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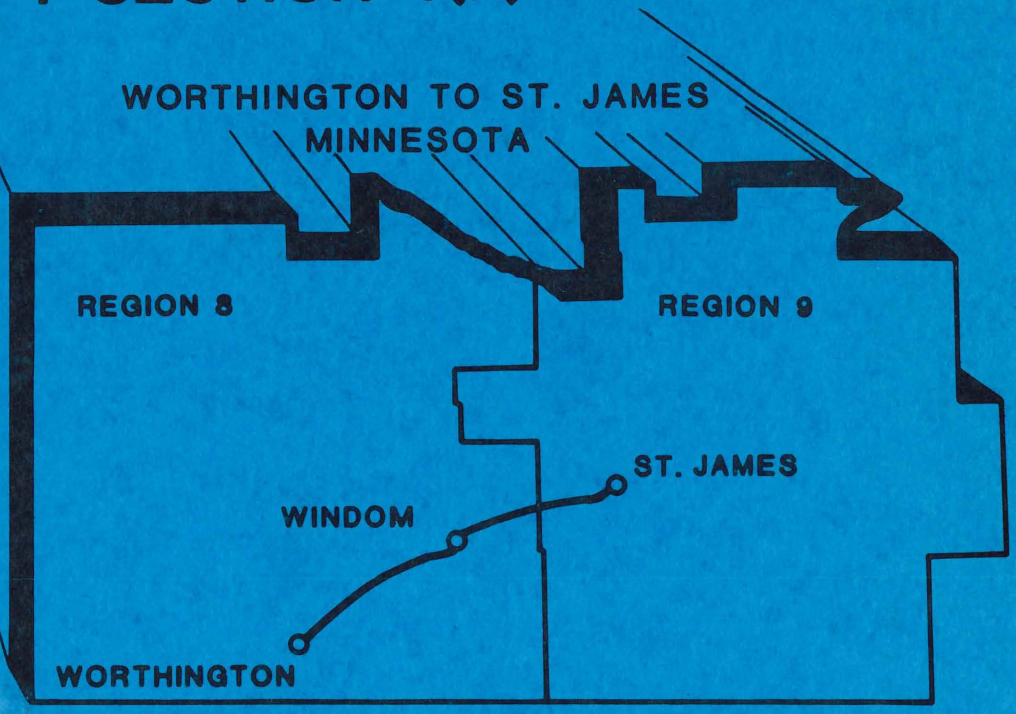
T.H. 60 DRAFT ENVIRONMENTAL IMPACT STATEMENT

AND DRAFT SECTION 4(F) EVALUATION



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

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Minnesota
Department of Transportation
Transportation Building
St. Paul, Minnesota 55155

Phone _____

In reply refer to: 330
FHWA-MN-EIS-82-01-D
Draft Environmental Impact Statement &
Draft Section 4(f) Evaluation for
Trunk Highway 60 in Nobles, Jackson,
Cottonwood & Watonwan Counties, Minnesota
Minnesota Projects F 016-1( ) & F 004-1( )
State Project 5306, 3204, 1703 & 8308
From the City of Worthington
To the City of St. James

Dear Sir:

Enclosed for your information is a copy of the Draft Environmental Impact Statement and Draft Section 4(f) Evaluation (DEIS/4(f)) which considers and documents the positive and negative impacts of the proposed improvements for the above referenced highway section.

The proposed action consists of improvements to 52 miles of TH 60 to be staged over a 25 year time period subject to funding availability. Initial stages include reconstructing the current two lane roadway to modern highway standards; subsequent stages involve expansion of the highway to a four lane facility in rural sections.

Comments on the document received through June 30, 1982 will be included in and addressed by the Final Environmental Impact Statement and Final Section 4(f) Evaluation. Comments may be directed to:

District Engineer
Mankato District Office
501 South Victory Drive
Mankato, Minnesota 56001

An open house will be held from 1:00 P.M. to 8:00 P.M. on Tuesday, June 8, 1982 at the Minnesota Department of Transportation Building in Windom, Minnesota, to provide an opportunity for public review of the location alternates, technical reports and the DEIS/4(f).

An Equal Opportunity Employer

A public hearing/meeting will be held on Thursday, June 10, 1982, at 7:30 P.M. in the Lecture Hall at Windom Senior High School, 1400 7th Street, Windom, Minnesota to afford an opportunity for all interested persons, agencies and groups to discuss the location alternatives, the DEIS/4(f) and the social, economic and environmental effects of the proposed project. Exhibits, oral and written statements will be accepted at the hearing and made a part of the hearing transcript. Written statements relative to the hearing and received by the Mn/DOT postmarked no later than June 30, 1982 will become a part of the hearing record.

The Final Environmental Impact Statement will be furnished to those who request a copy at the time they comment on this draft statement or who have previously requested copies of all finals.

Sincerely,

Lyle L. Hansen, Director
Office of Design Services

Enclosure (1)
DEIS

FHWA-MN-EIS-82-01-D State Projects 5306, 3204, 1703 and 8308

Trunk Highway 60
Worthington to St. James
In Nobles, Jackson, Cottonwood and Watonwan Counties, Minnesota

DRAFT ENVIRONMENTAL IMPACT STATEMENT
AND DRAFT SECTION 4(F) EVALUATION

Submitted pursuant to:

42 USC 4332(2)(c)
49 USC 1653(f)
and
Minnesota Statute 116D.01 et.seq.

Submitted by:

U.S. Department of Transportation
Federal Highway Administration
and
The State of Minnesota
Department of Transportation

Cooperating Agencies:

U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
Minnesota Department of Natural Resources

JAN. 15, 1982 — F. C. Marshall — Assistant Comm.
Date of Approval — For Mn/DOT — Title

1/26/82 — William R. Lake — Division Administrator
Date of Approval — For FHWA — Title

The following persons may be contacted for additional information concerning this document:

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Mr. Marcus Flygare
TH 60 Project Manager
Minnesota Department of Transportation
501 South Victory Drive
Mankato, Minnesota 56001
(507) 389-6351

ABSTRACT: This environmental impact statement describes and evaluates the proposed improvement of a 52-mile segment of Trunk Highway 60 from St. James to Worthington in southwestern Minnesota. Initial stages would provide two-lane reconstruction to modern highway standards, with subsequent staged dualization to a four-lane expressway. Alternatives include both reconstruction on existing alignment and, in the northern portion of the corridor, construction on new alignment. Potential adverse impacts include displacement of residences and businesses, acquisition of prime farmland, modification of streams and wetlands, community noise and traffic conflicts, tax base loss, and traveler-oriented business loss. Mitigation measures are proposed.

Comments on this draft EIS are due by JUN 30 1982 and should be sent to:

Mr. Marcus Flygare
TH 60 Project Manager
Minnesota Department of Transportation
501 South Victory Drive
Mankato, Minnesota 56001

SUMMARY

DESCRIPTION

The Federal Highway Administration (FHWA) and the Minnesota Department of Transportation (Mn/DOT) propose the improvement of a 52-mile section of Trunk Highway (TH) 60 between Worthington and St. James in southwestern Minnesota. Proposed construction would be staged over a period of approximately 25 years, subject to funding availability. Initial stages would provide two-lane reconstruction to modern highway standards. Subsequent stages would provide dualization to a four-lane expressway in rural sections.

OTHER GOVERNMENT ACTIONS

Recent or proposed actions in the TH 60 corridor by other governmental agencies significant to the TH 60 project include:

- Interstate Commerce Commission approvals of railroad branchline abandonment applications;
- Southwest Regional Development Commission adoption of a Comprehensive Regional Development Guide;
- Land use plan, zoning and floodplain ordinance updates by each of the four affected counties and the communities of Windom, Brewster and Mountain Lake.

These actions are discussed in appropriate sections of this impact statement.

ALTERNATIVES

Alternatives considered include (a) no-action, (b) reconstruction on the existing alignment, and (c) construction on new alignment in the northern portion of the corridor. Construction on new alignment would occur from near Windom to St. James (25 miles) or from near Mountain Lake to St. James (13 miles). Alignment and design variations have been evaluated in the vicinity of the cities of Heron Lake, Windom, Bingham Lake, Mountain Lake and Butterfield. Traffic operations improvements would be made in the urban sections of TH 60 under the existing alignment reconstruction alternative. The two-lane impact evaluation also reflects the alternative of postponing or cancelling of the proposed dualization at a future date, should re-evaluation of need during the initial two-lane construction indicate that such dualization would no longer be warranted.

SIGNIFICANT BENEFICIAL AND ADVERSE ENVIRONMENTAL IMPACTS

The proposed action would:

- provide a significantly safer and more efficient transportation facility than now exists;
- displace from 2 to 22 residences and 2 to 14 small businesses;
- displace approximately 90 to 800 acres of prime farmland, moderately or highly impacting from 3 to 21 farms (proposed farmland reclamations would help offset prime farmland loss);
- retain (existing alignment) or reduce (new alignment) community traffic conflicts and noise impacts;
- adversely impact up to 30 traveler-oriented businesses (new alignment);
- affect approximately 3 to 15 acres of streams and wetlands;
- involve three Section 4(f) properties (existing alignment);
- aid in the realization of regional economic development goals.

AREAS OF CONTROVERSY

Areas of significant controversy raised by agencies and the public include:

- immediate concern for replacement or removal of the hazardous railroad overpass east of Butterfield;
- need for future four-lane dualization in view of (a) uncertainty of future traffic projections, (b) additional farmland acquisition, and (c) increased cost-- versus need for (a) improved traffic safety and service, and (b) regional economic benefits;
- need for new alignment bypassing Windom, Mountain Lake and Butterfield to reduce in-town traffic delays, neighborhood conflicts and noise impacts-- versus additional farmland impacts and loss to existing traveler-oriented business;
- effect of limited funding availability on the staging and feasibility of the project.

FEDERAL PERMITS

The proposed project will require permits from the Department of the Army, Corps of Engineers, pursuant to Section 404 of the Federal Water Pollution Control Act Amendments of 1972, for various stream crossings in the 52-mile project corridor.

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J. TH 60 Farm Inventory Report
K. TH 60 Preliminary Right-of-Way Acquisition and Relocation Report
L. TH 60 Citizens Advisory Committee Reports

NOTE:

Appendices D to L are separate technical reports. Due to their size they have not been bound directly into this document for general circulation. Copies of these documents are available for public review at the following locations:

Minnesota Department of Transportation

- Transportation Building, St. Paul (Environmental Development Unit)
- District 7 Office, 501 South Victory Drive, Mankato
- Maintenance Office, CSAH 26, Windom

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PREFACE

Highway construction funding limitations require that needed improvements to the 52-mile section of Trunk Highway 60 from St. James to Worthington be programmed over a period of many years, the eventual duration of which will depend upon future funding conditions.

Of immediate concern is the selection of the most prudent location for the proposed first phase improvement of a limited segment near Butterfield and Mountain Lake to modern two-lane standards. A decision to reconstruct on existing alignment through the towns would likely preclude, from a practical viewpoint, new alignment options to the southwest of Mountain Lake and/or replacement around the towns in the foreseeable future. A decision to rebuild TH 60 on new alignment to avoid through-town traffic conflicts would, on the other hand, require a first phase construction of some 14 miles to provide a fully usable section.

The first phase decision must therefore be made in the context of, and compatible with, the long-range improvement needs, costs and impacts over the entire 52-mile corridor. The studies documented in this Environmental Impact Statement (EIS) have been structured to provide the information essential to the overall, continuing decision process for TH 60. The statement identifies and evaluates:

a) potential social, economic and environmental impacts for both initial two-lane and ultimate four-lane construction on selected reasonable location alternatives for the entire 52-mile corridor, including the limited section proposed for initial construction;

b) priorities for staged development on a section-by-section basis;

c) costs and related funding level requirements by section for each alternative necessary to complete the overall improvement program in a reasonable time period.

Because long-range planning must be based on costs, funding availability and traffic assumptions that may or may not prove accurate, a flexible approach must be maintained. Should estimated funding availability or traffic demands change significantly in future years, the information contained in the EIS will provide the basis for modifying the proposed construction program. If appropriate, a supplemental EIS will be prepared at that time.

Incorporated as appendices to this statement are reports of the TH 60 Citizens Advisory Committee and a number of technical study reports that document prior project development, public involvement and detailed engineering and environmental impact studies.

PURPOSE AND NEED

The need to improve the segment of Trunk Highway 60 between Worthington and St. James has been a subject of general agreement among all concerned for many years. Significant existing deficiencies include:

- substandard lane widths, shoulders, shoulder slopes and ditches;
- numerous "no passing" zones;
- hazardous intersections, driveway entrances and railroad crossings;
- old and deteriorating pavement;
- urban sections with local land use, traffic and pedestrian conflicts and through-traffic delay.

HISTORICAL PERSPECTIVE

Prior "Needs" Studies"

Statewide trunk highway "needs" studies prepared in 1961 and 1963 by Mn/DOT's predecessor, the Minnesota Department of Highways (MHD), recommended the upgrading of TH 60 from Worthington to St. James to expressway status based on "existing traffic volumes and systematically predicted future traffic demands". A 1972 MHD statewide priorities study assigned a first priority classification to TH 60 improvement on the basis of its importance for outstate economic development, road user benefits and system continuity. Similarly, a 1972 socio-economic analysis conducted by a private organization for the Highway 60 Action Group concluded that upgrading to a four-lane expressway status was needed for economic revitalization of the TH 169-60 corridor linking Minnesota and Iowa.

In 1974, MHD selected the combined TH 60-169 route from Worthington to the Twin Cities as one of two top priority routes for improvements under a new federal funding program for primary routes connecting with and supplementing the Interstate Highway System. Subsequent task force surveys and planning studies by the Development Commissions of Regions 8 and 9 identify the high priority of TH 60 improvement needs to local citizens and governments, with recommendations varying from two-lane reconstruction to a four-lane expressway.

Citizens Advisory Committee Study

Diversity of opinions as to the appropriate type of improvement in light of reduced highway funding capabilities, potential fuel shortages and farmland impacts led to a bi-regional Citizens Advisory Committee evaluation of TH 60 improvement needs and options. Following a year-long process, the Committee recommended by majority vote on July 6, 1978, that TH 60 be reconstructed as a four-lane expressway with a reduced-width median, located in part on new alignment so as to bypass the urban sections of Windom, Mountain Lake and Butterfield. It was the

judgement of the Committee majority that the recommended expressway would provide the degree of transportation service and safety needed in the corridor in a manner consistent with other regional and local concerns. The majority further cited the preponderance of public and local agency response in support of a four-lane facility.

In a minority report, four of the ten Citizens Advisory Committee members recommended reconstruction of TH 60 as a modern, 24-foot-wide roadway with paved shoulders, turn lanes and improved vertical and horizontal alignment. Three of the four members further recommended the need for the two-lane reconstruction to bypass the urban areas of Windom, Mountain Lake and Butterfield. Primary reasons cited by the minority for these recommendations were lower cost, less farmland impact and uncertainty of the traffic forecasts. The majority and minority reports are contained in Appendix L.

After evaluating the Committee's majority and minority recommendations, public comments, regional transportation plans and statewide transportation needs and financial resources, Mn/DOT decided in August of 1978 to pursue project development for initial construction of a modern two-lane road, incorporating isolated sections of four-lane roadway as necessary in built-up areas, with planning and right-of-way preservation for ultimate expansion to a four-lane expressway.

SYSTEMS LINKAGES

Statewide and regional system planning has identified TH 60 as part of a principal arterial system serving interstate, statewide and intercounty travel needs. As illustrated on Figure 1, Trunk Highway 60 diagonally overlays the basic gridiron highway system of Southwestern Minnesota, linking the surrounding region via TH 169 to the Twin Cities Metropolitan area. As a diagonal "short-cut" between Interstate Routes 90 and 35, TH 169-60 reduces the travel distance from Worthington to the Twin Cities by some 35 to 40 miles. Between Worthington and St. James, the diagonal route is over 10 miles shorter than the I-90 to TH 4 alternative route.

TH 169-60 is an expressway for the approximate 100-mile distance southwest from the Twin Cities through Mankato to St. James. Construction to four-lane expressway standards of the remaining 52-mile segment to Interstate 90 at Worthington would provide design continuity. Two-lane reconstruction would not provide design continuity, but would help retain the functional utility of TH 60 as a principal arterial in the face of increased travel demands and physical obsolescence of existing TH 60. Traffic service levels would vary depending upon the type of improvement provided, as discussed in following sections.

To the southwest, TH 60 extends approximately 90 miles to Sioux City, Iowa. It also provides a connecting link, via Interstate 90 and 29 to the markets of Sioux Falls, Omaha and Kansas City. Thus, TH 60 serves as a principal arterial link to statewide and out-of-state markets from both ends of the study corridor.

In addition to its principal arterial function, TH 60 serves as a vital access link between the town centers located along the study corridor and much of the secondary county highway and local township road system serving the surrounding

farmlands. Retention of these local system connections is essential in any upgrading plans for TH 60.

ROADWAY CONDITIONS

Geometric Deficiencies

Constructed in the 1930's, existing TH 60 is obsolete by modern roadway standards. Narrow travel lanes, gravel shoulders, and bridges offer little safety margin for meeting oncoming traffic, passing or making emergency stops. Steep shoulder slopes and narrow ditches, due in part to inadequate right-of-way width and culvert lengths, offer little opportunity for vehicles to regain control after leaving the roadway. Poor vertical and horizontal alignment result in substandard sight distances for passing and stopping maneuvers. Frequent at-grade intersections lack turn lanes and left-turn bypass provisions necessary for safe and efficient traffic flow.

Table 1 summarizes, by section, the major design features of existing TH 60 in comparison to minimum design standards for two-lane rural trunk highways. It shows that current roadway geometric deficiencies are most prevalent in the section between Wilder and St. James.

Curbed, urban segments of varying width accommodate four travel lanes without parking in Windom, and two travel lanes with parking in Mountain Lake and Butterfield. In Heron Lake and the fringe areas of the above towns, the existing roadway is of rural-type design with gravel shoulders. Posted speed restrictions include 30 mph in Windom, Mountain Lake and Butterfield; 40 mph in Heron Lake; and 45 mph in the fringe segments of Windom and Mountain Lake.

Structural and Maintenance Considerations

The existing pavement was designed to carry lower volumes and lighter loads than currently exist and are forecast. Consistent with 1930's design practices, the concrete pavement was laid predominantly on the existing topsoils. Subsequent experience has shown that the soils underlying TH 60 through most of the project area have insufficient strength for current traffic loads. Because of these poor subgrade conditions, the excessive loads, and age, the original pavement is badly deteriorated.

Normal rehabilitation practice for old concrete pavements consists of placing a bituminous overlay on the existing pavements. The average cost of a normal overlay treatment is currently $50,000 per mile of two-lane road. Where the pavement and subgrade are reasonably sound, this treatment will extend the life of the pavement ten to twenty years. Based on recent inspections of TH 60 sections overlaid between 1970 and 1976, reflective cracking and differential settlement have destroyed the riding quality and structural integrity of the TH 60 overlays in about five years. It is doubtful that normal overlay methods could be repeated with any success on a five-year frequency on TH 60. Even if successful for physically supporting traffic loads, overlays alone would overcome none of the other deficiencies of the road.

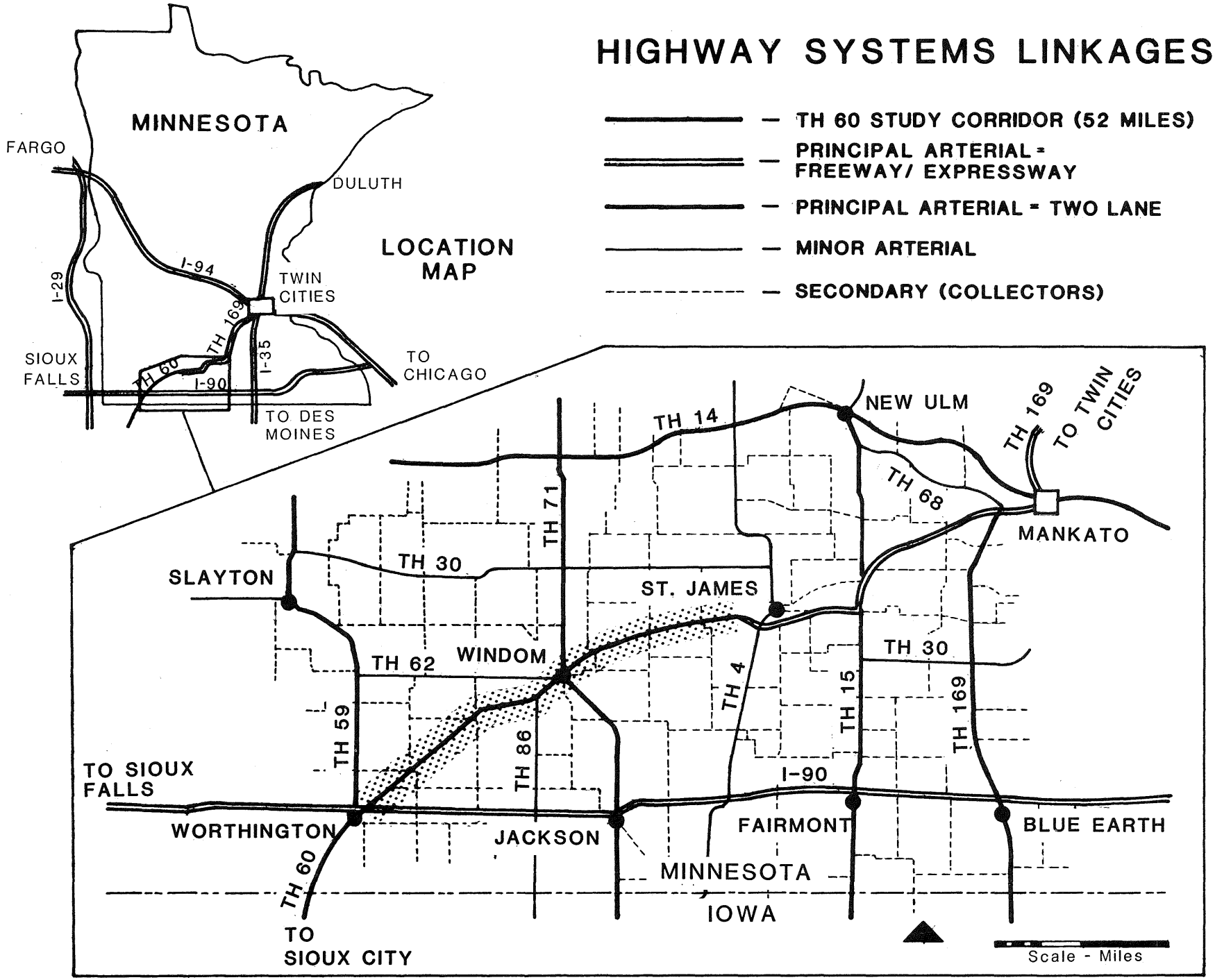

HIGHWAY SYSTEMS LINKAGES
TH 60 STUDY CORRIDOR (52 MILES)
PRINCIPAL ARTERIAL = FREEWAY/ EXPRESSWAY
PRINCIPAL ARTERIAL = TWO LANE
MINOR ARTERIAL
SECONDARY (COLLECTORS)
LOCATION MAP
MINNESOTA
FARGO
DULUTH
TWIN CITIES
I-94
I-29
TH 169
I-35
SIOUX FALLS
TH 60
I-90
TO CHICAGO
TO DES MOINES
NEW ULM
TH 14
TH 169
TO TWIN CITIES
TH 68
MANKATO
TH 71
SLAYTON
TH 30
ST. JAMES
TH 62
WINDOM
TH 4
TH 15
TH 30
TH 169
TH 59
TH 86
TO SIOUX FALLS
I-90
WORTHINGTON
JACKSON
FAIRMONT
BLUE EARTH
TH 60
MINNESOTA
IOWA
TO SIOUX CITY
Scale - Miles

FIGURE 1

TABLE 1

ROADWAY CHARACTERISTICS - EXISTING TH 60

	Length (Miles)	Year(s) Constructed	Right-of-Way Width (ft.)	Pavement Width (ft.)	Shoulder Width (ft.)	% Substandard Passing Sight Distance	% Substandard Stopping Sight Distance	Narrow Bridges
MINIMUM RURAL DESIGN STANDARD			150	24	11-1/2 (10 paved)			
RURAL SECTIONS								
• Worthington to Brewster (Including Brewster)	7	1936	150	22	8	51	12	1
• Brewster to Heron Lake	9	1937	150	22	8	17	2	2
• Heron Lake to Wilder (Including Wilder)	6-1/2	1937	150	22	8	41	8	1
• Wilder to Windom	4	1937-1950	150	22	8	93	49	-
• Windom to Mountain Lake (Including Bingham Lake)	9	1932	100-125	20	10	67	25	-
• Mountain Lake to Butterfield	5-1/2	1932	125	20	8-10	69	20	-
• Butterfield to St. James	5	1932	125	20	8	47	14	1
URBAN SECTIONS								
• Heron Lake	1	1937	90-125	22	8			
• Windom	3	1932, 1950, 1975	70	44 Travel, 50 Curb-to-Curb	-			
			100-150+	44-48	8			
• Mountain Lake	1-1/2	1932	70	20 Travel, 44-54 Curb-to-Curb	-			
			100-125	20	10			
• Butterfield	1/2	1932	70	20 Travel, 44-54 Curb-to-Curb	-			
			70-150	20	8			

The existing gravel shoulders constitute another major item of structural weakness and high maintenance cost. The gravel shoulders provide limited edge support for the pavement structure, permit infiltration of surface water into the subgrade, and are subject to constant raveling at the pavement edge. Costs for shoulder grading alone are approaching $20,000 per year for the study section. Shoulder maintenance requirements are aggravated by the narrow pavement. Compared to a standard 24-foot-wide pavement, shoulder blading is required approximately thirty times more often for the 20-foot-wide section and six times more often for the 22-foot-wide section.

Considering all of these problems and shortcomings, it is apparent that the only practical method to rehabilitate TH 60 for long-term service is to completely reconstruct the pavement, shoulders and subgrade.

TRAFFIC

Present and Projected Demands

Current Average Daily Traffic (ADT) volumes on TH 60 range from approximately 3000 vehicles/day outside Butterfield to over 11,000 vehicles/day in Windom. Rural demands are heaviest to the north of Worthington and south of Windom, averaging approximately 4500 vehicles/day.

Origin-destination surveys indicate that approximately 1000 of these vehicles travel the entire study corridor, including some 300 destined to/from the Worthington area. The remainder are either "local" trips or trips with origins and destinations elsewhere along the study route.

TH 60 traffic declined slightly in the mid-1970's with the completion of Interstate 90 across southern Minnesota. Otherwise, traffic has steadily increased throughout the corridor in the past 20 years, with overall increases varying from 20 percent near the northern end to 80 percent in the southern end. Recent traffic growth has increased daily volumes to or above pre-Interstate 90 levels.

Design traffic forecasts indicate continued growth in TH 60 traffic. These forecasts were developed using the computerized Statewide Travel Model forecasts for the year 2000 as a base. Adjustments to the base forecast were made to account for observed traffic counts, diversion to alternate routes, and travel time and attractiveness differences for new versus existing alignment and two-lane versus four-lane alternatives. A "constrained" forecast was also developed to reflect reduced tripmaking due to energy constraints, reduced corridor-generated traffic, and diversion to other routes. This estimate was based on results of origin-destination and tripmaking opinion surveys conducted as part of the TH 60 Citizens Advisory Committee Study. Both present and projected traffic demands are summarized, by section, in Table 2. Additional details are provided in the "Traffic" Section of Appendix D, the "TH 60 Engineering Studies Report".

Traffic Characteristics

Existing roadway deficiencies are aggravated by the heavy truck traffic TH 60 accommodates as a major grain and livestock shipping corridor. Trucks account for

TABLE 2

TH 60 AVERAGE DAILY TRAFFIC VOLUMES
(Vehicles per Day)

SECTION	Present Volume	PROJECTED VOLUMES (Design Year - 2000) 2-Lane Existing Alignment	2-Lane New* Alignment	4-Lane Existing Alignment	4-Lane New* Alignment	Constrained
RURAL						
• Worthington to Brewster (Including Brewster)	4200-4500	6300	6700	6700	7300	5300
• Brewster to Heron Lake	3400-3600	5000	5700	5400	6000	4100
• Heron Lake to Wilder (Including Wilder)	3300-3600	5700	6400	6100	6700	4800
• Wilder to Windom	4400-4600	6600	7200	7000	7500	5600
• Windom to Mountain Lake (Including Bingham Lake)	3600-4000	5700	6300	6200	6600	4800
• Mountain Lake to Butterfield	3200-3300	5600	6100	6100	6400	4700
• Butterfield to St. James	2800-3000	5300	5900	5700	6200	4400
URBAN						
• Heron Lake	3500-4400	5000-5700	5000-5700 (200-400)**	5400-6100	5400-6100 (200-400)**	4100-4800
• Windom	6500-11,300	8700-13,500	4000-4700 (4200-9000)**	9000-13,900	4300-5000 (4200-9000)**	7300-11,500
• Mountain Lake	4100-7700	6500-9900	5050 (1700-5000)**	7000-10,400	5350 (1700-5000)**	5500-8500
• Butterfield	3500-4800	5800-7100	5650 (500-1700)*	6300-7600	5950 (500-1700)**	4900-6100

NOTES: * Projected corridor demand with new alignment from Windom to St. James to eliminate present through town travel restrictions.
** Estimated traffic on existing TH 60 urban section with through traffic diverted to new alignment.

approximately 13 to 18 percent of Average Daily Traffic, with heavier use encountered during harvest season. Pickups, campers, and vans comprise an additional one-quarter of "light-duty" traffic, and farm equipment movements on and across TH 60 frequently slow and restrict traffic flow.

Overall, traffic is heaviest during summer and early fall months, with volumes approximately 110 to 120 percent of average. Thursday and Friday are typically the heaviest travel days, although the highest hourly demands during the year occur on summer-fall Sunday afternoons. Weekday daytime traffic remains relatively constant at 6 to 8 percent of ADT per hour from 10 a.m. to 7 p.m., with a slight peak in the late afternoon.

Service Levels

Traffic-carrying ability is reflected by the level of service provided under design hour traffic conditions. Rural trunk highways are normally designed to not exceed service level "B" traffic flow. Service level "B" provides stable traffic flow without unreasonable delays and an operating speed (highest overall speed under favorable weather conditions) of approximately 50 miles per hour.

Over 30 percent of the 52-mile study section of TH 60 currently operates below rural service level "B" under design hour traffic demands, as shown in Table 3. Without significant roadway improvement, over 80 percent of the route will operate below level "B" conditions under projected future demands. Even with future "constrained" tripmaking, over 60 percent would operate below level "B" conditions.

A modern two-lane facility with standard design features would permit level "B" or better operation over virtually the entire route under either projected or constrained design hour traffic demands, except for urban speed reduced sections if the existing alignment is retained. Ultimate four-lane expressway construction would allow free flow operation at the 55 mph speed limit, except in urban speed-reduced sections if the existing alignment is retained.

If the existing alignment is retained, urban traffic operational improvements will be required to maintain satisfactory urban traffic service for both TH 60 and cross-street movements. In Mountain Lake and Butterfield, elimination of current on-street parking and provision of left-turn lanes will be required. In Windom and Mountain Lake, additional intersection improvements and signalization will also be needed.

Travel delays for through traffic in the urban speed-restricted sections, as compared to free flow operation at the rural 55 mph speed limit, are shown in Table 4. Estimated intersection delays are included. TH 60 through travel delay per vehicle is greatest in Windom, but overall "lost" travel time is greater in Mountain Lake, due to the higher volume of through traffic. Also shown are estimated average side street delays for vehicles crossing or entering TH 60. These estimates assume provision of adequate signalization where warranted by cross-street traffic volumes.

TABLE 3

ESTIMATED OPERATING SPEED LEVELS
Percent of 52-Mile Section at Speed (mph) Shown

Roadway Type	Traffic Demand Level	Existing Alignment				New Alignment			
		55	50	40-45	< 35	55	50	40-45	< 35
Existing (No-Action)	Existing	39	24	31	6	-	-	-	-
	Projected	0	17	69	14	-	-	-	-
	Constrained	17	22	55	6	-	-	-	-
Improved 2-Lane	Projected	17	71	6	6	23	69	8	0
	Constrained	80	8	6	6	92	8	0	0
4-Lane Expressway	Projected or Constrained	88	0	6	6	100	0	0	0

NOTES:
(1) Operating speeds under design hour traffic conditions, estimated to the nearest 5 miles per hour.
(2) Includes urban reduced speed sections.

TABLE 4

ESTIMATED TRAVEL DELAYS - URBAN SECTIONS

Town	Lost Time/ Through Vehicle sec/veh	Projected Average Daily Through Vehicle Traffic veh/day	Lost Time/ Year veh-hr/year	Average Side Street Delay sec/veh
Heron Lake	29	5000	13,100	6.5
Windom	97	4000	31,000	6.1
Mountain Lake	91	4700	38,600	8.9
Butterfield	37	5400	16,900	7.8

Lost Time = additional travel time due to speed restrictions and signal delays as compared to equivalent travel at rural 55 mph speed limit.

SAFETY

Over 450 accidents were reported on the 52-mile study segment of TH 60 during the four-year period from 1976 to 1979. As shown in Table 5, the majority of these accidents occurred along six miles of reduced-speed, urban sections. Overall, accident rates on TH 60 compare favorably with statewide average rates of 1.6 accidents/million vehicle miles of travel for rural two-lane highways with similar traffic volumes, and 6.6 accidents/million vehicle miles for two-lane urban-suburban highways (see Table 6).

TABLE 6

TRUNK HIGHWAY ACCIDENT RATES

Accidents Per Million Vehicle Travel Miles

Minnesota - 1977-1979

	Two-Lane Rural Highways		Two-Lane, Urban-Suburban Highways	Rural Expressway
	ADT 2000-5000	ADT > 5000		
District 7	1.4	2.1	6.4	1.3
Statewide	1.6	3.6	6.6	1.4

Rural accident rates are highest in the Butterfield to St. James and Windom to Mountain Lake sections, particularly when considering the severity of the accidents. Heron Lake has the highest accident rate among the urban sections. Ten or more accidents were reported at nine locations in the study corridor, eight of which were intersections:

10th Street, Windom - 37 accidents
16th Street, Windom - 20 accidents
6th Street (TH 62), Windom - 18 accidents
S. Jct. TH 71, Windom - 17 accidents
9th Street, Windom - 16 accidents
CSAH 9, Heron Lake - 11 accidents
CSAH 1, Brewster - 11 accidents
10th Street, Mountain Lake - 10 accidents

Eleven accidents, including two fatal accidents resulting in six deaths, were reported in the vicinity of the railroad overpass east of Butterfield. Extra bridge deck maintenance, warning signing and shoulder improvement are being performed to try to keep this obsolete overpass as safe as possible until the decision is made whether to replace the bridge in its present vicinity or to built TH 60 on a new alignment south of the tracks. Strong public opinion has been expressed urging the immediate correction of conditions at this location.

Without improvements, accident rates on TH 60 can be expected to increase with the projected growth in traffic. State and nationwide experience has shown that

TABLE 5

1976-1979 ACCIDENT RECORD - TH 60

Section	Section Length (mi)	ACCIDENTS Fatal	Injury	Property Damage	Total	Accident Rate*	Severity Rate**
RURAL							
• Worthington to Brewster (Including Brewster)	7		18	26	44	1.0	2.3
• Brewster to Heron Lake	9		13	12	25	0.6	1.6
• Heron Lake to Wilder (Including Wilder)	6-1/2	1	8	4	13	0.4	1.6
• Wilder to Windom	4		7	17	24	1.1	2.0
• Windom to Mountain Lake (Including Bingham Lake)	9	2	20	32	54	1.2	2.9
• Mountain Lake to Butterfield	5-1/2		6	13	19	0.7	1.4
• Butterfield to St. James	5	2	6	17	25	1.5	3.7
Subtotal	46	5	78	121	204	0.9	2.2
URBAN							
• Heron Lake	1		7	12	19	8.3	17.4
• Windom	3	1	34	162	197	6.3	9.9
• Mountain Lake	1-1/2		8	23	31	2.0	3.6
• Butterfield	1/2			8	8	3.1	3.1
Subtotal	6	1	49	205	255	5.0	8.0
TOTAL	52	6	127	326	459	1.7	3.3

*Accidents per million vehicle miles of travel.
**Accident rate weighted to reflect accident severity.

accident rates on two-lane highways increase significantly as traffic volumes approach and exceed 5000 vehicles per day. Improvement alternatives under consideration for TH 60 would have the following anticipated safety benefits:

1) improved roadway geometrics and intersections would help to offset anticipated accident rate increases under any of the alternatives;

2) elimination of through-local traffic conflicts in the urban sections should significantly reduce overall accidents under the new alignment alternatives;

3) separation of opposing traffic under the four-lane alternatives would reduce both the number and severity of accidents, particularly as traffic volumes exceed approximately 5000 vehicles per day. Under projected traffic conditions, the accident rate would likely be approximately 30 to 40 percent lower than for an upgraded two-lane facility.

MODAL INTERRELATIONSHIPS

Rail

The Chicago and Northwestern Transportation Company's (CNW) Twin Cities Division mainline between Sioux City, Iowa, and Minneapolis-St. Paul, parallels TH 60 through the study corridor, as shown on Figure 2. This line is described in the State Rail Plan, December 31, 1979, as carrying between one and five million tons per mile annually and having a weight restriction of 263,000 pounds gross car weight. While the state rates the line as Class 4, good for 60 mph, current track conditions limit speeds throughout the corridor to 30 mph. Recently, heavy maintenance, including rail, tie and ballast replacement, has been required to maintain the 30 mph speed over some more seriously deteriorated sections. Future upgrading of the line is planned by the CNW when financing permits.

An average week sees approximately four trains per day between St. James and Worthington. Two regularly scheduled trains, No. 17 westbound and No. 18 eastbound, operate daily, normally in through service, and carry 100 to 150 cars. A third regularly scheduled train, No. 885, operates Sunday. Extra trains as reported by the trainmaster at Mankato are:

Eastbound		
Sunday	1 train	20-30 cars
Tuesday	1 train	50-60 cars
Wednesday	1 train	50-75 cars
Thursday	1 train	50-75 cars
Friday	1 train	25-50 cars
Westbound		
Sunday	1 train	40-60 cars
Monday	1 train	25-30 cars
Tuesday	1 train	20-40 cars
Wednesday	1 train	20-40 cars
Thursday	1 train	50-75 cars
Saturday	1 train	25-30 cars

These trains normally provide local service picking up and setting out cars throughout the corridor as needed.

In some weeks more extras would be run and in other weeks fewer depending on the demand. According to the trainmaster, about 50 percent of the cars on the westbound extras would be empty grain cars being returned for loads.

Most of the branch lines in the study corridor have been abandoned or are currently being considered for abandonment, as illustrated on Figure 2. Major characteristics and status of each of the branchlines are summarized in Table 7. Branchlines considered eligible for Federal Rail Serice Continuation Program funding are rated under the 1979 State Rail Plan according to their potential financial viability.

Recent rail service improvements have focused on the cost-effective, long-haul movement of bulk commodities such as grain to statewide and out-of-state markets. This trend, which is expected to continue, includes:

1) unit-train loading and increased storage at mainline grain elevators;

2) increased grain car fleet capacity, particularly jumbo hopper cars;

3) contracted rail service;

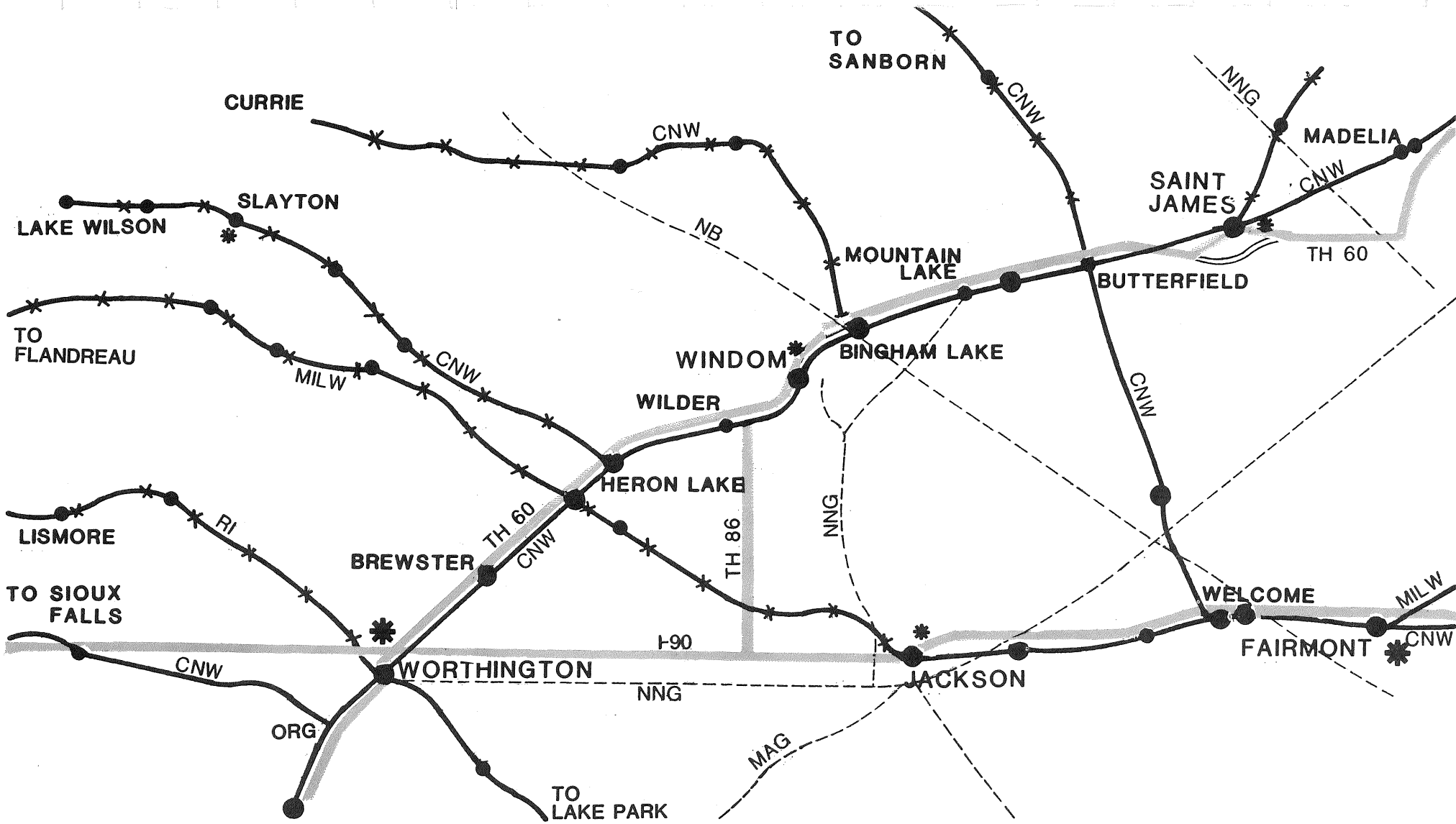
4) increased mainline track maintenance.

Unit-trains are comprised of groups of 25, 50, 75, 100 or more rail cars loaded with a single commodity operating as non-stop shuttle between a common origin (grain elevator) and destination (export terminal). By avoiding congested switching yards and low quality branch lines that slow down traditional mixed-commodity, multiple origin/destination trains, unit trains offer substantial time and cost savings. Availability of efficient, direct unit train service to Gulf and West Coast grain export terminals during winter months has expanded grain marketing opportunities and helped relieve traditional peak-season grain movement demands on the transportation system.

Upgrading of Minnesota grain elevators to accommodate unit-train loading has been concentrated in the southern, corn-growing portion of the state. Corn, a high yield and weight crop shipped to distant markets, is well suited to unit-train operations. In the study corridor, many of the elevators on the CNW mainline have been upgraded to 25-car or greater loading capability, as shown on Figure 2.

During the past three years, new construction has added nearly 20 percent to the storage capacity of the study corridor elevators, increasing storage from 9-1/2 to 11 million bushels. Loading tracks have been improved to accommodate increased train lengths and jumbo covered hopper-car weight loadings. Between 1978 and 1980, the capacity of the nationwide grain car fleet grew from 680 to 765 million bushels. The addition of new covered hoppers, particularly jumbo hoppers, has helped to relieve the peak-season car shortages which have hampered rail grain movement in recent years.

Elevators operating unit trains are able to offer up to a 10 to 25 cent per bushel price advantage for farmers over single-car train or truck shipments. While the



MODAL INTERRELATIONSHIPS

———	— Railroad	———	— Intercity Bus Service - Midwest Coaches
——×——×	— Abandoned or Subject to Abandonment	✱	— Scheduled Service Airport
——●——●	— Grain Elevator < 25 car loading	*	— General Aviation Airport
——●——●	— Grain Elevator > 25 car loading	- - - - - -	— Pipeline
CNW	— Chicago and Northwestern Transportation Co.	NNG	— Northern Natural Gas
MILW	— Chicago, Milwaukee, St. Paul and Pacific Railroad	MAG	— Mid-America Gas
RI	— Chicago, Rock Island and Pacific Railroad	NB	— Northern Border (proposed)

FIGURE 2

TABLE 7

RAILROAD BRANCHLINE STATUS - TH 60 CORRIDOR

Railroad and Line		Length (miles)	Abandonment Status	FRA Rail Class	Weight Restriction Lbs. Gross Car	Present Service	Potential* Profitability and Rank	
CNW	Butterfield to Sanborn	24.6	Application Expected Within 3 Yrs.	3 (40 mph)	263,000	Once per week	Moderate	8
CNW	Butterfield to Welcome	22.3	--	3 (40 mph)	263,000	Three per week	Moderate	1
CNW	Bingham Lake to Currie	38.3	Abandoned	Track Removed	Track Removed	None	--	--
CNW	Heron Lake to Lake Wilson	36.6	Application Pending Before ICC	1 (10 mph)	220,000	Less than once a week	None	17
MILW	Jackson to Flandreau, S.D.	93	Abandoned	2 (25 mph)	220,000	None	--	--
RI	Worthington to Lismore	22.3	Application Pending Before ICC	1 (10 mph)	263,000		--	--
RI	Worthington to Lake Park, Iowa	14.3	--	1 (10 mph)	263,000	Once per week	Marginal	13
CNW	Org to Sioux Falls, S.D.	60	--	3 (40 mph)	263,000	Five per week	Moderate	6

*1979 State Rail Plan potential profitability rating and statewide ranking among 22 branchlines eligible for Federal Rail Service Continuation Program Funding.

cost differential is less when river barge shipping is available, area elevator operators indicated a preference to use rail over truck due to: (1) removal of conflict with incoming grain shipments from farm, (2) decreased loading time, and (3) superior blending capabilities. Growing use and deregulation of special contract services and rates, using shipper-owner equipment or guaranteed shipping arrangements, have also improved the attractiveness and costs of rail use for the shipper and farmer, as well as allowing more efficient use of carrier equipment.

Rail service improvements, particularly unit-train service, have significantly increased rail movement of grain from the study corridor. Operators of major corridor elevators contacted in the Citizens Advisory Committee study indicated that 80 to 95 percent of their shipments are made by rail, either directly to the Gulf of Mexico and West Coast ports, or to Twin Cities barge terminals and Duluth during the inland waterway shipping season.

Preliminary results from the 1979 Commodity Flow Survey of Minnesota Grain Elevators conducted by the University of Minnesota in cooperation with the Minnesota Department of Agriculture and Minnesota Department of Transportation ("Preliminary Estimates of 1979 Grain Shipments from Minnesota County Grain Elevators", Fruin, Alley and Eldridge) indicate that for the Southwest Crop Reporting District overall, approximately 55 percent of grain shipments are made by rail. Reported destinations were approximately 60 percent in-state, 40 percent out-of-state, with some 90 percent of the latter shipments made by rail. Survey data for seven major elevators located on the CNW mainline adjoining TH 60 indicates that these elevators ship approximately 95 percent of their corn shipments and 80 percent of their soybean shipments by rail. Virtually all grain received by these elevators is by truck or farm vehicle.

TH 60 corridor truck transportation provides support for the long-haul grain movement by rail and provides services not offered or inefficiently served by rail.

1) Collection and distribution of farm products and supplies between the farm and elevator is provided by trucks. All of the CNW mainline elevators are directly or indirectly accessed via TH 60.

2) Grain is trucked from outlying feeder elevators to unit-train subterminal elevators on the mainline, an arrangement required by branch line weight limitations, inefficiencies and abandonments.

3) Trucks provide short-haul transport to intermediate processors. Most livestock and soybean shipments, in particular, are trucked to nearby intermediate processing points such as Sioux Falls, Worthington, Windom, and Mankato. Regional economic development efforts to attract additional processors to the area could increase such use.

4) Trucks provide an alternate means of market access for the farmer and country elevator during periods of rail car-shortage or major market price differentials.

Transit

Transit services in the study area are of two basic types: (1) inter-city bus service, and (2) social and medical paratransit services.

Midwest Coaches, Inc. of Mankato operates intercity buses on TH 60 as part of its services between Mankato, Worthington, Sioux Falls, and Sioux City. Connections are provided via other carriers to Minneapolis-St. Paul and other major cities. Service is provided twice a day in either direction, with scheduled stops in Heron Lake, Windom, Mountain Lake, Butterfield, and St. James, and flag stops in Brewster, Wilder, and Bingham Lake. One daily trip in each direction operates via I-90 and TH 86 through Lakefield, connecting to TH 60 north of Wilder. In April 1980, an express bus service was initiated between Worthington and the Twin Cities, with scheduled stops in Windom, St. James, and Mankato. Morning service was provided to the Twin Cities with an evening return. Despite optimistic anticipation of local business groups, the service has since been terminated due to low ridership.

Rural transportation services for the elderly, handicapped and autoless are provided by various social service agencies in each of the affected counties. Access is provided to health, employment, welfare, recreational and educational service and activities. A Cottonwood County mini-bus service is state-subsidized. Ambulance service is provided from Worthington, Heron Lake, Windom, Mountain Lake and St. James. Most of these services must operate on TH 60 to access their respective rural service areas.

Bicyclists and Pedestrians

TH 60 and major connecting trunk highways in the study corridor have been designated unsatisfactory for bicycle use on the Minnesota Bikeways Maps currently being prepared by Mn/DOT as a statewide guide for bicycle travel. Existing TH 60 is particularly hazardous for bicycle travel considering its narrow width, gravel shoulders and heavy truck use. The completed four-lane section of TH 60 to the north has been rated as "good, with paved shoulders". South of Interstate 90, the short section of TH 60 connecting into Worthington is rated as "fair with paved shoulder". Provision of paved shoulders as part of the proposed improvements should permit upgrading of the status of the study segment to a fair or good rating.

Pedestrian flow and safety in Mountain Lake, Butterfield and Windom would benefit from the elimination of through traffic with TH 60 on new alignment. Of particular importance are pedestrian movements to school and senior citizen facilities located along or near TH 60 in Mountain Lake and Butterfield. Sidewalk and traffic control improvements with TH 60 retained on existing alignment through the towns would provide a significantly lower level of benefit to pedestrian traffic.

Other

TH 60 provides the basic access routes for corridor residents to scheduled air service facilities at Worthington (see Figure 2) and, via TH 169, to the north at Mankato and Twin Cities. General aviation airports at St. James and Windom can also be accessed via TH 60 and connecting roadways.

Existing Northern Natural Gas Company pipelines terminate near Windom and Mountain Lake, with distribution stations in the vicinity of the new alignment alternative routes. In addition, the Northern Border Pipeline Company is currently constructing a new 42-inch gas pipeline that crosses the TH 60 corridor in the vicinity of Bingham Lake (see Figure 2).

ECONOMIC AND SOCIAL CONSIDERATIONS

Agricultural Needs

A modern, coordinated system of rail, waterway and roadway facilities is vital to the agricultural-based economic health of southwestern Minnesota. As previously discussed, TH 60 is an essential link in the flow of grain, livestock and poultry products from farm to market. It provides ties to rail and waterway terminals for shipment to out-of-state markets.

The physical obsolescence of TH 60 has long been recognized as an impediment to the efficient movement of agricultural goods within and from the region. Without improvement, increased deterioration and reduced travel speeds will further add to transportation costs for farm products and detract from the region's ability to attract further investment in agricultural development. The Southwest Regional Development Commission's Comprehensive Development Guide transportation policies to support and maintain the Region's agricultural economy give roadway improvement priority to principal arterials serving major state and national markets, citing TH 60 improvement in particular as being of extreme importance. Similarly, in a survey of farm operators located along the TH 60 study corridor, nearly 90 percent of 128 responding rated improvement of TH 60 as "very important" or "important". Corridor livestock shippers interviewed in conjunction with the Citizens Advisory Committee study cited narrow lane widths, poor road service and accident hazard as significant problems adversely affecting their operations on TH 60.

Industrial and Economic Development

A major goal of the Southwest Regional Development Commission is to attract additional employment opportunities, particularly industrial, to help maintain the prime labor force of the region. Development of a promotional package to attract industrial and economic development is viewed as a major task to reach the goal.

Improvement of TH 60 would undoubtedly serve as an asset in promoting industrial growth and jobs in the TH 60 corridor. Areas of particular potential include planned industrial areas in southwest Windom, particularly under a new bypass alignment, eastern Mountain Lake, and northeast Worthington.

By contrast, further deterioration of traffic service anticipated without major improvement will likely adversely affect development efforts and could lead to the long-term loss or reduction of employment and prime labor force population in the corridor.

Community Services and Conflicts

Most farmers and other rural residents of the study corridor are dependent on TH 60 for access to the various social, medical, governmental, shopping, business and emergency services provided in or from Worthington, Brewster, Heron Lake, Windom, Mountain Lake, Butterfield and St. James, whether by private auto or public rural transportation services. Similarly, town residents rely on TH 60 for inter-community activities and access to services not found in their own communities. Without major improvements, further physical and traffic service

deterioration of TH 60 will significantly hinder safe and convenient access to such services, particularly in emergency situations.

Land use, environmental, traffic and pedestrian conflicts in the existing urban sections of TH 60 indicate the need to consider new alignments bypassing the existing built-up sections of these communities to help alleviate the adverse conditions. In Mountain Lake and Butterfield, in particular, numerous community facilities and residences directly or closely adjoin TH 60. Included are schools, churches, recreation and medical facilities, elderly housing, and pedestrian-oriented shopping. Heavy through traffic and truck volumes adversely affect (1) pedestrian access and safety, particularly for school children and the elderly, and (2) the noise, air quality and visual environment of the adjoining properties. The city councils of both communities have adopted resolutions calling for a new TH 60 alignment south of the towns to eliminate the current conflicts.

In Windom, adjoining properties are primarily in commercial or industrial use. While heavy truck and total traffic volumes adversely affect pedestrian and environmental conditions, the impact is partially offset by the less sensitive nature of adjoining uses and the lower proportion of through traffic. Community opinion appears divided as to adverse traffic impacts on the community versus the potential loss to community business if through traffic is diverted around the city.

