the escape of groundwater through a thin layer of clay at the bottom of Eagle Creek and is located approximately one mile from the project corridor to the east. It is situated in woods that are surrounded by a housing complex. The spring is further separated from the proposed project corridor by the routes of Stagecoach Road and CSAH 18. As no stormwater runoff from the project site will drain to the Boiling Springs, there is no anticipated impact on this water resource. See Section 7.5 for the anticipated groundwater effects to this feature.

7.2.3 Mitigation

As noted above, the proposed project will exhibit an urban section, in which stormwater runoff flows into a storm sewer network prior to discharge rather than into ditches as with a rural design roadway. The PLSLWD requires that BMPs must be incorporated upstream of Pike Lake to control water surface level fluctuations. These BMPs will likely include stormwater retention

ponds and infiltration areas to reduce stormwater runoff rates prior to discharging to Pike Lake. Additional stormwater quality ponds and infiltration areas are being proposed in strategic locations throughout the corridor to reduce proposed peak discharge rates to existing rates as required by the watershed districts and watershed management organization.

The site plan for the planned transit station may allow for the opportunity to integrate stormwater treatment via rain gardens or a stormwater pond. These ponds, infiltration areas and other best management practices (BMPs) will be carefully designed to mitigate the water quantity impacts related to this project. The outlet from this area will drain to the north along CSAH 21 discharge into the wetland complex east of Dean Lake.

As stated in their *Comprehensive Water Resources Plan* (February 2004) and *Rules* (May 2005), the SWMO promotes and encourages runoff reduction, infiltration and increased groundwater recharge. This coincides with the stated goals and recommendations of the PLSLWD and LMRWD. As such, infiltration areas are being proposed in strategic locations to enhance stormwater treatment along the project corridor.

Additionally, Scott County states they are interested in considering opportunities for building a regional pond as part of this project. As such, the potential ponds shown in the southwest quadrant of New CSAH 21 and CSAH 16 near the planned transit station and in the northwest quadrant of CSAH 21 and CSAH 42 should be further investigated during final design for partnership with the adjacent cities. The Prior Lake Outlet Channel and Lake Volume Management Study (May 2003) indicates a desire that the CSAH 21 project look for opportunities of routing water around Pike Lake to a regional pond to control the lake's current water level fluctuations.

Infiltration is considered to be a key component of volume and rate control for most of the project area. Infiltration sites will need to be studied carefully during final design to balance the goals of infiltration (volume control, groundwater recharge, and water quality) with protecting groundwater resources in areas of high susceptibility.

The City of Shakopee, in their *Comprehensive Stormwater Management Plan* (January 1999), states that the project should utilize the natural drainage system for storage and flow of runoff, where practical. As such, stormwater drainage should be discharged to existing marshlands, swamps, retention basins or other treatment facilities. Thus, to the extent practical (and in compliance with other agency's rules and regulations) natural features will be used to attenuate stormwater runoff. Additionally, the City requires that the peak discharge rate from all newly developing property draining to the Blue Lake channel upstream of Dean Lake must be limited to 0.05 cfs/acre for rainfall events having intensities equivalent to a 10-year return period. Therefore, the preliminary drainage design for this project has made an effort to eliminate project-related runoff from discharging to this channel.

The Shakopee stormwater management plan notes that bluff erosion is occurring in certain areas near the project corridor. As noted elsewhere in this document, two bluff areas will be impacted by the construction of the proposed project: one located south of CSAH 16 and the other immediately north of CSAH 16. The urban design will reduce erosion potential due to elimination of steep roadside ditches. However, the ditch outlet for the CSAH 21/CSAH 16 regional pond would require energy dissipation measures, such as check dams and cascading ditches.

7.3 SURFACE WATER QUALITY

This section presents background information regarding the waterborne pollutants of most concern with respect to highway stormwater runoff and an assessment of the Build Alternative with respect to opportunities for avoiding or mitigating water quality impacts.

7.3.1 Affected Environment

The Minnesota Pollution Control Agency (MPCA) has not identified any “Outstanding Resource Value Waters” within the project corridor. A DNR wetland (#70-248W) is located along the southern portion of the proposed project corridor with an ordinary high water level of approximately 870 feet. As reported in the LMRWD *Water Management Plan* (September 1999), Dean Lake (DNR #70-74) is located along the project corridor and has an existing water quality of Level II. Level II water quality does not fully support swimming (activities limited to those that do not involve continued body contact with water) and has threshold limits for phosphorus. Dean Lake is an expression of the groundwater table in the area; the lake’s water surface elevation is affected by fluctuations in the groundwater table.

As previously mentioned, the land uses along the proposed project corridor vary from wooded to agricultural. As a result, existing stormwater runoff originates from a variety of land uses, which has varying effects on the water quality in downstream water bodies. Common pollutants from rural/agricultural and urban land uses include nutrients (e.g., nitrogen and phosphorous), pesticides, organic material that adds to biochemical oxygen demand (BOD) in surface waters, and sediment. However, runoff originating from wooded, or other non-agricultural land uses generally carries fewer pollutants.

For the most part in the existing condition, stormwater runoff from areas south of Dean Lake drains to downstream water bodies mainly via the Blue Lake Channel and the Prior Lake Outlet Channel. Stormwater in the Eagle Creek subwatershed drains to downstream water bodies via ditches along existing CSAH 18.

An important factor in addressing the stormwater needs of the project is the numerous proposed and on-going development projects adjacent to the corridor.

7.3.2 Environmental Consequences

No Build Alternative

The No Build Alternative would not change the amount or type of stormwater runoff in the project area and would therefore not change the water quality of stormwater runoff. The No Build Alternative would have the least increase in pollutant loading, since it would not result in construction of additional impervious pavement surface area.

Build Alternative

Pollutants commonly found in roadway runoff include materials from a variety of sources: atmospheric fallout, vehicle exhaust, lubrication system losses, tire and brake wear, transportation load losses, deicing and anti-icing agents, and paint from infrastructure. These

sources can produce pollutants including particulates, nitrogen, phosphorous, lead, zinc, iron, copper, cadmium, chromium, nickel, manganese, cyanide, sodium/calcium/chloride, sulfate, and petroleum compounds. The majority of these pollutants can be removed, to a certain extent, by the use of a passive treatment system involving a settling process. Therefore, the extent to which these pollutants would affect water quality within the proposed alternative is dependent upon the level of treatment provided for surface water runoff from roadways prior to discharge to a receiving water body.

The proposed project has potential to impact water quality because it will produce the pollutants described above that are only minimally present in the existing conditions. Increasing traffic volumes on CSAH 21 and at the transit station would continue to generate increasing pollutant levels in the future, especially if congestion levels result in an increased number of idling vehicles.

Several opportunities to collect stormwater runoff along the entire length of the corridor have been identified in appropriate locations that would provide for stormwater detention and treatment. Figure 7-2 shows the identified locations of the stormwater ponds and other BMPs along the corridor, which are necessary to provide adequate stormwater quality treatment.

The conveyance system design would likely need some type of energy dissipation as well as wet detention basins to prevent erosion, remove roadway pollutants, and contain contaminated spills.

As noted above, the City of Shakopee has identified that bluff erosion is occurring in areas near the project corridor. Bluff erosion can degrade downstream water quality by increasing turbidity levels in water bodies and siltation of habitat area. Therefore, special precautions will be made in the design, and during construction, to protect this area from further degradation.

The LMRWD notes the following water quality problems in Dean Lake in their *Water Management Plan* (September 1999):

- Sediment Deposition
- Degraded Water Quality
- Septic System Failures

The majority of these environmental consequences originate from non-point source pollution, which is carried from land areas to water bodies with stormwater or snowmelt. As the area within the district, and immediately adjacent to the district, becomes increasingly urban/developed, non-point source pollution will become a more considerable contributor to pollutant loading. Therefore, the City of Shakopee has recommended a diagnostic feasibility study for Dean Lake. The LMRWD agrees that there is a lack of data for Dean Lake. This study would not be part of this project, but would contribute valuable information on how to minimize the environmental consequences of this project on Dean Lake.

7.3.3 Mitigation

For the portion of the project between CSAH 42 and Southbridge Parkway, an assessment of the water quality needs for the project indicates that the Build Alternative would have sufficient space within or adjacent to the roadway corridor to provide water quality treatment consistent

with local, state, and federal requirements. This area would utilize detention/treatment ponds, filter strips, infiltration at pond edges where appropriate, and/or treatment ditches where appropriate. For the remainder of the corridor, the ability for this project to provide adequate water quality treatment BMPs is linked to the ability to coordinate with the potential developers at the northern project limits, with the proposed transit station, and along CSAH 21 east of Southbridge Parkway for regional ponding. Additionally, to the extent practical, all project runoff will be directed to stormwater detention areas. During final design, detention area outlet structures will be designed to accommodate downstream capacity constraints.

Along the entire project corridor, the primary goal of the water quality treatment system is to ensure that stormwater treatment in the proposed condition maintains, or improves, the existing condition. As stated in Section 7.2.1, because the Build Alternative proposes to place a roadway and transit station through previously undeveloped land, it would substantially increase the volume and rate of runoff compared to the No Build conditions. Further, as described in Section 7.2.2, this runoff would contain contaminants common to roadways and automobile facilities. Many of the BMPs listed above would act as spill containment measures in addition to providing water quality treatment. Note that these features would be designed to meet the regulatory requirements in effect at the time of final design.

Along the project corridor, two bluff areas will require special attention in terms of protecting water quality. According to the SWMO *Rules* (May 2005), a bluff area is defined as a hill, cliff, or embankment in which the average grade of any portion of the slope is 30 percent or greater and there is at least a 25-foot rise in elevation. The SWMO and the cities have set an impact zone from the top of the bluff in which the clear cutting of existing natural vegetation and/or other land disturbing activities are prohibited. If no alternatives exist, public roads may be placed within the bluff impact zone provided they are designed to minimize adverse impacts. As such, special care will be taken along these areas of the project corridor, in terms of designing and implementing BMPs, to ensure proper temporary and permanent erosion control measures are taken to protect water quality. Further, all BMPs used as part of this project will conform to the most recent version of *Protecting Water Quality in Urban Areas* (MPCA 2000).

The LMRWD requires stormwater management practices that lead to attainment of the water quality goals of the LMRWD water bodies. Therefore, as per the LMRWD Water Management Plan (September 1999) various BMPs will be implemented to maintain the existing stormwater runoff quality in the district along the project corridor. This will be accomplished via certain BMPs listed in *Protecting Water Quality in Urban Areas* (MPCA 2000), such as retention of surface runoff, construction site runoff controls and vegetated buffer strips. Additionally, the erosion control plans will conform to the MPCA's NPDES-SDS general permit to discharge stormwater from construction sites.

The PLSLWD, in the *Prior Lake Outlet Channel and Lake Volume Management Study* (May 2003), developed a conceptual plan for improvement of the Prior Lake outlet channel. Strategy 5 of this plan has direct and indirect implications for mitigation of water quality concerns related to this project and includes the following implementations:

- Additional easement acquisition
- Construction of improvements

- Support use of channel corridor as a greenway
- Assess potential for regional stormwater management opportunities in conjunction with CSAH 21 extension.
- Removal of sediment delta at inlet of Pike Lake
- Promote and participate in the development of a Sustainable Lakes Management Plan for Dean Lake
- Assess condition of Blue Lake outlet structure

As stated in the PLSLWD *Water Resources Management Plan* (July 2003), little is known of the sources and quantities of pollutants that have caused Pike Lake to exhibit poor water quality. As a result, BMPs must be incorporated upstream of Pike Lake, as per the district's plan. One BMP the district specifically mentioned is temporary sedimentation facilities upstream of Pike Lake, which would be implemented during construction.

Table 7-2 lists the ponding and infiltration requirements for each major drainage area based on the regulatory environment described in the above sections. The table also lists the approximate storage available to meet those requirements. The ponds are designed to meet National Urban Runoff Program standards and are generally accepted to achieve 90 percent total suspended solids removal and 60 percent phosphorous removal. Treatment ponds should help with overall water quality by capturing runoff from sources other than the highway, e.g. farming. Note also, that these reflect the current regulatory environment, which could change prior to the project's final design.

7.4 FLOODPLAINS

7.4.1 Affected Environment

There are no mapped floodplains directly within the project area. However, Pike Lake has a mapped floodplain. This area will not be affected by this project.

7.5 GROUNDWATER

7.5.1 Affected Environment

Information presented in this section was taken from: the Scott County Ground Water Protection Plan adopted March 22, 1999; the Soil Survey for Scott County issued in October 1959; and the Geologic Atlas for Scott County prepared by the University of Minnesota in 1982.

The project corridor is characterized by unconsolidated sedimentary deposits including till deposits, outwash deposits, middle-terrace deposits, peat deposits, lower-terrace deposits, and dune sediment deposits. Surficial deposits range in thickness from roughly 40 feet to almost 500 feet over a buried river channel. The uppermost bedrock unit in the vicinity of the project corridor is the Prairie Du Chien Group. The regional groundwater flow direction within the unconsolidated deposits is generally north to the Minnesota River and the depth to bedrock ranges from 40 to 500 feet.

**TABLE 7-2
STORMWATER BEST MANAGEMENT PRACTICES**

Watershed	Potential Best Management Practices	Perm. Pool Volume Required	Approximate Storage Volume Available	Infiltration Area Required	Approximate Infiltration Area Available	Comments
Pike Lake	Wet pond with overflow to infiltration basin	0.9 acre-feet	1.0 acre-feet	0.2 acre	0.1 acre	Opportunity for participation in regional ponding
Dean Lake ⁽¹⁾	Wet ponds	4.5-4.6 acre-feet ⁽²⁾	6.1 acre-feet	1.0 acre	Infiltration was not investigated as this portion of the project falls within an area of high groundwater sensitivity. ⁽⁴⁾	CSAH 16 location may have opportunity for participation in regional pond; this location may also require a liner.
Rice Lake East ⁽³⁾ and Eagle Creek	Wet ponds	1.5-2.8 acre-feet ⁽¹⁾	2.9 acre-feet	0.1 acre	Infiltration was not investigated as this portion of the project falls within an area of high groundwater sensitivity. ⁽⁴⁾	Ponds west of CSAH 18 may require cooperation with adjacent development projects.

⁽¹⁾ The required treatment volumes shown do not reflect volumes needed to treat runoff from the planned transit station as that site plan is still in a conceptual state. More information will be available during the FEIS when concept plans are more detailed.

⁽²⁾ The range shown represents volumes required for the three different alternatives at the CSAH 18 junction.

⁽³⁾ The 0.25 mile of the project that falls within the Rice Lake East subwatershed will be directed to the Eagle Creek subwatershed after treatment with the proposed condition.

⁽⁴⁾ These basins fall within an area of high groundwater sensitivity. During final design, the determination will be made as to their feasibility and whether measures can be implemented to allow infiltration while protecting groundwater resources in these areas.

The soil complexes in the northern portion of the project corridor include the Hubbard, Estherville, Waukegan, and Zimmerman. As a soil association these soils tend to be level to gently sloping loamy and sandy soils. Other than in wetland areas, this area generally has high infiltration and water transmission rates resulting in low runoff potential. In the southern portion of the project corridor, soil complexes include loamy and sandy soils such as Burnsville, Hayden, Kingsley, and Scandia. In general, this area has moderate infiltration and water transmission rates.

Steep slopes, greater than 10 percent grade, are located along both the lower (just north of CSAH 16) and upper bluff areas (the area northwest of Pike Lake).

Regional groundwater movement in the project area is north toward the Minnesota River. However, local groundwater movement varies based on the terrain and may instead be discharged to the nearby lakes and streams. Groundwater discharge areas can also occur where the water table intersects with the sloping bluff. While both bluff areas in the project corridor have the potential for groundwater seeps of this kind, only the bluff north of CSAH 16 has been identified to have seeps.

Confined and unconfined groundwater aquifers occur within the project area. The soil type and the ability of bedrock to form confining layers determine the susceptibility of groundwater resources to contamination. The southernmost third of the corridor falls within an area of low susceptibility. However, immediately adjacent to that, Pike Lake sits in a region of moderate susceptibility, and the northern two-thirds of the corridor is within an area of high groundwater susceptibility. Existing threats to groundwater quality along the project corridor consist primarily of agriculture-related contaminants and development north of CSAH 16.

