

SECTION 2

Alternatives

2.1 Introduction

Developing this Draft EIS required studies of alternatives as defined in the National Environmental Policy Act (NEPA) and the Minnesota Environmental Policy Act (MEPA). To remain consistent with the CEQ's goal of producing clear and concise EISs, only the most reasonable alternatives are presented and evaluated in this DEIS. This section describes the alternatives studied in detail in Section 3 and summarizes the alternatives development process. The DEIS does not revisit alternatives that were studied in earlier stages of project development, but were subsequently dismissed from additional consideration.

2.2 DEIS Alternatives—Overview

Sections 2.3 and 2.4 describe the alternatives that have been retained for detailed environmental analysis in this DEIS. Improvements studied in detail consist of a variety of expanded 4-lane alignment or highway location alternatives – with bypasses of Courtland and Nicollet and several interchange options. Exhibit 2-1 and the Aerial Photo Exhibit (attached to this DEIS) provide additional detail on the corridor location alternatives.

The US 14 corridor is divided into two sections for the purpose of describing the alternatives (see Exhibit 2-1):

- The **West Study Section** extends from Front Street in New Ulm to CR 12 in Courtland.
- The **East Study Section** extends from CR 12 in Courtland to CR 6 near North Mankato.

The alternatives studied in the DEIS are the result of an extensive process used to develop and screen a wide range of options.

That process, which included two phases of screening, is summarized in Section 2.5.

Exhibit 2-1 and the Aerial Photo Exhibit (a separate attachment) provide additional detail on the corridor location alternatives.

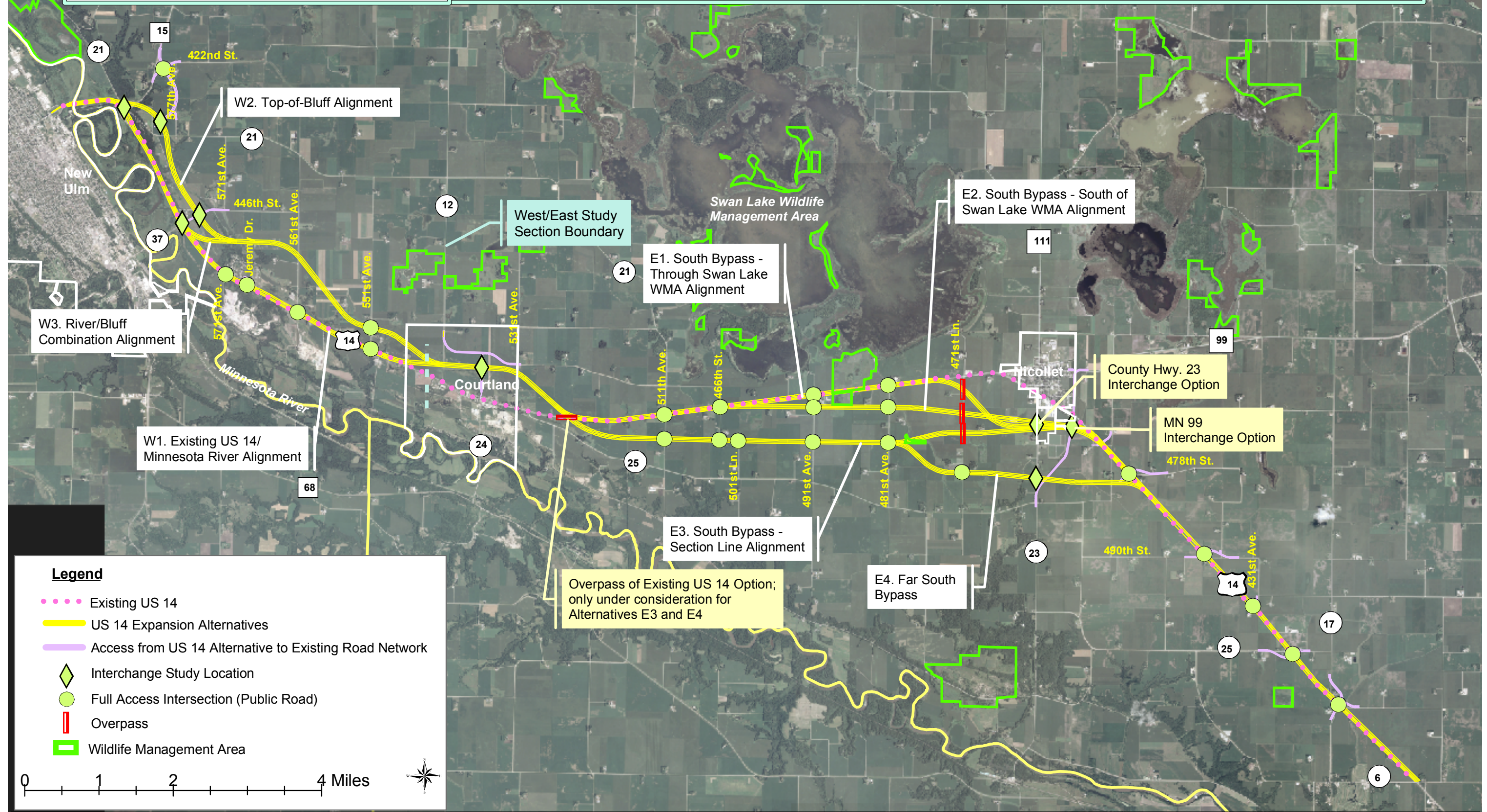
2.3 No Build Alternative

The No Build Alternative serves as a baseline for comparison to the Build Alternatives (see Section 2.4). Improvements under this alternative are limited to normal pavement maintenance, spot traffic operational improvements, and minor safety improvements. The No Build Alternative retains the existing roadway's current physical characteristics, horizontal and vertical alignment, and cross section (e.g., pavement width, shoulder width, and clear zone width).



West Study Section

East Study Section



US 14 EIS
New Ulm to North Mankato

06-18-07

Exhibit 2-1
Draft EIS Alternatives

2.4 Build Alternatives

Alternatives evaluated in this DEIS consist of corridor locations, or alignments, that have been refined through an extensive study process (see Section 2.5 and the Project Website). The Build Alternatives were designed as 4-lane, divided facilities with a 70-mph design speed. Several existing access points were consolidated into interchanges or intersections (primarily at existing public roads) (see Exhibit 2-1, the Aerial Photo Exhibit, and Section 2.4.4.2 for more information on proposed access).

All Build Alternatives include the potential for various interchange designs, which are depicted as “footprints” on the Aerial Photo Exhibit. These footprints are large enough to encompass reasonable interchange designs at each interchange study area; and were used to generally calculate the environmental impacts documented in Section 3. Detailed interchange designs and refined environmental impacts will be considered after Mn/DOT recommends a Preferred Alternative. The *Interchange Workshop Report*, which summarizes a workshop hosted by Mn/DOT during summer 2004, includes additional information regarding interchange concepts developed for this project (see the Project Website). A sample of the concepts developed at the workshop is included in Section 2.4.4.1.

The Build Alternatives evaluated in this DEIS consist of corridor locations, or alignments, that have been refined through an extensive study process.

These alternatives include the potential for various interchange designs, which are depicted as “footprints” on the Aerial Photo Exhibit.

