

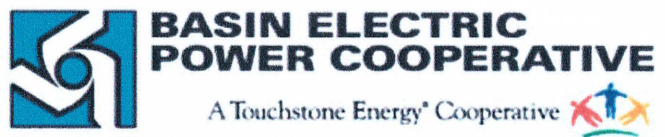
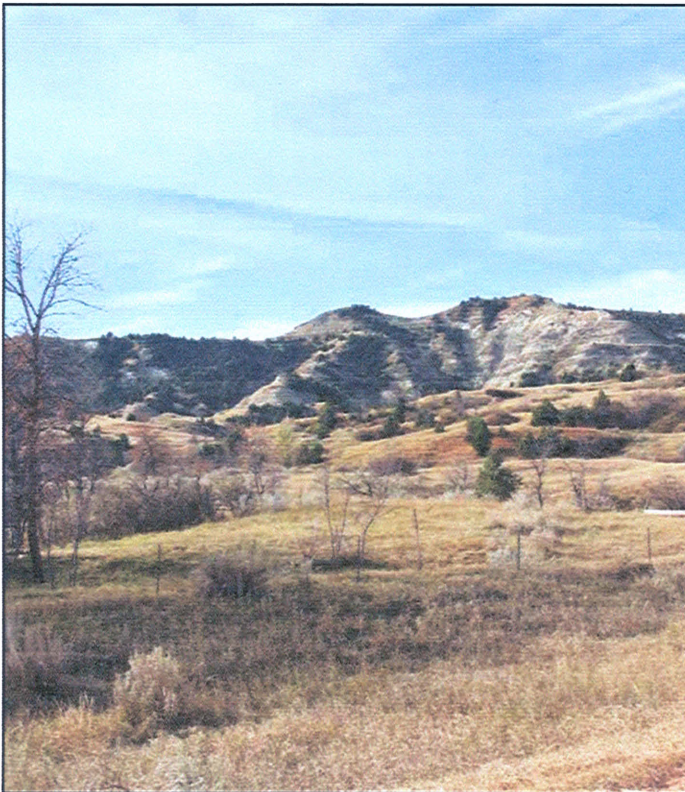
Amendment to the Application to the  
North Dakota Public Service Commission  
for  
Consolidated Certificate of Corridor  
Compatibility and Route Permit

Volume I

Case No: PU-11-696

for the

**AVS-Neset 345-kV  
Transmission Project**



December 2014

**Amendment to the Application to  
the  
North Dakota Public Service  
Commission for Consolidated  
Certificate of Corridor Compatibility  
and Route Permit**

**Case No: PU-11-696**

**for the**

**AVS-Neset  
345-kV Transmission Project  
Basin Electric Power Cooperative**

**December 2014**

**prepared by**

**Burns & McDonnell Engineering Company, Inc.  
Kansas City, Missouri**

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## 1.0 INTRODUCTION

On April 23, 2014, the North Dakota Public Service Commission (Commission) adopted the Findings of Fact, Conclusions of Law and Order granting a waiver of procedures and time schedules in issuing Corridor Certificate No. 152 and Route Permit No. 164 to Basin Electric Power Cooperative (Basin Electric). This Corridor Certificate and Route Permit authorize the construction of approximately 197 miles of 345-kV and 230-kV electric transmission line and associated facilities (Project) by Basin Electric. The Project extends from the Antelope Valley Station (AVS) near Beulah, North Dakota to the Neset Substation near Tioga, North Dakota. Since the July 23, 2014 Amendment and Corridor/Route revisions, changes have been made to the Corridor/Route. This amendment identifies these changes which are the results of:

- Additional substation connection to support local load
- New oil/gas well development near the proposed alignment

If approved by the Commission, the total length of 345-kV and 230-kV line combined would be 199.7 miles (Corridor/Route). The Corridor/Route revisions do not significantly alter the information presented in the original application. The Corridor/Route revisions are minor and typical of the progression of a linear project of this size. Only siting criteria information that has changed because of the Corridor/Route revisions is presented in this amendment. All other sections of the original application, March 2013, and July 2014 Amendments remain in effect. The general location and reasons for the Corridor/Route changes are summarized in the following table and the changes are illustrated on the Corridor/Route change maps following Table 1.0-1.

**Table 1.0-1: Summary of Corridor/Route Changes**

<b>Township</b>	<b>Range</b>	<b>Sections</b>	<b>Reason</b>	<b>Route Change Map Sheet #</b>
151N	100W	26 and 27	Line adjustments for the AVS to Judson line to avoid a new oil/gas well and additional line construction to connect to the future Patent Gate 345/115-kV Substation.	Sheet 1



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**LEGEND**

- ▲ Existing Substation
- ▲ Proposed Substation
- Patent Gate Substation Outline
- New Oil/Gas Pad Site
- County Boundary
- Revised Route - November 2014
- Revised Route - July 2014
- Revised Route - July 2013
- Public Land Survey System Sections
- Public Land Survey System Townships

Updated for replacement mapbook sheet 3 from July 2014



Basin Electric Power Cooperative  
Antelope Valley Station to Neset  
345-kV Transmission Project  
Route Change Maps  
Sheet 1 of 1

Unless otherwise in this amendment, all other text sections and Project descriptions in the original application remain unchanged. The general structure of this amendment remains the same, with similar chapters and sections. Section 1.4 was added in the July 2014 amendment to address additional future associated facilities related to the AVS to Neset 345-kV Transmission Project.

The map sheets included with this amendment in Volume II have been updated to indicate the above changes. Only the one sheet on which changes occurred is included in this amendment. This updated sheet replaces the same numbered sheet in the original application, July 2013, and July 2014 amendments.

## **1.1 Compliance with the Energy Conversion and Transmission Facility Siting Act**

No changes from Corridor/Route revisions.

### **1.1.1 Rural Utilities Service and Western Area Power Administration and U.S. Forest Service Planning Documents**

No changes from Corridor/Route revisions.

### **1.1.2 Letter of Intent**

No changes from Corridor/Route revisions.

### **1.1.3 Certificate of Corridor Compatibility**

No changes from Corridor/Route revisions. Table 1.1-1 included for convenience.

**Table 1.1-1: Certificate of Corridor Compatibility Completion Checklist**

<b>State Authority</b>	<b>Description</b>	<b>Section</b>
<b>Chapter 49-22</b>	<b>Commission Guidelines: Energy Conversion and Transmission Facility Siting</b>	<b>1.1</b>
<b>Section A</b>	<b>Description</b>	<b>1.2, 4.2</b>
1.	Type: Describe the type of transmission facility addressed in this application. The description shall include the purpose of the facility and the technology to be employed.	1.0, 1.2, 2.1, 4.2.1
2.	Product: Describe the type, source, and final destination of the product to be transmitted by the proposed facility.	1.2.2
3.	Size and Design:	4.0
3.a.	Provide a description of the size and design of the <u>Electrical</u> facility including, but not limited to, the following:	4.2.1, 4.2.2, 4.2.3
3.a.1.	Width of right of way;	4.2.1
3.a.2.	Estimated span lengths;	4.2.1
3.a.3.	Anticipated type of structure;	4.2.1
3.a.4.	Approximate length of facility;	1.0, 1.2, 4.1
3.a.5.	Voltage; and	4.2.1
3.a.6.	The requirement for a general location of any new associated facilities.	4.2.2
3.b.	Provide a description of the size and design of the pipeline facility including, but not limited to, the following:	N/A
4.	Time Schedule: Provide the anticipated time schedule for the accomplishment of the following events:	1.3
4.a.	Certificate of Corridor Compatibility;	1.3
4.b.	Route Application;	1.3
4.c.	Route Permit;	1.3
4.d.	Construction start date;	1.3
4.e.	Construction complete; and	1.3
4.f.	In-service date.	1.3
<b>Section B</b>	<b>Studies</b>	
	Provide a copy of any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any Federal, regional, state or local agency.	Appendices of original application

<b>State Authority</b>	<b>Description</b>	<b>Section</b>
<b>Section C</b>	<b>Need for Facility</b>	<b>2.0</b>
1.	An analysis of the need for the proposed facility based on present and projected demand for the product to be transmitted by the facility, including the most recent system studies supporting the analysis of the need.	2.1
2.	A description of any feasible alternative methods of serving the need.	2.2
3.	A statement justifying any deviations from the most recent Ten-Year Plan which the proposed facility may present.	2.3
<b>Section D</b>	<b>Location</b>	<b>Figures, 4.1</b>
1.	Select a study area, which includes the proposed corridor, of sufficient width to enable the Commission to evaluate the factors addressed in Section 49-22-09, NDCC.	1.2.1
2.	Identify and map the criteria that led to the proposed corridor location within the study area.	Figures, 1.2.1, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, Volume II of original application
3.	Discuss the relative value of each criteria and how the proposed corridor location was selected giving consideration to all criteria.	1.2.1, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6
4.	The criteria to be evaluated shall include at a minimum all of the following which are within the study area:	3.0
4.a.	Exclusion areas;	3.1
4.b.	Avoidance areas;	3.2
4.c.	Selection criteria;	3.3
4.d.	Policy criteria;	3.4
4.e.	Design and construction limitations; and	3.5
4.f.	Economic considerations.	3.6
5.	Discuss the general mitigative measures that will be taken to minimize adverse impacts which result from a route location in the proposed corridor.	5.1.3, 5.2.3, 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3, 5.8.3, 5.9.3, 5.10.3, 5.11.3, 5.12.3, 5.13.3
6.	List the qualifications of the people in the various disciplines that contributed to the corridor location study.	9.0
7.	Maps	Figures and Volume II of original application

State Authority	Description	Section
7.a.	Map the criteria within the study area showing the proposed corridor. Several different criteria may be shown on each map, depending on the map scale and the density and nature of the criteria. Minimum map scale shall be ½ inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	Volume II of original application
7.b.	Furnish one set of Mylar maps, separate from the application, of the same scale as the criteria maps and showing the same basic features as the criteria maps, including the study area, but not the proposed facility location.	Figures. GIS-based maps are included with this amendment in lieu of Mylar maps.
<b>Chapter 49-22-09</b>	<b>Factors to be considered in evaluating applications and designation of sites, corridors, and routes.</b>	<b>8.0</b>
1.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	8.1
2.	The effects of new energy conversion and transmission technologies and systems designated to minimize adverse environmental effects.	8.2
3.	The potential for beneficial uses of waste energy from a proposed energy conversion facility.	8.3
4.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	8.4
5.	Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	8.5
6.	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	8.6
7.	The direct and indirect economic impacts of the proposed facility.	8.7
8.	Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	8.8

<b>State Authority</b>	<b>Description</b>	<b>Section</b>
9.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	8.9
10.	The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.	8.10
11.	Problems raised by Federal agencies, other state agencies, and local entities.	8.11

### 1.1.4 Route Permit

No changes from Corridor/Route revisions. Table 1.1-2 included for convenience.

**Table 1.1-2: Route Permit Completion Checklist**

<b>State Authority</b>	<b>Description</b>	<b>Section</b>
<b>Chapter 49-22</b>	<b>Commission Guidelines: Energy Conversion and Transmission Facility Siting</b>	<b>1.1</b>
<b>Section A</b>	<b>Description</b>	<b>1.2, 4.2</b>
1.	Type: Describe the type of transmission facility proposed.	1.0, 1.2, 4.2
2.	Product: Describe the product or products to be transmitted.	1.2.2
3.	Size and Design: Provide a general description of the proposed size and design, and any alternate size or design, which was considered. Provide one (1) copy of the design data report, separate from the application, for the proposed facility and any associated facilities.	4.0, Appendix E of original application
4.	Time Schedule: Provide the anticipated time schedule for the accomplishment of major events including, at a minimum, the following:	1.3
4.a.	Route Permit;	1.3
4.b.	Right-of-way acquisition complete;	1.3
4.c.	Construction start date;	1.3
4.d.	Construction complete;	1.3
4.e.	Test operations; and	1.3
4.f.	In-service date.	1.3

<b>State Authority</b>	<b>Description</b>	<b>Section</b>
<b>Section B</b>	<b>Location</b>	<b>Figures, 4.0</b>
1.	Discuss the utility's policies and commitments to limit the environmental impacts of its facilities, including copies of board resolutions and management directives.	3.4
2.	Discuss the factors listed in Section 49-22-09, NDCC to aid the Commission's evaluation of the proposed route.	8.0
2.a.	Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	8.1
2.b.	The effects of new energy conversion and transmission technologies and systems designated to minimize adverse environmental effects.	8.2
2.c.	The potential for beneficial uses of waste energy from a proposed energy conversion facility.	8.3
2.d.	Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	8.4
2.e.	Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	8.5
2.f.	Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	8.6
2.g.	The direct and indirect economic impacts of the proposed facility.	8.7
2.h.	Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	8.8
2.i.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	8.9
2.j.	The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.	8.10

State Authority	Description	Section
2.k.	Problems raised by Federal agencies, other state agencies, and local entities.	8.11
3.	Identify and map the criteria that led to the proposed route location within the designated corridor.	Figures, 1.2.1, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, Volume II of original application
4.	Discuss in detail the relative value of each criteria and how the location, construction, and operation of the facility will affect each criteria.	1.2.1, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6
5.	The criteria to be evaluated shall include at a minimum all of the following which are within the designated corridor:	3.0
5.a.	Exclusion areas;	3.1
5.b.	Avoidance areas;	3.2
5.c.	Selection criteria;	3.3
5.d.	Policy criteria;	3.4
5.e.	Design and construction limitations; and	3.5
5.f.	Economic considerations.	3.6
6.	Discuss the mitigation measures that will be taken to minimize adverse impacts which result from the location, construction, and operation of the facility.	5.1.3, 5.2.3, 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3, 5.8.3, 5.9.3, 5.10.3, 5.11.3, 5.12.3, 5.13.3
7.	List the qualifications of the people in the various disciplines that contributed to the facility route location study.	9.0
8.	Maps	Figures
8.a.	Map the criteria within the designated corridor showing the proposed route and location of any new associated facilities. Several different criteria may be shown on each map, depending on the map scale and the density and nature of the criteria. Minimum map scale shall be ½ inch = 1 mile. All maps shall be at the same scale unless otherwise specified.	Volume II of original application
8.b.	Furnish one (1) set of Mylar maps, separate from the application, of the same scale as the criteria maps and showing the same basic features as the criteria maps, including the designated corridor, but not the proposed route or location of any new associated facilities.	Figures. GIS-based maps are included with this amendment in lieu of Mylar maps

State Authority	Description	Section
8.c.	Furnish one (1) set of uncontrolled 9x9 inch stereo-pair aerial photographs, separate from the application, with acceptable resolution showing the designated corridor, proposed route and location of any new associated facilities, and Section, Township and Range numbers, at a scale of 1 inch = 2000 feet, together with a flight map at a scale of 1/2 inch = 1 mile showing each flight line and the beginning and ending photo number of each flight line. Photo mosaic strip maps will also be acceptable. If the applicant can demonstrate that because of the limited size and scope of the Project, aerial photographs will not be practical, this requirement may be waived.	Figures. GIS-based maps are included with this amendment.

## 1.2 Project Summary

No changes to this section other than the proposed Corridor/Route revisions.

Corridor/Route revisions at the Patent Gate (PG) Substation contributed to an overall increase in project length of 0.32 mile. These alignment revisions are described below, presented in Table 1.0-1, and shown on the Route Change Maps following Table 1.0-1.