In Heron Lake, the CNW railroad adjoining TH 60 on the south and predominance of highway commercial use on the north help to reduce, though not eliminate community conflicts.

NEEDS SUMMARY

Physical deterioration and design deficiencies of existing TH 60 establish the need for its immediate replacement by a modern two-lane facility, with the highest priority sections lying between Wilder and St. James. Traffic service reductions, along with land use, traffic and noise conflicts in the urban communities of Mountain Lake, Butterfield, Windom and Heron Lake indicate the need to consider new alignments bypassing these communities in selecting the location for the needed improvements.

Projected traffic increases, improved safety and systems considerations substantiate the need to plan for future development of TH 60 to a four-lane expressway. Because projected traffic increases might not occur within the planning period due to energy-related or other constraints, the planning program must permit decisions on future developments to be made as the improvements progress.

Both immediate improvement and protection of the future traffic service, safety and physical integrity of TH 60 are vital to southwestern Minnesota's agricultural-based economic health, the mobility of its residents and its desire to attract industrial development. A minimum program of immediate two-lane improvement of high priority sections of TH 60 coupled with planning for its ultimate conversion to a four-lane expressway is necessary if the present and future transportation needs of southwestern Minnesota are to be met.

ALTERNATIVES

To satisfy the improvement needs discussed in the first section, several alternatives were investigated. A scoping process was used to identify preliminary alternatives, from which those most reasonable and practicable were selected for detailed study.

SCOPING PROCESS

The process for identifying reasonable alternatives and significant issues to be addressed in the Environmental Impact Statement is termed scoping. This activity began early for the TH 60 improvement project, and has involved affected agencies, local officials and the public.

Early Activities

The current project development studies began in September 1977 with the preparation and filing of the Project Development Report in accordance with the Mn/DOT Action Plan. In this report the highway needs were described, preliminary issues and alternatives were identified and the project development path was defined.

The first step following the Project Development Report was the Citizens Advisory Committee TH 60 Improvement Study. This study was commissioned because of the complexity of the issues, the high degree of public involvement and the diversity of opinion concerning the project. Meeting monthly over a period of a year, this ten-member committee investigated in depth the transportation needs and impacts in the corridor. In addition to detailed project technical studies, the Committee's considerations drew upon previous technical studies and public input including a 1973 EIS for the Windom to Butterfield segment of TH 60. The working meetings were open to and attended by the public. Newsletters and press releases were provided and the press covered the study extensively. Informal public hearings were held in Worthington, Windom and Butterfield. Upon completion of its work, the Committee filed with the Mn/DOT Commissioner its report and recommendations along with a Summary Report of its study. These results and the Committee's conclusions and recommendations are contained in Appendix L.

Formal Scoping Process

Through newspaper announcements, the public was informed of Mn/DOT's intent to file an EIS and to hold a scoping meeting. Concerned agencies and individuals were notified by mail and furnished a copy of the Citizens Advisory Committee's Summary Report to familiarize them with the project, the issues and the preliminary alternatives. A formal scoping meeting was held on August 23, 1979 at the Mn/DOT District 7 office in Mankato. The significant issues and categories of significant anticipated impacts were identified. Reasonable alternatives tentatively selected for detailed study were discussed. Written comments from agencies not represented at the scoping meeting were solicited. The notice of intent to file an EIS on the project was published in the January 31, 1980 Federal Register by the Federal Highway Administration, in which details of participation and timing of the EIS were delineated.

Elimination of Alternatives

Through the early activities and scoping process described above and technical studies made early in the current study, several alternatives for the improvement of TH 60 were eliminated from detailed study as being either impracticable or undesirable. These eliminations were made on the basis of technical studies, major land use or environmental conflicts, and/or significant public and official opposition without significant counteracting support. Listed below are the alternatives thus eliminated with a brief statement of the reason for such decision on each.

Alternatives Eliminated from Detailed Study

Alternative	Reason
1. Mn/DOT standard rural expressway median (124 feet between centerlines of roadways) and right-of-way width (324 feet).	A reduced median and right-of-way section for the TH 60 corridor was accepted by Mn/DOT, through efforts of the TH 60 Citizens Advisory Committee, as a reasonable means for minimizing impact on prime farmlands.
2. Urban expressway construction in Windom, Mountain Lake, and Butterfield.	Cost, and land use and environmental conflicts.
3. New alignments north of Mountain Lake and Butterfield, and north and west of Windom.	Land use and environmental conflicts, and public opposition.
4. Separate bypasses of Mountain Lake, Butterfield, or Windom.	High costs and land acquisition for the required multiple railroad crossings.
5. Undivided four-lane highway in rural areas.	Safety.
6. Upgrade TH 15 or TH 4 to four-lane expressway between TH 60 and Interstate 90.	Fails to provide for traffic service needs to TH 60 corridor communities and farms and to alleviate existing roadway and safety deficiencies. Traffic origin-destination and diversion analyses indicate minimal effect on TH 60 traffic demands.
7. New alignments between Worthington and Windom.	Land use and environmental conflicts and high land acquisition costs with no offsetting advantages over present alignment.

8.	Relocation of railroad to highway right-of-way in exchange for railroad right-of-way for highway relocation.	Alignment constraints severely limit the adaptable areas and ownership legal obstacles render right-of-way trade-off impracticable. Since the existing highway roadbed is readily restorable to agricultural use, there is little advantage to maintaining it in transportation use in preference to other agricultural land.
9.	Staging the development of an ultimate four-lane expressway by building in sequential four-lane sections.	The entire corridor has a greater immediate need for a modern two-lane road than any section has for four lanes.

DETAILED STUDY ALTERNATIVES

The alternatives selected for detailed study are the alternative of no-action, plus modern two- and four-lane highways on either existing or new alignments in rural areas, with traffic operational improvements in the urban areas on existing alignment alternatives. On new alignment alternatives, location variations occur in the vicinities of Windom, Bingham Lake, Mountain Lake, and Butterfield. At Heron Lake, three design variations are considered.

The general locations of the alternatives are shown in Figure 3. Greater detail is shown in the aerial photographs in Appendix A. All detailed study alternatives were developed at a scale of one inch equals 100 feet. Copies of these plans and profiles were displayed at the public information meetings and are on file at the Mn/DOT office in Mankato.

No-Action Alternative

Because of the age and general level of deterioration of the existing road, the TH 60 no-action alternative must include heavy maintenance to preserve the fundamental serviceability of the facility. This maintenance would include bituminous overlay treatments on the pavement, extraordinary blading of the gravel shoulders, and eventual replacement of structurally and functionally obsolete bridges. Traffic operational improvements would be required in the cities to accommodate the forecast traffic at current operating levels. However, the basic alignment, grade and cross section deficiencies of the existing roadway would not be corrected by the no-action alternative.

Existing Alignment Alternatives

Typical sections for the two- and four-lane improvements are shown in Figure 4. The two-lane reconstruction provides two 12-foot travel lanes with 10-foot paved shoulders on a 150-foot right-of-way. By comparison, the existing roadway provides two 11-foot travel lanes with 8-foot gravel shoulders on a 150-foot right-of-way between Worthington and Windom, and two 10-foot travel lanes with 8-foot gravel shoulders on a 100- to 125-foot right-of-way between Windom and St. James. The four-lane expressway section provides two 12-foot travel lanes, a 10-

foot paved shoulder on the right and a 4-foot paved shoulder on the left in each direction. The two roadways would be separated by a median 75 feet wide between centerlines of roadways. The right-of-way width would be 225 feet. The improved roadways would provide paved left- and right-turn lanes and appropriate channelization at all intersections. Rural geometric improvements would be made to a 70 mile per hour design speed to provide safety features consistent with the flat terrain of the corridor and a posted operations speed limit of 55 miles per hour.

Two-Lane Reconstruction. Between Worthington and Windom, the centerline of the new road would generally follow the centerline of the existing road using the existing right-of-way. At Brewster, safety dictates that the intersection with CSAH 1 be channelized. Because this section of road is basically rural without speed reduction, the channelization would be accomplished using the typical 75-foot rural median.

At Heron Lake, variations in both alignment and channelization have been considered, as described in following discussions. At the TH 86 intersection east of Wilder, the road would be realigned slightly and four-lane channelization with the 75-foot rural median would be constructed. On the long grade immediately west of Windom, a truck climbing lane is required for westbound traffic. Also, small improvements would be made to the south intersection with TH 71.

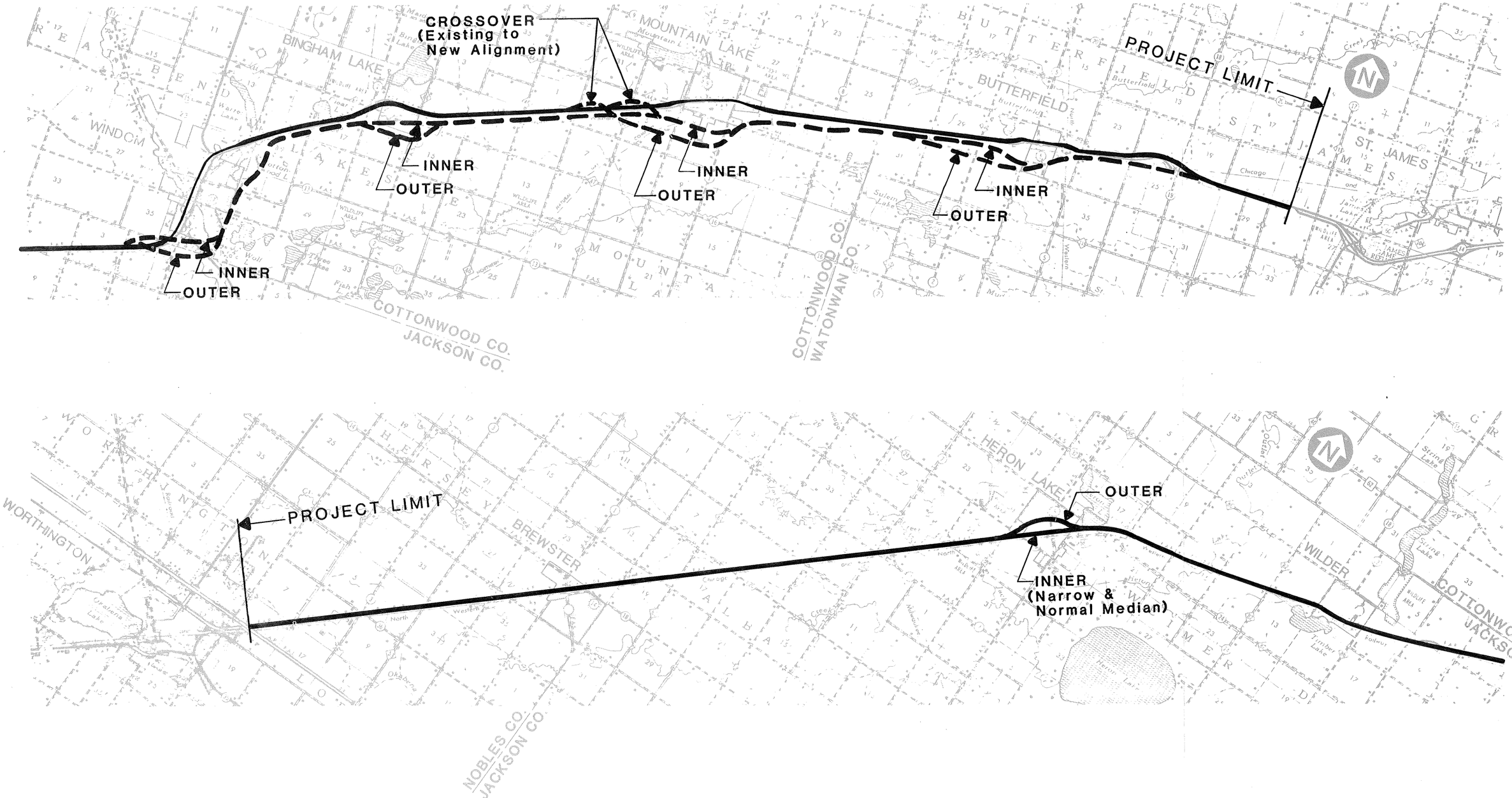
Through Windom the basic four-lane roadway would be maintained on the existing right-of-way and operational improvements would be made. Traffic signals would be needed at 6th and 16th Streets, in addition to the existing signal at 10th Street. The north intersection with TH 71 would be improved and the median extended southerly to include the 16th Street intersection. The easterly frontage road would be realigned at 16th Street, to provide adequate separation from TH 60 to permit the signalized intersection to function satisfactorily. To eliminate severe flat angle conflicts at 12th Street, the frontage road connection to TH 60 would be closed.

From the TH 71 intersection eastward to the vicinity of Warren Lake, TH 60 would be reconstructed to provide a five-lane urban section with a continuous center lane for left turns to serve the numerous businesses and side roads in this section.

From Bingham Lake to the railroad overpass east of Butterfield, the existing right-of-way is generally 125 feet wide and the centerline of roadway is only 50 feet from the railroad right-of-way line. Construction of the new roadway to the accepted standard, therefore, would require an additional 25 feet of right-of-way and the centerline of the upgraded two-lane road would be 25 feet north of the existing roadway centerline.

At the west side of Bingham Lake, the road would be realigned slightly to the south to eliminate two substandard horizontal curves and poor profile conditions. County and township road crossroads would be realigned to provide improved intersections with TH 60.

Through both Mountain Lake and Butterfield, operational improvements within the existing right-of-way would be made to accommodate the traffic. Parking would be eliminated from both sides of TH 60 to provide for one through traffic lane in each direction and a separate left-turn lane at intersections. The typical section



LEGEND

EXISTING ALIGNMENT

NEW ALIGNMENT (Windom to St. James)

INNER, OUTER — Indicates Location-Design Variations

miles 0 1/4 1/2
feet 0 500 1000 2000 3000

north

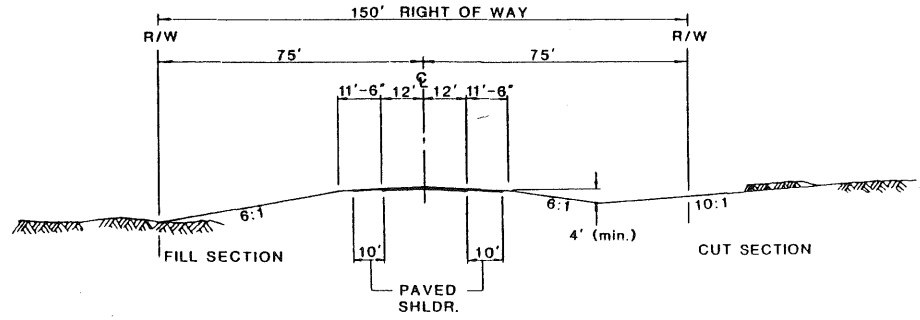
Minnesota Dept. of Transpotation
Edwards and Kelcey, Inc.

ALIGNMENT ALTERNATIVES

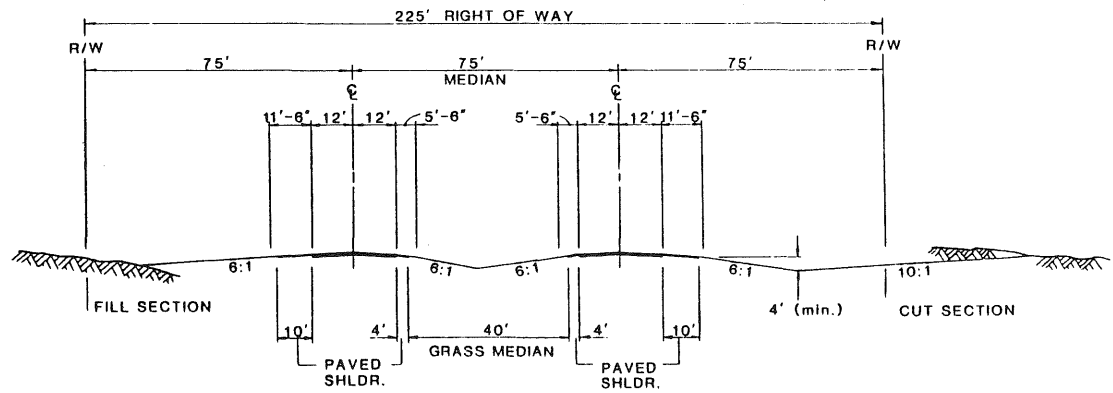
SELECTED FOR DETAILED STUDY

FIGURE 3

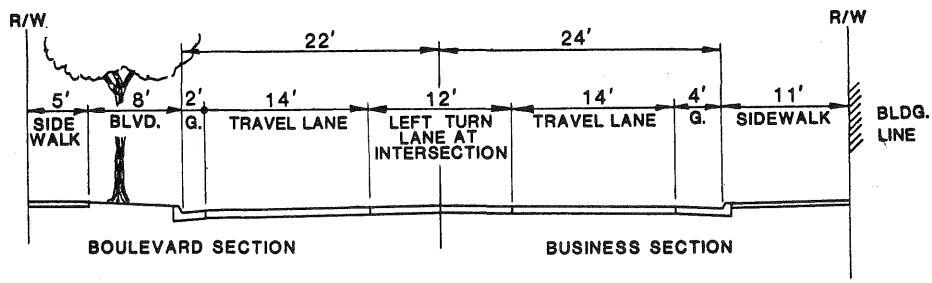
MINNESOTA 60



PROPOSED 2-LANE ROADWAY



PROPOSED 4-LANE EXPRESSWAY



PROPOSED IN-TOWN ROADWAY
BUTTERFIELD AND MOUNTAIN LAKE

TYPICAL SECTIONS

FIGURE 4

of this improvement is shown in Figure 4. In Mountain Lake, traffic signals would be required to accommodate projected future traffic at 10th and 12th Streets.

At the railroad overpass east of Butterfield, the road would be realigned to meet design standards and a new bridge over the railroad would be built. The roadway reconstruction would continue east of the overpass along the existing alignment to meet the existing four-lane section near St. James.

Profile improvements would be made throughout the corridor to eliminate current hazards including substandard stopping sight locations and, where practicable, substandard passing sight restrictions.

Four-Lane Rural Dualization, Staged Development. The upgraded two-lane alternative described above is compatible with an ultimate dualization to a four-lane expressway in rural sections. By adding another two-lane, one-way roadway to the improved two-lane road, acquiring the additional 75 feet of right-of-way and making minor adjustments to turning lanes and median shoulders, the four-lane expressway would be created. No right-of-way abandonments or realignments would be required.

Between Worthington and the new railroad overpass east of Butterfield, the second roadway, to serve westbound traffic, would be constructed 75 feet north of the alignment of the two-lane upgrade, which would then serve eastbound traffic. East of the new railroad overpass the second roadway, to serve eastbound traffic, would be extended along the southerly side of the previously reconstructed two-lane road to the project terminus at the existing four-lane expressway near St. James.

The in-town traffic operational improvements in Windom, Mountain Lake and Butterfield described for the two-lane up-grade alternative would also satisfy the requirements of the four-lane alternative. Transitions from the urban sections to rural expressway sections would be provided near the limits of each community. Present in-town speed reductions would be retained.

Design Variations. At Heron Lake, three design variations are under consideration. Two of these follow the existing, or "inner", alignment as shown on Figure 3 and in Appendix A. The other follows an "outer" realignment which passes to the north of the presently developed lands adjoining the TH 60-CSAH 9 intersection. This alignment joins the existing alignment near CSAH 24 on the southwest and near Duck Lake on the northeast. A four-lane, 75-foot median, channelized intersection with CSAH 9 is incorporated in the design of the two-lane, as well as the four-lane alternative on the outer alignment.

On the inner alignment, the variations include a four-lane channelization with (1) a narrow raised median, and (2) a typical rural (75-foot median) section. A two-lane channelization with a narrow median is considered as a first stage of the future four-lane typical median design. Two four-lane alternatives are also considered at the Duck Lake area adjoining the city of Heron Lake: (1) the 75-foot rural median, and (2) a narrow median which would reduce encroachment on the Duck Lake wetlands.

New Alignment Alternatives

As with the existing alignment, two basic alternative configurations-- two-lane and four-lane-- are under consideration. New alignment alternatives apply only to the Windom to St. James portion of the corridor, having been eliminated from detailed consideration southwest of Windom in the scoping process. Two different lengths of new alignment are being studied. One length extends from south of Windom to St. James. The other extends only from Mountain Lake to St. James, with the Windom to Mountain Lake section following the existing alignment. These are shown in Figure 3. Location variations have been considered near each of the cities on the route: Windom, Bingham Lake, Mountain Lake and Butterfield. These are shown in greater detail on the maps in Appendix A.

With the new road relocated to a new alignment, major portions of the existing road would not be needed for highway purposes. These sections would be reclaimed for agricultural use. These sections are shown on the maps in Appendix A.

New Alignment Mountain Lake to St. James. This alignment leaves the existing location west of Mountain Lake and crosses to the south side of the CNW tracks, passing to the south of the built-up areas of Mountain Lake and Butterfield. At Butterfield, it overpasses the Butterfield to Welcome branch of the CNW following the southerly side of the CNW mainline to meet existing TH 60 just east of the existing mainline railroad overpass. It then continues along the existing alignment to the present four-lane section near St. James.

New Alignment Windom to St. James. This alignment leaves the existing alignment near CSAH 15 west of Windom, crossing over the mainline into the Des Moines River Valley to bypass Windom on the east. The location is to the west of Wolf Lake and east of Cottonwood Lake. From a point just east of Cottonwood Lake to Mountain Lake, it adjoins the southerly side of the railroad passing through the southerly side of the city of Bingham Lake. At the west side of Mountain Lake, it ties into the new alignment described previously and continues on that alignment to the end of the corridor near St. James.

Location-Design Variations. On the new alignment alternatives, location and design variations occur at Windom, Bingham Lake, Mountain Lake, and Butterfield, as shown on Figure 3 and the illustrations in Appendix A.

At Windom, three variations have been developed; two on an outer alignment and one on an inner alignment. All three are developed as limited access facilities with interchanges and grade separated road crossings. Because of the close proximity of the interchanges to each other and to the Des Moines River, it was deemed necessary to construct four lanes in the Windom bypass section with either two-lane or four-lane construction in the remainder of the corridor. Each variation contains a directional interchange at the south side of Windom, with on and off ramps to existing TH 60 to and from the north. Each also contains a directionally oriented, full-diamond interchange at the north end of the bypass near the railroad and Cottonwood Lake. This interchange is made with a new connector road which would overpass the railroad and tie to existing TH 60 near Warren Lake. The three variations share a common alignment between this interchange and CSAH 17 to the south.

Variation 1 - This variation lies on the outer alignment and interchanges with TH 71 via a folded-diamond interchange at the east bank of the Des Moines River. CSAH 26 would be relocated to accommodate the interchange.

Variation 2 - This variation also lies on the outer alignment, but would interchange with a relocated CSAH 26 via a diamond interchange. Service to TH 71 would be provided via CSAH 26.

Variation 3 - Lying on the inner alignment, this variation would cross TH 71 west of the Des Moines River and then interchange with the existing CSAH 26 via a folded-diamond interchange. Service to TH 71 would be provided via CSAH 26.

At Bingham Lake, both inner and outer locations have been studied. The inner location would continue along the south edge of the railroad as in the rural areas. The outer location passes to south of the built-up area. On the inner alignment, at-grade intersections would be provided at CSAH 2 and 9th Street under both the two- and four-lane alternatives. On the outer alignment, at-grade intersections would be provided similarly at CSAH 2 and CR 44.

Both inner and outer locations have also been considered at Mountain Lake. The outer alignment would follow the half section line, entirely south of the built-up area, whereas the inner alignment would lie about a quarter-mile north, passing through a small, linear residential area extending southerly from the city. Under either two-lane or four-lane basic configurations, four-lane, at-grade intersections provide access at the east and west ends of Mountain Lake, connecting to existing TH 60. At the west end, the connection is made via an upgraded township road; at the east end via a new connector road. Interchanges could be developed in the future at both of these locations if conditions warranted. CSAH 1 would overpass TH 60 under either variation. On the outer alignment the township road at Heritage Village would also overpass TH 60. Under the inner alignment, severed local roads would be connected to CSAH 1 by frontage roads.

At Butterfield, an inner alignment lies immediately outside the built-up area and returns to the railroad immediately on either side of the city. An outer alignment is common to the inner on the east, but follows the line of existing CR 102 to the west until reaching the railroad, rather than swinging back to the railroad immediately. On both alignments, a four-lane at-grade intersection is provided at CSAH 5 to serve Butterfield. A future interchange could be developed at this location if warranted.

COSTS

Table 8 compares the total estimated capital costs for the various alternatives based on 1980 prices. The range of costs shown encompass the range of costs of the different variations on each of the major alternatives. Since ordinary maintenance will not be sufficient to keep the existing highway serviceable, the cost of extraordinary maintenance and substandard bridge replacement is given for the no-action alternative.

TABLE 8

COST ESTIMATE SUMMARY

($ Million - 1980 Prices)

Alternative	Construction	Right-of-Way and Relocation	Total
NO ACTION	9		9
EXISTING ALIGNMENT			
2-Lane*	68-70	1	69-71
4-Lane	107-114	3-4	110-118
EXISTING - WORTHINGTON TO WINDOM NEW - WINDOM TO ST. JAMES			
2-Lane*	89-97	3	92-100
4-Lane	126-141	5	131-146
EXISTING - WORTHINGTON TO MOUNTAIN LAKE NEW - MOUNTAIN LAKE TO ST. JAMES			
2-Lane*	73-76	2	75-78
4-Lane	115-123	4-5	119-128

*Includes partial 4-lane construction at certain locations - see text.

Comparative costs for the alignment variations in individual sections are shown in Table 9. The costs of possible future interchanges on alignment variations at Heron Lake, Mountain Lake and Butterfield are not included in the figures in Table 8. Interchanges would add approximately $2 million each in 1980 dollars.

Detailed costs by section and construction period for various alternative staging scenarios are given in the next section. Additional details on the cost estimates are contained in Appendix D, "TH 60 Engineering Studies Report".

STAGING CONSIDERATIONS

It is unrealistic to expect that the entire roadway between Worthington and St. James can be replaced in a single, all inclusive construction effort. Therefore, it is necessary to develop programs for constructing each of the alternatives in stages. The factors to be considered are:

- **Funding related to cost** - What rate of funding would be needed to accomplish the programs within reasonable time periods considering the needs?

- **Usability of sections** - When a section is completed, can a safe, convenient connection to the existing road be made?

- **Maintenance of traffic during construction** - Can reasonable local access and convenient detours for through traffic be provided?

- **Priority of need** - Which sections are most deficient in terms of roadway condition, traffic service, safety and land use and environmental conflicts?

Considering these factors, various generalized staging options were considered prior to establishing the detailed staging sequences for the build alternatives.

Staging Options Considered

All of the staging options were developed on the basic premise of initial two-lane upgrading. These include limited four-lane sections to provide channelized intersections and the Windom bypass as described previously. Dualization to a four-lane expressway would occur in subsequent stages.

Because the two-lane and four-lane designs are compatible, planning for a four-lane facility would not preclude later postponement or cancelling of dualization if traffic monitoring indicates four-lane ultimate development is unnecessary. The general staging options are:

A. On existing alignment alternatives:

   1. Build highest priority new two-lane sections first wherever they occur. Dualize in later stages based on highest traffic demand sections.

TABLE 9

COST ESTIMATE COMPARISON - ALIGNMENT VARIATIONS

($ Million - 1980 Prices)

Variation	Total Construction and Right-of-Way 2-Lane*	4-Lane
HERON LAKE (Existing Alignment)		
Inner		
Narrow Median	6	9
Normal Median	4	8
Outer	4	7
WINDOM (New Alignment)		
Inner	21	22
Outer		
CSAH 26 Int.	25	26
TH 71 Int.	26	27
BINGHAM LAKE (New Alignment)		
Inner	3	6
Outer	3	5
MOUNTAIN LAKE (New Alignment)		
Inner	7	9
Outer	5	8
BUTTERFIELD (New Alignment)		
Inner	7	11
Outer	7	11

*Includes partial 4-lane construction at certain locations - see text.

2. Build new two-lane sections in a continuous sequence from one end, considering highest priority end first. Dualize in later stages based on highest traffic demand sections.

3. Between Worthington and Wilder, two options exist for constructing an ultimate four-lane roadway:

   a. Build new two-lane road on the existing roadway centerline. Dualize in final stages.

   b. Build new two-lane one-way roadway for westbound traffic 75 feet north of the existing roadway and use the existing roadway temporarily for one-way eastbound traffic, replacing the existing roadway as the final stage of four-lane dualization. (This alternative is not practicable in other areas because of the unsuitable condition of the existing roadway and the relationship of the new profile to the existing road.)

B. On new alignment alternatives:

The only practical option is to build new two-lane sections in a continuous sequence considering highest priority first. The need to cross the railroad to tie new construction to the existing road is felt to introduce too much hazard and inconvenience to recommend construction of isolated sections on new alignment. Dualize in later stages (except Windom bypass) based on highest traffic demand.

Prioritization by Section

Table 10 indicates the relative improvement priority for the seven basic rural sections of TH 60. Roadway deficiency priorities are derived from the State sufficiency ratings, traffic service priorities from volume-capacity analysis and safety priorities from the State accident records.

Table 11 shows the relative priority for bypassing urban sections for new alignment alternatives. Safety priorities are based on the State accident records, traffic delays/conflicts, capacity analysis and volume counts. Land use/environmental conflict priorities are based on an evaluation of the number and kinds of conflicts that occur between land uses and the environment, and TH 60 traffic.

Recommended Staging and Costs by Alternative

Following the reasoning described in the foregoing sections, a staging sequence for each alternative was developed. These are shown in Tables 12 to 14. For each section and the total project, both as a two-lane and a four-lane facility, the costs in 1980 dollars, the years of construction, and the inflated dollar cost in years of construction (based on a 10 percent compounded annual inflation rate) are given.

The staging schedules are intended to illustrate the levels of funding required to complete the various alternatives in a reasonable time framework. No actual funding or time schedule commitments have been made.

TABLE 10

RELATIVE IMPROVEMENT PRIORITY - RURAL SECTIONS

Section	Roadway Deficiencies			Traffic Service	Safety (Accident Record)	Overall Ranking
	Cross Section	Sight Restrictions	Pavement Condition			
Worthington to Brewster	Low	Moderate	Low	Moderate	Moderate	5
Brewster to Heron Lake	Low	Low	Low	Low	Low	7
Heron Lake to Wilder	Low	Moderate	Low	Mod.-Low	Low	6
Wilder to Windom	Low	High	High	High	Moderate	3
Windom to Mountain Lake	High	High-Mod	Moderate	High	High-Mod.	2
Mountain Lake to Butterfield	High	High-Mod	Low	High-Mod.	Low	4
Butterfield to St. James	High	Moderate	High	High-Mod.	High	1

TABLE 11

RELATIVE PRIORITY FOR BYPASSING URBAN SECTIONS

(If New Alignment Alternative is Selected)

Section	Traffic Delays/ Conflicts	Land Use/ Environmental Conflicts	Safety (Accident Record)	Overall Ranking
Heron Lake	Low	Low	High	3
Windom	Moderate	Low	High-Mod.	2
Mountain Lake and Butterfield	High	High	Low	1

TABLE 12

STAGING - EXISTING ALIGNMENT

Stage	Section	Cost[1] (1980) $ Million	Const.[2] Years	Inflated[3] Cost $ Million	Section	Cost (1980) $ Million	Const. Years	Inflated Cost $ Million
	2-Lane Upgrade							
1	Butterfield to St. James	8	0-2	13				
2	Windom to Mountain Lake	10	2-4	19				
3	Mt. Lake to Butterfield (including Mountain Lake and Butterfield Urban)	9	4-6	22				
4	Wilder to Windom (including Windom Urban)	11	6-8	32				
					Subtotal 1-4	38	0-8	86
					Dualization Option B			
5	Worthington to Brewster	9	8-10	32	Dualize Worthington to Windom	33-35	8-15	152
6	Heron Lake to Wilder (including Heron Lake Urban)	11-13	10-13	51	Dualize Windom to St. James	20	15-20	148
7	Brewster to Heron Lake	11	13-15	62	Upgrade Existing Roadway Worthington to Wilder	19-20	20-24	232
2-Lane Total		69-71	15	231				
	Dualization Option A							
8	Dualize Worthington to Windom	26-27	15-21	211				
9	Dualize Windom to St. James	20	21-25	270				
4-Lane Total		115-118	25	712		110-113	24	618

1. Ranges shown reflect alternative locations/design variations and staging sequences
2. 1984 equals construction year 0. Requires 4.6 million per year (1980 $)
3. At 10% compounded annually

TABLE 13

STAGING - EXISTING ALIGNMENT WORTHINGTON TO WINDOM

NEW ALIGNMENT - WINDOM TO ST. JAMES

Stage	Section	Cost[1] (1980) $ Million	Const.[2] Years	Inflated[3] Cost $ Million	Section	Cost (1980) $ Million	Const. Years	Inflated Cost $ Million
	2-Lane Upgrade							
1	Mountain Lake to St. James (temporary crossover east of Mountain Lake)	16-17	0-3	26				
2	Windom to Mountain Lake (temporary crossover east of Windom)	20-21	3-6	42				
3	Wilder to Windom	3	6-7	8	Subtotal 1-3	39-41	0-7	76
					Dualization Option B			
4	Worthington to Brewster	9	7-8	28	Dualize Worthington to Wilder	30-32	7-11	105
5	Heron Lake to Wilder (including Heron Lake Urban)	11-13	8-10	39	Windom Bypass (including Dualization from Wilder)	23-27	11-15	117
6	Brewster to Heron Lake	11	10-12	46	Dualize Windom to St. James	20	15-18	148
7	Windom Bypass	22-26	12-15	112	Upgrade Existing Roadway Worthington to Wilder	19-20	18-22	188
2-Lane Totals		92-100	15	301				
	Dualization Option A							
8	Dualize Worthington to Windom	24-26	15-19	178				
9	Dualize Windom to St. James	20	19-23	216				
4-Lane Totals		136-146	23	695		131-141	22	634

1. Ranges shown reflect alternative locations/design variations and staging sequences
2. 1984 equals construction year 0. Requires 6.1 million per year (1980 $)
3. At 10% compounded annually

TABLE 14

STAGING - EXISTING ALIGNMENT WORTHINGTON TO MOUNTAIN LAKE
NEW ALIGNMENT MOUNTAIN LAKE TO ST. JAMES

Stage	Section	Cost[1] (1980) $ Million	Const.[2] Years	Inflated[3] Cost $ Million	Section	Cost (1980) $ Million	Const. Years	Inflated Cost $ Million
	2-Lane Upgrade							
1	Mountain Lake to St. James (temporary crossover east of Mountain Lake)	16-17	0-3	26				
2	Mountain Lake Bypass and Crossover	9	3-5	19				
3	Windom to Mountain Lake	8	5-7	21				
4	Wilder to Windom (including Windom Urban)	11	7-9	34				
					Subtotal 1-4	44-45	0-9	100
					Dualization Option B			
5	Worthington to Brewster	9	9-11	34	Dualize Worthington to Windom	33-35	9-15	152
6	Heron Lake to Wilder (including Heron Lake Urban)	11-13	11-13	51	Dualize Windom to St. James	23	15-20	170
7	Brewster to Heron Lake	11	13-15	62	Upgrade Existing Roadway Worthington to Wilder	19-20	20-24	231
2-Lane Totals		75-78	15	247				
	Dualization Option A							
8	Dualize Worthington to Windom	25-27	15-20	185				
9	Dualize Windom to St. James	23	20-25	280				
4-Lane Totals		123-128	25	712		119-123	24	653

1. Ranges shown reflect alternative locations/design variations and staging sequences
2. 1984 equals construction year 0. Requires 5.0 million per year (1980 $)
3. At 10% compounded annually

The construction years shown reflect an objective evaluation of the need for the project taking into account the condition of the existing roadway, the quality of traffic service and safety provided, and reasonable planning periods in relation to the traffic forecasts.

They assume start of construction in 1984 and 15 years of funding to complete each two-lane upgrade alternative. The period to complete the four-lane alternative is based on continuing the same two-lane rate of funding until the project is completed.

The construction staging shown in Tables 12 to 14 illustrates the flexibility available with regard to the decision whether or not to build four lanes. Under each alternative, the decision to build four lanes can be postponed indefinitely by following Option A. the selection of Option B may be postponed until about 1988, at which time design of dualization by this method would begin.

Funding Implications

Funding implications illustrated by Tables 12-14 are that approximately 4.6 million dollars per year, in 1980 dollars, are required to build the least cost two-lane option (existing alignment Worthington to St. James) within a 15-year period and that 25 years would be required to complete the four-lane improvement at the same funding rate. About 10 percent more, or 5.0 million dollars per year, would be required to fund the next most costly alternative-- existing alignment Worthington to Mountain Lake, new alignment Mountain Lake to St. James-- in the same period. The most costly option-- existing alignment Worthington to Windom, new alignment Windom to St. James, including the Windom bypass-- would require funding at a 6.1 million dollar per year level to complete the proposed improvements in a similar time period.

The third column in Tables 12-14, "Inflated Cost", illustrates the need to inflation proof the funding if the improvement program is to be completed in the suggested reasonable time. The current 10 percent inflation rate, if it continues as assumed in Tables 12-14, will halve the purchasing power of highway funds every seven years.

At a lower level of funding, such as 2 million dollars per year, it would take 35 years or more of funding to complete a two-lane upgrading from Worthington to St. James. At this slow rate of replacement, continued extraordinary maintenance would be required at the rate of 0.5 million dollars per year, resulting in a total funding level over one-half as high as the 15-year total improvement would require.

The no-action alternative, which would require bridge replacement as well as extraordinary pavement maintenance, is estimated to require 0.6 million dollars per year in 1980 dollars.

Right-of-Way Preservation

Mn/DOT is concerned that between the time the desirable location for the future highway is defined and the time when actual construction occurs, development may occur on or adjacent to the desirable location which would be incompatible with the proposed highway and make acquisition of the property far more costly than

under its present state of development. In the extreme, social and economic costs of acquisition could prohibit the anticipated future use of the selected location. The increased potential for intensive development to occur adjacent to a new modern two-lane highway accentuates the concern for preserving the adjacent strip of land so as not to preclude the eventual widening to a four-lane facility should conditions warrant. Because of this concern, various techniques to preserve the selected location in its current state of use and development were investigated.

The legal, administrative, economic and political merits of the following techniques were evaluated:

- Purchase in fee
- Purchase in fee with lease back
- Obtain purchase option
- Purchase restrictive development easement
- Purchase access rights
- Official map
- Local land use controls, i.e., zoning, subdivision, building setbacks, moratoriums, etc.
- Special legislation
- No action

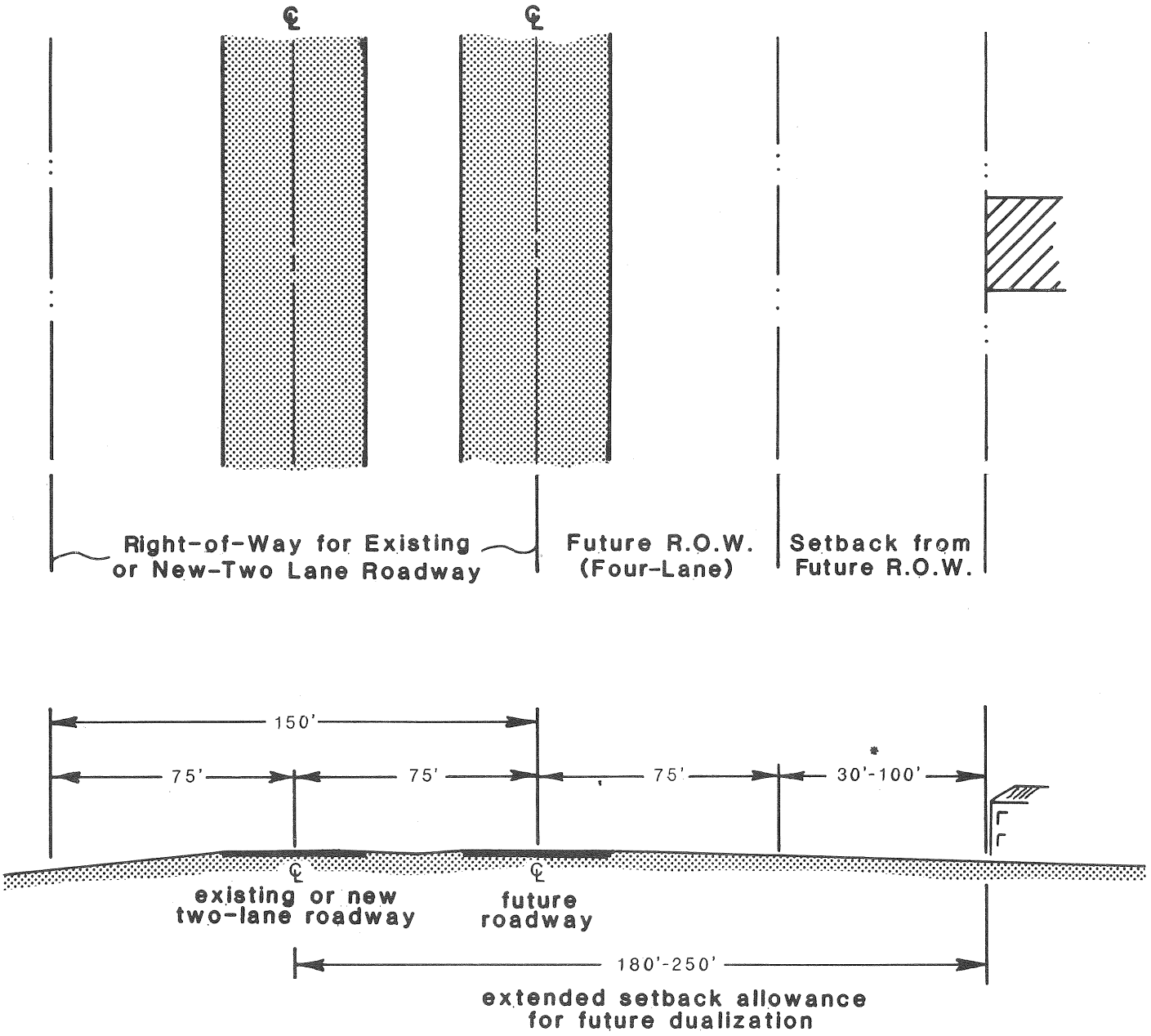
As a result of this evaluation, a two-part method is recommended as most practicable and cost effective for "preserving" the lands adjacent to the existing or new location two-lane roadway for eventual four-lane dualization:

1) Adoption by local authorities of building setback requirements from the new or existing two-lane right-of-way sufficient to allow for future four-lane dualization as illustrated in Figure 5.

2) Mn/DOT acquisition of access rights along two-lane roadway segments as new right-of-way is purchased, particularly near major intersections and the built-up communities where the development potential is the greatest.

Under proposed staging, right-of-way acquisition and construction on new alignment in the Mountain Lake, Bingham Lake, and Windom areas or the outer Heron Lake alignment would not occur until well into the future. If such alignments are selected, the affected counties should, through their official mapping authority under Minnesota Statute 394.361, officially designate the selected alignment for interim preservation as a planned highway corridor.

These techniques are believed to be legally, administratively, economically, and politically feasible and generally sufficient to attain the desired goal, i.e., to preserve right-of-way for future TH 60 construction from incompatible, intensive developments and the resulting excessively high acquisition costs.



* Range of setback from right-of-way required under current county ordinances. Adoption of a single uniform setback by each of the counties would be more desirable.

RIGHT-OF-WAY PRESERVATION THROUGH SETBACK REQUIREMENTS

FIGURE 5

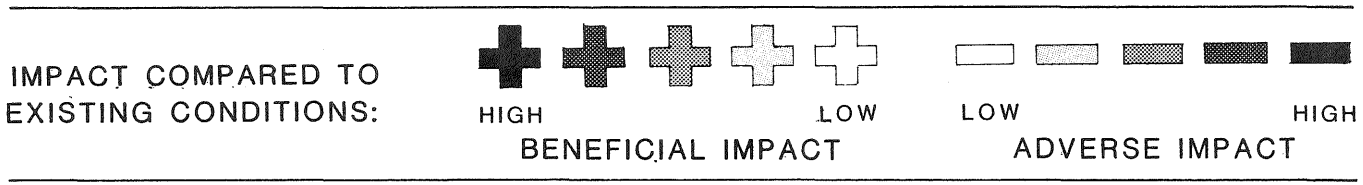
SUMMARY COMPARISON

Figure 6 provides a comparative impact summary for those concerns that are considered most significant to the decision of immediate relevance, i.e., if improvements to TH 60 are to be constructed, along which alternative corridor should they be developed? The figure provides a preliminary judgement as to the degree of impact, beneficial or adverse, for each of the concerns. These judgements reflect (a) anticipated mitigation of potentially adverse impacts, and (b) initial two-lane upgrading with provisions for ultimate dualization to a four-lane facility. They are based on the detailed identification of potential impacts and mitigation measures presented in the "Environmental Consequences" section and the various appended technical reports.

Because varying degrees of importance can be ascribed to each of the concerns, the figure does not reflect an overall judgement. Similarly, it is not intended to replace the detailed evaluation necessary to reach the numerous complex decisions to be made in the TH 60 improvement program. Rather, it is intended to identify for the reader the areas of major impact tradeoff between the alternative locations as an aid for reviewing the detailed evaluations.

All of the improvement alternatives provide significant traffic service and economic development benefits over the no-action alternative, but require considerable additional funding. The alternatives on partially or new alignment provide significant additional community impact benefits by reducing in-town noise and traffic conflicts, but incur somewhat greater cost and farm impacts. Overall, the adverse relocation, non-farm business, and natural and cultural impacts for the improvements were found to be of similar relative magnitude and, in view of potential mitigative measures, not of unduly high magnitude compared to no-action.

	NO ACTION	EXISTING ALIGNMENT	EXIST: WORTH.-WINDOM NEW: WINDOM-ST.JAMES	EXIST: WORTH.-MT.LK. NEW: MT.LK.-ST.JAMES
COST				
ANNUAL FUNDS REQUIRED ($ MILLION, 1980)	0.6	4.6	6.1	5.0
TRAFFIC SERVICE & ECONOMIC DEVELOPMENT				
FARM IMPACTS (DIRECT)	NONE			
COMMUNITY IMPACTS (INCL. NOISE)				
RELOCATIONS & NON-FARM BUSINESS IMPACTS	NONE			
NATURAL & CULTURAL IMPACTS	NONE			



SUMMARY COMPARISON OF ALTERNATIVES
SIGNIFICANT CONCERNS

FIGURE 6

AFFECTED ENVIRONMENT

INTRODUCTION

This section describes the prevailing environment of the area potentially affected by the TH 60 improvement alternatives. Most of the description focuses on the directly affected study corridor-- the cities, townships, farmlands and other features immediately adjoining the TH 60 alternative locations. A social and economic context is provided for the surrounding four-county study area and, where appropriate, the two economic development regions encompassing the project (Figure 7).

The descriptions provided herein concentrate on conditions related to the principal environmental concerns identified in the scoping process:

1) farm impacts;

2) community and business impacts in urban areas;

3) natural and cultural features protected by government regulation.

The aerial photographs in Appendix A provide a graphic illustration of land use and identify the location of major community and natural features in the project corridor. Because of the project size, inclusion of separate maps for each environmental resource was not practicable.

LAND USE

Agriculture is the dominant land use activity in southwestern Minnesota. Present and projected land use distributions for the Southwest Region, which are representative of the TH 60 study area, are summarized in Table 15. Over 90 percent of the region is in agricultural use, most of which is cultivated.

Conversion of pasture to cultivated land as a more intensive farmland use is the major anticipated change in the Region's overall land use. Very little "natural environmental" lands exist and most of these lands lack the quality and recreational value of areas located in other portions of the state. Land devoted to urban-related uses, including both urban and rural non-farm development, are expected to increase as a result of economic development, but are to remain less than two percent of the Region.

State government land use activity has primarily occurred in resource planning and regulation of public open spaces and critical environmental areas. Regionally, the Southwest Regional Development Commission (SWRDC) has adopted a series of land use goals and policies to preserve agricultural land, provide for orderly urban growth, protect critical environmental areas and minimize land use conflicts. Most of the policies rely upon county and local implementation of land use plans and regulations to provide:

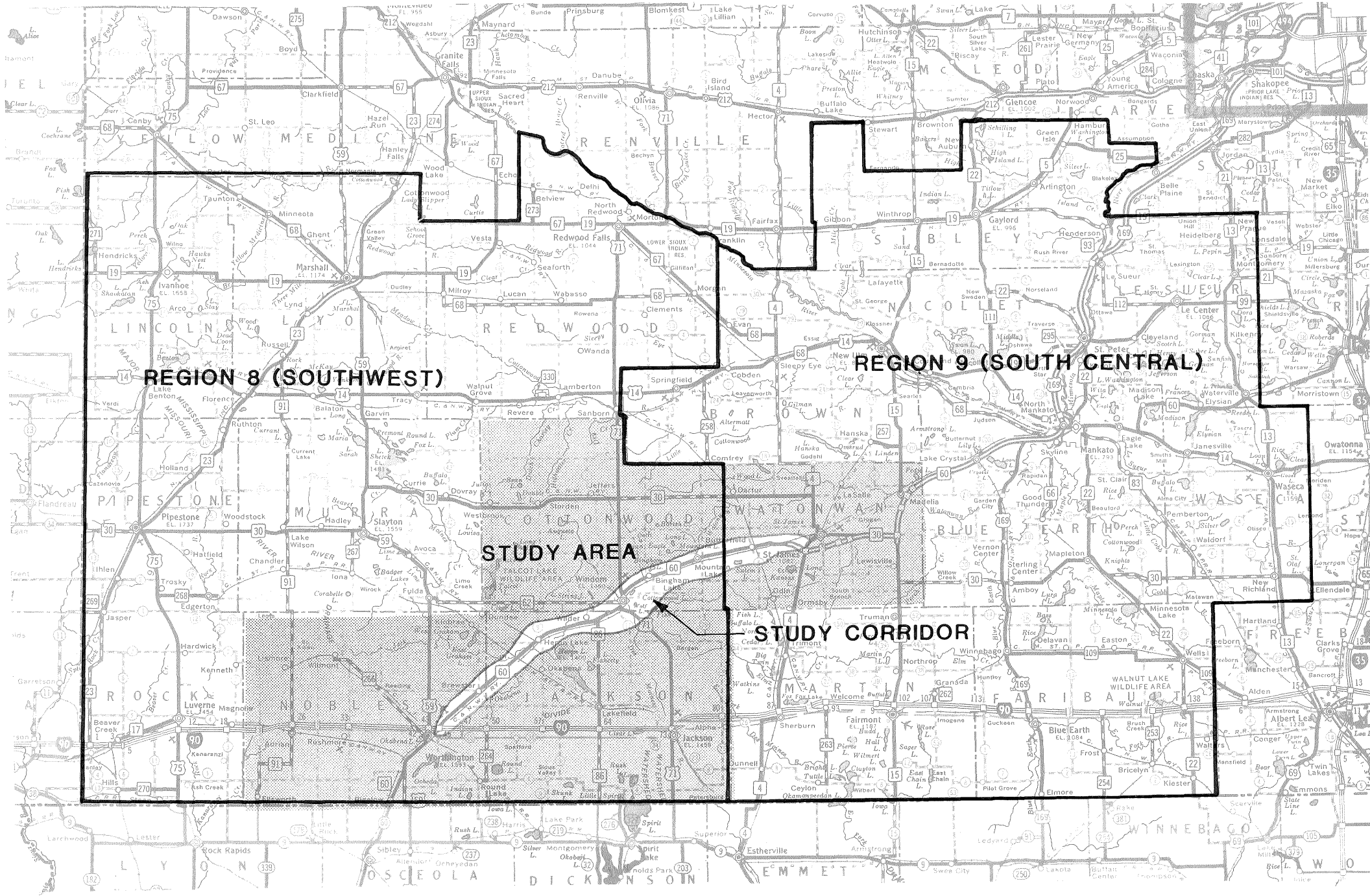
TABLE 15

PRESENT AND PROJECTED LAND USE - SOUTHWEST REGION

(Percent of Total Land Area)

	1975		2000	
Agriculture	93.9		93.2	
Cultivated		85.2		88.9
Open Pasture		8.7		4.2
Environmental Areas	1.9		2.0	
Water		1.1		1.1
Swamp/Marsh		0.3		0.2
Forested		0.5		0.7
Urban Related	1.3		1.7	
Urban		0.6		0.9
Rural Communities		0.5		0.5
Rural Non-Farm		0.2		0.3
Transportation and Communications	2.9		3.1	
Roadways		2.3		2.3
Other		0.6		0.8

Source: Southwest Regional Development Commission
Comprehensive Regional Development Guide
Land Use, March 1977



PROJECT SETTING

FIGURE 7

1) agricultural zoning districts and soil conservation practices;

2) planned transition from agriculture to urban uses in limited areas in and adjacent to existing communities;

3) controls on rural water system expansion and rural non-farm development in critical areas.

Cottonwood, Jackson, Nobles and Watonwan Counties have recently updated or are currently updating their zoning ordinances, including adoption of new floodplain regulations consistent with State and Federal guidelines. Comprehensive plans prepared in the 1960's and early 1970's are currently used only for general policy reference and background support for land use designations adopted in the zoning ordinances.

Agriculture remains the designated use for most of the unincorporated portions of the study corridor. Exceptions, as illustrated on Figure 8, include:

1) numerous small industrial tracts adjoining TH 60 and the CNW railroad at existing grain elevator or agricultural product processing sites;

2) small commercial zone areas near Windom and Bingham Lake;

3) residential zones "for the purpose of allowing limited urban growth adjacent to cities with existing services", including a 1/2-mile belt surrounding Heron Lake, a one-mile by four-mile strip south of Windom in Jackson County, and lands surrounding Cottonwood Lake in Cottonwood County.

