WENCK File #B2579-0029
October 2019

Sacagawea 16-inch Pipeline Project Revegetation Inspection Report PU-15-114




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 reclamation and revegetation inspection following construction of the Sacagawea Pipeline (Project) in McKenzie and Mountrail Counties, North Dakota (ND), constructed by Sacagawea Pipeline Company, L.L.C. (Sacagawea). 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 in 2016, and reclamation activities began fall 2016. Wenck completed a revegetation site inspection 6 August 2019. This report includes documentation from the site inspection and the status of reclamation and revegetation efforts to date. Overall the reclamation and revegetation of the Project were satisfactory. Select areas have issues with grass establishment and weeds which are described herein.

1.0 Background and Scope

1.1 INTRODUCTION

The Sacagawea 16-inch Crude Oil Pipeline (Project) is located in McKenzie and Mountrail Counties, North Dakota. The project originates at Paradigm Midstream Service's Keene terminal in McKenzie County and terminates at the Phillips 66 Partners Palermo Rail Terminal Facility in Mountrail County. The Sacagawea Pipeline Company, LLC (Sacagawea) is a joint business venture between Paradigm Pipeline, LLC (Paradigm) and Grey Wolf Midstream, LLC (Grey Wolf). The Project includes a 16-inch diameter underground crude oil pipeline with a total length of approximately 70 miles. 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-15-114 on 5 January 2016, granting a Certificate of Corridor Compatibility No. 177 and Route Permit No. 189 for the Project, amended 1 July 2016.

Project construction was completed September 2016. Reclamation and clean-up activities began concurrently with construction from April through September 2016. Re-seeding was completed along certain segments of the line in summer 2017 and summer 2018. This report documents current conditions in the Project area one full growing season after the 2018 reseeding efforts.

1.2 REGULATORY PURPOSE AND SCOPE OF WORK

The North Dakota Energy Conversion and Transmission Facility Siting 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 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 Orders.

The North Dakota PSC retained Wenck Associates, Inc. (Wenck) to complete a reclamation and revegetation inspection of the Project. The inspection process included a review of the Application for Corridor Compatibility and Route Permit, the Project's Order, and other applicable documents. The Findings of Fact, Conclusions of Law, and Order for the Project include the following findings and order provisions related to reclamation and revegetation.

- Findings of Fact 48. *Sacagawea agreed to refer to the NDSU Extension Service Publication No. R1728, "Successful Reclamation of Lands Disturbed by Oil and Gas Development and Infrastructure Construction," as a guide for best reclamation practices in constructing the Project.*

- Findings of Fact 50. *Sacagawea has committed to protecting the integrity of wetlands and waterbodies crossed by the route by using best management practices to minimize erosion and to prevent sediment discharge, which will include minimizing the footprint of environmental disturbance, installing sediment barriers, trench plugs, and temporary slope breakers as necessary, and properly restoring topsoil.*

- Order Provision 14. *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 17. *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 18. *Company understands and agrees that its obligation for reclamation and maintenance of the right-of-way will continue throughout the life of the transmission facility.*

- Order Provision 19. *Company understands and agrees that its obligation for reclamation and maintenance of the transmission facility, associated facilities, and roadways will continue throughout the life of the transmission facility.*

- Order Provision 20. *Company agrees to comply with the Tree and Shrub Mitigation Specifications, attached.*

- Order Provision 21. *Company understands and agrees that it shall repair or replace all fences and gates removed or damaged during all phases of construction and operation of the transmission facility.*

- Order Provision 22. *Company understands and agrees that it shall repair or replace all drainage tile broken or damaged as a result of construction and operation of the transmission facility.*

- Order Provision 24. *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.*

- Order Provision 25. *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.*

Wenck's scope of work was to perform and document a reclamation and revegetation inspection after one full growing season but not less than one year from the anniversary date of completion of fertilization and seeding. The reclamation and revegetation inspection must include a follow-up inspection of areas of concern identified in the as-built construction inspection. This 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 full compliance.

2.0 Findings of Site Inspection

2.1 METHODS

Sara Simmers, Wenck environmental scientist, inspected the Project route on 6 August 2019. A representative from Sacagawea, Mark Weiler, accompanied Wenck staff during the site visit.

The site was inspected by driving to access points, visually observing the route from public roads and fencelines, and where access was granted, walking within the Project right-of-way (ROW) to determine species composition. Geographic coordinates were recorded at observation points and potential problem areas using a handheld Global Positioning System (GPS) (Garmin GPSMAP 60CSx; <10m accuracy; NAD83 datum) (**Appendix A; Figures 1-2**). Digital photographs (iPhone 7) were taken showing representative portions of the route and problem areas (**Appendix B**).

2.2 ON-SITE INSPECTION OBSERVATIONS

Overall the ROW was in good to excellent condition, particularly in cropland and hayland. In native grassland, establishment of seeded grasses was good with dominant cover in most parcels. Annual weeds and noxious weeds were typically not present or minor, though some parcels did have problem areas. After several more growing seasons the grasses should outcompete the annual weeds and dominate the reclaimed areas. In comparison to last year's inspection, the establishment of planted grasses had improved as judged by total cover and evenness of stands.

2.2.1 Grassland/Rangeland

The Project ROW crossed native grassland at a rough estimate of one-third of its length. Reclaimed grassland parcels had between 10-80% cover of planted grasses and 0-80% cover of annual weeds; typically planted grasses were over 50% cover and annual weeds were less than 50% cover (**Appendix B; Observation Points 658, 660, 661, 662, 663, 664, 677, 680, 690**).

Seed tags were not available, but the species that were likely planted on most grassland parcels were the native grass species western wheatgrass, green needlegrass, slender wheatgrass, and sideoats grama. These species are often recommended by the NRCS. The introduced grass species crested wheatgrass, smooth brome, quackgrass, and intermediate wheatgrass, and the introduced forb yellow sweetclover may have also been planted as part of the seed mix in some parcels (**Table 1**). A few native forbs were noted and had presumably recolonized without seeding.

Kochia was the most common annual weed in grassland reclamations (**Table 1**). Grazed pastures had less grass biomass, but the annual weeds were also grazed and typically had lower cover between 0-30%, whereas in ungrazed areas the annual weeds made up 50-80% cover. The noxious weed Canada thistle was noted in one location (**Observation Point 675**, see Appendix B).

Table 1. Species[1] Observed in Reclaimed Grassland/Rangeland

	Native	Introduced
Grasses	Western wheatgrass (*Pascopyrum smithii*) Slender wheatgrass (*Elymus trachycaulus*) Green needlegrass (*Nassella viridula*) Sideoats grama (*Bouteloua curtipendula*) Foxtail Barley (*Hordeum jubatum*) Inland saltgrass (*Distichlis spicata*)	Quackgrass (*Elymus repens*) Smooth brome (*Bromus inermis*) Crested wheatgrass (*Agropyron cristatum*) Intermediate wheatgrass (Agropyron intermedium) Pigeon grass (*Setaria* sp.) Spring wheat (cover crop)
Forbs	Fringed sagewort (*Artemisia frigida*) Wavyleaf thistle (*Cirsium undulatum*) Flodman's thistle (*Cirsium flodmanii*)	Yellow sweetclover (*Melilotus officinalis*) Kochia (*Bassia scoparia*) Russian thistle (*Salsola* sp.) **Canada thistle (*Cirsium arvense*)** Dandelion (*Taraxacum officinale*) Black medick (*Medicago lupulina*)

[1]Noxious weeds in bold.

2.2.2 Hayland

Hayland parcels were in good condition overall (**Appendix B; Observation Points 657, 665, 666, 667, 674, 678, 692, 691, 688, 689, 681, 686, 687**). Vegetation cover was typically 50-80% and was primarily a mix of planted grasses and alfalfa (**Table 2**). Annual weed cover was typically less than 25%. Most parcels had been cut and baled at the time of the inspection.

Table 2. Species[1] Observed in Reclaimed Hayland

	Native	Introduced
Grasses	Western wheatgrass (*Pascopyrum smithii*) Slender wheatgrass (*Elymus trachycaulus*) Green needlegrass (*Nassella viridula*) Sideoats grama (*Bouteloua curtipendula*) Canada wildrye (*Elymus canadensis*)	Smooth brome (*Bromus inermis*) Crested wheatgrass (*Agropryon cristatum*) Intermediate wheatgrass (*Agropyron intermedium*) Kentucky bluegrass (*Poa pratensis*) Wild oats (*Avena* sp.) Field brome (*Bromus arvensis*)
Forbs/ Shrubs		Alfalfa (*Medicago sativa*) Yellow sweetclover (*Melilotus officinalis*) Kochia (*Bassia scoparia*) Russian thistle (*Salsola* sp.) Pigeon grass (*Setaria* sp.); Ragweed (*Ambrosia artemisifolia*) Mustard sp. Annual sunflower (*Helianthus annuus*) **Absinthe wormwood (*Artemisia absinthium*)** **Canada thistle (*Cirsium arvense*)** Curly dock (*Rumex crispus*)

[1]Noxious weeds in bold.

A couple of parcels inspected had particularly weedy growth that was atypical of the other parcels (**Appendix B; Observation Points 665, 691**). These locations were flat and soil

replacement and contouring appeared fine, so the reason for the weedy growth may have been due to the timing of reclamation seeding or contamination of the seed mix.

One parcel of hayland had recently had irrigation dikes repaired within the ROW and reseeded (**Appendix B; Observation Point 667**).

One parcel of hayland had Canada thistle (**Appendix B; Observation Point 688**) and another had absinthe wormwood (**Appendix B; Observation Point 678**), both noxious weeds. The location with wormwood had been dominated by wormwood during last year's inspection; treatment had been effective since wormwood cover during this inspection was reduced to scattered small patches.

