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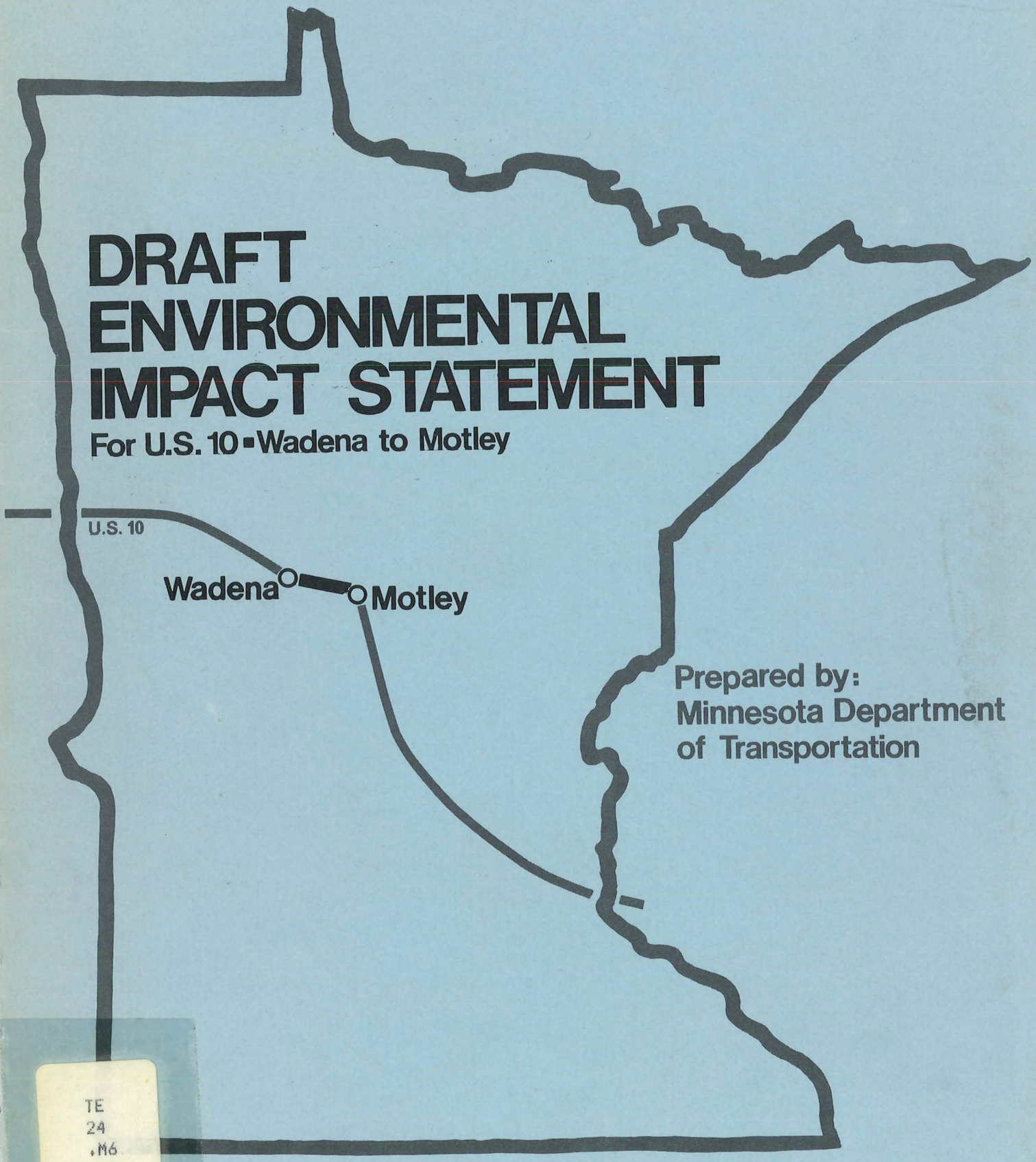
of Transportation
Federal Highway Administration

DRAFT ENVIRONMENTAL IMPACT STATEMENT

For U.S. 10 • Wadena to Motley



Prepared by:
Minnesota Department
of Transportation

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Report No: FHWA-MN-EIS-79-04-D
Federal Highway Administration
Region 5

U.S. Highway 10 in Otter Tail, Wadena, Todd and Morrison Counties, Minnesota
Including Bypasses for cities of Wadena, Verndale, Aldrich, Staples and Motley, Minnesota

Minn. Project:	F 002-2 ( )	State Project:	5605-08
Minn. Project:	F 002-2 ( )	State Project:	8001-21
Minn. Project:	F 002-2 ( )	State Project:	7702-29
Minn. Project:	F 037-1 ( )	State Project:	4903-23

from
C.S.A.H. 77 at Bluffton
to
Jct. C.S.A.H. 53, 0.5 Miles South of Motley
and
State Highway 210 in Todd County, Staples, Minn.

Minn. Project:	F 4076 ( )	State Project:	7701-18

from
C.S.A.H. 21
to
Jct. U.S. 10 in Staples

ADMINISTRATIVE ACTION
DRAFT
ENVIRONMENTAL IMPACT STATEMENT
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

Submitted pursuant to 42 U.S.C. 4332 (2) (C) & 23 U.S.C. 128(a)
and
Minnesota Statutes 116D.01 et. seq.

October 17, 1979
Date

Peter A. Fausch
Assistant Commissioner for Planning
Minnesota Department of Transportation

10-17-79
Date

E. Dean Carlson
Division Administrator
Federal Highway Administration

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SUMMARY

Federal Highway Administration
Administrative Action Environmental Statement

(X) Draft ( ) Final

( ) Section 4(f) Statement attached

Additional information about the proposal and statement can be obtained from:

District Director
Division of Field Operations, Mn/DOT
Box 666, Detroit Lakes, Minnesota 56501
218-847-4401

FHWA Division Administrator
Metro Square Building
Suite 490, St. Paul, Minnesota 55101
612-725-7001

(A) Project Description

The proposed highway improvement includes the upgrading of U.S. 10 from a two-lane single roadway to a four-lane divided roadway. It involves about 31 miles of U.S. 10 from C.S.A.H. 77 at Bluffton to C.S.A.H. 53, one-half mile south of Motley. This segment of highway is located in Otter Tail, Wadena, Todd and Morrison Counties in Central Minnesota. Bypasses for the cities of Wadena, Verndale, Aldrich, Staples and Motley are being considered. Freeway standards will be used for the bypasses of Wadena, Staples and Motley. Expressway Standards will be used for bypasses at Verndale and Aldrich as well as for all segments between city bypasses.

This proposal also includes the relocation and construction of about two miles of T.H. 210 in and south of the City of Staples. This segment is to be constructed to two-lane rural highway standards.

(B) Actions Required by Other Federal and State Agencies

1. U.S. Army Corps of Engineers,
   Section 404 Permit.

2. Minnesota Department of Natural Resources,
   Permit to work in public waters.

3. District Court,
   Permit to work in Judicial Ditches

(C) Summary of Major Environmental Impacts

1. Beneficial:
   a. Removal of through traffic from central business districts in four cities, thus providing more safety, and less congestion.

b. Greater traffic carrying capacity with more safety and less travel time, providing a higher level of service.

c. Stimulation of local and regional development.

2. Adverse

a. Relocation of 22 to 73 homes.
" " of 8 to 70 business establishments.
Loss of developed lands, 56 to 108 acres.
" " wetlands, 60 to 194 acres.
" " agriculture, 133 to 342 acres.
" " grassland, 143 to 349 acres.
" " woodland, 53 to 187 acres.
Total land loss, 445 to 1180 acres.
(The exact figures for above will depend on the alternative chosen.

b. Receptors along the proposed bypasses will experience a significant increase in noise levels.

(D) Summary of Major Alternatives

U.S. Highway 10:

1. Alternate Route No. 1 would follow the existing roadway in rural areas and by-pass on the north sides of the cities of Wadena, Verndale, Aldrich and Staples. Route 1 would bypass Motley on the west side.

2. Alternate Route No. 2 follows the existing roadway in both the rural and city areas.

3. Do Nothing.

State Highway 210:

1. Alternate Route A would relocate T.H. 210 beginning at a point about 1.7 miles south from its existing junction with U.S. 10 in Staples, bypass Staples on the east side and make a new junction with U.S. 10 at a proposed interchange east of Staples.

2. Alternate Route B would relocate T.H. 210 with the same termini as Alternate Route A, but its alignment would be 500 to 700 feet farther east for the first half of its length.

3. Do Nothing.

(E) Organizations and persons consulted in the preparation of this Environmental Impact Statement

U.S. Department of Agriculture
Soil Conservation Service

U.S. Department of Interior
U.S. Fish and Wildlife Service

Minnesota Department of Natural Resources
Fish and Wildlife Division
Waters, Soils & Minerals Division

Minnesota Historical Society

Minnesota Pollution Control Agency
Division of Water Quality

City Councils & Planning Commissions of Wadena, Verndale, Aldrich, Staples and Motley

Todd County and Wadena County
Highway Engineers

(F) Comments Are Being Solicited From:

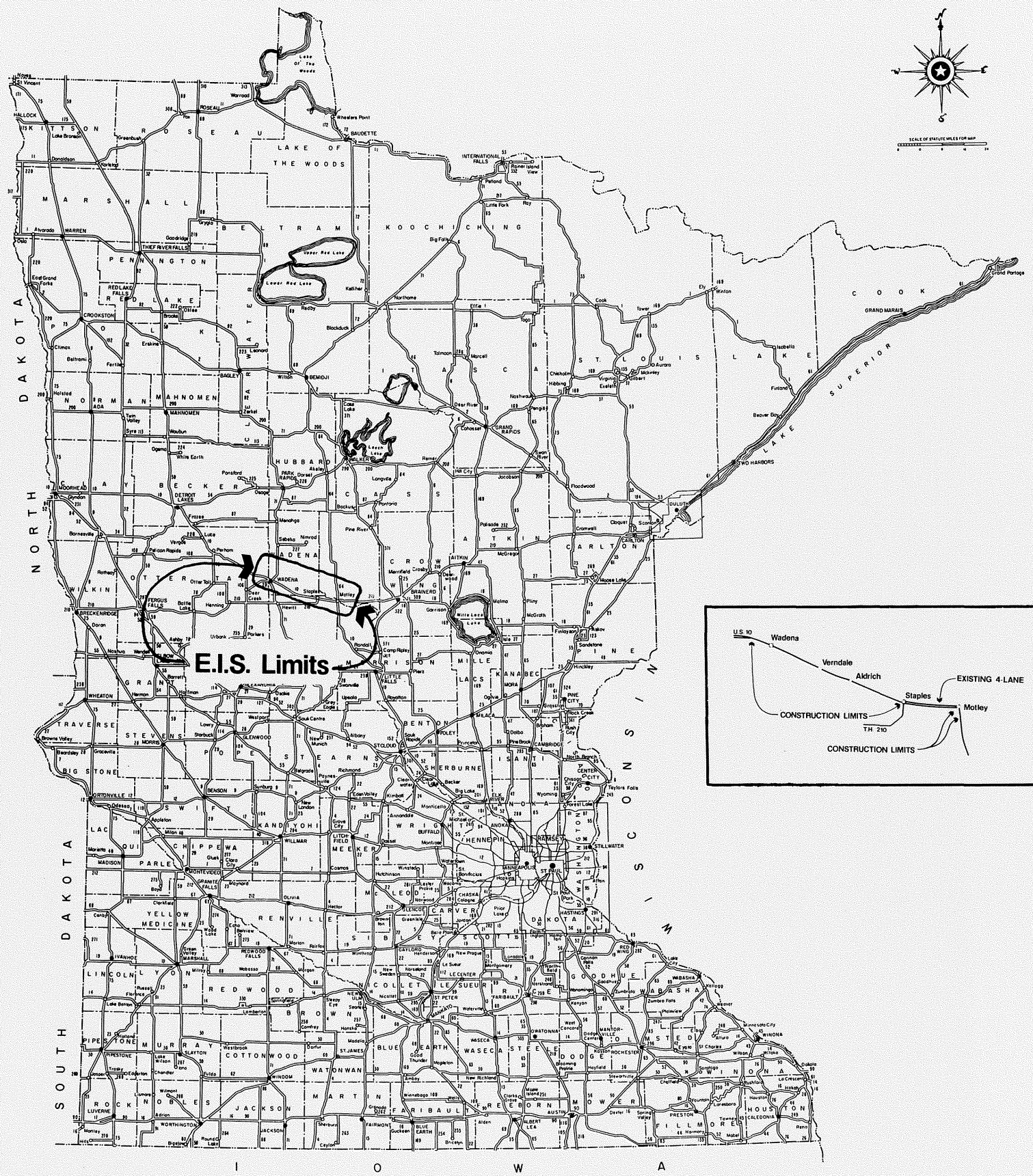
1. Federal:
   Environmental Protection Agency, Regional Office
   U.S. Army, Corps of Engineers
   U.S. Coast Guard, Second District
   Department of Agriculture
   Department of Health, Education and Welfare
   Department of Transportation (TES)
   Department of the Interior
   Department of Housing and Urban Development
   Department of Commerce
   Department of Energy
   Office of Economic Opportunity
   Federal Railroad Administration
   Federal Aviation Administration
   Urban Mass Transportation Administration

2. State:
   Minnesota Pollution Control Agency
   Minnesota Department of Natural Resources
   Minnesota State Planning Agency (A-95 Clearing House)
   Minnesota Environmental Quality Board
   Minnesota Historical Society
   Minnesota Regional Development Commissions, 4 and 5 (A-95 Clearing House)

3. County:
   County Planning Commissions; Otter Tail,
   Wadena, Todd and Morrison
   County Board of Commissioners; Otter Tail,
   Wadena, Todd and Morrison

4. City Councils of Wadena, Verndale, Aldrich, Staples and Motley.

5. Township Boards of Bluffton, Wadena, Aldrich, Bartlett, Thomastown, Staples, Villard, Motley, Compton, Leaf River, and Becker.



i Project Location Map

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INTRODUCTION

U.S. 10 crosses the state in a southeasterly (or northwesterly) direction between Fargo-Moorhead, at the west state line, through Minneapolis-St. Paul, and on into Wisconsin at a point southeast of St. Paul, near Hastings.

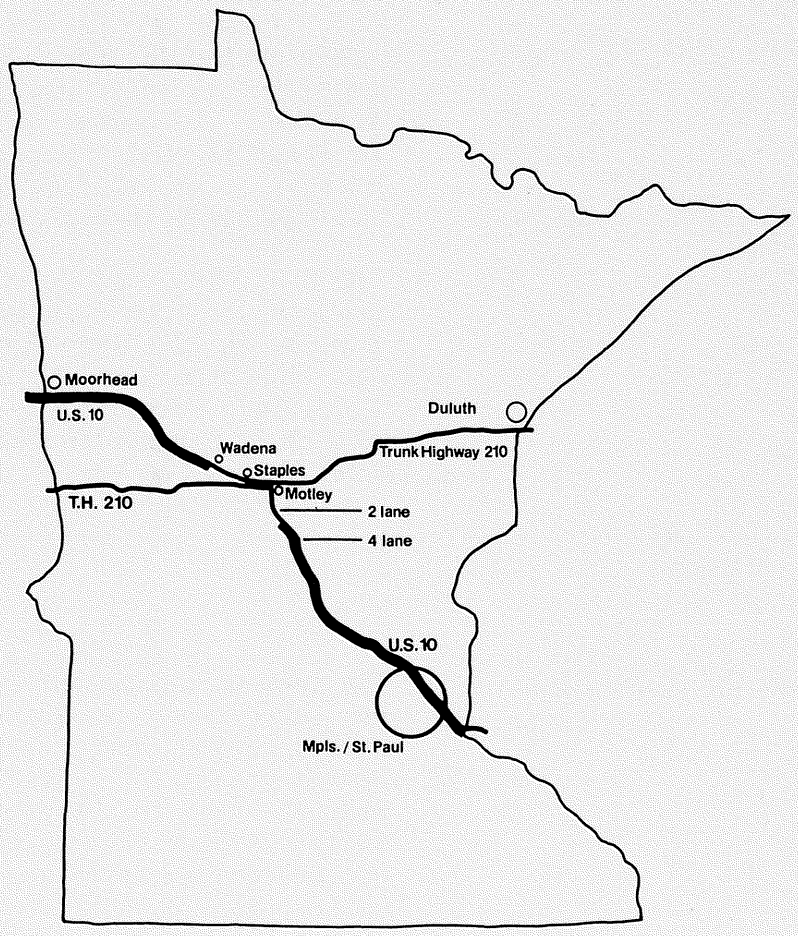

Figure 1 U.S. 10 and T.H. 210 in Minnesota

The proposed improvement to U.S. 10 involves the segment from the Junction with C.S.A.H. 77 in Bluffton to the Junction with C.S.A.H. 53, one half mile south of Motley. This segment totals 31.1 miles in length.

In 1972 a "Backbone Concept for Development of Minnesota Trunk Highways" was developed in co-operation with the FHWA. This report identified U.S. 10 as being of major importance in rural development, recreational use and road user benefits. U.S. 10 was classified at that time as an expressway facility and designated for improvement on a first priority basis.

The Burlington Northern, Inc. Railroad is another mode of transportation which passes through the area in the same corridor. Approximately 20 to 25 freight trains per day and 6 passenger trains per week are carried through the area from Moorhead to Staples. These trains also pass through the cities of Wadena, Verndale, Aldrich and Staples. Motley is served by another line of B.N., Inc. carrying approximately 16 trains per week, eastward, from Staples to Motley to Superior.

Both highway and railroad modes of transportation are expected to grow. The proposed highway improvement is not expected to affect railroad service. The number one commodity hauled by the railroad is coal. With the promotion of coal for energy, it is expected that the railroad will grow substantially in its coal hauling service.

The B.N., Inc. has estimated an increase in coal unit trains from 4.68 per day in 1977 to 9.68 per day in 1981 from Moorhead to Staples. For its line from Staples to Motley to Superior, the B.N., Inc. predicts a growth in coal unit trains from 2.24 per day in 1977 to 4.24 per day in 1981.

PRESENT DEFICIENCIES

The present segment of U.S. 10, which is proposed for improvement, is a two-lane two-way highway with generally uncontrolled access and inadequate design standards. Existing "No Passing" zones indicate that this highway is inadequate for today's higher vehicle speeds. Also, slope design, bridge width and lateral clearances to obstructions do not meet current design standards.

The Present Serviceability Rating of a highway is indicated by a number. Each number indicates the amount of deterioration to the roadway surface as follows:

1. = Complete Deterioration
2. = Severe Deterioration
3. = Moderate Deterioration
4. = Slight Deterioration
5. = No Deterioration

The Present Serviceability Rating of existing U.S. 10, in the area of the proposed improvement, are: 2.3 for the segment from two miles west of the west Wadena County Line to the west Wadena County Line and 3.5 from the west Wadena County Line to the ending terminus, south of Motley.

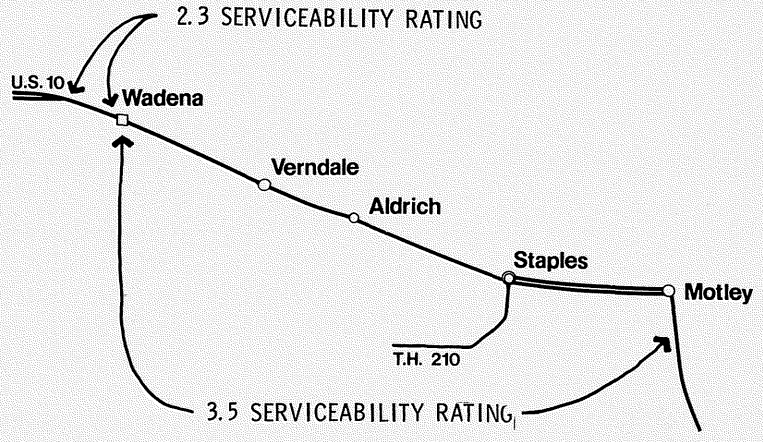

Figure 2 U.S. 10 Serviceability Rating

This segment of existing highway, in its present condition, can be salvaged for one roadway of the proposed four-lane divided facility. Continued use of this segment without improvement would cause deterioration to a rating of one, where complete reconstruction would be required.

TRAFFIC DEMAND

Traffic Forecasts, F4-2 (Nov. 1977) and F3-5 (April 1978), were prepared by Mn/DOT, Division of Highways. Traffic volumes were projected to the year 2000. These volumes are shown on the following figure.

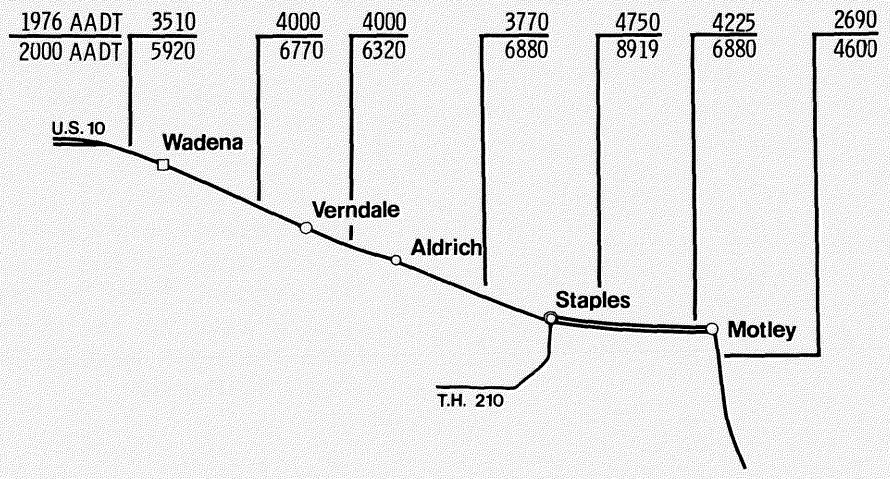

Figure 3 U.S. 10 Traffic Volumes (Year 1976 and 2000)

Note: (1) AADT = Annual Average Daily Traffic.
(2) Estimated directional distribution is 60/40%.
(3) Heavy Commercial Vehicles, comprise 15% of the above volumes.
(4) Design hourly volumes needed for the year 2000 are estimated to be 976 to 1516 vehicles per hour.

LEVEL OF SERVICE

Level of service is defined in the Highway Capacity Manual as a "a term which, broadly interpreted, denotes any one of an infinite number of differing combinations of operating conditions that may occur on a given lane or roadway when it is accommodating various traffic volumes."

There are six levels of service as follows:

Level of Service A - A condition of free flow, with low volumes and high speeds.

Level of Service B - Operating speeds beginning to be restricted somewhat by traffic conditions, but in the zone of stable flow.

Level of Service C - Still in the zone of stable flow, but speeds and manueverability are more closely controlled by the higher volumes. This level of service is generally used as a design value.

Level of Service D - Approaching unstable flow, with tolerable operating speeds being maintained though considerably affected by changes in operating conditions.

Level of Service E - Flow is unstable and there may be stoppages of momentary duration. Volumes are at or near capacity.

Level of Service F - Forced flow resulting from queues of vehicles backing up from a restriction downstream. In the extreme, volume and speed can drop to zero.

A traffic volume of 900 vehicles per hour, at operating speeds of 50 mph or more will provide a B-level of service, stable flow of traffic, on a two-lane, two-way highway. Therefore, when hourly traffic volumes exceed 900 (this projection is shown by the design hourly volumes), U.S. 10 as it now exists, will definitely not provide the B-level of service expected of it. Furthermore, the level of service will be substantially reduced by the year 2000.

If U.S. 10 were to remain a two-lane undivided highway, as it presently exists, the level of service would fall to Level D by the year 2000. The D - Level is a level of service approaching unstable flow of traffic with operating speeds decreasing to 35 mph.

A four-lane divided highway, as proposed, has the capacity to provide a B - level of service, stable flow, at operating speeds of 55 mph.

ACCIDENTS

The following tabulation summarizes the number of accidents for the years 1975 and 1976 on U.S. 10 from Bluffton to Motley:

Table 1 U.S. 10 Traffic Accident Data (1975 and 1976)

LOCATION	1975 ACCIDENTS		1976 ACCIDENTS	
	PERSONAL INJURY	PROPERTY DAMAGE	PERSONAL INJURY	PROPERTY DAMAGE
SEGMENTS BETWEEN TOWNS				
WADENA	4	23	4	27
VERNDALE	4	21	5	26
ALDRICH	0	2	0	2
STAPLES	0	2	1	1
MOTLEY	3	16	1	27
TOTALS	1	4	1	12
	12	68	12	95

There were no fatal accidents in this period. Personal injury accidents remained the same for both years, while property damage accidents increased from 68 to 95. This summary shows a large proportion of accidents happening in the cities of Wadena and Staples.

The accident summary supports the fact that the accident rate increases as the traffic volume increases.

Bypasses should decrease the accident rates in the Central Business Districts by decreasing the traffic volume therein. The design features of a four-lane divided highway will tend to decrease accidents as disclosed in the following excerpt from American Association of State Highway Officials - Geometric Highway Design: A comparison may be made on types of accidents on conventional highways versus freeways. A study of accidents on the Interstate system compared accidents on the existing highways within the Interstate system corridors which formerly carried the greatest proportion of the Interstate traffic before opening the Interstate section. Approximately 80% of the highways studied were rural on which results by type of collison were as follows:

Table 2 Interstate System Accident Data

TYPE OF COLLISION OR ACCIDENT	ACCIDENTS PER 100 MILLION VEHICLE MILES		RATIOS, EXISTING HIGHWAYS "BEFORE" INTERSTATE SYSTEM
	EXISTING HIGHWAYS "BEFORE"	INTERSTATE SYSTEM HIGHWAYS	
HEAD-ON OR SIDE-SWIPE OPPOSITE DIRECTION	34	1	34 to 1
ANGLE	32	4	8 to 1
COLLISION WITH PEDESTRIAN	4	1	4 to 1
REAR-END OR SIDE-SWIPE, SAME DIRECTION	94	47	2 to 1
OTHER TYPES OF COLLISION	37	49	0.8 to 1
NONCOLLISION ACCIDENTS	37	33	1.1 to 1
ALL ACCIDENTS	238	135	1.8 to 1

SYSTEM LINKAGE

Adjacent sections of U.S. 10 have been, or are being, improved to expressway standards. The proposed improvement (about 25 miles) would complete the "Final Link" of the four-lane divided facility from Moorhead to Minneapolis, a distance of 231 miles.

City conjestion is increased by "Through Traffic" which must pass through the central business districts of Wadena, Verndale, Aldrich, Staples and Motley.

Local Public input gives indication that a grievance of motorists in the central business districts is the difficulty of crossing the railroad to gain access to that part of the city which lies on the other side of the tracks. Intersecting streets must cross both U.S. 10 and the adjacent railroad tracks. Citizens have reported extended waits as long as 20 minutes and occasionally more. This is particularly true in Wadena and Staples where the storage of waiting motor vehicles conflicts with U.S. 10 traffic. By-passes will eliminate these conflicts for through traffic on U.S. 10, but will not eliminate the waits involved in crossing the tracks since the grade crossing of streets and tracks will not be eliminated. However, highway/ railroad separations are proposed for Staples and Motley.

PROJECT HISTORY

The corridor for U.S. 10 was probably first established in the early nineteen twenties when it was first graded for roadway purposes. The trend has been to improve the existing facility in its present corridor, making minor revisions in alignment.

The existing facility was paved with 22 feet wide concrete in 1942-1948. Spot repairs to pavement and shoulders have been done occassionally from 1942 to 1973.

Existing bridges were built in 1928, 1941 and 1948.

PROJECT MEETINGS AND HEARINGS

Mn/DOT personnel held an informal informational meeting in Wadena on September 23, 1968, to explain the proposed Wadena bypass to the Mayor and various members of the City Council and Planning Commission.

On May 28, 1969, a public hearing was held in Staples to establish the basic location for U.S. 10 from Bluffton to Little Falls. The concept of providing a four-lane divided facility which would avoid the congested areas of each city was well received and accepted.
In 1969, the Division of Highways and other local agencies began making decisions related to the proposed highway. More meetings were held, some public and some informal, as follows:

March 12, 1969	- Meeting with Staples City Council.
June 12, 1969	- Meeting with Wadena City Officials.
April 1, 1970	- Meeting with Wadena City Officials.
September 22, 1971	- Meeting with Wadena City Officials.
January 28, 1974	- Meeting with Wadena City Officials.
February 5, 1976	- Meeting with Staples City Council & Planning Commission.
September 8, 1976	- Meeting with Region V, Transportation Advisory Committee.
September 10, 1976	- Meeting with Staples City Planners.
February 6, 1978	- Meeting with Verndale City Council.
February 7, 1978	- Meeting with Aldrich City Council.
May 24, 1978	- Meeting of Mn/DOT Commissioner, District Directors, U.S. Highway 10 & U.S. Highway 71 Associations.
June 26, 1978	- Public Informational Meeting in Staples.
June 27, 1978	- Public Informational Meeting In Motley.
June 28, 1978	- Public Informational Meeting in Wadena, included Verndale and Aldrich area.
October 25, 1978	- Meeting with Wadena City Council.
November 14, 1978	- Meeting with Staples City Council.

On March 26, 1970, the Division of Highways (DH) notified the State Planning Agency of its intention to apply for federal assistance. No comments were received at that time.

LOCATION APPROVAL

Location approval was given by the Federal Highway Administration (FHWA) on May 14, 1970, for that segment of U.S. 10 from Bluffton to Little Falls.

LAYOUT APPROVAL

The FHWA gave its layout approval on October 26, 1971, for Design Study on the segments of U.S. 10 from nine-tenths mile east of the eastern corporate limits of Wadena to the eastern corporate limits of Verndale and from the Todd-Wadena County Line to two-tenths mile east of the eastern limits of Staples.

STAPLES DELEGATION

On May 11, 1977, a delegation from the City of Staples met with Mn/DOT personnel in the Central Office to discuss the status of the Staples Bypass. This group was in favor of the north by-pass and urged all possible speed in the process to have it completed. The delegation consisted of two county commissioners, two Staples City Councilmen, one representative from the Staples Development Corporation, one State Senator, one State Representative and the Staples City Mayor.

STATUS OF SEGMENTS ADJOINING EACH END OF THE PROPOSED IMPROVEMENT.

The segment of U.S. 10 adjoining the west terminus has just recently been constructed to four-lane divided standards. It was completed in 1977.

A Negative Declaration for the segment from Little Falls to Motley, which adjoins the eastern terminus, was approved by the FHWA on April 23, 1975. This segment is in the process of being improved with construction expected to be completed in 1982.

Design approval was given by the FHWA for the segment from Lincoln to Motley on July 12, 1976.

BASIC FACTS AND DECISIONS REGARDING THE WADENA NORTH BYPASS

October 11, 1968-- The City Clerk of Wadena informed Mn/DOT District 3 Director, that the City Council approved the routing of U.S. 10 through the City Airport; i.e. Alternate Route 1.

January 29, 1969-- The Mn/DOT Senior Geometrics Engineer informed the Principal Engineer at Brainerd that the City of Wadena does not object to damage of the airport by Alternate Route 1.

January 19, 1971-- The Division of Aeronautics informed District 3 Director that the City of Wadena had filed for approval of a new airport site.

September 28, 1971-- The Assistant District 3 Director filed a memo stating that the City of Wadena had picked a new airport site. An application for Federal Grant had been made. The District Director advised the city to pass a resolution which would allow a "hardship procedure" acquisition of the corridor through the present airport for Alternate Route 1. However, no right of way was ever acquired for this route. (The issue of a new airport is still not resolved at the time of this writing - A Draft Environmental Impact Assessment Report was prepared by the City of Wadena and submitted in November 1976. A public hearing was held January 21, 1977 where at, there surfaced such severe local reaction, Wadena has not continued this project.)

January 28, 1974-- District 3 Preliminary Design Engineer informed the City of Wadena that another Alternate Route was being considered for the bypass because of Freeway Standards, new development and new plats in the area; Airport property is not needed for bypass. (Gibson's Store was built in the path of Alternate Route 1 in 1972.)

January 29, 1974-- District 3 Preliminary Design Engineer filed a memo stating necessity to move Wadena bypass corridor northward. Mn/DOT was not willing to buy airport property at this time for Alternate Route 1.

ACQUIRED R/W

Some portions of the right of way have been acquired for Alternate Route 1 through the City of Staples. This right of way acquired under hardship procedures (Mn/DOT Right of Way Manual, 5-491.121), and is tabulated as follows:

Table 3 Right of Way Acquisition

OWNER	PARCEL NO.	DATE ACQUIRED	ACRES ACQUIRED	COST
IND. SCHOOL DIST. 793	11	5-15-72	4.17	$207,155
IND. SCHOOL DIST. 793	11a	5-15-72	0.57	3,700
PETER L. CARD JUNIOR	13	11-25-74	1.46	46,500
BETTY J. ODDEN	14	5-29-75	12.42	29,600
INTERNATIONAL HOMES INC.	11c	8-11-75	1.50	24,675
PETER CARD	10	3-9-76	2.47	121,140
TOTALS			22.59	$432,770

The cost shown above includes replacement housing and moving costs. The general location of the right of way purchased in Staples is shown in the following figure. No Federal Aid Funds were used in the purchase of these parcels.

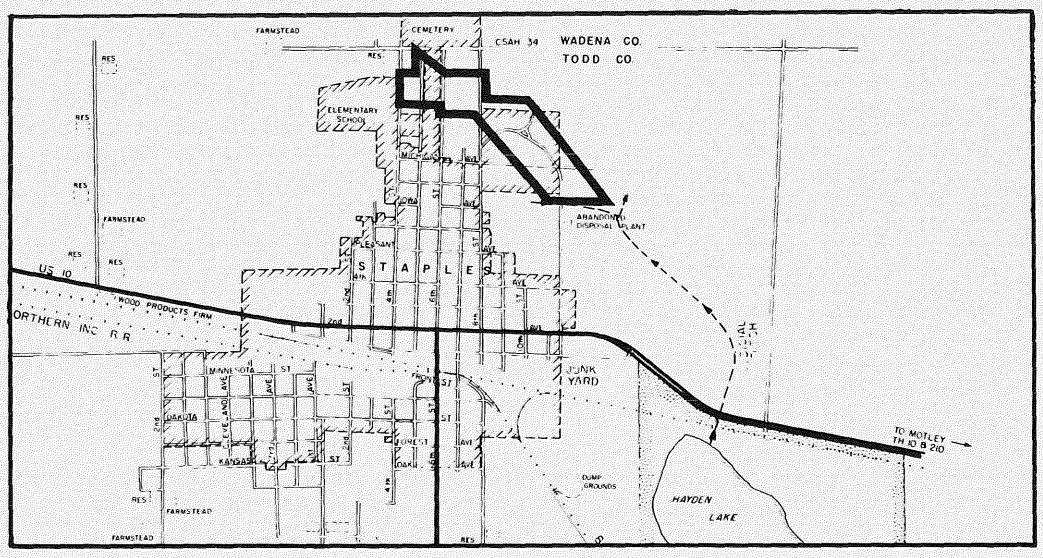

Figure 4 State Owned Right of Way for Staples By-pass

PROGRAMMING

The proposed improvement has not as yet been programmed for construction. However, construction could be started by 1982-1985 and completed in five years.

SECTION II
DESCRIPTION OF THE PROPOSED ACTION

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GENERAL

This statement discusses the environmental impacts for proposed improvements on U.S. 10 from Bluffton to one-half mile south of Motley. The existing facility follows along the north side of the Burlington Northern Railroad in this area until it reaches Motley. It passes through the central business districts of the cities of Wadena, Verndale, Aldrich, Staples and Motley.

The total length between termini is 31.1 miles. Construction for a segment from the western terminus to a point 1.4 miles east was completed to four-lane divided roadway standards in 1977, and can be excluded from this improvement. Another segment of about 4.5 miles between Staples and Motley can be excluded from improvement since it was constructed to four-lane divided standards in 1965 and 1966. This leaves a length of approximately 25.2 miles of existing U.S. 10 for proposed improvement. City by-passes will add about 2.0 miles overall, to make a total of 27.2 miles, improved U.S. 10.

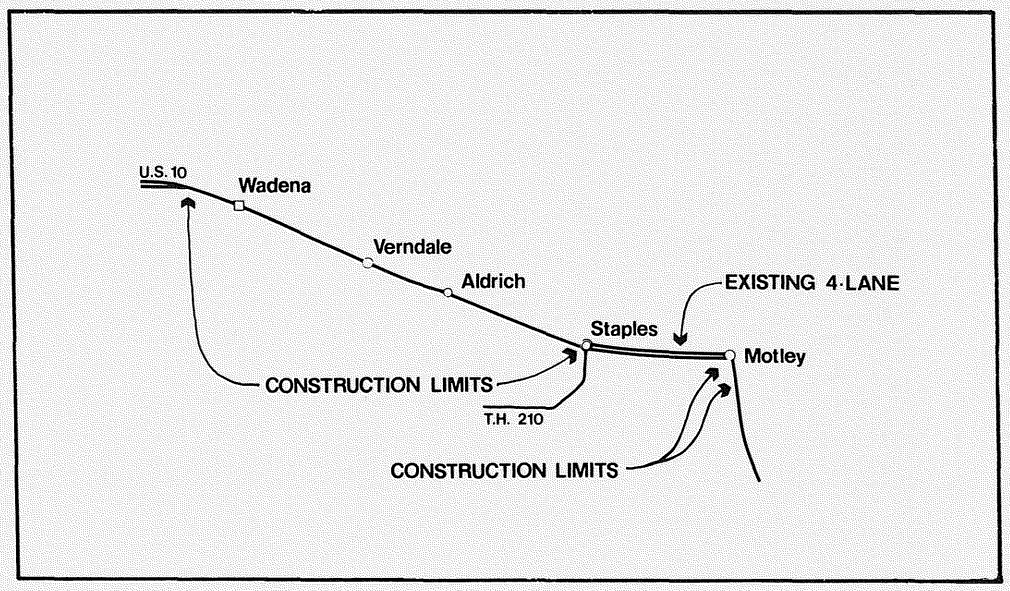
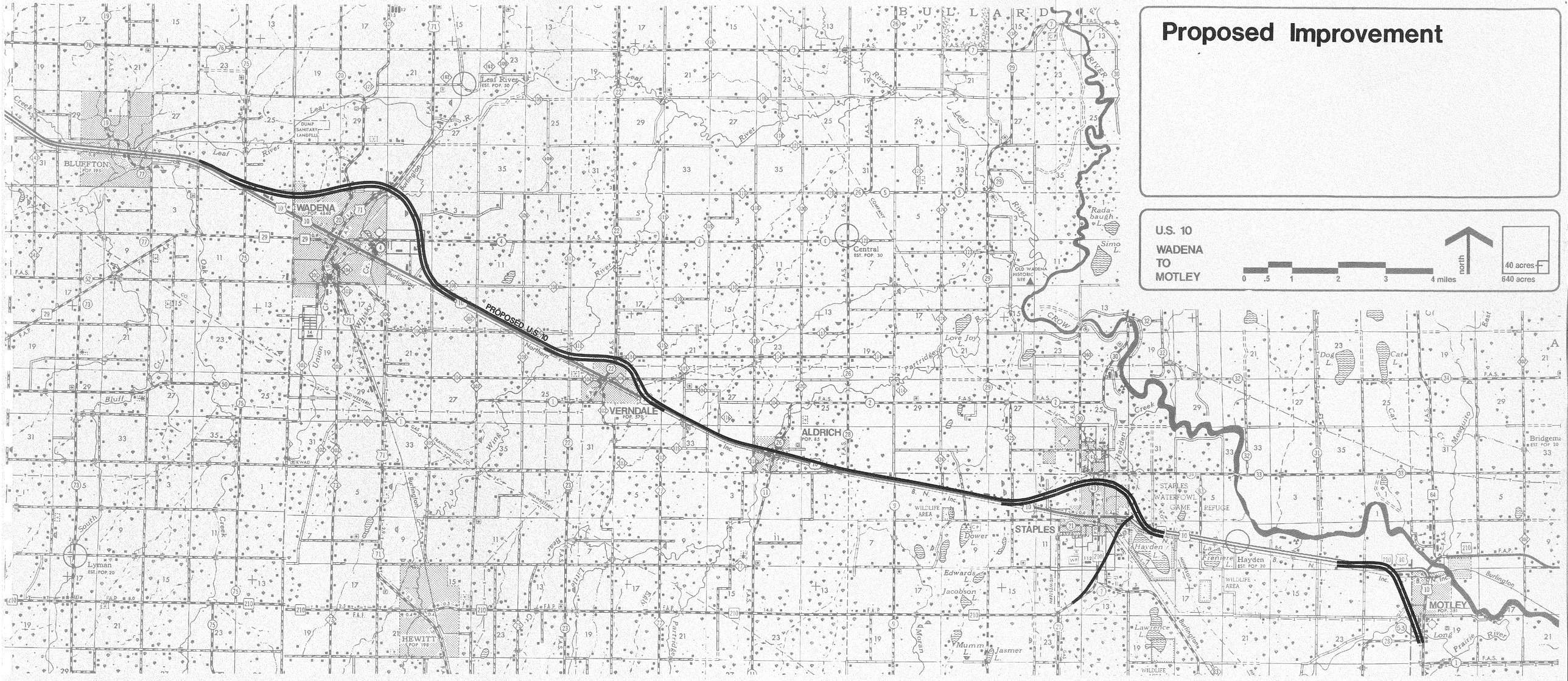


Figure 5 Construction Limits Map

This proposal also includes a segment of Trunk Highway 210 (T.H. 210) which passes through Staples. This segment 2.5 miles in length, begins at the junction with C.S.A.H. 21, south of Staples, and ends at the junction with U.S. 10 in Staples. Approximately 1.7 miles of this segment will be relocated and designed to undivided two-lane facility standards.

