



July 19, 2016

Darrell Nitschke
Executive Director
North Dakota Public Service Commission
600 East Boulevard; Dept. 408
Bismarck, ND 58505-0480

Re: Case No: PU-11-696 - Tree Sampling Plan

Dear Mr. Nitschke:

Attached you will find Basin Electric Power Cooperative's Tree-Shrub Sampling Plan for the AVS to Neset 345-kV Transmission Project (PU-11-696). The Tree-Shrub Sampling Plan was developed in January 2014 and was submitted to North Dakota Public Service Commission (PSC) staff electronically (attached). Through oversight, the Sampling Plan was inadvertently never submitted to the docket for formal approval as required in the Tree and Shrub Mitigation Specifications incorporated in the Project's Findings of Fact, Conclusions of Law and Order, April 2014. Basin Electric requests that the PSC formally approve our Tree-Shrub Sampling Plan.

Should you require additional information regarding this submittal, please contact myself at your convenience. I can be reached at 701.557.5635 or by e-mail at cmiller@bepc.com.

Sincerely,

A handwritten signature in black ink that reads "Cris Miller".

Cris Miller
Senior Environmental Specialist

/ser
Attachments

cc: Amanda Wangler
Casey Jacobson

From: [Lein, Jerry R.](#)
To: [Cris Miller](#)
Subject: [External] FW: PU-11-696 Tree and Shrub Sampling Plan
Date: Monday, July 18, 2016 1:43:57 PM
Attachments: [AVS-Neset tree and shrub plan Final.pdf](#)

From: Cris Miller [mailto:cmiller@bepc.com]
Sent: Thursday, January 30, 2014 3:58 PM
To: Lein, Jerry R.
Subject: PU-11-696 Tree and Shrub Sampling Plan

Attached is the AVS to Neset Transmission Project's Tree and Shrub Sampling Plan.
Should you have any comment or questions on this Sampling Plan please contact me at your convenience...Cris

Cris Miller

Senior Environmental Project Administrator
(701) 557-5635
(701) 202-6972 cell

Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck, ND 58503-0564

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ENVIRONMENTAL & STATISTICAL CONSULTANTS

4007 State Street, Suite 109, Bismarck, ND 58503
Phone: 701-250-1756 • www.west-inc.com • Fax: 701-250-1761

January 24, 2014

Cris Miller
Basin Electric Power Cooperative
1717 E Interstate Ave
Bismarck, ND 58503

RE: AVS-Neset Tree-Shrub Sampling Plan

Mr. Miller,

Basin Electric requested that WEST develop and implement a tree and shrub sampling plan to satisfy PSC permitting requirements for the AVS-Neset Project. In discussions with Mr. Jerry Lein, NDPSC, he recommended following the general guidance from the "Tree and Shrub Mitigation Specifications" as found in a previous permit. Mr. Lein provided the example Specifications and they are being applied in this plan. The Specifications state, in part, that:

- In windbreaks, shelterbelts and other planted areas, trees and shrubs anticipated to be cleared, regardless of size, must be inventoried for replacement.
- In native growth areas, trees anticipated to be cleared that are 1 inch diameter at breast height (dbh) or greater must be inventoried for replacement.
- In native growth areas, trees and shrubs may be inventoried by actual count or by a sampling method that will properly represent the woody vegetation population. A sampling plan developed by the company, filed with the North Dakota Public Service Commission (Commission) and approved prior to the start of construction must define the sampling method to be used for trees, for tall shrubs and for low shrubs. The data from the sample plots must be extrapolated to the total acreage of the wooded area to be cleared to determine the species and quantity of trees and shrubs to be replaced.

This sampling plan will apply these criteria, among others, to inventorying trees and shrubs as part of the AVS-Neset Project. Below is a description of how this inventory will be accomplished.

To satisfy the first bullet above from the Specifications, WEST will conduct a **direct count to inventory all trees and shrubs within planted windbreaks, shelterbelts and other planted areas** identified. These areas have been identified through review of recently aerial photographs. See attached aerial photographs for areas of planted tree locations which will be directly counted (shown in yellow).



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Given the length of the line, WEST will conduct a **sampling method in native growth areas** to provide statistically rigorous estimates of tree and shrub species composition and density as opposed to a direct count along the entire route. This sampled information of species and density will be extrapolated to the total acreage of native areas.

The Project, approximately 200 miles of transmission line, crosses several major ecoregions. Much of the Project crosses through or over grasslands and cropland. Areas of cropland are actively tilled and lack trees and shrubs, and as such sampling or other form of inventory for trees and shrubs will not be done in cropland areas. While trees and shrubs may be sparse within the grassland areas, there are scattered specimens of each. WEST proposes to sample the various native areas of grassland or planted grassland areas in the following breakdowns:

- 1) Grassland areas south of the Missouri River. This area is comprised largely of the Missouri Plateau ecoregion and is approximately 126 miles of the project, of which 82 is defined as grassland.
- 2) Grassland areas north of the Missouri River. This area is comprised largely of the Glaciated Dark Brown Prairie, has many potholes, and is approximately 69 miles of the project, of which 17 is defined as grassland.
- 3) Open grassland and shrubland areas within the badlands region, which is largely made up of the Little Missouri Badlands ecoregion, and is 8 miles of the project, of which 5 is defined as grassland or shrubland.

WEST will access and inventory trees and shrubs along approximately 30 0.5-mile long segments in the grassland area south of the Missouri River, 10 0.5-mile long segments in the grassland areas north of the Missouri River, and 10 0.5-mile long grassland/shrubland segments in the badlands area to comply with a statistically rigorous sampling design. The tentative 0.5-mile long segments for sampling are identified on the attached maps as sections of black and white checkered line. The sampling will be done such that a species composition and density (tree or shrubs/acre) can be calculated for each of these three areas. Based on the final ROW and area to be actually cleared, an estimate of the number of trees and shrubs can be calculated and extrapolated for each grassland parcel.

In addition to sampling grasslands throughout the Project, WEST has also identified native treed locations throughout the Project area. Most of these treed areas are located in the badlands region, but there are also native trees in ravines and riparian areas along the Project route as they are identified on recent color aerial photography. WEST proposes that the following sampling be done in these specific tree areas:

- 1) In all riparian areas along perennial streams (shown in blue on the attached maps), WEST will inventory trees and shrubs within a subsample of the riparian region at each perennial stream crossing. The sampled area will be composed of a minimum of four, 5-



