

28229

Service Date: October 1, 1997

Comment Due Date: October 31, 1997

**ENVIRONMENTAL ASSESSMENT  
FINANCE DOCKET NO. 32645**

**BIG STONE-GRANT INDUSTRIAL DEVELOPMENT  
AND TRANSPORTATION CORPORATION, L.L.C.  
ORTONVILLE-BIG STONE LINE OF RAIL CONSTRUCTION  
BIG STONE COUNTY, MINNESOTA, AND GRANT COUNTY, SOUTH DAKOTA**

**Informational Contact:**

**Dana White, or**

**Elaine K. Kaiser, Chief  
Chief, Section of Environmental Analysis  
Surface Transportation Board  
1925 K Street NW  
Washington, D.C. 20423-0001  
Telephone (202) 565-1552**

**Prepared by:**

**Surface Transportation Board  
Section of Environment Board Analysis**

## **CONCLUSION**

This environmental assessment (EA) considers the potential environmental impacts of the proposed construction and operation of a rail line by the Big Stone-Grant Industrial Development Corporation, L.L.C. (Big Stone). The proposal involves the construction of about 3.6 miles of track in the vicinity of Ortonville, Minnesota, and Big Stone City, South Dakota. It is intended to bring competitive rail service to the Big Stone Power Plant and to a proposed industrial park. This EA concludes that the proposal would not significantly affect the quality of the human environment if the recommended mitigation measures set forth in Chapter 6 are implemented. Accordingly, the Surface Transportation Board's (STB) Section of Environmental Analysis (SEA) preliminarily recommends that STB impose conditions on any decision approving the proposal that require Big Stone to implement the mitigation measures in Chapter 6. SEA will consider all comments received in response to the EA in making its final recommendations to STB.

## **EXECUTIVE SUMMARY**

On January 11, 1995, the Big Stone-Grant Industrial Development and Transportation Corporation, L.L.C. (Big Stone) petitioned the Surface Transportation Board (STB), formerly the Interstate Commerce Commission, for an exemption under 49 U.S.C. 10505 to permit the construction and operation of a rail line from Ortonville, Minnesota to Big Stone City, South Dakota. See Figure ES-1. Big Stone proposes to construct about 3.6 miles of new track that would provide competitive rail access to a proposed industrial park and the Big Stone Power Plant, which is a coal-fired electrical energy facility. The proposed line would initially carry coal. Other commodities would likely be transported over the line when the industrial park is developed.

Figure ES-1 - Alternatives Aerial Map

The Big Stone Power Plant is located west of Big Stone City,

South Dakota and is presently served only by the Burlington Northern Railroad Company (Burlington Northern). A majority of the proposed rail line would traverse an existing railroad right-of-way that was taken out of service in the 1920's and from which tracks and ties have been removed.

The proposed rail line would connect to an embargoed rail line called the Cannery Spur for the purposes of this report. See Figure ES-1. The Cannery Spur is about one mile long and extends east from the eastern terminus of the proposed project to a connection with the Burlington Northern main line adjacent to U.S. Route 75. The Cannery Spur was part of the Chicago, Milwaukee, St. Paul and Pacific Railroad and served the former Big Stone Canning Company until the 1980's when the canning company closed. The line is now owned by the Burlington Northern, although the Twin Cities and Western Railroad, a railroad operating in the area, has trackage rights to operate over the line.

Granting Big Stone's petition is considered a Federal action under the National Environmental Policy Act (NEPA) and thus requires the completion of an environmental review process before a final STB decision can be made to grant or deny the petitioner's request.

**BigStone.EA**  
**kab090597**

ES-4

**94S5068**

The STB's environmental review regulations are set forth at 49 CFR Part 1105. These regulations establish the criteria that determine the need for an environmental assessment (EA) or an environmental impact statement (EIS). See 49 CFR 1105.6(a) and (b). An EIS would normally be prepared for a rail construction proposal. However, 49 CFR 1105.6(d) permits the preparation of an EA if the Section of Environmental Analysis (SEA), the STB office responsible for NEPA compliance, determines that a particular proposal would not likely have a significant environment impact.

Big Stone requested that an EA be prepared for the proposed rail line construction and operation project. SEA granted Big Stone's request after consultation with appropriate Federal, state and local agencies and with Big Stone. However, if the EA discloses unanticipated environmental impacts that are significant, SEA reserves the right to require the preparation of an EIS. Big Stone's request for an EA and SEA's response are provided in Appendix B.

The EA considers four alternatives. These alternatives include three build alternatives, identified as Alternative A, the environmentally preferred route, Alternative B, Alternative C, and the No-Build Alternative.

Hanson Engineers Incorporated of Springfield, Illinois was retained by Big Stone to act as the independent third party consultant to assist SEA in completion of the environmental analysis and the preparation of this EA.

Table ES-1 summarizes the primary environmental impacts for Alternative A. Specific effects are briefly discussed below and discussed in the following chapters. SEA's recommended mitigation measures are set forth in Chapter 6. Although the government agencies that were consulted during the environmental review process did not request specific mitigation measures, these agencies did submit comments about potential environmental impacts. These comments are discussed in Chapter 5.

Table ES-1

**BigStone.EA**  
**kab090597**

ES-7

**94S5068**

## **SOCIOECONOMIC IMPACTS**

Socioeconomic impacts related to the construction and operation of the proposed rail line are expected to be minimal; some short-term employment may result from the construction activity. About 50 to 75 people may be employed during the construction period. Permanent employment will not be added in the local area, and no impacts on the local housing market or on income or employment in the project area will result from construction activities. Likewise, project construction is not likely to significantly impact local commerce or industry.

## **LAND USE**

Impacts to existing land use will be limited to areas acquired for rail line right-of-way. An average of about a 100 ft wide railroad corridor will be required for Alternative A and nearly 90 percent of the proposed route has previously been used as a railroad right-of-way. The land within the 100 ft corridor will be cleared prior to construction and converted back to a railroad corridor. This corridor will be maintained as railroad corridor, and other land uses will be limited.

## **WATER**

### **Ground Water**

Rail construction should have negligible impacts on ground water quantity. Recharge to aquifers is not expected to be impeded since the bulk of the proposed route will follow an existing rail bed. Ground water quality could be affected if a spill or contaminant release occurred during construction or operation and penetrated the aquifer, although the likelihood of such an event occurring is extremely small. The railroad company operating the proposed rail line will be responsible for spill clean-up plans and emergency response plans for potential accidents.

## **Surface Water**

Construction activities in the vicinity of wetlands, streams, and rivers could disturb these resources and cause increased siltation. However, these impacts would be short-term and should not be significant if the recommended timing of vegetation and wetlands replacement mitigation measures are implemented. Sedimentation resulting from borrow/spoil areas into waterways cannot be evaluated, as such areas have not been identified. Prior to construction, Big Stone will obtain necessary applicable construction permits.

## **BIOLOGICAL RESOURCES**

### **Wildlife**

Effects to terrestrial wildlife from construction and operation of the proposed rail line will primarily be related to conversion of land within the right-of-way from its current habitat uses. Wildlife occupying adjacent habitat could also be subject to sporadic disturbance because of noise generating construction activities and subsequent train operations. Construction-related disturbances would be temporary, and are not anticipated to cause a major redistribution of resident species.

Construction of the rail line will temporarily displace local terrestrial wildlife because of increased noise from construction equipment and the presence of humans. However, such disturbances would be temporary and are not anticipated to cause a major redistribution of resident species.

During construction and operation of the line, vegetation within the right-of-way will be cleared. This will decrease available habitat for some wildlife species, particularly in the area of the abandoned right-of-way and areas not previously used as railroad right-of-way. However, the loss of habitat is not likely to be significant given the availability of similar habitat within the project area and if the recommended revegetation measures are implemented. According to the U.S. Fish and Wildlife Service and South Dakota Department of Game, Fish and Parks, no habitat for Federal- or state-endangered or threatened wildlife is known to exist along the preferred alternative; consequently, the proposed rail line will likely have no adverse affects on protected species. Use by protected species whose range includes

the proposed route is unlikely because of previous habitat alteration.

### **Vegetation**

A total of about 25.1 acres of land will be included within the right-of-way of the preferred alternative; 90 percent of this land has been previously maintained as rail line right-of-way. About 18.4 acres are located in an abandoned right-of-way which is partially overgrown. The remaining 6.7 acres of land are currently in cropland, wetland, existing highway right-of-way, or commercial use.

Vegetation loss as a result of the proposed project will be primarily limited to previously disturbed areas along the abandoned rail line right-of-way. In these areas this natural vegetation may be impacted. Impacts to these communities would be limited and would not have a significant effect if the recommended revegetation measures are implemented and given the availability of these habitat types within the project area. According to the U.S. Fish and Wildlife Service and South Dakota Department of Game, Fish and Parks, no known populations of Federal- or state-listed endangered plants are present along the preferred alternative, so the proposed rail line is anticipated to have no adverse effects on protected plant species.

### **AIR QUALITY**

The proposed action could affect air quality in the project area. During construction, land clearing and transportation of fill from borrow areas may result in a temporary increase of fugitive emissions. However, if the recommended mitigation measures are implemented, such effects are expected to be minimal. Burning of cleared vegetation and debris may elevate ambient levels of particulates, volatile organic compounds and carbon monoxide. Emissions from the diesel locomotives that will operate on the proposed rail line will have a minimal impact on the air quality of the project area.

## **NOISE**

During construction, noise levels in the project area are expected to rise due to the operation of vehicles and heavy machinery used for clearing, rail construction, etc. These impacts would only be of short-term duration, only occurring during the 12 month construction period. Because of the rural nature of the project area, only a limited number of people would be affected by any construction related increases in noise.

It is likely that train operations over the proposed rail line will cause an increase in ambient noise levels. Within 500 ft of the line, the potential noise receptors consist of three commercial businesses along the newly constructed portion of the right-of-way. However, with existing automobile traffic on adjacent highways, the train generated noise is likely to be negligible. No schools, libraries, hospitals, or retirement homes are located within 3,000 ft of the proposed rail line. There are about six residences within 500 ft of the Cannery Spur portion of the line which would likely experience increases in ambient noise levels. However, where the train uses its horn near at-grade road crossings as required by state law, the noise created will be significantly higher. Since initial projected traffic levels are very low (three or four trains per week), train-generated noise levels are not expected to be significant.

## **TRANSPORTATION AND SAFETY**

The proposed rail line will cross three roads and one rail line, as described in Chapter 2. Two of these are county roads with a low level of vehicular traffic. One is a state highway (U.S. Route 12) with moderate traffic levels (ADT's of about 3,000 vehicles per day). To minimize train-vehicular accidents at the at-grade crossings, appropriate warning devices will be installed. The potential for train-vehicular accidents is expected to be minimal because of the low level of rail traffic (three to four trains per week), the low level of vehicular traffic, and the presence of appropriate warning devices.

The railroad operating over the line will be responsible for an inspection and maintenance program to minimize the potential for derailments. Operation of trains bound to and from the proposed rail line should have insignificant impacts on existing rail traffic.

Because all crossings of existing roads by the proposed rail line are at-grade, there is the potential for vehicular delay at the crossings. This delay is expected to have an insignificant effect on area transportation given the low level of both train and vehicular traffic.

### **CULTURAL RESOURCES**

No archaeological or historic sites are known to exist in the project area; proposed activities should not impact any archaeological sites. A Phase I cultural resource survey has been conducted along the proposed route, which concluded that no historic cultural or archaeological resources were identified. However, the proposed rail line will utilize two former railroad rights-of-way in South Dakota which, according to South Dakota state law, may be eligible for listing on the National Register of Historic Places. However, though the re-utilization of these rights-of-way will alter the existing appearance, it will not diminish their historical character. The South Dakota State Historical Society has stated that the proposed project will not diminish the significant characteristics of the existing rail bed therefore, the project will have no effects on resources considered eligible for the National Register of Historic Places.

A structure will be displaced by the proposed rail line. This structure is a recent ancillary structure adjacent to a former cannery. This building is part of a complex documented on a Minnesota Historic Properties Inventory form (see Appendix G). It is unknown if this building is potentially significant architecturally or historically. If features suspected of historic, cultural, or archaeological value are discovered during the construction activities within the proposed route, Big Stone will implement mitigation in coordination with the Minnesota Historical Society and/or South Dakota Historical Society to minimize impacts.

## **RECREATION**

Recreational activities will not be directly impacted by the proposed activities. Upgrading and restoring this line will not impact hunting, fishing, or other recreational opportunities.

## **SEA RECOMMENDATIONS FOR MITIGATION AND REQUEST FOR COMMENTS**

Based on our independent analysis of this project, and the comments and mitigation suggested by various parties, SEA preliminarily recommends that if STB approves the proposed rail line construction and operation, such approval be subject to the following mitigation measures:

1. Big Stone shall implement all mitigation measures Big Stone has proposed and that are set forth in Chapter 5 of this environmental assessment.
2. To minimize train-vehicular accidents at at-grade crossings, Big Stone shall install appropriate warning devices. Automatic signaling devices with advance warning signs shall be placed where the proposed rail line crosses the Burlington Northern main line, U.S. Route 12, and State Line Road. The remaining county road crossing (Unnamed Road #1) shall have standard crossbuck signs and advance warning signs. Before commencing any construction, Big Stone shall submit its grade crossing safety plans to the South Dakota Department of Highways and Transportation as well as the Grant County Commissioners' Offices for their review and approval.
3. During construction and operation, Big Stone shall consult with the South Dakota Department of Game, Fish and Parks in connection with measures to be taken to mitigate soil erosion. After construction, Big Stone shall re-seed the right-of-way

with grasses and appropriate vegetation. In addition, Big Stone shall follow a vegetation control program using herbicides approved by the U.S. Environmental Protection Agency.

4. In order to minimize fugitive emissions created during construction, Big Stone shall use appropriate measures such as water spraying, wind barriers, and treating the construction area with chemical stabilizers.
5. Before fill is placed in areas surrounding the streams crossed by the rail line or into jurisdictional wetlands, Big Stone shall obtain written documentation from the U.S. Army Corps of Engineers, Omaha District, authorizing the work under a Section 404 Permit. To minimize sedimentation into streams and wetlands crossed by the rail line, Big Stone shall implement appropriate construction techniques to minimize soil erosion. Also, Big Stone shall disturb the smallest area possible around streams and wetlands, and Big Stone shall comply with the provisions of the Storm Water Permit.
6. Big Stone will consult with the Minnesota Historical Society to develop mitigation measures if the former canning company is determined to possess significant architectural or historic quality.

SEA specifically invites comments on all aspects of this EA, including the scope and adequacy of the recommended mitigation. SEA will consider all comments received in response to the EA in making its final recommendations to the STB. Comments (an original and 10 copies) and any questions regarding this EA should be filed with STB's Section of Environmental Analysis, Surface Transportation Board, 1925 K Street, NW, Washington, D.C. 20423-0001, to the attention of Dana White at (202) 565-1552.

Date made available to the public: October 1, 1997

Comment due date: October 31, 1997

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
CONCLUSION .....	C-1
EXECUTIVE SUMMARY .....	ES-1
LIST OF TABLES .....	TC-3
LIST OF FIGURES .....	TC-3
<u>Chapter</u>	<u>Page</u>
1.0 PROPOSED ACTION AND ALTERNATIVES	
1.1 Introduction .....	1-1
1.2 Statement of Proposed Action .....	1-6
1.2.1 Construction .....	1-6
1.2.2 Operation .....	1-10
1.2.3 Maintenance .....	1-16
1.3 Alternatives Considered .....	1-17
1.4 Approvals and Permits Requested .....	1-18
2.0 DESCRIPTION OF EXISTING ENVIRONMENT	
2.1 Socioeconomic Setting .....	2-1
2.2 Physiography .....	2-4
2.3 Water Resources .....	2-6
2.3.1 Ground Water .....	2-6
2.3.2 Surface Water .....	2-8
2.4 Biological Resources .....	2-9
2.4.1 Wildlife .....	2-9
2.4.2 Vegetation .....	2-11
2.5 Air Quality .....	2-12
2.6 Noise .....	2-12
2.7 Transportation .....	2-12
2.8 Cultural Resources .....	2-13
2.9 Recreation .....	2-16
3.0 ENVIRONMENTAL IMPACTS OF CONSTRUCTION/OPERATION OF THE PROPOSED RAIL LINE	
3.1 Introduction .....	3-1

TABLE OF CONTENTS  
(continued)

<u>Chapter</u>		<u>Page</u>
3.2	Land Use/Economic Development .....	3-1
	3.2.1 Land Use .....	3-1
	3.2.2 Economic Development .....	3-2
3.3	Water Resources .....	3-2
	3.3.1 Ground Water .....	3-2
	3.3.2 Surface Water .....	3-3
3.4	Biological Resources .....	3-4
	3.4.1 Wildlife .....	3-4
	3.4.2 Vegetation .....	3-5
3.5	Air Quality .....	3-6
	3.5.1 Construction .....	3-6
	3.5.2 Operation .....	3-7
3.6	Noise .....	3-7
	3.6.1 Construction .....	3-7
	3.6.2 Operation .....	3-8
3.7	Transportation and Safety .....	3-8
3.8	Cultural Resources .....	3-9
3.9	Recreation .....	3-10
3.10	Environmental Justice .....	3-10
4.0	ALTERNATIVES	
4.1	Alternative Descriptions .....	4-1
	4.1.1 No-Build Alternative .....	4-1
	4.1.2 Build Alternative Alignments .....	4-2
	4.1.3 Selection of the Preferred Alternative .....	4-3
5.0	MITIGATION REQUESTED BY THE VARIOUS PARTIES AND PROPOSED BY THE BIG STONE INDUSTRIAL DEVELOPMENT AND TRANSPORTATION CORPORATION	
5.1	Agency Comments and Proposed Mitigation .....	5-1
	5.1.1 Land Use .....	5-1
	5.1.2 Biological Resources .....	5-1
	5.1.3 Water Resources .....	5-2
	5.1.4 Transportation and Safety .....	5-5
	5.1.5 Air Quality .....	5-5
	5.1.6 Cultural Resources .....	5-5
6.0	SECTION OF ENVIRONMENTAL ANALYSIS' RECOMMENDED MITIGATION AND REQUEST FOR COMMENTS	

TABLE OF CONTENTS  
(continued)

APPENDICES

APPENDIX A AGENCY CORRESPONDENCE .....	A-1
APPENDIX B SURFACE TRANSPORTATION BOARD'S RESPONSES TO PETITIONER'S REQUESTS .....	B-1
APPENDIX C LISTS OF PLANT AND ANIMAL SPECIES .....	C-1
APPENDIX D REFERENCES .....	D-1
APPENDIX E LIST OF PREPARERS .....	E-1
APPENDIX F BURLINGTON NORTHERN'S RESPONSE REFUSING ALTERNATIVE C .....	F-1
APPENDIX G PHASE I CULTURAL RESOURCE SURVEY .....	G-1

LIST OF TABLES

<u>Table</u>	<u>Title</u>	<u>Page</u>
ES.1	Summary of Environmental Impacts of Proposed Rail Line (Alternative A) Construction and Operation .....	ES-4
1.1	Design Specifications .....	1-8
1.2	Proposed Roadway/Railroad Crossings .....	1-11
1.3	Proposed Stream Crossing .....	1-12
2.1	Population, Employment, and Income Trends for Grant County, South Dakota and Big Stone County, Minnesota .....	2-2
4.1	Alternative Route Comparison .....	4-4

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>	<u>Page</u>
ES-1	Project Alternatives .....	ES-2
1.1	Project Location Map .....	1-2
1.2	Project Alternatives .....	1-3
1.3	Locations of Areas of Concern Along Proposed Route .....	1-7
1.4	Typical Cross-Section of Railroad .....	1-9
1.5	Typical Bridge Detail .....	1-13
1.6	Typical Culvert Detail .....	1-14
1.7	Proposed Construction Schedule .....	1-15

## **1.0 PROPOSED ACTION AND ALTERNATIVES**

### **1.1 INTRODUCTION**

On January 11, 1995, the Big Stone-Grant Industrial Development and Transportation Corporation, L.L.C. (Big Stone) petitioned the Surface Transportation Board (STB), formerly the Interstate Commerce Commission, for an exemption under 49 U.S.C. 10505 to permit the construction and operation of a rail line from Ortonville, Minnesota to Big Stone City, South Dakota. See Figure 1.1. Big Stone proposes to construct about 3.6 miles of new track that would provide competitive rail access to a proposed industrial park and the Big Stone Power Plant, which is a coal-fired electrical energy facility. The proposed line would initially carry coal. Other commodities would likely be transported over the line when the industrial park is developed.