7.5.2 Environmental Consequences

No Build Alternative

The No Build Alternative proposes no new construction and there would be no impact to groundwater in the project area.

Build Alternative

Grading for construction of the project may intersect the water table during excavation at the northerly bluff near the identified seep. Additionally, minor dewatering may be necessary near the wetlands north of CSAH 16 and DNR wetland #70-248W at the southern project limits.

Potential project-related sources of groundwater contaminants include spills during construction; these could occur from on-site transport, storage and transfer of fuels for construction equipment. Post-construction sources include traffic-related spills and runoff. The types of post-construction contaminants could include spills of fuel and various hazardous materials, resulting primarily from crashes, and heavy metals, salt, hydrocarbons, and sediment carried with the road runoff. This is of particular concern due to permeable soils and the consequent susceptibility of groundwater to contamination from surface spills in the northern two-thirds of the project area. However, many of the BMPs listed in Section 7.3.3 would act as spill containment measures in addition to providing water quality treatment.

In addition to the contaminants noted above, road runoff can contain various organic and mineral pollutants. It is considered a non-point source of pollution with relatively low concentrations of pollutants, generally measured in parts per million. Therefore, road runoff is not considered a major source of groundwater contamination due to the relatively low concentrations and the ability of soil to filter these pollutants as water infiltrates through the soil layers.

Construction of additional impervious surfaces can impede groundwater recharge. However, the proposed construction would not likely have any regional affect on groundwater recharge due to the relatively narrow area of impact in the overall watershed.

Regional groundwater flow is to the north and therefore carries project-related infiltrated stormwater away from the Boiling Springs. There are no anticipated impacts to the Boiling Springs.

7.5.3 Mitigation

Measures such as vegetated filter strips along road embankments and two-cell systems consisting of wet ponds and infiltration areas are potential means to promote infiltration and groundwater recharge of highway runoff. As discussed in Sections 7.2.3 and 7.3.3, BMPs will be implemented as part of the proposed project to treat road runoff and to minimize water quality and drainage impacts. Additionally, during final design, the determination will be made as to the feasibility of implementing infiltration measures in areas of high groundwater sensitivity and whether these measures can be implemented to allow infiltration while protecting groundwater resources in these areas.

If necessary, the potential pond, and any rain gardens proposed, for the southwest quadrant of CSAH 21 and CSAH 16 can be clay-lined if future investigations of the former dumpsite deem that necessary to guard against flushing any existing contaminants into the groundwater.

7.6 WETLANDS

Wetlands are protected by Federal laws (the Clean Water Act - Section 404) and State law (Minnesota Wetland Conservation Act [WCA] and Executive Orders) that mandate the “no net loss” concept of wetland functions and values. These laws further require that projects seek to avoid, then minimize, and finally mitigate any potential impacts (referred to as sequencing). In order to comply with Federal and State laws, all potentially affected wetlands in the project corridor have been identified and classified, and the project design has been developed in an attempt to avoid and minimize impacts to the greatest extent practicable.

In September 2002, the U.S. Army Corps of Engineers (COE) was invited by the FHWA to be a “cooperating agency” for the project. The COE is included as a cooperating agency because it issues permits for wetland impacts under Section 404 of the Clean Water Act. Under the WCA, a Technical Evaluation Panel (TEP) is made up of a knowledgeable representative each from the Local Governmental Unit (LGU), the County Soil and Water Conservation District (SWCD) and the Minnesota Board of Water and Soil Resources (BWSR). In December 2003, following completion of the SD/DSDD in August 2003, members of the TEP began meeting with staff of Scott County, the Prior Lake-Spring Lake Watershed District (PLSLWD), the Lower Minnesota River Watershed District (LMRWD), the Minnesota Department of Natural Resources (DNR), the COE and the County’s consultant, in an expanded TEP to review alternatives development and other issues relating to wetland review and agency concerns. Members of the expanded TEP met three additional times during the development of the DEIS.

7.6.1 Affected Environment

The process of identifying wetlands in the project area involved reviewing USGS quadrangle maps, USFWS National Wetland Inventory maps, DNR Protected Waters and Wetlands maps, aerial photos and finally, an on-site visit to delineate wetland boundaries using methodologies set forth in the US Army Corps of Engineers *Wetland Delineation Manual 1987*. Field conditions and results were documented in a wetland delineation report (December 2003 – alphabetical labels). Following submission of this delineation, it was determined that a separate delineation of the Hanson property (located in the northern portion of the project area) had been submitted to and approved by the TEP. Avoidance alternatives were based upon a combination of these delineations and discussed with TEP agencies in the winter and spring of 2004.

An additional delineation was also completed by the developer of the former Shutrop property in 2004 (numerical labels). The TEP approved the County's Fall 2003 delineation for all the wetlands except for the wetlands on the former Shutrop property, and approved the developer's delineation for the wetlands on the former Shutrop property (W-4, W-5, W-6). Impact analysis has been based on the TEP-approved delineations.

Fourteen wetlands (Wetlands A – M, W-4 and W-5) were identified in the project corridor. A summary of wetland types and areas is presented on Table 7-3. Identified wetlands are classified according to methodologies set forth in *Wetlands and Deepwater Habitats of the United States* (USFWS/OBS Publication 79/31; Cowardin et al. 1979) and *Wetlands of the United States* (USFWS Circular 39, Shaw and Fredine, 1971). Figures 7-3 through 7-7 show wetland boundaries accepted by the TEP and used for project design.

Wetland functions were analyzed using the Minnesota Routine Assessment Method Version 3.0 (MnRAM 3.0). This method requires the user to provide up to 72 data points for each wetland. The MnRAM 3.0 computer program then calculates functional levels as high, medium or low for 14 wetland functions. A detailed analysis of wetland functions is presented in the December 2003 wetland delineation report completed for this project. A range of functional levels calculated by MnRAM 3.0 is presented in Table 7-3 for each wetland.

7.6.2 Environmental Consequences

No Build Alternative

The No Build Alternative proposes no new construction and will not impact any wetlands.

Build Alternative

As described in Section 3.1, a scoping study was performed in 1990 to define and evaluate several project alternatives. A preferred alternative concept was identified based on design feasibility, environmental concerns, safety and the ability to meet current design standards. The preferred alternative concept was further studied and refined in a 1992 feasibility study. Since 1992, right of way has been acquired and preliminary designs have been developed for what now is referred to as the "Build Alternative". Additional discussion of the scoping process is included in Chapter 3.

**TABLE 7-3
WETLAND SIZE AND TYPE**

Wetland ID	Area (acres)	Type (Circ. 39)	Type (Cowardin)	Functional Level	Proposed Impact (acres)
WA	0.38	Type 3	PEMC	Low to High	0.0
WB	0.23	Type 2	PEMB	Low to High	.23
WC (DNR #248W)	2.59	Type 3	PEMF	Low to High	0.0
WD	1.12	Type 3	PEMC	Low to High	0.0
WE	0.30	Type 6	PSSA	Low to Moderate	0.0
W-4* (WJ)	.69	Type 2	PEMB	Not completed	0.48
W-5* (part of WF)	.8	Type 2	PEMB	Not completed	0.0
W-6* (WF)	>50	Type 3	PEMCd	Low to High	6.21
WG	0.52	Type 3	PEMCd	Low to High	0.0
WH	0.41	Type 3	PEMC	Low to High	.06
WI	3.06	Type 6	PESSA	Low to High	0.0
WK	0.09	Type 1	PEMA	Low to High	0.0
WL	1.91	Type 1	PEMA	Low to High	.05 - .09 ¹
WM	0.09	Type 1	PEMA	Low to High	0.0
				Total Wetland Impacts:	7.03 -7.07¹ acres

*Delineation of wetlands on former Shutrop property accepted by TEP. W-6 and WF are the same wetland area, delineated under both reports.

¹ Impact varies depending upon intersection option (.05 for 6-Lane Intersection and 4-Lane Interchange options and .09 for the 4-Lane Intersection option). Total impacts (7.03 for 6-Lane Intersection and 4-Lane Interchange options and 7.07 for the 4-Lane Intersection option).

As shown in Table 7-3, the Build Alternative would impact approximately 7.03 to 7.07 acres of wetlands. Wetlands WB, W-4, W-6 (WF), WH, and WL would all be impacted with the Build Alternative.

Wetland WB is a depressional wetland that functions at a high level for maintenance of the hydrologic regime and water quality in the area. While this wetland, like most of the wetlands in this area, is dominated by reed canary grass (*Phalaris arundinacea*), other wetland plant species are present, providing a moderate level of vegetative diversity. This wetland also functions at a moderate level in maintaining the wildlife habitat structure of the area, although it is considered to provide a low level for the aesthetic, recreational, educational and cultural function.

Wetland W-4 is a depressional wetland located in a horse pasture that functions at a high level for maintenance of the hydrologic regime and water quality in the area. It is dominated by reed canary grass with other wetland plant species present, providing a moderate level of vegetative diversity. This wetland functions at a moderate level in maintaining the wildlife habitat structure of the area and in offering aesthetic, recreational, educational and cultural uses. Stormwater is not discharged into this wetland, so it is rated high for sustainability because it does not receive inputs of sediment and nutrients.

Wetland W-6 (WF) is also referred to as the wetland on the former Shutrop property, and is part of a greater wetland complex including Dean Lake and the fringe area. This wetland functions at a high level in providing shoreland and water quality protection for Dean Lake, as well as maintenance of the hydrologic regime. This wetland has moderate vegetative diversity, although it is considered to be dominated by the invasive reed canary grass. A moderate level of flood and stormwater attenuation and maintenance of wetland water quality is provided by this wetland. However, the wetland itself is also moderately sensitive to stormwater input and urban development and stormwater should be provided additional treatment prior to discharge to this wetland. Overall, this wetland provides moderate levels of functions for wildlife and aesthetics.

Wetlands WH and WL function on a similar level in most cases, providing a high level of maintenance of the hydrologic regime and downstream water quality. While WH has moderate vegetative diversity, WL has a low level of vegetative diversity, as it is covered with a monotype of reed canary grass. These wetlands both provide a moderate level of flood and stormwater attenuation, wildlife habitat and aesthetics. Both wetlands are moderately sensitive to urban development stormwater input, and stormwater should be provided additional treatment prior to discharge to any remaining wetland area, as well as mitigation areas.

7.6.3 Sequencing

Sequencing is the process followed during project development to first avoid then minimize wetland impacts to the extent practicable, then finally mitigating for any unavoidable impacts that remain. As described in Chapter 3, early studies evaluated impacts on wetlands of various corridor alternatives. As described in Section 3.1.5, wetland protection was among the key objectives guiding the alignment refinement process.

While developing plans and layouts for the Build Alternative, potential alignments and design details that avoided filling wetlands were evaluated. At the south terminus of the proposed project, just north of CSAH 42, the alignment of the Build Alternative was modified to further avoid wetland impacts in this area. An urban design was selected for the entire corridor to minimize impacts to area wetlands.

An alternate build alignment east of the Build Alternative was developed in an effort to avoid and further minimize the wetland impacts of the Build Alternative. In order to move the CSAH 21 alignment to the east (to minimize impacts to wetland W-6 on the former Shutrop property), CSAH 16 would need to be realigned from its current location (to avoid creating a skewed intersection). This would also create a spacing issue regarding the distance between the Pike Lake Road (a City of Shakopee road) and CSAH 21 intersections with CSAH 16 [the Build Alignment spacing is approximately 1,600 feet; the alternative alignment spacing is approximately 1,000 feet; the County standard for intersection spacing is ¼ mile (1,320 feet)].

While this alternate alignment would somewhat reduce the area of wetland impact for CSAH 21 itself, it would require a longer extension of Southbridge Parkway to CSAH 21 that poses its own wetland impacts. The combined impacts for CSAH 21 and the extension of Southbridge Parkway for this alternate alignment would be 7.8 acres compared to the 7.03 to 7.07 acres of wetland impacts for the Build Alternative.

Also reviewed was the potential for moving the CSAH 21 alignment even further east to completely avoid wetland W-6 on the former Shutrop property. Doing so would again involve wetland impacts to this wetland for the Southbridge Parkway extension to CSAH 21, and additional impacts to wetlands further east. In addition to a severe skew crossing of CSAH 16 at or very close to Pike Lake Road, substantial bisecting of private property and additional grading, vegetation and habitat impacts south of CSAH 16 (YMCA camp bluff area) would be required. For these reasons, there appears to be no practicable alternative to the current Build Alternative, which, when compared with other feasible alignments investigated, does minimize wetland impacts.

Building a bridge over wetlands W-4, W-6 and the Prior Lake Outlet channel has been considered for further minimization. A comparison was completed between construction of a bridge over these wetlands and construction of the roadway on fill through the wetlands. Construction on fill would require excavation of the muck and poor soils, installation of a 10 foot x 10 foot box culvert for the Prior Lake Outlet channel, placement of solid structural fill material, as well as mitigation for the wetland impacts. Wetland impacts from construction on roadway fill is estimated at about 6.01 acres, whereas the impacts from a bridge would be approximately 500 square feet for the bridge piers. Approximately 11.22 acres of mitigation are required for the roadway fill impact, while only 1,000 square feet of mitigation would be required for the bridge impacts. Bridges would have other impacts to adjacent development sites and the park area, and additional impacts if stormwater ponding is required on the south side of the outlet. Construction on roadway fill would necessitate realignment of the Prior Lake Outlet channel. Cost comparisons have shown that bridging would cost nearly three times as much as construction on roadway fill and is therefore not financially feasible for a public entity (\$3 million for bridge compared to \$1 million for roadway fill).

7.6.4 Mitigation

Current state and federal regulations require mitigation of all wetland impacts that remain after following the sequencing protocol. State (WCA) regulations require a wetland mitigation ratio of 2:1. Federal (COE) regulations require that created or new wetlands must be used for the first 1.5:1 ratio, and Public Value Credit (PVC) areas (such as permanent upland buffer and water quality treatment ponds) may be used for replacement credit in excess of the initial 1.5:1 ratio.

Section 404 of the Clean Water Act (administered by the COE) also regulates wetlands at the federal level. The COE regulations regarding wetland mitigation requirements are generally consistent with WCA requirements except as discussed below. Therefore, fulfillment of WCA requirements would likely satisfy Section 404 regulations. An individual COE permit will likely be necessary if wetland impacts are greater than five acres. A Letter of Permission may serve as Section 404 authorization if impacts are less than five acres. Other permitting requirements include the need for an MPCA Section 401 Water Quality Certification for all COE Section 404 permits. This certification would be obtained if necessary.

In Minnesota, impacts on public waters (DNR Protected Waters and their wetlands) are subject to additional regulation. Wetland C is a DNR Protected Water (DNR #248W). Based on preliminary design information, this wetland would be avoided by the extension of CSAH 21 just north of CSAH 42. Avoidance of this wetland was accomplished by adjusting the alignment to the east. Therefore, a DNR Protected Waters permit is not anticipated to be necessary for this project.

At a 2:1 mitigation ratio, the area of impact for the project will necessitate approximately 14.06 to 14.14 acres of wetland mitigation (at least three-fourths of which must be created or new replacement wetlands in accordance with COE requirements, as discussed below). If wetland regulations change during the course of project implementation, the required mitigation may change.