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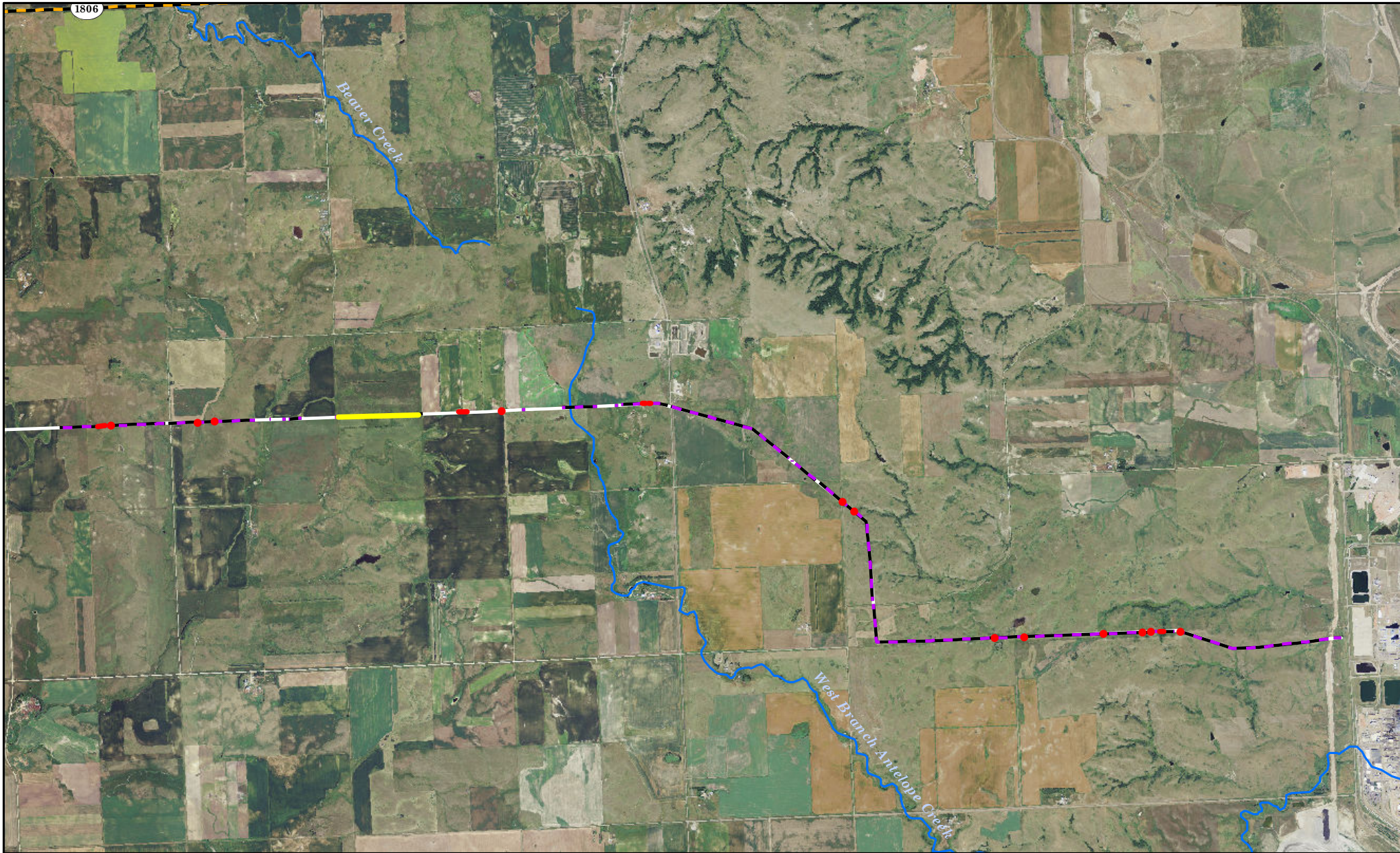
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m wide strips that traverse the length of the crossing. This sampling layout ensures that the sample will capture gradients of tree and shrub density that may occur at varying distances to streams. There are 5 perennial crossing to be sampled.

- 2) There are approximately 150 other native tree areas outside of the badlands crossed by the centerline (shown in red on attached maps), both north and south of the river. WEST will visit 20 of these tree areas based on a systematic sample and accessibility at time of survey spread across all locations between AVS and Neseet. Depending on size of the treed area, a direct count may be done or WEST will subsample within each of the 20 selected treed areas. The sampled area will be composed of a minimum of four, 5-m wide strips that traverse the treed area.
- 3) There are approximately 50 treed or taller/dense shrub areas within the badlands (shown in red on attached maps). WEST will visit 16 of these tree areas based on a systematic sample and accessibility at time of survey. Depending on size of the treed area, a direct count may be done or WEST will subsample within each of the 16 selected treed areas. The sampled area will be composed of a minimum of four, 5-m wide strips that traverse the treed area.

Sincerely

Clayton Derby
Senior Manager



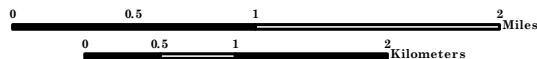
Map Features

- Proposed Transmission Line
- Tree/Shrub and Grassland Locations
 - Natural
 - Riparian
 - Planted
 - Grassland
- Major Roads
- Named Rivers/Creeks
- County Boundaries



