final [redacted] environmental impact statement

WILLIAMS PIPE LINE COMPANY'S PROPOSED MASON CITY, IOWA TO COTTAGE GROVE, MINNESOTA PIPELINE PROJECT

APRIL, 1977

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

DNR INFORMATION
(612) 296-6157

March 24, 1977

To: WHOM IT MAY CONCERN

Re: WILLIAMS PIPELINE COMPANY'S PROPOSED MASON CITY, IOWA TO COTTAGE GROVE, MINNESOTA PIPELINE PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT.

NOTICE OF COMPLETION

Enclosed, please find the Final Environmental Impact Statement for the Williams Pipeline Company proposed pipeline project.

Sincerely,

Richard Myshak

Richard Myshak, Assistant Commissioner
Department of Natural Resources

RM:cj

Enclosure

WILLIAMS PIPE LINE COMPANY'S PROPOSED MASON CITY, IOWA TO COTTAGE GROVE, MINNESOTA PIPELINE PROJECT

FINAL ENVIRONMENTAL IMPACT STATEMENT

PREPARED BY:

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

APRIL, 1977

TABLE OF CONTENTS

FIGURES

TABLES

I. DESCRIPTION OF THE PROPOSED ACTION

A. Purpose of Project

Williams Pipe Line Company, a unit of William Companies of Tulsa, Oklahoma, proposes to expand its pipeline capacity to Minnesota refiners to help offset announced reduction in the importation of crude oil from Canada. The expansion will involve the construction of a 130 mile, 18 inch pipeline from Mason City, Iowa, to the Minnesota Pipe Line Company's tank farm in Cottage Grove, Minnesota (see Figure 1). This pipeline will be utilized in the transportation of crude oil, refined petroleum products, LPG, and non-pressure liquid fertilizer solutions. Initially, the proposed pipeline will transport 80,000 barrels per day. Future additions of pumping equipment will permit throughput increases up to 285,000 barrels per day. The scheduled in-service date is October 1, 1977.

The proposed pipeline will be constructed, for the most part, parallel to existing pipeline facilities. A more detailed description of the route alignment in Minnesota is provided in Section ID1 - Location.

B. Minnesota EIS Process

Pursuant to the provisions of Minn. Stat. 116D.04 and Minnesota Environmental Quality Council Rules and Regulations for Environmental Impact Statements (Minn. Reg. MEQC 21 - 36), an Environmental Impact Statement (EIS) on the proposed action must be prepared prior to construction.

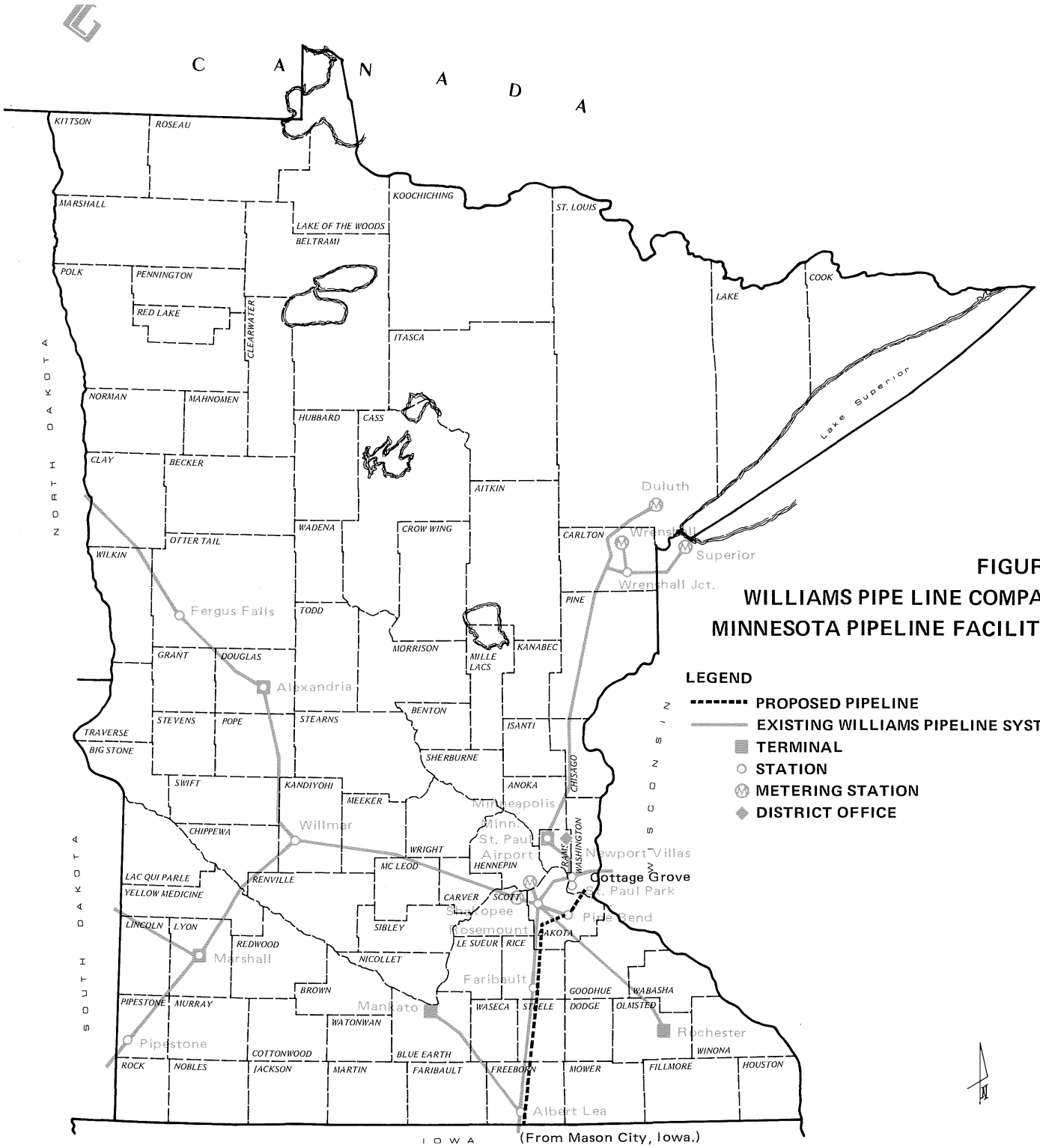


FIGURE 1
WILLIAMS PIPE LINE COMPANY
MINNESOTA PIPELINE FACILITIES

LEGEND

- PROPOSED PIPELINE
- EXISTING WILLIAMS PIPELINE SYSTEM
- TERMINAL
- STATION
- METERING STATION
- DISTRICT OFFICE

The Minnesota Department of Natural Resources (DNR) has been designated by the Minnesota Environmental Quality Council (EQC) as the Responsible Agency which will prepare the EIS. The DNR will initially prepare and submit a draft EIS to the EQC, appropriate government agencies, and the general public for review and comment. Public meetings will be held by the Responsible Agency as a part of the draft EIS process. Comments received during this period will then be incorporated into the document and a final EIS will be issued.

This EIS addresses the Minnesota portion of the Mason City-Cottage Grove pipeline project. The length of this segment is approximately 106 miles, or approximately 81 percent of the total line length.

C. Williams Pipe Line System - State of Minnesota

Figure 1 illustrates pipeline facilities owned and operated by Williams Pipe Line Company within the state of Minnesota. This system is used to transport refined petroleum products, crude oil, LPG and non-pressure liquid fertilizer solutions from the Gulf Coast and mid-continent areas to markets in Minnesota.

The 6 and 12 inch lines, paralleled by the proposed pipeline from the Minnesota-Iowa border to the Rosemount Pump Station, proceed north from the Rosemount Station, crossing the Mississippi River near Newport Villas, and continue around St.

Paul to the east and then west along State Highway 36 to Williams' Minneapolis terminal on County Road C.

An 8 inch line, which begins at Newport Villas, services refined petroleum products to Wisconsin areas. An 8 inch line, also from the Minneapolis terminal mentioned above, is used to move product to the Duluth-Superior area.

From the Rosemount Pump Station, a 12 inch line is used to transport product west to Willmar and then north to Alexandria which, with an 8 inch line from Sioux Falls, South Dakota, to Pipestone, Marshall, Alexandria, and into Fargo, North Dakota, serves the Watertown and Alexandria terminals as well as terminals in eastern North Dakota.

A 6 inch line between Albert Lea and Mankato provides the means to serve the Mankato area. Also, an 8 inch line from Rosemount to Rochester permits product to be transported into the Rochester area.

D. Scope of Project

1. Location

The Minnesota portion of the proposed Mason City-Cottage Grove pipeline will be located in Freeborn, Steele, Rice, Dakota, and Washington Counties. The pipeline will enter the state of Minnesota in Section 33 of Freeborn

County's Freeman Township (T101N, R21W), approximately 1,500 feet west of Interstate 35. From this point, the pipeline will extend in a northerly direction to Williams Pipe Line Company's Rosemount Station and then east to Koch Industries' Great Northern Refinery located near Pine Bend, Minnesota. The pipeline will then continue north and east across the Mississippi River to the Minnesota Pipe Line Company tank farm in Cottage Grove, Minnesota. Detailed strip maps illustrating the proposed pipeline right-of-way have been prepared by Williams and included as Appendix A to this EIS.

Of the 106 miles of pipeline in Minnesota, approximately 94 miles, or 89 percent of the total line length, will parallel existing Williams Pipe Line Company, or other pipeline companies' facilities, as indicated on the strip maps in Appendix A. From the Minnesota-Iowa border to the Rosemount Station, the proposed pipeline will parallel existing Williams' 6 and 12 inch lines, with the exception of approximately 9 miles near the cities of Albert Lea and Faribault, where urban development pressures necessitate the delineation of a new pipeline right-of-way (see Appendix A, sheet Nos. 8, 9, 17). It should be noted, however, that approximately 3 miles of this new right-of-way will be in proximity to existing Northern Natural Gas Company pipelines (see Appendix A, sheet No. 8). The proposed pipeline will be separated from the Northern

Natural Gas facilities by a distance of 60-150 feet. Options for easements are now being obtained for this new right-of-way by Williams Pipe Line Company.

The proposed pipeline will then parallel the Chicago & Northwestern Railroad from the Pine Bend Station north for a distance of approximately 8800 feet. The pipeline then angles easterly parallel to an existing transmission line for approximately 2500 feet to a point where it intersects with an existing Minnesota Pipe Line Company 16 inch line. The pipeline parallels the Minnesota Pipe Line facility across the Mississippi River to a point between Sections 24 and 25 where it then deflects east parallel to an existing Aranco Company pipeline. At the southwest corner of Section 19 the proposed pipeline leaves the Aranco line and angles north for approximately 2800 feet where it again parallels the Minnesota Pipe Line facility into Cottage Grove (see Appendix A, Sheet No. 26).

2. Proposed Facilities

Williams Pipe Line Company proposes to construct and operate a closed system, 18 inch outside diameter pipeline between two existing terminal points. This pipeline is designed for transportation of crude oil and its products northward but, if necessary, minor modifications of pump station piping could be made to accommodate southward movement.

No new or additional intermediate pumping or storage facilities are planned as part of this initial action. It is anticipated, however, that future transport requirements will necessitate the construction of additional pump station facilities in 1978-79. More detailed explanation of these additional facilities is included in Section ID5 - Future Plans.

The proposed pipeline will transport 80,000 barrels per day when placed in service on or around October 1, 1977. Additional pumping facilities will permit increasing this capacity of 285,000 barrels per day as demand requires. The pipeline is designed for maximum operating pressure of 1450 psig.

The pipeline will be designed, constructed, and operated in accordance with all current federal, state, and local codes, safety requirements and special guidelines, including, but not limited to:

- U.S. Department of Transportation, Part 195 Title 49, Code of Federal Regulations: Transportation of Liquids by Pipeline

- ANSI B 31.4 (1971) Liquid Petroleum Transportation Piping Systems

Present plans call for a construction period of four months, commencing June 1, 1977 and terminating October 1, 1977.

3. Right-of-Way Requirements

Construction of the proposed pipeline will typically require a 66 foot-wide working area (see Figure 2). Exceptions to this are 3.5 miles of pipeline near the city of Albert Lea and 1.5 miles of pipeline near the city of Apple Valley, where existing conditions limit the work area width to 50 and 30 feet, respectively.

The majority of existing right-of-way agreements on which the proposed pipeline will be constructed are open agreements. Others are restricted to specific widths of 100 feet or less. A 50 foot width will be the minimum used for normal maintenance requirements after construction is completed (see Figure 3). The proposed 18 inch pipeline and all existing lines which it will parallel will be located within this 50 foot width used for normal maintenance. Exception to this is in the restricted areas mentioned above where the final right-of-way width may be the same as the work area width.

The Land Use Inventory included in Section IIA identifies specific land uses and related features traversed by the proposed pipeline right-of-way.

FIGURE 2
CONSTRUCTION WORK AREA

Working side should always be away from existing pipe lines.

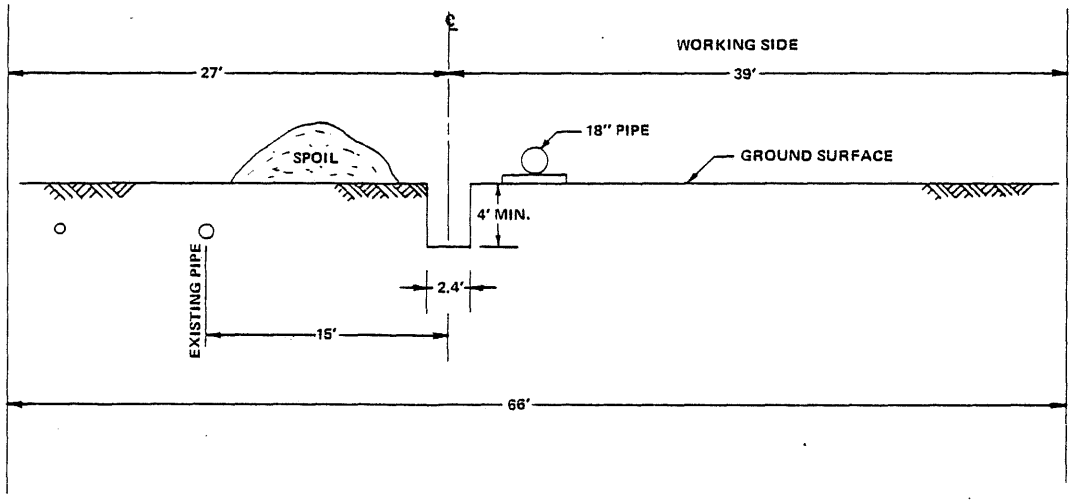
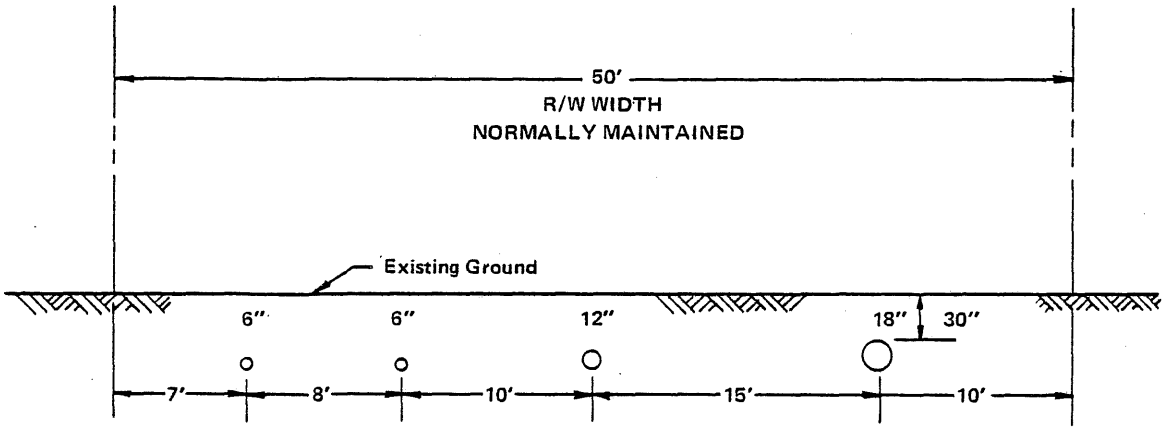


FIGURE 3

TYPICAL RIGHT OF WAY



MINIMUM 30" COVER OVER LINES

4. Related Facility Requirements

The proposed Mason City-Cottage Grove pipeline project involves only the pipe itself. No additional or related facilities are planned in conjunction with the construction of the pipeline.

5. Future Plans

The proposed pipeline will transport 80,000 barrels per day into the Twin Cities area when placed in service about October 1, 1977. Present plans anticipate the addition of a 4500 HP pumping unit at the Faribault Station in late 1978. This, with additional expansion south of Minnesota, will increase capacity to 120,000 barrels per day. In 1979 additional power would be added at the Albert Lea Station which would increase capacity to 285,000 barrels per day. The ultimate design capacity is 350,000 barrels per day which would also be achieved by power additions at locations south of Minnesota.

Present plans are to utilize electric motors as prime movers on the pumps.

E. Major Elements of the Proposed Action

1. Preconstruction

Prior to construction of the proposed pipeline in Minnesota, an Environmental Impact Statement (EIS) on the action must be issued by the Minnesota Environmental Quality

Council, as discussed in Section IB. In addition to the EIS process, Williams Pipe Line Company must seek and obtain permits from the following agencies affected by the proposed action:

U.S. Environmental Protection Agency (EPA) - permit for discharge of test water

U.S. Army Corps of Engineers - permit(s) to cross certain navigable streams and rivers

Minnesota Department of Natural Resources - permit to cross streams, rivers, and other water bodies designated by the DNR; permit for open burning where applicable

Minnesota Department of Highways - permit to cross under highways

County and local zoning commissions (as required to meet existing zoning requirements)

Railroads - permits to cross under railroads

In addition, utilities will be contacted to determine if they have facilities which will be crossed by the proposed pipeline. Such installations will be located and identified for the Williams' contractor so that damage during construction will be prevented.

A preconstruction conference including contractor and pipeline personnel, will be held to cover agency and landowner construction requirements.

2. Construction

Construction of the proposed project is scheduled during the four month period of July to October, 1977. The anticipated work force, including Williams Pipe Line Company and contractor personnel, will be approximately 275 workers. Throughout all phases of construction, including right-of-way clearing, temporary fencing, trenching, welding, coating, laying, backfilling and cleanup, Williams Pipe Line Company personnel will act as inspectors to ensure compliance with construction specifications. Following is a description of the major phases in pipeline construction.

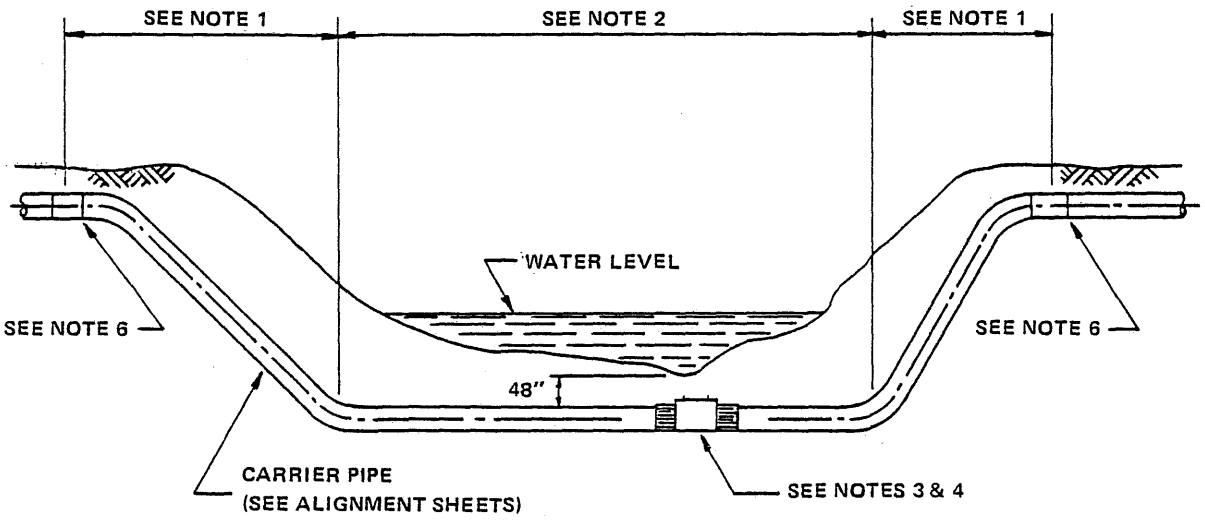
Prior to commencement of construction, landowners will be contacted and advised of construction plans and dates. Construction activities will then begin with right-of-way surveying and staking. Following negotiation with landowners, vegetation and other obstructions within the right-of-way will be removed to permit passage of equipment. Generally, merchantable timber will be cut and removed, and slash and brush burned or disposed of in accordance with local ordinances.

Merchantable timber will be stockpiled in the vicinity of the right-of-way for the landowner. Temporary gates and/or cattle guards will be installed at fencelines crossing the right-of-way.

Trenching operations follow in the cleared right-of-way. Depth of trench will vary but will be excavated to provide a minimum cover of 30 inches in agricultural land, 36 inches in residential areas and 48 inches below stream or river crossings, except in rock where the maximum cover will be 18 inches (for further discussion refer to Section VIID). Where existing underground drain tiles are encountered, all tiles will be repaired or replaced. Drainage tiles will be restored to their original contour and condition and Williams Pipe Line Company will obtain concurrence of the landowner regarding repairs and operation. Figures 4-7 illustrate typical cross sections of stream, road, and railroad crossings.

Materials utilized in the pipeline, including pipe, pipe connections, and pipe protective coverings, will meet or exceed standards stated in Part 195, Title 49, Code of Federal Regulations - "Mininum Federal Safety Standards for Liquid Pipelines." Pipe will be delivered to the Twin Cities by barge and then moved by truck to the right-of-way. Other pipeline materials will be stored within existing pump station areas. Pipe stringing and placement will require the use

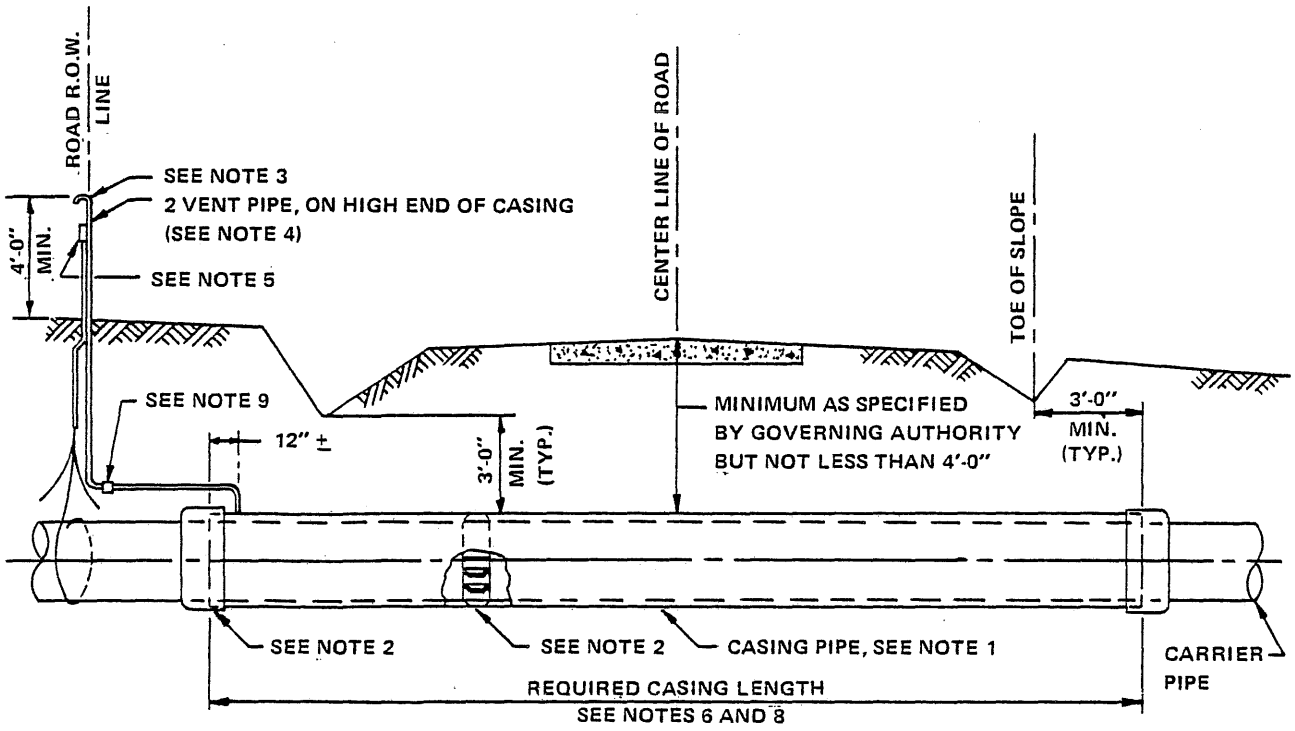
FIGURE 4
STREAM OR RIVER CROSSINGS



NOTES:

1. Pipe shall be laid to extra depth at these locations to prevent excessive bending.
2. Pipe shall be level under stream channel to the depth shown above except in rock formations where top of pipe may be laid to a minimum of 30" below stream bed.
3. If Engineer so directs, Contractor shall furnish and install concrete weights as shown on applicable drawing.
4. If Engineer so directs, Contractor shall furnish and install protective wood slatting as shown on Drawing 5009.
5. Contractor shall furnish and install 3/8" rock shield throughout crossing, or as directed by Engineer.
6. Install transition pieces as required.
7. Installation shall be in accordance with applicable permits.

FIGURE 5
ROAD CROSSINGS WITH CASING

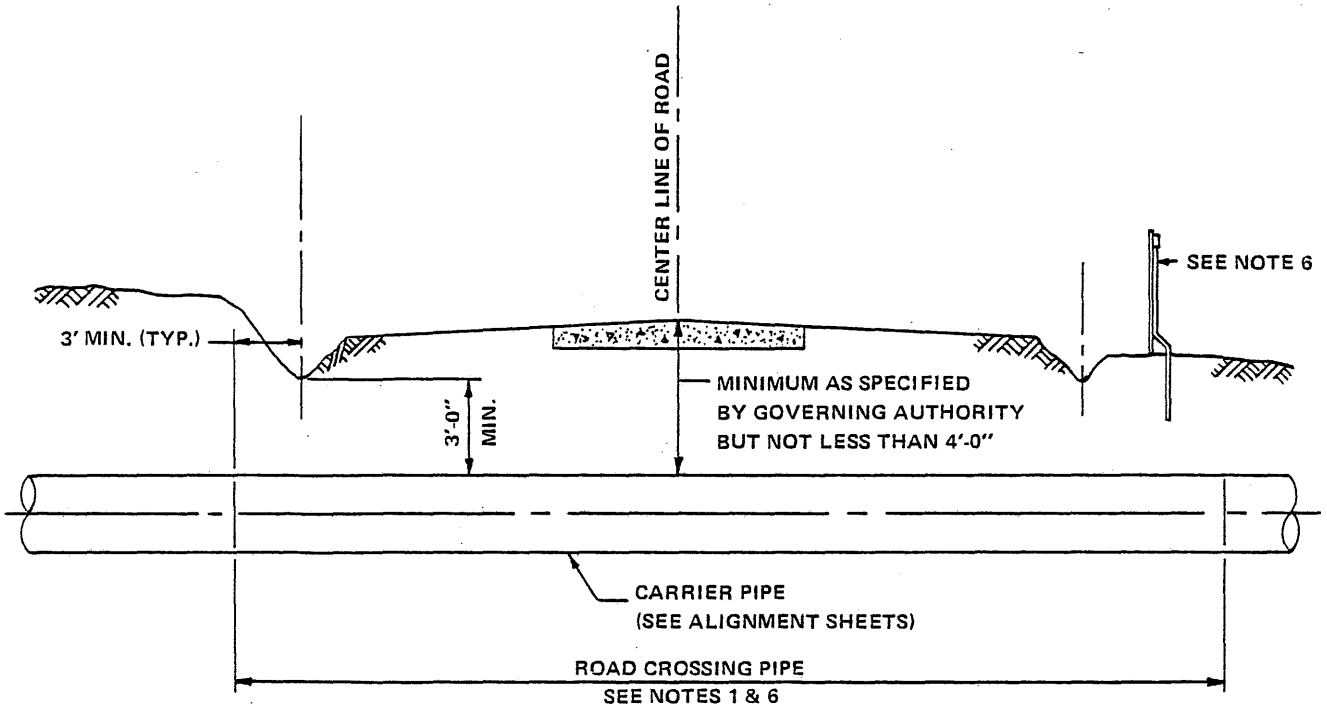


NOTES:

1. Casing pipe shall be installed bare by Contractor.
2. Install seal bushings and insulators as on Drawing STD-A-5120.
3. Install standard weight 180° return with screen.
4. Cut vent hole and weld vent pipe to casing pipe prior to inserting carrier pipe. Vent pipe below ground shall be covered with one coat of Roskote Mastic 612 XM (medium) or equal. Vent pipe above shall be painted by others.
5. Install Type 1 cathodic protection test station as on Drawing STD-A-5100.
6. The location and length of cased crossing will be noted on alignment sheets.
7. Crossing installation shall be in accordance with applicable permit.
8. Casing shall extend to a minimum of 3° beyond toe of slope (typical each side)
9. When horizontal offset of vent pipe along axis of carrier pipe exceeds 15'-0" install a 2-inch T.D. Williamson M-2 insulator or equal at the elbow as shown. For long offsets additional insulators may be required on 3'-0" spacing as directed by Engineer.

