



# **Bison I Wind Facility Post-Construction Inspection Report PU-09-151**



Prepared for:

## **NORTH DAKOTA PUBLIC SERVICE COMMISSION**

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Figure 1: Project Area and Field Observations Map

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Appendix A: Photographs  
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# 1.0 Executive Summary

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The North Dakota Public Service Commission (PSC) retained Wenck Associates, Inc. (Wenck) to complete a construction inspection of the Bison I Wind Project (Project) in Morton and Oliver Counties, North Dakota (ND), owned and operated by Minnesota Power, an operating division of ALLETE, Inc (Allete). Construction for the Project began on 9 October 2009 and it was commissioned on 31 January 2012. Wenck reviewed all Project documents to identify those aspects which required compliance and visually inspected the Project area on 7 November 2012.

The Project was well-maintained and appeared to have been constructed as planned with numerous efforts to minimize impacts. However, there were several non-critical issues that may need to be resolved for the Project to be considered complete and in full compliance, including 1) written verification of some items, and 2) continued tree and shrub mitigation. Wenck expects follow-up actions taken by Minnesota Power to address these particular issues can be corroborated in writing or photos and will not require a subsequent site visit. Wenck recommends the PSC take the following steps to resolve these issues.

## **Recommended Action Steps**

### **→ Request Now**

- Written verification of “necessary” items (refer to list in Section 4.1).
- Confirmation of certain planned wildlife measures or explanation of why deemed unnecessary (refer to list in Section 4.3).

### **→ Review Internally, Clarify, Then Request if Needed**

- Several “potential” items may need written verification, but the PSC should review first since some of them may not be needed or may be best verified in some other way (refer to list in Section 4.1).

### **→ Expect Later, Request if Needed**

- 2013: Tree and Shrub Survival Report.
- 2014: Tree and Shrub Survival Report.

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## 2.0 Background & Scope

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### 2.1 INTRODUCTION

The Bison I Wind Project (Project) was completed in January 2012 in Morton and Oliver Counties, North Dakota, approximately 9 miles to the west and 8 miles to the north of the town of New Salem (**Figure 1**). The Project is operated by Minnesota Power, a subsidiary of ALLETE, Inc. (Allete). The Project had a proposed capacity of 75.9-megawatts (MW) comprised of 33 2.3 MW turbines. The Project is under the jurisdiction of the North Dakota Public Service Commission (PSC), which issued its Findings of Fact, Conclusions of Law, and Order in Case No. PU-09-151 on 29 September 2009, granting a Certificate of Site Compatibility for Energy Conversion Facility, Certificate No. 15, for the Project. The Certificate was revised on 15 December 2010 to include construction of 16 2.3 MW and 15 3.0 MW turbines for a total capacity of 81.9 MW.

### 2.2 PURPOSE

The North Dakota Energy Conversion and Transmission Facility Act (North Dakota Century Code Chapter 49-22) authorizes the Public Service Commission to determine that the location, construction, and operation of jurisdictional energy conversion and transmission facilities will produce minimal adverse effects on the environment and the welfare of citizens of North Dakota. Post-construction inspections ensure that such projects are constructed in compliance with the siting laws (North Dakota Century Code Chapter 49-22) and rules (North Dakota Administrative Code Article 69-06) and the applicable Commission Findings of Fact, Conclusions of Law, and Order (Order). The North Dakota PSC retained Wenck Associates, Inc. (Wenck) to complete a construction inspection of the Project.

### 2.3 METHODS AND SCOPE OF INSPECTION

#### 2.3.1 Project Compliance Items Identified

Wenck identified a list of “Project Specifications”, which the company was obligated or responsible to follow and that can be verified either in written documentation or by an on-site inspection. These items were taken from 1) siting laws and rules, 2) Project activities or specifications proposed in the Application, 3) Project plans described in the Findings of Fact, 4) Orders, and 5) recommendations by other agencies. These Project specifications are listed in Table 2.1 within 7 categories: Siting & Location; Project Design & Engineering; Pre-Construction; Cultural Resources; Natural Resources; Construction, Reclamation & Soils; and Operation.

#### 2.3.2 Document Review

Wenck staff reviewed publicly-available Project documents in the PSC Online Case Search (ND PSC 2013) to find written verification of compliance for the Project specifications listed in Table 2.1. If written verification was filed, the findings are described in Section 3 and the source and name of the documentation is listed in Table 2.1, Column 3 (Written Verification). Shaded boxes in the table

represent Project specifications that are potentially non-compliant because they have no written verification.

### 2.3.3 On-Site Inspection

Luke Toso, Wenck botanist and natural resource scientist, visited the Project site on 7 November 2012. Daniel McCourtney, Environmental Compliance Coordinator, and Mike Pontious, Project Manager, both with Minnesota Power, accompanied Wenck staff during the site visit and assisted with navigation, pointed out problem areas, and answered questions.

The Project was inspected visually using a combination of driving and walking the entire area, including the substation, utility line routes, access roads, wind turbines, operations and maintenance buildings, and meteorological towers. Digital photographs (Canon Power Shot SD1300 IS, 12 megapixel) were taken showing typical Project infrastructure and documenting problem areas (**Appendix A**). Geographic coordinates were recorded at observation points or potential problem areas using a handheld Global Positioning System (GPS) (Garmin GPSMAP 60CSx; <10m accuracy; NAD83 datum) (**Figure 1; Appendix B**).

If on-site inspection of a Project specification was completed, the findings are described in Section 3 and referenced in Table 2.1, Column 4 (Site Verification). Shaded boxes in the table represent Project specifications that are potentially non-compliant based on site verification.