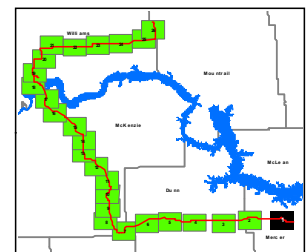
Proposed AVS to Neset Transmission Line

*Tree/Shrub and Grassland
Locations*











Map created on
01/24/14 by T. Thorn

Map Location





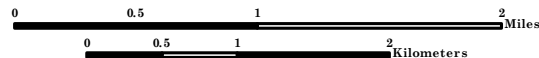
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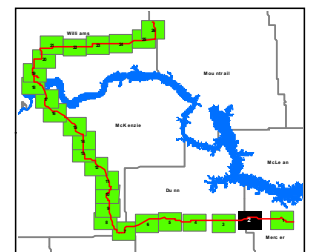
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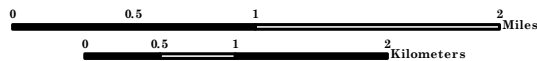
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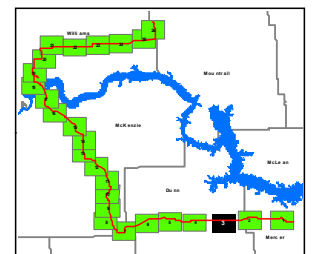
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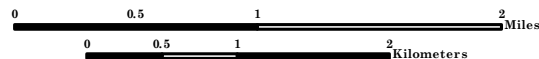
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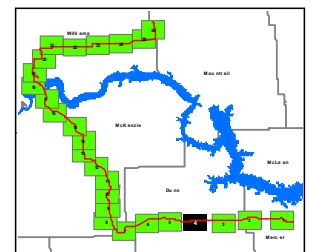
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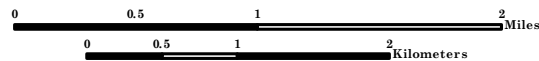
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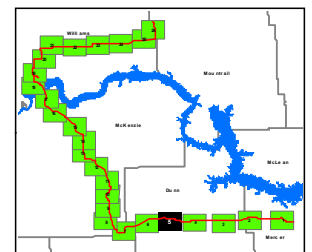