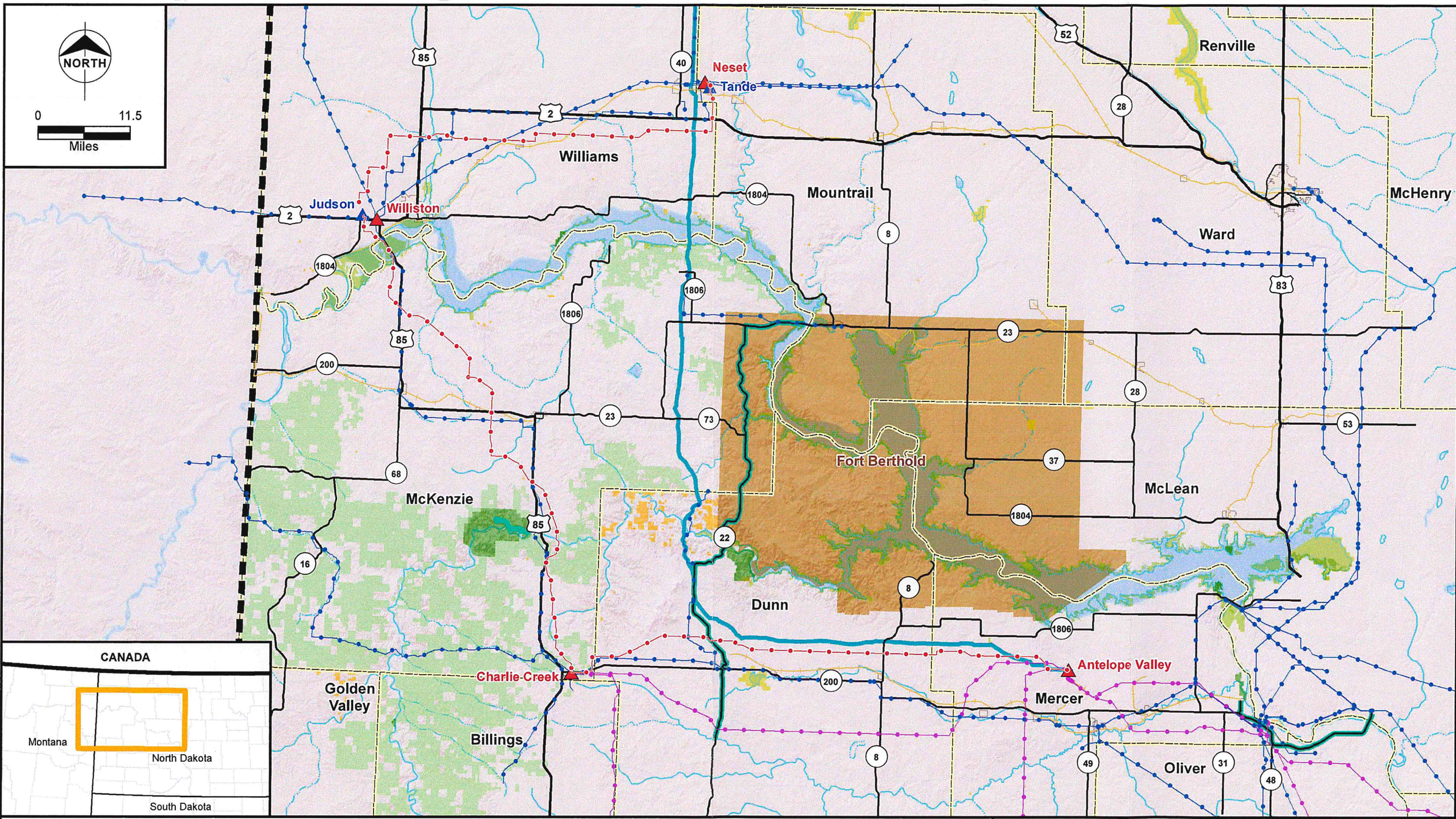
The Corridor/Route revision is located in McKenzie County to the east of the PG Substation. It includes approximately 0.3 mile where the proposed Corridor/Route will cut in to the proposed PG Substation. In addition to the substation connection, the route alignment from the southeast in sections 26 and 27 was adjusted slightly north to avoid a new gas/oil well located directly east of the proposed PG Substation. This line adjustment is necessary to avoid future conflict with the oil/gas operations and still maintain system reliability. Basin Electric has reached an agreement with the landowners to obtain necessary easements for the realignment. No opposition to this revision is expected.

### 1.2.1 Study Area, Project Corridor, and Route Development Summary

No changes from Corridor/Route revisions. Figure 1.2-1 has been updated to include the revised Corridor/Route.

### 1.2.2 Product

No changes from Corridor/Route revisions.



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LEGEND			
	Project Route November 2014		National or State Park
	Proposed Substation		BLM Lands
	Existing Substation		State Boundary
	Army Corps of Engineers		County Boundary
			National Wildlife Refuge
			National Grassland
			Tribal Lands
			Municipal Areas
	Railroad		DGC Pipeline
	Scenic Byway		Existing Transmission Lines
			345-kV
			230-kV and Below

  
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Figure 1.2-1  
 Basin Electric Power Cooperative  
 Antelope Valley Station to Neset  
 345-kV Transmission Project  
 Overall Proposed Project Area and  
 Proposed Corridor/Route

### 1.3 Project Schedule

No changes from Corridor/Route revisions.

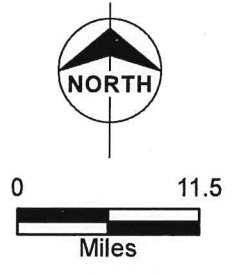
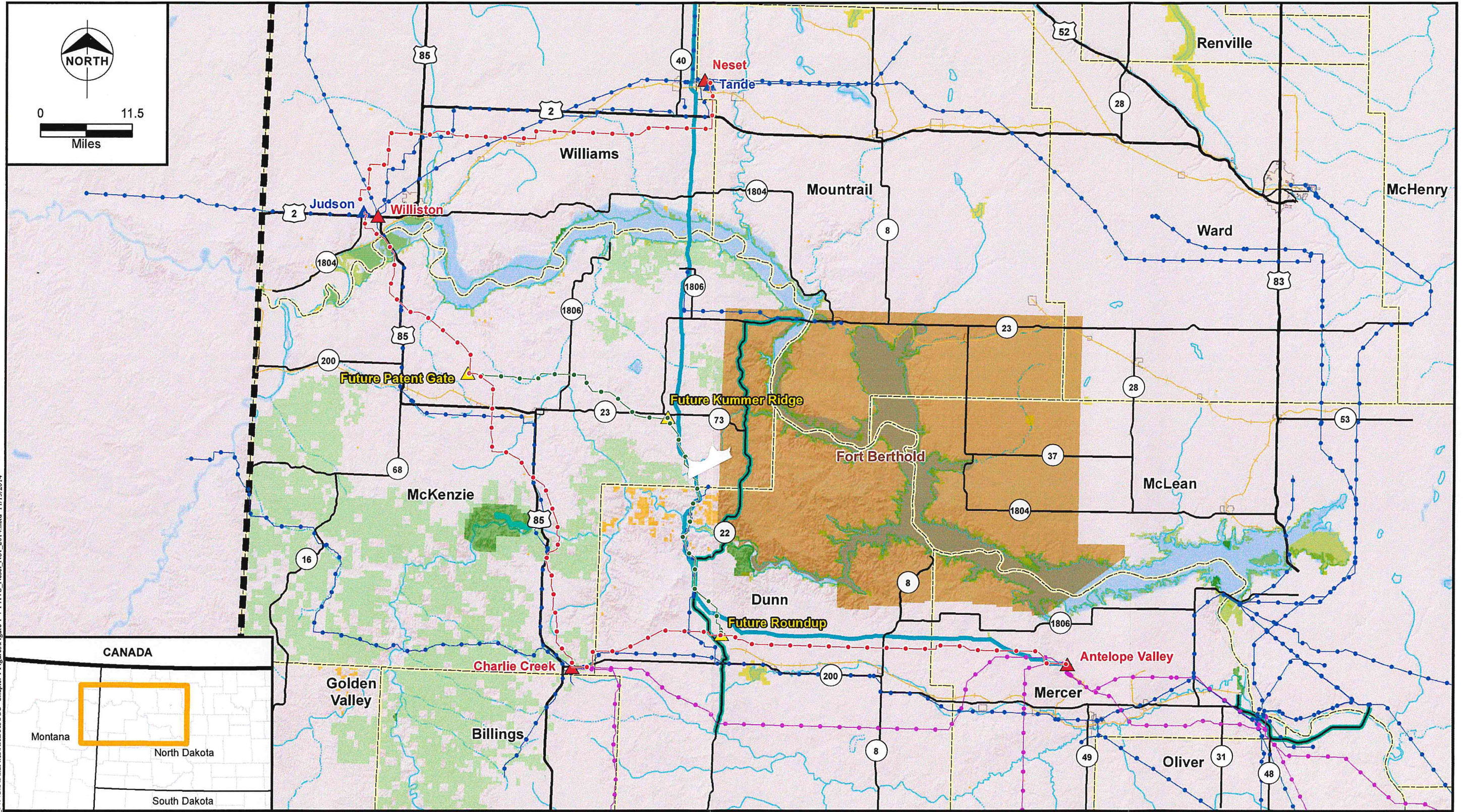
The Project began construction in September 2014. A 2-year construction phase is anticipated with in-service expected in 2016. Permitting efforts, including the corridor and route selection processes, are underway. The Project requires various state, Federal, and local permits prior to initiating construction. An overview of the Project schedule is provided in Table 1.3-1.

**Table 1.3-1: Project Schedule**

Corridor Certificate/Route Permit	April 2014
Corridor Certificate/Route Permit Amendment Application	July 2014
Corridor Certificate/Route Permit Amendment Approved	April 2014
Right-of-Way acquisition complete	2014
Construction start date	September 2014
Construction complete	October 2016
Test operations	November 2016
In-service date	December 2016

### 1.4 Future Associated Facilities

No changes from Corridor/Route revisions. Figure 1.4.1 has been updated to include the revised Corridor/Route.



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LEGEND		
<span style="color: red;">—●—</span> Project Route November 2014	<span style="background-color: #90EE90;">■</span> Army Corps of Engineers	<span style="border: 1px solid black;">■</span> State Boundary
<span style="color: green;">—●—</span> Future North Killdeer Loop Route	<span style="background-color: #90EE90;">■</span> National or State Park	<span style="border: 1px dashed black;">■</span> County Boundary
<span style="color: blue;">▲</span> Proposed Substation	<span style="background-color: #90EE90;">■</span> National Wildlife Refuge	<span style="border: 1px solid black;">■</span> Municipal Areas
<span style="color: yellow;">▲</span> Future Substation	<span style="background-color: #90EE90;">■</span> National Grassland	<span style="border-bottom: 1px solid black;">—</span> Railroad
<span style="color: red;">▲</span> Existing Substation	<span style="background-color: #8B4513;">■</span> Tribal Lands	<span style="border-bottom: 1px solid black;">—</span> DGC Pipeline
	<span style="background-color: #FFD700;">■</span> BLM Lands	<span style="border-bottom: 1px solid black;">—</span> Scenic Byway
		<b>Existing Transmission Lines</b>
		<span style="color: purple;">—●—</span> 345-kV
		<span style="color: blue;">—●—</span> 230-kV and Below

  
**BASIN ELECTRIC POWER COOPERATIVE**  
 A Touchstone Energy Cooperative

Figure 1.4-1  
 Basin Electric Power Cooperative  
 Antelope Valley Station to Naset  
 345-kV Transmission Project  
 Future Associated Facilities

## **2.0 NEED FOR FACILITY**

### **2.1 Needs Analysis**

No changes from Corridor/Route revisions.

### **2.2 Alternatives**

Route adjustments have been developed as discussed in Table 1.0-1. These adjustments are a result of need to connect to the new PG Substation and avoid recent oil and gas development. Corridor/Route adjustments are minor and do not provide opportunities for consideration of additional alternative alignments. The previous alternative corridors remain unchanged.

#### **2.2.1 System Upgrades**

No changes from Corridor/Route revisions.

#### **2.2.2 Additional 115-kV Lines**

No changes from Corridor/Route revisions.

#### **2.2.3 Additional 345-kV Lines**

No changes from Corridor/Route revisions.

#### **2.2.4 No Action Alternative**

No changes from Corridor/Route revisions.

#### **2.2.5 Recommended System Alternatives**

No changes from Corridor/Route revisions.

### **2.3 New Generation**

No changes from Corridor/Route revisions.

### **2.4 Ten-Year Plan**

No changes from Corridor/Route revisions.

### 3.0 TRANSMISSION FACILITY CORRIDOR AND ROUTE CRITERIA

No changes from Corridor/Route revisions.

#### 3.1 Exclusion Areas

Per Section 69-06-08-02(1), the geographical areas listed in Table 3.1-1 shall be excluded in the consideration of a Corridor/Route for a transmission facility, and shall include a buffer zone of reasonable width to protect the integrity of the area. Exclusion areas are mapped for the Project Corridor/Route and revisions in Volume II of the original application, the July 2014 amendment, July 2014 amendment and in Volume II of this amendment.

**Table 3.1-1: Exclusion Areas**

<b>Geographic Area</b>	<b>Present within Corridor/Route Revisions</b>	<b>Proposed Buffer</b>	<b>Section Addressed</b>
Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; monuments; and wilderness areas	Not present within the Re-route Corridor/Route	No impacts are anticipated and no buffer is proposed	5.2, 5.8, 5.9
Designated or registered state: parks; historic sites; monuments; historical markers; archaeological sites; and nature preserves	Not present within the Re-route Corridor/Route	No impacts are anticipated and no buffer is proposed	5.2, 5.8, 5.9
County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions	Not present within the Re-route Corridor/Route	No impacts are anticipated and no buffer is proposed	5.2, 5.9
Areas critical to the life stages of threatened or endangered animal or plant species	Not present within the Re-route Corridor/Route	No impacts are anticipated and no buffer is proposed.	5.13
Areas where animal or plant species that are unique or rare to this state will be irreversibly damaged	Not present within the Re-route Corridor/Route	No impacts are anticipated and no buffer is proposed.	5.13

### 3.2 Avoidance Areas

Per Section 69-06-08-02(2), the geographical areas listed in Table 3.2-1 shall not be considered in the routing of a transmission facility unless the applicant shows that under the circumstances there is no reasonable alternative. In determining whether an avoidance area should be designated for a facility, the Commission may consider, among other things, the proposed management of adverse impacts; the orderly siting of facilities; system reliability and integrity; the efficient use of resources; and alternative routes. Avoidance areas are mapped for the Project Corridor/Route and revisions in Volume II of the original application, the July 2013 amendment, July 2014 amendment, and in Volume II of this amendment. Table 3.2-1 presents the changes to avoidance areas resulting from the four Corridor/Route revisions.