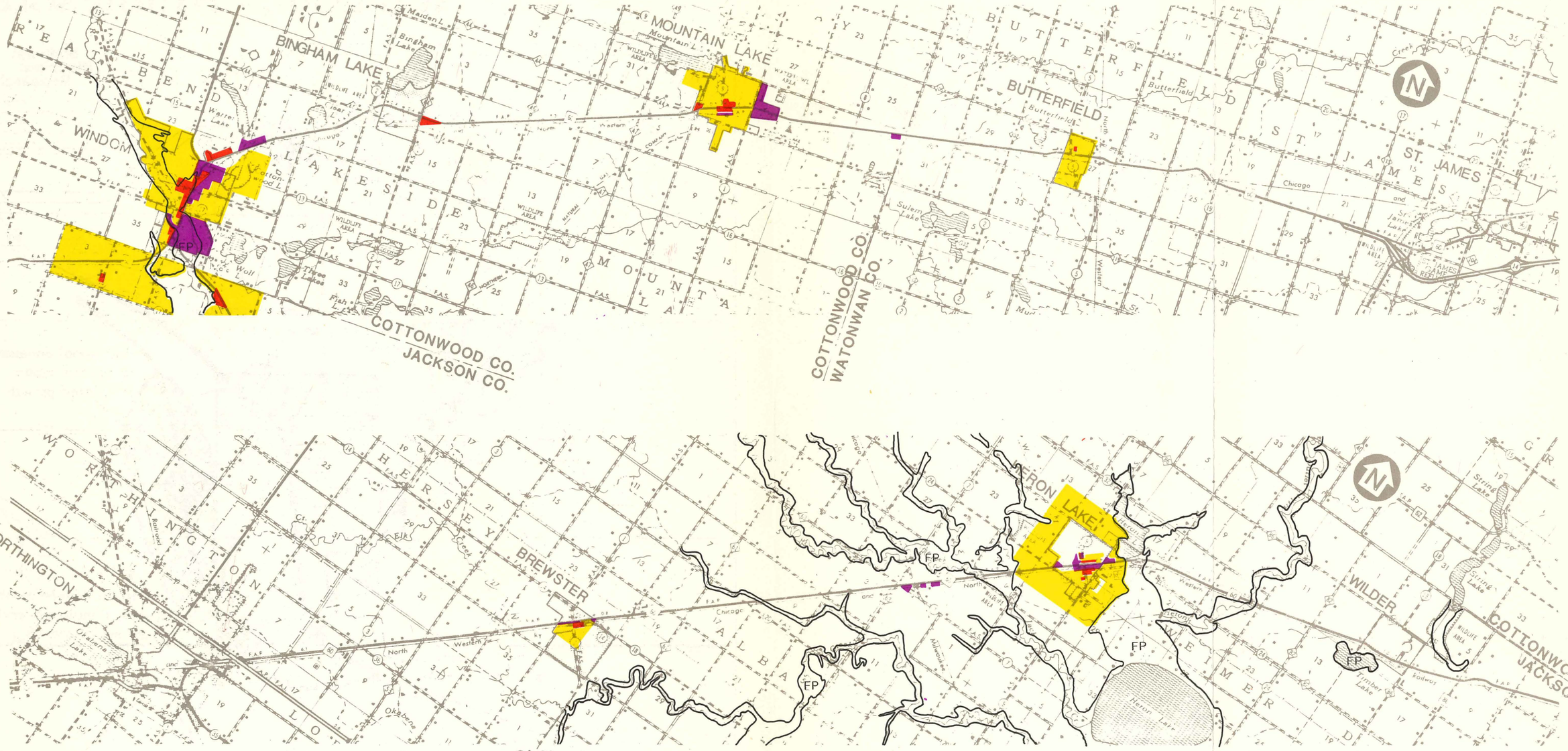
Land use planning activity in the incorporated areas along the study corridor are summarized below, by community. Current zoning is illustrated on Figure 8.

Brewster

The SWRDC is currently completing a new zoning ordinance and planning studies for Brewster. The northern portion of the town adjoining TH 60 is zoned for continued agricultural use. The CNW railroad and grain elevator tracts adjoining TH 60 on the south are zoned for industrial use. Urban residential and commercial zones are located to the south of the CNW railroad.

Heron Lake

Heron Lake's Comprehensive Guide Plan (1968) and zoning ordinances provide for the retention of the town's major business district and most residential development to the south of the CNW railroad. The CNW railroad and grain elevator lands ajoining TH 60 on the south are zoned for industrial use. The northern portion of the town is zoned for continued agricultural use except for a limited area of existing developed land near TH 60. A strip containing three gas stations, a bowling alley-cafe and miscellaneous other businesses currently adjoin TH 60 flanked by a residential area of approximately 30 dwellings. The Guide Plan schematically indicates a short TH 60 realignment along the northern edge of this area.



FP FLOOD PLAIN
RESIDENTIAL
INDUSTRIAL
AGRICULTURAL
COMMERCIAL

miles 0 1/4 1/2
feet 0 500 1000 2000 3000

north

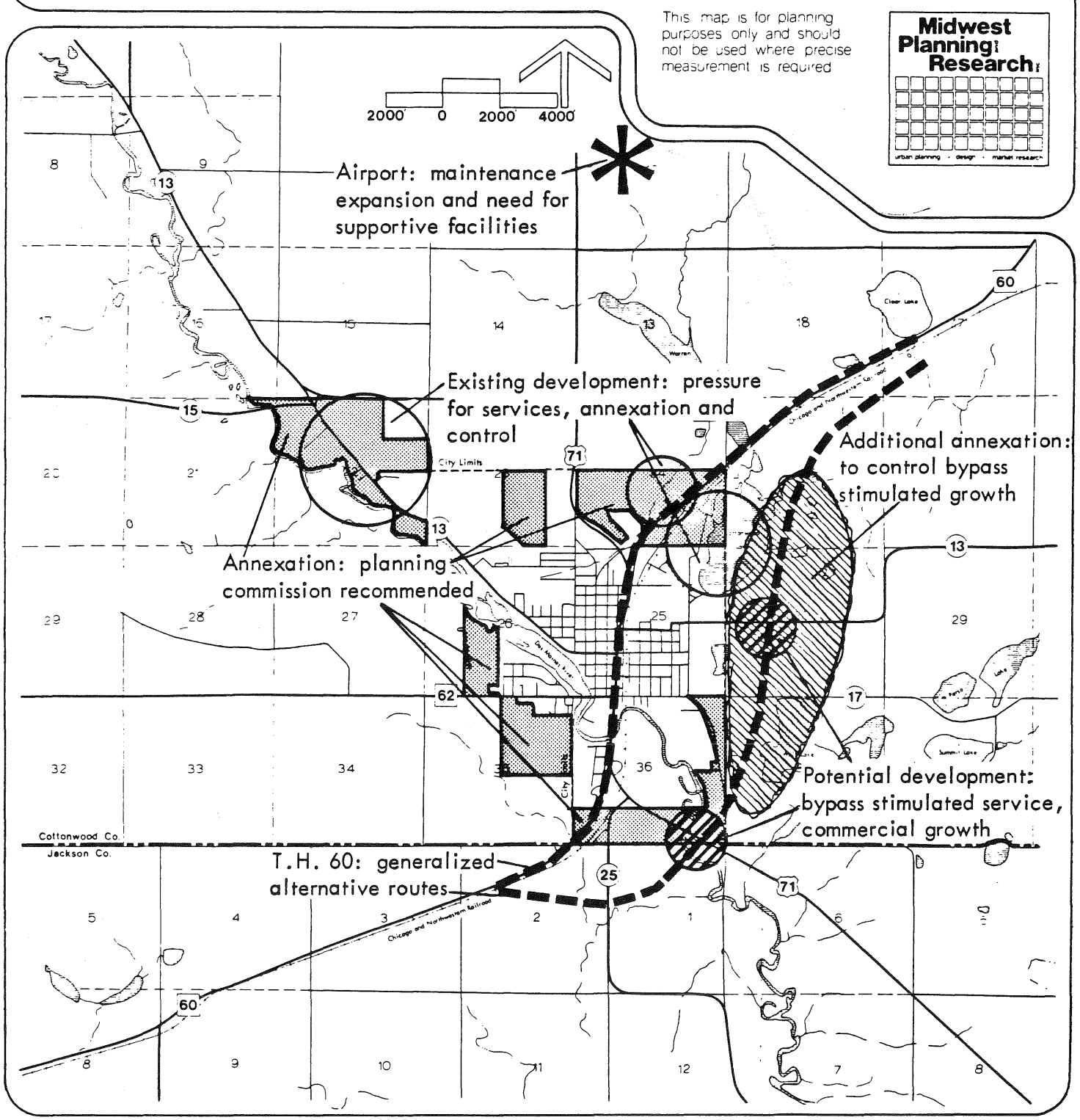
Minnesota Dept. of Transpotation
Edwards and Kelcey, Inc.

ZONING DISTRICTS

FIGURE 8

MINNESOTA 60

Windom, Minnesota



WINDOM AREA DEVELOPMENT ISSUES

FIGURE 9

Windom

Windom has recently adopted an updated comprehensive plan and zoning ordinance. Lands adjoining existing TH 60 are currently occupied by and zoned for primarily commercial and industrial uses. Annexation and land use development controls, particularly along a potential TH 60 bypass are major issues raised in the comprehensive plan, as illustrated in Figure 9. The plan recommends:

1) Annexation of lands in the potential bypass corridor to provide for orderly growth management, including control of new commercial development to discourage adverse effects on the existing business community.

2) Zoning of the annexed bypass corridor lands for (a) residential use north of CSAH 17, along Wolf Lake, and directly south of the city (except for the Des Moines River floodplain); and (b) industrial use along CSAH 26 southwest of the city adjoining the existing industrial park.

3) Annexation of current commercial-industrial lands along existing TH 60 northwest of Windom, including redevelopment and expansion of the Arlington Shopping Center as the second major business complex for Windom.

Mountain Lake

Mountain Lake, with the assistance of the SWRDC, is currently initiating an update of its land use plan and zoning ordinance prepared in 1970. Much of TH 60 within Mountain Lake is bordered by residential neighborhoods, which also contain numerous community facilities. Exceptions include an industrial-commercial area at the east end of town, a small commercial area at the west end, and the six-block central business district. Existing development is generally consistent with the 1970 plan and current zoning, and no major additional land use needs or changes are foreseen. The 1970 plan recommends realignment of TH 60 to the south of the community to alleviate in-town traffic and land use conflicts.

Butterfield

TH 60 is bordered by a mixture of residences, related community facilities, and the town's central business district. Most of the remainder of the town is zoned for residential and agricultural use, and no significant demand for new development is foreseen.

Wilder and Bingham Lake

Most of the land in these two small, unzoned municipalities is in agricultural or residential use. Extension of water service to Bingham Lake from Windom to alleviate current water supply fluctuations is anticipated during 1981 under a Farmers Home Administration grant. While such service will likely enhance the desirability of residential development in Bingham Lake, no major land use changes are expected in either Wilder or Bingham Lake.

POPULATION AND HOUSING

Total population in Southwest and South Central Minnesota, including the four-county study area, is anticipated to remain relatively stable over the next 20 to 30 years. As shown in Table 16, the State Demographer has projected a negligible to slight decline by the year 2000 in the study area counties. Preliminary 1980 Census figures, which are subject to revision, indicate that the decline may be occurring slightly earlier than anticipated.

Comparison of 1970 and preliminary 1980 Census population counts in Table 17 show an approximately 6 percent decline in the overall study area population. While study corridor cities grew by approximately 6 percent, the population of rural townships along TH 60 declined by over 20 percent. The changes are due to the combined effects of annexation of lands by the larger cities and population shift from farms into the urban communities. The latter trend is expected to continue, although at a slower rate, in the coming years.

Much of the overall decline in population has resulted from the out-migration of the middle-age, prime labor force population. As a result, the area population is currently composed of high proportions of both young and elderly. A future decline in population of the younger age group is expected to be coupled with additional increases in the population of the senior age group. Programs enhancing industrial development to maintain the prime labor force population and programs providing housing and social services for the elderly are among major goals and concerns of the region.

Despite the overall population decline, the number of households is expected to increase with a decrease in household size. As a result, demand for housing and transportation services will continue to grow. Increasing demand for housing despite overall population decline is reflected in Table 17, which shows that the number of housing units in the study area increased by 12 percent between 1970 and 1980, with 28 percent in the corridor cities. As previously discussed, further residential growth in and adjacent to the corridor cities is anticipated in the corridor land use planning. Provision of housing for the increasing proportion of senior citizens is a particular concern. Since over 60 percent of the region's housing units were built before 1940, rehabilitation and replacement of substandard housing are also major needs.

Auto registration has nearly kept pace with new housing development, increasing by 4 percent in the study area and 12 percent in the combined Southwest-South Central Regions between 1970 and 1979. During the same period, truck and recreational vehicle registration has climbed by 49 percent in the study area and 56 percent in the combined regions, while motorcycle registration has more than doubled.

AGRICULTURE

General Profile

Agriculture is the area's primary economic resource. Farms in southwestern Minnesota had an estimated 1979 average market value of over $1600 per acre, the

TABLE 16

POPULATION ESTIMATES

	Census 1970	Estimate 1979	Prelim. Census 1980	Projections (State Demographer) 1980	1990	2000
Cottonwood	14,900	15,500	14,700	15,700	15,900	15,200
Jackson	14,400	14,400	13,600	14,200	14,000	13,200
Nobles	23,200	22,900	21,600	23,400	23,900	23,100
Watonwan	13,300	12,300	12,000	12,100	11,800	11,300
Four-County	65,800	65,100	61,900	65,400	65,600	62,800
Southwest (Region 8)	141,500	140,500		142,200	144,000	139,600
South-Central (Region 9)	218,100	220,600		220,400	225,100	225,200
State	3,806,100	4,060,000		4,070,600	4,329,700	4,529,800

Sources: Minnesota State Planning Agency, Office of State Demographer
Population Estimates for Minnesota Counties 1979, June 1980
Revised Population Projections for Minnesota Counties, May 1979

U.S. Department of Commerce
1980 Preliminary Census of Population (subject to change)

TABLE 17

STUDY CORRIDOR POPULATION AND HOUSING

	POPULATION			HOUSING UNITS		
	1970	1980*	% Change	1970	1980*	% Change
Cities						
Worthington	9,916	10,038	+1	3,284	4,138	+26
Brewster	563	557	-1	187	220	+18
Heron Lake	777	776	-	283	321	+13
Wilder	132	117	-11	37	43	+16
Windom	3,952	4,703	+19	1,410	1,942	+38
Bingham Lake	214	230	+7	79	80	+1
Mountain Lake	1,986	2,246	+14	727	983	+35
Butterfield	619	619	-	228	238	+4
St. James	4,027	4,242	+5	1,502	1,942	+29
City Totals	22,186	23,528	+6	7,737	9,907	+28
Townships						
Lorain	518	385	-25	145	128	-12
Hersey	324	278	-14	99	97	-2
Alba	317	284	-23	97	103	+6
LaCrosse	350	291	-17	93	98	+5
Weimer	285	279	-2	97	106	+9
Delafield	419	331	-21	118	132	+12
Great Bend	1,034	656	-37	(300)**	240	-20
Lakeside	405	364	-10	117	128	+9
Mountain Lake	365	279	-24	104	89	-14
Midway	495	338	-32	149	119	-20
Butterfield	375	349	-7	122	124	+2
St. James	583	341	-42	179	132	+26
Township Totals	5,520	4,175	-24	1,620	1,496	-8
Counties						
Cottonwood	14,887	14,723	-1	5,130	5,874	+15
Jackson	14,352	13,618	-5	4,918	5,630	+14
Nobles	23,208	21,546	-7	7,386	8,295	+12
Watonwan	13,298	12,047	-9	4,583	4,881	+7
4-County Study Area	65,745	61,934	-6	22,017	24,680	+12

*1980 Preliminary Census Data - subject to change
**Estimate based on households

highest for any district of the state and nearly 60 percent above the statewide average. As shown in Table 18, direct farm income in 1978 was nearly $400 million for the study area and $1.8 billion for the combined Southwest and South Central crop reporting districts. Most other industries, businesses and services in the area are related to or indirectly dependent upon agriculture.

Livestock and livestock products account for over half the study area's gross farm income, reflecting a slight proportionate increase compared to crop income in recent years. In general, the further southwest the county, the greater the reliance on livestock. Watonwan County and the South Central district overall have a greater reliance on cash crops. Both Nobles and Jackson rate among the top 10 Minnesota counties in crop, livestock and total farm income; corn and soybean production; total hogs (Nobles ranks first) and pig crop; and cattle and calves on feed. Cottonwood County ranks among the top 10 counties in soybean production and cattle and calves on feed.

Table 19 presents a summary profile of the primary crops and livestock on study area farms. Approximate crop production values and livestock income estimates illustrate the relative importance of each. As shown, corn and soybeans are the principal crops, while cattle and hogs account for the majority of livestock income.

Approximately 45 percent of the corn crop is used locally for feed. As previously discussed, most of the remainder is shipped, primarily by rail, to the Gulf Coast or inland water terminals for export. Most of the soybean crop and livestock are trucked to nearby processing points.

While agriculture has remained the mainstay of the economy, farm employment has dropped from over half to less than one-quarter of total study area employment since 1940. Current study area farm employment is less than 5000, at which only a small percentage is wage and salary employment.

Corridor Farms

With the cooperation and assistance of U.S. Agricultural Stabilization and Conservation Service (ASCS) and Soil Conservation Service (SCS) offices in each of the study area counties, a detailed inventory was made of the characteristics of each of the 140 farm operations subject to direct impact by one or more of the TH 60 improvement alternatives. Inventory data was also obtained from interviews with the farm operators and from county assessor and treasurer records.

The 140 corridor farm operations contain a total of approximately 62,500 acres, or 446 acres per farm operation. Approximately 28,200 acres or 45 percent are in properties contiguously adjoining the TH 60 alternative locations. The remaining 55 percent of the lands are farmed as part of the 140 operations, but are in separate properties not contiguous to those adjoining the TH 60 alternatives.

Most of the farmland in the corridor is prime farmland, with Soil Conservation Service Capability Class I or II ratings. Class I and II soils generally have fair to good potential yields for field crops, with few or moderate limitations that restrict their use or require special management. The major exception is the the farmlands along the new alignment alternatives immediately east of Windom, which have

TABLE 18

CASH INCOME RECEIVED BY FARMERS - 1978

($ Million)

	Crops	Livestock	Government Payments	Total
Cottonwood County	49	47	2	98
Jackson County	51	59	2	112
Nobles County	39	75	2	116
Watonwan County	37	29	1	67
4-County Study Area	176	209	8	393
Southwest District	334	497	20	851
South-Central District	482	443	15	940

Notes: Totals may not add due to rounding.

Boundaries of South Central Crop Reporting District differ from Region 9.

Source: Bureau of Economic Analysis, U.S. Department of Commerce in "Minnesota Agricultural Statistics 1980", U.S. Department of Agriculture.

TABLE 19

STUDY AREA FARM PROFILE

STUDY AREA CROPS - 1979

	Acres Harvested (Thousand Acres)			Production (Thousand Bushels)			
	Corn (Grain)	Soybeans	Wheat Oats, Hay	Corn (Grain)	Soybeans	Wheat	Oats	Hay*
Cottonwood	144	184	23	14,780	5,648	79	470	50
Jackson	173	198	18	19,030	6,647	18	273	56
Nobles	169	183	39	16,900	6,022	46	922	99
Watonwan	106	125	15	11,922	4,264	77	251	33
Study Area Totals	592	690	95	62,632	22,581	220	1,916	238
% State Totals	10	13	1	10	13	0.2	2	3
Yield - Acre				100-113	31-34	28-33	58-64	4.1-4.3
Season Avg. Price ($/Bu. or Ton)				2.00	5.80	3.71	1.25	39.50
Estimated Production Value ($ Million)				125(70)**	130(125)**	1	2	9

*Hay production in thousand tons.
**Approximate portion sold. Remainder used on farm where produced.

STUDY AREA LIVESTOCK - 1979

(Number on Farms - Thousand Head)

	Cattle and Calves	Hogs	Sheep and Lambs	Hens and Pullets	Turkeys
Cottonwood	55.3	85.4	3.9	170	N.A.
Jackson	42.0	168.3	5.2	115	N.A.
Nobles	53.0	181.3	7.5	140	N.A.
Watonwan	28.1	91.7	1.2	65	N.A.
Study Area Totals	178.4	526.7	17.8	490	N.A.
% State Totals	5	11	8	5	3-4(Est.)
Est. Value ($/Head)	465	90.50	56	1.50	—
Estimated Farm Value ($/Million)	83	48	1	1	—
Estimated Gross Income ($/Million)	90-100*	70-80	1	6-8	6-8

*Includes Milk Production

Source: "Minnesota Agricultural Statistics 1980", U.S. Department of Agriculture.

Note: Estimated crop production values and livestock product gross income are Edwards and Kelcey approximations based on the production and price data in "Agricultural Statistics".

lower soil capability ratings. The extent of prime farmland taken by each alternative is identified in the Environmental Consequences section.

Table 20 provides a summary profile of the "contiguous" property farm operations. Approximately half the lands are owner-operated, the remainder are farmed by renters. Major corps and livestock are the same as for the study area overall. Additional inventory data such as location of farm tile systems, number of farm residents and property assessment data were used in the individual, farm-by-farm assessment of impacts.

The interviews also provided opinions of the potentially impacted farm operators regarding TH 60 and other transportation improvement needs in the area. Nearly 90 percent indicated improvements to both TH 60 and rail service were "very important", compared to 60 percent expressing importance for improving other area highways. Preference for two-lane versus four-lane development of TH 60 was evenly divided, with some four-lane advocates expressing desire for initial two-lane improvements with right-of-way preservation for a future four-lane highway. Preference for four-lane development was greatest near the south end of the corridor, least near the north end. Preference for continued routing through towns as opposed to a new alignment bypassing the towns was evenly divided throughout the corridor. Details of the entire farm inventory are contained in Appendix J, "TH 60 Farm Inventory Report".

COMMERCE AND INDUSTRY

General

Manufacturing and trade are the major "non-agricultural" sectors of the study area economy, as illustrated in Table 21. Each accounts for roughly one-third of the area's non-farm employment. Combined, they account for approximately 85 percent of reported gross sales. Much of this economic activity is agriculture related, however, involving farm product processing, farm machinery production, farm services, and sales of farm products and supplies.

Increased employment in manufacturing, retail trade, services and government has helped to partially absorb the decline of farm employment. Unemployment in the area has been relatively low. However, with an expected labor force increase in the face of a trend toward decreasing available jobs, the Southwest Region has identified a need to create additional jobs or risk losing more of its prime labor force population. Particular emphasis has been placed on attracting additional manufacturing industry to the area.

Wages and family income in the area are significantly below state averages. Median income of husband-wife families in 1977 were over 20 percent below the statewide $16,900 average; median income of all tax filers was approximately 15 percent below the statewide average of $10,100. The relatively low income and wage levels are viewed as an incentive for new manufacturing industry to locate in the area. Convenient and efficient transportation facilities are also viewed by the region as necessary incentives for attracting industry.

TABLE 20

TH 60 CORRIDOR FARM OPERATIONS

	Nobles County	Jackson County	Cottonwood County	Watonwan County	Total
# Farms	17	37	56	30	140
Contiguous Properties* (Area)	2,743	8,230	10,454	6,751	28,178
Owner-Operated	722	5,448	6,121	2,587	14,878
Renter-Operated	2,021	2,782	4,333	4,164	13,300
Cropland (Acres)					
Corn	1,249	3,301	4,633	2,965	12,148
Soybeans	1,213	2,785	4,118	3,002	11,118
Other	30	1,977	302	141	670
Livestock (# Head)					
Hogs	4,180	4,450	4,000	4,900	17,530
Cattle	1,050	1,190	2,420	810	5,470
Chickens	750	7,380	43,630	500	52,260
Turkeys	--	--	--	125,000	125,000
Other	800	250	90	20	1,160

*To TH 60 alternative locations.

TABLE 21

COVERED EMPLOYMENT AND REPORTED GROSS SALES BY INDUSTRY

(4-County Study Area)

	Constr.	Manufact.	Transp., Utilities	Wholesale Trade	Retail Trade	Finance, Insur., R.E.	Services	Govt.	Other	Total
Country Business Patterns, March 1977, U.S. Census										
# Estab. Reporting	185	75	102	199	479	123	349	--	16	1,528
# Employees	670	4,105	624	1,983	3,533	643	2,362	--	26	13,946
% Total	5	29	4	14	25	5	17	--	--	100
Minnesota Employment, September 1979, Minnesota Dept. of Economic Security										
# Estab. Reporting	218	77	126	675		138	333	133	32	1,732
# Employees	1,044	5,010	777	6,777		817	2,746	3,628	210	21,009
% Total	5	24	4	32		4	13	17	1	100
Sales and Use Tax, 1979, Minnesota Commissioner of Revenue										
# Estab. Reporting	68	93	63	174	932	26	536	39	149	2,080
Gross Sales ($ Million)	9	324	43	225	218	4	19	16	48	906
% Total	1	36	5	25	24	--	2	2	5	100

Notes: Covered employment data excludes self-employed, most farms, railroad employment, etc.
U.S. Census employment data also excludes government employees.
Gross sales generally include both taxable and non-taxable sales.
Some under-reporting may be included where the vendor did not report non-taxable sales.

Community Business Activity

Potential for direct displacement of businesses, or for indirect loss of sales activity as a result of traffic or parking changes, is a significant concern to local communities and businessmen. Table 22 provides a profile of total sales activity in each of the corridor communities, as well as sales activity for selected retail and service industries available for the four study area counties and the three largest corridor communities.

Retail trade and services are the business activities most susceptible to changes in traffic or parking conditions. Together they accounted for nearly $240 million in gross sales in 1979, or slightly over one-quarter of total non-farm sales in the study area.

Butterfield has a small, one-block commercial district along 2nd Street, adjoining its intersection with TH 60. It includes a bank, hardware, building supplies store, liquor store, gas station, cafe and miscellaneous small service establishments.

Mountain Lake's central business district occupies the city blocks on both sides of TH 60 from 9th to 12th Streets. It contains a variety of retail trade, commercial services, business and professional offices, finance, insurance and real estate services, and public uses. The retail and service core is located along 19th Street to the north and south of TH 60 and along TH 60 between 10th and 12th Streets. A small shopping mall containing food, drug, and miscellaneous other retail stores was recently constructed at the corner of TH 60 and 11th Avenue. A few additional businesses are located on TH 60 at both the east and west ends of Mountain Lake.

The Courthouse Square, located a block to the west of TH 60, serves as the hub of commercial activity in Windom. Included are a variety of retail, service, professional, finance-insurance-real estate and public uses. As noted in the land use section, virtually the entire length of TH 60 in Windom is also devoted to commercial or industrial activity. Included are restaurants and motels; auto dealers, supply and service stations; building supply, food and discount department stores; and various professional offices and services.

The commercial districts of Heron Lake and Brewster are located to the south of the CNW railroad along County State Aid Highways 9 and 1, respectively. In Heron Lake, a number of additional businesses are located along the north side of TH 60, including three gas stations, a restaurant-bowling alley and a sports store. At Brewster, a small gas station and flea-market business is located along the north side of TH 60. The town centers of Wilder and Bingham Lake are located off TH 60 and contain little commercial development.

COMMUNITY FACILITIES AND SERVICES

The location of community facilities in the study corridor are illustrated on the aerial photographs in Appendix A. Facilities shown include:

TABLE 22

STUDY AREA SALES ACTIVITY PROFILE

GROSS SALES FOR SELECTED BUSINESS TYPES - 1977

($ Million)

	RETAIL TRADE								SERVICES					
	Gas Stations		Eating and Drinking Places		Auto Dealers		All Retail Trade		Hotels, Motels, etc.		Auto Repair, etc.		All Services	
	#	Sales	#	Sales	#	Sales	#	Sales	#	Sales	#	Sales	#	Sales
Cottonwood County	15	3.5	26	2.6	10	12.6	164	44.5	5	0.2	21	1.0	148	3.7
Windom	7	1.9	12	1.8	5	8.0	94	29.8	4	*	11	0.6	85	2.4
Jackson County	11	2.4	22	1.9	12	8.0	133	28.2	4	*	16	0.4	101	3.7
Nobles County	26	5.0	43	5.8	26	18.1	255	76.8	9	1.4	32	1.2	148	6.9
Worthington	13	3.7	23	4.3	18	15.1	148	62.6	6	*	15	0.9	92	6.1
Watonwan County	16	2.8	25	3.4	10	11.9	148	37.3	4	*	12	0.3	101	3.4
St. James	6	1.2	13	2.0	5	*	72	24.0	3	*	9	*	51	1.8
4-County Study Area	68	13.7	116	13.7	58	50.6	700	186.8	22	*	81	2.9	498	17.7

*Indicates nondisclosure suppression of data.

Source: 1977 U.S. Census of Businesses.

TOTAL GROSS SALES BY COMMUNITY - 1979

($ Million)

Cottonwood County	171.9
Bingham Lake	0.2
Mountain Lake	24.9
Windom	99.3
Jackson County	134.6
Heron Lake	4.4
Wilder	0.2
Nobles County	439.4
Brewster	2.3
Worthington	316.6
Watonwan County	160.5
Butterfield	10.4
St. James	96.3
Study Area	906.4

Source: Sales and Use Tax Report, 1979,
Minnesota Commissioner of Revenue

- schools
- medical and emergency facilities (hospitals, clinics, nursing homes, fire, police and ambulance)
- religious and cultural facilities (churches, cemeteries, libraries, museums)
- parks
- municipal offices and public works.

The corridor traverses portions of seven independent school districts: IDS 518, Worthington; IDS 513 Brewster; IDS 330 Heron Lake-Okabena; IDS 177 Windom; IDS 173 Mountain Lake; IDS 836 Butterfield; and IDS 840 St. James. Public schools in Butterfield and Mountain Lake are located on or in close proximity to TH 60 and have designated pedestrian school crossings at TH 60. Mountain Lake's Christian School, a Mennonite parochial elementary school, is also located in relatively close proximity to TH 60. Schools in the remaining communities are not in close proximity to existing or alternative TH 60 locations. School locations and bus transportation preclude the need for school pedestrian crossings. Enrollment projections for the schools all indicate a slight to moderate decline in students, and no new schools are anticipated.

Hospitals are located in Worthington, Heron Lake, Windom, Mountain Lake, and St. James, with ambulance service provided from each city. The Mountain Lake Hospital is located on existing TH 60.

Other facilities located on existing TH 60 in Mountain Lake include a 2.5-acre city park, a nursing home, a senior citizens housing complex, and three churches. Butterfield's fire station-municipal building is located on TH 60. In Windom, two parks adjoin existing TH 60. One, a small Minnesota Department of Transportation wayside picnic area, is located within the present TH 60 right-of-way. The second, Island Park, is an active use area located west of TH 60 at the Des Moines River. It contains ballfields, playground equipment, an outdoor swimming pool, a shelter and picnic facilities.

Heron Lake's 20-acre Memorial Athletic Field is located a block north of TH 60, in close proximity to the outer location alternative. Hersey Cemetery, to the south of Brewster in Hersey Township, immediately adjoins existing TH 60. Other corridor community facilities are located away from existing and alternative TH 60 locations. Most corridor farmers and other rural residents are, however, dependent upon TH 60 for access to services provided at or from these facilities. Included are residents of Wilder who are dependent upon TH 60 for fire and police services from Windom and Heron Lake.

HISTORIC AND CULTURAL SITES

In accordance with the National Historic Preservation Act of 1966 and the Procedures of the National Advisory Council on Historic Preservation, the State Historic Preservation Officer (SHPO) has been consulted (see correspondence in Appendix B). A review of the project is being conducted by the Minnesota Historical Society (MHS).

The MHS review of the National Register, State Inventory, Minnesota Archaeological site files, Minnesota Trunk Highway Archaeological Reconnaissance Survey, MHS fur trade files, county histories, and other general literary references, has revealed that no historic, architectural, archaeological or cultural resources sites currently listed on, or having nomination pending to, the National Register of Historic Places are located along or near the TH 60 existing or new alignment corridors.

According to the SHPO, however, 1971 reconnaissance studies revealed two sites of potential archaeological significance adjoining existing TH 60 at the southeast and southwest ends of Duck Lake near the town of Heron Lake (see Appendix B for locations). The extent, nature, condition and significance of the sites have not been fully determined.

Along the new alignment corridor, a suspected archaeological site was recorded in the 1971 survey adjoining the southeast shore of Cottonwood Lake near Windom. However, additional survey and testing by the Historical Society revealed no evidence to support either preservation or salvage. Also along the new alignment corridor, Heritage House Incorporated is currently developing Heritage Village, a collection of relocated, restored buildings and artifacts of pioneer settlement on a prior farm site at the southeast corner of the City of Mountain Lake. The Village currently occupies the western five acres of a 22-acre site owned by the non-profit organization.

The SHPO has recommended that Duck Lake Site #2 (southwest end) be subjected to further archaeological investigation. Mn/DOT has requested the Minnesota Historical Society to complete the necessary additional testing. Completion is anticipated prior to preparation of the Final EIS for TH 60.

TOPOGRAPHY, SOILS AND GEOLOGY

Between St. James and Worthington, the existing terrain is generally flat to gently rolling. This type of terrain is typical of that produced by glacial action. Near the Des Moines River, particularly on the west side, the terrain has a little more relief (knolls).

With the exception of the stream and river channels and lakes, the soils along the alignment were deposited by glaciers. The materials are predominantly clay soils having varying amounts of sand and gravels. These soils typically have good strength and are not particularly compressible under static loads. They do have potential for erosion, particularly if steep slopes are created.

Near the waterways and lakes, the soil conditions are less predictable. Softer clays and organic materials can be found as well as sandier and/or siltier materials. Soils in these areas tend to have lower strengths and are more susceptible to settlement. These materials show a similar sensitivity to erosion as the glacially deposited clays.

Along the existing roadway alignment, the native topsoils are generally 1 to 2 feet thick. The topsoil is generally clayey and has a moderate amount of organic materials. The embankments for the existing roadway have been constructed of these topsoil materials, generally to depths of 5 to 8 feet. These topsoils have poor stability under traffic loads and are susceptible to frost heave.

Groundwater was noted to be within 5 to 10 feet below the surface along most of the alignment. The "tight" nature of most of the clay soils restricts water well development. However, enough water does exist to affect roadway performance and design. Most of the water is in thin lenses and seams of sand and silt within the mass of soil. Isolated sand lenses do produce sufficient water for domestic usage. However, the majority of the water wells in this area must extend down to the underlying bedrock.

Depth to bedrock along the corridor ranges from 60 to over 400 feet, most commonly occurring 200 to 300 feet below the surface. There are no known outcrops in most of the areas. The uppermost bedrock generally consists of shale and/or sandstone. A detailed description of soils and geologic conditions is contained in Appendix E, "TH 60 Soils and Geology Report".

WATER RESOURCES

Lakes

The lakes in the four-county area through which the TH 60 improvement corridor runs are generally small, shallow prairie-type lakes. Eleven such lakes can be found bordering or reasonably close to the present highway alignment. Three of these lakes, Butterfield, Bingham and Cottonwood, have been investigated in some detail. (See maps in Appendix A for locations.) It was found that their mean depths are less than 6 feet, and land use within their watersheds is greater than 90 percent agricultural. Phosphorus content limits plant growth in each lake (all nitrogen:phosphorus ratios are greater than 15:1). The phosphorus loading rates are greatly in excess of 0.13 g/m^2, which can be expected to produce eutrophic conditions in any lake with a mean depth of 6 feet or less. The very high level of nutrients in these shallow lakes indicates that they are in a relatively advanced state of progressive enrichment or aging-- a process called eutrophication.

Rivers and Streams

The Des Moines is the only river which is and/or would be crossed by the existing and alternative new alignments of TH 60 between St. James and Worthington. The Minnesota Pollution Control Agency has designated this river as Class 2, capable of supporting fisheries and recreation, and Class 3, suitable for industrial consumption, depending on exact location. The river is relatively nutrient rich, supporting populations of diatoms, green and bluegreen algae. Total coliform bacteria counts in water from the Des Moines are quite high; however, the majority of these have been shown to be of the nonfecal type. Water flow in the vicinity of Windom is capable of supporting canoeing for the full summer.

Four streams and a number of unnamed or otherwise indistinct ditches cross the present TH 60 alignment within the study area. Jack Creek, Elk Creek, and Heron

Lake Outlet are considered Class 2 waterways by the State of Minnesota. Okabena Creek and its tributaries along with a number of ditches are proposed as limited value resource waters, Class 7. None of these are designated as official trout streams.

In general, water quality parameters can be summarized by saying suspended solids, and therefore turbidity, are not excessive; dissolved oxygen is quite variable and coliform bacteria counts are high. Water hardness measured as equivalent concentrations of $CaCO_3$ most often exceed 300 mg/L, indicating that all streams and lakes examined contain hard to very hard water. Heavy metal concentrations are most often below U.S. Environmental Protection Agency (EPA) standards for domestic and freshwater aquatic life use. Average levels of lead, cadmium and mercury are, however, at or near the critical level for sensitive aquatic life as determined from samples taken and analyzed by Mn/DOT between November 1977 and August 1978. Intensive agricultural land use within all of the watersheds between St. James and Worthington is responsible for the runoff of various chemicals including fertilizers, pesticides and herbicides into both standing and flowing aquatic environments. Analyses have shown that the nutrient levels of Heron Lake Outlet and Jack, Butterfield and Okabena Creeks most often exceed national and regional averages, indicating water which is generally more fertile than water in comparative watersheds around the United States.

Fish and Benthos

The fishery of the waters within the study area is primarily limited to warm water species such as bass, sunfish, crappies, and rough fish. Northern pike are locally abundant and walleyes can be found where aided by stocking programs. Special fish management facilities exist at the Carpenter (Bingham Lake) State Wildlife Management Area and at the south end of Warren Lake for the production of northern pike fry and walleye fingerlings. Winterkill or freezeout is a common lake problem occurring once every 1 to 10 years. The West Fork of the Des Moines River has been reported by some fishermen as being better for fishing than many area lakes.

Benthos or bottom dwelling organisms can be indicative of various degrees of water quality. Qualitative sampling from the West Fork of the Des Moines River at the TH 71 bridge crossing southwest of Windom, an adjoining drainage ditch, and South Warren Lake has indicated a diverse benthos fauna present. Species defined as intolerant, moderate, facultative, and tolerant have been identified, indicating that the river has generally good water quality.

Wetlands

Wetlands are natural areas which play important roles in surface water hydrology, storage of groundwater, various farm uses, recreation, stabilization of runoff, the reduction or prevention of erosion, the production of timber, the creation of firebreaks and wildlife ecology. As a result of private initiative, community projects and even government-subsidized programs, many of the original wetlands of southwestern Minnesota have been drained and eliminated. A limited number of good marshes are still present. However, approximately 43 wetlands of various sizes and types exist along or near TH 60 between St. James and Worthington.

Mapping and detailed description of the water resources, including lakes, streams and wetlands are contained in Appendix I, "TH 60 Natural Resources Report".

VEGETATION AND WILDLIFE

Prior to the mid-1800's, when the first white men began to settle southwestern Minnesota, most of Jackson, Nobles, Watonwan and Cottonwood Counties were vegetated by tall and medium height prairie grasses. Wildflowers and aquatic vegetation were also very abundant. Conversion of this rich prairie to farmland did not take long, however. By 1900, over 90 percent of the land was so "improved". Presently farming is still the primary land use. Corn, soybeans, small grains and hay are the main crops. Nonagricultural land is limited to parks, wildlife management units, rights-of-way and river bottom. Only a very few remnants of the original prairie vegetation still exist. No officially threatened or endangered species of plants exist within the four-county area.

The diversity of wildlife within the study area is directly related to the vegetative cover. The nonagricultural areas mentioned previously are few and scattered, resulting in a shortage of good wildlife habitats. Where suitable habitat does exist, many kinds of mammals including at least 25 nongame species, can be found. Eleven species of reptiles and amphibians have been reported present in the four-county area of Nobles, Jackson, Cottonwood and Watonwan Counties by the Minnesota Department of Natural Resources (Mn/DNR, 1979).

A regional roadside bird survey conducted by the U.S. Fish and Wildlife Service (FWS) showed a minimum of 50 total species to be present in an area that includes the TH 60 corridor. Dave Montag, a Mn/DNR biologist, Madelia, Minnesota, has found the most common ground nesting birds to be (from most to least common): vesper sparrow, yellow throat, meadow lark, dickcissel, horned lark, song sparrow, and pheasant.

The proposed TH 60 project will not infringe upon the ranges of any officially threatened or endangered species, according to Mr. Jim Leech, Endangered Species Coordinator, FWS Twin Cities Area Office (personal communication August 1981). The Mn/DNR publication The Uncommon Ones (Moyle, 1980) also does not list any endangered or threatened species that exist in or near the study area corridor. A number of animals termed "Priority Species", however, could possibly be found in the Worthinton to St. James area. "Priority Species" are defined as species that are uncommon or local in Minnesota, but are not presently threatened or endangered. The species most likely to occur within the TH 60 study corridor are:

Common Name	Classification
Yellow-Crowned Night Heron	*Pr, Pl, Ra
Marsh Hawk	Pr, Ra
Short-Eared Owl	Pr, Ra
Eastern Bluebird	Pr, Ra
Lark Bunting	Pr, Pl
Blanding's Turtle	Pr, Pl
Cricket Frog	Pr, Pl

*Pr - Afforded some degree of protection under Minnesota laws, the amount and kind of protection varying with the species.

Pl - Has a large range in North American but whose range includes only a portion of Minnesota.

Ra - Its range includes either all or much of Minnesota but is rare throughout its range.

A black-crowned night heron colony which resides one mile west and 1/4 mile south of Butterfield and inplace TH 60 respectively, is of special interest. These herons, tree nesting birds, have returned each year since 1973 to the Clarence Blomgren farm near Butterfield. The birds' fecal droppings which contain ammonia have, however, begun to affect trees in the farm grove resulting in a deteriorating habitat. Consequently, fewer birds have been returning to this location in the past couple of years.

Two State Wildlife Management Areas adjoin the existing TH 60 alignment:

1) Bingham Lake State Wildlife Management Area, a 58-acre unit west of Bingham Lake; a portion of the unit contains a northern pike spawning area.

2) Valleau State Wildlife Management Area, a 335-acre unit spanning both sides of existing TH 60 and the CNW railroad approximately 1/2 mile southwest of TH 60.

Three additional State Wildlife Management Areas and two Federal waterfowl production areas are also located in the study corridor, but are not in the immediate vicinity of existing or alternative TH 60 locations.

Locations of each of these areas are shown on the maps in Appendix A. A detailed description of corridor vegetation and wildlife is contained in Appendix I, "TH 60 Natural Resources Report".

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This section discusses the probable social, economic and environmental effects of the alternatives, including that of no-action, and means to mitigate potential adverse impacts. The U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers and the Minnesota Department of Natural Resources acted as cooperating agencies to help identify effects on natural resources. During the preparation of this section, a number of technical reports were prepared that contain details supplementing the summary discussions presented in this section. These technical reports are incorporated as appendices to this EIS.

RELOCATION IMPACTS

Residential Displacements

Table 23 provides a comparison of total residential relocation requirements for each of the basic alternatives and for the individual alignment/design variation segments. Overall, relocation requirements are of a similar magnitude for existing versus partial new alignment alternatives and thus should not significantly affect the decision among alternative locations. In general, relocations necessary for four-lane construction are approximately double those for two-lane construction. As shown in Table 23, however, actual requirements will depend on the combination of alignment/design variations selected.

Mn/DOT's Mankato District Relocation Office will be responsible for providing the relocation services for this project. Mn/DOT relocation personnel will assist the persons displaced as long as necessary to reestablish them in homes. Relocation benefits will include replacement-housing differential, moving costs, closing costs, interest differential, and appraisers fees, if any. The Relocation Office will ensure that all persons will be relocated into decent, safe, and sanitary housing within their financial means, without regard to race, color, or national origin. No minority displacement is anticipated.

No residential displacement is required for proposed first-stage development under any of the alternatives. Second and third stage development would require no displacement on existing alignment, and zero to three displacements on new alignment, depending on the variations chosen. Most residential displacements would occur in the later stages of project development. Overall, the relocation requirements are considered relatively minor for a major highway improvement project 52 miles in length. Since acquisition would not occur for many years, preliminary acquisition contacts to develop a current resident profile was not considered appropriate at this time. However, general relocation housing availability and potential problems were assessed using current conditions as a representative indicator.

The main areas of residential displacement under existing alignment alternatives are in the City of Heron Lake and adjoining Weimer Township. The type of housing which would be displaced in Heron Lake is largely older-type residential property

TABLE 23

RESIDENTIAL DISPLACEMENTS
(Number of Residences Displaced)

BASIC ALTERNATIVES

	Existing Alignment		Existing: Worth. To Windom/New: Windom To St. James		Existing: Worth. To Mt. Lk./New: Mt. Lk. To St. James	
	2 Lane	4 Lane	2 Lane	4 Lane	2 Lane	4 Lane
Worthington to Windom	2-8	7-15	Same as Existing Alignment - - - - - - - - -			
Windom to St. James (inc. Windom)	0	2	3-7	3-7	0-1	1-2
TOTALS	2-8	9-17	5-15	10-22	2-9	8-17

Note: Displacement range shown reflects alternative alignment/design variation segments.

VARIATION SEGMENTS

	2 Lane	4 Lane
Heron Lake (Existing Align.)		
Inner Narrow Median	6	6
Inner Typical Median	4	10
Outer	0	2
Windom (New Align.)		
Inner	4	4
Outer	3	3
Bingham Lake (New Align.)		
Inner	2	2
Outer	0	0
Mountain Lake (New Align.)		
Inner	1	1
Outer	0	0
Butterfield (New Align.)		
Inner and Outer	0	0

falling in the lower price range. Residential property in Weimer Township immediately outside Heron Lake ranges from older to fairly new in age and construction type. Interviews with local real estate people indicate a fairly large number of homes currently for sale in the Heron Lake area. Estimates run from 12 to 18 homes on the market. These homes span the price range from lower-priced older housing to more expensive, newer-type structures. The majority of the older, lower-priced housing, which is similar to that which might face potential displacement, is typically occupied by the younger, starting family sector. This should give rise to a relatively high turnover in this type of property in upcoming years, due to the desire of most families to move to newer more expensive type housing as their economic status improves. Should any displaced household desire to rent rather than purchase a new residence, three apartment complexes are located within Heron Lake, at least one of which participates in lower income housing programs.

The other residential properties facing potential displacement under the existing alignment alternatives are of the rural residential nature. The current rural residential property market is fairly strong, and this trend will likely continue as farmers continue to expand their operations and subsequently dispose of extra farmsteads. One potential displacement is a combination residence-business property. The residence is of a newer type construction, and relocation of both residence and business in the particular community will be possible only through reconstruction or moving of existing improvements to a different site.

Under new alignment alternatives, the potential displacements south of Windom will be the same as discussed under existing alignment alternatives. From Windom to St. James potential displacements include: Lakeside Township - 3, Windom - 1, Bingham Lake 2, and Mountain Lake - 1.

The Lakeside Township properties, located a short distance from Windom, and the Windom property are of a rural residential nature. The relocation of these residents in similar homes may prove more difficult than normal, as rural residences close to a city such as Windom are very much in demand. The potential relocations in Mountain Lake and Bingham Lake, including one mobile home, are not anticipated to create unusual problems.

Non-Farm Business Displacements

Of the potential non-farm business displacements, all except one would occur along the existing TH 60 alignment. Primary locations involved include Heron Lake, Weimer Township and Windom, with one potential business loss each at Brewster and Bingham Lake. A comparison of non-farm business displacements by alternative and variation is shown in Table 24.

No business displacements are required in the first three stages of any of the alternatives. Since acquisition of business property would not occur for many years, relocation consultation with potentially-affected owners was not considered appropriate at this time.

Relocation assistance and compensation will be provided through the Mn/DOT Mankato District Relocation Office. As project plans for the later stages are developed, Mn/DOT will consult with owners to develop relocation plans and, if

TABLE 24

NON-FARM BUSINESS DISPLACEMENTS
(Number of Businesses Displaced)

BASIC ALTERNATIVES

	Existing Alignment		Existing: Worth. To Windom/New: Windom To St. James		Existing: Worth. To Mt. Lk./New: Mt. Lk. To St. James	
	2 Lane	4 Lane	2 Lane	4 Lane	2 Lane	4 Lane
Worthington to Windom	2-8	4-9	Same as Existing Alignment - - - - - - - - -			
Windom to St. James (inc. Windom)	4	5	0-1	0-1	4	5
TOTALS	6-12	9-14	2-9	4-10	6-12	9-14

Note: Displacement range shown reflects alternative alignment/design variation segments.

VARIATION SEGMENTS

	2 Lane	4 Lane
Heron Lake (Existing Align.)		
Inner Narrow Median	7	8
Inner Typical Median	5	8
Outer	1	3
Windom (New Align.)		
Inner	1	1
Outer	0	0
Other	0	0

desired, to help obtain resources or utilize relocation services and financing or tax incentives offered through local, State or Federal Agencies.

All of the potentially-affected establishments are small businesses, with no extensive new site requirements for relocation. Relocations to alternative sites in the affected communities are anticipated to occur without unusual difficulty in most instances and this should not be significant. Building relocation on the same site or adjoining property may be practicable in some cases.

In Windom, and to a lesser extent Heron Lake, availability of alternate sites fronting on TH 60 may be a problem, particularly for the predominantly highway-oriented businesses. These include three gas stations in Heron Lake and two "fast-food" establishments in Windom. Relocation of the latter establishments on the joint TH 60 - US 71 section in Windom could, in particular, be limited by site availability. If not relocated, market demand will likely dictate the development of equivalent "replacement" business, so that the community would not be adversely affected. In Heron Lake, relocation to sites accessed from public cross-streets would be preferable for traffic safety reasons, but could result in the loss of at least one of the existing gas stations. Since improvements in Windom and Heron Lake are not anticipated for many years under the proposed programming, further consideration at this time is not considered to be warranted.

FARM IMPACTS

Direct impact of the basic alternatives on farmlands and farm operations are summarized in Table 25. Comparative impacts for the location design variations are shown in Table 27, and are reflected in the ranges given in the overall summary.

Farmland Acquisition

Farmland acquisition required for the various alternatives ranges from approximately 100 acres for a two-lane upgrade on existing alignment to over 900 acres for a four-lane expressway construction on new alignment in the Windom to St. James portion of the corridor. Overall, such acquisition constitutes a taking of 0.2 to 1.5 percent of total acreage in the 140 corridor farm operations, or 0.4 to 3.4 percent of the farm properties contiguously adjoining the TH 60 alternatives.

As shown in Table 25, acquisitions for a two-lane upgrade on existing alignment would affect 77 properties, while a four-lane expressway partially on new alignment could affect up to 130 of the 140 corridor farms, depending on the alignment variations chosen. Owner-operated properties account for slightly less than half of the affected properties, but slightly more than half of the total acreage required for each of the alternatives. Estimated current market value (1980) of the land acquisition varies from $0.2 to $2.1 million.

Approximately 85 to 90 percent of the farmland taken under any of the alternatives is prime cropland according to soil capability ratings of the Soil Conservation Service. Assuming these lands are farmed equally for corn and soybean production, lost crop production at typical production rates and prices for the various alternatives is summarized in Table 26. Losses vary from 5 to 47

TABLE 25

FARM IMPACT SUMMARY

	Existing Alignment		Existing-Worthington to Windom New-Windom to St. James		Existing-Worthington to Mountain Lake New-Mountain Lake to St. James	
	2-Lane	4-Lane	2-Lane	4-Lane	2-Lane	4-Lane
PROPERTIES AFFECTED						
Owner Operated (#)	37	51	43-47	56-60	41-44	54-57
Rented (#)	40-41	54	51-58	64-70	46-49	59-61
Total (#)	77-78	105	94-105	120-130	87-93	113-118
LAND ACQUISITION						
Owner Operated (Ac)	51	229	318-343	503-536	148-187	325-370
Rented (Ac)	49-60	209-225	265-285	415-437	144-146	319-321
Total (Ac)	100-112	438-453	583-628	918-973	292-333	644-691
Est. Market Value ($000)	215-244	969-1010	1203-1382	1872-2068	754-825	1363-1527
LAND ACQUISITION BY TYPE						
Cropland-Prime (Ac)	84-96	395-411	474-497	801-831	257-299	585-635
Other (Ac)	12	25	67-89	67-93	32	41
Pasture	-	8	38-40	40-42	-	5
Other (Ac)	4	10	1-5	9-11	2	9
SEVERANCE & TRIANGULATION						
Properties Affected #	7	9	22-29	24-31	15-16	18-19
Sev. Dam. Area (Ac)	34	34	264-535	270-541	177-240	182-242
Trian. Front. (Miles)	2	2	12-19	15-19	10-11	10-11
Damage ($000)	32	39	123-165	133-175	104-109	115-120
FARMSTEAD IMPACTS						
Displacements Farm Res (#)	-	-	-	-	-	-
Nf. Res. (#)	1	3	2-3	2-3	1	2
Farm Blgds. (#)	2	4	2-3	4-5	2	6
Encroachment Farm Affect (#)	2	8	6-11	12-18	4-5	9-11
Damage ($000)	11	67	30-54	93-117	17-23	76-87
TILE IMPACTS BY PROPERTY						
Major (#)	18	28	25-29	36-43	25-26	37-40
Minor (#)	24	30-31	23-24	28-31	26-27	31-33
IMPACT RATING BY PROPERTY						
Minimal (#)	69-70	86	62-77	81-95	68-80	86-97
Small (#)	5	9	11-20	14-22	7-14	12-18
Moderate (#)	3	8	11-15	14-18	4	8
High (#)	-	2	2	3	2	3

TABLE 26

PRIME CROPLAND PRODUCTION LOSS
(Due to Farmland Acquisition)

Yield	Existing Alignment		Existing-Worthington to St. James New Windom to St. James		Existing-Worthington to Mountain Lake New-Mountain Lake to St. James	
	2 Lane	4 Lane	2 Lane	4 Lane	2 Lane	4 Lane
Corn (Thousand Bushel)	5	22-23	27-28	45-47	15-17	33-36
Soybean (Thousand Bushel)	1 1/2	7	8	14	4-5	10-11
1979 Production Value* ($ Thousand)	19	85-87	100-102	171-175	53-63	124-136
Percent of Study Area Production *	.007	.03	.04	.07	.02	.05

* See Table 19 for Study Area Production and Production Values.