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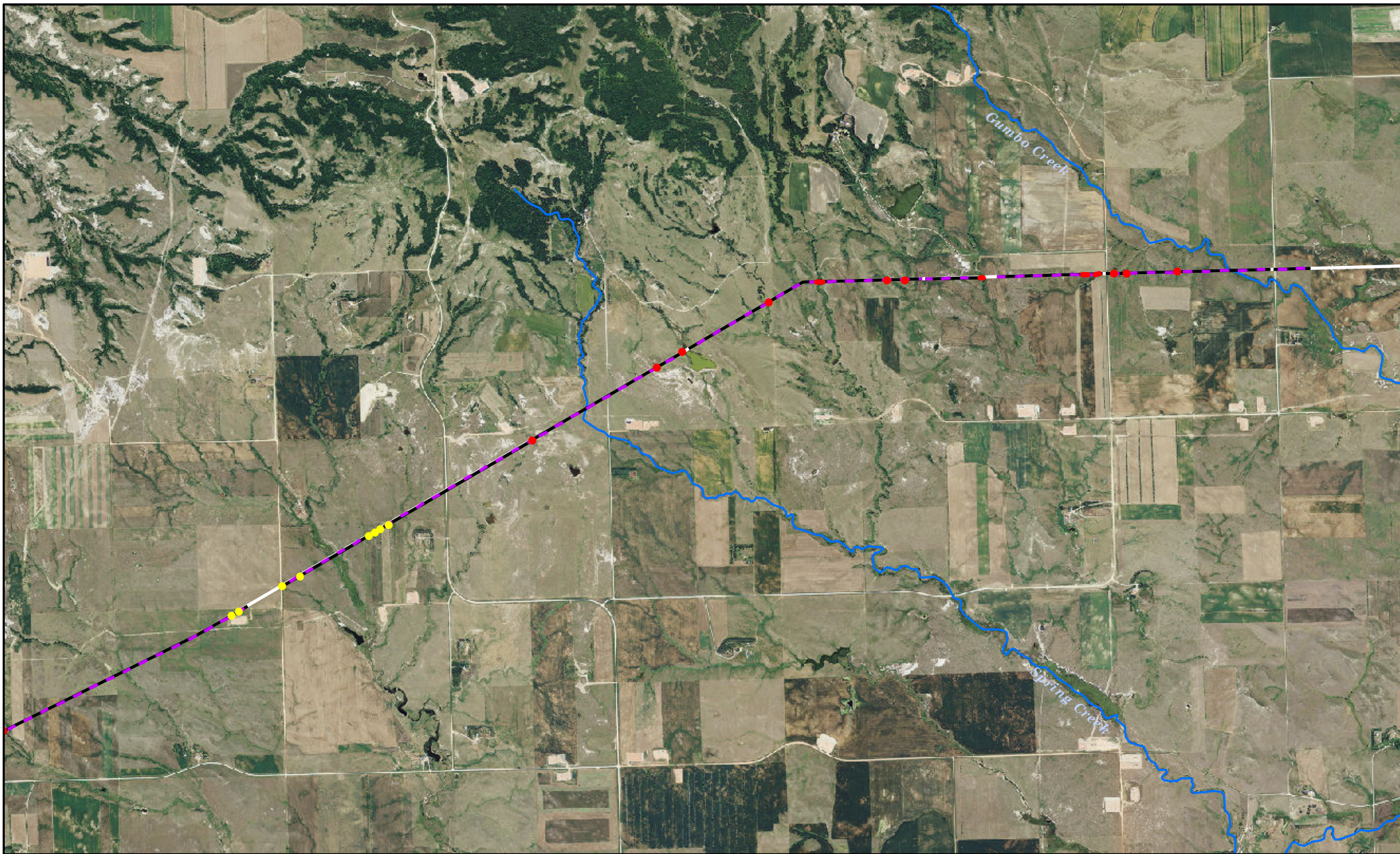
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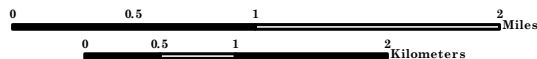
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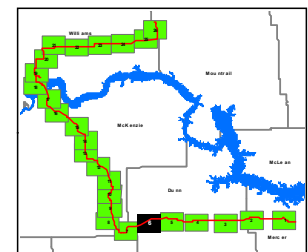
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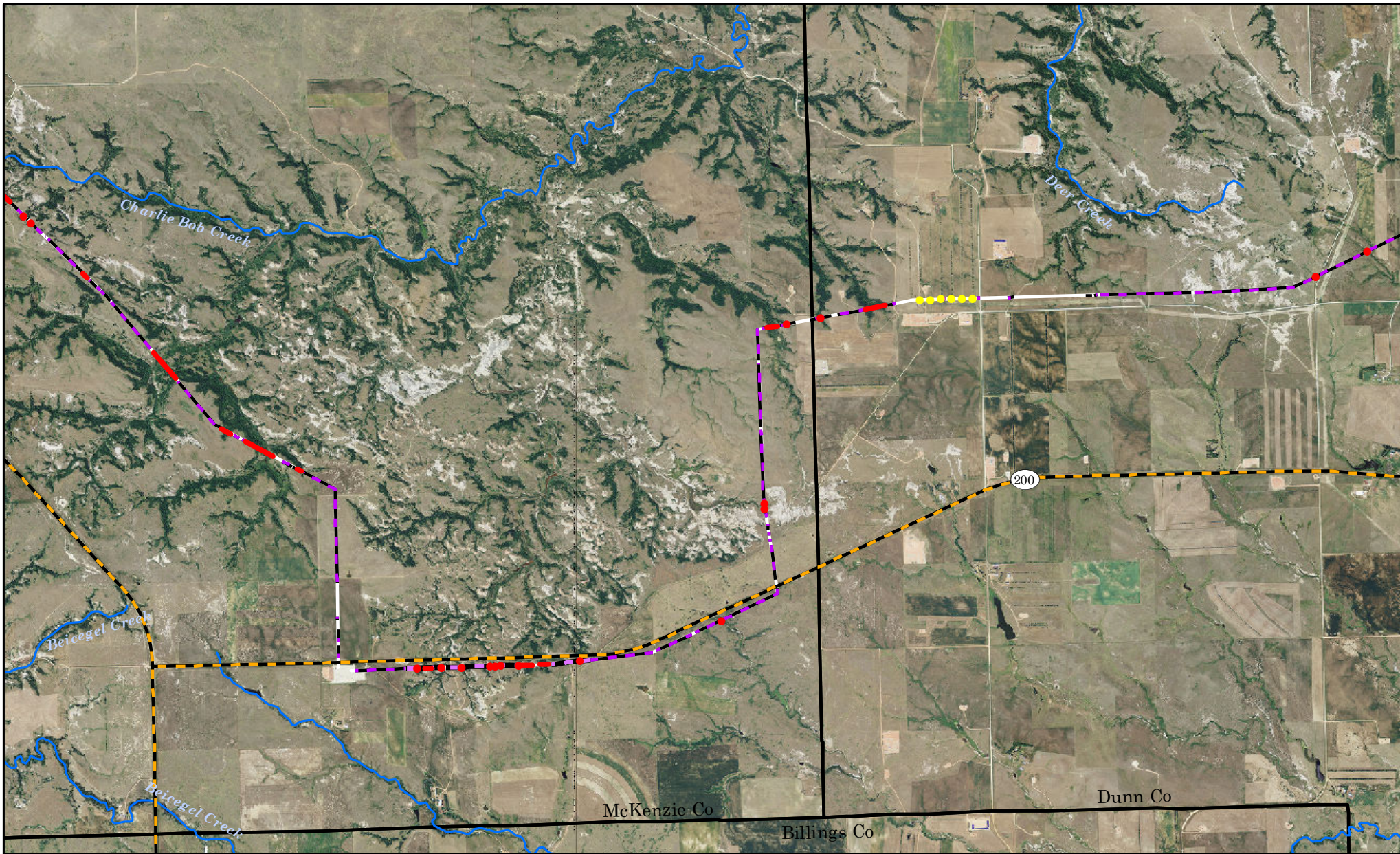
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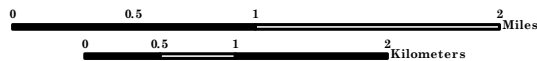
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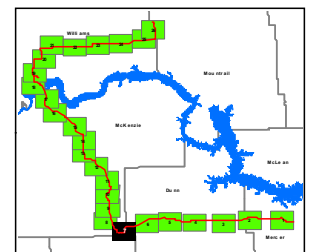
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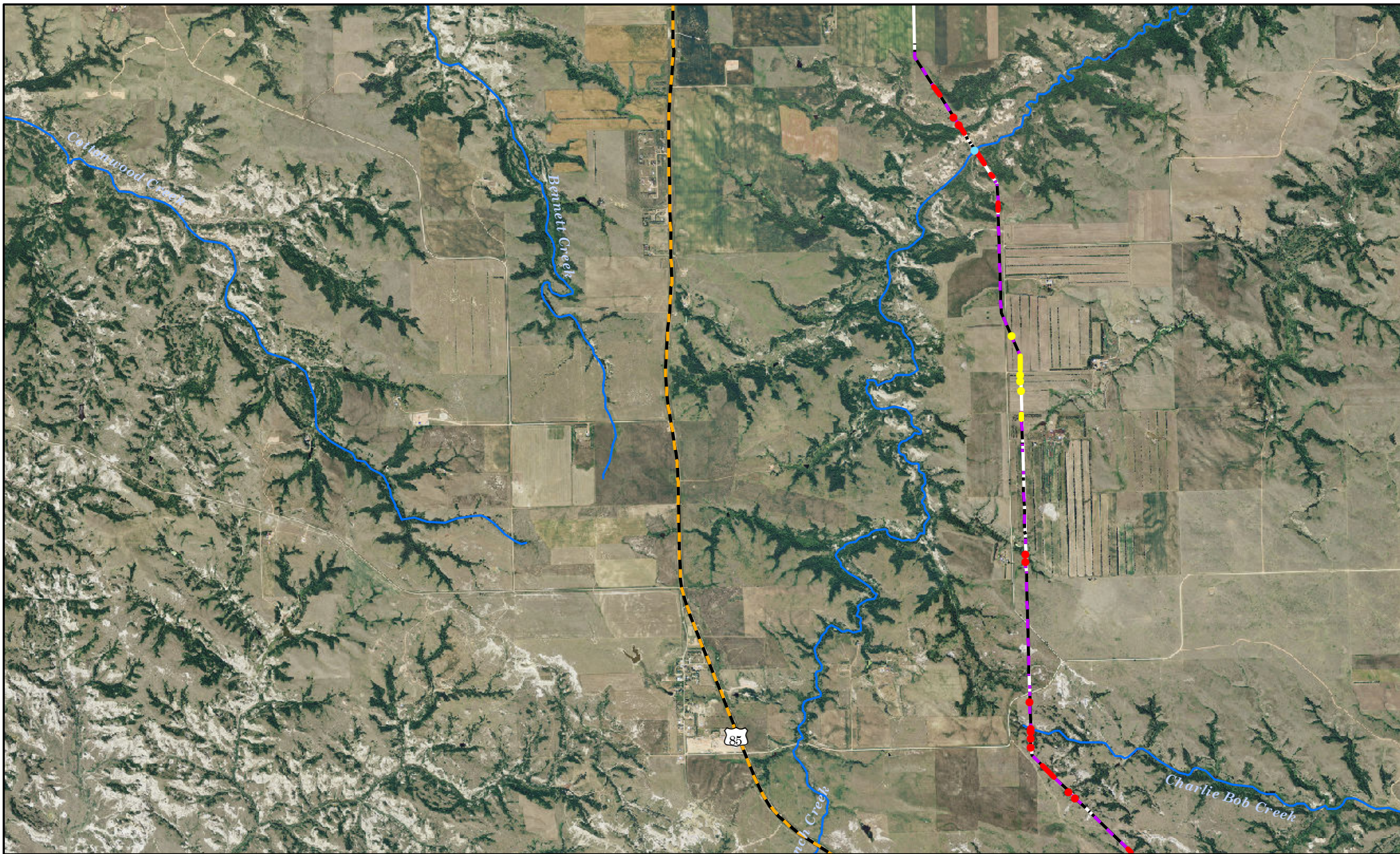
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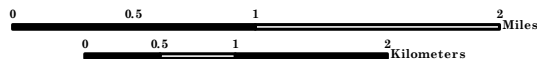
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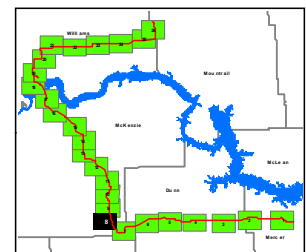
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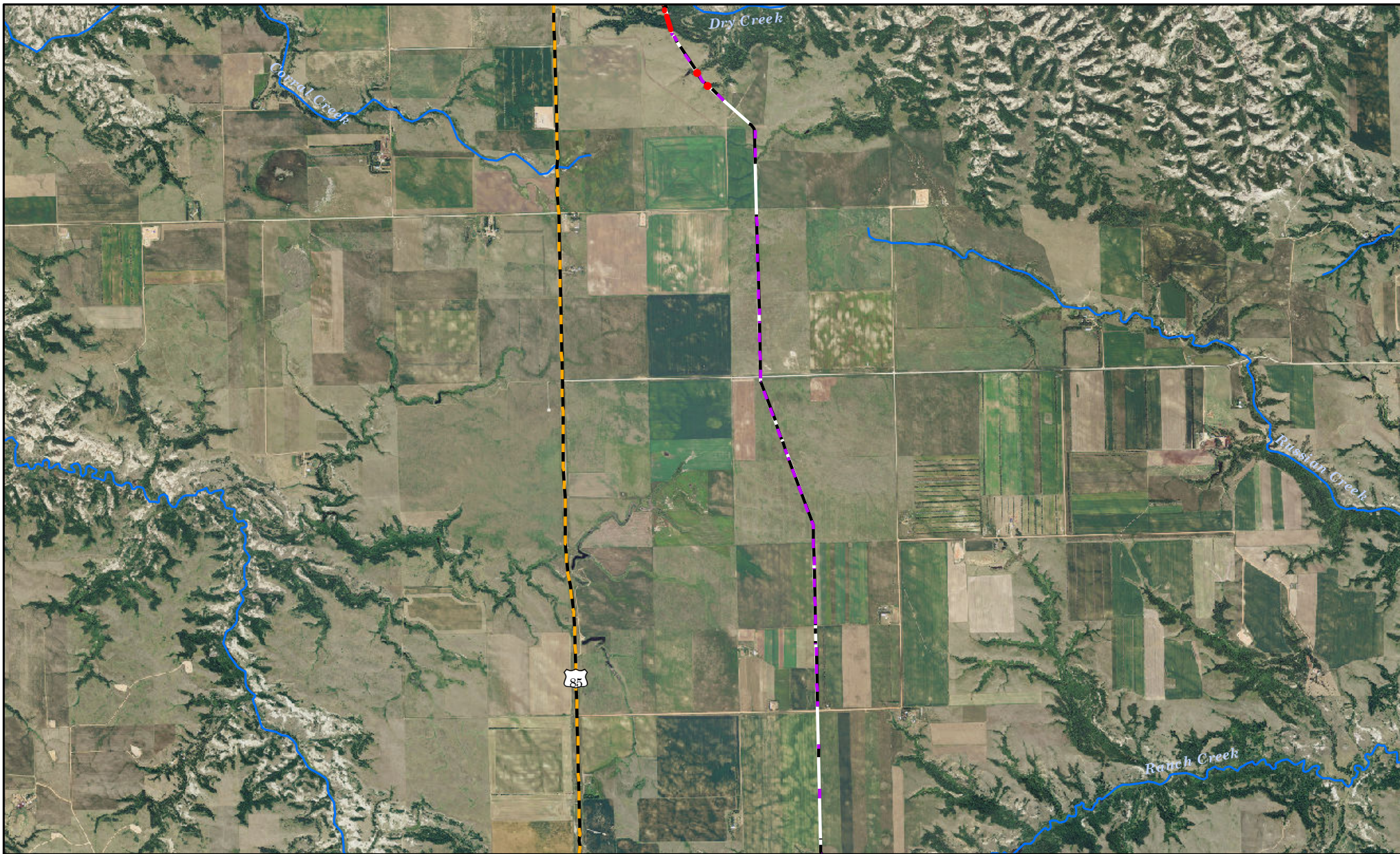