2.2.3 Cropland

Crop growth was visually consistent in density, height, and color within and outside of the ROW in most parcels, indicating reclamation was successful (**Appendix B; Observation Points 659, 667, 668, 669, 670, 671, 672, 673, 675, 682, 684**). However, yield cannot be compared visually. Annual weed cover was noticeably higher in a few of the parcels, but it was patchy and not dominant. One parcel with a lentil crop appeared to be ripening faster within the ROW. The pods were filled within the ROW and crop density appeared similar, but the plants were beginning to dry up within the ROW and were still green outside of the ROW (**Appendix B; Observation Point 667**).

2.2.4 River Crossing and Drainages

The crossing of Lake Sakakawea/Missouri River included a 2.1 mile bore under the lake. Both bore entry and exit locations on either side were within cropland. Impacts to floodplain vegetation and river breaks were entirely avoided. The bore location on the east side was observed; the wheat crop appeared similar within and outside of the ROW and workspace (**Appendix B; Observation Point 669**). Last year annual weed cover appeared to be higher within the area of the bore workspace, whereas this year there was not a visual difference within compared to outside of the area.

One intermittent drainage was observed during the inspection which had been open trenched during construction (**Appendix B; Observation Point 665**). The channel of the drainage had been naturally recolonized by wetland vegetation and there were no noxious weeds observed, however the grass seed mix had not germinated well or established along the slopes of the drainage and bare soils and annual weed cover were prevalent.

Another area included a bore under a road and wetland where everything looked intact and there were no concerns (**Appendix B; Observation Point 681**).

2.2.5 Roads and Maintenance

Roads along the ROW had primarily been bored underneath to avoid impacts (**Appendix B; Observation Point 681**) and there were no known temporary access roads to observe.

The ROW was being maintained in good condition. No trash or equipment was observed. Valve sites were fenced, secure, and maintained well. A minor amount of annual weeds were present (**Appendix B; Observation Points 669, 680**).

2.2.6 Tree and Shrub Mitigation

The “Tree/Shrub Mitigation Plan” for the Project states that the planting of trees and shrubs and three-year survival monitoring will be completed by the county NRCS offices. No annual reports have been submitted to date.

3.0 Issues, Resolutions, and Recommendations

3.1 MONITOR AND TREAT ANNUAL WEEDS

Annual weeds should be monitored at a few select locations to ensure grasses continue to establish and outcompete the annual weeds over time. Wenck recommends at least one year of mowing in June prior to seed ripening. This would reduce the annual weed seed bank within a year or two and allow the grass cover to establish better.

- Southwest corner of Saddle Butte. Observation Point: 660/Photo 999. The composition was about 50% grass and 50% annual weeds; patches of annual weeds were higher (about 80%) where ROW turned north and intersected a Hess gas line.
- Hayland parcel south of Highway 14, west side of Lake. Observation Point: 665/Photo 1007. Within the ROW, annual weed cover was about 80%, comprised of wild oats, ragweed, kochia, wild mustard, pigeon grass, and annual wild sunflower. Green needlegrass was present at a cover of less than 5%.
- Hayland parcel west of Highway 8, east side of Lake. Observation Point: 691/Photo 1045. Parcel of CRP or hayland. Within the ROW the vegetation cover was high at over 90%, but composition was weedy. Species included curly dock, Kentucky bluegrass, intermediate wheatgrass, slender wheatgrass, foxtail barley, field brome, and yellow sweetclover.

3.2 TREAT NOXIOUS WEEDS

Sacagawea has been treating known locations of noxious weeds and there was improvement from last year's inspection at several locations. Three locations of noxious weeds were observed which should continue to be monitored and treated, along with any other locations along the ROW. Canada thistle was noted at Observation Points 675 and 688 and absinthe wormwood was noted at Observation Point 678.

3.3 MONITOR RECENTLY RESEEDED AREAS

A couple of parcels were recently reseeded and should be monitored in the next year or two to ensure the grasses continue to establish and cover the bare ground. Additional over-seeding may be necessary in the future if grass cover does not take hold.

- Area northwest of Saddle Butte. Observation Point: 662, 663/Photos 1002, 1003, 1004. This portion of the ROW has had multiple seedings and was seeded again this year. Composition was about 30% vegetation and 70% bare ground.
- Irrigation dike repair area east of Keene office. Observation Point: 667/Photos 1009. Recently re-worked portion of the ROW where a landowner requested irrigation dikes be repaired. Bare soil has been seeded and irrigation dikes have an erosion control blanket installed over them to stabilize the soil.

3.4 DRAINAGE CROSSING RESEEDING

One intermittent drainage was observed during the inspection which had been open trenched during construction (Appendix B; Observation Point 665/Photo 1005). The channel of the drainage had been naturally recolonized by wetland vegetation and there were no noxious weeds observed, however the grass seed mix had not germinated well or

established along the slopes of the drainage and bare soils and annual weed cover were prevalent. Wenck recommends that a seed mix is applied in spring 2020 to this area and annual weeds are mown in June or early July to minimize seed set.

3.5 TREE AND SHRUB MITIGATION

Sacagawea provided a “Tree/Shrub Mitigation Plan” (Docket 115, Tree and Shrub Mitigation Plan), which was approved by the Commission 30 November 2016. The Project-specific plan describes that the planting of trees and shrubs and three-year survival monitoring will be completed by the county NRCS offices. No annual reports have been submitted to date. It is recommended that the PSC follow up with Sacagawea regarding the status of tree mitigation efforts and to request survival reports.

4.0 References

North Dakota Public Service Commission (ND PSC). 2019. Online Case Search. Available from: http://www.psc.nd.gov/database/company_case_list.php. Accessed October 2019.

Weiler, Mark. Sacagawea representative. Personal Communication: discussion during site visit on August 6, 2019.

5.0 Signatures

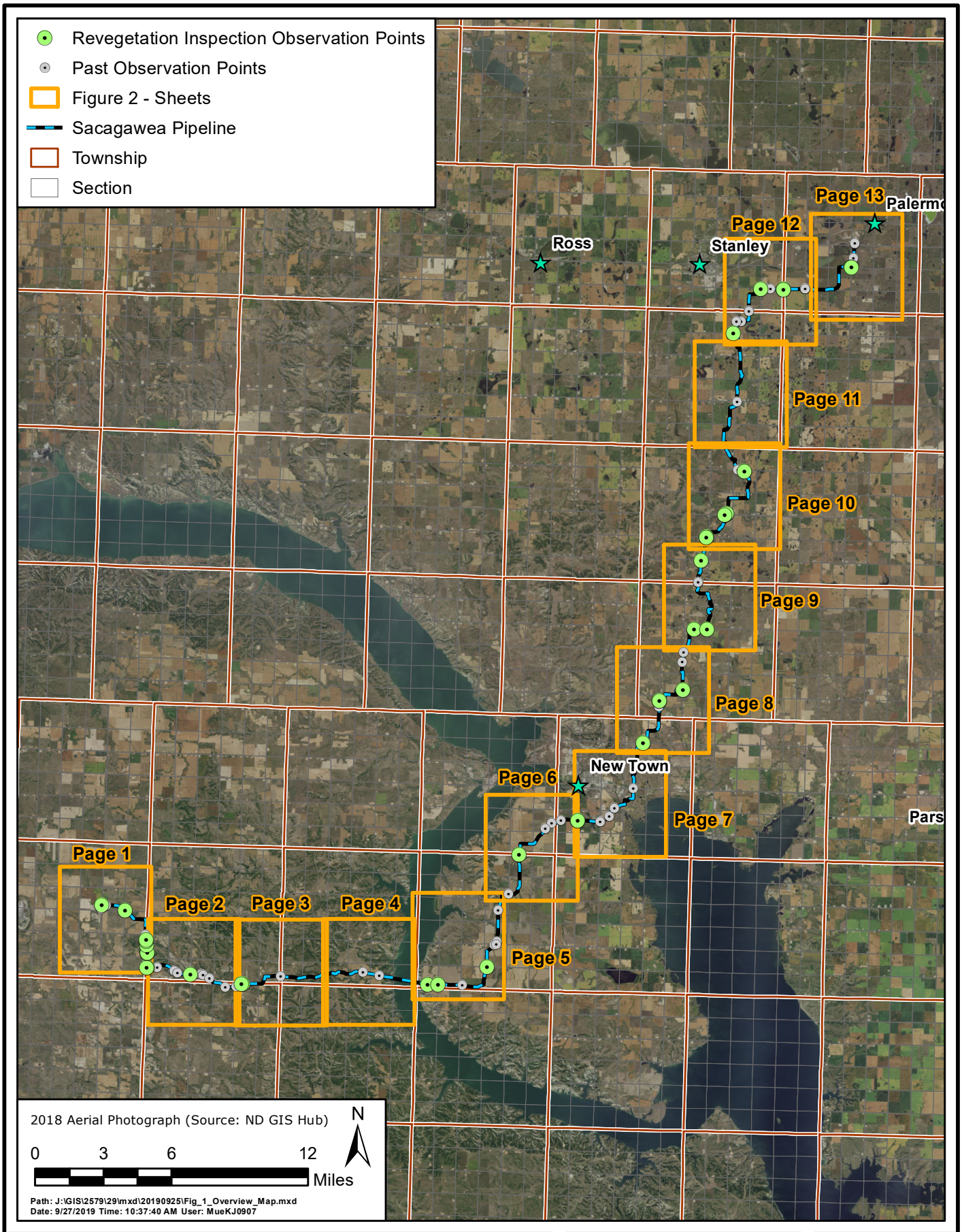
The services performed by Wenck staff for this project have been conducted in a manner consistent with the degree of care and technical skill appropriately exercised by professionals currently practicing in this area under similar time and budget constraints. Recommendations and findings contained in 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.

Lead Project Manager and Environmental Scientist, Sara Simmers, prepared the report.