FIGURE 6

ROAD CROSSINGS WITHOUT CASING



NOTES:

1. The type and length of pipe for crossings of public roads shall be as specified on the alignment sheets; for crossings of private roads it shall be same as adjacent carrier pipe. No vertical bends shall be made within these limits.

2. This type of crossing shall be made at all public and private roads where casing is not specified.

3. Installation shall be made in accordance with applicable permit.

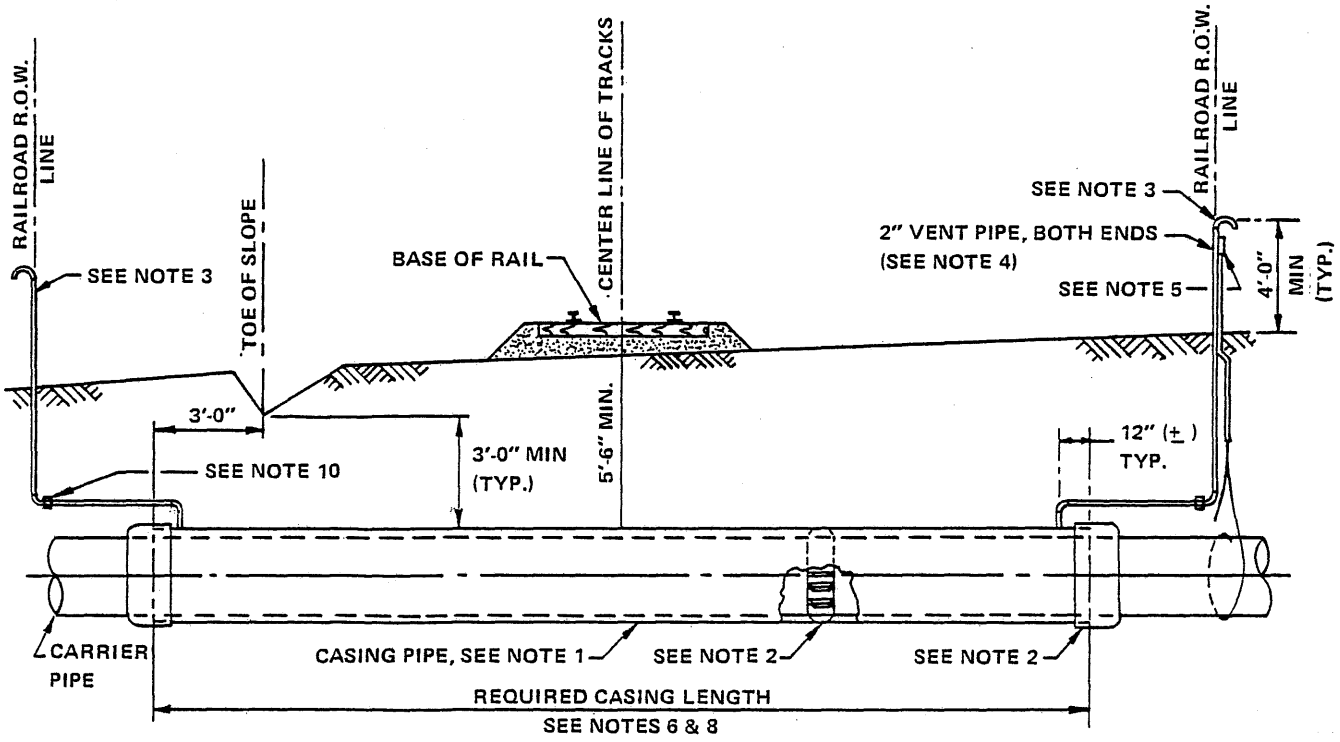
4. The trench excavated for the pipeline shall be promptly backfilled in a proper and workmanlike manner so as to leave no holes or obstructions therein and so as to furnish and provide drainage.

5. Road crossing pipe shall extend to a minimum of 3' beyond toe of slope (typical each side) Full joints of pipe shall be used, unless directed otherwise by Engineer.

6. Install Type 3 cathodic protection test station per drawing STD-A-5100 at locations shown on the alignment sheets and/or as designated by Engineer.

FIGURE 7

RAILROAD CROSSINGS



NOTES:

1. Casing pipe shall be installed bare by Contractor.
2. Install seal bushings and insulators as on Drawing STD-A-5120.
3. Install standard weight 180 return with screen.
4. Cut vent hole and weld vent pipe to casing pipe prior to inserting carrier pipe. Vent pipe below ground shall be covered with one coat of Roskote Mastic 612 XM (medium) or equal. vent pipe above ground shall be painted by others.
5. Install Type 1 cathodic protection test station on one vent pipe as on Drawing STD-A-5100.
6. The location and length of cased crossings will be noted on alignment sheets.
7. Crossing installation shall be in accordance with applicable permit which may require the installation to be somewhat different than shown on this drawing.
8. Casing shall extend to the greatest of the following distances (measured perpendicular to track)

   3' beyond toe of slope, or
   3' beyond ditch line, or
   25' from centerline of outside track
   45' from centerline of outside track when required by applicable permit

9. Where, in the opinion of the railroad company's Chief Engineer, drainage ditches or other conditions require the cased crossing to be buried to a greater depth, it shall be so installed.
10. When horizontal offset of vent pipe along axis of carrier pipe exceeds 15'-0" install a 2 inch T. D. Williamson M-2 insulator or equal at the elbow as shown. For long offsets additional insulators may be required on 3'-0" spacing as directed by Engineer.

of sideboom tractors to properly align pipe. All welding shall conform to API Standard 1104 "Standard for Welding Pipe Lines and Related Facilities," and Part 195, Title 49, Code of Federal Regulations. Upon welding inspection and approval, protective tape coating and wrapping will be completed. The pipe will then be lowered in and backfilled to restore the ground's natural contour. Topsoil removed during trenching operations will be replaced and final graded.

Once constructed, the pipeline will be hydrostatically tested to a minimum of 125 percent of maximum operating pressure to insure pipeline integrity. Testing operations will be conducted in accordance with all federal, state, and local regulations.

As soon as the pipe is laid, backfilled, and tested, the right-of-way and adjoining areas will be cleaned up, with debris removed and all exposed areas will be disked and harrowed and grasslands seeded to establish cover and reduce erosion potential. All fences, terraces, private roads, water courses, and other private property disturbed will be repaired and restored to their original condition.

3. Maintenance

Normal procedures will be utilized to maintain the proposed right-of-way in a satisfactory and acceptable condition. Within the right-of-way, land cover will be permitted which does not interfere with safe pipeline operation. Agricultural practices will not be affected, although woody species of vegetation will be permanently removed and restricted from regrowth. Herbicides, if used, will be applied in accordance with all regulatory requirements.

Preventive maintenance activities will be scheduled to ensure system reliability. Air surveillance of all pipeline facilities will occur at not more than two week intervals, weather permitting. Monitoring of the right-of-way in this manner will provide Williams Pipe Line Company with the current status of its facilities and right-of-way condition.

4. Safety Considerations

The proposed pipeline will be operated and maintained to ensure the health and safety of the public and to provide continuous and reliable service. In compliance with applicable federal and state regulations, specific plans have been incorporated into the facility's design and operation.

Pipeline protection from external corrosion is achieved through application of Polyken tape coating and

cathodic protection. Cathodic protection will be provided by rectifiers, the number and location of which will be determined by William's Corrosion Specialists. A minimum of -0.85 volts will be impressed on the pipeline to prevent external corrosion. Internal corrosion protection is provided through the use of chemicals which are injected into products to mitigate corrosion problems.

At federal and state highway and railroad crossings, the pipeline is bored and placed in a casing to prevent damage from excessive loading or settlement. Greater wall thickness pipe will be utilized at the Cannon and Mississippi River crossings. All river and stream crossings will be laid to provide a minimum cover of 48 inches below the riverbed, except in rock where the maximum cover will be 18 inches. The right-of-way is posted at all road and railroad crossings.

Design considerations for spill prevention control include manually operated valves located along the line to provide for shutoff in emergencies. These valves are placed approximately ten miles apart depending upon terrain and accessibility. In addition, the pump stations have line over-pressure protection to limit line pressure to 110 percent of operating pressure. The pump stations are controlled by dispatchers through a computerized control system which provides

continuous 24 hours per day, 7 days per week information on pressures, flow rates, and metered volumes for leak detection.

In the event that an emergency arises, the affected portion of line is closed. The federal and state Environmental Protection Agency offices and the Office of Pipeline Safety, Department of Transportation are notified of the occurrence. Procedures for containment, clean-up and repair are then instituted so that normal operation can be resumed as soon as possible (refer to Section IVB3 for additional discussions of spill containment and clean-up procedures).

F. Description of Other Projects in the Area

The only other known major pipeline project in the area of the proposed Mason City-Cottage Grove pipeline is the Dome Pipe Line Project, which traverses the southwestern portion of the state in a northwest-southeast direction. The proposed Dome pipeline will intersect with the Williams Pipeline near the Freeborn-Steele County line. No special problems or unusual construction activities are anticipated at this intersection point.

There are no other known major construction projects (e.g., drainage ditch, road improvements) which would be affected by the installation of the proposed pipeline.

II. DESCRIPTION OF THE EXISTING ENVIRONMENT

A. Land Use

The following subsection is broken down into three parts: existing land use, proposed land use, and agriculture. Parts 1 and 2 summarize major land use activities and development trends. An inventory of specific land uses crossed by the proposed pipeline is provided in Tables 1 and 2 (A-E). Figure 8 (Maps 1-6) illustrates selected existing land use features evident within one mile either side of the pipeline right-of-way.

Because agriculture is the dominant land use traversed by the pipeline route, a separate discussion has been provided relative to agricultural activities and crop production within the counties affected by the proposed project (Part 3).

1. Existing Land Use

Freeborn County

Land use in Freeborn County consists principally of agriculture and agriculturally related activities. Of the 468,719 acres in Freeborn County, over 87 percent is devoted to this extensive land use (United States Department of Commerce, 1974). Urban areas are scattered throughout the county, the city of Albert Lea being the largest with a 1970 population of 19,418.

The proposed route is situated in rural, agricultural areas of the county (see Table 2-A and Figure 8, Maps 1 and 2). The pipeline right-of-way crosses no formally classified areas, or incorporated communities, nor causes any structures to be removed. Principal highways traversed include U.S. Highway 69, Interstate 90, U.S. Highway 16, and State Trunk Highway 13.

The city of Albert Lea, at its closest point, is located approximately 1.5 miles east of the proposed pipeline. There are only two other population centers in proximity to the pipeline: the villages of Twin Lakes (1970 population-230) and Clarks Grove (1970 population-480), located approximately .75 mile and 1.6 miles from the pipeline route, respectively.

Steele County

Land use activities in Steele County are dominated by agriculture. Approximately 82 percent of the county's land is under active cultivation (United States Department of Commerce, 1974). The largest urban center within the county, the city of Owatonna, is located approximately 4 miles east of the proposed pipeline. Other smaller villages and unincorporated areas are widely dispersed throughout the county.

The dominant land use along the proposed right-of-way is agriculture. Active cropland and pasture land comprise

over 95 percent of the land cover (See Table 2-B). The right-of way crosses major highways at State Trunk Highway 30 and U.S. Highway 14. The only urban area in proximity to the proposed pipeline route is the village of Ellendale (1970 population=569), which is located approximately 1.6 miles to the east.

Beaver Lake County Park (T105N, R21W) is located immediately west of the pipeline right-of-way. Potential impact on this facility is addressed in Section III-I of this EIS.

Rice County

Rice County covers approximately 317,632 acres, of which agriculture and residential land uses are prominent (United States Department of Commerce, 1974). A decrease in the number of farms and total cropland is reflected in a noticeable rural to urban transition (Community Planning & Design Associates, Inc., 1967). The cities of Faribault and Northfield are major growth centers.

The proposed route is situated primarily in rural, agricultural areas, excepting an approximate three mile portion within the city of Faribault. The route in this area traverses the northern edge of a private campground, a mobile home park, a subdivision, and the edge of a golf course (see Appendix A, sheet no. 17). No structures will

be removed as the proposed pipeline will, for the most part, be incorporated into an existing pipeline right-of-way. The only deviation from the parallel concept is in the area of the golf course where a new right-of-way is delineated at the edge of the golf course property to avoid the facility's active use areas. Principal highways crossed are U.S. 65 and Interstate 35.

Dakota County

Dakota County land use is a mixture of agricultural and residental development. Northern Dakota County is receiving considerable growth pressures from the metropolitan Minneapolis-St. Paul region, where many townships have incorporated. Land south and east of Apple Valley is of suitable agriculture quality with the county reporting approximately 65 percent of its total area of 368,384 acres in farm and pasture land (United States Department of Commerce, 1974).

The proposed right-of-way in Dakota County crosses a diversity of land use activities (see Table 2-D). In Greenvale and Eureka Townships, agricultural related land uses are dominant, though the proposed pipeline traverses the Airlake Industrial Park Airport near Lakeville. The 5,000 foot paved runway will be crossed approximately 500 feet from the southeastern end.

Land traversed by the remainder of the route is more intensively developed with suburban and/or urban uses. The incorporated communities of Lakeville, Apple Valley and Rosemount support suburban residential clusters, commercial and industrial services. Major cultural features which adjoin or cross the proposed right-of-way in this area include: two residential suburbs, two commercial establishments, several industrial complexes, and a golf course (see Appendix A, sheet Nos. 21-24).

Washington County

The 1974 Census of Agriculture (United States Department of Commerce) indicated that land use within the county was, for the most part, evenly distributed between agricultural (51 percent) and non-farm (49 percent) uses. It can be assumed that since 1974 additional agricultural land has been converted to urban related uses.

That portion of Washington County traversed by the pipeline project, however, reflects a greater dominance of agricultural land uses (see Table 2-E). The only exceptions to this are a stone quarry immediately north of the right-of-way in Section 26, Grey Cloud Island Township; a linear residential development north and west of the pipeline along Grey Cloud Trail; and woodland tracts adjacent to the Mississippi River and Grey Cloud Channel (see Appendix A, sheet No. 26) which are unavoidably crossed by the proposed pipeline.

TABLE 1

LAND USE INVENTORY - PIPELINE COMPOSITE

	Length in Miles	Percent of Total
Woodland	5.22	4.95
Wetland	2.37	2.25
Cropland	82.30	78.01
Pasture, Fallow and Open	9.87	9.36
Residential Land	1.47	1.39
Vacant Land(1)	1.25	1.19
Farmstead(2)	0.89	0.84
Industrial - Commercial	0.57	0.54
Extractive	0.12	0.11
Recreation Land(3)	0.60	0.57
Major Roadways(4)	0.26	0.25
River Crossings(5)	0.58	0.54
Totals	105.50	100.00
Incorporated Areas	(23.07)	(21.87)

(1) Unoccupied land adjacent to existing urban development.
(2) Land immediately adjacent to farm residence.
(3) Golf courses (see Appendix A, Sheet No. 17 and 23).
(4) Divided highways.
(5) Cannon River, Mississippi River and Grey Cloud Channel.

Source: Aerial Photography 1970, 1976
United States Geological Survey (USGS) Quadrangles

TABLE 2-A
LAND USE INVENTORY
PROPOSED PIPELINE RIGHT-OF-WAY
FREEBORN COUNTY

	Townships							
	Freeman	Nunda	Pickerel Lake	Manchester	Bancroft	Bath	County Total	
Length of Centerline (ft.)	35,100	2,325	34,150	12,650	27,300	33,075	144,600	(27.39 mi.)
Acres Potentially Affected[1]	40.28	2.67	39.20	14.52	31.33	37.96	165.96	
Length of Woodland (ft.)	1,525	0	1,100	325	1,325	1,250	5,525	(1.05 mi.)
Acres of Woodland	1.75	0	1.26	.37	1.52	1.43	6.33	
Length of Wetland (ft.)	1,175	175	0	0	875	1,625	3,850	(.73 mi.)
Acres of Wetland	1.35	.20	0	0	1.00	1.87	4.42	
Length of Cropland (ft.)	27,825	2,150	31,500	12,025	21,400	29,675	124,575	(23.60 mi.)
Acres of Cropland	31.94	2.47	36.16	13.80	24.57	34.06	143.00	
Length of Pasture, Fallow and Open (ft.)	2,950	0	1,550	0	3,325	525	8,350	(1.58 mi.)
Acres of Pasture, Fallow and Open	3.38	0	1.78	0	3.81	.60	9.57	
Length of Residential (ft.)	0	0	0	0	0	0	0	
Acres of Residential	0	0	0	0	0	0	0	
Length of Vacant Land (ft.)	0	0	0	0	0	0	0	
Acres of Vacant Land	0	0	0	0	0	0	0	
Length of Farmsteads (ft.)	1,325	0	0	0	375	0	1,700	(.32 mi.)
Acres of Farmsteads	1.52	0	0	0	.43	0	1.95	
Length of Industrial · Commercial (ft.)	0	0	0	0	0	0	0	
Acres of Industrial · Commercial	0	0	0	0	0	0	0	
Length of Extractive (ft.)	0	0	0	0	0	0	0	
Acres of Extractive	0	0	0	0	0	0	0	
Length of Recreational (ft.)	0	0	0	0	0	0	0	
Acres of Recreational	0	0	0	0	0	0	0	
Length of Major Roadways (ft.)	300	0	0	300	0	0	600	(.11 mi.)
Acres of Major Roadways	.34	0	0	.35	0	0	.69	
Number of Surfaced Roads Crossed	4	0	2	2	2	3	13	
Number of Unsurfaced Roads Crossed	5	1	5	1	5	5	22	
Number of Railroads Crossed	1	0	2	2	2	0	7	
Number of Rivers Crossed	0	0	0	0	0	0	0	
Number of Continuous Streams Crossed	4	0	1	1	3	0	9	
Number of Intermittent Streams Crossed	3	0	0	0	0	0	3	
Number of Drainage Ditches Crossed	0	0	0	0	0	4	4	
Number of Residences Within 1/4 Mile	28	0	19	5	19	11	82	
Length of Incorporated Areas Crossed (ft.)	0	0	0	0	0	0	0	

(1) All acreage figures based on typical 50 foot wide right-of-way normally maintained

Source: Aerial Photography 1970, 1976
United States Geological Survey (U.S.G.S.) Quadrangles

TABLE 2-B
LAND USE INVENTORY
PROPOSED PIPELINE RIGHT-OF-WAY
STEELE COUNTY

	Townships					
	Berlin	Lemond	Meriden	Deerfield	County Total	
Length of Centerline (ft.)	32,275	32,025	32,375	32,500	129,175	(24.46 mi.)
Acres Potentially Affected(1)	37.04	36.75	37.16	37.31	148.26	
Length of Woodland (ft.)	875	425	300	300	1,900	(.36 mi.)
Acres of Woodland	1.00	.49	.34	.34	2.17	
Length of Wetland (ft.)	950	900	700	1,650	4,200	(.80 mi.)
Acres of Wetland	1.09	1.03	.80	1.89	4.81	
Length of Cropland (ft.)	29,075	30,100	28,425	29,250	116,850	(22.13 mi.)
Acres of Cropland	33.38	34.54	32.62	33.59	134.13	
Length of Pasture, Fallow and Open (ft.)	1,075	600	2,950	1,050	5,675	(1.07 mi.)
Acres of Pasture, Fallow and Open	1.23	.69	3.40	1.20	6.52	
Length of Residential (ft.)	0	0	0	0	0	
Acres of Residential	0	0	0	0	0	
Length of Vacant Land (ft.)	0	0	0	0	0	
Acres of Vacant Land	0	0	0	0	0	
Length of Farmsteads (ft.)	300	0	0	250	550	(.10 mi.)
Acres of Farmsteads	.34	0	0	.29	.63	
Length of Industrial · Commercial (ft.)	0	0	0	0	0	
Acres of Industrial · Commercial	0	0	0	0	0	
Length of Extractive (ft.)	0	0	0	0	0	
Acres of Extractive	0	0	0	0	0	
Length of Recreational (ft.)	0	0	0	0	0	
Acres of Recreational	0	0	0	0	0	
Length of Major Roadways (ft.)	0	0	0	0	0	
Acres of Major Roadways	0	0	0	0	0	
Number of Surfaced Roads Crossed	2	2	2	4	10	
Number of Unsurfaced Roads Crossed	4	4	4	3	15	
Number of Railroads Crossed	0	0	1	0	1	
Number of Rivers Crossed	0	0	0	0	0	
Number of Continuous Streams Crossed	0	0	1	0	1	
Number of Intermittent Streams Crossed	0	0	3	1	4	
Number of Drainage Ditches Crossed	1	1	0	1	3	
Number of Residences Within 1/4 Mile	21	7	11	21	60	
Length of Incorporated Areas Crossed (ft.)	0	0	0	0	0	

(1) All acreage figures based on typical 50 foot wide right-of-way normally maintained

Source: Aerial Photography 1970, 1976
United States Geological Survey (U.S.G.S.) Quadrangles

TABLE 2-C

LAND USE INVENTORY

PROPOSED PIPELINE RIGHT-OF-WAY

RICE COUNTY

	Townships					
	Warsaw	Wells	Cannon City	Bridgewater	County Total	
Length of Centerline (ft.)	32,150	27,150	5,250	38,375	102,925	(19.49 mi.)
Acres Potentially Affected(1)	36.90	30.94	6.03	44.03	117.90(2)	
Length of Woodland (ft.)	200	375	0	0	575	(.11 mi.)
Acres of Woodland	.23	.43	0	0	.66	
Length of Wetland (ft.)	650	550	0	225	1,425	(.27 mi.)
Acres of Wetland	.75	.63	0	.26	1.64	
Length of Cropland (ft.)	19,150	17,275	5,025	34,975	76,425	(14.47 mi.)
Acres of Cropland	21.98	19.83	5.77	40.13	87.71	
Length of Pasture, Fallow and Open (ft.)	11,575	850	0	3,175	15,600	(2.95 mi.)
Acres of Pasture, Fallow and Open	13.28	.98	0	3.64	17.90	
Length of Residential (ft.)	0	2,975	0	0	2,975	(.56 mi.)
Acres of Residential	0	3.41	0	0	3.41	
Length of Vacant Land (ft.)	450	2,375	0	0	2,825	(.54 mi.)
Acres of Vacant Land	.52	2.73	0	0	3.25	
Length of Farmsteads (ft.)	0	350	225	0	575	(.11 mi.)
Acres of Farmsteads	0	.40	.26	0	.66	
Length of Industrial · Commercial (ft.)	0	350	0	0	350	(.07 mi.)
Acres of Industrial · Commercial	0	.40	0	0	.40	
Length of Extractive (ft.)	0	0	0	0	0	
Acres of Extractive	0	0	0	0	0	
Length of Recreational (ft.)	0	1,375	0	0	1,375	(.26 mi.)
Acres of Recreational	0	1.58	0	0	1.58	
Length of Major Roadways (ft.)	125	475	0	0	600	(.11 mi.)
Acres of Major Roadways	.14	.55	0	0	.69	
Number of Surfaced Roads Crossed	2	7	0	3	12	
Number of Unsurfaced Roads Crossed	3	6	1	5	15	
Number of Railroads Crossed	0	1	0	0	1	
Number of Rivers Crossed	0	1	0	0	1	
Number of Continuous Streams Crossed	1	0	0	2	3	
Number of Intermittent Streams Crossed	3	2	1	1	7	
Number of Drainage Ditches Crossed	0	0	0	0	0	
Number of Residences Within 1/4 Mile	15	502	1	17	535	
Length of Incorporated Areas Crossed (ft.)	0	13,400	0	0	13,400	(2.54 mi.)
Other Features:						
Cannon River		200			200	(.04 mi.)

(1) All acreage figures based on typical 50 foot wide right-of-way normally maintained

(2) Acreage not computed for Cannon River Crossing

Source: Aerial Photography 1970, 1976

United States Geological Survey (U.S.G.S.) Quadrangles

TABLE 2-D
LAND USE INVENTORY
PROPOSED PIPELINE RIGHT-OF-WAY
DAKOTA COUNTY

	Townships		Villages					
	Greenvale	Eureka	Lakeville	Farmington	Apple Valley	Rosemount	Inver Grove	County Total
Length of Centerline (ft.)	29,000	33,025	26,175	6,575	17,675	33,900	15,925	162,275 (30.73 mi.)
Acres Potentially Affected[1]	33.29	37.90	30.04	7.54	20.29	38.90	16.10	184.06[2]
Length of Woodland (ft.)	1,200	3,050	0	0	0	3,800	6,925	14,975 (2.83 mi.)
Acres of Woodland	1.38	3.50	0	0	0	4.36	7.95	17.19
Length of Wetland (ft.)	1,550	150	0	0	650	125	550	3,025 (.57 mi.)
Acres of Wetland	1.78	.17	0	0	.75	.14	.63	3.47
Length of Cropland (ft.)	22,375	26,575	15,325	5,325	15,350	21,075	2,100	108,125 (20.48 mi.)
Acres of Cropland	25.69	30.51	17.58	6.11	17.62	24.19	2.42	124.12
Length of Pasture, Fallow and Open (ft.)	3,875	2,600	3,250	1,250	0	5,500	2,900	19,375 (3.41 mi.)
Acres of Pasture, Fallow and Open	4.44	2.98	3.73	1.43	0	6.31	3.32	22.21
Length of Residential (ft.)	0	0	4,825	0	0	0	0	4,825 (.91 mi.)
Acres of Residential	0	0	5.54	0	0	0	0	5.54
Length of Vacant Land (ft.)	0	325	1,200	0	225	0	1,350	3,100 (.59 mi.)
Acres of Vacant Land	0	.37	1.38	0	.26	0	1.55	3.56
Length of Farmsteads (ft.)	0	0	450	0	0	1,250	0	1,700 (.32 mi.)
Acres of Farmsteads	0	0	.52	0	0	1.43	0	1.95
Length of Industrial · Commercial (ft.)	0	325	500	0	1,450	350	0	2,625 (.50 mi.)
Acres of Industrial · Commercial	0	.37	.57	0	1.66	.40	0	3.00
Length of Extractive (ft.)	0	0	625	0	0	0	0	625 (.12 mi.)
Acres of Extractive	0	0	.72	0	0	0	0	.72
Length of Recreational (ft.)	0	0	0	0	0	1,800	0	1,800 (.34 mi.)
Acres of Recreational	0	0	0	0	0	2.07	0	2.07
Length of Major Roadways (ft.)	0	0	0	0	0	0	200	200 (.04 mi.)
Acres of Major Roadways	0	0	0	0	0	0	.23	.23
Number of Surfaced Roads Crossed	1	0	4	0	4	4	1	14
Number of Unsurfaced Roads Crossed	4	6	6	1	0	2	3	22
Number of Railroads Crossed	0	2	1	0	0	4	2	9
Number of Rivers Crossed	0	2	0	0	0	0	1	3
Number of Continuous Streams Crossed	1	0	1	0	0	0	0	2
Number of Intermittent Streams Crossed	2	4	3	2	1	0	0	12
Number of Drainage Ditches Crossed	0	0	1	0	0	0	0	1
Number of Residences Within 1/4 Mile	15	25	479	2	6	17	5	549
Length of Incorporated Areas Crossed (ft.)	0	0	26,175	6,575	17,675	33,900	15,925	100,250 (18.99 mi.)
Other Features:								
Mississippi River							1,900	1,900 (.36 mi.)