**Table 1: Project Specifications with Written or Site Verification Information**

Source of Project Specification	Description of Project Specification	Written Verification*	Site Verification*
<b>SITING &amp; LOCATION</b>			
Amend. Findings of Fact 3, 4; Order 2, 3	Designated location in Morton and Oliver Co. Associated facilities to include access roads, underground electrical and feeder lines, an electrical substation, meteorological towers, wind monitoring stations, and operations and maintenance buildings.	None.	Section 3.1.1
Findings of Fact 5	Compliance with county/city land use, zoning, rules, regulations, ordinances. Zoning permit from Morton and Oliver Co.	Docket #42, Conditional Use Permit Oliver and Morton County	N/A
ND Admin. Code Article 69-06-08; Findings of Fact 16, 19, App. p. 3-1 – 3-7	Siting Criteria analysis – exclusion, avoidance, selection, policy. Avoidance areas: historical resources, woodlands, wetlands.	Docket #7, Application	Section 3.1.3
Findings of Fact 17, 18; App. p. 7-16	Total land disturbance about 50 acres. Project will impact approx. 50 acres of agricultural production. Negligible disturbance to prime farmland. No impacts to quality of cropland anticipated. Soil compaction addressed as necessary.	None.	Section 3.1.4
Findings of Fact 21; App. p. 7-1-7-3	No adverse impacts foreseen to surrounding community, public services, safety. Expected economic benefit.	None.	Section 3.1.5
Findings of Fact 32-34; Supplement to Application	Turbine setbacks: 1,500ft. from occupied residence; 300ft. from existing transmission lines and public roads right-of-way.	Docket #35, Additional Site Layout Map	Section 3.1.6
<b>PROJECT DESIGN &amp; ENGINEERING</b>			
Findings of Fact 6; Request to Modify Certificate of Site Compatibility	Authorized 16 2.3 MW and 15 3.0 MW wind turbines and associated facilities.	None.	Section 3.2.1
Findings of Fact 6- 9, 14; Request to Modify Certificate of Site Compatibility	Siemens 2.3 MW and 3.0 MW turbines, 80m hub height, 101m rotor diameter. Turbines with concrete foundation, lighting according to FAA, control panel in turbine base, pad-mounted transformer steps down to collection lines. Turbines to have SCADA and lightning protection.	None.	Section 3.2.2
Findings of Fact 10; App. p. 4-1	Collection line system delivers electricity to substation, stepped up to existing 230kV transmission line.	None.	Section 3.2.3
ND Century Code Ch. 49-22-24; Findings of Fact 15; App. p. 6-3	Compliance with National Electric Safety Code.	None.	N/A
Order 31	As-built engineering design drawings and GIS files within 6mo.	Docket #147, As built drawings	N/A

Source of Project Specification	Description of Project Specification	Written Verification*	Site Verification*
	<b>PRE-CONSTRUCTION</b>		
ND Century Code Ch. 49-22-04; ND Admin. Code Article 69-06-02	Ten-year plan (submit before July 1)	Docket 1, Case No. PU-12-440	N/A
ND Century Code Ch. 49-22-07	Certificate of site compatibility or route permit	Docket #37, Certificate #15, 9-29-2012; Docket #103, Amended Certificate #15, 12-15-10	N/A
ND Century Code Ch. 49-22-07.1; ND Admin. Code Article 69-06-03	Letter of intent	Docket #1, Letter of Intent	N/A
ND Century Code Ch. 49-22-08; ND Admin. Code Article 69-06-04	Application for a certificate of site or corridor compatibility	Docket #7, Application and Docket #14, 20, Supplemental Materials for Application	N/A
Order 4, 5	Permits and approvals from other agencies and provide copies.	Docket #42, Conditional Use Permit Oliver and Morton County	N/A
Order 6, 7	Conduct pre-construction conference. Provide notice of intent to start construction.	Docket #38, Notes from Pre-Construction, Notice of Construction Commencement Date	N/A
Order 30	Provide PSC with engineered design draws prior to construction. Inform PSC of plans to modify facility and obtain approval.	Docket #35 Additional Site Layout Map; Docket #84, Request to modify permit; Docket #88 Request to modify the Certificate of Site Compatibility	N/A
	<b>CULTURAL RESOURCES</b>		
ND SHPO request (4/13/2009)	Obtain SHPO concurrence of archeologist's report. Provide copy to Commission.	Docket #67, 96, 120 SHPO concurrence letters	N/A
Findings of Fact 24	Avoidance of all identified sites potentially eligible for National Register of Historic Places. Avoidance of all cultural resource features during construction.	None.	Section 3.4.2
Order 11	Report discovery of cultural, archeological, historic sites. Construction stopped, SHPO consulted and clearance required, report to Commission filed.	None reported to date.	N/A

Source of Project Specification	Description of Project Specification	Written Verification*	Site Verification*
	<b>NATURAL RESOURCES</b>		
Findings of Fact 29, 30	Concerns of USFWS regarding migrating whooping cranes addressed: bury new power lines or mark lines near adequate stopover habitat.	None.	3.5.1
Findings of Fact 28; App. p. 7-28-7-29; USFWS (6-22-2009); NDPR (3-24-2011)	Concerns of USFWS regarding wildlife resources addressed: implement Avian and Bat Protection Plan and Adaptive Management Plan; avoid construction Feb 1-July 15; self-standing MET towers; NDPR request: avoid impacts to wildlife and habitats and Yellow bullhead ( <i>Ameiurus natalis</i> ) habitat	None.	Section 3.5.2
Findings of Fact 26; App. p. 7-3-7-5; NDGF (5-5-2009); USFWS (6-22-2009)	Minimal disturbance of native prairie. Concerns of NDGF and USFWS.	None.	Section 3.5.3
Findings of Fact 27, 31; App. p. 7-13-7-14; NDGF (5-5-2009); USFWS (6-22-2009); NRCS( 4-20-2009)	Wetlands avoided to the extent practicable during construction. NDGF, USFWS, NRCS concern.	None	Section 3.5.4
Order 10; App. p. 7-28; NDGF (5-5-2009); USFWS (6-22-2009); NDPR (5-14-2009)	Report presence of T+E species, bald or golden eagles during construction and operation. NDGF: suggest monitoring bat and avian mortality throughout the life of the facility.	Docket #175, Minnesota Power 2012 Wildlife Incident Report	N/A
Order 14; App. p. 6-10; USFWS (6-22-2009); NDPR (5-14-2009)	Reclamation, fertilization, and reseeding according to NRCS (or landowner if approved). USFWS, NDPR request: reseed with native species.	None.	Section 3.5.6
Order 17; App. p. 3-6	Compliance with "Tree and Shrub Mitigation Specifications".	Docket #128, 149 Mitigation Plan; Docket #166, 2012 Tree and Shrub Survival Report	Section 3.5.7
	<b>CONSTRUCTION, RECLAMATION &amp; SOILS</b>		
Order 7, 8, 13	Construct and operate in accordance with Application and safety requirements. Construction suspended during adverse weather conditions. Provide weekly construction reports.	Docket #43, 44, 113, 111, 114, 115, 117, 123, 126, 131, 133, 137 work stoppage due to rain; Docket #52, 111 work stoppage due to blizzard; Docket #41, 43-45, 47, 49-52, 57-66, 68-77, 79-83, 85-87, 95, 100, 101, 104, 111-119, 121-127, 129-133, 135-146, 148, 150-165 Weekly Construction Reports	N/A
Findings of Fact 35; NDDH	Soil erosion minimized by use of BMPs during and after construction to	Docket #43, 49, 60-66, 69, 79, 85,	Section 3.6.2

