PU-19-85
ONEOK Bakken Pipeline, LLC.
Little Missouri Lateral, 12-inch NGL
Reclamation Inspection Report

File No. 227701275

September 2021

Prepared for:

North Dakota Public Service Commission
600 E. Boulevard Avenue
Bismarck, ND 58505-0480

Prepared by:

Stantec Consulting Services Inc.
3303 Fiechtner Drive, Suite 100
Fargo, ND 58103

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1.0 EXECUTIVE SUMMARY

The North Dakota Public Service Commission (PSC) retained Stantec Consulting Services Inc (Stantec; Formerly Wenck Associates, Inc) to complete a reclamation and revegetation inspection following the completion of the ONEOK Little Missouri Lateral, 12-inch natural gas liquids (NGL) pipeline (Project) in McKenzie County, ND. The purpose of the inspection was to ensure the project was constructed in compliance with the siting laws and rules and the applicable PSC Orders for the Project, which includes requirements for restoration and repair of infrastructure affected by Project construction, reclamation, and reseeding.

The Project was constructed June 2019 through November 2019, with reclamation activities occurring in 2020. Stantec completed a revegetation site inspection on 6, 8, and 9 September 2021. This report includes documentation from the site inspection and the status of reclamation and revegetation efforts to date.

Overall, the reclamation of the project was satisfactory. The right of way (ROW) was observed to be recontoured and reclaimed to the surrounding landscape and topography as near as possible. Revegetation inspections of the Project revealed some issue areas along the ROW. Generally, areas under cultivation were producing crops apparently comparable to the outside of ROW cropland, though there were common instances of weeds or stressed crops in the reclaimed farmland. The establishment of grasses in hay land and rangeland was often overshadowed by annual weed stands, but there was evidence of grasses emerging from the understory of the weeds. The as-built inspection was conducted over a year ago in May 2020; since that time there was an increase in grass establishment, but also an increase of annual weeds. At the time of the revegetation inspection McKenzie County, North Dakota was classified as being in a severe drought (NOAA, 2021). If moisture conditions improve, it is anticipated grass establishment should improve with it, and overall, restoration of the Project appeared to be trending toward pre-construction conditions.

2.0 BACKGROUND AND SCOPE

2.1 INTRODUCTION

The Little Missouri Lateral 12-inch mixed natural gas liquids pipeline is a single pipeline segment located entirely within McKenzie County, ND and was constructed to transport NGLs, or Y-grade product approximately 10.8 miles. The Project originates from the southeast quarter of T149N, R98W, Section 30 at the Targa Badlands, L.L.C. Little Missouri Gas Processing Plant, and terminates at an interconnection with ONEOK's Demicks Lake Pipeline (PU-18-399) in the southwest quarter of T149N R100W, Section 1. The Demicks Lake pipeline was also constructed and completed earlier in 2020. The Project construction, including ROW clean-up and final ROW clean-up, was understood to be complete November 2019.

The pipe for the Little Missouri Lateral Pipeline is a 12.75-inch outside diameter steel pipe with 0.25 inches wall thickness for line pipe and 0.281-inches for road crossings. The maximum operating pressure will be 1,480 pounds per square inch and the maximum flow rate of each pipe will be 20,000 barrels per day. 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-19-85 on 31 May 2019, granting Certificates of Corridor Compatibility No. 211 and Route Permits No. 221 for the Project.

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 PSC Findings of Fact, Conclusions of Law, and Order (Order). The PSC retained Stantec to complete a reclamation and revegetation inspection of the Project following construction completion and as-built inspections.

2.3 METHODS AND SCOPE OF INSPECTION

2.3.1 Project Scope Identification

Stantec's scope of work was to perform and document a reclamation and revegetation inspection after one full growing season no less than one year from the anniversary date of completion of fertilization and seeding. The reclamation and revegetation inspection includes a follow-up of areas of concern identified in the as-built construction inspection. The report includes, but is not limited to, documentation of site visit

observations, and a summary of findings and issues that should be addressed for the Project to be considered complete and in compliance.

Stantec's intent was to ensure the Projects obligations of compliance with reclamation and restoration specifications found in the Findings of Fact, Conclusions of Law and Order, Certifications Relating to Order Provisions. These "Project Specifications" are listed in Table 1. Project Specifications originated mainly from the Certification Relating to Order Provisions.

Table 1 Project Specification Scope Table

Order Provision 18	*Company understands and agrees that it shall, as soon as practicable upon the completion of the construction of the transmission facility, restore the area affected by the activities to as near as is practicable to the condition as it existed prior to the beginning of construction.*
Order Provision 19	*Company understands and agrees that all pre-existing township and county roads and lanes used during construction must be repaired or restored to a condition that is equal to or better than the condition prior to the construction of the transmission facility and that will accommodate their previous use, and that areas used as temporary roads or working areas during construction must be restored to their original condition.*
Order Provision 20	*Company understands and agrees that reclamation, fertilization, and reseeding is to be done according to the Natural Resources Conservation Service recommendations, unless otherwise specified by the landowner and approved by the Commission.*
Order Provision 21	*Company will fulfill its obligation for reclamation and maintenance of the approved transmission facility right-of-way, transmission facility, and associated facilities continuing throughout the life of the transmission facility.*
Order Provision 22	*Company will repair all fences and gates removed or damaged during all phases of construction and operation of the transmission facility.*
Order Provision 23	*Company will repair or replace all drainage tile broken or damaged as a result of construction and operation of the transmission facility*
Order Provision 24	*Company agrees to comply with the Tree and Shrub Mitigation Specifications, attached.*
Order Provision 25	*Company understands and agrees that it shall remove all waste that is a product of construction and operation, restoration, and maintenance of the site, and properly dispose of it on a regular basis.*

2.3.2 On-Site Inspection

Scott Krych, Stantec Senior Ecologist, and Zachary Bartsch, Stantec Natural Resource and Soil Scientist, inspected the Project route on 6 September 2021, and 8 and 9 September 2021, respectively. The site was inspected by driving to public ROW access points and systematically inspecting ditches, fence lines, the encompassing ROW, and walking the ROW where accessible. Observation points containing geographic coordinates and describing potential issues and reclamation/revegetation status were recorded using ESRI ArcGIS Collector and Survey123 software applications on a tablet utilizing internal satellite triangulation software or paired with a Trimble Global Positioning System (GPS) **(Appendix A)**. Digital photographs were taken with the tablet utilizing the Survey123 application to geotag photo locations and associate all collected data from each Observation Point (Figures 1-5). Photographs were taken showing representative portions of the route, aboveground Project infrastructure, and problem areas (**Appendix B**).