T.H. 210 crosses the State in an east-west direction and links the Wahpeton-Breckenridge area, at the west state line, with the Duluth-Superior area at the east state line.


Proposed Improvement
U.S. 10
WADENA
TO
MOTLEY
0 .5 1 2 3 4 miles
north
40 acres
640 acres
BULLARD
BLUFFTON
POP. 195
WADENA
POP. 4446
Leaf River
EST. POP. 50
DUMP
SANITARY
LANDFILL
Central
EST. POP. 30
OLD WADENA
HISTORIC
SITE
PROPOSED U.S. 10
VERNDALE
POP. 579
ALDRICH
POP. 85
STAPLES
STABLES
WATERFOWL
GAME
REFUGE
WILDLIFE
AREA
Hayden
EST. POP. 20
MOTLEY
POP. 551
HEWITT
POP. 198
Lyman
EST. POP. 20
Bridgema
EST. POP. 20
Leaf River
Crow River
Partridge Creek
Burlington Northern
Soo Line
Great Northern
Minneapolis Inc.
Radabaugh L.
Simo L.
Love Joy L.
Dog L.
Cat L.
Edwards L.
Jacobson L.
Mumm L.
Jasmer L.
Lawrence L.
Hayden L.
La Freniere L.
Long Prairie River

Alternatives have been considered and are discussed in Section V of this statement.

Proposed Improvement

The proposal is to construct a single 2-lane facilty adjacent to and parallel to the existing 2-lane roadway, in the rural sections, thus providing a 4-lane divided facility. By-passes are proposed for the cities of Wadena, Verndale, Aldrich, Staples and Motley. The by-passes require the construction of a complete 4-lane divided facility. This will be the first stage of two stages of total construction.

The existing U.S. 10, future eastbound roadway, will carry traffic during the first-stage construction.

The second-stage of construction will involve the improvement of the existing U.S. 10 for eastbound traffic while traffic is carried on the new roadway of the first-stage construction. The second stage will concern such improvements as shoulder widening and surfacing, roadway surfacing to 24-foot wide standards and slope flattening to meet safety requirements. This second-stage includes improvements to the segments of present U.S. 10 that will be turned back to county and city jurisdiction.

Costs

The probable first-stage construction costs are based on $600,000 to $900,000 per mile plus $350,000 for each bridge structure for a total of approximately 30 million dollars. This includes the construction of T.H. 210 in Staples, as discussed later.

The second-stage construction will cost approximately 5.5 million dollars.

The cost of right of way is estimated at about 4 million dollars.

These costs can be expected to inflate at a rate of about 6% per year.

MAJOR DESIGN FEATURES

Right-of-Way

As measured from the roadway centerline, the existing right-of-way is basically 75 feet north and 40 feet south (toward the railroad) from Wadena to the Wadena-Todd Co. Line and then 75 feet north and south to Motley. Additional right-of-way will be required - normally a strip of 149 feet in width. The centerline of the new roadway will be 124 feet north of the existing roadway.

All new right-of-way will be acquired for the by-passes and will vary according to centerline separation as follows:

Wadena	- 290 feet basic R/W
Verndale	- 324 feet basic R/W
Aldrich	- 324 feet basic R/W
Staples	- 290 feet basic R/W
Motley	- 290 feet basic R/W

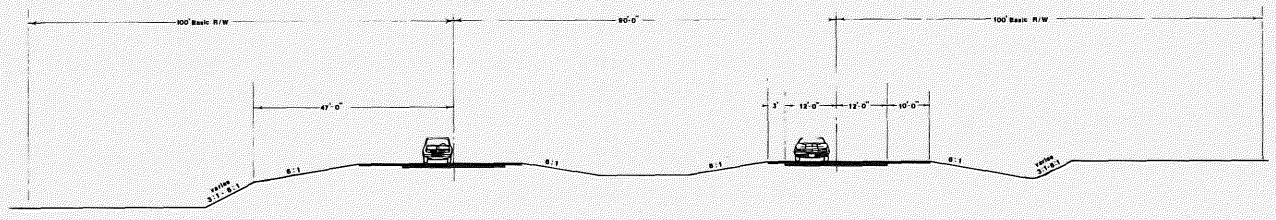
Standards

The City by-pass sections for Wadena, Staples and Motley will be constructed to "Freeway" standards; that is, a four-lane divided facility with full control of access. Similar to the Interstate Highway System, all cross-roads are separated, access is provided only through interchanges and no direct access to adjacent land is permitted.

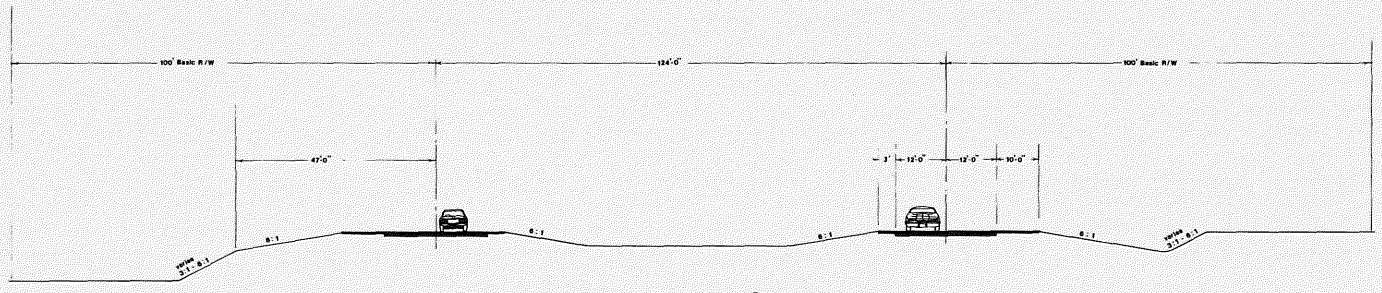
The Verndale and Aldrich bypasses and the rural sections, segments between bypasses, of U.S. 10 will be construction to "Expressway" standards; that is, a four-lane divided facility with partial control of access where some at-grade crossings and some direct access to adjacent land is permitted.

Typical Sections

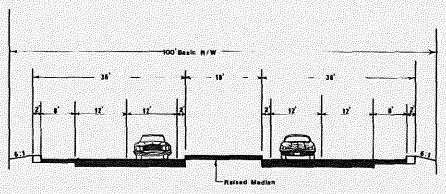
A graphic view of the different typical sections can been seen in the following figure.



Rural Freeway Section



Rural Expressway Section



Urban Highway Section

Figure 7 Typical Sections

Local Roads

The proposed project will intersect local roads and isolate various parcels of land. Some minor relocation of these roads will be required to provide continuity. Frontage roads will be constructed to provide access to isolate parcels of land, and other areas where a group of parcels may use one access in the interest of safety.

SECTION III
ENVIRONMENTAL SOCIAL AND ECONOMIC CONTEXT OF SURROUNDING AREA

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NATURAL FEATURES

Climate

The project area has a continental climate with hot summers and cold winters. The climate is subject to great fluctuations due to influxes of warm moist sub-tropical air masses and cold dry artic air masses. Temperature extremes range from highs over 100 degrees F and lows below -40 degrees F. Average July and January temperatures are 70 degrees (1976) and 11 degrees (1976) respectively. Normally, about ten days per year have highs of 90 degrees or more and 180 days have lows of freezing temperatures or below. The frost free period is from mid-May to mid-September.

Precipitation is characterized by deep winter snows and reliable summer rains, however periodic droughts do occur. During droughts, precipitation failure usually comes in July and August with rainfall 50 to 90% below normal. Average annual precipitation is 26 inches, with extremes ranging from a minimum of 16 inches to a maximum of 35 inches. Rainfall from mid-April through early November comprises 75 to 80% of the annual precipitation; the remainder occurs as snow. Average annual snowfall is about 42 inches. Continuous snowcover normally extends from mid-November through early April.

Annual precipitation usually exceeds evapotranspiration by about 10%. The project is located in the transition zone between water surplus areas to the east and deficient areas to the west. Even in wet years, droughty conditions during the growing season are common because of sandy soils.

Landscape

The landscape from Motley to Wadena along U.S. 10 traverses a patchwork of woodlands, wetlands, and farmlands. The area is drained by several slow-flowing streams which meander northeasterly and empty into the Crow Wing River, north of U.S. 10. A few marshy lakes and ponds, with open water, occur but such bodies of open water are uncommon. Large areas of other heavily vegetated lowland exist including wet meadow, shrub swamp and tamarack bog, but these wetlands lack open water.

These heavily vegetated wetlands are a prominent feature of the landscape. In the project area they are extensive and widespread covering about 15% of the land surface.

Topography

The land surface is relatively flat to undulating between Motley and Wadena. Broad valleys of several rivers traverse the area.

The land generally slopes from northwest to southeast. Elevation above mean sea level is approximately 1350 feet near Wadena and 1230 feet near Motley.

Past glacial activity is considered responsible for most existing topographic features. Low hills, 20-30 feet high, and shallow depressions are typical.

Glacial Deposits

Sandy and gravelly material overlie the bedrock throughout most of the highway corridor. This glacial material (till and outwash) was deposited by moving ice masses and water. Rock and boulders are found throughout the area.

Well drilling indicates that bedrock may be present at 280 feet at Aldrich. U.S. Geological Survey Data indicates the average thickness of glacial deposits to be 250 feet.

Drumlins

Hills fan out over Wadena, Todd and adjacent counties. From Wadena to Aldrich, these glacially formed hills, called drumlins, are generally orieneted north-south, have gradual slopes, and are usually separated by wetlands. These drumlins are 1-4 miles long and 0.1-0.5 miles wide. Between Aldrich and Staples drumlins are more prominent and are 50-100 feet high and 0.1-0.5 miles long. Extensive wetlands have developed in the depressions in the topography between the drumlins. These depressions have filled in with peat and organic deposits from plant growth. The resulting organic soils are poorly drained.

Soils

Sandy soils, having a high degree of permeability, predominate between Wadena and Aldrich. These soils are in the Estherville-Wadena-Hubbard Soil Association. Upland soils consist of a thin surface layer of dark organic matter underlain by approximately 10 inches of sand. Soil layers are thinner on drumlin crests and slopes where erosion has occurred. These soils have fair fertility levels. On cultivated land, when not properly managed and left exposed, these soils are subject to wind and water erosion problems. They are also droughty because of thin granular, porous texture.

From Aldrich to Motley medium textured forest soils of the Nebish-Rockwood Soil Association occur. These soils have low fertility. Areas of peat and muck often occur. The peat is usually 1-15 feet deep.

Near Aldrich 30-40 percent of the soils are peat. East of Aldrich to Motley soils are generally poorly drained.

GEOLOGY: NEAR SURFACE
PROJECT AREA: T.H.10 (FROM WADENA TO MOTLEY)

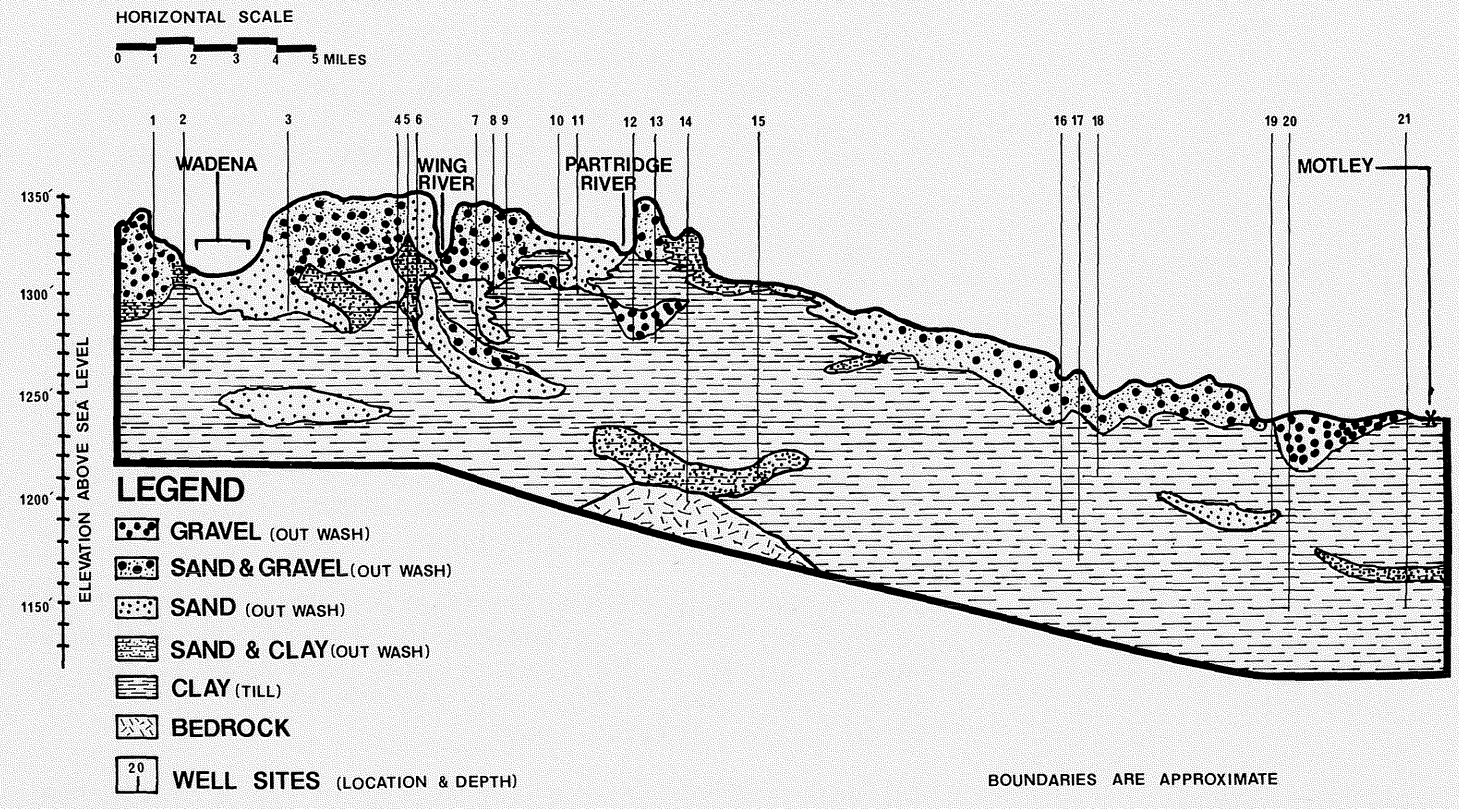


Figure 8 Soils Profile

SOIL DRAINAGE
PROJECT AREA: T.H.10 (FROM WADENA TO MOTLEY)

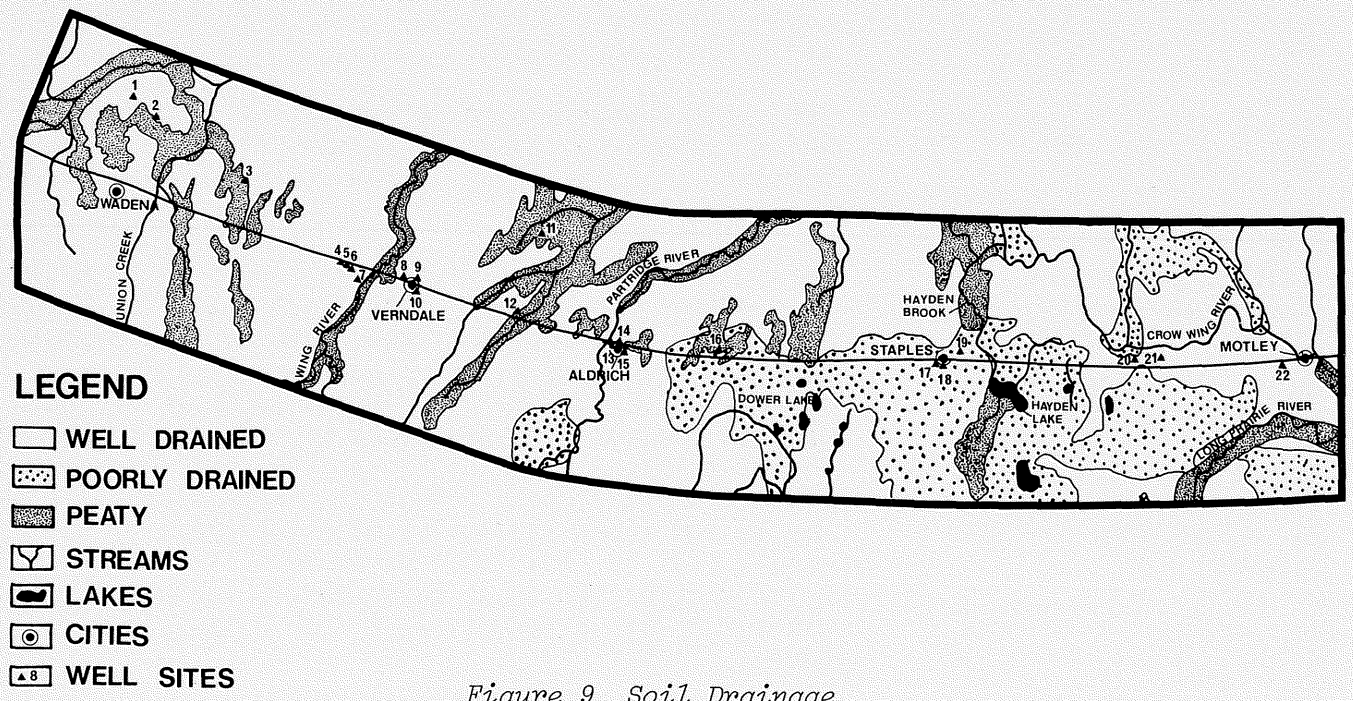


Figure 9 Soil Drainage

GROUNDWATER

The water table is generally 10-20 feet beneath the ground surface. The water table usually conforms to surface topography and ties into streams, lakes and wetlands. From Wadena to Motley the water table generally slopes eastward as does the land surface.

Surface sands and gravels are the main source of water for domestic, municipal and agricultural use. Estimated water yields from these surface deposits are 25-100 gallons per minute west of Aldrich and 100-500 per minute east of Aldrich. (Minn. Geo. Survey)

Bedrock has been known to yield small amounts of water north of the project area. Its potential contribution to the watershed is unknown.

Groundwater Quality

Moderate amounts of mineral matter are present in the groundwater. Calcium, magnesium, and bicarbonates are the major mineral constituents.

Groundwater Recharge

Within the project area the relative recharge potential to glacial deposits is greater in the granular sediment west of Aldrich. The steeper slopes and more clayey soils (low permeability) east of Aldrich are considered to be poorer recharge zones.

Surface Waters

The most significant surface waters in the project area are the numerous streams which flow through it. These streams (Leaf River, Union Creek, Whiskey Creek, Wing River, Partridge River, Hayden Brook and Long Prairie River) are all part of the Crow Wing River Watershed. (See Natural Features Map.)

Crow Wing River

The Crow Wing River is a tributary of the Mississippi River. Near U.S. 10 the Crow Wing River is wide, shallow, and has a sandy bottom. The river receives substantial recreational use. Fishing and canoeing are typical activities.

The river supports a roughfish-gamefish population. White sucker and redhorse are the principle fish. Northern pike, walleye, largemouth bass and panfish are also present.

Tributaries of the Crow Wing River

Physical characteristics of the tributaries are similar to the Crow Wing River. They are all generally shallow, and have a sandy bottom. Roughfish and gamefish inhabit of all these rivers. However, roughfish are predominent. Hayden Brook and Union Creek are both smaller streams. Hayden Brook may be used by Northern Pike for spawning during the spring, but is otherwise not an important fish resource. Union Creek is a DNR designated trout stream 1.3 miles upstream of the existing U.S. 10 crossing. Union Creek is not presently being managed for trout by the DNR. The city of Wadena discharges its treated sewage into Union Creek in Wadena.

Surface Water Quality

The quality of water in the Crow Wing River and its tributaries between Motley and Wadena is generally good. However, like the groundwater, the surface waters contain moderate amounts of dissolved minerals. This is due to the abundance of minerals in the glacial outwash and till which supply base flow (groundwater flow) to the rivers.

Nutrients such as phosphorous and nitrogen are present in moderate to high concentrations. Existing surface water quality is discussed in further detail in Section VI, Water Resources Impacts.

Lakes (over 10 acres)

Hayden Lake (253 acres), located southeast of Staples, (See Figure 10), is the only lake located close to existing and proposed U.S. 10. Hayden Lake does not support a permanent gamefish population. The lake is valuable for waterfowl, furbearers and shorebirds.

1.1% of the area of Wadena County is in lakes of 10 acres or more. This includes 39 lakes (3,802 acres) of which 28 have been partly or completely drained.

The eastern half of the project is in Todd County which contains more lakes. About 4.4% of the area of Todd County is in lakes over 10 acres (215 lakes or 27,901 acres).

Vegetation

The proposed action is located in the original transition zone between hardwood forest to the south, coniferous forest to the north and tall grass prairie to the west. East of Motley, forest still predominates. From Motley to Wadena the vegetation changes from forest to prairie (now mostly agricultural land).

Before settlement prairie fires maintained the forest-prairie transition. Frequent fires suppressed tree growth and encouraged the development of grassland. This created a savanna which contained islands of oak and aspen trees scattered over a prairie of grassland and marshes. The original prairie and savanna west of Motley has been virtually all cultivated or grazed. Many of the wetlands have also been completely or partially drained. Fire suppression has allowed trees and brush to encroach upon much of the area that is not disturbed by cultivation or grazing.

Land in the project area was cleared, drained and plowed for farming during the late 1800's and early 1900's. Many of the farms were abandoned during the 1920's and 1930's because the land was marginal for crops. The abandoned lands regenerated to second growth woodlands of oak and aspen. Currently, farming is again expanding in the area due to the advent of economical irrigation equipment. The future trend in land use will be a continuing conversion of second growth woodlands and undrained wetlands into agricultural production.

Woodlands

Aspen is the most abundant woodland vegetation. On dry, sunny sites red oak, bur oak, and birch are associated with the aspen. On moist, shady sites red maple, iron wood and basswood occur. Prominent understory shrubs in the aspen type include beaked hazel, juneberry, honeysuckle, and mountain maple. Large-leaved aster, wild sarsaparilla, false lily of the valley and bracken fern are the more common herbacaeous plants.

Along stream bottoms and adjacent to some wetlands the dominant overstory species are American elm, black ash, ironwood, yellow birch, and basswood. The understory often consists of hazel, willow, elderberry, choke cherry, alder and ferns.

On poorly drained peat soils lowland forests of tamarack and black spruce occur. The lowland forests are associated with shrub swamps of willow, red-osier dogwood and alder. Common understory species include labrador tea, mosses, leather leaf, sedge, and grasses.

Upland coniferous trees are uncommon. A few relict red and white pine and some stands of jack pine, spruce and balsam exist in woodland areas. A few pine plantations for windbreaks and timber have been planted.

Farmland

Agricultural land in the project area consists of grainfields, hayfields and pastures. Agriculture presently comprises the major land use in the project area, especially west of Aldrich. Area farms are not highly productive due to naturally low fertility, sandy soils and short growing seasons. New farming practices, such as irrigation, are improving agricultural production. Wadena County is one of only five counties in Minnesota that has more than 5% of its cultivated land under irrigation.

The U.S. Department of Agriculture, Soil Conservation Service has reviewed this project (See letter in Section XI) and has identified a few small areas of prime farmland along the proposed action.
No unique farmlands were identified.

Wetlands

Wetlands are abundant throughout the project area, comprising about 17% of the total land acreage. In a 6 mile wide band (3 miles on either side of existing T.H. 10) from Wadena to Motley (approximately 28 miles) there are approximately 18,500 acres of wetland. The size and distribution of wetlands can be seen on the Natural Features Map.

Wetlands range from seasonally flooded depressions to permanent areas of open water. Water levels in most of these wetlands are maintained by the near surface groundwater. Shallow, heavily vegetated wetlands, such as sedge meadow, and shrub swamps, are most abundant. Open water ponds and marshes with deep water are uncommon. Many of the wetlands in the area have been partially drained and have less overall value for wildlife than deeper marshes and ponds.

Wetlands were inventoried and classified into types according to Wetlands of the United States, Circular 39, Fish and Wildlife Service, United States Department of the Interior (Shaw and Fredine 1971).

The following wetland types occur in the project area.

Wetland Types

Type 1 - Seasonally flooded basins.

Soil is flooded for brief periods with shallow water during spring or after heavy rains, but is usually well drained for most of the growing season. Common plants are grasses and forbs, sometimes with scattered brush or tall weeds. These areas are often farmed or pastured.

Type 2 - Wet Meadows.

Soil may be flooded for only a few weeks after spring snow melt, but is without standing water most of the growing season. Soil remains waterlogged within a few inches of its surface. Plants include grasses, sedges, broadleafs, and woody forbs.

Type 3 - Shallow Marsh.

Soil is waterlogged to surface and often covered with 3 inches or more of water. Surface water remains during spring and early summer. Plants include grasses, bull rushes, spike rushes, cattails, arrowheads and smartweeds. The vegetation may form a complete cover or may have scattered areas of open water.

Type 4 - Deep Marsh.

Soil is covered with 6 inches to 3 feet or more of water during the growing season. Emergent vegetation is usually confined to the marsh rim or forms scattered clumps and islands. Vegetation includes cattails, sedges, rushes, arrowheads, duckweeds, and submerged aquatic plants.

Type 5 - Open Water.

Open water from 5 to 10 feet deep fringed by a border of emergent vegetation. Aquatic plants may include cattails, rushes, arrowheads, pondweeds, coontail, and lily pads.

Type 6 - Shrub Swamps.

Soil is water logged during the growing season and may be inundated by 6 inches or more of water. Common vegetation includes alders, willows, and dogwoods which form a dense woody cover. Understory vegetation may consist of grass, sedge, horsetail and cattail.

Type 7 - Wooded Swamps.

Soil is at least waterlogged close to the surface during the growing season and is often covered with a foot or more of water. Woody vegetation includes ash, elm, willow, alder, dogwood and tamarack.

Wildlife Habitat

A wide variety of plant communities occur along the proposed project. Included are stands of northern hardwoods, pine groves, confier swamps, marshes, grasslands, and agricultural lands. This varied mixture of plant communities provides good habitat for many different kinds of wildlife, both game and nongame.

Birds

A list of birds likely to occur in the project area includes approximately 225 species. Migrants account for around 200 species of which about half are also summer residents. Normally, only 15 species or so are year-round residents while about 20 species only visit the area during winter. Many of the 225 species are uncommon or rare. This is because the project is located in the transition zone between three major vegetation types and is thus situated on the edge of the range of many bird species.

Principal game birds include the ruffed grouse, mallard, blue-winged teal, wood duck, ring-necked duck and American woodcock. Other, less important game species include the ring-necked pheasant, Hungarian partridge, common snipe, American Coot, sore rail and several less abundant waterfowl species.

The proposed project area is located on the eastern edge of the priarie-potholes region. This region of 300,000 square miles in the upper-midsection of the North American Continent produces 50% of the Continent's duck crop in a normal year. Thus, the project area is in a region that has high potential for waterfowl. However, field investigations revealed moderate use of the project area by waterfowl. The great percentage of wetlands are naturally shallow or have been partially

drained. These wetlands have little open water, except in early spring, and because they are so shallow they have become choked with heavy growths of cattails, sedges and grasses. This dense vegetation reduces the wetlands usefulness as prime waterfowl habitat. Waterfowl thrive best in wetlands that are about half vegetation and half open water. The greatest numbers of waterfowl in the project area were located in the deep marshes and lakes southeast and southwest of Staples.

The project area is attractive to many kinds of non-game birds. A large number of shorebirds can be found in the extensive wetlands. Warblers, flycatchers, vieros, woodpeckers, and thrushes occur in the upland forests. Open fields and pastures are used by swallows, bobolinks, meadowlarks, sparrows, grackles and blackbirds. Several kinds of predatory birds are present including hawks and owls.

Mammals

About 50 species of mammals are likely to occur in the project area. The prominent game species include the eastern cottontail, snowshoe hare, gray squirrel, fox squirrel, beaver, muskrat, raccoon, mink and white-tailed deer. The white-tailed deer and ruffed grouse are the most important and popular game species. Common nongame species include porcupine, woodchuck, coyote, weasel, skunk, red squirrel, thirteen-lined ground squirrel, chipmunk, pocket gopher, shrew, bats, voles, mice and moles.

Reptiles and Amphibians

Several species of reptiles and amphibians also occur in the project area. These animals are usually closely associated with wet, marshy areas. The probable species include the tiger salamander, blue-spotted salamander, American toad, spring peeper, gray tree frog, mink frog, leopard frog, wood frog, eastern hog-nosed snake, snapping turtle and western painted turtle.

Threatened and Endangered Species

The project area is not within the primary breeding range of any species of wildlife listed as threatened or endangered by the U.S. Fish and Wildlife Service. The project does lie near the edge of the normal breeding range of the eastern timber wolf and the northern bald eagle. These threatened species may infrequently move through the project area but do not normally reside there. The American and artic peregrine falcons are endangered species which may rarely pass through the project area during spring and fall migrations.

Wildlife in Need of Special Consideration

Some species of wildlife in the project area are included in the Minnesota Department of Natural Resources list of species which are in need of special consideration. Three bird species, the marsh hawk, red-shouldered hawk and osprey, have been designated as species of changing or uncertain status. These species are locally uncommon but seem to be increasing in Minnesota at this time. Five species, the bobcat, great blue heron, common loon, pileated woodpecker, and snapping turtle, are listed as species of special interest because of their unique values, high public interest and vunerability of habitat.

Major Areas of Vegetation and Wildlife Habitat with Potential for Significant Impact

Within the project area three major areas of natural vegetation and wildlife habitat were identified which may be significantly impacted by the proposed action. (See Figure 10). These three areas were considered important because they are the largest contiguous blocks of natural vegetation affected by the proposed action and because they have special values for wildlife as follows:

North Wadena Area.

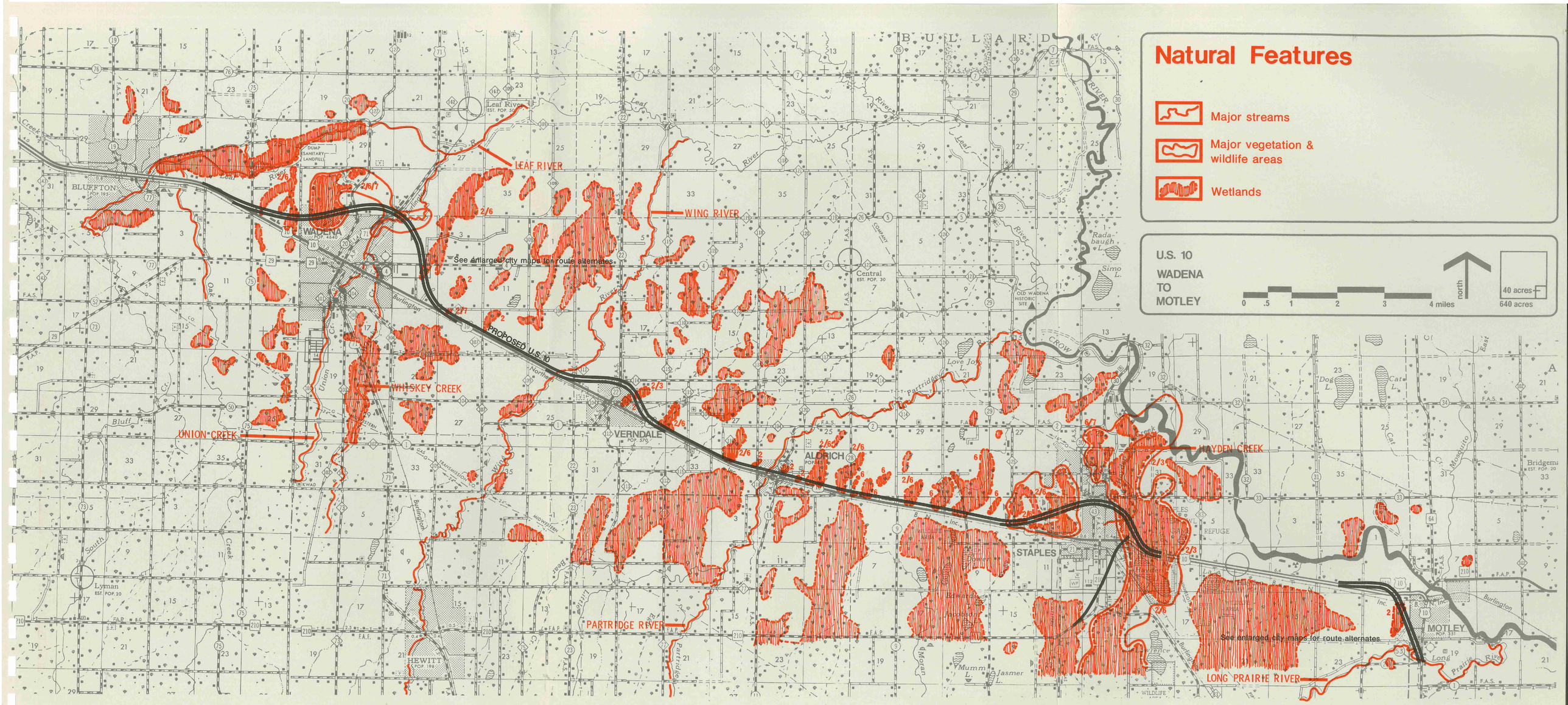
This area of approximately two square miles consists primarily of lowlands of thick tamarack swamps and shrub swamps. Intermixed throughout the swamp are islands of highland covered with northern hardwoods or grass meadows. This area is especially valuable to wintering deer because its swampy nature makes it somewhat inaccessible. This provides security for the deer. The swamp also contains extensive stands of red-osier dogwood, a highly preferred deer food. Winter signs observed in the area indicated heavy use by wintering deer.

West Staples Area.

This area is approximately 1.33 square miles in size. It is a low wetland, predominantly of sedge-meadow and shrub swamps. Some islands of aspen and grass also occur. No open water exists except in drainage ditches. It is most valuable for small game such as rabbits and grouse, and for a variety of non-game birds and mammals.

East Staples Area.

This area is a sizable complex of wetlands and woodlands of several square miles. It encompasses Hayden Lake and a large Type 3 cattail marsh directly north of U.S. 10. Hayden Creek runs through the center of the area and drains into the Crow Wing River. The diversity of vegetation provides good habitat for all kinds of wildlife found in the project area. The marshy character of the area makes it especially valuable for waterfowl. This area has the best overall value as wildlife habitat of the entire project area.


Natural Features
Major streams
Major vegetation & wildlife areas
Wetlands
U.S. 10
WADENA
TO
MOTLEY
0 .5 1 2 3 4 miles
north
40 acres
640 acres
BULLARD
BLUFFTON
POP. 195
WADENA
POP. 4440
Leaf River
EST. POP. 30
Central
EST. POP. 30
VERNDALE
POP. 570
ALDRICH
POP. 45
STAPLES
MOTLEY
POP. 351
Bridgema
EST. POP. 20
Lyman
EST. POP. 20
HEWITT
POP. 198
LEAF RIVER
WING RIVER
WHISKEY CREEK
UNION CREEK
HAYDEN CREEK
PARTRIDGE RIVER
LONG PRAIRIE RIVER
PROPOSED U.S. 10
See enlarged city maps for route alternates
See enlarged city maps for route alternates
DUMP SANITARY LANDFILL
OLD WADENA HISTORIC SITE
REFUGE
WILDLIFE

SOCIAL-ECONOMIC ENVIRONMENT

County Population

During the past 20 years most counties in North Central Minnesota have experienced a distinct fluctuation in their populations. The 1950's was a period when most counties lost population due to the rural to urban trend. This trend began reversing in the 1970's as people began moving back to the rural areas. See Table 4.