Figure 1.1

The  
Big  
Stone  
e  
P  
o  
w  
er  
Pl  
an  
t  
is  
lo  
ca  
te  
d  
w  
es  
t  
of  
Bi  
g  
St  
on  
e  
Ci

ty, SD and is presently served only by the Burlington Northern Railroad Company (Burlington Northern). A majority of the proposed rail line would traverse an existing railroad right-of-way that was taken out of service in the 1920's and from which tracks and ties have been removed.

The proposed rail line would connect to an embargoed rail line called the Cannery Spur for the purposes of this report. See Figure 1.2. The Cannery Spur is about one mile long and extends east from the eastern terminus of the proposed project to a connection with the Burlington Northern main line adjacent to U.S. Route 75. The Cannery Spur was part of the Chicago, Milwaukee, St. Paul and Pacific Railroad and served the former Big Stone Canning Company until the 1980's when the canning company closed. The line is now owned by the Burlington Northern, although the Twin Cities and Western Railroad, a railroad operating in the area, has trackage rights to operate over the line.

Figure 1.2

**BigStone.EA**  
**kab090597**

1-5

**94S5068**

**BigStone.EA**  
**kab090597**

1-6

**94S5068**

Granting Big Stone's petition is considered a Federal action under the National Environmental Policy Act (NEPA) and thus requires the completion of an environmental review process before a final STB decision can be made to grant or deny the petitioner's request.

The STB's environmental review regulations are set forth at 49 CFR Part 1105. These regulations establish the criteria that determine the need for an environmental assessment (EA) or an environmental impact statement (EIS). See 49 CFR 1105.6(a) and (b). An EIS would normally be prepared for a rail construction proposal. However, 49 CFR 1105.6(d) permits the preparation of an EA if the Section of Environmental Analysis (SEA), the STB office responsible for NEPA compliance, determines that a particular proposal would not likely have a significant environmental impact.

Big Stone requested that an EA be prepared for the proposed rail line construction and operation project. SEA granted Big Stone's request after consultation with appropriate Federal, state and local agencies and with Big Stone. However, if the EA discloses unanticipated environmental impacts that are significant, SEA reserves the right to require the preparation of an EIS. Big Stone's request for an EA and SEA's response are provided in Appendix B.

The EA considers four alternatives. These alternatives include three build alternatives, identified as Alternative A, the environmentally preferred route, Alternative B, Alternative C, and the No-Build Alternative. See Figure 1.2.

Rehabilitation of the Cannery Spur would be required prior to starting rail operations. This rehabilitation would likely include tie and rail replacement, a structural analysis and possible replacement of the existing bridge over the Minnesota River, and tree removal and maintenance of the existing right-of-way.

The current land use along the Cannery Spur consists of commercial property at the western terminus including grain silos, a fuel storage facility, and a storage facility at the former

cannery building. Two at-grade crossings are encountered along the Cannery Spur; both are rural county roads. These roads have been identified as Unnamed Road 2 and Unnamed Road 3 as shown on Figure 1.2. Railroad signage is posted at both road crossings.

Agricultural land comprised of row crops and pasture is the predominant land use type along the Cannery Spur. About six rural residences are located within about 500 ft of this spur. The Cannery Spur also crosses the Minnesota River and the river's narrow riparian forested area. An existing bridge is located at this crossing, but it is not known if the bridge is structurally sound for train traffic.

The anticipated rail traffic for the proposed rail line, including the Cannery Spur, is about 28 railcars per day. This is in addition to the 1.6 million tons of coal, or about three to four unit coal trains per week now being delivered annually to the Big Stone Power Plant and that could instead move over the proposed line.

Big Stone requested authorization to analyze in detail the environmental impacts of only Alternative A. This request was based upon the scope and intensity of field work completed for the proposed route, the on-site inspection of the proposed route performed by SEA, the results of comments received from various governmental agencies, and the reduced cost that would be incurred by constructing Alternative A. Based upon these factors, SEA's review of potential environmental impacts, contacts with Federal, state and local agencies, and briefings by Big Stone, SEA concurred with Big Stone's request to limit the detailed analysis of environmental impacts to Alternative A. Correspondence related to this matter is included in Appendix B.

Hanson Engineers Incorporated of Springfield, Illinois was retained by Big Stone to act as the independent third party consultant to assist SEA in the completion of the environmental analysis and the preparation of this EA.

This EA has been prepared pursuant to 49 CFR 1105(6)(b). In the process of preparing this EA, a number of governmental agencies were contacted to provide comments. In addition,

a public meeting was held in Milbank, South Dakota on September 22, 1994 to present the proposed project and the various alternatives to the public and to solicit comments and concerns.

## **1.2 STATEMENT OF PROPOSED ACTION**

The proposed action would consist of three critical components including construction, operation, and maintenance.

### **1.2.1 Construction**

The proposed rail line will begin about 0.6 of a mile west of Big Stone City, South Dakota. The proposed rail line will extend east-southeast around the south side of Big Stone City about 10,930 ft (2.1 miles) and connect with an embargoed rail line known as the Cannery Spur. Figure 1.3 depicts the proposed rail line with areas of concern denoted (i.e., road crossings, stream crossings, wetlands, etc.). Of the 10,930 ft of track required for the proposed rail line, only about 1,260 ft will be on new alignment. This section is located on the westernmost side of the project and extends from the Big Stone Power Plant rail spur to the first intermittent drainage area. The remainder of the project will be constructed along an abandoned railroad right-of-way previously owned by the Chicago, Milwaukee, St. Paul and Pacific Railroad. This line was abandoned in the 1920s. Based on an average right-of-way width of 100 ft, about 25.1 acres will be required for construction. Of this acreage, 20.5 acres consist of existing railroad right-of-way and about 4.6 acres would be new right-of-way.

Figure 1.3

C  
on  
str  
uc  
t i  
on  
of  
th  
e  
tr  
ac  
k  
an  
d  
ra  
il  
be  
d  
wi  
ll  
be  
in  
ac  
co  
rd  
an  
ce  
wi  
th

methods approved by the American Railway Engineering Association (AREA). The present rail bed ballast (where present) will be smoothed and used as the subgrade for the proposed construction. Where the rebuild involves a grade change, the same procedures will be followed with additional earthwork to provide the required subgrade elevation. The new track will be constructed on the new subgrade. General design specifications are shown in Table 1.1. A typical cross section of the rail bed is shown in Figure 1.4.

Table 1-1

Figure 1.4

**BigStone.EA**  
**kab090597**

1-13

**94S5068**

**BigStone.EA**  
**kab090597**

1-14

**94S5068**

**BigStone.EA**  
**kab090597**

1-15

**94S5068**

Since the proposed rail line will predominantly use existing rail bed, cut and fill activities will be relatively small. It is estimated that the maximum cut will be about 10 ft and the maximum fill will be about 32 ft. The track grade will not exceed 0.9519 percent and the maximum curvature will be about 3 degrees and 31 minutes.

The proposed rail line will create four at-grade crossings. There will be one crossing at a railroad line, one at a state highway, and two crossings at county road locations (see Figure 1.3). Appropriate warning devices and adequate site distances will be maintained for maximum safety. Crossings will be made at the same angles as the existing rail bed. Crossing surfaces will be equal to or better than the existing road surfaces. Table 1.2 summarizes the proposed road crossings and warning structures or devices to be placed at each road or railroad crossing.

Table 1-2

O  
n l  
y  
on  
e  
na  
m  
ed  
str  
ea  
m,  
th  
e  
W  
he  
tst  
on  
e  
Ri  
ve  
r ,  
wi  
ll  
be  
cr  
os  
se  
d  
by

the proposed rail line. Table 1.3 shows the stream crossing and the structure type. A three span precast concrete girder bridge will be placed at this stream crossing. There is currently no structure present at the Whetstone River along the existing railroad right-of-way. About 16 culverts, each at 36 in. in diameter, will be used at other intermittent drainage locations. These culverts have been sized to compensate for a minimum of a 50 year storm event. The typical bridge detail is depicted in Figure 1.5 and the typical culvert detail is shown in Figure 1.6. It is expected that construction will take about 12 months from the time of initial activities through final inspection. Figure 1.7 shows the major activities involved in the construction of the proposed line, and the approximate timing of the various activities. Construction will begin following receipt of required construction licenses and permits.

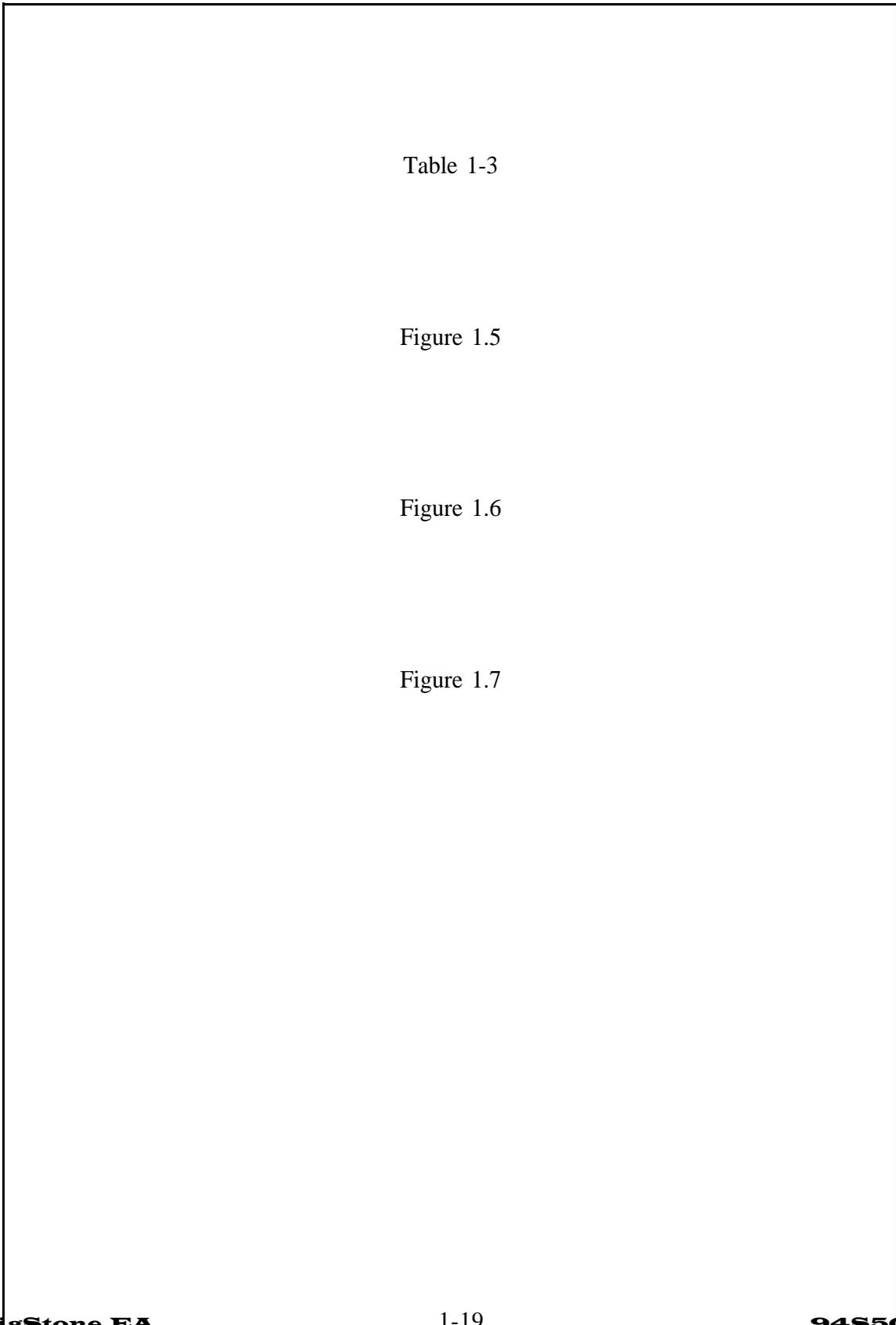


Table 1-3

Figure 1.5

Figure 1.6

Figure 1.7

1.  
2.  
2  
Q  
pe  
ra  
ti  
o  
n  
A  
bo  
ut  
1.  
6  
m  
ill  
io  
n  
to  
ns  
of  
co  
al  
pe  
r  
ye  
ar  
ar

e currently delivered to the Big Stone Power Plant. This equates to about three to four unit coal trains per week. Burlington Northern is presently the only carrier of coal to the Big Stone Power Plant. Burlington Northern has the transportation contract for this coal until 1999.



**BigStone.EA**  
**kab090597**

1-22

**94S5068**

**BigStone.EA**  
**kab090597**

1-23

**94S5068**

**BigStone.EA**  
**kab090597**

1-24

**94S5068**

**BigStone.EA**  
**kab090597**

1-25

**94S5068**

Another railroad company would have the opportunity to negotiate a coal transportation contract with the Big Stone Power Company and compete with Burlington Northern if the proposed project were constructed. Big Stone Power Company favors this competition in rail service so that cost savings might be incurred by competitive coal prices. The proposed rail line is also anticipated to serve an industrial park to be located near the Big Stone Power Plant.

In its application, Big Stone states that it does not intend to operate over the proposed line. Instead, the Big Stone contemplates that a rail carrier presently operating in the area, such as the Twin Cities and Western Railroad Company, would operate under contract to Big Stone to provide service both to the power plant and to the anticipated nearby industrial park. Further information about a prospective rail carrier that would provide service is not available at this time. However, any rail carrier providing service would be expected to comply with all applicable Federal and state operating and safety requirements.

### **1.2.3 Maintenance**

The track will be inspected weekly as required by Federal Railroad Administration (FRA) track standards. Additional inspections will be carried out, as necessary, when warranted by weather conditions. A maintenance program will be implemented to prevent deterioration of the track structure consistent with industry and FRA safety standards.

Inspections and necessary repair will be conducted as necessary. The inspections will focus on the condition of the following items:

- runoff drainage;
- vegetation growth;
- track alignment;
- track surface;
- track gauge;
- rail and turnouts;

- cross ties;
- highway grade crossings and warning devices;
- bridges and culverts; and
- fencing (subject to agreement with adjoining landowners).

Herbicides may be used along the rail line and applied with a Hy-Rail spray truck or spray train. Only herbicide applicators licensed in the State of South Dakota and/or Minnesota will be used. Only EPA-approved herbicides will be applied. The herbicides will be applied in accordance with label instructions on a regular basis, supplemented with spot herbicide applications as required. The spraying width pattern will be appropriate to cover the track tie and ballast shoulder areas, which are expected to be approximately 20 ft wide. Additional manual herbicide treatment would be performed where specific vegetation control is required, such as at bridge ends or around highway crossing signs. This would be carried out by back-mounted sprayer or hand-held pellet spreader.

### **1.3 ALTERNATIVES CONSIDERED**

Initially, Big Stone considered several alternatives to the proposed rail line construction for movement of coal and other potential commodities to the Big Stone Power Plant and industrial park, including truck transportation and alternate rail transport routes.

However, for a number of reasons, including cost and environmental considerations, Big Stone considered the construction and operation of Alternative A to be clearly preferable to the exclusive reliance on any of the other study alternatives as a means to transport coal and other commodities to Big Stone Power Plant and industrial park. The reasons for eliminating other alternatives from detailed consideration in this environmental assessment are set forth in Chapter 4, as is a discussion of the No-Build Alternative.

**1.4 APPROVALS AND PERMITS REQUESTED**

The Big Stone-Grant Industrial Development and Transportation, L.L.C. would be required to obtain a number of permits and approvals prior to construction. These include the following:

<u>Agency</u>	<u>Action</u>
Surface Transportation Board	Exemption authority to construct and operate proposed rail line.
U.S. Army Corps of Engineers	Section 404 permit(s) may be required if wetland areas or waters of the United States are affected.
South Dakota Department of Highways and Transportation	Highway crossing permit.
South Dakota Department of Game, Fish and Parks and Minnesota Department of Natural Resources	

## **2.0 DESCRIPTION OF EXISTING ENVIRONMENT**

The following section provides a description of the existing environment in the proposed project area. Included is information regarding the natural and human resources located within and adjacent to the project area. The information in this section is based on literature review, field reconnaissance, review of aerial photography, and contact with local, state, and Federal agencies.

### **2.1 SOCIOECONOMIC SETTING**

The proposed project is located in a rural area within the boundaries of Grant County, South Dakota and Big Stone County, Minnesota. Big Stone City, which is located in Grant County about 0.5 miles north of the project area, is the closest town in the vicinity of the project. Big Stone City had a 1990 census population of 682 (U.S. Census Bureau, 1994). In Minnesota, Ortonville, which is located in Big Stone County, is about 1.0 miles north of the project area and had a 1990 census population of 2,205. Larger towns near the project area include Milbank, located in Grant County about 8 miles southwest of Big Stone City along U.S. Route 12. Milbank had a 1990 census population of 3,879. The nearest city with a population over 10,000 is Watertown, South Dakota, located in Codington County about 51 miles southwest of Big Stone City. Watertown had a 1990 census population of 17,592.