(1) All acreage figures based on typical 50 foot wide right-of-way normally maintained
(2) Acreage not computed for Mississippi River Crossing

Source: Aerial Photography 1970, 1976
United States Geological Survey (U.S.G.S.) Quadrangles

TABLE 2-E

LAND USE INVENTORY

PROPOSED PIPELINE RIGHT-OF-WAY

WASHINGTON COUNTY

	Township Grey Cloud	Village Cottage Grove	County Total	
Length of Centerline (ft.)	9,950	8,150	18,100	(3.43 mi.)
Acres Potentially Affected[1]	10.35	9.35	20.78[2]	
Length of Woodland (ft.)	4,625	0	4,625	(.87 mi.)
Acres of Woodland	5.30	0	5.31	
Length of Wetland (ft.)	0	0	0	(0 mi.)
Acres of Wetland	0	0	0	
Length of Cropland (ft.)	3,800	4,775	8,575	(1.62 mi.)
Acres of Cropland	4.36	5.47	9.84	
Length of Pasture, Fallow and Open (ft.)	400	2,750	3,150	(.60 mi.)
Acres of Pasture, Fallow and Open	.46	3.16	3.62	
Length of Residential (ft.)	0	0	0	
Acres of Residential	0	0	0	
Length of Vacant Land (ft.)	0	625	625	(.12 mi.)
Acres of Vacant Land	0	.72	72	
Length of Farmsteads (ft.)	200	0	200	(.04 mi.)
Acres of Farmsteads	.23	0	.23	
Length of Industrial · Commercial (ft.)	0	0	0	
Acres of Industrial · Commercial	0	0	0	
Length of Extractive (ft.)	0	0	0	
Acres of Extractive	0	0	0	
Length of Recreational (ft.)	0	0	0	
Acres of Recreational	0	0	0	
Length of Major Roadways (ft.)	0	0	0	
Acres of Major Roadways	0	0	0	
Number of Surfaced Roads Crossed	1	1	2	
Number of Unsurfaced Roads Crossed	2	0	2	
Number of Railroads Crossed	0	1	1	
Number of Rivers Crossed	1	0	1	
Number of Continuous Streams Crossed	0	0	0	
Number of Intermittent Streams Crossed	0	0	0	
Number of Drainage Ditches Crossed	0	0	0	
Number of Residences Within 1/4 Mile	11	5	16	
Length of Incorporated Areas Crossed (ft.)	0	8,150	8,150	(1.54 mi.)
Other Features:				
Mississippi River	575		575	(.11 mi.)
Grey Cloud Channel	350		350	(.07 mi.)

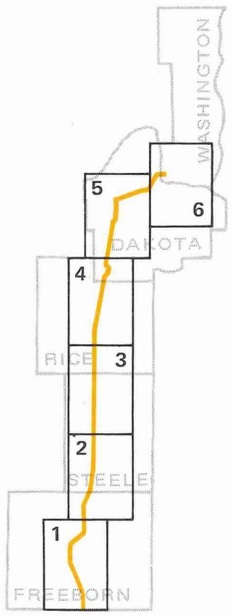
(1) All acreage figures based on typical 50 foot wide right-of-way normally maintained

(2) Acreage is not computed for Mississippi River and Grey Cloud Channel Crossings

Source: Aerial Photography 1970, 1976

United States Geological Survey (U.S.G.S.) Quadrangles

FIGURE 8 • EXISTING LAND USE (MAPS 1 THRU 6)



LOCATION KEY

LEGEND

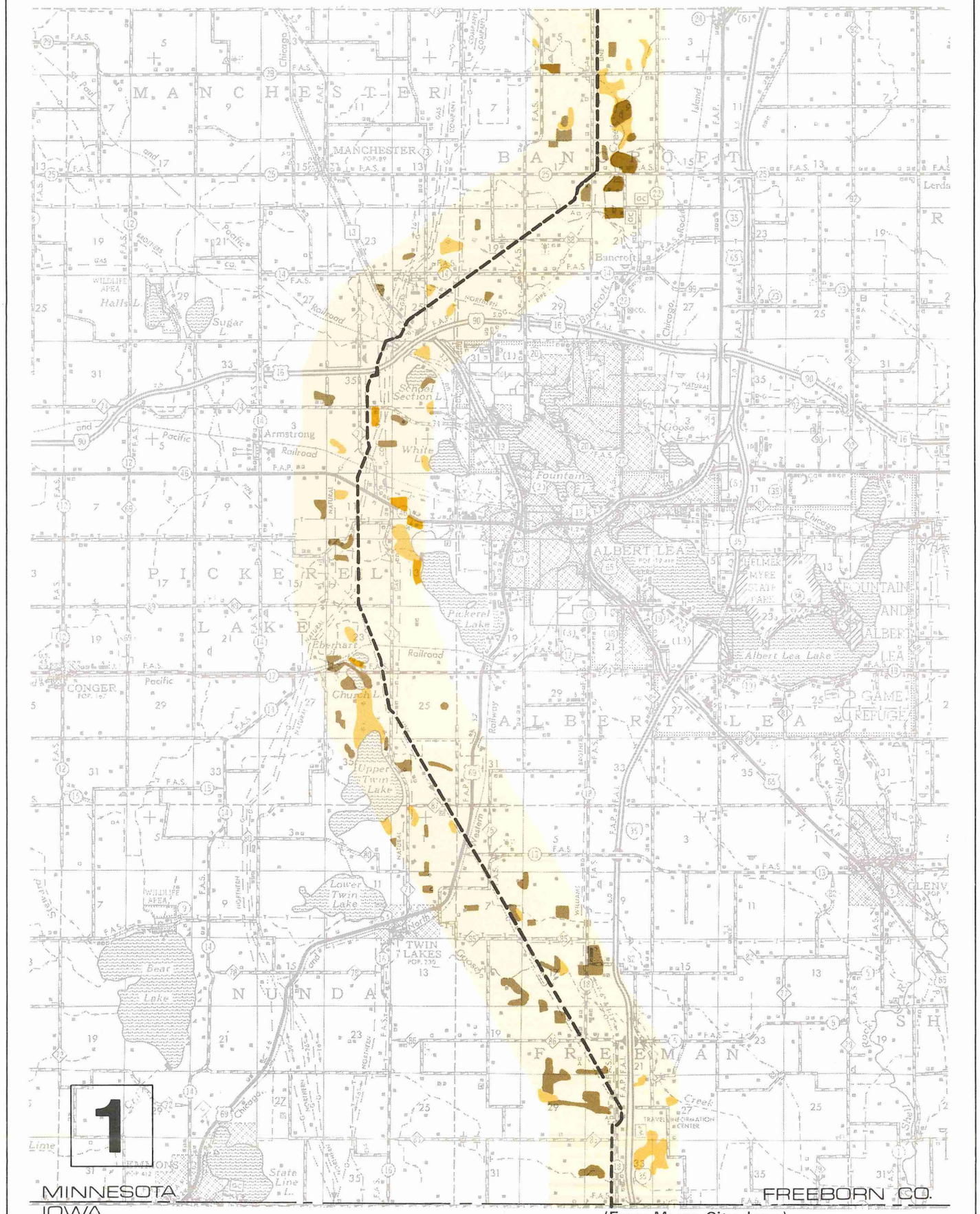
- PROPOSED PIPELINE
- AGRICULTURAL AND OPEN
- URBANIZED
- EXTRACTIVE
- WOODLAND
- WETLAND
- INCORPORATED AREA
- AIRFIELDS

BASE MAP SOURCE: Minnesota County Highway Maps;

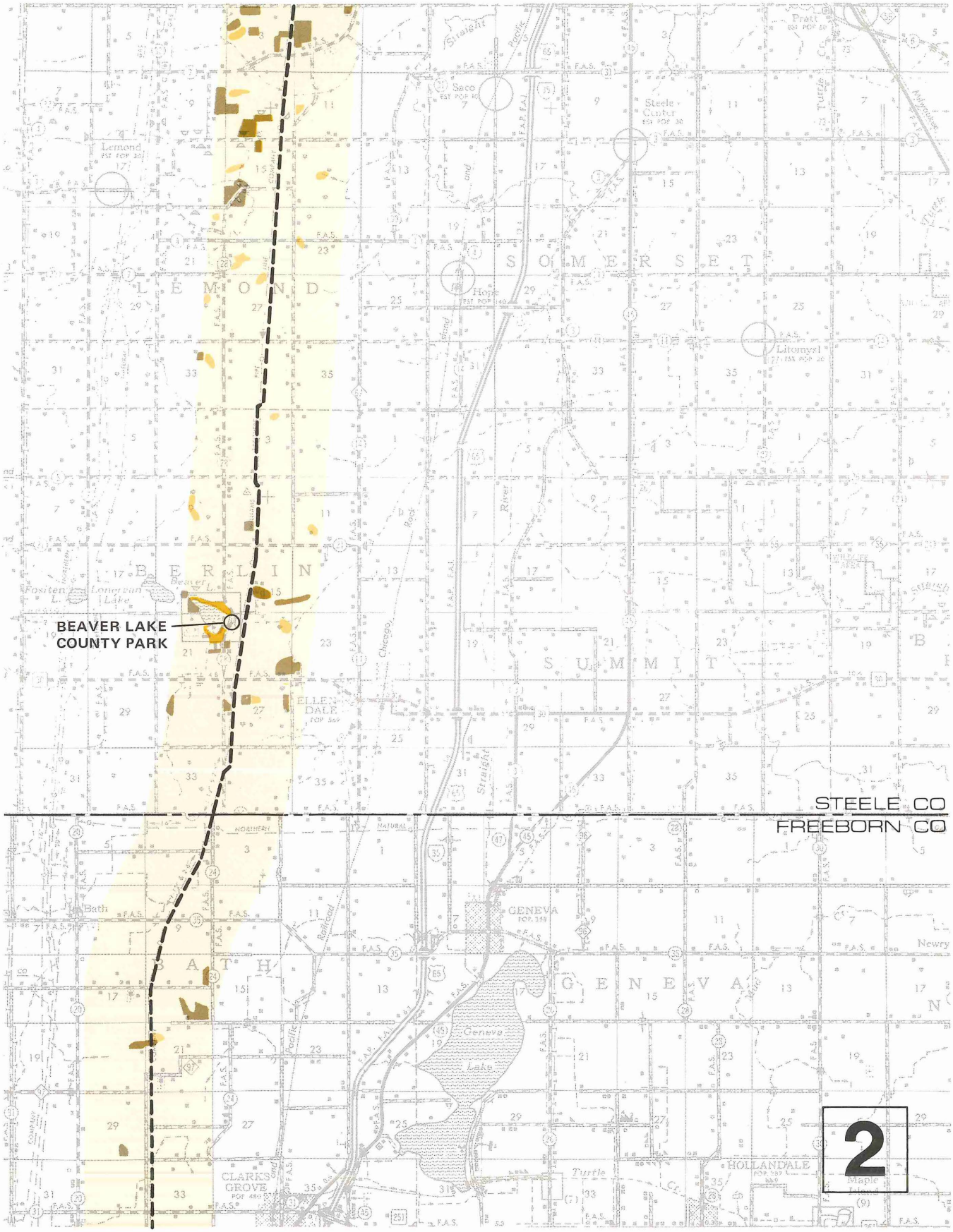
DATA SOURCE: Aerial Photography 1970, 1976. U.S.G.S. Topographic Quadrangles.

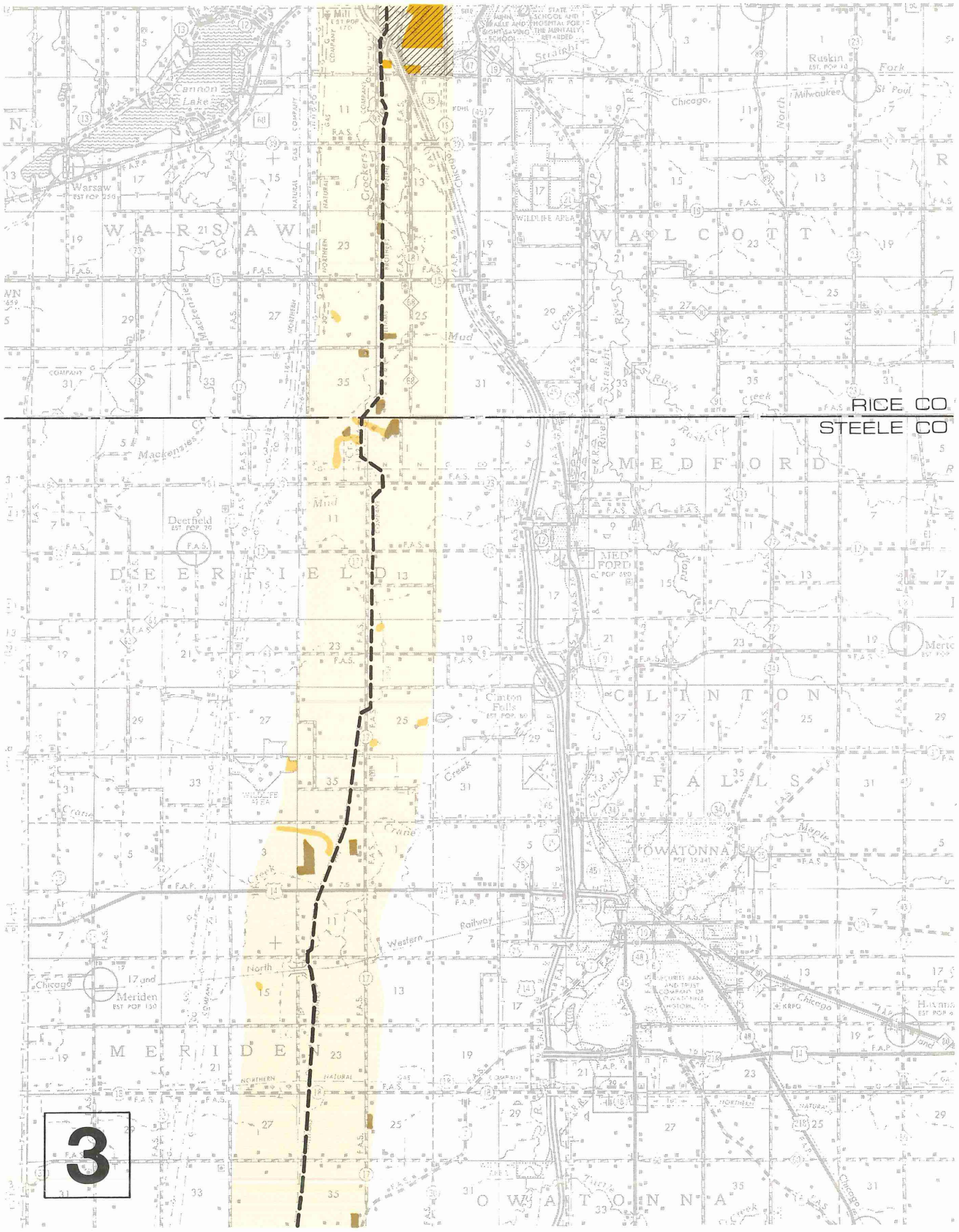
NORTH

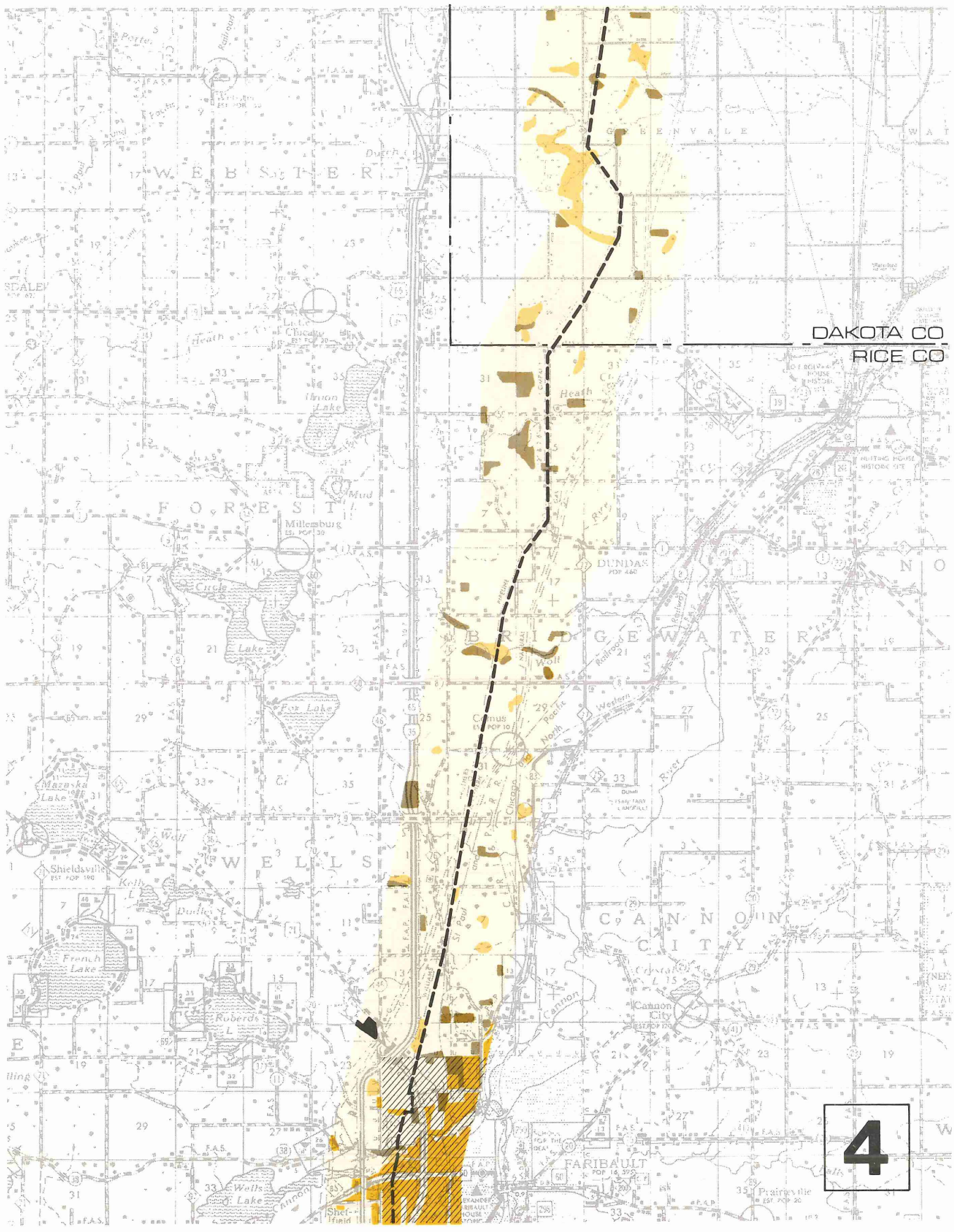
0 2 4
MILES

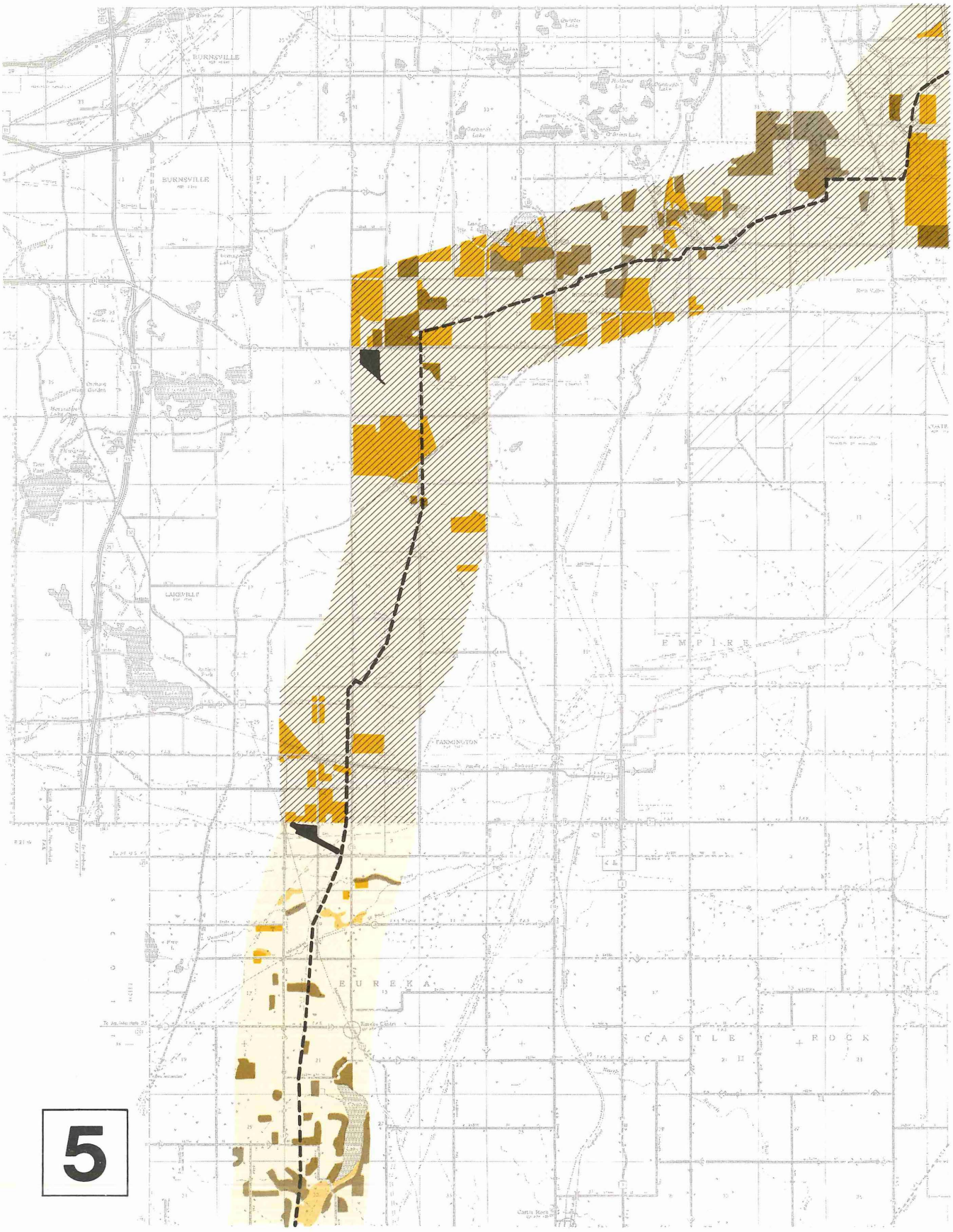


(From Mason City, Iowa)

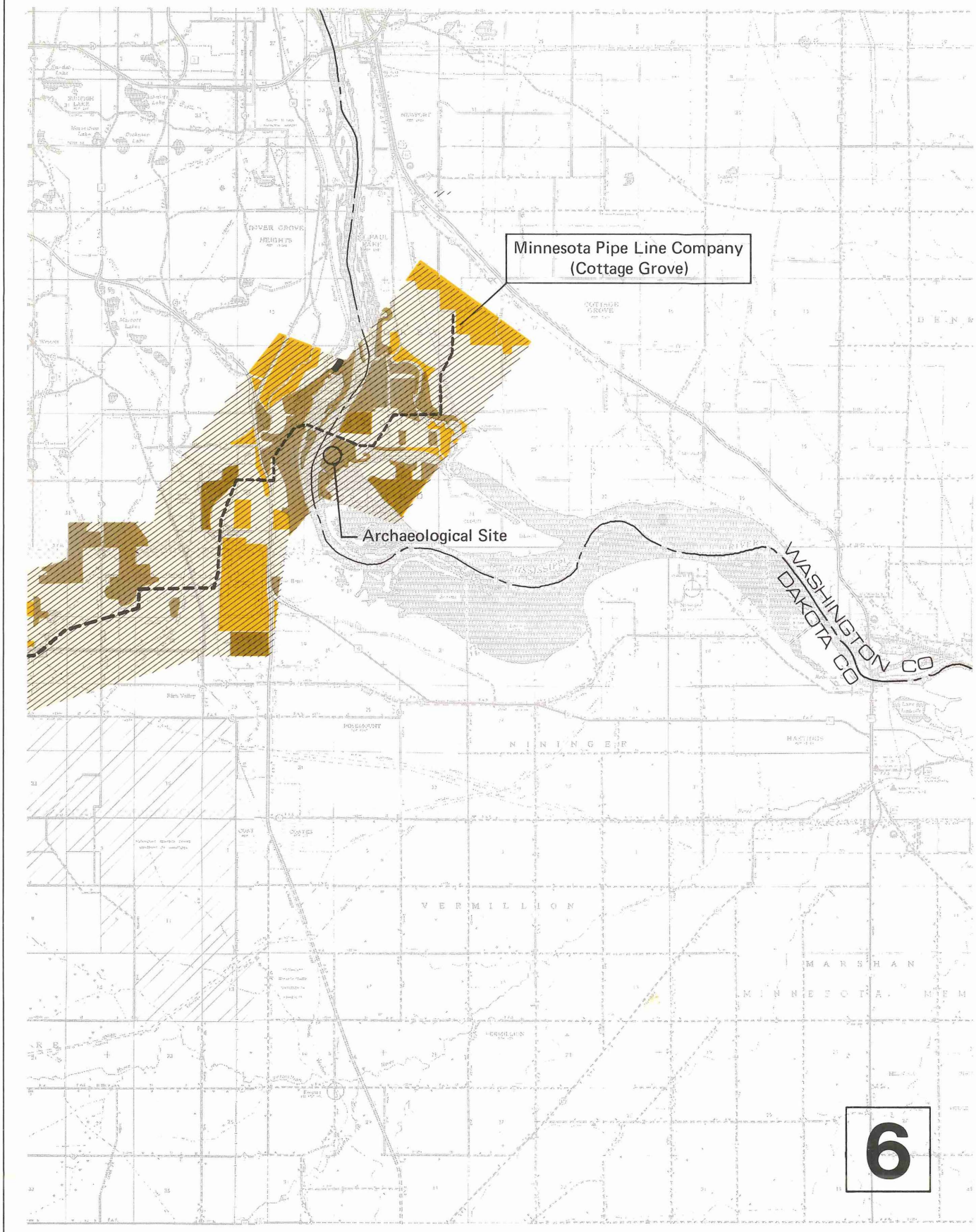

BEAVER LAKE
COUNTY PARK
STEELE CO
FREEBORN CO
2


RICE CO
STEELE CO
WARSAW
WALCOTT
MEDFORD
DEERFIELD
CLINTON FALLS
MERIDEN
OWATONNA
3


DAKOTA CO
RICE CO
4


BURNSVILLE
BURNSVILLE
LAKEVILLE
FARMINGTON
EMPIRE
EUREKA
CASTLE ROCK

5


Minnesota Pipe Line Company
(Cottage Grove)
Archaeological Site
WASHINGTON CO
DAKOTA CO
6

2. Proposed Land Use

Land use trends for the project area indicate a continued migration of farm residents to urban areas. Agricultural land will be displaced for more intensive residential, commercial and industrial needs. The number of farms will continue to decrease, though larger farmsteads will likely result. Lands of high productivity, such as in Freeborn County, will increase in significance and value for agricultural production.

Future residential growth will be most evident near existing municipalities. Communities such as Albert Lea, Owatonna and Faribault will remain major activity nodes in their respective counties. Rural populations are expected to decline as rural non-farm and urban populations increase.

Existing county and Metropolitan Council development plans indicate a continued dominance of agriculture and open space land uses along the proposed pipeline route. The pipeline right-of-way in Freeborn and Steele Counties traverses land which is exclusively planned for non-urban land uses (Vogt, Sage, & Pflum Consultants, 1970; Midwest Planning and Research, Inc., 1970). The route is similarly located in Rice County, excepting the city of Faribault where extended development is expected south of the city,and southwestern Bridgewater Township where industrial uses are proposed (Community

Planning & Design Associates, Inc., 1967). Continued suburban development in northern Dakota County is anticipated, especially in Apple Valley and Rosemount. Southern Dakota County townships are planned for continued agricultural uses (Metropolitan Council, 1975). In Washington County, additional residental development is anticipated in southwestern portions of Cottage Grove (Metropolitan Council, 1975).

3. Agriculture

The area agriculture is about evenly divided on a value of production basis between crops and livestock, however, most of the surface area of the land is devoted to growing crops for cash sale. Acreages, yields, and other pertinent data of the crops grown in the five county area are shown in Table 3. The principal crops are corn for both grain and silage, soybeans, alfalfa hay, and oats for grain. In addition to the field crops mentioned, high value crops such as potatoes, peas for processing, and sweet corn for processing, are produced on approximately 25,000 acres, primarily in Dakota and Freeborn Counties. Cabbage, onions, melons, apples, sweet corn, and other truck crops are grown in Dakota and Washington Counties for the fresh produce market in Minneapolis-St. Paul metropolitan area.