Source of Project Specification	Description of Project Specification	Written Verification*	Site Verification*
(11-16-2010)	protect groundwater and soils/topsoils. NDDH concerns: minimize fugitive dust, degradation of waterways, storm water management, and noise.	86, 112, 113, 114, 152, 153 Report of BMPs being installed, repaired, or maintained; Docket #47, 115 Report controlling erosion via spraying with water trucks.	
Order 20, 28	Staging areas not located on cultivated land unless negotiated with landowners. Topsoil segregated and replaced.	Docket #41, 43, 44, 47, 49, 50, 60, 61, 64, 68, 74, 82, 85, 111, 114, 115, 116, 127 indicate segregating or replacing topsoil	Section 3.6.3
Findings of Fact 37; Order 27	Utility line crossings of graded roads bored. Utility lines buried to minimum 42in.	Bore Plan – Project Overview (Provided during inspection)	Section 3.6.4
App. p. 7-29	Noxious weeds controlled within vicinity of turbines	None.	Section 3.6.5
Order 12, 22	Temporarily disturbed areas will be restored. Pre-existing roads restored to satisfactory condition. Temporary roads removed. Area around each turbine restored promptly. Working areas used during construction must be repaired or restored to a condition that is equal to or better than the condition prior to construction	Docket #58, 60, 75, 81, 83, 85-87, 127, 129, 130, 131 Weekly Construction Reports indicating restoration of area.	Section 3.6.6
Order 18, 19, 21	Repair/replace all damaged fences and gates. Repair/replace damaged drainage tile. Waste removed & disposed regularly.	Docket #59, 61, 63, 74 Weekly Construction Reports indicating repairs to damaged fences; Docket #65, 87 Weekly Construction Reports indicating site cleanup	Section 3.6.7
<b>OPERATION</b>			
Order 8, 25 33	Construct and operate in accordance with Application and safety requirements. Extraordinary events (e.g. tower/turbine failure, injuries, wildlife fatalities) reported within 5 business days. Maintain records of compliance with Order and Certificate of Site Compatibility.	Docket #108, Environmental Incident Report	Section 3.7.1
Order 15, 21	Reclamation and maintenance throughout life of facility. Waste removed & disposed regularly.	None.	Section 3.7.2
Order 23, 26, 29	Educational materials, as requested, and notification of possible dangers to landowners. Safety measures for traffic control or to restrict public access. Procedure for handling complaints. Cooperation with landowners/residents to mitigate adverse effects.	Docket #107, Complaint Report; Docket #109, Letter re Complaint. Docket #58, 95 Weekly Construction Reports indicating installation of signage	Section 3.7.3

Source of Project Specification	Description of Project Specification	Written Verification*	Site Verification*
Findings of Fact 36; Order 16, 34; App. p. 6-10	Decommissioning plan in place prior to Project placed in-service. All structures removed and area restored upon facility retirement.	None.	N/A

**\*Note: Shaded boxes represent non-compliance or potential non-compliance issues.**

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## 3.0 Findings

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### 3.1 SITING & LOCATION OF FACILITY

#### 3.1.1 Designated Location and Facilities

The Project was built as proposed in the designated project area described in the Application, Application Supplements, and Order (**Figure 1**). Wenck observed 31 wind turbines; 15 turbines were located in Morton County and 16 turbines Oliver County. Associated facilities observed during the site visit included access roads, an electrical substation, meteorological towers and wind monitoring stations, markers indicating the location of underground electrical and feeder lines, and operations and maintenance buildings (**Appendix A; Appendix B**).

Several differences in the proposed project layout (Docket #35, Additional Site Layout Map) on file compared to the built facility were noted. These included the following:

- None of the turbine alternates were constructed (35A, 34A, 37A).
- Turbines 14 and 21 were not built.

These changes were due to final decisions of planned/alternate turbines and the decision to construct 3.0 MW turbines during the second phase (1B) of the Project.

#### 3.1.2 County/City Regulations

Conditional Use Permits (CUP) were documented for Oliver and Morton Counties (Docket #42). Oliver County also required a building permit, which was on file (Docket #42, Permit #620). The CUP for Morton County allowed 28 turbines to be constructed, and improvements to section line roads.

#### 3.1.3 Siting Issues

Siting criteria were analyzed in detail in the Application for the Project (Docket #7). Wenck confirmed during the site inspection that exclusion and avoidance areas were avoided as described in the Application, to the extent possible. Historical/cultural resources were avoided (see Section 3.4.2). No natural woodlands were impacted; cuts to shelterbelts were minimized to the extent possible. Impacts to wetlands were mitigated (see Section 3.5.4). Wenck also confirmed that impacts to selection and policy criteria were considered and kept at a minimum.