_____ ___10/11/19_____

Sara Simmers, Environmental Scientist Date

Figures



NORTH DAKOTA PUBLIC SERVICE COMMISSION

Overview Map

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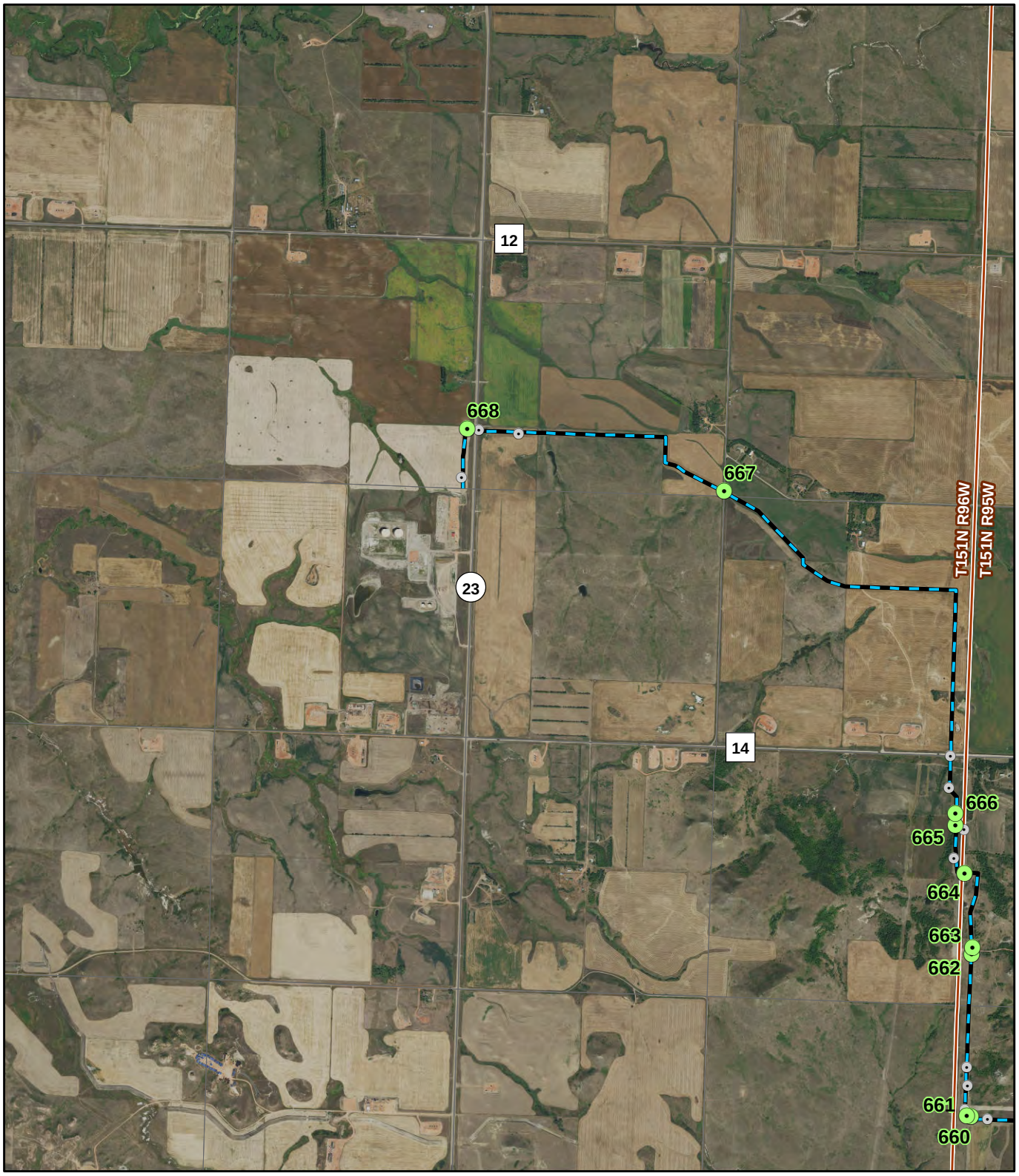
Figure 1



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Revegetation Inspection Observation Points

Past Observation Points

Sacagawea Pipeline

Township

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NORTH DAKOTA PUBLIC SERVICE COMMISSION

Field Observation Map (Page 1 of 13)

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Figure 2

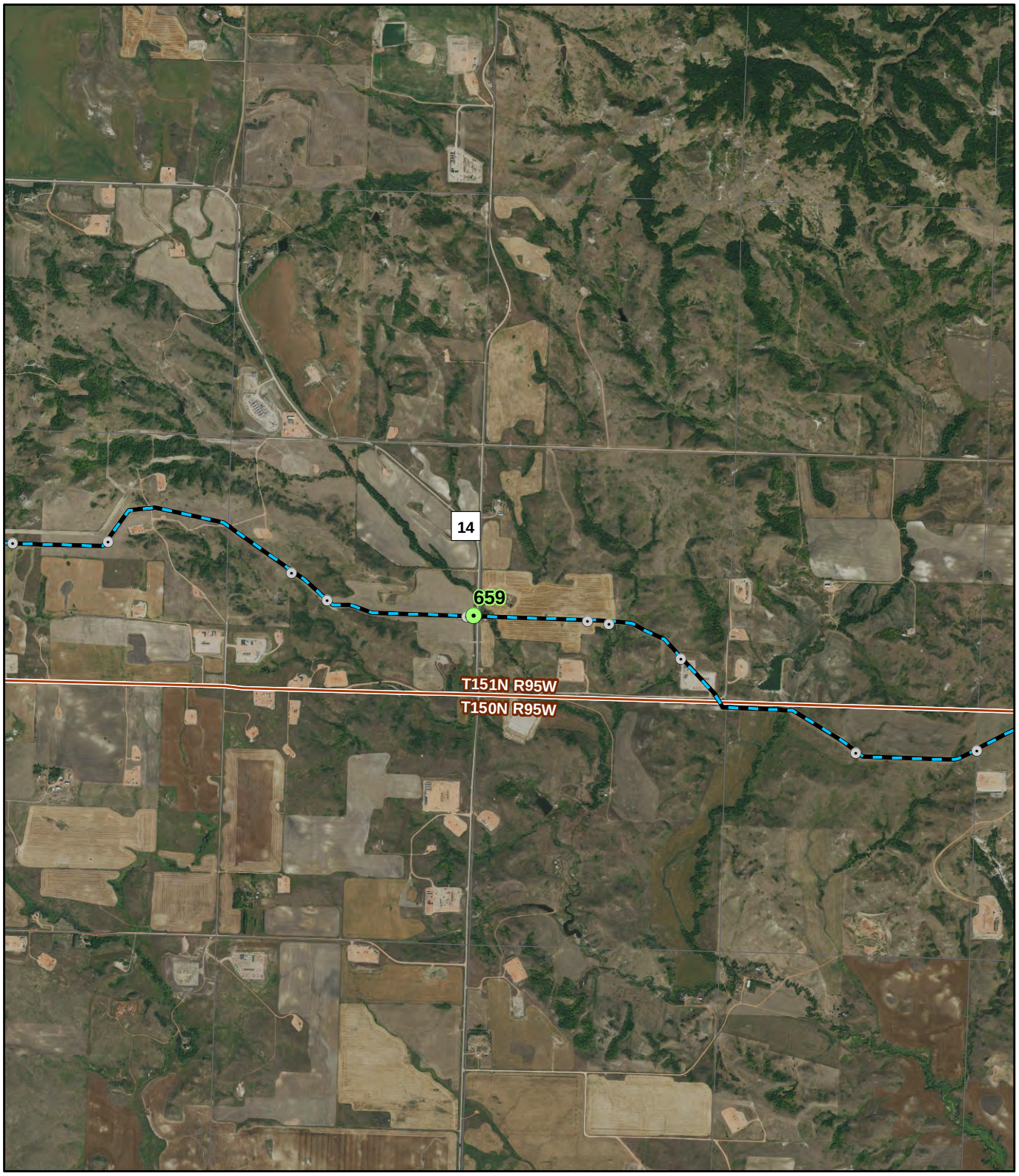

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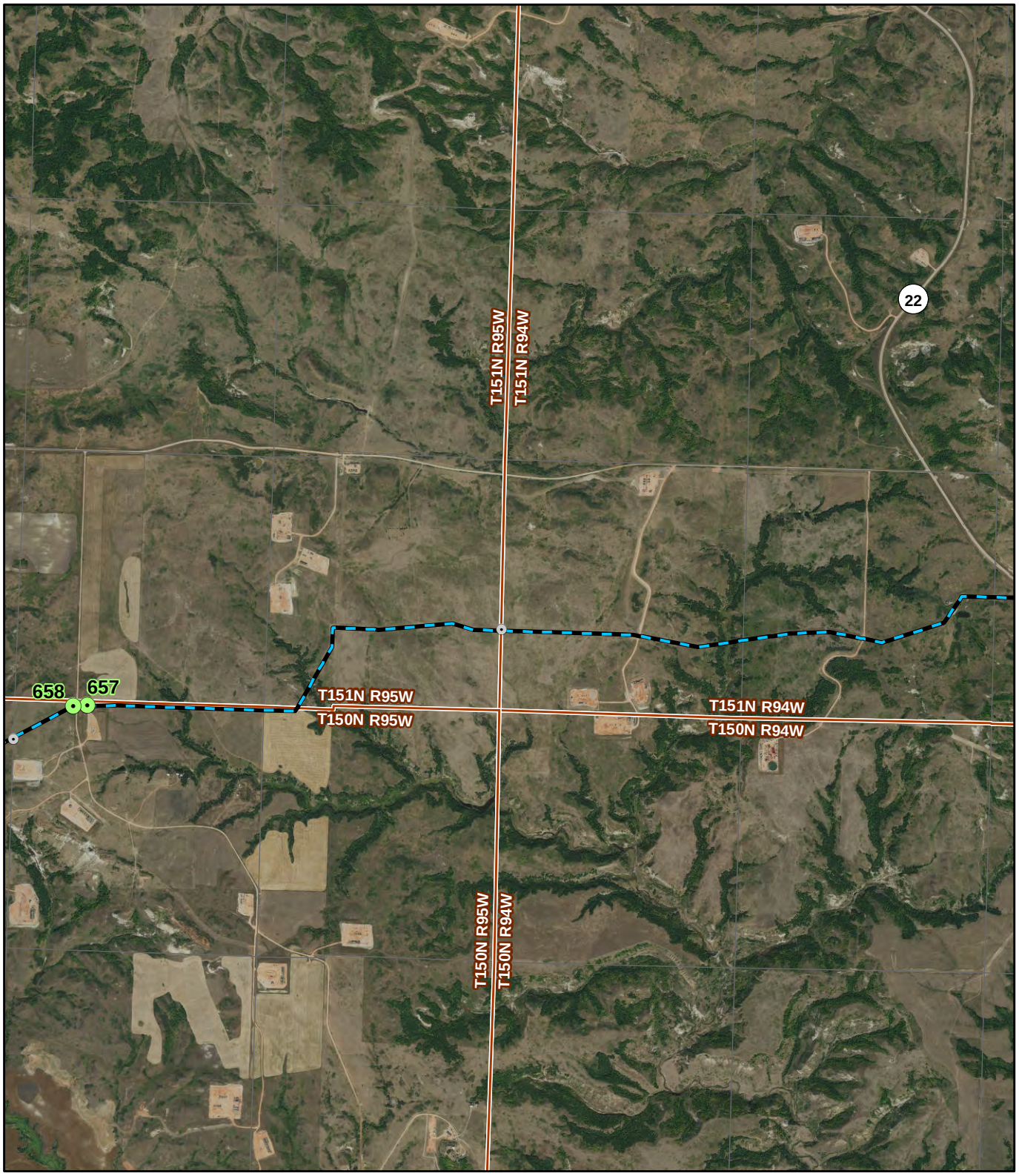
Figure 2



