

# Basin Electric Power Cooperative

## 345 kV Electrical Transmission Line

### Mercer, Dunn, McKenzie, Williams Counties, ND

#### Construction Inspection Report - Judson Electrical Substation

ND PSC Case No. PU-11-696

Keitu Project No. 569-213

*Prepared by:*  
**Keitu Engineers & Consultants, Inc.**  
1403 27<sup>th</sup> St NW  
PO Box 98  
Mandan, ND 58554  
T: +1 (701) 667-1800  
F: +1 (701) 667-1802  
[www.keitu.com](http://www.keitu.com)

September 3, 2015

## Table of Contents

Executive Summary.....	4
Introduction.....	5
Purpose and Scope of Inspection.....	5
Methods.....	5
General Project Information.....	6
Site Visit Observations.....	6
Conclusions.....	7
Certification.....	7
Appendix A. General Project Photos.....	8

## **Executive Summary**

The State of North Dakota, acting through its North Dakota Public Service Commission (NDPSC), Division of Public Utilities, has contracted Keitu Engineers & Consultants, Inc. (Keitu) to perform consulting services for construction and post-construction siting inspections. This report represents the findings of the construction inspection performed on Tuesday, September 1, 2015. The Judson Electrical Substation (Project) portion of the project is located in Mercer County in the State of North Dakota. Construction for the Project began in September 2014 with anticipated completion in late October 2015. The purpose of the construction inspection was to ensure the Project was being constructed in compliance with the siting laws, rules, and the applicable PSC Order for the Project. Prior to the construction inspection, Keitu reviewed all Project documents to identify any and all aspects requiring site verification.

The Project was visually inspected on September 1, 2015 by Keitu's project engineer Nathan Gaffrey, P.E. In addition, Mr. Gaffrey was escorted around the project by Cameron Mercer, Foreman, Great Southwestern Construction, Inc., Cris Miller, P.E., Senior Environmental Project Administrator, Basin Electric Power Cooperative and Andy Telehey, Assistant Construction Inspector Engineering & Construction, Basin Electric Power Cooperative. The three aforementioned escort personnel have been involved with construction or oversight of the project since its inception.

Overall, the project was very well-maintained and in good condition. It appeared to be constructed as planned with efforts to minimize impacts.

## Introduction

The Judson Electrical Substation is currently under construction at the time of this report. The Project will be operated by Basin Electric Power Cooperative. The Project will accept 345 kV electricity and step down the 345kV to 230 kV for the overall project. 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 on Case No. PU-11-696 on April 23, 2014, granting a Certificate of Site Compatibility for Corridor Compatibility No. 152 and Route Permit No. 164.

## Purpose and Scope of Inspection

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 welfare of the citizens of North Dakota. Construction inspections ensure the Project is constructed in compliance with siting laws, rules, and the applicable Commission Findings of Fact, Conclusions of Law, and Order (Order).

The North Dakota PSC retained Keitu to complete construction inspections and post-construction inspections of the Project. The inspection process included a review of the Application for a Certificate of Site Compatibility, Order, and other applicable documents to determine Project-specific siting and construction requirements; a site visit and inspection of facilities; documentation of compliance; and a report summarizing findings. This report includes, but is not limited to, site visit observations, documentation of compliance deficiencies, and a summary of issues, if any, that should be addressed for the Project to be considered in full compliance.

## Methods

Keitu reviewed North Dakota siting laws and rules, the Application for a Certificate of Site Compatibility, and the Order for the Project to identify what Project-specific documentation was required for compliance.

Nathan Gaffrey, P.E., Project Engineer, representing Keitu visited the Project site on September 1, 2015. The site was visually inspected by Keitu staff with a jobsite site survey lead by Cameron Mercer, Foreman, with Great Southwestern Construction, Inc., Cris Miller, P.E., Senior Environmental Project Administrator, Basin Electric Power Cooperative and Andy Telehey, Assistant Construction Inspector Engineering & Construction, Basin Electric Power Cooperative (BEPC) Digital photographs were taken showing typical Project infrastructure and documenting problem areas, if any, are located in Appendix A.

## General Project Information

**Electrical Contractor:** Great Southwestern Construction, LLC, Castle Rock, CO

**Project Owner:** Basin Electric Power Cooperative, Bismarck, ND

## Site Visit Observations

**Temperature:** 71 °F, Calm-No Wind

**Time:** 1:00 PM CST

The project is located at street address 5061 143rd Ave NW, Williston, ND. At the time of the visit, the project was under construction. The project had the steel electrical structures erected for accepting the electrical service from the Charlie Creek Transmission line portion of the project. These steel structures, including the electrical transformers and electrical breakers, are mounted on 4,000 psi strength concrete pads per Andy Telehey with BEPC and as noted on the project drawings. The electrical transformer contains 25,350 gallons of fluid per name plate data. There is a containment basin serving the electrical transformer that is sized to account for approximately 29,730 gallons of net capacity that takes into consideration the precipitation freeboard of a 100-year rainfall event. The containment basin is monitored and serviced by a vacuum-type truck should a release event occur. The containment basin is not tied into the site storm water drainage system. The electrical breakers and the 345 kV to 230 kV transformer were also mounted in place on concrete pads.

The electrical wiring duct enclosures are subsurface mounted and include both the electrical wiring and fiber optic cable. The fiber optic cable is housed in highly visible orange conduit. In order to disperse of any possible precipitation making its way into the enclosures, they are tied into a French drain system which is then attached to the site's storm water drainage system. The storm water drainage systems drain directly to a storm water retention pond located to the west of the site.

The control room serving the substation was in place and currently being wired in. The control room is served by overhead air conditioning ductwork with direct-expansion air handling units mounted at both ends of the room. The floor in the control room is raised type configuration and much of the electrical control wiring serving the control panels is routed in this space.

Throughout construction a Storm Water Pollution Prevention Plan commonly known as a "SWPPP" is being carried out by the onsite contractors per discussion with Mr. Telehey. The inspections are completed every 14 days or within 24-hours after a rain event greater than 0.25 inches. The SWPPP inspections are to occur until 70% native vegetative cover is in place.

## Conclusions

Overall, the Project appeared to be constructed as designed with minimal impacts to the surrounding natural and human environment to-date. The Project site was in good condition and well maintained.

## Certification

I declare that I have the specific qualifications based on education, training, and experience to assess a property of this nature; I believe to the best of my professional knowledge the contents of this report accurately represents the condition of this project to date.



Nathan J. Gaffrey, P.E.  
Project Engineer

## Appendix A. General Project Photos



Photo 1 –Overall site picture looking southeast.



Photo 2 – Electrical wiring enclosure. Fiber optic cabling located in orange conduit.



Picture 3 – Typical structural pier and mounting bolts.



Picture 4 – Electrical transformer looking northeast.



Picture 5 – Electrical breakers looking south.