The populations of both Grant and Big Stone counties have decreased from 1980 to 1992 (Table 2.1). However, both South Dakota and Minnesota have had an overall slight increase in population during the same time period. Potential reasons for decline in population for these counties may include limited new businesses or industry locating in the area, more young people relocating to larger cities for employment, and the nation's recent economic recession. The census figures indicate a decline of 656 and 1,767 for Grant and Big Stone counties respectively, from 1980 to 1992. The 1992 population of Grant County was 9,013 and Big Stone County's population was 7,716. The average number of persons per household was 2.43 in Grant County for 1990, down about 14.3 percent from 1980. In Big Stone County the average number of persons per household was 2.60 for 1990, which was down about

0.6 percent from 1980 (U.S. Department of Commerce, 1992).

Table 2.1

The  
per  
r  
ca  
pi  
ta  
in  
co  
m  
e  
in  
G  
ra  
nt  
C  
ou  
nt  
y  
in  
cr  
ea  
se  
d  
ab  
ou  
t  
4  
8.

0 percent from \$10,394 in 1989 to \$15,384 in 1990 (U.S. Bureau of the Census, 1994). In Big Stone County the per capita income grew about 53.4 percent from \$9,575 in 1989 to \$14,685 in 1990. The 1989 median household income for Grant and Big Stone counties was \$23,431 and \$19,408, respectively.

The unemployment rate in Grant and Big Stone counties was 3.7 percent and 5.1 percent, respectively, in 1991. These rates are nearly identical to the respective state unemployment rates for the same year. The unemployment rate for South Dakota was 3.4 percent in 1991 and 5.1 percent for Minnesota during the same year.

The project area is predominantly comprised of cropland. The primary crops for the area include corn, spring wheat, oats, flax, and alfalfa. Livestock and livestock products are the main sources of farm income (USDA, 1979).

The proposed rail line passes about 0.1 mile south of the Big Stone City limits, along the Whetstone River. There is one abandoned residence located within 500 ft of the proposed center line. This house is located on Unnamed Road 1, south of the proposed rail line (see Figure 1.3). This house has been purchased for this project and will be demolished during construction. No other residences are located within 500 ft of the proposed project. One structure would be impacted by the project, a former cannery building located at the eastern terminus of the project in Minnesota. This structure is currently used as a machine shop and warehouse facility.

The proposed rail line would connect to an embargoed line named the Cannery Spur for purposes of this report (see Figure 1.2). The Cannery Spur is about one mile long and extends east from the eastern terminus of the proposed project to a connection with the Burlington Northern main line adjacent to U.S. Route 75. The Cannery Spur was formerly a part of the Chicago and Milwaukee Railroad main line constructed in the early 1900's.

The Cannery Spur served the former Big Stone Canning Company from the early 1900's to the early 1980's. Canned vegetables and fruit drinks were delivered by rail over this line. The Cannery

Spur has been embargoed since the company went out of business in the early 1980's.

Rehabilitation of the Cannery Spur would be required prior to serving rail traffic. This rehabilitation would likely include tie and rail replacement, a structural analysis and possible replacement of the existing bridge over the Minnesota River, and tree removal and maintenance of the existing right-of-way.

The current land use along the Cannery Spur consists of commercial property at the western terminus including grain silos, a fuel storage facility, and a storage facility at the former cannery building. Two at-grade crossings are encountered along the Cannery Spur, both are rural county roads. These roads have been identified as Unnamed Road 2 and Unnamed Road 3 as shown on Figure 1.2. Railroad signage is posted at both road crossings.

Agricultural land comprised of row crops and pasture is the predominant land use type along the Cannery Spur. About six rural residences are located within about 500 ft of this spur. The Cannery Spur also crosses the Minnesota River and its narrow riparian forested area. An existing bridge is located at this crossing, but it is not known if the bridge is structurally sound for train traffic. It may need structural rehabilitation to accommodate the proposed rail traffic.

The anticipated rail traffic for the proposed rail line, including the Cannery Spur is about 28 railcars per day. This is in addition to the 1.6 million tons of coal being delivered annually to the Big Stone Power Plant. This results in about three to four unit coal trains per week.

## **2.2 PHYSIOGRAPHY**

The project area is located within the Small Lakes Section of the Central Lowland physiographic province. This area is typically a plain region with hummocky moraines of Wisconsinan till. Much of the surface is knob and kettle topography except that ponds and marshes are fewer than the eastern part of the province due to less rainfall. In this part of the Central Lowland the valleys are parallel to each other and to the former position of the ice front. These valleys are former outwash channels of retreating

ice (Hunt, 1967).

Most of the project area is located on the Coteau Des Prairies. This is a highland plateau known locally as "the hills". This area is level to undulating. The Whetstone and Yellow Bank Rivers and their tributaries drain this area to the east towards the Minnesota River. Elevation of the area ranges from around 2,000 ft near Summit Lake, South Dakota to about 977 ft near Big Stone City, South Dakota.

The proposed project lies primarily within two soil associations, the Renshaw-Fordville-Divide Association and the LaDelle-Dovray-Playmoor Association. A soil association is a landscape with a distinct proportional pattern of soils which is usually composed of one or more major soils and some minor soils.

The Renshaw-Fordville-Divide Association contains somewhat excessively drained to somewhat poorly drained, nearly level to moderately steep, loamy soils that are shallow or moderately deep over sand and gravel; on uplands and terraces. This soil association is present on glacial outwash plains and glacial moraines. Slopes are nearly level to gently undulating and sloping, but they are steeper on the glacial moraines and on the side slopes of drainageways. In some areas, the drainage pattern is poorly defined; it is well defined along the larger drainageways. About 67 percent of this association is used for crops and as pasture or hayland. The primary crops include corn, small grains, and alfalfa. Some of the steeper soils on the glacial moraine and some soils bordering drainageways are in native grass and are used for grazing (USDA Soil Conservation Service, 1979).

The LaDelle-Dovray-Playmoor Association contains deep, moderately well drained and poorly drained, level and nearly level, silty and clayey soils, located on flood plains, low terraces, and upland flats. This soil association is present on broad flats adjacent to entrenched drainageways and rivers. Slopes are mainly level to nearly level, but are steeper along drainage channels. About 70 percent of this association is used for crops and as pasture and hayland. The primary crops are corn, small grains, and alfalfa. In some areas, the poorly drained Ludden and Playmoor soils and the steep soils bordering drainageways are in native grass and are used for grazing. Poor drainage and high ground water tables

are the main concern for farming. Maintaining fertility and tilth and improving the rate of water intake are other management concerns.

The climate in the project area ranges from cold to very cold winters and warm summers. At Milbank, South Dakota, located about 10 miles south of the project area, the average winter temperature is 16°F with an average daily low temperature of 6°F. During the summer, the average temperature is 70°F and the average daily maximum temperature is 83°F (USDA, 1979).

The average total annual precipitation is about 21.9 inches. About 17 inches, or 80 percent usually falls in April through September. The average seasonal snowfall is about 36 inches. About 36 days out of the year have an average of at least 1 inch of snow on the ground. The average relative humidity in mid-afternoon is about 60 percent. The average percentage of possible sunshine ranges from about 75 percent in summer to about 55 percent in winter. The prevailing wind is from the south-southeast in the summer and from the north-northwest in winter. The average windspeed is the highest in April at about 14 miles per hour (USDA, 1979).

## **2.3 WATER RESOURCES**

### **2.3.1 Ground Water**

General ground water quality in the project area is good with only a few aquifers having naturally occurring contaminant problems such as high nitrate levels. Deeper aquifers generally have poorer water quality than shallow aquifers, but are also less susceptible to contamination from surface sources (South Dakota DENR, 1994).

More than 80 percent of South Dakota's population uses ground water for domestic needs such as household use, livestock watering, irrigation and industrial use. Almost 50 percent of the 453 million gallons of water used per day in South Dakota is ground water. Over 95 percent of South Dakota's public water supplies rely on ground water. Virtually everyone not supplied by public water systems is dependent on ground water for domestic use (South Dakota DENR, 1994).

Aquifers within South Dakota can be grouped into two categories, unconsolidated sand and gravel aquifers (glacial drift and alluvial), and bedrock aquifers. Bedrock aquifers are the only source of ground water west of the Missouri River, except for a few small alluvial areas along major streams. These aquifers are used extensively as rural-domestic and stock water supplies, as well as for municipal and industrial use. The majority of the bedrock aquifers are unsuitable for irrigation due to high chloride levels. Ground water accounts for up to 30 percent of water used in the western part of the state.

Glacial aquifers consist of sand and gravel outwash deposited by glacial meltwaters. These occur over most of the area east of the Missouri River, including the project area. Alluvial aquifers include sand and gravel deposits underlying the major streams and rivers within the project area. The glacial and alluvial aquifers are the most abundant and easily accessible sources of ground water for much of South Dakota's population. The water quality within these shallow aquifers is highly variable, but generally suitable for domestic, industrial, and agricultural (including irrigation) use. Being shallow and often overlain by permeable material, these aquifers are susceptible to contamination from surface sources. The water quality generally deteriorates with depth. In South Dakota the most significant ground water quality problems are man-induced ground water degradation from petroleum, nitrate, pesticide, and other chemicals through accidental releases and product mishandling, poor management practices, improper locating of pollutant producing facilities, and poor well construction.

### **2.3.2 Surface Water**

The project area is located within the Minnesota River Basin. This basin drains about 1,572 square miles extending north of the project into northeast South Dakota. Agriculture is the primary land use within this basin. Rivers within this basin include the Whetstone, South Fork of the Whetstone, North and South Forks of the Yellowbank, Little Minnesota, and Lac Qui Parle. Major lakes include Big Stone Lake, Lake Alice, Lone Tree Lake, Lake Cochrane, Fish Lake, Lake Hendericks, and Punished Woman Lake (South Dakota DENR, 1994).

The project area is located about three quarters of a mile south of Big Stone Lake. Big Stone Lake is about 12,360 acres in size and creates the headwaters of the Minnesota River. Big Stone's preferred route, Alternative A, would cross the Whetstone River, about one half mile south of where the Whetstone River joins the Minnesota River. The proposed rail line would also cross a previously channelized portion of the Whetstone River. This section of the Whetstone River was channelized to divert water directly into Big Stone Lake to maintain water levels. This diversion caused large sediment loads to be deposited into the south end of Big Stone Lake. In recent years, the construction and subsequent modification of a diversion dam and sediment barrier immediately south of the lake outlet, have resulted in a substantial reduction in lake sedimentation. This river flow management system, which includes a newly constructed control structure, was designed to divert about 80 percent of peak river flows along with the sediment, from lower Big Stone Lake to the Minnesota River.

Potential pollutant sources to surface waters in the Minnesota River Basin include the deposition of sediment, nutrients and bacteria from non-irrigated cropland, pasture, feedlots, and animal holding/management areas.

Wetlands have been identified in the project area. A wetland is defined as an area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Environmental Laboratory, 1987). Wetlands are a transitional zone between aquatic and terrestrial habitats. Wetlands are valuable because they provide habitat for a variety of

wildlife species, filter overland runoff, serve as storm water storage basins, and stabilize stream banks. Section 404 of the Clean Water Act states that a permit is required from the U.S. Army Corps of Engineers to place fill into or otherwise modify wetlands.

Wetlands within the project area include rivers, streams, former borrow source locations for the existing rail bed, and wet meadows. Hanson Engineers, the third party consultant, identified wetlands from U.S. Fish and Wildlife Service's National Wetland Inventory maps, Natural Resource Conservation Service wetlands maps, aerial photography and a field survey conducted by Hanson Engineers. Hanson Engineers also conducted a field survey in accordance with the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual.

Two jurisdictional wetlands, or wetlands regulated by the Clean Water Act, were identified along Alternative A (see Figure 1.3). These areas consist of a vegetated intermittent stream and a former borrow source location. The Whetstone River crossing would be considered waters of the United States and would require a Section 404 permit for the placement of piers (considered fill material) below the ordinary high water mark of the river.

Although wetland impacts have been minimized by using the existing railroad right-of-way to the greatest extent practicable, a total of about 0.98 acres of jurisdictional wetlands would be impacted by construction of Alternative A.

## **2.4 BIOLOGICAL RESOURCES**

### **2.4.1 Wildlife**

The project area contains numerous wildlife habitat types including forests, grasslands, croplands, wetlands, and surface water which is used by a variety of terrestrial and aquatic wildlife species. Appendix C provides a list of the species which may be found in the area of

the proposed activity. An "edge" effect is created by the transition of one habitat type to another, adding diversity in the project area. Many species expected to occur in the area utilize this edge habitat.

Alternative A would follow an existing rail bed that currently provides edge habitat between scrub-shrub vegetation and adjacent agricultural fields, wetlands, and riparian forest. Most of the common wildlife species are typically associated with this edge habitat.

The South Dakota Department of Game, Fish and Parks (SDGFP), the Minnesota Department of Natural Resources (MDNR), and the U.S. Fish and Wildlife Service (USFWS), were consulted for information on the presence of listed threatened or endangered species in the project area. The SDGFP Natural Heritage database and other department files were also reviewed.

No state threatened or endangered species have been documented along any of the build alternative locations. However, two state listed species are known to occur in the general area. The northern redbelly snake is a state listed species that occurs in moist woodlands of northeastern South Dakota. The osprey is a state listed species that frequents the Big Stone City area during migration. The proposed project will not likely affect any suitable nesting habitat for the osprey. The only current nesting records for South Dakota are from the Black Hills area in the western portion of the state.

Bald eagles and peregrine falcons are two additional Federally listed species that migrate through the project area. Some bald eagles winter in the Big Stone City area although there is no documentation of either species along the build alternatives. The Federally endangered American burying beetle historically occurred in both Minnesota and South Dakota but there are no recent records for either state. The nearest sites where this beetle was historically collected are Brookings, South Dakota, and Douglas County, Minnesota, both in the 1940s.

A review of the MDNR Natural Heritage database showed no listed wildlife species within one mile of the project site.

#### **2.4.2 Vegetation**

The project area is located in the Minnesota River Valley portion of the Central Lowland physiographic province. Several terrestrial vegetative community types are present in the project area, including croplands, riparian forests, grasslands, and wetlands.

The main cropland species in the area are corn, wheat, oats, and barley. Predominant domestic perennial grasses and legumes are intermediate wheatgrass, smooth brome grass, sweetclover, and alfalfa.

Some of the dominant native grasses in the area are big bluestem, panic grasses, and Indian grass. Some of the dominant trees and shrubs in the forested areas include American basswood, common chokecherry, silver maple, green ash, cottonwood, bur oak, American elm, eastern burning bush, juneberry, northern hackberry, and red osier dogwood.

Many species of plants exist in the rivers, lakes, and wetlands of the project area. A few species include knotweeds, cattails, cordgrass, rushes, sedges, pondweeds, bulrushes, stinging nettles, arrowhead, and waterleaf.

A review of the SDGFP Natural Heritage database revealed no state listed plant species within the project area in South Dakota. According to the SDGFP, the western prairie fringed orchid is a Federally threatened species that historically occurred in the Big Stone City area. However, at present there are no known populations of this species in South Dakota. The U.S. Fish and Wildlife Service has concurred that it is unlikely the proposed project would affect the habitat of this species.

The MDNR Natural Heritage database showed several occurrence records within the project at the eastern end of the Alternative B alignment for the state threatened Ball cactus. This species occurs in crevices of granite outcrops and in thin soil over granite bedrock. Recent

fieldwork has discovered no new populations of this species and it has been proposed for elevation to state endangered status. None of the build alternatives would affect any potential habitat for this protected species.

## **2.5 AIR QUALITY**

Under the provisions of the Clean Air Act, the U.S. Environmental Protection Agency (U.S.EPA) has established health-based National Ambient Air Quality Standards (NAAQS). Regions within a state are designated as either attainment or nonattainment areas. If emissions of a particular pollutant exceed the maximum emissions allowed under the national ambient air quality standard for that pollutant, then the region in question is designated as a "nonattainment area" for that pollutant. Likewise, if emissions do not exceed the maximum allowed levels, the region is an "attainment area" for the specific pollutant. The designations are pollutant-specific, which means that an area may fall into either category, depending on the subject pollutant.

The project area is not within any designated Air Quality Control Region since these controlled regions only occur around major metropolitan areas. Air quality within the project area is considered better than the national standards established by the U.S. EPA.

## **2.6 NOISE**

The project area is rural, with land use being primarily agricultural. Rail, automobile, and truck traffic is expected to be the primary noise sources in the project area. U.S. Route 12 and the Burlington Northern main line located near the western portion of the project area generate moderate levels of traffic. Also, ambient noise levels near the Big Stone Power Plant may be higher due to noise from plant operations.

## **2.7 TRANSPORTATION**

The proposed rail line will cross one state highway (U.S. Route 12), one secondary road (State

Line Road), one private road (Unnamed Road #1) and the Burlington Northern main line track (see Figure 1.2). All of these crossings are generally in a north-south orientation and are located in South Dakota.

Traffic volume data are only available for U.S. Route 12 from Big Stone City to Milbank. The average annual daily traffic in August 1993 was 2,900 vehicles per day.

The current Burlington Northern rail traffic to the Big Stone Power Plant is about three to four unit coal trains per week. This results in about 1.6 million tons of coal annually.

The proposed corn milling plant which contemplated this industrial park site for their operations, but which located elsewhere, estimated the need for about 72,000 bushels of corn per day which would result in about 28 rail cars per day.

## **2.8 CULTURAL RESOURCES**

A Phase I Cultural Resource survey was conducted for the build alternatives in September 1994 by Hanson Engineers Incorporated. The completed survey report is located in Appendix G. A summary of previous investigations and findings along the proposed route follows.

Portions of the project area and adjacent areas have been previously surveyed for the presence of cultural resources. In Minnesota, two mound sites were reported by T.H. Lewis, who surveyed large areas of Minnesota and South Dakota in the late 19th century. One of these sites, 21BS8, is a single mound site found within the northwest quarter of the southwest quarter of Section 15. The other site, 21BS9, has three mounds, and is located within the southwest quarter of the northwest quarter of Section 15. Both of these sites are found in the uplands, roughly one-quarter to one kilometer away from Alternative B of the project area. No archaeological resources have been reported for Sections 22 or 16, or the Minnesota portion of Section 17 (S. Anfison, personal communication, 1994).

During the 1880's, Lewis surveyed five tracts near or within the project area in South Dakota. One of these tracts surveyed on August 1, 1883 contained a prehistoric fortification site (39GT6) with ditchwork located atop a high hill within a meander loop of the Whetstone River (Minnesota Historical Society Archive #30.C.10.6F). Recently, Haug (1982) reported that he probably relocated this site but noted that cultivation has likely destroyed the earthworks.

Other recent surveys in the South Dakota portion of the project vicinity include one by Haug, and by Johnson (1975). Neither survey located cultural resources. Johnson (1975) observed that the low floodplain of the Minnesota River bottoms appeared to be devoid of archaeological sites, although some sites may be deeply buried and have no surface debris. One example of such a site is the Browns Valley Man site to the north, situated between Big Stone Lake and Traverse Lake (Jenks 1937).

The state of South Dakota has determined that all railroads within the state are eligible for listing on the National Register of Historic Places. The proposed route (Alternative A) will cross the Chicago, Milwaukee, St. Paul and Pacific Railroad (site number 39GT2007), and utilizes an abandoned former railroad bed (site number 39GT2042).