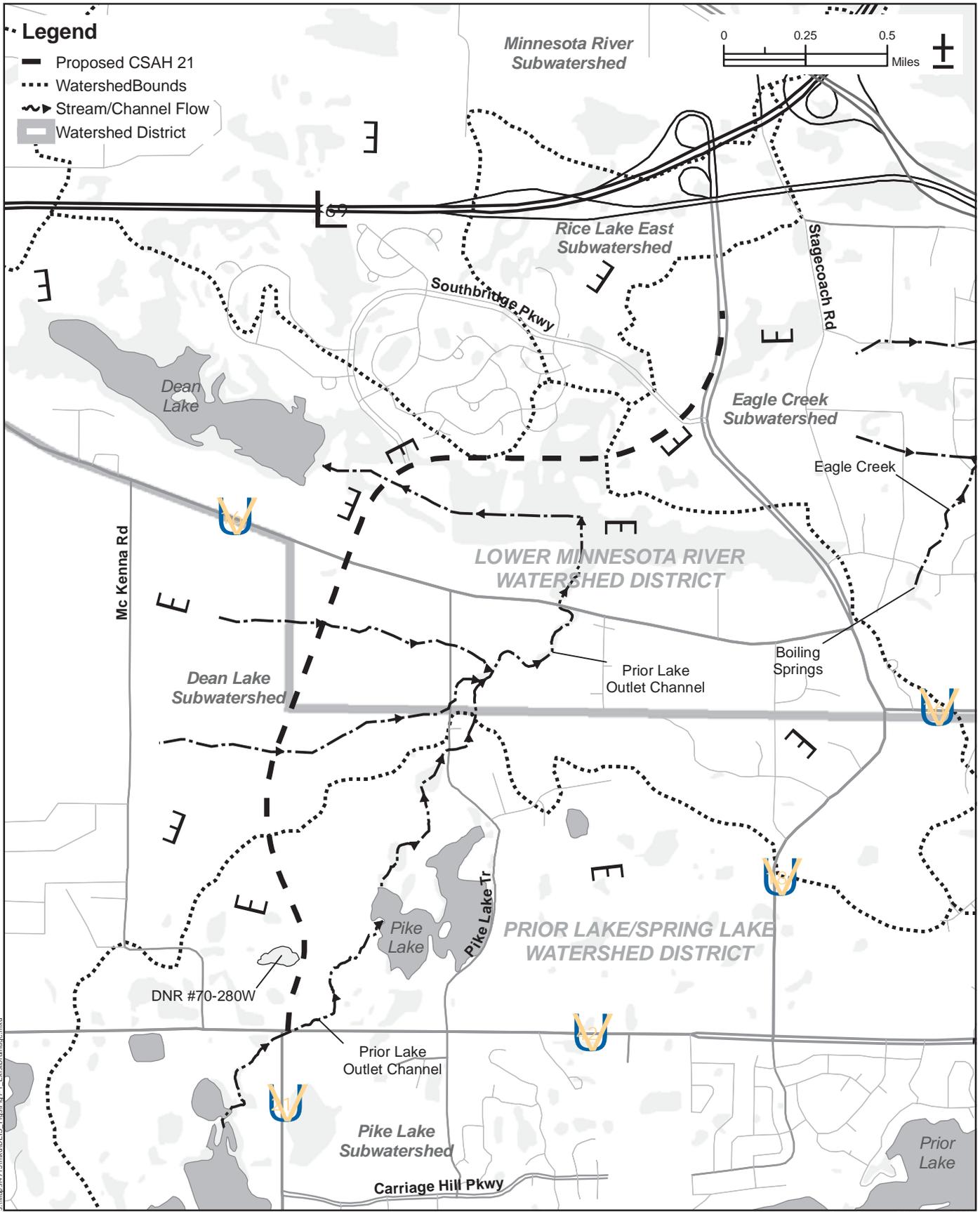
Wetland mitigation under WCA would occur – consistent with availability of mitigation sites - at locations following this priority order:

- 1) On-site or in the same minor watershed as the affected wetland
- 2) In the same watershed as the affected wetland
- 3) In the same county as the affected wetland
- 4) In an adjacent watershed or county
- 5) Statewide.

Regarding WCA regulations, the COE, in May 2005, established a new policy for wetland mitigation, requiring a minimum 1.5:1 new wetland replacement wetland area. Depending upon the distance of the mitigation site from the impact site, or the extent to which the impact is being replaced type-for-type, the mitigation ratio could be increased. Additional replacement credit may also be approved for enhancement of existing wetland or permanent protection of upland buffer area, above the minimum 1.5:1.

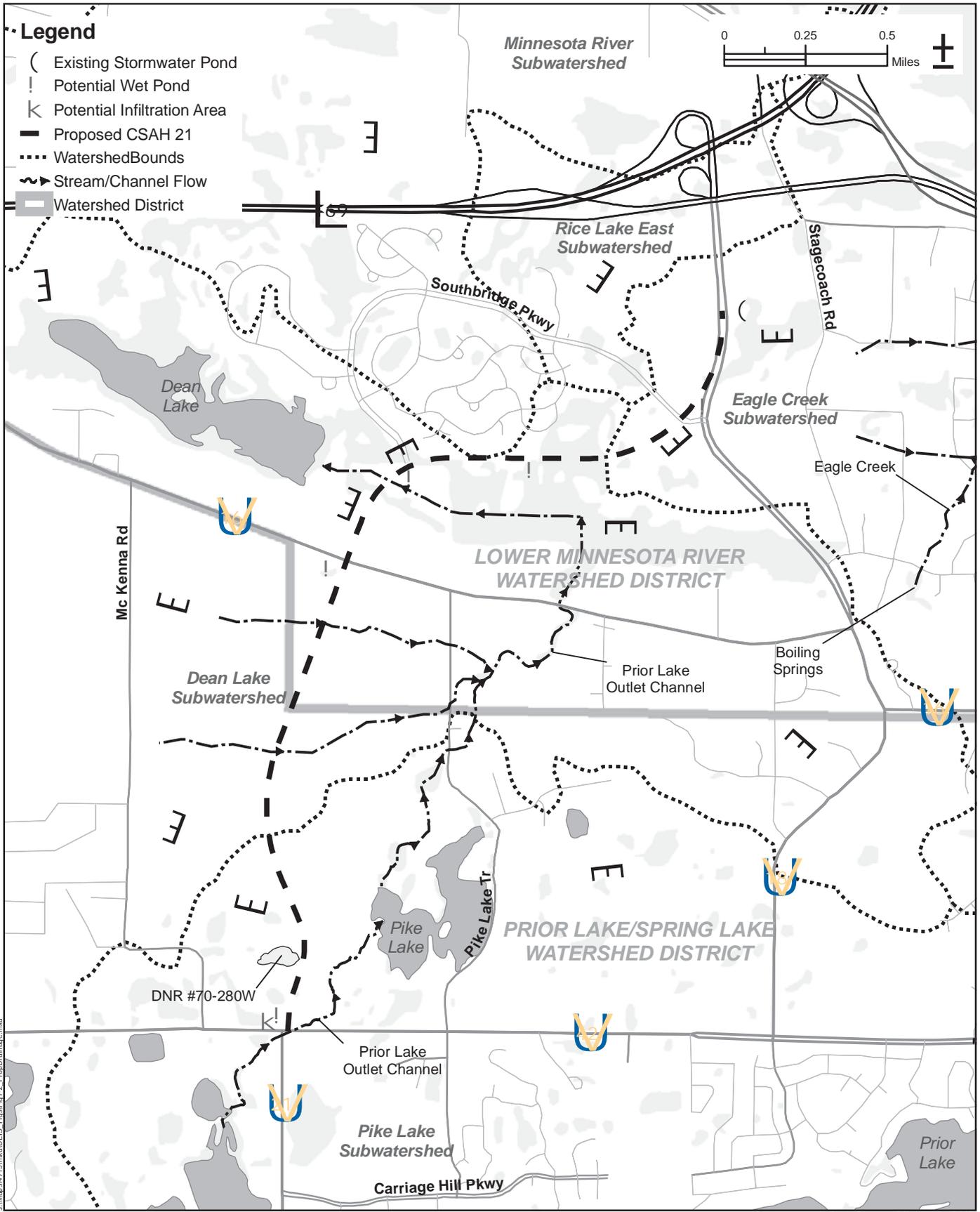
On-site mitigation is preferable to off-site, however, the amount of wetlands located on site creates a difficult challenge for on-site mitigation. Discussions between City of Shakopee and the County have included coordination to locate off-site opportunities for mitigation within the same watershed, creating one large mitigation site to cover all wetland impacts from CSAH 21 and Pike Lake Road. (CSAH 21 and Pike Lake Road are two separate and distinct projects, each of which will have its own separate wetland permit application; Pike Lake Road will likely be formally proposed prior to CSAH 21.) Coordination efforts to find acceptable off-site mitigation for these two projects may include development of a mitigation bank, designated specifically for these projects.

During the development of the FEIS, a wetland mitigation plan for replacement of the affected wetland areas will be developed. That plan will reassess the areas of wetland impacts (and mitigation needed) based on final design plans, wetland delineations, and the current and applicable wetland mitigation guidelines and regulations in effect at that time. The intent of the wetland mitigation plan will be to replace lost wetland functions in the project area where possible and possibly create an off-site wetland mitigation area to accomplish the remainder of the required mitigation. While not serving as replacement of wetland area, the stormwater management plan detailed in Section 7.2 will replace and improve water quality and floodwater storage functions in the project corridor.



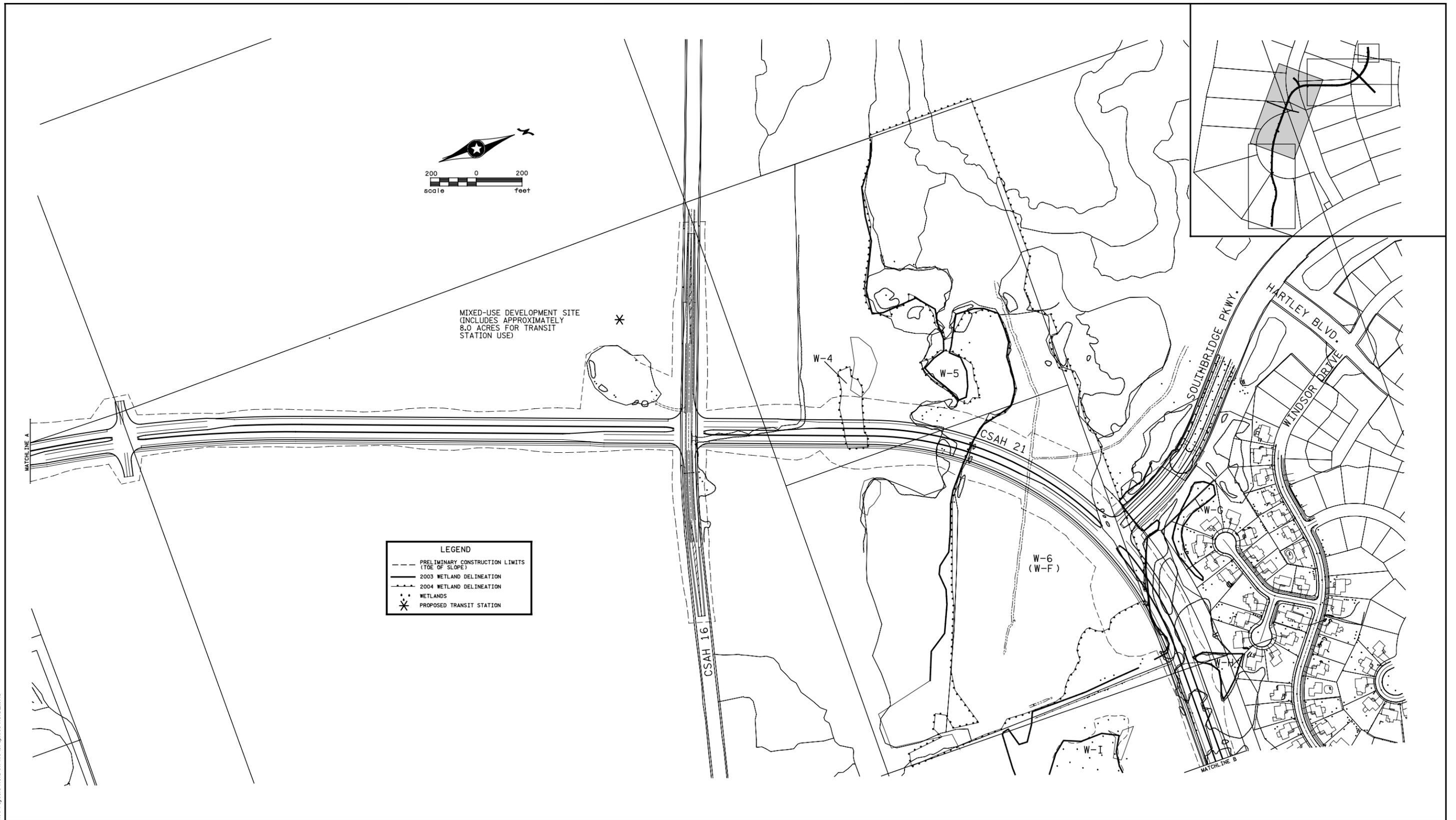
WATER RESOURCE REGULATORY BOUNDARIES / EXISTING DRAINAGE AREAS

Figure 7-1



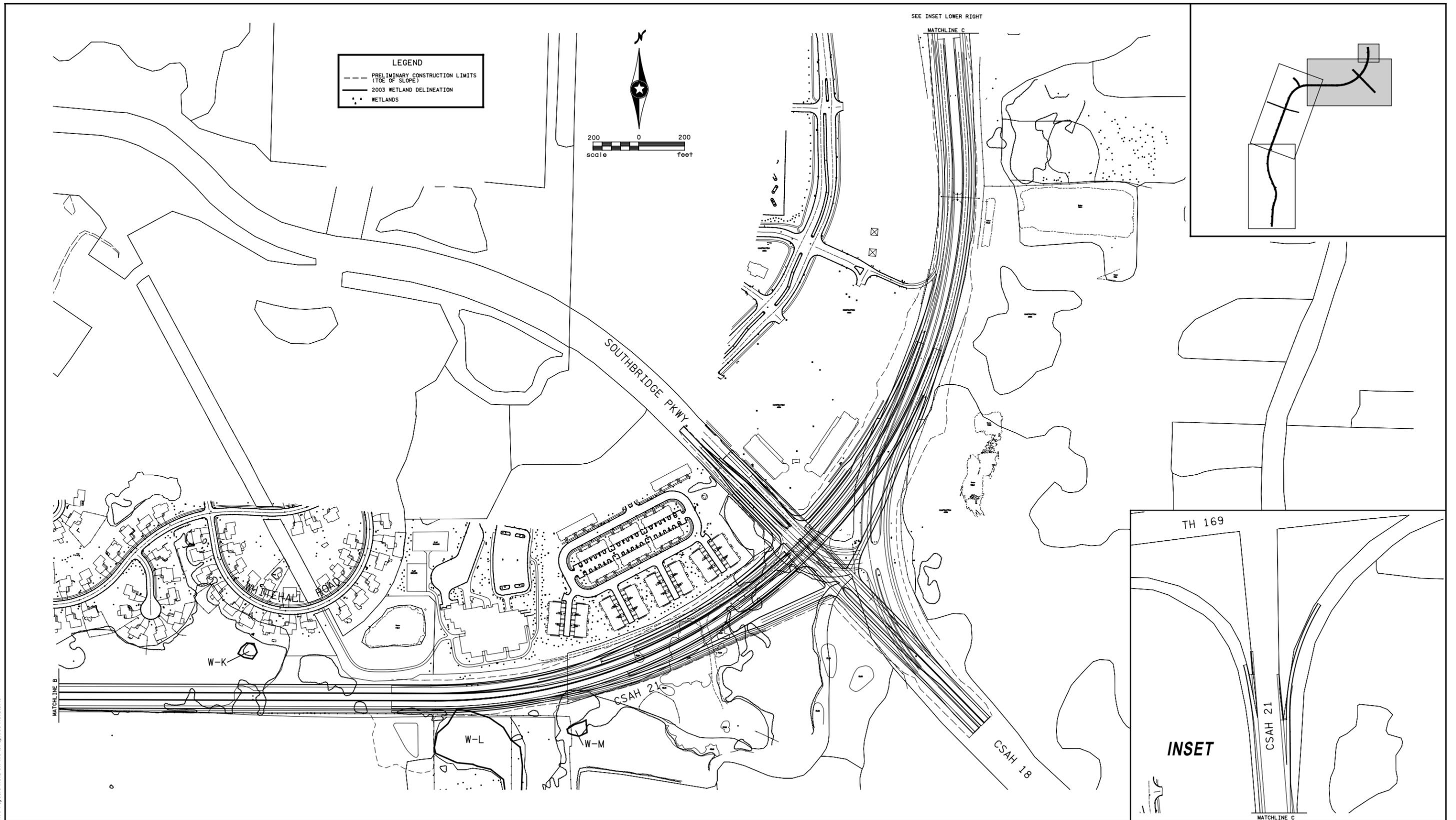
PROPOSED DRAINAGE AREAS AND TREATMENT OPTIONS

Figure 7-2



AREA WETLANDS (EAST ALIGNMENT)
 CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 7-6



AREA WETLANDS

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
Scott County, Minnesota

Figure 7-7

8.0 CULTURAL RESOURCES

This chapter describes the historical, architectural and archaeological properties found within the proposed project's area of potential effect (APE) and anticipated effects to these cultural resources resulting from the No Build and the Build Alternatives, as required by Minnesota Statute Chapter 138 and Section 106 of the National Historic Preservation Act of 1966 (as amended). Minnesota statutes require that state departments and agencies consider impacts on properties listed on the National Register of Historic Places (NRHP), the State Register of Historic Places and the State Historic Site Network in their project planning. The Minnesota Field Archaeology Act requires investigations on non-federal public land where archaeological sites are known or suspected to be located. Section 106 requires federal agencies to consider the effects of their actions on historic properties. Under Section 106 federal actions include: 1) a project, activity, or program carried out by or on behalf of a federal agency; 2) a project wholly or partially carried out with federal financial assistance; 3) a project requiring a federal permit, license, or approval; or 4) a project subject to state or local regulation administered pursuant to a delegation or approval by a federal agency.