As shown in Table 3, the field crop yields of the

TABLE 3

CROP STATISTICS

	Unit of Measurement	Freeborn County	Steele County	Rice County	Dakota County	Washington County	Totals or Averages	Minnesota Average Yields
Total cropland	Acres	338,600	188,650	186,204	198,687	93,920	1,006,061	
Cropland Irrigated	Acres	483	55	33	5,100	2,030	7,701	
Percent of County in cropland	Percent	75.5	69.3	58.6	53.9	38.0	60.8	
Number of farms[1]	Number	1,631	1,170	1,374	1,024	764	5,963	
Average farm size[2]	Acres	228	180	162	224	156	169	
Average value of products sold per farm	Dollars	44,380	33,534	27,928	35,324	25,483	36,364	
Crops harvested[3]	(Acreage - Average Yields for 6 years, 1970-1975)							
Corn for grain	Acres-Bushels	150,200-93.8	84,817-90.8	79,367-93.6	67,900-88.0	27,700-79.4	409,984-89.1	83.4
Corn for silage[4]	Acres-Tons	6,850-12.4	9,350-11.5	13,100-11.8	11,900-11.3	6,100-11.8	47,300-11.8	(NA)
Spring wheat	Acres-Bushels	2,050-32.7	2,250-36.5	3,767-33.6	6,967-30.0	2,100-32.5	17,134-33.1	31.2
Oats	Acres-Bushels	19,550-61.5	19,850-61.0	18,183-60.3	24,183-59.8	10,133-53.8	91,899-59.3	51.4
Barley	Acres-Bushels	167-38.2	133-41.7	167-41.7	833-43.3	267-42.6	1,567-41.5	41.7
Soybeans	Acres-Bushels	119,750-28.4	56,167-27.8	40,467-26.0	40,183-23.7	9,817-22.6	266,384-25.7	26.5
Alfalfa hay	Acres-Tons	18,700- 3.9	21,167- 3.9	31,517- 4.2	24,500- 3.4	19,217- 2.8	115,101- 3.6	2.9
Irish potatoes	Acres-Hundred Wt.	6,483- 234	716-224	Minor	333-179	Minor	7,700-212[6]	204
Sweet corn[5]	-	1,381-(NA)	2,098-(NA)	644-(NA)	2,344-(NA)	Minor	6,597-(NA)[6]	4.7
Peas[5]	-	1,548-(NA)	1,331-(NA)	570-(NA)	6,857-(NA)	964-(NA)	11,270-(NA)	1.3

NA means not available

(1) Only farms with cropland
(2) All farms
(3) Other minor crops include: sorghum, sugar beets, winter wheat, rye, apples, other hay, fresh cabbage, onions and melons
(4) 1974 and 1975 only
(5) For processing. Figures for 1972 and 1973 only (sweet corn includes 1974)
(6) Partial estimate

Source:

U.S. Bureau of the Census, 1974 Farm Census (advance county summaries)
Minnesota Crop and Livestock Reporting Service, Minnesota Agricultural Statistics (Various years 1970-76), St.Paul, Minnesota
Minnesota Department of Economic Development, Agricultural Activities in Minnesota, Production Processing Marketing, St. Paul, Minnesota

five county area are generally higher than the average yields for Minnesota as a whole. This fact and the ability of the area to produce commercial quantities of vegetable crops indicate that the five counties are of above average value for agriculture.

B. Population

Table 4 provides general population data for those counties, townships, and municipalities involved in the proposed pipeline project.

All counties crossed by the pipeline experienced an increase in population from 1960 to 1970, ranging from Freeborn County, where population increased from 37,891 to 38,064 (+0.5 percent), to Dakota County where population increased from 78,303 to 139,808 (+78.5 percent).

Despite an overall increase in total county population, all 4 townships in Steele County, and 4 out of 6 townships in Freeborn County crossed by the pipeline right-of-way have experienced a decline in number of inhabitants. Only Pickeral Lake and Manchester Townships in Freeborn County experienced population increases. Increases in these two townships can be largely attributed to urban-oriented growth extending into the townships from the city of Albert Lea. All other townships in remaining counties involved with the pipeline project show increases in population from 1960 to 1970.

TABLE 4

POPULATION OF POLITICAL UNITS CROSSED
BY PROPOSED PIPELINE

1960-1970

Political Unit	1970	1960	Percent Change
Freeborn County	38,064	37,891	0.5
Freeman Township	648	671	- 3.4
Nunda Township	502	553	- 9.2
Pickerel Lake Township	817	679	20.3
Manchester Township(1)	610	609	0.2
Bancroft Township(2)	1,392	1,452	- 4.1
Bath Township(3)	654	754	-13.3
Steele County	26,931	25,029	7.6
Berlin Township	484	621	-22.1
Lemond Township	567	654	-13.3
Meridan Township	791	832	- 4.9
Deerfield Township	624	691	- 9.7
Rice County	41,582	38,988	6.7
Warsaw Township(4)	999	875	14.2
Faribault City	16,595	16,926	- 2.0
Wells Township	1,398	1,220	14.6
Cannon City Township(5)	1,062	955	11.2
Bridgewater Township(6)	1,315	1,019	29.0
Dakota County	139,808	78,303	78.5
Greenvale Township	624	594	5.1
Eureka Township	860	666	29.1
Lakeville Village(7)	7,556	924	717.7
Farmington Village(8)	3,104	2,300	35.0
Apple Valley Village(9)	8,502	--	--
Rosemount Village(10)	4,034	2,012	100.0
Washington County	82,948	52,432	58.5
Grey Cloud Island Township(11)	389	298	30.5
Cottage Grove Village(12)	13,419	--	--

(1) Part of township annexed by Manchester Village.
(2) Part of township annexed by Albert Lea City.
(3) Part of township annexed by Clarks Grove Village.
(4-5) Part of township annexed by Faribault City.
(6) Part of township annexed by Northfield City.
(7) Lakeville Township annexed by Lakeville Village.
(8) Part of Empire Township annexed by Farmington Village.
(9) Lebanon Township incorporated as Apple Valley Village.
(10) Rosemount Township annexed by Rosemount Village after 1970 census.
(11) Part of Gray Cloud Island Township annexed by St. Paul Park Village.
(12) Cottage Grove Township incorporated as Cottage Grove Village.

Source: U.S. Department of Commerce, Bureau of the Census, Number of Inhabitants - Minnesota, 1970 Census of Population.

The most significant increase in population was in Dakota County, due largely to the continuing migration of urban residences to the suburbs. Population increases for those Dakota County local units of government crossed by the proposed pipeline range from 5.1 percent in Greenvale Township to 717.7 percent in Lakeville Village.

C. Physiography

The project area lies within the Western Lake Section of the Central Lowland Province of the Interior Plains Division (Fenneman, 1946). The topography is dominated by glacial features such as glaciated till plains, moraines, lakes and outwash terraces. Topography varies south to north from the flat, gently undulating topography in Freeborn County, through the mesalike uplands and buttes of Dakota County, to the level, Mississippi outwash terraces of Washington County.

The knob and basin topography of southern Dakota County reflects the early post glacial stream erosion of the limestone and sandstone bedrock. As the thickness of the glacial deposits increase to the south and west,the topography becomes a gently rolling till plain broken by 50-100 foot ridges of end moraines and by the valleys and terraces of the Vermillion, Cannon, Cedar,and Straight Rivers and their tributaries. Elevations range from 750 feet above sea level in Washington

County to 1300 feet in Freeborn County; glacial drift ranges in thickness from less than 50 feet in the north to 400 feet in Steele and Freeborn counties.

D. Geology

Devonian and Ordivician sedimentary limestones, dolomites, shales, and sandstones are overlain by glacial drift varying in thickness from less than 100 to more than 400 feet. Depths of glacial drift in the vicinity of the project eliminate any problems associated with Karst topography or sinkholes, more commonly found in Fillmore and eastern Mower counties. Structurally, the project area is on a boundary between a bedrock basin to the north and a bedrock trough dipping south into Iowa. Regionally, the bedrock formations dip to the southeast.

Glacial deposits consist of thin, deeply weathered, and eroded pre-Wisconsin age tills in the southern half of Dakota County. Younger, gray, Wisconsin age glacial deposits are present from Freeborn through Washington Counties, consisting of end and ground moraines in the uplands and alluviam and outwash in the drainage of the Mississippi, Cannon, and Straight Rivers.

Freeborn County is flat, gently undulating with small morainic belts forming north-south trending hills.

Steele County has two north-south trending end moraines with a typical hummocky appearance. The depressions are either

filled with water or contain peat deposits. There are some small outwash deposits along the Straight River. The rest of Steele County is relatively flat, till plain standing at 100 - 1200 feet above sea level.

The western third of Rice County is covered by broad moraines cut by the Cannon River Valley. The valley has two outwash terrace levels, one of which is two miles wide south of Faribault. Glacial material deepens in Rice County, forming a hummocky appearance south of Northfield with poorly developed drainage and many undrained depressions. Glacial drift is 400 feet thick in the uplands and 50 feet thick in the valleys.

The southern portion of Dakota County is dominated by streams deeply incised into the bedrock, forming mesalike uplands and buttes mantled by a thin veneer of glacial drift and loess derived from the Mississippi Valley. The remainder of Dakota County is Mississippi Valley outwash, with the exception of a series of moraines north of Rosemount. The outwash is a series of granular terraces generally attaining a thickness of 100 feet and locally reaching a thickness of 200 feet. The terraces are essentially level with groundwater being from 0-10 feet below the land surface. The moraines are steep hills (relief up to 150 feet) interspersed with deep depressions that either contain water or peat deposits.

Washington County from the Mississippi River to Cottage Grove consists of recent alluvium and glacial outwash terraces. These deposits are flat-lying except where braided by small streams. The material is granular with a thickness of from 75-125 feet. Abundant groundwater is present from 0-10 feet below the land surface. Some flooding occurs along the Mississippi River.

E. Hydrology

1. Surface Hydrology

The route lies entirely within the drainage of the Upper Mississippi River basin. Six watersheds are crossed, two of which are of only minor importance to the route. Significant rivers, creeks, intermittent streams, ponds, and all streams with banks sloping 12 percent or greater at the route crossing are shown in Table 5.

In Freeborn County the route passes through the upper 10 percent of the Shellrock River watershed. This river and its tributaries flow southeast to the Cedar River, approximately 85 miles downstream. The streams crossed by the route in this watershed are Goose Creek and its tributaries, and the upstream portion of the Bancroft Creek.

North of the Bancroft Creek the route passes through the uppermost part of the Little Cedar River watershed, although no dominant drainage pattern is evident in this area.

In Steele and Rice Counties, and the southern third of Dakota County, the route enters the Cannon River watershed, which includes a second major stream, the Straight River. The Cannon River flows northeast to the Mississippi River near Red Wing, approximately 45 miles downstream from the route crossing. The other streams crossed in this watershed include Crane Creek, Mud Creek, Crokers Creek, Wolf Creek, Heath Creek, and Chub Creek. All of these streams flow directly into the Straight or Cannon Rivers. A major wetland drains into Chub Creek in Section 33 (T113, R20W).

North of Chub Lake in Dakota County, the line enters the Vermillion River watershed. This river flows to the northeast into the Mississippi River near Hastings, approximately 25 miles downstream from the river crossing. The Vermillion River is the only major stream in this watershed.

In the central portion of Dakota County, the route skirts the southern edge of a hilly morainic area which does not exhibit a dominant drainage pattern. The area contains numerous small ponds, four of which are within 500 feet of the route. These ponds are listed in Table 5.

The route crosses the Mississippi River between Dakota and Washington Counties approximately 3-1/2 miles.

TABLE 5

INDIVIDUAL STREAMS CROSSED AND PONDS WITHIN 500 FEET OF PIPELINE

	Name	Section Twp./Rge.	Bank Slopes (Percent)(1)	Bank Soils	Remarks
Freeborn County	Unnamed drainage	33 101/21	0-12	Unsurveyed	Goose Creek tributary
	Goose Creek and wetland	17 101/21	0-6	Unsurveyed	Flows into Shellrock River
	Unnamed intermittent drainage	36, 35 103/22	0-12	Unsurveyed	Flows into School Section Lake
	Unnamed intermittent drainage	19 103/21	0-18	Unsurveyed	Flows into Fountain Lake
	Bancroft River	9 103/21	0-6	Unsurveyed	Flows into Fountain Lake
Steele County	Crane Creek	11 107/21	2-12	Loams, moderately eroded	Channelized ditch. Surrounding land occasionally flooded
	Mud Creek	36 109/21	2-12	Loams, moderately eroded	Channelized ditch
	Crockers Creek	24 109/21	2-18	Sandy loams, loams, some erosion	Parallels route. Bottom is dry loam and muck
	Unnamed intermittent drainage	13 109/21	2-18	Loams, sandy loams, some erosion	
	Crockers Creek	12 109/21	0-6	Sandy loams, loams	Parallels route
Rice County	Cannon River (2)	25, 36 110/21	2-25	Loams, sandy loams, some moderate erosion	At Faribault (on Straight River) max. discharge 5,990 cfs, May 1973; min. discharge 11.0 cfs February 1968
	Wetland	24 110/21	0-6	Loams	Water ponded usually
	Unnamed intermittent drainage	13 110/21	12-18	Loams, moderately eroded	
	Unnamed intermittent drainage	12 110/21	2-12	Loams and sandy loams	
	Unnamed intermittent drainage	6 110/21	6-18	Loams and sandy loams	Clay loam depression
	Wolf Creek	19 111/20	0-30	Sandy loams, loams	Bottom is frequently flooded
	Heath Creek	5 111/20	2-12	Loams, moderately eroded	Bottom is silty clay loam

(1) Slope data in Freeborn County is estimated from topographic maps
(2) Crossings illustrated in Exhibits 10-13

TABLE 5 (Continued)

	Name	Section Twp./Rge.	Bank Slopes (Percent) (1)	Bank Soils	Remarks
Dakota County	Unnamed intermittent drainage	28 112/20	2-12	Silt loams and loamy sand, moderarely eroded	Bottom is silty clay loam
	Wetland	21 112/20	6-12	Silt loams	No distinct drainage out
	Dutch Creek	16 112/20	2-18	Silt loams	Bottom is wet peat and muck
	Unamed intermittent drainage	4 112/20	2-30	Loams and silt loams	Bottom is wet peat and muck
	Wetland (2)	33 113/20	0-2	Marsh of wet peat,muck,silty clay loam and some sandy loam	Drained by Chub Creek
	Vermilion River (2)	4 113/20	2-6	Loams and loamy sand, moderately eroded	At Empire City (13 miles downstream) max. discharge 2,030 cfs Sept. 1942; min. discharge 8.4 cfs January 1975
	Unnamed intermittent drainage	33 114/20	6-12	Loams and sandy loams, moderately eroded	Drains into Vermilion River
	Unnamed intermittent drainage	10, 15 114/20	6-12	Silt loams, moderately eroded	Part of extensive system of dry drainages
	Unnamed pond	20 115/19	12-18	Sandy loams	Approximately 8 acres in size
	Three unnamed intermittent ponds	15, 21 115/19	6-12	Shallow loams, underlain by sand and gravel	Largest is approximately 30 acres in size
	Mississippi River (2)	26, 27 27/22	0-40	Loamy fine sands, sandy loams, and sands	At St. Paul, max. discharge 17,200 cfs, July 1972; min. discharge 62 cfs, Jan. 1971; 1967-75 average 802 cfs
Washington County	Grey Cloud Channel	24 27/22	0-25	Sandy loams and sands	Unnavigable channel on Mississippi River floodplain

downstream of St. Paul Park at River Mile 825.8. The main stream of the river is approximately 1300 feet wide at the crossing, with a 250 foot wide auxiliary channel to the west, which is the southern portion of River Lake. The river is commercially navigable at this point with the depth of the main channel maintained by dredging at approximately 9 feet. In 1973, approximately 20,000,000 tons of freight transited the river at this point in barges, and consisted of principally grain, coal, stone, and steel products. The river is also used extensively by pleasure boaters.

Water gaging information is available only for the Mississippi, Vermillion, and Straight Rivers. This data is shown in Table 5.

2. Groundwater

Water is available from two different sources within the area: glacial and bedrock. Sand and gravel lenses within the glacial drift supply farm and domestic wells in the upland areas of Rice, Steele, and Freeborn Counties. Municipal and industrial water supplies are obtained from aquifers in the bedrock, as are domestic supplies in Dakota and the northern part of Rice County. Large outwash terraces in the Mississippi, Cannon and Straight river valleys may be adequate for limited irrigation.

Groundwater levels range from 10-20 feet below the ground surface in the upland areas and from the ground surface to a depth of six feet in the valleys.

The major bedrock water sources available for municipal, industrial, and irrigation use are aquifers in the following formations: the St. Peter sandstone, the Galena limestone, and the Prairie Du Chien Group (Shakopee and Oneota dolomite) which are of Ordovician age; the Jordan sandstone and the Dresbach sandstones of Cambrian age; and in Freeborn County, the Cedar Valley limestone of Devonian age.

Water from Ordovician and Cambrian formations is calcium carbonate type, dissolved-solids content is generally less than 500 mg/l and sulphur less than 30 mg/l. Iron content is high and the water is very hard. The depths to the bedrock formations, depending upon the glacial overburden, are as follows: St. Peter sandstone 184-300 feet, Prairie Du Chien Group and Jordan sandstone 317-700 feet, Dresbach sandstone 750-760 feet, Gelena limestone 230-400 feet. The average individual thickness of each formation is over 100 feet.

Yields from wells now in bedrock aquifers range from 100-1500 gallons per minute.

Groundwater from glacial deposits are contained in lenses in the upland drift and in the outwash areas of the major drainages; terraces along the Cannon River south of Faribault are up to two miles wide and over 100 feet in thickness. The Mississippi River terraces attain a width of 10 miles and locally a thickness of 200 feet. Glacial groundwater is mostly of the calcium bicarbonate type with dissolved solids less than 500 mg/l with a calcium carbonate exceeding 180 mg/l.

F. Soils

Soils crossed by the proposed pipeline route are generally loams, silt loams, clay loams, and sandy loams which have formed from medium-textured calcareous glacial till of Wisconsin Age (see Table 6 and Figure 9, Maps 1-6).
Soil drainage varies from well drained to poorly drained, with very extensive agricultural drainage systems installed in the more poorly drained soils. Most of these wet soils are in Steele and Freeborn Counties, although lower portions of the landscape in the remaining counties are wet at least seasonally. In the wetter areas, scattered tracts of muck soils are present either along many of the drainages or in large depressions which range up to several hundred acres in size. Several of the larger tracts have been drained and are farmed for high value crops such as potatoes, snap beans, sweet corn, peas and asparagus.

Soils in the area are situated on a nearly level to rolling topography, with most slopes less than 12 percent. Some steeper soils are present along the surface watercourses and may slope up to 30 percent. The Burnsville-Scandia soils in northwest Dakota County are on the only rough, hilly topography along the route. A few slopes are as steep as 45 percent in this area, although the route avoids most of the steeper land which lies further north. Soil depth is generally over five feet, except for several areas noted in Table 6, where the surface soils are underlain by sand and gravel at 25-35 inches. These areas are usually on stream terraces, outwash flats, or in the hilly section described above.

The agricultural qualities of the soils are generally good, with Capability Class II soils predominating (only moderate limitations for agriculture). As a result, all of the soil associations are extensively farmed, except the Burnsville-Scandia soils, where the steeper topography limits the agricultural use to primarily woodland or pasture. Productivity is limited in the four county area by wetness, soil depth, and on much of the Lester, Hayden, and Clarion series, by erosion losses.

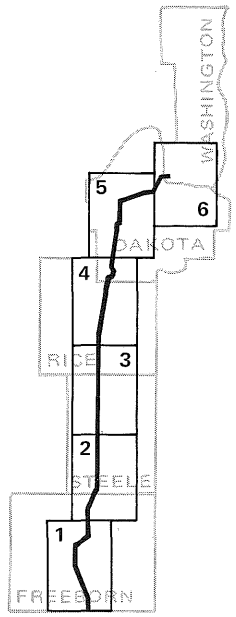
TABLE 6

AVERAGE SOIL ASSOCIATION CHARATERISTICS

	Soil Association[1]	Approximate Miles of Route	Slope	Depth	Drainage[2]	Topographic Position	Agricultural Productivity	Capability Class	Irrigation[3] Potential
Freeborn County	Hamel, Kilkenny, Minnetonka, Sigsbee clay loams	4.7	0-12%	Over 60 in.	Moderately poor to poor	Upland glacial till	Moderate, if drained where needed	II, III	Moderate to low
	Esterville, Dickman, Wadena loams and sandy loams	0.9	0-12%	Sand and gravel at 25 to 35 in.	Good to excessive	Low knolls and flats of stream terraces	Moderate	II, III	High, with sprinklers
	Lester, Webster, Clarion, loams and clay loams	20.3	0-12%	Over 60 in.	Good to poor	Knolls and flats of upland glacial till	Good,if drained where needed	II, III	Moderate, low where wet
Steele County	Wadena, Estherville loams and sandy loams	1.6	0-6%	Sand and gravel at 25 to 35 in.	Good to excessive	Flats, ridges and knolls of upland glacial till and stream terraces	Moderate	II, III	High, with sprinklers
	Webster, Clarion, Nicollet clay loams and loams	8.7	0-12%	Over 60 in.	Poor to good	Knolls and flats of upland glacial till	Good,if drained where needed	I, II, III	Moderate, except where wet
	Hayden, Webster, Lester loams and clay loams	3.8	0-12%	Over 60 in.	Good to poor	Knolls and flats of upland glacial till	Good,if drained where needed	II, III	Moderate, low where wet
	Lester, Webster, LeSueur loams and clay loams	8.5	0-12%	Over 60 in.	Good to poor	Knolls and flats of upland glacial till	Good,if drained where needed	II, III (some I)	Moderate, low where wet
Rice County	Clarion, Webster loams and clay loams	1.3	0-6% (some knolls to 12%)	Over 60 in.	Good to poor	Knolls and flats of upland glacial till	Good,if drained where needed	II (some III)	Moderate to low
	Estherville, Dickman sandy loams	4.5	0-2%	Sand at 15 to 30 in.	Somewhat excessive	Stream terraces along Cannon river and Crockers Creek	Low to moderate	III	High, with sprinklers
	Lester, Hayden loams and clay loams	13.5	0-12% (banks to 20%)	Over 60 in.	Good	Upland glacial till	Good	II, III (IV on steep slopes)	Moderate
Dakota County	Lester, Webster silt loams and silty clay loams	4.4	0-6%	Over 60 in.	Good to poor	Upland glacial till	Good,if drained where needed	I, II	Moderate
	Hayden, Lester loams and silt loams	2.7	2-12% (banks to 30%)	Over 60 in.	Good to moderately good	Upland glacial till	Good	II, III	Moderate, low where wet
	Port Byron silt loams	3.5	2-6%	Over 60 in.	Good	Upland loess	Good	II	Moderate
	Waukegan, Dakota silt loams	11.6	0-6%	Sand and gravel at 20 to 40 in.	Good	Outwash flats or stream terraces	Good	I, II	Moderate
	Burnsville, Scandia loams, sandy loams, and sands	5.9	6-12% (banks to 45%)	Reddish sand and gravel at 24 to 36 in.	Good to excessive	Hilly or rolling morainic areas	Low	II, III IV, VII	Low
	Dakota, Waukegan sandy and silty loams	1.9	0-6%	Sand and gravel at 24 to 36 in.	Good	Outwash flats	Moderate to good	II	Good to moderate
Washington County	Sparta, Dickman, Hubbard loamy fine sands, sandy loams, and sands	3.0	0-6% (banks to 40%)	Sand at 20 to 40 in.[4]	Excessive	Outwash plain, and terraces	Moderate[4]	II, III[4]	Moderate

(1) Listed south to north
(2) Poor along drainages or in lowlands
(3) Soil characteristics only. Estimated
(4) Estimated

FIGURE 9 • SOIL ASSOCIATIONS (MAPS 1 THRU 6)



LOCATION KEY

LEGEND

Soil Associations

1	Webster-Lester-Clarion
2	Hamel-Kelkenny-Minnetonka-Segsbee
3	Estherville-Dickman-Wadena
4	Webster-Clarion-Nicollet
5	Lester-Webster-LeSuer
6	Wadena-Estherville
7	Hayden-Lester
8	Lester-Hayden
9	Clarion-Webster
10	Estherville-Dickman
11	Lester-Webster
12	Waukegon-Dakota
13	Port Byron
14	Burnsville-Scandia
15	Dakota-Waukegan
16	Sparta-Dickman-Hubbard

DATA SOURCE: **U.S. Soil Conservation Service (Soil association names in Steele, Rice and Dakota Counties revised to reflect soils actually in vicinity of route.)**

NORTH

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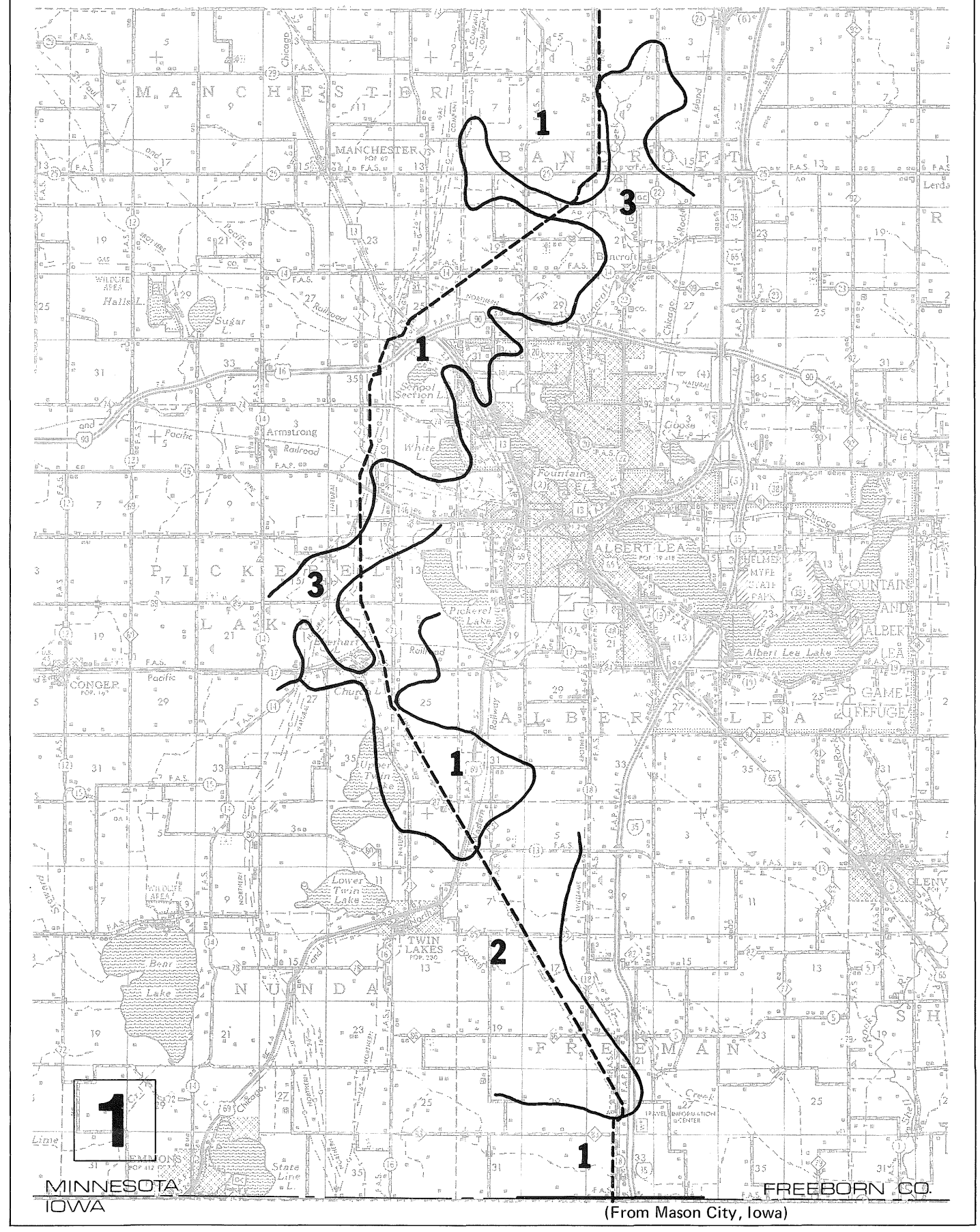
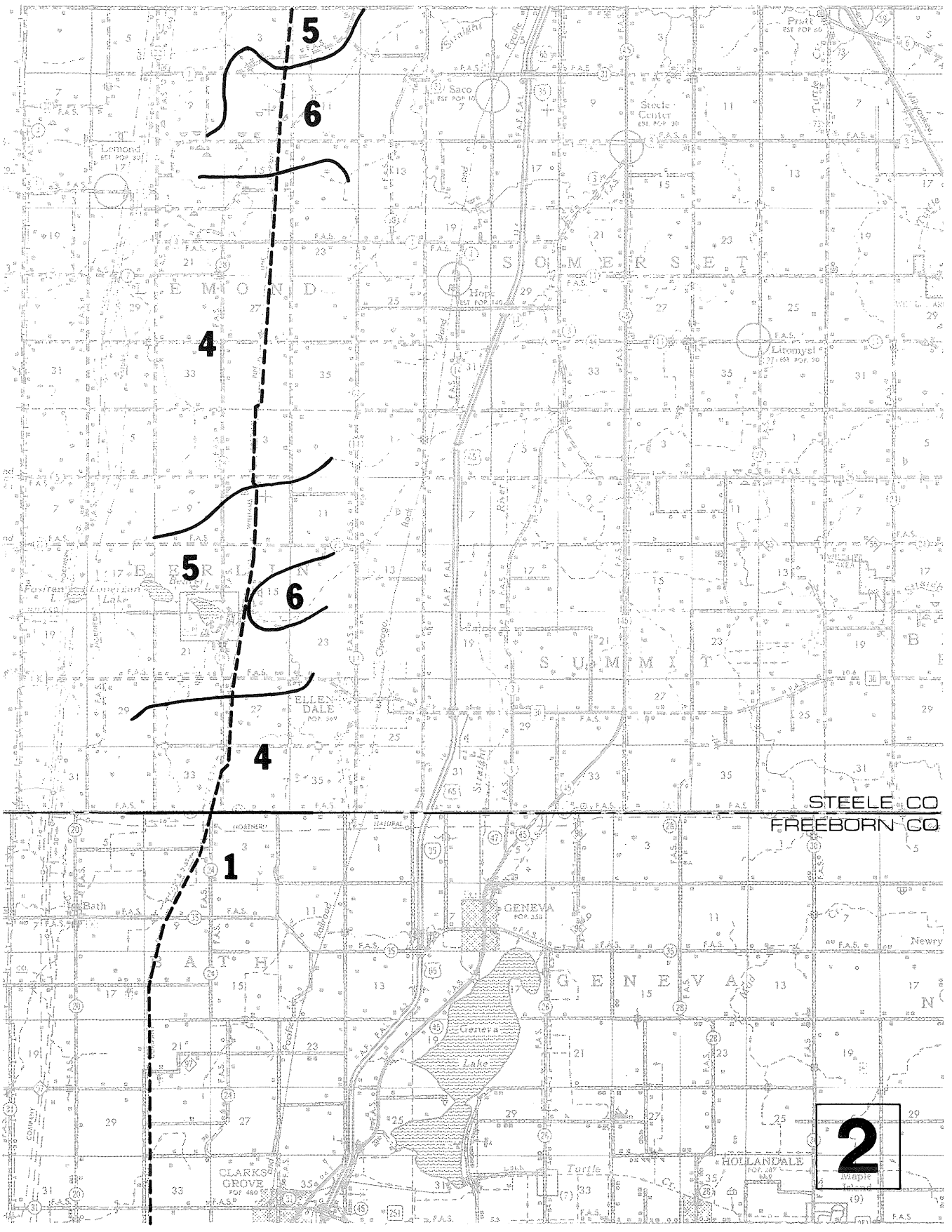
MILES