#### 3.1.4 Land & Agricultural Impacts

The Project was built as proposed within the estimated construction limits and right-of-ways. It appeared that the extent of construction and disturbance were within the maximum acreages estimated in the Application. Topsoil was segregated and safely stored for final reclamation. Crop production did not appear to be reduced surrounding the turbines, access roads, or along collection line routes that had been reclaimed (**Appendix A, Photos 2, 4, 11**), indicating that topsoil replacement and soil compaction were satisfactory. The Minnesota Power staff noted that any issues or landowner concerns related to agriculture or cropland are addressed promptly to maintain good rapport with the community.

### **3.1.5 Surrounding Community, Public Services, Safety**

There were no indications during the site inspection that the surrounding community or public were being impacted negatively due to the operation and infrastructure of the wind facility. All turbines were placed along access roads which spurred from main public roads. Roads were safe and appropriate signage was observed during the inspections (**Appendix A, Photos 1, 11**). The wind facility provides jobs for several people who reside in nearby towns.

### **3.1.6 Turbine Setbacks**

Wenck verified during the inspection that turbines were built at least 1,500 feet from occupied residences. Minnesota Power proposed setbacks of 300 feet from existing transmission lines and publicly improved and maintained road right-of-ways. During the field inspection, it appeared that these setbacks were followed.

## **3.2 PROJECT DESIGN & ENGINEERING**

### **3.2.1 Capacity**

The Project was authorized to build 16 2.3 MW and 15 3.0 MW turbines for a total capacity of 81.8 MW. The 31 turbines were inspected during the site visit (**Appendix A; Appendix B**).

### **3.2.2 Turbine Specifications**

All turbines were constructed as specified, 16 2.3 MW and 15 3.0 MW, 80 m hub height, 101 m rotor diameter. Each turbine had a concrete foundation, a control panel in the tower base, a pad-mounted transformer, and lightning protection (**Appendix A, Photos 3, 5, 10, 12**). Turbines were connected to a SCADA system, observed in the O & M Building control area. Lighting was not confirmed since the inspection took place during daylight hours but is assumed to be in compliance with the FAA since FAA approval was granted (Daniel McCourtney, pers. comm. 2012).

### **3.2.3 Collection Line & Substation**

Several points along the collection line system were observed and it appeared to be constructed generally where proposed (**Appendix B**). Points where the collection lines were bored under major roads were observed and no concerns were noted. Markers were in place (**Appendix B, Photo 9**). The collection line tied into a 230kV transmission line at the substation, as proposed.

### **3.2.4 National Electric Safety Code**

There was no written verification or certification of compliance with the National Electric Safety Code.

### **3.2.5 As-built Drawings and GIS Files**

As-built engineering design drawings and associated GIS files were submitted on 24 February 2012 within the 6 month time period specified after completion of construction activities.

## **3.3 PRE-CONSTRUCTION**

### **3.3.1 PSC-Required Documents**

A letter of intent was received 7 April 2009 (Docket #1). An Application for a Certificate of Site Compatibility was submitted 12 May 2009 (Docket #7), with supplements submitted on 9 July 2009 (Docket #14) and 18 August 2009 (Docket #20). Certificate of Site Compatibility 15 was issued on 29 September 2009 (Docket #46). On 15 December 2010 the Certificate of Site Compatibility was modified to allow for construction of 3.0 MW turbines. There was not a ten-year plan on file in the Project docket,

but searching the PSC website showed a 10-year plan submitted on 28 June 2012 by Minnesota Power filed under Case # PU-12-440.

### **3.3.2 Permits and Approvals from Other Agencies**

Several permits and approvals were identified in the Application as potentially required for the Project. Federal approvals were required by the Federal Aviation Administration (FAA) for potential construction of structures over 200 feet (Form 7460-1) and as-builts of constructed structures (Form 7460-2). A copy of these permits was not on file with the PSC. The Environmental Protection Agency (EPA) required a Spill Prevention Control and Countermeasure (SPCC) Plan for the facility and the US Army Corps of Engineers would have required a Section 404 permit for impacts to wetlands. Minnesota Power staff confirmed that that both permits were acquired, although neither was not on file with the PSC (Daniel McCartney, pers. comm. 2012).

Submitted state and local approvals on file included the Conditional Use Permits for Morton and Oliver Counties (Docket #42). Several other permits were identified as necessary but were not on file. The North Dakota Department of Health required an ND PES Permit and a Septic Tank and Drainfield Permits. Other permits included the ND Department of Transportation Utility Permit, ND Highway Patrol Overheight/Overweight Permit, and a ND Division of Emergency Management Emergency Planning and Community Right-to-Know Act Tier II report. Nevertheless, the Notes from the Preconstruction Conference (Docket #38) noted that all permits were obtained.

### **3.3.3 Pre-Construction Conference/Notice of Intent to Start Construction**

Record of the pre-construction meeting and notice of intent to start construction was on file (Docket #38).

### **3.3.4 PSC Approval of Modifications**

On 25 October 2010, a request to modify the facility was filed (Docket #84). On 8 November 2010 a request to modify the Certificate of Site Compatibility was filed to include 3.0 MW turbines in the project design (Docket #88). An Amended Findings of Fact, Conclusions of Law and Order was issued on 15 December 2012 allowing the proposed modifications to the facility (Docket #103).

## **3.4 CULTURAL RESOURCES**

### **3.4.1 SHPO Concurrence**

SHPO concurrence of all archeology reports was provided to the PSC, including concurrence on the modification of the facility (Dockets #67, 96, 120).