TABLE 27

FARM IMPACT COMPARISON - ALIGNMENT VARIATIONS

	HERON LAKE (Existing)				WINDOM (New)		
	Inner		Outer		Outer		
	2-Lane	4-Lane	2-Lane	4-Lane	Inner	TH 71 Int.	CSAH 26 Int.
Properties Affected							
Owner Operated (#)	1	2	1	2	7	7	7
Rented (#)	2	2	2	2	11	8	9
Total (#)	3	4	3	4	18	15	16
Land Acquisition							
Owner Operated (Ac)	Neg	7	-	6	94	95	101
Rented (Ac)	1	2	12	18	128	162	116
Total	1	9	12	24	222	257	217
Est. Market Value ($000)	1	9	30	49	401	385	365
Land Acquisition by Type							
Cropland-Prime (Ac)	2	9	12	24	113	145	107
Other (Ac)	-	-	-	-	67	68	68
Pasture (Ac)	-	-	-	-	38	40	40
Other (Ac)	-	-	-	-	4	4	2
Severance and Triangulation							
Prop. Affected (#)	-	-	2	2	12	10	10
Sev. Dam. Area (Ac)	-	-	13	13	120	197	195
Triang. Front. (miles)	-	-	1	1	6	9	8
Damage ($000)	-	-	45	45	40	53	44
Farmstead Impacts							
Displacements:							
Farm Res. (#)	-	-	-	-	-	-	-
NF. Res. (#)	-	-	-	-	1	-	-
Farm Bldgs. (#)	-	-	-	-	1	-	1
Encroachment:							
Farm Affect (#)	-	-	-	-	1	3	3
Damage	-	-	-	-	12	24	24
Tile Impacts							
Major (#)	-	-	-	-	2	2	2
Minor	-	-	-	1	1	2	2
Impact Rating by Property							
Minimal (#)	3	4	3	4	3	1	2
Small (#)	-	-	-	-	8	6	6
Moderate (#)	-	-	-	-	7	8	8
High (#)	-	-	-	-	-	-	-

TABLE 27 (Cont'd)

FARM IMPACT COMPARISON - ALIGNMENT VARIATIONS

	BINGHAM LAKE (New)				MOUNTAIN LAKE (New)				BUTTERFIELD (New)			
	Inner		Outer		Inner		Outer		Inner		Outer	
	2-Lane	4-Lane	2-Lane	4-Lane	2-Lane	4-Lane	2-Lane	4-Lane	2-Lane	4-Lane	2-Lane	4-Lane
Properties Affected												
Owner Operated (#)	3	3	5	5	5	5	5	5	6	6	8	8
Rented (#)	2	2	2	2	7	7	8	8	3	3	5	5
Total (#)	5	5	7	7	12	12	13	13	9	9	13	13
Land Acquisition												
Owner Operated (Ac)	41	58	54	79	70	83	64	81	58	82	47	66
Rented (Ac)	11	17	10	14	22	27	24	27	29	34	28	37
Total (Ac)	52	75	64	93	92	110	88	108	87	116	75	103
Est. Market Value ($000)	112	159	127	186	209	250	198	250	271	340	180	246
Land Acquisition by Type												
Cropland-Prime (Ac)	52	75	62	90	71	88	88	108	87	116	75	103
Other (Ac)	-	-	2	3	21	22	-	-	-	-	-	-
Pasture (Ac)	-	-	-	-	-	-	-	-	-	-	-	-
Other (Ac)	-	-	-	-	-	-	-	-	-	-	-	-
Severance and Triangulation												
Prop. Affected (#)	-	-	3	3	6	6	5	5	5	5	4	4
Sev. Dam. Area (Ac)	-	-	114	114	61	61	44	44	156	156	93	93
Triang. Front. (miles)	-	-	3	3	4	4	3	3	5	5	4	4
Damage ($000)	-	-	24	24	31	31	26	26	50	50	50	50
Farmstead Impacts												
Displacements:												
Farm Res. (#)	-	-	-	-	-	-	-	-	-	-	-	-
NF. Res. (#)	1	1	-	-	-	-	-	-	-	-	-	-
Farm Bldgs. (#)	-	-	1	1	-	-	-	-	1	1	1	1
Encroachment:												
Farm Affect (#)	-	-	2	2	3	3	2	2	2	2	3	4
Damage ($000)	-	-	4	4	6	6	3	3	15	20	20	30
Tile Impacts												
Major (#)	3	3	5	5	4	5	3	3	6	7	7	10
Minor (#)	-	-	-	-	2	2	1	1	1	1	1	1
Impact Rating by Property												
Minimal (#)	5	5	5	5	5	5	10	10	3	3	10	10
Small (#)	-	-	-	-	4	4	1	1	5	5	2	2
Moderate (#)	-	-	2	2	3	3	2	2	-	-	-	-
High (#)	-	-	-	-	-	-	-	-	1	1	1	1

thousand bushels of corn and 1 1/2 to 14 thousand bushels of soybeans, with a production value of $19 to $175 thousand at 1979 typical prices. These losses represent from .007 percent to .07 percent of the total $255 million production value for corn and soybeans in the four-county study area.

To help mitigate the impact of prime farmland acquisition, Mn/DOT has accepted reduced median and right-of-way standards for four-lane construction, as described in the Alternatives Section. As a result, the four-lane alternative acquisition acreage in Table 25 is approximately thirty percent lower than normal requirements. Under either the two- or four-lane new alignment alternatives, an additional mitigative measure is the proposed obliteration and reclamation of existing TH 60 rural sections for farmland use. Locations proposed for farmland reclamation are shown on the maps in Appendix A. Farmland reclamation experience on prior railroad and highway abandonment sections has shown that with proper regrading, the reclaimed cropland typically produces 50 to 60 percent of normal yield in the first year, reaching 90 percent or greater production within about five years. Soil borings for TH 60 have shown that the existing roadbed base is primarily topsoil of depths up to 7 or 8 feet. With proper regrading and soils scarification, nearly full production value can likely be obtained along the reclaimed TH 60 sections.

With a new alignment from Windom to St. James, approximately 230 acres of existing TH 60 right-of-way would be reclaimed for farmland. This reclamation would reduce prime cropland loss to a net of approximately 250-270 acres for two-lane acquisition or 570-600 acres for four-lane acquisition, reducing net taking by approximately 45 percent and 30 percent, respectively. With new alignment from Mountain Lake to St. James, approximately 140 to 150 acres would be reclaimed, depending on the location of the railroad crossover from existing to new alignment. This reclamation would reduce prime cropland loss to a net of approximately 120-150 acres for two-lane acquisition or 430-480 acres for four-lane acquisition, reducing net taking by approximately 55 percent and 25 percent, respectively.

Severances and Triangulation

In addition to direct land acquisition, the various alternatives produce new severance and triangulation of farm properties. Severance occurs when a formerly contiguous property is divided into two or more sections. Triangulation occurs when the new property line creates angular crop row ends, which decrease the efficiency of farming operations.

Severances and triangulation impacts are shown in Table 25. These damages are minimal for the existing alignment alternatives, occurring primarily in the short roadway realignment sections near Butterfield and Bingham Lake. With a new alignment from Windom to St. James, a total of approximately 270 to 540 acres would be severed from the main farmsteads by either two-lane or four-lane acquisition. Similar severances would be approximately 180-280 acres with new alignment from Mountain Lake to St. James only, depending on the alignment variation selected.

Additional triangulation would occur along approximately two miles of property frontage under the existing alignment alternative. Under the partial new alignment alternatives, additional triangulation would occur along approximately

10 to 19 miles of farm property frontage, including frontage for required township and county road relocations.

Estimated damage costs for triangulation and severance impacts range from approximately $30 thousand for existing alignment alternatives up to $175 thousand for the most damaging partial new alignment alternative. Damage payments would be included in the property acquisition settlements to help mitigate the impact on the affected owners.

Additional mitigative options would be available to affected landowners. The exchange of severed parcels would be possible when two or more adjacent landowners would each suffer separation of a small parcel, small meaning too small to farm efficiently. The exchange of properties which puts a small inefficiently farmable piece in with a larger more efficiently farmable parcel would substantially mitigate the severance and triangulation damages.

Another option, should there be no possible exchange, is to sell the severed and triangulated parcel to an adjacent landowner. In most cases, there will be only one or two potential buyers. As the supply of buyers is limited, the owner (seller) would be at a disadvantage and sell at a depressed price. This is a damage factor considered when arriving at damage amounts payable to landowners.

A third and the least corrective option is the specialized use of a severed and triangulated parcel. An example is the use of the parcel for hay land with no new crop farming. This is, of course, dependent upon the landowners operation, need for hay land, and availability of equipment. Generally, the first two options listed would be the most effective in mitigation of severance and triangulation damages.

Farmstead Impacts

No farm residences would be displaced by any of the alternatives. However, from one to three non-farm residences located on farm properties would be displaced. Displacement of these non-farm residents was previously discussed. In addition, from two to six farm buildings will be displaced. In each case, owners would be compensated at fair market value for the acquisition.

Significant encroachment damaging the farmstead but not actually displacing a residence or buildings occurs at an additional 2 to 8 properties on the existing alignment alternatives, and 4 to 18 properties on the partial new alignment alternatives. Estimated encroachment damages range from $11 to $117 thousand, as shown in Table 25.

Tile Impacts

Construction of all the build alternatives will require some reconstruction of existing farm drainage tile systems. Based on data collected in the Farm Inventory, field reconnaissance and photos, the extent of farm drainage modification was estimated for all affected farms. From 18 to 43 properties will require minor drainage system modifications. An additional 24 to 33 properties will require more extensive modification. Costs for necessary reconstruction or restoration is included in the construction cost estimates for each alternative.

Overall Impact Ratings

The combined effect of property acquisition, severance and triangulation, farmstead and tile impacts was evaluated on an individual farm operation basis, based on the size, ownership, operational and related data gathered on each farm in the Farm Inventory. While the percent of operation to be acquired was used as the general guideline, it was departed from when the other factors were found to be significant.

Impact ratings were assigned to each property as follows:

1). Minimal - The minimal rating generally was applied when 5 percent or less of a total operation was required for right-of-way purposes, including no severance and very little, if any, additional triangulation. Farm operations should be able to continue with little or no modification being caused by right-of-way acquisition.

2). Small - This rating includes 6 - 10 percent of the total operation being taken for right-of-way, which may include a small triangulation and/or severance problem. Lesser valued farm buildings may be taken. No significant effect on farm operations.

3). Moderate - From 10 - 15 percent of the farm operation is taken for right-of-way purposes which may include substantial triangulation and some severance creating operational difficulties. Tile lines may need replacement, could also include encroachment to inhabited structures or loss of some landscaping amenities.

4). High - Above 15 percent of farm operation is taken for right-of-way purposes. Inhabitable structures may be taken or severely encroached upon. Serious triangulation and severance problems might be found creating substantial difficulties in conducting efficient farming operations. Severed parcels may need to be sold or exchanged due to improbability of continued operation by land owner.

As shown in Table 25, the majority of individual impacts are rated as minimal, particularly for the existing alignment alternatives. The number of moderate or high impact properties are greatest under either the two- or four-lane alternatives on new alignment from Windom to St. James.

Impact Comparison of Variations

Farm impact comparisons for each of the alignment variations are shown in Table 27. Except for the amount of land acquisition required, differences between two-lane and four-lane alternatives are minimal for any of the variations.

At Heron Lake, the outer location has a slightly greater farm impact, although farm impacts are relatively minor on either inner or outer location. At Windom, farm impacts are similar for either the inner location or the outer location with a CSAH 26 interchange. Overall farm impacts are slightly greater for the outer location, TH 71 interchange option.

At Bingham Lake, the outer location produces the greatest farm impact, particularly with respect to severance and triangulation. However, the differences are not considered highly significant with respect to the overall project.

At Mountain Lake, the number of properties affected and total acquisition acres are relatively similar under either the inner or outer option. However, higher severance and triangulation and the characteristics of the affected properties results in higher impact effects on individual farm properties under the inner variation.

At Butterfield, the number of farm properties affected is higher under the outer alignment, but total land acquisition, severance and triangulation, and severity of individual impact is somehwat greater for the inner variation.

Market Accessibility

As discussed in the "Purpose and Need" section, TH 60 provides an essential link in the flow of grain, livestock and poultry products from farm to market, and delivery of supplies to the farm. Of particular importance is the short-haul transport of livestock and soybeans to intermediate processing points such as Sioux Falls, Worthington, Windom and Mankato. Together, livestock and soybeans account for roughly three-quarters of farm income and production in the study area.

Truck transportation via TH 60 also provides access to CNW mainline grain elevators for subsequent long-haul rail shipment of corn, which accounts for the remaining one-quarter of area farm production, to coastal and inland waterway export terminals. It further affords study area farmers an alternate means of access to the Twin Cities market during periods of rail-car shortage or major price differentials.

Comparative access times to these markets from points within the study corridor are shown in Table 28. The estimates are based on projected traffic and roadway conditions with "no action" to improve TH 60, versus the existing and partial new alignment improvement alternatives. Travel time savings vary from two to nineteen minutes, which produce a time savings of three to thirty percent, depending on the market destination and alternative selected.

Savings are generally greatest for partial new alignment alternatives, which avoid in-town speed reductions and delays. Four-lane reductions are greater than two-lane, although overall time differences are not substantial. Savings under "constrained" traffic conditions would be slightly less than shown. Savings with a new alignment from Mountain Lake to St. James would be between those shown for "Existing" and "New Alignment - Windom to St. James" improvement alternatives.

Under "no-action", reliability of market access would decrease with further deterioration and obsolescence of the roadway, particularly during spring thaw conditions. Future load restrictions, recurrent delays for patching and overlay construction, and operation over rough pavement conditions are probable, and temporary road closings are possible. All of the above conditions would add to transportation and food costs for both the farmer and consumer.

TABLE 28

COMPARATIVE MARKET ACCESS
(Design Traffic Conditions)

Market Area	No Action Driving Time	Time Savings Compared To No-Action							
		Existing Alignment				Existing: Worthington to Windom New: Windom to St. James			
		2 Lane		4 Lane		2 Lane		4 Lane	
From	Hr:Min	Min	%	Min	%	Min	%	Min	%
Sioux Falls									
St. James	2:25	10	7	14	10	14	10	19	13
Mountain Lake	2:10	8	6	11	9	9	7	13	10
Windom	1:50	5	5	7	6	5	5	7	6
Heron Lake	1:30	2	2	3	3	2	2	3	3
Worthington									
St. James	1:15	10	13	14	19	14	19	19	25
Mountain Lake	0:56	8	14	11	20	9	16	13	23
Windom	0:37	5	14	7	19	5	14	7	19
Heron Lake	0:20	2	10	3	15	2	10	3	15
Windom									
St. James	0:33	5	15	7	21	7	21	10	30
Mountain Lake	0:14	3	21	4	29	3	21	4	29
Heron Lake	0:16	3	19	5	31	3	19	5	31
Mankato									
Mountain Lake	0:55	2	4	3	5	3	5	4	7
Windom	1:10	5	7	7	10	7	10	10	14
Heron Lake	1:30	8	9	11	12	11	12	15	16
Worthington	1:55	10	9	14	12	14	12	19	17
Twin Cities									
Windom	2:55	5	3	7	4	7	4	10	6
Worthington	3:35	10	5	14	6	14	6	19	9

NON-FARM BUSINESS IMPACTS

Potential economic impacts on non-farm business can be grouped into four general categories:

1) Relocation Impacts

2) "Bypass" Effects

3) Other Traffic/Parking Changes

4) Economic Stimulus Impacts

Relocation impacts due to right-of-way acquisition were previously discussed in the "Relocation Impacts" section. The latter three categories are discussed below.

"Bypass" Effects

The new alignment alternatives can be expected to adversely affect several traveler-oriented businesses on existing TH 60 in Windom, Mountain Lake and Butterfield. Some will likely relocate or modify their businesses to avoid losses, while others may decide to cease operation. However, overall community business activity is not expected to be significantly affected.

Actual experience with bypass routes does not support the belief that a reduction in through-town highway traffic will have an overall adverse effect on community businesses. A Federal Highway Administration evaluation (Table 29) of bypass study findings for 45 areas showed that while traffic declined considerably in most of the towns, few experienced overall losses in retail sales. Related analysis of 24 bypass studies affecting 72 communities showed that while restaurant and motel sales declined by 13 and 23 percent, respectively, service station sales were minimally affected and overall retail sales for all establishments increased by 8.5 percent. Comparisons with control areas without bypasses confirmed that little overall economic impact occurred as a result of the bypasses.

The prior bypass experience has shown that certain businesses catering largely to the needs of transient motorists -- service stations, motels, restaurants, and tourist gift shops -- will likely be adversely affected if they remain at their original location along the old route. Service stations and restaurants are able to adjust in some cases by reorienting their merchandise and services to local trade. Business serving largely local community needs are generally little harmed, if at all, and may experience benefits due to improved shopper convenience and reduced congestion.

Apparent impacts of the recently completed St. James bypass at the north end of the study corridor tend to confirm the above findings. A recent St. James newspaper account, shown in Figure 10, indicates that with the exception of certain traveler-oriented business, most St. James businesses rely on local trade and have experienced little change.

To help assess the effects of new location alternatives from Windom to St. James, the number and characteristics of the traveler-oriented businesses located on

TABLE 29

CHANGE IN RETAIL SALES AND TRAFFIC IN BYPASSED CITIES AND TOWNS

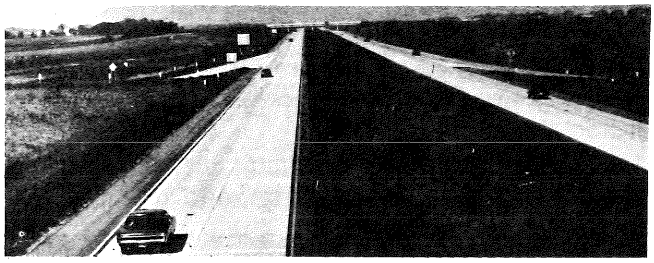
Population-Size Class	Areas With Gains in Sales (Number)	Areas With Losses in Sales (Number)	Average Decrease Bypassed Route (Percent)
Less than 1,000	3	2	Not Available
1,000 - 3,000	6	1	47
3,000 - 5,000	7	0	40
5,000 - 10,000	9	1	30
10,000 - 25,000	13	2	41
Over 25,000	1	-	Not Available
TOTAL	39	6	--

SOURCE: U.S. Department of Transportation, Federal Highway Administration, Social and Economic Effects of Highways, 1974.

Bypass survey

THE PLAINDEALER Wednesday, June 25, 1980

City businesses experience some trade loss



Bypass is busy with cars and trucks

But the downtown area is still filled with cars

by Joan Jacobson

Travellers, whizzing along Hwy. 60 around St. James, may miss the city's sights and sounds, but local businesses seem little bothered by their absence. A consensus of opinion seems to be that while city businesses may have lost some tourist trade since Hwy. 60 was re-routed around St. James six months ago, most rely on local trade and have therefore experienced little decline. Official opening of the bypass was in December.

Two notable exceptions are John's North Star station and the St. James Motel, both located on the west edge of the city. "Being the end station, I was the first one they hit coming in (before the new highway was constructed)," John Hoffman commented. "It's hard to say, but I've probably dropped 30 to 40 percent (in gasoline sales)."

GLORIA LOURIS says the situation at the St. James Motel is "bad." Last year, she said, the motel was almost always full. This year two or three rooms a night are all that are usually taken. "I think with the highway they don't know where we are anymore," she said.

The Crescent Cafe has also noticed a decline, though smaller. Marv Gore could only very roughly estimate that the loss was 10 to 15 percent, though noting that the Crescent used to get a lot of tourist trade.

Neither the A&W nor the Lakeshore restaurants have experienced any significant decline in business. They both rely on local trade. At the A&W, Bonnie Hanson noted that the only difference was that trade is steadier now. There are fewer holiday root beer rushes.

WEEKEND BUSINESS is down some at DeToy's Lakeshore, reports Pat DeToy, but not a lot. Some travellers, who know of the restaurant from before the re-routing of the highway, still stop there to eat, she says.

With the exception of the North Star, local service station owners have seen only a small decline, if any, in gasoline trade, and no decline in service work. Whether the loss of gasoline business is due to the highway or to high prices is hard to determine. Gasoline a year ago was selling at about 90 cents a gallon, now it's about $1.22.

Steve Hudson noticed that his Phillips 66 station picked up quite a few customers when the Standard station closed downtown. Standard's closing has been attributed by some people to the re-routing of Hwy. 60.

George Haler, petroleum manager at Watonwan Farm Service, said they see no change there, jokingly adding, "The only highway travellers we ever got were those that missed the stop sign."

DOWNTOWN BUSINESSES have seen little change. Bert Swenson says only a few tourists ever stopped at Sward-Kernp, and they only purchased small items, like dramamine for children who were car sick.

"I know there was a lot of talk beforehand . . . but we haven't noticed any difference at all," says Jean Solheid, owner of the Clothes Tree. Business is up at the Clothes Shop, according to Butch Nordby. "I don't know if that has anything to do with the highway or not," he laughed.

Other business people commented that there are fewer unfamiliar faces around, and that the streets are more quiet, but business is going on as usual since Hwy. 60 circled St. James, changing the city from a bridge to an island.

FIGURE 10

Source: The St. James Plaindealer

existing TH 60 in Butterfield, Mountain Lake and Windom were surveyed in the 1978 Citizens Advisory Committee studies. Since the survey, an additional restaurant has opened on TH 60 in Windom and various ownership changes have occurred. Further changes are likely before any new TH 60 facility could be constructed. Some other businesses such as auto and farm implement dealers or drug stores may experience minor sales loss, but are primarily local trade dependent. The survey data is considered to provide a reasonable indicator of the extent and character of business activity along TH 60 for the most sensitive business types.

A summary of the survey findings is shown in Table 30. A total of 29 such businesses were identified, with a gross annual sale of $8 million, representing approximately six percent of total gross sales in the three cities. Reliance on through traffic customers and opinions regarding anticipated business effects varied considerably.

The Mountain Lake to St. James New Alignment Alternative would have the least effect, bypassing existing businesses only in Mountain Lake and Butterfield. While most of the eleven traveler-oriented businesses anticipate a business decrease, a majority indicate a basic dependence on local trade and that they would likely continue operations. New gas station and restaurant facilities near the proposed new alignment interchanges at Butterfield and Mountain Lake would avoid a net business loss to the community, but could further draw from the existing, in-town facilities. Control of such development is discussed in the "Land Use Planning" section.

The minimal probable impact on overall community business is further reflected in the fact that the traveler-oriented businesses represent only two percent and four percent, respectively, of gross sales activity in Butterfield and Mountain Lake. Moreover, many other businesses on or near existing TH 60 will likely benefit from improved shopper convenience and shopping environment created by traffic reduction. Anticipated traffic reductions in the downtown business areas are approximately 50 percent in Mountain Lake and 75 percent in Butterfield. Reduced traffic conflicts and noise levels will enhance pedestrian shopping activity and provide for easier and safer parking.

An additional 19 traverler-oriented businesses in Windom (including the recently opened restaurant) would be bypassed by the Windom to St. James New Alignment Alternative. These businesses represent a higher proportion of total community sales - approximately 7 percent - and have indicated a somewhat greater reliance upon through traffic. Business owners on existing TH 60 in Windom have submitted a petition favoring retention of the throughtown routing. Potential benefits of traffic reduction to other businesses along TH 60 are less in Windom than in Mountain Lake and Butterfield since (1) pedestrian activity is low, (2) on-street parking is prohibited and (3) through traffic volumes are lower (the anticipated traffic volume reduction due to the bypass is approximately 30 percent).

Proposed design characteristics and timing for a new alignment bypass of Windom should help to minimize impacts on the existing businesses. Directional interchange layouts at each end of town are designed to route local-destined traffic and travelers in need of services into Windom along existing TH 60. Figure 11 from the Windom Comprehensive Plan illustrates this relationship. Access and

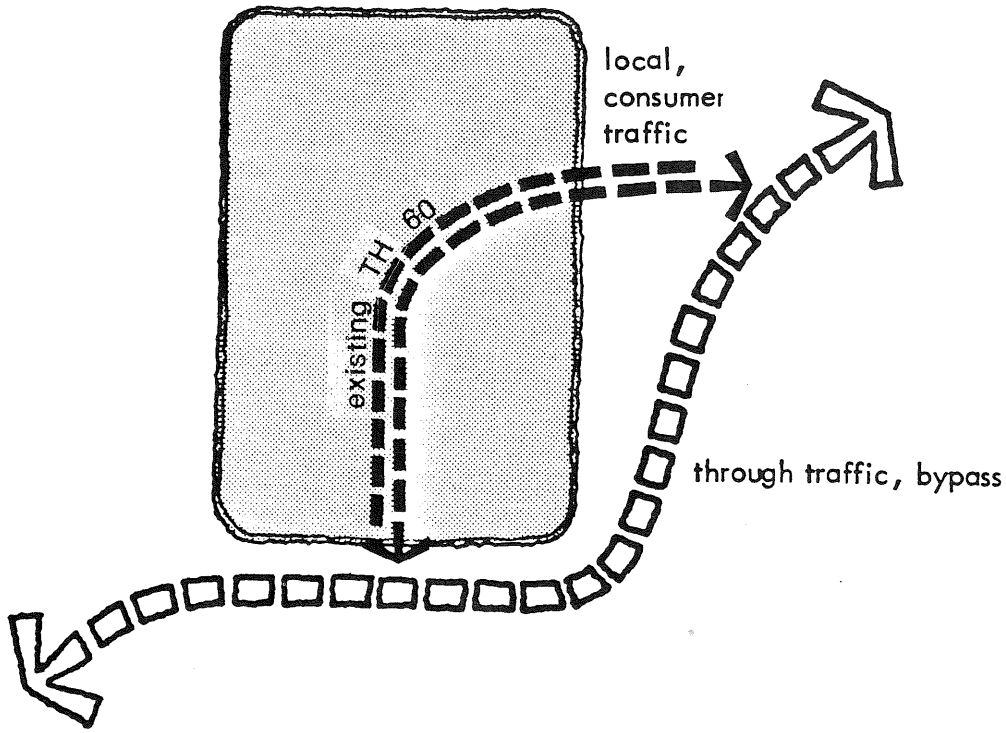
TABLE 30

1978 SURVEY OF TRAVELER-ORIENTED BUSINESSES ON T.H. 60

	Butterfield	Mt. Lake	Windom	Total
No. of Businesses - Total	3	8	18	29
Service Stations	2	5	8	15
Restaurants	1	2	6	9
Motels	-	1	4	5
No. of Employees				
Full Time	6	36	87	129
Part Time	3	14	134	151
Approximate Gross Annual Sales				
Surveyed Business Sales (millions of dollars)	0.2	1	7	8
Approximate % of Total Town Sales	2	4	7	6
Approximate % Through Traffic Customers (# responses)				
0-25%	-	4	5	9
25-50%	3	1	6	10
50-75%	-	3	4	7
75-100%	-	-	3	3
Expected Effect of Bypass on Sales (# responses)				
increase	1	-	-	1
decrease	1	6	14	21
no change	1	2	3	6
uncertain or no opinion	-	-	1	1
Expected Decision if Bypass is Built (# responses)				
same location & operation	1	5	8	14
same location, change operation	1	-	7	8
likely relocate	-	-	3	3
likely cease operations	-	3	3	6
no opinion	1	1	1	3

SOURCE: TH 60 Citizens Advisory Committee, TH 60 Improvement Study, (Working Paper Notebook), July 1978.

land use controls along the bypass, as discussed in the "Land Use Planning" section, would avoid undesirable competing business development. Since the Windom bypass section would not likely be constructed before the late 1990's under the proposed staging plans, more than adequate time would be allowed for the community and individual businesses to plan for the new route.



TRAFFIC ROUTING

FIGURE 11

Source: Windom Comprehensive Plan

At Heron Lake, the short "outer" realignment would avoid the displacement of three gas stations and miscellaneous other businesses required for "inner" alignment reconstruction, but would have the effect of bypassing these businesses. While most would remain fairly accessible to the new CSAH 9 intersection, it is probable that gas stations sales would likely be adversely affected. At least one would likely find a need to relocate to a site near either the new CSAH 9 or CSAH 24 intersections. The remaining businesses are primarily local service oriented and should not be seriously impacted.

Other Traffic/Parking Changes

Proposed traffic operations improvements in Mountain Lake and Butterfield under the Existing Alignment reconstruction alternative will require the removal of on-

street parking from TH 60. Such parking is currently prohibited in Windom. Together with new turn-lanes, traffic signals and some sidewalk reconstruction, the parking removal will help reduce traffic conflicts and congestion and improve pedestrian safety and access to existing businesses on TH 60. Such improvements would, however, have significantly less beneficial effect than through traffic diversion under the new alignment alternatives.

Convenience of curb-side spaces directly in front of existing businesses would be eliminated. To help offset this on-street parking loss, Mountain Lake and Butterfield should develop plans for nearby replacement off-street parking. Parking counts and observations indicate that approximately 20 replacement off-street spaces would be required in the Mountain Lake business district. Approximately 10 replacement spaces would be required in Butterfield. In Mountain Lake, recent construction of off-street parking in conjunction with the new shopping mall on TH 60 at 11th Avenue has helped to reduce on-street parking needs. Mn/DOT would provide technical assistance to the cities in developing plans and if necessary, applying for acquisition and construction financial aid.

Businesses in the cities would also experience inconveniences and access disruption due to construction activities for the Existing Alignment alternative. Those disruptions would be avoided by the New Alignment alternatives. To help minimize the disruptions, it is anticipated that the construction can be sequenced to maintain one lane of traffic in each direction, although operating conditions would be reduced. Modifications of local crossroads and driveways will alter circulation to various businesses on Heron Lake, Windom and Wilder. However, access will be maintained in each case.

Economic Stimulus Impacts

Construction activity for the proposed improvements would create jobs and generate a related influx of capital into the study area. Approximate hours of employment generated by the alternatives, based on the estimated construction costs and U.S. Department of Labor statistics for federally-aided highway construction, are summarized below.

TABLE 31
ESTIMATED CONSTRUCTION GENERATED EMPLOYMENT
(Million Hours)

	Existing Alignment		Exist Align - Worth. to Windom New Align - Windom to St. James	
	2-lane	4-lane	2-lane	4-lane
On-site	2.3	3.7	3.1	4.5
Off-site	0.3	0.4	0.3	0.5
Induced	3.2	5.3	4.4	6.3
TOTAL	5.8	9.4	7.8	11.3

Note: New Alignment-Mt. Lake to St. James would fall within the range shown.

Initial two-lane construction would generate approximately 6 to 8 million employment hours; future dualization would add approximately 3 1/2 million employment hours. Included with actual on-site construction employment are indirect economic effects characterized as off-site (for materials, supplies and other support services) and induced (multiplier effect of construction income and sales injected into the general economy). Construction at a rate enabling completion of initial two-lane construction and future dualization in approximately 15 and 25 years, respectively, would provide about 140 to 190 jobs annually. While some of the employment, materials acquisition, and related economic impact would occur outside the corridor, local and regional businesses will likely receive a substantial portion of the economic benefits. The added employment would also help to maintain the prime labor force, a major goal of the Southwest Regional Development Commission.

A similar indirect economic stimulus to area businesses would be provided by the improved market accessibility for agricultural products and improved potential for attracting industrial employment to the corridor. Transportation savings for the farmer and increased industrial employment and wages would likely be transformed into additional sales of goods and services for local businessmen.

COMMUNITY IMPACTS

Neighborhoods

Established, moderate-density residential neighborhoods with high pedestrian dependency directly adjoin and are severed by existing TH 60 in Mountain Lake and Butterfield. Heavy through and truck traffic volumes adversely affect pedestrian safety, particularly for the substantial aged and youth populations, as well as the overall character, quietude and cohesion of the neighborhoods. These negative effects would be aggravated by traffic increases anticipated under either no-action or existing alignment improvement alternatives. Diversion of through traffic to a new alignment south of the towns would enhance the character and livability of the in-town neighborhoods by significantly reducing traffic activity, pedestrian and bicyclist hazards, and noise levels (5 to 15 dBA reduction, see "Noise Impacts" section) along existing TH 60.

The inner new alignment alternative would affect a newer, low-density suburban-type subdivision at the south edge of Mountain Lake. One residence would be displaced and six other separated from the remainder of the town. While access would be maintained by a new service road, the more circuitous route would adversely affect both resident convenience and provision of city services to the area. Other residences at the south fringe of both Mountain Lake and Butterfield, and along CSAH 5 in Butterfield, would experience noise level increases and visual impact with the introduction of the new alignment alternatives. However, the extent of impact and number of affected residences is small compared to the potential positive in-town neighborhood effects along existing TH 60.

In Windom, TH 60 and the CNW railroad separate the eastern and western portions of the town. However, residential neighborhoods do not, for the most part, directly adjoin TH 60. Pedestrian activity along and across TH 60 is relatively limited. Auto and rail oriented commercial and industrial uses border most of TH 60 and

can be expected to remain with or without a new alignment to the east of town. Pedestrian oriented shopping and community facilities are generally located away from TH 60. Projected noise level reductions with diversion of through traffic to a new alignment east of Windom are small (3 to 4 dBA). Thus, beneficial effects for in-town neighborhoods would be minor in comparison to Mountain Lake and Butterfield. Existing fringe residential development along CSAH's 13 and 17 east of Windom would receive proximity noise and visual impacts from a new alignment alternative; however, community ties to Windom and minimal pedestrian activity would not be altered.

At Heron Lake, widening of the existing highway right-of-way and displacement of buildings would increase the separation between the small residential neighborhood north of TH 60 and the remainder of the town. The outer location realignment to the north of the residential area would help to integrate this neighborhood with the main portion of TH 60, particularly by reducing the hazard to pedestrian interaction. However, overall character and noise intrusion in the neighborhood would not significantly change due to the continued close proximity of TH 60.

At Bingham Lake, a small, rural-character neighborhood south of the CNW railroad would be further separated from the remainder of the town by the inner new alignment alternative. Crossing access would be maintained at CSAH 2 but pedestrian and psychological ties would be weakened. The outer new alignment alternative would avoid the neighborhood separation; however, significant neighborhood noise level increases (5 to 10 dBA) due to the proximity of the alternative new alignments would be similar in either case.

Schools

None of the TH 60 improvement alternatives would require altering of school bus routes in the seven independent school districts potentially affected, since all current roadway crossings of TH 60 are maintained, either at-grade or with new grade crossings. The wider lanes, paved shoulders, turn lanes and increased sight distances will provide safer conditions at pickup locations and reduce hazards for school bus travel on and across TH 60.

The proposed TH 60 improvements are in close proximity to school facilities and require pedestrian school crossings at only two locations--Butterfield and Mountain Lake. Both occur on the existing alignment within the respective towns.

The Butterfield Public School, serving grades kindergarten through twelve, is located directly on TH 60. Heavy truck and through traffic volumes present a crossing hazard for students living south of the roadway and create noise disturbance. Projected noise levels under the no-action or existing alignment alternatives approach Federal and exceed State noise level standards (see "Noise Impact" section). On-street parking in front of the school adds to the crossing hazard. Such parking would be removed under the existing alignment upgrade and would require replacement off-street parking. The new alignment alternatives would significantly reduce both noise levels and traffic hazard conflicts at the school by eliminating through traffic movements.

Mountain Lake's schools are similarly affected by through traffic conflict with school pedestrian crossing for students living south of existing TH 60. The new

alignment alternatives would reduce the hazard by rerouting through traffic south of the city. Noise levels at the schools, located a block to the north of existing TH 60, will not be significantly altered by any of the alternatives.

At Heron Lake, students from the small residential area north of TH 60 are presently bused to school to avoid the need to cross TH 60. Such provision would likely be retained under the no-action or inner existing alignment alternatives. Under the outer alignment alternative, the need for busing would likely be eliminated.

Impacts on the school districts due to lost real estate tax base are discussed later in this section.

Parks

Four parks are subject to potential impacts -- all lie along or near the existing alignment.

Lommen Park in Windom is a small, 0.6 acre wayside rest area maintained by Mn/DOT and located within the existing TH 60 right-of-way. Proposed in-town improvements under the existing alignment improvement alternative would alter the park by closing access between the adjoining service road and TH 60 at 13th Street -- the northern limit of the existing park. The net result will be to slightly increase the size of the park, which will retain its current picnic and drinking well facilities. Further details on the modification and impact are discussed in the "Impacts on Section 4 (f) Properties" section.

Island Park, Windom's major athletic recreational facility, lies between TH 60 and the Des Moines River south of TH 62. However, no modifications are proposed to the existing four-lane TH 60 in this location and anticipated traffic changes will not significantly alter prevailing noise levels or park access.

Mountain Lake's 2.5 acre City Park, containing playground, picnic, sitting and band shell facilities adjoins existing TH 60 in the center of the city. Proposed existing alignment improvements would not encroach on the park, and traffic and noise levels would remain similar to the no-action conditions. The new alignment alternative would benefit the park by improving pedestrian safety and access and reducing noise intrusion with the diversion of through traffic from existing TH 60.

Access to Heron Lake's Memorial Park, a 20-acre athletic field located a block north of TH 60, would be altered by township road relocation under the proposed improvements. The new TH 60 intersection and CNW railroad crossing for the relocated township road on the inner location alternatives should improve accessibility from the southern portion of the town. Access under the outer location realignment would become somewhat more circuitous, but should remain adequate. None of the alternatives would physically encroach on the park property or significantly alter environmental conditions within the park.

Other Community Facilities and Services

No community facilities would be displaced by any of the alternatives. Existing alignment alternatives would, however, require:

1) Acquisition of 0.6 acres of land from the First Baptist Church property in Windom for a service road relocation.

2) Acquisition of 0.1 and 0.7 acres from Hersey Cemetery (Hersey Township) for two-lane and four-lane improvements, respectively. No gravesites are located in the affected portion of the cemetery.

Rural residents are dependent on vehicular access, whether by private auto or paratransit services, for access to services and facilities in the corridor communities. Safety and convenience of access would be enhanced by the proposed TH 60 improvements. Emergency vehicle access to rural farms and residences would be similarly improved. Under the no-action alternative, deteriorating roadway conditions and increased traffic demands would result in critical delays in emergency situations, producing significant adverse impact.

Diversion of through traffic from existing TH 60 to a new alignment outside of Mountain Lake, Butterfield and Windom would further:

1) reduce traffic conflicts for emergency vehicles entering or crossing existing TH 60.

2) enhance pedestrian and bicycle access for local residents to community facilities on or near TH 60; particularly the medical, nursing home, retirement housing and religious facilities located on TH 60 in Mountain Lake.

Tax Base and Property Values

The proposed TH 60 improvements would impact the real estate tax base of the corridor county, municipality and school tax districts by removing taxable land and property improvements for highway right-of-way. In some tax districts, the initial loss would be partially offset by relocations and/or increases in overall property values.

Table 32 compares the total assessed valuation of each tax district to the estimated assessed valuation of the right-of-way removed from the tax rolls for the existing and new alignment improvement alternatives. The assessed valuation is a percentage, varying by tax district, of the market value estimate of the property. Overall, tax base loss differences between alternatives are not considered significant. However, impacts to the individual tax districts vary greatly.

Heron Lake, Bingham Lake, Weimer Township, and Windom would receive the greatest proportional impact under the existing alignment alternatives. Impacts to the latter three districts would primarily occur with a four-lane highway. Business displacements account for a significant portion of the loss in each district. Anticipated relocations within the respective districts would likely offset a portion of the initial loss. Impacts on all other districts are less than three-tenths of one percent of the tax base.

Tax base losses for the new alignment alternatives would be substantially higher for some of the affected districts. Bingham Lake, in particular, would be significantly affected under the inner new alignment location.

TABLE 32

IMPACTS ON REAL ESTATE TAX BASE

Tax District		Total Assessed* Valuation ($000)	Estimated Assessed Value Lost Due To Right-of-Way Acquisition: Existing Alignment 2 Lane $000	Existing Alignment 2 Lane % Total	Existing Alignment 4 Lane $000	Existing Alignment 4 Lane % Total	New Alignment 2 Lane $000	New Alignment 2 Lane % Total	New Alignment 4 Lane $000	New Alignment 4 Lane % Total
Lorain Township		6,100.	**	**	10	.16	Same as Existing Alignment			
Hersey Township		5,000.	**	**	8	.16	Same as Existing Alignment			
City of Brewster		900.	3	.28	3	.29	Same as Existing Alignment			
Nobles County	(Total)	128,300.	3	.002	21	.02	Same as Existing Alignment			
Alba Township		5,500.	**	**	13	.24	Same as Existing Alignment			
LaCrosse Township		5,600.	1	.01	6	.11	Same as Existing Alignment			
Weimer Township		4,500.	5-10	.11-.22	26-33	.58-.73	Same as Existing Alignment			
City of Heron Lake		1,600.	14-37	.84-2.32	15-43	.91-2.69	Same as Existing Alignment			
City of Wilder		200.	1	.28	4	1.79	Same as Existing Alignment			
Delafield Township		5,200.	3	.06	10	.20	8-19	.16-.37	13-24	.24-.46
Jackson County	(Total)	125,400.	24-52	.02-.04	74-109	.06-.09	29-68	.02-.05	77-123	.06-.10
Great Bend Township		5,500.	**	**	1	.01	2-11	.03-.21	2-11	.03-.21
City of Windom		14,700.	39	.27	39	.27	24	.16	24	.16
Lakeside Township		4,900.	5	.11	14	.29	48-51	.98-1.04	57-61	1.16-1.23
City of Bingham Lake		300.	1	.30	12	3.74	0-14	0-4.21	0-15	0-4.51
Mountain Lake Township		5,600.	2	.03	5	.08	10-16	.18-.29	16-21	.28-.38
Midway Township		6,000.	2	.03	6	.10	18	.29	22	.36
City of Mountain Lake		5,400.	**	**	**	**	1-3	.009-.06	1-4	.01-.07
Cottonwood County	(Total)	112,200.	49	.04	77	.07	103-137	.09-.12	122-158	.11-.14
Butterfield Township		5,900.	6	.10	15	.26	22-25	.37-.42	32-36	.55-.61
City of Butterfield		900.	--	--	--	--	6-6	.62-.64	6-6	.62-.65
St. James Township		6,300.	3	.05	8	.13	2	.03	7	.11
Watonwan Co.	(Total)	84,800.	9	.01	23	.03	30-33	.04-.04	45-49	.05-.06
IDS 518	Worthington	69,800.	**	**	9	.01	Same as Existing Alignment			
IDS 513	Brewster	11,800.	3	.03	22	.19	Same as Existing Alignment			
IDS 330	Heron Lake-Okabena	24,300.	20-48	.08-.20	42-77	.17-.32	Same as Existing Alignment			
IDS 177	Windom	43,800.	48	.11	83	.19	75-112	.17-.26	95-134	.22-.30
IDS 173	Mountain Lake	27,300.	5	.02	16	.06	37-45	.14-.17	52-60	.19-.22
IDS 836	Butterfield-Odin	16,600.	6	.04	15	.09	28-31	.17-.19	38-42	.23-.25
IDS 840	St. James	46,200.	3	.006	8	.02	2	.004	7	.02
Totals										
19 Affected Townships/Cities		90,100.	85-113	.09-.12	195-230	.22-.26	165-241	.18-.27	265-351	.29-.39
4 Affected Counties		450,700.	85-113	.02-.03	195-230	.04-.05	165-241	.04-.05	265-351	.06-.08
7 Affected School Districts		239,800.	85-113	.04-.05	195-230	.08-.10	165-241	.07-.10	265-351	.11-.15

*Based on 1980 Assessments

**Negligible

Nearly five percent of Bingham Lake's tax base would be lost. Only a small portion would likely be recaptured through relocations or property value increase. The outer new alignment location would avoid tax base loss in Bingham Lake, but would increase losses in adjoining Lakeside Township.

Other districts with relatively high tax base losses include Lakeside Township, Butterfield Township and the City of Butterfield. Losses in Lakeside Township would likely be substantially offset by relocations and by increased property values from additional industrial development southeast of Windom. If this area is annexed by Windom, both initial loss and offsetting property value gains would be realized by Windom.

Overall, agricultural property values are not expected to be significantly affected by the proposed improvements. In the long term, no-action could have a depressing property value impact to reduce market accessibility for agricultural products. By contrast, the proposed improvements will stabilize, and in some locations improve, accessibility in the face of increasing traffic demands. Triangulation and severence losses at certain farmsteads would be recompensable under damage payments and should not affect the overall value of agricultural property in the corridor.

Residential property values along existing TH 60 in Butterfield and Mountain Lake would not be significantly altered by the existing alignment improvements, but would likely improve with the elimination of through traffic under the new alignment alternatives. Overall value of commercial property in Butterfield, Mountain Lake and Windom should not be significantly affected under any of the alternatives. While certain highway oriented business along existing TH 60 would be adversely affected by the new alignment alternatives, any resultant property value loss would likely be offset by relocations and improvement incentive for general commercial development (See "Non-Farm Business Impacts" section).

LAND USE PLANNING IMPACTS

Regional

Overall, regional land use will be minimally affected by the proposed action. The major future land use change is anticipated to be the conversion of pasture to cultivated land as a more intensive farmland use, due to market forces and farm economics unassociated with the roadway improvement.

TH 60 improvements are not expected to have a significant urban growth inducing impact. Southwest Regional Development Commission policies and programs to attract industrial development to the area would likely be aided by TH 60 upgrading, although factors other than highway access have been found to be more important in attracting industry to small towns. Attraction of new industrial activity is expected primarily to help stabilize regional population levels, particularly in the prime labor force age bracket, rather than attract new residents and urban development to the region. Deterioration of traffic service anticipated without major improvement of TH 60 would, however, likely have an adverse effect on industrial economic activity and could lead to the long term loss or reduction of employment and prime labor force population in the corridor.

While regional population levels are expected to remain relatively stable, emerging economic and population patterns are expected to cause some shift from agricultural to urban use in and adjoining existing communities along TH 60. A moderate demand for new housing, commerce and services will occur in these areas with continued movement from farms into urban areas, an increase in total households with smaller family size, and replacement housing needs and desires. Economic trends together with regional service and investment policies are expected to focus such urban development activity into the regional and county trade centers of Worthington and Windom, and to a lesser extent, the full convenience trade centers of Mountain Lake and Heron Lake. Local planning impacts in these areas are discussed below.

Windom

The greatest potential for inducing growth in presently undeveloped areas occurs in the Windom area, along the new alignment alternative bypass to the east of the town. Windom's recently updated Comprehensive Plan recognizes the potential developmental effects and recommends various annexation and land use control measures to manage growth. (See "Affected Environment" section.)

Proposed design features of the new alignment alternative respond to the developmental concerns raised in the Windom Comprehensive Plan and will limit induced development activity. Access to the proposed route would be provided only via existing TH 60 at each end of the town, and at either CSAH 26 or TH 71 near the southeast corner of Windom, depending on the interchange alternative selected. Access would not be provided at CSAH's 13 and 17 east of Windom or at CSAH 25 south of Windom, although cross traffic would be maintained by grade separations. Thus, new alignment induced development activity would be effectively limited to the vicinity of the CSAH 26 or TH 71 interchange and along existing TH 60 connections into Windom. Limiting such activity to these areas, where development can be expected regardless of the alternative selected, should avoid adverse effects on the existing downtown business district.

A CSAH 26 interchange would provide an opportunity for Windom to effectively plan for desired industrial development and to direct such development to the southeast of Windom, consistent with its Comprehensive Plan. The interchange would adjoin an existing industrial park in southeast Windom. It would likely stimulate further development in the industrial park and on immediately adjoining lands in Lakeside and Great Bend Township, enabling an efficient usage of land resources and municipal services. The Windom Comprehensive Plan notes that "already interest has been expressed in land lying to the west of Wolf Lake for possible industrial development" and recommends annexation of these lands to manage industrial development activity. Direct access to TH 60 and clustering of major industrial uses in the southeast portion of Windom would help to reduce existing-- and avoid future-- truck traffic penetration of residential areas to the northwest.

A TH 71 interchange would also provide access to the southeast industrial area, avoiding the residential sections of Windom. However, access would be less convenient and the interchange location would not be as conducive to orderly, compact development. Lands to the south and west of the interchange are restricted from development under floodplain regulations. As a result, pressure

would likely evolve for strip development along TH 71 to the southwest in Jackson County, rather than adjoining the existing industrial park. Provision of municipal services would be more costly to provide. Potential attraction of commercial development along TH 71 could detract from, or encourage the relocation of, businesses already established along TH 60 and in the downtown business district.

Development adjoining the new alignment interchanges with existing TH 60 to the north and south of Windom will be effectively precluded by the directional interchange layouts. Such activity would be focused along the segments of existing TH 60 leading from the interchanges into Windom.

Developable lands nearest to the potential north interchange lie along existing TH 60 between the Caldwell Packing Plant and the existing north city limits. This area is presently partially developed and is subject to expanded development under the no-action or existing alignment alternatives. Windom's Comprehensive Plan recommends the annexation of this area and redevelopment of the existing Arlington Shopping Center as the town's second major business complex.

Development opportunities along the south connection into Windom would be limited to minor infill or redevelopment of existing commercial uses near the intersection of existing TH 60 and TH 71, anticipated to occur regardless of the alternative selected. The physical presence of the interchange could help to reduce the potential for strip development extending southward along existing TH 60 into Jackson County. Jackson County's designation of a three square mile residential zone to the south of Windom appears questionable in view of sufficient alternative residential growth zones proposed under the Windom Comprehensive Plan. Regardless of the alternative selected, measures should be taken to limit growth southward into Jackson County, where provision of services would be more costly and inefficient than adjoining existing developed areas of Windom.

Construction on new alignment to the east of Windom would not begin until the latter 1990's at the earliest under the proposed construction staging priorities (see "Alternatives" section). If selected as the desirable alternative, interim action should be taken by the affected counties to "official map" the selected corridor under the Minnesota Official Mapping Law of 1974, so as to reserve the proposed right-of-way and provide for compatible land use planning.

Worthington

The proposed improvements terminate north of Worthington at I-90. Worthington Comprehensive Plans do not anticipate urban expansion to the northeast in the TH 60 corridor. Development potential for use other than industrial or agricultural purposes is highly unlikely in view of adjoining airport, railroad and industrial uses. Except for an existing industrial tract in the northeast corner of the existing TH 60/I-90 interchange, the remainder of undeveloped property is zoned, and should continue to be zoned, for agricultural use. Any new industry attracted by the combined accessibility of I-90 and an improved TH 60 can be accommodated in the planned industrial area of northeast Worthington located to the south of the TH 60/I-90 interchange.

Mountain Lake

Mountain Lake can be expected to accommodate a slow, moderate growth pattern regardless of the alternative chosen. Minor urban expansion along all sides of the city and outward along TH 60 will likely continue under the no-action or existing alignment alternative.

As at Windom, connections into Mountain Lake from a new alignment alternative would be retained via existing TH 60 at each end of the city. Access would be controlled along the perimeter of the city. To avoid inducing development and routing of traffic into the southern residential area of the city, no access would be provided at CSAH 1 south of Mountain Lake. Elimination of through traffic from existing TH 60 would provide a planning opportunity to improve the residential neighborhoods and neighborhood linkages within the city.

The new alignment intersection at the east end of town would provide access from either direction to the existing industrial area along TH 60 without requiring such traffic to enter the city's residential areas or inducing new growth. The west intersection access to Mountain Lake would open adjoining farmland to potential commercial development, particularly highway oriented businesses. Extension of city services and land use controls to the intersection could be handled in an orderly manner with city annexation, developed in conjunction with the comprehensive planning studies currently being initiated. The area involved would be relatively small-- less than a quarter-section-under the inner alignment. The inner alignment would, in effect, become the logical southern boundary of the city. Similar annexation provisions could be made under the outer alignment alternatives, but encroachment on adjoining farmlands and cost to provide services to the areas would increase. As at Windom, "official mapping" of the corridor should be initiated as an interim measure if a new alignment alternative is selected.

Heron Lake

Minimal new development activity is anticipated in the Heron Lake area, regardless of the alternative chosen. Land use planning and zoning provided for the bulk of city development to remain to the south of the CNW railroad and TH 60; lands to the north of TH 60 are zoned for continued agricultural use except for a limited area of mixed commercial and residential uses immediately adjoining TH 60. The inner alignment alternatives would retain the existing land use-highway relationship, although displacing some 4 to 10 residences and 5 to 8 businesses. Most are anticipated to relocate on adjoining or nearby parcels in Heron Lake. The outer alignment would border the northern edge of the presently developed area, avoiding the displacements. However, existing highway oriented businesses would likely be induced to relocate near the new CSAH 9 and realigned CSAH 24 intersections with TH 60. Rezoning would be required. Access control would limit development along the remainder of the short realignment. Interim official mapping should be used to reserve the outer alignment if selected as the desired location alternative.

Lands surrounding Heron Lake have been zoned for urban residential use by Jackson County. Actual development of these lands should be minimal and not significantly affected by any of the improvement alternatives.

Other

Minimal development activity can be anticipated in the remaining TH 60 corridor communities and rural areas with or without improvement of TH 60.

At Brewster, a newly updated Comprehensive Plan and Zoning Ordinance retains the portion of the town north of TH 60 as an agricultural zone. Retention of agricultural use is compatible with the rural design of TH 60 through Brewster, and will avoid traffic conflicts that would be created by urban development north of TH 60.

At Butterfield, the new alignment alternative intersection with CSAH 5 would likely attract limited highway oriented development such as a gas station and or restaurant. The area is presently in agricultural use and zoned residential; rezoning would be required. On the inner alignment, such activity would likely be limited to the south side of the intersection, since access along the CSAH 5 to the north would not be permitted between the new highway and the existing developed area at Prairie Street.

Throughout the rural townships traversed by either the existing or new alignment alternatives, development potential is minimal and controlled by agricultural zoning. Land use planning controls for new farm buildings or other development should, however, provide for sufficient set backs from the proposed initial two-lane upgrade to allow future conversion to a four-lane facility. These setback requirements are described in the "Alternatives" section.

NOISE IMPACTS

A noise analysis was prepared to determine present and predicted noise levels for both existing alignment and new alignment alternatives. The results of this analysis are presented in Table 33. Additional information is contained in Appendix F, "TH 60 Noise Analysis Report".

Methodology

Field measurements of existing noise levels were taken during Fall 1979 at representative locations throughout the corridor. Anticipated future noise levels were computed using noise prediction computer models developed by Mn/DOT, based on the FHWA "STAMINA" Highway Traffic Noise Prediction Model. Daytime and nighttime year 2000 peak-hour estimated traffic volumes were utilized for two-lane, four-lane and constrained traffic conditions. Maximum anticipated noise levels at the appropriate distances were calculated for each impacted receptor location; as required, adjustments accounting for shielding and segment lengths were made for each receptor location.