**Table 3.2-1: Avoidance Areas**

<b>Avoidance Area</b>	<b>Present within Project Corridor/Route</b>	<b>Change due to Corridor/Route Revisions</b>	<b>Proposed Buffer</b>	<b>Section Addressed</b>
Designated or registered national: historic districts; wildlife areas; wild, scenic or recreational rivers; wildlife refuges; and grasslands	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	5.2, 5.8, 5.9
Designated or registered state: wild, scenic, or recreational rivers; game refuges; game management areas; management areas; forests; forest management lands; and grasslands	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	5.2, 5.9
Historical resources which are not specifically designated as exclusion or avoidance areas	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	5.8
Areas which are geologically unstable	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	5.11

<b>Avoidance Area</b>	<b>Present within Project Corridor/Route</b>	<b>Change due to Corridor/Route Revisions</b>	<b>Proposed Buffer</b>	<b>Section Addressed</b>
Within 500 feet of a residence, school, or place of business	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	5.1
Reservoirs and municipal water supplies	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	5.12
Water sources for organized rural water districts	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	5.12
Irrigated land	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	5.2, 5.10
Areas of recreational significance which are not designated as exclusion areas	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	5.2, 5.7, 5.9

### 3.3 Selection Criteria

Per Section 69-06-08-02(3), a corridor or route shall be designated only when it is demonstrated to the Commission by the applicant that any significant adverse effects resulting from the location, construction, and maintenance of the facility as they relate to the following, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum (Table 3.3-1). Selection criteria are mapped for the Project Corridor/Route and revisions in Volume II of the original application, the July 2013 amendment, July 2014 amendment, and in Volume II of this amendment. Table 3.3-1 presents changes to the selection criteria resulting from the four Corridor/Route revisions.

**Table 3.3-1: Selection Criteria**

<b>Selection Criteria</b>	<b>Potential Adverse Effects</b>	<b>Change due to Corridor/Route Revisions</b>	<b>Section Addressed</b>
Agricultural production	A total of 1,405.6 acres and 154.8 acres, respectively, of cultivated cropland and pasture/hay land within the Corridor/Route. Current agricultural production will be maintained for most of the Corridor/Route. The only land unavailable for agriculture will be the area occupied by structures for a total of 1.1 acre (0.0009-acre per structure). There will be a total of 1,181 structures for the Corridor/Route.	2.68 additional acres of cultivated cropland.  No additional acres of pasture/hay land.  <0.1 more acres of land permanently unavailable for agriculture that will be occupied by structures.  2 additional structures.	5.2, 5.10
Family farms and ranches	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	5.2, 5.10
Land which the owner can demonstrate has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	5.2, 5.10
Surface drainage patterns and ground water flow patterns	No changes from Corridor/Route revisions.	No change.	5.12
Noise-sensitive land uses	No changes from Corridor/Route revisions.	No changes from Corridor/Route revisions.	5.6
The visual effect on the adjacent area	Change in the visual characteristics and viewshed for eight residences located within 500 feet).	No changes from Corridor/Route revisions.	5.7

Selection Criteria	Potential Adverse Effects	Change due to Corridor/Route Revisions	Section Addressed
Extractive and storage resources	One oil/gas well was located in the July 2014 alignment. This amendment describes the Corridor/Route revision that would keep the newly identified oil/gas well outside of the Corridor/Route. No oil and gas wells identified within Corridor/Route revisions	Potential conflicts with oil and gas development avoided by Corridor/Route revisions.	5.11
Wetlands, woodlands, and wooded areas	The 26.9 acres of wetland within the Corridor/Route will be spanned. No change in effect. No additional changes.	0.44 additional acres of wetlands within right-of-way. All would be spanned.	5.13
Radio and television reception, and other communication or electronic control facilities	No change as a result of Corridor/Route revisions.	No change.	5.4 and 5.3
Human health and safety	No changes as a result of Corridor/Route revisions.	No change.	5.4
Plant life	Approximately one acre of area for vegetation permanently removed within Corridor/Route at structure locations. No additional changes.	<0.1 additional acre of permanent vegetation removal than reported in the July 2014 amendment.	5.13

### 3.4 Policy Criteria

No changes from Corridor/Route revisions.

### 3.5 Design and Construction Limitations

No changes from Corridor/Route revisions.

### 3.6 Economic Considerations

No changes from Corridor/Route revisions.

## 4.0 ENGINEERING AND OPERATIONAL DESIGN

Engineering design data is presented in Appendix E, and the plan and profiles are provided in Appendix G. A legal description for the Project Corridor/Route is provided in Appendix H.

### 4.1 General Corridor/Route Description

The general Corridor/Route description remains essentially the same as presented in the original application. The only changes include the Corridor/Route revisions addressed in this amendment as described below. Figures of these Route Change areas follow Table 1.0-1.

The Corridor/Route revision #1 is located in McKenzie County, approximately nine miles northwest of Watford City. The realignment occurs in Township 151N, Range 100W, Sections 26 and 27. This revision was developed to shift approximately one mile of the Corridor/Route up to 300 feet north to avoid potential conflict with a newly developed oil and gas well pad.

The Corridor/Route revision #2 is located in McKenzie County, approximately nine miles northwest of Watford City. The realignment occurs in Township 151N, Range 100W, Section 27. This includes construction of additional 345-kV transmission line to extend the Corridor/Route approximately 700 feet further west to connect to the future PG Substation (which is the subject of a separate Application). The Corridor/Route would be cut approximately 700 feet east of the property for the PG Substation. New line would be constructed from each end of the previous alignment to connect to the PG Substation, approximately 1,400 feet. Connection of the AVS-Neset Project to the PG Substation would provide s

### 4.2 Description of Proposed Facilities

No changes from Corridor/Route revisions.

#### 4.2.1 Transmission Line Characteristics

. No changes to structure types would result from the Corridor/Route revisions.

#### 4.2.2 Associated Facilities and Project Components

No changes from Corridor/Route revisions.

#### 4.2.3 Construction Techniques

No changes from Corridor/Route revisions.

#### **4.2.3.1 Pre-Construction Activities**

No changes from Corridor/Route revisions. Figure 4.2-5 has been updated to include the revised Corridor/Route.

#### **4.2.3.2 Transmission Structure Site Preparation**

No changes from Corridor/Route revisions.

#### **4.2.3.3 Structure Assembly and Erection**

No changes from Corridor/Route revisions.

#### **4.2.3.4 Stringing and Tensioning of Conductors**

No changes from Corridor/Route revisions.

#### **4.2.3.5 Structure Site Access and Traffic**

No changes from Corridor/Route revisions.

#### **4.2.3.6 Substation Construction Procedures**

No changes from Corridor/Route revisions.

#### **4.2.3.7 Transmission Line Maintenance and Operation**

No changes from Corridor/Route revisions.

#### **4.2.3.8 Substation Maintenance**

No changes from Corridor/Route revisions.

#### **4.2.3.9 Construction Schedule and Projected Workforce**

No changes from Corridor/Route revisions.

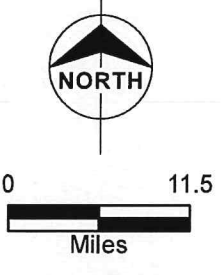
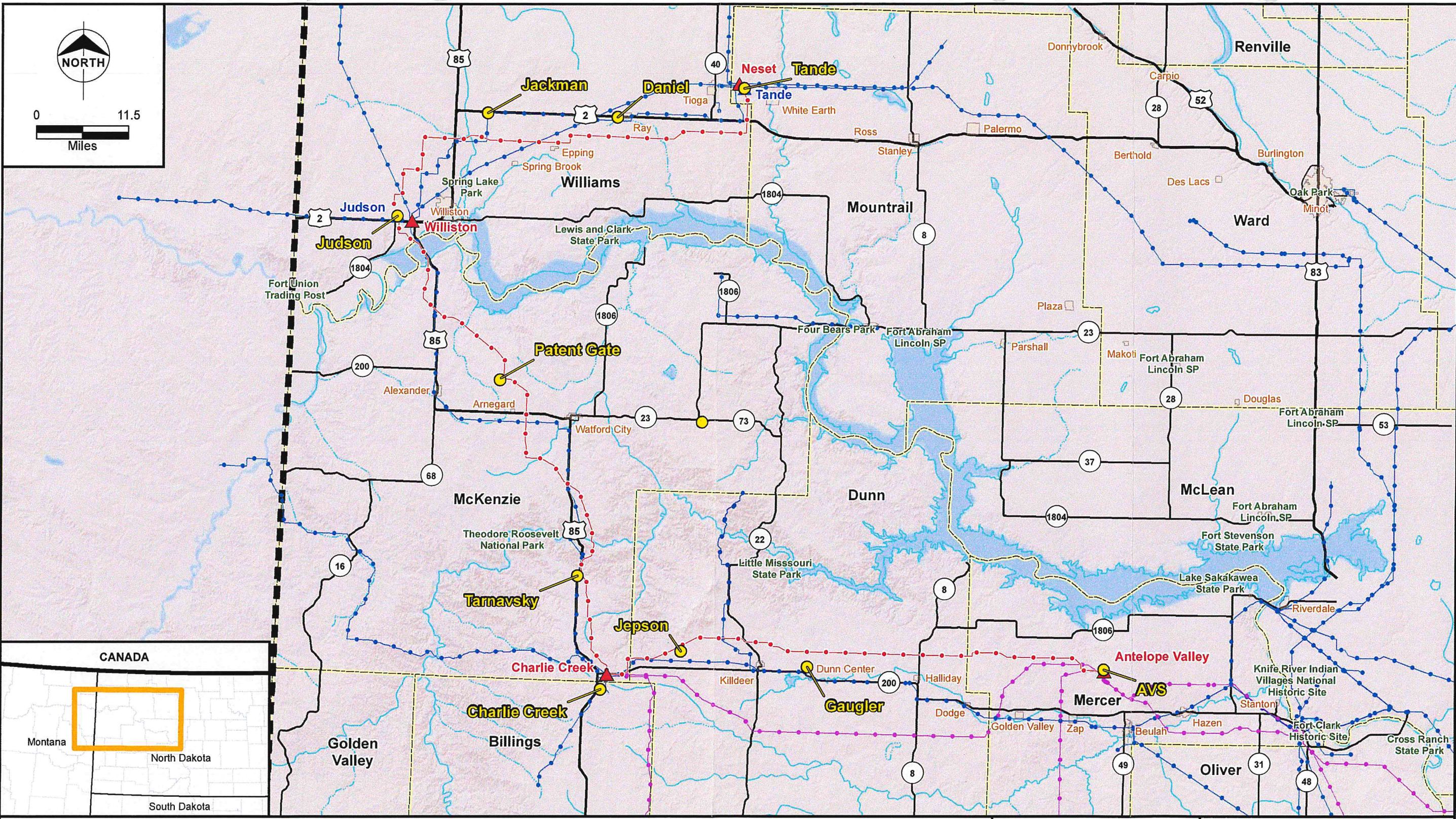
#### **4.2.3.10 Procedures for Minimizing Environmental Impact during Construction**

No changes from Corridor/Route revisions.

#### **4.2.3.11 ROW and Property Issues**

No changes from Corridor/Route revisions.

\\ESP\SRV\Data\Projects\Basin\61495\_AVS\_345\GIS\Data\Files\ArcDoc\BSC - Chapter 4 Figures - Project Route\Figure 4-2-5 AVS\_Neset\_Nov\_2014.mxd 11/13/2014



- LEGEND**
- - - Project Route November 2014
  - ▲ Proposed Substation
  - ▲ Existing Substation
  - Material Laydown Yard (Approximately 5 acres)
  - State Boundary
  - County Boundary
  - Existing Transmission Lines**
  - 345-kV
  - 230-kV and Below

  
**BASIN ELECTRIC POWER COOPERATIVE**  
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Figure 4.2-5  
 Basin Electric Power Cooperative  
 Antelope Valley Station to Neset  
 345-kV Transmission Project  
 Temporary Construction Material  
 and Equipment Laydown Areas

## 5.0 ENVIRONMENTAL ANALYSIS

This amendment addresses two areas where changes have been made to the Corridor/Route. As previously discussed, these changes are generally minor. As a result, the type of resources affected and the amount of each resource affected are similar to those presented in the original application, the July 2013 amendment and the July 2014 amendment. This section presents information on only those resources for which a material change resulted in the type or quantity of an affected resource as a result of the Corridor/Route revisions. For each of these resources, a general description is provided, followed by a discussion of potential impacts and potential mitigation measures. However, sections have only been updated if there would be a material change resulting from the Corridor/Route revisions. The description of resources subsections describe the resources and environmental settings found in the vicinity of the Project. The overall Corridor/Route extends through Mercer, Dunn, McKenzie, Williams, and Mountrail Counties in North Dakota. However, Corridor/Route revisions are confined to a small area within McKenzie County.

The impact discussion subsections describe the potential effects on each resource from the Project. Based on a centerline alignment, a 150-foot ROW was established to quantify the nature and extent of the impacts that could be expected for the Corridor/Route. For many of the resources discussed, such as vegetation and soils, impacts will be limited to this 150-foot ROW. For other resources such as wildlife, recreation, and visibility, impacts may extend outside the ROW.

In addition to impacts associated with construction and operation of the proposed Project within a 150-foot ROW, other potential impacts will result from construction-related facilities and activities. These will occur from establishment of laydown and staging yards and the development of access roads to structure locations. As some of these details will not be known until later in the process as field survey and final design are completed and coordination with landowners progresses, impacts from these activities are discussed in general terms.

The mitigation discussion subsections provide potential measures to reduce or eliminate anticipated adverse impacts identified. Standard mitigation measures have been incorporated into the development and construction of the proposed Project. These mitigation measures are designed to reduce or eliminate anticipated impacts resulting from the construction or operation of the proposed Project. They include Best Management Practices (BMPs) such as the spanning of wetlands, use of silt fencing and other erosion-control measures, and using existing corridors where feasible for locating and constructing the

transmission line. These standard mitigation measures are included in Appendix I, Standard Mitigation Measures.

## **5.1 Demographics**

### **5.1.1 Description of Resources**

No changes from Corridor/Route revisions.

### **5.1.2 Impacts**

No changes from Corridor/Route revisions.

#### **5.1.2.1 Regional Economy**

No changes from Corridor/Route revisions.

#### **5.1.2.2 Population**

No changes from Corridor/Route revisions.

#### **5.1.2.3 Housing**

No changes from Corridor/Route revisions.

#### **5.1.2.4 Employment and Income**

No changes from Corridor/Route revisions.

#### **5.1.2.5 Property Values**

No changes from Corridor/Route revisions.

#### **5.1.2.6 Property Taxes**

Table 5.1-10 summarizes these tax receipts to local governments associated with the 199.2 miles of transmission line. This table reflects an additional \$225 in property tax revenue will be generated by the revisions in this amendment (0.3 additional mile of 345-kV transmission line) for a total of \$59,730.

**Table 5.1-10: Property Tax Revenue Changes to Project Area Counties Associated with the Corridor/Route Revisions**

	Corridor/ Route (miles)	Change in Corridor/ Route (miles)	Year 2	Year 2 Change	Year 3	Year 3 Change	Year 4	Year 4 Change	Years 5- 45	Years 5- 45 Change
Dunn	43.1	No change	\$3,233	No change	\$6,465	No change	\$9,698	No change	\$12,930	No change
McKenzie	72.6	0.3	\$5,445	\$23	\$10,890	\$45	\$16,335	\$68	\$21,780	\$90
Mercer	18.5	No change	\$1,388	No change	\$2,775	No change	\$4,163	No change	\$5,550	No change
Mountrail	2.8	No change	\$210	No change	\$420	No change	\$630	No change	\$840	No change
Williams	62.1	No change	\$4,658	No change	\$9,315	No change	\$13,973	No change	\$18,630	No change
Project Area Total	199.2	No change	\$14,933	No change	\$29,9865	No change	\$44,798	No change	\$59,730	No change

Source: Staff calculations based on North Dakota Title 57, Taxation, n.d.