Table 4 County and City Populations

County	1940	1960	1970	Estimate 1980
OTTERTAIL	51,896	48,960	46,097	47,000
WADENA	12,772	12,199	12,412	12,700
TODD	27,438	23,199	22,114	22,900
MORRISON	27,473	26,641	26,949	27,300
City	**1940**	**1960**	**1970**	**1980**
WADENA	2,916	4,381	4,640	
VERNDALE	521	606	570	
ALDRICH	152	90	85	NOT
STAPLES	2,952	2,706	2,657	AVAILABLE
MOTLEY	368	430	351	

Source: U.S. Population, Minnesota, U.S. Department of Commerce, Bureau of Census

State Demographers Office, Minnesota State Planning Agency

The percentage of population increase from 1960 to 1977 for the project area is approximately 1%. This is compared to an approximate 11% increase for the entire State of Minnesota for the same time period.

Population Shifts within the Counties

Otter Tail County

The rate of movement from the city was greater than the movement statewide during the 1960-1970 period. Rural areas lost 0.9% of their population while urban areas in the county decreased nearly 0.6%. Population increases from 1970-1977 are somewhat scattered with most consistent increments amenity related and occurring adjacent to lakes and within rural wooded areas.

Wadena County

The rate of movement from farm to city was fairly typical of the 1960-1970 statewide movement. Rural areas lost 0.6% of their population while urban areas increased 5.9%. Population increases from 1970-1977 are also scattered with the most significant increase occurring in the southern rural areas.

Todd County

Both rural and urban areas of the county experienced a negative growth in the 1960-1970 period. Losses in the rural areas (-4.7%) exceeded those in urban areas (-1.8%). This trend has reversed with the 1970-1977 population increase. During this period, urban areas have increased by approximately 1% while rural populations expanded by nearly 9%. Significant growth has occurred in eastern, south central, and the northern townships of the county.

Morrison County

Population shifts in Morrison county during the 1960-1970 period were not typical of shifts which occurred statewide. The rural population increased by +2.1% while urban areas lost 1%. Urban areas have experienced a further loss of population from 1970-1977 (approximately 2.5%) while rural have increased by more than 9%. These rural growth increments have been scattered throughout the county.

The following figure shows the counties in the project area.

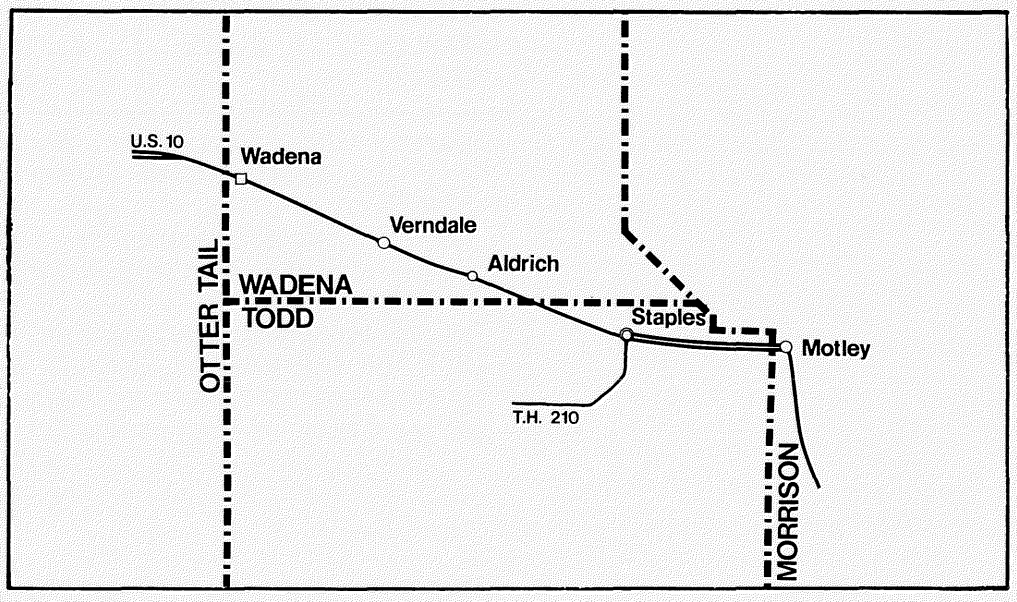


Figure 11 Counties in the Project Area

National Origins

National origin within the project area is mainly German (Polish and Southern). However, a significant number of people having Finnish decent live near the western portion of the project while a heavy population of Polish decendants reside near the eastern segment of the project area. Further analysis of the nationality origin indicates that a substantial number of people having Swiss decent reside in Todd county. Diversification of ethnic descent will continue to occur with population growth.

Employment

The demand for professional and other industrial/ commercial services is increasing steadily within the project area. SEE TABLE 5.

Table 5 Labor Source by Profession

Industry	1950	1960	1970
AGRICULTURE	56%	43%	32%
CONSTRUCTION	6	7	8
MANUFACTURING	6	11	14
WHOLESALE & RETAIL TRADE	12	16	21
PROFESSIONAL & RELATED SERVICES	20	23	25
	100%	100%	100%

Source: 1950, 1960, and 1970 U.S. Census.
General wage levels of all trades and occupations appear to be the same or slightly lower than surrounding counties.

Agriculture Influence

Although agricultural employment has decreased within the project area and Otter Tail, Wadena, Todd, and Morrison Counties do not, as a rule, contain high productive soils, agriculture is still the key factor influencing the economic situation within each county. Agriculture is the principle land use comprising a high percentage of the total land area within the counties.

Community Facilities

Coummunity facilities are quite variable between towns. The location of these facilities can be found on the following 5 maps.

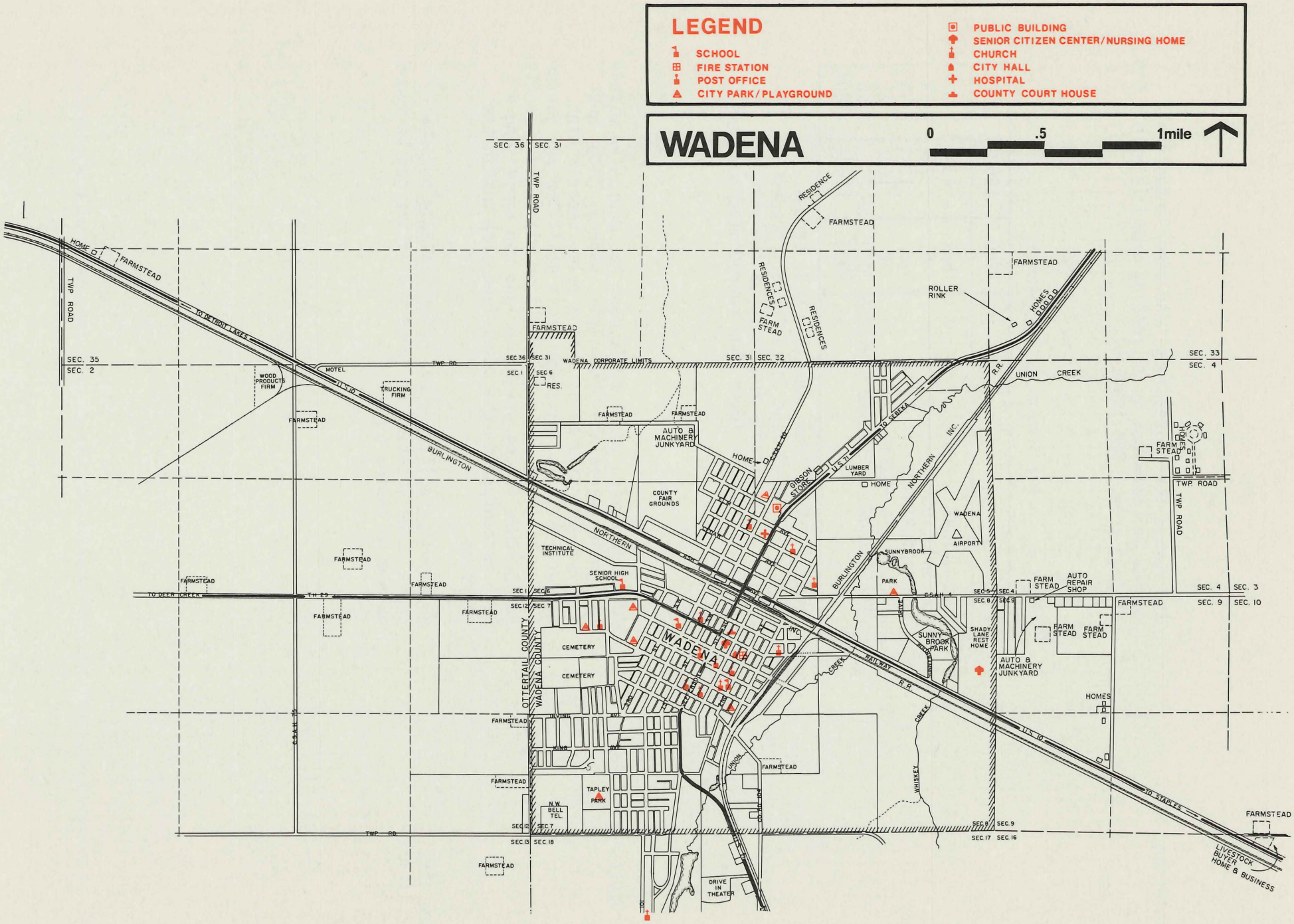


Figure 12 Wadena Community Facilities

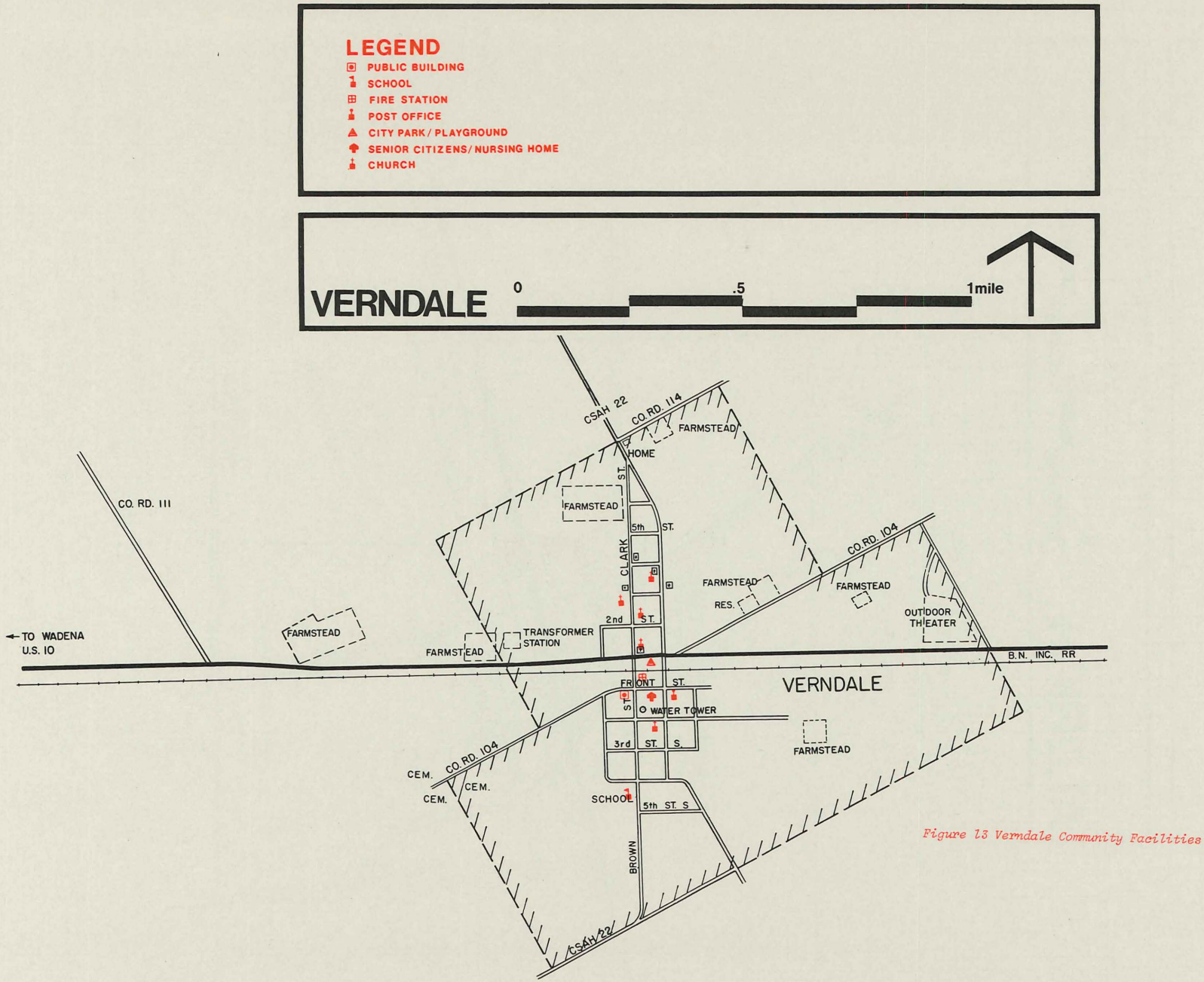


Figure 13 Verndale Community Facilities

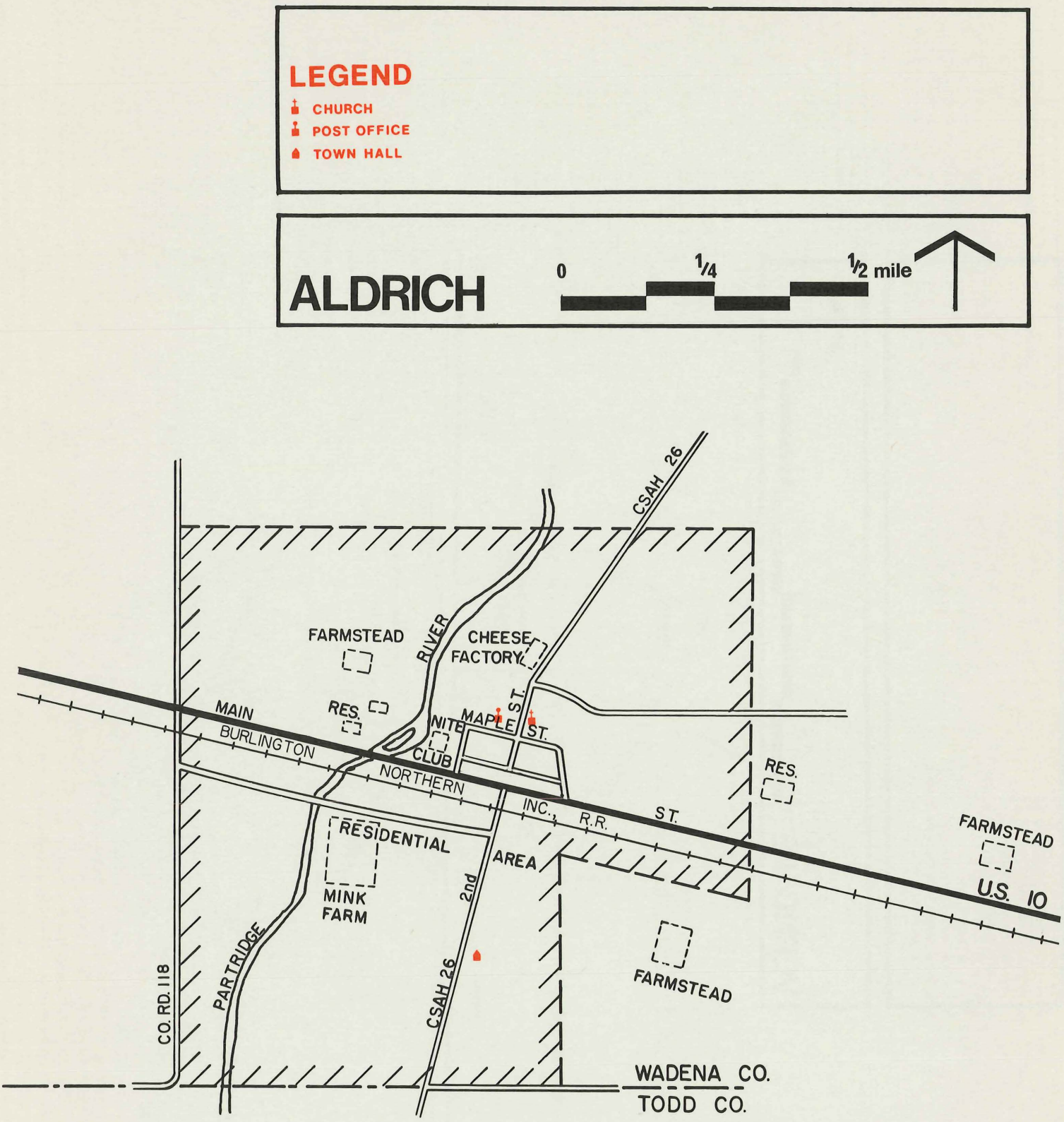


Figure 14 Aldrich Community Facilities

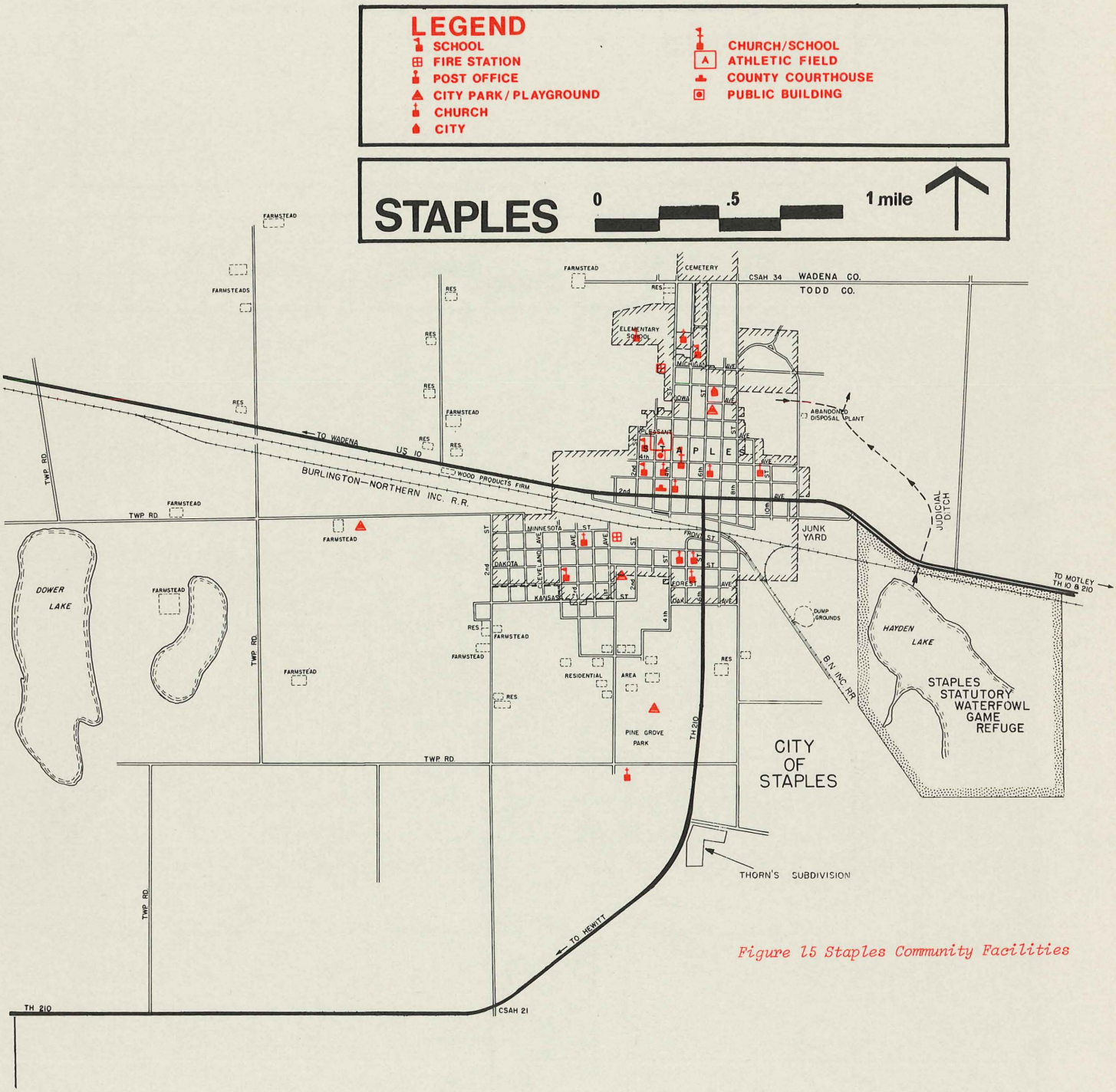


Figure 15 Staples Community Facilities

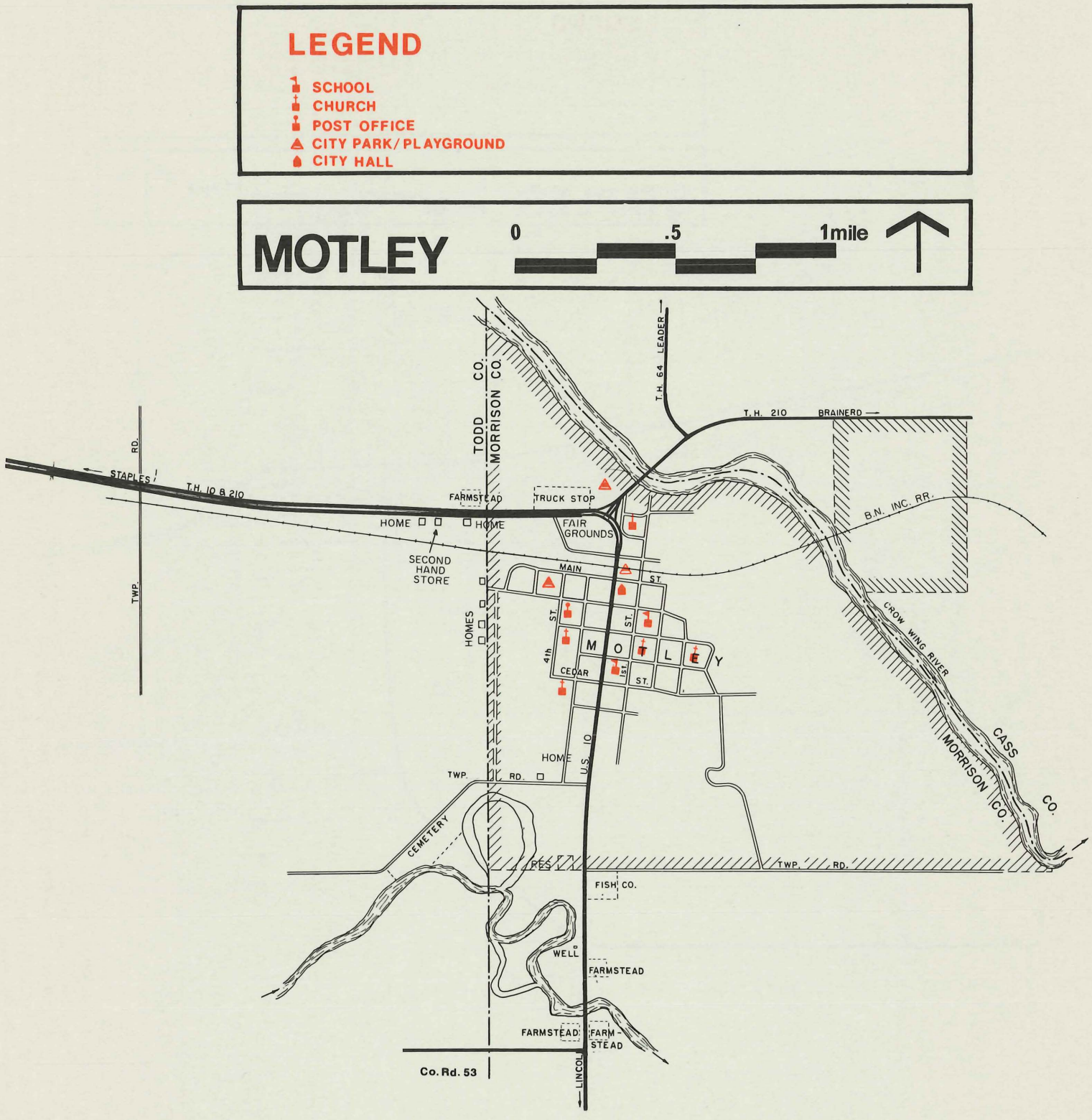


Figure 16 Motley Community Facilities

Parks and Recreation Areas in the project area	There are a number of parks and recreational areas located within or near the corridor of the proposed project. Their locations are indicated on the parks/ rec. maps and are described as follows:
Black's Grove Park	This park is located one-half mile south of U.S. 10, two miles west of the west corporate limits of Wadena. It measures 66 acres and is used by the public for picnicking. It is also used as an environmental education area by schools, scout troops and 4-H groups. There would be no impact by any of the proposed alternatives.
Wadena County Fairground	This is located in Wadena, north of the existing U.S. 10. It consists of 62 acres of commercial land owned by the county. There are about 30 buildings most of which are owned by the Fair Board. It is used for an annual 4 to 5 day fair, admission charged. It has a lighted baseball field with grandstand seating where about 100 games are played yearly. These are not professional type games, but are amateur or recreational leagues, locally sponsored. Occasionally, admission is charged. Other uses include occassional horse races, horse shows, dog shows, dairy cattle shows, etc. Some with free admission. The National Guard Units are allowed to bivouac on occasion. Both open and housed space is rented for storage used during the off season. Alternate Route 2 would require right of way from the south edge of this ground. This parcel is not considered 4(f) land.
Sunnybrook Park in Wadena	This is a city park of 68 acres located north of U.S. 10 near the eastern limits of Wadena. Alternate Route 2 would require right of way from the south edge of this park.
Tapley Park in Wadena	This public park, 20 acres in size, is located in the south part of Wadena, and is nearest to Alternate Route 4. There would be no involvement with any of the proposed alternate routes.
Other Parks in Wadena	Other small parks in Wadena, ranging from 0.3 to 2.0 acres in size, will not be impacted by the proposed project.
Verndale City Park	This public park, a one block area, is in the very center of Verndale, located along the south side of the existing U.S. 10. One third of the park is between U.S. 10 and the Burlington Northern Railroad. The other one-half of the park is located south of the railroad. Alternate Route 2 would involve this park.

4-H Picnic Area in Aldrich	This area is located alongside the existing U.S. 10 in Aldrich. It is all on Highway and Railroad right of way, between the highway and the railroad. It is sponsored and maintained by a local 4-H group providing two picnic tables, which almost cover the area. Alternate Route 2 will eliminate this area as a picnic stop. [See Section V.] This area is not considered 4(f) since it's intended use for transportation has never been relinquished for other purposes. See explanation of 4(f) lands in glossary.
Dower Lake Park	This is a regional park supported by the Community of Staples. It is located about one-half mile south of existing U.S. 10/Alternate Route 1 or about three miles southwest of Staples. It covers an area of 217.6 acres and has permanent buildings and supervised swimming. It has camping facilities, softball area, snowmobile racetrack, picnic facilities, and other areas for open space recreation. The proposed project will have no impact on this park.
Staples Elementary School Playground	This is located in the north part of Staples along Fourth Street and will be affected by Alternate Route 1. The proposed interchange an Alternate Route 1 at Fourth Street will require about 9.5 acres of the playground.
Staples East End Beautification Project	This is located alongside the existing U.S. 10 on the east edge of Staples. It is all on existing highway right of way. It was initiated and developed and is now maintained by a group of local organizations on a verbal permit from Mn/DOT. This area will all be used in the proposed construction of Alternate Route 1. See impacts in Section V.
Pine Grove Park in Staples	This is located just south of the corporate limits of Staples. This park has an area of 40 acres. It has mature Norway and White Pines for excellent walking and picnic areas. It has a lighted baseball field, and playground equipment for small children, such as teeter-totters, swings, and slides. The proposed project will have no impact on this park.
Other Parks In Staples	There are a number of small neighborhood parks in Staples ranging in size from one to four acres. None of these would be impacted by the proposed project.

Wayside Rest Area at Motley

This is located immediately outside of the north corporate limits of Motley, alongside T.H. 210. It measures 1.4 acres, all of it being on State Highway right of way. It is used for a Highway Maintenance Sub-station, having facilities for truck storage, salt sheds, gas pumps, etc. There are vault type toilet facilities and two/three picnic tables available. One entrance from existing U.S. 10 and one from T.H. 210 provide access to this facility. There will be no impact to this area by the proposed project.

This area is not considered 4(f) since it's intended use for transportation has never been relinquished for other purposes. See explanation of 4(f) lands in glossary.

Motley Fairgrounds

The Motley fairgrounds (5 acres) is located in the north part of Motley alongside the curved segment of the existing U.S. 10. It is used for an annual fair and for occasional other events throughout the year, such as auctions, shows, and exhibitions with no admission fee being charged. Alternate Route 2, through town, would involve this land.

City Park at Motley

This park, about one-half block in size, is located in the north part of Motley adjacent to the existing U.S. 10. There are 5 picnic tables and drinking water is available. The area is neatly maintained and bears a V.F.W. memorial marker. Alternate Route 2 would involve this park.

Wildlife Mangement Areas

Three State Wildlife Mangement Areas (WMA) are located south of U.S. 10 near Staples. They are:

- Dower WMA, 40 acres, Sec. 4, Staples Township.
- Lawrence WMA, 200 acres, Sec. 19, Villard Township.
- Villard WMA, 80 acres, Sec. 17, Villard Township.

None of these WMA's would be directly affected by the proposed action. See Figure 12.

Another wildlife area, the Staples Statutory Waterfowl Game Refuge, is located immediately south of existing U.S. 10 just east of Staples. This refuge was established in 1971, primarily as a nesting area for Canada geese. This 607 acre refuge is all privately owned and encompasses Hayden Lake. Approximately six acres in the north-west corner of the refuge, between U.S. 10 and the B.N.R.R., would be within the right-of-way of the proposed action. There are no easements by the Minnesota Department of Natural Resources or the U.S. Fish and Wildlife Service.

Historical Sites

There are two sites of historical significance in the vicinity of U.S. 10. These two sites are listed in the National Register of Historic Places. Both are located in Wadena County are are listed as follows:

1. Resume's Trading Post - It is located six and one-half miles north of U.S. 10.

2. Old Wadena Historic District - This is the common name for this site. Other historic names include Old Wadena, Cadotte's Trading Post, Prescott's Trading Post, Little Round Hill Trading Post and Partridge River Battle Site. It is located five miles north of U.S. 10.

The construction of the proposed project hill will have no impact on either side of these two historical sites.

Archaeological Sites

One archaeological site, known as the Steinbrecker Site, will be involved in the proposed project. It is located immediately east of the existing U.S. 10 on the north bank of the Long Prairie River at Motley.

The Minnesota Historical Society, sponsored by Mn/DOT and the FHWA, investigated this site during the month of May, 1975, and made the following recommendation:

The surface and subsurface data generated at this site suggest that potentially significant late Woodland Habitation material exists within the proposed alignment of U.S. 10 in this location. Since these investigations indicate that the cultural data extent at this site are partially disturbed through cultivation and are not particularly dense, this site does not necessarily warrant absolute preservation through realignment of the proposed project. The contents of the site are significant enough, however, to require further testing and possible salvage excavation of affected portions of the site. It appears that extensive testing will have to await purchase of the property by the state, because the landowner would not allow access to his property for further testing. Since Mr. Steinbrecker's property extends for a considerable distance east of existing T.H. 10, Mn/DOT will be unable to conduct extensive testing to determine other nearby locations as alternatives, should the known archaelogical site be determined significant. Once Mn/DOT has obtained the legal right to enter upon Mr. Steinbrecker's land and completes the extensive testing, a determination will be made as to whether a minor alignment shift is possible or if salvage excavation of the affected portions of the site is feasible. Mn/DOT will also establish contact with the State Historic Preservation Office (SHPO) at that time to determine the site's significance and eligibility for the National Register of Historic Places.

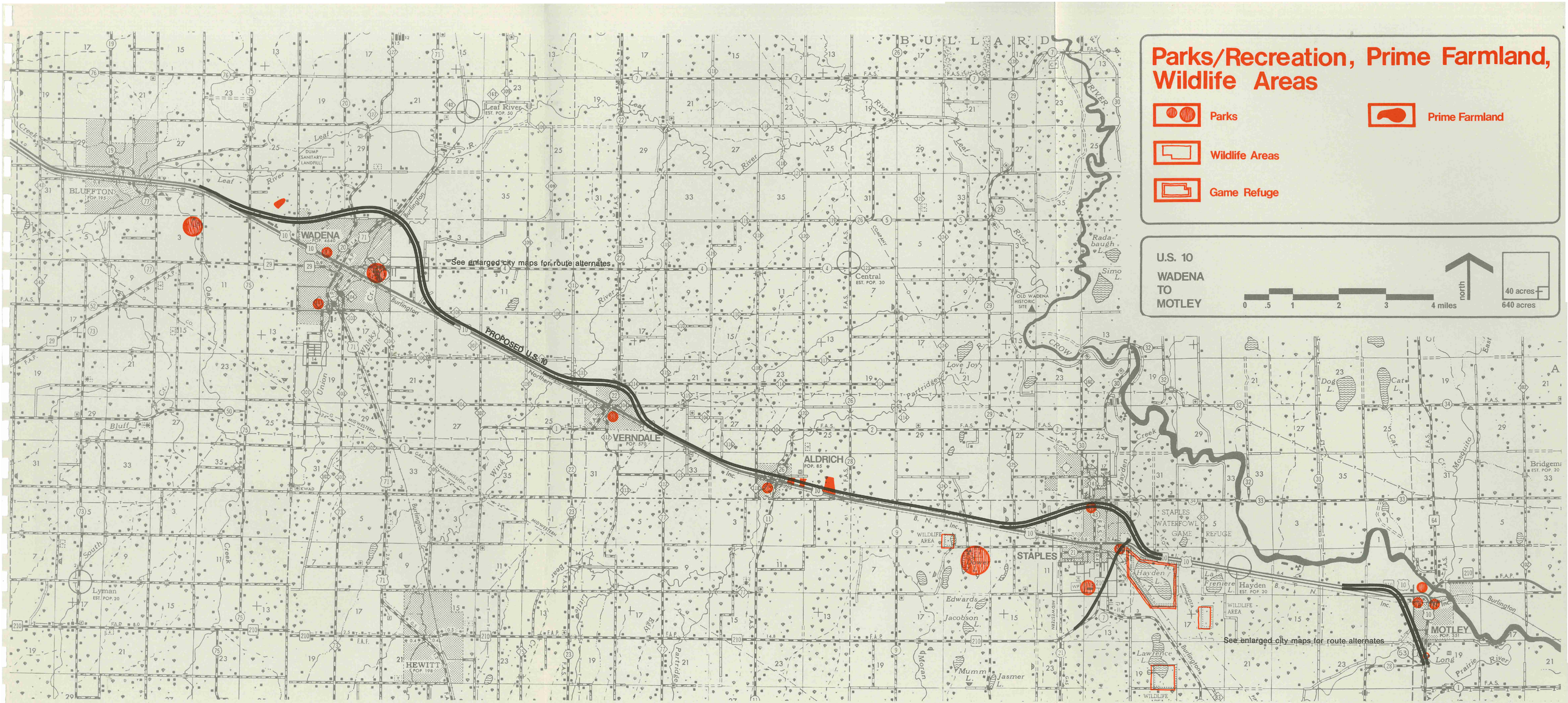


Figure 17 Parks/Recreation, Prime Farmland, Wildlife Area

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PRESENT LAND USE

The four counties which are affected by the proposed project have a variety of land uses of which agriculture and forest land is predominant. The following is a breakdown of each county into 40 acre parcels, with the classification of each parcel determined by its dominant land use:

Table 6 County Land Use by 40 Acre Parcels

COUNTY	FORESTED	CULTIVATED	PASTURE OPEN	WATER	MARSH	URBAN	EXTRACTIVE	TRANSPORTATION	TOTAL PARCELS
Otter Tail	5,844	20,557	3,724	4,111	668	784	12	12	35,712
Wadena	3,562	3,421	1,290	57	245	114	3	4	8,696
Todd	3,913	6,682	4,010	1,565	274	229	5	3	15,681
Morrison	6,129	5,803	5,188	340	661	338	4	14	18,477

Source: State Planning Agency, Pocket Data Book

Even though Agriculture has in the past and will continue to be the major land use, each of the four counties has experienced a downward trend in land devoted to agriculture. Following is a tabulation indicative of this trend.

Table 7 Decrease in Agricultural Land by County

COUNTY	1954 ACRES	1959 ACRES	1969 ACRES	1973 ACRES
Otter Tail	1,104,161	1,011,736	969,243	945,643
Wadena	236,286	205,553	176,030	168,065
Todd	502,754	480,236	474,529	460,123
Morrison	488,080	470,207	457,617	480,222

Source: Minnesota Department of Agriculture.

This reduction in farmland acreage is due to 2 factors: the abundance of land formerly used for livestock grazing and row crop and the conversion of farm land to non-productive uses. Even though some areas are being abandoned, the more productive land is becoming intensively farmed.

FUTURE PLANNING	Land uses are expected to slightly change whether or not the proposed highway improvement is constructed. The slowly expanding population and movement from employment based upon agriculture to a variety of other vocations, have resulted in this change. Farmland and undeveloped areas are being converted into residential, recreational, and industrial-commercial sites.
REGIONAL PLANNING	For many years the Regional Planning Commission (Region 5) has been aware of the proposal to upgrade U.S. 10 to 4 lanes. They concur with the proposal but do not go into detail on alternate route recommendations.
LOCAL ZONING	
Otter Tail County:	No county zoning exists.
Wadena County:	County zoning north and east of the City of Wadena dictates three basic land uses: suburban residential, transitional agricultural, and general agriculture. Both Alternates 1A and 1B pass through areas zoned suburban residential and transitional agriculture.
City of Wadena:	Alternate 1A does not pass through the City of Wadena. Alternate 1B passes through a portion of the City which is zoned residential and then extends north and outside of the city limits. The "North Area Study" does designate lands along the perimeter of Wadena - both inside and outside of the city limits - into specific use areas for industrial, commercial, agricultural, environmental, and residential purposes. This study, as previously stated, is contingent upon the adoption of Route 1A.
City of Verndale:	No zoning exists.
Todd County:	Lands along the highway corridor are currently zoned agricultural in Todd County.
City of Aldrich:	No zoning exists.
City of Staples:	The proposed bypass has been addressed within city planning for several years. The bypass will pass through mainly existing and proposed residential or commercially zoned areas. The city planning efforts clearly support this project.

Morrison County:	From the south boundary of the limits of Motley to the south terminus of this project, lands have 2 basic zoning types. They are commercial (along frontage roads and U.S. 10) and shoreline residential (along and near the Long Prairie River).
Motley:	The bypass at Motley will travel through an area zoned heavy-commercial.
Comprehensive Planning:	This project is consistent with local planning. The bypass alternates have been favored by Wadena and Staples for several years.