Existing Noise Levels

Existing noise levels were measured at either the right-of-way line or the nearest receptor, as appropriate. They were found to exceed FHWA residential noise

TABLE 33

SUMMARY OF NOISE IMPACTS

HIGHWAY SEGMENT	REPRESENTATIVE MEASURED NOISE LEVELS (L_{10}dBA)	PREDICTED 2 LANE NOISE IMPACTS (YEAR 2000)					PREDICTED 4 LANE NOISE IMPACTS (YEAR 2000)				
		PREDICTED DAY NOISE LEVELS (L_{10}dBA)	NUMBER OF RECEPTORS [2] IMPACTED BEFORE ABATEMENT			FEASIBILITY OF ABATEMENT	PREDICTED DAY NOISE LEVELS (L_{10}dBA)	NUMBER OF RECEPTORS [2] IMPACTED BEFORE ABATEMENT			FEASIBILITY OF ABATEMENT
			MN. STATE STAND.'S		FHWA DESIGN NOISE LEVELS			MN. STATE STAND.'S		FHWA DESIGN NOISE LEVELS	
			DAY	NIGHT				DAY	NIGHT		
NO ACTION AND EXISTING ALIGNMENT ALTERNATIVES											
NOBLES CO.	65-73	57-70	7	33	0	B	57-72	8	30	2	B
HERON LAKE	65-71	58-72	8-21	29-42	0-7	A	59-72	7-21	21-42	1-7	A
REMAINDER JACKSON CO.	63-65	57-67	5	17	0	B	59-73	6	17	3	B
WINDOM	63-77	69-75	86	94	15	C	61-74	86	94	15	C
MOUNTAIN LAKE	63-73	56-74	93	78	44	C	57-75	97	78	44	C
REMAINDER COTTONWOOD CO.	61-65	56-74	1	10	0	B	57-74	0	9	0	B
BUTTERFIELD	63-71	64-74	33	15	5	C	64-75	33	15	5	C
REMAINDER WATONWAN CO.	63-65	56-74	4	4	0	B	59-75	5	6	1	B
TOTALS EXISTING ALIGNMENT			242-255	280-293	64-71			240-258	270-291	71-77	
EXISTING ALIGNMENT - WORTHINGTON TO WINDOM NEW ALIGNMENT - WINDOM TO ST. JAMES											
NOBLES CO. (SAME AS EXISTING)	65-73	57-70	7	30	0	B	57-72	8	30	2	B
HERON LAKE (SAME AS EXISTING)	65-71	58-72	8-21	29-42	0-7	A	59-72	7-21	21-42	1-7	A
REMAINDER JACKSON CO.	63-65	57-67	5	17	0	B	59-73	6	17	3	B
WINDOM	51-59 (63-77) [3]	56-69 (61-70) [3]	33 [4]	46-47 [4]	0 [4]	B	56-69 (61-70) [3]	33 [4]	46-47 [4]	0 [4]	B
MOUNTAIN LAKE	55-59 (63-73) [3]	56-70 (60-65) [3]	0-2 [4]	2-10 [4]	0 [4]	A	58-72 (60-65) [3]	0-2	2-9 [4]	0-1 [4]	A
REMAINDER COTTONWOOD CO	51-59	55-69	1-5	5-11	0	B	57-71	1-8	7-27	0-4	B
BUTTERFIELD	57 (63-71) [3]	58-69 (54-58) [3]	1 [4]	11 [4]	0 [4]	A	56-65 (54-58) [3]	1 [4]	10-12 [4]	0 [4]	A
REMAINDER WATONWAN CO.	57-59	59-69	3	8	0	B	59-72	1	8	1	B
TOTALS EXISTING/ NEW ALIGNMENT			58-77	148-176	0-7			57-80	141-192	7-18	
EXISTING ALIGNMENT - WORTHINGTON TO MOUNTAIN LAKE NEW ALIGNMENT - MOUNTAIN LAKE TO ST. JAMES											
NOBLES CO. (SAME AS EXISTING)	65-73	57-70	7	33	0	B	57-72	8	30	2	B
HERON LAKE (SAME AS EXISTING)	65-71	58-72	8-21	29-42	0-7	A	59-72	7-21	21-42	1-7	A
REMAINDER JACKSON CO. (SAME AS EXISTING)	63-65	57-67	5	17	0	B	59-73	6	17	3	B
WINDOM (SAME AS EXISTING)	63-77	64-75	86	94	15	C	61-74	86	94	15	C
MOUNTAIN LAKE	55-59 (63-73) [3]	56-70 (60-65) [3]	0-2 [4]	2-10 [4]	0 [4]	A	58-72 (60-65) [3]	0-2 [4]	2-9 [4]	0-1 [4]	A
REMAINDER COTTONWOOD CO.	51-59	55-69	1	9	0	B	57-71	0	8	0	B
BUTTERFIELD	57 (63-71) [3]	58-69 (54-58) [3]	1 [4]	11 [4]	0 [4]	A	56-65 (54-58) [3]	1 [4]	10-12 [4]	0 [4]	A
REMAINDER WATONWAN CO.	57-59	59-69	3	8	0	B	59-72	1	8	1	B
TOTAL EXISTING/ NEW ALIGNMENT			111-126	203-224	15-22			109-125	190-220	22-29	

1. RANGE FOR VARYING TRAFFIC LEVELS AND NEAREST RECEPTOR SETBACKS WITHIN THE HIGHWAY SEGMENT
2. RANGES SHOWN REFLECT EFFECT OF VARIOUS SUBOPTIONS
3. NOISE LEVELS ASSOCIATED WITH REMAINING TRAFFIC ALONG EXISTING TH 60
4. INCLUDES NOISE LEVEL IMPACTS DUE TO REMAINING TRAFFIC ALONG EXISTING TH 60

A. ABATEMENT FEASIBLE IN THIS AREA ; SEE TEXT
B. ABATEMENT IS NOT FEASIBLE DUE TO ISOLATED SITE LOCATIONS
C. ABATEMENT IS NOT FEASIBLE DUE TO UNCONTROLLED ACESS CONDITIONS

guidelines[1] (L_{10} = 70 dBA)[2] within the cities of Brewster, Heron Lake, Windom, Mountain Lake and Butterfield. In addition, existing noise levels meet or exceed Minnesota State daytime standards[3] (L_{10} = 65 dBA) in rural areas adjacent to inplace TH 60 throughout the corridor. Nighttime noise measurements were not taken as part of this study.

No-Action and Existing Alignment Alternatives

For either a two-lane or four-lane facility, typical predicted design noise levels at the right-of-way line would vary between 71-73 dBA in rural areas and 72-77 dBA in urban areas. FHWA design noise level guidelines would be exceeded for an additional 65 feet in rural areas and an additional 155 feet in urban areas. Minnesota State daytime NAC-1 standards would be exceeded up to 195 feet and 365 feet from the right-of-way line in rural and urban areas, respectively.

As shown in Table 33, FHWA design noise level guidelines would be exceeded at 64-77 receptor locations. Minnesota State Standards would be exceeded at 240-258 locations (day) and at 270-293 locations (night). Use of noise barriers for attenuation would not be cost effective in rural areas due to the widely spaced receptor locations. Noise barrier attenuation in the urban areas would generally not be feasible due to land access requirements; i.e., noise barriers would have to retain openings for the many driveways and intersecting roadways. The resultant short barrier sections would be ineffective in reducing noise impacts.

The existing alignment alternative sub-option passing to the north and west of the city of Heron Lake is the only existing alignment alternative area where attenuation may be feasible. Berms placed adjacent to the proposed facility would protect two residences from noise levels exceeding FHWA guidelines and nine residences from State daytime and nighttime standards.

The no-action alternative would have the same noise impacts as the two-lane existing alignment reconstruction alternative. FHWA guidelines would be exceeded within urban areas; in addition, Minnesota day and night standards would be exceeded in rural areas adjacent to the existing facility.

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[1] FHWA has established "design noise levels" that represent the upper limit of acceptable traffic noise level conditions for various land uses at locations of normal human activity. The design noise level for Category B (residences, motels, hotels, schools, churches, libraries, hospitals, recreation areas, playgrounds, active sports areas and parks) is L_{10} = 70 dBA. Activity Category C (commercial and industrial areas) design noise level is L_{10} = 75 dBA.

[2] Noise (sound pressure) is most commonly measured in a unit called decibels and weighted on the "A" scale (dBA); this scale most closely approximates the response of the human ear. L_{10} is the hourly sound level exceeded 10 percent of the time. Thus, L_{10} = 70 dBA indicates the 70 dBA level is exceeded 10 percent of the time.

[3] Minnesota Pollution Control Agency (MPCA) has promulgated noise standards for various land activities. Noise Area Classification (NAC)-1 corresponds generally to Federal Activity Category B; the maximum State standards are L_{10} = 65 dBA (daytime) and L_{10} = 55 dBA (nighttime). NAC-2 applies primarily to commercial areas; the maximum State standards are L_{10} = 70 dBA (daytime and nighttime).

New Alignment Alternatives

Either a two- our four-lane facility would result in typical predicted design noise levels at the right-of-way line of 69-73 dBA. FHWA noise guidelines would be exceeded for an additional 65 feet. Noise levels in excess of Minnesota State daytime standards would extend 235 feet beyond the right-of-way line; nighttime standards would be exceeded for 605 feet.

The new alignment alternatives would result in a net decrease in the number of receptors exceeding FHWA and State noise level standards in Windom, Mountain Lake and Butterfield. Through traffic would no longer traverse developed areas within the communities, and traffic remaining on inplace TH 60 would be locally oriented. Noise levels at the right-of-way line would be reduced by 3-4 dBA in Windom, 9-11 dBA in Mountain Lake and 16 dBA in Butterfield. As shown in Table 34, the total number of receptors in these communities with noise levels exceeding FHWA guidelines would be reduced from 64 to one. The total number of receptors with noise levels exceeding State daytime and nighttime standards would be reduced from 217 to 35 and 187 to 69, respectively.

This total decrease represents a redistribution in noise level impacts. Several residences at the outer edges of the bypassed communities not impacted under the existing alignment alternatives would be impacted under the new alignment alternatives. Noise levels at one receptor location near Mountain Lake (four-lane facility only) would exceed FHWA guidelines prior to attenuation. Noise levels at an additional 30 residences (daytime) and 62 residences (nighttime) would exceed State standards.

As discussed for the existing alignment alternatives, attenuation in rural areas is generally not practicable due to the widely scattered receptor locations. Under the new alignment alternatives, however, noise abatement appears feasible at three locations. At the Bingham Lake through-town sub-option, incorporation of noise barriers along the south side of the roadway would reduce noise levels at four residences to below FHWA guidelines; noise would be attenuated to levels at or below State daytime standards for an additional five residences.

Noise abatement also appears feasible along the inner new alignment alternative south of Mountain Lake. This sub-option traverses an existing residential neighborhood, causing noise levels to exceed FHWA and State standards (daytime) at two locations. Mounding on both sides of the proposed facility would attenuate noise levels to below $L_{10} = 65$ dBA.

The new alignment alternatives would cause State nighttime standards to be exceeded at 8-11 receptor locations south of Butterfield. Each of these residences would exceed State nighttime standards only. The feasibility of noise abatement in each of the above areas will require additional detailed study as detailed roadway construction plans are developed.

Community Coordination

During preliminary and final design preparation, consideration will be given to providing attenuation through the use of mounding. An overall abatement plan will be prepared in an attempt to reduce traffic noise levels to State standards for

TABLE 34

COMPARISON OF NOISE IMPACTS IN URBAN AREAS[1]

EXISTING ALIGNMENT VS. NEW ALIGNMENT ALTERNATIVES

COMMUNITY	EXISTING ALIGN. ALT.			NEW ALIGNMENT ALTERNATIVES								
	RESIDENTIAL & COMMERCIAL/INDUSTRIAL[2] RECEPTORS EXCEEDING:			RECEPTORS ALONG BYPASSED SECTION EXCEEDING:			RECEPTORS ALONG NEW SECTION EXCEEDING:			TOTAL RECEPTORS EXCEEDING:		
	FHWA DESIGN NOISE LEVELS	MN. STATE** STANDARDS		FHWA* DESIGN NOISE LEVELS	MN. STATE ** STANDARDS		FHWA* DESIGN NOISE LEVELS	MN. STATE** STANDARDS		FHWA* DESIGN NOISE LEVELS	MN. STATE ** STANDARDS	
		DAY	NIGHT		DAY	NIGHT		DAY	NIGHT		DAY	NIGHT
WINDOM[2]												
RESIDENTIAL[3]	15	37	94	0	5	7	0	27	40	0	32	47
COM./IND.[4]	0	49	0	0	1	0	0	0	0	0	1	0
MOUNTAIN LAKE												
RESIDENTIAL	44	67	78	0	0	0	1	2	10	1	2	10
COM./IND.	0	31	0	0	0	0	0	0	0	0	0	0
BUTTERFIELD												
RESIDENTIAL	5	12	15	0	0	0	0	1	12	0	1	12
COM./IND.	0	21	0	0	0	0	0	0	0	0	0	0
SUBTOTALS												
RESIDENTIAL	64	116	187	0	5	7	1	30	62	1	35	69
COM./IND.	0	101	0	0	1	0	0	0	0	0	0	0
TOTALS	64	217	187	0	6	7	1	30	62	1	35	69

1. BEFORE ATTENUATION; SEE TEXT.
2. INCLUDES ADJACENT DEVELOPED AREAS.
3. TOTALS SHOWN REFLECT FEDERAL ACTIVITY CATEGORY B (MINNESOTA NAC-1) LAND USES.
4. TOTALS SHOWN REFLECT FEDERAL ACTIVITY CATEGORY C (MINNESOTA NAC-2 & NAC-3) LAND USES.

* FHWA DESIGN NOISE LEVELS: CATEGORY B L_{10} 70dBA; CATEGORY C L_{10} 75dBA.

** MINNESOTA STATE NOISE STANDARDS: NAC-1, DAY L_{10} 65dBA, NIGHT L_{10} 55dBA; NAC-2 L_{10} 70dBA; NAC-3 L_{10} 80dBA.

residential (NAC-1) land use (L_{10} = 65 dBA, daytime; L_{10} = 55 dBA nighttime). In some areas it may be necessary to request an exception to FHWA and/or State standards (see Table 33). When completed, the abatement plans will be presented to local officials and affected residences.

Included with the plans will be a noise assessment and appropriate recommendations for undeveloped lands adjacent to the proposed highway improvement. The assessment will include maps depicting future noise levels for use by the local officials in their land-use planning. Coordination with local officials will continue throughout the development of the project. In addition to this measure, project area communities-- like all cities, counties, and regional development commissions in Minnesota-- will receive copies of the "Audible Landscape", a Federal Highway Administration publication. This handbook provides guidance for land-use planning, plat layout, and building design for compatible development near traffic noise.

AIR QUALITY IMPACTS

The air quality impact of the proposed TH 60 improvement project has been analyzed. The project is not anticipated to have significant air quality impacts. It is located in an area where the approved State Implementation Plan (SIP) to attain and maintain ambient air quality standards does not contain any transportation control measures. Therefore, the conformity procedures of 23 CFR 770 do not apply to this project. Construction activities will conform to State and Federal air quality regulations.

A Memorandum of Understanding with the Minnesota Pollution Control Agency (MPCA) specifies that (1) prior consultation with the MPCA is considered as accomplished for highway sections outside of metropolitan areas; (2) an air quality analysis demonstrating consistency with the approved SIP is considered as accomplished for highway proposals outside metropolitan areas where the annual average daily traffic is not expected to exceed 20,000 vehicles per day within ten years following construction. The proposed project meets these criteria. It will not require an indirect source permit from MPCA.

A supplemental air quality analysis was carried out using the U.S. Environmental Protection Agency's (USEPA) screening procedures. This analysis was used to estimate peak carbon monoxide concentrations representative of maximum projected traffic volumes (1) in rural sections, and (2) at existing urban intersections in Windom and Mountain Lake. Stable meteorology and winter temperature levels were assumed as "worst case" conditions. Since peak volumes on TH 60 occur during summer months, the results tend to overestimate probable peak concentrations. However, they do provide a "worst case" screening check against ambient air quality standards and a basis for relative comparison of alternatives.

Results of the analysis are summarized in Table 35. Since construction would be staged over a number of years and no definite time table has been established, concentrations were estimated for five year intervals during the proposed improvement period. Highest traffic volumes forecast for the planning period (year 2000 volumes) were applied to 1995 emission rates as a "worst case" or high level estimate for the 1995-2000 period.

TABLE 35

"WORST CASE" CARBON MONOXIDE CONCENTRATIONS (ppm)

Ambient Air Quality Standards:
Federal: 1-Hr. ≤ 35 ppm; 8-Hr. ≤ 9 ppm
State: 1-Hr. ≤ 30 ppm; 8-Hr. ≤ 9 ppm

Location and Alternative	Receptor Site	1985		1990		1995-2000	
		1-Hr.	8-Hr.	1-Hr.	8-Hr.	1-Hr.	8-Hr.
Rural Sections							
No Action/2-Lane (New or existing alignment)	Right-of-Way	2.7	1.8	2.4	1.7	2.2	1.5
4-Lane (New or existing alignment)	Right-of-Way	2.2	1.6	1.9	1.5	1.8	1.4
Windom							
Existing Alignment (No-Action, 2- or 4-lane)	Right-of-Way	15.8	7.7	11.2	6.2	9.7	4.3
	Sidewalk	17.0	8.1	12.2	6.7	10.6	4.6
Existing TH 60 (Remainder with new alignment)	Right-of-Way	9.6	5.3	7.9	4.4	6.7	3.3
	Sidewalk	10.5	5.7	8.4	4.7	7.3	3.4
Mountain Lake							
Existing Alignment (No-Action, 2- or 4-lane)	Right-of-Way	14.3	7.2	10.4	5.9	8.7	3.9
	Sidewalk	16.0	8.1	11.6	6.5	9.6	4.2
Existing TH 60 (Remainder with new alignment)	Right-of-Way	7.3	4.0	5.0	3.2	4.0	2.3
	Sidewalk	7.9	4.3	5.4	3.4	4.4	2.4

Maximum rural section concentrations for either new or existing alignments are well below allowable State and Federal ambient air quality standards. Four-lane concentrations are slightly less than two-lane values, primarily due to the separation of traffic stream onto two roadways. Worst case estimates at peak traffic intersections in both Windom and Mountain Lake are also below standards, and decline in future years. With diversion of through traffic to a new alignment, peak concentrations on existing TH 60 in both Windom and Mountain Lake would be reduced.

An analysis of airborne lead using a procedure reviewed by the FHWA and MPCA indicates no violation of the Federal air quality standard for lead of 1.5 micrograms per cubic meter. The airborne lead concentration adjoining the highest traffic volume location in the corridor, the TH 60-10th Street intersection in Windom, indicates that the present (1980) highest concentration is estimated at 1.2 micrograms per cubic meter. The highest concentration after the anticipated completion of initial stage construction is estimated at 0.3 micrograms per cubic meter.

Comparative carbon monoxide emissions burden estimates prepared as part of the 1978 TH 60 Citizens Advisory Committee Study provide a further indicator of the comparative air quality effects of the alternatives. While the emissions calculations have not been revised to reflect updated USEPA emission rates because of the unwarranted time and cost effort required, they do provide a reasonable relative comparison to the no-action condition. Total emission levels were similar for the no-action and either two-lane or four-lane improvements on the existing alignment. Emission levels were approximately five percent lower for either the two-lane or four-lane improvements on partial new alignment due to improved operating conditions for through traffic bypassing speed limit and congestion restrictions in Windom, Mountain Lake, and Butterfield. Constrained traffic conditions would reduce total emissions by over ten percent on any of the alternatives.

Additional details on the air quality analyses are contained in Appendix G, "TH 60 Air Quality Analysis Report".

STREAM MODIFICATION IMPACTS

Stream Relocations

The ponds, intermittent and continuously flowing streams, marshes, lakes and wetlands make up an important natural resource. These waters provide food, shelter and nutrients not only to wildlife, but to every aspect of human endeavor as well. The need to protect and preserve the ecological, economic and recreational values of these resources is universally accepted. Construction, farming and other practices in or near these areas can create serious erosion, pollution and drainage problems unless the potential impacts are identified and mitigating measures taken to minimize harm.

Although the probable impacts to streams associated with the TH 60 construction project are not severe for any of the alternatives, the greatest environmental consequences would be associated with five potential stream relocations. Stream

encroachment without relocation would occur at nine or ten additional transverse stream crossings along the various alternatives.

The existing alignment alternative would result in the relocation of Butterfield Creek (5)[1] under either two- or four-lane construction. This realignment would not result in a decrease in channel length; the channel would be relocated to the north to accommodate the increased width of roadway section. Four-lane construction would necessitate additional relocations at Jack Creek (37A), Judicial Ditch No. 76 (38), and Okabena Creek (41) affecting a total of 1.3 acres of stream channel and associated wetlands. See Table 36.

Jack Creek would require relocation of a natural channel; the stream would be relocated to the north to protect the integrity of the four-lane roadway fill. The affected stream reach would be reduced from 1,000 to 550 feet or 45 percent. Due to the flat channel slope and the backwater nature of flow during flood events, channel velocities in this section are low. Anticipated minor changes in channel slope and velocity would not produce any significant erosion potential. Judicial Ditch No. 76 and Okabena Creek were relocated parallel to the roadway during construction of existing TH 60. The proposed relocation of these streams under four-lane construction would also be parallel to the roadway and would not change their respective reach lengths.

The new alignment alternatives (Windom to St. James) would have the same effects as the existing alignment alternative, with the exception of Butterfield Lake Outlet (3B). To provide for an at-grade intersection with CSAH 5 southwest of Butterfield, the relocation of this stream would impact an additional 0.3 acre. As a result of past agricultural activities, this stream has been extensively straightened. The proposed relocation would shorten the affected reach by 13 percent (1500' to 1300'), with no significant adverse impact.

Although encroachment from roadway fill would occur on additional streams as a result of new or replacement bridge construction, the impacts and affected acreage would be minimal. The proposed alternatives vary only slightly in anticipated impacts on the Tributary to Okabena Creek (4), Elk Creek (39A), the Tributary to Elk Creek (39B), the Tributary to Okabena Creek (37B), Heron Lake Outlet (30), Tributaries to the Des Moines River (27B), Judicial Ditch No. 1 (6), Mountain Lake Tributary (9C), and Judicial Ditch No. 13 (1). These streams would all be affected to the same extent (generally less than 0.1 acre) regardless of the alignment alternative for two- or four-lane construction.

In those areas where stream relocation is necessary, the old channel could be left unfilled or dredged and otherwise expanded. Such areas have the potential to develop into valuable wetlands. Judicial Ditch No. 76 (38) and Jack Creek (37A) are ideal areas for this to be done, although Okabena Creek (41), Butterfield Creek (5), and Butterfield Lake Outlet (3B) also have limited potential in this regard. All construction at stream crossings would be carried out in conformance with joint FHWA and Mn/DOT design guidelines for shoulders, side slopes and clear zones to minimize stream encroachment along new or reconstructed trunk highways (Mn/DOT Technical Memorandum 79-18-RD-2 or equivalent). Coordination with the U.S. Fish and Wildlife Service (FWS) and the Minnesota Department of Natural

[1]Numbers in parentheses refer to a natural features index. See Figure 12 for location and explanation of numbering scheme. See Appendix I, "Natural Resources Report" for additional information.

TABLE 36

IMPACT ON STREAMS, LAKES, AND WETLANDS

Stream Relocation	Existing Alignment 2-Lane Acres+	Existing Alignment 4-Lane Acres+	Existing - Worthington to Windom New - Windom to St. James 2-Lane Acres+	Existing - Worthington to Windom New - Windom to St. James 4-Lane Acres+	Existing - Worthington to Mt. Lake New - Mt. Lake to St. James 2-Lane Acres+	Existing - Worthington to Mt. Lake New - Mt. Lake to St. James 4-Lane Acres+
Okabena Creek (41)	0.1	0.4	0.1	0.4	0.1	0.4
Judicial Ditch No. 76 (38)	0.2	0.6	0.2	0.6	0.2	0.6
Jack Creek (37A)	< 0.1*	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Butterfield Creek (5)	0.1	0.2	< 0.1	0.1	< 0.1	0.1
Downstream of Butterfield Lake Outlet (38)	< 0.1	< 0.1	0.3	0.3	0.3	0.3
TOTALS	0.6	1.3	0.7	1.5	0.7	1.5
Stream Encroachment						
Tributary to Okabena Creek (40)	< 0.1	0.1	< 0.1	0.1	< 0.1	0.1
Elk Creek (39A)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Tributary to Elk Creek (39B)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Tributary to Okabena Creek (37B)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Heron Lake Outlet (30)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bridge over Des Moines River in Windom (27A)						
Tributary to Des Moines River (27B)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hwy. 71 Existing Des Moines River Bridge (26A)						
New Hwy. 71 Des Moines River Crossing outside Windom			< 0.1 TH 71 Interchange Option	< 0.1		
Tributary to Judicial Ditch No. 1 (10)	0.1	0.2	0.1	0.2	0.1	0.2
Tributary to Mt. Lake (9C)	< 0.1	< 0.1	< 0.1	<0.1	< 0.1	< 0.1
Judicial Ditch No. 13 (1)	< 0.1	0.1	< 0.1	0.1	< 0.1	0.1
TOTALS	0.5	0.7	0.6	0.8	0.5	0.7
Lakes						
Heron Lake (32)						
Duck Lake (31A)						
Timber Lake (29)						
String Lake (28A)						
Wolf Lake (25A)						
Cottonwood Lake (17A)						
Warren Lake South (15)	< 0.1	0.1			< 0.1	0.1
Clear Lake (13)		0.4				0.4
Bingham Lake (11)						
Mountain Lake (9A)						
Butterfield Lake (3)	—	—	—	—	—	—
TOTALS	<0.1	0.5			< 0.1	0.5

(Cont'd)

TABLE 36 (Cont'd)

IMPACT ON STREAMS, LAKES, AND WETLANDS

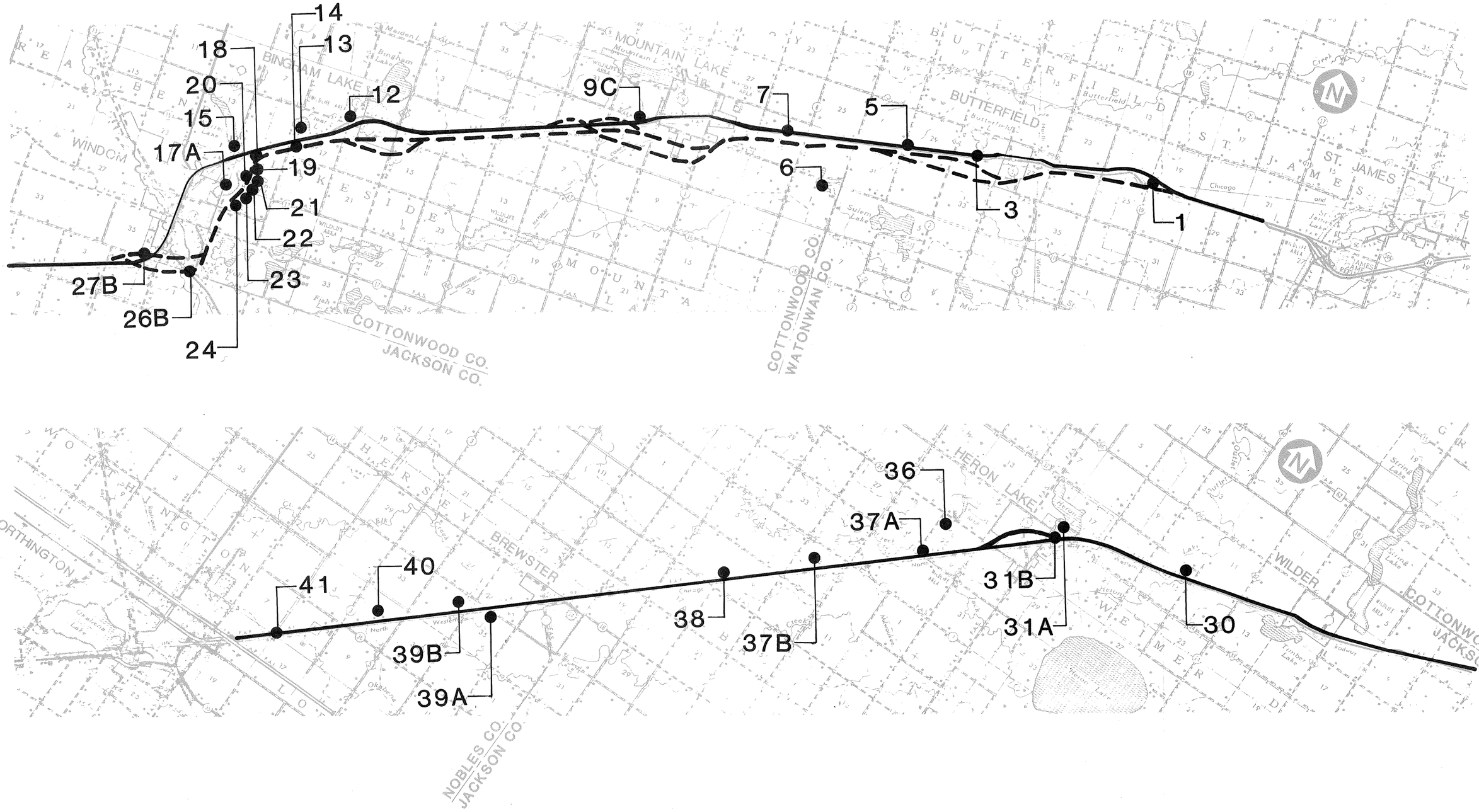
Wetlands	Existing Alignment 2-Lane Acres+	Existing Alignment 4-Lane Acres+	Existing - Worthington to Windom New - Windom to St. James 2-Lane Acres+	Existing - Worthington to Windom New - Windom to St. James 4-Lane Acres+	Existing - Worthington to Mt. Lake New - Mt. Lake to St. James 2-Lane Acres+	Existing - Worthington to Mt. Lake New - Mt. Lake to St. James 4-Lane Acres+
Outside Heron Lake City Limits (34)						
West of Heron Lake Memorial Field (33)						
South Shore of Duck Lake (31B)	1.2	3.5-5.3**	1.2	3.5-5.3	1.2	3.5-5.3
South Side of TH 60 at Duck Lake (31C)	0.7	0.7	0.7	0.7	0.7	0.7
Waterfowl Production Area-String Lake (28B)						
Gravel Pit Pond (26B)			0-1.0 TH 71 Interchange Option	0-1.0		
Southwest Edge of Wolf Lake (25B)						
Shrub Swamp (24)						
Cattail Pond (23)						
Shallow Pond (22)						
Shallow Pond (21)						
Inlet Creek to Cottonwood Lake (20)			< 0.1	< 0.1		
Cattail Pond (19)						
Shallow Pond (18)			< 0.1	< 0.1		
Douglas Axford Wetland (16)						
South End of Warren Lake (15)	0.1	0.2			0.1	0.2
South Side of TH 60 at Clear Lake (14)	0.5	0.5			0.5	0.5
South Edge of Clear Lake (13)	0.4	2.1			0.4	2.1
North of Hwy. 44 (12A)	2.5	2.5		2.5	2.5	
South of Hwy. 44(12B)-		0.1				0.1
Partially Drained Wetland (7A)						
South Side of Railroad (7B)						
South End of Butterfield Lake (3A)	0.2	0.4				
South Side of TH 60 at Butterfield Lake (3B)	0.3	0.3				
West Edge of Butterfield-North of TH 60 (2A)		0.1				
West Edge of Butterfield-South of TH 60 (2B)						
TOTALS	5.9	10.3-12.1	2.0-3.0	4.3-7.1	5.4	9.6-11.4
By Wetland Type:						
Type:						
1	0.5	0.5			0.5	0.5
1-2			0.5	0.5		
2	2.8	2.85			2.5	2.55
2-3	0.7	0.75	0.75	0.75	0.7	0.7
3-4	0.2	0.4				
4	1.2	3.5-5.3	1.2	3.5-5.3	1.2	3.5-5.3
4-5			0-1.0	0-1.0		
5	0.5	2.3			0.5	2.3
TOTALS	5.9	10.3-12.1	2.0-3.0	4.3-7.1	5.4	9.6-11.4
***GRAND TOTALS	7.1	12.8-14.6	3.3-4.3	6.6-9.4	6.7	12.3-14.1

*In tallying acres, those areas of less than 0.1 acre were added in at a value of 0.05 acres.

**This range is due to the variability of the Duck Lake "Typical" and "Narrow" median options.

***Ranges are the result of Duck Lake and Windom bypass variations.

+Area of affected stream channel and associated wetlands; includes areas within existing R.O.W.



LEGEND

1. Mn DNR's 1979 Preliminary Designation of Public Waters:
   A. A number and letter "p" indicate a lake, stream, or river as a public water.
   B. A number and the letter "W" indicate a wetland as a public water.

2. A number only indicates a wetland or other "critical area". significant to the T.H.60 project but not designated by Mn DNR.

miles 0 1/4 1/2
feet 0 500 1000 2000 3000

north

Minnesota Dept. of Transpotation
Edwards and Kelcey, Inc.

POTENTIAL IMPACT LOCATIONS: STREAMS AND WETLANDS

FIGURE 12

MINNESOTA 60

Resources (Mn/DNR) has been carried out in conformance with provisions of the Fish and Wildlife Coordination Act. (FWS letter is attached in Appendix C.) Each agency has served as a cooperating agency in the preparation of this statement.

Permit Requirements

Section 404 of the Federal Water Pollution Control Act established a permit program, administered by the U.S. Army Corps of Engineers, to regulate the discharge of dredged materials (and of those pollutants that comprise fill material) into the waters of the United States. There are three types of permits with this program; two of the permits pertain to this proposed action.

Nationwide permits, which do not require a formal application, authorize discharges of fill material into headwater regions of certain United States waters. For this study, any stream crossing with a contributing drainage area less than 40 square miles is considered within the headwater regions. Minor road crossing are also allowed under the Nationwide Permit. A minor road crossing involves the discharge of less than 200 cubic yards of fill below the ordinary high water elevation.

Individual 404 permits are required for all stream crossing that fail to meet the above exclusions. For all stream crossing with drainage areas greater than 40 square miles and for certain lakes within the region, an estimate was made of the amount of fill required for each alternative. See Table 37 for a tabulation of results.

A Mn/DNR Highway Construction permit is required for any bridge construction involving public waters. Preliminary Mn/DNR mapping outlining public waters and wetlands for each county along the TH 60 corridor was consulted for this determination. Table 37 indicates which crossings require a Mn/DNR permit. Additional details can be found in the "Hydraulics/Hydrology" section of Appendix D, "TH 60 Engineering Studies Report".

FLOOD HAZARD EVALUATION

General

This section of the report summarizes the interrelationship between peak anticipated surface water flow and development occurring on adjacent land forms within the study corridor. Low areas adjoining rivers, lakes and wetlands are subject to periodic inundation during spring thaws and/or intense summer thunderstorms. These areas are termed "floodplains". They provide storage for floodwaters, thereby minimizing potential water surface elevations. They provide surface area for groundwater recharge, and they provide habitat for many land and aquatic organisms.

Mn/DNR offices in New Ulm and St. Paul were contacted during November 1979 to February 1980 and August to September 1980 to discuss the proposed project and obtain pertinent floodplain delineations, historical flow records and related hydrologic-hydraulic data. U.S. Army Corps of Engineers personnel also provided available data, guidance and review for the flood hazard evaluation as a cooperating agency (see Appendix C).

TABLE 37

SUMMARY OF STREAM CROSSING PERMIT REQUIREMENTS

Lake/River Identification	Alignment Alternative	Drainage Area, $Miles^2$	Headwater Region	Public Waters	Proposed Structure	200 Cu. Yds. Fill Required		Corps of Engineers 404 Permit Requirement*		Mn/DNR Permit Requirement	
						2-Lane	4-Lane	2-Lane	4-Lane	2-Lane	4-Lane
Okabena Creek	Existing	8.6	Yes	Yes	10x10 Box Culv.	--	--	Nat.	Nat.	Yes	Yes
Okabena Creek Tributary	Existing	3.1	No	Yes	6x6 Box Culv.	--	--	Nat.	Nat.	Yes	Yes
Elk Creek Tributary	Existing	1.9	Yes	No	72" RCP	--	--	Nat.	Nat.	No	No
Elk Creek	Existing	55	No	Yes	85' bridge	No	Yes	Nat.	Ind.	Yes	Yes
Judicial Ditch #76	Existing	14.8	Yes	Yes	60' bridge	--	--	Nat.	Nat.	Yes	Yes
Jack Creek	Existing	200	No	Yes	141' bridge	Yes	Yes	Ind.	Ind.	Yes	Yes
Duck Lake	Existing	6.6	--	Yes	6x12 dbl. Box Culv.	No	Yes	Nat.	Ind.	Yes	Yes
Heron Lake Outlet	Existing	457	No	Yes	192' bridge	No	Yes	Nat.	Ind.	Yes	Yes
Des Moines River Tributary	Exist/New	1.25	Yes	No	48' RCP	No	No	Nat.	Nat.	No	No
Des Moines River	New (inner and outer)	1110	No	Yes	1820' bridge	No	No	Nat.	Nat.	Yes	Yes
Cottonwood Lake Outlet	Existing	4.1	--	Yes	4x6 Box Culv.	No	No	Nat.	Nat.	Yes	Yes
Cottonwood Lake Inlet	New	3.2	Yes	Yes	6x6 Box	--	--	--	Nat.	--	Yes
Clear Lake Outlet	New	0.7	--	Yes	6x6 Box	No	Yes	Nat.	Ind.	Yes	Yes
	Existing	0.7	Yes	Yes	6x6 Box	--	--	Nat.	Nat.	Yes	Yes
Judicial Ditch #1 Tributary	New/Exist	2.7	Yes	Yes	8x8 dbl.	--	--	Nat.	Nat.	Yes	Yes
Mountain Lake Tributary	New/Exist	0.9	Yes	No	6x6 Box	--	--	Nat.	Nat.	No	No
Butterfield Cr. Tributary	New/Exist	1.0	Yes	Yes	6x10 Box	--	--	Nat.	Nat.	Yes	Yes
Butterfield Lake Outlet	Existing	0.9	--	Yes	6x6 Box	No	No	Nat.	Nat.	Yes	Yes
	New Inner	0.9	Yes	Yes	6x6 Box	--	--	Nat.	Nat.	Yes	Yes
	New Outer	1.3	Yes	Yes	6x6 Box	--	--	Nat.	Nat.	Yes	Yes

Flood discharges and elevations were obtained either from available Mn/DNR and Federal records or computed via accepted techniques for each stream/lake outlet in the vicinity of TH 60. Floods having recurrence intervals of 50- and 100-year were selected as having significance for this study. The base flood,[1] as defined by both the National Flood Insurance Program and Executive Order 11988, is that flood having a one percent chance of being exceeded in any given year, and is commonly known as the 100-year flood. Maps illustrating the floodplain limits and details of the flood hazard evaluation are contained in the "Hydraulics/Hydrology" section of Appendix D, "TH 60 Engineering Studies Report".

The 50-year flood event was used for a preliminary culvert/bridge size determination. All designs incorporate at least a three-foot freeboard based on the elevation difference between the 50-year headwater elevation and the top-of-road. Invert elevations were assumed equal to that of the existing highway structures. Each proposed structure design was tested using the 100-year flood discharge to insure that the base flood (100-year event) does not overtop the roadway.

Floodplain Impacts

The primary objective of Executive Order 11988 is "...to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative...." In support of this Executive Order, the Federal Highway Administration requires that any highway construction, reconstruction or rehabilitation undertaken with Federal funds will avoid, where practicable, longitudinal encroachments and significant encroachments of the base floodplain.

Examination of floodplain delineations along the proposed corridor indicates that none of the stream crossings constitute a longitudinal encroachment.

A significant encroachment is defined as "a highway encroachment and any direct support of likely base floodplain development that would involve one or more of the following construction or flood-related impacts:

1) a significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles...

2) a significant risk, or

3) a significant adverse impact on natural and beneficial floodplain values."

The roadway elevation for all proposed alternatives has been designed at or above the 100-year flood elevation. Replacement culverts and bridges have been sized

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[1] The 100-year (base flood) floodplain is subdivided into a "floodway" and "flood fringe". The "floodway" is that portion subject to fast moving water and which must be maintained free of obstructions to discharge the flood flows. The "flood fringe" is the adjoining portion of the floodplain which, under Mn/DNR regulations, may be filled for development providing the resultant water surface elevation is not increased by more than 0.5 feet.

larger than the existing culvert or bridge in almost all instances; this results in lowered 100-year flood elevations at several locations. As a result of these preliminary design considerations, there does not appear to be a significant potential for interruption/termination of transportation facilities involved in the proposed actions.

There is very little existing or anticipated development within the base floodplain. Within Windom, floodplain development has occurred along the west side of existing TH 60, extending for approximately one-half mile north of the Des Moines River; additional developable sites are available within the floodplain. The existing alignment alternatives would tend to retain direct support of existing base floodplain development. Windom is participating in the National Flood Insurance Program and this portion of floodplain has been designated as flood fringe; new development is permitted provided only if Program requirements are met.

The new alignment alternatives located east of the city of Windom could also encourage floodplain development. Each new alignment alternative requires a crossing of the Des Moines River located just south of the southern Windom corporate limits. Inherent in each alignment is an interchange with either TH 71 or CSAH 26; the interchanges would occur adjacent to the base floodplain. A detailed analysis of the Des Moines River in this area has been undertaken for the unincorporated areas of Cottonwood and Jackson Counties as part of the National Flood Insurance Program. A floodway/flood fringe delineation has been prepared; therefore, sufficient information will be available to adequately manage development within the floodplain.

Under the new alignment alternatives, the proposed Des Moines River structure would be between 0.3 and 0.4 mile long. For each alternative, the bridge would span the identified floodway; some roadway embankment materials would be required in the flood fringe. In each case, resultant water surface elevations would be within 0.5 feet of existing conditions. Only the outer new alignment alternative with the folded diamond interchange at TH 71 would require roadway fill within the flood fringe.

Utilizing proper mitigative measures, no significant adverse impacts on natural and beneficial floodplain values are anticipated. Potential effects and mitigative measures with respect to wetlands, water quality, and aquatic flora and fauna are discussed in the following sections of this report. In view of the above findings, no significant encroachments on the base floodplain are anticipated.

WETLANDS IMPACTS

The protection of our remaining wetlands in this country is of paramount concern. In this regard, in 1977 the President issued Executive Order 11990. The purpose of this order is "to avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever that is a practicable alternative." Included as wetlands are "those areas that are inundated by surface or groundwater... supporting a prevalence of vegetation or aquatic life... which generally includes swamps, marshes, bogs and similar areas such as sloughs, potholes, wet meadows, river overflows, and mud flats and natural ponds." The

TH 60 construction alternatives would have various wetland impacts. U.S. FWS and Mn/DNR have served as cooperating agencies to identify the wetland resources, impacts, and mitigation measures. Coordination details are included in Appendices C and I.

Overall, the existing alignment alternatives (Worthington to St. James) would have the greatest effect on wetlands-- a minimum total of 5.9 acres (two-lane construction) to a maximum of 10.3-12.1 acres (four-lane construction) lost due to the placement of roadway fill. The areas of potential impact include Duck Lake (31B), the south end of Warren Lake (15), the south edge of Clear Lake (14), a wet meadow near Highway 44 (12A), and the periphery of Butterfield Lake (3A). See Table 36 and Figure 12.

The alternative which utilizes existing alignment from Worthington to Windom and new alignment between Windom and St. James has the least potential for wetlands damage. With the exception of the Duck Lake area, this alternative would impact only the inlet to Cottonwood Lake (20), a small cattail pond (19), and perhaps a gravel pit pond (26B). Areas (19) and (20) would lose 0.1 acre each for either the two- or four-lane option and area (26B), 1 acre in size, would be totally eliminated under the outer new alignment alternative with a folded diamond interchange at TH 71. The cumulative loss varies from 2.0-3.0 acres (two-lane construction) to 4.3-7.1 acres (four-lane construction).

In terms of impacts, the alternative which utilizes the existing alignment from Worthington to Mountain Lake and new alignment between Mountain Lake and St. James has impacts very similar to the existing alignment alternatives. Wetlands affected include the Duck Lake location (31B), Warren Lake (15), Clear Lake (13, 14), and Highway 44 (12) areas; the required roadway fill would result in a cumulative total loss of at least 5.4 acres (two-lane construction) to a maximum of 9.6 to 11.4 acres (four-lane construction).

Duck Lake

Under all of the alternatives, the area of greatest wetland impact and concern would be along the south shore of Duck Lake (31B). At this location, Type 2, 3 and 4 wetlands exist within both existing and proposed rights-of-way. Type 5 wetland (open lake) occurs to the north of these rights-of-way. All alternatives would affect this locale equally. A minimum of 1.9 acres, including 1.2 acres of Type 4 wetland from the south shore of Duck Lake and 0.7 acre of Types 2-3 wetland on the south side of TH 60, adjacent to the railroad embankment, would be eliminated under two-lane construction. Under four-lane construction, a maximum loss of 4.2 to 6.0 acres could occur. The same 0.7 acre of Types 2-3 wetland described above would be lost, plus 3.5 to 5.3 acres of Type 4 wetlands from the south shore of Duck Lake for the "narrow" and "typical" median options, respectively.

The present alignment of TH 60 and the Chicago and Northwestern Railroad embankment separates Duck Lake from Heron Lake; hydrologic and hydraulic conditions have stabilized over the 50 years the fill and drainage structures have been in place. As the existing drainage structures would be replaced in kind, changes in periodicity, local water tables, mean water level and circulatory patterns are not expected. The addition of fill material would cause a reduction in available retention storage; compared to the size of Duck and Heron Lakes, this

reduction would be insignificant. There could be some diversion of groundwater due to the extent of soil removal and subsequent filling required adjacent to Duck Lake. The impact due to changes in groundwater flow would be expected to be minimal.

Warren Lake

The south end of Warren Lake represents a special wetlands resource. This 24-acre area has been used and controlled by the Mn/DNR for a walleye-rearing pond since the late 1950's. The facility includes both a fish and a water control structure. The fish control is a screened area on the north side of inplace TH 60 which prevents predator fish from entering the rearing pond from Cottonwood Lake. The water control structure, on the south side of TH 60, serves as both an inlet and outlet for Cottonwood Lake depending on the water levels. Each spring, walleye fry are stocked into South Warren Lake, which fills with water from runoff. In the fall, the pond is drained and up to 110,000 fingerling walleyes have been captured to be stocked in area lakes. Either two-lane or four-lane reconstruction on the existing alignment would require new control structures in order for present functions to continue. Perhaps both the fish and water could be controlled by a single structure. Construction should be timed during October or May or special provisions made to control water levels in Warren Lake during construction so as not to result in the loss of walleye production.

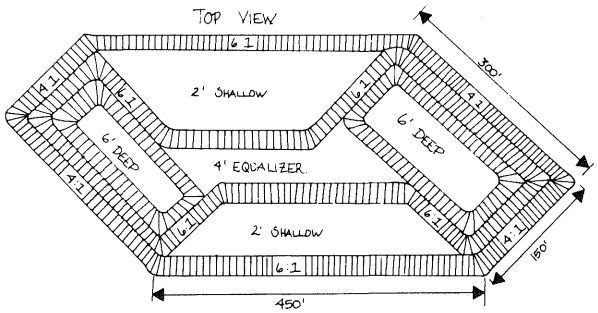
Mitigation

All construction in the affected wetlands areas would be carried out in conformance with joint FHWA and Mn/DOT design guidelines for shoulders, side slopes and clear zones to minimize wetland encroachments along new or reconstructed trunk highways (Mn/DOT Technical Memorandum 79-18-RD-2 or equivalent). A number of additional mitigative measures can be incorporated into both design and construction to enhance the natural environment and to minimize harm to present wetlands. Low meadows, such as exist near Highway 44 (12) and around Cottonwood Lake (18-24) might be dredged or impounded to create a pond or deepwater marsh and thus a more diverse habitat than at present. A former wetlands area east of Mountain Lake along TH 60 (7) is currently being drained for agricultural use; however, according to FWS, this area could be easily restored to a wetland or small lake. Ditch blocks, used in conjunction with the four-lane options, would serve to hold runoff water and provide some waterfowl habitat. This could work especially well around Duck Lake.

Near the lakes that are subject to encroachment-- especially Warren, Clear, and Duck Lakes-- it is critical to maintain a gradual slope from the road shoulder into the water in order to create a shallow shelf or littoral zone. In so doing, the aquatic vegetation would better be able to reestablish itself and the potential for invertebrate, fish and wildlife habitat would be maximized. Filling in or near the water should be done in a slow controlled fashion to prevent localized slope failures from occurring. Although fill placement would occur over an extended period, the net impact will minimize lake sedimentation.

Borrow pits generally fill with water and can be utilized to provide additional wetlands area, as shown in Figure 13. Borrow areas should be designed and located specifically to create a marsh habitat; flat side slopes (6:1) and shallow areas

should be included for the establishment of marsh vegetation. Final revegetation should begin as soon as possible, and should include typical marshland flora.



WETLAND CREATION USING BORROW PITS

FIGURE 13

Source: NCHRP Report 218A, December 1979.

WATER QUALITY IMPACTS

Erosion and Sedimentation

Although water runoff from a construction site can carry many things with it, the major pollutant is sediment. The receiving waters of a heavy sediment load have been shown to exhibit a decrease in the density of aquatic insects that serve as food for fish, a deterioration of fish spawning zones, and an increase in undesirable biological species.

Appropriate construction control practices will be used to minimize the impacts of erosion. Through appropriate construction control, the use and classification of all concerned water resources should not change. These measures are discussed in the "Construction Impacts" section of this report. The importance of such measures is reinforced by looking at the natural turbidity levels of the lakes and streams. Between November 1977 and August 1978 the turbidity of Butterfield, Bingham and Cottonwood Lakes varied from 1.3 to 40 Nephelometric Turbidity Units (NTU),

while selected streams ranged from 1.0-13.0 NTU. These numbers indicate that the natural amount of suspended matter (clay, silt, organic and inorganic matter, plankton, etc.) is not excessive.

Control measures are particularly important in the construction areas most vulnerable to erosion. These include (a) cut and fill transitions, (b) silty soil locations, (c) steep slopes, and (d) waterway crossings. Cut and fill transitions occur in the segment between Wilder and Butterfield on both existing and new alignment alternatives. Under the new alignment alternatives, there would be a considerable number of relatively deep cuts and high fills in the Windom area. The four-lane alternatives have a higher erosion potential than two-lane alternatives due to the greater amount of earthwork involved. Silty soils occur primarily in the vicinity of the Heron Lake outlet, between Wilder and Windom, and between Bingham Lake and Mountain Lake. The existing alignment alternative would expose fewer of the areas of silty soils than the new alignment alternatives. Steep slopes are encountered at the south end of Windom. The existing alignment alternatives would have the least impact due to the limited amount of earthwork required in the steep slope area. All of the proposed crossings of lakes, streams and wetlands would require placement of fill in or adjacent to the waterway, and all would inevitably result in some sedimentation. Areas of special concern include Jack Creek, Clear Lake, Warren Lake South, and Butterfield Lake. The new alignment alternatives would have less impact on these critical areas than would the existing alignment alternatives.

Chemical Pollutants

The construction, use and maintenance of any new stretch of highway carries with it the possibility of the addition of many unwanted chemicals into neighboring waterways. Petroleum products wash off heavy equipment during construction; metals, particularly lead from the exhaust of trucks and automobiles wash off the road surface during use; and road oils, salt, fertilizers and herbicides used to maintain the road and associated right-of-way can be carried along with runoff. Construction precautions to avoid water pollution are described in the "Construction Impacts" section.

Road salt used to maintain a safe winter road surface is perhaps of greatest concern. When Total Dissolved Solids (TDS) exceed 1,000 ppm, fish experience survival and reproductive problems. Sodium and chloride, the constituents of salt, are part of what constitute TDS. Between November 1977 and August 1978 Butterfield, Bingham and Cottonwood Lakes showed TDS values of between 490-2,300 ppm, 320-540 ppm and 330-540 ppm, respectively (see Appendix I, "TH 60 Natural Resources Report" for details).

An increase in the TDS entering Cottonwood Lake can be expected if the new alignment Windom bypass is constructed, as roadway runoff from TH 60 would have a more direct path to Cottonwood Lake via the creek (20) coming from the Axford slough (16). However, the additional concentration would unlikely boost TDS levels in the lake beyond the critical 1,000 ppm level and thereby noticeably affect its fishery.

Duck Lake would receive discharge from a subsurface TH 60 drainage system anticipated in the vicinity of the city of Heron Lake under the existing alignment

alternatives. Drainage from the area to Duck Lake is currently surface flow via existing TH 60 roadside ditches. Potential adverse impacts can be avoided by the use of a sedimentation basin located at the outlet of the anticipated storm sewer. Provisions will need to be developed at such time as detailed roadway plans are developed for the Heron Lake section of TH 60.

The streams along the route do not, for the most part, contain any kind of viable fish population near the highway crossings. TDS values are at, or in some cases, far beyond 1,000 ppm already. The two-lane upgrade will not significantly alter the amount of salt used in comparison to the present roadway. Four-lane dualization would approximately double the amount of salt used, but the impact on streams of this type and condition should be minimal. No change in their present use or classification should be expected.

Until less harmful de-icers are developed and readily available, limiting the amount of salt applied to the highways will be the most effective means of minimizing the possible impacts of salt on lakes and wetlands. Mn/DOT has instituted a program under which it has attempted to cut back on the amount of salt used on highways in the State without sacrificing the safety of motorists. In keeping with this program, the Mn/DOT will apply salt on TH 60 at the minimum amount that safety will allow.

Fertilizers and herbicides are used to establish and maintain the roadside right-of-way. Herbicides should be formulated into anti-drift emulsions and used only where deemed necessary. Fertilizers containing nitrogen phosphorus and potassium should only be applied in accordance with the deficiencies of the soil so that leaching is minimized. In view of the fact that over 90 percent of surrounding land use is agricultural, where herbicides and fertilizers are heavily applied, and that the prairie-type lakes are in an advanced state of eutrophication, little or no impact from controlled maintenance use of these substances on water quality is likely.

Heavy metals of minute amount can have drastic effects on the livability of an aquatic environment for certain organisms and its appropriateness for human uses. Sources of these substances include precipitation, dust, fallout, erosion, leaching of the soil, waste discharges, and street runoff. The U.S. Environmental Protection Agency has set water quality criteria to ensure the safety of our surface waters for various uses. The waters of Butterfield Lake, Bingham Lake, Cottonwood Lake, Butterfield Creek, Jack Creek, Heron Lake Outlet, and Okabena Creek all contain levels of heavy metals such as copper and nickel far below any critical levels. However, their concentrations of lead, cadmium and mercury were shown to be near, and in some cases above, safe levels for sensitive aquatic organisms between November 1977 and August 1978. Most of the sources of this contamination are not related to this project, but the erosion control practices described in the "Construction Impacts" section will help minimize any heavy metal pollution that may result from construction activities.

Accidental spills of hazardous liquids are always a possibility along any major highway. Areas of greatest vulnerability to such a spill in terms of environmental impacts would be Duck Lake, Cottonwood Lake, Clear Lake, and Butterfield Lake. In addition, all of the stream crossings as well as the Valleau State Wildlife Management Area would be harmed by a toxic chemical spill. Should such an event

occur it is important that a preconceived control procedure be carried out as quickly as possible. Mn/DOT has recently developed such a plan for the Arrowhead Bridge at Duluth, Minnesota. As this project moves forward, a similar plan applicable to TH 60 will be formulated.

OTHER NATURAL RESOURCE IMPACTS

Vegetation and Wildlife

As discussed in the "Affected Environment" section, the proposed TH 60 project will not infringe upon the ranges of any officially threatened or endangered species of wildlife or vegetation. Therefore, no impact on such species is anticipated. Impact on "priority species" is also quite unlikely. Of those priority species most likely to occur within the project vicinity, most prefer large marsh, lake or prairie habitats. None of the TH 60 project alternatives will significantly impact such areas.

The black-crowned night heron colony located on the Clarence Blomgren farm west of Butterfield would be very minimally affected, if at all, by the existing or either new alignment alternatives. None of the alternatives displace any of the grove used by the colony. The grove is not unique to the area and natural deterioration to the heron habitation will normally result in abandonment of the grove within a few years.

The Valleau State Wildlife Management Unit (36) represents one of the most important natural areas along the TH 60 improvement corridor. It is a wetland and natural vegetation area 335 acres in size and represents an important recreational resource for hunters, a native plant and animal refuge and a wintering area for deer. Existing TH 60 and the CNW railroad cut the unit approximately in half. The two-lane improvement alternative would not require additional right-of-way acquisition although the roadway cross section and slopes would be altered. The four-lane alternative would, however, require acquisition of 6.7 acres of land from the northern portion, representing approximately two percent of the total Unit area. A draft Section 4(f) evaluation is included in this Impact Statement.