### 5.1.2.7 Impacts to Residences

No changes from Corridor/Route revisions.

### 5.1.3 Mitigation

No changes from Corridor/Route revisions.

## 5.2 Land Use

### 5.2.1 Description of Resources

#### 5.2.1.1 Regional Setting

No changes from Corridor/Route revisions.

#### 5.2.1.2 Existing Land Use

No changes due to Corridor/Route revisions.

#### 5.2.1.3 Zoning

No changes due to Corridor/Route revisions.

#### 5.2.1.4 Comprehensive Plans

No changes from Corridor/Route revisions.

**5.2.1.5 State and Federal Properties**

No changes from Corridor/Route revisions. Figure 5.2-1 has been updated to include the revised Corridor/Route.

**5.2.2 Impacts**

No changes from Corridor/Route revisions.

**5.2.2.1 Agricultural Land Use Impacts**

In total, the Corridor/Route will require approximately 5.3 additional acres of ROW due to Corridor/Route revisions for a total of approximately 3,624.9 acres of ROW. These lands will be restricted from various types of future development but could continue to be used for agricultural uses. Figure 5.2-1 shows the acreages of each land use type within the Corridor/Route.

Only two additional structures will be necessary, although changes in the placement of other structures may be necessary, as part of the corridor/route changes to the Project. This will result in the permanent conversion of these areas from agricultural land to utility land use.

**Table 5.2-1: Acres of Land Affected within Corridor/Route**

Land Use	Project Corridor/Route	Change due to Corridor/Route Revisions
Grassland (acres)	1,655.5	1.7
Cultivated cropland (acres)	1,405.6	2.7
Pasture/hay (acres)	154.8	0
Developed lands (acres)	117.2	0
Other lands(acres)*	291.8	0.9
<b>Total (acres)</b>	<b>3,624.9</b>	<b>5.3</b>

\*Includes woodland, shrub/scrub, wetlands, barren lands, open water  
 Acres were calculated using available National Land Cover Dataset (NLCD) information

**5.2.2.2 Zoning and Land Use Plans**

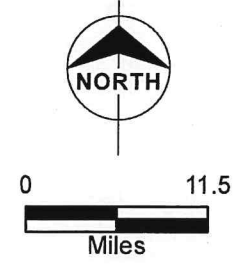
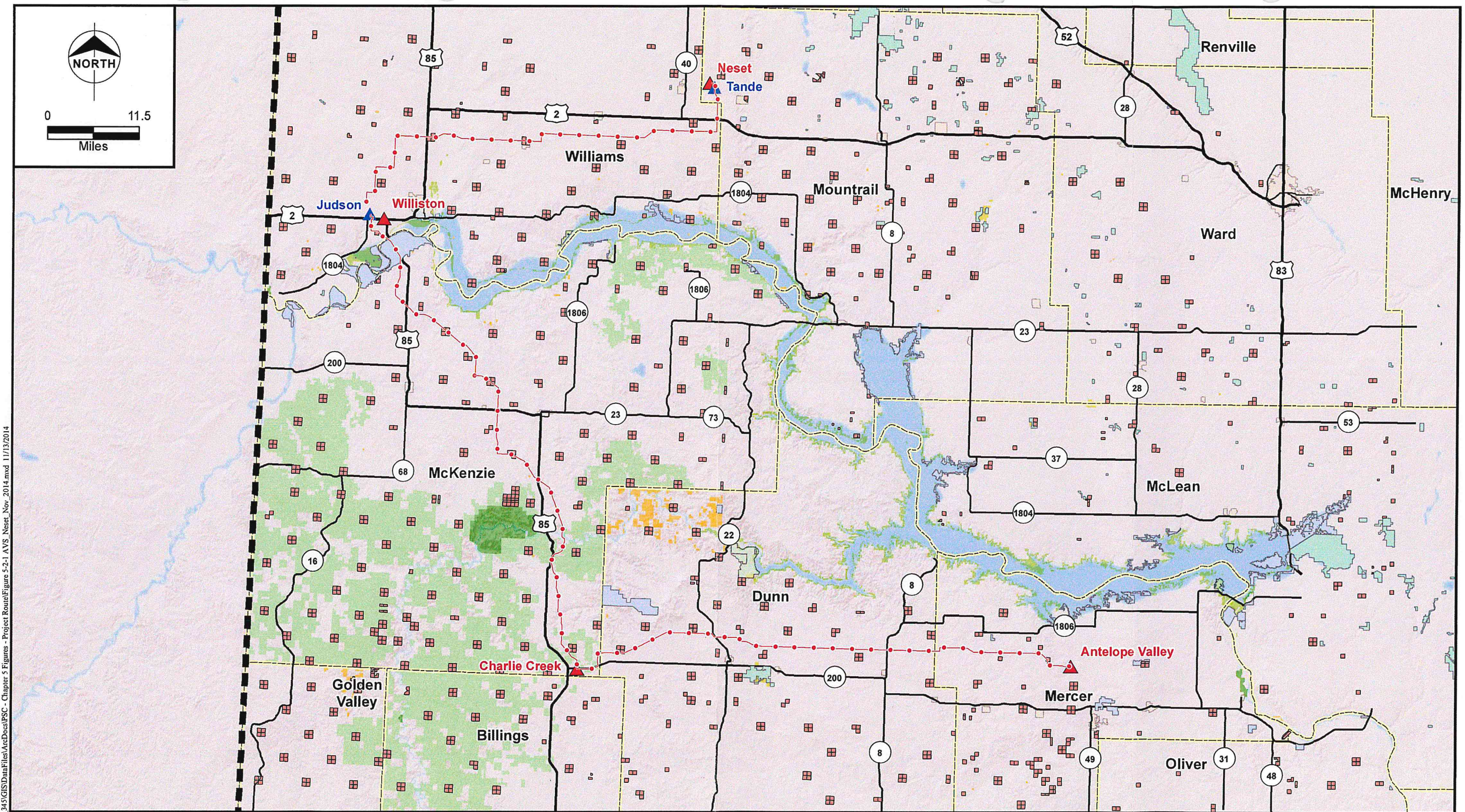
No changes from Corridor/Route revisions.

**5.2.2.3 State and Federal Properties**

No changes from Corridor/Route revisions.

**5.2.3 Mitigation**

No changes from Corridor/Route revisions.



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**LEGEND**

- - - Project Route November 2014
- ▲ Proposed Substation
- ▲ Existing Substation
- State Boundary
- County Boundary
- Municipal Areas
- Wildlife Management Areas
- State Park
- Army Corps of Engineers
- National Grassland
- National Park
- National Wildlife Refuge
- BLM Lands
- State School Trust Lands
- Waterfowl Production Area



Figure 5.2-1  
 Basin Electric Power Cooperative  
 Antelope Valley Station to Naset  
 345-kV Transmission Project  
 Federal and State-Owned Lands

## **5.3 Infrastructure/Transportation**

### **5.3.1 Description of Resources**

#### **5.3.1.1 Regional Setting**

No changes from Corridor/Route revisions. Figure 5.3-1 has been updated to include the revised Corridor/Route.

#### **5.3.1.2 Utility Infrastructure**

No changes from Corridor/Route revisions.

#### **5.3.1.3 Transportation Infrastructure**

No changes from Corridor/Route revisions.

### **5.3.2 Impacts**

No changes from Corridor/Route revisions.

## **5.4 Public Health and Safety**

No changes from Corridor/Route revisions.

## **5.5 Air Quality**

No changes from Corridor/Route revisions.

## **5.6 Noise**

No changes from Corridor/Route revisions.

## **5.7 Visual Impacts**

No changes from Corridor/Route revisions.

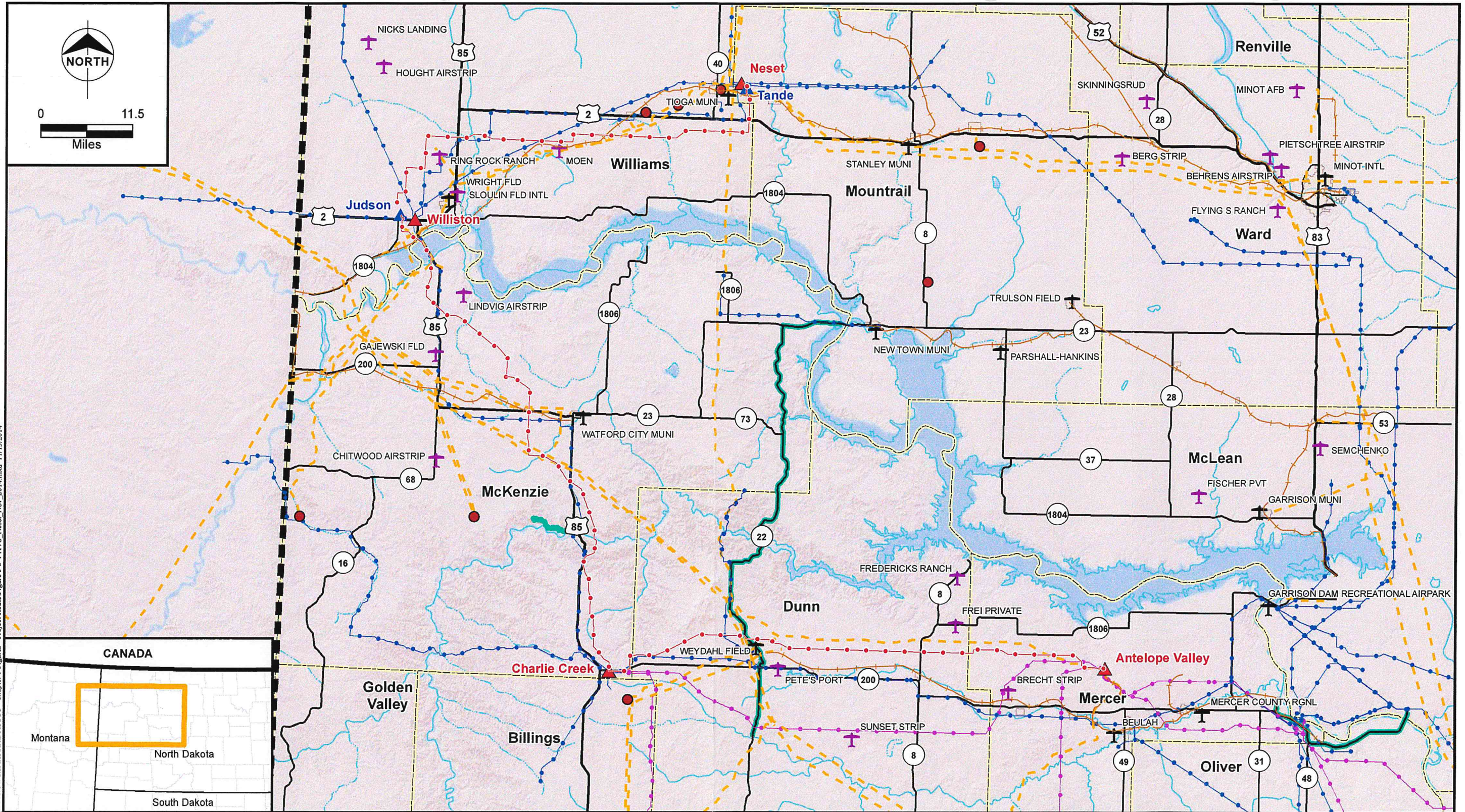
## **5.8 Cultural Resources**

No changes from Corridor/Route revisions.

## **5.9 Recreational Resources**

No changes from Corridor/Route revisions.

\\ESP\SRV\Data\Projects\Basin\61495\_AVS\_345\GIS\Data\Files\ArcDoc\5\Chapter 5 Figures - Project Route\Figure 5.3-1\_AVS\_Neset\_Nov\_2014.mxd 11/13/2014



**LEGEND**

- |                             |                 |              |                                    |
|-----------------------------|-----------------|--------------|------------------------------------|
| Project Route November 2014 | Railroad        | Gas Plants   | <b>Existing Transmission Lines</b> |
| Proposed Substation         | Pipeline        | Scenic Byway | 345-kV                             |
| Existing Substation         | Public Airport  |              | 230-kV and Below                   |
| State Boundary              | Private Airport |              |                                    |
| County Boundary             |                 |              |                                    |

  
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Figure 5.3-1  
 Basin Electric Power Cooperative  
 Antelope Valley Station to Neset  
 345-kV Transmission Project  
 Transportation and Utilities

## **5.9.1 Description of Resources**

### **5.9.1.1 Regional Setting**

No changes from Corridor/Route revisions.

### **5.9.1.2 Facilities**

No changes from Corridor/Route revisions. Figure 5.9-1 has been updated to include the revised Corridor/Route.

### **5.9.1.3 Hunting and Fishing**

No changes from Corridor/Route revisions.

## **5.9.2 Impacts**

No changes from Corridor/Route revisions.

## **5.9.3 Mitigation**

No changes from Corridor/Route revisions.

## **5.10 Soils and Farmlands**

### **5.10.1 Description of Resources**

#### **5.10.1.1 Soils**

No changes from Corridor/Route revisions.

