

*Hankinson-Ellendale
Transmission Line
Reroute*
**Construction
Inspection Report**

Otter Tail Corporation

Prepared for:

**NORTH DAKOTA
PUBLIC SERVICE COMMISSION**
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Executive Summary

The North Dakota Public Service Commission (PSC) retained Wenck Associates, Inc. (Wenck) to complete a construction inspection of the Hankinson-Ellendale Transmission Line Reroute, constructed in Richland County, ND by Otter Tail Corporation (Otter Tail) in 2008. The purpose of the construction inspection was to ensure the project was constructed in compliance with the siting laws and rules and the applicable PSC Order for the Project. Prior to the construction inspection, Wenck reviewed all Project documents to identify those which required site verification.

The Site was visually inspected on August 24, 2011 by Wenck. Overall, the Project was well-maintained and in good condition. It appeared to have been constructed as planned with 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. Wenck recommends the PSC request the following from the company: 1) written documentation of several particular aspects of project implementation identified during the document review, 2) regular monitoring of the portion of the reroute within flooded areas, 3) documentation of whether trees and shrubs were, or were not, removed during construction of the Project, and if so, reports of replacement plantings and subsequent survival monitoring 4) provision of a signed and sealed copy of the as-built drawings. The PSC will need to decide whether these recommendations are necessary to fulfill Project obligations. Wenck expects any follow-up action taken by Otter Tail to address these particular issues can be corroborated in writing and will not require a further site visit.

1.0 Background

1.1 INTRODUCTION

The Hankinson-Ellendale 230kV Transmission Line Reroute (Project) was completed in 2008 in Richland County, North Dakota. The Project is operated by Otter Tail Corporation (Otter Tail). The Project comprises a 0.64-mile long reroute of a 230 kV transmission line near Grass Lake, west and north of the town of Lidgerwood, in Sections 31 and 32, T131N, R52W and Section 6, T130N, R52W, Richland County, North Dakota. 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-07-766 on March 6, 2008, granting Certificate of Site Compatibility for a Transmission Facility Corridor No. 102 and Route Permit No. 112 for the Project.

1.2 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 the welfare of citizens of North Dakota. Construction inspections ensure the project is constructed in compliance with the siting laws and rules 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 Hankinson-Ellendale Transmission Line Reroute Project. The inspection process included a review of the Siting Plan, 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, documentation of site visit observations, documentation of compliance deficiencies, and a summary of issues that should be addressed for the Project to be considered complete and in full compliance.

2.0 Document Review

2.1 METHODS

Wenck reviewed North Dakota siting laws and rules, the Letter of Intent for the Certificate of Corridor Compatibility and Route Permit (Letter of Intent), and the Order for the Project to identify what Project-specific documentation was required for compliance. Wenck then reviewed Project documents in the PSC Online Case Search (ND PSC 2012) to identify those siting laws and rules and Letter of Intent and Order assertions that already had written verification, those which still required documentation, and those which required physical site verification.

2.2 FINDINGS

The following table includes a list of components of the Project that were asserted in the Letter of Intent and Order which could be documented post-construction to verify compliance with siting laws and rules and the Order for the Project (**Table 1**), via either written documentation or physical site verification. If Wenck found written documentation in the online PSC files for a particular Project component, this is marked in the second column of the table. If physical site verification was possible, this was marked in the third column and that particular component was verified during the site inspection (Section 3.0).

Several components of the Project were asserted in the Order or proposed construction but have no written documentation showing that they were indeed implemented or constructed as planned, and physical site verification is not applicable. *This includes all items listed in Table 1 which have shaded boxes in the second column*, indicating written verification is possible and appropriate, but it is lacking from current files. The PSC should request written verification from Otter Tail for these items, to show the Project is in full compliance.