The overall impact of this action to the Valleau Wildlife Management Unit should not be significant. The potential impacts have been discussed with Mn/DNR. As a mitigative measure for the loss of 6.7 acres, adjacent parcels could be purchased and added to the Unit. The addition of Mn/DNR proposed expansion lands at Crosse State Wildlife Management Area immediately to the north of Valleau would enhance the area's overall benefit to wildlife. In addition, an improved wildlife corridor between the north and south portions of the Valleau Unit can be accommodated by the new, longer span bridge(s) at the adjoining Jack Creek crossing with either two- or four-lane construction. Wildlife movement would be similarly enhanced by new, longer span bridges proposed for Elk Creek, Judicial Ditch No. 76, Heron Lake Outlet on the existing alignment and would be accommodated by the proposed new alignment span at the Des Moines River.

Only a few prairie remnants remain throughout the State. One such area exists near the intersection of TH 60 and CSAH 2 at the southwest corner of the Carpenter (Bingham Lake) State Wildlife Management Area and spawning facility.

Under the existing alignment alternative, CSAH 2 and TH 60 would be realigned. However, part of TH 60 would be "reclaimed". The existing prairie area would remain intact and could possibly expand into the reclaimed area. A draft Section 4(f) discussion is included in this Impact Statement.

Similarly, the rolling hills on the east side of Cottonwood Lake could become a good prairie habitat. They are presently, however, being grazed by cattle and horses. Should the new alignment alternative bypassing Windom be chosen, this would be an excellent area for mitigation in terms of prairie restoration using highway right-of-way.

Roadside management should consider the importance of road shoulders and rights-of-way as a valuable wildlife habitat resource regardless of the alternative chosen. This is particularly true for southwestern Minnesota where, as a result of intensive farming, there are relatively few locations of excellent wildlife habitat. A patchwork mixture of brome grass and alfalfa with switchgrass-- a prairie species-- is recommended for roadside cover by Mn/DNR and Mn/DOT wildlife biologists. Switchgrass provides needed winter cover while brome/alfalfa service the needs of nesting birds. Care should be taken to control roadside cutting for hay by farmers before mid-July, or nests would be unnecessarily destroyed. In areas where extreme salt use is anticipated, shoulders and medians may need to be planted with salt tolerant species such as fescue, wheat grass, wild rye and reed canary grass.

Groundwater

The available geology and soils information indicates that although groundwater can be expected relatively close to the surface, the clayey nature of the soil restricts this aquifer for groundwater withdrawal. As a result, most water supply sources extend down to the underlying bedrock. The great depth of clayey soils results in very little surface recharge to the underlying aquifers. Significant impacts to municipal or private water wells are not anticipated.

Roadway construction is therefore anticipated to have a minimal effect on groundwater recharge and resources. A possible exception occurs in the Windom area. The new alignment alternative to the east of Windom passes over what appears to be an old river channel. Soils in this area tend to be more granular than in other portions along the alignment. As a result, there is the possibility that some surface groundwater recharge occurs in this area. Construction of embankments over the existing low areas along the alignment could reduce the amount of surficial recharge presently occurring. Some water well development has occurred in the old channel deposits. Shallow wells within 100 feet of the alignment should be sampled prior to construction to establish existing water quality and depth.

"Perched" groundwater may be encountered at roadway cut sections in certain locations, including (1) the north end of Windom, (2) the "outer" new alignment location at Bingham Lake, and (3) some of the cuts along the new alignment alternative between Mountain Lake and Butterfield. Such conditions may require dewatering during construction but should have minimal adverse environmental effect.

Energy Consumption

A comparative energy analysis was prepared using techniques and representative consumption rate information contained in workshop notes on "Energy

Requirements for Transportation Systems", sponsored by the Federal Highway Administration, Office of Environmental Policy and Office of Development. Current state-of-the-art techniques do not lend themselves to precision. The comparative consumption estimates do indicate, however, if a proposed facility will have a trend towards an increase or decrease in energy usage. Since each alternative is evaluated in the same manner and with the same factors, the lack of precision should not affect the relationship of the alternatives. Calculated differences of less than ten percent are generally considered not significant. At approximately ten percent, differences are considered to reach a significant level, the degree of significance increasing as the percent difference increases.

Both direct and indirect energy consumption were considered. Direct energy consumption consists of fuel consumption due to vehicle operation on the roadway system. Indirect energy consumption consists of roadway, manufacturing and maintenance of the vehicles using the roadway, and "peripheral effects" due to resulting changes in land use or population patterns. No substantial shifts in population density or land use are anticipated that would induce significant energy differences in trip production or travel patterns, other than accounted for in the traffic assignments to the various alternatives. Conversion of farmland to highway use will be minimized by reduced right-of-way standards and the reclamation of abandoned rights-of-way for farmland use. Thus, potential biomass energy production differences would not be of significant magnitude to affect the comparative analysis. The peripheral effects are discussed in the "Land Use Planning Impacts" and "Farm Impacts" sections.

Table 38 provides a comparison of the no-action alternative to the three basic improvement alternatives in terms of equivalent annual energy consumption. Estimated consumption is shown for both two-lane and four-lane improvement configurations. For ease of analysis and comparison, a single estimated "completion year"-- 2000-- was assumed for both two-lane and four-lane construction.

The comparison of alternatives reveals:

1) Direct vehicle operation energy consumption for each of the improvement alternatives is slightly lower than for the no-action alternative, despite the fact that higher traffic volumes are accommodated. This is due to increased operating efficiency on the improved roadways.

2) Construction energy requirements and higher vehicle maintenance and manufacture energy (due to additional travel accommodated) result in somewhat greater indirect energy consumption for the improved alternatives.

3) Overall energy consumption differences due to the location of the improvement alternative (i.e., all on existing alignment versus partially on new alignment) are too small to indicate that one location is significantly more energy intensive than another.

4) As compared to no-action, overall energy consumption for two-lane improvement is not significantly different.

TABLE 38

EQUIVALENT ANNUAL ENERGY CONSUMPTION

(Thousand Barrels Oil/Year)

	ALTERNATIVE						
		Existing Alignment		Exist: Worth.-Windom New: Windom-St. James		Exist: Worth.-Mt.Lk. New: Mt.Lk.-St. James	
	No-Action	2-Lane	4-Lane	2-Lane	4-Lane	2-Lane	4-Lane
Direct							
Vehicle Operation*	145-152	131-134	131-145	134-139	134-151	133-136	133-148
Indirect							
Roadway Construction**	7	20-21	32-34	25-27	36-40	22-23	34-37
Roadway Maintenance	2	2	3	2	3	2	3
Vehicle Manufacture and Maintenance*	56-60	56-60	56-62	55-64	55-65	55-62	55-63
Peripheral Effects	0	Minimal		Minimal		Minimal	
Subtotal	65-69	78-83	91-99	82-93	94-108	79-87	92-103
Total*	210-221	209-217	222-244	216-232	228-259	212-223	225-251
% Change from No-Action		1- to -2%	6 to 10%	3 to 5%	9 to 17%	1%	7 to 13%

*Range shown reflects consumption under constrained versus projected traffic volume conditions.
**Range shown reflects alignment variations.

5) As compared to no-action or two-lane improvement, overall energy consumption for four-lane improvement on any of the alignments is potentially significant. However, the proposed construction staging will reduce actual differences between two- and four-lane construction. Moreover, the portion of the difference due to increased traffic using a four-lane facility reflects estimated economic losses to the corridor with future two-lane travel constraints-- losses that would likely result in offsetting travel energy increases at other locations absorbing the economic shift. When such factors are discounted (i.e., as they are in the low end of the consumption ranges shown in Table 38), the differences between two- and four-lane construction are not significant.

Thus, while the computations show a slight trend toward higher overall energy consumption with four-lane dualization and/or use of new alignment, the magnitude of such differences are not deemed significant in view of the precision of the current state-of-the-art computation techniques.

HISTORIC SITE IMPACTS

In accordance with the National Historic Preservation Act of 1966 and the Procedures of the National Advisory Council on Historic Preservation, the State Historic Preservation Officer (SHPO) has been consulted (see correspondence in Appendix C). A review of the project is being conducted by the Minnesota Historical Society (MHS).

The MHS review of known sites has revealed that no historic, architectural, archaeological or cultural resources sites currently listed on, or having nomination pending to, the National Register of Historic Places would be impacted, since none are located along or near the TH 60 existing or new alignment corridors.

The MHS has also completed field surveys of the alternative alignment corridors to identify any sites potentially eligible for inclusion on the National Register. Two sites adjoining existing TH 60 at the southeast and southwest ends of Duck Lake were identified as having potential archaeological significance (see Appendix C). Investigation of Duck Lake Site #1 (southeast end) indicated that the proposed improvements would not affect the site. The SHPO has recommended that Duck Lake Site #2 (southwest end) be subjected to further intensive testing to identify the nature, condition and significance of the archaeological deposits and the potential impacts or salvage needs associated with the proposed TH 60 construction alternatives. No other potentially eligible sites were found along the existing alignment corridor. Along the new alignment alternative near Windom, MHS surveys of a potential archaeological site on the southwest shore of Cottonwood Lake revealed no evidence to support either preservation or salvage.

At Mountain Lake, the new alignment alternatives would pass near Heritage Village, a collection of relocated, restored buildings and artifacts of pioneer settlement. Land acquisition of less than one acre would be required at the southeast corner of the 22-acre site owned by the developers of the Village, Heritage House, Incorporated. The affected portion of the tract is currently leased for farming. The five acres at the western end of the site occupied by the Village

would not be significantly affected. As noted in a September 13, 1979 supplement to the Mountain Lake-Butterfield Observer/Advocate on Heritage Village, "It [the Village] was well organized [in 1971] with the thought that in the future the Village would abut the proposed four-lane freeway..."

Mn/DOT has requested the Minnesota Historical Society to complete the necessary additional testing of the Duck Lake Site #2 as part of the MHS Trunk Highway Archaeological Survey program. Completion is anticipated prior to preparation of the Final EIS for TH 60.

AESTHETICS AND VISUAL IMPACTS

General Considerations

The evaluation of aesthetics and the visual effects is complicated by the fact that aesthetic judgements are largely subjective. What is visually pleasing to one individual may not be to another. While reaction to specific features might vary, studies have shown that, in general, motorists prefer trees, plantings and a park-like appearance along highways, and that attitudes toward farmland as roadside scenery are favorable.

In evaluating aesthetic quality, two factors must be examined. One factor involves the treatment of the roadway itself and the design of roadway appurtenances and landscaping. Since similar treatments of roadway details can be applied to all alternatives, this factor of aesthetic quality was not considered in the evaluation.

The second level, and the one upon which a comparative evaluation can be based, deals with the larger scale consideration of how well the highway blends with the terrain and to what extent its location takes advantage of and complements the natural scenic amenities of the corridor. The view from the road, of the road and the compatibility of the highway with its surroundings were considered.

No-Action

The existing road is small in scale and follows the undulating ground closely. It fits the terrain well except for several horizontal curves which are too sharp for the broad plain and gentle slopes on which it lies. The broken, deteriorated physical condition of the concrete pavement detracts from its overall appearance. Gravel shoulders emphasize the narrow widths and contribute to the inconsistency between the physical scale of the roadway and the amount and size of traffic utilizing it.

The character of TH 60 in the cities of Butterfield and Mountain Lake is busy and traffic-related, with emphasis on traffic control devices. This mixed highway versus town environment creates an adverse visual intrusion on the adjoining residential neighborhoods. Anticipated traffic increases will further exaggerate this condition. The highway character in Windom is similar, but the visual impact is minimized since the adjoining environment is predominantly commercial.

Existing Alignment Alternatives

The improved two-lane highway would be similar to the present roadway. It would have a smoother, more flowing horizontal alignment, complementing the rolling nature of the countryside. The proposed facility would be raised slightly, offering a better view of the terrain without significantly increasing the intrusion of the roadway on the landscape.

Vertical and horizontal realignment west of Bingham Lake would fit the terrain in a more pleasing manner, and would improve views of and from the roadway. It will also improve the visibility of the intersections in the area, increasing the safety of the facility. Alignment changes at TH 86 near Wilder would similarly produce a more pleasing, smooth, and safe road alignment.

Four-lane construction would result in an increased roadway scale; the gently rolling line and grade in addition to the directional separation of traffic would be much more pleasing to the highway user. The two additional lanes may represent either a more interesting visual landscape or an intrusion on the terrain, depending on the preconceptions of the observer.

The visual effect on Butterfield, Mountain Lake, and Windom would be similar to that of no-action.

New Alignment Alternatives

The new two-lane alignment would be generally smooth and flowing with a gentle line and grade that fits the surrounding terrain. Four-lane construction would have effects similar to those discussed under the existing alignment alternative. The major changes to the existing landscape would occur at the proposed railroad overpasses, the bypassed cities of Butterfield and Mountain Lake, and in the vicinity of Windom.

Railroad overpasses are proposed for the Welcome branch of the CNW near Butterfield, and for the CNW mainline either near the existing overpass east of Butterfield or west of Mountain Lake. The highway would be elevated about 30 feet above the general level of terrain and major landscaping efforts would be required to soften the visual impact of the high embankment. Conversely, the view from the high points would offer the motorist a change of perspective of the surrounding landscape; it could become a welcome and pleasing relief from an otherwise general sameness.

In Butterfield and Mountain Lake, removal of traffic from the existing roadway would produce a street environment more compatible with local authority. Elimination of through traffic, a general absence of heavy trucking and need for fewer traffic control devices would open up potential for local visual improvements such as sidewalk and street landscaping.

The visual character east of Windom would be changed significantly with the introduction of a four-lane facility. The area is generally open, with many localized hills and depressions. The resultant curvilinear highway alignment would follow the terrain closely, especially in the northern portion. The grassed median

and landscaped back slopes should enhance the basic attractiveness of the facility, resulting in an interesting transition into the floodplain.

At the northerly Windom interchange, the two-lane overpass over the CNW mainline and proposed TH 60 is surrounded by hills and valleys of about the same scale and should not be intrusive. The diamond ramps are located close to the highway with gentle curvature and would result in a compact facility blending into the rise and fall of the surrounding terrain. A brief glimpse of Cottonwood Lake would greet the motorist just south of this interchange.

Near the Des Moines River crossing, the inner alternative alignment would pass under CSAH 26 escarpment cut over TH 71 near the center of the valley west of the river, and then onto the River Bridge approximately 25 feet over the floodplain. The curvilinear alignment and views of the valley floor should be pleasing to the motorist, although the interchange and cut/fill transition would add complexity to the scene. This alternative complements the terrain fairly well, but is somewhat intrusive within the river valley.

The outer alternative alignments would have much the same impacts on the visual scene as the inner alignment, but would be slightly less intrusive within the floodplain due to the scale of the valley and the distance to potential viewers. West of the river it would raise to a point 110 feet above the valley floor and would dominate westward vistas. The outer alignments would have a more open and rural setting than the inner alignment, although embankments and structures would be both higher and longer. Both alternatives would significantly alter the present rural setting.

CONSTRUCTION IMPACTS

Aside from long-term direct impacts on vegetation, wildlife and natural resources, a number of potential impacts could occur due to the actual construction of TH 60. These include air and water pollution, erosion, and disruption to utilities and local traffic. This section discusses the occurrence of these impacts and measures that would be taken to minimize harm.

Bridge and Fill Construction in Streams, Lakes and Wetlands

Surface Water Crossings: General. All applicable regulations of pollution control and fish and wildlife agencies relating to the prevention and abatement of pollution shall be complied with during hauling and construction operations. The Minnesota Department of Transportation's construction specifications require the contractor to become familiar with local conditions and national, state and local regulations before starting construction.

Fording of live streams with hauling equipment will not be permitted. Temporary bridging will be used if and where stream crossings are necessary. Waterways will be cleared as soon as possible after construction.

During construction, potentially harmful materials such as gasoline and oil will be kept in confined areas out of the floodplain to prevent any spillage from entering the water bodies.

Des Moines River Crossing. Some soils within the Des Moines River floodplain were found to be soft and may require fill to support construction equipment. Portions of the area have been farmed and may be relatively stable; other portions may require a sand blanket. Limited application of the blanket using the minimum thickness possible would reduce the harmful effects. Revegetation of the mat upon construction completion would consolidate the blanket into the floodplain sands and sediments. No long-term impacts from the sand blanket are anticipated.

Due to the high water table in the floodplain, construction of the bridge piers could mean contamination of groundwater through sedimentation and erosion. Cofferdams will be constructed, however, and dewatering techniques used to minimize harm. Pumped water and excavated material from the cofferdams will be discharged in approved means at approved disposal sites under U.S. Army Corps of Engineers and MPCA regulations so as to avoid adverse impact on the Des Moines River.

Lake and Wetlands. See the "Wetlands Impacts" section.

Borrow Pit Treatment

Much of the proposed roadway is on fill, and sites outside the construction limits will be required as a source of fill material. Mn/DOT will identify potential borrow pit sites for the contractor at such time as construction plans are developed for each of the roadway sections in the 52-mile corridor. Topsoil and clays will be utilized for fill provided they are not used for placement in water. The relatively high groundwater level in the area indicates that borrow sites may require dewatering, and could produce siltation problems at the discharge point. Additional soils investigations will insure that borrow pits would not be located in areas of silty soils; this should minimize potential harm. The high groundwater table also dictates a relatively shallow borrow pit configuration; care in shaping will enhance the potential use as a wetlands area. Under Mn/DOT policy, the list of potential sites will be furnished to the Minnesota Historical Society for archaeological review under the Trunk Higway Archaeological Survey program prior to construction.

As soon as borrow is completed in a given area, these sites will be left neat and in as near a natural condition as possible. Restoration will include cleaning, shaping, replacement of topsoil, and establishment of vegetative cover on all areas disturbed by construction operations.

Disposal of Unsuitable Materials

Near Duck Lake, the Des Moines River, Warren Lake, Clear Lake and Butterfield Lake, areas with unstable soils or peat will first have to be excavated down to stable materials. The excavated peat and organic soil will be used as slope-dressing wherever needed along the overall project route. To keep this material from reentering the water bodies, the excavated material would normally be removed from the floodplain area. However, if subsequent testing of the dredged material shows it to be relatively free of pollutants, these materials may be used to create a 10- to 15-foot shallow shelf or littoral zone; this would enhance the productivity of the affected lake or wetland. In each instance, the concurrence of

Mn/DNR, U.S. Army Corps of Engineers and FWS will be obtained before the dredged material is reused in this manner.

An additional mitigation measure use for peat/muck soils is as bottom dressing for reclaimed borrow pits. The relatively sterile mineral soil exposed in borrow excavation is unsuitable for marsh plant production, resulting in a slow rate of revegetation. By lining the pits with organic material, a fertile substrate is provided for plant growth.

Construction Plants

If a hot mix paving plant or similar operation is required for this project, air pollution requirements will be adhered to. Water containing sediment from aggregate wash operations will be treated to the extent that the final sediment content will meet the specified effluent standards that the Minnesota Pollution Control Agency has set. All necessary permits will be obtained and complied with. Wash water or wastes from concrete mixing operations will not be allowed to enter live streams. All applicable regulations of pollution control and fish and wildlife agencies relating to prevention and abatement of pollution shall be complied with in the performance of the contract work.

Pollution Control During Construction

Precautionary measures will be utilized during the construction of this project to prevent air and water pollution. Controls over contractor's construction operations will be provided by the Division of Highways' "Standard Specifications for Highway Construction" and other regulations in effect at the time of construction. Additional controls relating to the prevention of air and water pollution will be included in the contract.

These specifications and special provisions will include the following: The engineer will have authority to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations and to direct the contractor to provide immediate permanent or temporary control measures to prevent contamination of adjacent streams and other water courses, lakes, ponds, and areas of water impoundment. Cut slopes will be seeded and mulched as the excavation proceeds to the extent considered desirable and practicable.

The contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time. Temporary pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent erosion control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with the permanent control features on the project. Some examples of temporary control devices are mulches, slope drains, dikes, sediment basins, and turf establishment. Temporary grasses will be quick growing species suitable to the area, that will provide temporary cover but will not later compete with the grasses sown for permanent cover.

Where erosion is likely to be a problem (see "Water Quality Impacts" section), clearing and grubbing operations will be so scheduled and performed that grading

operations and permanent erosion control features can follow immediately thereafter if the project conditions permit; otherwise, temporary erosion control measures may be required between successive construction stages.

The engineer will limit the area of excavation, borrow and embankment operations in progress commensurate with the contractor's capability and progress in keeping the finish grading, mulching, seeding and other such permanent erosion control measures current in accordance with the accepted schedules. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures will be taken immediately to the extent feasible and justified. For example, if river bridging work is stopped for the winter, the exposed cuts or fills for approaches will be riprapped to protect against erosion during spring runoff and resulting high water.

The engineer may increase or decrease the amount of surface area of erodible earth material that may be exposed at one time by clearing and grubbing, excavation, borrow and embankment operations, as determined by his analysis of project conditions. For example, two separate areas could be opened simultaneously if two fleets of equipment were available.

Construction Noise

The high noise levels of construction equipment mean that there is a potential for noise impacts. It is difficult to estimate the actual equipment that will be used at any given time and no predictions of the noise levels have been made at this time. Due to the number of potential receivers, construction noise impacts will be greatest within the communities of Brewster, Heron Lake, Wilder, Windom, Bingham Lake, Mountain Lake and Butterfield. Other generators of high noise levels include pile driving and earthwork grading.

The impact of construction noise can be minimized by restricting the hours of construction activity, utilizing the quietest equipment available, constructing temporary barriers and by careful attention to see that all equipment is properly muffled. Ordinances regarding working hours-- or types of construction that can be performed during certain hours-- sometimes vary from city to city. Contractors will be required to comply with these regulations.

Disruptions to Utilities

Mn/DOT will notify utility companies and municipalities which properties (pole lines, conduits, gas lines, water mains, sewers, etc.) must be relocated to complete the project; this notice will specify final utility locations. The contractor will give notice to the utilities at least 48 hours before commencing operations affecting those properties. The contractor will also take all precautions, including use of special equipment and hand labor, to prevent damage to the facilities.

The existing utilities along rural sections of TH 60 include electric, telephone and natural gas; these run both parallel and perpendicular to the proposed action, depending on area. All four-lane construction options would require relocation of the Interstate Power Company substation near Heron Lake. The new alignment alternatives would also require relocation of high pressure natural gas lines near town border stations at Windom and Mountain Lake. The existing alignment

alternatives would also require relocation of electric, telephone, gas, sanitary sewer and water main facilities within Heron Lake, Windom, Mountain Lake and Butterfield. Construction staging of utility relocations will provide continuous service on all major transmission facilities. Short-term disruptions may occur as the relocated facilities are brought on-line; these are expected to be temporary with no short-or long-term adverse impacts.

Disruptions to Traffic

Construction work will probably cause some disruptions to local traffic patterns. Since the project is relatively lengthy (Worthington to St. James, about 52 miles), the actual construction will be done under several separate contracts. Construction will be scheduled in such a manner that alternate routes around construction areas can be developed. Vehicular access to adjacent properties will be maintained during construction.

The Minnesota Department of Transportation's "Standard Specifications for Highway Construction" requires contractors to conduct their operations in a way that will cause the least obstruction to traffic. Contractors are also required to provide for the safety of the general public as well as residents abutting the highway. When necessary, contractors will provide temporary facilities to serve pedestrian travel over or through obstructions at public walkways. Open excavations will be fenced off and posted with warning signs.

Contractors are required to give the chiefs of the local fire and police departments sufficient notice to arrange for routing of emergency vehicles before it becomes necessary to blockade a street. They must also keep them informed as to the status and removal of street blockades affecting emergency travel. Access to fire hydrants will not be obstructed without the approval of the local fire chief.

Two-lane reconstruction along the existing alignment would require significant detours around each construction segment. Between Worthington and Wilder, dualization as a first stage would avoid the need for detours from the existing alignment; traffic would utilize the new roadway during future replacement of the existing roadway. Likewise, construction of the new alignment alternatives and all future dualization avoid the need for detours. Localized disruptions would occur at intersections under any of the alternatives. Roadway reconstruction on the existing alignment in Windom, Mountain Lake and Butterfield would be sequenced to maintain one lane of traffic in each direction at reduced operating levels.

Detours to TH 60 through traffic would be routed on designated Trunk Highway routes. As work progresses on a segmental basis, Highways 4, 10, 71, 86, 62, 59 and I-90 would be utilized. Intra-corridor (local) traffic would likely utilize township or county roads to reduce detour lengths and travel times. Traffic volumes and resultant road wear would tend to increase on these roadways. In any case, construction staging will be arranged to minimize trip length, increased travel times, and potential traffic delays.

COMPARISON OF ALTERNATIVES

Table 39 provides a summary comparison of the costs, traffic service, and impacts of the no-action and proposed improvement alternatives. The selected indicators

TABLE 39

COMPARISON OF ALTERNATIVES

Cost	No-Action	Existing Alignment 2-Lane	Existing Alignment 4-Lane	Exist-Worth.Windom New-Windom to St. James 2-Lane	Exist-Worth.Windom New-Windom to St. James 4-Lane	Exist-Worth.-Mt. Lake New-Mt. Lake to St. James 2-Lane	Exist-Worth.-Mt. Lake New-Mt. Lake to St. James 4-Lane
Construction and Right-of-Way ($ Million - 1980 Dollars)	9	69-71	110-118	92-100	131-146	75-78	119-128
Annual Funding - Staged Const. ($ Million - 1980 Dollars)	0.6	4.6		6.1		5.0	
Traffic Service (Design Traffic)							
Operation below 50 mph desirable service level (percent of 52-mile corridor)	83	10-12	10-12	8-10	0-2	6-8	6-8
Travel Delays - Urban Sections (Thousand Veh Hr/Yr)	100*	87-100	87-100	0-13	0-13	31-44	31-44
Travel Time - Worthington to St. James (minutes)	75	65	61	61	56	63	59
Safety	Retains Design Hazards; Thru-Town Conflicts	Eliminates Design Hazards Retains Thru-Town Conflicts		Eliminates Design Hazards and Thru-Town Conflicts		Eliminates Design Hazards and Part of Thru-Town Conflicts	
		—	30-40% Lower Accident Rate than 2-Lane	—	30-40% Lower Accident Rate than 2-Lane	—	30-40% Lower Accident Rate than 2-Lane
Land Use/Economic Development							
Regional Development Goals	Negative Impact	Minor Positive Stimulus		Positive Stimulus		Positive Stimulus	
Land Use Planning	Partially Compatible, In-Town Conflicts	Partially Compatible, In-Town Conflicts		Generally Compatible, Special Concerns in Windom Area		Generally Compatible	
Relocations							
Residences (Number)	0	2-8	9-17	5-15	10-22	2-9	8-17
Businesses (Number)	0	6-12	9-14	2-9	4-10	6-12	9-14
Farm Impacts							
Prime Farmland Acquisition (Acres)	0	84-96	395-411	474-497	801-831	257-299	585-635
Farms Moderately or Highly Impacted (Number)	0	3	10	13-17	17-21	6	11
Non-Farm Business Impacts							
Traveler-Oriented Businesses Bypassed (Number-Gross Sales $ Million/Yr)	0	0	0	30/8	30/8	11/1	11/1
Community Impacts							
Neighborhood and Community Facilities	Retains In-Town Conflicts	Retains In-Town Conflicts		Eliminates In-Town Conflicts		Eliminates Most Significant In-Town Conflicts (Mt. Lake and Butterfield)	
Tax Base Loss ($ Thousand Assessed Value)	0	85-113	195-230	165-241	265-351	131-170	245-272
Noise Impacts							
Number of Receptors: Exceeding FHWA Design Noise Levels	64-71	64-71	71-77	0-7	7-18	15-22	22-29
Exceeding State Noise Standards:							
Day	140-152	140-152	140-153	57-75	56-78	62-76	60-75
Night	280-293	280-293	270-291	148-176	141-192	203-224	190-220
Air Quality Impacts							
Peak 8-Hour CO Concentrations: (ppm)							
Rural	1.8	1.8	1.6	1.8	1.6	1.8	1.6
Windom	8.1	8.1	8.1	5.7	5.7	8.1	8.1
Mt. Lake	8.1	8.1	8.1	4.3	4.3	4.3	4.3
Natural Resource Impacts							
Stream Modifications (Acres)	0	1.1	2.0	1.3	2.3	1.2	2.2
Lakes and Wetlands Affected (Acres)	0	6.0	10.8-12.6	2.0-3.0	4.7-7.1	5.5	10.1-11.9
Wildlife Management Area Acquisition (Acres)	0	0.4	7.1	0	6.7	0.4	71
Equivalent Annual Energy Consumption (Thousand Barrels Oil/Year)	210-221	209-217	222-244	216-232	228-259	212-223	225-251

NOTE: All impacts are prior to mitigation.

shown are representative of the extent and nature of impact in each of the areas of concern. Comparisons are provided for both the proposed initial two-lane construction and future four-lane dualization. The two-lane values also reflect the alternative of postponing or cancelling the proposed dualization at a later date, should traffic monitoring or other conditions during the initial two-lane construction indicate that such dualization would no longer be warranted. Such decision can be delayed until either the latter 1980's or indefinitely, depending on the staging option chosen for dualization.

Existing alignment improvements would significantly enhance traffic service and safety along TH 60, but would retain speed restrictions and travel delays, local traffic conflicts, pedestrian/bicyclist hazards, neighborhood character and cohesion conflicts, and noise impacts in Mountain Lake, Butterfield, Windom and Heron Lake. In-town operations improvements would help to minimize additional traffic congestion and delay under increasing traffic demands. The initial two-lane upgrade would cost approximately $70 million (1980 dollars), displace approximately 10 to 20 residences and businesses and 90 acres of prime farmland, and affect about 7 acres of streams and wetlands. Four-lane dualization would provide desired traffic service and safety levels for future demands at an additional cost of about $40 million, displacing approximately 10 additional residences and businesses and 300 additional acres of prime farmland, and affecting 7 additional acres of streams and wetlands.

Construction on new alignment from Windom to St. James would eliminate[1] urban section speed reductions and travel delays, local traffic conflicts, pedestrian hazards, neighborhood cohesion and character conflicts, and significantly reduce the number of noise impacted receptors. As compared to the existing alignment alternative, the new alignment would cost approximately $20 to $30 million more and increase farm impacts, including acquisition of an additional 400 acres of prime farmland (approximately 230 acres of which would be replaced through reclamation of the existing TH 60 right-of-way). Overall stream and wetlands impacts and business displacements would be reduced, but residential displacements would slightly increase and approximately 30 traveler-oriented businesses along existing TH 60 would be subject to potential loss of business due to reduction in through traffic. Traffic diversion impacts during construction would be avoided in the new alignment sections.

Construction on new alignment from Mountain Lake to St. James would cost only about $5 to $10 million more than the existing alignment improvement, but would eliminate over half of the urban section travel delays and the most significant in-town pedestrian and neighborhood conflicts. Noise impacted receptors would also be significantly reduced, while residential and business displacements would be similar to the existing alignment alternative. Potential traveler-oriented business losses would be minimal. Approximately 200 additional acres of prime farmland would be required, but would be partially offset by the reclamation of nearly 150 acres of existing TH 60 right-of-way. Stream and wetlands impacts would be slightly less.

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[1] Minor urban speed reductions and conflicts would remain if the "inner" existing alignment location is retained at Heron Lake.

IMPACTS ON SECTION 4(f) PROPERTIES

INTRODUCTION

A "4(f)" involvement occurs when a Federal Highway Administration project requires use of land from a historic site or publicly owned park, recreation area or wildlife refuge of national, state or local significance. The proposed TH 60 project would require use of land from up to three such properties, depending on the improvement alternative chosen, as described in the following sections.

Project Description

The Federal Highway Administration (FHWA) and the Minnesota Department of Transportation (Mn/DOT) propose the improvement of a 52-mile section of Trunk Highway (TH) 60 between Worthington and St. James in southwestern Minnesota. Proposed construction would be staged over a period of approximately 25 years, subject to funding availability. Initial stages would provide two-lane reconstruction to modern highway standards. Subsequent stages would provide dualization to a four-lane expressway in rural sections.

Alternatives considered include (1) no-action, (2) reconstruction on the existing alignment, and (3) construction on new alignment in the northern portion of the corridor. Construction on new alignment would occur from near Windom to St. James or from near Mountain Lake to St. James, as shown in Figure 14. Alignment and design variations have been evaluated in the vicinity of Heron Lake, Windom, Bingham Lake, Mountain Lake and Butterfield. Traffic operations improvements would be implemented in the urban sections of TH 60 under the existing alignment reconstruction alternative. The two-lane impact evaluation also reflects the alternative of postponing or cancelling of the proposed dualization at a future date, should re-evaluation of need during the initial two-lane construction indicate that such dualization would no longer be warranted.

Figure 14 shows the location of the three 4(f) properties potentially affected; all lie along the existing alignment. The properties are (1) Valleau Wildlife Management Unit southwest of Heron Lake, (2) Carpenter Wildlife Management Area at Bingham Lake, and (3) Lommen Park in Windom.

Project Need

Both immediate improvement and protection of the future traffic service, safety and physical integrity of TH 60 are vital to southwestern Minnesota's agricultural based economic health, the mobility of its residents and its desire to attract industrial development. A program of immediate two-lane improvement of high priority sections, coupled with planning for ultimate conversion to a four-lane expressway is necessary if the present and future transportation needs of southwestern Minnesota are to be met. Significant existing deficiencies include:

- substandard lane widths, shoulders, shoulder slopes and ditches;
- numerous "no passing" zones;

- hazardous intersections, driveway entrances and railroad crossings;
- old and deteriorating pavement.

Reduced traffic service and safety together with land use and environmental conflicts in the urban communities of Mountain Lake, Butterfield, Windom and Heron Lake indicate the need to consider new alignments bypassing these communities in selecting the location for the needed improvements. These existing roadway deficiencies are aggravated by the heavy truck use TH 60 accommodates as a major grain and livestock shipping corridor.

Current Average Daily Traffic (ADT) volumes on TH 60 range from approximately 3,000 vehicles/day outside Butterfield to over 11,000 vehicles/day in Windom. Rural demands are heaviest to the north of Worthington and south of Windom, averaging approximately 4,500 vehicles/day. Traffic has increased throughout the corridor in the past 20 years, with overall increases varying from 20 percent near the northern end to 80 percent in the southern end. Design traffic forecasts indicate continued growth in TH 60 traffic. Projected rural demands range from 5,300 to 7,500 vehicles/day; urban demands from 5,000 to over 13,000.

Over 30 percent of the 52-mile study section of TH 60 currently operates below desirable rural traffic service level conditions under design hour traffic demands. Without significant roadway improvement, over 80 percent of the route will operate below desirable levels.

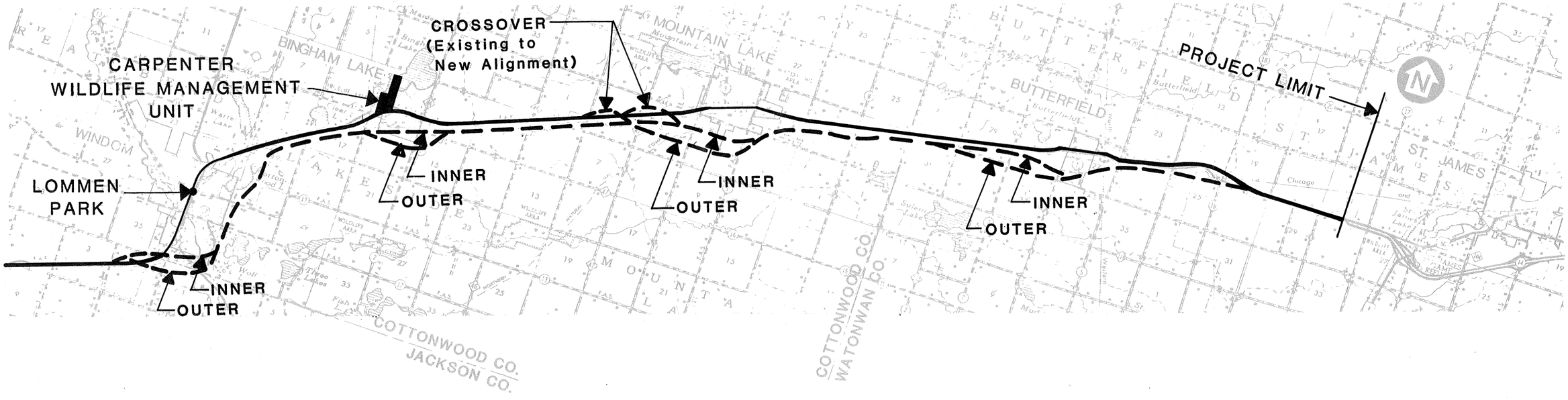
A modern two-lane facility with standard design features would permit level "B" or better operation over virtually the entire route, except for urban speed reduced sections if the existing alignment is retained. Ultimate four-lane expressway construction would allow free flow operation at the 55 mph speed limit, except in urban speed reduced sections if the existing alignment is retained. If the existing alignment is retained, urban traffic operational improvements will be required to maintain satisfactory urban traffic service.

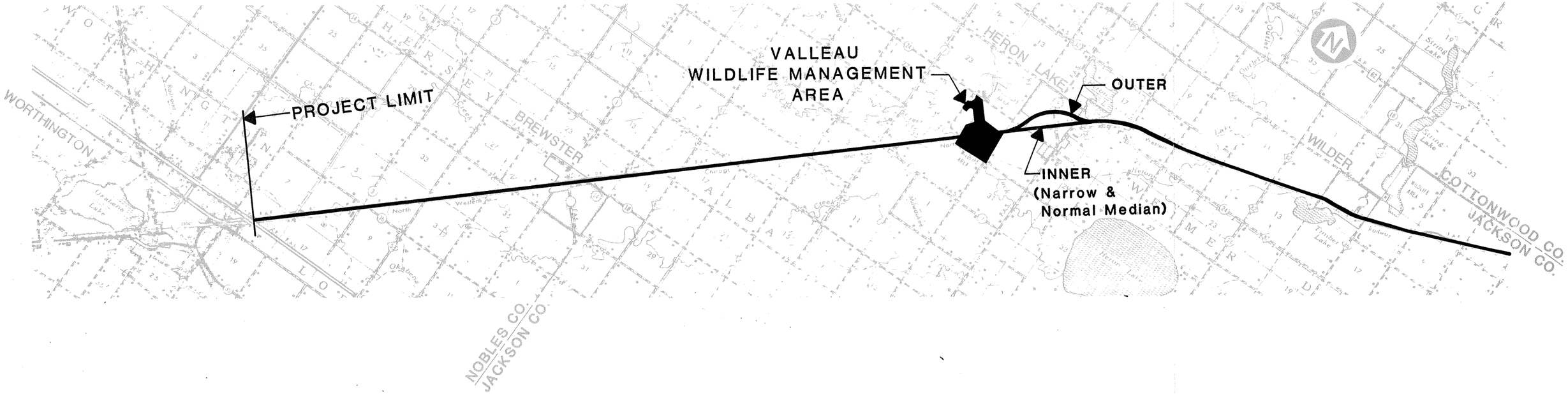
TH 169-60 is an expressway for the approximate 100-mile distance southwest from the Twin Cities through Mankato to St. James. Construction to four-lane expressway standards of the remaining 52-mile segment to Interstate 90 at Worthington would provide system design continuity. Dualization would also reduce both the number and severity of accidents, particularly as traffic volumes exceed approximately 5,000 vehicles per day. Under projected traffic conditions, the accident rate would likely be approximately 30 to 40 percent lower than for the improved two-lane facility. The projected traffic increases, improved safety and systems considerations substantiate the need to plan for future dualization of TH 60 to a four-lane expressway.

VALLEAU WILDLIFE MANAGEMENT UNIT

Character and Uses

The Valleau Wildlife Management Unit is a 335-acre wetland and natural vegetation area providing native plant and animal habitat including a wintering area for





LEGEND

EXISTING ALIGNMENT

NEW ALIGNMENT (Windom to St. James)

INNER, OUTER — Indicates Location-Design Variations

miles 0 1/4 1/2
feet 0 500 1000 2000 3000

north

Minnesota Dept. of Transpotation
Edwards and Kelcey, Inc.

ALIGNMENT ALTERNATIVES

SELECTED FOR DETAILED STUDY

FIGURE 14

MINNESOTA 60

deer. The Unit is divided into two roughly equal tracts by TH 60 and the Chicago and Northwestern Railroad as shown in Figure 16. Figure 15 also shows the wetland areas and vegetative cover included in the Unit. Tract 2, which is primarily the portion which would be altered by the TH 60 improvements, is shown in the aerial photo, Figure 15.

The main recreation activity on the Unit is hunting but the area is also used for nature study in general and in particular by biology classes from Heron Lake High School. The species hunted are upland game, waterfowl and deer. Due to the current high price for furs the area is also under heavy trapping pressure.

This Unit is one of the most important natural areas along the TH 60 corridor. Together with the Crosse Wildlife Management Unit which it abuts to the north, the two units provide 401 acres of protected natural area in the Jack Creek watershed which empties into Heron Lake about 3 miles downstream. These two units function as satellites of the Heron Lake waterfowl area. The State owns 9 acres on South Heron Lake and two Jackson County parks are located on the lakes. The county parks provide picnic facilities and boat access.

Attendance and Access

The Unit is bordered on all sides by public roads which provide ready access into the area on foot. Parking areas are provided at various locations around the perimeter, but vehicle access into the area is prohibited.

The area is used moderately for hunting and is otherwise lightly used.

Development

No facilities exist to accommodate recreation activity other than the parking areas and none are planned.

Ownership and Title

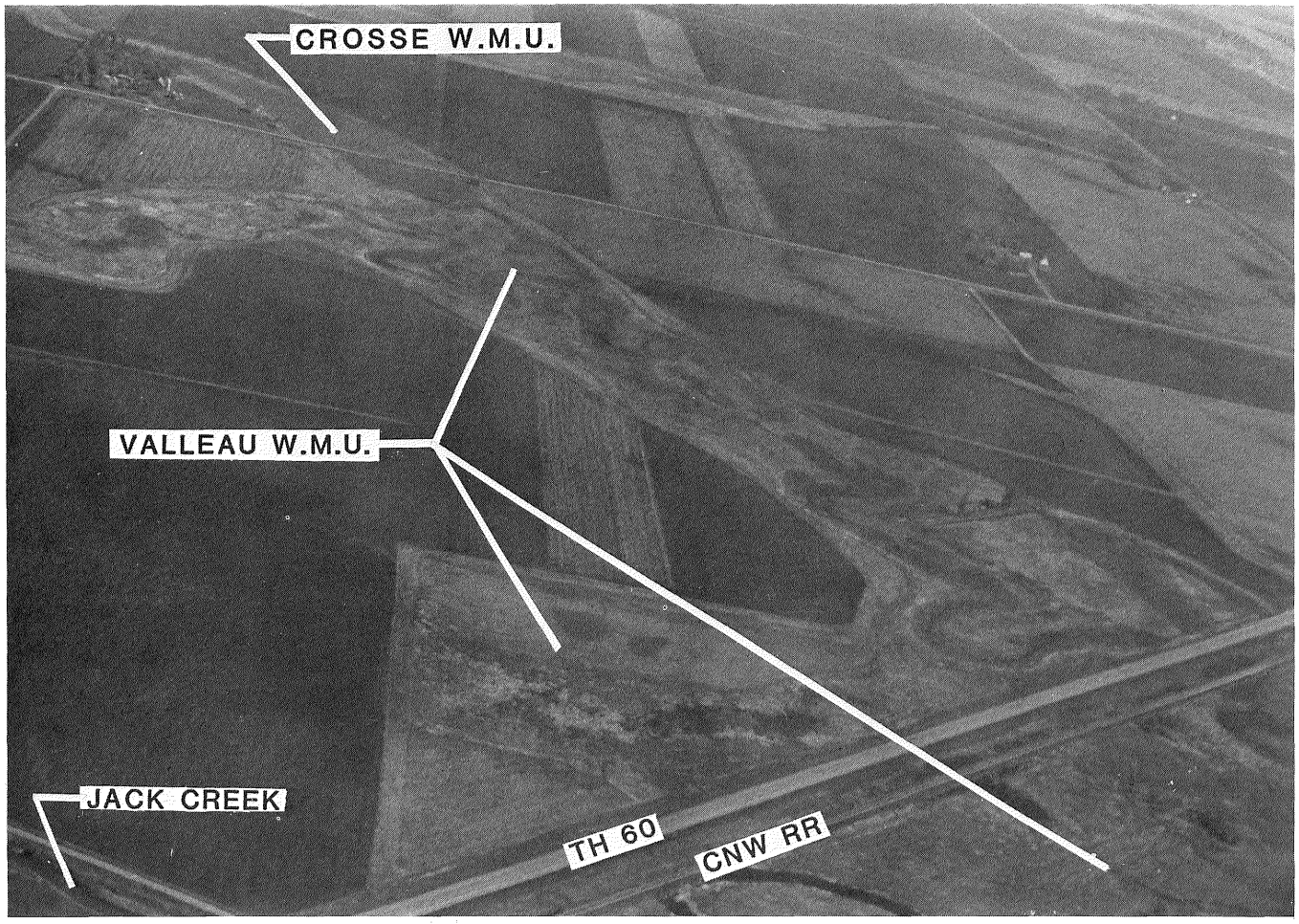
The Valleau Unit is owned by the State of Minnesota Department of Natural Resources (Mn/DNR). The title to the property is subject to existing roadway and powerline easements.

Proposed Highway Use

With initial two-lane improvement, the roadway would be raised three to four feet and the fill slopes flattened. The resulting highway slopes would occupy the entire right-of-way, whereas at present a small strip of natural area remains outside the highway slopes within the highway right-of-way. However, no additional right-of-way would be required, thus avoiding Section 4(f) involvement. Dualization to four lanes would require acquisition of a 75-foot-wide strip to accommodate the additional roadway and fill. A total of 6.7 acres of Section 4(f) property would need to be acquired, as shown on Figure 16.

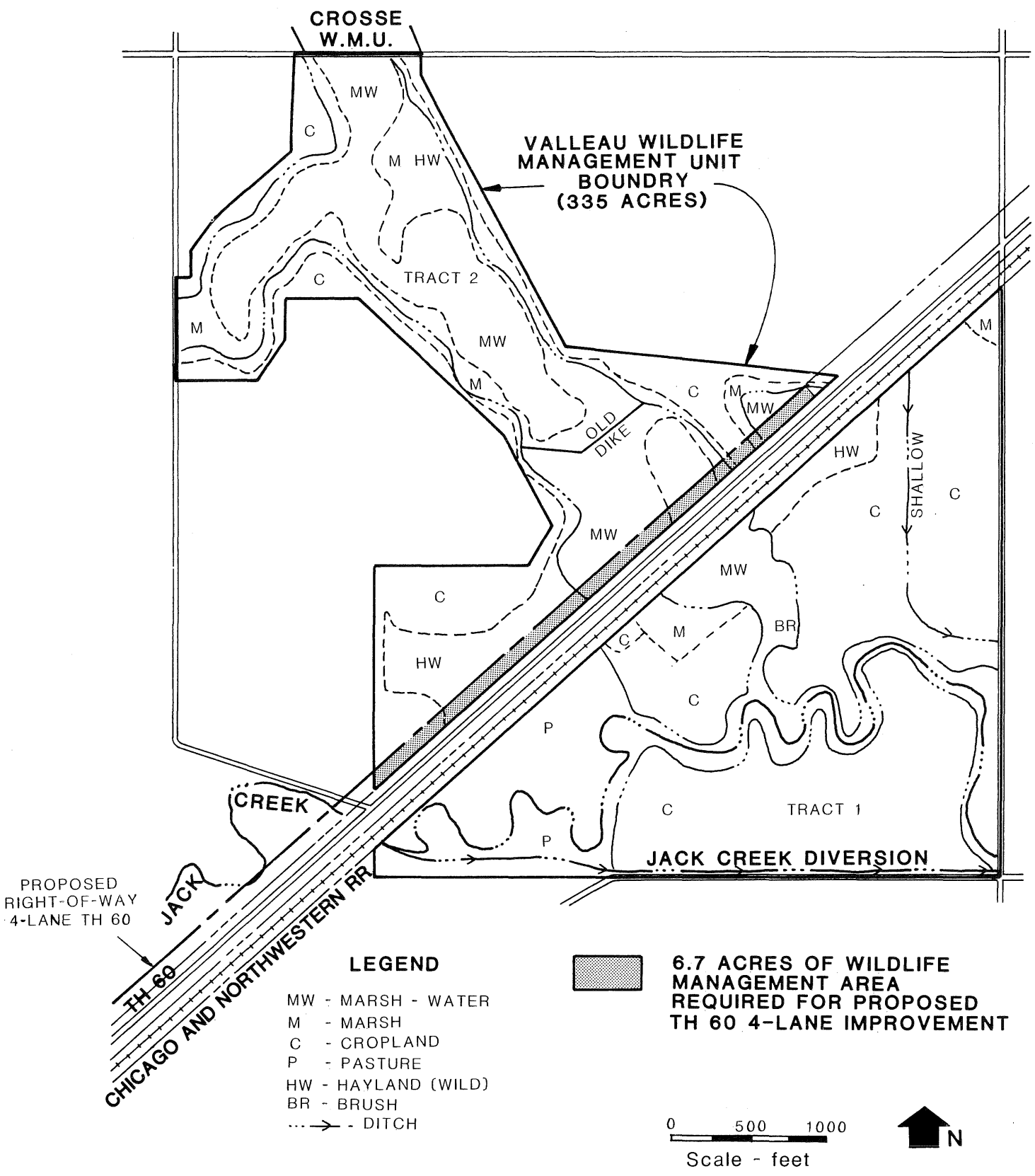
Alternatives to Use of 4(f) Land

Alternatives considered include: (1) routing TH 60 around Valleau and adjoining Crosse Wildlife Management Unit to the north, (2) routing TH 60 around Valleau to



VALLEAU WILDLIFE MANAGEMENT UNIT SETTING

FIGURE 15



PROPOSED ROADWAY IMPROVEMENTS AND 4(f) INVOVEMENT - VALLEAU WILDLIFE MANAGEMENT UNIT

FIGURE 16

the south, (3) a narrow- or no-median four-lane design through Valleau, and (4) retention of only two lanes (no-action or initial two-lane reconstruction only) through Valleau.

The alternative alignment to the north would be nearly a mile longer, cost approximately $2 million more, require an additional 75 to 90 acres of land acquisition (mostly prime farmland) and create additional farmland triangulation impacts along one to two miles of property frontage. The alternative alignment to the south would be over one-half mile longer, require two additional railroad overpasses, cost approximately $2 million more, require an additional 70 acres of land acquisition (mostly prime farmland), and create an additional three miles of farmland triangulation impact.

Although providing slightly more wetland, the narrow- or no-median design would reduce the net amount of vegetative cover, increase roadway runoff, and remove the potential median refuge for animals moving across the road. Motorist safety would be significantly reduced. The no-action alternative differs little from initial two-lane reconstruction in its effect on the area. It preserves a slight amount of existing wetland, but reduces the potential to enhance wildlife movement by the construction of longer bridges. Either alternative would have a significant adverse impact on traffic safety and operations by creating a short, two-lane restricted section in an otherwise continuous four-lane rural expressway.

In view of the limited degree of impact and potential for mitigation with normal four-lane dualization on existing location, none of the alternatives are considered prudent.

Impacts

The physical effects on the users of the area relate mainly to visual conditions, although loss of 6.7 acres of land, 2 percent of the total, for four-lane construction would reduce the habitat and thus the hunting potential slightly.

Visual. The slightly higher elevation and the broader expanse of pavement of the four-lane highway would visually intrude in the natural area to a greater degree than the existing highway.

Noise. At the proposed ROW line, construction of a four-lane facility would cause a maximum daytime noise level increase of 3 dBA over the two-lane roadway north of the railroad. The noise level increase would slowly decrease to a difference of 1 dBA at a distance of 1,000 feet, again measured from the four-lane ROW line. Nighttime noise levels would be increased by approximately 1 dBA at all distances less than 1,000 feet. South of the railroad embankment, construction of a four-lane facility would result in a negligible change in noise levels. All noise level increases due to a four-lane roadway would be barely perceptible (3 dBA or less). There would be no perceptible difference in noise levels between the two-lane improvement and the no-action alternative. Thus, noise impacts would not be significant in any case.

Mitigation Measures

A wetland in excess of 6.7 acres adjacent to the unit could be acquired to replace that which would be acquired for highway use. In addition, under the build

alternatives, new bridges at Jack Creek and a culvert location near the center of the unit could be built long enough to provide wildlife trails under the highway to improve wildlife movement between the north and south tracts. The flattened slopes of the improved highway could be planted with suitable grasses to furnish additional wildlife habitat within the highway right-of-way or with screen type plantings to reduce the visual intrusion of the roadway. Noise mitigation for the minor changes would not be warranted.

Coordination

The USFWS and Mn/DNR are cooperating agencies for the study. Representatives of USFWS, Mn/DNR and Mn/DOT met on July 18, 1980 to discuss the impacts of the proposed project on the area. The USFWS has filed suggestions (see letter of August 6, 1980 in Appendix C) for possible mitigative measures in dealing with wildlife resources. These are discussed in the "Environmental Consequences" section of the DEIS.

No Federal funds were used in the acquisition of the area.

CARPENTER WILDLIFE MANAGEMENT AREA

Character and Uses

The Carpenter area is 58.1 acres in size and lies between TH 60, CSAH 2 and the southwest shore of Bingham Lake about 1/2 mile northwest of the city of Bingham Lake, as shown in Figures 17 and 18. Several other Wildlife Management Areas are located in a four- to eight-mile radius of the Carpenter unit, but there are none directly related in the immediate vicinity.

The Carpenter area is a wetland and natural vegetation area providing native plant and animal habitat enhanced by a managed rearing pond for Northern Pike. It also contains a very small remnant of natural prairie.

This facility provides pedestrian access to Bingham Lake for fishing. Hunting and nature study are also available. Available game are pheasants and Hungarian partridge.