2.4.1 Highway Design Details

2.4.1.1 Rural 4-Lane Highway—Prevailing Design

Mn/DOT used a 4-lane rural highway design for preliminary engineering on most sections of all Build Alternatives. This design best addresses safety and operational deficiencies and is most consistent with Mn/DOT’s long-range corridor plans. *Exhibit 2-2* shows highway and right-of-way widths of a typical 4-lane rural roadway; which generally consists of:

- 131-foot highway (including two lanes of highway in both directions, median, and shoulders)
- Approximately 300-foot right-of-way
- 70 mph design speed¹ (posted at 65 mph for consistency with state law)
- Left and right turn lanes at intersections
- Managed access (see Section 2.4.4 for more information)

¹ A design speed of 70 mph means the speed selected to determine the highway’s appropriate geometric design features—for example, curvature, sight distance, shoulders, and roadside. Design speed is thus the maximum speed that can be safely maintained when other conditions (for example, weather and traffic) are favorable, so that highway design restrictions govern.



2.4.1.2 Constrained 4-Lane Highway—Lower Impact Design Near the Minnesota River

The section of highway between Front Street in New Ulm and CR 37 is constrained by the river to the south and bluffs to the north. Therefore, for Alternatives W1 and W3, Mn/DOT proposes to use a constrained (urban-type) design for this section to avoid and minimize potential impacts to wetlands (see Section 3.8) and the Minnesota River floodplain (see Section 3.9). The constrained design consists of a six-foot raised concrete median to separate the east and westbound roadways, and curb/gutter on the outside edges to reduce the overall roadway width to approximately 84 feet. The use of median barrier will be evaluated if the constrained cross section is part of the preferred alternative. Typical highway and right-of-way widths for this type of design are summarized below, also see *Exhibit 2-3*.

For Alternatives W1 and W3, Mn/DOT proposes to use a constrained (urban-type) design from the Minnesota River Bridge to CR 37. This design helps avoid and minimize potential impacts to wetlands and the Minnesota River floodplain by reducing the overall roadway width (see Exhibit 2-3; also see Section 3.8 and 3.9 for wetland and floodplain impacts discussion).

- 82-foot roadway width highway (including two lanes of highway in both directions, median, and shoulders)
- 180-250-feet of right-of-way
- 70 mph design speed (posted at 55 or 65 mph for consistency with state law)
- Left and right turn lanes at intersections
- Managed access (see Section 2.4.4 for more information)

The three Build Alternatives in the West Study Section extend from Front Street in New Ulm to CR 12 in Courtland. All of the alternatives include the expansion of the Minnesota River Bridge on the west end.

The constrained design will not be used for the entire corridor because the rural highway design, with a 55-foot median, reduces the likelihood of cross-median crashes compared to the constrained design. The constrained design requires storm sewer; also, other features potentially included in this type of design (e.g., a median barrier) would likely require additional maintenance.

2.4.2 West Study Section Location Alternatives

The three Build Alternatives included in the West Study Section extend from Front Street in New Ulm to CR 12 in Courtland (see Exhibit 2-1). All of the alternatives include widening the US 14 Minnesota River Bridge in New Ulm from two to four lanes at the current location. Interchanges are under consideration at MN 15/CR 21 and CR 37. These locations have the potential for various interchange designs. Depending on the interchange concepts ultimately selected, it may be necessary to re-route CR 21 and CR 37. Each alternative also consolidates access points along the existing corridor (see Section 2.4.4 for more information on proposed interchanges and access features).

2.4.2.1 Minnesota River Bridge (MN Bridge ID No. 9200)

Mn/DOT has recognized the need to include the US 14 Minnesota River Bridge within the DEIS project limits. Section 1.3.3.2 addresses specific reasons why the bridge expansion should be pursued at this location and shows that there is no need to evaluate alternative bridge locations.

Relative to DEIS project alternatives, the decision to include the Minnesota River Bridge was formalized in the *Amended Scoping Decision Document* (see also Section 2.5.2). The engineering design of the proposed bridge expansion is not addressed in detail within this DEIS. However, it is assumed to include major reconstruction of the existing 2-lane bridge plus the addition of a parallel 2-lane bridge immediately north of the existing bridge. While the details of a bridge reconstruction or rehabilitation project could vary,² the footprint (or impact) represented by reconstruction of the existing bridge, along with a parallel 2-lane bridge to the north is sufficient to accurately to analyze the project for environmental impacts.

2.4.2.2 Alternative W1. Existing US 14/Minnesota River Alignment

Alternative W1 would expand US 14 on existing alignment from Front Street in New Ulm to just west of CR 12 in Courtland, where the alternative would diverge from the existing alignment and move north to tie into a bypass of Courtland (see Section 2.4.3). Westbound traffic would use existing US 14 from MN 15 to approximately 571st Avenue; eastbound traffic would use new alignment to the south. From 571st Avenue to 561st Avenue (past a subdivision, New Ulm Quartzite Quarries, and the Minnesota Valley Lutheran High School), existing US 14 would accommodate eastbound traffic; westbound lanes would be built to the north. From 561st Avenue to just west of CR 12, the existing US 14 would carry westbound traffic; two lanes built to the south would carry eastbound traffic.

A constrained highway design would be used between Front Street and CR 37 to avoid substantial continuous impact to the Minnesota River floodplain (see *Exhibit 2-3*). The 4-lane rural highway design would be used for the remainder of the alternative from CR 37 to CR 12 (see *Exhibit 2-2*).

2.4.2.3 Alternative W2. Top-of-Bluff Alignment

Alternative W2 would expand the existing US 14 alignment from Front Street in New Ulm to the MN 15/CR 21 intersection. Beyond this intersection, the alternative leaves existing alignment and moves north to the top of the bluff, where it stays through the end of the alternative at CR 12. The 4-lane constrained design would be used from Front Street to the proposed interchange at the top of the bluff (see *Exhibit 2-3*). The new alignment east of the interchange, on top-of-bluff alignment, would use the 4-lane rural highway design, shown in *Exhibit 2-2*.

2.4.2.4 Alternative W3. River/Bluff Combination Alignment

Alternative W3 is a combination of Alternatives W1 and W2 that was developed to utilize the existing highway between Front Street and CR 37, while avoiding access management

² The construction of a new bridge parallel to the existing presents a number of compelling advantages. Principally, these include the ability to build the bridge improvements while keeping the river crossing open to traffic, possible lower costs through minimal reconstruction of the existing bridge, and less environmental impact than would occur with construction of a single new 4-lane bridge. This DEIS still assumes a considerable bridge construction project; the actual impacts could be less than assumed.