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2018 Aerial Photograph (Source: ND GIS Hub)

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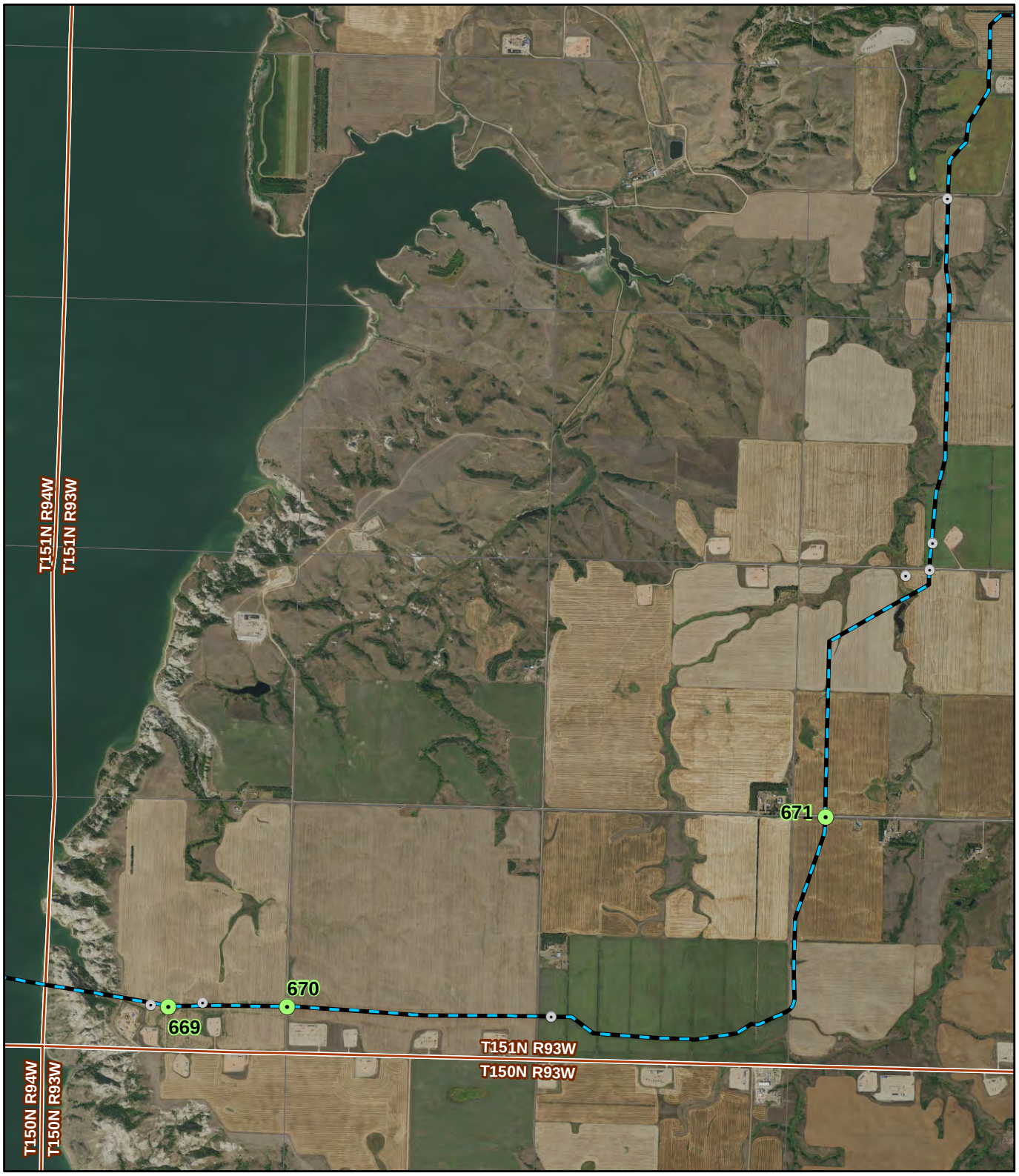

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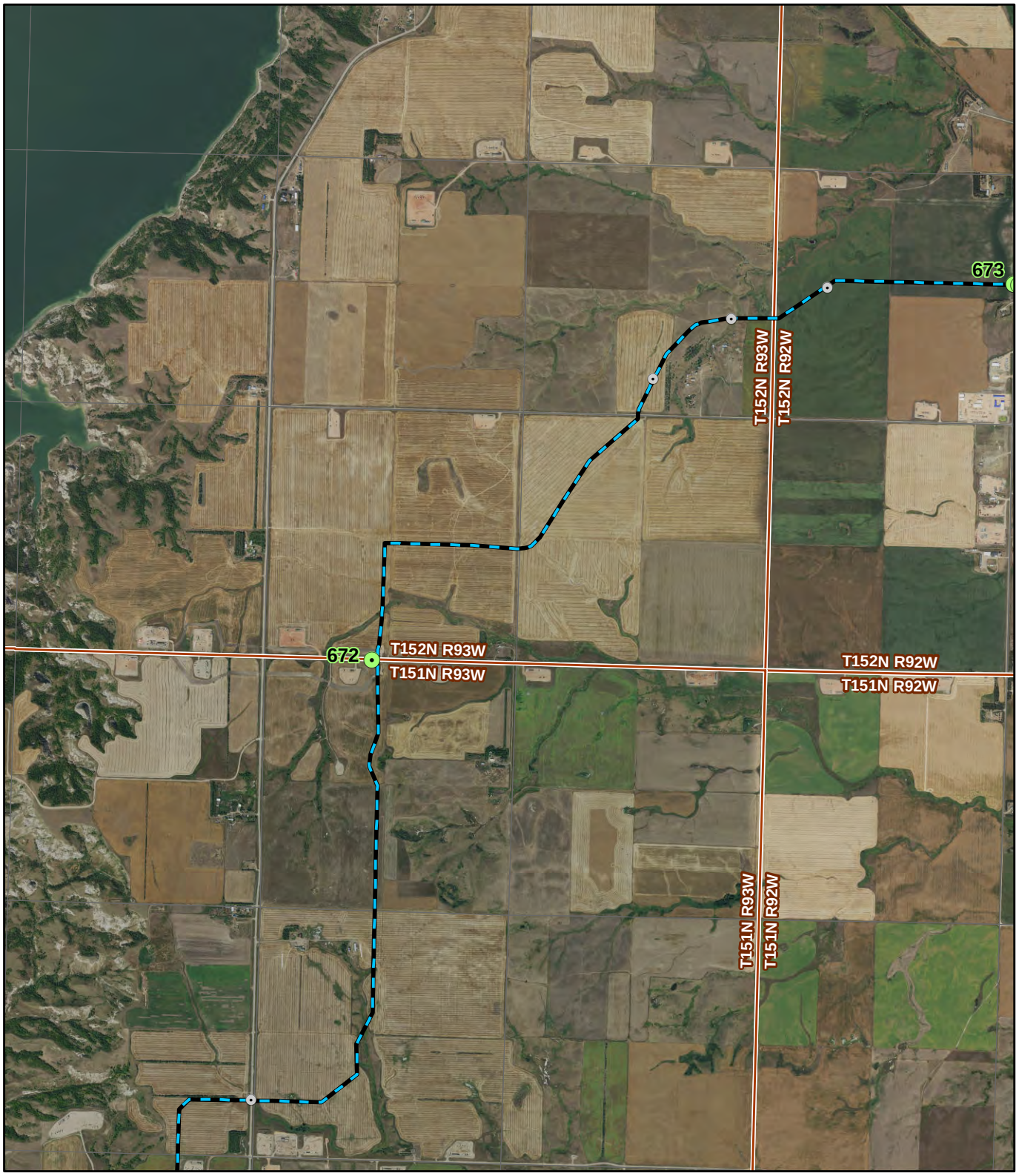

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Revegetation Inspection Observation Points