Nineteenth and early Twentieth Century historical atlases and plats were examined to determine if historic structures such as early farmsteads were situated within the proposed corridor. The project route is mostly confined to unincorporated and undeveloped agricultural areas. The exception is where the project enters the incorporated portion of Big Stone City, in the south half of Section 17. A review of early atlases determined that early structures are not situated within the proposed routes.

Alternative A will utilize the existing right-of-way of the abandoned rail spur, which has previously been assigned site number 39GT2007, beginning at the former Chicago, Milwaukee, St. Paul and Pacific Railroad. This abandoned rail spur line has been reported to the South Dakota State Historic Preservation Officer (SHPO) and a site number, 39GT2042, has been assigned by the SHPO. Hanson Engineers, as part of the cultural resource survey, conducted

shovel probe excavations of wooded areas and a pedestrian reconnaissance of agricultural fields within a 50 ft corridor on the north side of the spur line which failed to locate cultural resources.

One potentially historic structure will be displaced by Alternative A. Located within the former cannery property in the southwest quarter of Section 16 in Minnesota, this building is a relatively recent ancillary structure adjacent to the main cannery. This building is part of a complex documented on a Minnesota Historic Properties Inventory Form. Refer to Appendix G for a more detailed description of this building.

A Phase I cultural resource survey of the proposed route between Big Stone City, South Dakota and Ortonville, Minnesota performed by Hanson Engineers, failed to locate archaeological resources. One potentially historic structure, situated within the Minnesota portion of the survey area, will be displaced by Alternative A. This structure is currently used as a machine shop and is associated with a cannery established in 1902. It is unknown at this time if this building is potentially significant architecturally or historically. Connection of Alternative A to the former Chicago, Milwaukee, St. Paul and Pacific Railroad (site 39GT2007) will not result in significant adverse affects which would compromise site 39GT2007's significance. In addition, re-utilization of the abandoned rail spur track (39GT2042) for Alternative A would alter this site's appearance but should not diminish its historical character. The South Dakota State Historical Society has stated that the proposed project will not diminish the significant characteristics of the existing rail bed therefore, the project will have no effects on resources considered eligible for the National Register of Historical Places.

Previous archaeological investigations conducted in the area reported that the "area appears to be devoid of sites" and speculated that the upper Minnesota River Valley may have been subject to frequent flooding in the past (Johnson 1975:6). Further, Johnson states that the "lakes themselves with their flat lakeshore beaches, vegetation cover on the steep upland slopes, and the ample water supply and protection offered habitation and burial areas much more attractive than the low floodplain of the Minnesota River bottoms (ibid.)."

## **2.9 RECREATION**

There are no known public access recreational areas within the immediate project area. Big Stone Lake, located about one mile to the north of the project area, provides a source of boating, swimming, fishing, and hunting for area residents. Also, the Whetstone River provides a fishing resource and canoeing route for enthusiasts.

### **3.0 ENVIRONMENTAL IMPACTS OF CONSTRUCTION AND OPERATION OF THE PROPOSED RAIL LINE**

#### **3.1 INTRODUCTION**

This chapter addresses environmental impacts of constructing and operating Alternative A of the proposed Big Stone-Grant Industrial Development and Transportation, L.L.C. (Big Stone) rail line. As previously discussed, the proposed rail line would provide competitive rail access to the Big Stone Power Plant, a coal-fired electrical energy facility and to a proposed new industrial park.

#### **3.2 LAND USE/ECONOMIC DEVELOPMENT**

##### **3.2.1 Land Use**

Impacts to existing land use will be limited to areas acquired for rail line right-of-way. An average width of about 100 ft of railroad corridor would be required for Alternative A. All but about 10 percent of the proposed route would utilize an abandoned Chicago and Milwaukee Railroad Company right-of-way. The remaining 10 percent would be newly developed right-of-way. The land within the 100 ft corridor will be cleared prior to construction and converted to an operating railroad corridor, which will limit other types of land use.

Based on these requirements, approximately 25.1 acres of right-of-way will have to be acquired for the proposed project. Of this total, 73 percent (18.4 acres) is currently scrub-shrub vegetation that has grown up along the abandoned rail bed. About 2.3 acres is currently cropland. About 1.4 acres is currently commercial property and about 2.0 acres consists of highway and railway right-of-way. About 1.0 acre of the proposed right-of-way is wetland.

One abandoned residence is located within 200 ft of the proposed route. This residence is located south of the proposed route on the east side of Unnamed Road 1 (see Figure 1.3). This structure would be demolished during the construction phase of the project. No occupied residences are located

on property to be acquired for the right-of-way.

### **3.2.2 Economic Development**

Socioeconomic impacts related to the construction and operation of the proposed rail line are expected to be minimal. Some short-term employment may result from the construction activity. Approximately 50 to 75 people may be employed during the construction period. To the extent that these employees would be local people, and that the wages these employees would receive would be spent within the local area, the local economy would be positively affected by the construction phase of the proposed action. This would be a minimal effect due to the limited duration of employment. Permanent employment will not be added in the local area. The local infrastructure of the project area appears to be adequate to absorb the impact of the construction phase of the project.

No new employees are expected to be added in the county as a result of project operation, maintenance or construction, so no new population will result from project construction. It is expected that a rail carrier operating in the area, such as the Twin Cities and Western Railroad, would operate and maintain the proposed line. There will be no impact on the local housing market or on income or employment in the project area. Likewise, project construction is not likely to significantly impact local commerce or industry.

## **3.3 WATER RESOURCES**

### **3.3.1 Ground Water**

Rail construction should have negligible impacts on ground water quantity. Recharge to aquifers is not expected to be impeded since the bulk of the proposed route will follow an existing abandoned rail bed. No aquifers would be disturbed in the areas of excavation for the proposed rail line.

Ground water quality could be affected if a spill or contaminant release occurred during rail line construction or operation, and penetrated the aquifer, thereby contaminating it. The likelihood of such a release is extremely small due to the small quantities of fuels and oils that would be present during construction and operation. Should a release occur, the emergency response and spill protection plans of the carrier operating over the line would be implemented as governed by state and Federal regulations.

### **3.3.2 Surface Water**

Although a waterway does not have to be crossed by a rail line to be affected by it, the surface water resources of most concern are those waterways that are actually crossed by the line. Table 1.3 listed locations of the streams that will be crossed by the proposed line. The following sections discuss potential impacts of rail line construction, followed by discussion of impacts resulting from operation.

Construction activities in the vicinity of creeks, impoundments and wetlands have the potential to impact these bodies of water through increased sedimentation and interference with surface drainage. Big Stone will comply with state stormwater runoff permit requirements. The in-stream work anticipated for this project would be associated with the placement of bridge piers, culverts and/or fill at waterway and wetland areas. These activities could disturb these resources and cause increased siltation. Additionally, construction activities on the right-of-way immediately adjacent to a waterway could result in increased siltation. However, these impacts would be short-term and should not be significant, provided mitigation measures are implemented such as utilizing silt fences and re-seeding cleared areas as soon as practicable. Sedimentation resulting from borrow/spoil areas into waterways cannot be evaluated at this time, as such areas have not been identified.

Two wetland areas have been identified along the proposed rail line route in addition to the one river crossing (see Figure 1.3). These areas may be directly impacted by rail line construction. Impacted wetland areas greater than one-tenth of an acre require a U.S. Army Corps of Engineers (COE) permit under Section 404 of the Clean Water Act. Section 404 of the Clean Water Act established a program for regulating those discharges of dredged or fill material not exempted by statute into all waters of the U.S., including most wetlands. The Section 404 program is administered through

a system of permits which may be obtained from the COE. The permits fall into two broad categories: general permits and individual permits. Affected wetlands that would require COE permits are called jurisdictional wetlands. General COE permits authorize a category or categories of activities nationwide (Nationwide Permit) or regionwide (Regional Permit). If an activity is covered by a Nationwide or Regional Permit, an individual permit is not required. Generally nationwide or regionwide permits are issued when the proposed activity is expected to have minimal adverse impacts on the aquatic environment. The individual COE permit application process is required when more extensive impacts to wetlands are anticipated and involves preparation by the COE of either an environmental assessment or an environmental impact statement for the proposed activity, and possibly a public hearing by the COE regarding the proposal.

A wetlands survey conducted by Hanson Engineers Incorporated determined that the proposed rail line would impact two jurisdictional wetlands. One wetland is located in an unnamed tributary to the Whetstone River. About 0.25 acres of this wetland would be filled for the proposed construction. The abandoned rail bed skirts the edge of another wetland which is within the 100 ft right-of-way required for construction. About 0.73 acres of this wetland will be impacted by fill material to widen the existing rail bed. Figure 1.3 illustrates the locations of these wetlands. During Hanson Engineers' consultation with the COE, the COE indicated that Section 404 permits would be required for crossing the Whetstone River, impacts to streams below the ordinary high water mark, and to wetlands regulated by the Clean Water Act.

### **3.4 BIOLOGICAL RESOURCES**

#### **3.4.1 Wildlife**

Effects to terrestrial wildlife from construction and operation of the proposed rail line will primarily be related to conversion of land within the right-of-way from its current habitat uses.

Wildlife occupying adjacent habitat could also be subject to sporadic disturbance because of noise-generating construction activities and subsequent train operations.

A total of about 25.1 acres of land will be included within the right-of-way of the proposed route; most of this acreage has been previously maintained as rail line right-of-way. About 18.4 acres are located in an abandoned right-of-way which is overgrown with shrubs and small trees. The remaining 6.7 acres of land are currently cropland, commercial, wetland, and highway/railroad right-of-way.

Construction of the rail line will temporarily displace local terrestrial wildlife because of increased noise from construction equipment and the presence of humans. However, such disturbances would be temporary and are not anticipated to cause a major redistribution of resident species.

During construction and operation of the line, vegetation within the right-of-way will be cleared. This will decrease available habitat for some wildlife species, particularly in the area of the abandoned right-of-way and areas not previously used as right-of-way. However, the loss of habitat is not likely to be significant given the availability of similar habitat within the project area.

As stated in Chapter 2, no Federal- or state-endangered or threatened wildlife is documented along the proposed route (Alternative A). Consequently, the U.S. Fish and Wildlife Service has stated that construction and operation of the proposed rail line will not likely have an adverse affect on any protected species. Use of the rail line area by protected species whose range includes the proposed route is unlikely because of previous habitat alteration.

### **3.4.2 Vegetation**

Vegetation loss as a result of the proposed project will be primarily limited to previously disturbed areas along the abandoned rail line right-of-way. In addition, some cropland and two wetlands areas will be impacted by the proposed project. In these areas, natural vegetation may be impacted. Impacts to these communities would be limited and would not have a significant effect on the availability of these habitat types within the project area. The vegetation within these communities is

representative of disturbed and degraded areas. No high quality habitat is present along the proposed route.

As previously stated, no known populations of Federal- or state-listed endangered plants are present along the proposed route. Consequently, the proposed rail line is not anticipated to have an adverse effect on protected plant species.

### **3.5 AIR QUALITY**

STB's environmental regulations require that the anticipated effects of a proposed rail line project on air emissions be quantified if eight trains a day or more utilize the segment of rail line affected. The STB also requires a statement regarding whether the increased emissions are within state parameters if the proposed action is within a Class I or nonattainment area. Since only three to four unit trains per week will likely use the proposed rail line, and the project area is not within a Class I or nonattainment area, the air quality impacts from the normal operation of diesel locomotives, such as suspended solids and gas combustion products, are expected to be minimal. Therefore, a detailed analysis of such operational impacts is not warranted for this project.

#### **3.5.1 Construction**

The construction phase of the proposed action could affect air quality in the project area. During construction, land clearing and transportation of fill from borrow areas may result in a temporary increase in fugitive emissions. In addition, open burning of debris and removed vegetation could contribute to temporary increases in particulates, nitrogen oxides, organic compounds, and carbon monoxide emissions. An increase in organic compounds and nitrogen oxide emissions could cause an increase in ozone levels. However, with appropriate mitigation measures, such effects are expected to be minimal. Such measures could include spraying road surfaces from a water truck or covering truck beds with tarps as necessary. Other methods of control, to be used if required, include wind barriers and treatment of construction areas with chemical stabilizers. All burning related to construction of the rail line will be in accordance with the appropriate local, state and Federal regulations. Large trees and logs removed during clearing operations can be offered to adjacent landowners for use as lumber or

firewood. Other debris not burned will be mulched or landfilled.

### **3.5.2 Operation**

Emissions from the diesel locomotives that will operate on the proposed rail line will have a minimal impact on the air quality of the project area. Big Stone anticipates that initially three or four unit coal trains per week could move over the line.

### **3.6 NOISE**

Train operation over the proposed rail line would likely raise noise levels in the immediate vicinity of the track. The STB has determined a threshold level of rail traffic beyond which noise created by a proposed project must be quantified and sensitive receptors identified. This threshold level, eight trains per day, is not exceeded by this project since an average of three to four trains per week will use the proposed rail line. Therefore, the potential increase in noise levels has not been quantified. However, the potential increase in noise would be fairly minimal due to the low rail traffic level. Also, the number of noise receptors would be low as the line would pass through a rural area.

#### **3.6.1 Construction**

During construction, noise levels in the project area are expected to rise. Temporary noise increases would be caused by operation of vehicles and heavy machinery used for clearing, rail construction, etc. These impacts would be of short-term duration, and would only occur during normal working hours during the weekdays of the 12 month construction period. Because of the rural nature of the project area, it is unlikely that anyone would be affected by any

construction related increases in noise. There are about six residences within 500 ft of the Cannery Spur which may be temporarily affected during rehabilitation of the spur.

### **3.6.2 Operation**

It is likely that train operations over the proposed rail line will cause an increase in ambient noise levels. Within 500 ft of the line, the potential noise receptors consist of three commercial businesses along the newly constructed portion of the right-of-way. However, with existing automobile traffic on adjacent highways, the train generated noise is likely to be negligible. No schools, libraries, hospitals, or retirement homes are located within 3,000 ft of the proposed rail line. There are about six residences within 500 ft of the Cannery Spur portion of the line which would likely experience increases in ambient noise levels. However, where the train uses its horn near at-grade road crossings as required by state law, the noise created will be significantly higher. Since initial projected traffic levels are very low (three or four trains per week), train-generated noise levels are not expected to be significant.

### **3.7 TRANSPORTATION AND SAFETY**

The proposed rail line will cross three roads and one rail line as described in Chapter 2. Two of these are county roads with a low level of vehicular traffic. The average annual daily traffic on U.S. Route 12 was 2,900 vehicles in August 1993.

To minimize train-vehicular accidents at the at-grade crossings, appropriate warning devices will be installed. The South Dakota Department of Transportation has stated that Big Stone will be required to install automatic flashing light signaling devices, which will likely be cantilevered and gated, where the proposed line crosses the Burlington Northern main line, U.S. Route 12, and State Line Road (see Figure 1.3). Big Stone will be required to install standard crossbuck sign and advance warning signs at the remaining county road crossings.

The potential for train-vehicular accidents is expected to be minimal because of the low level of rail traffic (three to four trains per week), low levels of vehicular and rail cross-traffic, and the presence of appropriate warning devices. Because all crossings of existing roads by the proposed rail

line are at-grade, there is the potential for vehicular delays at the crossings. These delays are expected to have an insignificant effect on area transportation given the low level of both train and vehicular traffic. Train delivery will be into a loop track of the industrial park and to the Big Stone Power Plant. The trains will not block any road crossings while unloading.

Train operation may create the possibility for train derailment. Big Stone's inspection and maintenance program will help to minimize this potential. The prospective rail carrier, such as the Twin Cities and Western Railroad, will have a spill prevention plan and emergency response that will be implemented in the event of a spill or derailment. Operation of trains bound to and from the proposed rail line should have insignificant impacts on existing Burlington Northern rail traffic.

### **3.8 CULTURAL RESOURCES**

Based on a review of state historic preservation records, there are no known registered archaeological or historic sites within the project alternatives. A Phase I cultural resource survey has been conducted along Alternative A in both South Dakota and Minnesota, which concluded that no historic cultural or archaeological resources were identified. However, the proposed rail line will utilize an existing rail bed and cross the former Chicago, Milwaukee, St. Paul and Pacific rail line. According to South Dakota state law, all railroad lines are eligible for listing on the National Register of Historic Places. The re-utilization of the existing rail bed will alter its existing appearance; however, it will not diminish its historical character. The South Dakota State Historical Society has stated that the proposed project will not diminish the significant characteristics of the existing rail bed therefore, the project will have no effects on resources considered eligible for the National Register of Historical Places.

A commercial structure will also be displaced by the proposed rail line. This structure is a recent ancillary structure adjacent to a former cannery and is part of a complex documented on a Minnesota Historic Properties Inventory form (see Appendix G). The Minnesota Historical Society is evaluating whether the building is potentially significant architecturally or historically. If resources suspected of historic, cultural, or archaeological value are discovered during the construction activities within the proposed route, Big Stone will contact and consult with the Minnesota Historical Society and/or South Dakota Historical Society to develop mitigation measures and minimize any potential

negative impacts.

### **3.9 RECREATION**

The proposed construction would not affect access to recreational areas, nor impact any recreational areas directly. No impacts on recreational areas are expected based on coordination with state and Federal agencies.

### **3.10 ENVIRONMENTAL JUSTICE**

Executive Order 12898 entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" directs Federal agencies to analyze the environmental effects of their actions on minority and low-income communities. Significant and adverse effects should then be addressed by mitigation measures in the environmental document. In addition, Federal agencies should provide the opportunity for community input, including identifying potential effects and mitigation measures throughout the environmental review process.

In this EA, SEA considered the impacts of the construction and operation of the proposed rail line on minority and low-income communities. The portion of the right-of-way that will be newly constructed is in an entirely rural area, and there are no residences or residential communities located near the line. There are six residences within 500 ft of the Cannery Spur portion of the line. Because Big Stone anticipates only three or four unit coal trains per week, potential impacts that could be related to environmental justice are not expected to occur.

However, SEA specifically requests comments on environmental justice issues and any recommended mitigation measures.

## 4.0 ALTERNATIVES

On December 8, 1994 Big Stone requested a waiver of the requirement to prepare an environmental impact statement (EIS), and authorization instead of the preparation of an environmental assessment (EA). On January 30, 1995 Big Stone also filed a request to limit the detailed study of alternatives to only Alternative A. SEA granted both of these requests. See applicable correspondence in Appendix B. Therefore, the scope of this EA is limited to the proposed route, and, to a limited extent, the alternate routes.

### 4.1 ALTERNATIVE DESCRIPTIONS

Big Stone considered a number of alternatives to the proposed project. These alternatives, including the No-Build Alternative, are discussed below.