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FREEBORN CO
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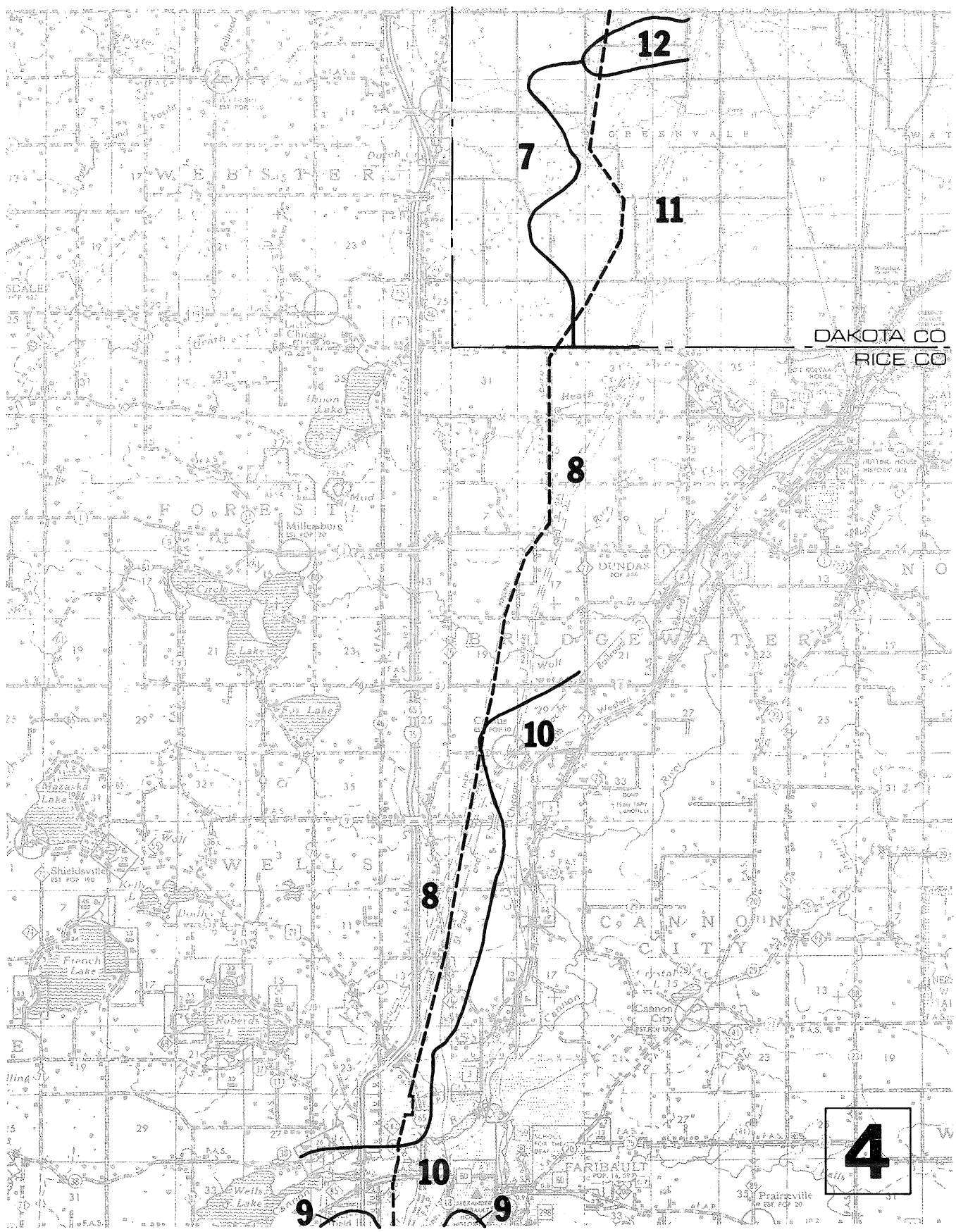
LEMOND
SOMERSET
BERLIN
SUMMIT
BATH
GENEVA
ELLENDALE
CLARKS GROVE
HOLLANDALE
Lemond
Saco
Steele Center
Hope
Litomysl
Ellendale
Bath
Geneva
Newry
Hollandale
Clarks Grove
Geneva Lake
Fostrom Lake
Emerson Lake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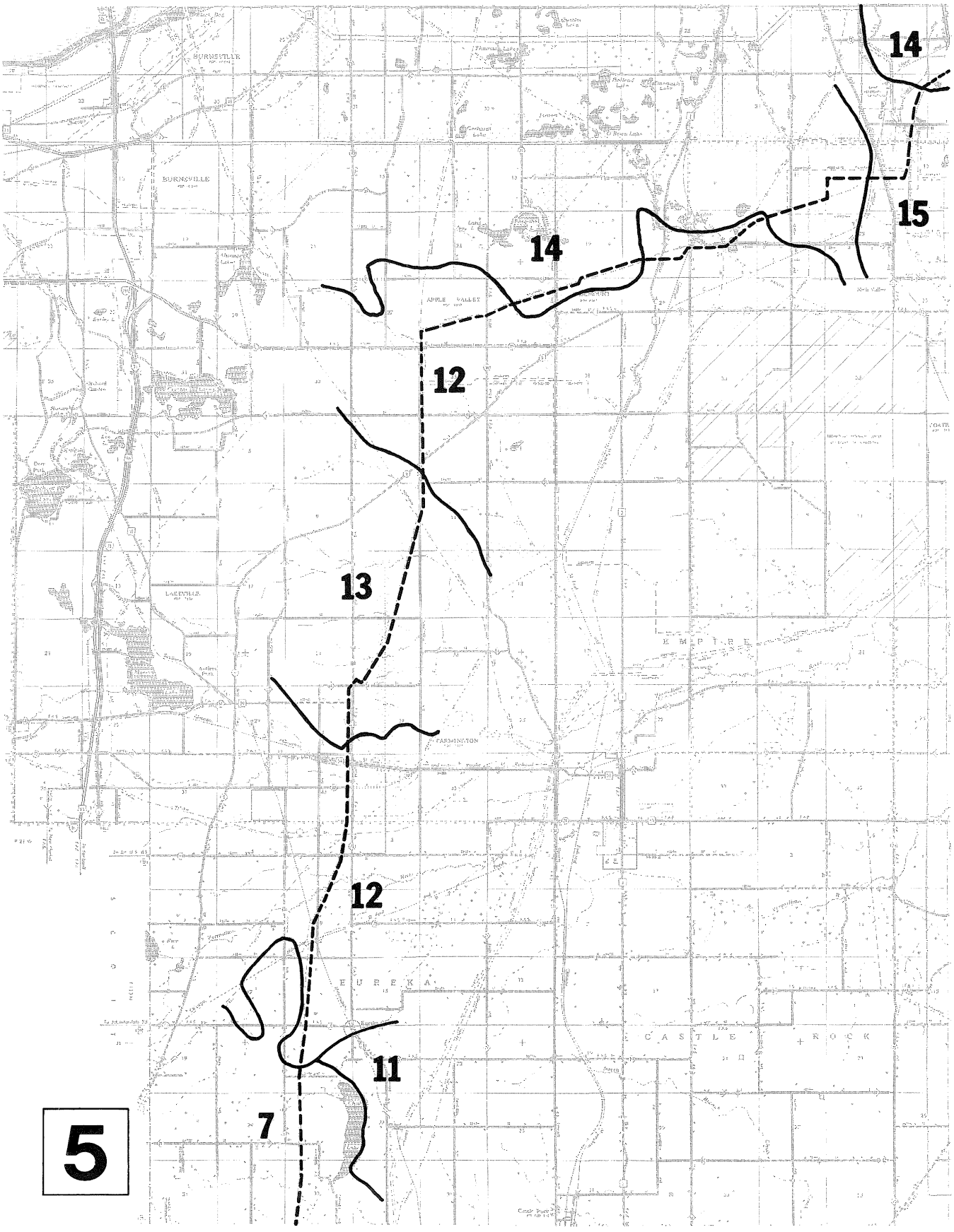
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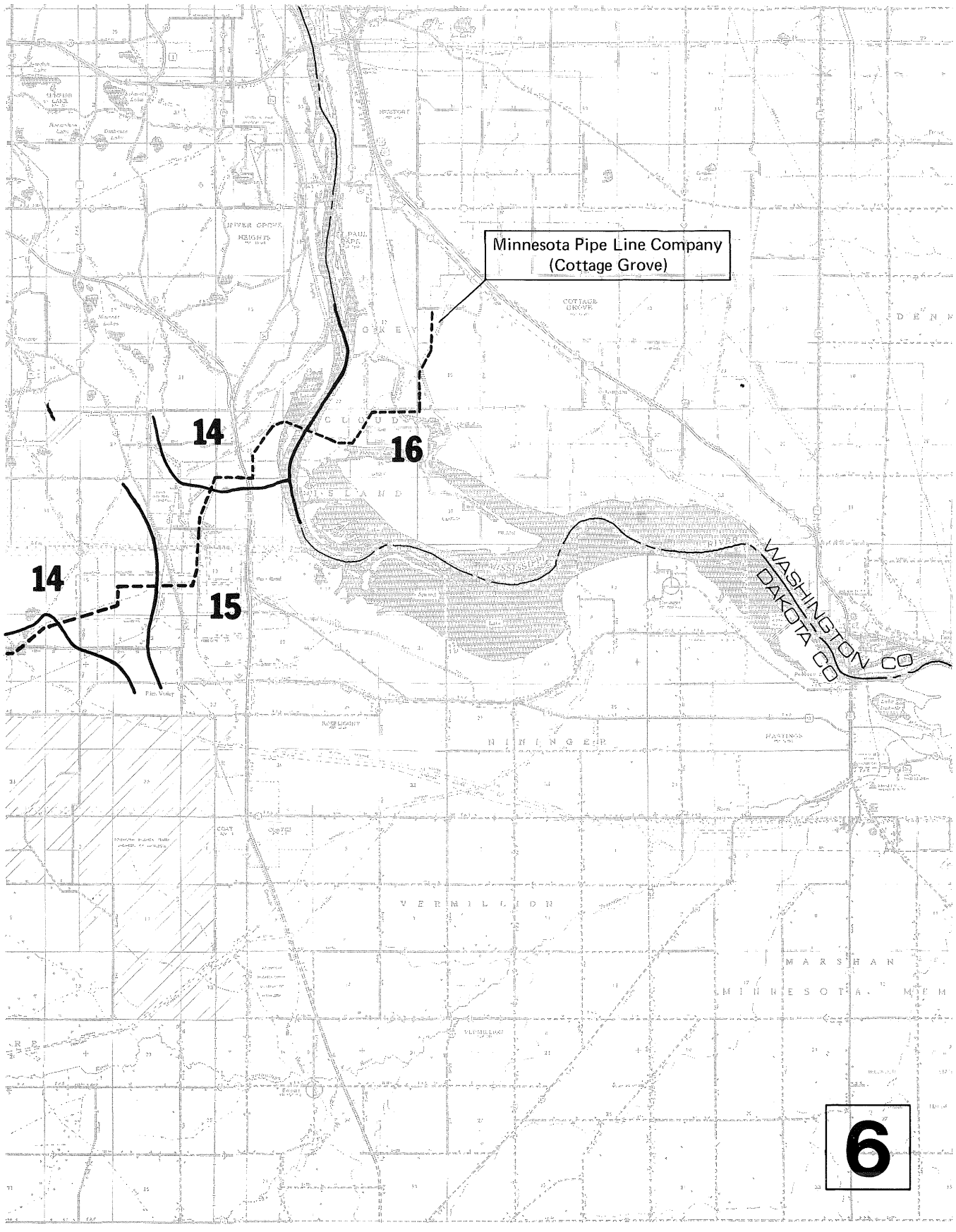
LAKEVILLE
FARMINGTON
EMPIRE
EUREKA
CASTLE ROCK


Minnesota Pipe Line Company
(Cottage Grove)
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WASHINGTON CO
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G. Terrestrial Biota

A generalized presettlement vegetation pattern for the project area (Project 80 Map) would have included three distinct ecosystems: northern hardwoods, oak savanna and true prairie. Kuchler (1964) & Barret (1962) described the vegetation of these basic types and others, and were used as primary references. Within the area traversed by the proposed pipeline route, however, six general habitat types have been identified: open water, prairie wetland, agricultural field, old field, ecotone, and woodland. The density of wildlife populations is dependent upon the type and quality of habitat available to them. The habitat requirements of food and cover must be met for a given species to utilize an area; therefore, a habitat type generally has certain species indigenous to it.

Open water vegetation would consist of various types of aquatic plants such as duckweed, waterweed, and pondweed as well as various other plants and algae. Open water habitat such as that found along the Mississippi, Vermillion, and Cannon Rivers and the Crane Creek watershed could provide loafing space for migrating waterfowl as well as habitat for fish and furbearing mammals. Diving ducks, such as redheads, ring-necked ducks, scaup, and golden-eye as well as coots and grebes, utilize these open water regions within the project area.

Prairie wetlands were extensively distributed but have diminished in numbers because of drainage for cultivation. These areas would be typified by grasses, sedges, cattails and willows. The wetland near Chub Lake is an excellent example. The prairie wetland habitat in this region represents one of the prime waterfowl breeding areas in North America. As stated, many have been drained to accommodate agricultural usage which has caused the remaining wetlands to become more important as nesting sites for such dabbling ducks as mallards, pintails, shovelers and teal. These wetlands are also utilized by rails, herons, shorebirds, game birds, hawks and mammals such as the striped skunk, muskrat and mink.

Because of the nearly continuous disruption of the vegetation within them, agricultural fields seldom afford habitat for wildlife species. However, they do offer a food source to many animals. In fact, some crops are utilized to such an extent that the species feeding on them are considered pests. Migrating waterfowl, particularly geese, blackbirds, and some galliform birds, as well as raccoon and white-tailed deer will find sustenance in grainfields, although they will seldom nest or den in them.

The Oak Savanna (old field) consisted of tall grass prairie interspersed with broadleaf deciduous trees either singly, but more often in groves. Big bluestem, little bluestem and burr oak were the dominant species in the past. This type still exists today in some locations, particularly around farmhouses where the trees have been left for protection and aesthetics, examples being the area near Heath and Chub Creeks and to a lesser degree at Bancroft Creek. However, the bluestems probably have lost dominance to various other introduced grasses. Also, some pastures in the area are similar with a grove of either oak or elm interspersed with grasses. As with wetlands, this vegetation type has been removed in favor of agricultural purposes. In addition, many abandoned agricultural fields are presently in various stages of secondary succession, thereby providing old field habitat. The old fields and prairie remnants, because of their vegetation similarities, also contain similar fauna. These ares, while not common along the proposed route, do provide habitat for many of the small rodents which are in-turn fed upon by many of the mammalian carnivores and most of the birds of prey. Several sparrows and most ground nesting birds inhabit the old fields.

The ecotone, or transition zone between two habitats, usually contains the most diverse biotic communities. The variety of vegetation, consisting of plants species from both habitats, affords both food and cover, and can support an equally wide variety of wildlife species. Species frequently utilizing this habitat type include the white-tailed deer, red fox, cottontail rabbit, and many of the smaller rodents and shrews. Bird species which might be present are warblers, bluebirds, woodcock, sparrows, and some upland game birds.

The northern hardwoods would be predominantly composed of sugar maple and basswood with box elder, bitternut hickory, ash and American elm also present. As settlement progressed westward, agriculture increased in importance and, as a result, much of the forested lands have been cleared for cultivation. In addition, the Mississippi and Vermillion River areas typify the northern floodplain forest type. The dominant tree species are cottonwood, black willow, and American elm. Less common species might include box elder, red maple, river birch, and ash. Most of these species were observed at the Mississippi, Vermillion, and Cannon Rivers and, to a certain degree, at Wolf Creek and at an area within the Chub Lake Marsh where an intermittent stream was observed. While not usually as diverse as the ecotone, these woodland habitats will contain

varying populations of squirrels, chipmunks, raccoons and other arboreal mammals. Birds commonly found in the woodlots include thrushes, nut hatches, kinglets and wrens.

H. Aquatic Biota

With the exception of the Mississippi and Cannon Rivers, there was little data available on creeks and classified streams crossed by the proposed pipeline. Further, most of the creeks and streams are intermittent and found in a dry condition during field inspection.

Moving from south to north, the proposed route traverses Goose and Bancroft Creeks, which are small intermittent streams, and several unnamed drainages in Freeborn County (see Table 5).In Steele County, Crane Creek, a drainage project, and Mud Creek are the only waterways crossed. Crockers Creek, Cannon River, Wolf Creek,Heath Creek and four unnamed drainages are crossed in Rice County.

In Dakota County, Duck and Chub Creeks as well as the Vermillion River and some of its immediate drainages are crossed by the proposed pipeline. The Mississippi River is crossed at the border of Dakota and Washington Counties, and the Gray Cloud Channel is crossed in Washington County. There are no lakes crossed by the pipeline within the five county study area.

Wetland classifications, based on the U.S. Fish and Wildlife Circular 39, state that wooded swamps (Type 7) often occur in association with shrub swamps (Type 6). An example of this is the wetland crossed by the proposed pipeline near Chub Lake (Section 33; R20W, T113N). Type 6 dominates, but as the area progresses from wetland to agricultural land (north) several types of trees are evident (ash and box elder) in the transition zone. The area was labeled wetland Type 6 for convenience. Near the Cannon River the pipeline also crosses a wetland which was classed as Type 6 because of the presence of willows. All other stream crossings occur at either intermittent or slowly moving streams (Type 1), some of which have been channeled for drainage purposes.

Public water classification data for the project area was extracted from the Minnesota DNR reports published by the Division of Waters, Soils and Minerals in 1973. This study indicates that there are three general classes of public water within the project area. These classes are:

- Natural Environment: Those waters which need a significant amount of protection because of their unique natural characteristics or their unsuitability for development and sustained recreational use.

- Recreational Development : Those waters which are capable of absorbing additional development and recreational use.

- General Development : Those waters which are at present highly developed or which, due to their location, may be needed for high density development in the future.

An inventory of public waters within the project area indicates that there are five lakes within one mile of the proposed pipeline which are included in the Natural Environment classification. These are:

Chub Lake - Section 28, T113N, R20W
School Section Lake - Section 36, T103N, R22W
Eberhart Lake - Section 23, T102N, R22W
Church Lake - Section 26, T102N, R22W
Upper Twin Lake - Section 35, T102N, R22W

Beaver Lake (Section 21, T105N, R21W) is the only public water within one mile of the pipeline route classified as Recreational Development. All other bodies of water crossed or within one mile of the pipeline are included in the General Development classification.

At the onset of the environmental analysis of the pipeline route, certain areas were identified as having potential significance and therefore earmarked for more detailed study. The areas were so designated by evaluating U.S.G.S. topographic maps and aerial photography, and conducting literature searches, field inspection and conversations with various state and federal officials.

Those natural areas which were chosen include: Bancroft and Goose Creeks in Freeborn; Crane Creek and Mud Creek in Steele County; Crockers Creek, the Cannon River, and Heath Creek in Rice County; and Duck Creek, Chub Creek, Chub Lake environs, and the Vermillion River in Dakota County; and the Mississippi River and Grey Cloud Channel in Washington County. All of these areas were then field inspected. Based on the surficial quality of the area and in particular land uses found in association with the community in question, four areas were identified for further analysis. These were the Cannon River, the marsh area near Chub Lake, the Vermillion River, and the Mississippi River. Further discussion of these areas will be presented in this section. The other areas will be discussed briefly in Section III G-Impact on Aquatic Biota.

Figure 10 shows the proposed pipeline crossing of the Cannon River. The crossing, which is located in T110N R29W, Sections 25 and 26, is at a narrow point of the river;

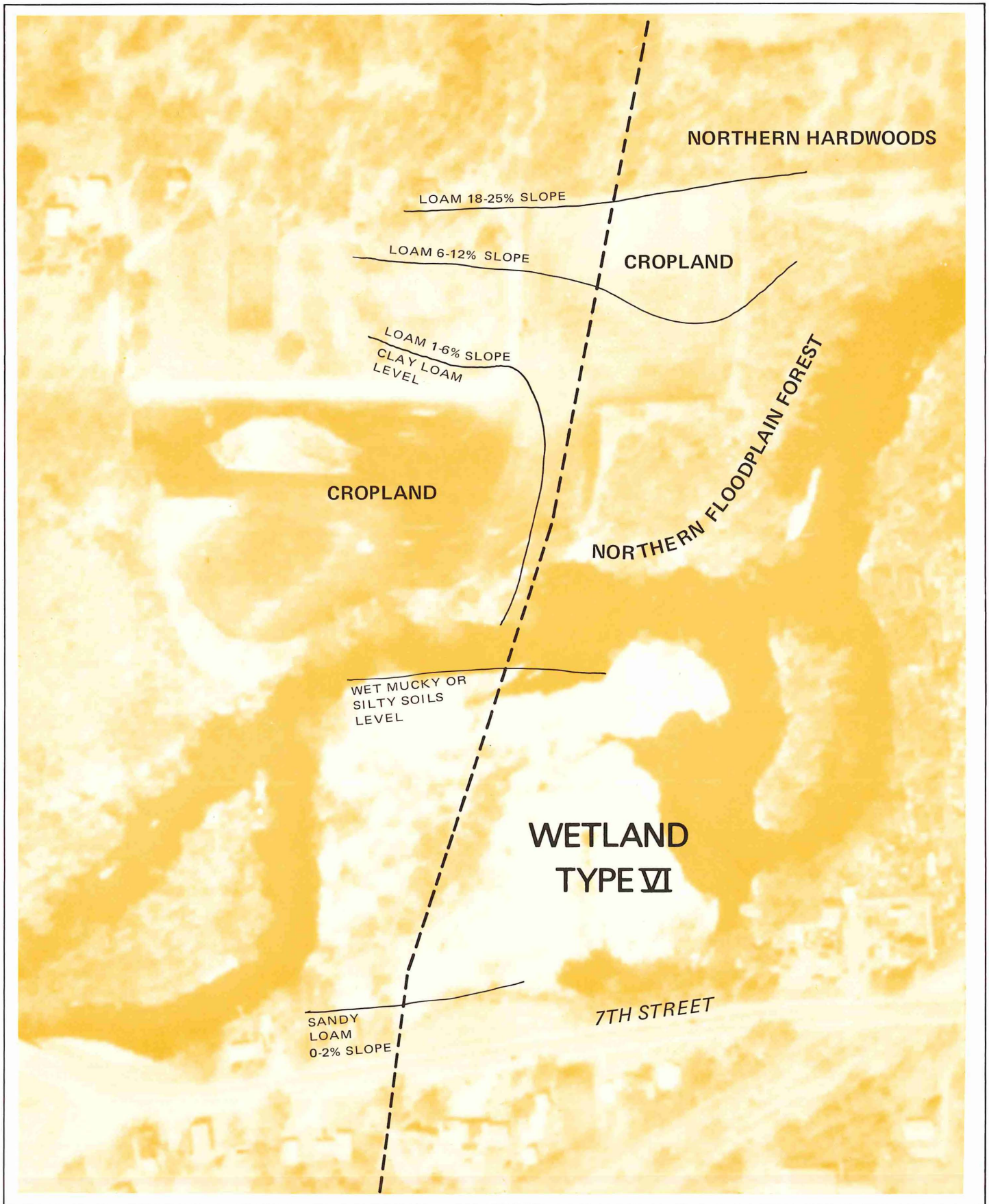

FIGURE 10. CANNON RIVER
RICE COUNTY
T110N-R21W
SECTIONS 25 & 36

PROPOSED PIPELINE

0 400 FEET

NORTH

TABLE 7

CANNON RIVER CROSSING

AQUATIC VEGETATION

Duckweed (*Lemna* sp.)
Waterweed (*Anacharis* sp.)

TERRESTRIAL VEGETATION

Herbaceous

Asparagus (*Asparagus officinalis*)
Smartweed (*Polygonum* sp.)
Vervain (*Verbena* sp.)
Jewelweed (*Impatiens pallida*)
Bur marigold (*Bidens* sp.)
Boneset (*Eupatorium* sp.)
Aster (*Aster* sp.)
Ragweed (*Ambrosia* sp.)
Nettle (*Laportea canadensis*)
Goldenrod (*Solidago* sp.)

Woody

Juniper (*Juniperus* sp.)
Basswood (*Tilia americana*)
Prickly ash (*Zanthoxylum americanum*)
Sumac (*Rhus* sp.)
Boxelder (*Acer negundo*)
Sugar maple (*Acer saccharum*)
Grape (*Vitis* sp.)
Virginia creeper (*Parthenocissus* sp.)
Bramble (*Rubus* sp.)
Hawthorne (*Creteagus* sp.)
Cherry (*Prunus* sp.)
Red oak (*Quercus* sp.)
White oak (*Quercus* spp.)
Hickory (*Carya* sp.)
Willow (*Salix* spp.)
Elm (*Ulmus* sp.)
Hackberry (*Celtis occidentalis*)
Dogwood (*Cornus* sp.)
Ash (*Fraxinus* sp.)
Commonelder (*Sambucus canadensis*)
Viburnum (*Viburnum* sp.)

however, there are wetland areas on the southern side and a narrow band of northern flood-plain forest species on the northern side. The wetland has been typed as a Type 6 shrub swamp following the system employed by state and federal agencies. The shrub and tree type vegetation is dominated by willow species. Smartweed, Joe-pye weed, goldenrod, and milkweed were commonly found in the association. The northern side was characterized by elm, ash, dogwood, and hawthorn in the canopy with spike rush, and touch-me-not common ground vegetation. Once past this tree line, cultivated land again became dominant. Other vegetation species identified are listed in Table 7.