Minnesota Rules Chapter 4410.3900 states that when a joint federal and state environmental document is being prepared, governmental agencies shall, to the fullest extent, avoid duplication between Minnesota Statutes and federal requirements. Therefore, for the purposes of this DEIS, the federal Section 106 process, described below, is being conducted to meet requirements set forth by Minnesota Statute Chapter 138 and the Field Archaeology Act. Section 106 includes a review process whereby the federal agency consults with the State Historic Preservation Office (SHPO), the Tribal Historic Preservation Office (THPO) on tribal land, the Advisory Council on Historic Preservation (AHCP) if appropriate, tribes with historic ties to the area, other interested parties, and the public to identify, evaluate, assess effects, and mitigate adverse impacts on any historic properties affected by their undertaking.

Identification of significant cultural resources and potential effects to those resources has been and continues to be coordinated with SHPO. Consultation has also occurred with Native American tribes and will continue throughout the EIS process.

Potential effects to cultural resources can include direct impacts caused by the proposed project, including demolition and construction activities; however, it can also include indirect impacts such as visual and noise. All possible impacts have been considered in determining effects to cultural resources.

8.1 AFFECTED ENVIRONMENT

A cultural resources assessment for the proposed project was conducted in August 2002. Based on this assessment, several areas of the project corridor were recommended for a Phase I archaeology survey and seven properties were recommended for a Phase I architectural history investigation (see Figures 8-1 and 8-2). In October 2003, a Phase I cultural resources survey was conducted to determine whether the project area contains previously recorded or unrecorded cultural resources that may be potentially eligible for listing on the NRHP.

The APE for archaeology included all areas of proposed construction activities or other potential ground-disturbing activities associated with construction of the highway extension (Figures 8-1 and 8-2). The archaeological investigation consisted of a review of documentation of previously recorded sites within one mile of the project area and of surveys previously conducted within the project area, as well as a Phase I archaeological field survey. The Phase I archaeological survey area included approximately 109 acres within the Central Lakes Deciduous archaeological sub-region. No archaeological resources were found during the Phase I survey or in previous studies.

The APE for architectural history accounts for any physical, auditory, or visual impacts to historic properties, including alterations to historic farm parcel acreage. The Phase I architectural history investigation consisted of review of documents of previously inventoried properties and of previously conducted surveys within the project area, as well as a field survey. Of the seven architectural properties surveyed the David Kinghorn House (north of CSAH 16 and east of Pike Lake Road, identified as Property 2) and the R.L. Dean House (north of CSAH 16 and east of McKenna Road, identified as Property 6) were recommended as potentially eligible for listing on the NRHP (see Figures 8-1 and 8-2).

The Minnesota Department of Transportation (Mn/DOT) Cultural Resources Unit (CRU) reviewed the project pursuant to its Federal Highway Administration (FHWA)-delegated responsibilities for compliance with Section 106 of the National Historic Preservation Act, as amended (36 CFR 800). The Mn/DOT CRU concluded that neither the Kinghorn nor the Dean residence should be considered NRHP-eligible based on their lack of sufficient historical integrity, demonstrating that neither David Kinghorn nor R.L. Dean made any significant historical contributions at the national, state, or local level. In a letter dated January 7, 2004, Mn/DOT CRU submitted a determination that no historic properties listed in or eligible for the NRHP will be affected by the proposed project. The SHPO concurred with this determination in a letter dated February 4, 2004. (See Appendix A)

The Phase I archaeology and architectural survey along with the Mn/DOT CRU “no historic properties” determination were forwarded by FHWA to the SMSC for comment. No comments were provided to FHWA.

8.2 ENVIRONMENTAL CONSEQUENCES

No Build Alternative

The No Build Alternative proposes no new construction and would not affect any NRHP listed or eligible properties/resources along the corridor.

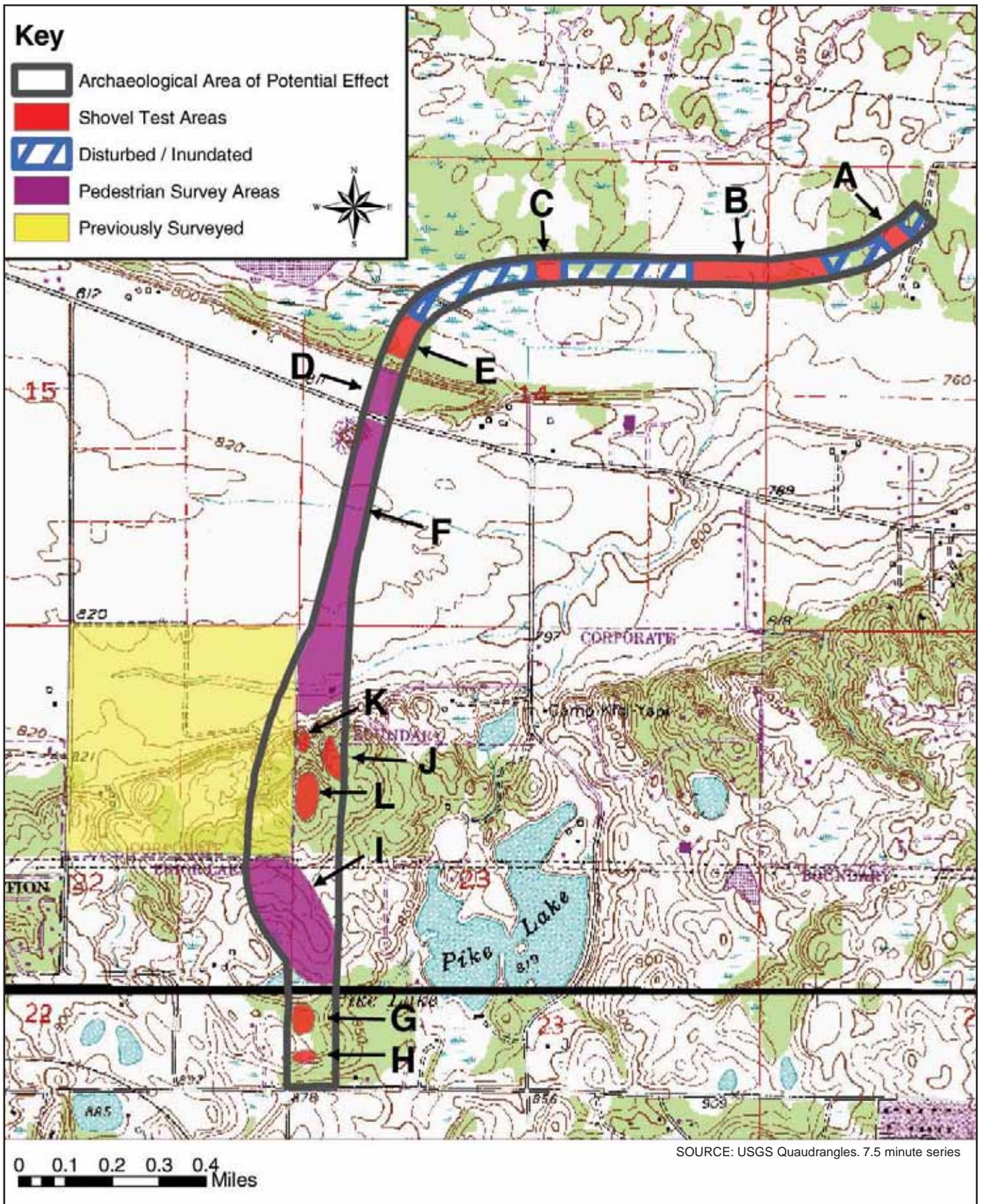
Build Alternative

As noted above, the Build Alternative will not affect any NRHP listed or eligible properties/resources along the corridor.

8.3 MITIGATION

No mitigation is necessary.

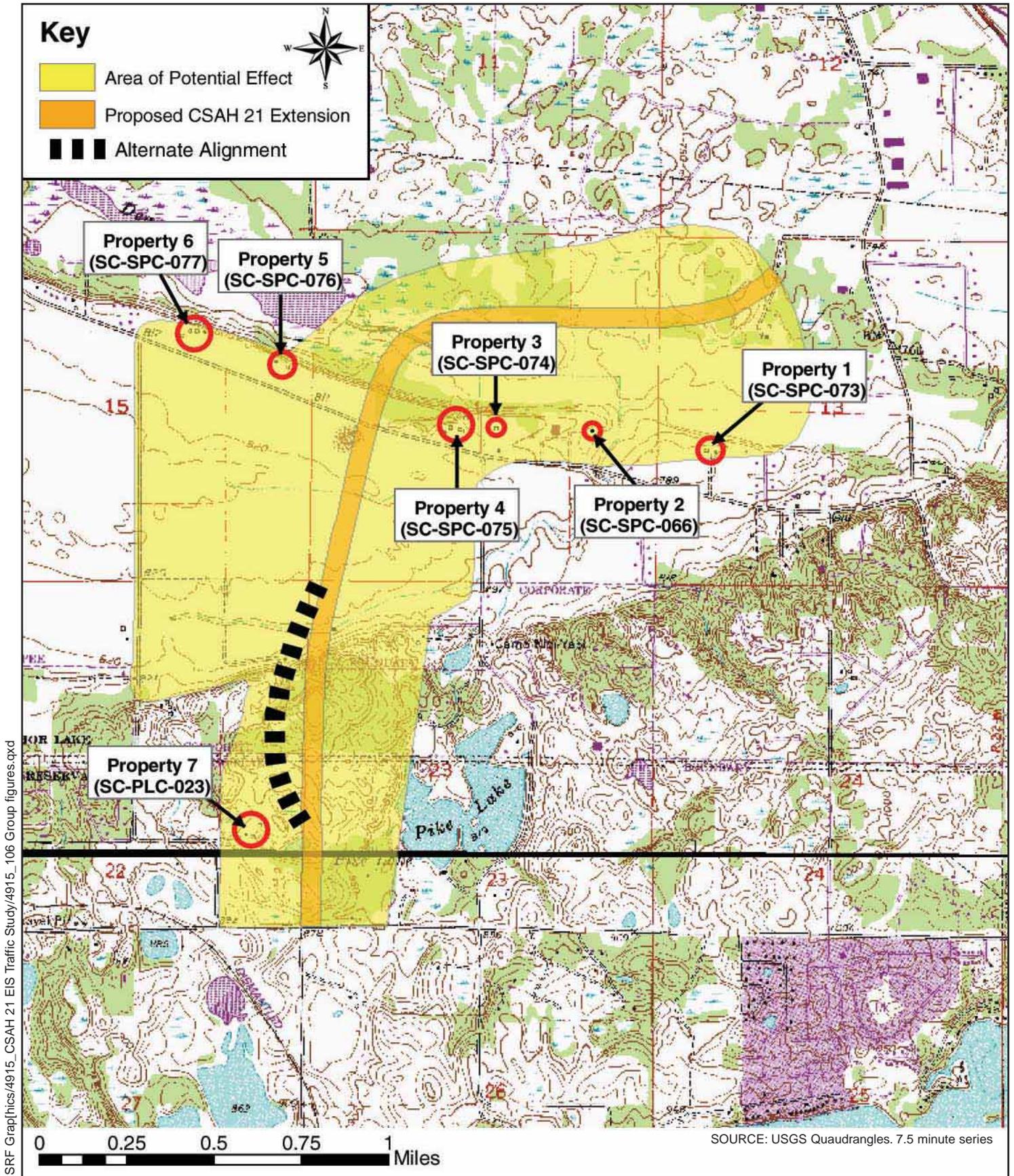
SRF Graphics/4915_CSAH 21 EIS Traffic Study/4915_106 Group figures.qxd



ARCHAEOLOGICAL SURVEY AREAS

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
Scott County, Minnesota

Figure 8-1



ARCHITECTURAL HISTORY SURVEY RESULTS

CSAH 21 DRAFT ENVIRONMENTAL IMPACT STATEMENT
 Scott County, Minnesota

Figure 8-2

9.0 CONSTRUCTION IMPACTS

This chapter describes potential construction-related impacts that may result from the proposed improvements. Major environmental effects associated with construction include: traffic congestion; impacts to the transportation system; impacts to business access; vegetation/invasive species/noxious weeds; noise; air quality; visual; water quality and soil erosion; habitat impacts; potential contaminated substance spills/leaks; borrow and excess material; utility disruption; and earthborne vibrations. With the implementation of the preferred alternative, all applicable precautions would be taken to limit impacts connected with highway, interchange, and bridge construction activities.

9.1 AFFECTED ENVIRONMENT

The affected environment includes the study area from CSAH 42 to CSAH 18. Previous chapters of this DEIS describe the existing transportation system, land use, and natural resources in the study area.

9.2 ENVIRONMENTAL CONSEQUENCES

9.2.1 Traffic

It is expected that construction of the Build Alternatives with any of the CSAH 21/ CSAH 18 intersection options would take a minimum of two years to complete. During construction, temporary traffic delays and associated congestion may make travel in the project area difficult.

A construction staging plan would be developed during final design that would further assess potential traffic problems. The objectives of the plan would include: minimization of traffic pattern disruption, property access closures or length of closure, impacts to business access, and impacts to emergency services (police, fire, rescue, and hospital access) and transit services and maximization of direct detour routes, where necessary. These objectives would be balanced against the overall impact to the project schedule.

Traffic control measures would be in accordance with the Minnesota Manual on Uniform Traffic Control Devices (MMUTCD).

9.2.2 Vegetation/Invasive Species/Noxious Weeds

As part of the construction plan, the likelihood of introducing or spreading invasive species will be determined and measures to minimize harm will be identified. Measures to minimize harm may include weed free staging areas, use of invasive-free seed and mulch, equipment cleaning before arrival on site, and replanting in disturbed areas. Additionally, eradication strategies would be determined should an invasive species be introduced to the project area as a result of construction of the project.

9.2.3 Noise

Noise would be generated by construction equipment used in the construction of the highway extension. Noise levels due to construction activities in the project area would vary depending on the types of equipment used, the location of 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. Adverse impacts resulting from construction noise are expected to be temporary and limited to properties adjacent to the project corridor. Phasing of project construction would depend on funding; the current construction schedule is expected to take a minimum of two years. Noise impacts during construction would not be continuous along the entire corridor. The construction noise impacts would be localized near the area where construction was taking place. The Red Oak Elementary School is a “unique noise receptor.” As such, the County should coordinate with the school during construction to minimize impacts.

Section 6.2 identifies the potential traffic noise impacts that may result from the proposed project. Noise impacts may also be experienced at the identified receptors from the construction equipment and other activities related to the highway construction.