#### 4.1.1 No-Build Alternative

The No-Build Alternative would result in truck transport of coal and other potential commodities to the Big Stone Power Plant and the proposed industrial park. However, truck movement is economically feasible only for short distances and for limited quantities of coal and other commodities. Currently, coal for the Big Stone Power Plant is transported from Montana via railroad. It is not economically feasible to truck coal from that distance. However, it is possible that coal could be delivered to an unloading facility near the Ortonville area and loaded onto trucks or a conveyor and transported to the plant. The cost for construction of an unloading facility would be about 25 million dollars. In addition, new roads would have to be constructed for haul trucks since they would not be permitted on public roads. Conveyor costs would be uneconomical since the entire structure would be required to be contained to minimize fugitive dust emissions. Also, the route from the Ortonville area would likely encounter numerous wetland impacts. This option was eliminated because of the large number of trucks required to haul the coal, which would have a negative environmental impact in terms of energy consumption, air and noise pollution, highway safety, and highway degradation.

#### **4.1.2 Build Alternative Alignments**

Alternative A is the environmentally preferred alternative (see Figure 1.2). This alternative extends southeast from a connecting point with the Big Stone Power rail spur and County Road 4 through an agricultural field. Alternative A continues to the southeast across a small drainage area which contains a small wetland area, and passes immediately south of the former Big Stone City Municipal Landfill. From the landfill this alternative enters a wooded area along the abandoned railroad grade and continues southeast where it crosses the Burlington Northern main line tracks and U.S. Route 12. Alternative A continues easterly remaining along the former railroad embankment, just south of Big Stone City. This section of the alternative to the Whetstone River is adjacent to some wetland areas, forested areas, agricultural areas, and a section of the Whetstone River. This section of the Whetstone has been previously channelized to flow directly into Big Stone Lake. This section of the alternative also crosses an unnamed road with no through access. This road has been identified as Unnamed Road 1 for purposes of this report. Alternative A crosses the Whetstone River and the State Line Road where it exits South Dakota and enters Minnesota. The alternative continues for a short distance through an agricultural field where it will tie into the Cannery Spur at the former cannery location.

Alternative B is the second most preferred route and follows the same route as Alternative A to State Line Road, near the South Dakota/Minnesota border. At this point, Alternative B would diverge to the east-southeast through agricultural fields until it reaches the Minnesota River. Along this section of Alternative B an additional road crossing would be incurred and it has been named Unnamed Road 2 for the purposes of this report. Alternative B would continue east-southeast through some riparian habitat and across the Minnesota River where it then traverses through some wetland areas and pasture. Alternative B crosses one more road identified as Unnamed Road 3 and connects with the Burlington Northern main line track near the same location as the Cannery Spur which runs parallel to U.S. Route 75 in Minnesota.

Alternative C has the same starting point as Alternatives A and B. However, after passing along the south side of the Big Stone City Municipal Landfill, Alternative C would diverge to the northeast and connect to the Burlington Northern main line parallel to U.S. Route 12. This alternative would not

cross U.S. Route 12 and would connect to the Burlington Northern main line south of the cheese plant and County Road 4 (see Figure 1.2). Although Alternative C would involve the least environmental impacts of the three build alternatives, it depends entirely upon Big Stone's being able to obtain trackage rights from Burlington Northern. Big Stone requested trackage rights and Burlington Northern refused. This correspondence is located in Appendix F.

#### **4.1.3 Selection of the Preferred Alternative**

Alternative B involves the construction of about 3.6 miles of rail line from the lead track to a point of connection on the Burlington Northern main line between Appleton and Ortonville, Minnesota. The route is identical to Alternative A from the western terminus to the Whetstone River. Alternative B would then diverge from this point and continue south and east of the Cannery Spur for about an additional mile through primarily agricultural land (i.e., cropland and pasture). This Alternative was determined to be infeasible for a number of reasons. Table 4.1 depicts the route comparisons of the alternatives. First, the route would require the acquisition of an additional 9,860 ft of new right-of-way, some of which would sever an existing farm, and would result in a significantly higher expense than the other alternatives because it does not utilize existing track. Second, the route would require the crossing of two additional roads. Third, the route would entail significantly more environmental impacts than the other two build alternatives, since it would require the construction of a bridge over the Minnesota River, and construction through about 2.3 additional acres of wetlands which are located between the Minnesota River and the Burlington Northern main line. Finally, the additional construction required by this route would increase the cost and time for construction of this project significantly.

Table 4.1



Alternative C would consist of the construction of a turnout from the Burlington Northern main line located west of Big Stone City, onto a point of connection with the Big Stone Power Plant lead track. This turnout would result in the construction of about 0.7 miles of new track (see Table 4.1). This alternative is the most cost-effective, and would cause the least amount of environmental impact. The possibility exists that such a turnout could be constructed outside of STB jurisdiction, as an industrial side track under 49 U.S.C. §10907. However, this alternative requires Burlington Northern's agreement to grant Big Stone trackage rights to operate over its track from Ortonville to Milbank, South Dakota. As noted above, Burlington Northern refused Big Stone's request. Consequently, Big Stone eliminated Alternative C as a viable alternative for achieving the goals of the project.

Big Stone selected Alternative A as the preferred alternative based on the re-use of about 1.7 miles of existing rail bed and the connection with the abandoned Cannery Spur line, reducing the length of the proposed project by about 1.5 miles. The re-use of existing rail bed would also greatly reduce and minimize construction costs and environmental impacts associated with the proposed action.

## **5.0 MITIGATION REQUESTED BY THE VARIOUS PARTIES AND PROPOSED BY THE BIG STONE INDUSTRIAL DEVELOPMENT AND TRANSPORTATION CORPORATION**

### **5.1 AGENCY COMMENTS AND PROPOSED MITIGATION**

This chapter addresses by impact category the mitigation measures proposed by Big Stone for this project. Various governmental agencies have been consulted in the process of preparing this EA. Their comments are summarized below, and are presented in Appendix A. Chapter 6 contains the mitigation measures that SEA recommends in any final decision approving the proposed construction and operation.

#### **5.1.1 Land Use**

No comments were received for land use impacts during the consultation process. However, Big Stone proposes that the provisions set forth in the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970, as amended (42 USC 4601, et seq.) will be followed as a guideline for any actions involving the acquisition of property.

Big Stone also proposes that during construction, an erosion control plan will be implemented to minimize erosion. Following construction, the right-of-way will be immediately reseeded with grasses or other appropriate vegetation.

#### **5.1.2 Biological Resources**

Many of the governmental agencies responding to the consultation process indicated a preference towards Alternatives C and A and least favored Alternative B. Most of the agencies requested the protection of threatened and endangered species and their habitats. However, there are no recorded threatened or endangered plant or animal species within the right-of-way of any of the build alternatives. The U.S. Fish and Wildlife Service and the South Dakota Department of Game, Fish and Parks have

concluded that threatened or endangered species or their habitats will not be adversely affected by the proposed project.

The U.S. Fish and Wildlife Service stated that the Whetstone River is considered a Class II high priority fishery and requested that no construction be conducted within the river during the spawning season which extends from April through June. U.S. Fish and Wildlife Service also requested the replacement of all trees and brush that will be removed for the construction of the proposed project. Mitigation was requested at a 2:1 replacement ratio.

To minimize impacts on wildlife, Big Stone proposes that the right-of-way will be re-seeded after construction with grasses and other appropriate vegetation at a 2:1 ratio. Construction activities at the Whetstone River will not be conducted from April through June to avoid the spawning season. The trees and brush cleared for the project will be replaced at a 2:1 ratio, such as along the right-of-way and at borrow source locations.

### **5.1.3 Water Resources**

The U.S. Army Corps of Engineers (COE) has requested that the proper permits be acquired before fill is placed in any waters of the United States including wetlands, and requests that during construction, care be taken to minimize wetlands impacts. A wetland survey has determined that two jurisdictional wetlands areas exist along the proposed route. The Whetstone River is considered waters of the United States. These areas are regulated by the Clean Water Act, and will require Section 404 permits prior to construction.

As part of the Section 404 permitting process in accordance with the Clean Water Act, and in recognition of the U.S. Fish and Wildlife Services' concerns regarding lost wetlands replacement, Big Stone has offered some land adjacent to the Big Stone Power Plant to be used for wetland mitigation if required for a Section 404 permit. Wetland mitigation will be in-kind and on-site at a replacement ratio of 1.5:1.

The South Dakota Department of Environment and Natural Resources (SDDENR) listed the following recommendations, which if followed, should ensure that the project would not violate any statutes or regulations administered through their office.

1. All fill material shall be free of substances in quantities, concentrations, or combinations which are toxic to aquatic life.
2. Removal of vegetation shall be confined to those areas absolutely necessary to construction.
3. At a minimum, construction techniques for sediment and erosion control shall be utilized, such as those presented in either "Best Management Practices" by DWNR (1981), "Best Management Practices" by the Federal Department of Transportation, or the "Erosion Control Manual" by the Colorado Department of Transportation.
4. All material identified in the application as removed waste material, material stockpiles, dredged or excavated material shall be placed for either temporary or permanent disposal in an upland site that is not a wetland, and measures taken to insure that the material cannot enter the watercourse through erosion or any other means.
5. Methods shall be implemented to minimize the spillage of petroleum, oils and lubricants used in vehicles during construction activities. If a discharge does occur, suitable containment procedures such as banking or diking shall be used to prevent entry of these materials into the waterway.
6. All newly created and disturbed areas above the ordinary high water mark which are not riprapped shall be seeded or otherwise revegetated to protect against erosion.

7. Measures shall be taken to minimize any increase in suspended solids and turbidity.
8. Alternatives A and B cross the Whetstone River, which is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:
  - (5) Warm water semipermanent fish life propagation waters;
  - (8) Limited contact recreation waters;
  - (9) Wildlife propagation and stock watering waters; and
  - (10) Irrigation waters.

Because of these beneficial uses, special construction measures may have to be taken to insure that the total suspended solids standard of 90 mg/L is not violated.

9. It appears that wetlands may be impacted by Alternatives A and B. Wetlands are considered waters of the state and are protected under the South Dakota Surface Water Quality Standards. The discharge of pollutants from any source, including indiscriminate use of fill material, may not cause destruction or impairment of wetlands except where authorized under Sections 402 or 404 of the Federal Water Pollution Control Act.
10. A Surface Water Discharge (SWD) permit may be required if any construction dewatering should occur as a result of this project, or if more than five surface acres are disturbed.

To minimize sedimentation into the river crossed by the proposed rail line and to respond to SDDENR's concerns, Big Stone proposes implementation of the following measures:

- Appropriate techniques to minimize soil erosion during construction.
- Disturbance of the smallest area as possible around the river.

- Immediate revegetation of disturbed areas at a 2:1 ratio.
- Other recommendations made by the South Dakota Department of Environment and Natural Resources will be followed so as to not violate any state statute or regulation.

#### **5.1.4 Transportation and Safety**

No comments specific to transportation and safety were received from any of the agencies consulted. However, Big Stone proposes to install appropriate warning devices which will be placed at all at-grade crossings in accordance with state department of transportation policies. The proper state and county permits and approvals for all road crossings will be obtained.

#### **5.1.5 Air Quality**

SDDENR stated that construction equipment with point source emissions are, in many cases, required to have an air quality permit to operate. SDDENR also suggested that fugitive emissions add to the deterioration of the ambient air quality.

Big Stone proposes that fugitive emissions created during construction will be minimized, if necessary, using water spraying. Other potential methods of control include wind barriers and chemical treatment of construction areas; however, these are unlikely to be used. Also, air quality permits will be obtained for any equipment requiring permits for point source emissions.

#### **5.1.6 Cultural Resources**

The South Dakota State Historical Society stated that all railroads within the state, both existing and historic, are eligible for listing on the National Register of Historic Places.

A Phase I cultural resource survey was conducted for the proposed route and concluded that the proposed construction and operation activities associated with the rail line will have little impact on cultural resources. The re-utilization of the existing rail bed will alter its current appearance; however,

it will not diminish its historical character. The South Dakota Historical Society has stated that the proposed project will not diminish the significant characteristics of the existing rail bed therefore, the project will have no effects on resources considered eligible for the National Register of Historic Places.

The Minnesota Historical Society is currently evaluating the historical significance of the former canning company and whether the proposed project will have an effect on any potential historic character.

**6.0 SECTION OF ENVIRONMENTAL ANALYSIS'  
RECOMMENDED MITIGATION AND REQUEST FOR COMMENTS**

Based on our independent analysis of this project, the comments from various governmental and private agencies and concerned parties, and the mitigation proposed by the applicant, the Section of Environmental Analysis (SEA) has developed the mitigation measures set forth below. SEA recommends that any Surface Transportation Board decision approving the proposed Big Stone - Grant Industrial Development and Transportation Corp. (Big Stone) rail line construction and operation be subject to these mitigation measures:

1. Big Stone shall implement all mitigation measures Big Stone has proposed and that are set forth in Chapter 5 of this environmental assessment.
2. To minimize train-vehicular accidents at at-grade crossings, Big Stone shall install appropriate warning devices. Automatic signaling devices with advance warning signs shall be placed where the proposed rail line crosses the Burlington Northern main line, U.S. Route 12, and State Line Road. The remaining county road crossing (Unnamed Road #1) shall have standard crossbuck signs and advance warning signs. Before commencing any construction, Big Stone shall submit its grade crossing safety plans to the South Dakota Department of Highways and Transportation as well as the Grant County Commissioners' Offices for their review and approval.
3. During construction and operation, Big Stone shall consult with the South Dakota Department of Game, Fish and Parks in connection with measures to be taken to mitigate soil erosion. After construction, Big Stone shall re-seed the right-of-way with grasses and appropriate vegetation. In addition, Big Stone shall follow a vegetation control program using herbicides approved by the U.S. Environmental Protection Agency.
4. In order to minimize fugitive emissions created during construction, Big Stone shall use

appropriate measures such as water spraying, wind barriers, and treating the construction area with chemical stabilizers.

5. Before fill is placed in areas surrounding the streams crossed by the rail line or into jurisdictional wetlands, Big Stone shall obtain written documentation from the U.S. Army Corps of Engineers, Omaha District, authorizing the work under a Section 404 Permit. To minimize sedimentation into streams and wetlands crossed by the rail line, Big Stone shall implement appropriate construction techniques to minimize soil erosion. Also, Big Stone shall disturb the smallest area possible around streams and wetlands, and Big Stone shall comply with the provisions of the Storm Water Permit.
6. Big Stone will consult with the Minnesota Historical Society to develop mitigation measures if the former canning company is determined to possess significant architectural or historic quality.

Based on the information provided from all sources to date and subject to the recommended conditions, the SEA concludes that, as currently proposed, construction and operation of the proposed rail line will not significantly affect the quality of the human environment. Therefore, the environmental impact statement process is unnecessary in this proceeding.

We specifically invite comments on all aspects of this environmental assessment, including the scope and adequacy of the recommended conditions. Comments (an original and 10 copies) and any questions regarding this environmental assessment should be sent to: Section of Environmental Analysis, Surface Transportation Board, 1925 K Street NW, Washington, D.C. 20423-0001, to the attention of Dana White (202-565-1552). All comments shall reference the docket number FD 32645 for this proceeding.

Date made available to the public: October 1, 1997

Comment due date: October 31, 1997

APPENDIX A  
AGENCY CORRESPONDENCE

## APPENDIX A

### AGENCY CORRESPONDENCE TABLE OF CONTENTS

This appendix contains the correspondence received from the various Federal, state, and local agencies who were contacted for comment on the construction of the proposed rail line. The responses are organized according to the governmental body. The following Table of Contents shows the location of the agencies responses within this appendix, and includes the date of correspondence.

<b>Exhibit</b>	<b>Correspondence</b>	<b>Page</b>
1	Comment Request Letter	A-3
2	Address List for Comment Request Letter	A-6
3	U.S. Department of the Army, St. Paul District, Corps of Engineers; 12/5/94	A-8
4	U.S. Environmental Protection Agency, Region VIII; 10/7/94	A-10
5	U.S. Department of the Interior, Fish and Wildlife Service; 9/30/94	A-12
6	U.S. Environmental Protection Agency, Region 5; 9/29/94	A-16
7	U.S. Department of the Interior, Fish and Wildlife Service; 9/27/94	A-18
8	U.S. Department of the Army, Omaha District, Corps of Engineers; 9/12/96	A-22
9	Minnesota Department of Natural Resources; 11/30/94	A-24
10	South Dakota Department of Game, Fish, and Parks; 10/18/94	A-26
11	Minnesota Department of Natural Resources; 10/5/94	A-29
12	South Dakota Department of Game, Fish and Parks; 9/27/94	A-31
13	Minnesota Historical Society; 9/19/94	A-33
14	South Dakota Department of Environment and Natural Resources; 9/16/94	A-34
15	South Dakota State Historical Society; 9/6/94	A-37
16	Big Stone County Attorney, William J. Watson; 10/3/94	A-38

**APPENDIX A**  
**AGENCY CORRESPONDENCE**  
**TABLE OF CONTENTS**  
**(continued)**

17	Public Informational Meeting; 9/22/94	A-40
18	Public Comments for Public Informational Meeting; 10/24/94	A-44
19	U.S. Department of the Interior, Fish and Wildlife Service; 2/24/97	A-49
20	Minnesota Historical Society; 3/20/97	A-51
21	South Dakota State Historical Society; 3/26/97	A-52
22	South Dakota Department of Game, Fish and Parks; 3/31/97	A-54

**AGENCY CORRESPONDENCE  
MAILING LIST  
ORTONVILLE - BIG STONE LINE OF RAIL CONSTRUCTION PROJECT  
AUGUST 25, 1994**

**Federal Agencies**

Mr. Joseph S. Marler  
U.S. Fish and Wildlife Service  
Great Lakes - Big Rivers Regional Office  
Region 3  
One Federal Drive  
Federal Building  
Fort Snelling, MN 55111

Mr. Don H. Castleberry  
National Park Service  
Midwest Region  
1709 Jackson Street  
Omaha, NE 68102

U.S. Army Engineer Division,  
North Central  
111 N. Canal Street  
Chicago, IL 60606-7206

Mr. Jack W. McGraw  
U.S. Environmental Protection Agency  
999 18th Street  
Suite 500  
Denver, CO 80202-2405

Mr. Ralph Morgenweck  
U.S. Fish and Wildlife Service  
Mountain-Prairie Regional Office  
Region 6  
134 Union Blvd.  
P.O. Box 25486  
Denver Federal Center  
Denver, CO 80225

U.S. Army Engineer Division,  
Missouri River  
P.O. Box 103, Downtown Station  
Omaha, NE 68101-0103

Mr. Valdus V. Adamkus  
U.S. Environmental Protection Agency  
Region 5  
77 West Jackson Blvd.  
Chicago, IL 60604

**State Agencies**

Minnesota Public Utilities Commission  
121 East 7th Place #350  
St. Paul, MN 55105

Mr. Gary R. Nordstrom  
State Conservationist  
USDA Soil Conservation Service  
600 Farm Credit Building  
375 Jackson Street  
St. Paul, MN 55101-1854