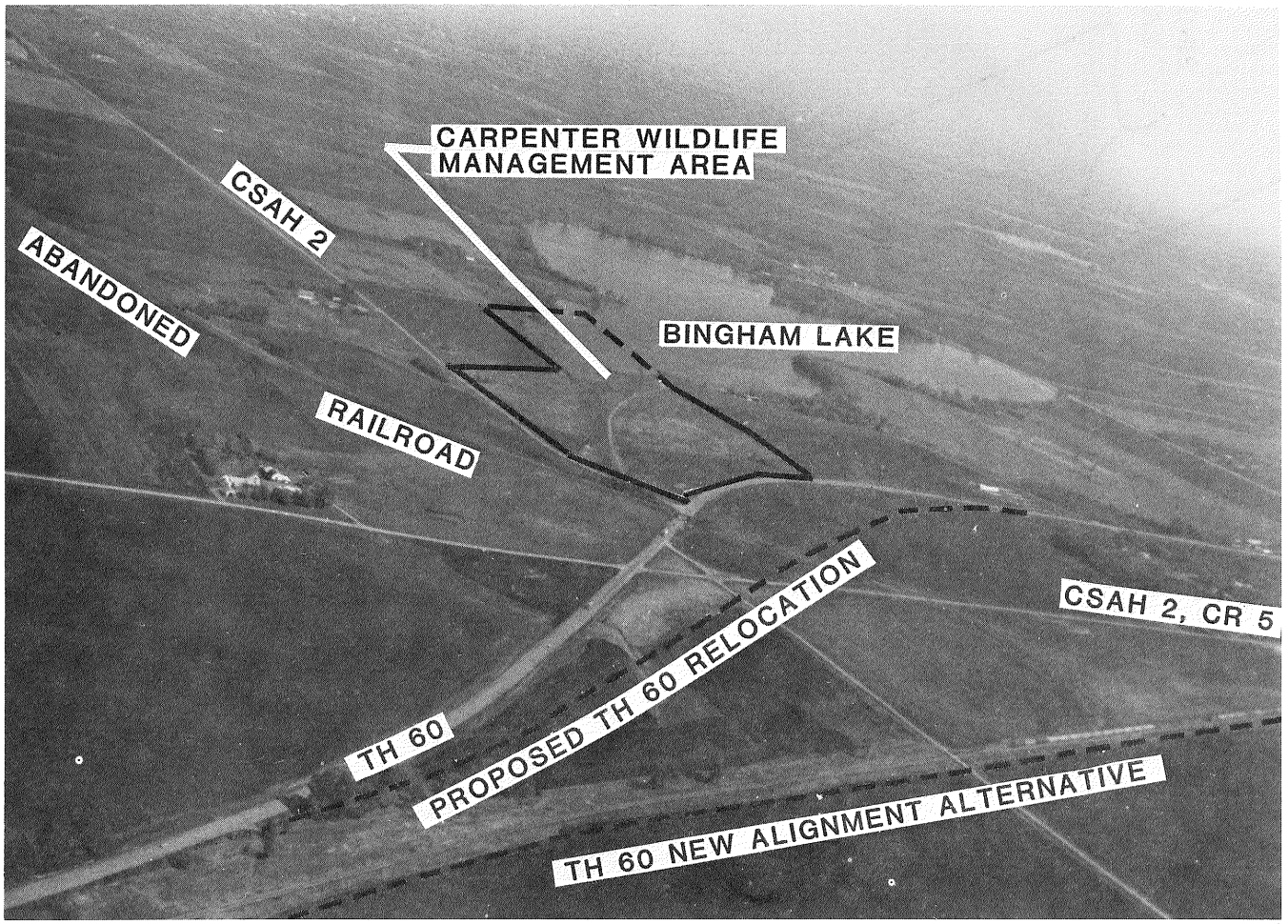
Attendance and Access

Due to limited cover for game, the area is only lightly used by hunters in season. There is also some muskrat trapping in the area.

Access is directly available from TH 60 and CSAH 2. A primitive road exists from CSAH 2 to Bingham Lake but vehicles are prohibited.

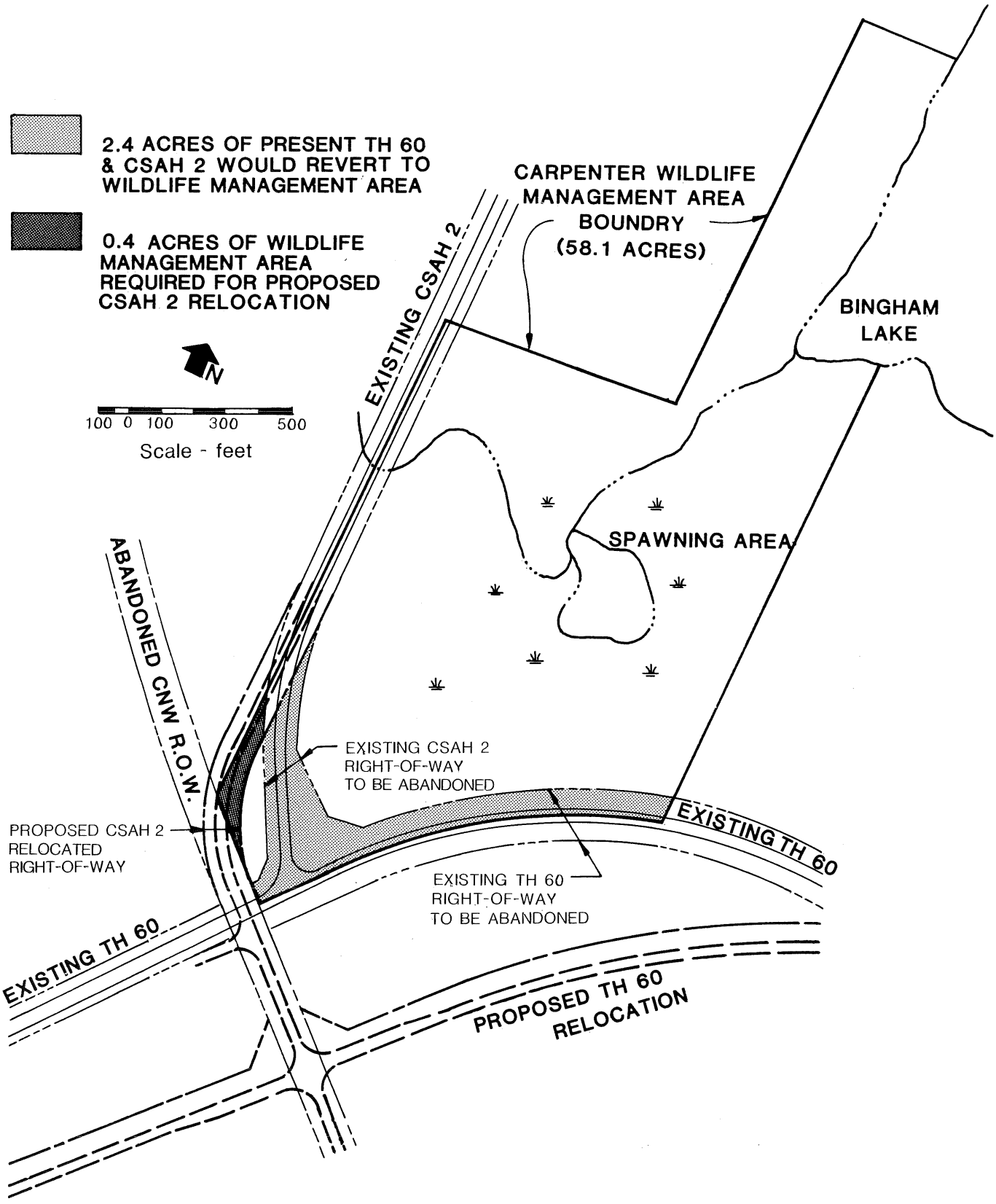
Development

There are no existing or planned facilities at this site other than small fringe parking areas.



CARPENTER WILDLIFE MANAGEMENT AREA SETTING

FIGURE 17



PROPOSED ROADWAY RELOCATIONS AND 4(f) INVOLVEMENT - CARPENTER WILDLIFE MANAGEMENT AREA

FIGURE 18

Ownership and Title

The property is owned and managed by the State of Minnesota Department of Natural Resources (Mn/DNR).

Title is subject to existing road and power line easements and continuance of tile field drains.

Proposed Use

As shown in Figure 18, 2.4 acres of present TH 60 and CSAH 2 would revert to wildlife management area and 0.4 acre of partially wooded land would be required for the proposed CSAH 2 relocation under the existing alignment alternatives. Under the new alignment alternatives no change is proposed. It is anticipated that the existing TH 60 roadway would remain and revert to county road status.

Alternatives to Use of 4(f) Lands

The new alignment alternatives avoid the area.

Impacts

No facilities or access would be affected other than extending the primitive road to meet the relocated CSAH 2 under the existing alignment alternatives. The old TH 60 and CSAH 2 would be removed and the area regraded and planted.

Under any of the alternatives except the no-action, physical effects, noise, visual and air pollution, etc., would be reduced. The no-action alternative would result in a slight increase in noise and visual intrusion from the anticipated traffic increase.

Mitigation Measures

No practicable measures to minimize impacts under the no-action alternative are available. The existing alignment alternatives would enlarge the usable area slightly and improve the human environment by relocating the trunk highway to a greater distance from the area. The new alignment alternative would not change the physical character, but would remove most of the traffic from the area.

Coordination

The original 41 acres of this area were purchased with Federal Pittman-Robertson Funding for wildlife management activities with stipulations requiring mitigation or replacement for alterations to the property. LAWCON funds have been used for management activities, but not for purchase.

Representatives of USFWS, Mn/DNR and Mn/DOT met on July 18, 1980 to discuss the impacts of the proposed project on the area. No adverse concerns were expressed.

LOMMEN PARK

Character and Uses

Lommen Park is a 0.6-acre triangular shaped wayside rest area located along TH 60 at the north edge of the Windom central business district (CBD) as shown in Figures 19 and 20.

The primary recreation is picnicking. In addition to serving as a wayside rest it also offers a pleasant greenspot in the urban scene.

Picnic areas are also provided at Island Park, a major community park about a mile to the south on TH 60 but there are no facilities similar to Lommen Park in the 52-mile corridor.

Attendance and Access

The park is accessible from streets on all three sides. No parking is permitted along the TH 60 side.

The park receives light to moderate usage in the summertime and light the rest of the year.

Development

A picnic table and drinking water well are provided in a tree-shaded setting. No additional facilities are planned.

Ownership and Title

Lommen Park is owned by Mn/DOT as part of the highway right-of-way.

Proposed Use

Closure of the intersection between 1st Avenue and TH 60 at the north end of the park would make a small additional area available. No land is proposed to be taken from the park area.

Alternatives to Use of 4(f) Land

The no-action and Windom bypass alternative would avoid Lommen Park. The bypass alternatives would reduce traffic volumes on 2nd Avenue (TH 60).

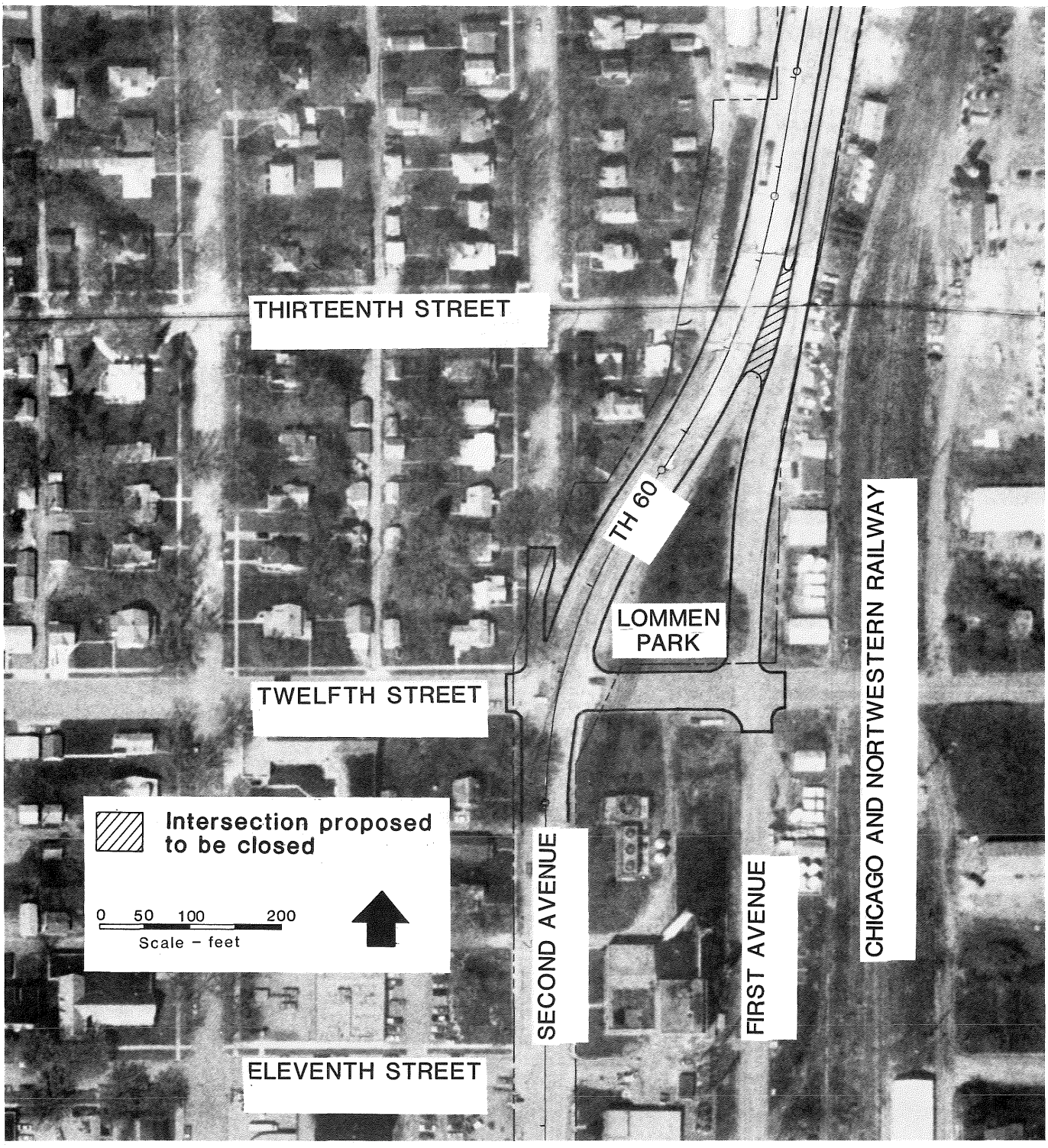
Impacts

Access to and from TH 60 north would be diverted via 12th Street under the through town alternatives.

Increased noise and air pollution will result under the through town alternatives due to increased traffic volume. Increased traffic would reduce ease of access. The bypass alternatives would reduce traffic and its attendant impacts and probably its use as a wayside rest.

LOMMEN PARK SETTING

FIGURE 19



PROPOSED ROADWAY IMPROVEMENTS AND 4(f) INVOLVEMENT - LOMMEN PARK

FIGURE 20

Mitigation Measures

There appear to be no available measures to mitigate the impacts.

Coordination

No LAWCON funds were used in the acquisition of the area. In the event that a bypass alternative is selected, further coordination will be required to transfer ownership and jurisdiction of the property since the highway might be turned back to local jurisdiction.

LIST OF AGENCIES, ORGANIZATIONS AND OFFICIALS TO WHOM COPIES OF THIS DRAFT EIS ARE BEING SENT

Legislators

U.S. Representative Vin Weber
U.S. Representative Thomas M. Hagedorn
State Senator Marion Menning (Edgerton)
State Senator Darrel Peterson (Fairmont)
State Senator Dennis Fredrickson (Morgan)
State Representative Bruce Anderson (Slayton)
State Representative Wendell O. Erickson (Hills)
State Representative George L. Mann (Windom)
State Representative David M. Jennings (Truman)
State Representative Gilbert D. Esau (Mountain Lake)

Federal Agencies

Advisory Council on Historic Preservation
Department of Agriculture
    Agricultural Stabilization and Conservation Service
    Soil Conservation Service
Department of the Army
    Corps of Engineers, St. Paul District
Department of Commerce
Department of Health, Education and Welfare
Department of Housing and Urban Development
Department of the Interior
    Fish and Wildlife Service
    Heritage Conservation and Recreation Service
Department of Transportation
    Federal Aviation Adminstration
    Federal Railroad Administration
Council on Environmental Quality
Environmental Protection Agency
Federal Emergency Management Agency

State Agencies

Department of Agriculture
Department of Economic Development
Department of Natural Resources
Department of Public Safety
Energy Agency
Environmental Quality Board
Historical Society
Pollution Control Agency
State Planning Agency
Water Resources Board

Regional, County and Local Agencies

Region Nine Development Commission
Southwest Regional Development Commission
Cottonwood County
Nobles County
Jackson County
Watonwan County
Alba Township
Butterfield Township
Delafield Township
Great Bend Township
Hersey Township
La Crosse Township
Lakeside Township
Lorain Township
Midway Township
Mountain Lake Township
St. James Township
City of Bingham Lake
City of Brewster
City of Butterfield
City of Heron Lake
City of Mountain Lake
City of St. James
City of Wilder

Others

Chicago and Northwestern Transportation Company
Dayton, Herman, Graham and Getts
Interstate Power Company
Minnesota Good Roads
TH 60 Advisory Committee
Highway 60 Action Corporation

Copies of the DEIS are also available for public inspection at the following locations:

Mn/DOT District 7 Office
501 South Victory Drive, Mankato

Mn/DOT Maintenance Office
County Road 26, Windom

Mn/DOT Central Office
Transportation Building, St. Paul

Libraries in Worthington, Windom, Mountain Lake, Butterfield and St. James

COMMENTS AND COORDINATION

The improvement of TH 60 has been under active study for a period of 10 to 15 years. During this period many lines of communication were developed with the public and directly concerned agencies. These were reinforced, expanded and formalized to carry out the NEPA process.

INTERAGENCY COORDINATION AND INVOLVEMENT

At the initiation of the study, all agencies having a potential interest in the project and its impacts were invited by letter to participate in the scoping process and to attend the scoping meeting. In addition to the agencies, invitations were sent to the district State Senators and Representatives, county and township boards, city councils, and the members and alternates of the TH 60 Citizens Advisory Committee, the TH 60 Association and the Minnesota Good Roads Association. This invitation included a copy of the Summary Report of TH 60 Citizens Advisory Committee, which provided a brief description of the general scope of the proposed project.

The scoping meeting was held at the Mn/DOT District Office in Mankato on August 23, 1979. Copies of the proposed detailed scope of work and alternatives were given to those attending and sent to all agencies not attending. Approximately 60 people attended this meeting. Five State and Federal agencies were represented.

The aspects of the scope of work emphasized in the scoping meeting comments related to the energy situation, factors considered in highway improvement programming, funding availability, farm impacts, including local economic impacts of farming and impacts on drainage tile lines, impacts on bypassed businesses and the scope of the public participation program. Selection of reasonable alternatives for detailed study is described in the "Alternatives" section.

Two agencies, the U.S. Fish and Wildlife Service and the Minnesota Department of Natural Resources, were requested to serve as cooperating agencies; both agreed. Representatives of both agencies participated in the field studies, the evaluation of impacts, and development of measures to minimize harm to the environment. The U.S. Army Corps of Engineers also participated as a cooperating agency in subsequent phases of the EIS preparation, helping to evaluate potential water resource impacts and permit requirements.

Other agencies which provided data and assistance, in addition to comment, are the Minnesota Historical Society, the Minnesota Pollution Control Agency, the U.S. Soil Conservation Service, the U.S. Agricultural Stabilization and Conservation Service, and the Region 9 and Southwest Regional Development Committees.

PUBLIC INVOLVEMENT PROGRAM

The public was brought into the project at the beginning through the scoping process. The local newspapers published announcements of the scoping meeting

and invitations were sent to public officials and interested citizens as described earlier.

Newsletters

Newsletters were prepared at important points in the study and sent to interested citizens and all residents potentially directly impacted by any of the alternatives. The first newsletter announced the study, gave the project schedule, described the technical studies and identified the alternatives selected for study as a result of the scoping process. Newsletter No. 2 announced the open houses, showed general plans of the alternatives and design variations, and gave the project schedule. The third newsletter is currently being prepared to announce the DEIS and Public Hearing, and to summarize the alternatives and anticipated impacts. Copies of the newsletters are contained in Appendix B.

Open Houses

When the preliminary designs of the alternatives had been developed, open houses for the public were held at four locations in the corridor. The purposes of these open houses were to familiarize the public with the alternatives and to hear comments relative to the study from the public. These open houses were held in Butterfield Monday, May 19, Windom May 20, Mountain Lake May 21, and Heron Lake May 22, 1980. At each open house, 1"=2000' scale air photo plans showing all of the alternatives throughout the entire corridor were displayed along with typical cross sections of the existing road and proposed improvements. Also displayed were detailed plans and profiles at a scale of 1"=100' of the alternatives in the community in which the open house was being held and the immediately adjacent communities. During the hours of the open houses, 6 to 10 p.m., professional representatives of the Mn/DOT and consultant study staffs were present to explain the plans, answer questions and hear comments.

Summary of Public Input Received

Throughout the study, the public continued to admonish the study staff to consider the major issues, which as expressed by the public, are:

- Energy - the need to conserve it, and the effect of scarcity and price on traffic forecasts and the relative importance of alternative transportation modes.
- Farmland - the general value for world food production, the specific economics of efficiency of individual farm operations, and local economic effects.
- Highway safety in the corridor in general.
- Impacts on highway-oriented businesses.
- Impacts of through traffic in urban areas.
- Financing - the available funds versus the cost of construction.

- The bridge over the railroad east of Butterfield. Because of recent fatal accidents at or in the vicinity of this structure, demonstrated public interest was great enough to prompt the Minnesota House of Representatives Committees on Agriculture and Transportation to hold a field trip and informal public hearing on TH 60 on Monday, July 14, 1980.

- Impacts on individual people and properties.

These issues punctuate the controversy over the need for two- versus four-lanes and existing versus new alignment.

LIST OF PREPARERS

The following people were primarily responsible for preparing this Environmental Impact Statement.

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APPENDIX A

TH 60 ALTERNATIVES

1" = 2000' SCALE AERIAL PHOTOS

2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

miles 0 1/4 1/2
feet 0 500 1000 2000 3000
north

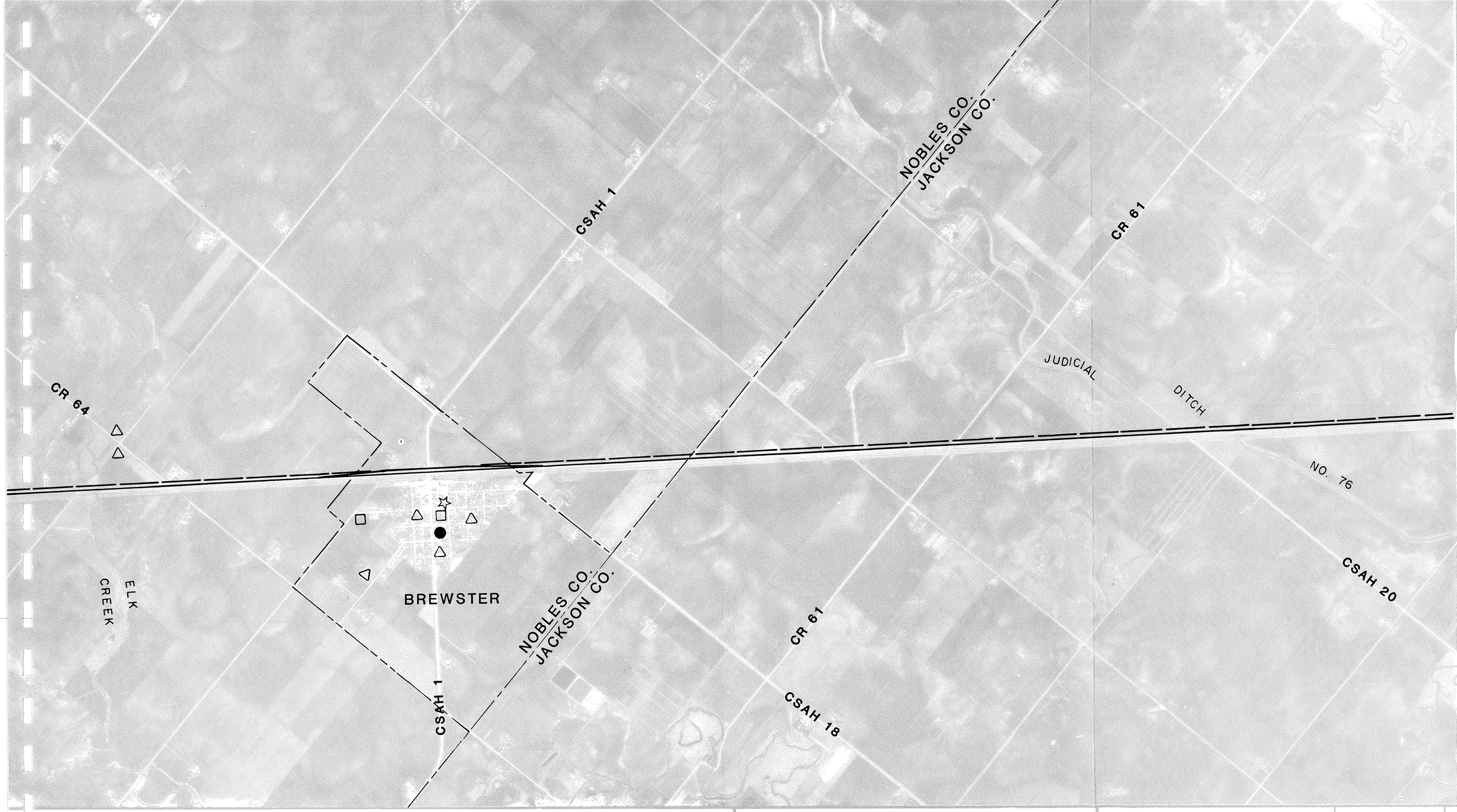
Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

1 OF 21

EXISTING ALIGNMENT

MINNESOTA 60



2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

miles 0 1/4 1/2
feet 0 500 1000 2000 3000

north

Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

2 OF 21
EXISTING ALIGNMENT

MINNESOTA 60

2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

miles 0 1/4 1/2
feet 0 500 1000 2000 3000

north

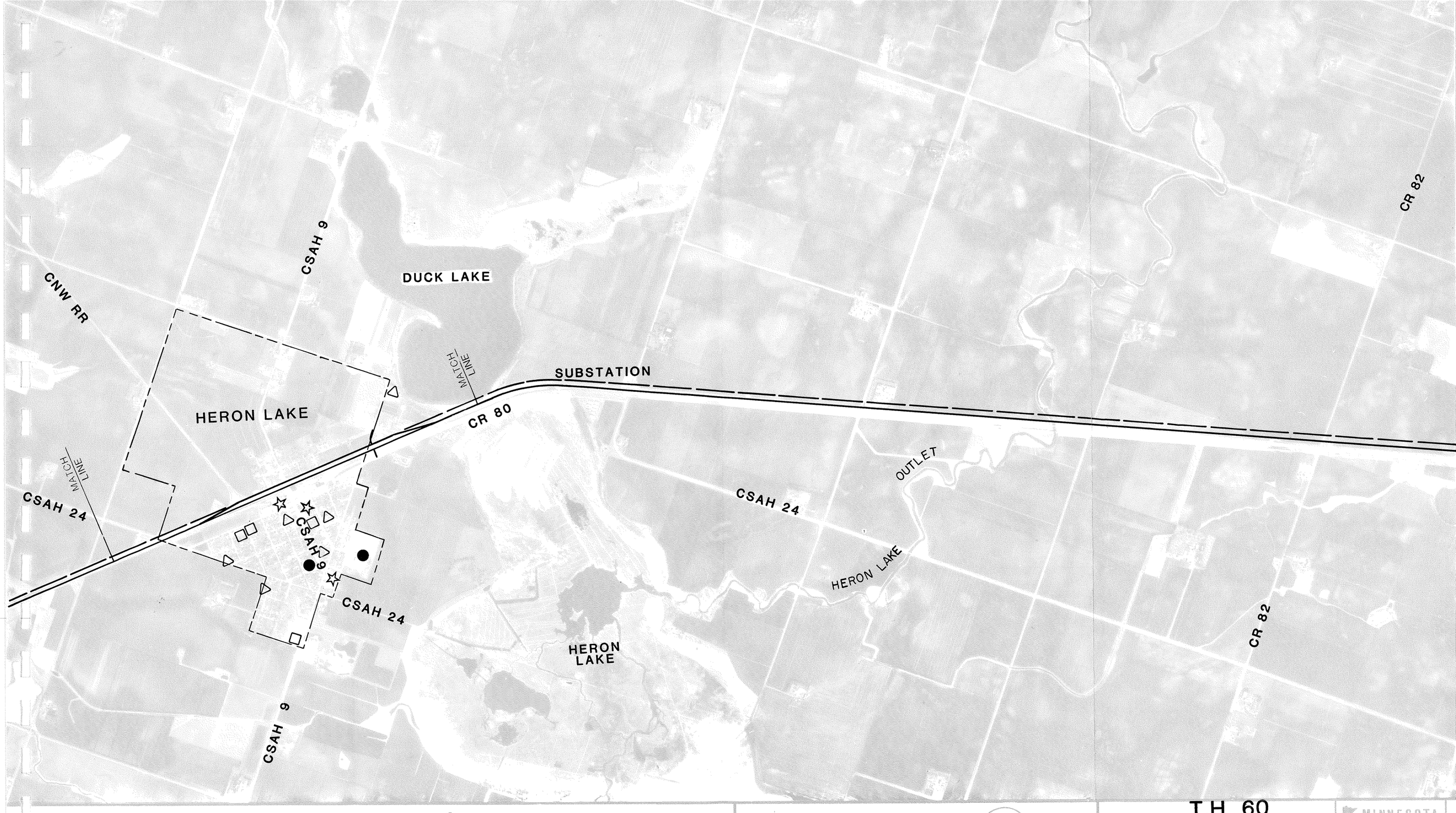
Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

3 OF 21

EXISTING ALIGNMENT

MINNESOTA 60



2-Lane Alignment

4-Lane Dualization

Farmland Reclamation

Crossover to Existing Alignment

Potential Ultimate Interchange

● Schools

△ Religious & Cultural Facilities

□ Parks

☆ Medical & Emergency Facilities

* Municipal Offices & Public Works

miles 0 ¼ ½

feet 0 500 1000 2000 3000

north

Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

4 OF 21

EXISTING ALIGNMENT

MINNESOTA 60

STRING LAKES

CR 82

CSAH 13

CR 86

WILDER

CR 86

CSAH 13

TIMBER LAKE

CR 82

CR 86

TH 86

CSAH 15

2-Lane Alignment

4-Lane Dualization

Farmland Reclamation

Crossover to Existing Alignment

Potential Ultimate Interchange

Schools

Religious & Cultural Facilities

Parks

Medical & Emergency Facilities

Municipal Offices & Public Works

miles 0 1/4 1/2

feet 0 500 1000 2000 3000

north

Minnesota Dept. of Transportation

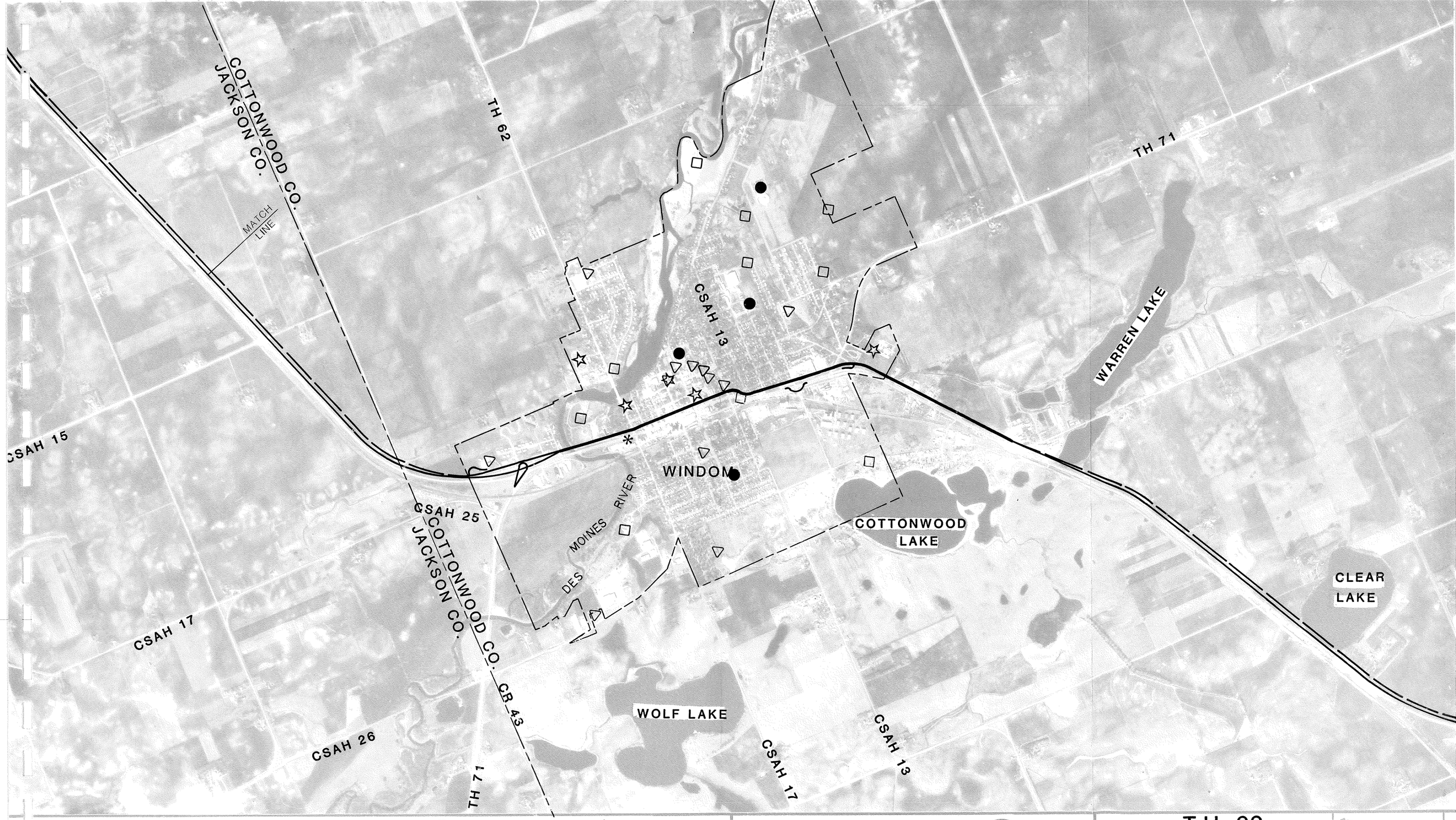
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

5 OF 21

EXISTING ALIGNMENT

MINNESOTA 60



2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

miles 0 1/4 1/2
feet 0 500 1000 2000 3000

north

Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

6 OF 21

EXISTING ALIGNMENT

MINNESOTA 60

CSAH 2
CR 44
TRIBUTARY TO
CR 46
BINGHAM LAKE
CR 44
BINGHAM LAKE
CLEAR LAKE
CSAH 2
CR 44
JUDICIAL DITCH NO. 1
CSAH 2
CR 46
CR 47

2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

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feet 0 500 1000 2000 3000
north

Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

7 OF 21

EXISTING ALIGNMENT

MINNESOTA 60

MOUNTAIN LAKE

TRIB. TO MT. LAKE

CSAH 9

CSAH 1

CSAH 8

MOUNTAIN LAKE

CR 47

CSAH 1

2-Lane Alignment

4-Lane Dualization

Farmland Reclamation

Crossover to Existing Alignment

Potential Ultimate Interchange

Schools

Religious & Cultural Facilities

Parks

Medical & Emergency Facilities

Municipal Offices & Public Works

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Minnesota Dept. of Transportation

Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

8 OF 21

EXISTING ALIGNMENT

MINNESOTA 60

2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

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feet 0 500 1000 2000 3000
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Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

9 OF 21

EXISTING ALIGNMENT

MINNESOTA 60

2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

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feet 0 500 1000 2000 3000

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Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

10 OF 21

EXISTING ALIGNMENT

MINNESOTA 60

2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

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feet 0 500 1000 2000 3000
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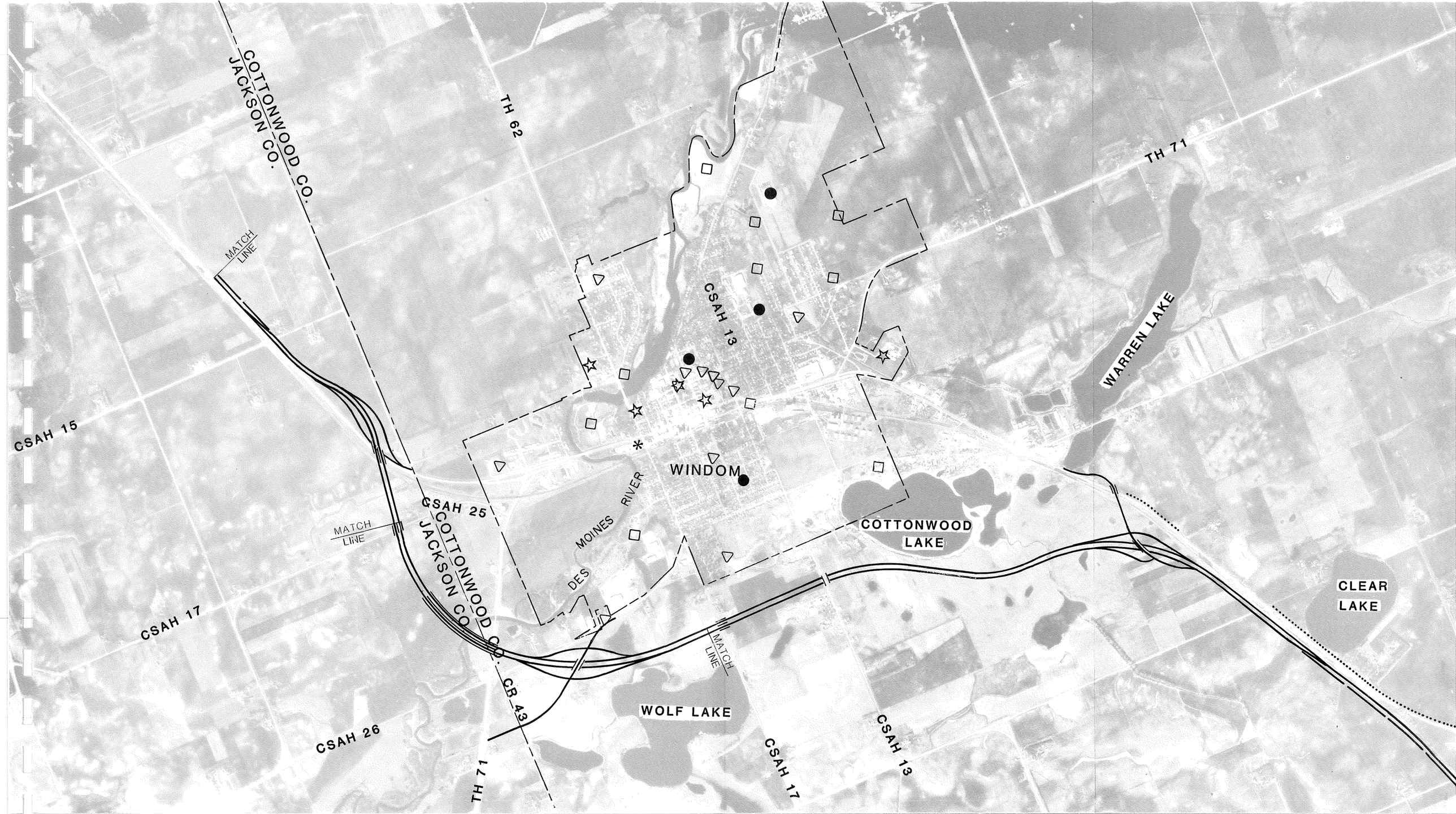
Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

11 OF 21

EXISTING ALIGNMENT
HERON LAKE
OUTER LOCATION

MINNESOTA 60



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Potential Ultimate Interchange

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Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

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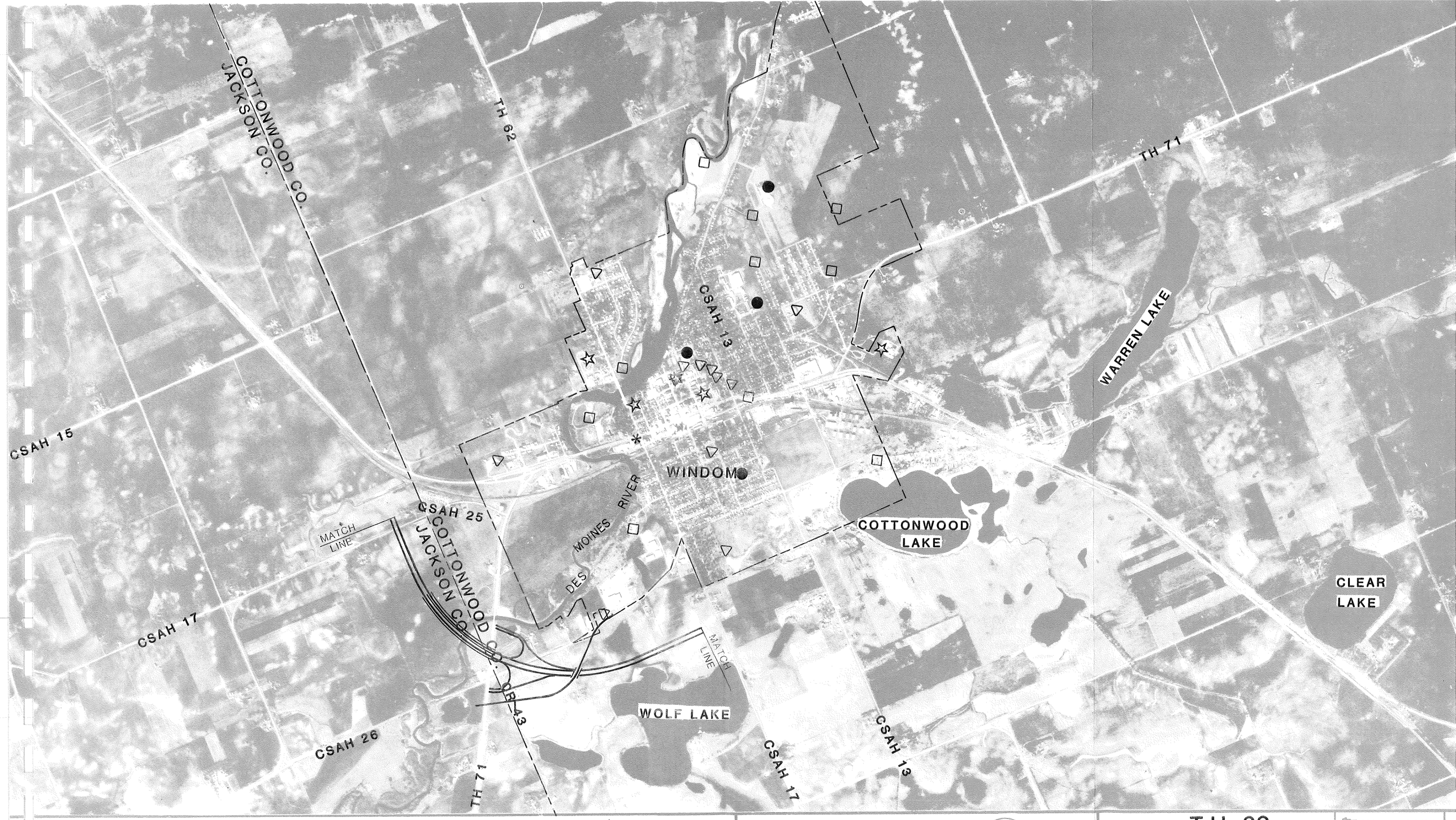
feet 0 500 1000 2000 3000
north

Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

12 OF 21
NEW ALIGNMENT
WINDOM OUTER LOCATION
WITH CSAH 26 INTERCHANGE

MINNESOTA 60



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4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
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Medical & Emergency Facilities
Municipal Offices & Public Works

miles 0 1/4 1/2
feet 0 500 1000 2000 3000

north

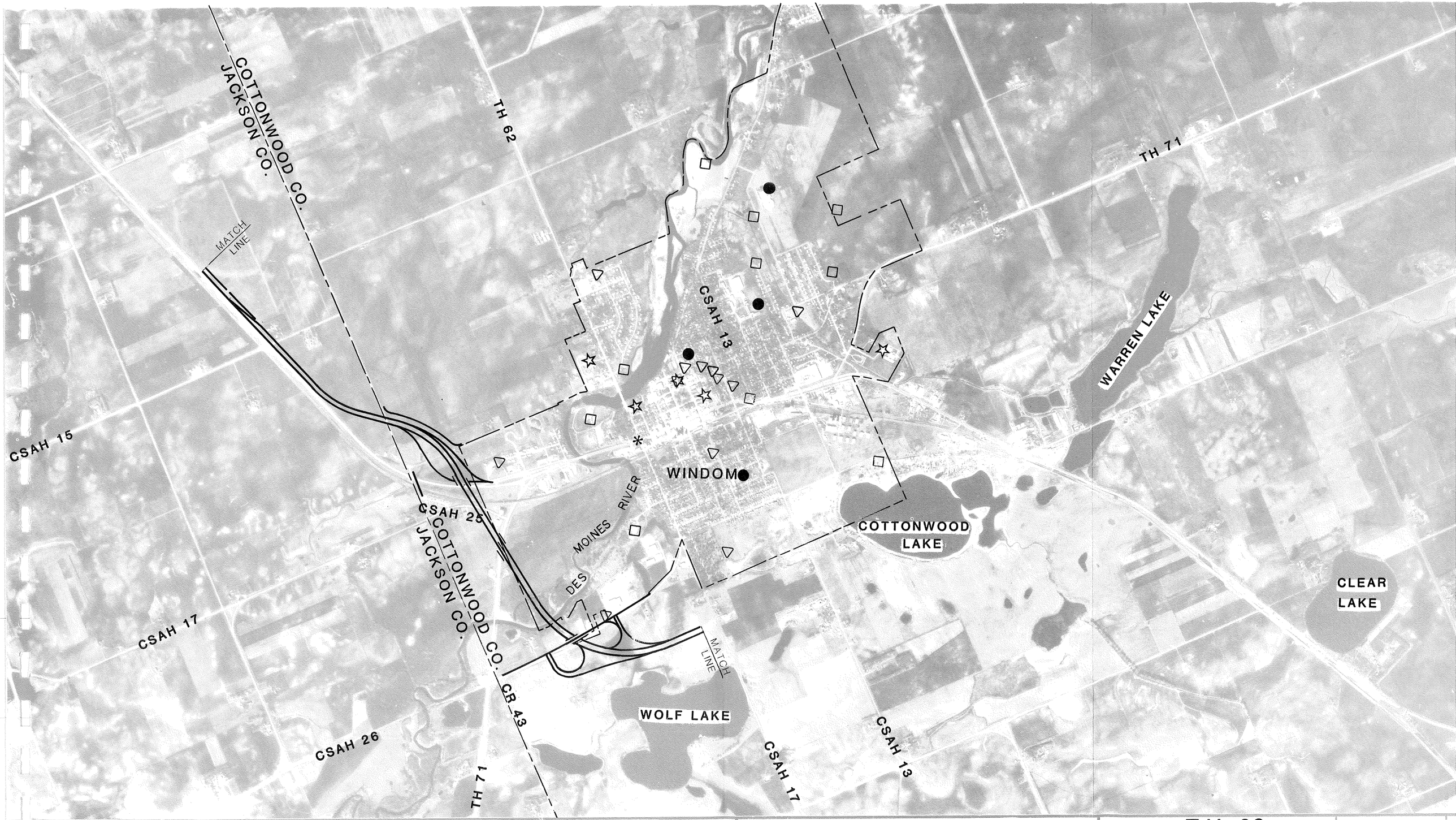
Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

13 OF 21

NEW ALIGNMENT
WINDOM OUTER LOCATION
WITH TH 71 INTERCHANGE

MINNESOTA 60



2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

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feet 0 500 1000 2000 3000

north

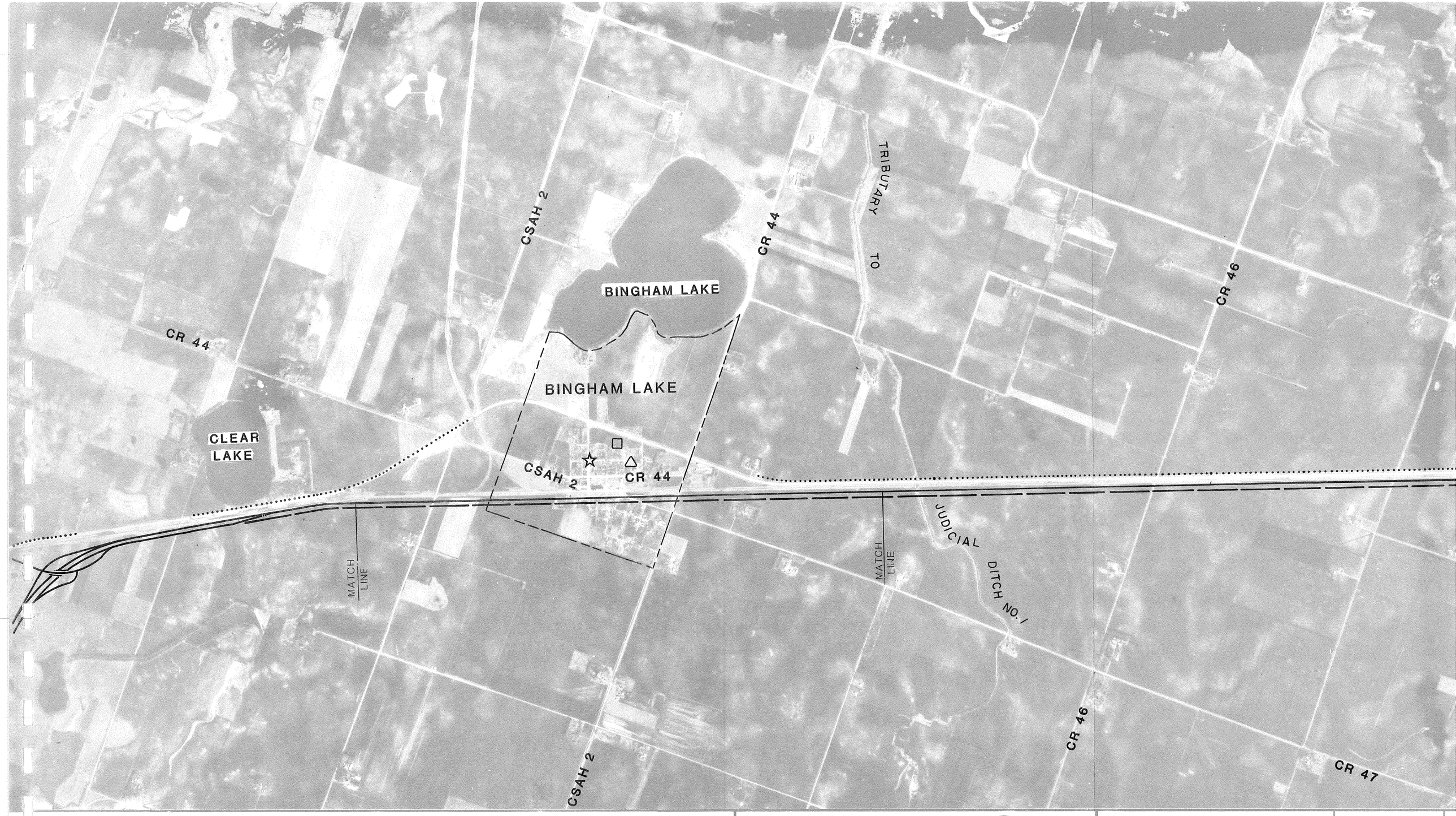
Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

14 OF 21

NEW ALIGNMENT
WINDOM INNER
LOCATION

MINNESOTA 60



2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

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feet 0 500 1000 2000 3000
north

Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

15 OF 21
NEW ALIGNMENT
BINGHAM LAKE
INNER LOCATION

MINNESOTA 60

- 2-Lane Alignment
- 4-Lane Dualization
- Farmland Reclamation
- Crossover to Existing Alignment
- Potential Ultimate Interchange
- Schools
- Religious & Cultural Facilities
- Parks
- Medical & Emergency Facilities
- Municipal Offices & Public Works

miles 0 1/4 1/2

feet 0 500 1000 2000 3000

north

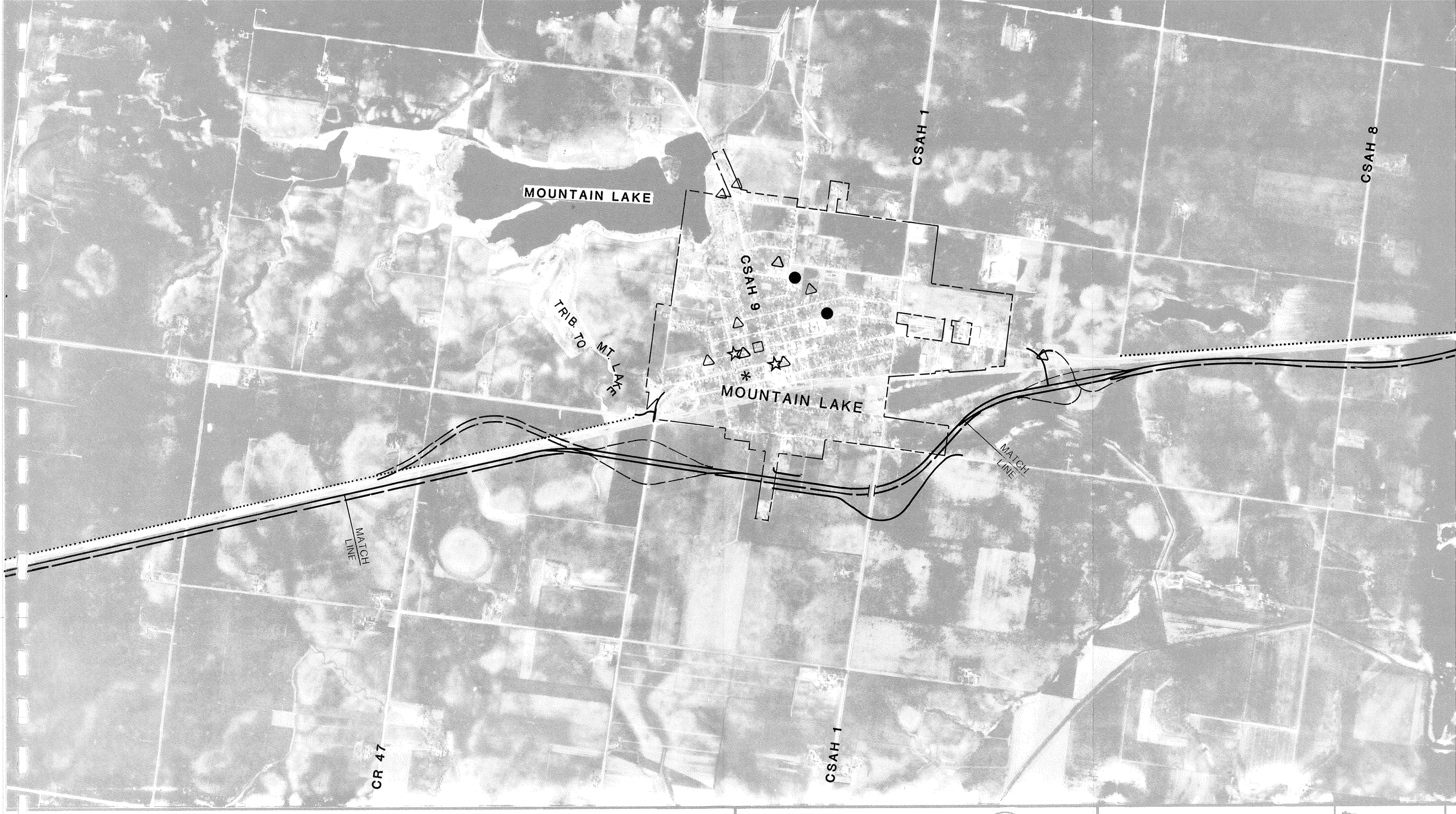
Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