COMMUNITY PLANNING

Wadena	A comprehensive Guide Plan for the city of Wadena was completed in the year 1967 under the "701"* Program. Financial aid through a Federal Grant from the Urban Renewal Administration of the Housing and Home Finance Agency, under the Urban Planning Assistance Program authorized by Section 701 of the Housing Act of 1954, as amended, and administered by the Division of Community Planning of the Department of Business Development. It did not include the "North Area" where the proposed U.S. 10 Bypass might be located.
North Area Study	The City began updating their comprehensive city plan early in 1977. They obtained consultant planning services in May 1977. A schedule of study for the "North Area" was prepared, extending through the years 1977 and 1978. At least 15 progress meetings and 3 public hearings were held by City Planning Staff and the Planning Commission for the "North Area" study. The overall study coordination process included input from the City Planning Staff, City Planning Commission, County Planning Commission, Leaf River Township Board, consultant engineers, Mn/DOT, interested community groups, and the general public. The result of this study is a land use plan that is highly consistent with highway and city planning goals.
Verndale, Aldrich and Motley	The cities of Verndale, Aldrich and Motley do not have a comprehensive guide plan for growth and development. However, the city of Verndale employs engineer-consultant services pertaining to sewers, water systems, etc.

Staples

The city of Staples formulated a comprehensive plan for its development in 1972. It has the following 3 basic objectives:

1. To assist the local governing body in maintaining and improving the quality of life in the City of Staples.
2. To enhance and promote efficient and orderly development of the community.
3. To prevent overlapping, overdesign, or underdesign of current and proposed projects covered in its plan.

This comprehensive guide discusses plans for Land Use, Thoroughfares, and Community Facilities.

The proposed projects covered in the plan include U.S. 10 Bypass and T.H. 210 relocation plans. Consequently, these proposals are consistent with Staples comprehensive plans.

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ALTERNATIVES

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Introduction

Public hearings were held in Wadena on Sept. 23, 1968, and in Staples on May 28, 1969, to establish the basic corridor for the proposed highway improvement. Comments received at these hearings from city officials, organizations and the public in general indicated a preference for upgrading U.S. 10 from a two lane road to a four lane divided road. By-passes were preferred for the cities of Wadena, Verndale, Staples and Motley.

4 (f) Involvement

The alternatives under consideration have been reviewed to determine the possible involvement of lands and properties falling under the provisions of Section 4(f) of the Department of Transportation Act of 1966.

4(f) lands may be involved depending on alternative selected and are discussed in detail in the Draft 4(f) Information Section at the end of this section.

Basic Alternatives

Three alternatives are being considered for upgrading this section of U.S. 10. They are:

1. Alternate Route 1 (North Route).
   This Route follows alongside the north side of existing U.S. 10 in rural segments and by-passes on north sides of cities except at Motley.

2. Alternate Route 2 (Through City).
   This follows existing U.S. 10 through all cities. It would connect to Alternate Route 1, rural segments.

3. Do Nothing.
   This would leave existing U.S. 10 as it is.

The following figures illustrate the North Route and the through City Route.

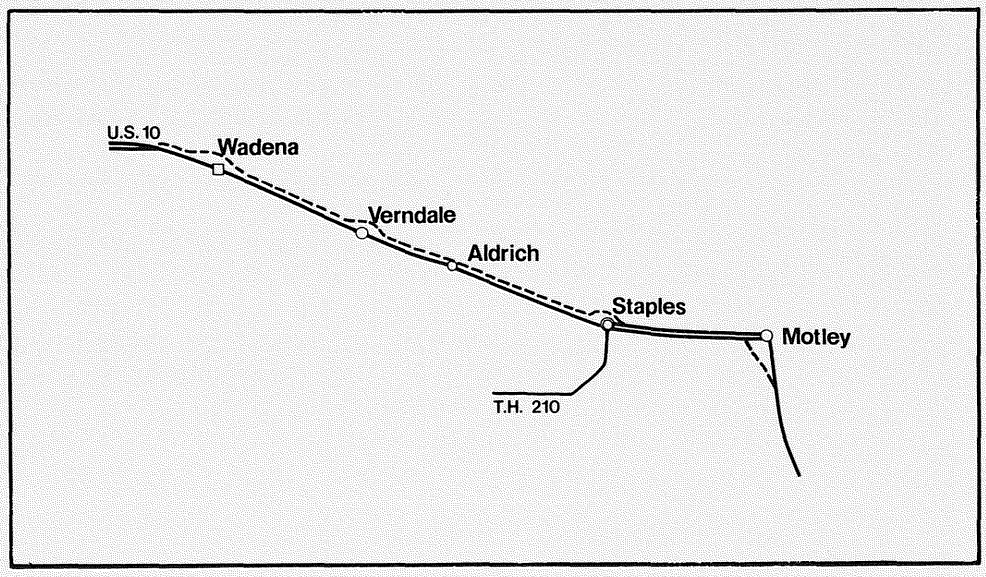


Figure 18 U.S. 10 - North Route

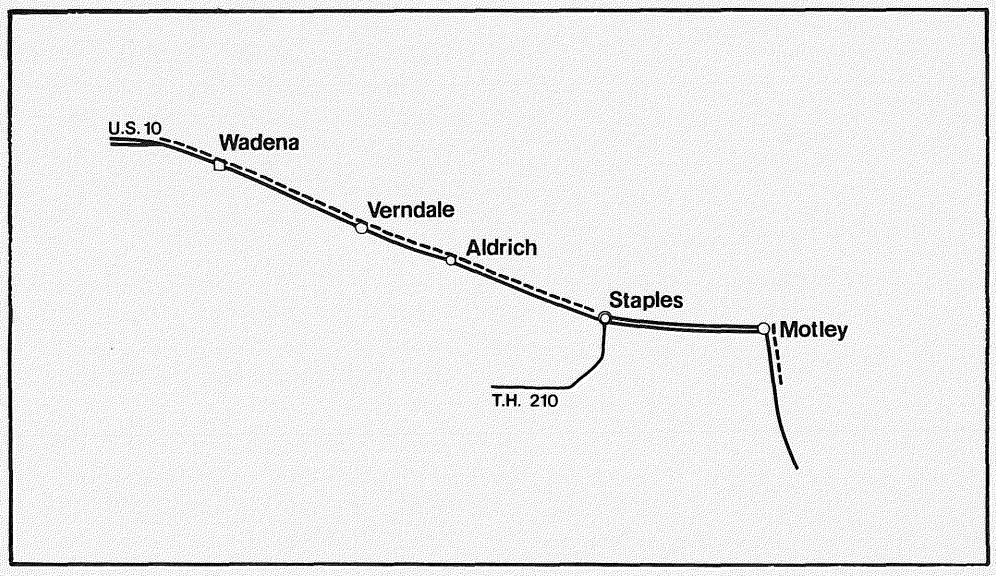


Figure 19 U.S. 10 - Through City Routes

ALTERNATIVES ELIMINATED

Alternatives which were studied early in the EIS process and have been considered unreasonable or impractical are discussed below.

Wadena By-pass, Route 1

Alternate Route 1 would by-pass the city of Wadena on the north side. This route is also known as the "Gibson Route." It would begin approximately 1.5 miles west of Wadena and end .75 mile east of Wadena. Alternate Route 1 would be about 5.6 miles in length. (See Figure 15).

Access for Wadena would be provided at four locations:

1. At-grade intersection with C.S.A.H. 75 west of Wadena.

2. At-grade intersection with Township Road on West Corporate Limits of Wadena.

3. Interchange at U.S. 71 in North Wadena.

4. At an interchange with C.S.A.H. 4, relocated, east of Wadena.

C.S.A.H. 20 would be closed, having no direct access to U.S. 10. However, access would be given by way of a frontage road.

Approximately 1.4 miles of frontage roads and connectors would be required for Route 1.

Alternate Route 1 would involve the acquisition and relocation of the Gibson Store, a retail outlet store for Pamida, Inc. Additional commercial and residential development is progressing rapidly at this site.

Twelve acres of the Wadena Airport would be needed for Right-of-Way on the Gibson Route, requiring the relocation of the airport. (See PROJECT HISTORY in Section I of this report.) A relocation proposal has been stalemated by severe local opposition.

Route 1, Bypass of Wadena, is considered by Mn/DOT to be impractical and not in the best interest of the public. This route has not been considered further since 1974.

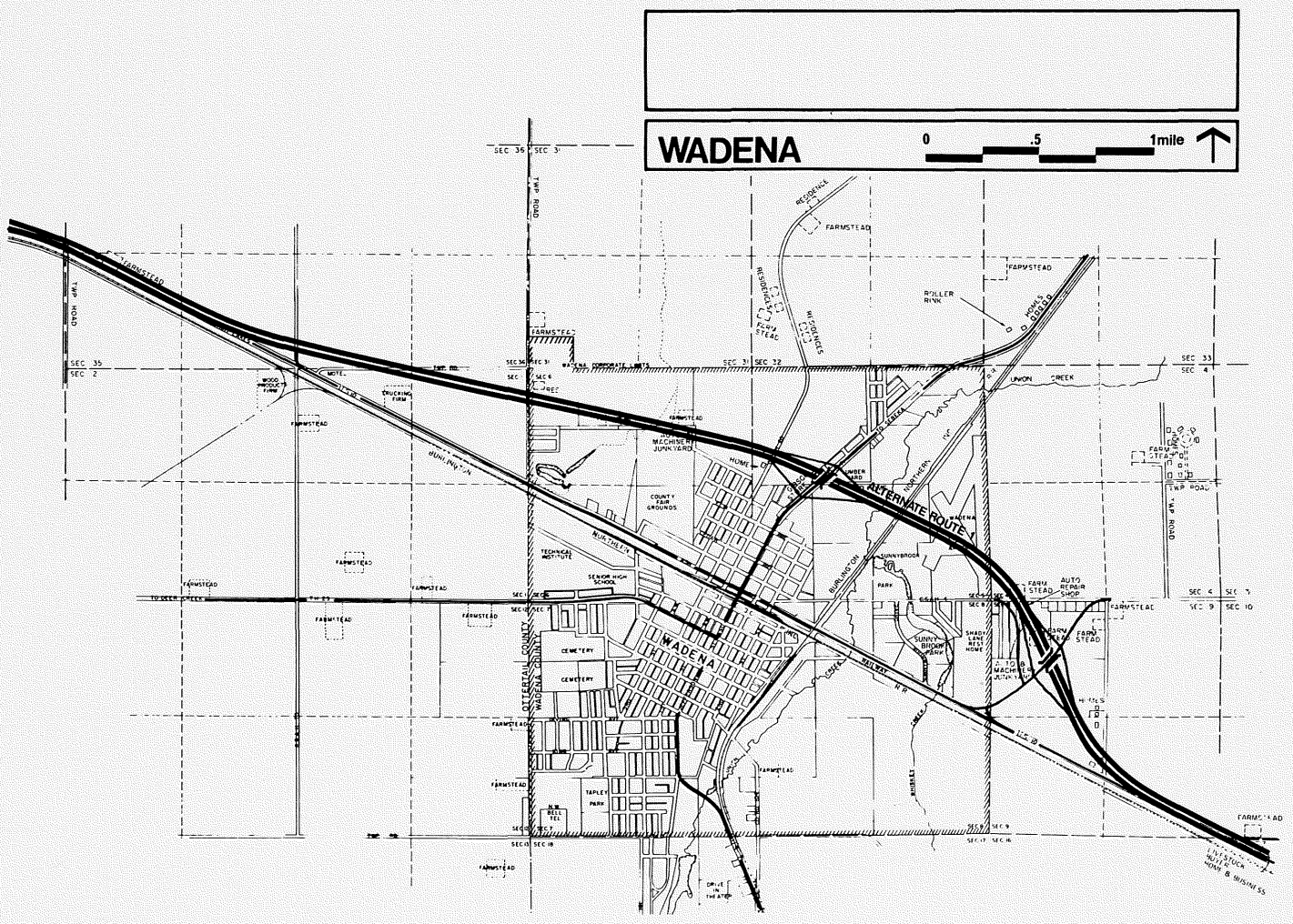


Figure 20 Wadena Route 1 (Gibson Route)

"South Route"

The South Route would follow the existing U.S. 10, but would be south of and parrallel to the Burlington Northern Railroad in rural areas. It would bypass the cities of Wadena, Verndale, Aldrich and Staples on the south sides.

This route would turn off at Staples, follow on the west side of the Burlington Northern Railroad to Philbrook and on to Lincoln where it would rejoin existing U.S. 10.

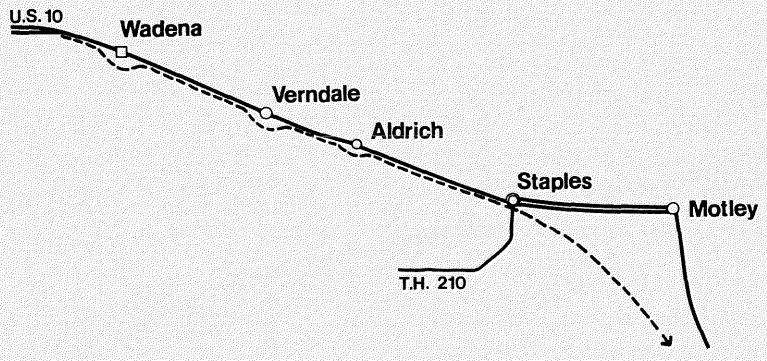


Figure 21 U.S. 10 - South Route

The South Route was studied primarily with the assumption that it would be used throughout its length from Bluffton to Lincoln. Portions of the South Route have also been considered as south by-passes for the cities of Wadena, Verndale, Aldrich and Staples in conjunction with Route 1. The construction of the South Route in either manner would not be practical nor in the best interest of the public. It is not being considered further for the following reasons:

1. All new right-of-way, approximately 1, 789 acres, would be required. Compares to 1,097 acres for the north route.

2. Would pass near or through the Verndale Public School.

3. Would involve Pine Grove Park in Staples, possibly requiring some 4(f) land acquisition for highway purposes.

4. If used in conjunction with Alternate 1, bridges would be required at both ends of each city by-pass to provide safe crossings of the Burlington Northern, Inc. Railway.

5. It would require the complete construction of an additional 10 miles of single roadway between city by-passes.

6. It would also require the complete construction of an additional 14 miles of double roadway from Staples to Lincoln.

7. This route would not serve the City of Motley. U.S. 10 was established by the State Legislature and must serve the City of Motley. (Minnesota Constitution, Article XVI, Section 2--U.S. 10 is listed as Route 2 in a constitutional amendment adopted November 2, 1929).

8. The South Route would also influence and foster changes in community development, land use, traffic patterns, etc. which, although obvious, are difficult to evaluate.

REASONABLE ALTERNATIVES

Each alternate, still under consideration, will be described and a brief tabular comparison will be shown. The selection of an alternative will be made after a comprehensive study of comments received, and will be stated in the "Final" issue of this Environmental Impact Statement.

Alternate routes that are still being considered, will be described and discussed in the following order:

U.S. 10

Rural Segments (includes all segments between cities):
Route 1

Wadena:
Routes 1A, 1B and 2

Verndale:
Routes 1, 1A and 2

Aldrich:
Routes 1 and 2

Staples:
Routes 1 and 2
Routes A and B (for T.H. 210)

Motley:
Routes 1 and 2

Do Nothing

Alternate Route 1 (North Route) In Rural Areas

Alternate Route 1 was generally the most favored by persons and groups represented at the Location Study Public Hearing. It would follow the existing alignment in rural segments between cities, using the present roadway for the eastbound traffic. A second roadway, for westbound traffic, would be constructed north of and parallel to the existing roadway. Additional right-of-way will be required-basically a strip of 149 feet in width is be needed to complete the 324 foot corridor. The centerline of the new roadway will be 124 feet north of the existing roadway.

Alternate 1 includes by-passes which would be constructed on the north side of the cities of Wadena, Verndale, Aldrich, Staples and on the west side of Motley. The by-passes will require the construction of two complete roadways to provide a four-lane divided facility.

Wadena By-Pass, Route 1A (North Route)

Alternate Route 1A would by-pass the City of Wadena on the north side. Its length would be about 6.5 miles.

Access for Wadena would be provided at 3 locations:

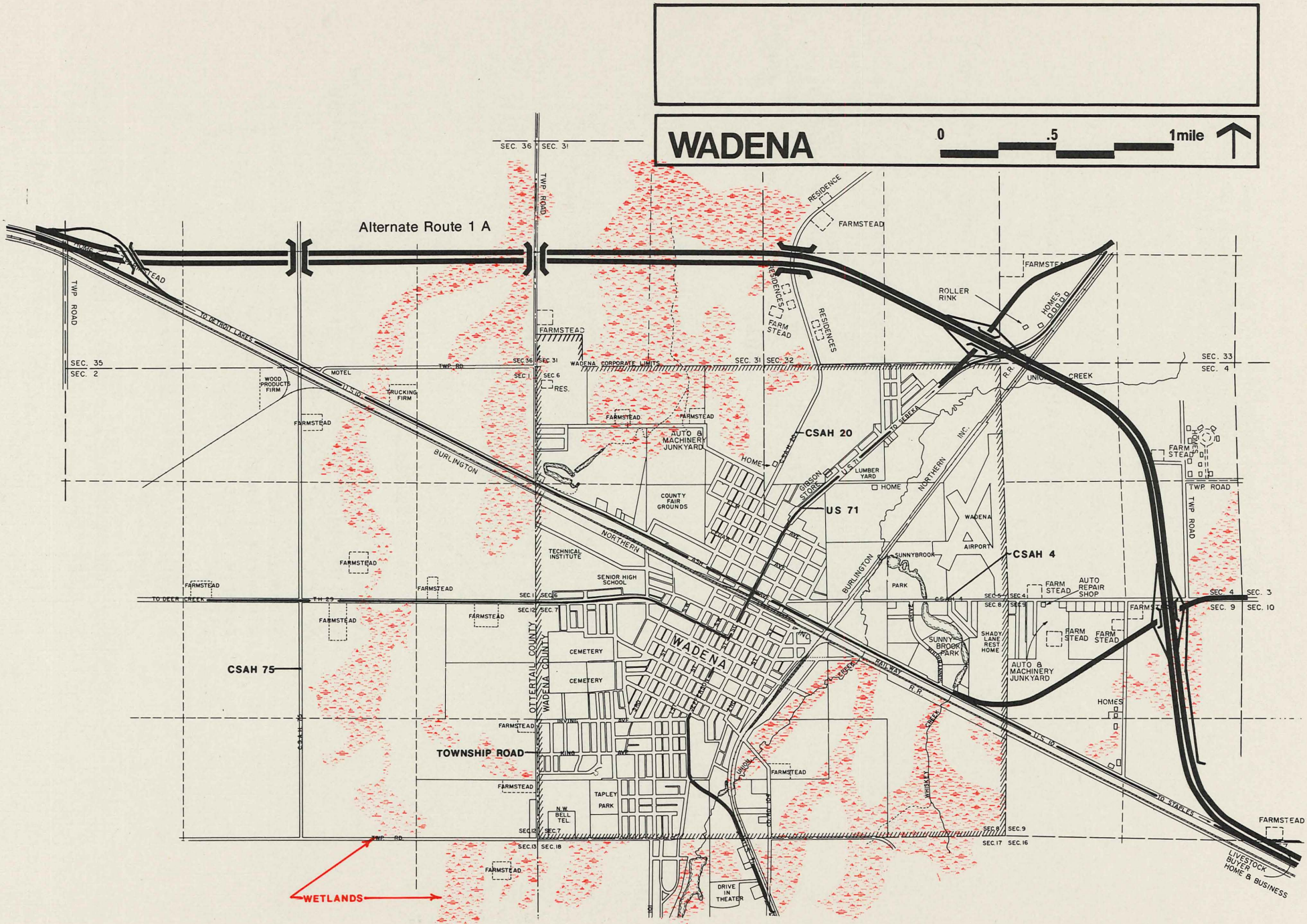


Figure 22 Wadena Route 1A

1. On the west terminus, an at-grade exit for eastbound and a separated directional for the westbound will provide access for existing U.S. 10 through Wadena.

2. Interchange at U.S. 71.

3. Interchange at relocated C.S.A.H. 4.

Grade separations would occur at 3 locations.

1. At U.S. 10 and CSAH 75.

2. At U.S. 10 and the West Corp. limits township road.

3. At U.S. 10 and C.S.A.H. 20.

Route 1A would require all new alignment and would be constructed to Freeway Standards. The corridor width of 324 feet would be carried from the beginning of the by-pass to a point 3.3 miles east where it would converge to 290 feet wide. This 290-foot corridor would then be carried to the end of the by-pass where it would diverge to the 324-foot width, east of Wadena.

Wadena By-pass, Route 1B (North Route)

Alternate Route 1B is identical to Route 1A between U.S. 71 and a point 1.3 miles east of Wadena. Its total length is 5.9 miles.

West of U.S. 71, Alternate Route 1B is located approximately .5 mile south of Alternate Route 1A.

Access points would be provided as follows:

1. .7 miles east of C.S.A.H. 75.

2. At U.S. 71.

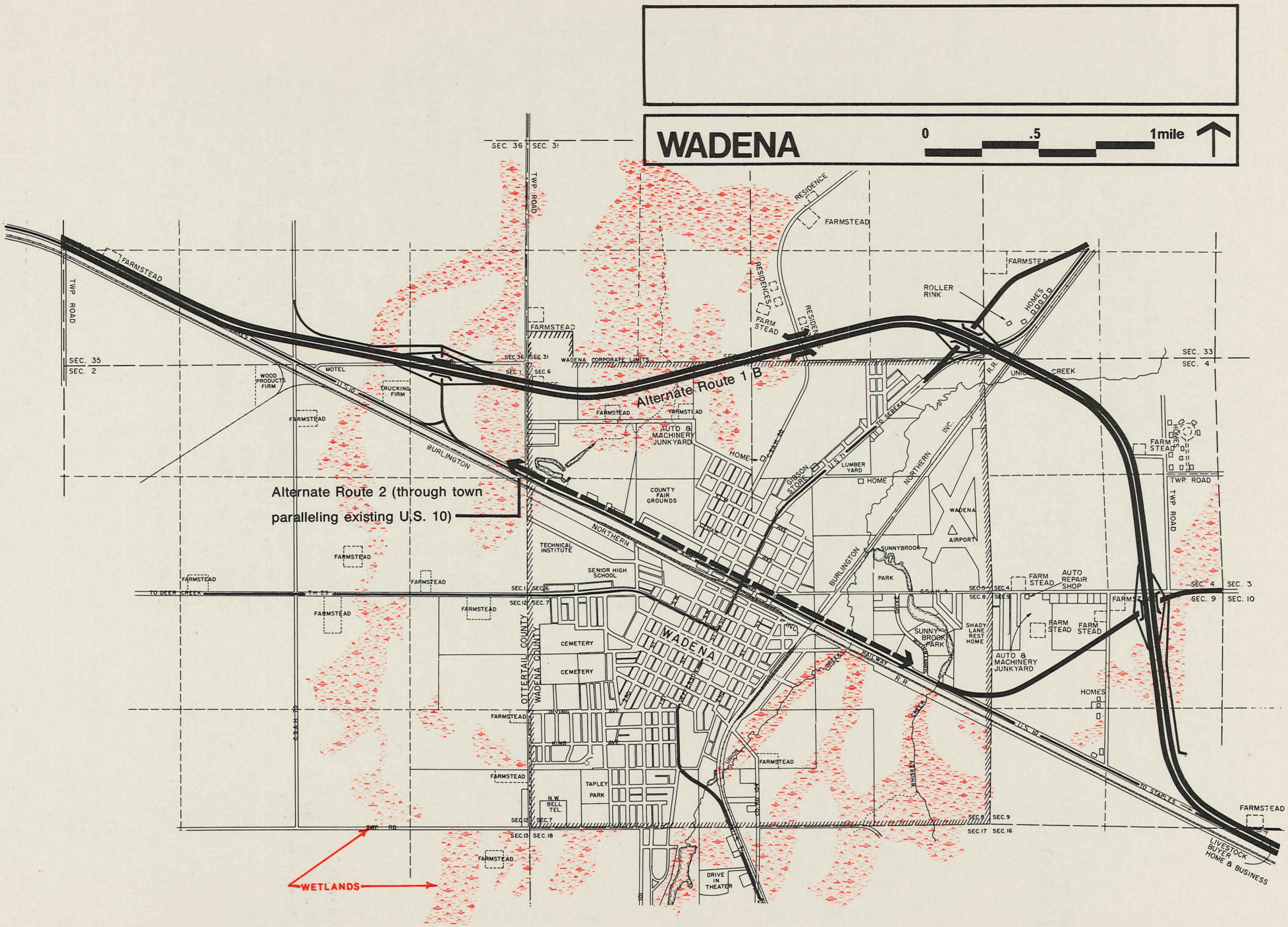
3. At relocated C.S.A.H. 4.

Route 1B would require all new alignment and would be constructed to Freeway Standards. A basic corridor of 290 feet in width would be required.

Alternate Route 1B came into being after adverse environmental impacts of Route 1A became known. The adverse impacts on Route 1A, west of U.S. 71 are as follows:

1. The severance of very productive farm crop-land operations.

2. The severance and destruction of a wildlife habitat area.


WADENA
0
.5
1mile
Alternate Route 1 B
Alternate Route 2 (through town paralleling existing U.S. 10)
WETLANDS
WADENA
FARMSTEAD
TWP ROAD
SEC. 36
SEC. 31
SEC. 35
SEC. 2
SEC. 33
SEC. 4
SEC. 3
SEC. 9
SEC. 10
SEC. 13
SEC. 18
SEC. 17
SEC. 16
WADENA CORPORATE LIMITS
WOOD PRODUCTS FIRM
MOTEL
TRUCKING FIRM
BURLINGTON
NORTHERN
AUTO & MACHINERY JUNKYARD
COUNTY FAIR GROUNDS
TECHNICAL INSTITUTE
SENIOR HIGH SCHOOL
CEMETERY
TAPLEY PARK
N.W. BELL TEL.
DRIVE IN THEATER
OTTERTAIL COUNTY
WADENA COUNTY
RESIDENCE
RESIDENCES
FARM STEAD
ROLLER RINK
HOMES
UNION CREEK
LUMBER YARD
GIBSON STORE
TO SEBEKA
WADENA AIRPORT
SUNNYBROOK PARK
SUNNY BROOK PARK
SHADY LANE REST HOME
AUTO REPAIR SHOP
AUTO & MACHINERY JUNKYARD
TO DEER CREEK
TO STAPLES
LIVESTOCK BUYER HOME & BUSINESS
HOME
FARM STEAD

Alternate Route 1B would have less adverse environmental impacts than Alternate Route 1A.

However, Route 1B poses an adverse social/economic effect by severing a newly platted residential area where development and construction of new homes has begun.

Wadena, Route 2
(Through City)

Alternate Route 2 would pass through Wadena by paralelling (on the north side) existing U.S. 10. See Figure 18.

The existing U.S. 10, urban section, in Wadena is surfaced with concrete pavement, 50 feet wide, curb to curb.

The pavement is in fair condition with some cracking, bituminous patching and deterioration.

There are concrete walks, 6 feet wide, on each side of U.S. 10 throughout the 1/2 mile long section. Parking is allowed except between Jefferson Street and Second Street Northeast.

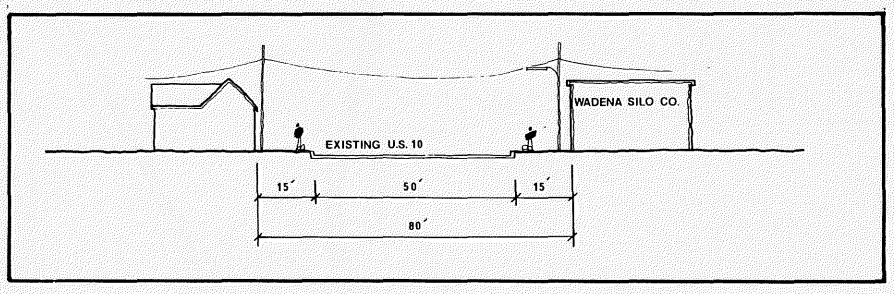


Figure 24 Wadena Existing Cross Section

Some examples of the types of businesses on existing U.S. 10 are: gas/auto service stations, cafes, supper club, lumber yards, auto dealerships, farm machinery dealerships, home appliance dealers and various other outlets of goods and services, all dependent to some degrees on U.S. 10 for business.

Verndale
Routes 1 and 1A
(North Route)

Alternates 1 or 1A would by-pass north of Verndale. Each would have the same beginning point, about .3 mile west of the corporate limits, and ending at the east corporate limit. Alternate 1 would be approximately 2.6 miles and Alternate 1A would be about 2.7 miles long. See Figure 20.

Alternate Route 1A would be located .4 mile farther north from Route 1.

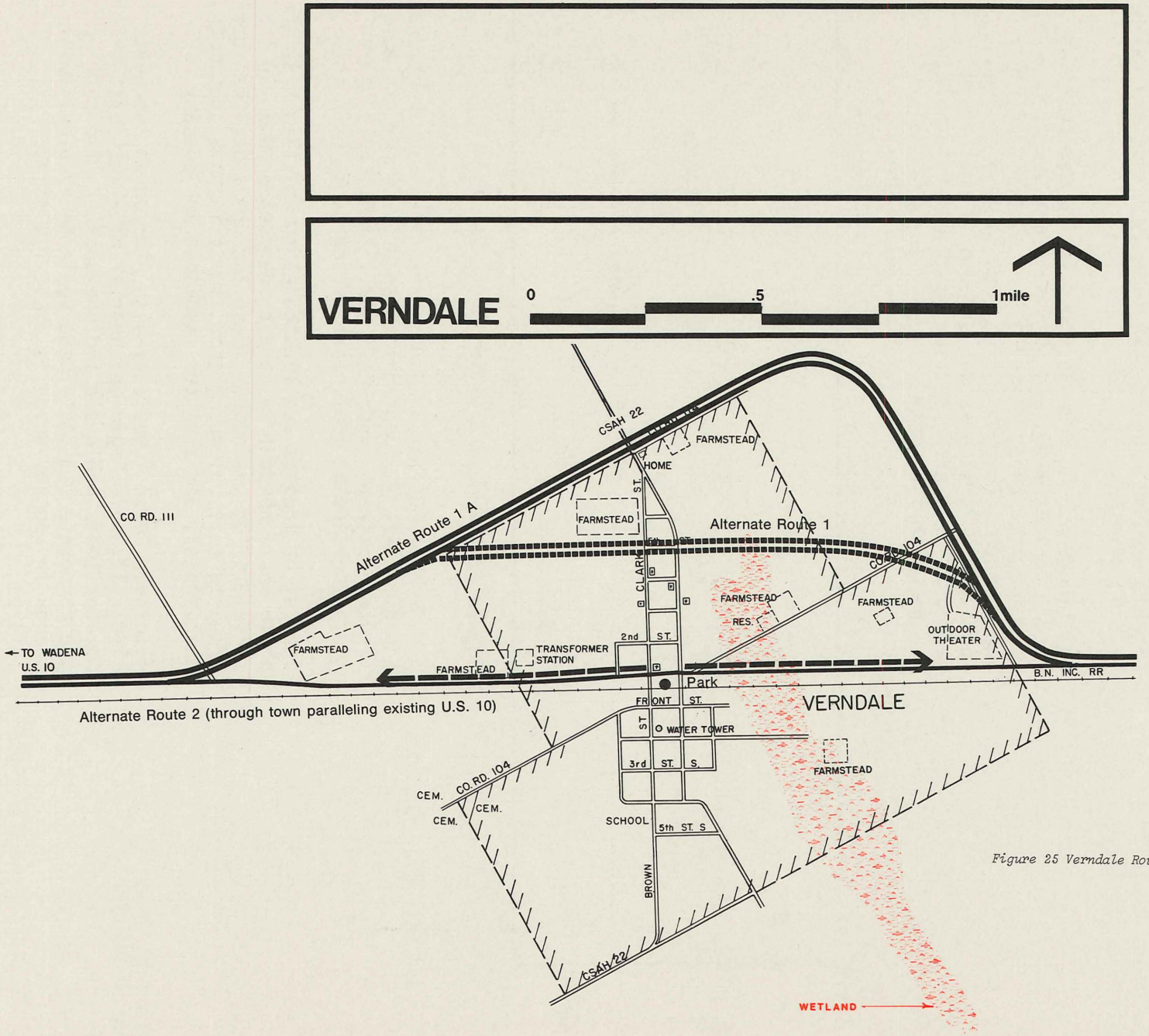


Figure 25 Verndale Routes 1, 1A, 2

Access for Verndale would be provided at both ends of the by-pass and about midway, at Clark Street, via at-grade intersections.

The separated roadways by-passing Verndale would be 124 feet apart, requiring a basic right of way corridor of 324 feet.

Verndale, Route 2 (Through City)

Alternate Route 2 would pass through Verndale paralelling existing U.S. 10.

Existing U.S. 10, through Verndale, is concrete surfaced, 22 feet wide, and the sides are surfaced with bituminous to the curb and gutter totaling 50 feet. The surface is smooth riding, but is in a cracked condition. Parking is not allowed in this urban section. This urban section has a concrete walk, on the north side only.

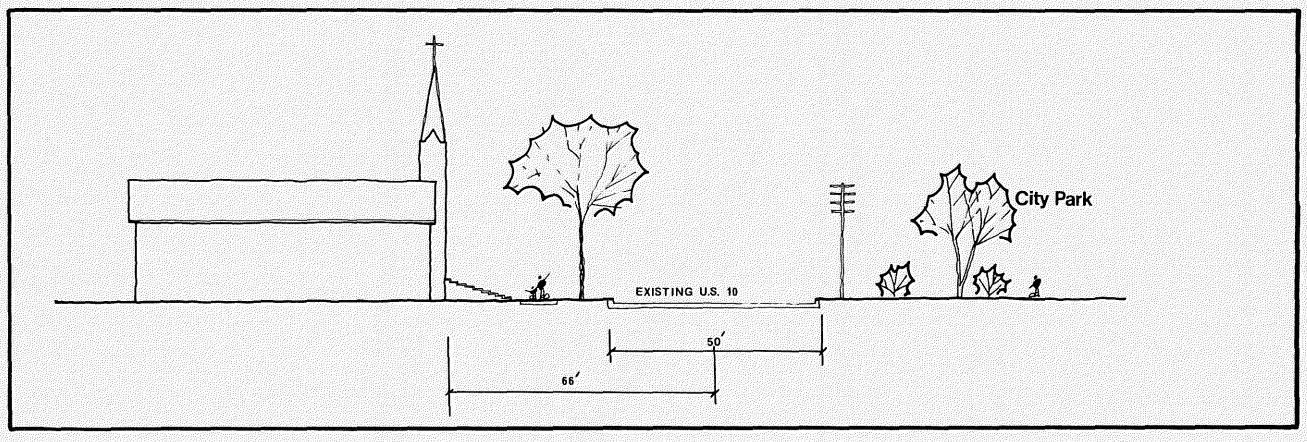


Figure 26 Verndale Existing Cross Section

A public park is located between U.S. 10 and the Burlington Northern, Inc. Railroad. It is one block in length, extending from Clark Street to Main Street.

Several businesses are located along existing U.S. 10 which are dependent in varying degrees on U.S. 10 travelers for business. These include a service station, drive-in cafe, plumbing shop, small machine and implement dealer, and a rafter manufacturing company.

Aldrich, Route 1 (North Route)

Alternate Route 1 would by-pass Aldrich on the north side. It would begin one-quarter mile west of the corporate limits and would end one-quarter mile east of the corporate limits. There would be no significant change in length, which is about 1.3 miles.

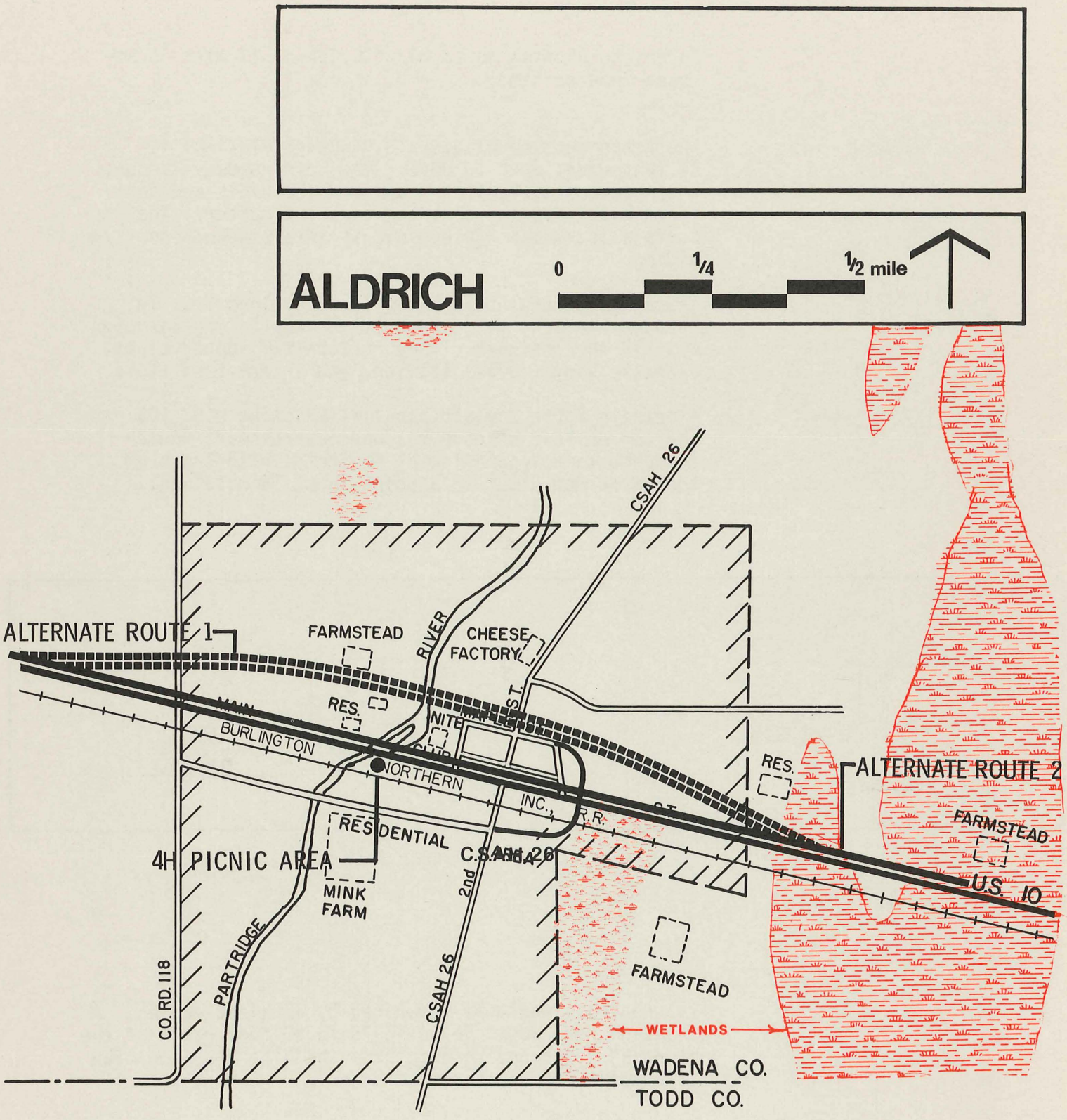


Figure 27 Aldrich Routes 1 and 2

Access to Aldrich would be at C.S.A.H. 26 with an at-grade intersection.