Department of Transportation  
325 John Ireland Blvd.  
St. Paul, MN 55155

Minnesota Historical Society  
690 Cedar Street  
St. Paul, MN 55101

Mr. Rodney W. Sando  
Department of Natural Resources  
500 Lafayette Road  
St. Paul, MN 55155-4001

**APPENDIX A  
AGENCY CORRESPONDENCE  
MAILING LIST  
(continued)**

Office of History  
South Dakota State Historical Society  
900 Governors Drive  
Pierre, SD 57501

The Honorable Val Rausch,  
City of Big Stone City  
Box 246  
Big Stone, SD 57216

Mr. Robert E. Roberts  
Department of Environment and  
Natural Resources  
Joe Foss Building  
523 E. Capitol Avenue  
Pierre, SD 57501

Mr. Elwood Throndrud  
Chairman County Commissioners  
20 Southeast 2nd St.  
Ortonville, MN 56278

Mr. Richard Beringson  
Game, Fish and Parks Department  
523 East Capitol  
Pierre, SD 57501-3182

Mr. Ronald E. Hendricks  
State Conservationist  
USDA Soil Conservation Service  
Federal Building  
200 4th Street, S.W.  
Huron, SD 57350-2475

State Clearinghouse Coordinator  
Office of the Governor  
500 East Capitol  
Pierre, South Dakota 57501

**Local Agencies**

Mr. George Dumann  
Chair County Commissioners  
RR1 Box 38  
Summit, SD 57266

The Honorable Dave Ellingson,  
City of Ortonville  
619 Northwest 2nd Street  
Ortonville, MN 56278

**APPENDIX A  
AGENCY CORRESPONDENCE  
MAILING LIST  
(continued)**

**APPENDIX A  
AGENCY CORRESPONDENCE  
MAILING LIST  
(continued)**

**BigStone.EA A-8 94S5068  
kab090597**

**APPENDIX B**

**SURFACE TRANSPORTATION BOARD'S  
RESPONSES TO PETITIONER'S REQUESTS**

**BigStone.EA  
kab090597**

**A-8**

**94S5068**

APPENDIX C

LIST OF PLANT AND ANIMAL SPECIES

**BigStone.EA**  
**kab090597**

**94S5068**

## APPENDIX C

### HERBACEOUS PLANT SPECIES OF POSSIBLE OCCURRENCE IN THE PROJECT AREA

<u>Common Name</u>	<u>Scientific Name</u>
Alkali Muhly	<i>Muhlenbergia asperifolia</i>
Alumroot	<i>Heuchera richardsonii</i>
Amaranth	<i>Amaranthus tuberculatus</i>
American Purple Vetch	<i>Vicia americana</i>
American Slough Grass	<i>Beckmannia syzigachne</i>
American Dragonhead	<i>Dracocephalum parviflorum</i>
Aromatic Aster	<i>Aster oblongifolius</i>
Arrowleaf Tearthumb	<i>Polygonum sagittatum</i>
Awed Cyperus	<i>Cyperus aristatus</i>
Ball Cactus	<i>Mammillaria vivipara</i>
Baltic Rush	<i>Juncus balticus</i>
Barnyard Grass	<i>Echinochloa crusgalli</i>
Bastard Toadflax	<i>Comandra umbellata</i>
Beardtongue spp.	<i>Penstemon albidus</i>
Beggar Ticks	<i>Bidens comosa</i>
Bicknell's Sedge	<i>Carex bicknellii</i>
Big Bluestem	<i>Andropogon gerardii</i>
Bigblue Lobelia	<i>Lobelia siphilitica</i>
Black Bindweed	<i>Polygonum convolvulus</i>
Black Raspberry	<i>Rubus occidentalis</i>
Bladderwort	<i>Utricularia vulgaris</i>
Blue Vervain	<i>Verbena hastata</i>

**Common Name****Scientific Name**

Blue Lettuce	<i>Lactuca pulchella</i>
Blue Prairie Violet	<i>Viola pratincola</i>
Blue-Eyed Grass	<i>Sisyrinchium campestre</i>
Blunt Spikerush	<i>Eleocharis obtusa</i>
Breadroot	<i>Psoralea esculenta</i>
Broadleaf Cattail	<i>Typha latifolia</i>
Brome Grass	<i>Bromus tectorum</i>
Bull Thistle	<i>Cirsium vulgare</i>
Bur Cucumber	<i>Sicyos angulatus</i>
Bushy Knotweed	<i>Polygonum ramosissimum</i>
Cactus	<i>Coryphantha vivipara</i>
Canada Wildrye	<i>Elymus canadensis</i>
Canada Violet	<i>Viola canadensis</i>
Canada Goldenrod	<i>Solidago canadensis</i>
Canada Mayflower	<i>Maianthemum canadense</i>
Canada Clearweed	<i>Pilea pumila</i>
Canal Bluegrass	<i>Poa compressa</i>
Charlock	<i>Brassica kaber</i>
Clustered Field Sedge	<i>Carex praegracilis</i>
Coast Blite	<i>Chenopodium rubrum</i>
Cockelbur	<i>Xanthium strumarium</i>
Common Smartweed	<i>Polygonum hydropiper</i>
Common Purslane	<i>Portulaca oleracea</i>
Common Hop	<i>Humulus lupulus</i>
Common Milkweed	<i>Asclepias syriaca</i>
Common Sunflower	<i>Helianthus annuus</i>
Common Flax	<i>Linum usitatissimum</i>
Common Reed	<i>Phragmites australis</i>
Coontail	<i>Ceratophyllum demersum</i>
Cordgrass	<i>Spartina pectinata</i>
Cranesbill	<i>Geranium carolinianum</i>
Creeping Vervain	<i>Verbena bracteata</i>
Creeping Thistle	<i>Cirsium arvense</i>
Creeping Spikerush	<i>Eleocharis macrostachya</i>
Crested Sedge	<i>Carex cristatella</i>
Cup Plant	<i>Silphium perfoliatum</i>
Cursed Crowfoot	<i>Ranunculus sceleratus</i>
Dame's Rocket	<i>Hesperis matronalis</i>
Death Camas	<i>Zigadenus elegans</i>
Devils Beggar-ticks	<i>Bidens frondosa</i>
Ditch Grass	<i>Ruppia occidentalis</i>

**APPENDIX C**  
**HERBACEOUS PLANT SPECIES OF POSSIBLE**  
**OCCURRENCE IN THE PROJECT AREA**  
**(continued)**

Ditch Stonecrop	<i>Penthorum sedoides</i>
Dodder spp.	<i>Cascuta glomerata</i>
Dodder spp.	<i>Cascuta pentagona</i>
Dodder spp.	<i>Cascuta gronovii</i>
Downy Yellow Violet	<i>Viola pubescens</i>
Downy Painted Cup	<i>Castilleja sessiliflora</i>
Duck-Potato	<i>Sagittaria latifolia</i>
Dutchman's Breeches	<i>Dicentra cucullaria</i>
Earleaf Brome	<i>Bromus latiglumis</i>
Early Scorpion Grass	<i>Myosotis verna</i>
Early Wood Lousewort	<i>Pedicularis canadensis</i>
Eelgrass	<i>Vallisneria americana</i>
Emory's Sedge	<i>Carex emoryi</i>
Engelmann Flatsedge	<i>Cyperus engelmannii</i>
Erucastrum spp.	<i>Erucastrum gallicum</i>
Erysimum spp.	<i>Erysimum inconspicuum</i>
Euthamia spp.	<i>Euthamia gymnospermoides</i>
Evening Primrose	<i>Calylophus serrulata</i>
Everlasting	<i>Antennaria neglecta</i>
Eyebane Broomspurge	<i>Euphorbia nutans</i>
False Dandelion	<i>Agoseris glauca</i>
False Gromwell	<i>Onosmodium molle</i>
False Pennyroyal	<i>Isanthus brachiatus</i>
False Indigo	<i>Amorpha fruticosa</i>
False Baby-Blue-Eyes	<i>Ellisia nyctelea</i>
False Boneset	<i>Kuhnia eupatorioides</i>
Feather Bunch Grass	<i>Stipa viridula</i>
Field Milkvetch	<i>Astragalus agrestis</i>
Field Horsetail	<i>Equisetum arvense</i>
Field Chickweed	<i>Cerastium arvense</i>
Flameflower	<i>Talinum parviflorum</i>
Flat Top Fragrant Goldenrod	<i>Euthamia graminifolia</i>
Flat Top Aster	<i>Aster umbellatus</i>
Flax spp.	<i>Linum rigidum</i>
Foxtail Dalea	<i>Dalea leporina</i>
Foxtail Sedge	<i>Carex alopecoidea</i>
Fragrant Giant Hyssop	<i>Agastache foeniculum</i>
Fringe-Top Bottle Gentian	<i>Gentiana andrewsii</i>

**APPENDIX C**  
**HERBACEOUS PLANT SPECIES OF POSSIBLE**  
**OCCURRENCE IN THE PROJECT AREA**  
**(continued)**

Gaura	<i>Gaura coccinea</i>
Glasswort	<i>Salicornia rubra</i>
Goat's Beard	<i>Tragopogon dubius</i>
Golden Aster	<i>Heterotheca villosa</i>
Golden Ragwort	<i>Senecio aureus</i>
Golden Dock	<i>Rumex maritimus</i>
Golden Alexanders	<i>Zizia aurea</i>
Goldenrod spp.	<i>Solidago ptarmicoides</i>
Goldenrod spp.	<i>Solidago mollis</i>
Goldenrod spp.	<i>Solidago gigantea</i>
Goosefoot spp.	<i>Chenopodium standleyanum</i>
Goosefoot spp.	<i>Chenopodium simplex</i>
Grama Grass spp.	<i>Bouteloua gracilis</i>
Grama Grass spp.	<i>Bouteloua hirsuta</i>
Grape-Fern	<i>Botrychium campestre</i>
Gray Goldenrod	<i>Solidago nemoralis</i>
Great Plains Ladies' Tresses	<i>Spiranthes magnicamporum</i>
Greater Duckweed	<i>Spirodela polyrhiza</i>
Green Muhly	<i>Muhlenbergia racemosa</i>
Green Foxtail	<i>Setaria viridis</i>
Greenbrier	<i>Smilax lasioneura</i>
Ground Cherry spp.	<i>Physalis heterophylla</i>
Ground Cherry spp.	<i>Physalis virginiana</i>
Ground Plum	<i>Astragalus crassicaarpus</i>
Groundnut	<i>Apios americana</i>
Gumweed	<i>Grindelia squarrosa</i>
Hairy Crabgrass	<i>Digitaria sanguinalis</i>
Hairy Wild Rye	<i>Elymus villosus</i>
Haplopappus spp.	<i>Haplopappus spinulosus</i>
Hardstem Bulrush	<i>Scirpus acutus</i>
Hawk's Beard	<i>Crepis runcinata</i>
Hawthorn	<i>Crataegus faxoni</i>
Heartleaved Alexanders	<i>Zizia aptera</i>
Heath Aster	<i>Aster ericoides</i>
Hedge Bindweed	<i>Convolvulus sepium</i>
Hedyotis	<i>Hedyotis longifolia</i>
Hemp	<i>Cannabis sativa</i>
Hoary Vervain	<i>Verbena stricta</i>

**APPENDIX C**  
**HERBACEOUS PLANT SPECIES OF POSSIBLE**  
**OCCURRENCE IN THE PROJECT AREA**  
**(continued)**

Hoary Pucoon	<i>Lithospermum canescens</i>
Horned Pondweed	<i>Zannichellia palustris</i>
Ironweed	<i>Vernonia fasciculata</i>
Jack-In-The-Pulpit	<i>Arisaema triphyllum</i>
Joe Pye Weed	<i>Eupatorium maculatum</i>
June Grass	<i>Koeleria macrantha</i>
Kentucky Bluegrass	<i>Poa pratensis</i>
Kidneyleaf Buttercup	<i>Ranunculus abortivus</i>
Knotweed	<i>Polygonum arenastrum</i>
Knotweed	<i>Polygonum tenue</i>
Kochia	<i>Kochia scoparia</i>
Lambert's Crazy Weed	<i>Oxytropis lambertii</i>
Lanceleaf Figwort	<i>Scrophularia lanceolata</i>
Largeleaf Beardtongue	<i>Penstemon grandiflorus</i>
Largeleaved pondweed	<i>Potamogeton amplifolius</i>
Larkspur	<i>Delphinium virescens</i>
Leafy Spurge	<i>Euphorbia podperae</i>
Leafy Pondweed	<i>Potamogeton foliosus</i>
Lesser Fringed Gentian	<i>Gentianopsis procera</i>
Linear Leaf Willow Herb	<i>Epilobium leptophyllum</i>
Little Bluestem	<i>Schizachyrium scoparium</i>
Little Barley	<i>Hordeum pusillum</i>
Little Prickly Pear	<i>Opuntia fragilis</i>
Long Beak Sedge	<i>Carex sprengelii</i>
Longleaf Starwort	<i>Stellaria longifolia</i>
Longleaved Pondweed	<i>Potamogeton nodosus</i>
Lopseed	<i>Phryma leptostachya</i>
Low Juneberry	<i>Amelanchier humilis</i>
Lowland Loosestrife	<i>Lysimachia hybrida</i>
Mad Dog Skullcap	<i>Scutellaria lateriflora</i>
Many Head Sedge	<i>Carex sychnocephala</i>
Marsh Fleabane	<i>Senecio congestus</i>
Mat Muhly	<i>Muhlenbergia richardsonis</i>
Mexican Muhly	<i>Muhlenbergia mexicana</i>
Milkvetch spp.	<i>Astragalus lotiflorus</i>
Milkvetch spp.	<i>Astragalus missouriensis</i>
Milkvetch spp.	<i>Astragalus adsurgens</i>
Milkvetch spp.	<i>Astragalus flexuosus</i>

**APPENDIX C**  
**HERBACEOUS PLANT SPECIES OF POSSIBLE**  
**OCCURRENCE IN THE PROJECT AREA**  
**(continued)**

Milkweed spp.	<i>Asclepias ovalifolia</i>
Milkweed spp.	<i>Asclepias viridiflora</i>
Milkweed spp.	<i>Asclepias verticillata</i>
Milkweed spp.	<i>Asclepias speciosa</i>
Missouri Gooseberry	<i>Ribes missouriense</i>
Missouri Violet	<i>Viola missouriensis</i>
Missouri Goldenrod	<i>Solidago missouriensis</i>
Moonseed	<i>Menispermum canadense</i>
Mountain Honeysuckle	<i>Lonicera dioica</i>
Mountain Rice	<i>Oryzopsis racemosa</i>
Mouse-ear Chickweed spp.	<i>Cerastium brachypodum</i>
Mouse-ear Chickweed spp.	<i>Cerastium nutans</i>
Mousetail	<i>Myosurus minimus</i>
Mudwort	<i>Limosella aquatica</i>
Nannyberry	<i>Viburnum lentago</i>
Narrow-leaved Pucoon	<i>Lithospermum incisum</i>
Narrow-Spike Small Reedgrass	<i>Calamagrostis inexpansa</i>
Narrowleaf Collomia	<i>Collomia linearis</i>
Narrowleaf Dock	<i>Rumex stenophyllus</i>
Narrowleaved Cattail	<i>Typha angustifolia</i>
Needle Grass	<i>Stipa comata</i>
New England Aster	<i>Aster novae-angliae</i>
Nodding Trillium	<i>Trillium cernuum</i>
Nodding Beggar-ticks	<i>Bidens cernua</i>
Nodding Fescue	<i>Festuca obtusa</i>
Northern Dropseed	<i>Sporobolus heterolepis</i>
Nuttall Alkalai Grass	<i>Puccinellia nuttalliana</i>
Nuttall's Waterweed	<i>Elodea nuttallii</i>
Oak-leaved Goosefoot	<i>Chenopodium glaucum</i>
Orach	<i>Atriplex patula</i>
Oregon Woodsia	<i>Woodsia oregana</i>
Ox Eye	<i>Heliopsis helianthoides</i>
Pale Jewelweed	<i>Impatiens pallida</i>
Pale Spike Lobelia	<i>Lobelia spicata</i>
Panic Grass spp.	<i>Panicum wilcoxianum</i>
Panic Grass spp.	<i>Panicum meridionale</i>
Panic Grass spp.	<i>Panicum leibergii</i>
Panic Grass spp.	<i>Panicum oligosanthos</i>

**APPENDIX C**  
**HERBACEOUS PLANT SPECIES OF POSSIBLE**  
**OCCURRENCE IN THE PROJECT AREA**  
**(continued)**

Panic Grass spp.	<i>Panicum lanuginosum</i>
Panicled Aster	<i>Aster lanceolatus</i>
Pasque flower	<i>Pulsatilla nuttalliana</i>
Plains Muhly	<i>Muhlenbergia cuspidata</i>
Plumed Thistle spp.	<i>Cirsium altissimum</i>
Plumed Thistle spp.	<i>Cirsium flodmanii</i>
Poison Ivy	<i>Toxicodendron radicans</i>
Porcupine Grass	<i>Stipa spartea</i>
Porcupine Sedge	<i>Carex hystericina</i>
Poverty Grass	<i>Aristida dichotoma</i>
Poverty Dropseed	<i>Sporobolus vaginiflorus</i>
Prairie Rose	<i>Rosa arkansana</i>
Prairie Ragwort	<i>Senecio plattensis</i>
Prairie Bulrush	<i>Scirpus paludosus</i>
Prairie Violet	<i>Viola pedatifida</i>
Prairie Trefoil	<i>Lotus purshianus</i>
Prairie Mimosa	<i>Desmanthus illinoensis</i>
Prairie Coneflower	<i>Ratibida columnifera</i>
Prickly Lettuce	<i>Lactuca serriola</i>
Prickly Gooseberry	<i>Ribes cynosbati</i>
Purple Giant Hyssop	<i>Agastache scrophulariaefolia</i>
Purple Coneflower	<i>Echinacea angustifolia</i>
Purple Avens	<i>Geum triflorum</i>
Purple Prairie Clover	<i>Petalostemon purpureum</i>
Purslane Speedwell	<i>Veronica peregrina</i>
Quackgrass	<i>Agropyron repens</i>
Rayless Alkali Aster	<i>Aster brachyactis</i>
Red Baneberry	<i>Actaea rubra</i>
Redroot Flatsedge	<i>Cyperus erythrorhizos</i>
Redtop	<i>Agrostis stolonifera</i>
Reedgrass	<i>Calamovilfa longifolia</i>
Richardson's Pondweed	<i>Potamogeton richardsonii</i>
River Bulrush	<i>Scirpus fluviatilis</i>
River-bank Grape	<i>Vitis riparia</i>
Rock Spikemoss	<i>Selaginella rupestris</i>
Rose spp.	<i>Rosa macounii</i>
Rough Bentgrass	<i>Agrostis scabra</i>
Rough Bugleweed	<i>Lycopus asper</i>