### **3.4.2 Cultural Site Avoidance**

Class I and III cultural resources surveys were recommended by the ND SHPO. Based on the Class I Cultural Resources File Search, four previously recorded cultural resources and four archaeological site leads were identified within 1 mile of the Project boundaries (Docket #7, Application). It appears that a Class III Cultural Resources Inventory Report was submitted to the SHPO (Docket #18), but no report was on file with the PSC, perhaps for confidentially reasons. No cultural resources maps were part of the Application or Amendments. The Application described measures that would be taken to avoid the potentially eligible features, including reroutes, turbine shifts, and fencing during construction. Although there were no reports on the PSC docket, Minnesota Power staff directed Wenck to areas where cultural resources were avoided by construction and Wenck observed that the potentially eligible cultural sites were preserved.

### 3.4.3 Reporting

No new discoveries of cultural, archeological, or historic sites have been reported to the PSC to date. Presumably no new sites were encountered during construction of the Project.

## 3.5 NATURAL RESOURCES

### 3.5.1 Whooping Cranes

Measures identified specifically to minimize potential Project impacts to whooping cranes included: stop-work within two miles of whooping cranes observed during construction; curtailment of turbines within two miles of whooping cranes observed during operation; and burying/marking power lines within 1 mile of potential stopover habitat (e.g. wetlands). No reports of whooping cranes to the USFWS have been filed with the PSC to date; presumably none have been observed within the project area during this time. Minnesota Power has submitted an annual Wildlife Incident Report for the Project, and no whooping cranes were observed or directly impacted. All feeder lines were buried and no above ground power lines were constructed in association with the Project.

### 3.5.2 Wildlife

Additional measures were proposed to minimize impacts to other wildlife in the Project area and Wenck verified several of these measures. All collection lines were buried to avoid bird collisions (**Appendix A, Photo 10**). No additional transmission lines were constructed for the Project, although the transmission line constructed for a separate project (230 kV Transmission Line, Morton and Oliver Counties; PU-09-587) did have bird deterrents nearby wetlands. Impacts to wetland habitats were minimized if possible, and a mitigation site was constructed to offset impacts.

Some measures proposed by Minnesota Power or recommended by the USFWS were not able to be confirmed. There was no written verification that an Avian and Bat Protection Plan and Adaptive Management Plan were implemented. However, Minnesota Power has submitted a Wildlife Incident Report (Docket #175) detailing any wildlife mortality observed on the Project site. Meteorological towers were not self-standing as recommended by the USFWS, though they did have bird deterrents on the guy wires to help prevent bird collisions. The USFWS also requested that construction be avoided during migratory bird nesting season (Feb 1-July 15). It appeared surface disturbance of the Project occurred before this time (Docket #41, Initial Weekly Construction Report week ending Oct. 17 2009), degrading habitat prior to the migratory bird nesting season to deter nesting in the area.

The NDPR requested that habitat for the yellow bullhead (*Ameiurus natalis*) is avoided. Wenck confirmed that this habitat was not impacted by the Project.

### 3.5.3 Native Prairie

Native prairie appeared to have been avoided to the extent possible by siting most turbines in cultivated land. However, some turbines were placed on range land that had native prairie communities (**Appendix A, Photo 1, 3**). Minnesota Power had considered avoidance of native prairie during the siting process (Docket #7, Application) and it appeared during the site inspection that the impact was minimized as feasible, through minimizing the width of roads through these areas and minimizing the area disturbed around each turbine.

### **3.5.4 Wetlands**

During the construction inspection, Wenck confirmed that all turbine locations avoided wetlands and all streams crossings were avoided. Locations of most jurisdictional wetlands were avoided by boring underneath them to install collection lines (Bore Plan, provided during inspection). It did not appear that the vegetation along these wetland margins had been disturbed. However, access road construction did impact some wetland areas, but no Section 404 permit was on file with the PSC. Presumably a permit was filed with the US Army Corps of Engineers because a wetland mitigation site was construction for the Project, and was observed during the inspection. (**Appendix A, Photo 7**). The wetland appeared to have been planted with native hydrophytic vegetation, which had established throughout the area. Upland areas had also been planted and established with native vegetation. The area appeared to be well maintained and in good condition.

### **3.5.5 Reporting**

Minnesota Power utilizes a Wildlife Incident Report System to monitor, report, and document any wildlife fatalities observed. These reports are documented on a monthly basis, and a yearly report summarizes these findings and was on file with the PSC (Docket #175). There were no reports filed to date of the presence of threatened or endangered species or bald or golden eagles during construction or operation.

### **3.5.6 Reclamation & Reseeding**

Wenck observed that most disturbed areas in non-cropped lands were reclaimed and reseeded after construction. Erosion was not a concern, and no annual weed outbreaks were noted. Minnesota Power staff stated that a native seed mix, approved by the NRCS, was used on all non-cropped areas. However, the timing of the inspection (after the growing season in late fall) and the fact that reclamation and reseeded had recently occurred or was ongoing, confirmation that native species had been planted or established was not able to be confirmed by Wenck staff.

### **3.5.7 Tree & Shrub Mitigation**

Two mitigation plans were approved for the Project (Docket #128, 149) documenting two planting locations for tree and shrubs. Bison 1A (2.3 MW turbines) had a separate mitigation plan from Bison 1B (3.0 MW turbines). A 2012 Survival Monitoring Report (Docket #166) was submitted on 10 September 2012 for both plantings. The report indicated that Trees/Tall shrubs had adequate survival, but low shrubs had only 30% survival. These shrubs were replaced in 2012 to meet the survival requirements. So far, Minnesota Power has adequate survival, with an average survival across plantings of 167%.

## **3.6 CONSTRUCTION, RECLAMATION & SOILS**

### **3.6.1 Construction Management & Safety**

Weekly Construction Reports were submitted in fulfillment of the Order to provide weekly construction reports and these submissions indicated that construction of the Project proceeded in accordance to the Application and safety requirements (Docket #41, 43-45, 47, 49-52, 57-66, 68-77, 79-83, 85-87, 95, 100, 101, 104, 111-119, 121-127, 129-133, 135-146, 148, 150-165). Twelve weekly construction reports indicated work stopped due to rain (Docket #43, 44, 113, 111, 114, 115, 117, 123, 126, 131, 133, 137) and twice due to blizzards (Docket #52, 111), indicating that construction was halted at times during adverse weather conditions, as ordered by the PSC.

