

Reclamation and Revegetation Inspection Report

Denbury 12" Cedar Hills CO2 Pipeline
Denbury Green Pipeline- North Dakota, LLC

ND PSC Case No. PU-19-294

Prepared for:

North Dakota Public Service Commission
Public Utilities Division
State Capitol
600 East Boulevard – Dept. 408
Bismarck, ND 58505-0480



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Executive Summary

The State of North Dakota, acting through its North Dakota Public Service Commission (Commission), Division of Public Utilities, has contracted Keitu Engineers & Consultants, Inc. (Keitu) to perform services for a Reclamation and Revegetation Inspection. This report addresses the Orders established by the Commission and issues established in Case No. PU-19-294.

The Denbury Green Pipeline-Montana, LLC Cedar Hills South Unit Lateral Pipeline Project (Project) is approximately 17.8 miles in length, with approximately 2.29 miles in Slope County and 6.94 miles Bowman County. The Project enters North Dakota in NENW Sec 31 T133N R106W in Slope County, North Dakota and terminates at NWSW Sec 33 T132N R106W in Bowman County, North Dakota. The Project Route consists of a 200-foot wide corridor and totals 224 acres. The purpose of the Reclamation and Revegetation Inspection is to ensure the Project was constructed in compliance with the siting laws, rules, and the applicable Commission Order for the Project. Prior to the inspection, Keitu reviewed all Project-related documents necessary to verify reclamation and revegetation aspects during the site visit.

The site was visually inspected on November 13, 2023 by Kathleen Spilman, P.E. of the Keitu staff. At the time of the visit, the Project area was well-maintained, secured, and in good condition and is as near as practical to pre-construction surface topography conditions. Some areas were reseeded with suitable plants but lack sufficient surface cover. The low density of vegetation is likely due to historically low precipitation rates in the area over the past 2 years. These areas will likely recover adequately given additional time. Five areas, however, are without adequate plant cover, and/or largely taken over by weeds or other atypical vegetation. Additional follow-up should be considered in those areas.

Introduction

The Project was approved in April 2020 and construction began in July 2021. Construction for the Project was completed in the fall of 2021 and is operated by Denbury Green Pipeline, LLC. The Project is a 12-inch nominal diameter steel pipeline and associated facilities. The Project will transport carbon dioxide from a pipeline source in Fallon County, Montana to Denbury's CHSU oil production facilities in Bowman County, North Dakota.

The Project is under the jurisdiction of the North Dakota Public Service Commission, which issued its Certificate Corridor Compatibility No. 215 for Case No. PU-19-294 on April 1, 2020.

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 a location, construction, and operation of jurisdictional energy conversion and transmission facilities to produce minimal adverse effects on the environment and welfare of the citizens of North Dakota. Field inspections ensure the Project is constructed in compliance with siting laws, rules, and the applicable Commission Order Amending Certificate and Permit (Order).

The Commission retained Keitu Engineers & Consultants, Inc. (Keitu) to complete a Reclamation and Revegetation Inspection of the Project. The inspection process included a review of the Consolidated Application for Certificate of Corridor Compatibility and Route Permit (Application), Order, Certification Relating to Order Provisions (Certification), 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 site condition.

Methods

Keitu reviewed North Dakota siting laws and rules, the Application, Certification, and the Order for the Project to identify what Project-specific documentation was required for compliance. Keitu then reviewed Project documents in the PSC Online Case Search to identify those siting laws, rules, and Application and Order assertions that already had written verification, those that still required documentation, and those that required physical site verification.

Kathleen Spilman, P.E. of the Keitu staff visited the Project area on November 13, 2023 to visually inspect the site. Digital photographs were taken showing typical conditions. The Project was reportedly in operation at the time of visit.

As-Built Inspection Follow-Up

An "As-Built" inspection was conducted on July 27, 2023 by Keitu Staff. During this inspection it was deemed by Keitu staff that the Project was constructed in compliance with the siting laws, siting rules, and applicable Commission Orders.