**APPENDIX C**  
**HERBACEOUS PLANT SPECIES OF POSSIBLE**  
**OCCURRENCE IN THE PROJECT AREA**  
**(continued)**

Rough Purple False Foxglove	<i>Aqalinis aspera</i>
Roundleaf Monkey Flower	<i>Mimulus glabratus</i>
Russian Olive	<i>Elaeagnus angustifolia</i>
Rusty Flatsedge	<i>Cyperus odoratus</i>
Sage	<i>Salvia reflexa</i>
Sago Pondweed	<i>Potamogeton pectinatus</i>
Saline Plantain	<i>Plantago eriopoda</i>
Salt Meadow Grass	<i>Diplachne fascicularis</i>
Saltgrass	<i>Distichlis stricta</i>
Saltwort	<i>Salsola iberica</i>
Sandwort	<i>Arenaria lateriflora</i>
Scarlet mallow	<i>Sphaeralcea coccinea</i>
Scurf Pea	<i>Psoralea argophylla</i>
Sea Blite	<i>Suaeda calceoliformis</i>
Seaside Arrow Grass	<i>Triglochin maritima</i>
Seaside Crowfoot	<i>Ranunculus cymbalaria</i>
Sedge spp.	<i>Carex assiniboinensis</i>
Sedge spp.	<i>Carex saximontana</i>
Sedge spp.	<i>Carex peckii</i>
Sedge spp.	<i>Carex pennsylvanica</i>
Sedge spp.	<i>Carex heliophila</i>
Sedge spp.	<i>Carex eleocharis</i>
Sedge spp.	<i>Carex gravida</i>
Sedge spp.	<i>Eleocharis engelmannii</i>
Sedge spp.	<i>Carex filifolia</i>
Shortbeak Sedge	<i>Carex brevior</i>
Side-Oats Grama	<i>Bouteloua curtipendula</i>
Silky Aster	<i>Aster sericeus</i>
Silverberry	<i>Elaeagnus commutata</i>
Silverweed	<i>Potentilla anserina</i>
Sisymbrium spp.	<i>Sisymbrium loeselii</i>
Skullcap spp.	<i>Scutellaria leonardi</i>
Slender Beardtongue	<i>Penstemon gracilis</i>
Slender Naiad	<i>Najas flexilis</i>
Slender Rush	<i>Juncus tenuis</i>
Small Spikerush	<i>Eleocharis parvula</i>
Small's Spikerush	<i>Eleocharis smallii</i>
Smooth Sow Thistle	<i>Sonchus uliginosus</i>

**APPENDIX C**  
**HERBACEOUS PLANT SPECIES OF POSSIBLE**  
**OCCURRENCE IN THE PROJECT AREA**  
**(continued)**

Smooth Rose	<i>Rosa blanda</i>
Smooth Aster	<i>Aster laevis</i>
Smooth Scouring Rush	<i>Equisetum laevigatum</i>
Sneezeweed	<i>Helenium autumnale</i>
Snow-On-The-Mountain	<i>Euphorbia marginata</i>
Softstem Bulrush	<i>Scirpus validus</i>
Southern Naiad	<i>Najas guadalupensis</i>
Spiderwort	<i>Tradescantia bracteata</i>
Spiny Naiad	<i>Najas marina</i>
Spotted Broomspurge	<i>Euphorbia maculata</i>
Spring Cress	<i>Cardamine bulbosa</i>
Spurge spp.	<i>Euphorbia glyptosperma</i>
Spurge spp.	<i>Euphorbia serpyllifolia</i>
Squirreltail Grass	<i>Hordeum jubatum</i>
Star Grass	<i>Hypoxis hirsuta</i>
Star Duckweed	<i>Lemna trisulca</i>
Starry False Solomon's Seal	<i>Smilacina stellata</i>
Stickseed spp.	<i>Hackelia deflexa</i>
Stinging Nettle	<i>Urtica dioica</i>
Sunflower spp.	<i>Helianthus rigidus</i>
Swamp Milkweed	<i>Asclepias incarnata</i>
Switch Grass	<i>Panicum virgatum</i>
Tall Cinquefoil	<i>Potentilla arguta</i>
Tansy Mustard spp.	<i>Descurainia richardsonii</i>
Tansy Mustard spp.	<i>Descurainia pinnata</i>
Threesquare Bulrush	<i>Scirpus pungens</i>
Threestamen Waterwort	<i>Elatine triandra</i>
Tooth Cup	<i>Rotala ramosior</i>
Torrey's Rush	<i>Juncus torreyi</i>
Touch-me-not	<i>Impatiens capensis</i>
Triple-awned Grass	<i>Aristida purpurea</i>
Tufted Foxtail	<i>Alopecurus carolinianus</i>
Tumble Grass	<i>Schedonnardus paniculatus</i>
Umbrella Flatsedge	<i>Cyperus diandrus</i>
Umbrellawort	<i>Mirabilis hirsuta</i>
Violet Wood Sorrel	<i>Oxalis violacea</i>
Virgin's Bower	<i>Clematis virginiana</i>
Virginia Stickseed	<i>Hackelia virginiana</i>

**APPENDIX C**  
**HERBACEOUS PLANT SPECIES OF POSSIBLE**  
**OCCURRENCE IN THE PROJECT AREA**  
**(continued)**

Virginia Waterleaf	<i>Hydrophyllum virginianum</i>
Virginia Strawberry	<i>Fragaria virginiana</i>
Wapato Arrowhead	<i>Sagittaria cuneata</i>
Water Starwort spp.	<i>Callitriche verna</i>
Water Starwort spp.	<i>Callitriche heterophylla</i>
Water Stargrass	<i>Heteranthera dubia</i>
Water Hemlock	<i>Cicuta maculata</i>
Water Hemp	<i>Amaranthus tamariscinus</i>
Water Hyssop	<i>Bacopa rotundifolia</i>
Water-Plantain spp.	<i>Alisma gramineum</i>
Water-Plantain spp.	<i>Alisma triviale</i>
Western Prairie Fringed Orchid	<i>Platanthera praeclara</i>
Western Ragweed	<i>Ambrosia coronopifolia</i>
Western Androsace	<i>Androsace occidentalis</i>
Western Heath Aster	<i>Aster falcatus</i>
White Water Crowfoot	<i>Ranunculus longirostris</i>
White Snakeroot	<i>Eupatorium rugosum</i>
White Prairie Clover	<i>Petalostemon candidum</i>
White Prairie Clover	<i>Petalostemon occidentale</i>
White Boltonia	<i>Boltonia asteroides</i>
White Avens	<i>Geum canadense</i>
White Grass	<i>Leersia virginica</i>
White Mulberry	<i>Morus alba</i>
White Sage	<i>Artemisia ludoviciana</i>
White Ladyslipper	<i>Cypripedium candidum</i>
White Vervain	<i>Verbena urticifolia</i>
Whitlow Grass spp.	<i>Draba nemorosa</i>
Whitlow Grass spp.	<i>Draba reptans</i>
Whorled Milkwort	<i>Polygala verticillata</i>
Wild Garlic	<i>Allium canadense</i>
Wild Columbine	<i>Aquilegia canadensis</i>
Wild Leek	<i>Allium tricoccum</i>
Wild Four-o'clock	<i>Mirabilis nyctaginea</i>
Wild Onion spp.	<i>Allium stellatum</i>
Wild Onion spp.	<i>Allium textile</i>
Wild Licorice	<i>Glycyrrhiza lepidota</i>
Wild Black Currant	<i>Ribes americanum</i>
Wildrye spp.	<i>Elymus virginicus</i>

**APPENDIX C**  
**HERBACEOUS PLANT SPECIES OF POSSIBLE**  
**OCCURRENCE IN THE PROJECT AREA**  
**(continued)**

Willow Herb	<i>Epilobium glandulosum</i>
Willow Weed	<i>Polygonum lapathifolium</i>
Winter Scouring Rush	<i>Equisetum hyemale</i>
Wirestem Muhly	<i>Muhlenbergia frondosa</i>
Witch Grass	<i>Panicum capillare</i>
Wolf's Spikerush	<i>Eleocharis wolfii</i>
Wolfberry	<i>Symphoricarpos occidentalis</i>
Wood Lily	<i>Lilium philadelphicum</i>
Wood Nettle	<i>Laportea canadensis</i>
Woodbine	<i>Parthenocissus inserta</i>
Woodland Sedge	<i>Carex blanda</i>
Wooly Plantain	<i>Plantago patagonica</i>
Wooly Blue Violet	<i>Viola sororia</i>
Wormseed Mustard	<i>Erysimum cheiranthoides</i>
Wormwood Sage spp.	<i>Artemisia frigida</i>
Wormwood Sage spp.	<i>Artemisia biennis</i>
Yellow Prairie Violet	<i>Viola nuttallii</i>
Yellow Water Crowfoot	<i>Ranunculus flabellaris</i>
Zigzag Goldenrod	<i>Solidago flexicaulis</i>

## APPENDIX C

### TREES AND SHRUBS OF POSSIBLE OCCURRENCE IN THE PROJECT AREA

<u>Common Name</u>	<u>Scientific Name</u>
Alderleaf Juneberry	<i>Amelanchier alnifolia</i>
American Basswood	<i>Tilia americana</i>
American Plum	<i>Prunus americana</i>
American Elm	<i>Ulmus americana</i>
Balsam Poplar	<i>Populus balsamifera</i>
Bebb Willow	<i>Salix bebbiana</i>
Black Walnut	<i>Juglans nigra</i>
Black Ash	<i>Fraxinus nigra</i>
Boxelder	<i>Acer negundo</i>
Bur Oak	<i>Quercus macrocarpa</i>
Canada Plum	<i>Prunus nigra</i>
Common Chokecherry	<i>Prunus virginiana</i>
Common Elderberry	<i>Sambucus canadensis</i>
Common Juniper	<i>Juniperus communis</i>
Downy Juneberry	<i>Amelanchier arborea</i>
Eastern Cottonwood	<i>Populus deltoides</i>
Eastern Redcedar	<i>Juniperus virginiana</i>
Eastern Burningbush	<i>Euonymus atropurpureus</i>
Eastern Hophornbeam	<i>Ostrya virginiana</i>
Fire Cherry	<i>Prunus pensylvanica</i>
Green Ash	<i>Fraxinus pennsylvanica</i>
Missouri River Willow	<i>Salix eriocephala</i>
Northern Prickly Ash	<i>Zanthoxylum americanum</i>
Northern Hackberry	<i>Celtis occidentalis</i>
Paper Birch	<i>Betula papyrifera</i>
Peachleaf Willow	<i>Salix amygdaloides</i>
Quaking Aspen	<i>Populus tremuloides</i>
Red Maple	<i>Acer rubrum</i>
Red Osier Dogwood	<i>Cornus stolonifera</i>
Rock Elm	<i>Ulmus thomasi</i>
Roundleaf Juneberry	<i>Amelanchier sanguinea</i>

**APPENDIX C  
TREES AND SHRUBS OF POSSIBLE  
OCCURRENCE IN THE PROJECT AREA  
(continued)**

Sandbar Willow	<i>Salix exigua</i>
Silver Buffaloberry	<i>Shepherdia argentea</i>
Silver Maple	<i>Acer saccharinum</i>
Slippery Elm	<i>Ulmus rubra</i>
Smooth Sumac	<i>Rhus glabra</i>
Speckled Alder	<i>Alnus rugosa</i>
Sugar Maple	<i>Acer saccharum</i>
Swamp White Oak	<i>Quercus bicolor</i>
Water Parsnip	<i>Berula pusilla</i>
Willow spp.	<i>Salix gracilis</i>
Yellow Birch	<i>Betula alleghaniensis</i>

## APPENDIX C

### FISH SPECIES OF POSSIBLE OCCURRENCE IN PROJECT AREA

<u>Common Name</u>	<u>Scientific Name</u>
Banded Killifish	<i>Fundulus diaphanus</i>
Banded Darter	<i>Etheostoma zonale</i>
Bigmouth Shiner	<i>Notropis dorsalis</i>
Bigmouth Buffalo	<i>Ictiobus cyprinellus</i>
Black Bullhead	<i>Ictalurus melas</i>
Black Crappie	<i>Pomoxis nigromaculatus</i>
Blacknose Dace	<i>Rhinichthys atratulus</i>
Blacknose Shiner	<i>Notropis heterolepis</i>
Blackside Darter	<i>Percina maculata</i>
Bluegill	<i>Lepomis macrochirus</i>
Bluntnose Minnow	<i>Pimephales notatus</i>
Bowfin	<i>Amia calva</i>
Brassy Minnow	<i>Hybognathus hankinsoni</i>
Brook Stickleback	<i>Culaea inconstans</i>
Brown Bullhead	<i>Ictalurus nebulosus</i>
Burbot	<i>Lota lota</i>
Central Stoneroller	<i>Campostoma anomalum</i>
Central Mudminnow	<i>Umbra limi</i>
Channel Catfish	<i>Ictalurus punctatus</i>
Chestnut Lamprey	<i>Ichthyomyzon Castaneus</i>
Common Shiner	<i>Notropis cornutus</i>
Creek Chub	<i>Semotilus atromaculatus</i>
Emerald Shiner	<i>Notropis atherinoides</i>

**Common Name****Scientific Name**

Fantail Darter	<i>Etheostoma flabellare</i>
Fathead Minnow	<i>Pimephales promelas</i>
Finescale Dace	<i>Phoxinus neogaeus</i>
Freshwater Drum	<i>Aplodinotus grunniens</i>
Gizzard Shad	<i>Dorosoma cepedianum</i>
Golden Shiner	<i>Notemigonus crysoleucas</i>
Golden Redhorse	<i>Moxostoma erythrurum</i>
Goldeye	<i>Hiodon alosoides</i>
Grass Pickerel	<i>Esox americanus</i>
Green Sunfish	<i>Lepomis cyanellus</i>
Hornyhead Chub	<i>Nocomis biguttatus</i>
Iowa Darter	<i>Etheostoma exile</i>
Johnny Darter	<i>Etheostoma nigrum</i>
Lake Sturgeon	<i>Acipenser fulvescens</i>
Largemouth Bass	<i>Micropterus salmoides</i>
Logperch	<i>Percina caprodes</i>
Longnose Dace	<i>Rhinichthys cataractae</i>
Longnose Gar	<i>Lepisosteus osseus</i>
Mooneye	<i>Hiodon tergisus</i>
Northern Redbelly Dace	<i>Phoxinus eos</i>
Northern Pike	<i>Esox lucius</i>
Northern Hogsucker	<i>Hypentelium nigricans</i>
Orangespotted Sunfish	<i>Lepomis humilis</i>
Pugnose Shiner	<i>Notropis anogenus</i>
Pumpkinseed	<i>Lepomis gibbosus</i>
Quillback	<i>Carpiodes cyprinus</i>
Rainbow Darter	<i>Etheostoma caeruleum</i>
River Carpsucker	<i>Carpiodes carpio</i>
River Shiner	<i>Notropis blennioides</i>
Rock Bass	<i>Ambloplites rupestris</i>
Rosyface Shiner	<i>Notropis rubellus</i>
Sand Shiner	<i>Notropis stramineus</i>
Sauger	<i>Stizostedion canadense</i>
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>
Shortnose Gar	<i>Lepisosteus platostomus</i>
Silver Chub	<i>Hybopsis storeriana</i>
Skipjack Herring	<i>Alosa chrysochloris</i>
Slenderhead Darter	<i>Percina phoxocephala</i>
Smallmouth Bass	<i>Micropterus dolomieu</i>
Spotfin Shiner	<i>Cyprinella spiloptera</i>

**APPENDIX C**  
**FISH AND SPECIES OF POSSIBLE**  
**OCCURRENCE IN PROJECT AREA**  
**(continued)**

Spottail Shiner  
Stonecat  
Tadpole Madtom  
Trout-perch  
Walleye  
White Crappie  
White Sucker  
White Bass  
Yellow Perch  
Yellow Bullhead

*Notropis hudsonius*  
*Noturus flavus*  
*Noturus gyrinus*  
*Percopsis omiscomaycus*  
*Stizostedion vitreum*  
*Pomoxis annularis*  
*Catostomus commersoni*  
*Morone chrysops*  
*Perca flavescens*  
*Ictalurus natalis*

## APPENDIX C

### AMPHIBIAN AND REPTILE SPECIES OF POSSIBLE OCCURRENCE IN PROJECT AREA

<u>Common Name</u>	<u>Scientific Name</u>
Boreal Chorus Frog	<i>Pseudacris triseriata maculata</i>
Bull Snake	<i>Pituophis melanoleucus</i>
Canadian Toad	<i>Bufo hemiophrys</i>
Eastern American Toad	<i>Bufo a. americanus</i>
Gray Treefrog (complex)	<i>Hyla versicolor-Hyla chrysoscelis</i>
Gray Tiger Salamander	<i>Ambystoma tigrinum diaboli</i>
Great Plains Toad	<i>Bufo cognatus</i>
Mudpuppy	<i>Neturus maculosus maculosus</i>
Northern Redbelly Snake	<i>Storeria occipitomaculata occipitomaculata</i>
Northern Prairie Skink	<i>Eumeces septentrionalis septentrionalis</i>
Northern Leopard Frog	<i>Rana pipiens</i>
Red-Sided Garter Snake	<i>Thamnophis sirtalis parietalis</i>
Snapping Turtle	<i>Chelydra serpentina</i>
Texas Brown Snake	<i>Storeria dekayi texana</i>
Western Smooth Green Snake	<i>Opheodrys vernalis blanchardi</i>
Western Chorus Frog	<i>Pseudacris triseriata triseriata</i>
Western Painted Turtle	<i>Chrysemys picta belli</i>
Western Hognose Snake	<i>Heterodon nasicus nasicus</i>
Western Plains Garter Snake	<i>Thamnophis radix haydeni</i>
Wood Frog	<i>Rana sylvatica</i>

## APPENDIX C

### MAMMAL SPECIES OF POSSIBLE OCCURRENCE IN PROJECT AREA

<u>Common Name</u>	<u>Scientific Name</u>
Arctic Shrew	<i>Sorex arcticus</i>
Badger	<i>Taxidea taxus</i>
Beaver	<i>Castor canadensis</i>
Big Brown Bat	<i>Eptesicus fuscus</i>
Boreal Redback Vole	<i>Clethrionomys gapperi</i>
Coyote	<i>Canis latrans</i>
Deer Mouse	<i>Peromyscus maniculatus</i>
Domestic Dog	<i>Canis familiaris</i>
Domestic Cat	<i>Felis catus</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Eastern Chipmunk	<i>Tamias striatus</i>
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>
Fox Squirrel	<i>Sciurus niger</i>
Franklin's Ground Squirrel	<i>Citellus franklini</i>
Gray Fox	<i>Urocyon cinereoargenteus</i>
Hoary Bat	<i>Lasiurus cinereus</i>
House Mouse	<i>Mus musculus</i>
Keen Myotis	<i>Myotis keeni</i>
Least Weasel	<i>Mustela rixosa</i>
Little Brown Myotis (Little Brown Bat)	<i>Myotis lucifugus</i>
Longtail Weasel	<i>Mustela frenata</i>
Masked shrew	<i>Sorex cinereus</i>
Meadow Vole	<i>Microtus pennsylvanicus</i>