3.0 RESULTS OF SITE INSPECTION

The following subsections outline findings from the inspection pertaining to the land uses of the ROW.

3.1 CROPLAND

The Project ROW crosses several parcels of cropland, either bisecting or following the outer boundaries of the fields. Most of the encountered fields were under small-grain production and were harvested at the time of the inspection. One soybean field was observed, and was still maturing and unharvested. No visual grain yield estimate or stand height comparisons were made, however, the stand density and color of harvested grains within the ROW were consistent to the surrounding, undisturbed crops (**Appendix B; Observation Points 9080006, 9080010, 9080014, 9080013, 9080015, and 9080016**). Soybeans at one location inside the ROW were observed to be less densely populated, shorter, and had fewer pods than plants outside the ROW (**Appendix B; Observation Points 9080001**). During a conversation with a local landowner, the landowner implied that the ROW in the soybean field was mowed. Stantec could not confirm or repudiate that statement, but the soybeans at this observation point appeared to have been either mowed or were drastically shorter because of reclamation issues, or both.

The soil in most cropland appeared to have been adequately replaced and was matching existing topography. However, horizonal directional drilling (HDD) locations were generally not as adequately reclaimed than the general ROW corridors. Specifically, topsoil in farmland was absent in two areas which revealed bare subsoil at **Observation Points 9080001 and 9080006 (Appendix B),** resulting in bare or sparse crop coverage. Additionally, **Observation Points 9080003 and 9080011** noted visible bare, uneven surface which could be indicative of subsidence and/or compaction in the ROW. Compaction would inhibit root penetration and plant establishment, potentially decreasing water infiltration and risking runoff. Populations of annual weeds, predominantly kochia (*Bassia scoparia*), were common in the surrounding agricultural fields, but were significantly more concentrated within the copped portions of the ROW than outside and may need additional control.

3.2 HAY LAND

The Project ROW crosses numerous parcels of idle land presumably used for hay production, covered by perennial and annual vegetation. It is presumed these hay lands are not normally subjected to livestock grazing or cultivation (**Appendix B; Observation Points 9080008, 9080009, 9060001, 9060002**). According to ONEOK's Revegetation Plan (PU-19-85 Docket 68), the hay land areas were seeding with various perennial grasses including, but not limited to, slender wheatgrass (*Elymus trachycaulus*), western wheatgrass (*Pascopyrum smithii*), inland saltgrass (*Distichlis spicata*), and little bluestem (*Schizachyrium scoparium*), which are consistent with NRCS recommendations. Any deviations from NRCS recommendations, typically at landowner requests, is unknown.

On-site inspections confirmed the establishment and/or presence of crested wheatgrass (*Agropyron cristatum*), slender wheatgrass, inland saltgrass, and green foxtail (*Setaria viridis*). Slender wheatgrass and inland saltgrass are native species likely a result of seeding, while crested wheatgrass and green foxtail are introduced species that are colonizing the disturbed area. Other species observed in the hay land were kochia, alfalfa (*Medicago sativa)*, yellow sweet clover (*Melilotus officinalis*), and curly-cup gumweed (*Grindelia squarrosa*). Outside of the ROW, the land was dominated by alfalfa, slender wheatgrass, crested wheatgrass, and some kochia. Therefore, hay land ROW's were presumably seeded with alfalfa at one point, and could explain their presence in the ROW. Overall, vegetation cover was around 60% in ROW areas both at the geographical coordinates of the photo observation, and from adjacent visual assessments along ROW extents.

Near **Observation Point 9060002**, a slope cut in the ROW near a sectional road was observed to be largely unvegetated. Stantec noted a lack of topsoil and visible subsoil on the surface. **Observation Point 9080009** contained possible minor surface subsidence and compaction in the ROW. Lastly, annual weeds, primarily kochia and prickly Russian thistle (*Kali tragus*), were observed in hay lands with kochia frequently being the most dominant species within the ROW.

3.3 RANGELAND

The Project ROW crosses grassland presumably used as rangeland for grazing or CRP, and displayed no evidence of haying (**Appendix B; Observation Points 9080005, 9080007, 9080011, 9080004, and 9080012**). According to ONEOK's Revegetation Plan (PU-19-85 Docket 68), the species that were likely planted on rangeland parcels were the native western wheatgrass, green needlegrass, and slender wheatgrass, which are consistent with NRCS recommendations. Any deviations from NRCS recommendations are unknown.

On-site inspections confirmed the establishment and/or presence of native species slender wheatgrass, echinacea, American licorice (*Glycyrrhiza lepidota*), and western snowberry (*Symphoricarpos occidentalisi*), and an unidentifiable drilled seeded grass at **Observation Point 9080005**. The drilled grasses are presumably native. Native broadleaf species in the ROW may have been seeded but there is no documentation of landowner requests. Therefore, the native broadleaves are likely recolonizing the disturbed area. Overall, the revegetation of native species matched areas outside the ROW, especially at **Observation Point 9080004.** Non-native plant species observed in rangeland ROW's were alfalfa, yellow sweet clover, green foxtail, and smooth brome (*Bromis inermus*). Alfalfa, kochia, and smooth brome were common outside of the ROW, but were more robust than the ROW plant communities. Vegetation in the ROW is expected to improve in subsequent growing seasons due to the establishment of seeded perennial species, and due to the probability of the severe drought in McKenzie County subsiding over time.

Kochia, prickly Russian thistle were common throughout the rangeland and grassland ROW. Additional, minor annual weeds, such as curly-cup gumweed and lambsquarter (*Chenopodium album*), were also observed in reclaimed rangeland ROW parcels. Plumeless thistle (*Carduus acanthoides* L.), an ND and McKenzie Co. noxious weed was also observed. It is still early enough that there is not a significant

noxious weed invasion at this location. (**Observation Point 90004)**. Timely mechanical or chemical control is recommended for the next growing seasons followed by additional monitoring.