Fisheries in the Cannon River were dominated in 1970 by carp ranging from 12 to 21 inches in length (DNR Field Records, 1970). In addition, white suckers, northern redhorse, walleyes, a hognose sucker, black bullhead, and rock bass were recorded. Most of these species are considered to be tolerant and therefore capable of inhabiting waters that are not pristine. Cannon Lake had a similar population which was dominated by carp and buffalo with 29,000 and 6,500 pounds, respectively, being taken by contract fishermen (Fisheries Manager, 1976). As stated, such tolerant fish species are usually indicators of deteriorated water quality and are found in association with more tolerant aquatic insects and benthic species.

In Section 33 of Eureka Township, Dakota County, the proposed line comes within one half mile of Chub Lake, and, in fact, traverses the western side of a marsh area associated with the lake. This alignment provides a route which least affects the marsh area and follows existing pipelines. There are various associations found in this area with Wetland Type 6 and Northern Hardwoods being dominant. As mentioned, the wetland community is on the eastern side of the alignment with the hardwoods on the west, which indicates how the area drainage is oriented. Species common to the woods included sumac, ash, elm, oak, box-elder, prickly ash, and poplars. Herbaceous vegetation included goldenrod, milkweed, aster, plantain, and yarrow. The wetland was dominated by water hemlock, blue flag, sedges, nettles, nannyberry and others which were found in association with elms, poplars box elders, and willows. A more complete listing of species identified can be found in Table 8, while the area is depicted in Figure 11.

Figure 12 shows the proposed Vermillion River crossing (T113N,R20W). The floodplain can be classified as a Wetland Type 1 Seasonally Flooded Basin or Flat. Examination of Figure 12 shows how narrow this floodplain is at the proposed crossing point. Aquatic vegetation included duckweed, grasses, cattails, and macroscopic periphyton. Common low-growing species included: strawberry, asters, mints, currents, golden-rods, and roses, while the trees were dominated by several

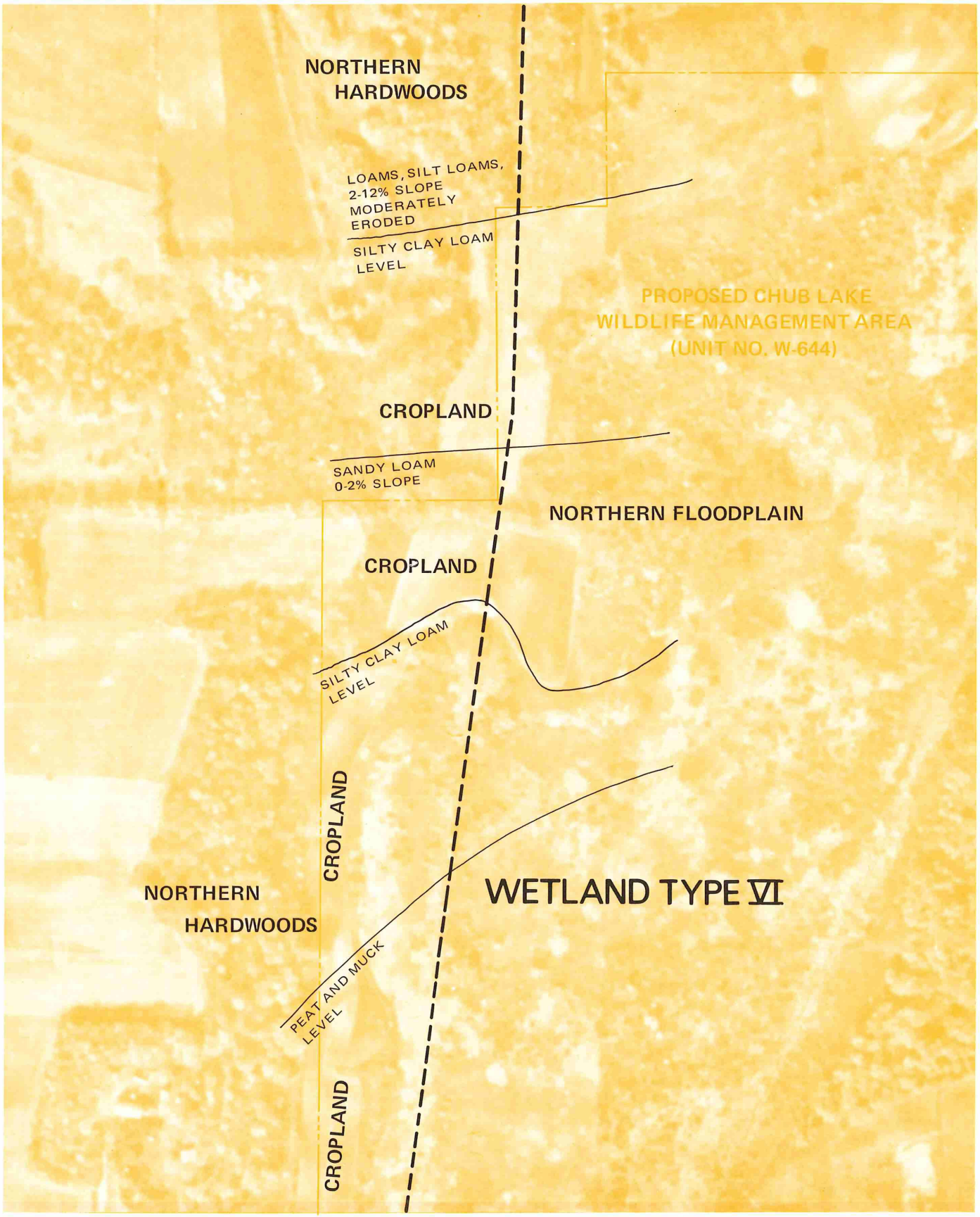

FIGURE 11. CHUB LAKE MARSH AREA
DAKOTA COUNTY
T113N-R20W
SECTION 33

PROPOSED PIPELINE

0 400 FEET

NORTH

TABLE 8

CHUB LAKE MARSH AREA

TERRESTRIAL VEGETATION

Herbaceous

Dock (*Rumex* sp.)
Wild geranium (*Geranium* sp.)
Jewelweed (*Impatiens* sp.)
Strawberry (*Fragraria* sp.)
Cinquefoil (*Potentilla* sp.)
Clover (*Trifolium* sp.)
Nettle (*Laportea canadensis*)
Water parsnip (*Sium suave*)
Water hemlock (*Cicuta maculata*)
Milkweed (*Asclepias* sp.)
Vervain (*Verbena* sp.)
Plantain (*Plantago* sp.)
Ragweed (*Ambrosia* sp.)
Joe-pye-weed (*Eupatorium maculatum*)
Goldenrod (*Solidago* sp.)
Aster (*Aster* sp.)
Yarrow (*Achillea millefolium*)
Thistle (*Cirsium* sp.)
Hawkweed (*Hieracium* sp.)
Bullrush (*Scirpus* sp.)
Sedge (*Cladium* sp.)

Woody

Baneberry (*Actea* sp.)
Basswood (*Tilia americana*)
Prickly ash (*Zanthoxylum americanum*)
Boxelder (*Acer negundo*)
Sugar maple (*Acer saccharum*)
Sumac (*Rhus* sp.)
Poison ivy (*Rhus radicans*)
Wild grape (*Vitis* sp.)
Virginia creeper (*Parthenocissus quinquefolium*)
Brambles (*Rubus* sp.)
Hawthorne (*Creteagus* sp.)
Wild cherry (*Prunus* sp.)
Gooseberry (*Ribes* sp.)
Red oak (*Quercus* sp.)
Bur oak (*Quercus macrocarpa*)
Hazel (*Corylus americana*)
Hickory (*Carya* sp.)
Aspen (*Populus* sp.)
Willow (*Salix* sp.)
Elm (*Ulmus* sp.)
Dogwood (*Cornus* sp.)
Ash (*Fraxinus* sp.)
Elder (*Sambucus canadensis*)
Greenbriar (*Smilax* sp.)

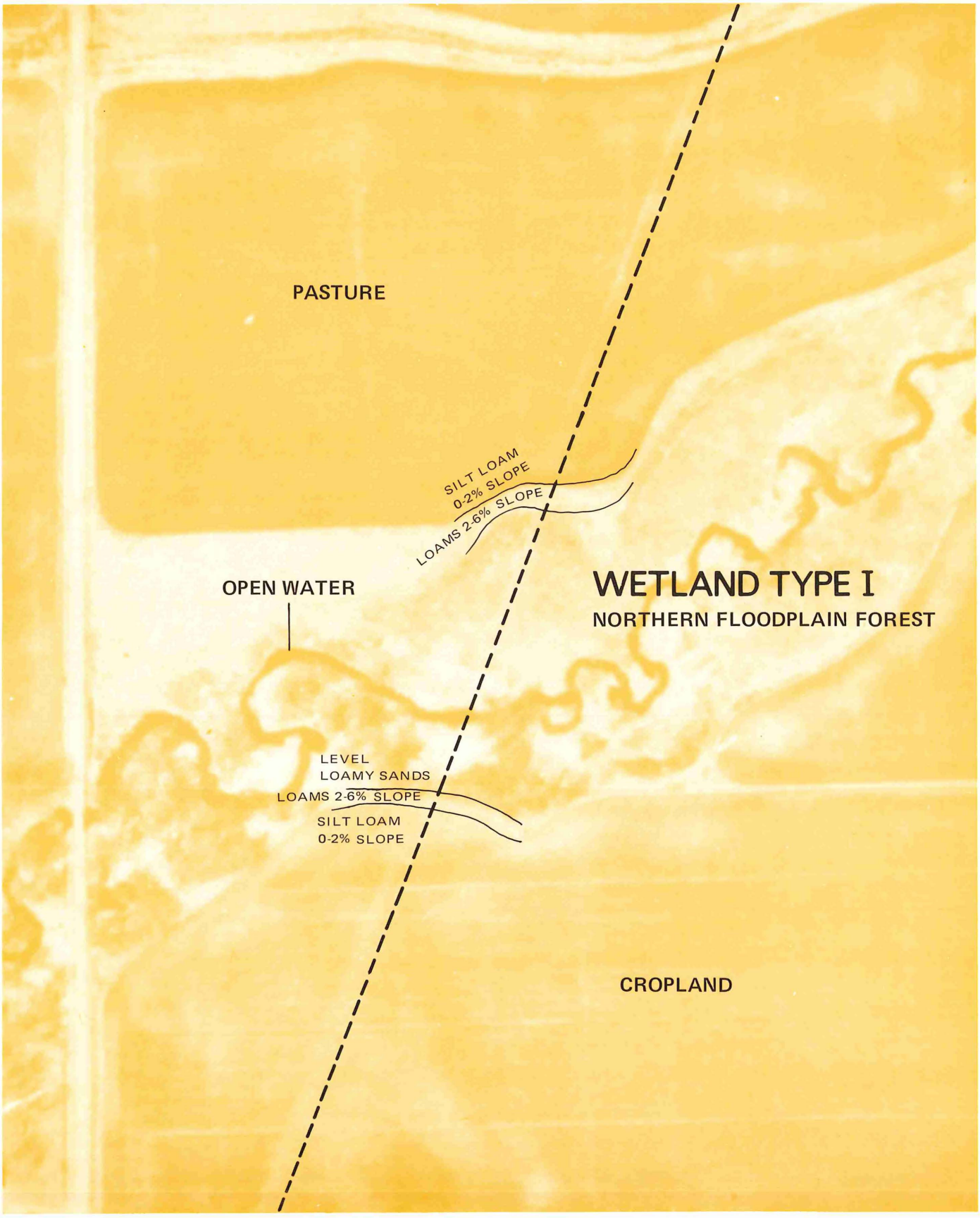

FIGURE 12. VERMILLION RIVER CROSSING
DAKOTA COUNTY
T113N-R20W
SECTIONS 4 & 9

PROPOSED PIPELINE

0 400 FEET

NORTH

TABLE 9

VERMILLION RIVER CROSSING

AQUATIC VEGETATION

Duckweed (*Lemna* sp.)
Cattails (*Typha* sp.)

TERRESTRIAL VEGETATION

Herbaceous

Strawberry (*Fragraria* sp.)
Touch-me-not (*Impatiens* sp.)
Asparagus (*Asparagus officinalis*)
Goldenrod (*Solidago* spp.)
Asters (*Geranium* spp.)
Sunflower (*Helianthus* sp.)
Thistles (*Cirsium* spp.)
Milkweed (*Asclepias* sp.)
Burdock (*Arctium* sp.)
Yarrow (*Achillea millefolium*)
Mints (*Mentha* spp.)

Woody

Virginia creeper (*Parthenocissus* sp.)
Rose (*Rosa* sp.)
Current (*Ribes* sp.)
Hawthorne (*Creteagus* sp.)
Boxelder (*Acer negundo*)
Red maple (*A. rubrum*)
Willow (*Salix* spp.)
Dogwood (*Cornus* spp.)
Ash (*Fraxinus* sp.)
Commonelder (*Sambucus canadensis*)

large willows, box elder, dogwood, ash, red maple, and hawthorn. Table 9 is a more complete listing of those species identified during field investigation.

Figure 13 shows the proposed alignment across the Mississippi River. This crossing point was selected so as to parallel an existing pipeline. As access to the river was somewhat more difficult than the others and it was later in the fall season, vegetation was not identified beyond the general cover type. In Dakota County there are significant topographic changes coming up to the river. Tree type vegetation is dominant and is comprised of oaks and hickories on the higher grounds with some pure stands of birch being found along the existing right-of-way. In Washington County the floodplain is much more evident and willows seem to dominate the vegetational cover. Agricultural activities are more common and in closer proximity to the river in Washington County. This floodplain and, to a lesser degree, the Dakota County floodplain are classified as Type 1 wetland.

Water quality in the area of the crossing (Pool 2) is adversely affected by high colliform, phosphates and other parameters along with a heavy load of silt contributed by Minnesota River. According to a fish survey of Baldwin and River Lakes, game fish accounted for only 26.3 percent of the total

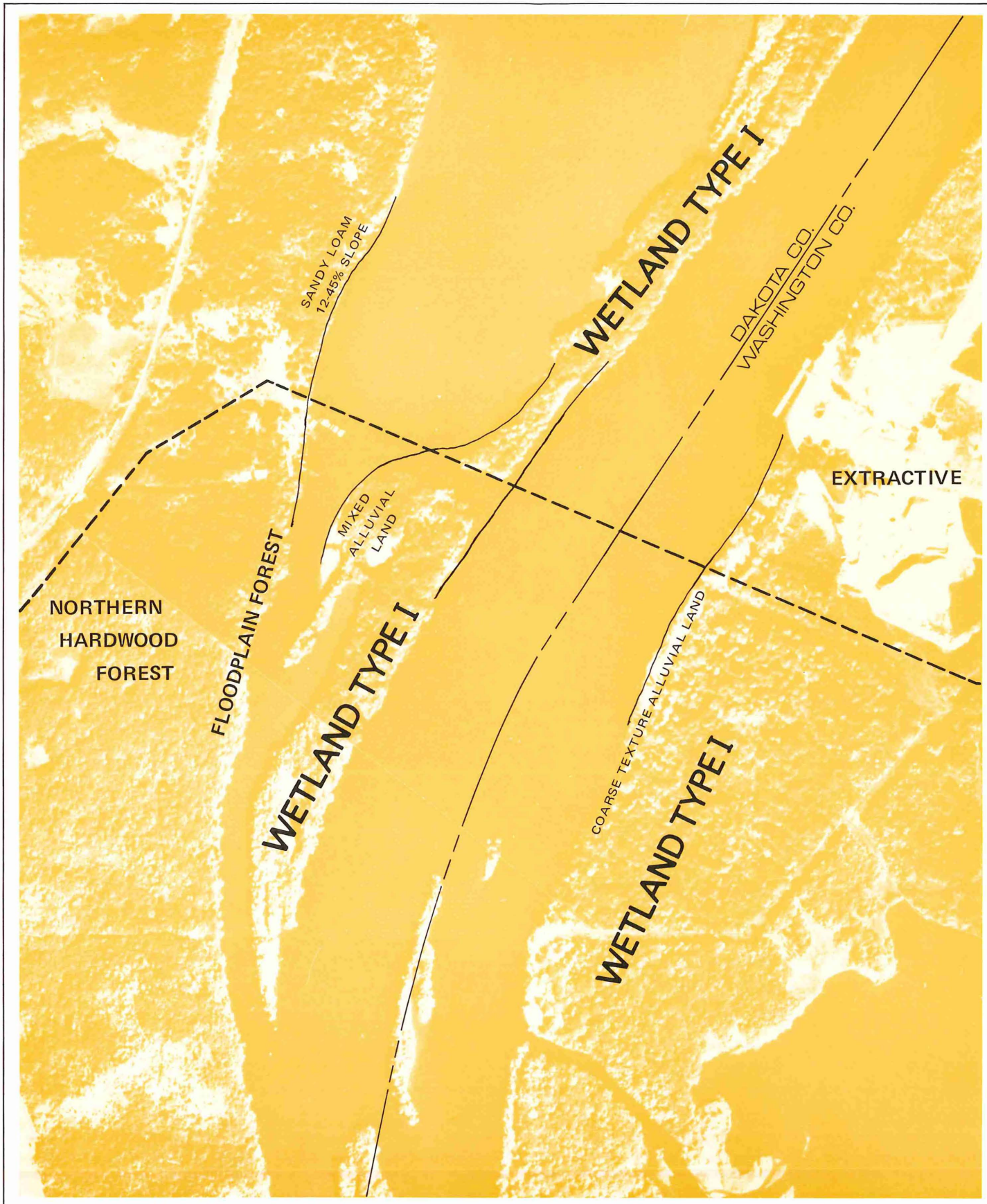

FIGURE 13. MISSISSIPPI RIVER CROSSING
DAKOTA & WASHINGTON COUNTIES
T27N-R22W
SECTIONS 26 & 27

PROPOSED PIPELINE

0 800 FEET

NORTH

fish population (Minnesota DNR Division of Game and Fish, 1964). The DNR Area Fisheries Manager has indicated that present populations are probably similiar to those found in 1964. Both the black cappie and the carp dominated the game and rough fish populations respectively and are characteristic of impoundments (Hobbs & Lagler, 1974).

I. Cultural Resources

The Minnesota Archaeological and Historic site files were researched for an area one mile either side of the proposed pipeline right-of-way. Research revealed that there are no registered or recorded historic sites within one mile of the proposed pipeline route. Further, there is only one known archaeological site within one mile of the pipeline. This site is the Larson Plant Floodplain Site (WA-24), located in the NE 1/4, SW 1/4, Section 26, Grey Cloud Island Township, Washington County (T27N, R22W). The pipeline right-of-way will be located approximately 250 feet north of this area at its closest point (see Figure 8, Map 6)

J. Designated Natural and Recreational Areas

An inventory of formally designated natural areas (e.g. waterfowl production areas, wildlife management areas, Nature Conservancy preserves, and state scientific and natural areas) within the five counties affected by the pipeline project indicates that the only designated natural area traversed by the proposed

pipeline route is the Mississippi River, which is classified as a Critical Area.

The general purpose of this designation is to control development activities within and adjacent to the Mississippi River. A pipeline, such as that herein proposed, is classified as a transmission service within the framework of the Critical Area Plan. That portion of the Mississippi River crossed by the proposed pipeline is located within a rural/open space district of the Critical Area. A transmission service is recognized as a permitted use within the rural/open space district, when constructed in compliance with Standards and Criteria for Development established in conjunction with the Critical Area designation.

Only one other designated natural area is situated within one mile of the pipeline route. This area is the DNR Swan Lake Wildlife Management Area, located in Sections 27 and 34, Deerfield Township, Steele County (T107N, R21W), approximately 0.75 mile west of the pipeline at its closest point.

The Freeborn County Comprehensive Plan Report (December, 1970) identifies general areas within the county suitable for designation as Wildlife Management Areas. Two of these areas

are traversed by the proposed pipeline. Goose Creek in Freeman Township (T101N, R21W) and Bancroft Creek in Bancroft Township (T103N, R21W). The Minnesota DNR has likewise identified the Goose Creek area as a candidate Wildlife Management Area (DNR Classification No. 70A).

In addition to Goose Creek, the proposed pipeline traverses, or is within one mile of, three other areas identified by the DNR as proposed Wildlife Management Area project units:

Cattail - Section 29,30 Greenvale Township, Dakota County T112N, R20W

Greenvale - Section 8 Greenvale Township, Dakota County T112N, R20W

Chub Lake - Section 33,34 Eureka Township, Dakota County T113N, R20W

According to DNR Project Unit Maps, the pipeline route will avoid both the proposed Cattail and Greenvale areas. The pipeline will,however, cross the western edge of the proposed Chub Lake unit, parallel to existing lines for a distance of approximately 0.7 mile (see Figure 11).

All of the counties traversed by the proposed pipeline support a variety of state and local designated recreational

areas. There are, however, only three such designated areas within one mile of the pipeline route: Beaver Lake County Park, located in Section 22, Berlin Township, Steele County (T105N, R21W), the Sakatah Singing Hills Trail, located in Section 35, Wells Township, Rice County (T110N, R21W) and the Cannon River, a designated state canoe and boating route, located in Section 25, Wells Township, Rice County (T110N, R21W).

Beaver Lake County Park, located on the eastern shore of Beaver Lake, includes beach, playground, and picnic facilities (see Figure 8, Map 2). The pipeline route is located immediately east of the park, adjacent to a parking lot. The proposed pipeline right-of-way will be located on the east side of the existing pipelines in this area. Existing active use areas of the park are located approximately 450 feet west of the pipeline right-of-way.

The Sakatah Singing Hills Trail extends from a point immediately southwest of the intersection of Interstate 35 and the Cannon River, westerly to the Minnesota River. The proposed pipeline route is located approximately 2,300 feet from the trail at its closes point.

The proposed pipeline crosses the Cannon River, a designated state canoe and boating route, approximately 1400 feet northeast of Cannon Lake. At this point of crossing, the

pipeline is situated within the corporate limits of the city of Faribault and downstream of an impoundment on Cannon Lake.

K. Climate

Climate conditions within the project area are typically continental with extremes in many climatic features. Situated close to the geographical center of the North American continent, there normally exists wide variations in temperature, ample summer rainfall, and moderate winter precipitation. Sites selected for comparative evaluation were NOAA stations at Rochester and Minneapolis, Minnesota.

Temperature variation from season to season is substantial. The normal mean temperature for the winter months (December, January, and February) is about 16° F, and for the summer months (June, July, and August) about 70° F. The growing season is favorable, averaging 142 days at Rochester and 166 days at Minneapolis.

Precipitation distribution complements the growing season as over 65 percent of the annual rainfall occurs from May through September. Mean annual precipitation is 27.5 inches at Rochester and 26 inches at Minneapolis. Winter snowfall averages over 40 inches per year.

III. ENVIRONMENTAL IMPACT

A. Impact on Land Use

The proposed pipeline route,for the most part,parallels existing pipelines, with only slight deviations as noted in Section ID1 - Location. Incorporation of an additional pipeline within an established right-of-way will result in reduced construction and operational related impacts, when compared to the installation of a completely new and independent pipeline facility.

Initial effects on land use pertain to right-of-way clearing and trenching. All woody vegetation will be cleared and other obstructions temporarily removed during this phase. Trenching operations will temporarily disturb soil profiles and normal water course flow. These actions will result in the removal of approximately 42 acres of woodland and the disruption of approximately 19 acres of wetland areas (based on 66 foot wide construction right-of-way; see Section IA3-Right-of-Way Requirements). Approximately 658 acres of cropland will be temporarily removed from production during the construction period (based on 66 foot wide construction right-of-way).

There will be no residences removed by the proposed right-of-way. Some temporary disruption of local traffic flow will be apparent during construction causing minor inconveniences.

The proposed pipeline traverses the city of Faribault for a distance of approximately three miles (see Section IIAI). However, impact on developed areas crossed by the proposed route within the city will be limited to short-term construction related impacts (increased noise, disturbance of normal traffic flow at street crossings etc.), as the right-of-way parallels existing pipelines (see Appendix A, sheet no. 17). Adequate room is available in these areas to facilitate the construction of the proposed pipeline.

In Section 4 of Eureka Township, Dakota County (T113N, R20W) the pipeline route crosses the runway of the Airlake Industrial Park Airport, parallel to existing pipelines. The proposed pipeline will be bored under the runway to avoid disruption of the paved runway surface.

Following construction and right-of-way restoration, few impacts on land use will result from operation of the pipeline. Agricultural practices will be resumed as usual. Woody vegetation within the 50 foot right-of-way width normally maintained will be controlled to facilitate line inspection. Provisions for residences or other structures proposed to be constructed near the pipeline will be handled with the individual owners.

B. Impact on Agriculture

The land in the five county project area is approximately 61 percent cropland. The pipeline will be placed in approximately 78 percent cropland due to the more suitable terrain. However,

other than the impact on soils described in Section IIIF, the effect of the pipeline on agriculture should be only temporary. During construction, crops will be removed from the 66 foot wide construction right-of-way. After the pipe is buried and the area restored, the right-of-way will be returned to farming. Only gate valves on approximate ten mile intervals and two existing pumping stations will indicate the presence of the pipeline. Gate valves are located adjacent to road rights-of-way and occupy minimal area (±50 square feet).

Since the valves will be placed near existing roads and no new pumping stations will be required, no significant amount of agricultural land will be removed from production. Farmers will be compensated, as a part of the easement payment, for all crops damaged during construction. Temporary culverts, fences, gates, roads, etc., will be provided as required to ease the burden of construction activities on farm operations. For example, where alternate pasture is not available, temporary fencing will be provided. Farm facilities (fences, ditches, drain tiles, etc.) disturbed during construction will be returned to their original condition. Where the pipeline parallels shelterbelts, the route alignment will be modified to avoid removal of mature trees, and efforts will be made to minimize disruption of shelterbelts crossed by the proposed right-of-way.

Williams Pipe Line Company inspection personnel will ensure that the farm disruption will be kept to a minimum and that the pipeline construction contractor carries out agreements between the landowner and the pipeline company regarding restoration of facilities.

1. Tiling

Tiling is used in reference to drain tile installed in agricultural land so normal agricultural operations can be accomplished.

Drain tile installations exist on farmland traversed by the existing pipelines which are buried with approximately 30 inches of cover. The additional pipeline is proposed to be constructed parallel to the existing pipelines, and if not installed at the same depth, would present difficulty to new drain tile installation. The new tile would probably have to be installed so that it would cross below the existing pipelines and above the new pipeline if the tile flow line gradient would permit. It is quite possible interference would then exist, requiring drain tile installation at a greater depth. This would be prevented with all pipelines having similar cover.

The extensive problems encountered and the undesirable impact on the landowner resulting from greater depth pipeline installations on new right-of-way makes it more appropriate for the landowner and Williams Pipe Line Company to enter into individual agreements where drain tile installations are proposed. The proposed pipeline parallels three existing pipelines. The first of the existing pipelines was constructed in 1931 and since that time Williams Pipe Line and its predecessor,

Great Lakes Pipe Line Company, have worked with landowners in resolving any problems pertaining to tiling. Toward this end, Williams will negotiate with landowners on an individual basis to satisfy requirements for future drain tile installations.

2. Irrigation

Irrigation would not be affected since the pipeline will be constructed below ground. Irrigation wells if proposed in the vicinity of the pipeline would have to be located so that neither the well or the pipeline is affected. Landowners' contact with the pipeline operator would resolve any problems.

C. Socioeconomic Considerations

The proposed pipeline project should not have any effect on population growth or distribution, or human settlement patterns because of the relatively short construction period and the steady movement of construction crews along the pipeline route as construction phases are implemented. A short-term transient population increase can be expected, however, during the construction period as much of the 275 member work force will seek temporary housing, such as hotels, motels or trailer parks, within the area. This activity will in turn stimulate a short-term increase in the local economy as construction personnel patronize local service-oriented business establishments. Further, since much of the construction

will take place during the summer months, little, if any, attendance pressures will be felt by local school systems.

In addition to the short-term increase in business attributed to housing and leisure time demands of the construction work force, further stimulation of the local economy is expected through the purchase and use of non-specialized goods and services required for construction of the pipeline. Further, it is anticipated that a portion of the actual construction work force will be comprised of local workers. Easement payments and annual advalorem taxes of approximately $410,000 will also provide for an increase in the local economic base.

Construction of the proposed pipeline will unavoidably disrupt normal farm operations. However, Williams Pipe Line Company will compensate affected property owners at current market value for crops damaged or restricted during installation of the pipeline. After the construction period, farming can resume within the right-of-way.

D. Impact on Hydrology

1. Surface Hydrology

Since most of the stream crossings will be made with the pipe buried under the stream bottom, temporary adverse impacts to the surface hydrology will result from removing

vegetation, excavating a trench in stream banks and bottoms, and backfilling and restoring the disturbed areas. The major impact will be siltation of the water and minor oil leakage which may occur from equipment used for trenching. Siltation will result in lowering water quality and impinging on the natural environment of aquatic flora and fauna (see Section IIIH).