Aldrich
Alternate Route 2

The urban section of U.S. 10, through Aldrich, is 50 feet wide, curb to curb. The main roadway is concrete pavement, 22 feet wide, and the sides are surfaced with bituminous to the curb and gutter. The surface is smooth riding, but is in a cracked condition.

There are several businesses located along U.S. 10, through Aldrich, all dependent in varying degrees upon U.S. 10 for business. They include two supper clubs, a cheese store, a gas station, and a farm feed store.

Alternate Route 2 would parallel existing U.S. 10. The centerlines of each roadway (expressway) would converge to a separation of 46 feet, extending from the Partridge River to a point about .4 mile east.

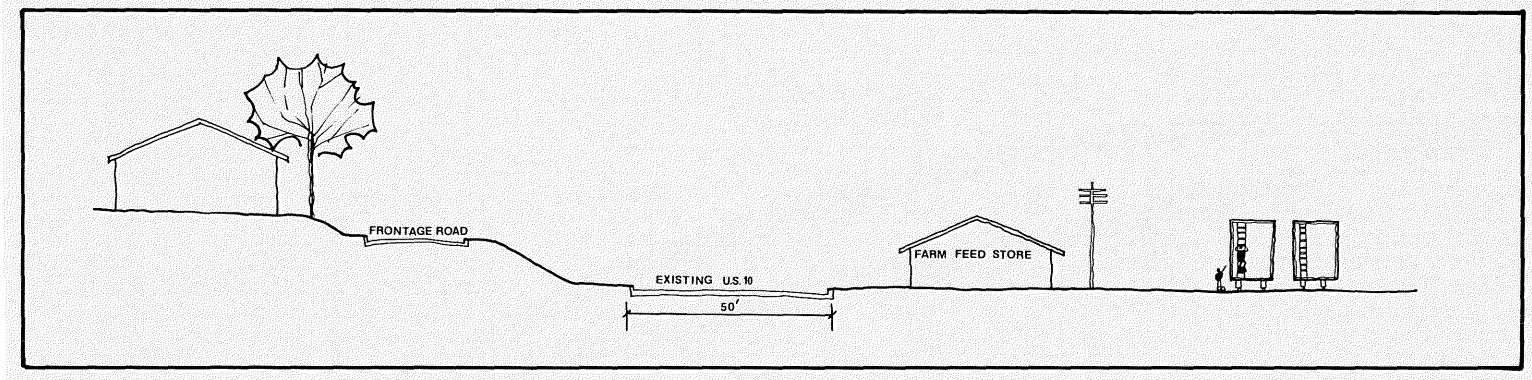


Figure 28 Aldrich Existing Cross Section

The roadways would be separated by a raised median. A frontage road would be built 75 to 90 feet north of the proposed westbound roadway from the Nite Club location to a point 1000 feet east.

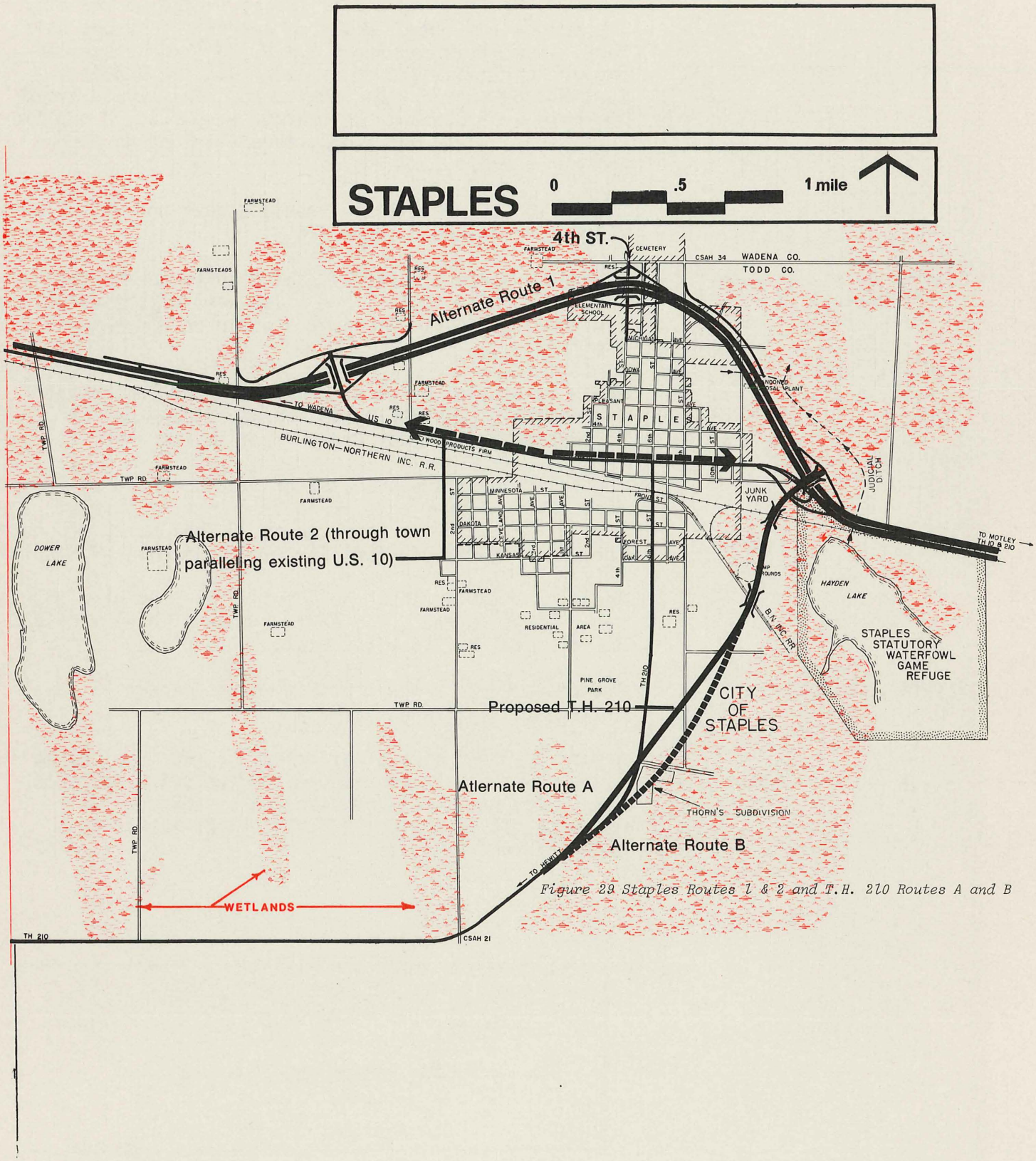


Figure 29 Staples Routes 1 & 2 and T.H. 210 Routes A and B

In conjunction with Alternate 2, it is proposed that C.S.A.H. 26 be relocated on the east edge of the city. The relocation length would be approximately one-half mile. New alignment for C.S.A.H. 26 is necessary to provide a right angle crossing of U.S. 10 and the Burlington Northern, Inc. Railroad. This would avoid the mixing of C.S.A.H. 26 traffic with U.S. 10 traffic for approximately one block, thus eliminating an existing hazard.

Access to U.S. 10 will be provided near the Nite Club and also at relocated C.S.A.H. 26.

Staples By-pass, Route 1 (North Route)

Alternate Route 1 would by-pass Staples on the north-side. It would begin 1 1/2 miles west of the corporate limits. The length of Route 1 would be approximately 4 miles.

Route 1, Staples By-pass, would be on new alignment and would be constructed to Freeway Standards. A minimum corridor width of 290 feet is required.

The separated roadways, west of Staples would be 124 feet apart, converge to 90 feet for the By-pass of Staples, and finally converge to 75 feet to return to the existing divided facility, 1/2 mile east of Staples.

Access to Staples would be provided at 3 points, west of town, at 4th Street, and east of town. Three frontage roads, totaling 1.6 miles would be required.

Staples, Route 2 (Through City)

Alternate Route 2 would pass through Staples by paralelling the existing facility.

Approximately 1 mile of existing U.S. 10 is of urban design, with concrete pavement 50 feet wide, curb to curb. The rural designed section is surfaced with concrete, 22 feet wide, and has 9-foot bituminous shoulders on each side.

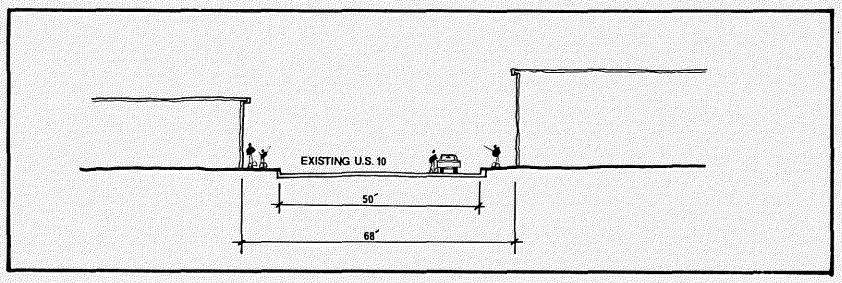


Figure 30 Staples Existing Cross Section

Many businesses are located along existing U.S. 10; such as, gasoline service stations, car dealers, cafes, drive-ins, grocery stores, drug stores, motels, hardware stores, appliance stores, department stores, barber shops, beauty salons, lawyer offices, veterinary clinics, and electrical repair services.

T.H. 210 IN STAPLES

T.H. 210 Relocation Alternates

In conjunction with U.S. 10, Route 1, it is also proposed to relocate a segment of T.H. 210.

Two alternate routes, A and B, have been considered for the relocation of T.H. 210. Both would end at the proposed intersection (interchange) with U.S. 10, Route 1, east of Staples, and would begin at a point approximately 1.7 miles south of its present junction with U.S. 10 in Staples.

Two bridges will be required to cross two lines of the Burlington Northern Railroad on either alternate.

T.H. 210 Alternate A

Alternate A, from its proposed junction with U.S. 10, east of Staples, will traverse 2.1 miles to its proposed connection to T.H. 210 south of Staples.

T.H. 210

Alternate B, from its proposed junction with U.S. 10, east of Staples, will traverse 1.9 miles to a proposed connection to T.H. 210.

T.H. 210 Alternates, Advantages and Disadvantages

Either alternate would eliminate the traffic bottleneck and hazard caused by the present at-grade crossing of T.H. 210 and the Burlington Northern Railroad in the CBD of Staples.

Either alternate would provide access for emergency vehicles, traveling from one side of Staples to the other (Staples is divided by the railroad), through use of the proposed interchange at U.S. 10, near the east corporate limits.

Alternate B would pass through Thorn's Subdivision, while Alternate A would by-pass it by going west of it.

Thorn's Subdivision was platted in 1964. This plat is located in the southeast quadrant of the intersection of T.H. 210 and C.S.A.H. 7 on the south edge of Staples. It consists of 16 lots, all of which have been sold. Housing development has begun on 8 or more of these lots, the homes averaging 35 to 40 thousand dollars each.

Alternate B would cause the most damage in property severance by dividing Thorn's Subdivision.

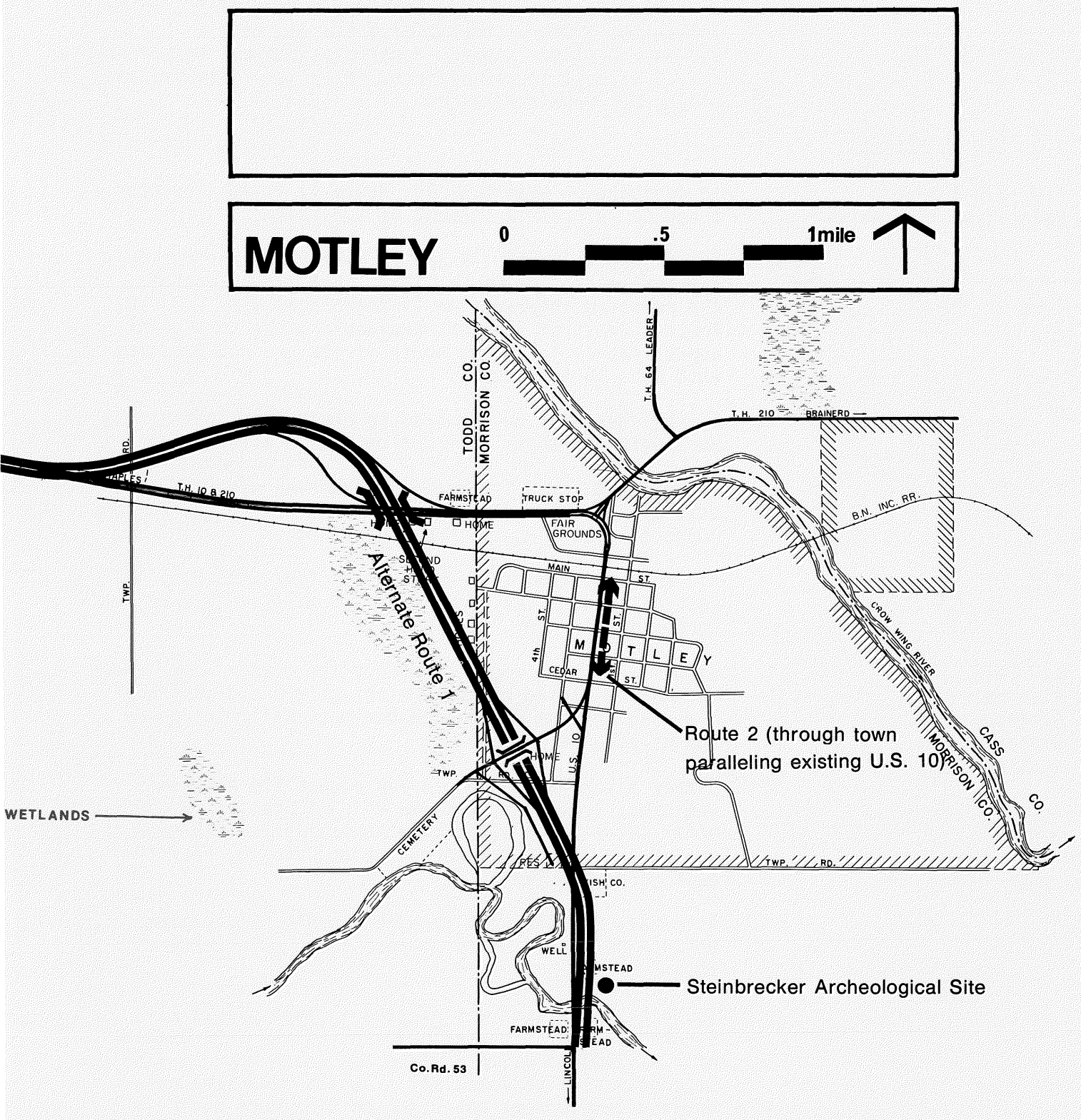


Figure 31 Motley Routes 1 and 2

Motley By-pass, Route 1 (West Side)

Alternate Route 1 would by-pass Motley on the west side. It would begin at a point one mile west of the corporate limits of Motley, on U.S. 10, and end at the Junction of C.S.A.H. 53, one-half mile south of Motley.

The length of Route 1, by-passing Motley, would be 2.5 miles as compared to the existing length of 2.8 miles through the city.

Access for Motley would be at the beginning of the by-pass northwest of the city and again at the interchange near the south end of the city.

The separated roadways, by-passing Motley, would be 90 feet apart, requiring a basic corridor width of 290 feet. The roadway centerlines would diverge from 75 to 90 feet, west of Motley, and from 90 to 124 feet, south of Motley.

Motley, Route 2 (Through City)

Alternate Route 2 would pass through Motley by paralelling U.S. 10. This section has a bituminous surface, 62 feet wide, and concrete sidewalks, 8 feet wide, along both sides. The sidewalks are elevated and act as curbs.

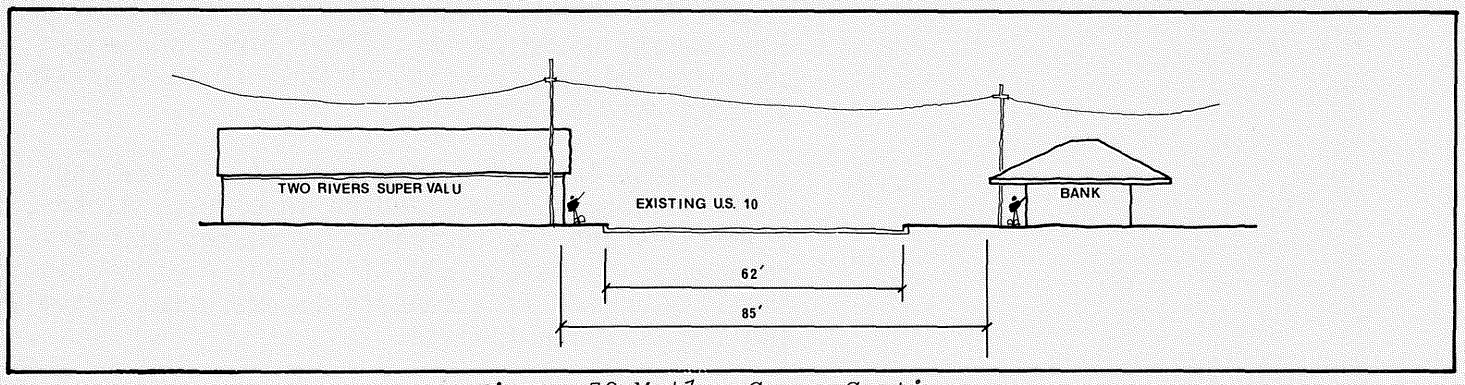


Figure 32 Motley Cross Section

The bituminous surfacing and riding qualities are both good. Parking is allowed throughout the urban section, except for one side between the railroad and Main Street (one-half block).

Existing U.S. 10 crosses two lines of Burlington Northern, Inc. Railroad tracks as it enters, southbound, into Motley. This railroad carries about 4 trains per day from Staples to Duluth. Projections double this to 8 trains per day by the year 1981.

There are a number of businesses located along U.S. 10 in Motley. They are dependent to some extent on U.S. 10 for business. Some of these businesses are: gas stations, cafes, liquor shop, saddle shop, repair shops, feed store, hardware store, motels, fish market, and other outlets of goods and service.

Do-Nothing

The Do-Nothing Alternative would be to not construct any improvement to U.S. 10.

To not improve the highway would deny the basic needs as established in Section I, "Need For The Project." Those needs are summarized as follows:

1. U.S. 10 is a highway of major importance in rural development, recreational use and road user benefits. It is classified as an expressway facility.

2. Traffic conditions during peak periods are very hazardous. This condition will become worse as traffic projections for the future materialize. The level of service will approach Levels D and E by the year 2000.

3. Roadway deterioration will be hastened as future traffic increases.

4. The present serviceability rating of U.S. 10 is 2.5 to 3.5 -- it can be salvaged for one roadway of the proposed divided facility.

5. Segments both east and west of the proposed improvement have been or are being improved to provide a four-lane divided facility. This proposed improvement would be the "final link" and would complete the construction of U.S. 10 to four-lane divided roadway standards.

6. The present lack of access control, increasing traffic volumes, sub-standard shoulders, slopes, geometrics and the through-city routes all serve to hamper the safety and efficiency of the existing facility, which is a concern to everyone, traveler and local resident alike.

SUMMARY OF ADVANTAGES & DISADVANTAGES OF ALTERNATES

Advantages, Route 1

1. Less traffic congestion through central business districts of cities of Wadena, Verndale, Aldrich, Staples and Motley.

2. Completes the "final link" of improvements of U.S. 10, from trunk highway to expressway or freeway standards.

3. Will provide a higher level of service and greater safety.

4. Removal of some air and noise pollution from CBD of cities by-passed.

	5. Provides convenience of improvement by segments that fit the overall improvement of U.S. 10 and it creates less disruption of CBD's during construction.
Disadvantages, Route 1 (North Route)	1. City by-pass segments will require all new alignment and right of way (882 acres). Rural segments require 189 acres.
	2. Loss of agricultural land and its produce (337 acres).
	3. Relocation of homes (39). Affected Businesses (8).
	4. Loss of trade by travel sensitive businesses that are by-passed.
	5. Alteration of wildlife habitat (425 acres).
	6. Loss of approximately 9.5 acres of elementary school playground from School District 793 in Staples. However, the school district now owns approximately 552 acres. Approximately 65 acres of undeveloped school ground will also be taken.
Advantages, Route 2 (Through Cities Only)	1. There would be virtually no adverse impact on cropland, vegetation, wildlife and wetlands.
Disadvantages, Route 2, (Through Cities)	1. Would not relieve the traffic conjestion through Central Business Districts of Wadena, Verndale, Staples and Motley.
	2. Would require the acquisition of highly developed property and the relocation of well established, growing businesses.
	3. Extremely high costs for right-of-way and access control.
	4. Would involve the following public lands that are subject to section 4(f) of the 1966 DOT Act. a. Sunnybrook Park in Wadena. b. City Park at Verndale. c. City Park area in Motley.
	5. It would disrupt and inconvenience business and traffic in CBD's during construction.

Table 8 Cost, Length and Acres needed for Alternate Routes

Segment, Alternative		Cost in Millions Construction & Right of Way	Bridges Required	Length Miles	Total, Acres Needed
Wadena	1A	6.4	9	8.9	358
Wadena	1B	5.9	9	8.5	390
Wadena	2	5.5	0	8.8	88
Wadena to Verndale	1	3.4	2	3.6	63
Verndale	1	2.6	0	2.7	102
Verndale	1A	2.7	0	2.6	105
Verndale	2	2.5	0	3.5	45
Verndale to Aldrich	1	2.5	0	1.6	36
Aldrich	1	1.3	2	2.2	36
Aldrich	2	1.3	2	2.1	13
Aldrich to Staples	1	4.9	0	3.0	90
Staples	1	3.9	4	5.8	201
Staples	2	3.3	0	7.1	65
Staples, T.H. 210	A	2.1	2	1.8	49
Staples, T.H. 210	B	1.9	2	1.8	45
Motley	1	2.5	7	5.1	150
Motley	2	2.8	2	4.4	45

DRAFT 4 (F) INFORMATION

Involvement

Certain build alternatives will involve public lands used for purposes related to recreation. The use of parklands for transportation purposes is governed by Section 4(f) of the Department of Transportation Act of 1966 as amended by the Federal-Aid Highway Act of 1968.

Public lands that would be affected by certain alternatives are:

- Sunnybrook Park Wadena
- Verndale Park
- Staples Elementary School
- Motley Park

Sunnybrook Park, in Wadena

Sunnybrook Park in Wadena is a city park of 70 acres, located adjacent to and north of existing U.S. 10, near the eastern limits of Wadena.

Alternate Route 2 would impact this park. It would require 0.7 acre for permanent right of way from the south edge which parallels the existing U.S. 10 for approximately 450 feet. This would involve a green lawn portion of the park and a small portion of water pond, which is a widened portion of Whisky Creek. Whisky Creek passes through the park. The pond encroachment (right of way) would total about 600 square feet, which is about 0.1% of the park's total water area of approximately 9.6 acres.

This portion of the park adjacent to U.S. 10 is zoned for light industrial land use by the city.

Impacts of Alternate Route 2 would include the following:

- Loss of 0.7 acres from 70 acres of parkland (1% loss).

- Pond encroachment (.01 acres).

- L_{10} noise level increase from 73 to 75 dba.

Alternate Routes 1A and 1B would miss Sunnybrook Park, thus avoiding any impact.

City Park in Verndale

Alternate Route 2 would impact this 1.6 acre park, which is a one-block area in the center of Verndale.

This park is divided by the Burlington Northern Railroad. One portion, about 0.5 acre, lies between U.S. 10 and the railroad and would be needed for Route 2. This area is all grass and shrubs with 1 park bench. The remaining portion of 1.1 acres is located south of the railroad and would remain unaffected.

The existing facilities are all south of the railroad. They include 1 flagpole, 1 picnic shelter, water, barbecue broiler, 15 benches, 7 picnic tables, 3 swings, 2 horseshoe courts and 2 memorial markers. Toilet facilities are housed in the city fire hall, which is across the street from the park.

The area is owned by the Burlington Northern Railroad as right of way and is leased to the city for park purposes.

There are no other park facilities in the city.

Impacts of Alternate Route 2 would include the following:

- Loss of 0.5 acre of parkland from 1.6 total acres (31% loss).

- L_{10} noise level increase from 73 to 75 dba.

Alternate Routes 1 and 1A would miss the Verndale City Park thus avoiding any impact.

School Playground in Staples

Alternate Route 1 would impact this elementary school playground located in the north part of Staples along Fourth Street. This playground is bounded by Judicial Ditch #5 on the West and Judicial Ditch #8 on the north. During seasons of heavy rain these drainage ditches pose a hazard to the school children.

The playground is part of a recreational area used for physical education activities by the school during the school year and by the community during the summer. The whole recreational area totals 41.8 acres and is known as the Bicentennial Memorial Athletic Field. This area includes the original school site area of 22.9 acres.

The affected portion totals about 9.5 acres, and is from the original school site area where the school building itself is located.

The Staples Public School System has clear title to this land. There are no covenants or restrictions.

The Staples Public School owns additional land, totaling 510.95 acres, which adjoins this park. This is unimproved land, used by the school for class work in the use of heavy equipment for earth excavation and embankment.

Impacts of Alternate Route 1 would include the following:

- Loss of 9.5 acres from a total area of 41.8 acres.

- L_{10} noise level increase from 64 to 66 dba.

- safety from Juidical Ditches for elementary school children using playground.

- highway safety fence serving as a deterrant to school children from contact with ditch.

- visual appearance of highway.

Access to the area would not be changed. However, school children and other pedestrians crossing the ramp accesses to Fourth Street would be exposed to a safety hazard.

Alternate Route 2 would miss the Staples School Playground and would thus avoid any impact.

The Motley City Park, about 0.7 acre in size, is located in the north part of Motley adjacent to the existing U.S. 10 and the Burlington Northern Railroad.

City Park, in Motley

Alternate Route 2 will affect this park.

This park is neatly maintained by the city of Motley and bears a V.F.W. Memorial Marker.

Existing facilities include a water tap, drinking fountain and 4 to 5 picnic tables. Plans for the future would be continued use as it presently exists.

The Burlington Northern Railroad owns the land as right of way, and has leased it to the city for park purposes.

The city of Motley is planning to improve an additional 1-block area for future recreational purposes. This will be located 3 blocks west of the existing city park. It would not be affected by Alternate Route 2.

Impacts of Alternate Route 2 would include the following:

- Loss of 0.2 acres from the total area of 0.7 acres (28.6% loss).

- L_{10} noise level increase from 77 to 78 dba.

Alternate Route 1 would miss the city park and the proposed future recreational park in the city of Motley, thus avoiding any impacts to 4(f) lands.

Construction Impacts (All 4f Lands)

Construction activities will temporarily increase air, water, and noise pollution. Control of construction operations by laws, regulations, specifications and special provisions will prevent 4(f) users and the environment from becoming significantly impacted. Although some activities may be annoying to 4(f) land users, no park or recreational area closings are anticipated.

MITIGATION MEASURES

Detailed mitigation measures will be described in the Final Section 4(f) Statement after an alternative has been selected. General mitigation measures will be included, where appropriate and desired by the governing agency, as follows:

- replacement of displaced facilities
- minimize right of way taking
- landscaping

Construction mitigation will include:

- construction of replacement facilities before removal of existing facilities, so that no loss of use will occur.

- temporary and permanent erosion control.

- maintenance of access to park without closing.

COORDINATION

In the process of planning the proposed action, contacts with the agencies having jurisdiction over the 4(f) lands have been made. These contacts revealed a general strong support for the project, with the consensus favoring the bypasses, particularly at Wadena and Staples.

Coordination with the appropriate governing agencies will continue through the project development and implementation phases.

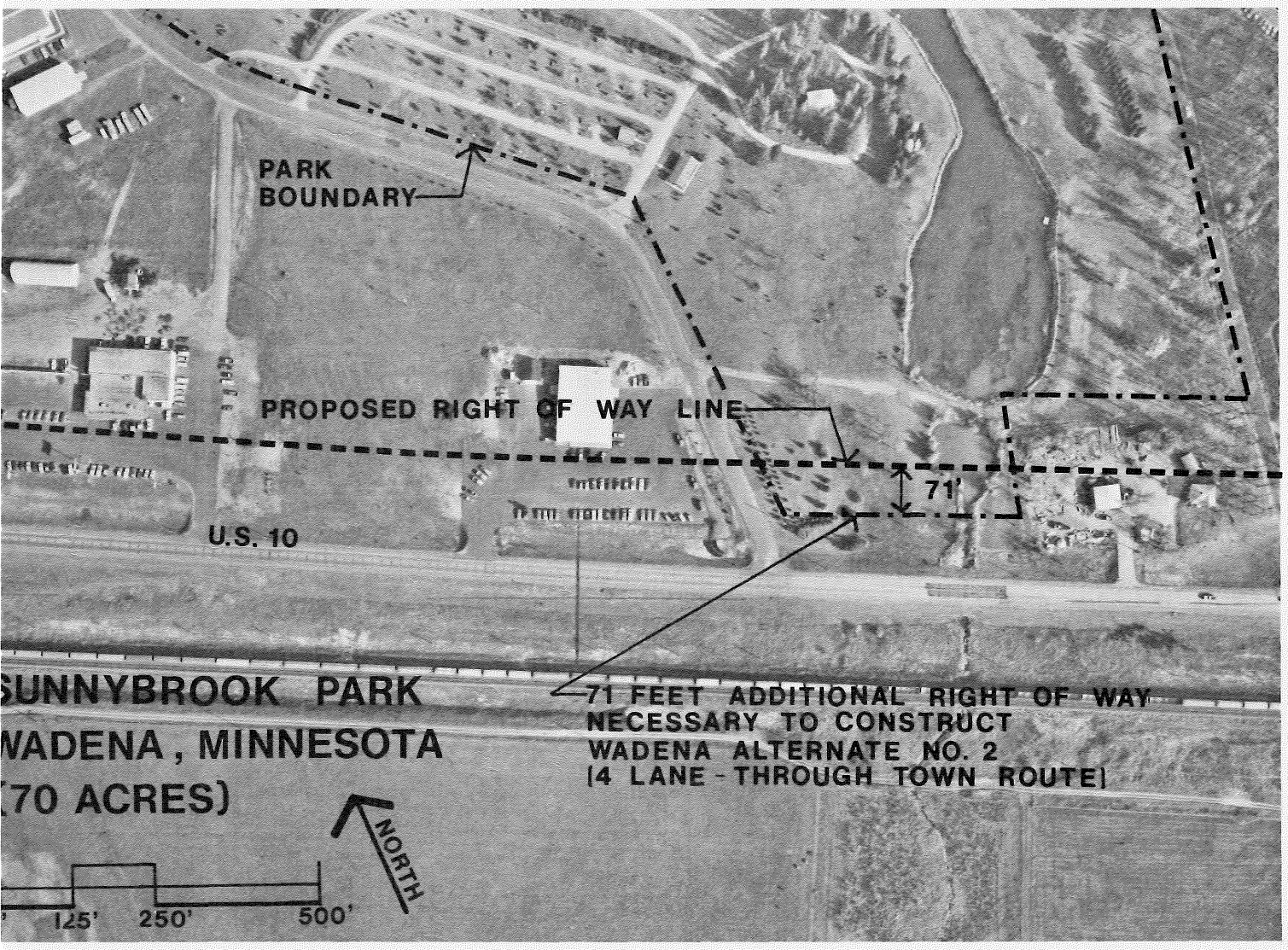
Table 9 Description of 4(f) Properties

DESCRIPTION OF 4(F) PROPERTIES

	Sunnybrook Park in Wadena	Verndale Park	Staples School Playground	Motley Park
Size	70 Acres	1.6 Acres	41.8 Acres	0.7 Acre
Type	Recreational	Recreational	Educational-Recreational	Recreational
Available Activities	Camping Picnic Zoo (Buffalo, Deer) Baseball/Softball Playground	Picnic, Horseshoe play	Softball, Basketball Swings, Football, Track, Tennis	Picnic
Existing Facilities	Sewer pumping station 3 picnic shelters Rest Rooms Utilities (water, sewer, Electricity)Baseball/ softball diamond 3 footbridges Roads	Water, Shelter, Barbecue broilers, picnic tables, benches, horseshoe game area	Bituminous playground, Childrens playground equipment 2 ball fields 3 tennis courts Parking Lot	Water, 5 picnic tables
Planned Facilities	Additions to 2 existing Picnic shelters. 4 new picnic shelters additional footbridges Road Improvements	No change-continued use as it now exists.	Track & Football Field Soccer Field 3 add. Tennis Courts	No change for existing, additional 1-block site being acquired for future recreational purposes.
Useage	Moderate	Moderate	Moderate	Minimal
Relationship to other similar lands	other parks in the city provide similar activities except camping.	None other in city.	other parks in the area provide baseball field in Pine Grove Park, 2 softball fields at Dower Lake, 5 tennis courts in smaller parks in the city.	None other in city.
Access	Vehicular and pedestrian from U.S. 10, and CSAH 4 Via Sunnybrook Drive	Pedestrian access from U.S. 10 on the northside & city & streets surrounding other 3 sides.	Vehicular and Pedestrian from 4th Street 3rd Street	Pedestrian access from U.S. 10 on Westside, Main St. on Southside, & 1st St. on Eastside.
Ownership	City of Wadena	Burlington Northern R.R. Leased to city	Staples School	Burlington Northern R.R. Leased to city
Deed Restriction	None	None	None	None
Significance	Regional	Local	Local	Local
Unusual Characteristics	None	None	Once had flooding problem. Corrected by reclamation projects of Area Vocational-Technical Institute's Heavy Equipment Class.	None
Existing/Planned use is compatible with local Goals and Plans	Yes	Yes	Yes	Yes

Table 10 4(f) lands affected by different alternates

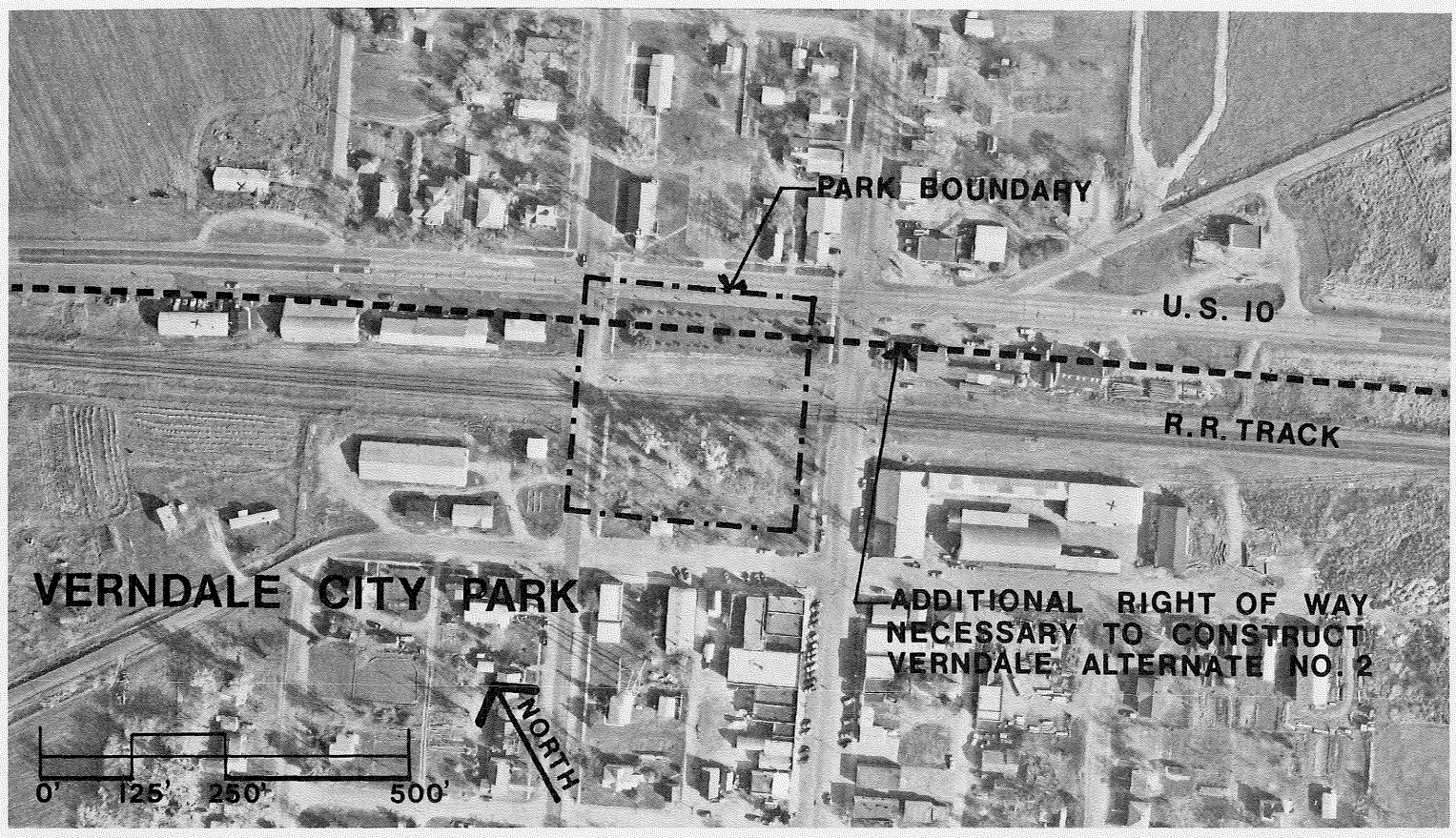
4(f) Lands Affected				
	Alt. 1	Alt. 1A	Alt. 1B	Alt. 2
Wadena, Sunnybrook Park	NA	Misses	Misses	Involves
Acres Needed				0.7
Acres Remaining				69.3
Facilities affected				None
Access effects				None
Effect on Remaining				None
Verndale, City Park	Misses	Misses	NA	Involves
Acres Needed				0.5
Acres Remaining				1.1
Facilities affected				None
Access effects				None
Effect on Remaining				None
Staples, School Playground	Involves	NA	NA	Misses
Acres Needed	9.5			
Acres Remaining	32.3			
Facilities Affected	.3 of .5 Ac. Bit. paved playground, 9.2 ac. of dirt playgrounds			
Access Effects	None			
Effect on Remaining	Noise Increase			
Motley, City Park	Misses	NA	NA	Involves
Acres Needed				0.2
Acres Remaining				0.5
Facilities Affected				None
Access Effects				None
Effect on Remaining				Noise Increase