All construction equipment would be properly muffled and held to the manufacturer’s specifications as they pertain to operational noise levels. Construction methods that could result in noise of inordinate levels of intrusiveness (such as pile driving) may be necessary. The noise associated with this activity would be minimized in intrusiveness by restricting the hours of operation as much as possible and complying with city noise ordinances. The City of Shakopee does not limit hours of construction but has defined restrictions on the decibel level of construction noise. In the City of Shakopee, daytime construction noise restrictions are 60 decibels in residential areas, 65 decibels in commercial areas, and 75 decibels in industrial areas. Nighttime construction noise restrictions are the same as daytime restrictions in commercial and industrial areas but are reduced to 50 decibels in residential areas. The City of Prior Lake does not have a decibel level restriction on construction noise but does restrict construction activities to within the hours of 6:00 am and 10:00 pm Monday through Friday, 7:00 am and 10:00 pm Saturdays, and 8:00 am and 10:00 pm Sundays.

9.2.4 Air Quality

Air quality impacts from construction include increased dust and airborne particulates caused by grading, filling, removals, and other construction activities. Dust impacts would be minimized through standard dust control measures such as watering. After construction is complete, dust levels are expected to return to near existing conditions. Air quality impacts may also result from emissions from construction equipment and possibly from traffic stopped at intersecting roadways or on potential detour routes. These impacts are expected to be minimal and of short duration.

9.2.5 Visual

Visual impacts would occur with construction of the proposed project. Temporary visual impacts would include the presence of equipment and workers.

9.2.6 Water Quality and Soil Erosion

The potential for soil erosion and impacts on water quality are greatest during construction when removal of vegetation for initial clearing, grubbing, and grading activities exposes soil and makes it more susceptible to erosion. The highest potential for adverse impacts relates to the steep slopes, lakes, and wetlands in the project area. As identified in Section 7.1, a National Pollutant Discharge Elimination-State Disposal System (NPDES-SDS) permit would be required for this project. Erosion prevention and sediment control requirements would be followed in accordance with the NPDES-SDS permit, which would require development of an erosion control plan, as well as best management practices (BMPs) contained in Mn/DOT's standard specifications, details, and special provisions. These BMPs may include, but are not limited to, the following: minimizing vegetation clearing; construction of sedimentation basins; silt control devices (silt fences, hay bales); slope drains; and prompt revegetation of exposed construction areas. An erosion control plan would be developed as part of the design for the preferred alternative.

Construction in or near waterways and wetlands would be undertaken in accordance with Mn/DOT's Standard Specifications for Road and Bridge Construction or special provisions to minimize erosion and sedimentation. Also, the DNR has recommended specific ways to minimize disturbance in the area during construction: 1) minimize vehicular disturbance in the area (allowing only vehicles/equipment necessary for construction activities); 2) do not park equipment or stockpile supplies in the area if at all possible; 3) reduce runoff by completing work as rapidly as possible and using erosion control measures such as straw bales or silt fencing; and 4) revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible, to decrease the opportunity for exotic species to invade the area. (Appendix A).

9.2.7 Habitat Impacts

To mitigate the potential impact of the proposed project on fisheries and other wetland habitat, best management practices (BMPs) will be implemented during construction to control erosion and sediment discharge to water bodies.

9.2.8 Potential Contaminated Substance Spills/Leaks

If a spill or leak of hazardous or toxic substances should occur during construction of the proposed project, it would be responded to according to MPCA containment and remedial action procedures. A spill containment plan would be required to be in place prior to construction to minimize these potential impacts.

9.2.9 Borrow or Excess Material

Selection of borrow material that may be required for the construction of the proposed improvements would be the responsibility of the construction contractor. Any new borrow sites would be subject to environmental reviews under Minnesota Rule Chapter 4410.4300, Subp. 12 and may require an archaeological survey of the site. Archaeological reviews of these areas are conducted by the Cultural Resources Unit at Mn/DOT.

The excavation of soil materials for new roadway construction would be necessary for the Build Alternative including any of the three design options at CSAH 21/CSAH 18. The disposal of excess material would be conducted in accordance with Mn/DOT specifications and according to a project disposal plan that would be in accordance with state regulatory requirements. There would be no disposal of excess materials into wetlands, floodplains or other sensitive areas.

9.2.10 Utility Disruption

There are transmission power lines within the study area and a major gas main that crosses the proposed CSAH 21 alignment west of CSAH 18. The Metropolitan Council Environmental Services (MCES) interceptor MWCC 7120-2 and a Prior Lake interceptor cross the proposed alignment in the area.

Impacts to utilities are anticipated during construction of the Build Alternative with any of the three CSAH 21/CSAH 18 intersection options. Impacts could include utility relocation and/or temporary interruptions in service. If the Build Alternative is selected as the preferred alternative, a design plan would be developed to determine exact locations of utilities and to minimize potential impacts, including coordination with utility providers.

9.2.11 Earthborne Vibrations

This project is not anticipated to require blasting; however, it could involve pile driving, compacting and/or pavement breaking or the operation of other construction equipment that may result in temporary earthborne vibrations. The location and magnitude of construction vibrations cannot be assessed until the final design phase of the project; however, based on the nature of the planned work and affected environment, no substantial impacts are anticipated.

9.3 MITIGATION

The discussions in Section 9.2 include identification of some mitigation measures that could be used to avoid/minimize construction impacts. Following the selection of a preferred alternative, details of the construction activities including mitigation measures such as a detailed erosion control plan; a plan for management and disposal of any excess material; a construction staging plan; traffic flow management techniques and access maintenance and/or detour plan would be developed. In addition, safety measures would be used (fencing, signage) that would preclude the public from entering areas of construction or, if applicable, from passing beneath bridge construction (when overhead activities are a concern).

10.0 CUMULATIVE IMPACTS

This chapter describes the potential for cumulative impacts, both direct and indirect, from the Build and No Build Alternatives in combination with other past, present and reasonably foreseeable future actions.

Cumulative impacts analysis takes into account an array of potential actions and their impacts that are unrelated to the proposed action (Build Alternative) except to the extent that their impacts may, in combination with the potential impacts from the proposed action, result in adverse impacts. Cumulative impacts are defined as follows in the Council on Environmental Quality's (CEQ) regulations (40CFR 1500-1508) 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40CFR 1508.7)

Impacts of the No Build Alternative and Build Alternative have been discussed in Chapters 4 through 9. Cumulative impacts are not causally linked to the Build Alternative, but are the total effects of all known federal and non-federal actions (past, present, and future) in the vicinity of the proposed action that impact the same resources as the proposed action. The purpose of cumulative impacts analysis is to look for 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 significant and adverse when combined with other actions.

10.1 CUMULATIVE IMPACT METHODOLOGY

The goal of cumulative impact analysis is to consider the potential combined effects of past, existing and anticipated future actions, with the intent of identifying planning/implementation measures that can be taken to mitigate (avoid, minimize or otherwise alleviate) the effects of these actions. Based on the CEQ definition of cumulative effects and the goals stated, the study methodology followed these steps:

1. Identify the time frame (past, present, and future) for analysis.
2. Identify the resources to be analyzed.
3. Identify the geographic area to be considered in assessing each resource.
4. Define past, present, and future conditions.
5. Assess impacts to resources resulting from the proposed project, other future actions in the study area, and the cumulative impact of these actions. This assessment includes the consideration/identification of avoidance and mitigation measures to alleviate adverse cumulative impacts to these resources.

10.1.1 Establish Time Frame for Analysis

The temporal scope of the analysis attempts to consider previous resource impacts since the construction of the new river crossing at TH 169 in 1995 as well as anticipating events extending to 2030, the Build analysis year for this project.

10.1.2 Identify Resources to be Analyzed

Cumulative impacts analysis is limited to those resources, ecosystems, and human communities affected by the proposed Build Alternative and intersection options – wetlands, vegetation/habitat/wildlife, traffic noise, and land use (includes right of way and farmland). The direct and indirect effects of the project on these resources are discussed throughout Chapters 4 through 8.

10.1.3 Identify Geographic Area to be Studied for Each Resource

The geographic scope of this analysis varies by the resource under examination, but in general is limited to an area proximate to the project limits.

10.1.4 Past, Present and Future Conditions in the Study Area

10.1.4.1 Past Actions

Past actions in the project area include residential and commercial development, as well as highway and other infrastructure construction.

Recent actions considered for this assessment of the potential for cumulative impacts include:

- Development of the Southbridge area, including residential, school, and commercial use
- Development to the east of the project area including Crossings Boulevard
- Development immediately south of the project area in Prior Lake
- Other development in northern Scott County, including west of the project area in Shakopee and along CSAH 42 in Prior Lake

10.1.4.2 Future Actions Anticipated

The following current or known future projects were considered for this analysis:

- Extension of Crossings Boulevard
- Construction of Pike Lake Road
- Extension of Valley View Road
- Planned residential development north of CSAH 16 and east of CSAH 21
- Planned residential development on SMSC land adjacent to proposed CSAH 21
- Planned community park north of CSAH 16 and west of proposed CSAH 21
- Planned residential development south of CSAH 16 and the Southbridge development
- Planned South Bridge Transit Station Park-and-Ride at TH 169 and CSAH 18

10.2 EFFECTS ON RESOURCES

To the degree possible given available information/resources, the following steps were taken to analyze potential cumulative effects:

- Summarize the existing condition of each potentially affected resource, as it compares to past conditions.
- Summarize impacts to the affected resources from the proposed action as described in the previous chapters of the DEIS.
- Summarize the impacts to the affected resources from the reasonably foreseeable future actions. Discuss the potential cumulative impacts to the resource based on consideration of effects of all past, present and future actions as well as consideration 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 resources.

10.2.1 Wetlands

10.2.1.1 Existing Conditions

Fourteen wetlands (Wetlands A – M, W-4 and W-5) were identified in the project corridor. A summary of wetland types and areas is presented in Table 7-3. Identified wetlands are classified according to methodologies set forth in *Wetlands and Deepwater Habitats of the United States* (USFWS/OBS Publication 79/31; Cowardin et al. 1979) and *Wetlands of the United States* (USFWS Circular 39, Shaw and Fredine, 1971). Figures 7-3 through 7-7 show wetland boundaries accepted by the TEP and used for project design.

10.2.1.2 Impacts from the Proposed Action

As shown in Table 7-3, the Build Alternative would impact approximately 7.03 to 7.07 acres of wetlands. At a 2:1 mitigation ratio, the area of impact for the project will necessitate approximately 14.06 to 14.14 acres of wetland mitigation (at least three-fourths of which must be created or new replacement wetlands). If wetland regulations change during the course of project implementation, the required mitigation may change.

10.2.1.3 Potential for Cumulative Impacts

Together with past and future planned actions in the study area, the proposed project is anticipated to result in adverse cumulative impacts to the area's wetland resources. In addition to the wetlands impacted directly by the proposed project, other wetlands have and will be impacted by past and proposed actions in the study area.

Proposed actions include the extension of Pike Lake Road and development north of CSAH 16. At the time of the analysis, it is estimated that the construction of Pike Lake Road would impact up to eight acres of wetland. The City of Shakopee and Scott County have and

continue to coordinate with the Prior Lake Spring Lake Watershed District (PLSLWD) to locate off-site opportunities for mitigation, specifically to locate one large off-site mitigation location. This concept has been agreed to in concept by COE and SWCD staff.

Wetlands in Minnesota are protected by Federal law (the Clean Water Act – Section 404) and State law (Minnesota Wetland Conservation Act and Executive Order) that mandate the “no net loss” concept of wetland functions and values. These laws require the avoidance of wetland impacts when possible. When avoidance is not possible, impacts must be minimized and mitigated. Both the DNR and the Wetland Conservation Act (WCA) require mitigation of wetland impacts on at least a 2:1 ratio.

10.2.2 Vegetation, Wildlife, and Habitat

10.2.2.1 Existing Conditions

The project corridor contains forests, wetlands, grasslands, and farmlands. In the southern portion of the project corridor (i.e., south of CSAH 16), primary types of vegetation include cultivated and pastured farm fields and a stand of maple-basswood oak forest on the YMCA camp property and the SMSC owned land. In the northern portion of the project corridor there are stands of oak forest on the ridge just north of CSAH 16. Adjacent to the Southbridge residential development is a wooded/wetland area with oak trees and non-native wetland grasses. Grasslands in the project area are located primarily south of CSAH 16, and are used as hayfields and pasture land. Consequently, the grasslands have low vegetative diversity and are dominated by pasture grasses.

The types of vegetation listed above provide habitat for wildlife. The maple/basswood forest in the southern portion of the project area is home for several animals including deer, squirrels and many songbirds and is adjacent to wetlands that can provide habitat to amphibians and reptiles. The forested bluff area has been identified as a wildlife corridor. The 20-acre maple-basswood forest core is also an important resource for wildlife. Oak forest throughout the project area can provide habitat to wildlife species such as songbirds, deer and other small mammals. Wetlands in the project area can provide habitat to waterfowl, reptiles, and amphibians. Wetlands that provide suitable wildlife habitat are usually located adjacent to undisturbed uplands, have diverse flora communities and have varied hydrologic regimes. Grasslands in the project area are primarily pasture grasses, considered to have degraded habitat value. However, they may provide habitat to small mammals such as mice, voles and gophers.

10.2.2.2 Impacts from the Proposed Action

Impacts of the Build Alternative would result in the conversion of vegetated areas to impervious surfaces and grassed medians within the roadway right of way.

Approximately 22 acres of the RSEA by Dean Lake will be impacted by the Build Alternative. Under the western alignment option, the Build Alternative will impact approximately 23.6 acres of forest of which 0.8 acres have been determined to be maple-basswood forest core. Under the

eastern alignment options, the Build Alternative will impact approximately 22.8 acres of forest of which 2.3 acres have been determined to be maple-basswood forest core. Construction of the Build Alternative would directly impact some wildlife habitat and potentially create a barrier to wildlife movement.

Where impacts to vegetation and wildlife are unavoidable, the effect of the impacts would be minimized through design features. Disturbed areas would be re-vegetated with native plants and land in the right of way would be managed to have diverse grassy vegetation with trees and shrubs outside the required roadway clear zone. To minimize wildlife/vehicular conflicts in the upper bluff wildlife corridor, it is anticipated that a fence will be constructed along the right of way. Two grade-separated wildlife crossings would be incorporated into this project.

10.2.2.3 Potential for Cumulative Impacts

In association with past and future planned actions for the study area, the loss of additional vegetation and wildlife habitat is probable. The proposed project has been located to minimize impacts. It can be anticipated that future actions including roadway and trail construction and residential development will include land use planning and preliminary studies to avoid and/or minimize impacts to vegetation, wildlife and habitat. Where impacts are unavoidable, it is likely that exercise of land use controls through project review and permitting by the appropriate regulatory agencies will require use of design considerations to reduce the overall impact.

10.2.3 **Land Use/Right of Way/Farmland**

10.2.3.1 Existing Conditions

The project area includes land in the cities of Prior Lake and Shakopee. Existing land uses include residential (rural, single family and townhome), an elementary school, agricultural, open space and private recreational uses. Commercial development is located in the northwest and northeast quadrants of the proposed CSAH 21/CSAH 18 intersection. A YMCA camp is located adjacent to the project corridor.

The portion of the project area in the City of Shakopee is planned for low-density residential development and is also identified as a “park search area.” A greenway corridor is also designated along the west side of the existing CSAH 21 corridor from Prior Lake to the Minnesota River.

The City of Prior Lake has designated the area near the existing CSAH 21/CSAH 42 intersection for business and high-density land uses. Land in Prior Lake north of the intersection is designated as urban low to medium density. A mixed density residential and community use development in the southwest quadrant of the CSAH 21/CSAH 42 intersection is under construction; subsequent phases of the development will occur over the next five years.

The SMSC has long range plans for the project area including planned natural areas (i.e., forest management), stream and wetland restoration areas and an 80 acre housing development.

10.2.3.2 Impacts from the Proposed Action

The proposed project will require additional right of way (i.e., right of way acquisition). There would not be any total acquisitions or relocations.

Three farms are located along the project corridor. The Build Alternative will acquire between 8.4 and 8.6 acres of agricultural land affecting three farming operations. The affected land is either under cultivation or retained as open space. No farm buildings would be removed.