16 OF 21

NEW ALIGNMENT
BINGHAM LAKE
OUTER LOCATION

MINNESOTA 60



2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

miles 0 1/4 1/2
feet 0 500 1000 2000 3000
north

Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

17 OF 21

NEW ALIGNMENT
MT. LAKE INNER
LOCATION

MINNESOTA 60

MOUNTAIN LAKE

TRIB TO MT. LAKE

CSAH 9

CSAH 1

CSAH 8

MOUNTAIN LAKE

MATCH LINE

MATCH LINE

CR 47

CSAH 1

2-Lane Alignment

4-Lane Dualization

Farmland Reclamation

Crossover to Existing Alignment

Potential Ultimate Interchange

Schools

Religious & Cultural Facilities

Parks

Medical & Emergency Facilities

Municipal Offices & Public Works

miles 0 1/4 1/2

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Minnesota Dept. of Transportation

Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

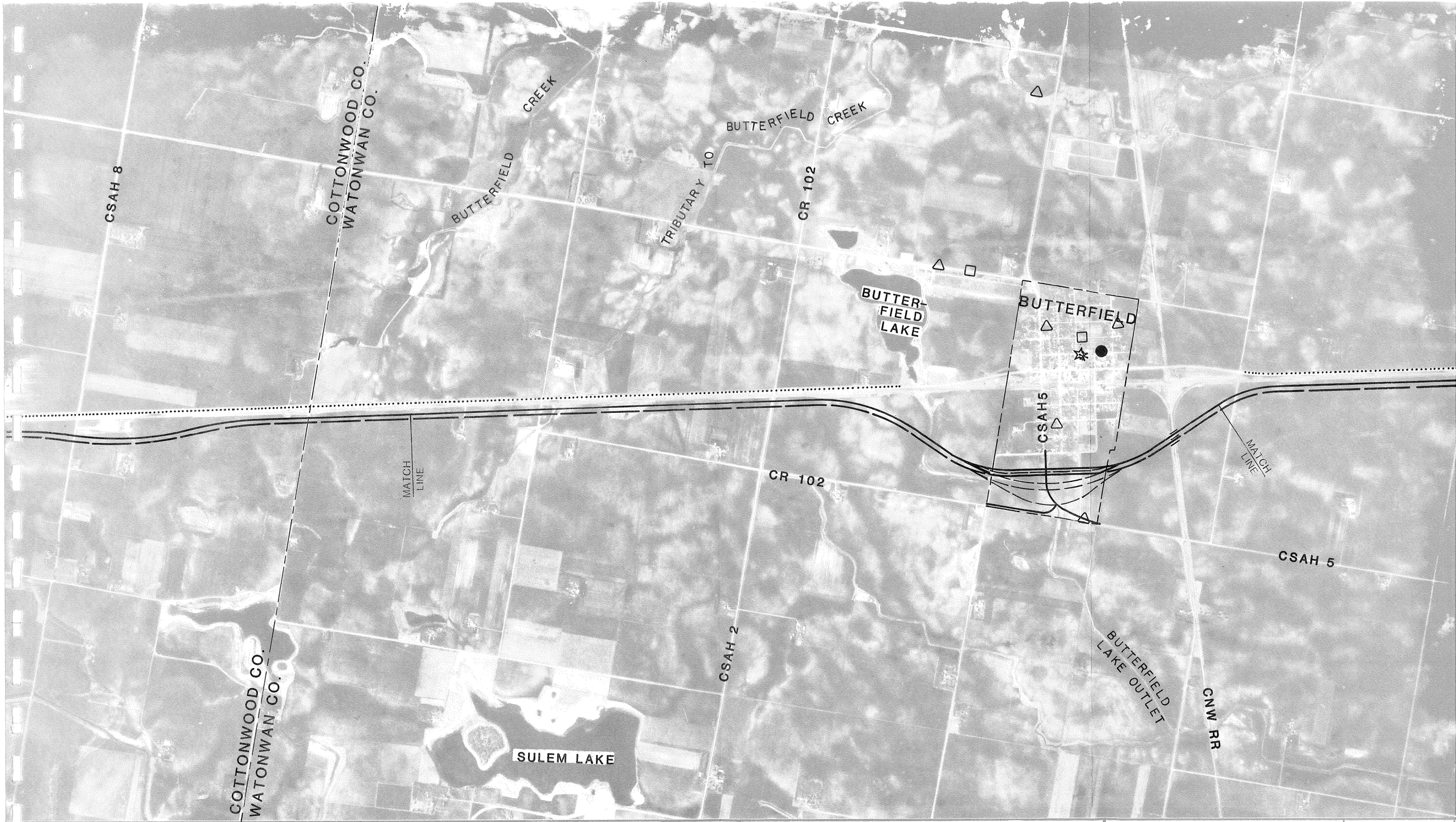
18 OF 21

NEW ALIGNMENT

MT. LAKE OUTER

LOCATION

MINNESOTA 60



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4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

miles 0 1/4 1/2
feet 0 500 1000 2000 3000
north

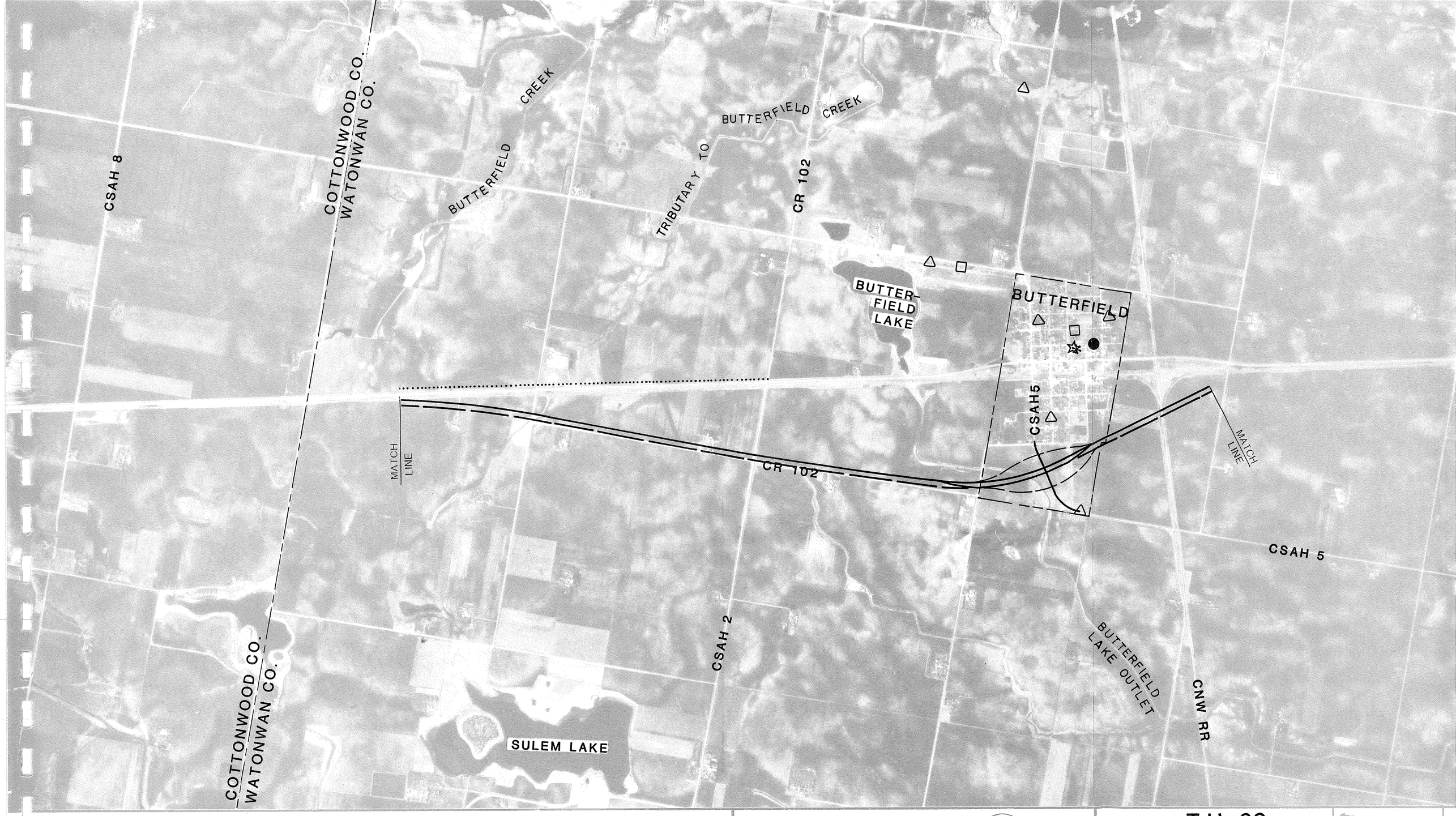
Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

19 OF 21

NEW ALIGNMENT
BUTTERFIELD INNER
LOCATION

MINNESOTA
60



2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

miles 0 ¼ ½
feet 0 500 1000 2000 3000

north

Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

20 OF 21

NEW ALIGNMENT
BUTTERFIELD OUTER
LOCATION

MINNESOTA
60

MATCH LINE

CNW RR

ST. JAMES LAKE

CSAH 19

TH 4

2-Lane Alignment
4-Lane Dualization
Farmland Reclamation
Crossover to Existing Alignment
Potential Ultimate Interchange

Schools
Religious & Cultural Facilities
Parks
Medical & Emergency Facilities
Municipal Offices & Public Works

miles 0 1/4 1/2
feet 0 500 1000 2000 3000

north

Minnesota Dept. of Transportation
Edwards and Kelcey, Inc.

T.H. 60 ALTERNATIVES

21 OF 21
NEW ALIGNMENT

MINNESOTA 60

APPENDIX B

NEWSLETTERS

MINNESOTA 60

T.H. 60 news

MINNESOTA DEPARTMENT OF TRANSPORTATION

NUMBER 1 ST. JAMES TO WORTHINGTON, MINNESOTA OCTOBER 1979

IMPACT STUDIES UNDERWAY

PROJECT SCOPING

The Minnesota Department of Transportation (Mn/DOT) and its consultant, Edwards and Kelcey, Inc., have recently begun detailed engineering and impact studies to prepare an Environmental Impact Statement (EIS) for the improvement of Trunk Highway 60 between St. James and Worthington. Under U.S. Council on Environmental Quality guidelines, affected Federal, State and local agencies and other interested parties were invited to participate in developing the "scope" of technical studies and alternatives to be addressed in the impact statement.

On August 23, 1979, a "scoping" meeting was held in Mn/DOT District 7 Offices at Mankato to discuss the proposed work program. Agencies unable to attend were provided with a written description of the proposed work and asked to provide written comments. Appropriate revisions have been made to address concerns raised at the meeting and in written responses. A summary list of areas to be covered in the technical studies is presented below. The alternatives selected for detailed study are presented on the following page.

TECHNICAL STUDIES

Engineering

- Design Layouts (1" = 100' scale)
- Traffic and Structures
- Soils and Geology
- Utilities, Hydraulics and Hydrology
- Funding/Scheduling and Right-Of-Way Preservation

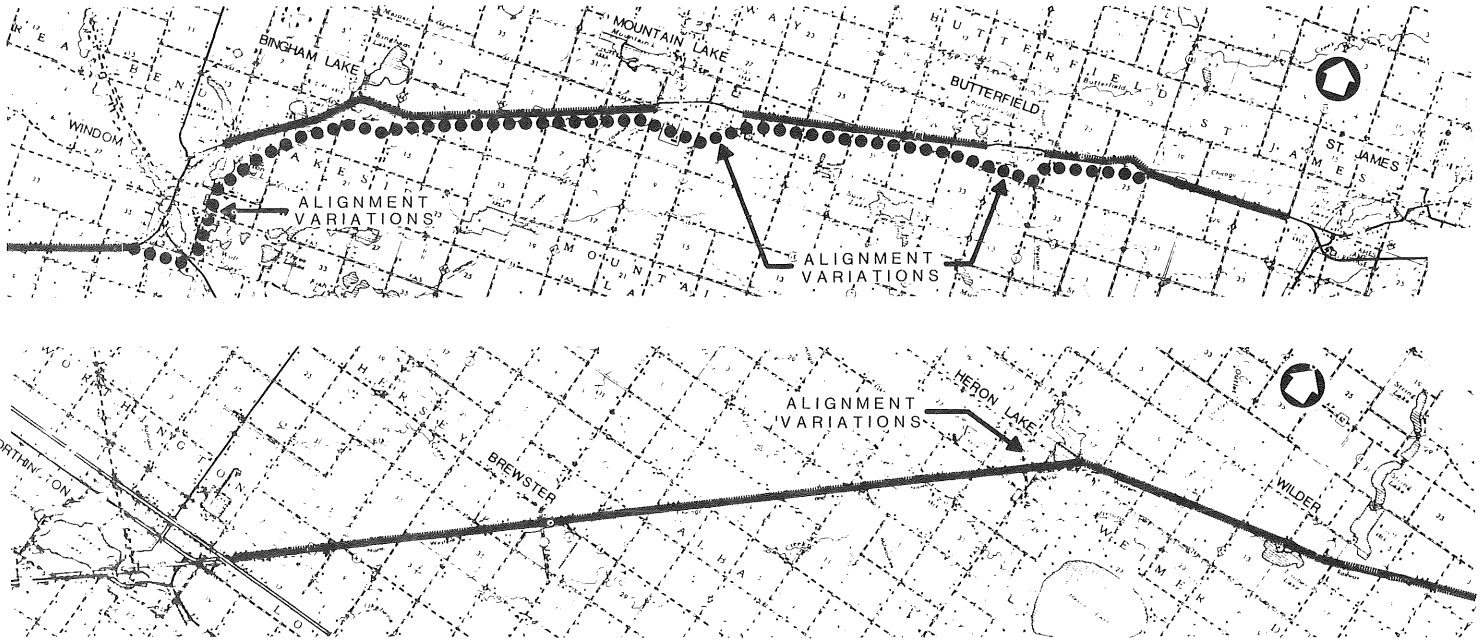
Impact Assessments

- Land Use Planning
- Acquisitions and Relocations
- Farmlands and Farm Operations
- Population, Housing and Neighborhoods
- Business and Employment
- Tax Base and Property Values
- Community Services and Facilities
- Open Space and Cultural Resources
- Water Quality and Wetlands
- Vegetation, Fish and Wildlife
- Noise and Air Quality
- Energy
- Transportation Systems

PROJECT SCHEDULE

Preliminary design layouts and impact assessments are expected to be completed by the Spring of 1980. At that time, a series of informal "open-houses" will be held at a number of locations along the corridor. Displays of the layouts will be available for review and comment by corridor residents and officials. An official Public Hearing will be held during the Fall of 1980, following circulation of a Draft EIS. The Final EIS is expected to be completed early in 1981, to be followed by final design and right-of-way acquisition. Construction of the first segment is presently anticipated to begin in 1984, provided sufficient funds are available. In brief, the anticipated timetable is:

Layouts & Impact Assessment	Sept. 1979-Mar. 1980
Public "Open Houses"	Mar.-Apr. 1980
File Draft EIS	August 1980
Public Hearing	Sept. - Oct. 1980
File Final EIS	January 1981
Final Design and R.O.W. Acquisition	1981 - 1983
Begin Construction	1984



LEGEND ═══ EXISTING ALIGNMENT ●●●●● NEW ALIGNMENT

ALTERNATIVES SELECTED FOR DETAILED STUDY

BASIC ALTERNATIVES

1. 4-lane divided highway with reduced median* on alignment options:
   (a) existing alignment
   (b) existing alignment with south bypasses of Butterfield/Mt. Lake and Windom
   (c) new alignment south of railroad from St. James to Windom, existing alignment from Windom to Worthington
2. 2-lane upgrade on alignment options (a), (b) and (c) above
3. No-Build

VARIATIONS

1. two construction staging options for the 4-lane alternative as follows:
   (a) initial 2-lane upgrade with right-of-way preservation for future expansion to four lanes
   (b) build 4-lane segments
2. highway and railroad R.O.W. exchange in rural sections, St. James to Windom
3. at-grade vs. grade separated intersections in bypass areas
4. minor alignment and/or cross-section variations at critical locations
5. turnback of existing T.H. 60 rural sections to farmland or local roadway

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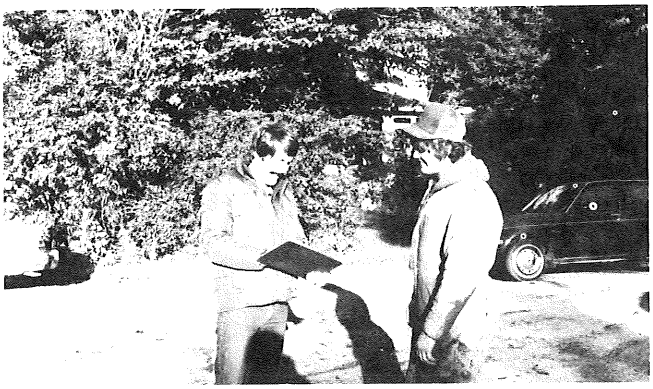
*Median width reduced from current design standards based on T.H. 60 Advisory Committee Study.

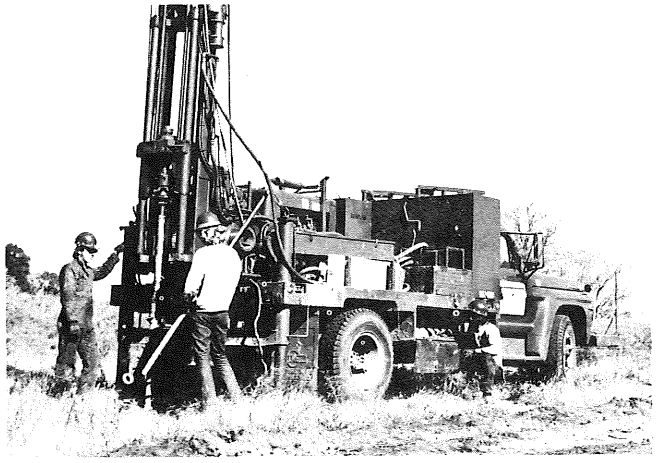
**Various methods for right-of-way preservation to be evaluated (e.g., purchase, purchase with leaseback, easement, official map).

FIELD INVESTIGATIONS IN PROGRESS



TRAFFIC & NOISE SURVEYS

Edwards and Kelcey and Mn/DOT engineers have recently conducted a series of traffic counts and noise measurements along the study corridor. The measurements will be used to update prior traffic studies and to identify potential noise level impacts of the various alternatives.



NATURAL RESOURCE SURVEY

Natural resource specialists from National Biocentric, Inc. of St. Paul, the U.S. Fish and Wildlife Service and the Minnesota Department of Natural Resources recently conducted a field inventory of natural areas along or near the alternative alignments. Twenty-five locations, including two Federal Waterfowl Production areas and three State Wildlife Management areas were investigated.

FARM INVENTORY

Edwards and Kelcey staff, with the assistance of farm management specialists from Jensen Management Service of Luverne, MN, recently conducted interviews with each of the farmers who might be directly affected by any of the TH 60 improvement alternatives. Information was gathered on the location, size and nature of operation of each farm.

SOILS INVESTIGATIONS

Soils engineers from Braun Engineering Testing, Inc. of Minneapolis are currently conducting soils borings along each of the study alignments. Engineering evaluation of the borings will be used to identify structural foundation and roadway embankment, subgrade and pavement requirements.

TH 60 NEWS
ST. JAMES TO WORTHINGTON

FUTURE MAILINGS & WRITTEN COMMENTS

This issue of TH 60 NEWS is the first of a series to be distributed to keep affected agencies and corridor residents and officials up-to-date on project developments. The newsletter has been prepared and distributed by Edwards and Kelcey, Inc., under the auspices of the Minnesota Department of Transportation.

Written comments on matters discussed in this newsletter or otherwise pertinent to the TH 60 project may be sent to the address below. If you were not on the mailing list for this issue, but wish to be added for future issues, please send your name and address to:

Mr. Marcus Flygare
TH 60 Project Manager
Minnesota Department of Transportation
District 7 Office
501 South Victory Drive
Mankato, Minnesota 56001

MINNESOTA 60

T.H. 60 news

MINNESOTA DEPARTMENT OF TRANSPORTATION

NUMBER 2 ST. JAMES TO WORTHINGTON, MINNESOTA MAY 1980

OPEN HOUSES SCHEDULED

"Open Houses" have been scheduled for the week of May 19th, 1980 at four locations in the Trunk Highway 60 corridor. Dates and locations are shown below. Preliminary design layouts will be displayed for each of the various Highway 60 improvement alternatives currently under detailed study. Locations on both new and existing alignments will be shown. (See map inside).

All corridor residents, local officials and other interested parties are encouraged to attend one or more of the sessions. Representatives of the Minnesota Department of Transportation and its consultant, Edwards and Kelcey, will be on hand to provide information, answer questions, and receive your comments and suggestions on the various design layouts.

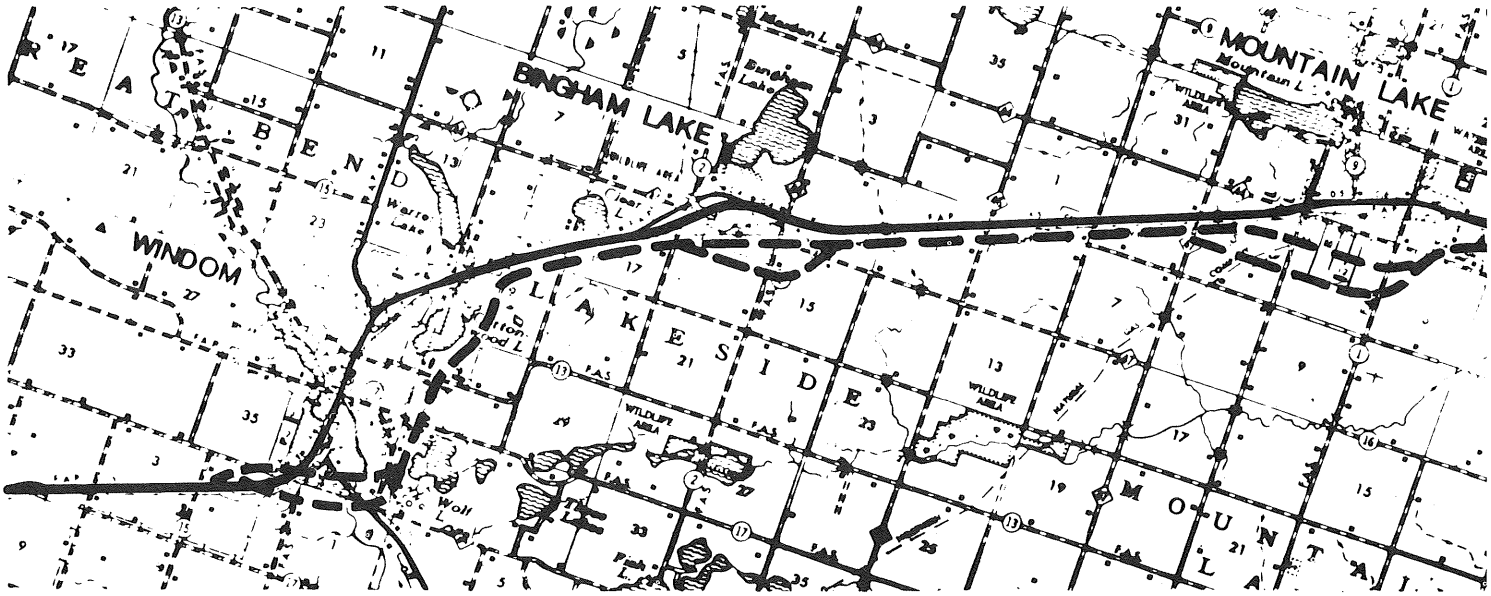
Each of the displays will be open between the hours of 6:00 P.M. and 10:00 P.M. You are invited to come in to view and discuss the design layouts at any time during these hours. If you desire to submit written comments, forms will be provided which may be returned at the open houses or by mail.

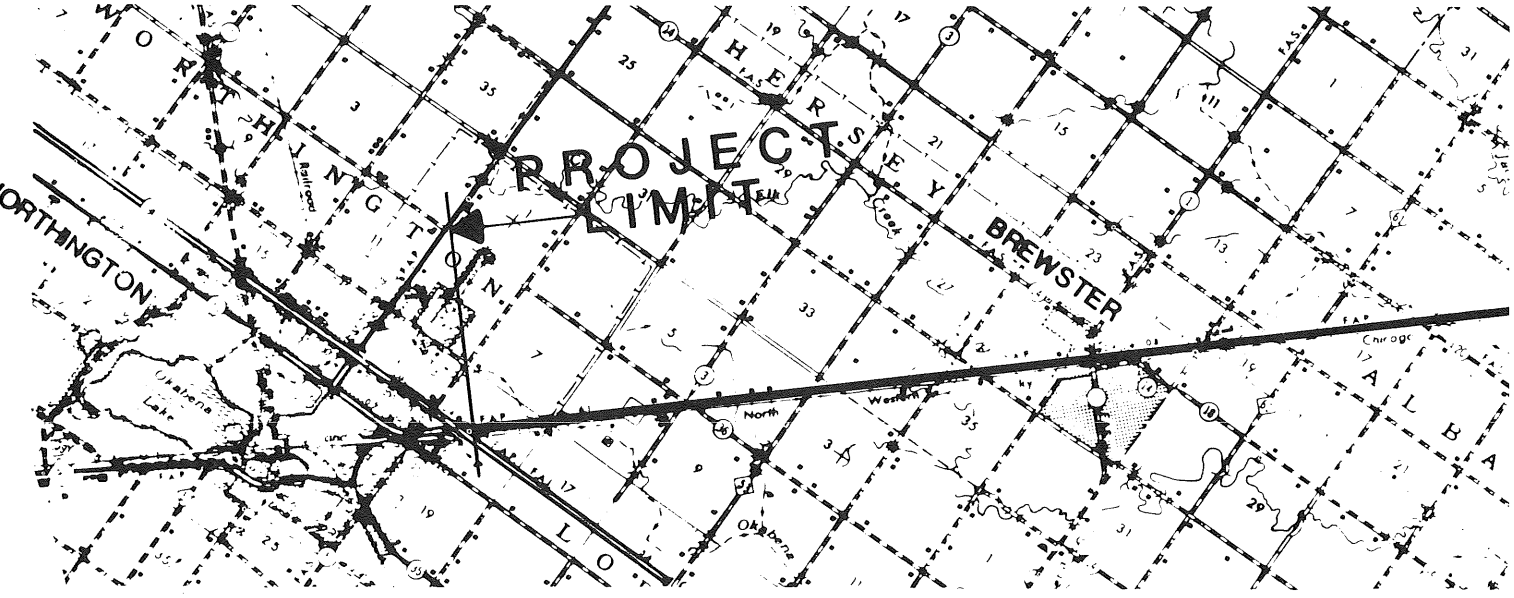
The displays will provide preliminary roadway design, right-of-way and access features for each of the alternative locations and for both 2-lane and 4-lane roadways. At this stage in the project development, all layout features are provided for discussion and review only, and are subject to change as the designs are further refined.

Following the open houses, appropriate layout revisions will be made, and a detailed analysis of costs and impacts will be prepared for each of the alternatives. Comments received through the open houses will be used to help identify potential impacts and means for minimizing adverse effects. An Environmental Impact Statement (EIS) is being prepared describing the development, cost and impacts of all alternatives. The anticipated project schedule is:

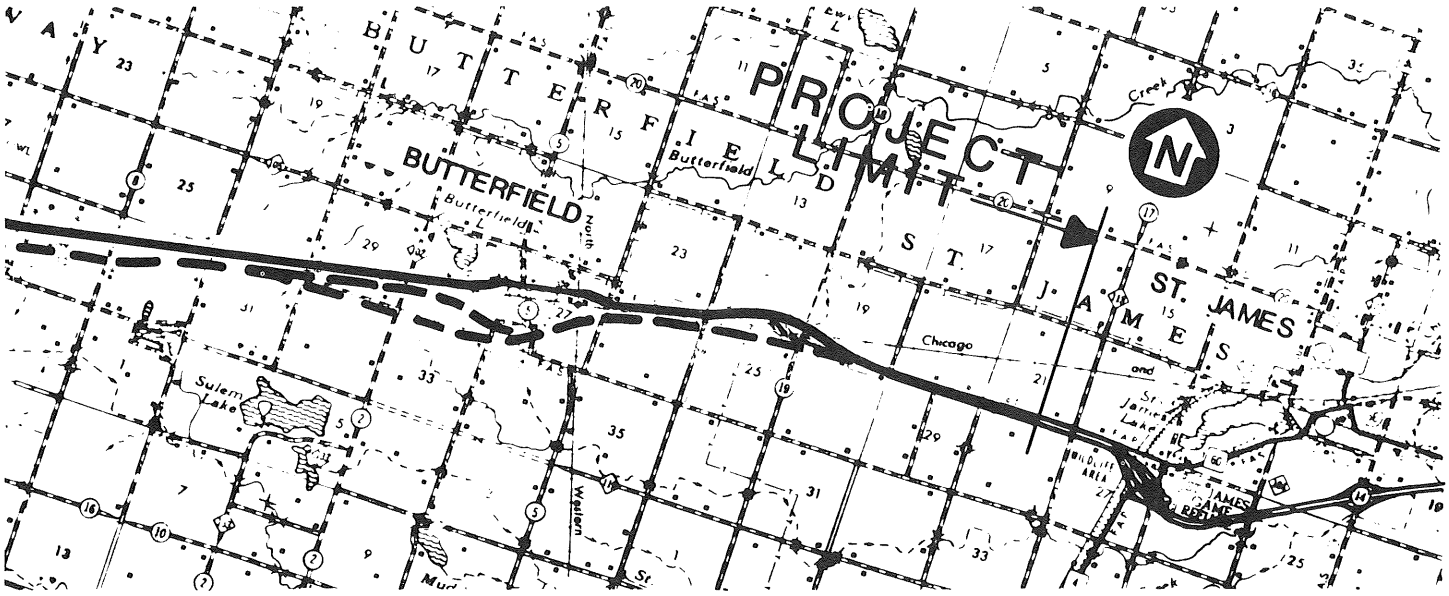
Circulate Draft EIS	August 1980
Public Hearing	Sep-Oct. 1980
File Final EIS	January 1981
Construction Plans and R.O.W. Acquisition	1981 - 1983
Begin Construction	1984 (subject to funding availability)

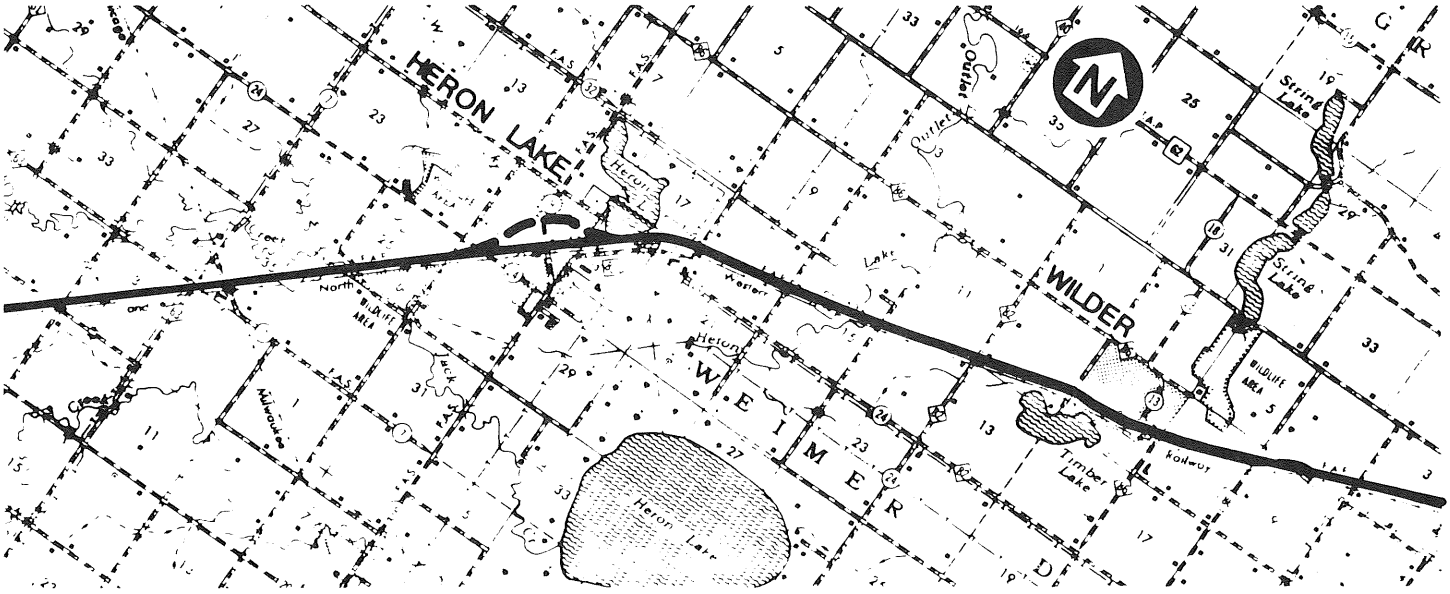
OPEN HOUSES	DATE	HOURS	LOCATION
BUTTERFIELD	Monday May 19	6 PM - 10 PM	Municipal Bldg. Meeting Room, Hwy. 60 and 3rd Street
WINDOM	Tuesday May 20	6 PM - 10 PM	Mn/DOT Maintenance Bldg. Downstairs Conf. Room, Co. Rd. 26
MOUNTAIN LAKE	Wednesday May 21	6 PM - 10 PM	City Hall Upstairs Auditorium, 2nd Ave. between 10th & 11th Sts.
HERON LAKE	Thursday May 22	6 PM - 10 PM	Municpal Bldg. Basement Mtg. Rm., 2nd Ave. between 9th and 10th Sts.





ALTERNATIVE ALIGNMENT CURRENTLY UNDER DETA





LOCATIONS
ILED STUDY

LEGEND:

— EXISTING ALIGNMENT

– – – NEW ALIGNMENT

(LOCATIONS SHOWN ARE APPROXIMATE)

T.H. 60 NEWS
MINNESOTA DEPARTMENT
OF TRANSPORTATION
MANKATO, MN 56001

FUTURE MAILINGS & WRITTEN COMMENTS

This issue of TH 60 NEWS is the second of a series to be distributed to keep affected agencies and corridor residents and officials up-to-date on project developments. The newsletter has been prepared and distributed by Edwards and Kelcey, Inc., under the auspices of the Minnesota Department of Transportation.

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Mr. Marcus Flygare
TH 60 Project Manager
Minnesota Department of Transportation
District 7 Office
501 South Victory Drive
Mankato, Minnesota 56001

APPENDIX C

AGENCY CORRESPONDENCE

U.S. Department of Interior, Fish and Wildlife Service

U.S. Army Corps of Engineers
St. Paul District
Rock Island District

Minnesota Historical Society (S.H.P.O.) - 2 Letters

United States Department of the Interior

FISH AND WILDLIFE SERVICE

IN REPLY REFER TO:

St. Paul Field Office, Ecological Services
538 Federal Building and U.S. Court House
316 North Robert Street
St. Paul, Minnesota 55101

August 6, 1980

Mr. Marcus R. Flygare, P.E.
Minnesota Department of Transportation
District 7
501 South Victory Drive
Mankato, Minnesota 56001

Dear Mr. Flygare:

This provides our comments on the preliminary outline for the draft environmental impact statement on T.H. 60, and suggestions on possible mitigative measures to be discussed in the EIS.

It appears from the preliminary outline that the EIS will cover the pertinent areas of concern, and that the information will be organized in a comprehensible manner. The technical reports should aid in making the EIS more understandable.

There are a number of general mitigative measures that can be utilized in dealing with fish and wildlife resources, in particular wetlands. In those areas where a new channel is required for a stream, as much of the old channel as is possible should be allowed to remain unfilled. These oxbows often develop into valuable wetlands. In other areas, wetland meadows might be dredged, or impounded to create ponds or deepwater marshes, and thus provide a more diverse wetland habitat. In some of the wetland areas excess sediments caused by the construction may be, or could become a problem. In these instances, portions of the current or created wetland could be used as sedimentation basins. In open water areas where just the vegetative fringe is impacted by construction, a shallow shelf (about one foot below the normal water level) could be constructed waterward of the edge of the fill area to allow for re-establishment of the vegetation.

A number of stream crossings are involved in this proposed project. Where appropriate (where sufficient room exists) wildlife corridors could be constructed under the new bridges. As much of the surrounding area is agricultural, the stream beds serve an important function in wildlife as well as fish movements, and to disrupt this function could cause substantial adverse impacts. On some streams, fish and water

control structures have been mentioned. They should be used where appropriate. Additional mitigative measures would include limiting roadside mowing, both in amount and time frame, and preserving native prairie areas, possibly by inclusion within the right-of-way. Both measures would aid wildlife by providing suitable habitat.

Within the proposed project area, there are a number of places where mitigative measures could be effectively applied. These areas will be refered to using the numbering system on the table labeled "Wetlands and Other Critical Areas Along Proposed T.H. 60 Corridor". In addition to those mentioned here, there may be other areas where mitigation would be appropriate.

Area 7 on the listing has excellent potential for mitigation. It is currently being drained, but could easily be restored to a wetland or small lake. Area 12 is currently pasture, but also has good potential for upgrading to a wetland with standing water or a lake. Area 37, where most proposals necessitate a partial filling of the oxbow and rechannelization, could afford mitigation by leaving the majority of the old channel unfilled. Area 38, p., which includes judicial ditch number 76, has a good potential for expanding the wetland. In the Windom area, depending on the route chosen, there are a number of small ponds and wetlands where mitigative measures could be used.

We hope these remarks will be helpful in the preparation of the EIS. These comments have been prepared under the authority of and in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et. seq.) and are consistent with the intent of the National Environmental Policy Act of 1969.

Sincerely,

Richard F. Berry

Richard F. Berry
Field Office Supervisor

cc: U.S. EPA, Chicago
Minn DNR, St. Paul
Duane Dittberner, Environmental Research Group, St. Paul
Robert Sands, Edwards and Kelley, Inc., Minneapolis

DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING
ROCK ISLAND, ILLINOIS 61201

REPLY TO
ATTENTION OF:
NCROD-S

Mr. William R. Lake
Division Administrator
Federal Highway Administration
Suite 490, Metro Square Building
7th and Roberts Street
St. Paul, Minnesota 55101

Dear Mr. Lake:

Reference is made to your letter dated 8 October 1981 requesting our review and comments concerning the proposed highway project on TH 60 from Worthington to St. James, Minnesota.

The reports sent with your letter have been reviewed. This information indicates that the project starts at the I-90 and TH 60 interchange, located in Section 18, Township 102 North, Range 39 West. The Rock Island District's concern in the Worthington area is the Worthington Flood Control Project on Okabena Creek and Whiskey Ditch, located in Sections 15 and 20, Township 102 North, Range 40 West. Based on the information provided, this office has determined that the proposed project will not have any impacts on the Worthington Flood Control Project, and therefore this office has no objections to this project.

Any questions concerning Department of the Army permits for this project will be handled through the US Army Corps of Engineers, St. Paul District, ATTN: NCSCO-S, 1135 USPO and Custom House, St. Paul, Minnesota 55101.

Should you have any questions, please contact our Regulatory Functions Branch by letter, or telephone Mr. Steve Vander Horn, 309/788-6361, extension 6370.

Sincerely,

HENRY G. PFIESTER, P.E.
Chief, Operations Division

Copy Furnished:
Commander
US Army Engineer District, St. Paul
ATTN: NCSCO-S
1135 USPO and Custom House
St. Paul, Minnesota 55101

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
1135 U. S. POST OFFICE & CUSTOM HOUSE
ST. PAUL, MINNESOTA 55101

SEP 29 1981

REPLY TO
ATTENTION OF:

NCSCO-RF (CC 0656)

Mr. William Lake
Division Administrator
U.S. Department of Transportation
Region 5
Suite 490, Metro Square Building
St. Paul, Minnesota 55101

Dear Mr. Lake:

Reference is made to the proposed Trunk Highway 60 (TH 60) project from Worthington to St. James, Minnesota.

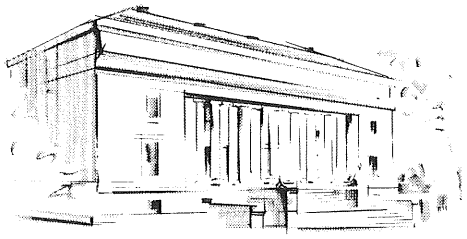
It appears individual permits will be required from the Corps of Engineers for the project regardless of the alternative chosen. However, to confirm this, our office would require additional information on the amounts and dimensions of the filling and the types of waterbodies involved. Many of the wetland encroachments and river crossings could be authorized under existing Department of the Army nationwide permits.

A review indicates there are no St. Paul District Civil Works projects to be affected by the proposed project. The Rock Island District is responsible for Civil Works projects in portions of Nobles, Jackson and Cottonwood Counties along the TH 60 route. There is a Flood Control project at Worthington, Minnesota. For more information on their involvement, you should contact Mr. Monte Hines, Regulatory Functions Branch, Clock Tower Building, Rock Island, Illinois 61201; telephone (309) ~~788-6361,~~ 786-6771 Ext. 209.

If you have any questions, please contact Mr. Tim Fell at (612) 725-7775.

Sincerely,

WILLIAM W. BADGER
Colonel, Corps of Engineers
Commander and District Engineer



MINNESOTA HISTORICAL SOCIETY

690 Cedar Street, St. Paul, Minnesota 55101 • 612-296-2747

11 March 1981

Mr. C. P. Kachelmyer
Preliminary Design Engineer
Department of Transportation
Room 604 - Transportation Bldg.
St. Paul, MN 55155

Dear Mr. Kachelmyer:

RE: S.P. 1703, 3204-26, 5306-23, 8308 (TH 60)
From Jct. I-90 at Worthington to West Jct. TH 4 near St. James, Nobles, Jackson, Cottonwood and Watonwan Counties

MHS Referral File Number: C 995

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the National Advisory Council on Historic Preservation (36CFR800).

This review reveals that segments of the above-referenced project have been under study since 1971. Results of archaeological investigations have resulted in the finding of three archaeological sites. The following is a description of the sites:

21CO11 - Cottonwood Lake Site (Figure 3)
NW¼, NW¼, Sec. 30, T105N, R35W
Cottonwood County

This possible prehistoric archaeological site was recorded on the east shore of Cottonwood Lake on the basis of the recovery of one side notched projectile point and several possible stone waste flakes during the course of surface reconnaissance under the auspices of the Trunk Highway Survey in 1971. This locus appears to lie within, or immediately adjacent to, the proposed eastern bypass of Windom. No further surface or subsurface evaluation of the site has been accomplished pending definition of project design. The nature, condition, and significance of this site are unknown.

21JK12 - Duck Lake Site #1 (Figure 4)

W½, SE¼, Section 17, T104N, R37W
Jackson County

Surface reconnaissance in 1971 under the auspices of the Trunk Highway Survey resulted in the recovery of a "grab sample" from this prehistoric archaeological site consisting of Woodland ceramics and

and a substantial collection of lithic debitage. This collection suggests that an archaeological deposit of probable habitation or limited use debris exists at the northern margin of the present T.H. 60 right-of-way at the southeast end of Duck Lake and may thus be affected by either the two-lane or four-lane alternative. No further investigations have been completed at this site. Thus the nature, condition, and significance of the archaeological deposit remain unknown.

Site 21JK13, Duck Lake Site #2 (Figure 4)
NW¼, NW¼, Section 20, T104N, R37W
Jackson County

Trunk highway archaeological surveys in 1971 also recorded a possible archaeological site at the southwest end of Duck Lake on the basis of a small collection of stone chipping debris. This site appears to be within the limits of the proposed four-lane alternative for TH 60. No further assessment of the site has been completed and its nature, condition, and significance are therefore unknown.

Sites 21 JK 12 and 21 JK 13 are in the vicinity of the "existing alignment" alternative. With the exception of these two areas, the alignment was thoroughly tested and contained no sites of historic, architectural, archaeological or cultural resources. Therefore, with these exceptions there are no sites listed on the National Register, or eligible for inclusion on the National Register, which will be affected by your "existing alignment" alternative. With regard to the two above-referenced archaeological sites, we concur with the archaeologist that further testing is needed to define the extent, nature, significance, and relationship to the proposed construction limits.

Further intensive survey work will be required for the remaining alternate corridors for the relocation of T.H. 60, which should include the assessment of the archaeological site 21 CO 11 near Windom.

If you have further questions or comments, please do not hesitate to contact Ms. Susan Hedin, Environmental Assessment Officer, State Historic Preservation Office, 240 Summit Avenue, St. Paul, MN 55102, (612) 296-0103. Again, thank you for your participation in this important effort to identify and preserve Minnesota's cultural resources.

Sincerely,

Russell W. Fridley

Russell W. Fridley
State Historic Preservation Officer

RWF/sl

cc: Les Peterson
Fort Snelling

Enclosure: map

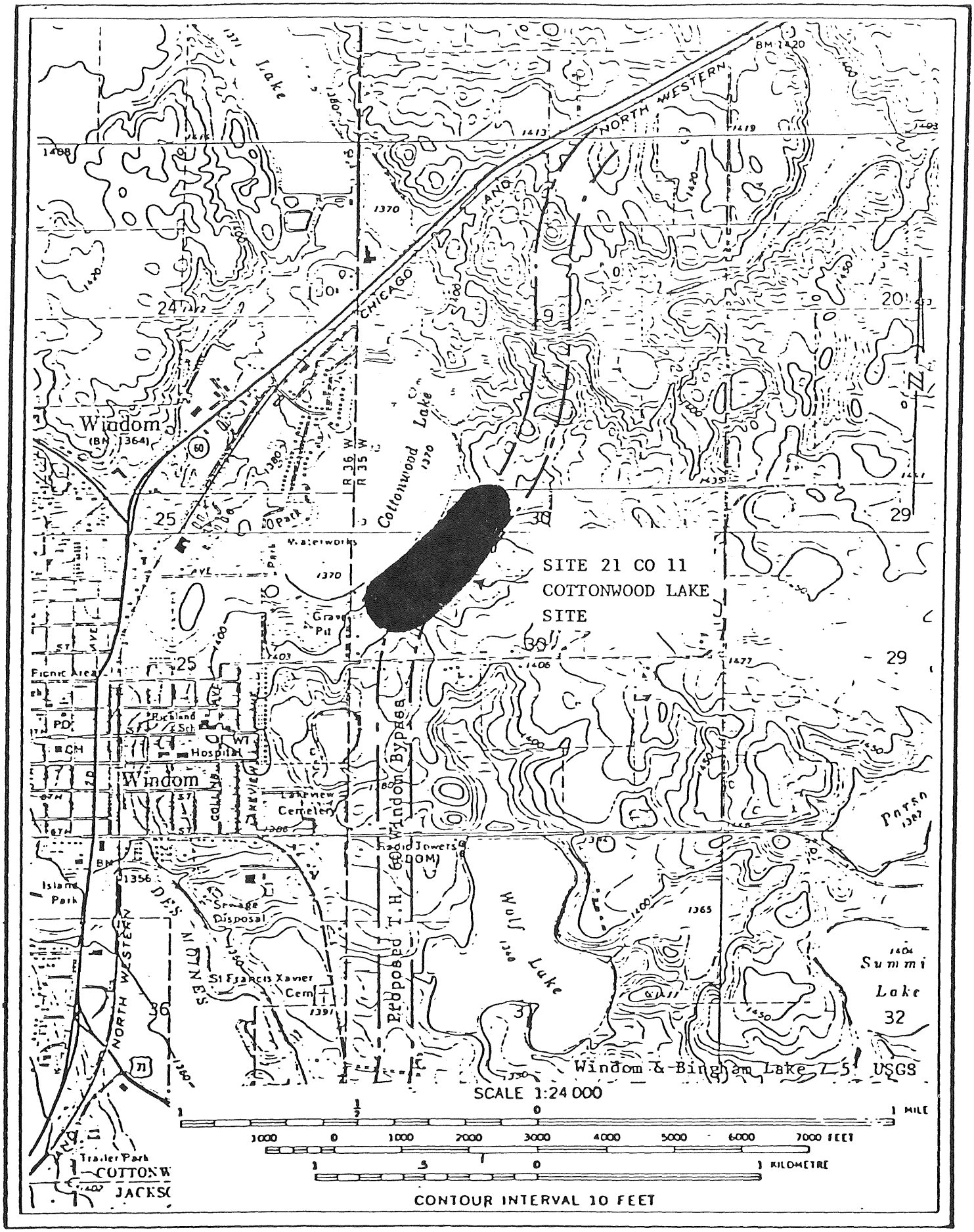


Figure 3. Relationship of Site 21 CO 11 to the proposed alternate location for T.H 60 at Windom, Cottonwood County.

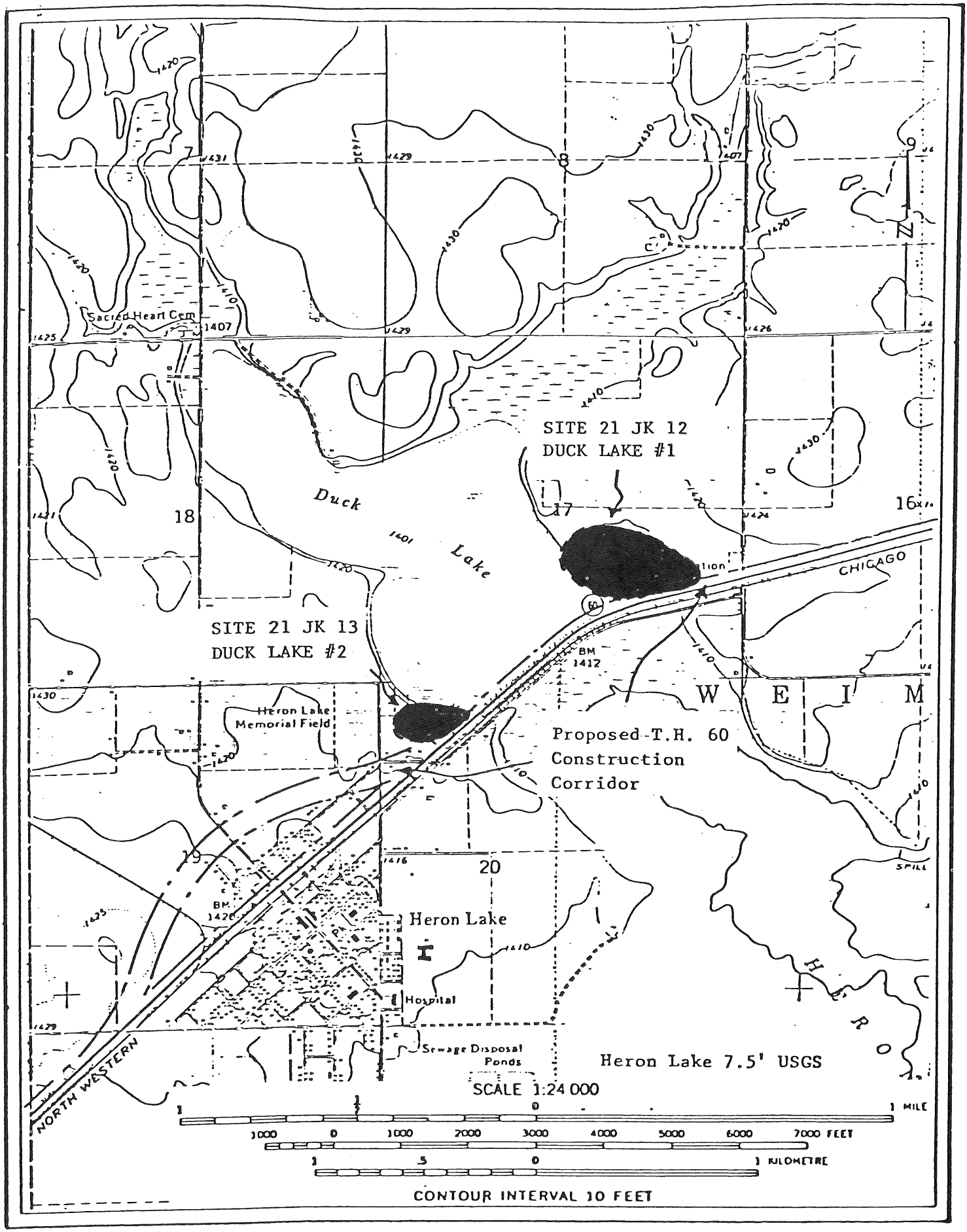


Figure 4. Relationship of Sites 21 JK 12 and 21 JK 13 to proposed alternate corridors for T.H. 60 near Heron Lake, Jackson County.

MINNESOTA HISTORICAL SOCIETY
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690 Cedar Street, St. Paul, Minnesota 55101 • (612) 296-6126

15 December 1981

Mr. C. P. Kachelmyer
Preliminary Design Engineer
Department of Transportation
Room 604 - Transportation Bldg.
St. Paul, MN 55155

Dear Mr. Kachelmyer:

Minn. Proj F 016-1( ), F 004-1( )

RE: S.P. 1703, 3204-26, 5306-23, 8308 (T.H. 60)
From the Jct. I-90 at Worthington to West Jct., T.H. 4 near St. James/Nobles, Jackson, Cottonwood, and Watonwan Counties.

MHS Referral File Number: C 995

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the National Advisory Council on Historic Preservation (36CFR800).

This letter is to update our 11 March 1981 letter regarding the above referenced project. During the course of the 1981 field season, all segments and alternatives not previously reviewed were surveyed for prehistoric archaeological sites. No new cultural resources were discovered, during the course of this survey. In addition, the three known archaeological sites were re-evaluated. The Cottonwood Lake Site (21 CO 11) was tested and because a single projectile point is the only evidence of the site it is our opinion that it is not eligible for inclusion on the National Register, and no further consideration is needed. The Duck Lake Site #1 (21 JK 12) was investigated and we concur with the findings of the archaeologist that if the currently proposed right-of-way is maintained there will be no effect on the site. With respect to Duck Lake Site #2 (21 JK 13), we again support the recommendations of the archaeologist to conduct further intensive testing in order to determine the eligibility of the site and the potential impacts.

Consequently, all upgrading and relocation alternatives have been reviewed. With the exception of the area of the Duck Lake Site #2 (21 JK 13) it is our opinion that there will be no effect on sites of historical, architectural, cultural, or archaeological significance listed on the National Register, or eligible for inclusion on the National Register, by your proposal. Once the results of the test excavations for Duck Lake Sites #2 are submitted, we will forward our final comments for this segment.

If you have further questions or comments, please do not hesitate to contact Mr. Dennis Gimmestad, Acting Assistant State Historic Preservation Officer, State Historic Preservation Office, 240 Summit Avenue, St. Paul, MN 55102, 296-9070.

Again, thank you for your attention to cultural resources in your planning process.

Sincerely,

Russell W. Fridley

Russell W. Fridley
State Historic Preservation Officer

RWF/sl