#### **5.10.1.2 Farmland**

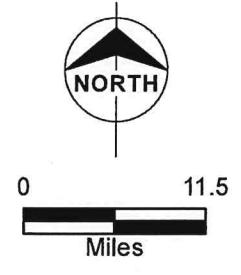
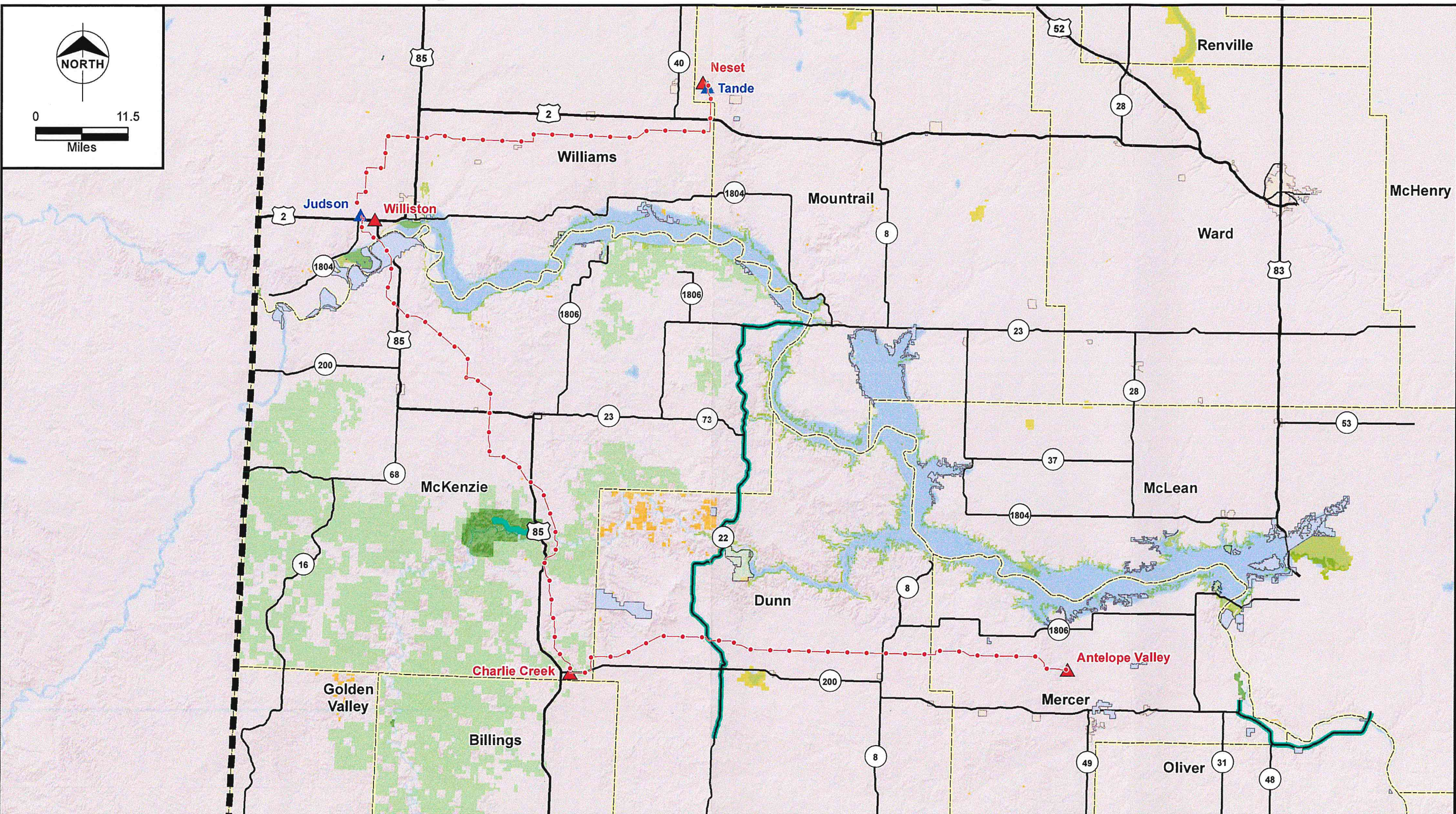
No changes from Corridor/Route revisions.

#### **5.10.1.3 Prime Farmland**

No changes from Corridor/Route revisions. Figure 5.10-1 has been updated to include the revised Corridor/Route.

### **5.10.2 Impacts**

No changes from Corridor/Route revisions.



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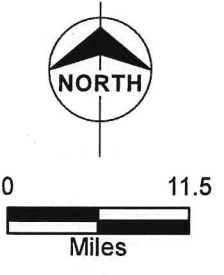
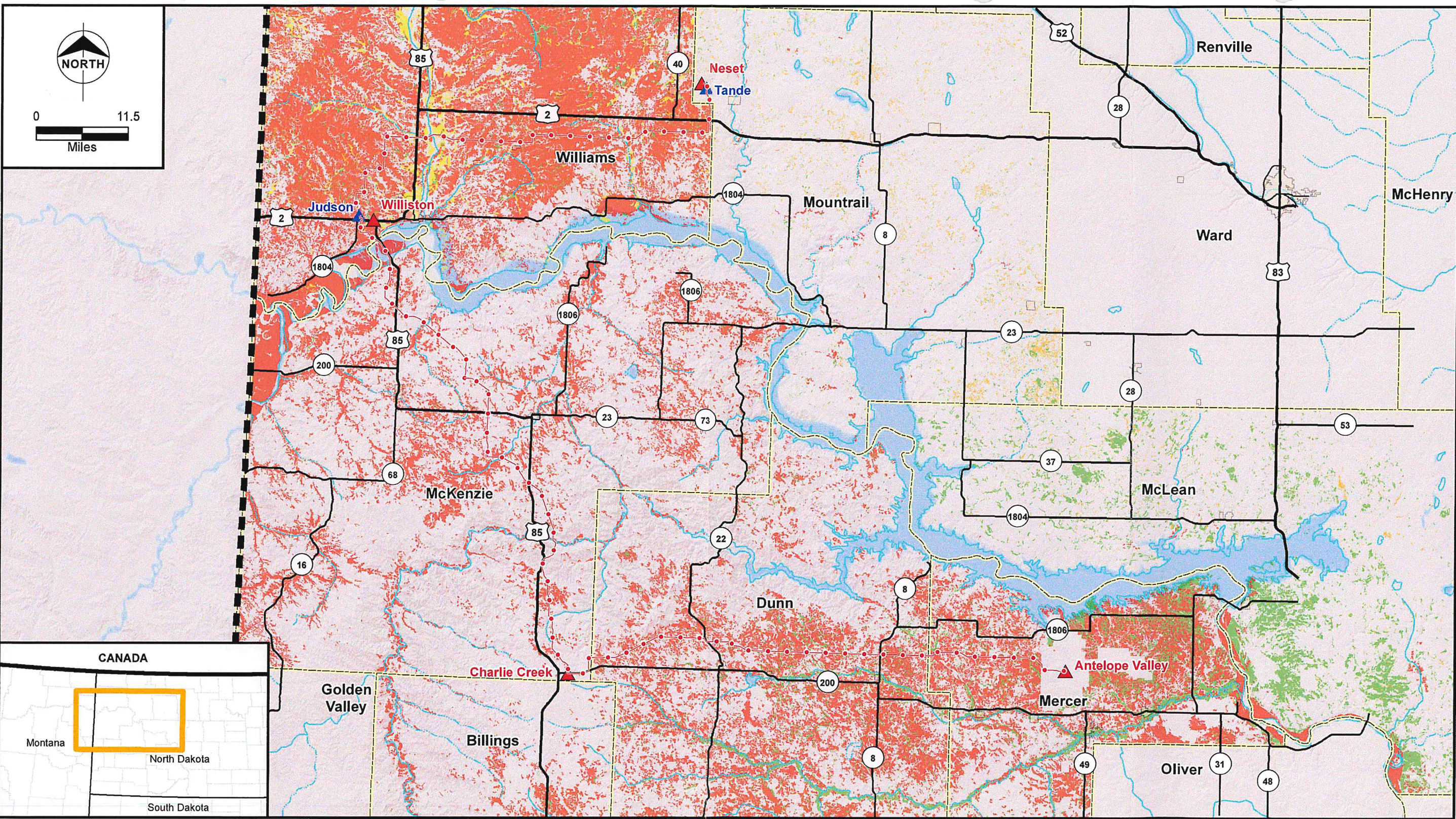
LEGEND			
	Project Route November 2014		Municipal Areas
	Proposed Substation		Wildlife Management Areas
	Existing Substation		Scenic Byway
	State Boundary		State Park
	County Boundary		Army Corps of Engineers
			National Grassland
			National Park
			National Wildlife Refuge
			BLM Lands

  
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Figure 5.9-1  
 Basin Electric Power Cooperative  
 Antelope Valley Station to Naset  
 345-kV Transmission Project  
 Recreation Areas

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LEGEND	
	Project Route November 2014
	Proposed Substation
	Existing Substation
	State Boundary
	County Boundary
	Prime Farmland
	Farmland of Statewide Importance
	Prime Farmland if Drained
	Prime Farmland if Irrigated

  
**BASIN ELECTRIC POWER COOPERATIVE**  
 A Touchstone Energy Cooperative

Figure 5.10-1  
 Basin Electric Power Cooperative  
 Antelope Valley Station to Naset  
 345-kV Transmission Project  
 Prime and Important Farmland

**5.10.2.1 Soils**

Approximately 5.3 additional acres of surface soil would be incorporated into the Corridor/Route ROW for a total of 3,624.9 acres, although the acreage that would actually be disturbed would be far less. Permanent impacts to soils would include the disturbance of less than 0.1 additional acre (1.1 acre total) of soil where transmission structures (1,181 total) would be placed. Farmland

Approximately 2.7 additional acres of cultivated cropland would be incorporated into the Corridor/Route ROW by the proposed revisions, for a total of project of 1,405.6 acres. It is likely that impacts would not occur across the entire 1,405.6 acres because most impacts would be temporary and occur during construction. Permanent impacts, requiring the removal of cropland from production, would occur only at the structure locations. The remaining acreage within the ROW would be allowed to return to cropland

**5.10.2.2**

completion of construction. Approximately 1.7 additional combined acres of grassland, pasture, or hay land occur within the Corridor/Route, for a total of 1,810.3 acres. No other changes to this section were identified.

**5.10.2.3 Prime Farmland**

The Corridor/Route revisions would result in no additional acres of permanent prime farmland loss, for a Project total of approximately 1.0 acre. Table 5.10-4 summarizes the overall Project-related impacts to farmland soils. No changes to prime farmland impacts were identified.

**Table 5.10-4: Acres of Prime Farmland within Corridor/Route**

<b>Farmland Classification</b>	<b>Corridor/Route</b>	<b>Change due to Corridor/Route Revisions</b>
Not prime farmland (acres)	2,108.9	5.3
All areas are prime farmland (acres)	81.9	0
Farmland of statewide importance (acres)	1,372.1	0
Prime farmland if drained (acres)	4.3	0
Prime farmland if irrigated (acres)	57.8	0
<b>Total (acres)</b>	<b>3,625.0</b>	<b>5.3</b>

### **5.10.3 Mitigation**

No changes from Corridor/Route revisions.

## **5.11 Geology and Landforms**

### **5.11.1 Description of Resources**

#### **5.11.1.1 Regional Setting**

No changes from Corridor/Route revisions.

#### **5.11.1.2 Terrain**

No changes from Corridor/Route revisions.

#### **5.11.1.3 General Geology**

No changes from Corridor/Route revisions. Figure 5.11-1 has been updated to include the revised Corridor/Route.

#### **5.11.1.4 Oil Shale**

No changes from Corridor/Route revisions.

#### **5.11.1.5 Mineral Resources**

No changes from Corridor/Route revisions. Figure 5.11-4 has been updated to include the revised Corridor/Route.

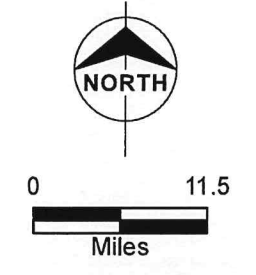
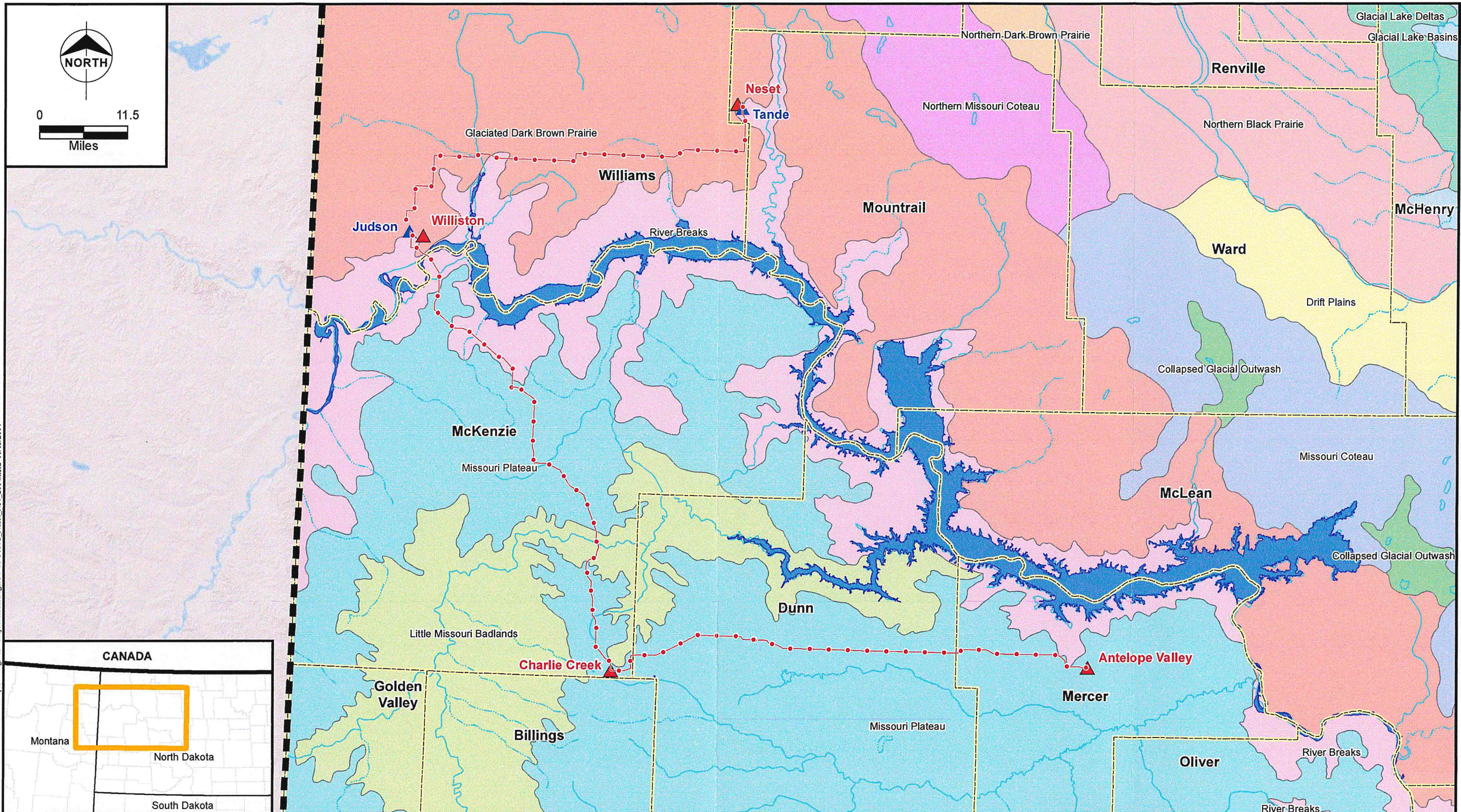
#### **5.11.1.6 Landslides**

No changes from Corridor/Route revisions. Figure 5.11-5 has been updated to include the revised Corridor/Route.

### **5.11.2 Impacts**

The Corridor/Route is located within 500 feet of one additional existing oil and gas wells along the length of the route. It is probable that this number would increase due to the continuing development of oil and gas development activities in the area. There are 25 total oil and gas wells within 500 feet of the Project. However, it is anticipated that the Project would not directly affect any wells or drill rigs since the final design and placement of structures along the Corridor/Route would be designed to avoid these areas, span collector systems, and provide sufficient clearance for well maintenance and operation.