3.4 NOXIOUS AND ANNUAL WEEDS

Plumeless and Canada thistle were the only noxious weeds and were observed at **Observation Points 9080004 and 9080016**, respectively (**Appendix B**).

Table 2 Species[1] Observed in Reclaimed ROW

Land Use	Vegetative Class					
	Grasses		Forbs		Weeds	
	Native	Non-Native	Native	Non-Native	Native	Non-Native
Cropland	*NA*	*Green Foxtail*	*NA*	*NA*	*NA*	***Canada thistle*** *Kochia*
Hay Land	Inland saltgrass Slender wheatgrass	Crested wheatgrass Foxtail barley Green foxtail	Curly-cup gumweed	Alfalfa Yellow sweet clover	NA	Kochia Prickly Russian thistle
Rangeland	Slender wheatgrass	Crested wheatgrass Green foxtail Smooth brome	American licorice Purple coneflower Western snowberry (shrub)	Yellow sweet clover	NA	Kochia Lambsquarter **Plumeless thistle**

[1]Noxious weeds in bold red.

3.5 STREAM/WETLAND CROSSINGS

One open cut stream/wetland crossing was examined. The final topography matched the drainage area outside of the ROW with no evidence of severe erosion and the seeded vegetation was exceptionally established (**Appendix B; Observation Point 9080011**). One other stream/wetland crossing was observed where the HDD crossing method was used (**Appendix B; Observation Point 9080012**). The boring area was observed to be appropriately reclaimed and contained adequate vegetative cover. However, one concern found during the reclamation inspection was the occurrence of wooden debris left behind **Observation Point 9080011**.

3.6 ROADS AND MAINTENANCE

Gravel roads crossed by the ROW had been bored underneath to avoid cuts and were in good condition. Access points through roadside ditches and approaches had a prevalence of annual weedy species and smooth brome grass. All fences and fenceposts appeared to have been fixed and/or replaced, and no access roads were found to remain. Overall, the ROW was maintained in good condition. No trash or equipment was observed. Observed above ground infrastructure (i.e., valve sites) were fenced, secure, and maintained well.

3.7 AS-BUILT INSPECTION CONCERNS

The as-built inspection found several permits and other required documentation had yet to be filed with the PSC. Since the submittal of the as-built inspection report, Stantec found ONEOK has only submitted a Tree and Shrub Mitigation Plan, which was approved by the PSC. Stantec did not find any filings with the PSC pertaining to:

- USACE Permits
- USFWS-required MBTA and BGEPA surveys
- USFWS concurrence on wetland and grassland easements within the Project corridor
- Dakota skipper additional surveys and USFWS concurrence
- WAWSA concurrence on rural water supplies
- Permit Verification
    - USACE, Section 404 Permit
    - Department of Transportation. Federal Highway Administration, Permit to Cross
    - NDDEQ, SWPPP, Permit & NOI
    - McKenzie County, Conditional Use Permit

A review of the case file dockets relating to Tree and Shrub mitigation reveals ONEOK plans to sponsor a specific replanting project through the North Dakota Petroleum Foundation's (NDPF) "Plantings For The Future Program" for the tree and shrub mitigation and reporting requirement. ONEOK will also provide the landowners that were affected by tree and shrub removal the option to have the same 2:1 ratio plantings replaced on their properties. The NDPF will conduct a post-planting survey to determine survival rates

and results of this inspection will be provided to the Commission. Two years after replanting occurs, ONEOK will file a summary documenting how this Plan achieved sustainable plantings.

Proposed re-seeding activities are presumed to have been conducted to NRCS recommendations, however, it is unknown if any deviations were made upon the request of landowners and Stantec is unaware of any PSC approvals to do so.

4.0 ISSUES, RESULTIONS, AND RECOMMENDATIONS

4.1 VEGETATION MONITORING

Seeded and desired grass species did not comprise a majority of absolute cover in most of the inspected ROW areas. Native species can be slow to colonize recently disturbed land since competition for available nutrients in the reclaimed soil with annual weed species is high. Another source for delay in native species establishment may be due to drought in McKenzie County, as seeds can lay dormant for significant amounts of time in dry conditions. Despite the lack of precipitation in the 2021 growing season, there was a small, yet positive, presence of desired species. Future monitoring could be conducted to ascertain if absolute cover of desired species increases over time. Stantec recommends, if absolute cover n does not increase during a climatically normal season in the next year or two, reseeding may be necessary.

4.2 WEED MANAGEMENT

Weed management is required throughout the majority of the ROW and the weed management plan should be implemented. Stantec recommends coordinating herbicide treatment with landowners for areas within cropland in the Spring of 2022. Kochia is recommended to be sprayed once in the spring when the plants emerge, and later in the summer when late-germinating plants begin emerging (NDSU Extension Service, 2016). Kochia and prickly Russian thistle have seed viability of ~1 year, so adequate control for one growing season may significantly reduce weed presence in following years. Other annual weeds should be monitored along the route in hay lands and rangelands per landowner preferences. Stantec recommends one or two years of mowing or herbicide application in June or July prior to seed ripening. This would reduce the annual weed seed bank within a year or two and allow the grass cover to better establish.

The two noxious weed species observed were Canada thistle (perennial) and plumeless thistle (biennial). Stantec recommends PSC contact ONEOK about addressing infestations of noxious weeds in the ROW. For Canada thistle control, Stantec recommends infested areas be treated immediately at the beginning of the 2022 growing season. Canada thistle is best controlled by repeated mowing to prevent plants from producing seeds, or by applying correct herbicides at the "rosette" vegetative stage, when the herbicide has the greatest chance at killing the plant (Lym, 2013). Plumeless thistle was found only in rangeland, as its lifecycle does not it allow to easily survive in crop rotations. Biennial thistle is recommended to also be treated with herbicide during its rosette stage, which is the fall of its first year. The locations observed with noxious weeds should be monitored for at least two years to allow for the lifecycle of weeds, and to ensure infestations do not spread.