EW LOOKING NORTHWEST



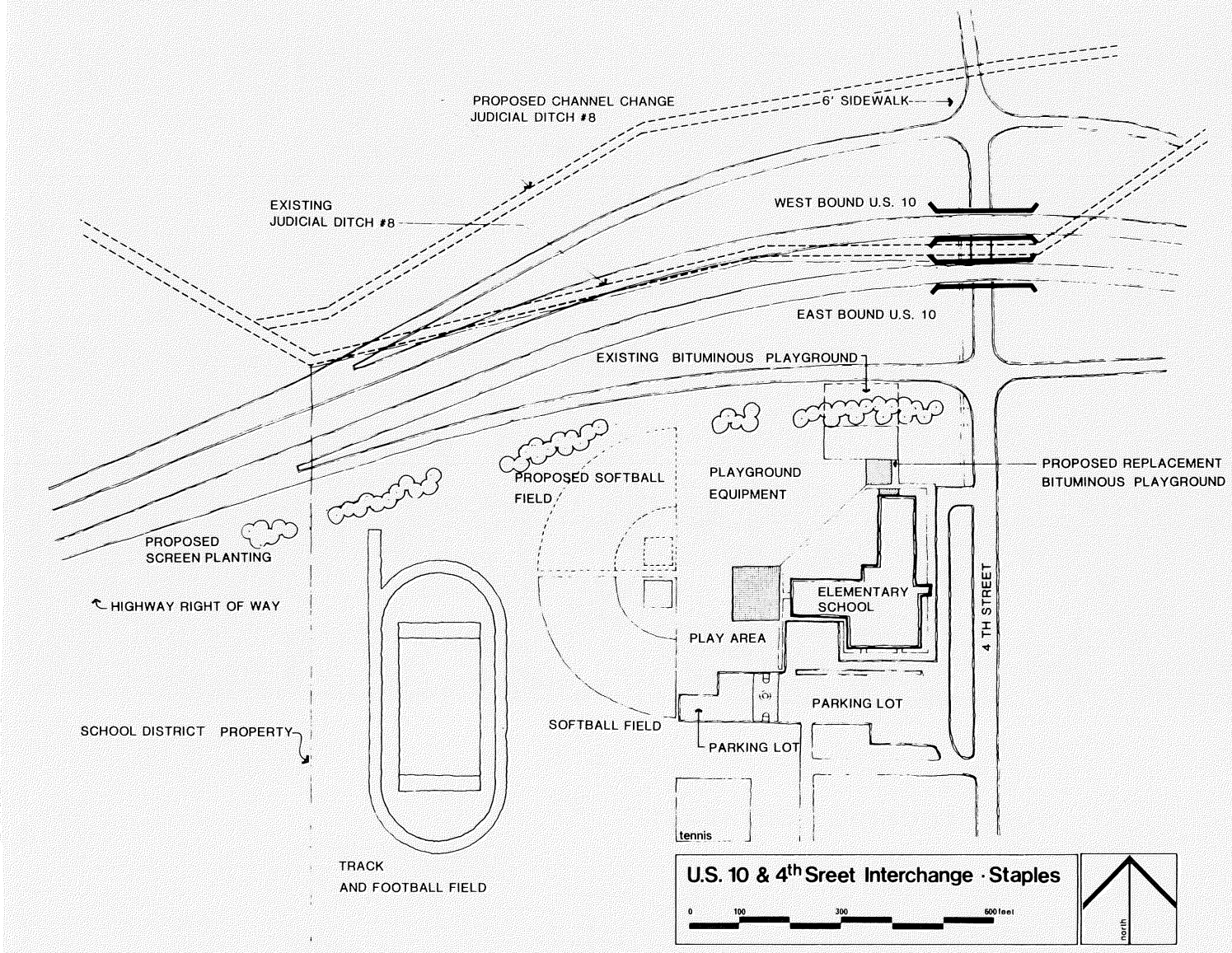
Figure 33 Sunnybrook Park



VIEW LOOKING SOUTHEAST



Figure 34 Verndale Park



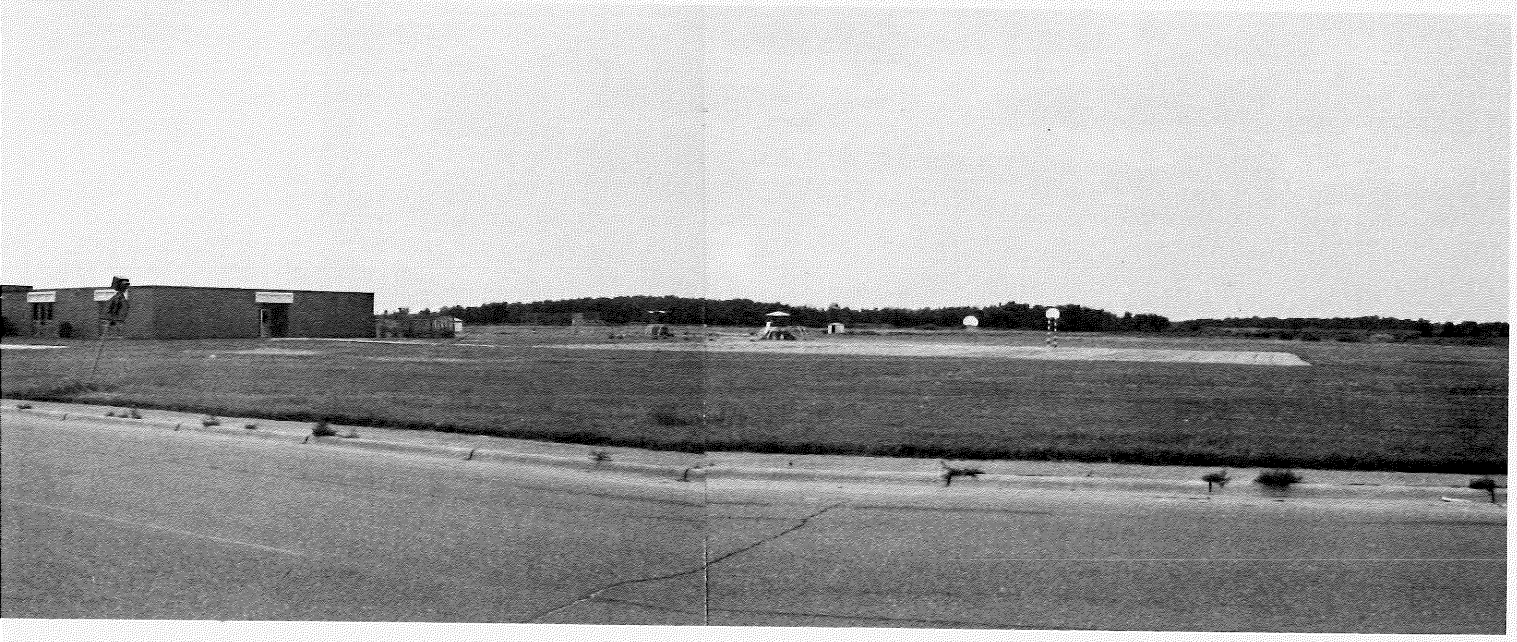
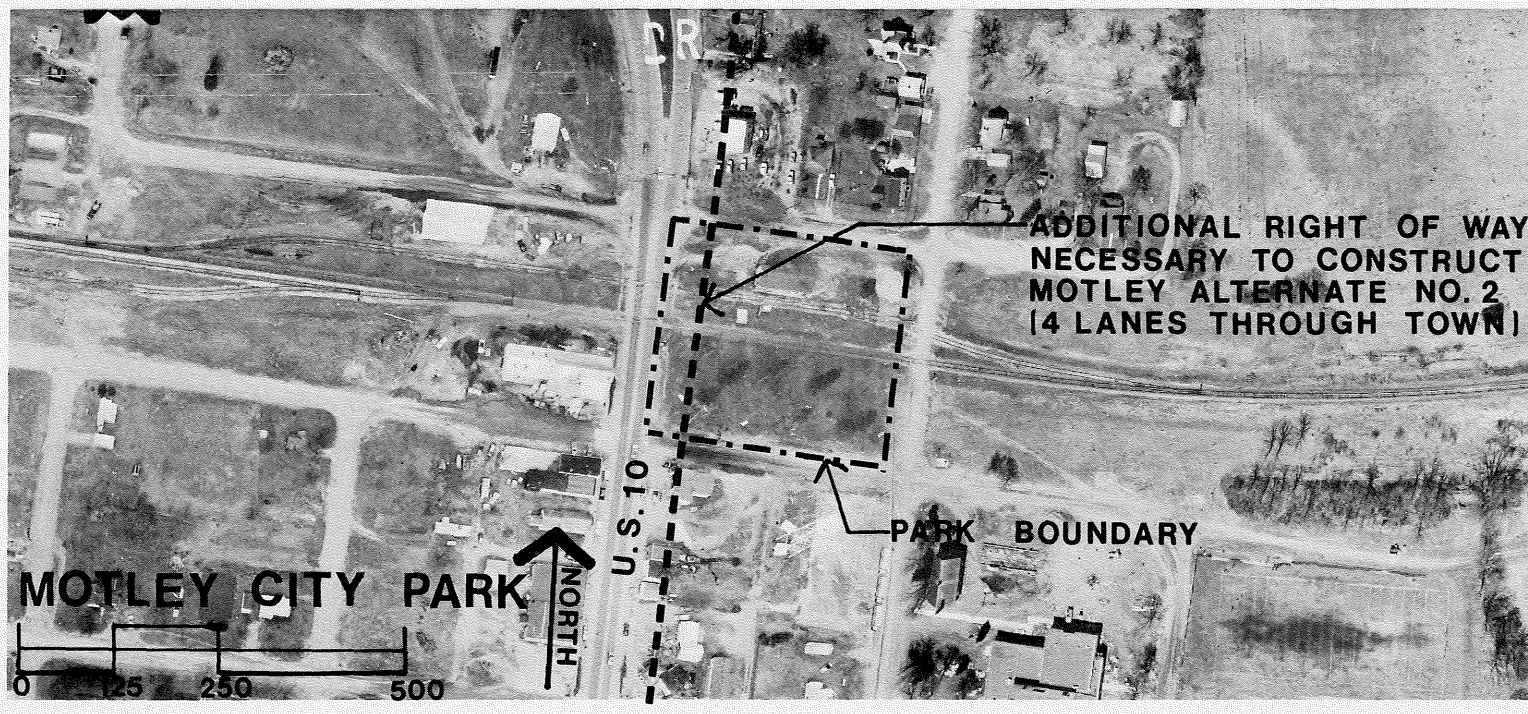


Figure 35 Staples Elementary School



VIEW LOOKING NORTHEAST

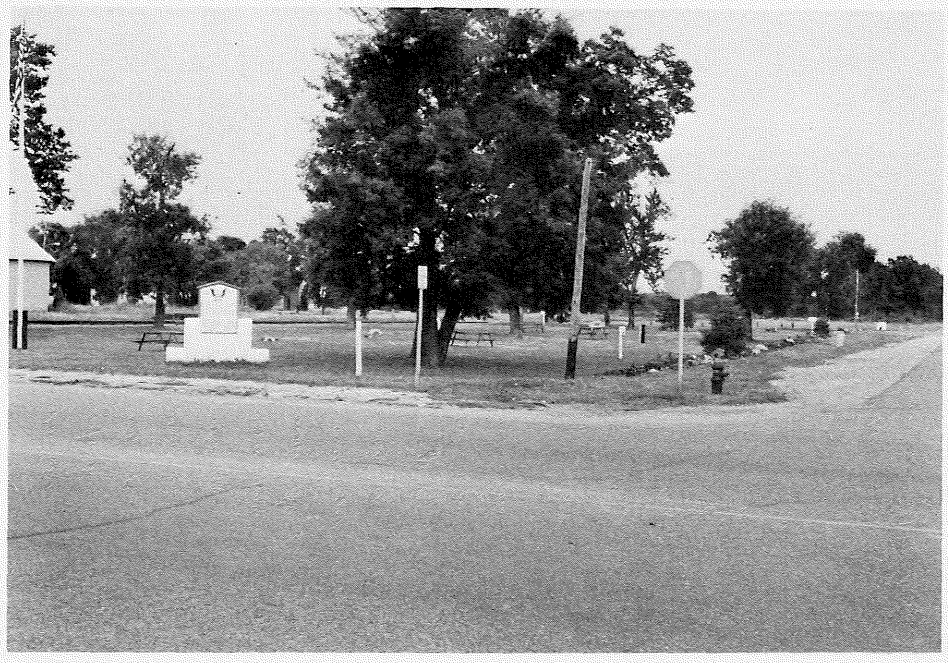


Figure 36 Motley Park

SECTION VI
PROBABLE IMPACTS

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NATURAL FEATURES IMPACTS

Five types of land will be impacted by this project. They are:

1. Cropland
2. Residential & Commercial Development
3. Grassland
4. Woodland
5. Wetland

The approximate acreage of each land type within the proposed highway right-of-way is given in the following table, for each practical alternative. The acreage figures shown for the bypass alternatives represent a freeway design and include the area required for frontage roads and interchange connections.

Table 11 Land Types impacted for Alternate Routes

Segment, Alternative		Cropland	Developed	Grassland	Woodland	Wetland	Total
Wadena	1A	160	0	59	60	79	358
Wadena	1B	193	13	59	35	90	390
Wadena	2	41	22	11	9	5	88
Wadena to Verndale	1	46	2	9	2	4	63
Verndale	1	51	7	27	8	9	102
Verndale	1A	54	2	21	10	18	105
Verndale	2	11	16	12	4	2	45
Verndale to Aldrich	1	24	0	2	4	6	36
Aldrich	1	12	11	4	6	3	36
Aldrich	2	0	6	3	4	0	13
Aldrich to Staples	1	8	6	36	8	32	90
Staples	1	0	27	103	33	38	201
Staples	2	2	20	29	4	10	65
Staples, T.H. 210	A	3	2	28	15	1	49
Staples, T.H. 210	B	3	5	21	15	1	45
Motley	1	0	18	81	49	2	150
Motley	2	0	22	20	3	0	45

Another impact, will result from the need for borrow pits to obtain fill material, and for waste and disposal sites to dump unsuitable material excavated from the roadway. The area of land needed for these purposes cannot be estimated until the roadway elevations are known and soil tests are completed. This information is not available until the detail design stage of project development. Preliminary indications are that the right-of-way does not contain enough fill material to build the project. Also, because of the many wetlands being crossed, extensive excavation of muck and peat will be necessary. This material is unsuitable for road base construction and must be used for slope dressing, but excess would be placed off the right-of-way. There will be no disposal of peat in wetlands.

Esthetic Effects

The total length of the proposed project is approximately 27 miles. All but 10 miles will be new roadway construction which parallels existing U.S. 10.

The only areas where the road will not parallel the inplace road will be in the bypass areas of Wadena, Verndale, Staples and Motley. In these locations, alterations to the visual environment will occur. Areas of greatest visual impact will be where the mainline or frontage roads and ramps will be on high fills (15 to 25 feet).

Areas that would be visually affected by a road that would parallel the inplace U.S. 10 would be a park and fairgrounds in Wadena, and parks in Verndale, Aldrich, and Motley.

The northern bypass of Staples would be located approximately 400 feet north of the elementary school on Fourth Street.

Disruption of Scenic Resources

Disruption of scenic resources such as trees, topography and wetlands will occur as a result of new road construction.

Roadway design features such as variable median and varying the horizontal grade will help preserve scenic areas, which will be an esthetic benefit to motorists and residents alike. Specific areas where special road design features may be implemented will be discussed in the final environmental impact statement.

Potential to disrupt scenic resources also exists in borrow site locations. Wooded areas should be avoided as borrow sites. Borrow sites should be designated in grassland or cropland areas that can be restored to their original condition.

Measures to Minimize Harm

Opportunities exist to visually enhance the highway right of way and areas adjacent to the right of way. These will be implemented as practicable.

These include:

- Ponding areas (wildlife ponds) along right of way or in interchanges.
- Preservation of interesting or scenic trees and topography (especially near town entrances and in interchange areas).
- Borrow sites that can be shaped to form attractive water bodies.
- Plantings in interchange areas and entrances to towns. Little or no landscaping will be necessary in rural areas. Natural vegetation is more desirable.
- Special esthetic design consideration for bridges.
- Controlling access to prevent undesirable strip development.

Erosion

Disruption of the soil and landscape will occur during highway construction. Erosion of exposed soil and underlying sediment is the primary concern. Erosion occurs when soil or sediment particles become detached from each other and are transported by wind or water. Wind and water erosion are often severe in sandy or loam soils that exceed 24% slope. In the U.S. 11% of the annual amount of erosion is due to highway construction activities. The potential for erosion to occur during construction of U.S. 10 is low, since most of the immediate project area is flat.

Erosion Control

Permanent, temporary and administrative controls will be used to minimize erosion. Permanent control measures include items such as, replacement of top soil, seed, sod and rock riprap. Seed, sod and topsoil are used to re-establish vegetation after construction. Vegetation cover is the best permanent means of controlling and reducing erosion in large exposed areas. Permanent erosion control measures are included in the construction plans by the designer and it is the project engineer's responsibility to see they are implemented.

Temporary controls of erosion include items such as, bale ditch checks, earth diversions, bale diversions, and temporary sediment basins. Temporary controls will be included in construction plans are used at the discretion of the Project Engineer. Administrative erosion controls occur in the form of standard specifications, licenses, permits and requirements placed upon the contractor.

To establish vegetation in areas disturbed by construction, Mn/DOT usually requires topsoil, lime (if necessary), fertilizer, sod and/or seed and mulch. The type and rate of application of fertilizer used depends upon the nature of the topsoil.

Normally topsoil within a construction area is salvaged and reused. When a project is being designed, existing topsoil is sampled and tested. Test results provide information on topsoil gradation, pH, organic matter, phosphorous and potassium content. From test information proper fertilizer type and rate may be derived. If more topsoil is required than may be obtained by salvaging inplace topsoil, topsoil borrow (topsoil obtained from a source other than the construction site) will have to be used.

Fertilizer applied to the soil will either be removed from the soil or be stored in the soil. Nutrients in fertilizer may be removed from the soil by vegetation, leaching (nutrients dissolve and move downward through the soil) or micoorganism breakdown. Nutrients may be stored in soil by being incorporated into microbes, fixed by clay, absorbed by organic matter and/or absorbed by the soil.

Little or no adverse effects upon the quality of ground and surface waters are anticipated due to the use of fertilizer. The soil and vegetation will store nutrients and inhibit their entrance to ground or surface waters. In fact, the beneficial effect of fertilizer in re-establishing vegetative cover, will far outweigh the effect of fertilizer contributing nutrients to aquatic areas.

Bedrock Geology

Bedrock lies (at least) 100 feet or more beneath the soil surface. Therefore, construction of any of the alternatives will not affect bedrock formations.

Groundwater Effects

The abundance of wetlands along proposed U.S. 10 indicates a high water table. Well log data from the USGS and private borings for structures and wells confirms this. Potential problems are likely to occur where the water table is close to the ground surface, usually less than 10 feet. These problems include: frost heave of the new road surface, pumping of soil fines from below the pavement surface, flooding and early pavement deterioration. The new road surface will be kept a minimum of 5 feet above the water table, groundwater problems will be minimal.

Deicing Salt

Deicing salt is a potential groundwater pollutant. Though present ice control policies reduce the amount of salt used for deicing, some salt still enters the environment. For deicing salt to enter the groundwater system it must move directly downward through the soil. To date, no instance of groundwater contamination from highway runoff of deicing salts has been documented in Minnesota.

In Minnesota, contamination of wells has occurred from runoff of deicing salt stock piles. This is not expected to be a problem because existing stock pile sites are expected to be used to service proposed U.S. 10. The amount of salt stored at any given time should not exceed quantities presently being stored. All stock piles will also be covered when not actively being used.

FLOODPLAINS ASSESSMENT

There are seven locations (1-7) shown on the Floodplain map on where the alternates encroach upon the 100 year floodplain. All these potential encroachment sites are now stream or river crossings or would be forded for the first time by construction of bypasses at Motley, Staples, Verndale, and Wadena.

Risk of flood damage at these crossings will be minimal because Mn/DOT complies with Minnesota Department of Natural Resources (DNR) regulations for new stream crossings and replacement of existing crossings. The definition of flood and floodway in the flood plain management and protection order is the same as in the DNR regulations (i.e., a flood is a 100 year flood, where the floodway is the area inundated by a 100 year flood). According to existing state law a new stream crossing must meet the following criteria:

(a) No approach fill for a crossing can encroach upon a community designated floodway.

(b) Where a floodway has not been designated or where a flood plain management ordinance has not been adopted, increases in flood stage in the regional flood of up to .5 foot shall be permitted if they will not materially increase flood damage potential. Additional increases may be permitted if:

(i) A field investigation and other available data indicated that no significant increase in flood damage potential would occur upstream or downstream.

(ii) Any increases in flood stage are reflected in the flood plain boundaries and flood protection elevation adopted in the local flood plain management ordiance.

Replacement of an existing crossing requires the following:

(a) If the existing crossing has a swellhead of 0.5 foot or less for the regional flood, the replacement crossing shall comply with the provisions for new crossings (6 MCAR § 1.5025 B. 2.b(1)).

(b) If the existing crossing has a swellhead of more than 0.5 foot for the regional flood, stage increases up to the existing swellhead may be allowed provided field investigation and other available data indicate that no significant flood damage potential exists upstream from the crossing. The swellhead for the replacement crossing may exceed the existing swellhead if it complies with the provisions for new crossings found in (i) and (ii) of 6 MCAR § 1.5025 B.2.b.(1)(b).

(c) The decks and approaches to bridges or culverts on major transportation routes and on roads that provide access to development at urban densities shall be no lower than two feet below the flood protection elevation as defined in NR 87 (3) MCAR § 1.0087 (e)) unless it can be shown that alternatives routes or access can be provided during the regional flood.

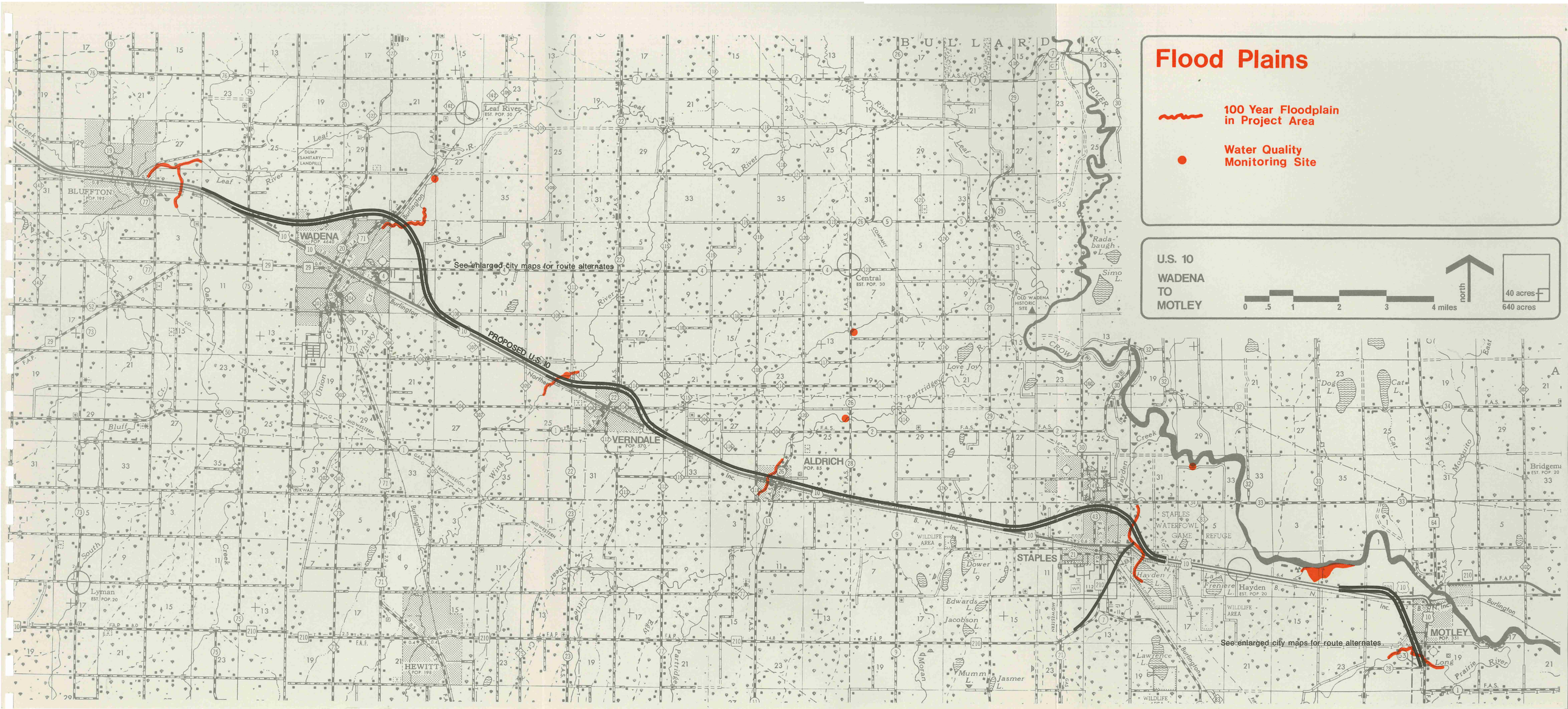
Should the hydraulic capacity of any of the seven stream crossing structures be exceeded, the potential for loss of property or loss of human life is low because there is no intensive development (i.e., houses, businesses), on the 100 year flood plain.

All of the stream crossing structures will be located in approximately the same place as presently located on existing T.H. 10 except for Union Creek, which would be required to build Alternates 1A or 1B in Wadena. It is located in a large Type 6 wetland. Should Alternates 1A or 1B be selected as the chosen alternative in the final EIS, there will be appropriate features to minimize harm to the Type 6 wetland or to improve it for wildlife use.
The following mitigation and minimization of harm measures are being considered:

1. Construction of a small impoundment for the dual purposes of creating more wetland and thus more wildlife habitat, and to biologically treat run-off in Union Creek which is highly enriched due to the inputs of nutrients from the sewage treatment plant upstream.

2. Minimal encrochment of the wetland by using steep fill slopes, such as going from (6:1 to 3:1) beyond the clear zone.

At present the floodplains of these rivers and streams are natural and devoid of intense development. It is not expected that the new highway facility will spur


Flood Plains
100 Year Floodplain in Project Area
Water Quality Monitoring Site
U.S. 10
WADENA
TO
MOTLEY
0 .5 1 2 3 4 miles
north
40 acres
640 acres
BULLARD
BLUFFTON
WADENA
VERNDALE
ALDRICH
STAPLES
MOTLEY
HEWITT
Lyman
Leaf River
Central
Hayden
See enlarged city maps for route alternates
PROPOSED U.S. 10
STAPLES WATERFOWL GAME REFUGE
OLD WADENA HISTORIC SITE
Burlington
Leaf River
Partridge
Long Prairie River
Hayden Creek
Lawrence L.
Mumm L.
Jasmer L.
Edwards L.
Jacobson L.
Dower L.
Love Joy L.
Radabaugh L.
Simo L.
Dog L.
Cat L.
Bridgema
Mosquito
Bluff
Union
Oak
Whisky
Wing
Moran
Bear
Little
Eddy
Partridge
South
Creek
Leaf River
Crow River
Hayden
Lawrence L.
Mumm L.
Jasmer L.
Edwards L.
Jacobson L.
Dower L.
Hayden L.
La Frenière L.
Lyman
Bluff
Oak
Whisky
Union
Wing
Partridge
Moran
Bear
Little
Eddy
Mosquito
Cat
Dog
Prairie
Long
Creek
Leaf
River
Burlington
Northern
Inc.
F.A.S.
F.A.P.
MIDWESTERN
KWAD
GAS TRANSMISSION CO.
WILDLIFE AREA
DUMP SANITARY LANDFILL
Leaf River
EST. POP. 50
Central
EST. POP. 30
BLUFFTON
POP. 195
WADENA
POP. 4640
VERNDALE
POP. 570
ALDRICH
POP. 85
STAPLES
MOTLEY
POP. 351
Hayden
EST. POP. 20
Lyman
EST. POP. 20
Bridgema
EST. POP. 20
HEWITT
POP. 198
See enlarged city maps for route alternates

development in the floodplains of the Partridge River, Hayden Creek, Long Prairie River, Wing River, Leaf River or Union Creek. The highway will cross these water courses approximately at a right angle and floodplain encroachment will increase mainly since the new facility will have four lanes instead of two.

Surface Water Effects

The Partridge River, Wing River, Leaf River, Long Prairie River, Union Creek and Hayden Brook will receive runoff from proposed U.S. 10. These streams and rivers are all tributaries of the Crow Wing River.

Water Classification

The Minnesota Pollution Control Agency (MPCA) classifies streams and rivers according to their potential uses. Categories of use or uses are:

	Classification
Domestic Consumption	1
Fisheries and Recreation	2
Industrial Consumption	3
Agriculture and Wildlife	4
Navigation and Waste Disposal	5
Other Uses	6

The 6 uses are subject to minimum chemical and biological quality standards denoted by the letters (A-D). Standard (A) is most restrictive (of the highest quality) and (D) is least restrictive. Maintenance of water quality in receiving waters is achieved by applying the most restrictive standards for each use (1-6). The Crow Wing River, Hayden Brook, Partridge River, and Leaf River are classified 2B, 3C, 4A, 5 & 6. The Long Prairie River is classified 2B, 3B, 4A and 5. Union Creek is classified 2B, 2C, 3B, 3C, 4A, 4B, 5 & 6. The proposed action will not change any of these classifications.

Water Quality Monitoring

Mn/DOT collected water samples and other stream data at 5 sites. These sites are located on the Crow Wing River near Staples, Partridge River, Wing River near Verndale, Union Creek near Wadena and an unnamed creek. The sites were selected to provide an indication of the present quality of surface waters in the project corridor. All of these streams and rivers receive runoff from existing U.S. 10 and will also receive runoff from proposed U.S. 10.

Water Quality

The data which has been collected and analyzed to date, indicates that nutrients (eg., nitrogen and phosphorous) are abundant at 4 of the 5 sample sites. Nutrients encourage the growth of algae and other plants and organisms and can degrade rivers and streams for many uses. Union Creek contains the most nutrients and has probably lost some species of stream dwelling organisms and fish as a

result. Chloride concentrations were low at all 5 sample sites. Chloride levels can be elevated in surface waters due to chloride in deicing salt and other man caused and natural sources.

Quality of Highway Runoff

Highway runoff has the potential to degrade receiving waters. Pollutants that may be found in highway runoff include:

1. Sediment generated primarily by erosion during construction and also by winter sanding on roadways.
2. Deicing salt, usually 95% or more sodium chloride by weight.
3. Trace Pollutants:
   A) Heavy metals such as lead, zinc, chromium, copper and nickel.
   B) Petroleum product residues such as rubber, n-parrafin, grease, gas and oil.
   C) Pesticides and fungicides.
   D) Nutrients such as nitrogen and phosphorous.

3A and 3B are residues of motor vehicle emissions or from wear of tires and mechanical parts. 3C and 3D are caused by normal maintenance of highway rights-of-way and from accumulation of dust, dirt and organic matter.

U.S. 10 Drainage

In general runoff from existing and proposed U.S. 10 should not contain high concentrations of pollutants. Highways in rural areas do not generate and collect pollutants as effectively as urban highways and streets.

Drainage from U.S. 10 will be discharged into shallow wetlands and ditches whenever feasible to minimize the effects of discharge directly into streams or lakes. The use of wetlands and ditches to collect highway runoff is intended to deposit roadway pollutants in ditches and wetlands instead of transporting them (via surface flow) to streams or lakes. Research regarding wetlands and biological treatment of stormwater (Hickock et al., 1977) indicates that shallow wetlands reduce pollutant loads and are not rendered less biologically productive because of urban storm runoff. Similar processes occur in ditches if they are vegetated and open.

No significant adverse effects are anticipated in streams and aquatic areas as a result of deicing salt applied to U.S. 10. There are no lakes which will receive salt drainage from U.S. 10. Hayden Lake near Staples is technically a wetland, not a lake, and will receive runoff from U.S. 10. Most of the deicing salt applied to U.S. 10 will infiltrate into the near surface groundwater or will be carried by surface runoff into the Crow Wing River. The large amount of dilution which occurs in the surface and groundwater systems and the low toxicity of salt to plants are the main

reasons that deicing salt will have little affect on the biology of the streams and wetlands receiving drainage from U.S. 10.

Effects of Stream Channelization

Channelization can cause serious alteration of the physical and biological characteristics of a stream, which include the following:

1. Loss of natural stream length.
2. Increased sediment loading and deposition downstream.
3. Disturbances of the stream bottom.
4. Decrease in the total number and diversity of stream organisms.
5. Loss of cover and food for gamefish and subsequent decline in gamefish populations.

Stream Channelization

The Partridge River and Union Creek will be channelized at two stream crossings. The purpose of creating a new or modified stream channel at these crossings is to provide adequate hydraulic capacity and to ensure a stable channel configuration beneath the bridges. The Partridge River crossing is located near Aldrich and the Union Creek crossing is near Wadena and is part of the Wadena Bypass (See Section III for description of these water courses).

Patridge River

Alternate Route 2, at Aldrich requires that a 200 foot segment of the Partridge River be moved slightly east. The new channel would use 50% or more of the present channel beneath U.S. 10. The river appears to have been channelized previously, for about 450 feet downstream of the U.S. 10 crossing.

The Partridge River channel change should not result in significant long term degradation of the river because:

1. The length of the new channel will be approximately equal to the present river channel.
2. Increased sediment loading and deposition of sediment downstream of the channel change should cease, shortly after construction is completed.

Mitigation Measures for the Partridge River

Rip-rapping of the banks and channel will result in better habitat for stream organisms (i.e., invertebrates) and small fish. Several large boulders placed in the new channel would create cover for gamefish. Brush piles could also be placed in the stream to provide cover for fish. All the above mentioned mitigation measures will be considered and specific measures will be included in the final EIS after an alternate route has been selected for U.S. 10 near Aldrich.

Union Creek	Depending on the design and alternate route selected for the Wadena Bypass approximately 500-1000 feet of Union Creek may be channelized. The new stream channel would probably depart from the former channel considerably if alternate 1A or 1B for the Wadena Bypass is selected.
Mitigation Measures for Union Creek	Specific mitigation measures to reconstruct equivalent lengths of stream channel will be discussed in the Final EIS after a route for U.S. 10 around Wadena has been chosen.
Permits Required	The proposed action will require Section 404 permits from the Corps of Engineers for various stream crossings. The same areas will also require permits from DNR. Certain judicial ditches will be effected requiring permits from the District Court. Final permit requirement determinations will be made when more hydraulic and design information is available during the detailed design phase of the project. Special provisions or recommendations, suggested by agencies having permit authority as precautions against environmental damage, will be incorporated into the final plan package for this project.
Pesticides	The term pesticides implies any substance used to destroy, or repel any pest. Pests include plants, animals, insects, etc. Pesticides used by the Mn/DOT are generally limited to herbicides (weed control chemicals). Herbicides are used along highway right of ways to control noxious weeds (control of noxious weeds is required by law) and as a tool in vegetation management. Herbicide use is limited to spot spraying (identifying the target and using the proper herbicide on the target). The main herbicides used are 2, 4-d, for broadleaf weeds, 2, 4, 5-T for brush control, Picloram for Canada thistle and a combination of Dalapon + TCA for cattails. All herbicides are applied by or under the supervision of a licensed pesticide applicator. Based upon the topography and the surrounding land use, limited amounts of herbicides will probably be used adjacent to U.S. 10. Small infestations of noxious weeds (Canada Thistle, Leafy spurge, bull thistle, musk thistle, plumless thistle, sow thistle) will be controlled with hand applications of Picloram. Due to the limited amount of herbicide use and because many herbicides biodegrade, the impact upon aquatic areas will be negligible.

Vegetation Removal

Removal of vegetation and the resultant loss of wildlife habitat is the primary impact of highway construction upon the natural environment. Roughly 85% of the natural vegetation within the proposed right of way will be converted to pavement or grassland roadsides.

Woodland Effects

The right-of-way of the proposed action with construction of freeway-design bypasses would contain approximately 160 acres of woodland. Not all of this acreage would be destroyed. Some forestland can be preserved within the right-of-way by restricting clearing and grubbing to within the grading construction limits. This can be done throughout the project, but is especially effective in large interchange areas.

Woodland sites are less adversely affected by highway construction than lowland sites. Construction through woodlands will alter tree species composition and density along the forest edge. Tree growth often increases due to a decrease in competition by eliminating neighboring trees which increases sunlight, moisture and nutrient supply. A new edge community develops which is composed of plants which require more sunlight and are tolerant to wind exposure.

Some trees may be lost along the forest edge due to wind throw, root compaction, and changes in soil moisture.

Measures to Minimize Harm on Woodlands

1. Restrict clearing and grubbing operations to within the grading construction limits.

2. Identify and protect large specimen trees or esthetically important stands of vegetation.

3. Require the contractor to repair damage to trees and shrubs caused from construction by trimming and dressing tree wounds and by pruning to balance root damages.

Wetland Effects

Wetlands are more adversely affected by highway construction than uplands. Aside from direct wetland loss through excavation and filling, the most important effect of construction in wetlands is the change of natural soil drainage conditions. Deep road cuts or fills can raise or lower water table levels near the edges of the roadway. In the wooded swamps which are valuable habitat for wintering deer, alterations in natural drainage and water circulation patterns can cause the die-off of trees far from the roadway. Natural drainage patterns can be kept intact, and vegetational changes associated with shifts in water depths can be minimized by installing level drainage culverts every 100-200 feet when

crossing wetlands (Davis and Humphrys, 1977). The extent of these types of impacts are difficult to foresee.

Impeding wetland drainage could have a beneficial impact. Shallow, vegetation choked wetlands without open water areas have low value for waterfowl. These wetlands can be upgraded by raising their water table levels. This will be done where practical, if suitable sites occur along the selected routes.

Secondary drainage by adjacent landowners is another potentially significant impact. Highway ditches will be designed to minimize the potential for their use as drainage ways for adjacent lands. This can be best done by eliminating ditch sections through wetland basins wherever possible.

Several other less significant impacts to wetlands can happen. Contamination of soils and waters by deicing salts and auto pollutants may occur but will probably be minimal. Soils and wetlands act as "natural sinks" for pollutants and are normally capable of dissipating these pollutants when present at low levels. Downstream recovery of waters polluted from highway use generally occurs within about 200 feet of the highway (Davis and Humphrys, 1977).

Even with standard erosion control measures, increased soil erosion and sedimentation will occur during construction. Because most of the wetlands involved lack areas of open water, which are most susceptable to sediment and turbidity, impacts from erosion should be minor.