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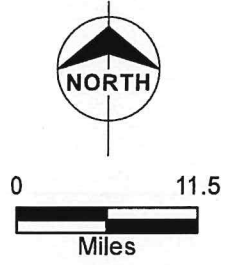
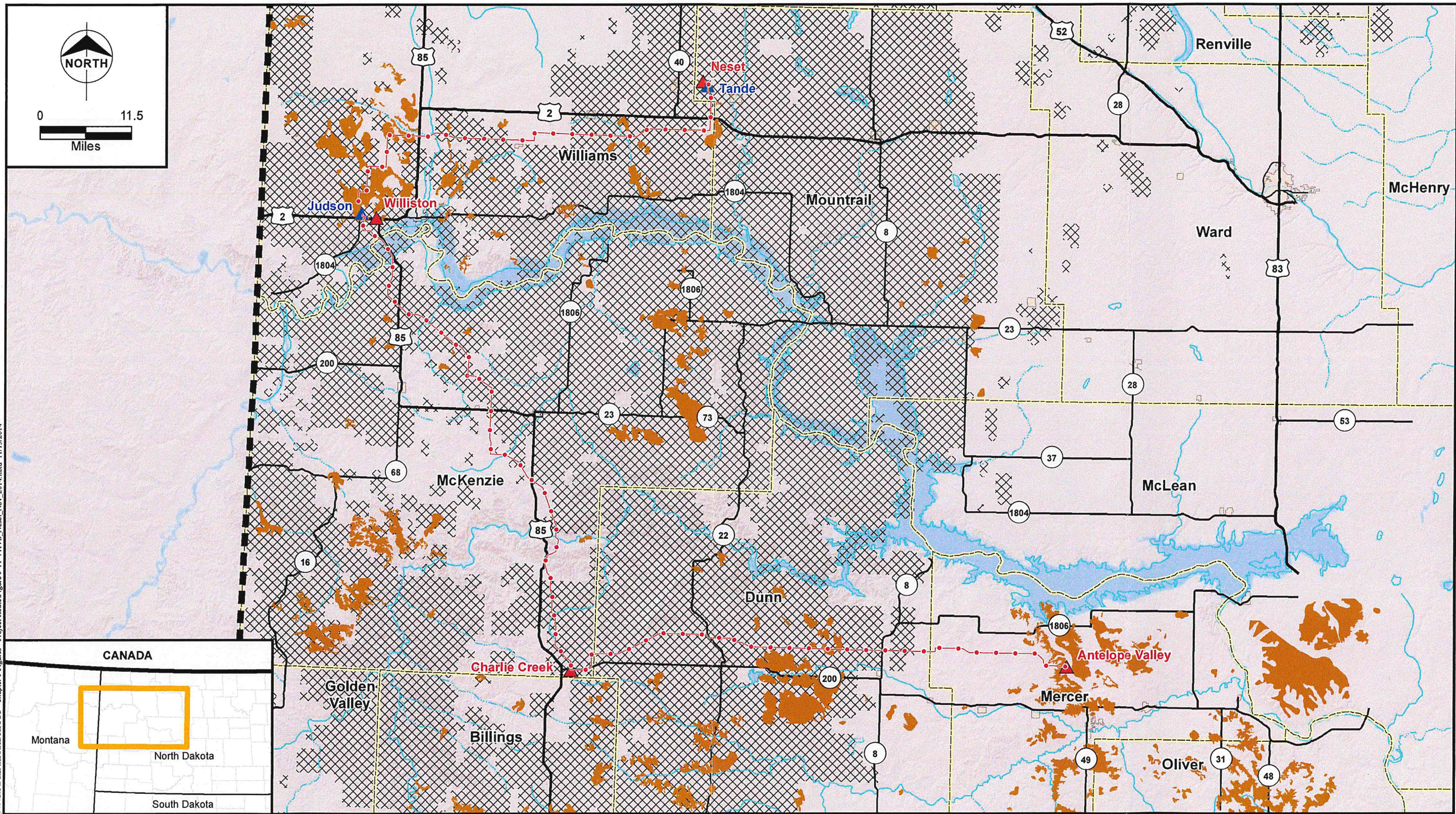
- Project Route November 2014
- ▲ Proposed Substation
- ▲ Existing Substation
- ▬ State Boundary
- ▬ County Boundary
- Missouri River/Lake Sakakawea
- Ecoregions
- Missouri Coteau
- Collapsed Glacial Outwash
- Northern Missouri Coteau
- Glaciated Dark Brown Prairie
- Missouri Plateau
- Little Missouri Badlands
- River Breaks
- Glacial Lake Basins
- Northern Black Prairie
- Northern Dark Brown Prairie
- Drift Plains
- Glacial Lake Deltas



Figure 5.11-1  
Basin Electric Power Cooperative  
Antelope Valley Station to Neset  
345-kV Transmission Project  
Ecoregions within the Study Area

Source: North Dakota GIS; Esri; Basin Electric; Burns & McDonnell.

Revised November 13, 2014



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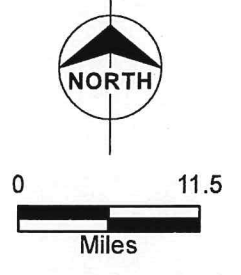
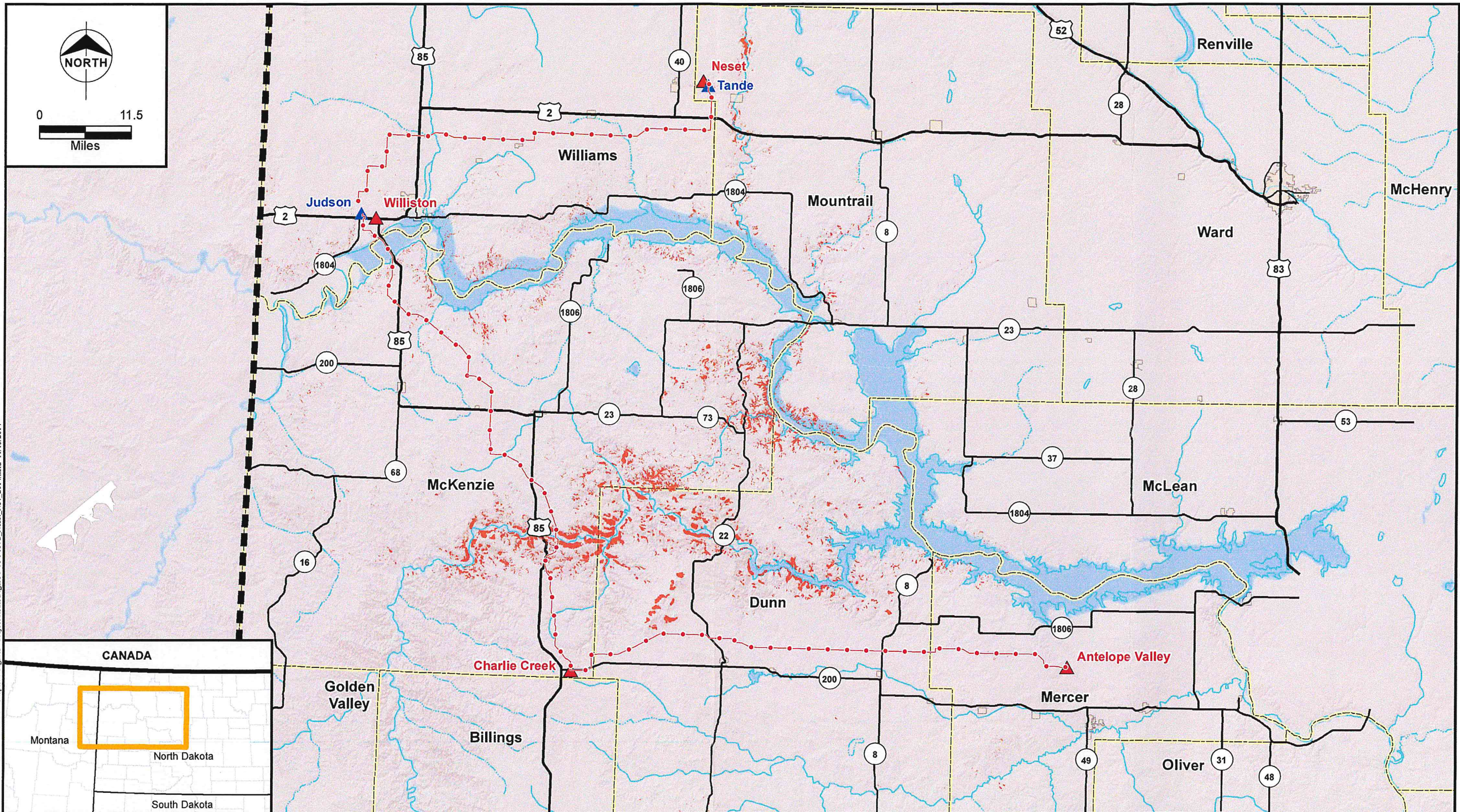
- Project Route November 2014
- ▲ Proposed Substation
- ▲ Existing Substation
- Coal Fields
- State Boundary
- Oil Fields
- County Boundary

  
**BASIN ELECTRIC POWER COOPERATIVE**  
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Figure 5.11-4  
 Basin Electric Power Cooperative  
 Antelope Valley Station to Naset  
 345-kV Transmission Project  
 Oilfields and Coal Deposits

\\ESPSRV\Data\Projects\Basin\61495\_AVS\_345\GIS\Data\ArcDoc\BSC - Chapter 5 Figures - Project Route\Figure 5-11-4\_AVS\_Neset\_Nov\_2014.mxd 11/13/2014

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**LEGEND**

- - - Project Route November 2014
- ▲ Proposed Substation
- ▲ Existing Substation
- State Boundary
- County Boundary
- Landslide Deposits



Figure 5.11-5  
Basin Electric Power Cooperative  
Antelope Valley Station to Neset  
345-kV Transmission Project  
Landslide Areas

### **5.11.3 Mitigation**

No changes from Corridor/Route revisions.

### **5.12 Water Resources**

No changes from Corridor/Route revisions.

### **5.13 Biological Resources**

#### **5.13.1 Description of Resources**

##### **5.13.1.1 Regional Setting**

No changes from Corridor/Route revisions.

##### **5.13.1.2 Vegetation**

No changes from Corridor/Route revisions.

##### **5.13.1.3 Wildlife**

No changes from Corridor/Route revisions.

###### **5.13.1.3.1 Big Game**

No changes from Corridor/Route revisions.

###### **5.13.1.3.2 Mammals**

No changes from Corridor/Route revisions.

###### **5.13.1.3.3 Migratory and Resident Birds**

No changes from Corridor/Route revisions.

###### **5.13.1.3.4 Raptors**

No changes from Corridor/Route revisions.

###### **5.13.1.3.5 Gamebirds, Waterfowl, and Shorebirds**

No changes from Corridor/Route revisions.

###### **5.13.1.3.6 Reptiles and Amphibians**

No changes from Corridor/Route revisions.

**5.13.1.3.7 Native and Introduced Gamefish Species**

No changes from Corridor/Route revisions.

**5.13.1.4 Wetlands**

No changes from Corridor/Route revisions. Figure 5.13-5 has been updated to include the revised Corridor/Route.

**5.13.1.5 Special Status Species**

**5.13.1.5.1 Endangered Species Act Species and Critical Habitat**

No changes from Corridor/Route revisions. Figure 5.13-6 has been updated to include the revised Corridor/Route.

**5.13.1.5.2 USFS Sensitive and Management Indicator Species**

No changes from Corridor/Route revisions.

**5.13.1.5.3 North Dakota Species of Conservation Priority**

No changes from Corridor/Route revisions.

**5.13.2 Impacts**

No changes from Corridor/Route revisions.

**5.13.2.1 Vegetation**

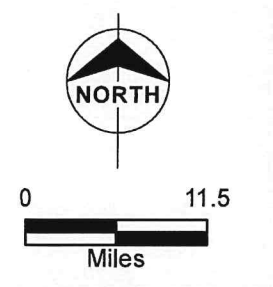
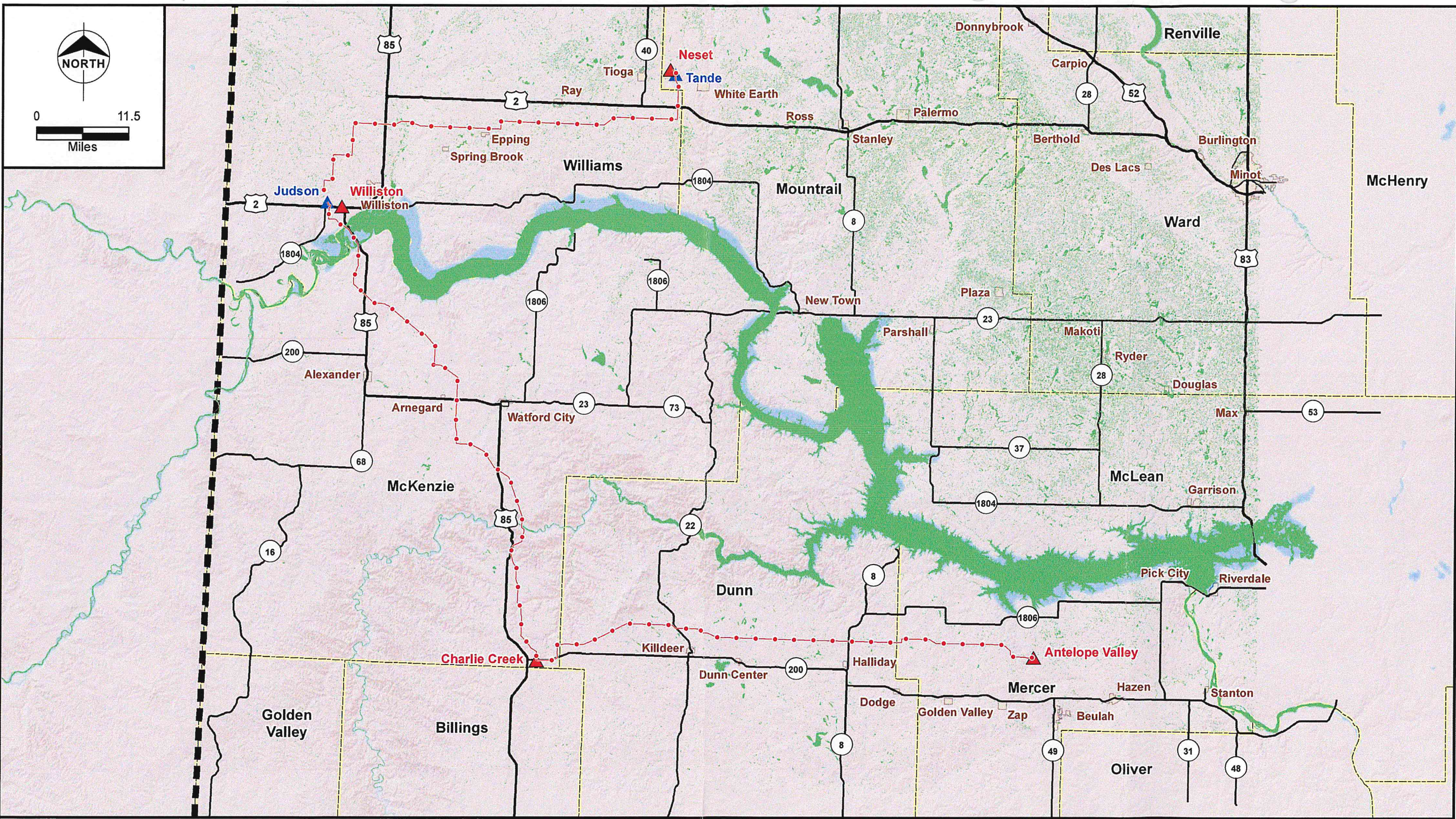
Table 5.13-3 presents the potential number of acres impacted within the Project Corridor/Route for each vegetation type for the entire Corridor/Route length.