4.3 SOIL MIXING, COMPACTION, AND SUBSIDENCE

Exposed subsoil was observed at several locations throughout the ROW. Stantec recommends the PSC inquire about these areas with ONEOK. Adding topsoil or soil biological amendments could be possible methods to improve the organic matter content and improve vegetative restoration.

Soil decompaction at select areas could mitigate the adverse impacts to soil quality that resulted in reduced vegetation growth and could result in increased runoff from the ROW. Landowners producing crops in the compacted portions of the ROW soil may experience declined crop yields due to poor root penetration. ONEOK should coordinate with the landowner(s) on possible ways to address these areas noted through either tillage, cover crops, or other methods.

5.0 SIGNATURES

This document was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of North Dakota Public Service Commission (the "Client"). The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The findings in the document are based on conditions and information existing at the time the document was compiled and do not take into account any subsequent changes. Recommendations and opinions 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.

Lead Project Manager and Environmental Scientist, Matt Retka, and Natural Resources Scientist, Zachary Bartsch, prepared the report.

Matt Retka
Project Manager
Environmental Scientist

September 23, 2021
Date

Zachary Bartsch
Natural Resources Scientist

September 23, 2021
Date

6.0 REFERENCES

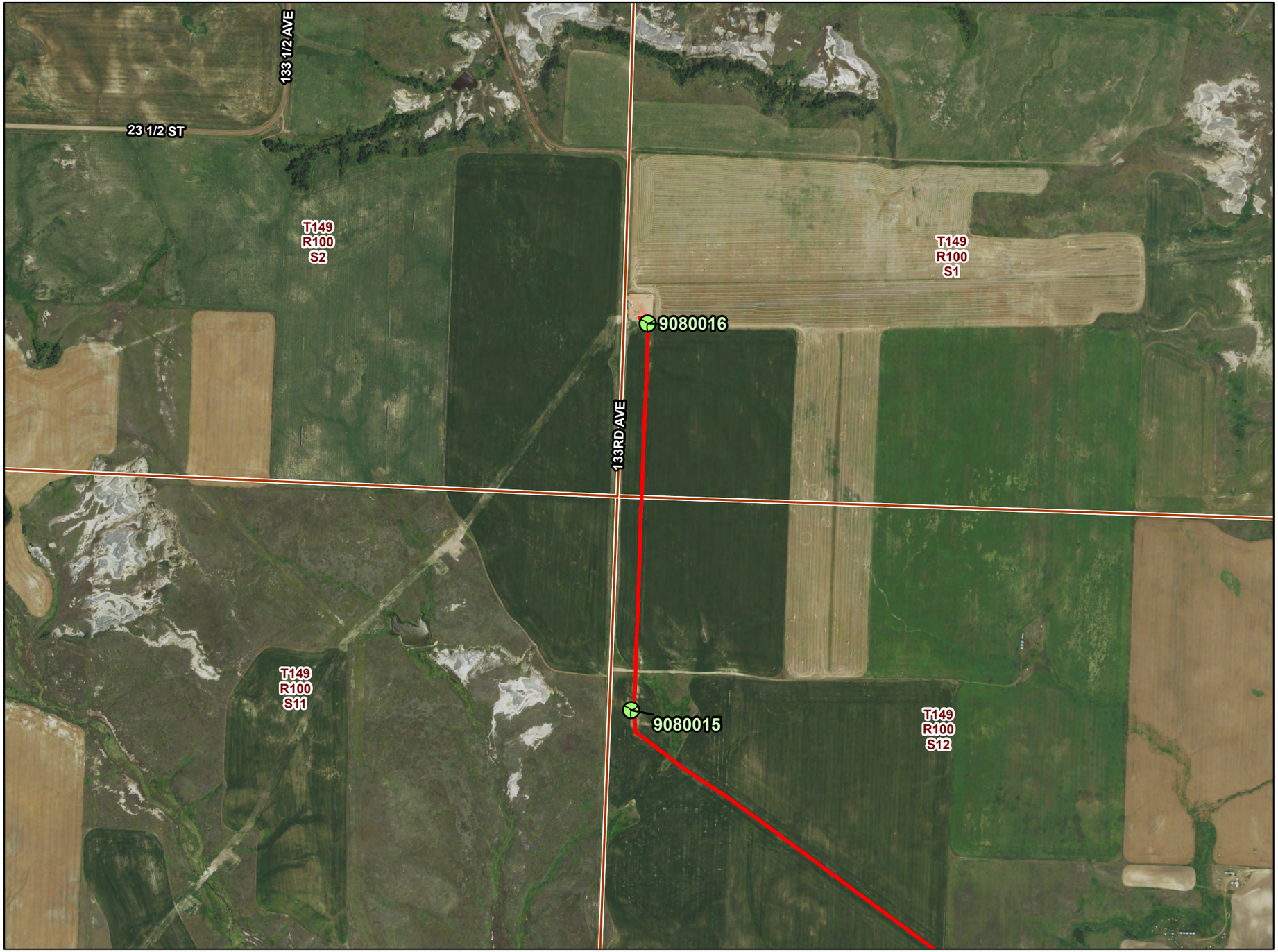
Lym, R. 2013. Perennial and Biennial Thistle Control – W799. North Dakota State University Extension Service and Plant Sciences Department, Fargo, North Dakota. Available from: https://www.ag.ndsu.edu/publications/crops/perennial-and-biennial-thistle-control-w799. Accessed September 2021.

North Dakota Public Service Commission (ND PSC). 2021. Online Case Search. Available from: http://www.psc.nd.gov/database/company_case_list.php. Accessed September 2021.

North Dakota State University (NDSU) Extension Service. 2016. Kochia – Weed of the Year. North Dakota State University Extension Service, Fargo, North Dakota. Available from: https://www.ndsu.edu/agriculture/sites/default/files/2021-05/38-Koch.pdf. Accessed September 2021.