10.2.3.3 Potential for Cumulative Impacts

The proposed project area encompasses a substantial portion of undeveloped land. The proposed project will require conversion of farmland for right of way. Both the City of Shakopee and Prior Lake have plans for development of these undeveloped areas. The proposed project and the future actions planned for the area are not anticipated to result in an adverse cumulative impact because the proposed project is consistent with proposed land use planning. Future land development will be reviewed for its consistency with the local comprehensive land use plans. 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, and 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 on agricultural lands and operations are integrated into the decision-making process, and that impacts upon agricultural land are minimized to a reasonable extent. It is anticipated that future actions in the project area will be evaluated to identify any soils classified by the Natural Resources Conservation Service (NRCS) as being prime and unique farmland or statewide and local important farmland. In addition, areas proposed for future actions would be reviewed to identify land held under state and/or federal easement or protection programs.

10.2.4 **Traffic Noise**

10.2.4.1 Existing Conditions

Existing (2004) modeled noise levels demonstrate that one noise receptor exceeds state daytime noise standards. Modeled noise levels do not exceed the federal standards. Nighttime noise levels demonstrate that six receptors exceed the state nighttime noise standard.

10.2.4.2 Impacts from the Proposed Action

Existing daytime L_{10} noise levels vary from 40 dB(A) in isolated areas away from existing traffic noise sources, to 66 dB(A) along CSAH 42. Construction of the proposed project would result in an eight dB(A) increase of L_{10} daytime noise levels over existing conditions in areas close to existing high volume roadways and up to 29 dBA in isolated areas currently not exposed to traffic noise. Nighttime noise levels would have similar increases.

10.2.4.3 Potential for Cumulative Impacts

Traffic volumes from future development have been assumed in the Build Alternative; therefore cumulative impacts have been accounted for in the analysis and mitigation for noise impacts. Additionally, as development in the project area occurs in the future there will be opportunities to create buffers to decrease noise impacts.

10.2.5 **Visual**

10.2.5.1 Existing Conditions

The visual elements of the study area can be divided into two groups: natural and cultural, which together combine to create the visual landscapes affected by the proposed project.

The natural environment is composed of those visual elements not constructed by humans. Natural elements within the project corridor include the maple-basswood and oak forests, grasslands, wetlands and lakes (Dean Lake and Pike Lake). The cultural environment includes those visual elements that are the result of human modification of the natural landscape or construction activities such as clearing and grading for agriculture (i.e., the farms south of CSAH 16) and construction of homes, businesses and existing roadways (particularly the Southbridge area).

Together the natural and cultural environments combine to create a general rural landscape in the southern project area, dominated by agricultural and rural residential cultural elements such as pastures, fields, barns, and houses, and wooded river bluffs, and a suburban landscape in the northern most portion of the project area.

10.2.5.2 Impacts from the Proposed Action

The Build Alternative will introduce views of pavement and traffic to the visual setting for neighbors (where those views are not buffered by landscaping).

The construction of the proposed roadway and transit station will change the landscape by grading and introduction of pavement and other structural roadway and transit station features through currently undisturbed and wooded bluffs and farm fields. While urban design may be less visually compatible than rural design with the existing rural landscape, the proposed design will not be inconsistent with the future plans for the area, which anticipate suburban development.

The four-lane interchange option will have CSAH 21 bridge over CSAH 18 and will be 27 feet above the current elevation. This option, which includes 26-foot high retaining walls, will be more visible to adjacent neighbors than the two at-grade intersection options. The six-lane at-grade intersection option will have more pavement than the four-lane at-grade intersection option and will therefore have a greater visual impact of the two at-grade intersection options.

10.2.5.3 Potential for Cumulative Impacts

The study area is changing from a rural to an urban landscape. The project area has and will continue to change to a more suburban landscape as development progresses. Land use plans for the project area include low to medium density residential development and potential community park development. Visual impacts can be mitigated by design features such as landscaped buffers and minimization of roadway cross sections. Mitigation measures have been addressed with the proposed project and are anticipated to be considered as part of regulatory reviews for future planned actions in the study area.

11.0 RELATIONSHIP OF SHORT-TERM USE OF THE ENVIRONMENT VERSUS LONG-TERM PRODUCTIVITY AND IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

This chapter documents the relationship between short-term use of the environment and the maintenance and enhancement of long-term productivity as well as the irreversible and irretrievable commitment of resources associated with the proposed action.

11.1 SHORT-TERM USE OF RESOURCES VERSUS MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Potential impacts to fiscal resources include the use of local, county, state and federal funds for the materials, labor and right of way acquisition required for construction of a Build Alternative. The cost of constructing a Build Alternative and converting existing private property to public land for the transportation use will be recovered through efficient travel. Although premature to be reliably determined, an increase in the tax base may also result due to the increased accessibility to existing and future land uses.

Impacts to social and economic resources (see Chapter 5) such as changes in access and right of way acquisition would be counteracted, similar to the fiscal resource impact, by providing a more efficient transportation facility that would, in the long-term, improve accessibility and mobility in the area.

Chapter 6 identifies the impacts to the natural and physical environment resulting from the Build Alternative, including noise and impacts to vegetation, habitat and wetlands.

The long-term transportation service and efficiency benefits would outweigh short-term adverse impacts to the physical environment (e.g. air quality and noise impacts from construction). Short-term impacts to the natural environment (e.g. vegetation and wetlands) would be mitigated to alleviate long-term consequences.

The short-term use of resources is consistent with the long-term productivity of the area, including present and future transportation needs of the county and region (see Chapter 2). The transportation improvements are based on local, county and regional planning documents which have considered the need for existing and future transportation needs within the context of present and future land use development.

11.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Implementation of the proposed project involves the commitment of a range of fiscal, social and economic, and physical and natural resources. Construction of the Build Alternative would require a substantial one-time expenditure of local, county, state and (potentially) federal funds which are not retrievable. While these public funds are not directly retrievable, the money spent can be considered a long-term investment to the economic vitality of the region.

Land would be acquired for the Build Alternative and is considered an irreversible commitment during the time period that the land is used for a highway facility. However, if greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion would ever be necessary or desirable.

Considerable amounts of fossil fuels, labor and highway construction materials such as cement, aggregate and bituminous material would be required for the Build Alternative. Additionally, large amounts of labor and natural resources are used in the fabrication and preparation of construction materials. The use of these materials is generally considered irretrievable. However, these materials are not in short supply and their use would not have an adverse effect upon continued availability of these resources. In addition, some of these materials may have salvage value and may be recycled at the end of the facility's design life.

The construction and operational requirements of the Build Alternative are similar and generally greater than the energy requirements for the No Build Alternative. However, savings in operational energy requirements would offset construction energy requirements and result in savings in energy usage.

The commitment of these resources is based on the concept that residents in the immediate area, state and region would benefit by the improved quality of the transportation and transit systems. These benefits would consist of improved accessibility, safety, savings in time and greater availability of quality services which are anticipated to outweigh the commitment of these resources.

12.0 COMMENTS AND COORDINATION

This chapter describes the process used to involve governmental agencies and the public in the preparation of the DEIS for the CSAH 21 extension project.

Public and agency involvement for this project has been on-going since the initiation of the 2002 EIS scoping process which included public information meetings, public meetings with local officials and other interested parties, input from the project Technical Advisory Committee (TAC) (described below), a scoping public hearing, and early coordination correspondence with local, state, and federal agencies.

Public and agency involvement played an important part in the preparation of this DEIS. Local governments, agencies and the general public continued to be informed and have had an opportunity to comment on the proposed project throughout the DEIS preparation process through advisory committees, media coverage, project website, and open house and other public meetings.

12.1 AGENCY/LOCAL GOVERNMENT COORDINATION

Scott County is the lead agency for this project. Agency/local government coordination included the TAC, cooperative agencies, and small group meetings as needed to discuss/resolve issues as they were identified. The DEIS process has also included coordination with several natural and cultural resource agencies.

Copies of the DEIS are being provided to reviewing agencies, local libraries, city/town halls and to other interested organizations.

12.1.1 Technical Advisory Committee (TAC)

A TAC was established during scoping and has continued as part of the DEIS process. This committee includes representatives from federal, state, regional, tribal, and local agencies/governments. The purpose of the TAC members is to represent their agency or group and provide technical input on the project design. The group meets periodically to discuss technical issues related to the project.

Technical Advisory Committee

- * Federal Highway Administration (FHWA)
- * U.S. Army Corps of Engineers (COE)
- * Minnesota Department of Transportation (Mn/Dot)
- * Minnesota Department of Natural Resources (DNR)
- * Metropolitan Council
- * Scott County
- * City of Shakopee
- * City of Prior Lake
- * Prior Lake-Spring Lake Watershed District (PLSLWD)
- * Lower Minnesota River Watershed District (LMRWD)
- * Shakopee Mdewakanton Sioux Community (SMSC)

12.1.2 Natural Resources Coordination

In addition to including natural resource representatives on the TAC, the County met with the DNR, the Spring Lake/Prior Lake Watershed District, the Lower Minnesota River Watershed District, the Corp of Engineers, Board of Water and Soil Resources, the Cities of Prior Lake and Shakopee, the Shakopee Mdewakanton Sioux Community, and the Scott County Soil and Water Conservation District throughout the scoping and EIS phases of the project to review specific impacts to natural resources. Meetings held during the scoping phase occurred in November and December 2003. Meetings held during the EIS phase of the project occurred in February and April 2004 and March and December 2005 and January 2006. Additionally, a meeting with the City of Shakopee's Environmental Advisory Committee was held in December 2003.

12.1.3 Cultural Resources Coordination

Chapter 8 describes the cultural resource studies conducted for the project. The Mn/DOT CRU reviewed the project for compliance with Section 106 of the National Historic Preservation Act, as amended (36 CFR 800) and submitted a determination that no historic properties listed in or eligible for the NRHP will be affected by the proposed project. The SHPO concurred with this determination.

The Phase I archaeology and architectural survey along with the Mn/DOT CRU finding were forwarded by FHWA to the SMSC for comment. No comments were provided.

12.2 PUBLIC INVOLVEMENT

Public and agency involvement was conducted in compliance with both federal (National Environmental Policy Act) and Minnesota environmental review and public involvement requirements. The public involvement process was designed to be inclusive of all residents in the project area as well as other interested parties.

12.2.1 Public Open Houses

Two public information open houses were held during the scoping phase, one on September 26, 2002, and one on May 21, 2003. Comments received during those meetings included concerns about noise, YMCA property, buffering, traffic and geometrics, and the connection to Southbridge Parkway. Two public information open houses were also held during the DEIS preparation phase, one on January 8, 2004 and one on March 3, 2005. Comments received during these meetings included concerns about traffic, school safety, noise, pedestrian trail, design preferences, and the natural environment. The public was given the opportunity to provide written comments at, and following, all meetings.

12.2.2 Website

Scott County maintains a project website where project reports can be viewed along with many of the materials that were presented at the open houses. The website is updated when new information is available. The website can be found at the following address: http://www.co.scott.mn.us/xpedio/groups/public/documents/web_files/ne_ne_studycsah21extfra me.hcsp

12.2.3 DEIS Notice of Availability and Public Hearings

A public hearing will be held on the DEIS a minimum of 15 days after the notice of its availability is published in the Federal Register. The purpose of the public hearing will be to provide the public the opportunity to review the Build Alternative (including CSAH 21/CSAH 18 intersection options) and the findings of the impact analysis completed as part of the DEIS process, and opportunity to comment on the DEIS.

The availability of the DEIS will be published in the Federal Register and the Minnesota EQB *Monitor*. Advertisements announcing the availability of the DEIS and the date of the public hearing will be published in various local and regional publications. Copies of the DEIS will be available to the public for a minimum of 45 days following publication in the Federal Register.

13.0 LIST OF PREPARERS

AGENCY / STAFF NAME	DEIS RESPONSIBILITY
Federal Highway Administration	
Cheryl Martin	Review of DEIS; coordinate FHWA input; TAC member
United States Army Corps of Engineers	
Tamara Cameron	Review of DEIS; coordinate U.S. COE input; TAC member
Minnesota Department of Transportation	
Linda Heath	Review of DEIS; coordinate Mn/DOT input; TAC member
Mary Bieringer	Review of DEIS; coordinate Mn/DOT input; TAC member
Lisa Freese	Coordinate Mn/DOT input; TAC member
Gerry Larson	Review of DEIS; evaluation of environmental compliance
Jason Alcott	Coordinate Mn/DOT input; review for state and federal threatened and endangered species
Liz Abel	Coordinate Mn/DOT input; review for cultural resources
Minnesota Department of Natural Resources	
Wayne Barstad	Coordinate DNR input; review for environmental issues; TAC member
Metropolitan Council	
Ann Braden	Coordinate Met Council input, TAC member
Scott County	
Mitchell Rasmussen	Scott County Project Engineer; TAC member
Dawn Gibas	Coordinate Scott County input with regard to natural resources; TAC member
Al Frechette	Coordinate Scott County input with regard to environmental health; TAC member
Lezlie Vermillion	Coordinate Scott County input; TAC member
Brian Sorenson*	Coordinate Scott County input
Greg Ilkka	Scott County Project Engineer; TAC member

AGENCY / STAFF NAME	DEIS RESPONSIBILITY
Local Representation	
Bruce Loney	Coordinate City of Shakopee input; TAC member
Michael Leek	Coordinate City of Shakopee input; TAC member
Bud Osmundson*	Coordinate City of Prior Lake input; TAC member
Steve Albrecht	Coordinate City of Prior Lake input; TAC member
Watershed Districts	
Shannon Lotthammer	Coordinate Prior Lake-Spring Lake Watershed District input; TAC member
Terry Schwalbe	Coordinate Lower Minnesota River Watershed District input; TAC member
Shakopee Mdewakanton Sioux Community	
Bill Rudnicki	Coordinate SMSC input as SMSC Tribal Administrator; TAC member
Stan Ellison	Coordinate SMSC input as SMSC Land Manager; TAC member
Leonard Wabasha	Coordinate SMSC input; TAC member
Dan Guenther	Coordinate SMSC input as consultant to SMSC; TAC member
SRF Consulting Group, Inc.	
Randy Geerdes	Project oversight
Jim Dvorak	Engineering oversight and coordination
Dave Nelson	Design/Engineering
Jack Sullivan	Design/Engineering
Nancy Frick	DEIS oversight, coordination and preparation
Michele Ross	DEIS preparation and noise analysis
Barbara Walther	DEIS preparation (wetland resources)
Lisa Goddard	DEIS preparation (water resources)
Steve Wilson	Transportation planning for DEIS

AGENCY / STAFF NAME	DEIS RESPONSIBILITY
SRF Consulting Group, Inc. continued	
Patrick Corkle	Traffic operations analysis for DEIS
Craig Vaughn	Traffic operations analysis for DEIS
Vishnu Garg	Transportation planning for DEIS
Jonathan Ehrlich	Air quality analysis for DEIS
OTHER SUB-CONSULTANTS	
Anne Ketz, The 106 Group	Cultural resource investigation and reporting for DEIS
David Mussel, Braun Intertec	Phase I Environmental Site Assessment for DEIS

*Denotes this individual is no longer with the corresponding agency.