WEST

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Map Location





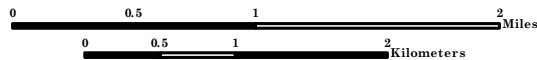
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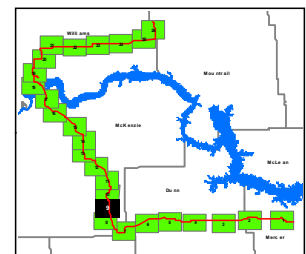
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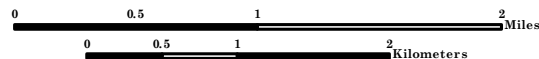
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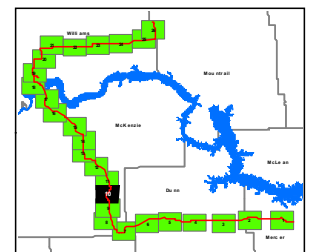
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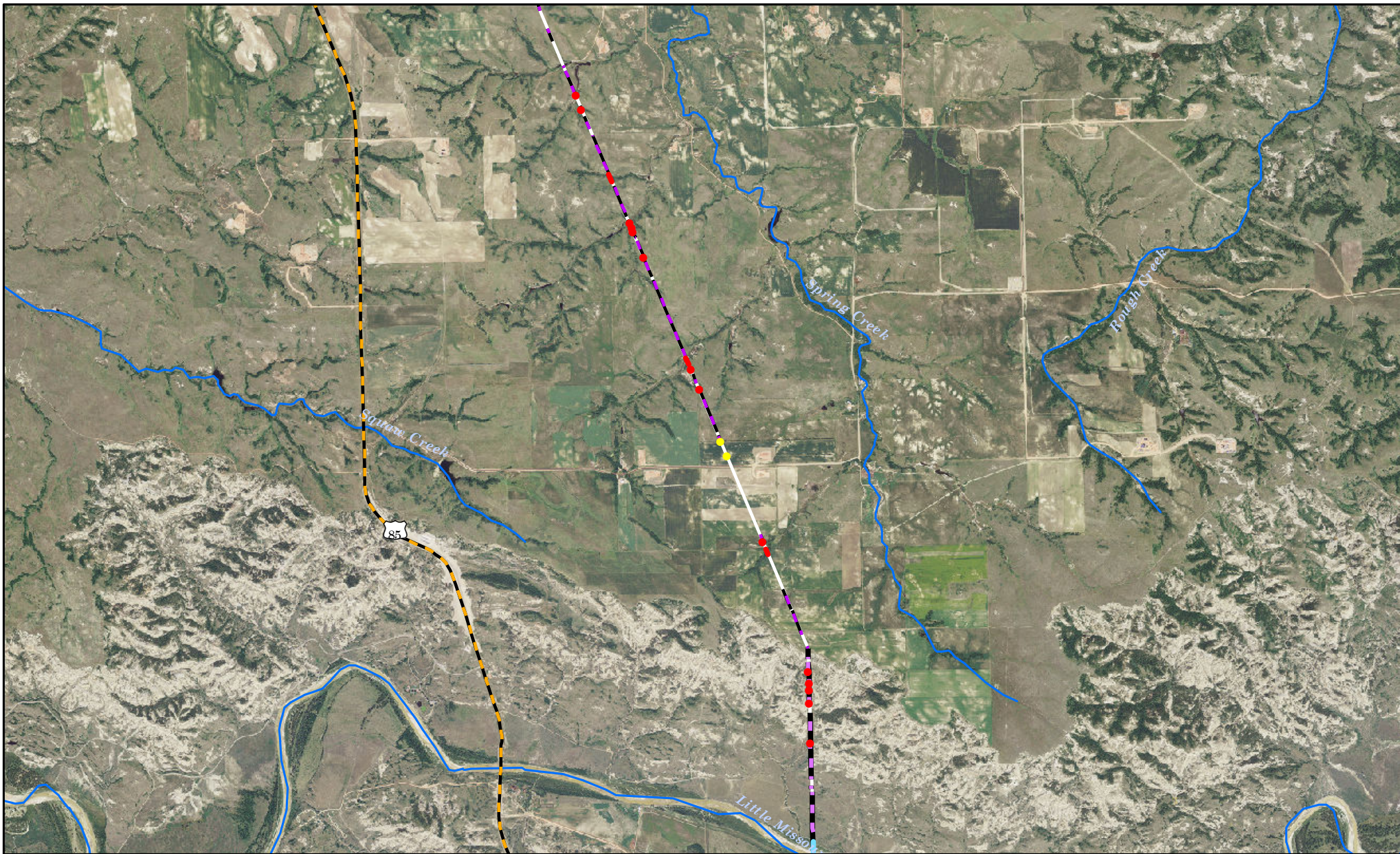


WEST

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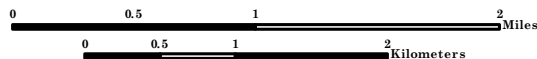
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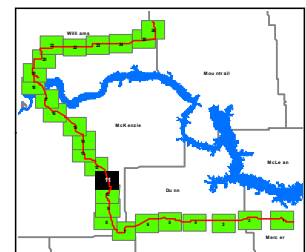
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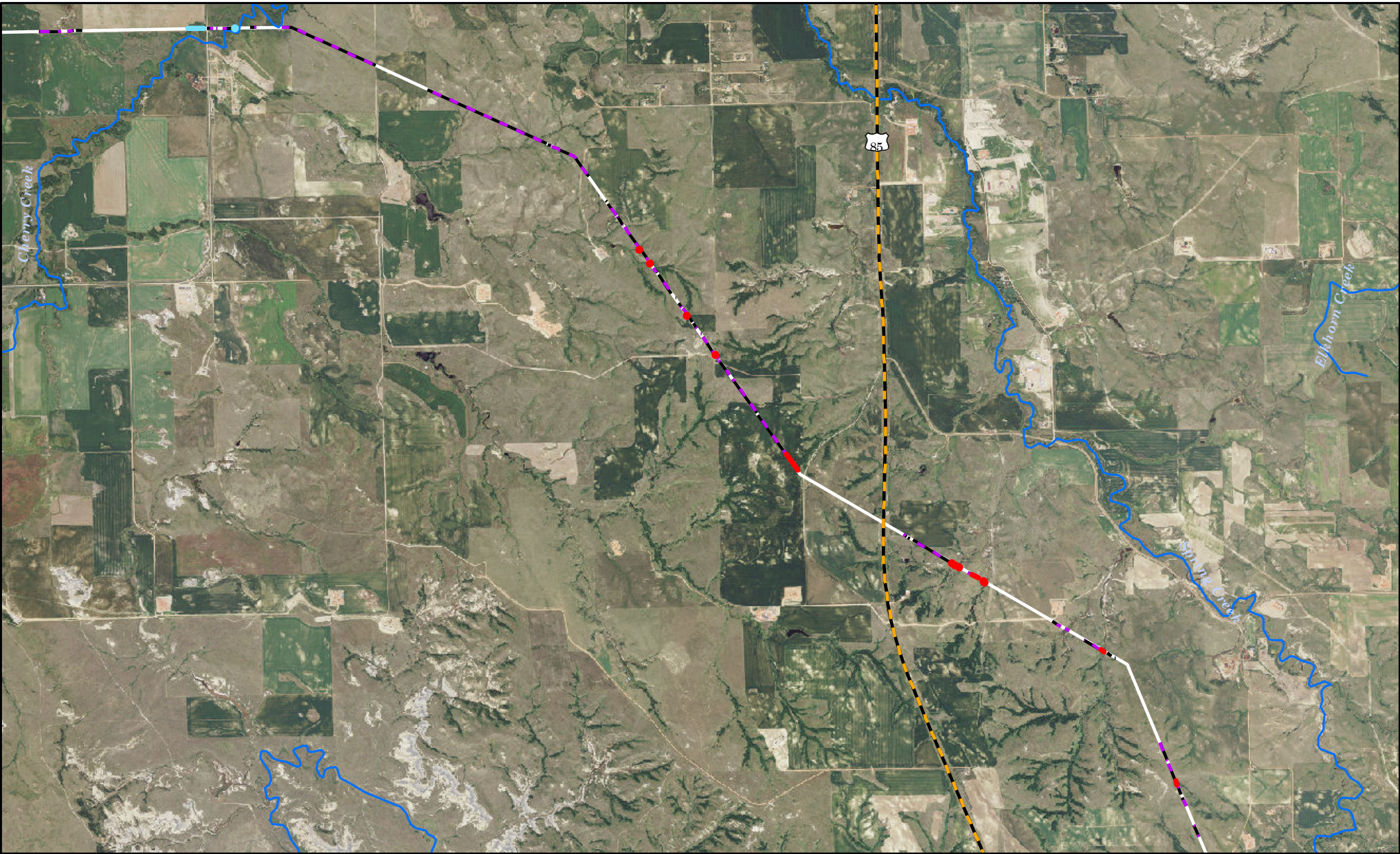
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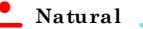