FIGURES

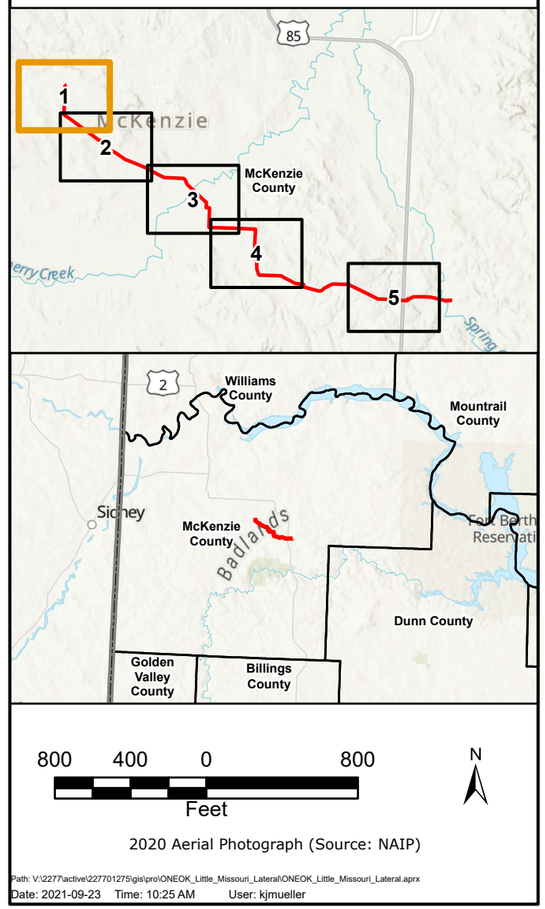
Figure 1-5: Reclamation/Revegetation Observation Locations Map



North Dakota Public Service Commission

Little Missouri Lateral Figure 1

- Reclamation/Revegetation Observation Point Location
- Little Missouri Lateral As-Built Centerline (PU-19-85)
- Little Missouri Lateral Original Proposed Centerline (PU-19-85)



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PU-19-85 LITTLE MISSOURI LATERAL RECLAMATION/REVEGETATION INSPECTION

Observation Point Map

Stantec

SEP 2021

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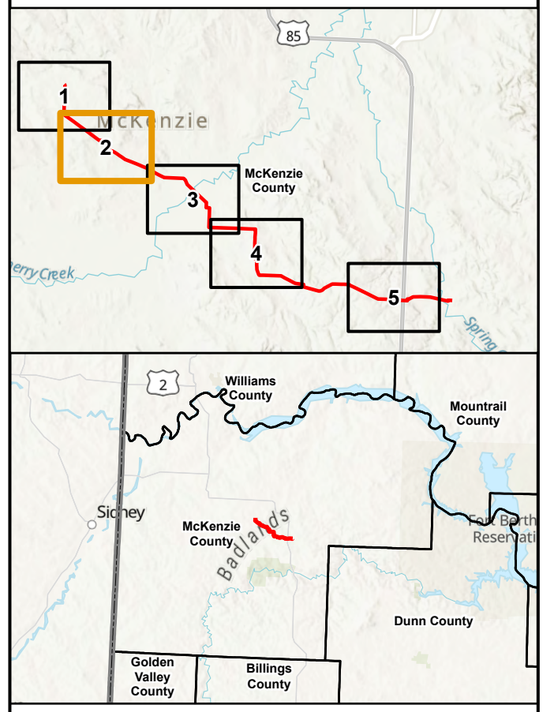
North Dakota Public Service Commission

Little Missouri Lateral Figure 2

- Reclamation/Revegetation Observation Point Location
- Little Missouri Lateral As-Built Centerline (PU-19-85)
- Little Missouri Lateral Original Proposed Centerline (PU-19-85)



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PU-19-85 LITTLE MISSOURI LATERAL RECLAMATION/REVEGETATION INSPECTION