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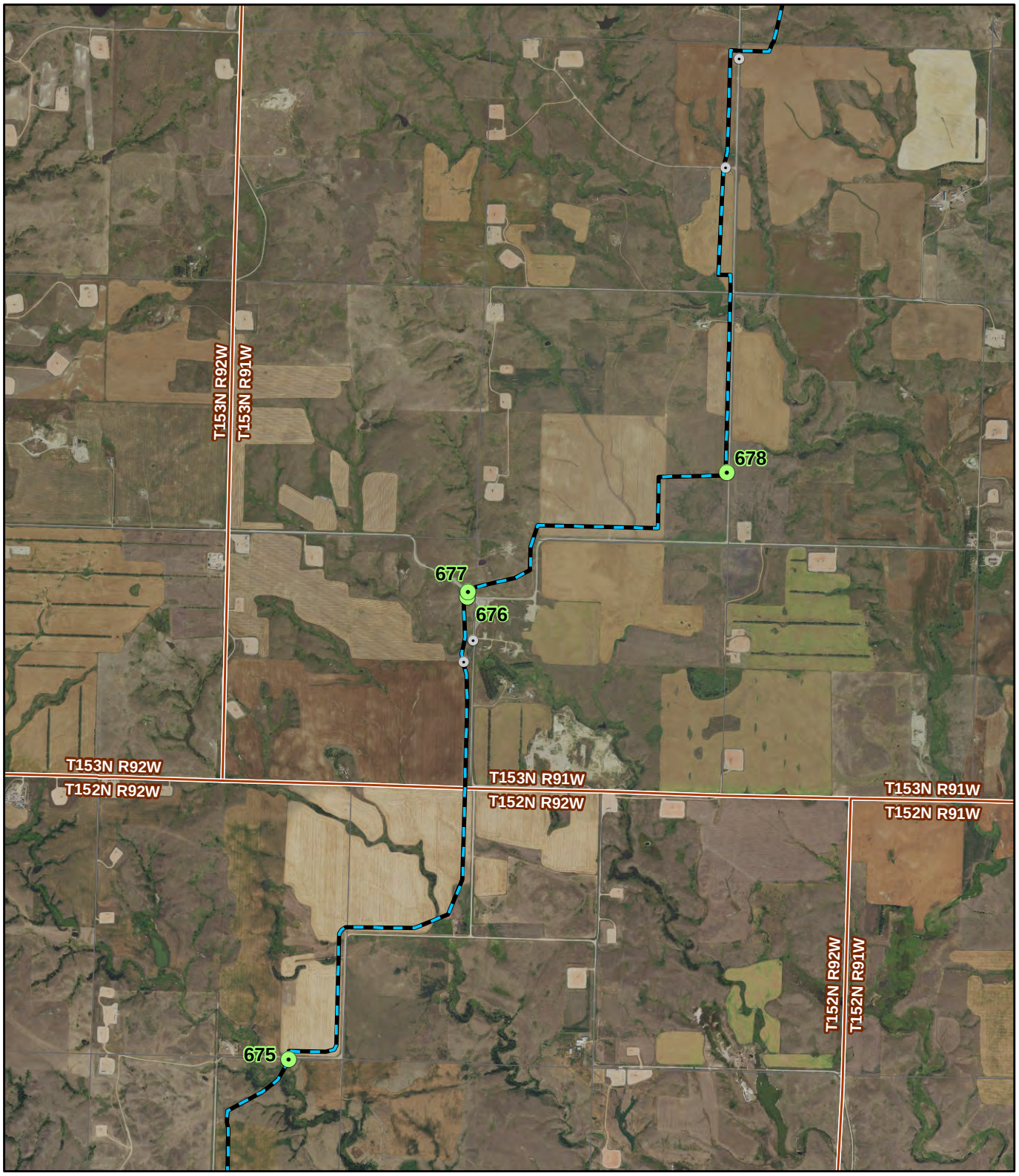

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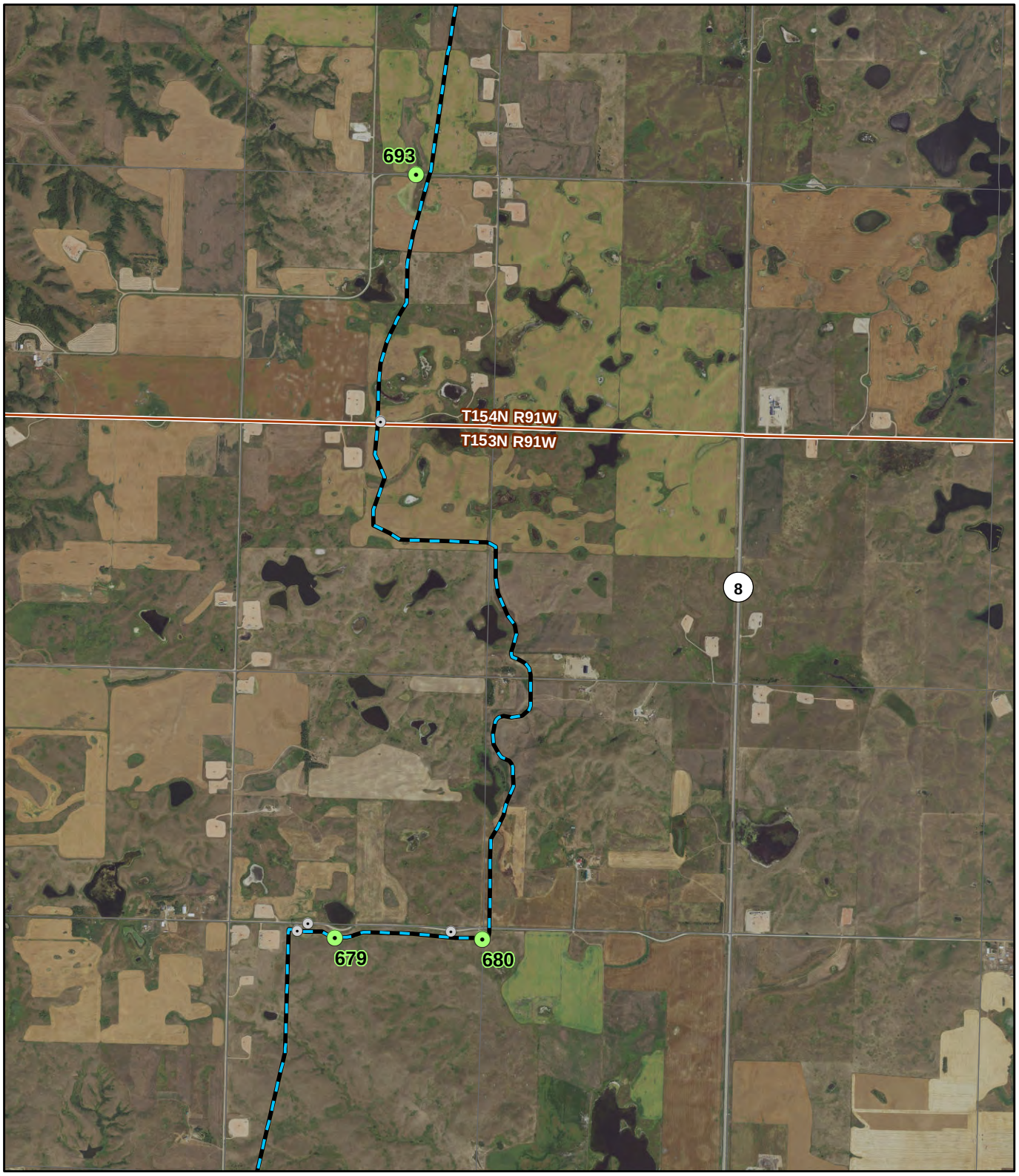

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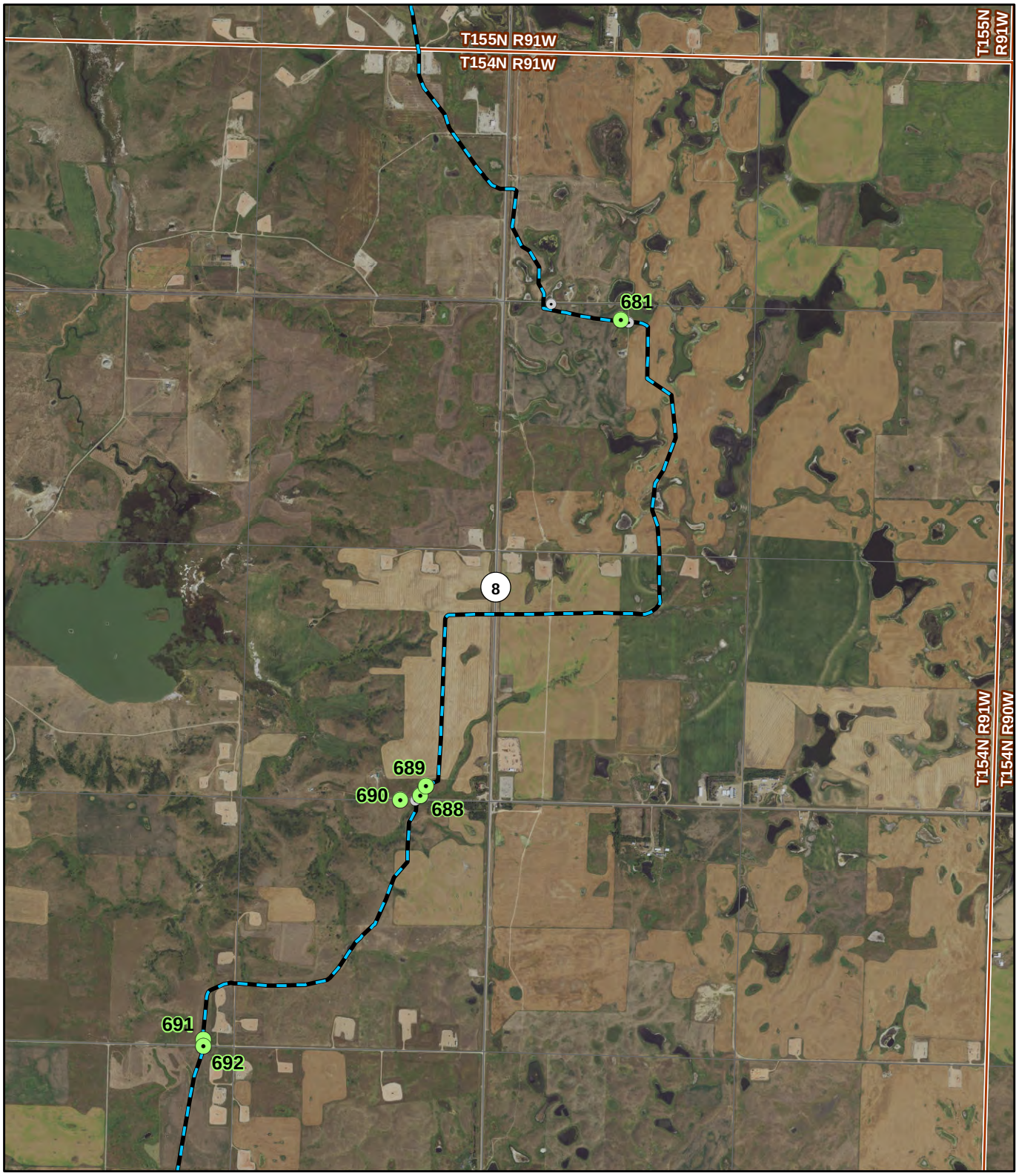