### 3.6.2 Erosion & Sedimentation

Best Management Practices (BMPs) were used as part of the construction and maintenance of the Project to minimize erosion and control sediment. Weekly Construction Reports documented installation and maintenance of BMPs (Docket # 43, 49, 60-66, 69, 79, 85, 86, 112, 113, 114, 152, 153). Culverts were installed where necessary to allow for the natural flow of drainage (**Appendix A, Photos 5, 6, 12**). No erosion problems were observed around the utility junction boxes; cement bollards and gravel were in place around each. In general, erosion problems were not an issue and infrastructure of the Project area was well-maintained.

### 3.6.3 Minimization of Impacts

In general it appeared during the site visit that measures were taken to minimize the overall impact of the Project and the extent of land and soil disturbance. Most areas that been disturbed during construction of the Project were agricultural fields and any impacts to native rangeland were minimized to the extent possible. Crops were harvested at the time of the survey, but showed no indication of poor development or production in areas where the soils would have been disturbed compared to areas not disturbed. The laydown yard for the Project had been reclaimed (**Appendix A, Photo 2**). The cropland had been satisfactorily reclaimed, supported by the fact that the cropland was in use and appeared to be in good condition compared to areas that had not been disturbed. Wenck observed that all topsoil appeared to be replaced to the required depth.

### 3.6.4 Utility Lines

Wenck verified that all county road and highway crossings had been directionally bored, with the route of the underground utility line indicated by red markers in all locations (**Appendix A, Photo 10**). Minnesota Power reported that the bore for each of these crossings began and ended further out in adjacent agricultural fields, not in the road ditches. The vegetation in the ditches did not appear to have been disturbed. The crossings include 31<sup>st</sup> St., 52<sup>nd</sup> St., 32<sup>nd</sup> St., 86<sup>th</sup> Ave., and County Road 140<sup>th</sup> West. All utility lines appeared to be buried at the properly required depth.

### 3.6.5 Noxious Weeds

Minnesota Power indicated annual and noxious weeds are controlled with herbicide on a regular basis several times throughout the summer months around turbines and the substation. Wenck did not observe any weed outbreaks or problem areas of noxious weeds. Vegetation was sprayed around the base of each turbine on the gravel pad and at the substation to control weeds.

### 3.6.6 Reclamation & Roads

Most of the areas of the Project which had been disturbed during construction appeared to be properly restored (**Appendix A, Photo 2**). During the construction inspection, Wenck noted that all county roads and highways within the Project area appeared to be in good condition and properly maintained. The gravel pads surrounding the tower structures were all well-maintained and in excellent condition (**Appendix A, Photos 3, 5, 12**). They appeared to have been constructed properly. There was no soil slumping or settling, no open trenches, and no areas of erosion. Crops were planted as close as possible to the tower bases. None of the crops showed visible signs of poorer production or vigor, which would indicate improper topsoil replacement. Also refer to Section 3.5.6 Reclamation and Reseeding.

### 3.6.7 Repairs & Waste

All fences and gates were in place and fully operable. Where landowners refused new fence replacements, waivers were on file (Docket #134, Fence waiver). Numerous new gates had been installed for the Project where access roads crossed fencelines (**Appendix A, Photos 1, 10**). Cattle guards

were installed at the gates when necessary (**Appendix A, Photo 9**). Minnesota Power reported there had not been any agricultural fields with drainage tile impacted by construction of the Project. There was no waste, debris, or abandoned equipment observed during the inspection. The site appeared to be regularly maintained and no remnants of the construction phase were noted. Several weekly construction reports documented cleaning up waste and debris around the Project site (Docket #65, 87).

### **3.7 OPERATION**

#### **3.7.1 Safety & Record-keeping**

No concerns were identified during the site review that would indicate that Project operation was out of compliance with the Application or safety regulations, other than the minor concerns noted in this report. Examples of operational safety measures observed at the site include: use of personal protective equipment, signs marking safety hazards for employees at the O & M building and at towers, and vehicle safety measures.

Two extraordinary events were on file with the PSC. The first incident occurred on 25 January 2011 when a transformer exploded for an unknown reason (Docket #108), spilling some mineral oil; most was captured by in a concrete pit, with some absorbed by snow and gravel. The second incident occurred on 19 March 2011 when a transformer overheated, spilling 185 gallons of mineral oil into a concrete pit and some absorbed by adjacent crushed rock and gravel. Both incidents were reported to the North Dakota Department of Health and North Dakota Department of Emergency Services. The oil was contained, and the area was remediated through environmental cleanup actions.

#### **3.7.2 Maintenance**

Wenck observed that Minnesota Power has in place an on-going maintenance schedule. Wenck noted that the gravel pads surrounding the tower structures were all well-maintained and in good condition. Annual weeds were sprayed regularly to keep them under control. Wenck did not observe any areas of exposed soil remaining from construction activity or the on-going operation of the Project that were in need of reclamation. There was no waste, debris, or abandoned equipment observed during the inspection. The site appeared to be regularly maintained.

#### **3.7.3 Public Contact & Safety**

No examples of educational materials for landowners or the public were noted at the Project Site or on file with the PSC. However, Wenck observed that danger/safety warnings were in place on junction boxes, tower doors and electric boxes, surrounding the substation, and on markers indicating buried utility lines (**Appendix A, Photos 10**). Minnesota Power reported that there are no security systems in place on the doors to the towers. However the doors are locked and regularly monitored. There was a security fence in place surrounding the substation. Wenck did not identify any areas where traffic control signs were necessary within the Project area that did not already have signs posted. No formal complaints have been filed with the PSC to date. Wenck received verbal confirmation from Minnesota Power staff that landowner and resident concerns are addressed promptly and that Minnesota Power makes every reasonable attempt to alleviate problems caused by the facility. One complaint was on file (Docket #107), regarding increased TV interference. Minnesota Power resolved the matter promptly (Docket #109).