Wetland Loss

A large area of wetlands will be directly impacted by this project. The following shows the approximate acreage of wetlands taken by type for each alternative. Assuming that the project was built with freeway design bypasses and expressway between the cities, roughly 191 acres of wetlands would be lost. Most of the wetland acreage affected is sedge meadow and shrub swamp. These types of wetlands are abundant throughout the project area comprising about 17% of the total land acreage. Within a 3 mile band on either side of T.H. 10 there are approximately 18,500 acres of Wetland. The proposed project would affect .1% of this wetland acreage.

Table 12 Wetland Types Impacted for Alternate Routes

Segment, Alternative		WETLAND TYPE 1	2	2/6	3	4	6	7	Total
Wadena	1A	0	11	13	0	0	25	30	79
Wadena	1B	0	13	5	0	0	43	29	90
Wadena	2	0	3	0	0	0	2	0	5
Wadena to Verndale	1	0	1	0	0	0	1	2	4
Verndale	1	1	0	4	1	3	0	0	9
Verndale	1A	0	0	14	1	3	0	0	18
Verndale	2	0	0	2	0	0	0	0	2
Verndale to Aldrich	1	0	0	5	0	0	1	0	6
Aldrich	1	0	3	0	0	0	0	0	3
Aldrich	2	0	0	0	0	0	0	0	0
Aldrich to Staples	1	0	6	8	0	0	18	0	32
Staples	1	0	3	6	0	11	12	6	38
Staples	2	0	5	3	1	0	0	1	10
Staples, T.H. 210	A	0	0	0	1	0	0	0	1
Staples, T.H. 210	B	0	0	0	1	0	0	0	1
Motley	1	0	2	0	0	0	0	0	2
Motley	2	0	0	0	0	0	0	0	0

Wetland Loss (cont.)

The impact from this wetland destruction is not considered to be a significant reduction of the available wetland resource.

Executive Order 11990 was issued May 25, 1977 and requires that Federal funding can be granted for an action which involves construction in wetlands, only when the following findings have been made: (1) there are no practicable alternatives to construction in wetlands; (2) the proposed action includes all practicable measures to minimize the harm to wetlands.

The only alternative that completely avoids wetlands is the "no-build." The alternative of upgrading the existing alignment to 4 lanes from Wadena to Motley rather than building bypasses would reduce wetland encroachment from 191 acres to 60 acres. Upgrading the existing alignment to 4 lanes would have serious social-economic effects. See Section on Social-economic impacts.

Measures to Minimize Harm on Wetlands

The following measures will be investigated and utilized where found feasible, cost-effective and permissible under statutory limitations to minimize harm to wetlands and associated wildlife.

1. Alignment shifts to avoid wetlands encroachment; and to minimize severance of wetlands by following wetland edges rather than crossing through their centers.

2. Design modifications to minimize encroachment such as steepening inslopes on high fills outside of the clear zone, and using gradelines that avoid deep cuts in wetlands.

3. Provision of culverts every 100-200 feet along fills through wetlands.

4. Designing ditches so that they cannot be used for secondary drainage.

5. Specifying strict erosion control measures for wetland areas.

6. Provide replacement wetlands by:

   -using culverts as dams to create new ponds or upgrade existing low quality wetlands.

   -using dugouts and ditch blocks to pond water in ditches, interchanges, or other areas of extra width right of way.

   -rehabilitating borrow pits to form wetlands.

   -acquire excess right of way for pond construction.

7. Restrict contractors from using wetlands for borrow pits or waste and disposal sites except for mitigation purposes.

8. Maximize the use of excavated peat and muck for slope dressing to minimize the need for disposal sites.

Specific mitigation measures will be described in the Final Environmental Impact Statement.

Wildlife Effects

Removal of woodland, grassland and wetland vegetation will cause a reduction in the available wildlife habitat. The proposed action would alter about 693 acres of these natural vegetation types. In addition, about 404 acres of cropland and developed land would be affected.

The construction of the highway will create 2 new habitat types: the grassy right-of-way vegetation and the shrubby edge (ecotone) vegetation along forested sections. These new habitats will result in an increase in populations of several species of small mammals and song birds (Michael 1976). On the other hand, loss of the habitats which originally occupied the highway site, will cause reduction in numbers of other wildlife species. Since the paved highway and shoulders represent a permanent loss of habitat for any animals found in the project area, the overall effect of the project will be a net loss of wildlife habitat. For example, studies by Ferris et al. (1977) have shown that the population levels of breeding birds within the right-of-way will be about half that supported by the natural habitat.

Population Changes

Species composition will be changed. Species of wildlife which live in grassland and forest edges will increase as a result of highway construction. The grassland and shrubby edges created in the revegetated roadsides will be better wildlife habitat than the original cropland and developed land. The roadsides will be poorer habitat than the woodlands and wetlands altered by construction.

Grassland species likely to benefit include sparrows, starlings, blackbirds, goldfinches, killdeer, crows, woodchucks, skunks, weasels, and meadow voles. Studies have shown that roadsides are also attractive to nesting pheasants and ducks (Oetting and Cassel 1970, Joselyn 1972, Voorhees et al. 1978).

Wildlife associated with forest areas such as hares, grouse, deer, coyotes, vieros, thrushes, ovenbirds, wood warblers and most woodpeckers will probably be adversly affected as a result of habitat loss. However, it is not likely that any game animals will change their local distribution or population density due to the presence of the highway.

One exception to this may be the deer wintering area north of Wadena. The 1A alternative would bisect the length of this wooded swamp. A heavy concentration of deer occurs in this area, and disruption from habitat loss, noise and road kills may greatly reduce its value for deer. The 1B alternative would have much less effect because it skirts the southern edge of the swamp instead of bisecting it.

Loss of wetlands will adversely affect species restricted to that habitat. These species include heron, bitterns, snipe, rails, blackbirds, marsh hawks, waterfowl, mink and muskrats.

Predators and scavengers such as foxes, coyotes, ravens, hawks and owls will be attracted to the roadsides due to the increase in small animals (especially meadow voles) and carrion from road-kills. Raccoons, beavers, porcupines, woodchucks and muskrats will utilize culverts, ditches, embankments and other structures created by highway construction.

Roadkills

Considerable mortality of wildlife on the highway can occur. In general, the effect of this loss on wildlife populations is unknown. Roadkill will probably be greatest immediately after highway is opened. Wildlife populations seem to "adjust" to the road's presence in a few years and mortality declines. Highways with moderate traffic volumes apparently do not create impassible barriers to most animal movement patterns (small mammals - Ferris et al. 1977, and white-tailed deer - Bellis and Graves, 1978).

Wildlife roadkills are not excepted to be a significant problem except for the deer wintering area located north of Wadena. The potential for deer roadkill at this site is higher for the 1A alternative which traverses through the center of the deer wintering area, than for the 1B alernative which passes along the southern edge of the wintering area. No other known important travel lanes for wildlife would be bisected by the proposed project.

Secondary Effects

In addition to direct removal of vegetation within the highway right-of-way, the proposed action will also have secondary effects on areas outside of the right-of-way. The most significant secondary impact is the conversion of natural vegetation and wildlife habitat to commercial and residential land uses because of developments stimulated by the provision of access. It is difficult to predict how much secondary development would be caused by the proposed action. It is certain to occur to some extent, especially near interchanges.

Measure to Minimize Harm

1. Freeway design will control secondary development better than an expressway design. The freeway would have fewer access points and stronger access control. Expressways tend to promote strip developments while freeways tend to concentrate development at interchange locations. Local zoning ordinances are also important for controlling where development occurs.

2. To minimize harm from borrow pits and waste and disposal sites, Mn/DOT will require that the contractor reshape all borrow pits and disposal sites to a natural contour including replacement of topsoil and seeding, and that no wetlands be used for borrow sources or waste and disposal sites except for constructing wildlife ponds for mitigation.

Ecological Summary

The original plant and animal communities of the project area have been greatly altered by logging, drainage and farming. The project area is in several successional stages ranging from annually disturbed row-crop fields to nearly mature stands of deciduous forest. Each successional stage has its own plant community which determines the kinds of wildlife it supports.

The right-of-way of the proposed action will include approximately 1100 acres of land. About 30-40% of this land would be paved and the rest revegetated as grassland. Roughly 15% of the right-of-way may be left undisturbed.

Impacts will be greater along the new alignments of the bypass routes where no road currently exists than along the existing alignments between towns where a highway facility is already in place. The 3 major areas of habitat shown on the Natural Features Map, and other wetland areas are the sites which would be most adversely affected by highway construction. The impacted biotic communities will be largely replaced by new plant and animal associations. Although species composition and diversity will be changed, these communities can sustain the necessary nutrient and energy transformations to maintain the existing food chains and ecosystem integrity.

Measures to Minimize Harm on the Natural Environment

1. Select the alternative and design modifications which minimize encroachment into the 3 major areas of wildlife habitat and other wetlands.

2. Wildlife use of the roadsides will be enhanced by minimizing mowing and allowing native woody vegetation to encroach into the right-of-way to the maximum extent possible.

Air Quality	The air quality impact of the proposed improvement has been analyzed. The proposed improvement is not anticipated to have significant air quality impacts and is considered consistant with the approved State Implementation Plan (SIP).
MCPA Memorandum Of Understanding	A memorandum of understanding with the Minnesota Pollution Control Agency (MPCA) specified: (1) that prior consultation with the MPCA is considered as accomplished for highway sections outside of a Standard Metropolitan Statistical Area (SMSA); and (2) an air quality analysis, which demonstrated that the project is considered consistent with the approved SIP, is considered as accomplished for highway proposals outside of SMSA where the annual average daily traffic is not expected to exceed 20,000 vehicles per day (including intersecting traffic) within 10 years following construction. This highway proposal meets these criteria.
Screening Procedure	The EPA 1975 Volume 9 screening procedure, Evaluating Indirect Sources, updated with the EPA 1978 (Mobile One) emission factors was also used to estimate the peak carbon monoxide concentration at the nearest critical receptors along this project. The screening procedure assumptions include a 1 meter per second wind at 10 degrees to the roadway (variable direction at intersections), a Pasquill-Gifford stability classification of "D", an 8-hour persistence factor of 0.6, 10% cold starts at 20 degrees F, and a 1975 background concentration of 5 and 2 ppm for 1- and 8-hour periods, respectively. The 1975 background concentration for rural areas is 1 ppm for both the 1 and 8-hour periods. The following 1- and 8-hour concentrations have been calculated (and background concentrations added) for the critical receptors. Daily volumes utilized are in parenthesis.

Table 13 Carbon Monoxide Predictions in Parts Per Million

Receptor Location	Year 1987 1 hour	Year 1987 8 hour	Year 2000 1 hour	Year 2000 8 hour
(1) Approx., 3 miles east of the East Corp. limits of Aldrich (residence) 4-lane divided road (115 ft. north of proposed westbound roadway	1.2* (5050 AADT)	1.1*	1.5* (6570 AADT)	1.1*
(2) Present U.S. 10 & 4th St. signalized intersection in Staples. (Business w/upstairs apt. 34 ft. north of existing U.S. 10 centerline)				
a) with bypass constructed	5.1** (2360 AADT)	1.6**	3.2** (3080 AADT)	1.3**
b) No build	11.6** (8760 AADT)	3.1**	6.9** (10,220 AADT)	2.0**
c) 4-lane upgrade thru-town (N.E. quadrant of 4th St. & U.S. 10 in Staples. A doctor's office 198 north of U.S. 10 centerline	5.6** (8760 AADT)	1.7**	3.3** (10,220 AADT)	1.4**

* Rural Background Concentration Used
** Urban Background Concentration Used

Federal and State Air Quality Standards

Although the do-nothing alternate would increase the concentrations at the present signalized intersection in Staples (worst in town receptor), all predicted concentrations are well below the Federal Standards of 35 ppm and 9 ppm and the Minnesota Standards of 30 ppm and 9 ppm for 1- and 8-hour concentrations, respectively.

Lead Analysis

The Minnesota Department of Transportation checked with the Minnesota Pollution Control Agency (MPCA) on December 15, 1978 and was informed that there are no lead monitoring results and no known point sources of lead in the project area.

An analysis of the airborne lead from this project indicates no violations of the lead standard either currently or after construction of the proposed project.

The airborne lead concentration (worst case) at the nearest critical receptors along the proposed project has been analyzed using procedure based upon a January 31, 1978 FHWA memorandum, "Proposed National Ambient Air Quality Standard for Lead". This procedure has been reviewed by the FHWA and the MPCA. This analysis takes into account major crossroads and parrallel highways as this proposed project. No violations of the lead standard (1.50 micrograms per cubic meter) were indicated. The present (1978) highest concentration is estimated at 0.4 micrograms per cubic meter. The highest concentration one year after completion of construction (1987) is estimated at 0.04 micrograms per cubic meter.

Noise

Roadways typically represent a major potential noise source. The proposed U.S. 10 improvements (Expressway/ Freeway Design) involve the construction and/or reconstruction of a highway section with full access control on the proposed bypass segments and partial access control on the rural segments and, thus constitute a type 1A project according to Volume 7, Chapter 7, Section 3 of the Federal Aid Highway Program Manual (FHPM 7-7-3). In accordance with the requirements of FHMP 7-7-3, the probable impacts of the alternates under consideration have been analyzed and a separate "Preliminary Noise Analysis Report" and "Minnesota State Noise Standards Supplement" have been prepared. These reports will be distributed to the U.S. Environmental Protection Agency (EPA) and the Minnesota Pollution Control Agency (MPCA) for review and comment. Informational copies of these reports will also be distributed to the local units of government bordering U.S. 10. Subsequent to the selection of a preferred alternative a "Final Noise Report" will be prepared.

The following information represents a summary description of the existing and projected noise conditions, the probable noise impacts as well as an evaluation of abatement measures. A more detailed explanation of this information can be found in the "Preliminary Noise Analysis Report" and Minnesota Supplement.

Noise Analysis

The proposed U.S. 10 improvements generally traverse agriculturally zoned land. The bypasses for Staples and Wadena also traverse scattered residentially developed and zoned areas.

A noise analysis has been conducted based upon field noise readings (measured in decibels or dB, on A weighted scale) and projected traffic volumes as identified in traffic studies F4-2 and F3-5. Noise levels for the proposed U.S. 10 alternates were predicted in accordance with the procedures outlined in the National Cooperative Highway Research Program reports 117/144. The input parameters for this modeling procedure include traffic volumes, traffic speeds, and the physical characteristics of the roadway and surrounding area.

The future (year 2000) noise levels at each identified receptor site were predicted for all the U.S. 10 and no-build alternates using the previously described highway noise prediction model. The traffic conditions used for this analysis are the anticipated year 2000 Design Hourly Volumes of autos and trucks and the corresponding average operating speeds.

The probable impact of each of the alternates under consideration for U.S. 10 were analyzed by comparing the predicted year 2000 noise levels to the Federal Highway Administration Design Noise Levels and Minnesota Pollution Control Agency State day and nighttime standards identified in NPC 2.

Noise impacts are expressed as L_{10}-dBA, the sound level that is exceeded 10% of the time for the period under consideration, (or L_{50}-dBA, the sound level that is exceeded 50% of the time for the period under consideration), and measured in decibels (dB) that involves the human audibility of certain frequency levels (A), commonly referred to as dBA.

Permitted noise levels vary with the type of land use predominating within an area. Both the FHWA and the State of Minnesota have adopted regulations aimed at minimizing noise impacts to receivers.

The FHWA Design Noise Levels and MPCA Noise Standards and land use relationships are identified in Table 15.

Probable Noise Impacts of Alternates

Based upon analysis of existing levels it has been determined that numerous receptors currently are exposed to noise levels which exceed federal design noise levels and Minnesota State noise standards. The following table shows the number of receptors, along existing U.S. 10 which will be exposed to noise levels currently exceeding FHWA and MPCA noise levels and standards.

Table 14 Sites Currently Exceeding State Standards and Federal Design Noise levels

Location	Federal Design Noise Levels		Minnesota Noise Standards			
	Category B 70 dBA	Category C 75 dBA	NAC 1 (65 dBA)L_{10}	(60 dBA)L_{50}	NAC 2 (70 dBA)L_{10}	(65 dBA)L 0
Wadena	6	16	9	6	54	0
Wadena to Verndale	1	0	1	0	0	0
Verndale	6	0	7	1	11	0
Verndale to Aldrich	0	0	0	0	0	0
Aldrich	0	0	2	0	0	0
Aldrich to Staples	0	0	0	0	0	0
Staples	40	0	45	40	31	0
Motley	0	0	24	0	1	0

Table 15. FHWA Design Noise Levels And MPCA State Noise Standards

DESIGN NOISE LEVEL/ACTIVITY RELATIONSHIPS--FHWA [1]

Activity Category	Design Noise Level -L_{10}	Description of Activity Category
A	60 dBA (exterior)	Tracts of lands in which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, or open spaces or historic districts which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	70 dBA (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas and parks which are not included in Category A and residences, motels, hotels public meeting rooms, schools, churches, libraries and hospitals.
C	75 dBA (exterior)	Developed lands, properties or activites not included in categories A and B above.
D	n/a	Undeveloped lands.
E	55 dBA (interior)	Residences, motels, hotels, public meeting rooms schools, churches, libraries, hospitals and auditoriums.

[1] FHPM 7-7-3,

NOISE LEVEL STANDARDS--MINNESOTA POLLUTION CONTROL AGENCY[2]

Category	General Land Use Types	Daytime Noise Level	Nighttime Noise Level (10 PM to 7 AM)
NAC-1	Residential & Institutional	L_{10} of 65 dBA L_{10} of 60 dBA	L_{10} of 55 dBA L_{10} of 50 dBA
NAC-2	Commercial & Recreational	L_{10} of 70 dBA L_{10} of 65 dBA	L_{10} of 70 dBA L_{10} of 65 dBA
NAC-3	Industrial	L_{10} of 80 dBA L_{10} of 75 dBA	L_{10} of 80 dBA L_{50} of 75 dBA

[2] NPC-2 - Noise Standards; Adopted September 17, 1974.

No-Build

Analysis of the no-build alternate reveals that the present noise levels on U.S. 10 may increase by up to 2 decibels by the year 2000. The addition of 2 decibels will increase the number of receptors exposed to noise levels exceeding FHWA design noise levels and MPCA state day and/or nighttime standards. The following table identifies the number of receptors, along existing U.S. 10 which are expected to be exposed to noise levels exceeding Federal and State Noise Standards in the year 2000.

Table 16 Noise Receptor Sites Exceeding Standards for the No Build Alternative (Year 2000)

Location	Federal Design Noise Levels		Minnesota Noise Standards			
			NAC 1		NAC 2	
	Category B 70 dBA	Category C 75 dBA	(65 dBA)L_{10}	(60 dBA)L_{50}	(70 dBA)L_{10}	(65 dBA)L_{50}
Wadena	7	32	10	9	70	15
Wadena to Verndale	2	0	4	3	1	0
Verndale	7	2	7	6	11	0
Verndale to Aldrich	0	0	1	1	0	0
Aldrich	2	0	3	0	0	0
Aldrich to Staples	2	0	6	2	0	0
Staples	45	13	45	40	13	9
Motley	7	0	28	1	20	0

Other U.S. 10 Alternates

For each of the proposed U.S. 10 alternates a site/receptor noise level analysis has been conducted based on future (year 2000) traffic projections. The results of this analysis revealed those sites which are likely to experience noise levels exceeding FHWA design noise levels and MPCA day and nighttime standards. Those sites not exceeding FHWA design noise levels, but which are likely to experience substantial noise level increases of 10 dBA or more were also identified. The results of this analysis identifying the number of sites exceeding FHWA or MPCA noise standards or experiencing substantial increases in noise levels are summarized in TABLE 17.

Noise Abatement Measures

For those sites which will experience predicted noise levels exceeding FHWA design noise levels and MPCA State noise standards, noise abatement measures have been considered.

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Predicted Noise Levels

No-Build

Analysis of the no-build alternate reveals that present noise levels on U.S. 10 are expected to increase by the year 2000 as a result of increasing traffic volumes. As traffic volumes and noise levels increase, additional residential and commercial receptor sites will be exposed to noise levels exceeding FHWA design noise levels and Minnesota state noise standards. The following table which identifies the number of receptors along sections of existing U.S. 10 are expected to be exposed to noise levels exceeding standards in the year 2000.

Table 16 Noise Receptor Sites Exceeding Standards for the No Build Alternative (Year 2000)

Location	Federal Design Noise Levels		Minnesota Noise Standards			
			NAC 1		NAC 2	
	Category B 70 dBA	Category C 75 dBA	(65 dBA)L_{10}	(60 dBA)L_{50}	(70 dBA)L_{10}	(65 dBA)L_{50}
Wadena	7	25	9	7	66	14
Wadena to Verndale	1	0	4	3	0	0
Verndale	7	11	7	7	11	11
Verndale to Aldrich	0	0	1	1	0	0
Aldrich	2	0	3	3	0	0
Aldrich to Staples	2	0	6	6	0	0
Staples	45	31	45	44	33	3
Motley	26	21	29	29	34	17

Other U.S. 10 Alternates

For each of the proposed U.S. 10 alternates a site/receptor noise level analysis has been conducted based on future (year 2000) traffic projections. The results of this analysis revealed those sites which are likely to experience noise levels exceeding FHWA design noise levels and MPCA day and nighttime standards. Those sites not exceeding FHWA design noise levels, but which are likely to experience substantial noise level increases of 10 dBA or more were also identified. The results of this analysis identifying the number of sites exceeding FHWA or MPCA noise standards or experiencing substantial increases in noise levels are summarized in TABLE 17.

Noise Abatement Measures

For those sites which will experience predicted noise levels exceeding FHWA design noise levels and MPCA State noise standards, noise abatement measures have been considered.

Table 17. Sites exceeding Noise Standards for the "Build" Alternatives (Year 2000)

NUMBER OF SITES FOR EACH ALTERNATE EXCEEDING NOISE STANDARDS - YEAR 2000			WADENA 1A	WADENA 1B	WADENA 2	WADENA TO VERNDALE	VERNDALE 1A	VERNDALE 1	VERNDALE 2	VERNDALE TO ALDRICH	ALDRICH 1	ALDRICH 2	ALDRICH TO STAPLES	STAPLES 1	STAPLES 2	MOTLEY 1	MOTLEY 2
Total Number Sites	Residential		7	7	10	4	4	6	8	1	4	3	6	12	45	5	29
	Commercial		0	0	71	1	1	1	11	0	5	0	0	3	45	0	35
Number Sites Exceeding Federal Design Noise Levels	(70 dBA)	B	0	0	7	3	0	5	7	1	3	3	4	4	45	2	28
	(75 dBA)	C	-	-	33	0	0	0	11	-	2	-	-	0	42	-	26
Number Sites Exceeding State Daytime Noise Standards NAC 1	(65 dBA)	L 10	2	3	10	4	2	6	7	1	4	3	6	11	45	2	29
	(60 dBA)	L 50	1	1	9	4	2	6	0	1	4	3	6	5	45	2	29
Number Sites Exceeding State Daytime Noise Standards NAC 2	(70 dBA)	L 10	-	-	70	1	0	1	11	-	2	-	-	2	45	-	35
	(65 dBA)	L 50	-	-	34	1	0	1	11	-	2	-	-	0	42	-	33
Number Sites Exceeding State Nighttime Noise Standards NAC 1	(55 dBA)	L 10	4	7	10	4	4	6	8	1	4	3	6	11	45	4	29
	(50 dBA)	L 50	0	0	6	2	1	5	8	1	3	3	6	3	45	0	26
Number Sites Exceeding State Nighttime Noise Standards NAC 2	(70 dBA)	L 10	-	-	0	0	0	0	0	-	0	-	-	0	0	0	0
	(65 dBA)	L 50	-	-	0	0	0	0	0	-	0	-	-	0	0	-	0
Number Sites Not Exceeding Federal Design Noise Levels But Exposed To Substantial Increases of 10 dBA or more.			5	7	0	1	5	2	0	0	0	0	0	10	5	2	4

Timber noise walls have been evaluated as an abatement measure to reduce predicted noise levels (5 to 10 decibel reduction). Preliminary analysis indicates that partial access control on the urban sections of U.S. 10 the distance between many of the site receptors on rural segments and the cost of wall construction may not justify the construction of noise walls as an abatement measure. Further cost analysis of noise wall construction will be conducted and documented in the Final EIS and Final Noise Report.

Mounding and/or a combination of timber walls and mounding were considered. Due to the lack of earth material at the sites and the cost per cubic yard of borrow, this abatement measure was also deemed not economically justified.

Noise abatement measures were also evaluated for the sites which do not exceed FHWA design noise levels, but which do experience substantial increases in noise levels of 10 dBA or more. Preliminary analysis indicates that timber walls, timber walls and mounding or mounding alone are not economically justified. Therefore, no abatement measures of this type are proposed for these sites.

Noise Insulation

Noise insulation of private residences or businesses is not within the scope of the Federal Highway Administration regulations pertaining to noise (FHPM 7-7-3). If the noise impact is especially severe and if conventional abatement measures are unacceptable this extraoridnary measure could be considered on a case by case basis. FHPM 7-7-3, does not define "especially severe impacts". THis determination must be made by Mn/DOT. Any proposal of extraordinary abatement measures must be approved by the Regional Federal Highway Administrator.

Traffic Control

Prohibition or time use restrictions (curfews) of heavy commercial vehicle types (trucks) on U.S. 10 would hinder commercial transportation in the central portion of the State as well as hinder or cut off needed services to the rural and urban communities along U.S. 10 between Wadena and Motley. U.S. 10 serves as an important link between I-94 at Moorhead and the Minneapolis-St. Paul Metropolitan Area.

Truck Noise Standards

As mentioned, the noise predictions for the proposed projects are based on projected traffic counts for the year 2000, but use present day traffic noise emissions for comparison. At the present time there are programs in operation to lower the noise output of traffic related noise generators. Areas of concern are muffling systems on trucks and vehicle tire designs. The Minnesota Pollution Control Agency, in cooperation with the Environmental Protection Agency, has established a maximum noise level of 83 dBA at 50 feet for trucks traveling at 35 miles per hour.

This standard became effective on January 1, 1978, and applies only to new trucks manufactured after that date. By January 1982, this standard will be lowered to 80 dBA. The establishment of such "noise source" standards may help minimize the impacts of noise to adjacent receivers.

Based upon the analysis it has been determined that noise abatement measures (traffic management measures) as stated in FHPM 7-7-3, Paragraph 7.b. (5) would not be practical for the elimination or reduction of highway noise impacts on the affected receptors on this project. Therefore, exceptions to FHWA Noise Levels will be requested.

Construction Noise

Construction noise has been considered and no long term impacts are anticipated. Those residences located near proposed bridges may be exposed to excessive noise levels due to pile driving operations. Effects will be short term and limited to daytime activity hours. The Minnesota Standard Specifications for Highway Construction Section 7, Subsection 1701, states in part that the contractor shall comply with all applicable laws, ordinances, regulations, orders and decrees in the performance of the construction. This would include any local noise control laws.

Local Coordination and Land Use Planning

The Minnesota Department of Transportation has furnished all Cities, Counties and Regional Development Commissions in Minnesota with copies of "The Audible Landscape".

This handbook provides guidance for land use planning, plat layout and building design for compatible development near traffic noise corridors.

A copy of the "Preliminary Noise Analysis Report" and Minnesota Noise Supplement will be furnished to local officials to assist them in developing future land uses adjacent to the proposed highway project.

In addition, local officials will be informed that noise abatement measures will not normally be approved by the Federal Highway Administration for those activities and land uses which come into existence after the dates of public knowledge of the U.S. 10 project. The date of public knowledge is the date following FHWA highway location approval, when Mn/DOT officially notifies the public of the adoption of the location for proposed improvements to U.S. 10.

Plat Reviews

Proposed plats for land adjacent to all Minnesota State Highways are submitted to the Department of Transportation for review prior to plat approval by local units of government. When potential for noise impact is identified in the review process, it is noted in Mn/DOT review comments to insure that the approving authority is aware of an existing or possible highway noise impact on land areas proposed for development.

SOCIAL-ECONOMIC FEATURES

Right of Way Acquisition

The Right of Way needed for this project will affect farms, residences, and businesses. (See Table 14). In some instances, severed farmlands may be too small for normal farming operations and will likely be converted to other uses. Just compensation for farmland severance will be made.

Table 18 Farms, Residences and Businesses Affected by Alternate Routes

Segment, Alternative		Farms Affected (but not severed)	Farms Severed	Residences Relocated	Residential Land Affected	Businesses Affected
Wadena	1A	4	13	9	1	1
Wadena	1B	7	9	9	0	1
Wadena	2		0	7		27
Wadena to Verndale	1	7	0	3	0	2
Verndale	1	1	2	7	0	1
Verndale	1A	5	0	3	0	0
Verndale	2		0	4		10
Verndale to Aldrich	1	9	0	0	1	0
Aldrich	1	2	1	6	0	1
Aldrich	2		0	0		1
Aldrich to Staples	1	11	0	1	3	0
Staples	1	5	1	3	0	3
Staples	2		0	30		22
Staples, T.H. 210	A	2	1	3	0	1
Staples, T.H. 210	B	1	0	1	0	2
Motley	1	10	5	5	0	1
Motley	2		0	9		7

Farmland Effects	With freeway designed bypasses the right-of-way would include about 670 acres of cropland and grassland. The U.S. Department of Agriculture, Soil Conservation Service, has reviewed this project and has determined that a few small areas of prime farmland occur along the proposed action. (See letter in Section XI). The total area is 38.5 acres. No unique farmlands were identified. Nine acres of these 38.5 acres will be involved in the proposed project as follows: Route 1A, Wadena Bypass, will require 2 acres. This could be avoided by choosing Route 1B. The other 7 acres would be needed for Route 1 in the rural segment between Aldrich and Staples. There is no prudent alternative in this location, since the highway alignment can be moved northward only and this would require even more of the prime farmland. The possibility of reducing the median width to minimize prime farmland loss will be studied.
Relocation Survey	A relocation survey will be conducted for the proposed improvement. Preliminary contact with real estate agencies and examination of newspaper ads indicated that an adequate supply of decent, safe and sanitary houses appear to exist within the project area.
Compensation to Displacees	Fair and just compensation will be made for the lands and buildings affected by the right of way needs for the proposed improvement. A comprehensive relocation assistance and compensation program will be available to assist displacees. Rising housing costs, interest rates and moderate income may present a problem for some families. This potential concern should be alleviated with supplemental housing payments and interest differential payments. Assistance will be provided wherever required. It is not anticipated that any minority groups will be affected by right of way acquisition.
Impact on Retail Businesses	U.S. 10 presently passes through business districts at Wadena, Verndale, Aldrich, Staples, and Motley. Numerous traffic sensitive retail businesses exist along U.S. 10 and other state highways within the project area. Since the proposed improvement may involve the construction of a bypass around the cities of Wadena, Verndale, Staples and Motley, a Mn/DOT business survey was conducted in 1978. From this survey, various predictions and assumptions can be made regarding the affect of this project upon the economic status of the local business climate. In addition, many "Bypass" studies written in other states and sections of Minnesota were reviewed.

These reports indicate that those communities showing economic and physical growth are least adversely affected by the construction of a highway bypass. Businesses dependent on local area trade generally show sales trends similar to those experienced before construction of a bypass facility.

These studies indicate that those traffic sensitive businesses (eating and drinking establishments and service stations) dependent largely on passing traffic may suffer economic hardships when the bypass is constructed. The studies also point out that most highway oriented businesses have the potential to make adjustments and/or broaden their range of services to accomodate a more dependent or variety demanding clientele. After making these changes, many businesses can recover from initial losses resulting from being bypassed. As an example, gas stations may increase services by marketing tires and other auto accessories or specializing in an auto repair service. Studies prepared in Michigan have revealed that after having made level of service adjustments, gross sales steadily increase even though they are no longer adjacent to the main roadway.

Cooperative Planning

A partnership must be formed between prospective developers, local governmental units having planning and zoning responsibility, and Mn/DOT when growth along highway bypasses is planned. The local governmental units must consider their ability to provide and maintain utility services. Mn/DOT must consider the impact that residential/business growth will have at intersections, interchanges, and frontage roads. Developers must consider the cost-effectiveness of providing various levels of services at highway bypasses.

Impact on Regional Planning Community Tax Structure

Highway bypasses will usually effect the tax structure of communities in several different ways. Some land values increase, some decrease, and in most instances stay virtually the same. A logical assumption which usually can be made is that a highway bypass will improve the local tax base while improving the level of services to the community. Even though in the most extreme situations, new establishments/business will generally have a greater assessed valuation than those that remain but are affected by the bypass. Growth of new businesses within or near Central Business Districts (C.B.D.) will become a likely result of a highway bypass project. These new establishments find the pleasant and convenient shopping climate of the C.B.D. free of truck and long distance travelers, provides a stimulating local business climate. New businesses will, of course, become a factor in the expansion of the local tax base.

Social - Economic Secondary Effects

Once a highway bypass is completed, the development of new highway oriented businesses often occurs at interchanges/intersections and along frontage roads. These establishments generally cater almost exclusively to the traveling public. Franchise establishments often appear as opposed to locally owned and operated businesses.

Increased demand for city sewer and water for commercial and residential developments may be induced by the proposed project.

Social - Economic Impact of Wadena Alternative 1A

This alternate includes an interchange just west of the city limits. This interchange will provide access to the business district via old Highway 10 only from the east bound lane of new U.S. 10. Westbound traffic leaving the business district via old U.S. 10 will also have access to new U.S. 10 by passing over both lanes of new U.S. 10 and making a free-flow merge into westbound traffic. Typically, a number of rural home sites exist near free standing growth centers such as Wadena. This particular interchange is proposed in an area in which there are nine residences which would be displaced. This corridor as proposed, will consume good farm acreage and sever thirteen farms.

This severance will leave several areas detached from the core of the farming operations (all farmsteads are located north of the highway corridor) and undoubtedly more difficult to manage properly. This alternative has also been determined to have an adverse impact upon the large environmentally sensitive area north of Wadena. The corridor virtually divides this wildlife area in half disrupting habitat areas and the natural movement of wildlife. species. The City of Wadena, Leaf River Township, and Wadena County have recently completed a "NORTH AREA STUDY" which recommends a land use plan for properties near and adjacent to the new highway location. The study based its findings on the assumption that Alternative Number 1A would become the preferred corridor.

The full diamond interchange at the junction of U.S. 10 and 71 will have the same approximate location should either Alternate 1A or 1B be selected. The interchange will have good development potential, dependent upon favorable soil and water conditions.

Commercial or residential development will likely occur along relocated C.S.A.H. 4 on the east end of either Alternate 1A or 1B.

Social - Economic Impact of Wadena Alternative 1B

This alernate contains a full diamond interchange outside of the west city limits of Wadena. (See Figure 18). This interchange will provide access to the business district via old highway 10 from both the west and east bound lanes of new U.S. 10. The area is free of residential and commerical development with a small number of homes and businesses south and west of the interchange location. This corridor passes through a planned medium density residential area along the western limits of the city (presently being rapidly developed with residential dwellings), the southern boundary of the before mentioned wildlife area, and the southern portion of an area recommended for low density residential housing west of the County Line. East of the County Line, another recommended medium density residential area and industrial park area will be divided by Alternate 1B. Inasmuch as this corridor is south of Alternate 1A, the proposed interchange will have a lesser effect upon existing farming operations. The interchange and highway corridor is located at the perimter of fields and therefore causes minimal field severance of nine farms. Alternate number 1B will also have a much lesser impact upon the environmentally sensitive wildlife area because of its location along the perimeter. This alternative will, however, have an impact upon the "west" medium density housing area. Several homes have recently been erected with several more soon to be built. While these new houses are not usually difficult to relocate, they may cause alternate 1B to be more costly than alternative 1A. The development potential adjacent to either of the interchange locations is considered good. Topography, drainage, accessability, site distances, etc. are all conductive to highway orientated development at either of these locations. From U.S. Highway 71, east and south, alternatives 1A and 1B share a common corridor.

The second interchange at Wadena will be located at the junction of U.S. Highway 71. The potential for commercial development, as recommended in the NORTH AREA STUDY, is basically good as discussed earlier. Specific areas must be analyzed on a case by case basis.

Social - Economic Impact of Wadena Alternative 2

This alternative consists of an upgrade of existing U.S. 10 through Wadena. While this alternate would not involve the taking of farmland, new residential property, or wildlife habitat, it would affect 27 existing businesses and cause further traffic conjestion. This alternative would involve the taking of parkland (Sunnybrook City Park) and would tend to divide the city.

Social - Economic Impact of Wadena No-Build Alternative

There is currently a congestion problem in Wadena caused by at grade intersections of local streets and T.H. 10. This congestion is aggravated by the periodic blockage of the Northern Pacific Railroad line by railroad cars and the subsequent traffic congestion it causes. The no build alternate would further aggravate this problem. Projected increases in traffic volume could add to the level of noise and air pollution. The no build alternate appears to have the least potential for disruptive social or economic impacts.

Social - Economic Impact of Verndale Alternative 1A

This alternate within the project proposal includes 3 at grade intersections at Verndale.

The westerly intersection is located at County Highway Number 111. Development near and adjacent to this intersection will be limited by the Wing River floodplain, the existing highway 10.

The central intersection is located near the northern border of the city at the junction of C.S.A.H. 22. The development potential is considered good northwest of this intersection where open farmland currently exists. Potential at other locations are limited by county road locations and the location of existing farm and residential buildings.

The easterly intersection is located near the edge of an existing drive-in theatre. Development potential is considered excellent at this intersection. The drive-in theatre occupies the southwest quadrant and the remaining 3 quadrants consist mainly of agricultural lands. The topography, site distances, etc. appear conductive to development, either commercial or residential. This alternate would displace three homes and sever farms.

Social - Economic Impact of Verndale Alternate 1

This alternate is a modification of 1A in that it passes through the city limits rather than following the northern and eastern perimeters. The western and eastern intersections would be basically the same as described during the discussion of Alternate 1A. Intersections would be necessary at both Clark and Main city streets rather than the single intersection described at Alternate 1A. Alternate 1 would produce adverse social effects because of dividing a residential area, thus requiring school children, senior citizens, and other pedestrians to cross a major 4 lane highway in order to attend school and obtain community services. It would also displace seven homes, one business and sever farms.