Table 1. Hankinson-Ellendale Transmission Line Reroute Project Document Review Summary

Description of Project Component/Assertion	Written	
	Verification in PSC Files*	Site Verification
Pre-Construction conference record	X	
Permits/Approvals from other agencies	X	
Intent to start construction notice	X	
Weekly construction reports	X	
Construction according to Application and safety requirements		
Reports of presence of threatened, endangered species or bald or golden eagles, if applicable		
Reports of cultural, archeological, historical resources found, if applicable		
Restoration of pre-existing roads, lanes, temporary roads		X
Reclamation and clean-up continuous with construction	X	
Reclamation/reseeding according to NRCS or landowner		X
Reclamation and maintenance throughout life of facility		X
Compliance with tree/shrub 2:1 replacement, monitoring 3 years		X
As-built drawings within 90 days after construction	X	
Mitigation of television & radio interference		
Coordination with landowners to implement damage mitigation measures		
Repair/replace all fences and gates, if applicable		X
Commission approval of changes in structure locations	X	

*Note: Shaded boxes indicate documentation is lacking and site verification is not applicable.

3.0 Site Inspection

3.1 METHODS

Kevin Magstadt, P.E. and Sara Simmers of Wenck visited the Project area on August 24, 2011. The site was inspected visually along the entire 0.64 mile reroute by walking within the transmission line right-of-way. The west end of the reroute which crossed and then paralleled an existing gravel road (90th St SE) was flooded at the time of the survey by waters of Grass (Sand) Lake. Digital photographs (Canon Power Shot SD1300 IS, 12 megapixel) were taken showing 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) (**Appendix B**).

3.2 OBSERVATIONS & FINDINGS

3.2.1 Engineering/Construction/Design & Soils

The following aspects pertaining to engineering, construction, or design of Project infrastructure were inspected at the site.

- *Roads Restored to Previous Use.* No temporary or permanent new roads were constructed for the Project; existing roads were used to access pole locations. The reroute crossed and paralleled the existing gravel road 90th St SE, however this road was closed and flooded by Grass (Sand) Lake at the time of the survey (**Appendix A, Photos 1, 3, 5**). The visible portion of the road appeared to be in good condition and maintained with no problems related to the transmission line reroute. Any road problems due to the reroute along the flooded portion of the road will no longer be able to be evaluated.

- *On-going Reclamation and Maintenance.* Within the unflooded portions of the reroute, 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. Soils and vegetation appeared to be properly reclaimed. Poles were upright and all poles and wires appeared to be properly maintained and in good condition (**Appendix A, Photos 1, 3-5**). Standing water along the reroute due to flooding may lead to long-term damage or problems to the poles or lines and should be monitored.
- *Fences/Gates Repaired/Replaced.* There were no locations where fences or gates were removed for the Project. Wenck did not observe any fences or gates missing which would have been impacted by construction.
- *As-built Drawings and GIS Files.* Otter Tail had submitted as-built drawings and GIS files to the PSC as required after construction of the Project (ND PSC 2011, PU-07-766, Docket #26). Wenck verified during the inspection that the Project had been constructed according to the as-built drawings. The as-built drawings on file are not signed and sealed by a registered engineer; Wenck suggests that Otter Tail submit sealed as-builts for the Project.

3.2.2 Natural Resources (Wildlife, Wetlands, Vegetation)

The following requirements pertaining to natural resources, including wildlife, wetlands, and vegetation, were inspected at the Project site.

- *Reclamation/Reseeding According to NRCS or Landowner, if applicable.* It appeared that the locations of the poles along the reroute where there would have been soil disturbance were all within or nearby the ditch of the existing gravel road 90th St SE and would not have required reseeding. However some of the poles were in standing water and not able to be assessed at the time of the survey (**Appendix A, Photo 1; Appendix B, Point 464**). The vegetation around the poles outside of the flooded area

appeared to have naturally revegetated and cover was satisfactory (**Appendix A, Photos 4-5; Appendix B, Point 465**).

- *Compliance with Tree and Shrub Replacement, Three-Year Monitoring.* An email documenting a pre-construction conference call for the Project stated that Otter Tail would note in final documentation whether or not any trees were removed during construction (ND PSC 2012, Docket #21). There was no further documentation in the file regarding tree/shrub removal. Wenck did not observe any patches of trees or shrubs that would have been affected by Project construction, though it is unclear whether any were removed. Wenck suggests Otter Tail provides written verification stating whether or not trees were removed, as they stated in the pre-construction conference. If trees were removed, documentation of replacement and monitoring would be required.