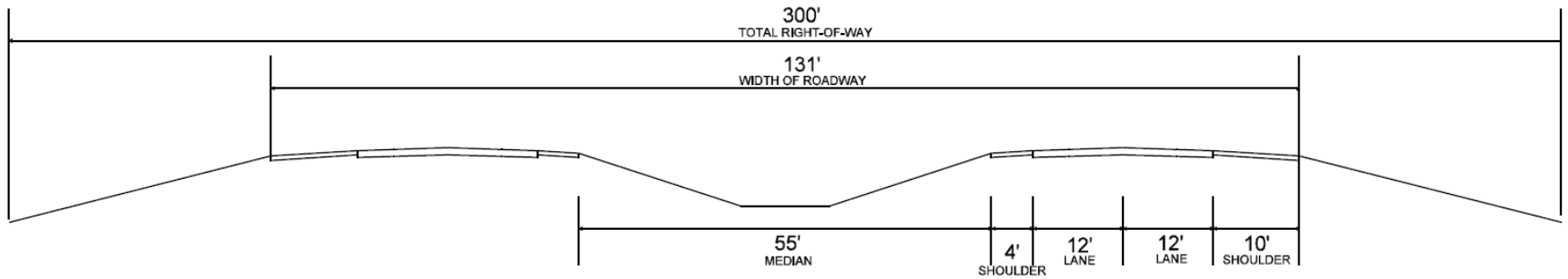


Exhibit 2-2

4-Lane Rural Highway Design

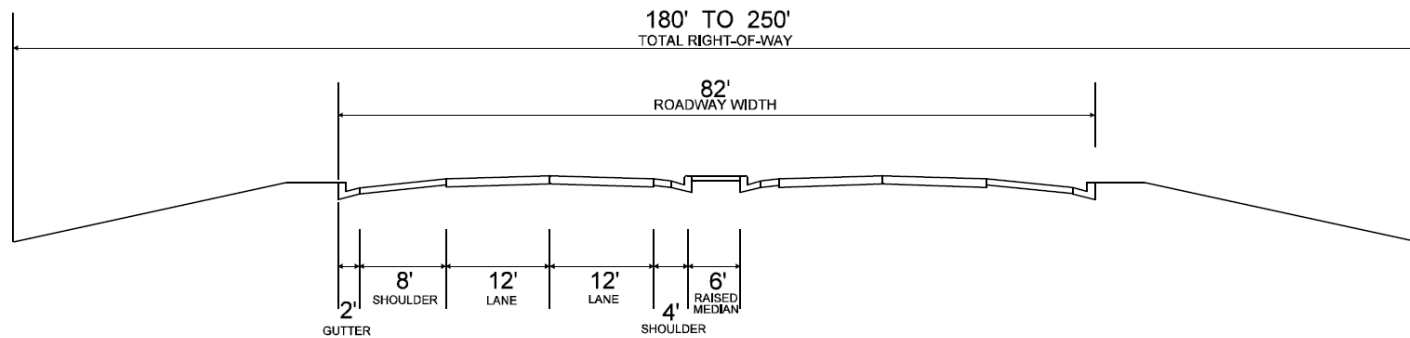


Exhibit 2-3

4-Lane Constrained (Urban) Highway Design



US 14 EIS
New Ulm to North Mankato

challenges posed by the Minnesota Valley Lutheran High School, a residential area between CR 37 and CR 12, and truck traffic going to and from the quarries (see the Aerial Photo Exhibit). This alternative would expand US 14 on existing alignment from Front Street in New Ulm to CR 37. At CR 37 the alternative would leave the existing alignment and extend northeast to connect with the Alternative W2 alignment.

The Existing US 14 alignment would carry westbound traffic between MN 15 to CR 37; eastbound traffic would use lanes built south of existing US 14. The remainder of the alternative would be built on new alignment. A 4-lane, constrained highway design would be used for the section between the US 14 Minnesota River bridge and CR 37 (see Exhibit 2-3). The 4-lane rural highway design would be used for the remainder of the alternative from CR 37 to CR 12 (see Exhibit 2-2).

2.4.3 East Study Section Location Alternatives

The East Study Section extends from CR 12 in Courtland to CR 6 just west of North Mankato (see *Exhibit 2-1*). The four alignment alternatives in the East Study Section share common portions on the west and east ends. The common portion in the west is the northern bypass of Courtland, which begins at CR 12 (where the three West Study Section Alternatives end); and ends where

The East Study Section extends from CR 12 in Courtland to CR 6 just west of North Mankato and includes four corridor alignment alternatives.

it converges with existing US 14, approximately $\frac{3}{4}$ mile east of 531st Avenue. The common portion on the east extends along the existing US 14 alignment from just east of Nicollet to CR 6, the eastern project limit. This common section would use the existing two lanes of US 14 for the eastbound traffic; and two new lanes built to the north for westbound traffic. All four build alternatives would use the 4-lane rural highway design (see *Exhibit 2-2*).

All four Build Alternatives include consideration of an interchange at CR 24, as part of the Courtland bypass, approximately $\frac{1}{2}$ mile north of existing US 14. This interchange concept would have the potential to provide local access to CR 12, 466th Street, and 531st Avenue in Courtland. Alternatives E1, E2, and E3 include the option for one of two interchange locations south of Nicollet. One location is on existing CR 23, approximately $\frac{1}{2}$ mile south of US 14 in Nicollet. The other location is approximately $\frac{1}{2}$ mile east of existing CR 23, directly east of the first interchange option. The second interchange location includes the potential for a new local road to connect a re-routed CR 23 to a re-routed MN 99 (see Section 2.4.4.1 and the *Aerial Photo Exhibit* for more information).

2.4.3.1 Alternative E1. Near South Bypass Alignment

Alternative E1 would begin at CR 12 with the Courtland bypass. Approximately $\frac{3}{4}$ mile east of 531st Avenue, the alignment would tie into the existing US 14 and remain on existing alignment to just west of 471st Lane. Just west of 471st Lane, the alignment veers southeast of the existing highway to bypass Nicollet. The alignment then ties into existing US 14 alignment just east of CR 72 and remains on existing alignment through the end of the study area at CR 6. Generally, the portions of Alternative E1 that use existing US 14 alignment use the two existing lanes of US 14 for eastbound traffic; westbound traffic would use two new lanes north of the existing roadway. Within the Swan Lake WMA, the new alignment stays within Mn/DOT's existing

right-of-way as much as possible, while maintaining the four-lane rural highway design (see Exhibit 2-3).

2.4.3.2 Alternative E2. South Bypass – South of Swan Lake WMA Alignment

Alternative E2 would use the Courtland bypass from CR 12 to approximately $\frac{3}{4}$ mile east of 531st Avenue. At 531st Avenue, the alignment would reconnect to US 14 and remain on existing alignment to 466th Street. This portion of the alignment would use the existing two lanes of US 14 for eastbound traffic and two new lanes built to the north for westbound traffic. Just past 466th Street, the alignment would veer from the existing highway, skirt the southern boundary of the Swan Lake WMA, and remain south of existing US 14 to bypass Nicollet. The alignment would tie back in with the existing US 14 just east of CR 72 and remain on existing alignment through the end of the study area at CR 6.

2.4.3.3 Alternative E3. South Bypass – Section Line Alignment

Alternative E3 would utilize the Courtland bypass from CR 12 to approximately $\frac{3}{4}$ mile east of 531st Avenue where the alignment crosses existing US 14. The new alignment generally follows the half section line to approximately 481st Avenue, where it shifts slightly north. Once past CR 72, the alignment would tie back in with the existing US 14 and remain on existing alignment through the end of the study area at CR 6.

2.4.3.4 Alternative E4. Far South Bypass

Alternative E4 utilizes the Courtland bypass from CR 12 to approximately $\frac{3}{4}$ mile east of 531st Avenue where the alignment crosses from existing US 14. The new alignment generally follows along a half section line to approximately 481st Avenue. Once past 481st Avenue, the alignment would shift south, and tie back into existing US 14 alignment near 478th Street to remain on existing alignment through the end of the study area at CR 6. Unlike Alternatives E1, E2, and E3, this alternative includes consideration of an interchange only on existing CR 23 alignment approximately one and one quarter mile south of US 14 in Nicollet.

2.4.4 Proposed Interchanges and Access Features

2.4.4.1 Interchanges

As mentioned earlier, all Build Alternatives include consideration of interchanges. Each location has potential for various interchange designs, which are generalized by “footprints” on the *Aerial Photo Exhibit*. The West Study Section includes consideration of interchanges at MN 15, and CR 37. In the East Study Section, interchanges are being considered at CR 24 in Courtland; and at or near CR 23 in Nicollet. While interchanges are considered the ultimate, large-scale configuration for these four locations, interim design might include two-way stop intersections or roundabouts.