Social - Economic Impact of Verndale Alternative 2	Another potential alternative would be an upgrading of existing U.S. 10 in place. This alternate would cause severe economic impact because of having to acquire and relocate ten businesses, four residences and three turkey production facilities. In this alternative, the cost and degree of economic impact would be great and not practicable.
Social - Economic Impact of Verndale No-Build Alternative	Increased traffic volumes would further restrict the movement of pedestrians to and from the senior citizens center and the school. School age children and the elderly are particularly dependant upon walking as a means of transportation. Therefore these groups would either be subject to increased traffic hazards or become less mobile. The impact of the no build upon these however would not be as great as that of alternate 2. Alternate 1A and the no build appear to have the least potential for disruptive social or economic impacts.
Social - Economic Impact of Aldrich Alternative (Route 1)	Alternative Route 1 at Aldrich would be located approximately 1 block north of existing U.S. 10 and will bypass the business district. This alternate could adversely affect the seven business located along existing T.H. 10. It will also displace eight residences and one business and sever one farm.
Social - Economic Impact of Aldrich Alternative (Route 2)	Alternate Route 2 at Aldrich is an upgrading of existing U.S. 10 through town. Two at grade intersections will provide access to the northern portion of the town. The west intersection provides an entrance to third street which mainly services a supper club. Very little additional development potential exists at this proposed intersection. C.S.A.H. 26 currently travels through the center of Aldrich in a north-south direction. A portion of this county highway will be relocated to the east and will junction with U.S. 10 near the east edge of the city. Some minimal development potential exists at this intersection. This alternate would displace one business.
Social - Economic Impact of Aldrich No-Build Alternative	The main residential area of Aldrich is located south of T.H. 10. Increased traffic volumes through town would restrict pedestrian (high proportion of elderly people in the population) movement to business establishments north of T.H. 10. The restriction of pedestrian movement caused by the no-build alternative would be similar to that brought about by alternate route 2.
Social - Economic Impact of Staples Alternative (Route 1)	Alternate Route 1 bypasses the city to the north. Three interchanges are included as a part of this proposal. The western interchange will provide access, via existing U.S. 10 into the city. Development potential is considered good at this interchange. The central interchange is proposed to be located near the northern edge of the city between the cemetery and the elementary school. Access into Staples will be provided via Fourth

Street. Potential for future development is considered limited because of the amount of existing development within the area and because the school district owns much of the adjacent land. The eastern interchanges will provide access into the city via existing U.S. 10. It will also provide access to T.H. 210, which will be relocated from its existing location on Sixth Street. Development potential at this new location appears to be limited because of the large amount of wetland/wildlife area and existing development within the area.

Social - Economic Impact of Staples Alternative (Route 2)

Alternate Route 2 would be up to upgrade the existing alignment through the city. This alternative is not considered viable because of the severe impact it will have upon the large number of businesses (22) and residences (30) along the route. A very significant portion of the city's business district would have to be acquired and relocated.

Social - Economic Impact of T.H. 210 Alternate A & B in Staples

Alternate B would pass through Thorn's Subdivision and consequently would have more of an adverse social-economic impact than Alternate A which would be located west of this housing subdivision.

The area around the intersection of relocated T.H. 210 and U.S. 10 has limited development potential.

Social - Economic Impact of Staples Bo-build Alternative

A parking problem currently exists along Second Avenue. The no build would tend to aggravate this problem. Alternate 1 and the no build alternate appear to have the least potential for disruptive social economic impacts. Increased congestion due to increased traffic volumes could add to the level of noise and air pollution.

Social - Economic Impact of Motley Alternative (Route 1)

At the western edge of Motley it is proposed that an at grade intersection with a township road to be provided for use by residents in the rural areas to the north and south. Space is available for development at each quadrant utilizing existing agricultural lands. (See Figure 26).

New U.S. 10 is proposed to loop north of old U.S. 10 east of this intersection and then curve to the south along the western fringes of the city. Eastbound "off" and westbound "on ramps will be provided as follows: Traffic moving east may exit at this location and either enter the main business district or continue east across the Crow Wing River on T.H. 210. Traffic coming west on T.H. 210, or westbound traffic leaving the business district, will utilize an "on" ramp when gaining access to new U.S. 10. Limited development potential exists at this general location due to the fact that the "exit" and "entrance" ramps will carry one way traffic only. In addition, the geometrics of these ramps does not lend itself well to adjacent development.

	A full diamond interchange is proposed at the southern edge of Motley. Northbound traffic will be able to exit at this interchange and enter the business district from the south on proposed T.H. 64 (old U.S. 10). Traffic desiring to travel southwest into the rural area will also be accommodated at this interchange. Motorists desiring to travel on new U.S. 10 (north or south) from other roadways may gain access at this interchange. Located at the southern end of the frontage road is Morey Fish Company. A representative of the fish company has expressed an opinion that both immediate and long range loss of income will result from not having an at grade entrance south of his establishment. He has stated that a significant amount of business is now conducted with motorists traveling northwest on U.S. 10 who are impulsively stopping and buying. During a public meeting, held in Motley, a statement was given by the Mayor indicating that the city will not approve final plans unless a cross-over and entrance to the frontage road is provided south of the Fish Company. This is possible, at this location, given current Mn/DOT standards. This entrance to the frontage road would likely reduce the potential economic impact to the City of Motley. The potential for future development and community growth is considered very good within the vicinity of this intersection. This alternate would displace seven residences, one business, and sever five farms.
Social - Economic Impact of Motley Alternative 2	Another alternative, Route 2 at Motley, would be to upgrade existing U.S. 10 through the city. This alternative would displace eleven residences; and seven businesses.
Social - Economic Impact of Motley No-build Alternative	Possible restriction of pedestrian movement may occur. Given the high percentage of traffic sensitive businesses in Motley the no build alternate could have a beneficial economic impact.
4(f)	See Section V for the discussion of impacts for different alignment alternatives.
Impacts on Historical/ Archeological Sites	No historical sites will be affected by the proposed action. One archeological site (Steinbrecker Site) will be involved by proposed action (See Section III).

CONSTRUCTION IMPACTS

The construction of the proposed action would have a number of impacts associated with it. Most of these impacts would be temporary in nature and would terminate with the completion of the facility. The impacts would be temporary air, noise and water pollution, erosion during construction, traffic management during construction including detours and bypasses, mixing plant operations and borrow pit areas outside the right-of-way.

Proposed Mitigation Air, Noise, Water Pollution and Erosion Controls

The Mn/DOT Standard Specifications for Highway Construction provides controls over the contractor's construction operations. This document can be augmented by special provisions in the contract to provide additional controls relating to the prevention of air, noise and water pollution and erosion control.

Air and noise pollution by construction equipment will be subject to the standards established by the Minnesota Pollution Control Agency, and applicable Federal Agencies.

Water pollution and erosion will be controlled by monitoring the contractor's progress and limiting the amount of surface area of erodible earth exposed by his operations. Examples of these operations are cleaning out grubbing, excavation, borrow and embankment, grading, paving, and revegetation work. Once the side slopes are shaped, immediate revegetation of these slopes will commence by sodding, seeding or ground cover and a mulch placed to limit erosion and thus, water pollution.

Some temporary measures may also be used for erosion control such as slope drains, dikes, sediment basins, and temporary quick-growing grasses which will provide temporary cover, but will not compete with permanent grasses later.

During construction, polluting materials such as gasoline, oil and hydraulic fluids will be stored in areas which will not allow spills to reach streams or storm water collection systems.

Traffic Safety and Management in Construction Areas.

Construction of the proposed action will cause some distruption to the local traffic patterns. Obviously, the no-build alternative will not have a traffic management impact.

Unless otherwise provided, the road while undergoing improvement shall be kept open to traffic. Where so provided in the Contract or when ordered by the Engineer, traffic shall be directed over an approved detour route.

Minnesota Standard Specifications for Highway Construction require the Contractor to keep the portions of the project being used by public traffic, whether it be through or local traffic, in such condition that the traffic will be adequately accommodated at all times. The Contractor shall provide and maintain temporary approaches, crossings, and intersections with trails, roads, streets, businesses, parking lots, residences, garages, farms and other abutting property in acceptable condition.

This project would require a traffic management and safety plan for motorists, bicyclists and pedestrians which would be incorporated into the contract special provisions.

Mixing Plant Operations

Any mixing plants which would be required for construction materials would be required to meet local, state and federal pollution requirements.

Borrow Pit Treatment

The construction of the proposed action may require fill materials from a site outside of the construction limits (a borrow pit). Should a borrow pit be used, and once it is no longer used, the site shall be restored including shaping, replacement of topsoil and revegetation on all disturbed areas.

SECTION VII
PROBABLE UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

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After the incorporation of mitigating measures during the study for the proposed action, a number of impacts will remain. The purpose of this section of the DRAFT EIS is to state these impacts which are determined to be partially or totally unavoidable after efforts at mitigation have occurred.

RELOCATION	The social impacts of relocation, such as disruption of family life, will remain even though property owners have been reimbursed financially for their losses. Some unquantifiable economic impacts will also remain for owners of commercial property due to the disruption of their plans and priorities.
REDUCTION OF TAX BASE	The proposed action will mean that land used will be permanently removed from the tax roles of local municipalities and counties.
TERRESTRIAL VEGETATION AND WILDLIFE	Approximately 328 acres of farm cropland and 693 acres of existing vegetation will be removed. As wildlife habitat, the existing vegetation varies in quality from low to very high. Because replacement vegetation will, at best, be of an intermediate value to wildlife, there will be an unavoidable alteration in wildlife populations in the local area.
ASETHETICS	The proposed action will remain a visual intrusion. Post construction landscaping will not fully mitigate the loss of existing natural features, vegetation and wildlife.
NOISE	There will be an unavoidable increase in noise levels due to the proposed action. Without very extensive mitigating measures, noise levels will, in some instances, exceed State and Federal Standards.
AIR QUALITY	No State of Federal standards will be exceeded, even without mitigation.
WATER QUALITY	Salt will be discharged to receiving waters varying in quality from low to high. A shift in the composition of aquatic vegetation to more salt tolerant species may occur in the higher quality receiving waters.
EXPENDITURE OF PUBLIC FUNDS	Implementation of the proposal will require an expenditure of at least 39.5 million dollars of public funds that theoretically could be used for other purposes.
CONSTRUCTION DISRUPTION	During the estimated 5 year construction period there will be unavoidable disruption of existing traffic patterns resulting in delays and detouring of traffic along with dust and noise due to construction.

SECTION VIII

RELATIONSHIP BETWEEN LOCAL SHORT TERM USES OF MAN'S ENVIRONMENT AND LONG TERM PRODUCTIVITY

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Land Conversion	Present usage of the majority of land included in the study area is for agriculture. Land use is presently changing, especially in the Wadena and Staples areas, and will continue to change whether or not this improvement is constructed. Much of the land presently used for farming, will be converted to residential, commercial or industrial use. This change in land use is not dependent on bypass construction but may be accelerated by it. Further development will be compatible with zoning ordinances and the controlled access feature of the proposed improvement. The proposed facility will then effectively serve both the needs of transportation and urban-suburban development. The wetland, woodland and cropland to be altered by construction of the proposed improvement will undergo what is essentially a permanent change, i.e., long term, relative to the life of the highway.
Development of Communities	The communities will continue to develop as regional trade centers, especially Staples and Wadena, due to the proximity to agricultural and tourist related businesses. Development of industrially zoned areas abutting the bypasses will attract industry and business. This will create job availability and in turn, residential development which will benefit the area. The proposed bypasses will aid in promoting the establishment or expansion of traffic and transportation oriented businesses.
Bypass Impacts	Economic hardships may occur for those traffic sensitive businesses dependent largely on present U.S. 10 traffic. This loss is only temporary in most instances. The proposed bypasses will benefit the communities in the long run by reducing traffic noise, conjestion and parking problems in the central business districts.

SECTION IX
IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed project will require the acquisition of approximately 445-1180 acres of land. A breakdown of land types is as follows:

- Agriculture Cropland	133-342 Acres
- Grassland	143-349 Acres
- Woodland	53-187 Acres
- Developed Land	56-108 Acres
- Wetlands	60-194 Acres
- Present Highway R/W	382 Acres

Lands acquired for this improvement will be utilized for highway rights of way for an undetermined length of time. This commitment should be considered irretrievable. Also, any vegetation, wildlife, crops, etc., produced within the proposed construction limits will be altered or lost.

All funds, manpower, material and energy to be used in constructing and maintaining the facility will be virtually irretrievable for other uses.

SECTION X
IMPACT ON STATE GOVERNMENT AND MULTI STATE RESPONSIBILITIES

Federal Funding	149
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IMPACT ON STATE GOVERNMENT OF ANY FEDERAL CONTROLS ASSOCIATED WITH THE PROPOSED ACTION

Federal Funding	Federal controls may be imposed as a result of conditions placed upon the issuance of Section 404 permit(s) by the U.S. Army Corps of Engineers. Also, DNR (Department of Natural Resources) Public Waters Permits will be required. Final determinations will be made when hydraulic and design information becomes available.
Executive Order 11990	Executive Orders 11990 (on protection of wetlands) and 11988 (on the protection of floodplains) impose restrictions on the use of Federal funding for construction in wetlands and floodplains. Federal funding cannot be used for construction in wetlands unless: (1) there are no practicable alternatives to avoid these areas, (2) all practicable measures have been taken to minimize harm to these areas, and (3) an opportunity for public involvement has been given.

MULTI-STATE RESPONSIBILITIES

This proposed action will have no impact on adjacent states and there are, therefore, no multi-state responsibilities involved.

SECTION XI
COORDINATION AND COMMENTS

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Coordination

A field review of the proposed project area with personnel of the U.S. Fish and Wildlife Service and Minnesota Department of Natural Resources, was conducted on October 27, 1978. The purpose was to familiarize them with the proposed action to request comment letters indicating their concerns with the project.

The Division of Highways met with the U.S. Department of Agriculture, Soil Conservation Service, at Fergus Fall on August 22, 1977, and provided maps for use in their study.

Responses to comments received from the U.S. Fish and Wildlife Service and Minnesota Department of National Resources concerning wetlands impacts.

U.S. Fish and Wildlife Service - Letter dated 11 January 1979.

Response to:

Comment #1 - Alternative 1B was developed primarily to avoid the deer wintering area of concern to the FWS. This alignment will be used if found to be practical. The major obstacle to use of the 1B alternative is a housing development which is currently being rapidly built up with new homes. This housing development lies directly in the path of the 1B alternative. If too many more homes are built in the housing development it may become economically impractical to use the 1B alternative. There are very few homes in the area when the 1B alternative was first conceived.

Comment #2 - Slight alignment shift and design modifications to minimize impacts will be considered during the detail design phase of project planning. Specific mitigation features will also be developed at that time. The hydrologic conditions of the mentioned wetland complex will be improved as suggested if this is found to be possible to do.

Comment #3 - Same as response given for comment #2.

Comment #4 - As much of the existing right-of-way as possible will be used for the crossing of the Long Prairie River.

DNR Letter - Dated August 7, 1973

Comment #1 - It is the Department's policy to maintain existing drainage patterns. If hydraulic investigations indicate that the water movement under the highway may be affected, then design measures will be taken to maintain the present flow regiem. It is not anticipated that construction disturbances would affect the nesting geese. This potential will be further evaluated in the final EIS.

United States Department of the Interior
FISH AND WILDLIFE SERVICE
St Paul Field Office, Ecological Services
538 Federal Building and U.S. Court House
316 North Robert Street
St. Paul, Minnesota 55101

IN REPLY REFER TO:

11 JAN 1979

Mr. John R. Rolfe
Preliminary Design Engineer
Minnesota Department of Transportation
District 4
Detroit Lakes, Minnesota 56501

Dear Mr. Rolfe:

This letter provides U.S. Fish and Wildlife Service preliminary comments regarding Minnesota Department of Transportation's proposed construction of U.S. Highway 10 from Wadena to Motley, Minnesota.

This project was reviewed for its conformance with the National Environmental Policy Act of 1969 (P.L. 91-190, 83 Stat. 852), Section 4(f) of the Department of Transportation Act (P.L. 89-670, 80 Stat. 931) and Executive Orders 11988 and 11990. Our review included a field review of the alternatives with MN DOT and MN DNR representatives on October 27, 1978 and review of addition data provided by District 4, MN DOT.

Construction as proposed would involve upgrading a 30 mile segment of U.S. Highway 10 from west of Wadena to south of Motley, Minnesota to 4 lane expressway standards between cities and freeway standards at city bypasses. Based on available data relating to the alternatives being considered for the proposed reconstruction, approximately 185 acres of wetland, 177 acres of forestland, 359 acres of grassland, 300 acres of cropland and 179 acres of residential and commercial land would be required for highway right-of-way. We believe that expansion along the existing U.S. Highway 10 corridor would be least environmentally damaging. This is planned for the majority of the proposed construction, with the exception of new alignments bypassing the cities of Wadena, Verndale, Staples and Motley. These proposed new alignments impact natural areas that provide wildlife habitat and therefore are the sites of major concern to the U.S. Fish and Wildlife Service.

The alternatives being considered for the bypass of Wadena will affect, in varying degrees, a deer wintering area of approximately 2 sq. miles. This area consists primarily of wetland Type II, VI, and VII interspersed with areas of upland hardwood and grass meadows. Both alternatives now being considered for the bypass will have an impact on the area. Alternative 1A will bisect the area, opening it up to development and reducing its value to wildlife. Alternative 1B will traverse the south edge of the area. Although it would require taking wetland and woodland acres, Alternative 1B is preferred over 1A because it would leave most of the deer wintering area intact. Intrusion into the area should be minimized by aligning the roadway closer to the city limits in Section 5 and 6 of Wadena Township.

The alternatives being considered for the bypass of Verndale are variations of a route north of the city. An approximately 30 acre Type II/VI wetland complex is found east of the city and north of existing U.S. Highway 10 in Sections 12, 20, 29 and 30 of Aldrich Township. The route chosen should avoid encroachment into this complex by shifting the alignment north or steepening the inslope on fill sections adjacent to the wetland. It is recommended that this site be an area where the DOT's policy of wetland enhancement be implemented. The quality of this wetland complex can be improved by using culverts to increase the water flow into the area or constructing the highway on the north so that it increases ponding of water in the wetland complex.

The preferred alternative for the bypass of Staples will go north of the town and will result in the loss of 38 acres of wetlands, Type II, IV, VI, and VII. Because of the diversity of vegetation in this complex and the adjacent Hayden Lake Statutory Waterfowl Game Refuge, this area has the best overall value as wildlife habitat in the project area. For the bypass of Staples we recommend that the roadway be compressed to decrease the amount of right-of-way needed in the wetland complex and that the inslopes be as steep as possible on fill sections to minimize encroachment. Since this area around Staples provides some of the best wildlife habitat in the project area, this would be an appropriate area to implement DOT Order 5660.1A, Preservation of the Nation's Wetlands. Protection by purchase or enhancement by creating open water areas in the wetlands adjacent to the designated right-of-way in Section 1, Staples Township and Section 6, Villard Township is recommended.

For the bypass of Motley the major concern is the crossing of Long Prairie River. The Long Prairie River fish population is dominated by red horse and sucker, with northern pike and walleye being the principal sport species. To minimize disturbance to the river and the adjacent floodplain, the crossing of the river for new U.S. Highway 10 should maximize use of existing right-of-way.

Impacts on water resources and fisheries will be more carefully reviewed when specific plans for stream crossings have been developed. When the required Section 404, Public Notices of permit applications for stream crossings are reviewed, additional recommendations may be made to minimize impacts on fish and wildlife resources.

Please keep us informed as project plans are being developed.

Sincerely,

Richard F. Berry
Field Office Supervisor

cc: MN DNR - St. Paul
MN DOT - R. Staffon

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES
CENTENNIAL OFFICE BUILDING · ST. PAUL, MINNESOTA · 55155

December 27, 1978

DNR INFORMATION
(612) 296-6157

John R. Rolfe
Preliminary Design Engineer
Mn/DOT - District 4
Detroit Lakes, Minnesota 56501

RE: T.H. 10 Motley to Wadena
State Project No. 8001-21
7702-29
7702-80

Dear Mr. Rolfe:

The Department of Natural Resources (DNR) has reviewed the preliminary plans and alternatives for upgrading T.H. 10 between Motley and Wadena and offers the following comments.

The upgrading of the existing highway along its present alignment between the five towns involved (Motley, Staples, Aldrich, Verndale, Wadena) will help to minimize the environmental impacts to natural resources. However, the numerous wetlands adjacent to the existing roadway ensure that there will be substantial wetlands impact. A rough estimate was made that of 180 acres of wetlands involved in the project approximately 85% will be impacted. Therefore, adequate mitigation of the impacts on wetlands will be examined closely. This could include acquisition of additional wetland area, improvement of existing wetlands (dugouts, drainage of water from roadway into the wetlands, level ditching, creation of islands, improve type I, II and possibly VI wetlands to type III and IV by increasing their water holding capacity) and construction techniques to minimize adverse impacts.

The proposed by-passes around the five towns have the potential for impacts of varying degrees on wildlife, fisheries and water resources. The specific concerns we have identified thus far with existing data are as follows:

Motley - potential impacts on the Long Prairie River, however, the rip rapping of the river bend at the existing bridge does not appear necessary.
Staples - several wetland areas will be impacted and the Hayden Lake Refuge should be avoided.
Aldrich - Either proposed route does not appear to significantly impact wildlife habitat however, we would prefer route 2.
Verndale - Three routes are presently proposed. We would prefer route 1 as it would impact the least amount of farmland.
Wadena - The deer yarding area north of town and the Union Creek area are both sensitive wildlife habitat areas and should be avoided to the extent possible.

Several streams will be crossed by the project. These include Union Creek, Hay Creek, Wing River and the Partridge River. Area Fisheries Manager indicated that no important fishery resources are involved and no objections to the proposed project are foreseen. However, placement of culverts and bridges will require review and coordination in addition to protective measures to be taken to control whatever stream erosion and siltation that may occur as the result of construction.

A DNR Division of Waters Permit will be required where waters of the State are impacted.

Thank you for the opportunity to review this project in its early stages of development. We are looking forward to continued cooperation and coordination with your agency as the project evolves.

Sincerely,

Jerome H. Kuehn, Administrator
Bureau of Planning and
Programming

JHK: rlh
cc: Oliver Jarvenpa
Al Wald
Henry Wulf
Dave Hills
Rich Staffon MnDOT
Joe Fraune

ORDER ESTABLISHING
THE STAPLES STATUTORY WATERFOWL GAME REFUGE
TODD COUNTY

GAME REFUGE ORDER NO. 373

TO WHOM IT MAY CONCERN:

WHEREAS, a petition having the required number of signatures has been presented to the Director of the Division of Game and Fish, State of Minnesota, requesting that the following described lands in Todd County be established as a state waterfowl refuge:

All of Section Seven (7) lying South of U.S. Highway 10 and lying East of the Northern Pacific Railroad right-of-way;

All of the North One-half of the Northeast Quarter (N½ NE¼) of Section Eighteen (18);

All of the North One-half of the Northwest Quarter (N½ NW¼) of Section Eighteen (18) lying East of the Northern Pacific Railroad right-of-way;

All located within Township One Hundred Thirty-three North, Range Thirty-Two West (T. 133N., R. 32W.).

WHEREAS, all of the owners, lessees or persons in possession of the above described lands have joined in said petition;

WHEREAS, it has been found that public interest would be best served by the establishment of this waterfowl refuge;

NOW, THEREFORE, UNDER AUTHORITY OF MINNESOTA STATUTES 1969, SECTION 99.25, SUBDIVISIONS 3, 5 AND 6A, IT IS ORDERED THAT THE ABOVE DESCRIBED AREA BE AND IS ESTABLISHED AS A STATUTORY WATERFOWL GAME REFUGE TO BE KNOWN AS THE STAPLES STATUTORY WATERFOWL GAME REFUGE, TODD COUNTY, MINNESOTA. THIS ORDER BECOMES EFFECTIVE UPON DUE PUBLICATION THEREOF AND COMPLETION OF POSTING IN ACCORDANCE WITH LAW.

Dated at Saint Paul, Minnesota,
this 24th day of February, 1971.

ROBERT HERBST, COMMISSIONER
DEPARTMENT OF NATURAL RESOURCES

By: Milo Casey, Jr.
Milo Casey, Director
Division of Game and Fish

NOTE: The Northern Pacific Railroad is now the Burlington Northern, Inc.

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

August 3, 1973

Mr. R. W. Wagner
District Design Engineer
Department of Highways
Detroit Lakes, Minnesota

Dear Mr. Wagner:

In reference to your letter dated July 3, 1973, regarding the Staples Waterfowl Game Refuge, I will try to answer the questions you asked.

The refuge does have significant local and state interest as the Staples Sportsmen's Club started a resident Canadian geese flock approximately six years ago and it seems to be developing very satisfactory at the present time.

The north boundary line of the refuge is Highway No. 10. Enclosed find a copy of the Game Refuge Order No. 373 dated February 24, 1971, establishing the Staples Statutory Waterfowl Game Refuge.

I feel that the proposed route of Highway No. 10 will not have a significant impact on the waterfowl in the refuge or in general on the Staples Waterfowl Game Refuge.

Yours sincerely,
Orville Meyer
Conservation Officer
Rural Route #1
Staples, Minnesota

OM:mec
Encl. (1)

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

August 7, 1973

Mr. R. W. Wagner
District Design Engineer
Box 666
Department of Highways
Detroit Lakes, Minnesota 56501

Dear Mr. Wagner:

In answer to your request for information on the Staples Statutory Waterfowl Refuge I have attempted to answer your questions and also I have included some additional materials.

The Statutory Waterfowl Refuge was established officially in February of 1971 in response to a request by the Staples Sportsmen's Club and other interested citizens of the community. The Staples Sportsmen's Club has a small flock of Canada Geese established year-around on Hayden Lake. The refuge protects these breeding geese and also resident ducks. During spring and fall migration periods a number of other ducks and geese use the refuge, most notably, a number of redhead and canvasback ducks which are no longer numerous in Minnesota. The Refuge Order No. 373 describes the refuge boundaries clearly. The north boundary is located between the railroad right-of-way and the south highway right-of-way. Signs are present along this line.

In terms of environmental impact of the proposed re-routing of U.S. 10 and 210 north, I see no adverse effect unless normal movement of water under the highway and railroad is disrupted. This might change or alter the level of Hayden Lake. During periods of construction, the presence and use of large equipment could adversely affect the geese if it occurred during nesting season, mid-April to mid-June.

At this time I see no other adverse effects. I am forwarding a copy of this letter and the materials you sent me to D.N.R. Conservation Officer Orville Meyer in Staples. He works much more closely with the local sportsmen's club and knows the history of Hayden Lake well. He may have some other comments to make.

Thank you for contacting me. I hope I may be of service to you in the future.

Sincerely yours,
Gary H. Johnson
Area Game Manager
Game & Fish - D.N.R.

GHJ:bj
Enclosure
cc: Reg. Game Office
C.O. Orville Meyer, attach.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P. O. Box 358, Fergus Falls, MN 56537

SUBJECT: Highway 10 - Prime and Unique Farmland DATE: January 12, 1978

TO: Ken Christensen
Minnesota Department of Transportation
Box 666
Detroit Lakes, MN 56501

We have conducted the investigation to determine the prime and unique farmland on the proposed route of Highway 10 from west of Wadena, Minnesota to Motley, Minnesota.

Small areas of prime farmland are in Sec. 36, Bluffton Township, Otter Tail County, MN and Sec. 35 and 36, Aldrich Township, Wadena County, MN. The location of these areas are shown in green on the attached location map. These areas have a total of approximately 38.5 acres, based on a 500 foot corridor for the Highway. No unique farmland was observed on the proposed Highway route.

If you have any questions please contact me.

Donald E. DeMartelaere, Soil Scientist
SCS, Fergus Falls, MN

cc: Alva E. Broyles, Acting AC, Fergus Falls, MN
Clarion Neseth, DC, SCS, Perham, MN
Merlin R. Jennings, DC, SCS, Wadena, MN
Robert E. Krause, DC, SCS, Long Prairie, MN
Steve Wilson, DC, SCS, Little Falls, MN

COMMUNITY CENTER STAPLES, MINN. 56479 218-894-2553

April 10, 1979

Mr. Lee Markell
Office of Environmental Affairs
Minnesota Dept. of Transportation
1000 W. Th. 10, Box 666
Detroit Lakes, MN 56501

RE: Section 4 (f) Involvement

Dear Mr. Markell:

Enclosed is a copy with the answers to your questions from your letter of January 3 regarding Alternative Route 1 affecting the elementary school grounds in Staples.

Please feel free to contact us again if you have further questions.

Sincerely,

Eric F. Lloyd, Director

Enclosures

INFORMATION RELATIVE TO THE MDOT REQUEST DATED 1/3/79 ...

1) What recommended uses does the school property provide to the community?

The hardsurfaced area is used for physical education activities during the school year, and during the summer months, by the community. It is especially useful in providing an area in which to play in the wet, muddy periods of the year.

2) What uses will be eliminated as a result of our project?

Approximately two-thirds of the bituminous-surfaced playground. The remaining one-third of the area will be virtually useless, because of its minimal size.

The other concern we have is one of safety. The portion not disrupted by the highway interchange will abut the exit ramp for eastbound traffic. If a vehicle were to lose control, it could intrude on the playground area. The cross traffic of exit ramps and Fourth Street also poses a threat due to the close proximity to the playground.

3) Do other parks in the area provide for the types of recreational facilities that will be impacted by the highway?

No. A replacement area west of the school would be very adequate.

4) Your determination as to the significance of the entire park (not the portion which may be acquired) to the recreational needs of the community.

The North Elementary School and adjacent Bicentennial Memorial Athletic Field are very important to the school and community.

5) A map showing the dimensions and size of the park (acres or square feet).

Acceptable, providing two revisions are included ...

a) Additional screen planting on right-of-way edge. Hopefully, a complete row of plants, instead of sporadic spacing as indicated on the map. Perhaps a low eastern berm should be considered.

b) Replacement of a bituminous playground area west of the school building.

6) Location of the park, including specific boundaries.

Currently -

a) 2 - baseball fields
b) 2 - softball fields
c) 3 - tennis courts

Planned for future construction -

a) Football field
b) Eight-lane track
c) Soccer field
d) Football practice field
e) 3 - additional tennis courts

7) Type of facility, e.g., historic, recreation, etc.

Recreational.

8) Available recreational activities, e.g., fishing, swimming, golfing, etc.

The City of Staples has a number of other parks, but land availability and location to populace served makes the Bicentennial Memorial Park the only one capable of providing space for a recreational complex of this massive nature.

9) Facilities existing and planned, e.g., description and location of ball diamonds, tennis courts, etc.

The attached map correctly indicates current and planned construction. A portion of the current and future development extends to the south of the area included on the map, and will not be directly affected by the Highway 10 bypass.

10) Usage (approximate number of users for each activity).

During winter months, the usage is minimal, except for the playground areas.

Spring, summer and fall usage -

a) Baseball 500/day
b) Track 250/day
c) Tennis 100/day
d) Football 200/day
e) Softball 150/day
f) Playground 500/day
g) Jogging 100/day

1800/day average when the park is fully developed

11) Access, e.g., pedestrian, vehicular, and effect thereon.

The Highway 10 bypass will have minimal effect on the access to the area. Vehicular access from the west and east will be improved by the proposed highway construction. In a few, overflow crowd situations, vehicles might park on Fourth Street, which would increase traffic congestion. Pedestrian movement would not be influenced by the proposed highway plans. The major pedestrian concern is for students walking and biking to school from the north along Fourth Street when they cross the exit and entrance ramps of the interchange. Construction of special design for pedestrian safety is urged at these potentially dangerous crossings.

12) Applicable clauses affecting title, such as covenants, restrictions or conditions, including forfeiture.

The Staples Public School has clear title to the land involved. There are no convenants or restrictions, to our knowledge.

13) Unusual characteristics of the 4 (f) land, e.g., flooding problems, terrain conditions, or other features that either reduce or enhance the value of the portions of the area.

The area once had a flooding problem, but this has been corrected through the effects of reclamation by the Staples Area Vocational-Technical Institute's Heavy Equipment as a class project.

The land is highly valued, being free of streets and traffic, and its adjacent location to the Elementary School.

DEPARTMENT OF THE ARMY
ST PAUL DISTRICT CORPS OF ENGINEERS
1135 U. S. POST OFFICE & CUSTOM HOUSE
ST. PAUL, MINNESOTA 55101

REPLY TO
ATTENTION OF:
NCSCO-GR(SF 79-224-13)

9 May 1979

Mr. E. Dean Carlson
Division Administrator
Federal Highway Administration
Suite 490, Metro Square Building
St. Paul, Minnesota 55101

Dear Mr. Carlson:

We have reviewed the preliminary copy of a pre-draft version of an environmental impact statement for the proposed T.H. 10 in Otter Tail, Wadena, Todd and Morrison Counties.

The following are our comments on this document:

1. We concur with the motion that the FHWA serve as the lead agency for the development of the environmental documentation for this highway section (U.S. 10, Wadena to Motley).

2. The reader would be aided in commenting on alternatives if, in figures 17 and 27, wetlands and other important resource features were delineated where it is appropriate.

Thank you for the opportunity to comment on this matter.

Sincerely,

Frank J. Mazurkiewicz

FRANK J. MAZURKIEWICZ
Acting Chief, General Regulatory Branch
Construction-Operations Division



MINNESOTA HISTORICAL SOCIETY
690 Cedar Street, St. Paul, Minnesota 55101 • 612-296-2747

August 24, 1979

Mr. C.P. Kachelmyer
Preliminary Design Engineer
Department of Transportation
Room 604 - Transportation Building
St. Paul, Minnesota 55155

Dear Mr. Kachelmyer:

RE: S.P. 5605-08, 8001-21, 7702-29 (TH 10)
From 2.2 Mi. W. of the east Ottertail
County Line to 0.2 Mi. E. of the east
corps. limits of Staples
Ottertail, Wadena and Todd Counties

S.P. 7701-18 (TH 210)
From 1.9 Mi. S. of Proposed Jct. TH 10
to proposed Jct. TH 10
at Staples, Todd County

S.P. 4903-26, 7702-30 (TH 10)
From 1 Mi. S. of Motley
to 1 Mi. W. of W. Morrison County Line
Morrison and Todd Counties

MHS Referral File Number H 4

Our office has received a revised status report from the Trunk Highway Archaeologist on the above referenced projects. This report states that the reconnaissance survey of the newly designed Wadena Bypass for T.H. 10 has been completed, thus culminating the survey of the entire length of the proposed upgrading project. We concur with the findings of the archaeologist that no new sites were found; consequently, the Steinbrecker Site (21 MO 15) remains the only known archaeological site which appears to be affected by the proposed construction.

At this time, we wish to reiterate our recommendation that intensive test excavation and surface collection be conducted at the site to provide data to thoroughly assess the site's nature, extent, and condition. This work will provide the information necessary to determine whether the site is eligible for inclusion on the National Register of Historic Places.

With the exception of the Steinbrecker Site, there are no additional sites of historic, architectural, cultural, or archaeological significance on or eligible for inclusion on the National Register which may be affected by your proposal.

We hope that this information aids you in your continued planning and assessment.

Sincerely,

Donn Coddington

for Russell W. Fridley
State Historic Preservation Officer

RWF/cjb

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GLOSSARY OF TERMS

C.S.A.H.	- County State Aid Highway - A road or street established and designated under county jurisdiction in accordance with Chapter 162, Minnesota Statutes 1967.
dBA	- The sound pressure level in decibels measured with a frequency weighting network corresponding to the "A" scale on a standard sound level meter. In this report the term is used with the understanding that the noise levels calculated are exceeded 10% or 50% of the time at the hourly volumes under study.
Depressed Median	- The area between roadways usually in a rural section. This area is of lower elevation than the roadway surface.
Expressway	- A multilane divided facility with partial control of access; that is, some at-grade crossings and some direct access to adjacent land is permitted.
Freeway	- A multilane divided facility with full control of access. Similar to the Interstate Highway System, all crossroads are separated, access is provided only through interchanges, and no direct access to adjacent land is permitted.
Heavy Commercial Vehicles	- All trucks and busses except 4 tire trucks.
Highway 10 Association	- An organization comprised of businessmen, merchants, and chambers of commerce of the towns and villages located adjacent to U.S. 10, interested in improving the economy of the regions served by U.S. 10 through the improvement of U.S. 10.
Interim Service Level Classification	- A statewide highway system plan prepared by the Minnesota Department of Transportation (Mn/DOT) in cooperation with the U.S. Department of Transportation (DOT), Federal Highway Administration (FHWA). This is a plan for development of the state highway system which, when accomplished would provide a completely adequate highway system.
Minimum Stopping Sight Distance	- The distance required by the driver of a vehicle, traveling at a given speed; to bring his vehicle to a stop after an object on the road becomes visible (critical when going over a hill; that is crest or summit of a vertical curve). Stopping sight distance is measured from the driver's eyes, assumed to be 3.75 feet above the pavement surface, to an object 0.5 feet high on the road.

Mn/DOT - Minnesota Department of Transportation. It was created by the 1976 Legislature and came into being on November 8, 1976. It combines the former Highway and Aeronautics Department with the transportation sections of the State Planning Agency and Public Service Commission.

No-Passing - When the crest of a hill or an object off the road restricts the driver's sight distance (on vertical or horizontal curves), it becomes necessary to paint a warning stripe on the center-line of the roadway to prohibit passing.

Raised Median - The area between roadways which extends above the roadway surface and is surrounded by a 6 inch curb.

R/W - Right-of-way.

Trunk Highway - Normally an undivided two-lane facility with partial control of access that will continue to penetrate the congested areas of the municipalities it serves.

4(f) lands - Section 4(f) of the Federal Aid Highway Act of 1968 specifies that publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state or local significance---or <u>any</u> land from an historic site of national, state or local significance may be used for Federal Aid projects only if:

1. There is no feasible and prudent alternative to the use of such land, and

2. Such highway program or project includes all possible planning to minimize harm to 4(f) lands resulting from such use.

To reiterate, Section 4(f) is applicable when a proposed highway project:

1. Takes land from a publicly owned, significant National, State or local park, wildlife refuge or recreation area.
2. Takes land from an significant National, State or local historic site.
3. Takes land from a publicly owned tract that is not officially designated as a park, recreation area or wildlife refuge, but that is being used for this purpose on a permanent basis if the official having jurisdiction believes its use as a 4(f) type area is significant.

References:

Bellis, E. and H.B. Graves, 1978. Roadside fences, can they control vehicle collisions with deer? Rural and Urban Road 16(4): 62-65.

Davis, P.B. and C.R. Humphrys, 1977. Ecological effects of highway construction upon Michigan woodlots and wetlands. Final Summary Report, Agr. Exp. Stat. Mich. State Univ. East Lansing. 63 pp.

Ferris, C.R., D.S. Palman and V.B. Richens, 1977. Ecological impact of Interstate 95 on birds and mammals in northern Maine. Maine Dept. Trans., Materials and Res. Div., Tech. Pop. 77-12. 122 pp.

Michael, E.D., 1976. Effects of highways on wildlife. West Virginia Dept. Highways, Res. Proj. 42. 58 pp.

Mn/DOT - Minnesota Coal Impact Study, September, 1977.

The Minnesota Trunk Highway Archaeological Reconnaissance Survey Annual Report 1975.

Highway Capacity Manual 1965, Highway Reseasrch Board Special Report 87.

Mn/DOT Air Quality Study, U.S. 10, Wadena to Motley, December, 1978.

Mn/DOT Social/Economic Study, U.S. 10, Wadena to Motley, May 23, 1978.

Mn/DOT Noise Analysis Report, U.S. 10, Wadena to Motley.

Mn/DOT Noise Analysis Report Supplement, U.S. 10, Wadena to Motley.