4.0 Issues to Resolve and Recommendations

4.1 WRITTEN VERIFICATION OF PROJECT IMPLEMENTATION

As noted in Section 2.0, several components of the Project were asserted in the Order, plans, or proposed construction, but have not been documented with the PSC. Many of these components could be verified easily with copies of final construction reports or reports from the local operations office – any type of written documentation showing that the Project was indeed implemented or constructed as planned, or that particular impacts have not occurred. Wenck recommends that the PSC requests from Otter Tail the list of items which, according to our review of the PSC files, have not been documented in writing. This would include all items listed in Table 1 which have shaded boxes in the second column (Section 2.0). The PSC may be able to verify some of the items/issues from other records it has available.

4.2 FLOODING OF REROUTE

The justification for the short reroute of this transmission line was to avoid the waters of Grass (Sand) Lake. However flooding in the region has continued to raise the level of the lake and the west end of the reroute was within standing water at the time of the survey. Standing water may lead to long-term damage or problems to the poles or lines, as was the concern with the original route. Wenck suggests the reroute should be regularly monitored for problems.

4.3 TREE & SHRUB REMOVAL

It is unclear whether any trees or shrubs were removed for the Project. Otter Tail stated in the pre-construction conference that it would note in final documentation whether or not any trees were removed, but this was not provided. Wenck suggests Otter Tail provide information about

tree/shrub removal. If trees were removed, documentation of replacement and monitoring would be required for fulfillment of the Order.

4.4 AS-BUILTS

As-built drawings were submitted by Otter Tail as required by the Order, but Wenck recommends the PSC request a copy signed and sealed by a registered engineer for their records.

5.0 Conclusion

Overall, the Project appeared to have been constructed as designed with minimal impacts to the surrounding natural or human environment. The unflooded portions of the Project site were 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, monitoring of the reroute infrastructure within flooded areas, documentation of tree and shrub removal, and provision of a signed and sealed copy of as-built drawings. Though none of the issues were critical, they should be reviewed by the PSC to determine if compliance from the company is necessary.

6.0 References

North Dakota Public Service Commission (ND PSC). 2012. Online Case Search. Available from:
http://www.psc.nd.gov/database/company_case_list.php. Accessed January 6, 2012.

Appendix A



Photo 1. Direction: East/Southeast. West end of transmission line reroute. The H-frame structure in the right foreground was likely part of the original route. The three monopole structures on the left were the beginning of the reroute. The monopoles had guy wires attached. All structures were in standing water at the time of the survey.



Photo 2. Direction: South/Southeast. Close-up photo of the remnants of the post structures from the original route on the west end, which were in deeper standing water to the south of the reroute line.



Photo 3. Direction: East/Northeast. Overview of east end of transmission line reroute. From the monopole structures in Photo 1, the reroute line crossed a gravel road (90th St SE), attached to a wooden H-frame structure (distant left of photo), then attached to another set of three monopoles (distant far left), then connected back to the original route. Grass (Sand) Lake flooded the road at the time of the survey. The east end of the reroute was accessed by walking across the shallow water on the road.



Photo 4. Direction: North. Base of posts of wooden H-frame structure on the east end of the reroute. This portion of the reroute was outside the flooded area.



Photo 5. Direction: Northeast. Set of three monopoles at the east end of the reroute. The monopoles had guy wires attached and were also outside the flooded area.



Photo 6. Direction: Southeast. Remnants of old posts from the original transmission line route within deep standing water of Grass (Sand) Lake.

Appendix B

Appendix B. Field Observation Points (GPS Coordinates)

Point	Feature	Northing (m)*	Easting (m)*	Observation Notes
464	West end reroute	5107582.35	635104.3385	Set of 3 monopoles on west end of reroute.
465	East end reroute	5107628.69	635378.7962	H-frame structure on east end of reroute.

*Northing/Easting are in Universal Transverse Mercator Coordinate System.