14.0 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE STATEMENT ARE SENT

State Agencies

Department of Agriculture
Department of Commerce
Environmental Quality Board
Department of Health
Department of Natural Resources
Pollution Control Agency
Department of Transportation
Board of Water and Soil Resources

Libraries

Technology and Science Library
Prior Lake Library
Shakopee Library

Federal

U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

Regional

Metropolitan Council

Local

Scott County Government Center
Shakopee City Hall
Prior Lake City Hall

Tribal

Shakopee Mdewakanton Sioux community

Watershed Districts

Prior Lake-Spring Lake Watershed District
Lower Minnesota River Watershed District

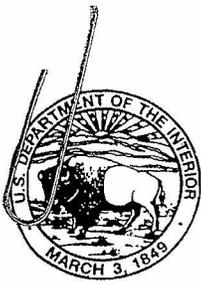
APPENDIX A

AGENCY COORDINATION

APPENDIX A

AGENCY COORDINATION

- **Mn/DOT Cultural Resources Unit Correspondence**
- **Minnesota Historical Society Correspondence**
- **USFWS Correspondence**
- **Mn/DOT Environmental Services Unit Correspondence**
- **MnDNR Natural Heritage Program Correspondence (2)**
- **USDA/NRCS AD 1006**



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Twin Cities Field Office
4101 East 80th Street
Bloomington, Minnesota 55425-1665

JUL 20 2005

Mr. Jason Alcott
Natural Resource Specialist
Office of Environmental Services
Minnesota Department of Transportation
395 John Ireland Boulevard, MS 620
St. Paul, Minnesota 55155-1899

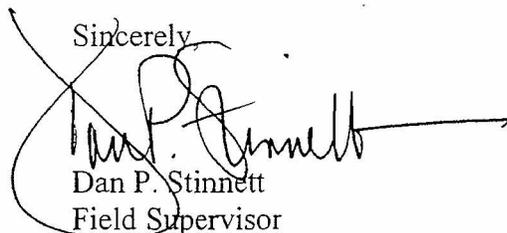
Dear Mr. Alcott:

This is in response to your letter dated June 1, 2005, requesting concurrence from our agency regarding potential effects to the federally threatened bald eagle (*Haliaeetus leucocephalus*) as a result of the proposed extension of County State Aid Highway (CSAH) 21 in the cities of Shakopee and Prior Lake. The proposed project involves the approximate three mile extension of a four-lane expressway. In addition, the intersection of CSAH 21 and CSAH 18 is being evaluated for both a six-lane intersection and four lane interchange. The project would connect County Road (CR) 42 to CR 16 and CR 18 at the intersection of Southbridge Parkway in Scott County, Minnesota.

According to information found in Minnesota's Department of Natural Resource (DNR) Natural Heritage Database, there are no records of a bald eagle nest site in the general vicinity of the project area. Because of the location and type of activity proposed, we concur that this project is not likely to adversely affect any federally listed or proposed threatened or endangered species or their critical habitat. This precludes the need for further action on this project as required under section 7 of the Endangered Species Act of 1973, as amended. However, if the project is modified or new information becomes available which indicates that listed species may be affected, consultation with this office should be reinitiated.

We appreciate the opportunity to comment and look forward to working with you in the future. If you have questions regarding our comments, please call Mr. R. Nicholas Rowse of my staff at (612) 725-3548, extension 210 or by email at nick_rowse@fws.gov.

Sincerely,



Dan P. Stinnett
Field Supervisor



Minnesota Department of Transportation

Transportation Building
395 John Ireland Boulevard
Saint Paul, Minnesota 55155-1899

January 7, 2004

Direct Line: (651) 284-3244
Mail Stop 620

Mr. Dennis A. Gimmestad
Government Programs & Compliance Officer
State Historic Preservation Office
Minnesota Historical Society
345 Kellogg Blvd. W.
St. Paul, MN 55101



Re: CSAH 21 Extension, Shakopee and Prior Lake, Scott County
Minn. Archaeological License #03-072
SHPO No. Pending

Dear Mr. Gimmestad:

We have reviewed the above-referenced undertaking pursuant to our FHWA-delegated responsibilities for compliance with Section 106 of the National Historic Preservation Act, as amended (36 CFR 800). Scott County is proposing to use FHWA funds to construct an extension of CSAH 21 between CSAH 42 in Prior Lake and CSAH 18 in Shakopee. Please find enclosed one copy of *Phase I Cultural Resources Survey for the Proposed County State Aid Highway (CSAH) 21 Scott County Extension Project, Shakopee and Prior Lake, Scott County, Minnesota*, completed by The 106 Group.

The survey identified no archaeological sites within the project area of potential effects (APE). We do not concur with The 106 Group's recommendations that the David Kinghorn Farmstead house (SC-SPC-066) and the R. L. Dean Farmstead house (SC-SPC-076) are potentially eligible for the National Register of Historic Places (NRHP) under Criteria B and C. Both houses appear to lack sufficient integrity to be eligible under Criterion C. David Kinghorn was an early settler in Scott County (ca. 1852), a Sergeant-at-Arms at the Minnesota Constitutional Convention in 1857, and a member of the Minnesota House of Representatives in 1857-58. Reputedly, Kinghorn also served as a teacher to American Indians in Redwood County around 1860 to 1862. These achievements do not appear to be of particular historical significance and the house, which was built ca. 1880, post-dates all of these activities. The report presents no evidence to suggest that R. L. Dean made any significant historical contributions at the national, state, or local level. For these reasons, we do not believe that the Kinghorn or Dean residence should be considered NRHP-eligible under Criterion B.

It is the opinion of this office that **no historic properties** listed in or eligible for the National Register of Historic Places will be affected by the proposed project. We are providing you with this determination pursuant to the responsibilities given the State Historic Preservation Office (SHPO) by 36 CFR 800. Please call if you have any questions.

Sincerely,

Elizabeth J. Abel
Historical Archaeologist/Historian
Cultural Resources Unit (CRU)

encs.

cc: Cheryl Martin FHWA (w/4 report copies)
Mark Dudzik, State Archaeologist
Nancy Frick, SRF
Joe Hudak, Mn/DOT CRU

Mn/DOT CO File
Mn/DOT CRU Project File



MINNESOTA HISTORICAL SOCIETY

February 5, 2004

Ms. Elizabeth Abel
Cultural Resources Unit
MN Dept. of Transportation
Transportation Building, MS 620
395 John Ireland Boulevard
St. Paul, MN 55155-1899



Re: CSAH 21 Extension from CSAH 42 in Prior Lake to CSAH 18 in Shakopee
T115 R22 S13, 14, 22 & 23, Scott County
SHPO Number: 2004-0905

Dear Ms. Abel:

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800), and to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

We have reviewed the results of the survey of the project area, as well as your analysis of the survey results. We concur with your determination that no properties listed on or eligible for listing on the National Register of Historic Places will be affected by the project.

Contact us at 651-296-5462 with questions or concerns.

Sincerely,

Dennis A. Gimmestad
Government Programs & Compliance Officer

cc: Anne Ketz, The 106 Group

cc: Nancy Frick, SRF



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Twin Cities Field Office
4101 East 80th Street
Bloomington, Minnesota 55425-1665

SEP - 4 2002

Ms. Nancy Frick
Senior Planner
SRF Consulting Group, Inc.
One Carlson Parkway North
Suite 150
Minneapolis, Minnesota 55447-4443

Dear Ms. Frick:

This responds to your July 18, 2002, letter, requesting our input on any issues related to a proposed extension of County State Aid Highway (CSAH) 21 from CSAH 42 to CSAH 18. The proposed length of the roadway is approximately 3.2 miles within a 1500-foot corridor.

There will be significant wetland impacts with the proposed extension of CSAH 21 north of CSAH 16, especially at the east end of Dean's Lake. We recommend that the Draft Environmental Impact Statement evaluate the feasibility of upgrading Mckenna Road (CSAH 21) and Eagle Creek Boulevard (CSAH 16), as an alternative constructing a new highway, which will have greater environmental impacts that upgrading an existing highway.

Lands of the Minnesota Valley National Wildlife Refuge lie just north of Highway 101 and the additional stormwater runoff from a new highway must be treated before outletting into the wetlands of the Refuge. Given the location and type of activity proposed, we have determined that the project is not likely to adversely affect any federally listed or proposed threatened or endangered species or adversely modify their critical habitat. This precludes the need for further action on this project as required under section 7 of the Endangered Species Act of 1973, as amended. However, if the project is modified or new information becomes available which indicates that listed species may occur in the affected area, consultation with this office should be reinitiated.

We appreciate the opportunity to comment and look forward to working with you in the future. If you have questions regarding our comments, please call Mr. R. Nicholas Rowse of my staff at (612) 725-3548, extension 210 or by email at nick_rowse@fws.gov.

Sincerely,

R. Nicholas Rowse

Dan P. Stinnett
Field Supervisor

*advice
FD*





Minnesota Department of Transportation

Office of Environmental Services
395 John Ireland Boulevard, MS 620
St. Paul, MN 55155-1899

Fax: 651/ 284-3754
Phone: 651/ 284-3750

August 13, 2002

Nancy Frick
SRF Consulting Group, Inc.
Suite 150
One Carlson Parkway North
Minneapolis, MN 55447-4443



RE: Federal Threatened and Endangered Species
S.P. Not Assigned
CSAH 21, 4-Lane Extension (Scoping)
From CSAH 42 to CSAH 18
Cities of Prior Lake and Shakopee
Scott County

Dear Ms. Frick

As you have requested I have reviewed the effects the above referenced project will have upon Federal Threatened and Endangered (T&E) Species. The project county is within the distribution range of the bald eagle, a Federal T&E Species. Currently, there are no documented Federally Listed T&E Species within the general project area. However, since project construction will not occur for many years, it is recommended that that the project be re-reviewed for potential impacts to Federal T&E Species during the pre-design phase of project development. If the project is modified or new information becomes available which indicates that listed species may be affected, please contact this office.

This review was completed for Federally Listed T&E Species only. For information on State Listed T&E Species, contact the Natural Heritage and Nongame Research Program of the Minnesota Department of Natural Resources.

Sincerely,

Jason Alcott
Natural Resource Specialist

cc: Gerry Larson Greg Busacker file



Minnesota Department of Natural Resources

Natural Heritage and Nongame Research Program, Box 25

500 Lafayette Road

St. Paul, Minnesota 55155-40__

Phone: (651) 296-7863 Fax: (651) 296-1811 E-mail: sarah.hoffmann@dnr.state.mn.us

November 10, 2003

Nina Berglund
SRF Consulting Group, Inc.
One Carlson Parkway N., Suite #150
Minneapolis, MN 55447-4443



Re: Request for Natural Heritage information for vicinity of proposed CSAH 21 Extension,
T115N R22W Sections 11-15, 22 & 23, Scott County
NHNRP Contact #: ERDB 20030901-003

Dear Ms. Berglund,

The Minnesota Natural Heritage database has been reviewed to determine if any rare plant or animal species or other significant natural features are known to occur within an approximate one-mile radius of the area indicated on the map enclosed with your information request. Based on this review, there are 32 known occurrences of rare species or natural communities in the area searched (for details, see enclosed database printout and explanation of selected fields). Following are specific comments for **only those elements that may be impacted** by the proposed project. Rare feature occurrences not listed below are not anticipated to be affected by the proposed project.

- The northern portion of the proposed extension passes through an area identified by the Minnesota County Biological Survey as a "Site of High Biodiversity Significance" (see the enclosed maps for details). "Sites of Biodiversity Significance" are areas with varying levels of native biodiversity that may contain high quality native plant communities, rare plants, rare animals, and/or animal aggregations. This particular site contains Dry Oak Savanna, Dry Prairie, Oak Woodland-Brushland, and Emergent Marsh natural communities, and several special concern species including Rhombic-Petaled Evening primrose (*Oenothera rhombipetala*), Plains Pocket Mouse (*Perognathus flavescens*), and the Gopher Snake (*Pituophis catenifer*) have been documented within the site. According to the project map submitted for review, the road extension would avoid most of the natural communities noted above with the exception of the emergent marsh communities. We recommend that alternatives that would avoid/minimize impacts to the emergent marsh community be considered. The other community types could also be indirectly impacted by the project through runoff, isolation/fragmentation, or the introduction of invasive non-native species. As such we ask that disturbance in this area be minimized in all ways possible and offer the following recommendations: (1) Minimize vehicular disturbance in the area (allow only vehicles/equipment necessary for construction activities); (2) Do not park equipment or stockpile supplies in the area if at all possible; (3) Reduce runoff by completing the work as rapidly as possible and using erosion control measures such as straw bales or silt fencing; (4) Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible, to decrease the opportunity for exotic species to invade the area.

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Minnesota Natural Heritage Database
Element Occurrence Records

CSAH 21 EXTENSION
T115N R22W SEC. 11-15, 22 & 23, SCOTT COUNTY
MnDNR, Natural Heritage and Nongame Research Program

15:12 Wednesday, NOVEMBER 05, 2003 1
Copyright 2003 State of Minnesota DNR

TWP	RNG	PRIMARY SECTION	FED STATUS	MN STATUS	S RANK	ELEMENT and OCCURRENCE NUMBER	MANAGED AREA
T115N	R21W	06		THR		ACTINONAIAS LIGAMENTINA (MUCKET MUSSEL) #94	MINNESOTA VALLEY NWR
T115N	R21W	06				COLONIAL WATERBIRD NESTING SITE #249	MINNESOTA VALLEY NWR
T115N	R21W	06		END		FUSCONAIA EBENA (EBONY SHELL MUSSEL) #16	MINNESOTA VALLEY NWR
T115N	R21W	06			S2	MIXED EMERGENT MARSH (PRAIRIE) #28	MINNESOTA VALLEY NWR
T115N	R21W	06				MUSSEL SAMPLING SITE #138	MINNESOTA VALLEY NWR
T115N	R21W	06		THR		PLEUROBEMA COCCINEUM (ROUND PIGTOE MUSSEL) #75	MINNESOTA VALLEY NWR
T115N	R21W	06		END		QUADRULA NODULATA (WARTYBACK MUSSEL) #10	MINNESOTA VALLEY NWR
T115N	R21W	06		SPC		STERNA FORSTERI (FORSTER'S TERN) #31	MN VALLEY TRAIL: RICE LAKE WAYSIDE
T115N	R21W	06		THR		TRITOGONIA VERRUCOSA (PISTOLGRIP MUSSEL) #27	MINNESOTA VALLEY NWR
T115N	R21W	07			S2	DRY OAK SAVANNA (SOUTHEAST) SAND-GRAVEL SUBTYPE #4	MINNESOTA VALLEY NWR
T115N	R21W	07		NON		LAMPETRA APPENDIX (AMERICAN BROOK LAMPREY) #101	
T115N	R21W	07				MUSSEL SAMPLING SITE #139	
T115N	R21W	07		SPC		PITUOPHIS CATENIFER (GOPHER SNAKE) #98	MINNESOTA VALLEY NWR
T115N	R21W	07		NON		REITHRODONTOMYS MEGALOTIS (WESTERN HARVEST MOUSE) #30	MINNESOTA VALLEY NWR
T115N	R21W	18				GROUNDWATER PROCESS (HOLOCENE) #2	
T115N	R21W	18		SPC		PEROGNATHUS FLAVESCENS (PLAINS POCKET MOUSE) #20	
T115N	R21W	18		SPC		PITUOPHIS CATENIFER (GOPHER SNAKE) #10	
T115N	R21W	18		SPC		PITUOPHIS CATENIFER (GOPHER SNAKE) #105	
T115N	R21W	18			S3	WET MEADOW #78	
T115N	R21W	19			S3	POOR FEN SEDGE SUBTYPE #22	
T115N	R22W	01				COLONIAL WATERBIRD NESTING SITE #250	MINNESOTA VALLEY NWR
T115N	R22W	01				COLONIAL WATERBIRD NESTING SITE #561	MINNESOTA VALLEY NWR
T115N	R22W	01		SPC		STERNA FORSTERI (FORSTER'S TERN) #32	MINNESOTA VALLEY NWR
T115N	R22W	03	LT	SPC		HALIAEETUS LEUCOCEPHALUS (BALD EAGLE) #1683	MINNESOTA VALLEY NWR
T115N	R22W	11			S1	DRY PRAIRIE (SOUTHEAST) BARRENS SUBTYPE #12	
T115N	R22W	11		SPC		OENOTHERA RHOMBIPETALA (RHOMBIC-PETALED EVENING PRIMROSE) #19	
T115N	R22W	11		SPC		PEROGNATHUS FLAVESCENS (PLAINS POCKET MOUSE) #21	
T115N	R22W	11		SPC		PITUOPHIS CATENIFER (GOPHER SNAKE) #99	
T115N	R22W	12		SPC		SPEYERIA IDALIA (REGAL FRITILLARY) #40	
T115N	R22W	13		THR		BESSEYA BULLII (KITTEN-TAILS) #121	EAGLE CREEK AQUATIC MANAGEMENT AREA
T115N	R22W	22			S2	MAPLE-BASSWOOD FOREST (BIG WOODS) #134	PRIOR LAKE RESERVATION
T115N	R22W	27			S2	MAPLE-BASSWOOD FOREST (BIG WOODS) #131	

RECORDS PRINTED = 32



Minnesota Department of Natural Resources

Natural Heritage and Nongame Research Program, Box 25

500 Lafayette Road

St. Paul, Minnesota 55155-40

Phone: (651) 296-7863 Fax: (651) 296-1811 E-mail: sarah.hoffmann@dnr.state.mn.us



May 10, 2005

Ms. Michelle Ross
SRF Consulting Group, Inc.
One Carlson Parkway North, Suite 150
Minneapolis, MN 55447-4443

Re: Request for Natural Heritage information for vicinity of proposed CSAH 21 Extension;
T115N R22W Sections 12-15, 22 & 23; Scott County
NHNRP Contact #: ERDB 20030901-0004

Dear Ms. Ross,

The Minnesota Natural Heritage database has been reviewed to determine if any rare plant or animal species or other significant natural features are known to occur within an approximate one-mile radius of the area indicated on the map enclosed with your information request. Based on this review, there are 31 known occurrences of rare species or native plant communities in the area searched (for details, see enclosed database printout and explanation of selected fields). However, based on the refined project alignment, I do not believe any of the design options will affect any known occurrences of rare features.