**Table 5.13-3: Vegetation Types within Corridor/Route**

<b>Vegetation Type*</b>	<b>Project Corridor/Route Acres</b>	<b>Change due to Corridor/Route Revisions</b>
Woodland	116.0	0
Grassland	1,655.5	1.7
Pasture/Hay Land	154.8	0
Cultivated Cropland	1,405.6	2.7

\*Source: National Land Cover Dataset

Permanent vegetative impacts (not including forested areas) associated with the Project would primarily be confined to the removal of vegetation at each structure foundation location, resulting in a permanent

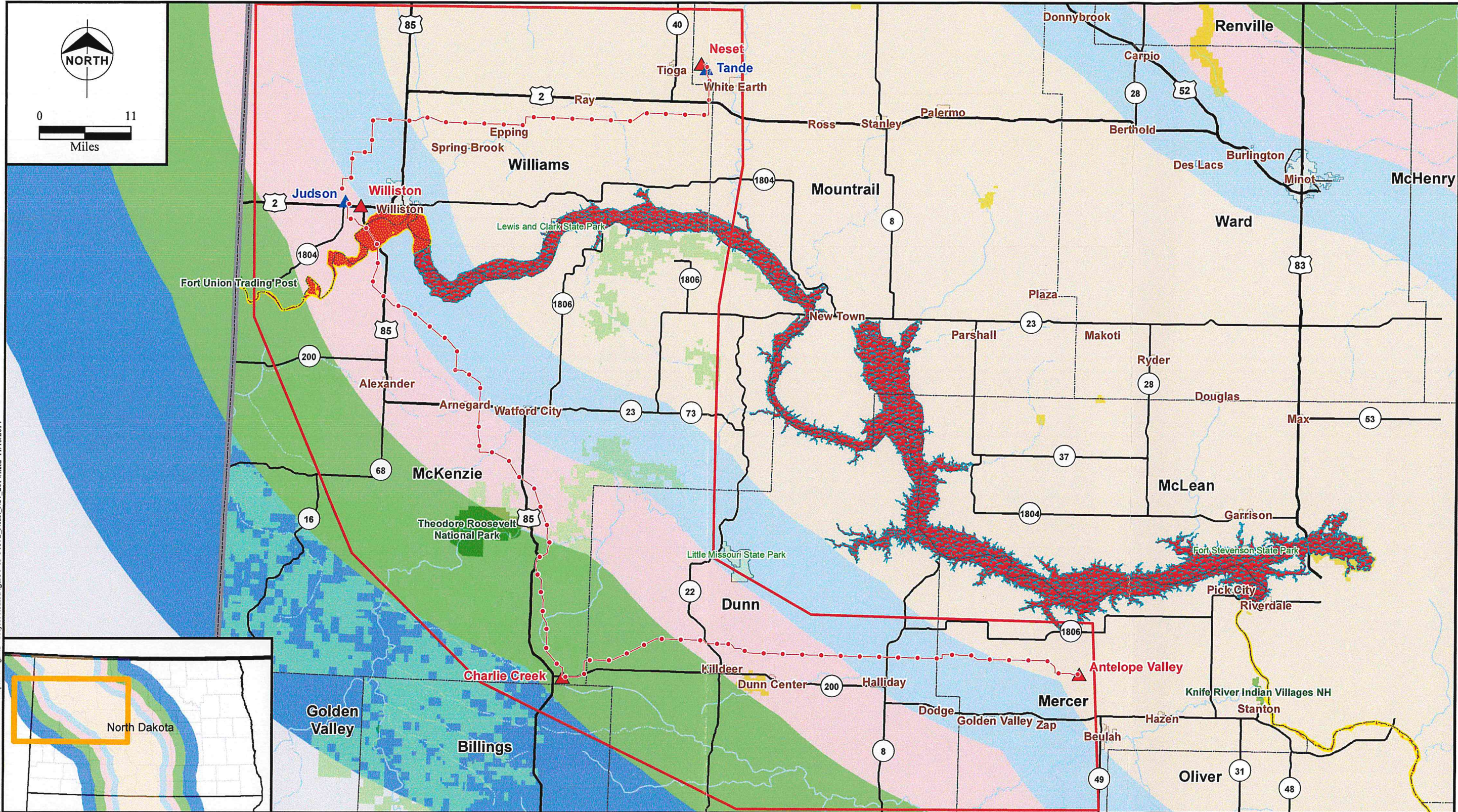


- LEGEND**
- - - Project Route November 2014
  - ▲ Proposed Substation
  - ▲ Existing Substation
  - State Boundary
  - County Boundary
  - Municipal Areas
  - NWI Wetlands



Figure 5.13-5  
 Basin Electric Power Cooperative  
 Antelope Valley Station to Naset  
 345-kV Transmission Project  
 NWI Wetlands

\\ESPSRVV\Data\Projects\Basin\61495\_AVS\_345\GIS\DataFiles\ArcDoc\BSC - Chapter 5 Figures - Project Route\Figure 5-13-5\_AVS\_Naset\_Nov\_2014.mxd 11/13/2014



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LEGEND	
	Project Route November 2014
	Substation
	Proposed Substation
	State Boundary
	County Boundary
	Municipal Areas
	National or State Park
	National Wildlife Refuge
	National Grassland
	Piping Plover Critical Habitat
	Interior Least Tern Habitat
	Pallid Sturgeon Habitat
	75% (60 mi Whooping Crane Corridor)
	80% (80 mi Whooping Crane Corridor)
	85% (100 mi Whooping Crane Corridor)
	90% (130 mi Whooping Crane Corridor)
	95% (170 mi Whooping Crane Corridor)

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Figure 5.13-6  
 Basin Electric Power Cooperative  
 Antelope Valley Station to Neset  
 345-kV Transmission Project  
 Important Threatened and Endangered  
 Species Habitat

Source: North Dakota GIS; USFWS Map; Esri; Basin Electric; Burns & McDonnell.

Revised November 13, 2014

loss of vegetation of less than 0.1 additional acre (1.1 acre total) over the length of the Corridor/Route. No other changes to this section were identified.

**5.13.2.2 Wetlands**

Table 5.13-4 displays the changes in potential wetland types and acreages resulting from the Corridor/Route revisions.

**Table 5.13-4: NWI Wetland Acres within Corridor/Route**

<b>Wetland Type</b>	<b>Wetland Acres in Corridor/Route</b>	<b>Change due to Corridor/Route Revisions</b>
PEM	12.0	0.4
PSS	0.4	0
Lake	11.2	0
Pond	0.8	0
Riverine	2.5	0
<b>Total</b>	<b>26.9</b>	<b>0.4</b>

PEM = palustrine emergent, PSS = palustrine scrub/shrub  
 Source: NWI Geographic Information System (GIS) data layer

No other changes to this section were identified.

**5.13.2.3 Wildlife**

**5.13.2.3.1 Big Game**

No changes from Corridor/Route revisions.

**5.13.2.3.2 Nongame Species**

No changes from Corridor/Route revisions.

**5.13.2.3.3 Birds**

No changes from Corridor/Route revisions.

**5.13.2.3.4 Aquatic Species**

No changes from Corridor/Route revisions.

**5.13.2.3.5 Proposed Substations**

No changes from Corridor/Route revisions.

### 5.13.2.4 Special Status Species

Preparation of the Biological Assessment (BA) and consultation with the United States Fish and Wildlife Service (USFWS) determined the proposed Corridor/Route would not likely adversely impact piping plover critical habitat. The USFWS determination has been submitted to the Commission under separate cover.

The Project area is within the whooping crane migration corridor. Table 5.13-5 displays the change in length in miles due to Corridor/Route revisions that the Corridor/Route would occur within each whooping crane percent occurrence migration corridor.

**Table 5.13-5: Whooping Crane Percent Migration Corridor**

	Length Through Whooping Crane Percent Migration Corridors (miles)					
	75%	80%	85%	90%	95%	Total
<b>Project Corridor/Route</b>	54.4	54.1	57.1	34.1	0	<b>199.7</b>
<b>Change due to Corridor/Route Revisions</b>	0	0.3	0	0	0	<b>0.3</b>

Source: USFWS Whooping Crane Percent Migration Corridor, as depicted in Figure 5.13-6

The Corridor/Route will be located within 1 mile of 0.2 additional acres of NWI wetlands for the length of the Corridor/Route, for a total of 3,992.2 acres. Preparation of the BA and consultation with the USFWS determined the proposed Corridor/Route would not likely adversely impact whooping cranes.

Table 5.13-6 presented the Project considerations for all identified special status species. No changes to this table were identified.

#### 5.13.2.4.1 Proposed Substations

No changes from Corridor/Route revisions.

### 5.13.3 Mitigation

No changes from Corridor/Route revisions.

## 5.14 Summary of Corridor/Route Impacts

The construction and operation of Basin Electric’s proposed Project could have a potential impact on environmental and human resources located in northwestern North Dakota. A summary of changes resulting from the Corridor/Route revisions is provided in Table 5.14-1.

**Table 5.14-1: Summary of Project Impacts and Mitigation**

Resource	Corridor/Route		Substations		Mitigation
	Permanent Impacts	Temporary Impacts	Permanent Impacts	Temporary Impacts	
Socioeconomics	An additional \$225 in property tax revenues for a total of \$59,730 annually to Project counties.	No change.	No change.	No change.	No change.
Land Use	An additional 5.3 acres of ROW (total of 3,625 acres) will be required and would be restricted from some types of future development.  Less than 0.1 additional acre of soil (1 acre total of 0.0009-acre per structure) would be permanently removed.  No additional changes.	No change.	No change.	No change.	No change.
Infrastructure-Transportation	No change.	No change.	No change.	No change.	No change.
Public Health and Safety	No change.	No change.	No change.	No change.	No change.
Air Quality	No change.	No change.	No change.	No change.	No change.
Noise	No change.	No change.	No change..	No change.	No change.
Visual	No change.	No change.	No change.	No change.	No change.
Cultural	No change.	No change.	No change.	No change.	No change.
Recreation	No change.	No change.	No change.	No change.	No change.

Resource	Corridor/Route		Substations		Mitigation
	Permanent Impacts	Temporary Impacts	Permanent Impacts	Temporary Impacts	
Soils and Farmland	Less than 0.1 additional acre of soil (1 acre total; 0.0009-acre per structure) would be permanently removed.  No additional changes.	No change.	No change.	No change.	No change.
Geology and Landforms	No change.	No change.	No change.	No change.	No change.
Water	No change.	No change.	No change.	No change.	No change.
Biological Resources	Vegetation: Less than 0.1 additional acre of vegetation permanently removed within Corridor/Route at structure locations (approximately one acre total). No other changes.  Wildlife: No change. Wetlands: Approximately 0.4 additional acre (total of 26.9 acres) of wetland within Corridor/Route. No other changes.	No change.	No change.	No change.	No change.

## **6.0    PUBLIC AND AGENCY COORDINATION**

No changes from Corridor/Route revisions.

## **7.0 IDENTIFICATION OF ADDITIONAL REQUIRED PERMITS/APPROVALS**

No changes from Corridor/Route revisions.

## **8.0 FACTORS CONSIDERED**

North Dakota Century Code (NDCC) Section 49-22-09 of the North Dakota Energy Conversion and Transmission Facility Siting Act lists 11 factors to guide the Commission in evaluation of sites, corridors, and routes. The following sections address these factors where applicable to the Project Corridor/Route revisions.

### **8.1 Available Research and Investigations Relating to the Effects of the Location, Construction, and Operation of the Proposed Facility on Public Health and Welfare, Natural Resources, and the Environment**

No changes from Corridor/Route revisions.

### **8.2 The Effects of New Energy Conversion and Transmission Technologies and Systems Designed to Minimize Adverse Environmental Effects**

No changes from Corridor/Route revisions.

### **8.3 The Potential for Beneficial Uses of Waste Energy From a Proposed Energy Conversion Facility**

No changes from Corridor/Route revisions.

### **8.4 Adverse Direct and Indirect Environmental Effects Which Cannot Be Avoided Should the Proposed Site or Route be Designated**

Unavoidable impacts are those that would occur after implementation of mitigation measures. In summary, construction and operation of the proposed Project would convert less than 0.1 additional acres of land from agricultural uses to utility uses than the July 2014 amendment (total of 25 acres). No other changes to this section were identified.

### **8.5 Alternatives to the Proposed Site, Corridor, or Route Which are Developed During the Hearing Process and Which Minimize Adverse Effects**

No changes from Corridor/Route revisions.

### **8.6 Irreversible and Irretrievable Commitments of Natural Resources Should the Proposed Site, Corridor, or Route Be Designated**

No changes from Corridor/Route revisions.

### **8.7 The Direct and Indirect Economic Impacts of the Proposed Facility**

No changes from Corridor/Route revisions.

### **8.8 Existing Plans of the State, Local Government, and Private Entities for Other Developments at or in the Vicinity of the Proposed Site, Corridor, or Route**

No changes from Corridor/Route revisions.

### **8.9 The Effect of the Proposed Site or Route on Existing Scenic Areas, Historic Sites and Structures, and Paleontological or Archaeological Sites**

No changes from Corridor/Route revisions.

### **8.10 The Effect of the Proposed Site or Route on Areas Which are Unique Because of Biological Wealth or Because They are Habitats for Rare and Endangered Species**

Section 5.13.2 discusses the effects of the Project on biological resources, including wetlands, vegetation, wildlife, and special status species. Corridor/Route revisions would have no effect on wetlands, as all of the additional 0.4 acres of wetlands within the Corridor/Route would be spanned, and no structures would be placed in wetlands. No other changes identified to this section.

### **8.11 Problems Raised by Federal Agencies, Other State Agencies, and Local Entities**

No changes from Corridor/Route revisions.

## 9.0 QUALIFICATIONS OF CONTRIBUTORS

No changes from Corridor/Route revisions.

## 10.0 REFERENCES

No changes from Corridor/Route revisions.

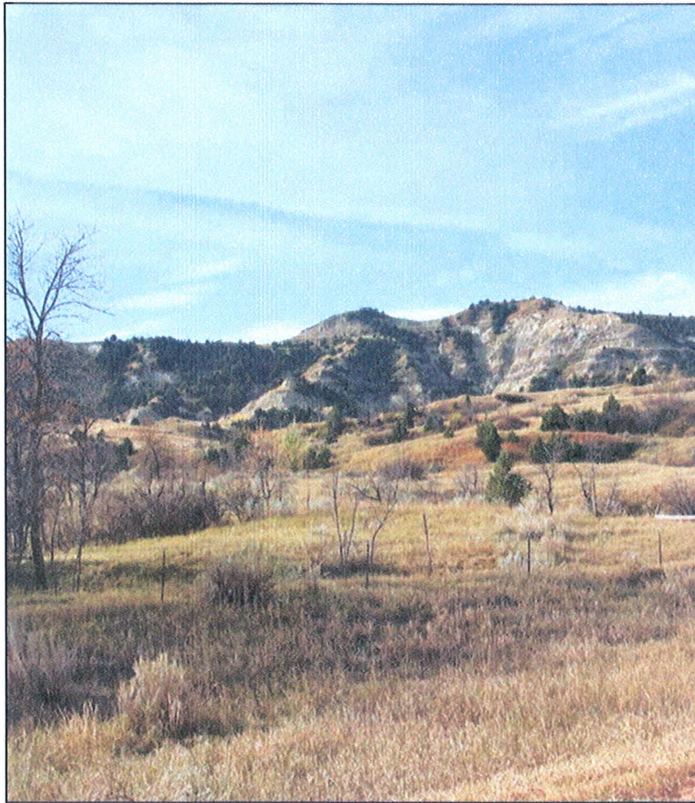
## 11.0 LAND ACQUISITION STATUS

No changes from Corridor/Route revisions.