Mn/DOT hosted an Interchange Workshop in June 2004, attended by representatives from Brown and Nicollet Counties; the Cities of New Ulm, Courtland, and Nicollet; and Mn/DOT. Several interchange design concepts were developed at the potential interchange locations. The *Interchange Workshop Report* (August 2004) summarizes Mn/DOT’s recommendations (available on the Project Website).



In March 2007, Mn/DOT studied additional interchange and intersection options at MN 15 and CR 37. Additional consideration was given to these locations for a number of reasons including:

- The intersection of US 14/MN 15 has the highest crash rate along the corridor which warrants additional consideration of safety at these locations; the intersection at CR 37 has the third highest crash rate along the corridor.
- Mn/DOT is considering a roundabout at US 14/MN 15 for safety and cost reasons. A comparison of the roundabout to two other interchange types is included in the March 2007 technical memo; these three intersection options are shown in *Exhibits 2-4 through 2-6*.
- Additional information regarding archaeological resources located near US 14 between MN 15 to CR 37 was received after completion of the interchange workshop and technical memo were completed. The March 2007 technical memo includes options that would avoid these resources.

The complete comparison of interchange types considered on US 14 at MN 15 and CR 37 are documented in the *Interchange and Intersection Type Comparison*, which is available on the Project Website.

Note that there are several feasible interchange configurations, particularly in the West Study Section, and determining the optimal interchange types will be part of more detailed design undertaken after the selection of a preferred alternative. Exhibits on the following pages show a sampling of interchange and intersection treatments at the four locations under consideration:

Exhibits 2-4 through 2-7 show possible designs at MN 15 for Alternatives W1, W2, and W3:

- US 14/MN 15 Alternative W1 Interchange Concept A (Trumpet) in New Ulm (Exhibit 2-4) – This interchange uses a loop and ramps to provide access from US 14 to MN 15. CR 21 would be re-routed north to 577th Avenue. Existing westbound CR 21 would end at a cul-de-sac just east of the interchange. Westbound CR 21 traffic would utilize northbound 577th Avenue up to 422nd Avenue and then parallel MN 15 to reconnect with existing CR 21 west of MN 15.
- US 14/MN 15 Alternative W1 Interchange Concept B (Tight Diamond) in New Ulm (Exhibit 2-5) – This concept uses a tight/compressed diamond interchange at the existing MN 15/CR 21 intersection. CR 21 would be re-routed slightly north to bypass the US 14/MN 15 interchange, and return to existing CR 21 once past the interchange.
- US 14/MN 15 Alternative W1 Concept C (Roundabout) in New Ulm (Exhibit 2-6) – The roundabout shown in Exhibit 2-6 would require realignments of MN 15 (going up the steep grade) and CR 21.
- US 14/MN 15 Alternative W2 Interchange Concept (Diamond) (Exhibit 2-7) – This concept includes a diamond interchange on new alignment just east of MN 15, and re-routing MN 15 to the east to utilize the 577th Street alignment.

Exhibits 2-8 through 2-10 show a sample of interchange designs at CR 37 (for both Alternatives W1 and W3)

- US 14/CR 37 Alternative W1 Interchange Concept A (Trumpet) in New Ulm (Exhibit 2-8) – This interchange uses a loop and ramps to provide free flow access from US 14 to CR 15.



This option would not provide a connection to 446th Street (just north of US 14).

- US 14/CR 37 Alternative W1 Interchange Concept B (Tight Diamond) (Exhibit 2-9) & W3 Interchange Concept C (Tight Diamond) (Exhibit 2-10) – These concepts use a tight/compressed diamond interchange at the existing CR 37. The mainline and interchange ramps would be located slightly north of existing US 14 to avoid cultural resources (see Section 3.13 for more details). Under both alternatives, it would be possible to extend CR 37 north of US 14 to tie into 446th Street.

Exhibit 2-11 shows the interchange that is proposed as part of the Courtland Bypass

- US 14/CR 24 Common Courtland Bypass Interchange Option (Diamond) (Exhibit 2-11) – Only one alignment of the northern bypass of Courtland is under consideration. Given that this area is relatively flat, and that there are not constraints, a diamond interchange is the only option under consideration at this location.

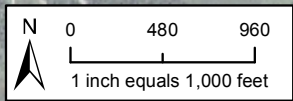
Exhibits 2-12 and 2-13 show two of the possible interchange options being considered under Alternatives E1-E3

- US 14/MN 99/CR 23 Interchange Concepts in Nicollet (Exhibits 2-12 & 2-13) – Exhibit 2-12 shows a diamond interchange concept south of Nicollet on a new US 14 alignment at existing CR 23. Exhibit 2-13 shows a diamond interchange concept on new alignment that includes a new local road to connect a re-routed CR 23 to a re-routed MN 99. MN 99 would be diverted away from the center of Nicollet by utilizing the existing CR 72 alignment between existing MN 99 and US 14. The re-routed MN 99 alignment would end at existing US 14. South of existing US 14, the new local road would continue as CR 23 to the interchange location approximately 1,200 feet south of existing US 14. South of the interchange, the new CR 23 alignment would continue until it reconnected with existing CR 23, approximately one mile south of the E1, E2, and E3 alignments. Existing northbound and southbound CR 23 would end at cul-de-sacs at the proposed US 14 alignment.

2.4.4.2 Access Features

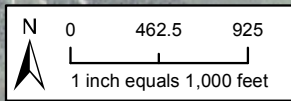
As described above, all build alternatives involve a combination of existing and new alignment. The sections of an alternative that utilize existing US 14 alignment consolidate several existing access points into fewer interchanges or intersections (see Exhibit 2-1 and the Aerial Photo Exhibit). The sections of alternatives that use new alignment would be managed in accordance with Mn/DOT's access management guidelines. Table 2-1 and Table 2-2 show the proposed access for each of the alternatives in the West and East Study Sections, respectively. Existing access points that are not shown on the tables below or on Exhibit 2-1 or the Aerial Photo Exhibit would be closed.