The Natural Heritage database is maintained by the Natural Heritage and Nongame Research Program, a unit within the Division of Ecological Services, Department of Natural Resources. It is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. Its purpose is to foster better understanding and protection of these features.

Because our information is not based on a comprehensive inventory, there may be rare or otherwise significant natural features in the state that are not represented in the database. A county-by-county survey of rare natural features is now underway, and has been completed for Scott County. Our information about native plant communities is, therefore, quite thorough for that county. However, because survey work for rare plants and animals is less exhaustive, and because there has not been an on-site survey of all areas of the county, ecologically significant features for which we have no records may exist on the project area.

The enclosed results of the database search are provided in two formats: index and full record. To control the release of locational information, which might result in the damage or destruction of a rare element, both printout formats are copyrighted.

The index provides rare feature locations only to the nearest section, and may be reprinted, unaltered, in an Environmental Assessment Worksheet, municipal natural resource plan, or report compiled by your company for the project listed above. If you wish to reproduce the index for any other purpose, please contact me to request written permission. **The full-record printout includes more detailed locational information, and is for your personal use only. If you wish to reprint the full-record printouts for any purpose, please contact me to request written permission.**

Please be aware that review by the Natural Heritage and Nongame Research Program focuses only on *rare natural features*. It does not constitute review or approval by the Department of Natural Resources as a whole. If you require further information on the environmental review process for other natural resource-related issues, you may contact your Regional Environmental Assessment Ecologist, Wayne Barstad, at (651) 772-7940.

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TWP	RNG	PRIMARY SECTION	FED STATUS	MN STATUS	S RANK	ELEMENT and OCCURRENCE NUMBER	MANAGED AREA
T115N	R21W	06		THR		ACTINONAIAS LIGAMENTINA (MUCKET MUSSEL) #94	MINNESOTA VALLEY NWR
T115N	R21W	06				COLONIAL WATERBIRD NESTING SITE #249	MINNESOTA VALLEY NWR
T115N	R21W	06		END		FUSCONAIA EBENA (EBONY SHELL MUSSEL) #16	MINNESOTA VALLEY NWR
T115N	R21W	06			S2	MIXED EMERGENT MARSH (PRAIRIE) #28	MINNESOTA VALLEY NWR
T115N	R21W	06				MUSSEL SAMPLING SITE #138	MINNESOTA VALLEY NWR
T115N	R21W	06		THR		PLEUROBEMA COCCINEUM (ROUND PIGTOE MUSSEL) #75	MINNESOTA VALLEY NWR
T115N	R21W	06		END		QUADRULA NODULATA (WARTYBACK MUSSEL) #10	MINNESOTA VALLEY NWR
T115N	R21W	06		SPC		STERNA FORSTERI (FORSTER'S TERN) #31	MN VALLEY TRAIL: RICE LAKE WAYSIDE
T115N	R21W	06		THR		TRITOGONIA VERRUCOSA (PISTOLGRIP MUSSEL) #27	MINNESOTA VALLEY NWR
T115N	R21W	07			S2	DRY OAK SAVANNA (SOUTHEAST) SAND-GRAVEL SUBTYPE #4	MINNESOTA VALLEY NWR
T115N	R21W	07		NON		LAMPETRA APPENDIX (AMERICAN BROOK LAMPREY) #101	
T115N	R21W	07				MUSSEL SAMPLING SITE #139	
T115N	R21W	07		SPC		PITUOPHIS CATENIFER (GOPHER SNAKE) #98	MINNESOTA VALLEY NWR
T115N	R21W	07		NON		REITHRODONTOMYS MEGALOTIS (WESTERN HARVEST MOUSE) #30	MINNESOTA VALLEY NWR
T115N	R21W	18				GROUNDWATER PROCESS (HOLOCENE) #2	
T115N	R21W	18		SPC		PEROGNATHUS FLAVESCENS (PLAINS POCKET MOUSE) #20	
T115N	R21W	18		SPC		PITUOPHIS CATENIFER (GOPHER SNAKE) #10	
T115N	R21W	18		SPC		PITUOPHIS CATENIFER (GOPHER SNAKE) #105	
T115N	R21W	18			S3	WET MEADOW #78	
T115N	R21W	19			S3	POOR FEN SEDGE SUBTYPE #22	
T115N	R22W	01				COLONIAL WATERBIRD NESTING SITE #250	MINNESOTA VALLEY NWR
T115N	R22W	01				COLONIAL WATERBIRD NESTING SITE #561	MINNESOTA VALLEY NWR
T115N	R22W	01		SPC		STERNA FORSTERI (FORSTER'S TERN) #32	MINNESOTA VALLEY NWR
T115N	R22W	11			S1	DRY PRAIRIE (SOUTHEAST) BARRENS SUBTYPE #12	
T115N	R22W	11		SPC		OENOTHERA RHOMBIPETALA (RHOMBIC-PETALED EVENING PRIMROSE) #19	
T115N	R22W	11		SPC		PEROGNATHUS FLAVESCENS (PLAINS POCKET MOUSE) #21	
T115N	R22W	11		SPC		PITUOPHIS CATENIFER (GOPHER SNAKE) #99	
T115N	R22W	12		SPC		SPEYERIA IDALIA (REGAL FRITTLARY) #40	
T115N	R22W	13		THR		BESSEYA BULLII (KITTEN-TAILS) #121	EAGLE CREEK AQUATIC MANAGEMENT AREA
T115N	R22W	22			S2	MAPLE-BASSWOOD FOREST (BIG WOODS) #134	PRIOR LAKE RESERVATION
T115N	R22W	27			S2	MAPLE-BASSWOOD FOREST (BIG WOODS) #131	

U.S. DEPARTMENT OF AGRICULTURE

Form AD-1006

FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)		1. Date of Land Evaluation Request	2. Sheet <u>1</u> of <u>1</u>
3. Name of Project <u>CSA#21 Extension</u>		4. Federal Agency Involved	
5. Proposed Land Use <u>Roadway and Road ROW</u>		6. County and State <u>Scott County, MN</u>	7. Type of Project: Corridor <input checked="" type="checkbox"/> Other <input type="checkbox"/>
PART II (To be completed by NRCS)		1. Date Request Received by NRCS <u>4/19/05</u>	2. Person Completing the NRCS parts of this form <u>Stan Woodland</u>
3. Does the site or corridor contain prime, unique, statewide or local important farmland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (If no, the FPPA does not apply - Do not complete additional parts of this form)		4. Acres Irrigated <u>None</u>	5. Average Farm Size <u>NA</u>
6. Major Crop(s) <u>C-5B</u>	7. Farmable Land in Government Jurisdiction Acres: %	8. Amount of Farmland As Defined in FPPA Acres: %	
9. Name of Land Evaluation System Used	10. Name of Local Site Assessment System	11. Date Land Evaluation Returned by NRCS <u>8/9/05</u>	

PART III (To be completed by Federal Agency)	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly				
B. Total Acres To Be Converted Indirectly, Or To Receive Services				
C. Total Acres in Site	<u>18.0</u>	<u>18.3</u>	<u>18.3</u>	

PART IV (To be completed by NRCS) Land Evaluation Information				
A. Total Acres Prime and Unique Farmland	<u>53,683</u>	<u>53,683</u>	<u>53,683</u>	
B. Total Acres Statewide and Local Important Farmland	<u>NA</u>	<u>NA</u>	<u>NA</u>	
C. Percentage of Farmland in County or Local Govt. Unit to be Converted				
D. Percentage of Farmland in Govt. Jurisdiction with Same or Higher Relative Value	<u>.03%</u>	<u>.03%</u>	<u>.03%</u>	

PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland to be Serviced or Converted (Scale of 0 - 100 Points)				
	<u>80</u>	<u>80</u>	<u>80</u>	

PART VI (To be completed by Federal Agency) Corridor or Site Assessment Criteria (These criteria are explained in 7 CFR 558.5(b & c))		Max. Points			
		Corridor	Other		
1. Area in Nonurban Use	15 15	<u>10</u>	<u>10</u>	<u>10</u>	
2. Perimeter in Nonurban Use	10 10	<u>8</u>	<u>8</u>	<u>8</u>	
3. Percent of Site Being Farmed	20 20	<u>7</u>	<u>7</u>	<u>7</u>	
4. Protection Provided by State and Local Government	20 20	<u>0</u>	<u>0</u>	<u>0</u>	
5. Distance from Urban Built-up area	0 15	<u>0</u>	<u>0</u>	<u>0</u>	
6. Distance to Urban Support Services	0 15	<u>0</u>	<u>0</u>	<u>0</u>	
7. Size of Present Farm Unit Compared to Average	10 10	<u>5</u>	<u>5</u>	<u>5</u>	
8. Creation of Non-Farmable Farmland	25 10	<u>0</u>	<u>0</u>	<u>0</u>	
9. Availability of Farm Support Services	5 5	<u>2</u>	<u>2</u>	<u>2</u>	
10. On-Farm Investments	20 20	<u>1</u>	<u>1</u>	<u>1</u>	
11. Effects of Conversion on Farm Support Services	25 10	<u>0</u>	<u>0</u>	<u>0</u>	
12. Compatibility with Existing Agricultural Use	10 10	<u>5</u>	<u>5</u>	<u>5</u>	
TOTAL CORRIDOR OR SITE ASSESSMENT POINTS	160	38	38	38	

PART VII (To be completed by Federal Agency)				
Relative Value of Farmland (from Part V above)	100	<u>80</u>	<u>80</u>	<u>80</u>
Total Corridor or Site Assessment (From Part VI above or a local site assessment)	160	<u>38</u>	<u>38</u>	<u>38</u>
TOTAL POINTS (Total of above 2 lines)	260	118	118	118

PART VIII (To be completed by Federal Agency after final alternative is chosen)	
1. Corridor or Site Selected:	2. Date of Selection
3. Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/>	
4. Reason For Selection:	

Signature of person completing the Federal Agency parts of this form:	DATE
---	------

APPENDIX B

LIST OF ACRONYMS

LIST OF ACRONYMS

ADT	Average Daily Traffic	MNRAM	Minnesota Routine Assessment Method
ACHP	Advisory Council on Historic Preservation	MUSA	Metropolitan Urban Service Area
APE	Area of Potential Effect	NAAQS	National Ambient Air Quality Standards
BMPs	Best Management Practices	NAC	Noise Abatement Criteria
BWSR	Board of Water and Soil Resources	NEPA	National Environmental Policy Act
CO	Carbon Monoxide	NPDES- SDS	National Pollutant Discharge Elimination System – State Disposal System
CEQ	Council on Environmental Quality	NRCS	Natural Resource Conservation Service
COE	Corps of Engineers (U.S. Army)	NRHP	National Register of Historic Places
CR	County Road	NWI	National Wetland Inventory
CSAH	County State Aid Highway	ppm	Parts per million
dB(A)	Decibels (A-weighted)	RSEA	Regionally Significant Ecological Area
DEIS	Draft Environmental Impact Statement	SD/DSDD	Scoping Document/Draft Scoping Decision Document
EIS	Environmental Impact Statement	SEE	Social, Economic and Environmental
EPA	Environmental Protection Agency	SHPO	State Historic Preservation Office
EQB	Environmental Quality Board	SIP	State Implementation Plan
ESA	Environmental Site Assessment	SMSC	Shakopee Mdewakanton Sioux Community
FEIS	Final Environmental Impact Statement	TAC	Technical Advisory Committee
FHWA	Federal Highway Administration	TAZ	Traffic Analysis Zone
FPPA	Farmland Protection and Policy Act	TH	Trunk Highway
LOS	Level of Service	THPO	Tribal Historic Preservation Office
MEPA	Minnesota Environmental Policy Act	USFWS	United States Fish and Wildlife Service
MLCCS	Minnesota Land Cover Classification System	VHT	Vehicle hours traveled
Mn/DOT	Minnesota Department of Transportation	VOCs	Volatile organic compounds
Mn/DOT/ CRU	Minnesota Department of Transportation Cultural Resources Unit	WCA	Wetland Conservation Act
DNR	Minnesota Department of Natural Resources		
MPCA	Minnesota Pollution Control Agency		

APPENDIX C

PROJECT RELATED SPECIAL STUDIES

PROJECT RELATED SPECIAL STUDIES

- *CSAH 21 Scoping Document*, Scott County, March 1996.
- *CSAH 21 Scoping Decision Document*, Scott County, June 1997
- *Wetland Delineation and Functions Analysis Report*, SRF Consulting Group, Inc. (SRF), December 2003.
- *Phase I Archaeological and Architectural Investigation*, The 106 Group Ltd., November 2003.
- *Phase I Environmental Site Assessment*, Braun Intertec, November 2003.
- *CSAH 21 EIS Traffic Study Draft Memorandum*, SRF, January 2004.
- *CSAH 21 EIS Traffic Study Draft Memorandum*, SRF, May 2004.
- *CSAH 21 EIS 2030 Traffic Forecasts Memorandum*, SRF, January 2005.
- *Scott County CSAH 21 Transit Station Traffic Analysis Results Memorandum*, SRF, March 2005.
- *CSAH 21/CSAH 18 Supplemental Analysis Draft Memorandum*, SRF, March 2005.

APPENDIX D

DATA SOURCES AND REFERENCES

DATA SOURCES AND REFERENCES

- *Scott Water Management Organization Rules*, SWMO, 2005.
- *Scott County Comprehensive Water Resources Plan*, SWMO, 2004.
- *Scott County 2020 Comprehensive Plan Update*, 2004.
- *Interim Scott County Parks, Trails, and Open Space System Policy Plan*, 2004.
- *City of Shakopee Comprehensive Plan Update*, 2004.
- *Dean Lake Area Park, Open Space, and Trail Master Plan*, Scott County, 2004.
- *2003 Labor Force Report*, U.S. Department of the Interior, Bureau of Indian Affairs.
- *Prior Lake Outlet Channel and Lake Volume Management Study*, PLSLWD, 2003.
- *Water Resources Management Plan*, PLSLWD, 2003.
- *Scott County Transportation Plan*, 2001.
- *Shakopee Mdewakanton Sioux Community Comprehensive Land Use Plan*, 2000.
- *2000 Census of Population and Housing*, U.S. Census Bureau.
- *City of Prior Lake 2020 Comprehensive Plan*, 1999.
- *City of Shakopee Comprehensive Plan*, 1999.
- *Transportation Energy Data Book*, U.S. Department of Energy, 1999.
- *Water Management Plan*, Lower Minnesota River Watershed District, 1999.
- *City of Shakopee Transportation Plan*, 1998.
- *Scott County Transportation Plan*, 1996
- *Scott County CSAH 18 & CSAH 21 Feasibility Study*, 1992.
- *Scott County Transportation Study: County Road 18 Corridor Alternatives*, 1990.
- *Transportation Development Guide/Policy Plan*, Metropolitan Council.
- *Regional Travel Forecasting Model*, Metropolitan Council.
- *Executive Order 121898*.