Observation Point Map

Stantec

SEP 2021

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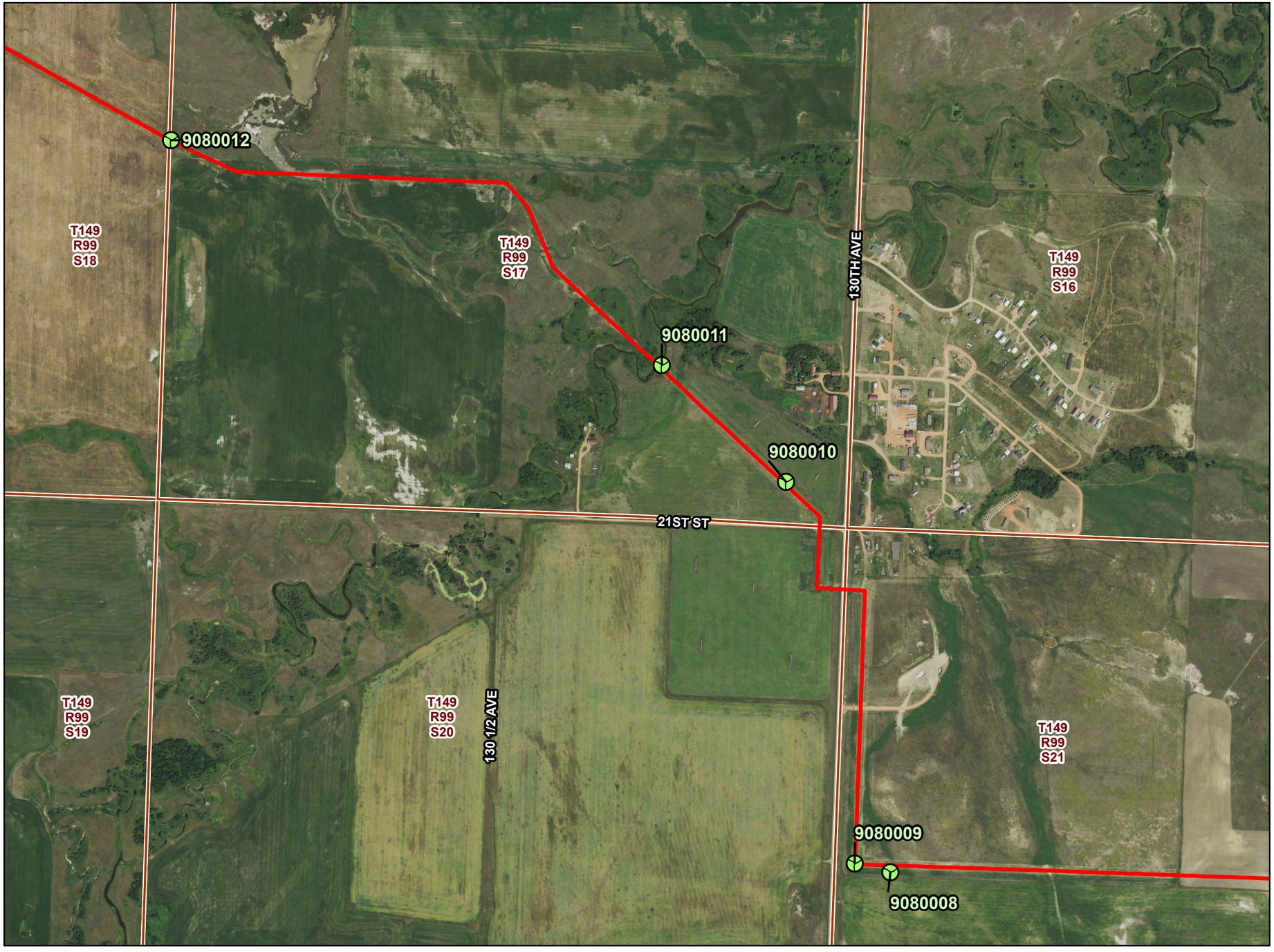
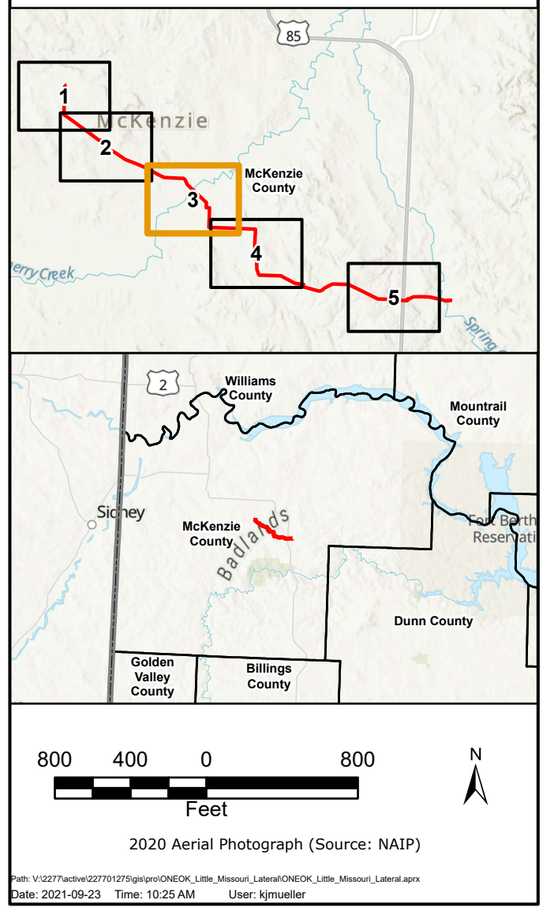


North Dakota Public Service Commission

Little Missouri Lateral
Figure 3

- Reclamation/Revegetation Observation Point Location
- Little Missouri Lateral As-Built Centerline (PU-19-85)
- Little Missouri Lateral Original Proposed Centerline (PU-19-85)



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PU-19-85 LITTLE MISSOURI LATERAL RECLAMATION/REVEGETATION INSPECTION

Observation Point Map

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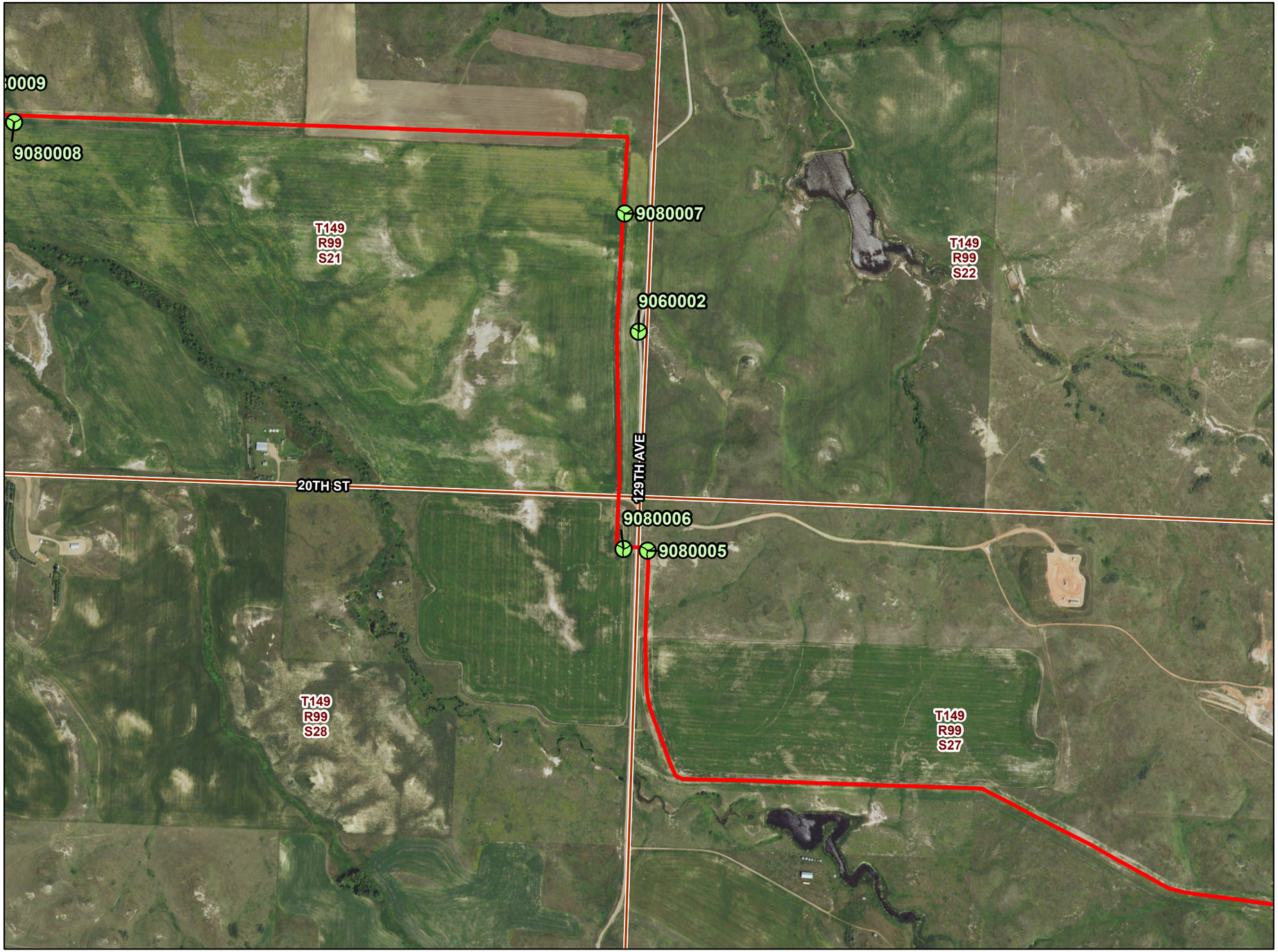
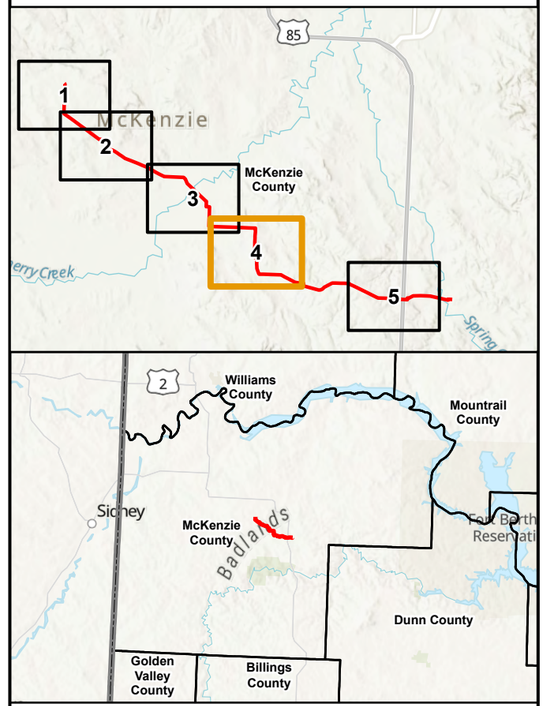
Little Missouri Lateral
Figure 4