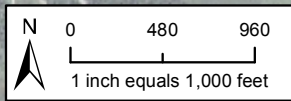
US 14 EIS
New Ulm to North Mankato

Exhibit 2-4
US 14/MN 15/CR 21 Alternative W1/W3
Concept A (Trumpet)
New Ulm



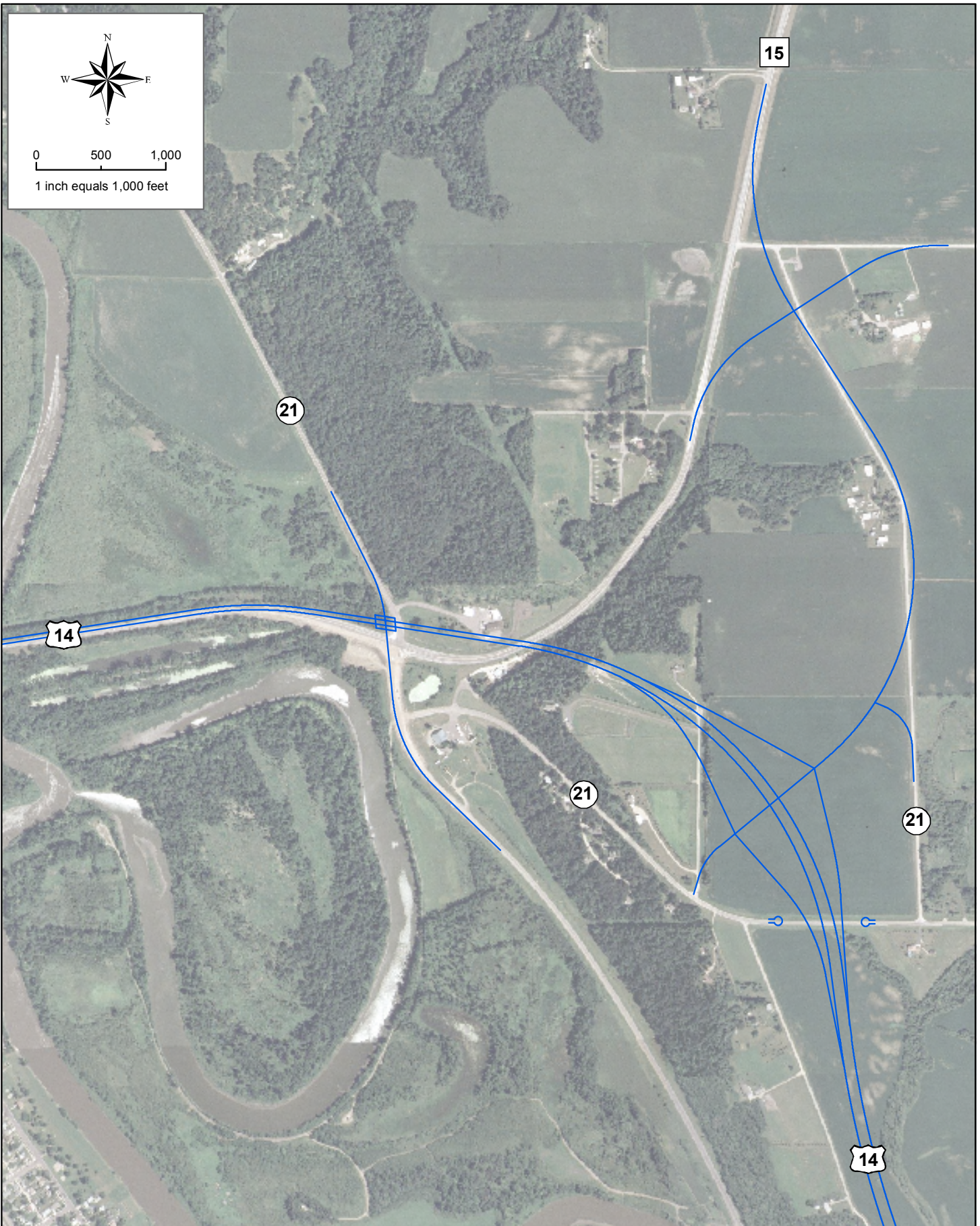
US 14 EIS
New Ulm to North Mankato

Exhibit 2-5
US 14/MN 15/CR 21 Alternative W1/W3
Concept B (Tight Diamond)
New Ulm



US 14 EIS
New Ulm to North Mankato

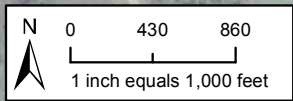
Exhibit 2-6
US 14/MN 15/CR 21 Alternative W1/W3
Concept C (Roundabout)
New Ulm



US 14 EIS
New Ulm to North Mankato

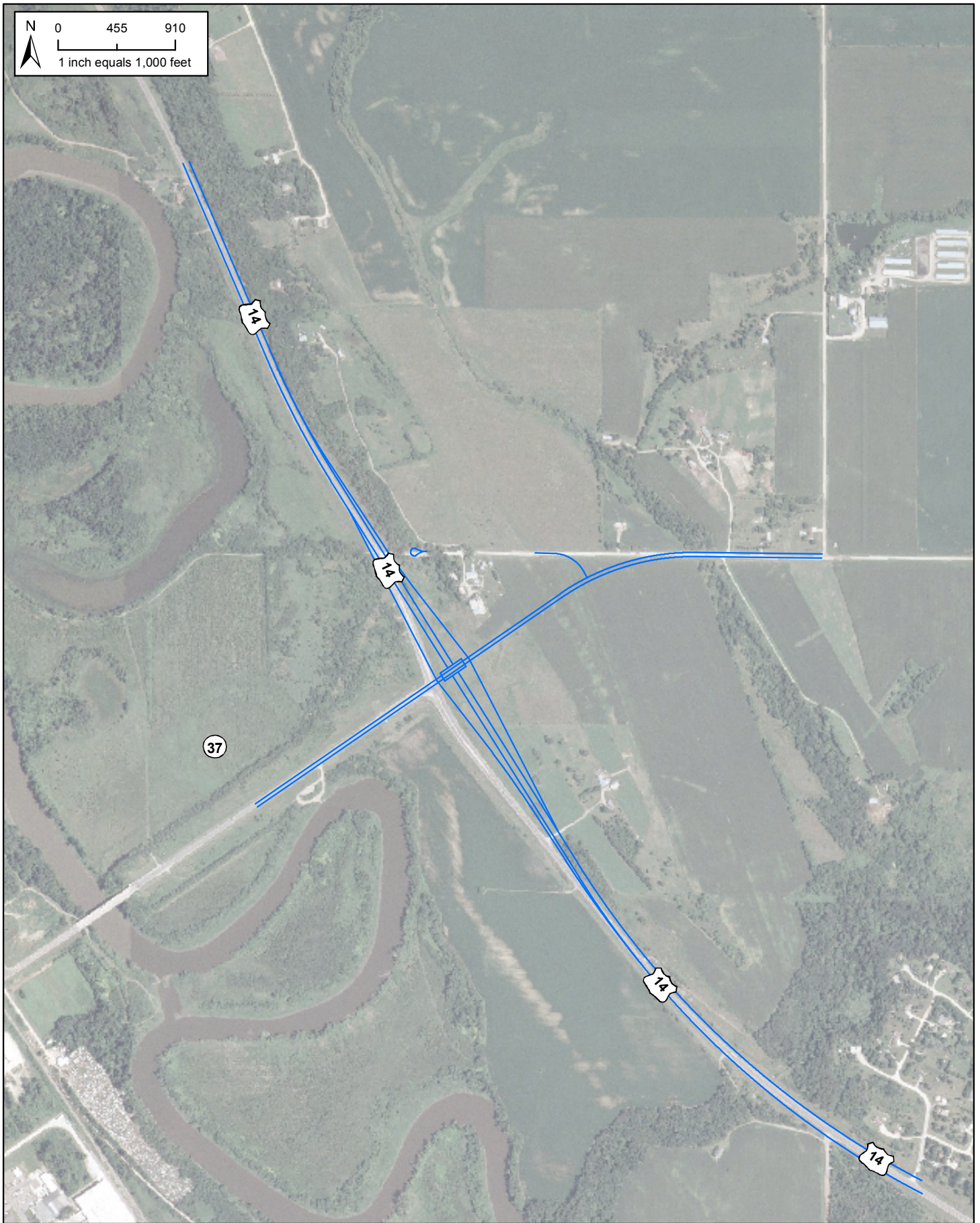
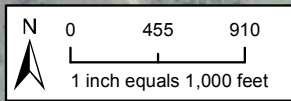
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Exhibit 2-7
US 14 - MN 15 Alternative W2
Interchange Concept
New Ulm



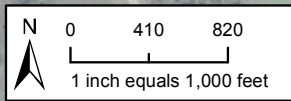
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Exhibit 2-8
US 14/CR 37 Alternative W1
Concept A (Trumpet)
New Ulm



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Exhibit 2-9
US 14/CR 37 Alternative W1
Concept B (Tight Diamond)
New Ulm