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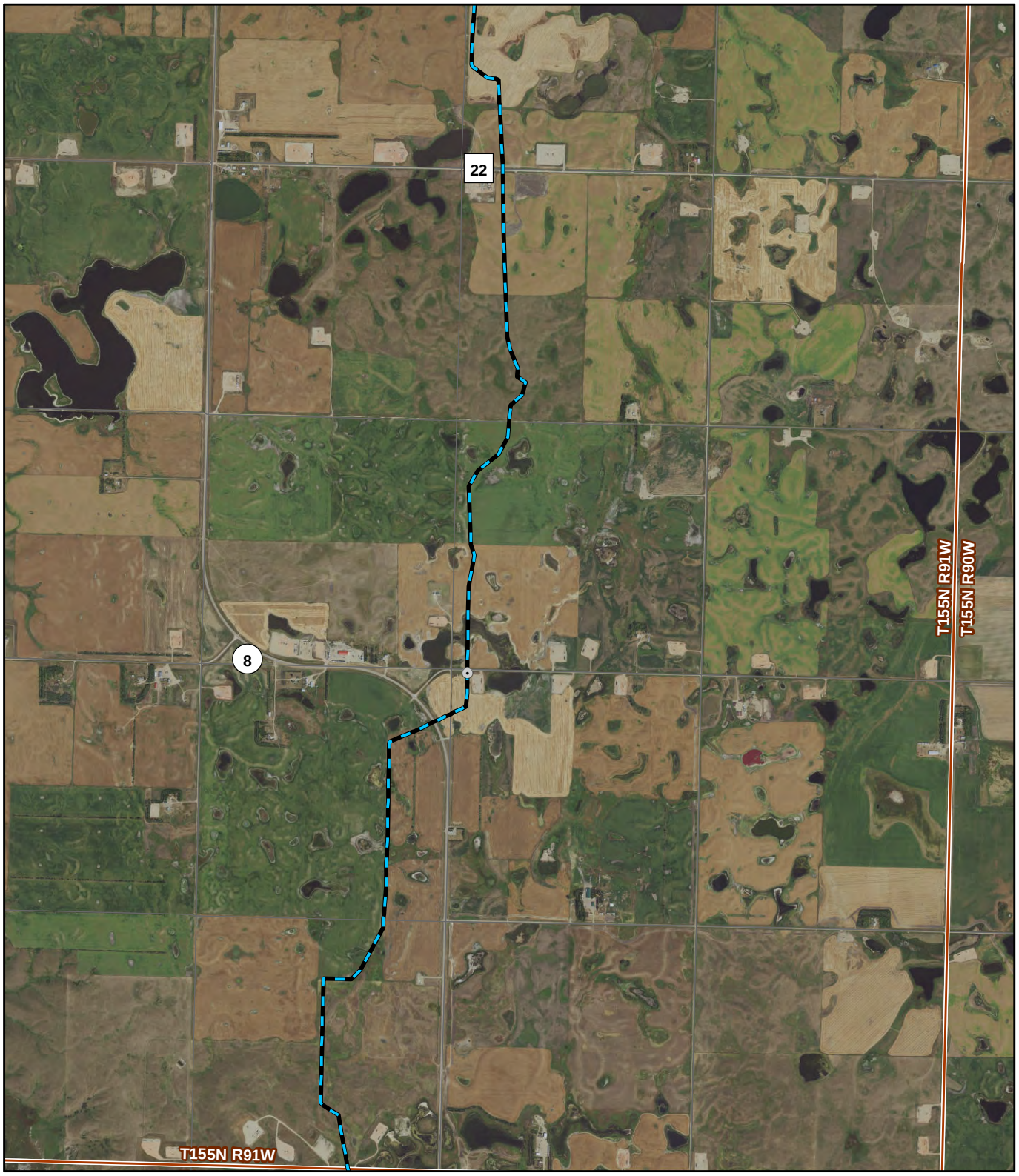

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Field Observation Map (Page 11 of 13)

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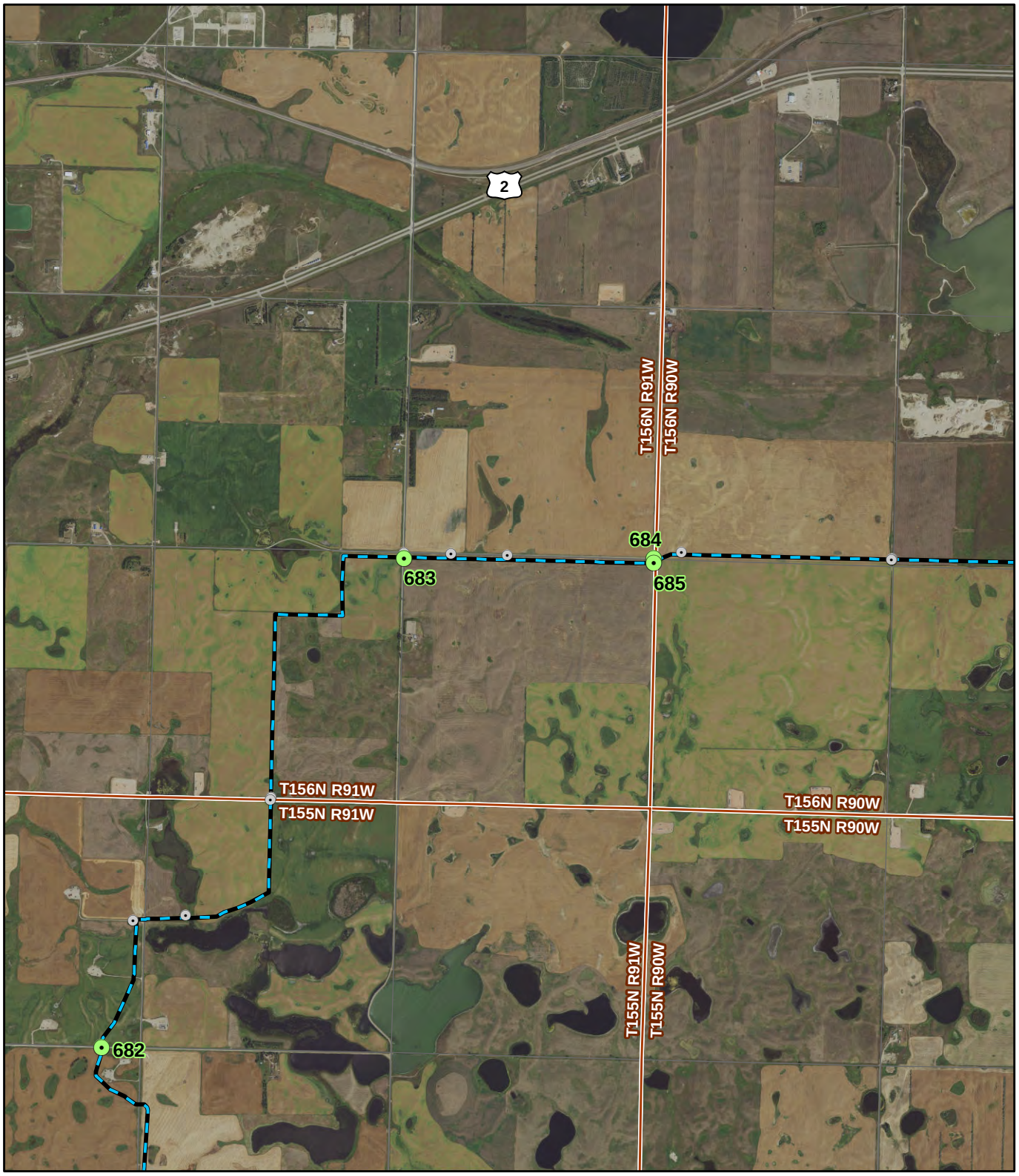
Figure 2