- Reclamation/Revegetation Observation Point Location
- Little Missouri Lateral As-Built Centerline (PU-19-85)
- Little Missouri Lateral Original Proposed Centerline (PU-19-85)



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PU-19-85 LITTLE MISSOURI LATERAL RECLAMATION/REVEGETATION INSPECTION

Observation Point Map

Stantec

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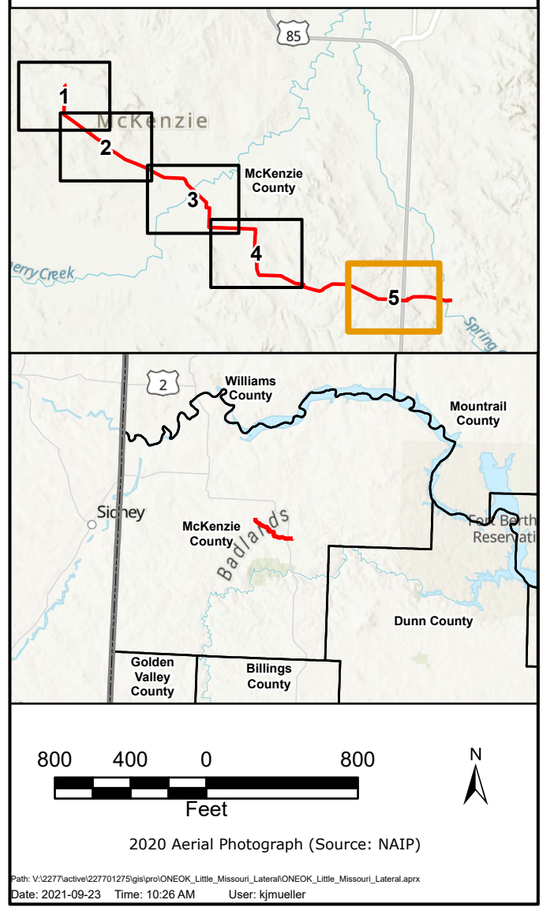
North Dakota Public Service Commission

Little Missouri Lateral Figure 5

Reclamation/Revegetation Observation Point Location

Little Missouri Lateral As-Built Centerline (PU-19-85)

Little Missouri Lateral Original Proposed Centerline (PU-19-85)



PU-19-85 LITTLE MISSOURI LATERAL RECLAMATION/REVEGETATION INSPECTION

Observation Point Map

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APPENDIX A

Field Observation Coordinates

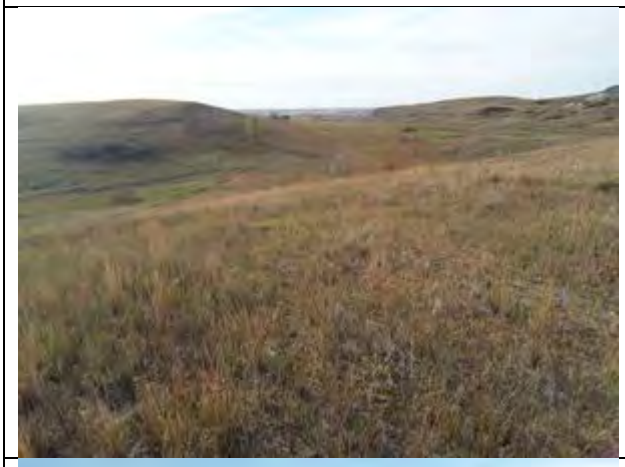
Field Observation Points

Observation Point #	Latitude	Longitude
9060001	47.692998	-103.271068
9080001	47.6945307	-103.3037233
9080002	47.6951466	-103.3044999
9080003	47.6952154	-103.3047858
9080004	47.695388	-103.3057323
9080005	47.7023721	-103.3471884
9080006	47.7023881	-103.3479339
9060002	47.70693	-103.347716
9060002	47.70693	-103.347716
9080007	47.7093825	-103.3482809
9080008	47.7108113	-103.3672456
9080009	47.7109664	-103.3683595
9080010	47.7188957	-103.3709291
9080011	47.7212413	-103.3749159
9080012	47.7255629	-103.3903864
9080013	47.7317087	-103.4104044
9080014	47.7321455	-103.4128124
9080015	47.7425426	-103.4326119
9080016	47.7506125	-103.4325576