It was noted that the project area was seeded but some areas are still bare and several areas consisted of noxious weeds. Heavy infestations of grasshoppers were noted in several areas of the route, especially in the western most 1.5 miles and 0.25 miles on either side of Oilwell Road (approx. MP 14.6). Significant areas have been defoliated, contributing to the poor condition of the vegetative cover along the right-of-way.

Observations

At the time of the visit, the Project area was well-maintained, secured, and in good condition and is as near as practical to pre-construction surface topography conditions. Some areas were reseeded with suitable plants but lack sufficient surface cover. The low density of vegetation is likely due to historically low precipitation rates in the area over the past 2 years. These areas will likely recover adequately given additional time. Photographs depicting conditions in two areas are provided for reference.

Five areas, however, remain without adequate plant cover, and/or largely taken over by weeds or other atypical vegetation. Conditions in each area are summarized and a photograph of typical conditions are included.

Area "A" 46° 17' 0" N, 104° 01' 07" W to 46° 16' 59" N, 104° 00' 51" W

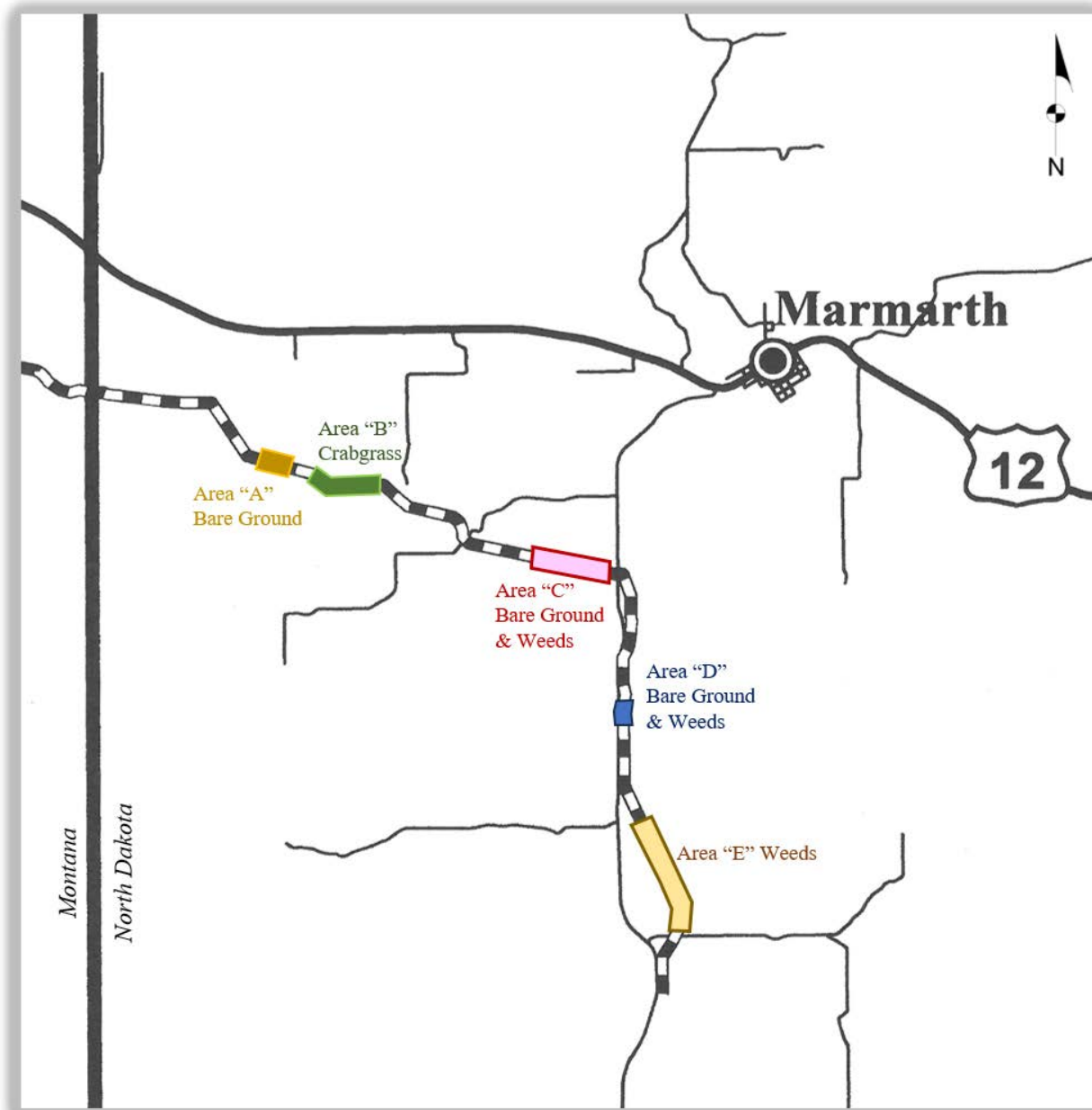
Approximately 0.2 miles long, the entire right-of-way (ROW) is bare to the ground. Seeding rows are evident, indicative of either very recent seeding or possibly a lack of precipitation since planting. It is notable that a herd of pronghorn antelope were seen grazing within the ROW boundaries; and when departing, left by remaining exclusively within the boundaries of the ROW.