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NORTH DAKOTA PUBLIC SERVICE COMMISSION	WENCK Responsive partner. Exceptional outcomes.	OCT 2019
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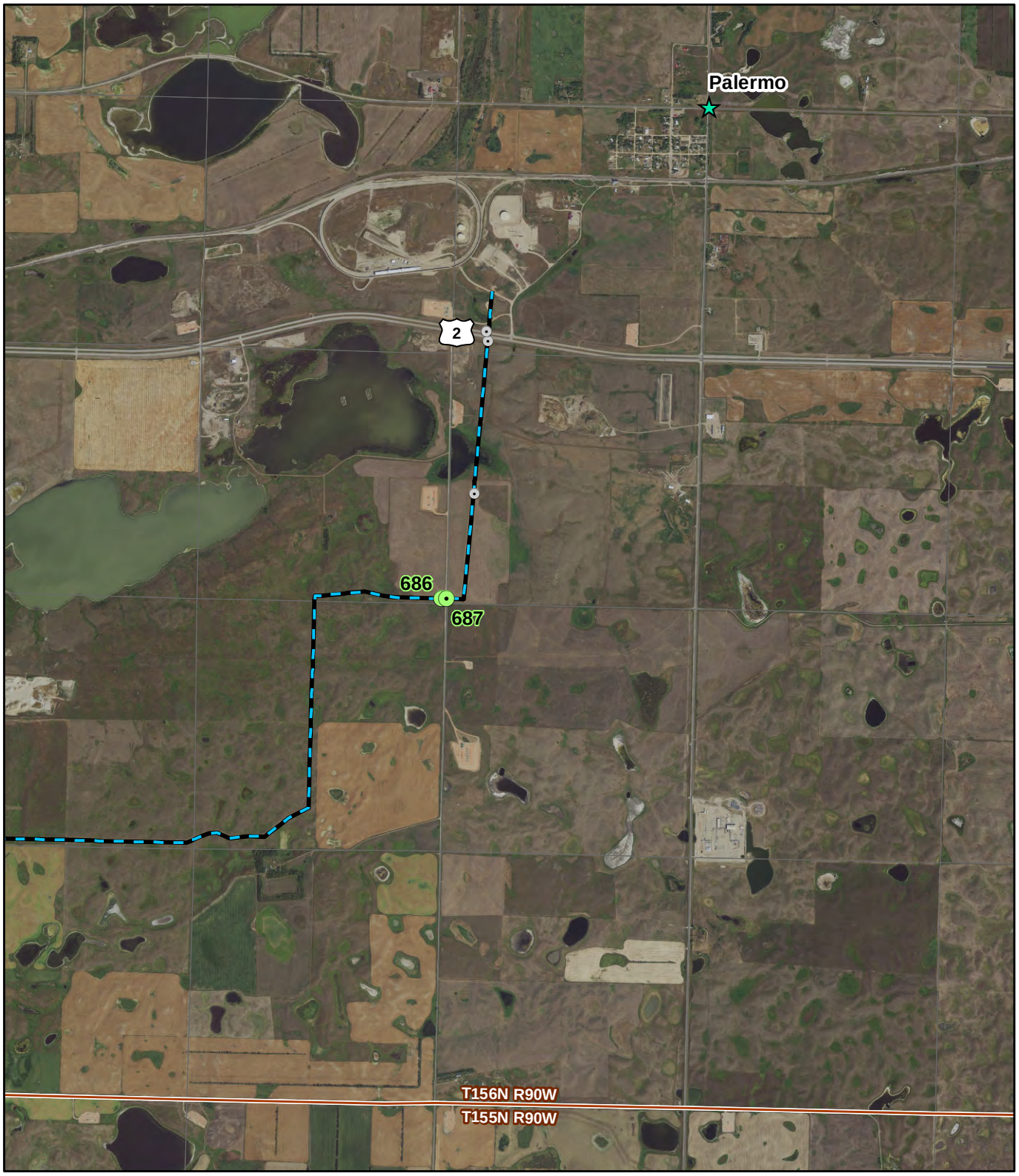

2018 Aerial Photograph (Source: ND GIS Hub)

3,000 1,500 0 3,000

Feet

N

Revegetation Inspection Observation Points

Past Observation Points

Sacagawea Pipeline

Township

Section

Path: J:\GIS\2579\29\mxd\20190925\Fig_2_Field_Observations.mxd
Date: 9/27/2019 Time: 10:49:37 AM User: MueKJ0907

NORTH DAKOTA PUBLIC SERVICE COMMISSION

Field Observation Map (Page 13 of 13)

WENCK

Responsive partner. Exceptional outcomes.

OCT 2019

Figure 2

Appendix A

Observation Point Coordinates

Point #	Latitude	Longitude	Time stamp
657	47.84710368	-102.8061382	06-AUG-19 9:08:14AM
658	47.8470347	-102.8073178	06-AUG-19 9:25:07AM
659	47.85196619	-102.8558843	06-AUG-19 9:46:11AM
660	47.85545524	-102.8971127	06-AUG-19 10:00:59AM
661	47.85551098	-102.8974754	06-AUG-19 10:07:37AM
662	47.86484515	-102.8974615	06-AUG-19 10:17:47AM
663	47.8652666	-102.8974362	06-AUG-19 10:23:12AM
664	47.8695277	-102.8983138	06-AUG-19 10:29:15AM
665	47.87231561	-102.899209	06-AUG-19 10:34:21AM
666	47.87295205	-102.8992441	06-AUG-19 10:39:18AM
667	47.8911448	-102.9199728	06-AUG-19 10:48:18AM
668	47.89429296	-102.9422142	06-AUG-19 10:58:51AM
669	47.85006627	-102.6317805	06-AUG-19 12:24:06PM
670	47.85024086	-102.6216009	06-AUG-19 12:34:28PM
671	47.86206286	-102.5757985	06-AUG-19 12:45:29PM
672	47.93436307	-102.5479322	06-AUG-19 12:57:18PM
673	47.95704274	-102.4935979	06-AUG-19 1:08:34PM
674	47.95700267	-102.4931379	06-AUG-19 1:09:41PM
675	48.00722871	-102.4334501	06-AUG-19 1:36:48PM
676	48.03421358	-102.4190369	06-AUG-19 1:49:42PM
677	48.03452027	-102.4190337	06-AUG-19 1:52:51PM
678	48.04175234	-102.3969594	06-AUG-19 2:00:10PM
679	48.08029762	-102.3876145	06-AUG-19 2:15:29PM
680	48.08042209	-102.3749372	06-AUG-19 2:21:53PM
681	48.18149669	-102.3432467	06-AUG-19 2:39:26PM
682	48.2692227	-102.3568434	06-AUG-19 3:03:48PM
683	48.29793239	-102.3317038	06-AUG-19 3:14:22PM
684	48.29826725	-102.3100373	06-AUG-19 3:18:16PM
685	48.29795955	-102.3100362	06-AUG-19 3:18:50PM
686	48.31293264	-102.2464965	06-AUG-19 3:35:56PM
687	48.31295335	-102.2460284	06-AUG-19 3:37:30PM
688	48.15371487	-102.3595583	06-AUG-19 4:00:38PM
689	48.15429549	-102.3591303	06-AUG-19 4:02:33PM
690	48.15344053	-102.361286	06-AUG-19 4:10:20PM
691	48.13931728	-102.3778282	06-AUG-19 4:17:11PM
692	48.13895786	-102.3777959	06-AUG-19 4:20:35PM
693	48.12451852	-102.3822517	06-AUG-19 4:24:41PM

Appendix B

Photographs

	**Observation Point: 657** **Image #: 0994** Date Taken: August 6, 2019 Direction Photo is Taken: East Photo Description: Hayland. Landowner did not specify seed mix to be used for this parcel, so a mix of green needlegrass, slender wheatgrass, western wheatgrass, and sideoats grama was used.
	**Observation Point: 657** **Image #: 0995** Date Taken: August 6, 2019 Direction Photo is Taken: East Photo Description: Close-up of vegetation in hayland. All seeded species except sideoats grama were a dominant part of the stand at 70-80% cover. A minor amount of annual weeds were present, including kochia, Russian thistle, and pigeon grass, and less than 5% of the introduced smooth brome grass and yellow sweetclover were present.
	**Observation Point: 658** **Image #: 0997** Date Taken: August 6, 2019 Direction Photo is Taken: Southwest Photo Description: Route through parcel of native rangeland. Multiple pipelines running adjacent; the Sacagawea line in on the north (right) side. Rangeland had not been grazed this year. Species composition on Sacagawea right-of-way (ROW) was about 75-80% quackgrass; 10-20% kochia; and less than 5% western wheatgrass, slender wheatgrass, pigeon grass, and green needlegrass along the edge of the ROW.

	**Observation Point: 659** **Image #: 0998** Date Taken: August 6, 2019 Direction Photo is Taken: West Photo Description: ROW through field of canola. Crop looked comparable height and color within and outside of ROW.
	**Observation Point: 660** **Image #: 0999** Date Taken: August 6, 2019 Direction Photo is Taken: East Photo Description: Sacagawea ROW along the south side of Saddle Butte, adjacent and intersecting other pipeline ROWs. The composition was about 50% grass and 50% annual weeds; patches of annual weeds were higher (about 80%) where ROW turned north and intersected a Hess gas line. Species included kochia (dominant), green needlegrass, smooth brome, Russian thistle, crested wheatgrass, wheat (cover crop), intermediate wheatgrass, slender wheatgrass, sweetclover, western wheatgrass, and sideoats grama.
	**Observation Point: 661** **Image #: 1001** Date Taken: August 6, 2019 Direction Photo is Taken: North Photo Description: Continuing north along the west side of Saddle Butte, the ROW consisted of green needlegrass, western wheatgrass, sideoats grama, and slender wheatgrass, all distributed evenly with vigorous growth and about 50% total cover. Kochia was present between 10-40% cover. Erosion control was in place and recontouring was good on the slope. Lighter colored soils on the slope indicate topsoil/subsoil mixing and likely a lack of adequate original topsoil. Vegetation is establishing despite these conditions.

Observation Point: 662
Image #: 1002
Date Taken: August 6, 2019
Direction Photo is Taken: South

Photo Description: View along ROW toward Saddle Butte (on left of photo). This portion of the ROW has had multiple seedings and was seeded again this year. Composition was about 30% vegetation and 70% bare ground. Species were crested wheatgrass, smooth brome, western wheatgrass, slender wheatgrass, green needlegrass and foxtail barley. Minimal to no annual weed cover indicates it may have been sprayed.

Observation Point: 663
Image #: 1003
Date Taken: August 6, 2019
Direction Photo is Taken: North

Photo Description: Erosion control is in place at a washout along the gravel road in the photo, which needs further repair.

Observation Point: 663
Image #: 1004
Date Taken: August 6, 2019
Direction Photo is Taken: North

Photo Description: Another closer view of washout and repair efforts. Growth of foxtail barley (grass with light-colored seed heads) likely indicates salts on soil surface and therefore some subsoil mixing. Seeded grasses were present, though at low cover, and should establish over time.