Operation of the pipeline for oil transport creates the remote possibility for contamination of the surface hydrological systems through a leak or break in the pipe. Such a leak or break could have a serious effect on area streams or lakes. Design, construction, and operation standards minimize the potential for such an occurrence. For example, a central pipeline computer control system monitors pipeline operating conditions and provides immediate notification of pressure and flow variances. This information would be used by the dispatcher in assessing leak probability. If the dispatcher suspects that a leak or break has occurred, emergency procedures will be taken as outlined in Section IVB3 - Oil Spill Containment and Cleanup Procedures.

2. Groundwater

Trenching for the pipeline will not occur at a depth which would cause interference with local aquifers. Once the pipeline is operational, a possible impact could occur on groundwater should a break or leak occur which remains undetected for a long period of time. However, with present day design, construction, and operation standards, the possibility of such an occurrence is very remote.

E. Impact on Soils

Impacts on soils will include localized soil compaction and topsoil dilution, and increased erosion hazards. Heavy equipment passing repeatedly over the soil will cause the soil to be compressed, which in turn results in adverse effects such as reduced aeration and permeability, as well as increased runoff of precipitation. Tightly compacted soils are difficult to work, less productive, and more susceptable to water erosion. Since most of the soils are wet much of the year, a distinct compaction hazard exists within much of the proposed pipeline route. Assuming the total construction access right-of-way is 66 feet wide, and that 50 percent of this is traversed by heavy vehicles, a total of 422 acres will be affected to some degree. With the route crossing approximately 78 percent cropland, this could affect up to 329 acres of tilled land.

The trenching operation may cause the topsoil to be mixed with subsoils, which have considerably lower value for both agricultural and natural vegetation. Mitigative measures will be taken to minimize this mixing (see Section IVB - Mitigative Measures), but a total of 36 acres of topsoil throughout the pipeline length could be affected to some degree (trench width plus 3 inches on either side).

Assuming the average depth of the trench to be 50 inches and the average width to be 28 inches, approximately 601,000 cubic yards of material will be excavated. The 18-inch pipe will take up 18.2 percent of the trench volume. Therefore, the backfill will have to be compacted and the top of the fill mounded to return all of the excavated material to the trench. Any excess material will be spread over the right-of-way or placed in an area agreed upon by the property owner and Williams Pipe Line Company.

Soil disturbed on the steeper slopes will be subject to increased erosion hazard. However, mitigative measures defined in Section IVB, and the generally level terrain should preclude any significant erosion of upland or stream bank soils.

F. Impact on Terrestrial Biota

The construction phase, particularly right-of-way clearing, will produce the most adverse effect on the wildlife

population. This impact will be due to the reduction of habitat associated with right-of-way clearing. As discussed in Section IIF, six general habitat types have been identified in the four county study area.

The wetland vegetation will probably recover at a faster rate from the construction than will forested areas due to the nature of wetland vegetation. The grasses, sedges, etc., are capable of rapid growth and will, most likely, revegatate the area within a few growing seasons. The forest vegetation will also recover from construction, but large trees will not be allowed to regrow within the right-of-way. The shrubs and herbaceous vegetation will invade the disturbed areas and ground cover can be expected within several years. Certain species will pioneer more quickly,while others will need several growing seasons for reestablishment.

Open water habitats are in some instances unavoidable and,therefore,can be impacted by construction activities. This impact, however, is more concentrated on the aquatic members than on the terrestrial species which commonly utilize such habitats. That is, during the construction process, ducks or shorebirds utilizing the open water would simply move to another area for the duration and shortly thereafter reoccupy the area. The potential impacts on the aquatic members are presented in Section IIIG.

Prairie wetland habitat will be the most adversely affected habitat type. Disruption of drainage patterns, allowing a loss or increase of water, will impact the sensitive plant communities associated with the wetland habitat. However, use of proper mitigative measures, including openings in trench spoil, proper backfilling and grading, and the establishment of cross drainages after construction will reduce potential effects. The long term impacts are expected to be minimal because the proposed pipeline follows existing pipelines through the few prairie wetlands which are crossed.

Agricultural fields do not normally provide a permanent habitat and therefore are the least affected community from a natural systems standpoint. As most species use these areas for a food supply only, they will simply reduce their activity in the immediate construction zone.

Old field communities would be impacted by the pipeline construction, but only to a small degree. This is based on the realization that old field habitat is constantly going through successional changes and that a reversal in this pattern should not produce a measurable impact.

Although ecotones provide habitat for many species, they are not affected in the same manner as other habitat types as they normally result from earlier disruption. For

example, a woodlot and old field are normally the result of an abandoned agricultural area which abutted the woodlot. Also, ecotones are normally found in linear configurations and therefore only a small zone within the ecotone would be affected. If the ecotone and right-of-way are parallel and adjacent, the result would simply be another ecotone area.

The wooded communities will be most noticeably affected as the clearing process will leave a 66 foot wide construction right-of-way through the wooded area. Associated with this opening in the community will be a change in the habitat's species composition, as those individuals which require the seclusion of a forest community will leave the general zone affected by the right-of-way. This change in species composition does not imply a truly negative impact, however, as other species which prefer a more open habitat will begin to utilize this new community. In effect, such a clearing represents a reversal in natural succession to an earlier seral stage and therefore provides habitat for those species which populate such a community. In addition to this occurrence, a right-of-way can produce a valuable ecotone association if the wooded area is large enough. That is, a very small woodlot has sufficient ecotonal areas on all sides so that a right-of-way through it should not be construed to provide valuable ecotones through the edge effect.

Once the line is in place, there should be little impact resulting from normal pipeline operation. Maintenance of the right-of-way will produce some impacts as the reintroduction of man and machinery will cause some short-term and localized disturbances to the wildlife population. In addition, the maintenance procedure will again reverse the natural succession which has occurred since the last clearing date.

Although unlikely, should a break occur at any point along the pipeline, there would be the potential for adverse impacts. Normally, the sequence would follow an immediate short-term build-up in soil microorganism activity preceding a long period of no microbiological activity which could leave the affected area noticeably impacted. However, with appropriate mitigation, this area would be restored to its previous condition.

The Fish and Wildlife Service's list of endangered plants (Federal Register, June 16, 1974), and a list compiled by G.B. Ownbey, a professor of botany from the University of Minnesota, were consulted for endangered plant species. None of the federally protected plants should be affected, but some of the plants mentions by G.B. Ownbey may be present because of the comprehensive nature of the list. However, as the pipeline will only disrupt an area 66 feet wide, the chances are unlikely that an entire plant complex will be destroyed.

G. Impact on Aquatic Biota

The easiest method of avoiding impact on aquatic communities is to select a route which minimizes the number of encounters. This was accomplished for lakes and ponds common to the project area. However, streams and rivers cannot be avoided if they run in an opposing direction. Such is the case for the creeks, streams, and rivers which will be unavoidably crossed by the proposed line.

The construction of a pipeline across a stream can produce significant impacts if certain precautions are not instituted during the trenching and installation operations. Williams Pipe Line Company proposes to follow all applicable standards for stream crossings and to mitigate any potential impacts as much as practicable. Even so, there will be some erosion potential and certainly some stream siltation in the trenching phase. However, such effects should be minimal and, based on field inspections of the various stream crossings, the small amount that is likely to occur should not adversely affect the aquatic community. In fact, many of the streams which were field investigated were found to be either dry or flowing very sluggishly, if at all. This,of course,does not imply that these streams are incapable of supporting an aquatic population,but only that population would be tolerant of varying water conditions. Such a tolerance level would indicate that

members of any of these aquatic communities could withstand the impact associated with the construction of the proposed pipeline. There will, of course, be a direct impact on those members of the benthic community which inhabit the area to be trenched. This is unavoidable and, as such species are normally quite prolific, they should be able to reestablish their population size quickly.

Normal operation and maintenance should cause no further impacts on the aquatic communites. A catastrophe such as a leak at a stream crossing, could produce significant impacts. However, Williams Pipe Line Company maintains emergency plans for such an occurrence (see Section IE4-Safety Considerations). In addition, the various safety devices required for this line will assist in controlling the impact if a leak should be detected. Data indicates that over the past few years such leaks on older pipelines are infrequent and small in nature.

Some concern has been voiced that pipelines disrupt water flow in wetlands, thus causing a shift in plant associations due to hydrologic specificity. Blocked drainage will cause a shift in the water table which in turn will affect the vegetation. Some tree mortality has been reported in an article by Boelter and Close (1974) and examples were cited where these damages could be overcome by mitigative measures. Their study

was done in the Chippewa National Forest in north central Minnesota which is not far removed from the project area. They outlined general construction techniques which allow for proper drainage, thus keeping the wetland in its original condition.

In order to mitigate impacts in wetlands and stream crossings during pipeline construction, proper openings in the trench spoil bank will be provided to allow normal drainage of the area. Soil erosion will be reduced by the placement of burlap sacks to act as breakers. Normal surface drainage will be restored by proper backfilling and grading operations. Additionally, in large wetlands like the Chub Lake Marsh, cross drainage systems similar to those described by Boelter and Close (1974) will be established. Cross ditches are usually constructed at right angles to the pipeline and back-filled to a depth which corresponds to normal flow of nearby waters.

Chub Lake, located about one half mile east of the pipeline in Eureka Township Dakota County (T113N, R20W) is classed as a Natural Environment Lake. However, because of the distance from the pipeline, the lake should not be affected.

Dutch Creek is crossed by the proposed pipeline in Section 16 (T112N, R20W), Greenvale Township Dakota County. No water was observed in this Type 1 wetland and, with the proper project scheduling and construction practices, there will be minimum impact on this area.

Heath Creek, Section 5 (T111N,R20W) Bridgewater Township in Rice County, is an intermittent stream and classed as General Development. The pipeline will have little effect on this creek. Also, the creek is surrounded by pasture which may already adversely affect the water quality. Vegetation diversity is very low and the species present will have no problem in revegetating within the right-of-way.

Wolf Creek is crossed in Section 19, Bridgewater Township, Rice County (T111N,R20W). This creek,also classifed as General Development, may be more adversely affected than the Heath Creek crossing. Slopes in the area range from 0-30 percent,which may create a slight hazard. This is an intermittent stream so the time of construction will play an important role. Little vegetation will be affected due to the presence of pasture on both sides of the creek crossing. The floodplain forest is sufficiently removed from the right-of-way to preclude clearing. However, several small trees in the right-of-way may have to be taken out.

The pipeline comes to within about 200 feet of a Type 3 wetland located in Section 24, Wells Township, Rice County (T110N,R21W). The marsh was almost dry at the time of field inspection. A cultivated field is present and contains small grain. Trees along the marsh rim are ash, basswood, box-elder, elm and willow. Other vegetation consisted of

grasses, Solomon's Seal and cattails. Little impact will be imposed upon the marsh as the pipeline is several hundred feet away.

Crane Creek (Judicial Ditch No. 24), traversed by the proposed pipeline in Section 2, Meridan Township, Steele County (T107N,R20W) also has been designated general development and in fact has also been channelized. Short-term construction effects of the pipeline will be much less than the effects from channelization construction.

Beaver Lake in Steele County has been classified as Recreational Development, but since the pipeline right-of-way is almost 1000 feet away, no impact is anticipated.

Bancroft Creek, crossed by the pipeline in Section 7, Bancroft Township, Freeborn County (T103N,R21W),will present few problems as the creek has been previously channeled. Proposed construction practices again will keep erosion to a minimum. Little diversity was noted in the creek bank plant community,which will simplify revegetation of the area.

A portion of Section 17, Freeman Township, Freeborn County (T101N,R21W),is being considered by the Minnesota Department of Natural Resources to be added to their holdings of wetlands (Classification Number 70A). The current vegetative

cover is corn. Goose Creek has apparently been modified for use as a drainage ditch. As the area has been drained and the creek channelized, little impact is expected from the pipeline.

Freeborn County also has several lakes, for example, Church, Everhart, School Section, and Upper Twin, which are classified as Natural Environment waterbodies. However, as the lakes are all at least 1000 feet from the right-of-way, little impact is expected.

As discussed in Section II certain rivers crossed by the proposed pipeline were further investigated as it was felt that impacts could be more adverse at the crossing points.

The Cannon River crossing (Figure 10) is at a point where the river is narrow, just downstream from Cannon Lake. Flow is somewhat sluggish and turbidity is noticeable. On the southern bank, a wetland community has been created by the meandering river. Any other crossing in this general vicinity would either cross the river or two branches,or would have an adverse effect on land use as the river flows through Faribault, Minnesota. In addition, the proposed right-of-way parallels existing pipelines through this area. On the northern bank there is a narrow band of vegetation adjoined by cropland. The impacts associated with this crossing are the removal of wetland vegetation along the southern bank and some very restricted tree removal on the northern bank with little effect on the river's designation as a state canoe and boating route.

Aquatic species should not be adversely affected as those present are normally classified as being tolerant of deteriorated conditions and should therefore be able to continue to utilize the habitat once the pipe is installed and the construction crew has moved farther down the line.

As shown in Figure 11, the marsh lands near Chub Lake will be traversed by the proposed pipeline. This crossing represents the greatest potential for adverse impact on natural systems along the entire route. The vegetative association will be disrupted by the clearing process and leave a noticeable scar on the wetland for a few growing seasons. It should be noted, however, that the existing right-of-way, which will be paralleled, is only slightly detectable and then only by the trained eye. This is most likely due to the revegetation potential wetland species normally demonstrate. In an effort to minimize the impacts there will be a restricted clearing policy employed throughout this natural area. Such a program will ensure that only those trees which must be removed will be, and that right-of-way width will be held to the minimum needed for proper construction.

The Vermillion River crossing (Figure 12) presents no particular problem as the river is very narrow at the crossing point and the adjacent agricultural land use has

precluded the development of a large natural community. There is, however, a small band of floodplain vegetation on either side and this will need to be cleared for the pipeline. Again, such a clearing program will be oriented toward saving as many large diameter trees as possible within the 66 foot wide construction area.

Aquatic species will not be severely impacted as the construction period will be short and any disruptions will be rectified as much as practicable.

The Mississippi River crossing has been selected to parallel an existing pipeline not only in the river but at both ingress and egress points. A Northern States Power (NSP) transmission line also crosses the river approximately one-half mile to the south of the proposed crossing. At this point (River Mile 525.4), the banks are considerably steeper as the river narrows and flow velocities increase. Due to the steepness and length of bank slopes, as well as the sandy nature of the undifferentiated river valley soils, the potential for local soil erosion impacts is greater in the vicinity of the transmission line crossing. As the aquatic community is reported to be experiencing some degradation at present, it is felt that no further long-lasting detectable change will be produced by the proposed pipeline.

The riparian vegetation will, however, be affected as clearing will be required on both the Dakota and Washington County sides. In Dakota County, the proposed route follows an existing pipeline just east of the Chicago-Rock Island-Pacific Railroad to the river.

In Washington County, the proposed route will again directly parallel the existing pipeline and be just south of an active extractive operation.

H. Impact on Cultural Resources

The only known historic or archaeological site within one mile of the proposed pipeline right-of-way is the Larson Plant Floodplain Site (WA-24), located on the east bank of the Mississippi River in NE 1/4 SE 1/4, Section 26, (T27N, R22W; see Section II I-Cultural Resources). The pipeline route is located approximately 250 feet north of this tract. Because of the fact that the exact limits of the Larson Plant Floodplian Site are unknown, a pre-construction survey of the pipeline route will be made by a qualified archaeologist to determine if any site remnants extend into the proposed right-of-way.

Because of the archaeological significance of the Mississippi River, a more in-depth inspection of the pipeline right-of-way on either side of the river crossing will also be conducted by a qualified archaeologist.

I. Impact on Designated Natural and Recreational Areas

The only designated natural or recreational areas traversed by the proposed pipeline are the Mississippi River, which is identified by the State of Minnesota as a Critical Area, and the Cannon River, a designated state canoe and boating route. As discussed in Section IIJ, the proposed Mississippi River crossing point is located within a Rural Open Space District of the Critical Area. The proposed pipeline is a permitted use in this district. Anticipated impact at both river crossings is addressed in Section IIIG.

Three designated areas are located within one mile of the proposed pipeline route:

- Swan Lake Wildlife Management Area (T107N, R21W)
- Beaver Lake County Park (T105N, R21W)
- Sakatah Singing Hills Trail (T110N, R21W)

The pipeline should have no effect on the Swan Lake Wildlife Management Area as it is located approximately 0.75 mile west of the route at its closest point.

Beaver Lake County Park is located immediately west of the proposed pipeline route. Despite its close proximity, the pipeline should not have any impact on the park other than construction noise and possible dust.

The Sakatah Singing Hills Trail is located approximately 2300 feet west of the proposed route at its closest point. The pipeline should therefore have no impact on this trail.

J. Impact on Air Quality

Suspended particulate monitoring data was obtained from stations in Austin and Bloomington, Minnesota. These stations are geographically representative of the project area. The maximum 24 hour concentration at Austin was 299 ug/m^3, the second highest concentration was 135 ug/m^3 and the annual geometric mean was 57 ug/m^3. At Bloomington the maximum 24 hour concentration was 149 ug/m^3 and the annual geometric mean was 64 ug/m^3.

Standards established by the Environmental Protection Agency have classified Austin as Priority II and Bloomington as Priority I for particulate matter. The deterioration increment of air quality for Class I or II should be limited to the following increases in particulate matter:

	Area Designations	
	Class I	Class II
Particulate Matter	ug/m^3	ug/m^3
Annual geometric mean	5	10
24 hour maximum	10	30

These increments will not be exceeded recognizing the preeminence of rural land and low population density in the vicinity of the proposed project.

During construction, temporary increases in particulates may be noted locally. The sporadic and intermittent nature of these activities will lessen possible effects on adjacent land uses. Necessary mitigative procedures will be employed to restrict fugitive dust. Effects on air quality during operation will not be apparent as the pipeline system will be closed with no emissions necessary.

K. Noise Impact

Existing noise levels in the vicinity of the proposed project are normally low in rural areas with increases noted near urbanizing communites. Primary noise sources during the construction phase will include: trucks, bulldozers, trenchers, and welding machines.

Proposed construction activities will temporarily increase ambient noise levels. Scheduled during a 10-hour, 6-day work week, noise sources will be intermittent in operation and variable in location throughout the right-of-way. Equipment operation will comply with federal noise performance standards. The overall impact on existing noise levels will be short term and temporary in duration.

L. Effects on Other Projects in the Area

The only known major construction project in the area of the pipeline route is the Dome Pipe Line Project, which will be intersected by the proposed pipeline near the Freeborn-Steele County Line. No special problems or unusual construction considerations are anticipated at the intersection point.

IV. DIRECT AND INDIRECT EFFECTS THAT CANNOT BE AVOIDED

A. Unavoidable Adverse Effects

Construction and operation of the proposed pipeline will cause few significant effects on the local environment. During the construction phase, a majority of the unavoidable adverse impacts will result from right-of-way clearing and trenching. Approximately 42 acres of vegetation will be cleared within the 66 foot wide construction right-of-way. Likewise, approximately 19 acres of marshland will be disturbed to some degree. The relatively small area of this vegetative cover removed will not seriously impair the stability of the terrestrial ecosystems.

Adverse impacts on soils during construction will include the disruption of soil profiles, soil compaction, short-term decrease in soil productivity, and topsoil dilution. Crop production will be temporarily restricted within the construction right-of-way.

Other unavoidable impacts experienced during construction will be short-term in duration. Disturbances at stream crossings will temporarily result in increased turbidity and siltation from trenching operations. Inconveniences in local traffic patterns and increased noise levels will be evident, although localized and sporadic in occurrence.

Unavoidable effects of project operation will be minimal. The pipeline, located underground, will be removed from public view and access. Land use within the right-of-way will not be restricted except for the erection of structures.

B. Mitigative Measures

Specific mitigative measures will be used throughout the construction phase to reduce adverse effects of the Mason City-Cottage Grove pipeline project. Following is a summary of the proposed measures as they pertain to impacts discussed in Section III. Recognizing that construction of the proposed pipeline will have the most direct effect on surface hydrology and soils, separate discussion is provided on particular procedures to be taken to reduce impact on these features.

1. General

Work performed in completion of the proposed project includes certain directives to mitigate construction impacts: conservation of topsoil in tillable areas to assist in final revegetation; provision of proper openings in trench spoil banks to allow normal drainage and prevent surface water cumulation; and use of only that working space necessary to

satisfactorily perform the work. In suburban areas, rubber tired equipment will be utilized, while fugitive dust movement will be controlled through application of water or suitable stabilizing material.

Crossings of streams, rivers or wetlands require particular mitigative actions, as addressed in the following subsection (B2). The construction schedule is planned during July to October, 1977, and will, accordingly, help to reduce effects upon aquatic ecosystems during this period of low flow. Emergency shut-off valves will be specified at periodic intervals as discussed in Section IC. Subsequent to construction, banks of all rivers and streams will be restored to their original condition, elevation and grade and all debris and construction materials removed to restore normal water flow and use.

Final mitigative measures will be incorporated as soon as the pipeline is laid and backfilled. All temporary structures, access roads and debris will be removed. The right-of-way will be graded to restore original contours and seeded with suitable vegetation to limit soil erosion. Lawns, driveways, shrubbery and other materials damaged will be restored to their original condition or replaced. Should settlement of disturbed portions of the right-of-way later occur, such problems will be corrected on an individual landowner basis by Williams Pipe Line Company.

2. Mitigation of Surface Hydrological Impacts

Construction will take place during summer and early fall when minimum stream flows are encountered, thereby reducing impacts on the natural drainage systems.

The banks of all streams and rivers will be restored to their former condition and riprapped with sacks of earth or sand or other suitable material if necessary. The disturbed banks will be properly reseeded with species suitable for the location. The beds of streams will be restored to their former elevation and grade and all construction materials removed to prevent interference with normal water flow or use. The pipeline company will provide on-site inspection of the construction process at all stream, intermittent drainage, marsh, and pond crossings. The pipe will be located so as to be safe from damage or exposure due to normal scouring of the stream bed, natural erosion of the banks, or the effects of minor floodings. The crossings will be periodically inspected during operation of the pipeline to ensure that no erosion is taking place that would damage the pipe or cause leakage of its contents.

Construction activities and procedures for dredging and excavation of materials necessary for crossing the Mississippi River will be performed in accordance with U.S. Army Corps of Engineers requirements.

Numerous precautions will be taken by the pipeline company to prevent a break or leak in the pipe that could damage the lakes and rivers of the area. Gate valves will be located on each site of the Cannon and Mississippi Rivers. Concrete coating will be applied on the pipe at these two crossings to assure adequate negative buoyancy. Detailed inspections and tests will be made during construction of the pipeline to reduce the possibility of leaks from corrosion, cracks in the pipe or welds, cracks resulting from stresses due to uneven support of the pipe and other factors. Once operational, the pipeline will be inspected by air at not more than two week intervals. Should a leak or break be discovered, the emergency procedures described in Section IVB3 can be quickly implemented.

3. Oil Spill Containment and Cleanup Procedures

Williams Pipe Line Company has adopted specific procedures for oil spill containment and cleanup. The purpose of this action plan is to ensure effective and complete response to problems presented by accidental spills, while reducing potential impacts.

Actions to control, contain, remove and clean up soil spills will begin when a spill is reported. Actions taken will be geared to the size and nature of the existing emergency, and initiated promptly. All spills, regardless of magnitude, require a well-coordinated effort on the part of all involved.

In addition to the primary notification and containment responsibilities, the following will be done--the sequence depends on the nature of the situation:

1. Identify and locate the source of the reported leak.
2. Stop the discharge of product involved.
3. Evaluate and cope with the resulting hazards.
4. Notify other pertinent outside parties (i.e. landowner, tenant, etc.)
5. Effect necessary repairs, cleanup, and restore normal operations.
6. Evaluate the incident and response for potential improvement.

These steps will assure effective action to accomplish the goals of oil spill containment and cleanup. Property owners affected by spills will be compensated for any damages incurred.

Methods and procedures for containment of spills on land include the use of bell holes or through the construction of catchment basins, earthen dams, or separators. Natural avenues of escape such as ditches, gullies, or waterways, will be thoroughly examined for possible containment action. The contained product will then be picked up or otherwise disposed of as quickly as possible to prevent further travel or damage.

A considerable amount of research has been conducted to determine the most effective methods and equipment for containing, skimming, and absorbing petroleum products on water. Booms and sorbents have been determined most effective in the containment and cleanup of oil spills.

Booms may be used to confine oil within a specific area or for diverting an oil slick such as on a river. Research reveals that booms are generally not effective for containment of oil in current velocities exceeding 1.2 ft. per second. However, booms may be used if the water velocity is over 1.2 ft. per second by placing the boom at some angle relative to the current to divert the oil slick to a region of low water velocity.

Oil can be removed from water by first applying a material which is preferentially oil wetted and then removing the oil-wet material from the water surface. Polyurethane and urea formaldehyde foams are the best oil sorbents, and on a weight basis these materials remove about 10 times more oil than straw or other sorbents. Sorbents will in most cases lose oil after removal from the slick. Oil loss is due both to evaporation and drainage. Generally about 80 percent of the amount of oil initially absorbed will be retained after draining for 24 hours.

Specialized material and equipment utilized for oil spill containment and cleanup is listed below. This equipment is located at each of three Williams Pipe Line Company Maintenance Gang Headquarters in Alexandria, Clear Lake and Minneapolis, Minnesota. The items listed are specialized equipment only and do not include usual gang equipment such as trucks, air compressors, welders, shovels, etc.

1 - 2" Centrifugal ditch pump

1 - 3" Centrifugal ditch pump

1 - 3" Diaphragm pump

200' - 2" Suction hose

50' - Slick Bar Oil Boom complete with end sets 6" x 6" size, complete with quick connectors and anchor points

10 - 37 lb bags Slickwik oil absorbent

In the event that other equipment or materials are required, Williams Pipe Line Company will contact other regional maintenance headquarters or specialized contractors.

In conformity with the National Multiagency Oil & Hazardous Material Contingency Plan, the U.S. Environmental Protection Agency, Water Quality has been assigned responsibility for all inland areas. The EPA will notify all members of the Regional Response Team which includes Coast Guard, Corps of-

Engineers, Department of Health, Education and Welfare, and Office of Emergency Preparedness. In addition, the EPA will also notify the first downstream water user and the appropriate State Water Pollution Control administrator. When reporting an oil spill, these contacts will be verified with the EPA representative receiving the call. The U.S. Environmental Protection Agency is first and foremost on the list.

Public agency telephone numbers are included below. The need to contact any one particular agency will be dependent upon the spill location and its potential for damage.

1. United States EPA, Chicago, Illinois 800-424-8802

2. North half of State-Ninth Coast Guard District, Cleveland, Ohio 800-424-8802
   South half of State-Second Coast Guard District, St. Louis, Mo.
   or 2nd District Area Office, Dubuque, Ia.
   or 2nd District Area Office, Duluth, Minn.
   National Response Center, Washington, D.C.

3. United States EPA Representative in Minnesota 612-861-4467 or 612-884-2565

4. Minnesota Pollution Control Agency
   St. Paul, Minn. 612-296-7373 (24 hours)

5. State Fire Marshal, St. Paul, Minn. 612-296-3586

6. Office of Pipeline Safety, Washington, D.C. 800-424-8802

4. Mitigation of Soil Impacts

Soil compaction in the construction right-of-way will be difficult to alleviate, except that soils which are temporarily wet will be avoided when possible. Since most of the right-of-way will be returned to farming, any soil suffering compaction will be returned to a nearly normal condition within a short time.

Topsoil dilution and loss will be largely prevented where requested by the landowner or tenant, or where desired by the company for protection of the pipe. Where specified in the right-of-way agreements, the topsoil will be removed separately from the full width of the pipe trench to a specified depth. This topsoil will be set aside and protected from subsequent construction activities and will not be mixed with other soil from the trench or graded right-of-way. When the trench is backfilled, the topsoil will be replaced in its original relative position as the upper portion of the trench backfill. Spoil which cannot be used as backfill will be removed from the premises and disposed of in a manner satisfactory to the landowners, tenants, and pipeline company.

Soil erosion will be prevented in sloping terrain by use of burlap sacks filled with earth or sand and laid across the pipe trench as necessary to help channel water away from the bare or loose soil. Shallow furrows will be dug to help divert the water, as necessary, to areas less susceptible to soil erosion. Sloping areas will be properly seeded to prevent erosion of the soil.

The conditions for mitigation of soil impacts will be included in the contractor's construction specifications. The pipeline company will ensure the conditions are met through on-site inspection.

V. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

None of the land or material resources required for construction and operation of the proposed pipeline will be irretrievably or irreversibly lost. The pipeline and its associated hardware and materials could be removed at any time and reused or reprocessed if necessary.

Construction of residences and other structures will be precluded within the right-of-way while the pipeline is in operation. Land use patterns adjacent to the pipeline right-of-way will not be altered or limited in terms of future development. Agricultural activities, temporarily interrupted during installation of the pipeline, will resume normal operation following construction.

Approximately 42 acres of woodland will be removed for the pipeline right-of-way (based on 66 foot wide construction right-of-way). Woody vegetation within the normally maintained 50 foot wide right-of-way will be necessarily controlled for the useful life of the pipeline facility. If the right-of-way was ever abandoned, however, the vegetation could be returned to its original state.

VI. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE OF LONG-TERM PRODUCTIVITY

Short-term use of the environment is generally associated with the disruption of land during construction. Installation of the pipeline will result in disrupted or altered agricultural operations during the construction period. Once operational, however, farming activities can be resumed as usual within the right-of-way. Disruption of residential areas will be limited to short term inconveniences to local residents during construction. There should be no alteration of residential development patterns.

The long term productivity of the land and its resources will not be affected by the pipeline project. Long-term benefits to the residents of Minnesota will be derived from the provision of a continuing source of crude oil to meet increasing consumer demands.

VII. ALTERNATIVES TO THE PROPOSED ACTION

A. Alternate Routes

The proposed Mason City-Cottage Grove pipeline will parallel existing pipeline facilities for approximately 89 percent of its length. Easement agreements for the existing Williams' pipelines provide multiple line rights for the pipeline owner. In effect, therefore, the proposed pipeline will be installed in existing right-of-way. Selection of an alternate route would require the delineation and acquisition of a new, independent right-of-way.

Selection of a new pipeline right-of-way would require the construction of new pump station facilities similar to those already existing along the proposed pipeline route (see Appendix A). Any other route would also likely produce more severe conflict with existing land uses and environmental features.

There are no other existing pipeline rights-of-way owned and operated by other companies within the area which would provide a more direct line with comparable transport capacity.

B. Alternate Means of Transportation

Alternate modes of crude oil transportation would include rail, barge and truck facilities. These transportation alternatives would be owned and operated by others. Further, they are considered to be less desirable on either an economic, environmental or reliability basis.

C. Alternate Facility Designs

Alternate pipeline sizes were evaluated by Williams Pipe Line Company. Lines of smaller diameter were eliminated from consideration because they do not provide expansion capacity sufficient to meet total anticipated demands; larger diameter lines were also eliminated on the basis of economic analysis. Gate valves are not installed on each side of smaller streams since they are narrow and their exposure to drainage is limited. Contacts with officials in regard to drainage ditch maintenance will be made periodically and aerial patrol on a biweekly basis should detect problem areas. On this basis appropriate action can be taken to alleviate any problems.

D. Alternate Construction Techniques

Below ground installation of pipelines is the most practical means of pipeline construction. Above ground installation, on the other hand, would be in direct conflict with existing and potential use of the land surface area.

Installing the pipeline at increased depths on new or existing rights-of-way presents problems. Increased depth requires a much deeper excavation resulting in a larger surface area being required to place the excavated material during construction. Greater depth trench in loose soils would require sloping the trench walls to prevent cave-ins; therefore, the trench width at the top could be at least twice the depth. It is readily apparent this would require a much wider right-of-way for work activities during construction.

The additional depth would likely result in encountering the water table at numerous points along the right-of-way. This would require working under muddy conditions or installing well points to lower the water table during construction with attendant problems of dewatering and its disposal.

Although the pipeline is installed and operated with corrosion protection technique and hydrostatically tested to insure integrity, installing the pipelines at greater depths presents significant problems in detecting minor leaks, if such should occur.

Specific construction procedures to be utilized by Williams Pipe Line Company, as outlined in Section IE, are standard practices set forth in current governmental codes, safety requirements, and special guidelines.

VIII. IMPACT ON STATE GOVERNMENT OF ANY FEDERAL CONTROLS ASSOCIATED WITH THE PROJECT

A permit to discharge water during hydrostatic testing of the pipeline will be required from the U.S. Environmental Protection Agency prior to construction start-up. Permits will also be required by the U.S. Army Corps of Engineers to cross the Mississippi River and other designated streams by the Department of Natural Resources. Neither of the above-mentioned actions will influence state action on this project.

IX. MULTISTATE RESPONSIBILITIES ASSOCIATED WITH THE PROJECT

There are no multistate responsibilities associated with the proposed pipeline project.

X. ORGANIZATIONS AND AGENCIES CONTACTED

The following agencies and organizations have been contacted to date on the proposed Mason City-Cottage Grove Pipeline Project (listing by agency/organization, subject and date):

Dakota County Planning Department. County planning documents. September 23, 1976.

Dakota County Cooperative Extension Service, Agricultural Extension Agent. Agricultural data. September 27, 1976.

Freeborn County Office of Planning and Zoning. County planning documents. September 1, 1976.

Freeborn County Cooperative Extension Service, Agricultural Extension Agent. Agricultural data. September 1, 1976.

Minnesota Dept. of Highways. Existing and future highway systems. October 5, 1976.

Minnesota Historical Society. Historic and archaeological sites. October 29, 1976.

Minnesota Dept. of Natural Resources, Bureau of Land. DNR administered lands. November 11, 1976.

Minnesota Dept. of Natural Resources, Division of Parks and Recreation. Sakatah Singing Hills Trail. September 22, 1976.

Minnesota Dept. of Natural Resources, Division of Parks and Recreation. Impact on rivers. September 23, 1976.

Minnesota Dept. of Natural Resources, Fisheries Section (Areas V and VI). Fisheries data and general discussion of fish impacts. September 30, October 4, October 13 and November 12, 1976.

Minnesota Dept. of Natural Resources, Waters Section. Public waters classifications. September 28 and October 17, 1976.

Minnesota Dept. of Natural Resources, Wildlife Section. Wetlands/wildlife impacts. October 4 and November 17, 1976.

Minnesota Dept. of Natural Resources, Wildlife Section. Chub Lake Marsh Area. September 28, October 15, 1976.

Nature Conservancy, Inc. Conservancy land holdings. October 2, 1976.

Rice County Planning and Zoning Office. County planning documents. September 23, 1976.

Rice County Cooperative Extension Service, Agricultural Extension Agent. Agricultural data. September 23, 1976.

Steele County Zoning Office. County planning documents. October 11, 1976.

Steele County Zoning Office. Status of Beaver Lake County Park. October 22, 1976.

Steele County Cooperative Extension Service, Agricultural Extension Agent. Agricultural data. September 23, 1976.

U.S. Dept. of Agriculture, Soil Conservation Service, Dakota County. Soils data. September 23, 1976.

U.S. Dept. of Agriculture, Soil Conservation Service, Freeborn County. Soils data. September 1, 1976.

U.S. Dept. of Agriculture, Soil Conservation Service, Rice County. Soils data. September 23, 1976.

U.S. Dept. of Agriculture, Soil Conservation Service, Steele County. Soils data. September 23, 1976.

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ADDENDUM

ERRATA

FINAL ENVIRONMENTAL IMPACT STATEMENT
WILLIAMS PIPE LINE COMPANY'S PROPOSED
MASON CITY, IOWA TO COTTAGE GROVE, MINNESOTA
PIPELINE PROJECT

Page 1

First Paragraph, Line 1: Revise to read "Williams Pipe Line Company, a unit of The Williams....."

First Paragraph, Lines 8 and 9: Revise to read "This pipeline will be utilized primarily in the transportation of crude oil, but can also be utilized to transport refined petroleum products, LPG, and...."

Page 6

First Full Paragraph, Line 8: Change "Sections 24 and 25" to "Section 26 and 27."

Second Full Paragraph, Line 8: Change "(1971)" to "(latest edition)."

Page 8

Third Paragraph, Line 4: Revise sentence to read "A 50 foot width will be used for...."

Page 13

Second Paragraph, Line 2: Change "June"to"July."

Page 14

First Full Paragraph, Line 5: Change "maximum" to "minimum".

Page 21

First Full Paragraph, lines 4 and 5: Revise to read "....pipe will be utilized at the Mississippi River crossing."

First Full Paragraph, Line 7: Change "maximum" to "minimum."

Page 42

First Partial Paragraph, Line 3: "100" should be "1000."

Page 70

First Partial Paragraph, Line 4: Third word should be "crappie."

Page 73

Second Full Paragraph, Line 5: Next to last word should be "closest."

Page 80

First Full Paragraph, Line 8: Change "and" to read "along with."

Page 84

First Full Paragraph, Line 4: Last word should be "revegetate."

XII DRAFT EIS COMMENTS AND RESPONSES

IMPACT ON AQUATIC BIOTA

The Williams Pipe Line Company has completed negotiations with Northern States Power Company to locate the proposed pipeline crossing of the Mississippi River at approximately river mile 525.4 and parallel to an existing high voltage transmission line. This crossing represents the alternative discussed in the Impact Section (III), Impact on Aquatic Biota,presented on page 95 of the Draft Environmental Impact Statement (DEIS). As noted in the DEIS, the potential for local soil erosion impacts is greater for this alternative. No other impacts have been identified to further distinguish between the alternative crossings.

NOISE IMPACTS

Sources of noise during construction of the proposed pipeline would include heavy machinery for ditching, earth moving and pipe handling. Examples of equipment that would be used include welding machines, bulldozers, and ditching equipment. Other sources of noise may include power saws during vegetation removal and large trucks at the construction site.

Operation noise would be contributed by automobiles, trucks, bulldozers, and welding equipment. The welding machines, ditching outfit, and all vehicles would be equipped with standard mufflers. The following table lists the average sound levels for noise sources associated with the proposed action.

Source	Average sound level dBA at 50 ft.
Bulldozers (wheel & track)	87
Loaders (wheel & track)	79
Chain saws	83

The noise would be comparable to that experienced with road construction equipment. Operations of ditching equipment would proceed along the right-of-way at a rate of nearly one mile per day. The remainder of the equipment would probably not be at any one site more than a week and a half. The only noise receptor identified along the construction route that may be particularly sensitive to these impacts would be Beaver Lake County Park. Mitigation of this potential noise impact would be through limiting of construction to weekdays.

AIR QUALITY IMPACTS

Control of fugitive dust during construction phase would be the responsibility of the contractor. Given the expected rate of construction, the amount of dust generated at any one location would not be expected to exceed that comparable to most agricultural practices of harrowing or discing in the summer.

A public meeting was held on 9 February, 1977 in the City of Owatonna at which time the following comments and questions were received.

A. ALVIN KRAUS

Comments

1. How will pipe be hauled to the site?

2. Who pays when the county has to repair roads damaged by trucks hauling the pipe?

Response

1. Pipe will be hauled to the site on trucks. Contractors hauling pipe would be required to use equipment compatible with local road weight limits and requirements. The Williams Pipe Line Company would ensure that any damages are settled in its contracts for the work.

B. ORVILLE FRATHAM

Comments

1. Who will actually do the work, such as tile repair?

Response

1. The contractor to the company would do the work or sub-contract it to a tiling firm. Tile repair would be to the satisfaction of the landowner. A tile inspector for the Williams Pipe Line Company would inspect the work and require a release from the landowner.

C. GERALD SOUBA

Comments

1. How will farmers be compensated for crop losses?

Response

1. The landowner or tenant would be compensated by the Williams Pipe Line Company for damages sustained and at the value of the crops damaged.

D. DAVE SEVERSON

Comments

1. Will work go on near Beaver Lake County Park during the weekends?

Response

1. See previous discussion under noise impacts in this addendum.

E. SILBAN PRIBBLE

Comments

1. Is there any restriction on building outside the right-of-way?

2. Is there a 50 foot no-build strip?

Response

1. Building within the normally maintained right-of-way would be restricted in accordance with the easement.

In addition to comments received at the public meeting, a number of written comments were later submitted. These written comments are provided with responses as follows:

I. U.S. DEPARTMENT OF INTERIOR: FISH AND WILDLIFE SERVICE

No response necessary

II. MINNESOTA DEPARTMENT OF TRANSPORTATION

Response

Concur. The proposed pipeline would cross, in addition to those listed, Trunk Highways 19 and 60 in Rice County and Trunk Highway 50, 3, and the combined route of 52, 55, and 56, in Dakota County.

Correction of terminology. Highways listed in the Draft EIS as "federal highways" should be listed as "trunk highways".

III. MINNESOTA ENVIRONMENTAL QUALITY COUNCIL

Response

At full projected (future) capacity, additional electric pumps would have to be added at Albert Lea, between Albert Lea and Faribault, and possibly Rosemount. New pumps would be 4160 volts. These stations would require construction of electrical service lines to the site. It is unknown at this time what new lines would be required or what type of power grid is available in these locations. The only additional use of land that would be required would be at the station between Albert Lea and Faribault. If that station were built, it would require approximately one to five acres.

Although it would be desirable to locate the "midway" station at the hydraulic midpoint, the specific location could be within one mile on either side of the midpoint. Because of flexibility in locating the station, no significant environmental impacts would be anticipated by the addition of this facility.

Present plans call for a construction period of four months, commencing June 1, 1977.

IV. MINNESOTA DEPARTMENT OF AGRICULTURE

Response

The operating temperature of the proposed pipeline would not exceed ground temperature by more than 5 degrees.

Summer and winter operating temperatures would range from 65-70°f and 40 to 45°f, respectively, depending on ambient soil temperature and frost conditions. Although a several degree increase in temperature may occur at the pumping stations, the crude oil would reach ground temperature again within 2 or 3 miles, for an 18" line. The difference in temperature between the pipeline and surrounding soils could not be detected at the surface.

The maximum allowable operating pressure is 110 percent of the design operating pressure, or 1595 psi. The line would be pressure tested at 125 percent of the design operating pressure, or 1813 psi.

The proposed pipeline would parallel existing pipelines for 89 percent of the total route. In agricultural areas of southeastern Minnesota the proposed pipeline would parallel three existing pipes, a 12" line and two 6" lines, except for 20 miles north of Albert Lea where there are two existing pipes, the 12" line and one 6" line. Only those lines constructed after 1970 were required to provide a 30 inch depth of cover in agricultural areas. As a result, these existing lines have a variable depth of cover from 24 to 30 inches. To maintain 42 inches of cover the proposed pipeline would have to be placed 12 inches below the top of the adjacent 12" lines and would require a trench at least 5 feet deep.

This additonal excavation would require removal of at least 13,200 cubic yards of additonal soil per mile of line not including the additonal volumes involved if the trench must be outsloped or stabliized in cohesionless soils. For the length of the proposed line the additional excavation required to provide 42 inches of cover as opposed to 30 inches, would be at least 1.7 million cubic yards of soil.

The proposed pipeline would have a greater than 30" depth of cover for portions of the 3 mile diversion around Albert Lea. In these cases, the company would be lowering the elevation of the pipe to accommodate specific tiling installations at the request of the landowners or tenants. Placing the proposed pipeline at a greater depth than the adjacent lines for the entire route would represent a greater potential interference with future tiling operations. The impacts of less than 42" of cover on the additional right-of-way for the proposed pipeline would include potential limitations on deep subsoilings or similar types of agricultural practices in the future.

Regulations of the U.S. Department of Transportation, Office of Pipeline Safety, specified a 30" minimum depth of cover for pipelines in agricultural areas. The depth of cover on operating lines is subject to on-the-ground inspection by the agency on a periodic basis.

V. METROPOLITAN COUNCIL

No response necessary.

VI. GREY CLOUD TOWNSHIP, WASHINGTON COUNTY

Response

1. The Metropolitan Council and Washington County have designated portions of Grey Cloud Township for regional parks. Portions of Grey Cloud Township also have a high potential for inclusion as part of a national recreation area, as reflected in both county and metropolitan plans. There is little doubt the reclamation of the quarry offers the potential development of an outstanding recreation area. After crossing the Mississippi River at the NSP high voltage transmission line, the proposed pipeline would parallel an existing pipeline around the quarry, and into the Cottage Grove Tank Farm. The proposed pipeline would not be expected to present any additional obstacle to developing a park at the quarry.

2. The U.S. Corps of Engineers maintains a 9-foot channel in the Mississippi River off Grey Cloud Island for commercial navigation. Grey Cloud Channel, although not maintained for commercial navigation, is suitable for naviagation for fishing and certain types of pleasure boating. The proposed pipeline would not interfere with any of these forms of navigation or river use.

3. All rivers and streams in Minnesota were classified as "general development" in 1971 unless they were trout streams or wild and scenic rivers. Grey Cloud Channel

could be reclassified to "natural environment" by the Department of Natural Resources if requested to do so by the county and presented with appropriate supportive materials.

4. By crossing the Mississippi River at the NSP transmission line, the proposed pipeline would cross vegetation types associated with that right-of-way. These include the vegetative types common to floodplain forests and type I wetlands, such as willows, hackberry, silver maple, birch, cottonwood, prickly ash, sumac, hazel, raspberry and gooseberry.

5. A consultant to Williams Pipe Line Company would employ a qualified archeologist to work with a representative of the Minnesota Historical Society and prepare a report on those areas of possible historical significance (including the Larsen Floodplain) along the pipeline route. Williams Pipe Line Company would pay for this work. On the basis of the report, the company will adjust this pipeline route to preserve the historical resources of these areas.

6. See response, Minnesota Department of Agriculture, concerning federal inspection of the proposed pipeline operations.

7. Erosion control practices that would be employed during construction and maintenance of the proposed pipeline are discussed in the Draft EIS, Section IV. These practices are designed to minimize top soil loss. Cultivated lands would be returned to tillable condition after the pipeline was constructed.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Federal Building, Fort Snelling
Twin Cities, Minnesota 55111

IN REPLY REFER TO:
LWR

FEB 23 1977

Mr. Alan Wald
Division of Waters
Minnesota Department of Natural Resources
Centennial Office Building
St. Paul, MN 55155

Dear Mr. Wald:

This letter is in response to Mr. Richard J. Myshak's letter of January 25, 1977, regarding a draft environmental impact statement for the Williams Pipeline Company's proposed Mason City, Iowa, to Cottage Grove, Minnesota, pipeline project.

The U.S. Fish and Wildlife Service has reviewed the document and find that it adequately describes the impacts of the proposed project on fish and wildlife resources.

Sincerely yours,

Donald F. La Pointe

Donald F. La Pointe
Acting Assistant Regional Director
Environment

cc: Regional Director, BOR, Ann Arbor

STATE OF MINNESOTA

ENVIRONMENTAL QUALITY COUNCIL
CAPITOL SQUARE BUILDING
550 CEDAR STREET
ST. PAUL, 55101

February 25, 1977

Mr. Alan Wald
Department of Natural Resources
3rd Floor Centennial Building
658 Cedar Street
St. Paul, MN 55155

RE: Comments on Williams Pipeline Draft EIS

Dear Mr. Wald:

The State Planning Agency (SPA) staff has reviewed the draft environmental impact statement (DEIS) for the proposed Williams Pipeline project between Mason City, Iowa and Cottage Grove, Minnesota. Comments and questions for those topics needing clarification are as follows:

1) Present plans are to utilize electric motors as prime movers on the pumps. With planned increases in pipeline capacity, power additions will also be necessary. How much electrical energy will be required for the pumps at the different projected levels of pipeline capacity? How will this energy be supplied? Will any new energy facilities or powerlines be required? What environmental impacts might result?

2) The anticipated construction schedule indicates two different starting times. Page 8 shows a June to October schedule and page 13 indicates the starting time as July.

The staff appreciates the thorough presentation of information and the comprehensiveness of the data in the text of the DEIS. If you have questions on these comments, please contact me or Howard Hoganson at 296-8255.

Sincerely,

William P. Middleton

William P. Middleton
Environmental Planner

WPM/dh

STATE OF MINNESOTA

DEPARTMENT OF AGRICULTURE
STATE OFFICE BUILDING
SAINT PAUL, MINN. 55155
TELEPHONE: (612) 296-7686

LAND OF QUALITY FOODS

March 3, 1977

Michael O'Donnell, Acting Commissioner
Department of Natural Resources
Centennial Office Building
St. Paul, MN 55155

Dear Mr. O'Donnell:

Our Department has had an opportunity to review the Draft Environmental Impact Statement on Williams Pipe Line Company's proposed Mason City, Iowa to Cottage Grove, Minnesota pipeline project. On the whole, we feel that it is a good document which accurately reflects most of the impacts which can be anticipated from a project such as this. However, there are a few additional items which we feel must be added in order to more accurately reflect the impacts which this line might have upon agriculture.

First, we were not able to find any reference in the Draft EIS to the operating temperature of this pipeline. Because of the possibility of subsoil moisture evaporation due to increased soil temperatures resulting from the line as well as the possible impact which warmer soils will have on the growth of crops immediately above and adjacent to the line, we would suggest that this document indicate a maximum temperature which products moving through this line will reach as well as the maximum temperature anticipated for soils within 1 foot of the line.

Second, we feel that this document should indicate the maximum allowable operating pressure and the anticipated operating pressure of this pipeline.

Third, although the issues of tiling is discussed in the EIS, our Department feels that the impacts which will be experienced by the agricultural operators along this pipeline are understated. Our Department is not convinced that a cover of 30 inches in agricultural land will sufficiently protect the pipeline and the farmer. Deep tilling practices such as subsoiling, interference with drainage tiling, and wind erosion of topsoils reducing the minimum cover are issues which we feel warrant a minimum depth of 42 inches in agricultural areas. In addition, we have no means of anticipating what farming practices will be in the future. A nominal cover depth of 30 inches may very well preclude these farmers from implementing new farming techniques and equipment in the future.

These three issues we feel warrant additional consideration in the Final Environmental Impact Statement. We appreciate the opportunity of reviewing this document and providing your Department with our comments. If we may be of any additional assistance to you please feel free to contact us.

Sincerely,

Randall D. Young
Planning Division

RDY:vf

Minnesota Department of Transportation

Transportation Building, St. Paul, MN 55155

Room 813

Phone 296-8529

March 4, 1977

Alan Wald, Senior Hydrologist
Division of Waters
3rd Floor Centennial Office Building
658 Cedar Street
Saint Paul, Minnesota 55155

In reply refer to: 700
Draft Environmental Impact Statement
Williams Pipeline

Dear Mr. Wald:

Our Department has reviewed the Draft Environmental Impact Statement for the Williams Pipeline proposal. We wish to offer the following comments relating to transportation.

The only effects on transportation facilities appear to be at those locations where the pipeline crosses roads, railroads or airport lands.

As stated on page 21, the draft document does acknowledge that permits for all highway and railroad crossings will be obtained. The report also states that the project will require boring rather than trenching at trunk highway and railroad crossings, and that the pipeline will be cased in these locations. We concur that these requirements will adequately provide for maintenance of these transportation services throughout the construction period.

In Section II, under existing land uses, references thereto are made on a County basis. Highways being traversed in Freeborn and Steele Counties are correctly identified. Rice County should add Trunk Highways 19 and 60 to those highways listed. Dakota County makes no reference to highways, and so to be consistent, should include the crossings of Trunk Highways 50, 3 and the combined route of 52, 55 and 56.

In future documents, in discussing highways we would appreciate the use of terminology used by our department. There are no "federal highways". State highways as well as those with a U. S. designation are referred to as trunk highways (TH). Other roads may be under the jurisdiction of townships, cities and counties.

We appreciate this opportunity for review. If you have any questions regarding our comments, please contact Terry Hoffman, Environmental Policy Section at 296-7974.

Sincerely,

Kermit F. McRae
for
Harry A. Reed
Deputy Commissioner
Bureau of Policy and Planning

Metropolitan Council
OF THE TWIN CITIES AREA

300 Metro Square Building, 7th Street and Robert Street, Saint Paul, Minnesota 55101 Area 612, 291-6359

March 1, 1977

Mr. Richard J. Myshak
Assistant Commissioner
Minnesota Department of Natural Resources
Centennial Office Building
St. Paul, MN 55155

Re: Draft Environmental Impact Statement
for the Williams Pipeline Company's
Proposed Pipeline Project
Metropolitan Council Referral File No. 4204

Dear Mr. Myshak:

At its meeting February 24, 1977, the Metropolitan Council considered the above draft Environmental Impact Statement.

The Apple Valley segment of the proposed pipeline and its Cottage Grove terminal point are within the 1990 Metropolitan Urban Service Area. The remainder of the proposed right-of-way is either in the General Rural Use or Commercial Agriculture Areas. The proposed pipeline is consistent with the Development Framework. Construction related environmental impacts will be of short duration and design and practices for spill control are good. The proposed Mississippi River crossing is consistent with the Interim Development Regulations for the Critical Area.

The Council would like to commend the Minnesota Department of Natural Resources for the preparation of a thorough and well supported draft Environmental Impact Statement.

Sincerely,

John Boland

METROPOLITAN COUNCIL
John Boland, Chairman

JB/khf

cc: Cliff Aichinger, Critical Areas Coordinator, MEQC
Lynne Takemoto, MC staff

GREY CLOUD TOWNSHIP
COUNTY OF WASHINGTON
P. O. RTE. 1, ST. PAUL PARK, MINN. 55071

March 15, 1977

TO: Alan Wald, Division of Waters
Minnesota Dept. of Natural Resources
Centennial Building
St. Paul, Minnesota 55155

FROM: Roland M. Peek, Chairperson
Board of Supervisors

SUBJECT: EIS, Williams Pipe Line Proposal

In accordance with our phone conversation extending the time limit for response by our Township, the following comments are submitted from our Board of Supervisors and Planning Commission:

1. Our Township plans its own hearings because there are a number of questions still unanswered by the draft EIS. In addition, there are questions concerning township and/or county ordinances which must be worked out (burning permits, working hours, etc.)

2. It is my impression that those reading the proposal so far generally recognized the need for the pipeline and saw the logic of the proposed location. However, a number of officials commented on the tone of the EIS; the gist of these comments was that it sounded as if it were written on behalf of the Company rather than an objective report for Minnesota citizens (this was not a criticism of the content but a criticism of the apparent point of view).

3. The EIS does not report anywhere that both the Metropolitan Council and Washington County have designated portions of Grey Cloud Township for regional parks,(the Township's own comprehensive plan, now in preparation, will undoubtedly reflect those designations, possibly with larger areas included). Further, the Draft states that Grey Cloud has no recreational land; this may be formally true in a technical sense, but plans and discussions for some time have included certain portions for recreation (for example, some of the reclamation plans for the quarry, plus the aforesaid discussion about the comprehensive plan and the Critical Areas classifications as Open Space).

4. Grey Cloud Channel is termed "unnavigable" in Table 5. This is inconsistent with information I personally received from DNR about a year ago in regard to a question related to the use of Grey Cloud Channel for irrigation. We would very much appreciate a clarification of this point, plus copies of documents and statutes giving the

criteria for classification of waters.

5. Although Grey Cloud Channel may also be officially classified as a "general development" body of water, as stated in the Draft EIS, this is probably inappropriate; our understanding is that it would more correctly be classified "natural environment". Although this is perhaps not directly relevant to the draft EIS, we would appreciate knowing your criteria for this classification; perhaps a site visit by DNR personnel should be considered.

6. Unfortunately the characteristics of the Mississippi River crossing area were not identified because of the season. This is regrettable because any river crossing area is especially important, and because of unique vegetative features in some river areas. The draft EIS states merely that "willows seem to dominate the vegetative cover", which is clearly in error. We would suggest that DNR take a closer look at that area than was reported in the EIS.

7. The "reported degradation" of the aquatic community (p.95) will, it is hoped, continue to be reversed as improvements in river quality and sewage disposal construction go forward. The implication in the EIS seems to be that since there was "reported degradation" this is inevitable, it will continue, and therefore it justifies adding to the degradation.

8. The EIS refers to a survey by a "qualified archeologist" along the Larson Plant flood plain site, as well as an "in-depth" inspection of the pipeline right of way on either side of the river crossing". Who will select the archeologist for these tasks, and by whom will he be paid? Shouldn't the EIS include a statement that his/her findings will be considered in the final routing? In addition, one would hope that he/she would consult with local historians and knowledgeable persons.

9. We have noted that all of the various inspections are to be done by the company. This raises the obvious questions of the objectivity of such inspections where findings could be against the company's financial interests. Is there any provision for input or supervision by state or other governmental agencies or by independent persons or firms?

10. The EIS states (p.110) that topsoil loss is "largely prevented where requested by the landowner or tenant, or where desired by the company for protection of the pipe." Since topsoil is one of our most valuable assets, and since it is so difficult and sometimes impossible to replace, it is regrettable (a) that the EIS does not point out that there is essentially no general plan for reducing topsoil loss, and (b) that the company is not required to replace topsoil in all areas unless permission is given for specific exceptions.

Roland M. Peek

Roland M. Peek