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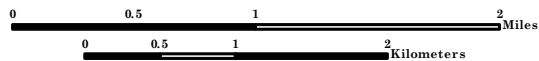
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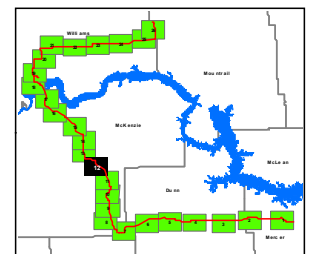
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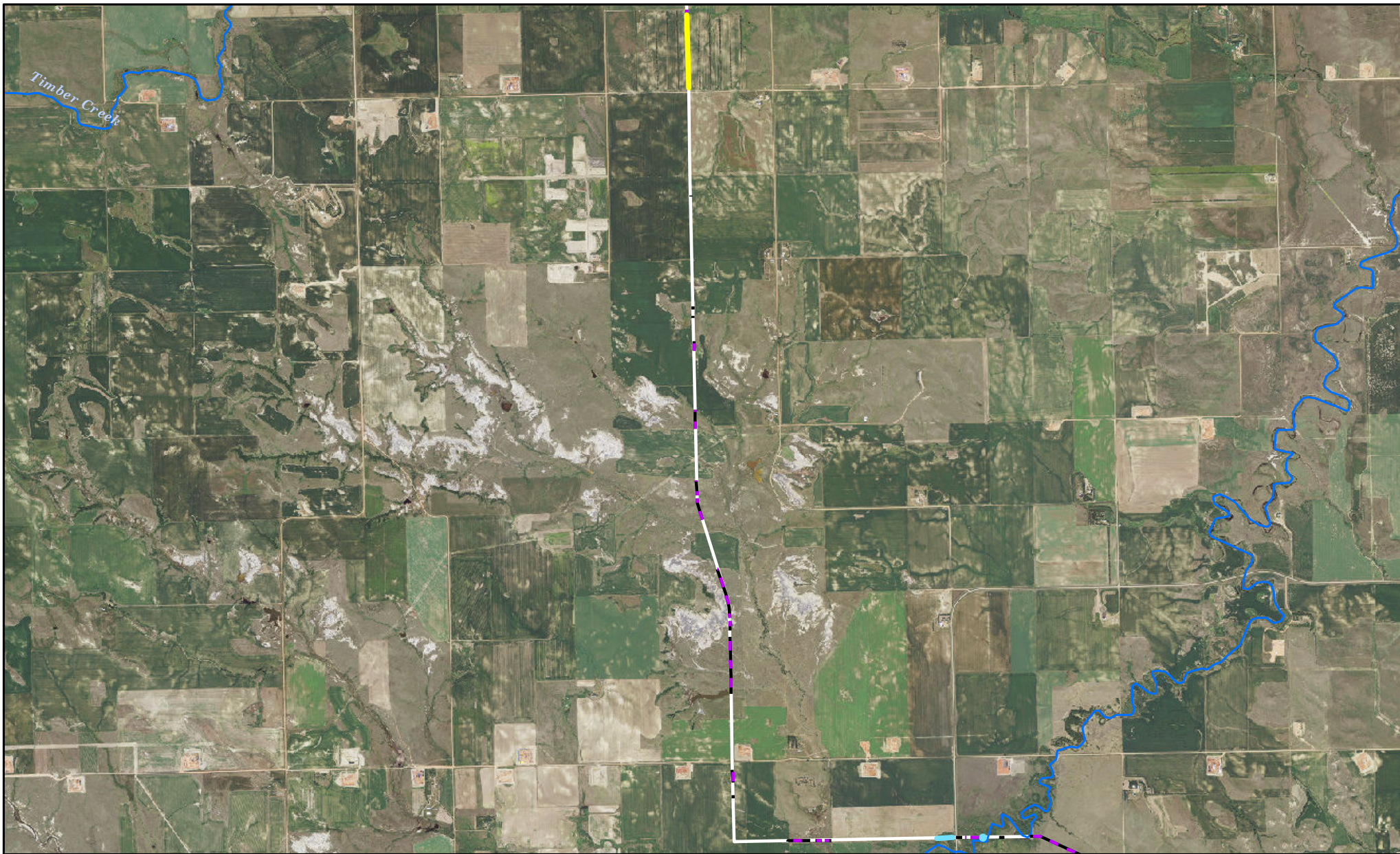
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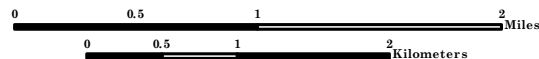
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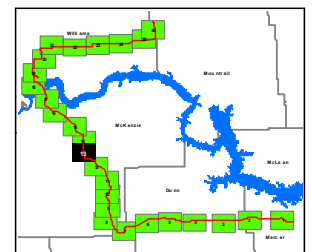
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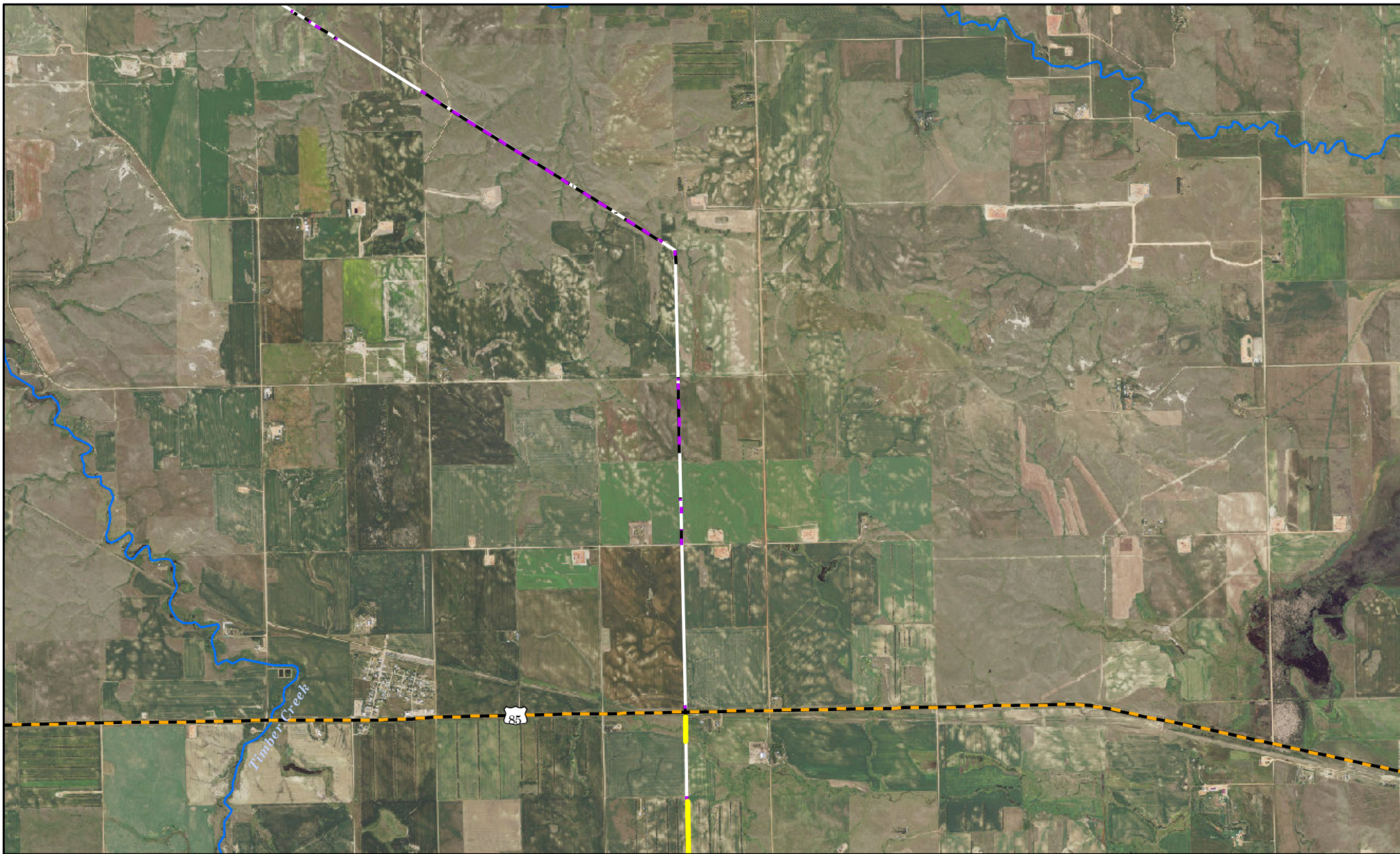
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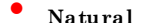