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## 4.0 Issues to Resolve and Recommendations

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### 4.1 PROJECT SPECIFICATIONS NEEDING WRITTEN VERIFICATION

Several components of the Project were asserted in the Application or proposed construction and could be verified in writing, but have not been filed with the PSC. Table 2-1 summarizes these items, which are indicated as those shaded in the “Written Verification” column, indicating no written verification was provided where applicable and necessary. Wenck does not consider any of these items to be critical for Project compliance. However some were more important than others and Wenck suggests they be on file with the PSC to confirm compliance. Wenck recommends the PSC request from Minnesota Power the following list of “Necessary” items, and if the PSC deems appropriate, the list of “Potential” items could also be requested.

#### Necessary Items

- Federal Permits identified as necessary for the Project (or indication the permit was deemed unnecessary: FAA Form 7460-1, EPA SPCC Plan, US ACOE Section 404 permit .
- Local and State Permits identified as necessary for Project (or indication the permit was deemed unnecessary): Department of Health ND PES and Septic Tank and Drainfield Permits, the ND Department of Transportation Utility Permit, ND Highway Patrol Overheight/Overweight Permit, and ND Division of Emergency Management Emergency Planning and Community Right-to-Know Act Tier II report, .
- Decommissioning plan that was required before the Project was placed in service.

#### Potential Items

- Written verification of compliance with National Electric Safety Code.
- Verification that no new discoveries of cultural, archeological, or historic sites were found during construction.
- Examples of educational materials to be provided to landowners or the public, if requested.

### 4.2 TREE & SHRUB REPLACEMENT

The replacement of trees and shrubs to mitigate those removed during construction of the Project had been planted in the spring of 2011 at a 3:1 ratio (2:1 was required). Wenck verified that the replacement plantings were installed; and the latest report indicates that the average survival across plantings stands at 153%. However, survival monitoring is required for the three years after the anniversary of the planting to confirm that survival is over 75%, until spring of 2014. Wenck recommends that the PSC proceed with its requirement for the full three years of survival monitoring to ensure 75% survival of the replacement planting.

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## 5.0 Conclusions

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Overall, the Project appeared to have been constructed as designed with minimal impacts to the surrounding natural or human environment. The Project site was well-maintained and in good condition. However, Wenck observed several issues that may need to be resolved before the Project is considered complete and in full compliance. This includes provision of written documentation of particular aspects of Project implementation and continued tree and shrub survival monitoring. None of these are critical issues, but the PSC should determine which are necessary for the company to comply with and then notify the company what actions are required on their part.

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## 6.0 References

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North Dakota Public Service Commission (ND PSC). 2013. Online Case Search. Available from:  
[http://www.psc.nd.gov/database/company\\_case\\_list.php](http://www.psc.nd.gov/database/company_case_list.php). Accessed January, 2013.

McCourtney, Daniel. 2012. Environmental Compliance Specialist, ALLETE, Inc. Personal Communication:  
discussion during site visit.

Pontious, Michael. 2012. Project Manager, Minnesota Power. Personal Communication: discussion  
during site visit.

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## 7.0 Signatures

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The services performed by Wenck scientists for this project have been conducted in a manner consistent with the degree of care and technical skill appropriately exercised by professionals currently practicing in this area under similar time and budget constraints. Recommendations and findings contained in this report represent our professional judgment and are based upon available information and technically accepted practices at the present time and location. Other than this, no warranty is implied or expressed.

Project Manager, Kevin Magstadt, and Luke Toso, Botanist and Natural Resources Specialist, prepared the report.