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New Ulm to North Mankato

Exhibit 2-10
US 14/CR 37 Alternative W3
Concept A (Tight Diamond)
New Ulm

N 050
1 inch equals 1,500 feet



US 14 EIS
New Ulm to North Mankato

Exhibit 2-11

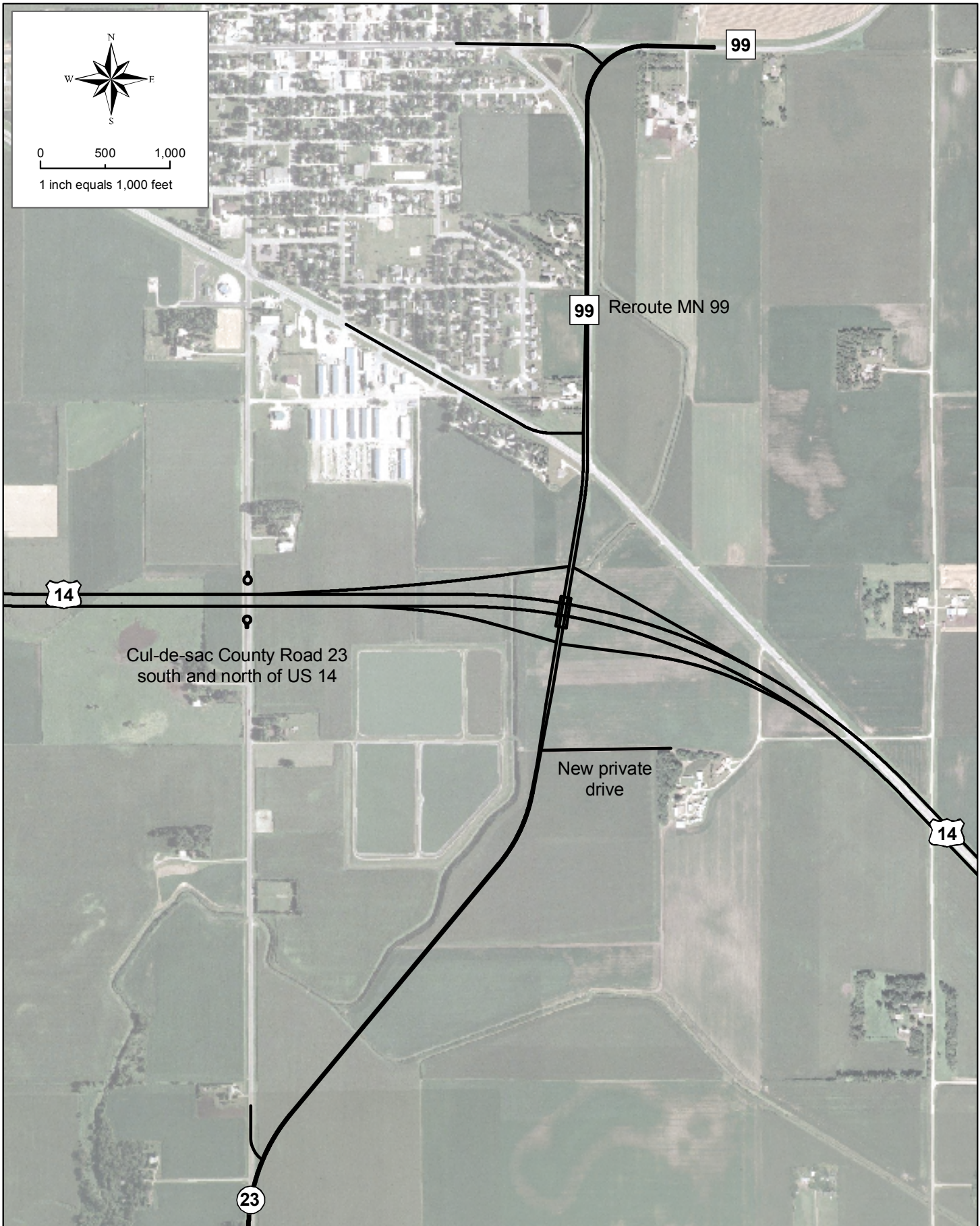
US 14/CR 24 All Alternatives
Diamond Interchange Bypass
Courtland



US 14 EIS
New Ulm to North Mankato

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Exhibit 2-12
US 14 - MN 99 - CR 23
Alternatives E1, E2 and E3 Interchange Concept
Nicollet



US 14 EIS
New Ulm to North Mankato

06-20-07

Exhibit 2-13
US 14 - MN 99 - CR 23
Alternatives E1, E2 and E3 Interchange Concept
Nicollet

TABLE 2-1

Summary of West Study Section Proposed Public Road Access (from west to east)

Road Name	Proposed Access		
	Alt W1	Alt W2	Alt W3
MN 15	Interchange	Interchange	Interchange
577 th Ave.	NA	"T" Intersection to realigned MN 15	NA
CR 37	Interchange	Interchange	Interchange
571 st Ave. (existing alignment)	4-legged Intersection	NA	NA
Jeremy Dr.	"T" Intersection	NA	NA
561 st Ave.	"T" Intersection	NA	NA
551 st Ave.	"T" Intersection	4-legged Intersection	4-legged Intersection
"Old" US 14	Interchange (will provide access to "old" US 14, which would carry eastbound traffic)	Realigned to MN 15	Realigned to CR 37

TABLE 2-2

Summary of East Study Section Proposed Public Road Access (from west to east)

Road Name	Proposed Access			
	Alt E1	Alt E2	Alt E3	Alt E4
CR 12	Interchange via CR 24	Interchange via CR 24	Interchange via CR 24	Interchange via CR 24
CR 24	Interchange	Interchange	Interchange	Interchange
531 st Ave.	Interchange via CR 24	Interchange via CR 24	Interchange via CR 24	Interchange via CR 24
Existing US 14	--	--	Overpass	Overpass
511 th Ave.	4-legged Intersection	4-legged Intersection	4-legged Intersection	4-legged Intersection
466 th St.	4-legged Intersection	4-legged Intersection	"T" Intersection	"T" Intersection
501 st Ln.	--	--	"T" Intersection	"T" Intersection
491 st Ave.	4-legged Intersection	4-legged Intersection	4-legged Intersection	4-legged Intersection
481 st Ave.	"T" Intersection	4-legged Intersection	4-legged Intersection	4-legged Intersection
471 st Ave.	Overpass	Overpass	Full Access Intersection	Full Access Intersection



TABLE 2-2

Summary of East Study Section Proposed Public Road Access (from west to east)

Road Name	Proposed Access			
	Alt E1	Alt E2	Alt E3	Alt E4
CR 23	Interchange	Interchange	Interchange	Interchange
New Road*	Interchange	Interchange	Interchange	Not constructed
478 th St.	4-legged Intersection	4-legged Intersection	4-legged Intersection	4-legged Intersection
490 th St.	4-legged Intersection	4-legged Intersection	4-legged Intersection	4-legged Intersection
431 st Ave.	"T" Intersection	"T" Intersection	"T" Intersection	"T" Intersection
CR 25	4-legged Intersection	4-legged Intersection	4-legged Intersection	4-legged Intersection
CR 17	4-legged Intersection	4-legged Intersection	4-legged Intersection	4-legged Intersection

*Re-routed CR 23 & MN 99, located east of existing CR 23 (see Exhibit 2-1 and the Aerial Photo Exhibit for more detail)

2.5 Alternatives Development and Screening

This section documents the development and screening processes used to determine which alternatives to retain for detailed analysis in the DEIS. Those alternatives that were screened out from further consideration during the initial scoping phase are not the focus of this section. Reasons for eliminating alternatives from further consideration can be found in other documents, including the *Corridor Management Plan*, the *Scoping Decision Document (SDD)*, the *Alternatives Screening Recommendations for the US 14 EIS Technical Memorandum*, and the *Amended Scoping Decision Document* (which are available on the Project Website).