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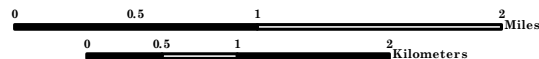
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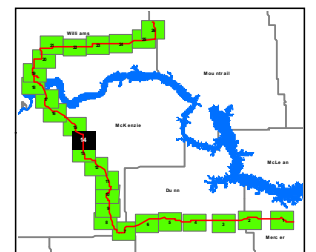
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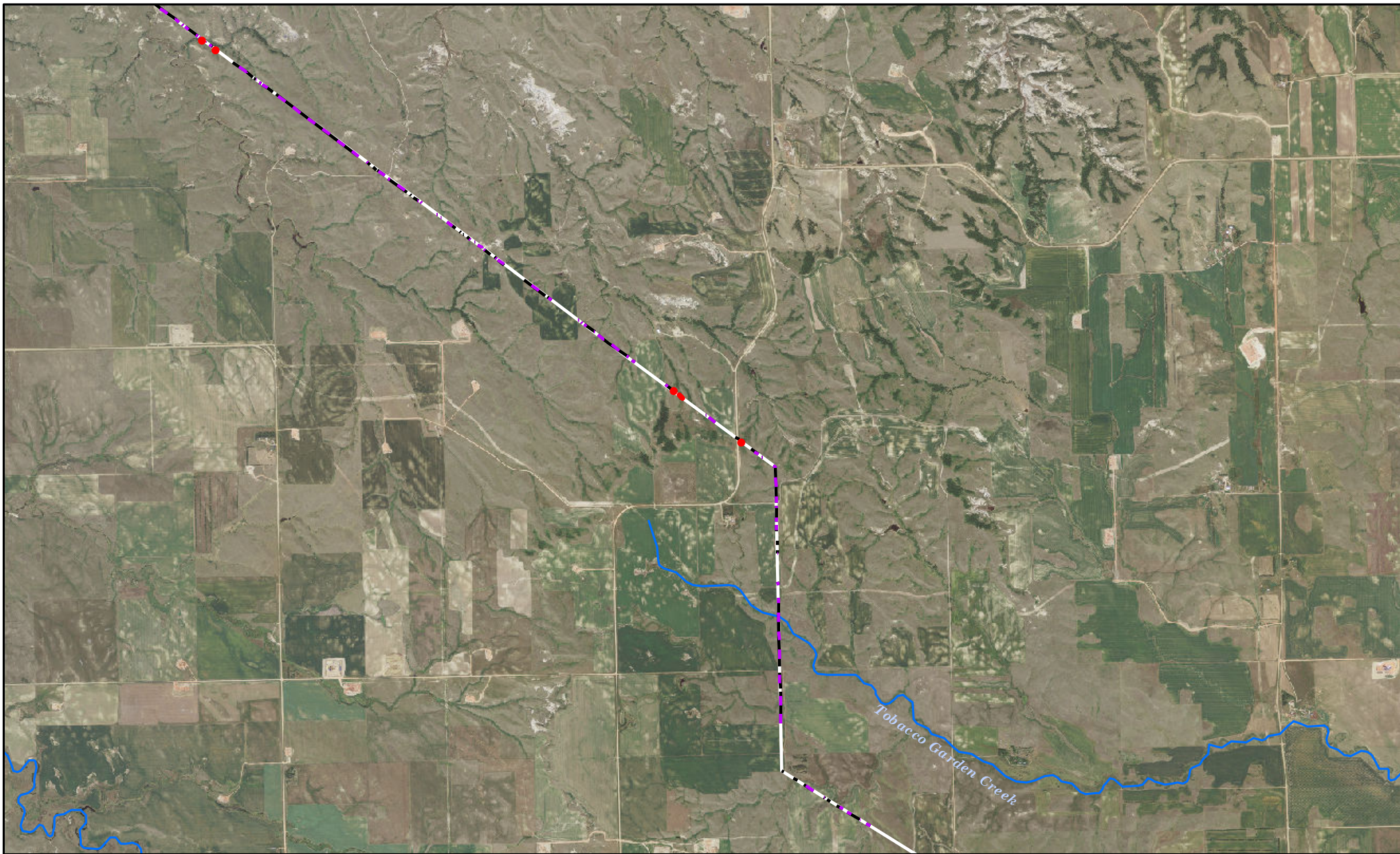
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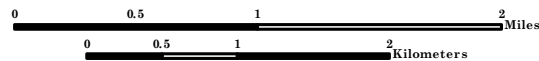
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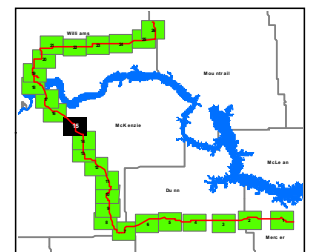
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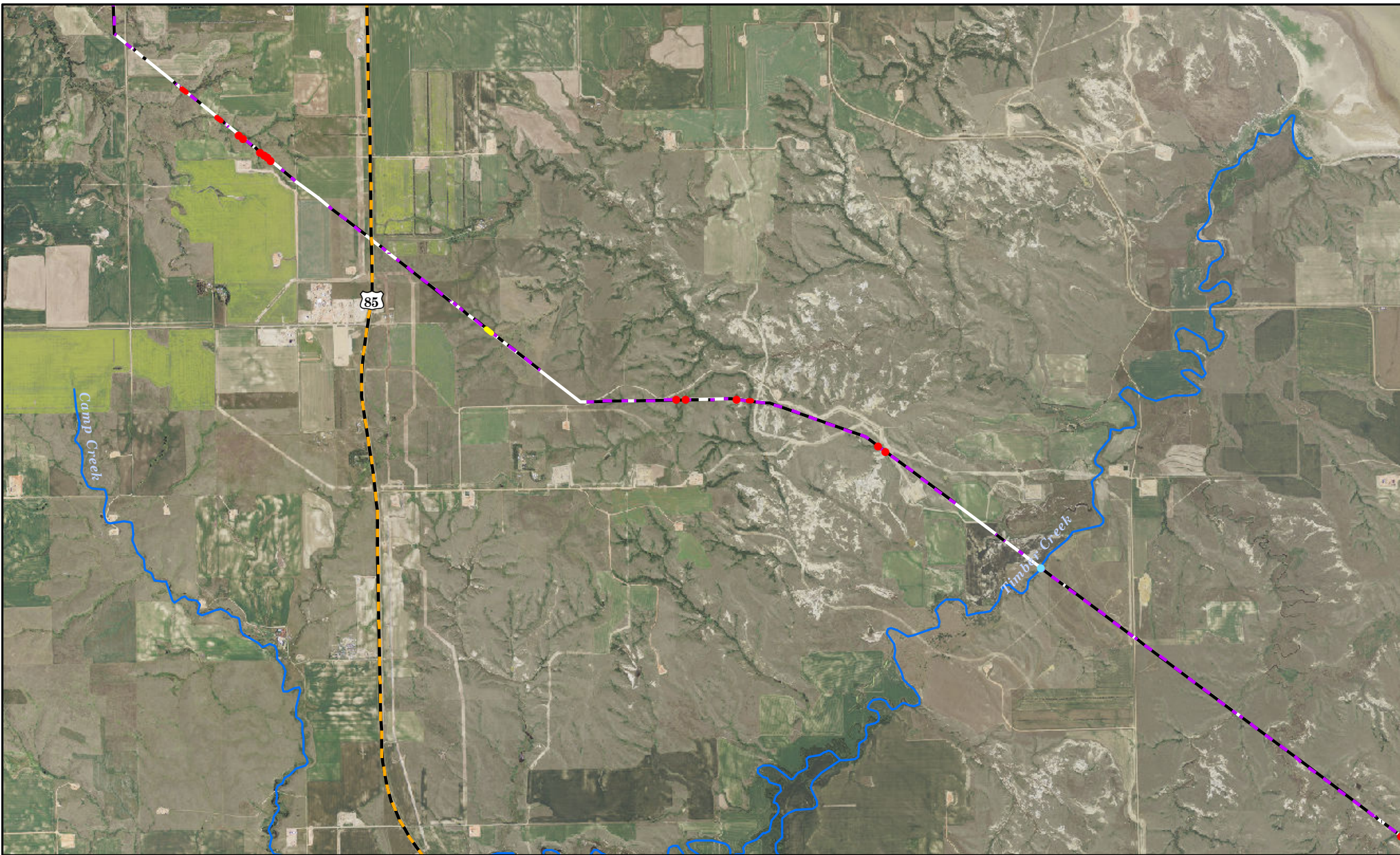
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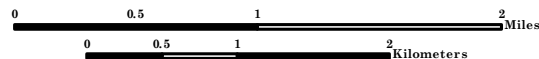
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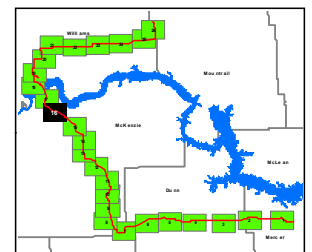
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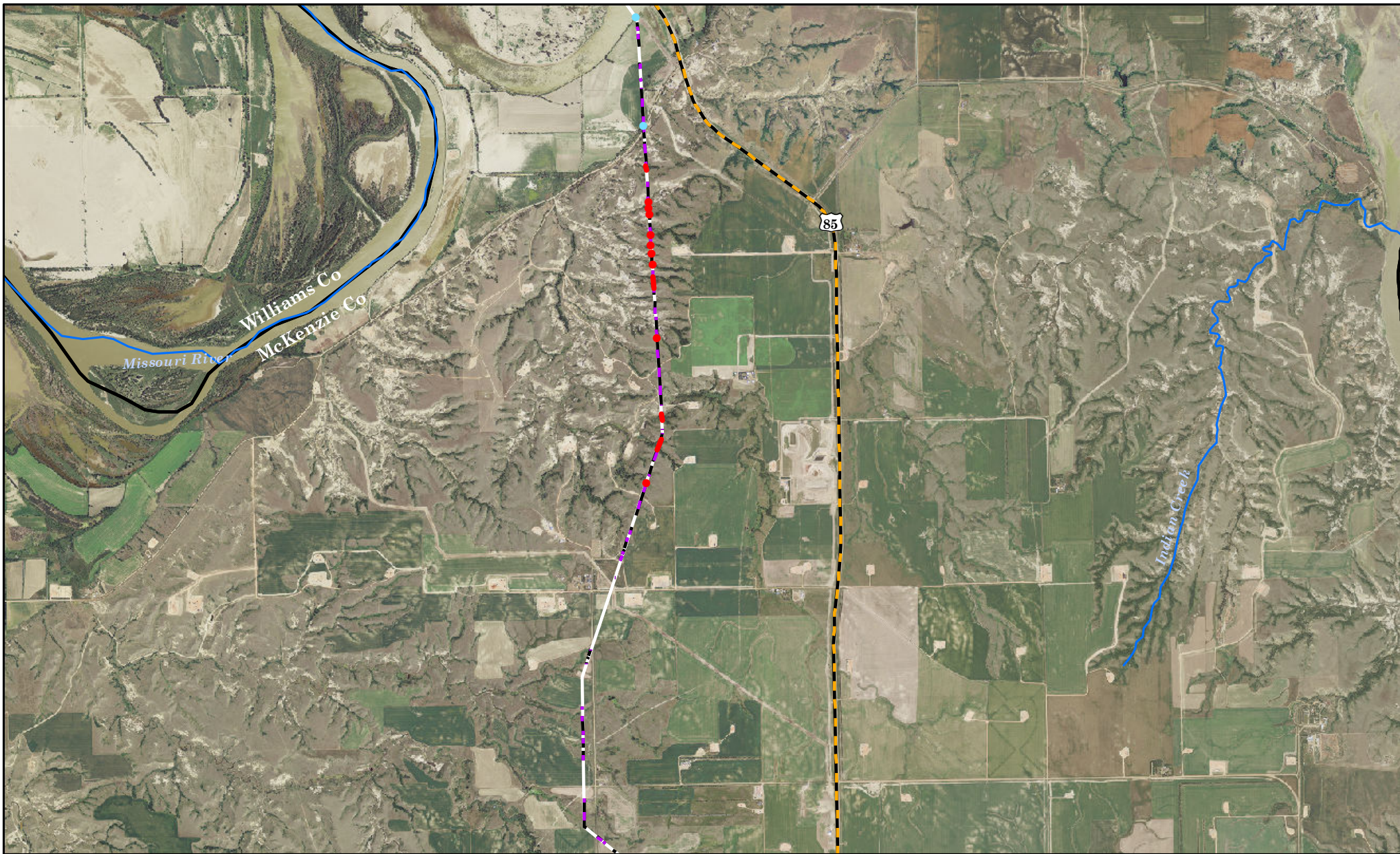
*Tree/Shrub and Grassland
Locations*