Area "B" 46° 16' 54" N, 104° 00' 26" W to 46° 16' 54" N, 103° 59' 50" W

Approximately 0.5 miles long, this area has sparse grass throughout the area but significant weeds and spotted with plants unique to this portion of the Project. Specific plant varieties are difficult to identify this late in the season, but appears to be a type of crabgrass. This plant is distributed throughout this portion of the ROW, and not noted anywhere else in the Project area. Accumulations of cut straw was noted intermittently in low area.

Area "C" 46° 16' 5" N, 103° 57' 3" W to 46° 16' 8" N, 103° 57' 22" W

Approximately 0.5 miles long, based on historical photographs soils in this area probably tight clays to the point holds water on a regular basis but without organic matter to support vegetative cover. The pre-construction condition of the site must be considered when setting expectations for reclamation and revegetation. So not expectedly, no vegetative cover exists in most areas, and what exists is largely weeds of one type or another.



Area "D" 46° 15' 7" N, 103° 56' 59" W to 46° 15' 0" N, 103° 56' 59" W

Approximately 0.1 miles long, the pipeline runs west along the boundary of an oil production well and includes pipeline mile marker 15. A visual inspection of the soils indicates very little organic matter, which offers a challenge even before the disturbance associated with pipeline construction is added. Very little vegetative cover exists, and what exists are largely weeds.

Area "E" 46° 14' 6" N, 103° 56' 47" W to 46° 13' 14" N, 103° 56' 26" W

Approximately 1.0 miles long and of specific interest, a very weedy portion of the ROW starts and ends at an existing fenceline. Adjacent land parcels exhibit adequate vegetation and reclamation progress.

Recommendations

1. Maintenance should be done to encourage the revegetation of desirable species throughout the entire length of the Project until adequate vegetative cover is established.
2. The five identified areas should be re-evaluated for additional actions. Some areas may benefit from more aggressive erosion control cover such as crimped straw or grass blankets or even Curlex®; addition of topsoil, Leonardite or other organic matter, reseeding and/or additional weed control measures and reseeding with a suitable drought tolerant prairie mix.

Conclusion

Overall, the Project appeared to be constructed with minimal impacts to the surrounding environment. With the exception of inadequate suitable vegetative cover, existence of atypical vegetation or poorly controlled weeds in 5 areas, the Project site is in good condition. Some problem areas would have benefited by HDD boring rather than disturbing existing vegetation during construction. Ground cover will improve given additional recovery time.

Management Review

The services performed by Keitu and its staff 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.



11/28/2023

Jaimee Antognazzi, Operations Manager

Date

Report Photo #1: West Portion of Pipeline ROW with Revegetation Apparent



Report Photo #2: East Portion of Pipeline ROW with Revegetation Apparent



Report Photo #3: Area "A" Antelope-Favored Bare Ground and Surface Soil Rows



Report Photo #4: Area "A" Antelope Herd Moving Exclusively on ROW



Report Photo #5: Area "B" Bare, Weeds and Crabgrass



Report Photo #6: Area "C" Bare Ground and Weeds



Report Photo #7: Area "D" Bare Grounds and Weeds



Report Photo #8: Area "E" Bare Ground and Weeds