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Applications to the  
North Dakota Public Service Commission  
for  
Waiver of Procedures and Time Schedules  
and a Consolidated Certificate of Corridor Compatibility  
and Route Permit

Volume II

Case No: PU-11-696

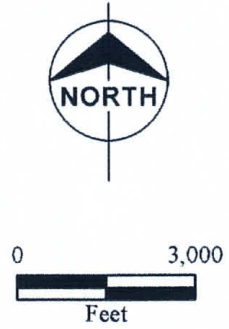
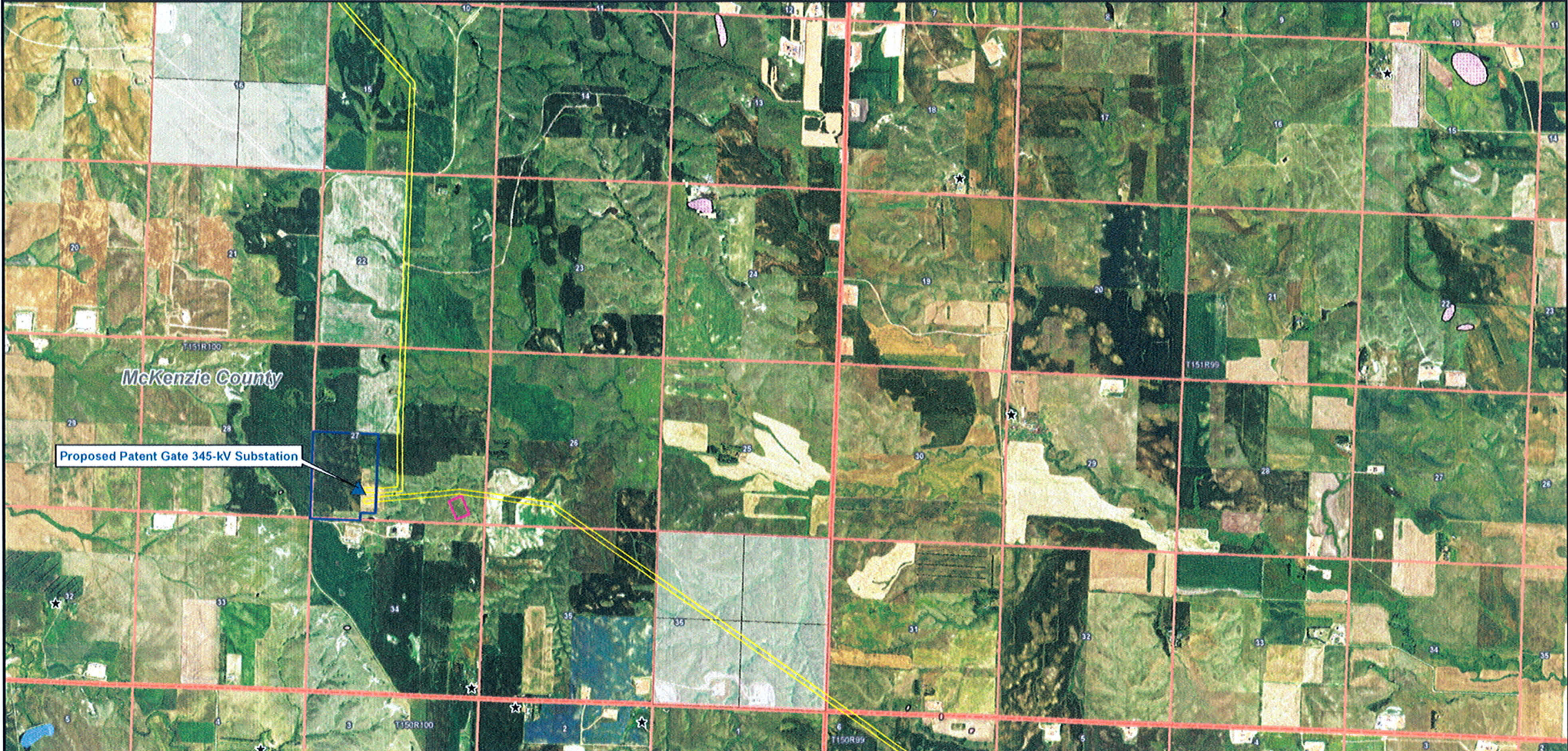
for the

**AVS-Neset 345-kV  
Transmission Project**



December 2014

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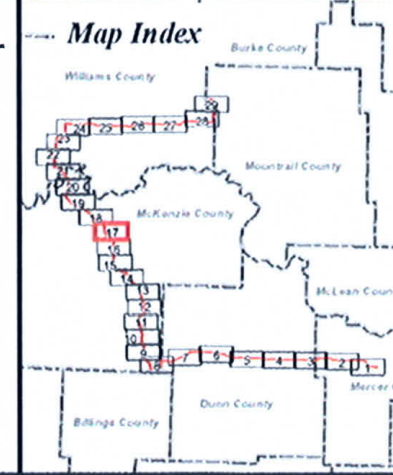


- Corridor/Route 150'
- Corridor/Route 100'
- Tande Substation Outline
- Judson Substation Outline
- Patent Gate Substation Outline
- Mobile Home
- Man Camp
- Residence
- Residence within 500 Feet
- New Oil/Gas Pad Site
- County Boundary
- Municipal Boundary
- Civil Townships
- Public Land Survey Sections

- Exclusion Areas**
- State Sensitive Species Habitat/Occurrence
  - NRHP Structure
  - Piping Plover Critical Habitat
  - State Park
  - National Park

- Avoidance Areas**
- Center Pivot Irrigation
  - State Historical Site
  - Scenic River
  - Scenic River
  - Landslide Deposit
  - Waterbody
  - National Grassland
  - USACE Land
  - State-Owned School Lands
  - State Wildlife Management Area
  - National Wildlife Refuge

- Slope Greater than 10%**
- 10% - 20%
  - 20% - 30%
  - 30% - 44.5%

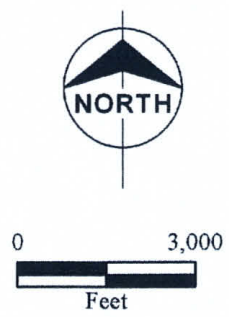
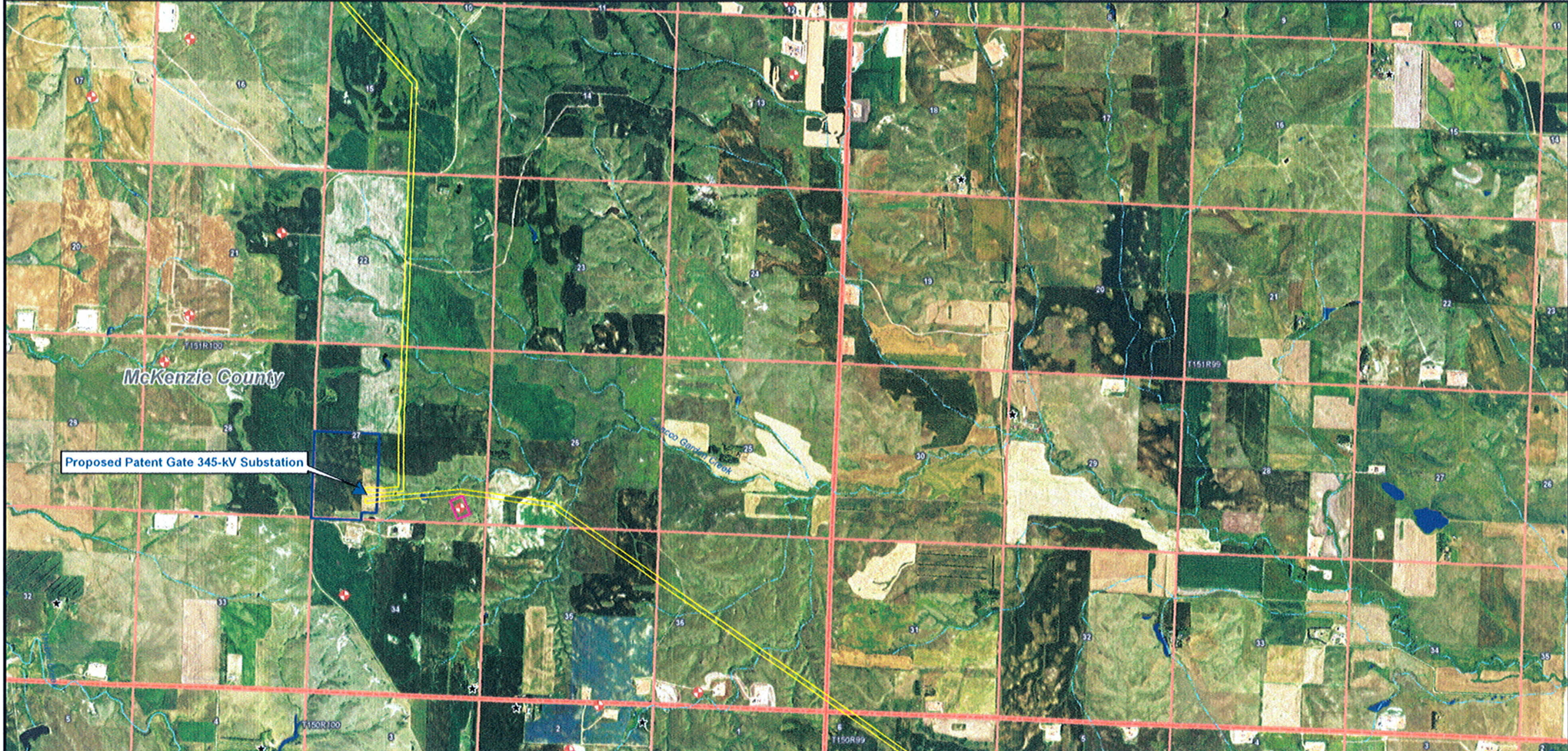


Exclusion and Avoidance Criteria  
 Updated for replacement mapbook  
 sheet 17 from July 2014

Basin Electric Power Cooperative  
 Antelope Valley Station to Neset  
 345-kV Transmission Project  
 Detailed Project Route Maps  
 Sheet 17 of 29

Source: USDA NAIP 2012 & 2014 Aerial Photography, NDNH, North Dakota GIS, National Park Service, State Historical Society, Burns & McDonnell

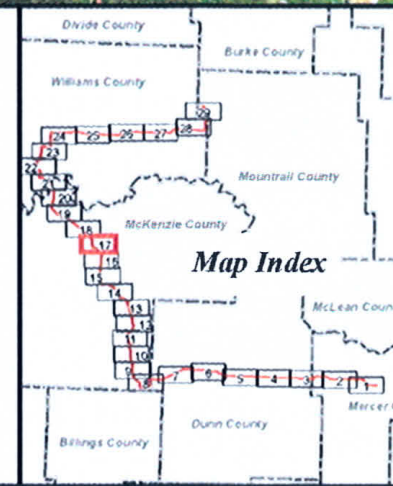
\\ESPRV\Data\Project\Bain\61495\_AVS\_345 GIS Data\Files\AveDover\PSC - Chapter 5 Figures - Project Route\Selection Criteria Figures\Selection Criteria Maps\_AVS\_Neset\_Nov\_2014.mxd



- Corridor/Route 150'
- Corridor/Route 100'
- Tande Substation Outline
- Judson Substation Outline
- Patent Gate Substation Outline
- New Oil/Gas Pad Site
- County Boundary
- Municipal Boundary
- Public Land Survey Sections
- Civil Townships

**Selection Criteria**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li><span style="color: red;">★</span> Residence within 500 Feet</li> <li><span style="color: blue;">■</span> Mobile Home</li> <li><span style="color: red;">■</span> Man Camp</li> <li><span style="color: black;">★</span> Residence</li> <li><span style="color: red;">♦</span> Oil Well</li> <li><span style="color: blue;">■</span> AM/FM Radio Tower</li> </ul> | <ul style="list-style-type: none"> <li><span style="color: cyan;">—</span> Scenic Byway</li> <li><span style="color: cyan;">—</span> Perennial Stream</li> <li><span style="color: cyan;">—</span> Intermittent Stream</li> <li><span style="color: green;">■</span> National Grassland</li> <li><span style="color: green;">■</span> National Park</li> <li><span style="color: blue;">■</span> NWI Wetlands</li> <li><span style="color: magenta;">■</span> FEMA Floodplains</li> </ul> |
|--|---|



**Selection Criteria**  
 Updated for replacement mapbook  
 sheet 17 from July 2014

Basin Electric Power Cooperative  
 Antelope Valley Station to Neset  
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 Sheet 17 of 29

Source: USDA NAIP 2012 & 2014 Aerial Photography, Federal Communications Commission, North Dakota GIS, National Park Service, State Historical Society, FEMA, Burns & McDonnell.



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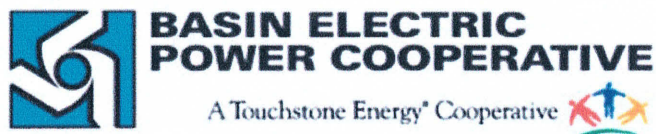
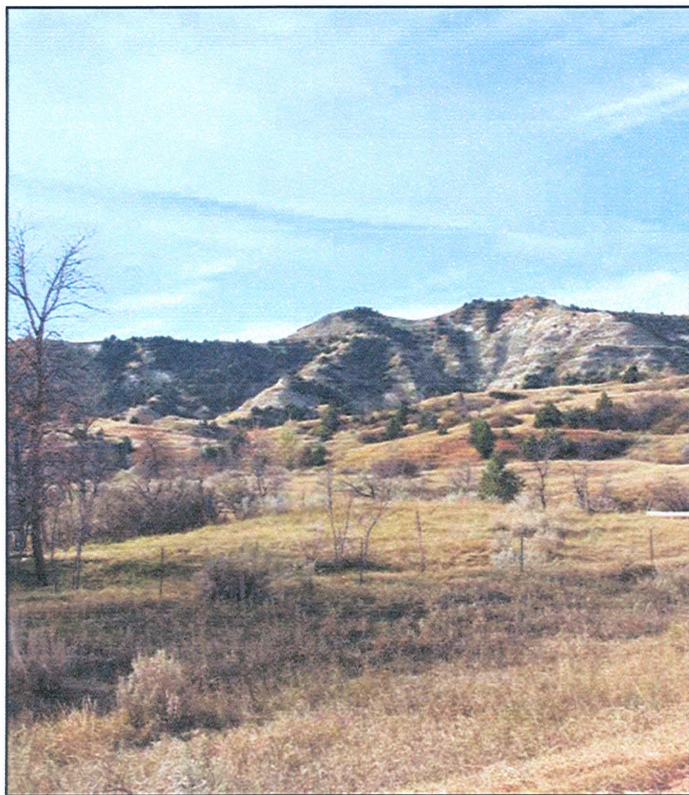
Amendment to the Application to the  
North Dakota Public Service Commission  
for  
Consolidated Certificate of Corridor  
Compatibility and Route Permit

Volume III

Case No: PU-11-696

for the

**AVS-Neset 345-kV  
Transmission Project**



December 2014

(No change to appendix)



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