2.5.1 Scoping Process

A wide universe of US 14 alignment alternatives and highway design options were developed beginning in

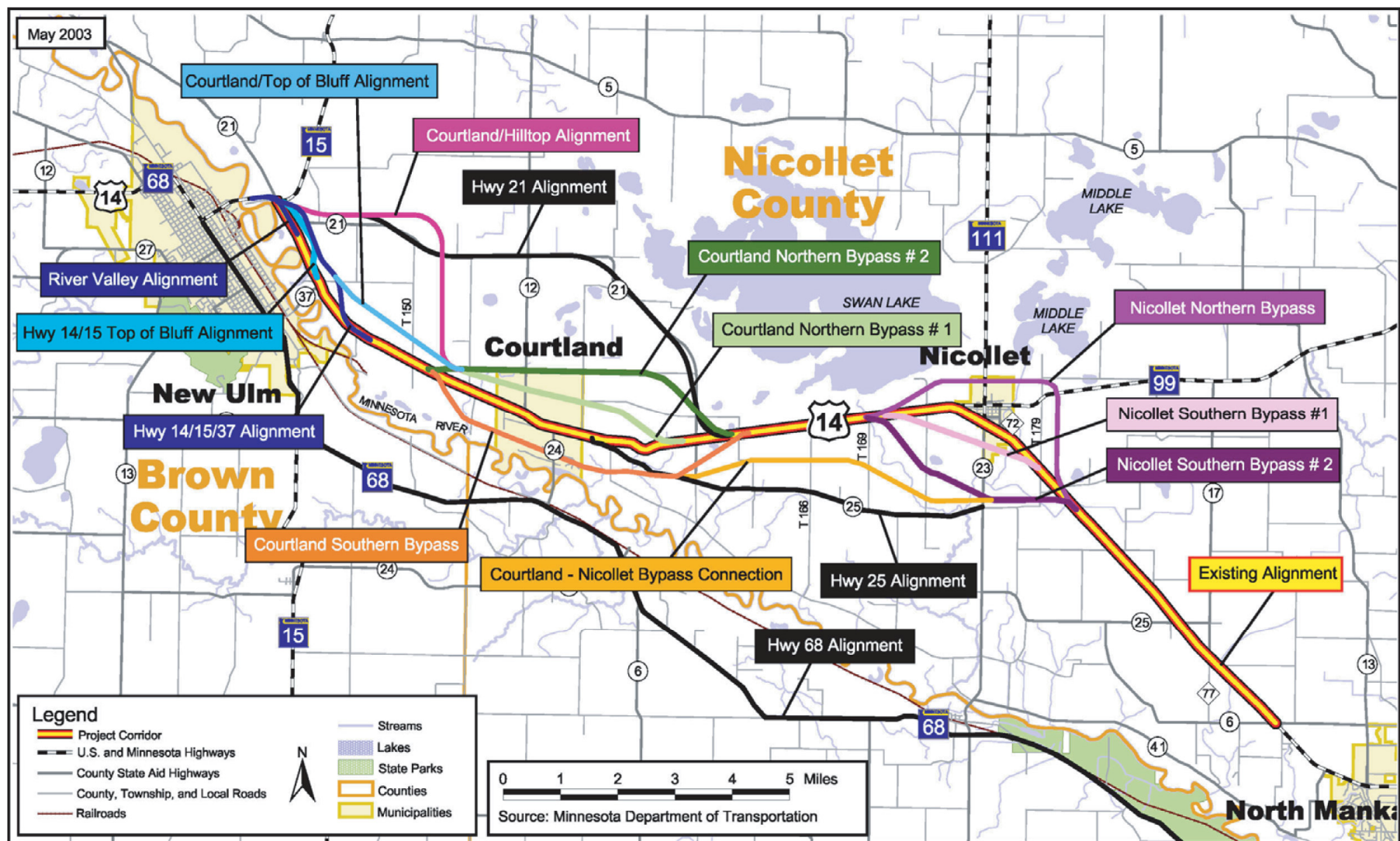
2002 for analysis in the *Scoping Document*. These alignment alternatives are shown on

Exhibit 2-14, and

listed in the left column of Table 2-3. Both location alternatives and design options were screened during the EIS Scoping process based on public input, environmental considerations, consistency with local land use plans, and consistency with Mn/DOT's corridor performance goals and design guidelines. The May 2003 *SDD* included recommendations to either eliminate or retain the alternatives. Alternatives recommended for additional study in the May 2003 *SDD*

Additional information on alternatives development and screening, as well as other project background, is available on Mn/DOT US 14 EIS Website at: www.dot.state.mn.us/d7/projects/14newulmtonmankato/documents.html





Source: 14 West IRC Scoping Document, Figure 6-4, March 2003

Exhibit 2-14



US 14 Draft EIS
New Ulm to North Mankato

Full Universe of Scoping Alternatives
Examined in US 14 Scoping Document (March 2003)

were identified as potentially feasible solutions to the identified roadway deficiencies; or as warranting more detailed study to determine their feasibility. Alternatives that clearly did not address the identified deficiencies or that were found to be inconsistent with local land use plans and environmental resource goals were removed from further consideration—for example, the alternative of an improved 2-lane highway was eliminated because it did not sufficiently address safety and traffic operation deficiencies, and it does not provide for system continuity throughout the US 14 Interregional Corridor (this designation terminates in New Ulm). The alternatives recommended for additional study during the scoping process included an expanded 4-lane highway and a variety of alignment alternatives; including expansion and reconstruction along the existing highway as well as new routings or bypasses along the west end of the corridor (near the Minnesota River) and around Courtland and Nicollet.

2.5.2 DEIS Alternatives Screening Process & the Amended SDD

Shortly after beginning work on the DEIS during summer 2004, the alternatives recommended for detailed study in the May 2003 *SDD* were once again reviewed. This screening phase built on the recommendations made in the May 2003 *SDD*; however, it was conducted in a manner that left the project open to new data, new ideas, and decision-making aimed at developing a concise DEIS (see Section 2.1).

The process largely evaluated the same corridor alternatives recommended for additional study in the May 2003 *SDD*. Mn/DOT evaluated each alternative's reasonableness or responsiveness to the project purpose and need, as well as the potential of each alternative to address existing and forecasted US 14 deficiencies. This assessment included engineering evaluation, agency coordination, consideration of overall social, economic, and environmental impacts, and input received from the public during the summer and fall of 2004 (see Section 4 for more information).

Studying these additional details ultimately led Mn/DOT to recommend more precise corridor locations, some new corridors, and the elimination of other corridors. These screening efforts resulted in a greater understanding of the potential benefits and the adverse impacts of each alternative carried forward in the May 2003 *SDD*. The bulk of this screening effort is documented in the *Alternatives Screening Recommendations* and the *Interchange Workshop Report*, both of which are published on the Project Website.

Based on the work completed during this screening process, Mn/DOT determined that it was necessary to issue an *Amended SDD* to formally update the May 2003 *SDD*, and to refine the alternatives to be addressed in detail within the DEIS. The *Amended SDD*, published in October 2005, provided the justification for eliminating or refining certain alternatives; and for adding in the Minnesota River crossing to the project limits (see Section 2.4.2.1). The *Amended SDD* ensures more clarity and completeness in the decision-making process than possible with the wider range of alternatives considered at the beginning of the EIS process.