  
\_\_\_\_\_  
Kevin Magstadt, P.E., Associate/Regional Manager

1/29/13  
\_\_\_\_\_  
Date

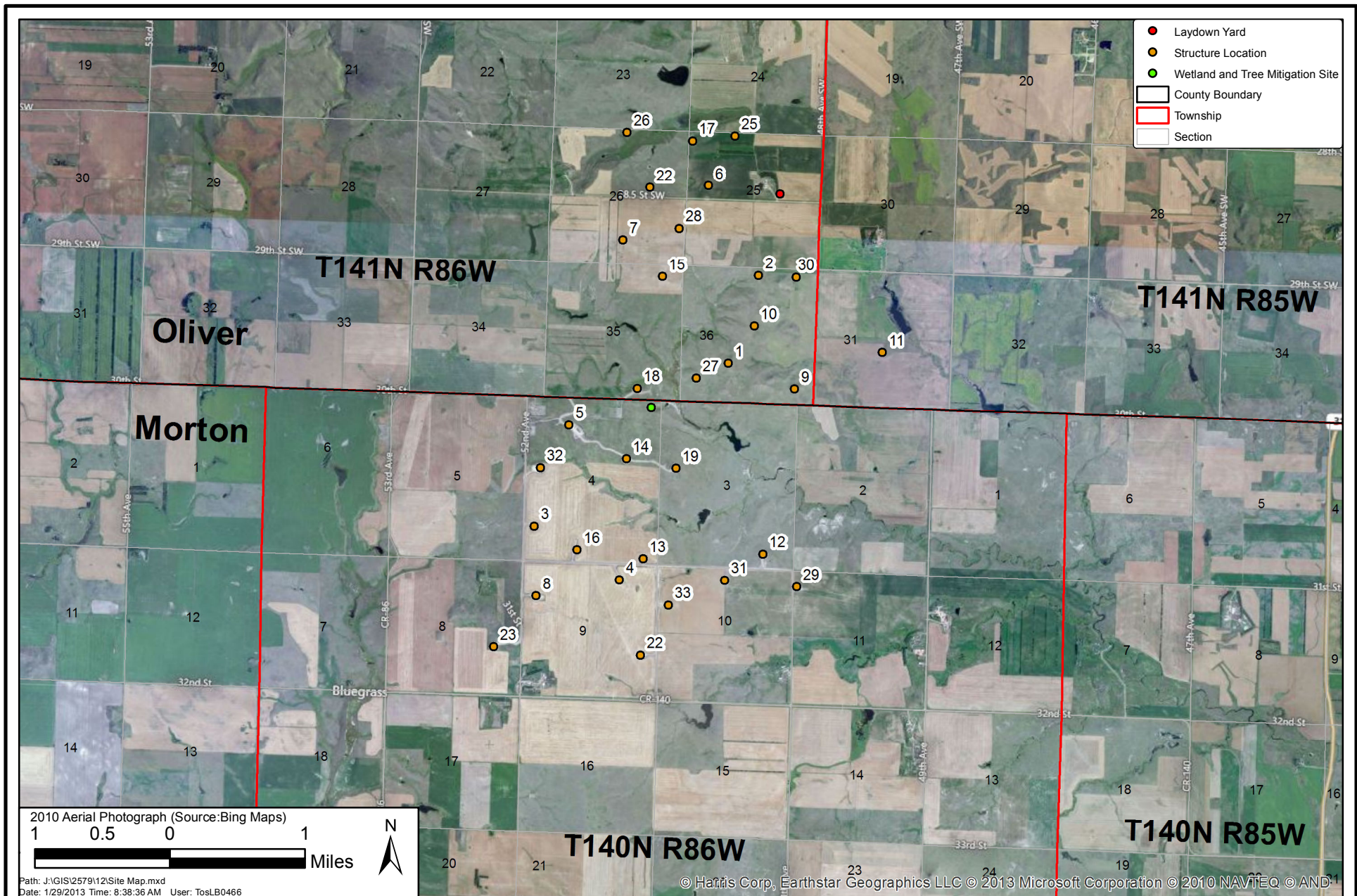
  
\_\_\_\_\_  
Luke Toso, Botanist/Natural Resource Scientist

1/29/2013  
\_\_\_\_\_  
Date

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## Figures

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NORTH DAKOTA PUBLIC SERVICE COMMISSION

Project Area and Field Observation Map

  
 Engineers - Scientists  
 Business Professionals  
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Figure 1

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## **Appendix A**

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### **Photographs**



**Photo 1.** Direction: West. Access road and cattle guard for Structures 30, 2, 10, 1, and 27; Structures 30 (left) and 2 (right) are shown here. The access road was well maintained, and road margins appeared to have been reclaimed with native species successfully.



**Photo 2.** Direction: Northwest. Laydown yard that had been reclaimed by Minnesota Power and put back into cropland by landowner.



**Photo 3.** Direction: Northwest. Typical turbine pad and turbine for the project; Structure 1-30 is shown here. The gravel pad was well maintained and free of noxious weeds.



**Photo 4.** Direction: Southwest/West. Substation, operations and maintenance yard (buildings seen behind the turbine on the right) and, from right to left, Structures 18, 5, and 14. A restored feeder line scar is also shown here going towards the substation.



**Photo 5.** Direction: South. Access road to Structure 28. Note culverts in place along roadway (black arrows).



**Photo 6.** Direction: Southwest. Culverts installed along access road to Structure 26.



**Photo 7.** Direction: Northeast. Wetland mitigation site and tree and shrub mitigation site for Bison 1A. Planted trees are indicated by green fence posts (right).



**Photo 8.** Direction: South. Tree and shrub mitigation site for Bison 1B. Tree and shrubs appeared to be well established, but given the timing of the inspection (late fall after leaf drop), no estimate of survival was documented.



**Photo 9.** Direction: South. Cattle guard installed along access road.



**Photo 10.** Direction: Structure 32 with associated access road, gate, and feeder line marker (black arrow).



**Photo 11.** Direction: North. View of 52<sup>nd</sup> Ave, which had been improved by Minnesota Power and was currently in good condition and well maintained. This was typical for roads in the project area. Reclamation of the road margins was successful, as evidenced by establishment of vegetation.



**Photo 12.** Direction: South. Structure 29 with associated culvert.

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## **Appendix B**

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### **Field Observation Points**

**Appendix B: Field Observation Points (GPS Coordinates)**

<b>Description</b>	<b>Latitude*</b>	<b>Longitude*</b>
Structure 1	46.98538	-101.52438
Structure 2	46.99492	-101.52010
Structure 3	46.96729	-101.55395
Structure 4	46.96184	-101.54035
Structure 5	46.97825	-101.54901
Structure 6	47.00438	-101.52838
Structure 7	46.99829	-101.54150
Structure 8	46.95982	-101.55328
Structure 9	46.98285	-101.51392
Structure 10	46.98947	-101.52048
Structure 11	46.98707	-101.50033
Structure 12	46.96508	-101.51801
Structure 13	46.96417	-101.53674
Structure 14	46.97481	-101.53988
Structure 15	46.99446	-101.53513
Structure 16	46.96489	-101.54711
Structure 17	47.00912	-101.53113
Structure 18	46.98240	-101.53855
Structure 19	46.97397	-101.53208
Structure 20	47.00396	-101.53759
Structure 22	46.95385	-101.53665
Structure 23	46.95424	-101.55965
Structure 25	47.00976	-101.52448
Structure 26	47.00976	-101.54140
Structure 27	46.98370	-101.52933
Structure 28	46.99972	-101.53275
Structure 29	46.96171	-101.51259
Structure 30	46.99485	-101.51421
Structure 31	46.96216	-101.52391
Structure 32	46.97358	-101.55328
Structure 33	46.95931	-101.53256
Wetland and Tree Mitigation Site	46.98038	-101.53625
Laydown Yard	47.00369	-101.51714

\*Data Source: NAD 1983