**Common Name**

Meadow Jumping Mouse  
Mink  
Mule Deer  
Muskrat  
Northern Water Shrew  
Northern Grasshopper Mouse  
Norway Rat  
Opossum  
Prairie Vole  
Plains Pocket Mouse  
Plains Pocket Gopher  
Pygmy Shrew  
Raccoon  
Red Fox  
Red Squirrel  
Red Bat  
Richardson Ground Squirrel  
River Otter  
Shorttail Shrew  
Shorttail Weasel  
Silver-Haired Bat  
Southern Flying Squirrel  
Southern Bog Lemming  
Spotted Skunk  
Striped Skunk  
Swift Fox  
Thirteen-lined Ground Squirrel  
Western Jumping Mouse  
Western Harvest Mouse  
White-footed Mouse  
White-tailed Deer  
Whitetail Jackrabbit  
Woodchuck

**Scientific Name**

*Zapus hudsonius*  
*Mustela vison*  
*Odocoileus hemionus*  
*Ondatra zibethica*  
*Sorex palustris*  
*Onychomys leucogaster*  
*Rattus norvegicus*  
*Didelphis virginiana*  
*Microtus ochrogaster*  
*Perognathus flavescens*  
*Geomys bursarius*  
*Microsorex hoyi*  
*Procyon lotor*  
*Vulpes vulpes*  
*Tamiasciurus hudsonicus*  
*Lasiurus borealis*  
*Citellus richardsoni*  
*Lutra canadensis*  
*Blarina brevicauda*  
*Mustela erminea*  
*Lasionycteris noctivagans*  
*Glaucomys volans*  
*Synaptomys cooperi*  
*Spilogale putorius*  
*Mephitis mephitis*  
*Vulpes velox*  
*Citellus tridecemlineatus*  
*Zapus princeps*  
*Reithrodontomys megalotis*  
*Peromyscus leucopus*  
*Odocoileus virginianus*  
*Lepus townsendi*  
*Marmota monax*

## APPENDIX C

### BIRD SPECIES OF POSSIBLE OCCURRENCE IN PROJECT AREA

<u>Common Name</u>	<u>Scientific Name</u>
American Robin	<i>Turdus migratorius</i>
American Woodcock	<i>Scolopax minor</i>
American Avocet	<i>Recurvirostra americana</i>
American Kestrel	<i>Falco sparverius</i>
American Redstart	<i>Setophaga ruticilla</i>
American Goldfinch	<i>Carduelis tristis</i>
American Coot	<i>Fulica americana</i>
American Bittern	<i>Botaurus lentiginosus</i>
American Crow	<i>Corvus brachyrhynchos</i>
Bank Swallow	<i>Riparia riparia</i>
Barn Swallow	<i>Hirundo rustica</i>
Barred Owl	<i>Strix varia</i>
Belted Kingfisher	<i>Ceryle alcyon</i>
Black Tern	<i>Chlidonias niger</i>
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>
Black-capped Chickadee	<i>Parus atricapillus</i>
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>
Blue Jay	<i>Cyanocitta cristata</i>
Blue-winged Teal	<i>Anas discors</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Brown Thrasher	<i>Toxostoma rufum</i>
Brown-headed Cowbird	<i>Molothrus ater</i>

**Common Name****Scientific Name**

Burrowing Owl	<i>Athene cunicularia</i>
Canada Goose	<i>Branta canadensis</i>
Canvasback	<i>Aythya valisineria</i>
Cattle Egret	<i>Bubulcus ibis</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Chestnut-Collared Longspur	<i>Calcarius ornatus</i>
Chimney Swift	<i>Chaetura pelagica</i>
Chipping Sparrow	<i>Spizella passerina</i>
Clay-Colored Sparrow	<i>Spizella pallida</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Common Nighthawk	<i>Chordeiles minor</i>
Common Snipe	<i>Capella gallinago</i>
Common flicker	<i>Colaptes auratus</i>
Common Grackle	<i>Quiscalus quiscula</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Common Screech-Owl	<i>Otus asio</i>
Common Pintail	<i>Anas acuta</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Dickeissel	<i>Spiza americana</i>
Double-Crested Cormorant	<i>Phalacrocorax auritus</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Eared Grebe	<i>Podiceps nigricollis</i>
Eastern Wood-Pewee	<i>Contopus virens</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Eastern Bluebird	<i>Sialia sialis</i>
European Starling	<i>Sturnus vulgaris</i>
Field Sparrow	<i>Spizella pusilla</i>
Forster's Tern	<i>Sterna forsteri</i>
Franklin's Gull	<i>Larus pipixcan</i>
Gadwall	<i>Anas strepera</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Gray Catbird	<i>Dumetella carolinensis</i>
Gray Partridge	<i>Perdix perdix</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Great Horned Owl	<i>Bubo virginianus</i>
Green-backed Heron	<i>Butorides striatus</i>
Green-winged Teal	<i>Anas crecca</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Henslow's Sparrow	<i>Ammodramus henslowii</i>

**APPENDIX C**  
**BIRD SPECIES OF POSSIBLE**  
**OCCURRENCE IN PROJECT AREA**  
**(continued)**

Hooded Merganser	<i>Lophodytes cucullatus</i>
Horned Lark	<i>Eremophila alpestris</i>
House Wren	<i>Troglodytes aedon</i>
House Sparrow	<i>Passer domesticus</i>
Indigo Bunting	<i>Passerina cyanea</i>
Killdeer	<i>Charadrius vociferus</i>
King Rail	<i>Rallus elegans</i>
Lard Bunting	<i>Calamospiza melanocorys</i>
Lark Sparrow	<i>Chondestes grammacus</i>
Least Flycatcher	<i>Empidonax minimus</i>
Least Bittern	<i>Ixobrychus exilis</i>
Leconte's Sparrow	<i>Ammospiza leconteii</i>
Lesser Scaup	<i>Aythya affinis</i>
Little Blue Heron	<i>Egretta caerulea</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Long-eared Owl	<i>Asio otus</i>
Mallard	<i>Anas platyrhynchos</i>
Marbled Godwit	<i>Limosa fedoa</i>
Marsh Wren	<i>Cistothorus palustris</i>
Mourning Dove	<i>Zenaida macroura</i>
Northern Shoveler	<i>Anas clypeata</i>
Northern Oriole	<i>Icterus galbula</i>
Northern Harrier	<i>Circus cyaneus</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Orchard Oriole	<i>Icterus spurius</i>
Ovenbird	<i>Seiurus aurocapillus</i>
Pied-Billed Grebe	<i>Podilymbus podiceps</i>
Pine Siskin	<i>Carduelis pinus</i>
Piping Plover	<i>Charadrius melodus</i>
Purple Martin	<i>Progne subis</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>
Red-Headed Woodpecker	<i>Melanerpes erythrocephalus</i>
Red-necked Grebe	<i>Podiceps grisegena</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Redhead	<i>Aythya americana</i>
Ring-necked Pheasant	<i>Phasianus colchicus</i>
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>

**APPENDIX C**  
**BIRD SPECIES OF POSSIBLE**  
**OCCURRENCE IN PROJECT AREA**  
**(continued)**

Rough-winged Swallow	<i>Stelgidopteryx ruficollis</i>
Ruby-throated Hummingbird	<i>Archilochus colubris</i>
Ruddy Duck	<i>Oxyura jamaicensis</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Sedge Wren	<i>Cistothorus platensis</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Short-eared Owl	<i>Asio flammeus</i>
Snowy Egret	<i>Egretta thula</i>
Song Sparrow	<i>Melospiza melodia</i>
Sora	<i>Porzana carolina</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Swainson's Hawk	<i>Buteo swainsoni</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
Tree Swallow	<i>Iridoprocne bicolor</i>
Turkey Vulture	<i>Cathartes aura</i>
Upland Sandpiper	<i>Bartramia longicauda</i>
Verry	<i>Catharus fuscescens</i>
Vesper Sparrow	<i>Pooecetes gramineus</i>
Virginia Rail	<i>Rallus limicola</i>
Warbling vireo	<i>Vireo gilvus</i>
Western Kingbird	<i>Trannus verticalis</i>
Western Grebe	<i>Aechmophorus occidentalis</i>
Western Meadowlark	<i>Sturnella neglecta</i>
White Pelican	<i>Pelecanus erythrorhynchos</i>
White-breasted Nuthatch	<i>Sitta carolinensis</i>
White-Faced Ibis	<i>Plegadis chihi</i>
Willow Flycatcher	<i>Empidonax traillii</i>
Wilson's Phalarope	<i>Steganopus tricolor</i>
Wood Duck	<i>Aix sponsa</i>
Yellow Warbler	<i>Dendroica petechia</i>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>
Yellow-throated vireo	<i>Vireo flavifrons</i>

APPENDIX D

REFERENCES

## APPENDIX D

### REFERENCES

- AASHTO Specifications for Highway Bridges. 1983. South Dakota Standard Specifications for Roads and Bridges. 1990.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Publ. No. FWS/OBS-79/31. U.S. Fish and Wildlife Service, Washington, D.C.
- Downey, Joe S. 1988. The Regional Aquifer System Underlying the Northern Great Plains in Parts of Montana, North Dakota, South Dakota, and Wyoming - Summary. U.S. Geological Survey, Denver, Colorado.
- Environmental Laboratory. 1987. "Corps of Engineers Wetlands Delineation Manual." Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi.
- Federal Emergency Management Agency. 1986. Flood Insurance Rate Map, Big Stone County, Minnesota, Unincorporated Areas. National Flood Insurance Program.
- Geological Survey (U.S.) 1992. Ortonville, Minnesota, [Map] 1:24,000 - Scale Topographic Map: 7.5 Minute Series (Topographic). Reston, Virginia.
- Haug, J.H. 1982. Archaeological Site Form 39GT6. Submitted to the South Dakota Archaeological Research Center, Fort Meade, South Dakota.
- Hunt, Charles Butler. 1906. Natural Regions of the United States and Canada. W.H. Freeman and Company.
- Jenks, Albert E. 1937. "Minnesota's Browns Valley Man and Associated Burial Artifacts." Memoir No. 49. American Archaeological Association.
- Johnson, Eldon. 1975. Archaeological Survey and Testing for the Upstream Work. Big Stone Lake-Whetstone River Project Area. Unpublished Contract Report submitted to the Department of the Army, St. Paul District, Corps of Engineers.
- Lewis, T.H. 1887. Field Notes and Survey Information. Minnesota Historical Society Archive Microfilm 30.C.10.GF.
- Martin, A.C., H.S. Zim, and A.L. Nelson. 1851. American Wildlife and Plants. Dove Press, New York.

## APPENDIX D

### REFERENCES (Continued)

- Mayden, R.L., B.M. Burr, L.M. Page, and R.R. Miller. 1992. The native freshwater fishes of North America. Pp. 827-863, *In* R.L. Mayden, ed. Systematics, historical ecology, & North American freshwater fishes. Stanford University Press, Stanford, CA.
- Ownbey, Gerald B. et al. 1916. Vascular Plants of Minnesota, A Checklist and Atlas. University of Minnesota.
- Reed, P.B., Jr. 1988. National List of Plant Species That Occur In Wetlands; North Central (Region 3). Biol. Rpt. 88(26.3). U.S. Fish and Wildlife Service, Washington, D.C.
- Robins, C.R., R.M. Bailey, C.E. Bond, J.R. Brooker, E.A. Lachner, R.N. Lea, and W.B. Scott. 1991. Common and Scientific Names of Fishes from the United States and Canada. 5th edition. American Fisheries Society Special Publication 20.
- South Dakota Agricultural Statistics Service. 1994. South Dakota Agricultural Statistics. Sioux Falls, South Dakota.
- South Dakota Department of Environment and Natural Resources. 1994. South Dakota Water Quality, Water Years 1992-1993.
- Terres, John K., 1980. The Audubon Society Encyclopedia of North American Birds, Alfred A. Knopf, New York.
- U.S. Bureau of the Census. 1994. County and City Data Book: 1994. Washington D.C.
- U.S. Department of Commerce. 1992. Volume 1 Geographic Area Series, Part 23 Minnesota State and County Data.
- United States Department of Agricultural, Soil Conservation Service. 1979. Soil Survey of Grant County, South Dakota. U.S. Government Printing Office, Washington D.C.
- United States Department of the Interior, Fish and Wildlife Service. 1991. Endangered and threatened wildlife and plants; animal candidate review for listing as endangered or threatened species. 21 November. 50 CFR Part 17, Federal Register 56(225): 58804-58836.

## **APPENDIX D**

### **REFERENCES (Continued)**

United States Department of the Interior, Fish and Wildlife Service. 1992. Endangered and threatened wildlife and plants. August 19. 50 CFR 17.11 and 17.12.

Van Bruggen, Theodore. 1926. The Vascular Plants of South Dakota, second edition. Iowa State University Press.

APPENDIX E

LIST OF PREPARERS

**BigStone.EA**  
**kab090597**

**94S5068**

**APPENDIX E**  
**LIST OF PREPARERS**

**Surface Transportation Board**  
**Section of Environmental Analysis (SEA)**

Elaine K. Kaiser	Project Director/Environmental and Legal review
------------------	---

Dana White	Analysis review and verification of consultant's work product/site inspection
------------	---

**Third-party Consultant\***

Mary Lou Goodpaster	Assessment review
---------------------	-------------------

Kevin M. Seals	Assessment preparation/Field Inspection
----------------	---

Bernard F. Vahlkamp	Hazardous Waste Analysis/Field Inspection
---------------------	---

Joe Galloy/Joseph Craig	Cultural Resources Analysis/Field Inspection
-------------------------	--

\*As provided for under 40 CFR 1506.5, the Surface Transportation Board may be assisted in the preparation of environmental documentation by a third-party consultant.

APPENDIX F

BURLINGTON NORTHERN'S RESPONSE REFUSING ALTERNATIVE C

**BigStone.EA**  
**kab090597**

**94S5068**

APPENDIX G

PHASE I CULTURAL RESOURCE SURVEY

**BigStone.EA**  
**kab090597**

**94S5068**

**TABLE 2.1**  
**POPULATION, EMPLOYMENT, AND INCOME TRENDS**  
**FOR GRANT COUNTY, SOUTH DAKOTA AND BIG STONE COUNTY, MINNESOTA**

	Grant County					Big Stone County				
Year	1980	1989	1990	1991	1992	1980	1989	1990	1991	1992
Population	9,013	N/A	8,372	N/A	8,357	7,716	N/A	6,285	N/A	5,949
Labor Force	3,924	N/A	3,992	4,116	N/A	3,225	N/A	2,797	2,908	N/A
Employed	N/A	N/A	3,821	3,963	N/A	N/A	N/A	2,657	2,759	N/A
Unemployed	N/A	N/A	171	153	N/A	N/A	N/A	140	149	N/A
Percent Unemployed	N/A	N/A	4.3	3.7	N/A	N/A	N/A	5.0	5.1	N/A
Per Capita Income	N/A	\$10,394	\$15,384	N/A	N/A	N/A	\$9,575	\$14,685	N/A	N/A

Source: U.S. Bureau of the Census. County and City Data Book. 1994.

**TABLE 1.1**  
**DESIGN SPECIFICATIONS\***

Maximum Curvature	3° 31'
Maximum Grade	0.9519 percent
Minimum Weight of Rail	115 lb/yd
Minimum Tie Length	8 ft 6 inches
Ties per mile	3,520
Top Ballast Depth	12 inches
Sub-ballast Depth	12 inches
Minimum Subgrade Width	17 ft
Minimum Depth of Drainage Ditches	2 ft
Minimum Slope of Cut and Fill	1.5 horizontal; 1 vertical
Maximum Cut	10 ft
Maximum Fill	32 ft

\*Source: AREA manual for Railway Engineering, 1996.

AASHTO Specifications for Highway Bridges, 1983. South Dakota Standard Specifications for Roads and Bridges, 1990.

**TABLE 1.2**  
**PROPOSED ROADWAY/RAILROAD CROSSINGS**

<b>Roadway/Railroad Name</b>	<b>Structure Type</b>
State Highway 12	At-grade with automatic signaling device.
Burlington Northern Railroad	At-grade with automatic signaling device.
County Road (#1)	At-grade with standard cross-buck and advance warning sign.
State Line Road	At-grade with automatic signaling device.

**TABLE 1.3**  
**PROPOSED STREAM CROSSING<sup>(1)</sup>**

<b>Stream Name</b>	<b>Structure Type</b>
Whetstone River	3 Span Precast Concrete Girder Bridge.

<sup>(1)</sup> Table represents named stream crossings, minor culvert locations are not included.

**TABLE 4.1**

**ALTERNATIVE ROUTE COMPARISON**

<b>Feature</b>	<b>Unit</b>	<b>No-Build Alternative</b>	<b>Preferred Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
Length of Rail line	Feet	0	10,934	19,030	3,528
	Miles	0	2.07	3.60	0.70
Abandoned Rail bed	Feet	0	8,976	7,212	756
New Right-of-Way	Feet	0	1,958	11,818	2,772
Agricultural Cropland	Feet	0	1,506	8,152	1,002
Forest	Feet	0	0	296	0
Shrub Regrowth	Feet	0	7,947	7,947	1,644
Grassland/Pasture	Feet	0	871	2,635	882
Commercial Property	Feet	0	610	0	0
Wetlands Impacted	Acres	0	0.98	3.29	0.30
Endangered Species Habitat	Yes/No	No	No	No	No
Road/Railroad Crossings (At-Grade):					
State Highways					
County Roads	No.	0	1	1	0
Railroads	No.	0	2	4	0
	No.	0	1	1	0
River Crossings:	No.	0	1	2	0
Residences:					
Within 200 feet	No.	0	1	1	0
Cultural Sites (within 100 ft of center line)	No.	0	3	2	2

**TABLE ES.1**  
**SUMMARY OF ENVIRONMENTAL IMPACTS OF PROPOSED RAIL LINE**  
**(ALTERNATIVE A)**  
**CONSTRUCTION AND OPERATION**

<b>Category</b>	<b>Impact</b>	<b>Effect</b>
1. Land Use	Miles of Rail line	2.07
	Acres affected within ROW	25.1
	Residences affected	0
2. Water Resources	Effects on ground water	NE
	River crossings	1
	Wetland acreage affected	0.98
3. Wildlife	Short-term habitat loss (acres)	25.1
	Long-term habitat loss (acres)	25.1
	Threatened/endangered species affected	0
	Critical habitat affected	0
4. Transportation	Roads crossed	3
	Rail lines crossed	1
	Train movements per week-loaded	2-4
	Train movements per week-unloaded	2-4
	Grade crossings safety/delay impacts	NE
	Effects on waterway navigation	NE
5. Air Quality	Air quality effects/changes	NE
6. Noise	Noise level effects/changes	NE
	Number of residences within 500 ft of the proposed line	0
7. Cultural Resources	Historic cultural or archaeological sites affected	3 sites with negligible effects

NE - Negligible or non-existent