APPENDIX B

Observation Point Photolog

	**Observation Point: 9060001** Date Taken: September 6, 2021 3:58 PM Direction Photo is Taken: East Photo Description: Vegetation conditions similar inside and outside of ROW. Latitude: 47.692998 Longitude: -103.271068
	**Observation Point: 9080001** Date Taken: September 8, 2021 6:08 PM Direction Photo is Taken: Photo Description: Might need to revisit about weed control on hilltop. heavy presence of kochia with stunted or chopped soybeans. Poor crop compared to surrounding plants, bare soil appeared lacking in organic matter. Latitude: 47.6945307 Longitude: -103.3037233
	**Observation Point: 9080002** Date Taken: September 8, 2021 6:05 PM Direction Photo is Taken: Southeast Photo Description: Subsidence present in soybean ROW. Latitude: 47.6951466 Longitude: -103.3044999

No photo. Point taken at extent of possible subsidence and bare areas. Conditions similar to Observation Point 9080002.	**Observation Point: 9080003** Date Taken: September 8, 2021 6:02 PM Direction Photo is Taken: Southeast Photo Description: Soybeans looks similar to undisturbed areas. Minor areas of subsidence and bare. Latitude: 47.6952154 Longitude: -103.3047858
	**Observation Point: 9080004** Date Taken: September 8, 2021 6:16 PM Direction Photo is Taken: Northwest Photo Description: Appropriate veg cover and species composition which matches surrounding area. Acceptable reclamation. Observed species: Slender and crested wheatgrass, echinacea, kochia, plumeless thistle, yellow sweet clover, American licorice, and western snowberry. Latitude: 47.695388 Longitude: -103.3057323
	**Observation Point: 9080005** Date Taken: September 8, 2021 4:10 PM Direction Photo is Taken: South Photo Description: Overall good cover and growth. No noxious weeds, minimal bare areas, grassland land use. Dominated by small, drilled grasses: Smooth brome, Lambsquarter, prickly Russian thistle, and yellow sweet clover. Looks mowed. Latitude: 47.7023721 Longitude: -103.3471884
	**Observation Point: 9080006** Date Taken: September 8, 2021 4:26 PM Direction Photo is Taken: East Photo Description: Soil mixing area with bare surface. Taken in wheat field, the mixing seemed to adversely affect crop production in isolated area. Latitude: 47.7023881702574 Longitude: -103.347933984024

Observation Point: 9060002
Date Taken: September 6, 2021 4:30 PM
Direction Photo is Taken: South

Photo Description: Slope cut still visible. Areas with sparse vegetation are due to lack of topsoil and subsoil contact.

Latitude: 47.70693
Longitude: -103.347716

Observation Point: 9060002
Date Taken: September 6, 2021 3:58 PM
Direction Photo is Taken: North

Photo Description: Vegetation conditions similar inside and outside of ROW.

Latitude: 47.692998
Longitude: -103.271068

	**Observation Point: 9080007** Date Taken: September 8, 2021 4:42 PM Direction Photo is Taken: North Photo Description: Minimal bare ground and no erosion. Species observed: yellow sweetclover, kochia, green foxtail. Latitude: 47.7093825 Longitude: -103.3482809
	**Observation Point: 9080008** Date Taken: September 8, 2021 5:05 PM Direction Photo is Taken: West Photo Description: Alfalfa and grass cover mix, some bare topsoil present. Also crested and slender wheatgrass, kochia present. Reclamation achieved very similar to surrounding hay land. Latitude: 47.7108113 Longitude: -103.3672456

	**Observation Point: 9080009** Date Taken: September 8, 2021 5:09 PM Direction Photo is Taken: South Photo Description: Subsidence and soil cracking. Species observed: kochia, alfalfa, yellow sweet clover, and green foxtail Latitude: 47.7109664 Longitude: -103.3683595
	**Observation Point: 9080010** Date Taken: September 8, 2021 5:23 PM Direction Photo is Taken: Northwest Photo Description: Appropriate reclamation of cropland. Latitude: 47.7188957 Longitude: -103.3709291
	**Observation Point: 9080011** Date Taken: September 8, 2021 5:29 PM Direction Photo is Taken: Southeast Photo Description: Reclaimed area near streambank. Appropriate revegetation growth. kochia, lambsquarter, crested wheatgrass, and sweet clover present. Wood debris remains. Minor subsidence present. Latitude: 47.7212413 Longitude: -103.3749159

	**Observation Point: 9080012** Date Taken: September 9, 2021 10:44 AM Direction Photo is Taken: East Photo Description: Grassland Area looks appropriately reclaimed Latitude: 47.7255629679082 Longitude: -103.390386474079
	**Observation Point: 9080013** Date Taken: September 9, 2021 10:24 AM Direction Photo is Taken: Southeast Photo Description: reclaimed wheat field was observed to match undisturbed fields. Latitude: 47.7317087 Longitude: -103.4104044
	**Observation Point: 9080014** Date Taken: September 9, 2021 10:18 AM Direction Photo is Taken: East Photo Description: Kochia is dominant in reclaimed ROW. Wheat crop was harvested. Latitude: 47.7321455 Longitude: -103.4128124

	**Observation Point: 9080015** Date Taken: September 9, 2021 11:17 AM Direction Photo is Taken: Southeast Photo Description: Kochia in ROW. Wheat stalks were similar in density as in outside of ROW. ROW facing south is dominated by harvested wheat. Latitude: 47.7425426 Longitude: -103.4326119
	**Observation Point: 9080016** Date Taken: September 9, 2021 11:27 AM Direction Photo is Taken: South Photo Description: Wheatgrass and kochia in ROW was recently mowed. Kochia was dense in wheat field in ROW looking south. Vegetative cover is comparable to adjacent areas. Canada thistle was present at observation point as well. Latitude: 47.7506125 Longitude: -103.4325576