	**Observation Point: 664** **Image #: 1005** Date Taken: August 6, 2019 Direction Photo is Taken: West/Northwest Photo Description: Another view of reseeded portion of ROW north of Saddle Butte. Grass cover at 30-40%.
	**Observation Point: 665** **Image #: 1006** Date Taken: August 6, 2019 Direction Photo is Taken: South Photo Description: ROW trenched through an intermittent stream. Wetland vegetation has reestablished within the stream channel. Adjacent slopes were 80-90% bare soil with the remainder of the vegetation annual weeds. Seed mix did not appear to germinate here.
	**Observation Point: 665** **Image #: 1007** Date Taken: August 6, 2019 Direction Photo is Taken: North Photo Description: Upland flat north of the stream channel in previous photo. This parcel appears to be hayland but had not been hayed this year; vegetation outside of the ROW was crested wheatgrass, alfalfa, and silver sagebrush. Within the ROW, annual weed cover was about 80%, comprised of wild oats, ragweed, kochia, wild mustard, pigeon grass, and annual wild sunflower. Green needlegrass was present at a cover of less than 5%.

	**Observation Point: 666** **Image #: 1008** Date Taken: August 6, 2019 Direction Photo is Taken: South Photo Description: Hayland parcel. ROW was about 30% alfalfa, 30% grass, and 10-20% annual weeds.
	**Observation Point: 667** **Image #: 1009** Date Taken: August 6, 2019 Direction Photo is Taken: Southeast Photo Description: Recently re-worked portion of the ROW where a landowner requested irrigation dikes be repaired again. Bare soil has been seeded and irrigation dikes have an erosion control blanket installed over them to stabilize the soil.
	**Observation Point: 667** **Image #: 1010** Date Taken: August 6, 2019 Direction Photo is Taken: Northwest Photo Description: Opposite side of road from irrigation dikes, showing crop field of lentils. The crop within the ROW appeared to have ripened faster. The plants were drying up and turning brown, but the pods were filled. Cover was similar within and outside ROW.

	**Observation Point: 668** **Image #: 1011** Date Taken: August 6, 2019 Direction Photo is Taken: South/southwest Photo Description: ROW through cropland north of Keene substation, on west side of Highway 23. Appeared to have been barley, possibly baled for hay. The ROW appeared to have more annual weed cover compared to adjacent cropland.
	**Observation Point: 669** **Image #: 1012** Date Taken: August 6, 2019 Direction Photo is Taken: West Photo Description: View across the area of the Lake Sakakawea bore entry/exit workspace. The wheat crop in this area looked good and appeared comparable to the field outside of the workspace area.
	**Observation Point: 669** **Image #: 1013** Date Taken: August 6, 2019 Direction Photo is Taken: East Photo Description: Valve site at east bore location; maintained well with minor scattered annual weeds. ROW continues east over hill in distance. Cropland appeared to have no difference within or outside of ROW.

	**Observation Point: 670** **Image #: 1015** Date Taken: August 6, 2019 Direction Photo is Taken: West Photo Description: Wheat field. Appeared to be no visual difference within or outside of ROW.
	**Observation Point: 670** **Image #: 1016** Date Taken: August 6, 2019 Direction Photo is Taken: East Photo Description: Another wheat field. Appeared to be no visual difference within or outside of ROW. Tracks along ROW for unknown reason.
	**Observation Point: 671** **Image #: 1017** Date Taken: August 6, 2019 Direction Photo is Taken: South Photo Description: Wheat field. Appeared to be no visual difference within or outside of ROW.

	**Observation Point: 671** **Image #: 1018** Date Taken: August 6, 2019 Direction Photo is Taken: North Photo Description: Soybean field. Higher cover of kochia was apparent within the ROW compared to outside of ROW (dark green vegetation growth).
	**Observation Point: 672** **Image #: 1019** Date Taken: August 6, 2019 Direction Photo is Taken: South Photo Description: Wheat field. No visual difference within or outside of ROW.
	**Observation Point: 672** **Image #: 1020** Date Taken: August 6, 2019 Direction Photo is Taken: North Photo Description: Canola field. No visual difference within or outside of ROW. Annual weed growth in foreground was not associated with Sacagawea ROW.

Observation Point: 673
Image #: 1021
Date Taken: August 6, 2019
Direction Photo is Taken: West

Photo Description: Wheat field. Crop was visually similar within and outside of ROW. Appeared to be slight subsidence within ROW.

Observation Point: 674
Image #: 1022
Date Taken: August 6, 2019
Direction Photo is Taken: East

Photo Description: Hayland or CRP parcel. ROW vegetation was coming in very well with over 90% cover and an even mixture of alfalfa, intermediate wheatgrass, western wheatgrass, green needlegrass, smooth brome, slender wheatgrass, and white sweetclover. The adjacent area appeared to have been planted with a native seed mix including native forbs (Canada milkvetch, black-eyed Susan, purple prairie clover) and little bluestem.

Observation Point: 675
Image #: 1026
Date Taken: August 6, 2019
Direction Photo is Taken: Southwest

Photo Description: ROW through a parcel of native rangeland. Vegetation was approximately 20-30% cover each of planted grasses; native forbs including fringed sagewort and waveleaf thistle; and annual or weedy species including foxtail barley. A small patch of the noxious weed Canada thistle was noted at this point.

Observation Point: 675
Image #: 1028
Date Taken: August 6, 2019
Direction Photo is Taken: East

Photo Description: ROW parallels road in wheat field. No visual difference apparent in wheat crop.

Observation Point: 677
Image #: 1029
Date Taken: August 6, 2019
Direction Photo is Taken: South

Photo Description: ROW through native grassland. Grass cover was at approximately 50% including seeded species, inland saltgrass, and smooth brome. Erosion control in place on steep slope.

Observation Point: 677
Image #: 1031
Date Taken: August 6, 2019
Direction Photo is Taken: Northeast

Photo Description: Continuation of ROW across road in previous photo. Grass had better growth at 70% cover, with a few bare spots. Species included green needlegrass, smooth brome, and western wheatgrass.

	**Observation Point: 678** **Image #: 1032** Date Taken: August 6, 2019 Direction Photo is Taken: North Photo Description: Parcel of crested wheatgrass grassland, possibly used for rangeland. Within ROW was 50-70% cover of crested wheatgrass, western wheatgrass, sideoats grama, and green needlegrass with bare, gravelly soils between.
	**Observation Point: 678** **Image #: 1033** Date Taken: August 6, 2019 Direction Photo is Taken: West Photo Description: Same parcel as previous photo showing ROW grass establishment. This point had a few scattered plants of absinthe wormwood, a noxious weed. During last year's inspection, this location had dense wormwood across the parcel and it had been effectively sprayed last year after the inspection.
	**Observation Point: 680** **Image #: 1034** Date Taken: August 6, 2019 Direction Photo is Taken: West Photo Description: State land parcel of native rangeland. The ROW had been mown. The ROW in this area had between 50-80% total vegetation cover, of which 30-50% was grass. Species included green needlegrass, western wheatgrass, foxtail barley, Flodman's thistle, common dandelion, fringed sagewort, and black medick. Hilltops had areas with more bare soil between plants.

Observation Point: 680
Image #: 1035
Date Taken: August 6, 2019
Direction Photo is Taken: East

Photo Description: Valve site on top of hill on state land. Maintained in good condition.

Observation Point: 692
Image #: 1046
Date Taken: August 6, 2019
Direction Photo is Taken: South

Photo Description: Hayland. Good establishment of alfalfa and grass mix. No obvious visual difference within and outside ROW.

Observation Point: 691
Image #: 1045
Date Taken: August 6, 2019
Direction Photo is Taken: Northeast

Photo Description: Parcel of CRP or hayland with intermediate wheatgrass and alfalfa (vegetation adjacent to ROW). Within the ROW the vegetation cover was high at over 90%, but composition was weedy. Species included curly dock (tall, dark brown plant in photo), Kentucky bluegrass, intermediate wheatgrass, slender wheatgrass, foxtail barley, field brome, and yellow sweetclover.

Observation Point: 690
Image #: 1044
Date Taken: August 6, 2019
Direction Photo is Taken: South/southeast

Photo Description: ROW is routed along hills in distance, indicated by red line. Vegetation growth was higher cover compared to last year's inspection. Some minor spots of bare soils were still visible on steep parts of slope and tops of hills.

Observation Point: 689
Image #: 1043
Date Taken: August 6, 2019
Direction Photo is Taken: Southwest

Photo Description: ROW on parcel of idle grassland on a hillslope between fields and road. Grass cover was over 90% on slope in foreground.

Observation Point: 688/689
Image #: 1042
Date Taken: August 6, 2019
Direction Photo is Taken: Northeast

Photo Description: ROW with dense stand of smooth brome, alfalfa, green needlegrass, slender wheatgrass, Canada wildrye, and Canada thistle (a noxious weed). A small amount of crested wheatgrass and foxtail barley were also present. Point 688 marks a dense area of Canada thistle, which needs treatment within the Sacagawea ROW and adjacent ROW and fields.

	**Observation Point: 681** **Image #: 1036** Date Taken: August 6, 2019 Direction Photo is Taken: West Photo Description: Alfalfa hayland and some grass cover. Vegetation cover was similar within and outside of ROW.
	**Observation Point: 681** **Image #: 1037** Date Taken: August 6, 2019 Direction Photo is Taken: East Photo Description: Pipeline bored underneath road and wetland in foreground of photo. Pipeline marker visible.
	**Observation Point: 682** **Image #: 1038** Date Taken: August 6, 2019 Direction Photo is Taken: West Photo Description: Cropland. No visual difference within or outside of ROW.

	**Observation Point: 684** **Image #: 1039** Date Taken: August 6, 2019 Direction Photo is Taken: East Photo Description: ROW through canola field on left side of photo. Few weeds visible but otherwise crop growth was similar within and outside of ROW.
	**Observation Point: 686** **Image #: 1040** Date Taken: August 6, 2019 Direction Photo is Taken: West Photo Description: Hayland of alfalfa and grass at 50-75% cover. Grasses included sideoats grama, western wheatgrass, and green needlegrass.
	**Observation Point: 687** **Image #: 1041** Date Taken: August 6, 2019 Direction Photo is Taken: East/northeast Photo Description: Hayland with good regrowth within ROW.

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Exceptional outcomes.