2.6 Project Cost and Benefit-Cost Analysis

Table 2-4 provides a summary of the estimated capital costs to build the proposed project, including real estate (acquisition of right-of-way and costs for residential and business



relocations) and a separate line-item estimate for the proposed Minnesota River Bridge improvements. Because a wide variety of corridor combinations are possible, the entire range of total project costs is bracketed in the estimates.

TABLE 2-3

Preliminary Capital Cost Estimate Summary (\$ Millions 2007)

Cost Category	No Build	West Build Alts.			East Build Alts.				Build - Total Range	
		W1	W2	W3	E1	E2	E3	E4	Min.	Max.
Construction Costs ^{1, 2, 3}	8.8	79.4	83.3	95.0	103.0 [104.8]	102.6 [104.3]	103.0 [104.7]	92.6	172.0 [183.7]	198.0 [199.8]
Environmental and Additional Costs ⁴	0.0	0.6	0.4	0.6	0.3 [0.3]	0.3 [0.3]	0.3 [0.3]	0.1	0.5 [0.7]	0.9 [0.9]
Land Acquisition/Right-of-Way and Relocation Costs ⁵	0.0	18.0	14.3	12.6	15.6 [16.8]	14.9 [16.3]	15.7 [16.4]	14.2	26.8 [28.9]	33.7 [34.8]
Turnback Costs ⁶	0.0	1.0	6.4	4.4	5.2 [5.2]	8.1 [8.1]	9.9 [9.9]	11.0	6.2 [6.2]	17.4 [16.3]
TOTALS	8.8	99.0	104.4	112.6	124.1 [127.1]	125.9 [129.0]	128.9 [131.3]	117.9	216.9 [226.1]	241.5 [243.9]

NOTES:

[##] The bracketed numbers are the estimates for the optional interchange and connecting roadways at MN 99 in Nicollet instead of at CR 23.

1 Highway construction costs assume that portions of alternatives that use the existing highway route would be completely reconstructed. All possible combinations of western and eastern alternatives include four interchanges—two in the west and two in the east.

2 All western cost estimates include an estimated \$12 million for the Minnesota River bridge. This entails a parallel 2-lane bridge immediately north of the existing bridge and complete reconstruction of the existing 2-lane bridge. An actual bridge reconstruction or rehabilitation project could vary from this assumption, including the possibility of less reconstruction of the existing bridge.

3 Improvements under the No Build Alternative are limited to normal pavement maintenance, spot traffic operational improvements, and minor safety improvements.

4 Environmental and Additional Costs include estimated costs for wetland mitigation and historic/cultural resource mitigation.

5 Land Acquisition/Right-of-Way and Relocation Costs include estimated costs for new right-of-way and for relocation programs.

6 Turnback includes costs for replacing existing pavement on portions of US 14 that would be transferred from Mn/DOT to Nicollet County jurisdiction. Alternatives that use the most new alignment result in the highest levels of turnback.

As required by Mn/DOT's Cost Effectiveness Policy, a benefit-cost analysis is required for this project. The benefit-cost analysis is based on determining the present value of the anticipated



benefits and costs associated with each of the Build Alternatives compared to the No Build Alternative. The primary benefits that are measured in the Mn/DOT benefit-cost analysis methodology are: travel time, operating costs, and safety. Other factors such as annual maintenance costs, major replacement costs, and remaining value of project components (such as structures and right-of-way) at the end of the study period are also considered. However, the comparison does not account for other unique factors of each alternative such as social and environmental impacts and long-term functionality of the infrastructure, which are more difficult to quantify.

As shown in Table 2-4, all Build Alternatives have a benefit-cost ratio below 1.0, indicating that the measured costs of the alternatives are greater than the measured benefits. Due to the nature of the benefits that are measured, an important factor in the relative ranking of alternatives is the length of an alternative segment (i.e., a longer roadway segment will likely result in a lower benefit-cost ratio). For instance, in this study, Alternative W1 is the shortest and W2 is the longest of the three West Build Alternatives, and Alternative E4 is the shortest and E1 is the longest of the four East Build Alternatives. In that regard, these benefit-cost comparisons help to provide an examination of the *measured* costs and benefits for each of the Build Alternatives.

TABLE 2-4 Benefit-Cost Ratios for each of the Build Alternatives							
Build Alternative	West Build Alts.			East Build Alts.			
	W1	W2	W3	E1	E2	E3	E4
Benefit-Cost Ratio	0.58	0.45	0.45	0.67 [0.65]	0.74 [0.72]	0.71 [0.69]	0.88
NOTE: [##] The bracketed numbers are benefit-cost ratios for the optional interchange and connecting roadways at MN 99 in Nicollet instead of at CR 23.							
NOTE: All combinations of West and East Build Alternatives result in a benefit-cost ratio between 0.5 and 0.75.							

Mn/DOT guidance for analysis of a project's cost-effectiveness (Technical Memorandum No. 04-05-IM-01, December 7, 2004) requires a consideration of social, environmental, or community goals and business impacts critical to the project if the benefit-cost ratio is less than 1.0. These types of critical goals are more difficult to quantify as monetary benefits or costs, but are critical to the project's purpose and need (as described in Section 1).

The following critical goals of this project are also reflected in the description of Purpose and Need in Section 1.

- US 14 from New Ulm to Rochester is part of Minnesota's interregional corridor (IRC) system. The IRC system is integral to the safe, timely, and efficient movement of goods and people between regional trade centers across Minnesota. This segment of US 14 between New Ulm and Rochester DEIS study area (between New Ulm and North Mankato) is only part of the designated US 14 interregional corridor not upgraded to a four lane expressway, or is not in an advanced stage of project approval (the section from Owatonna to Dodge Center is being re-evaluated in a Draft EIS). Maintaining system continuity as a four-lane expressway between these trade centers is critical for the long-term functionality of this



corridor and its ability to operate at the target goal speed of 55 mph.

- While safety improvements are calculated as part of the benefit-cost analysis, it is difficult to quantify and project the trend in both number and severity of crashes. The method of benefit-cost analysis used in this study assumes a static (i.e., non-changing) crash rate and severity rate for the corridor over the twenty-year analysis period. Increased levels of congestion over this timeframe would likely be associated with an increase in crashes across the corridor, but especially in the growing communities of Courtland and Nicollet. For this corridor, especially known to have high crash severity rates, an underestimation of the crashes in a No Build alternative would have the effect of underestimating the benefits of a Build Alternative.
- The cities of Courtland and Nicollet have recognized the long-term adverse impacts of increased congestion on their community and the need to plan for a new US 14 alignment that by-passes each city. Both cities passed resolutions to this effect in the summer of 2005. In fact, the City of Courtland has planned for this by incorporating a by-pass into their Comprehensive Plan.

While the benefit-cost ratio is below 1.0, the critical goals described above and in Section 1 - Purpose and Need provide the qualitative basis for proceeding with the proposed project. In the development of a preferred alternative, Mn/DOT will continue to assess opportunities for improving the Project's cost-effectiveness.

2.7 Recommendation of a Preferred Alternative

All alternatives presented in the DEIS remain under equal consideration with none identified as preferred. Selection of a preferred alternative for identification and presentation in the Final EIS will be made only after evaluation of all comments received as a result of a public hearing and following review of the DEIS by the public and agencies.