Map created on
01/24/14 by T. Thorn

Map Location





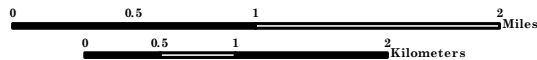
Map Features

-  Proposed Transmission Line
-  Tree/Shrub and Grassland Locations
 -  Natural
 -  Planted
-  Riparian
-  Grassland
-  Major Roads
-  Named Rivers/Creeks
-  County Boundaries



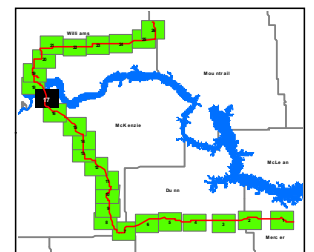
**Proposed AVS to Neset
Transmission Line**

*Tree/Shrub and Grassland
Locations*



Map created on
01/24/14 by T. Thorn

Map Location





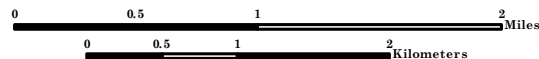
Map Features

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 - Planted
 - Grassland
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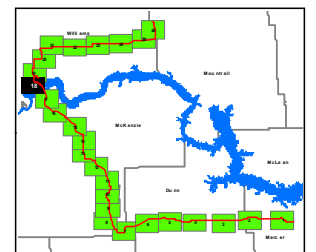
**Proposed AVS to Neset
Transmission Line**

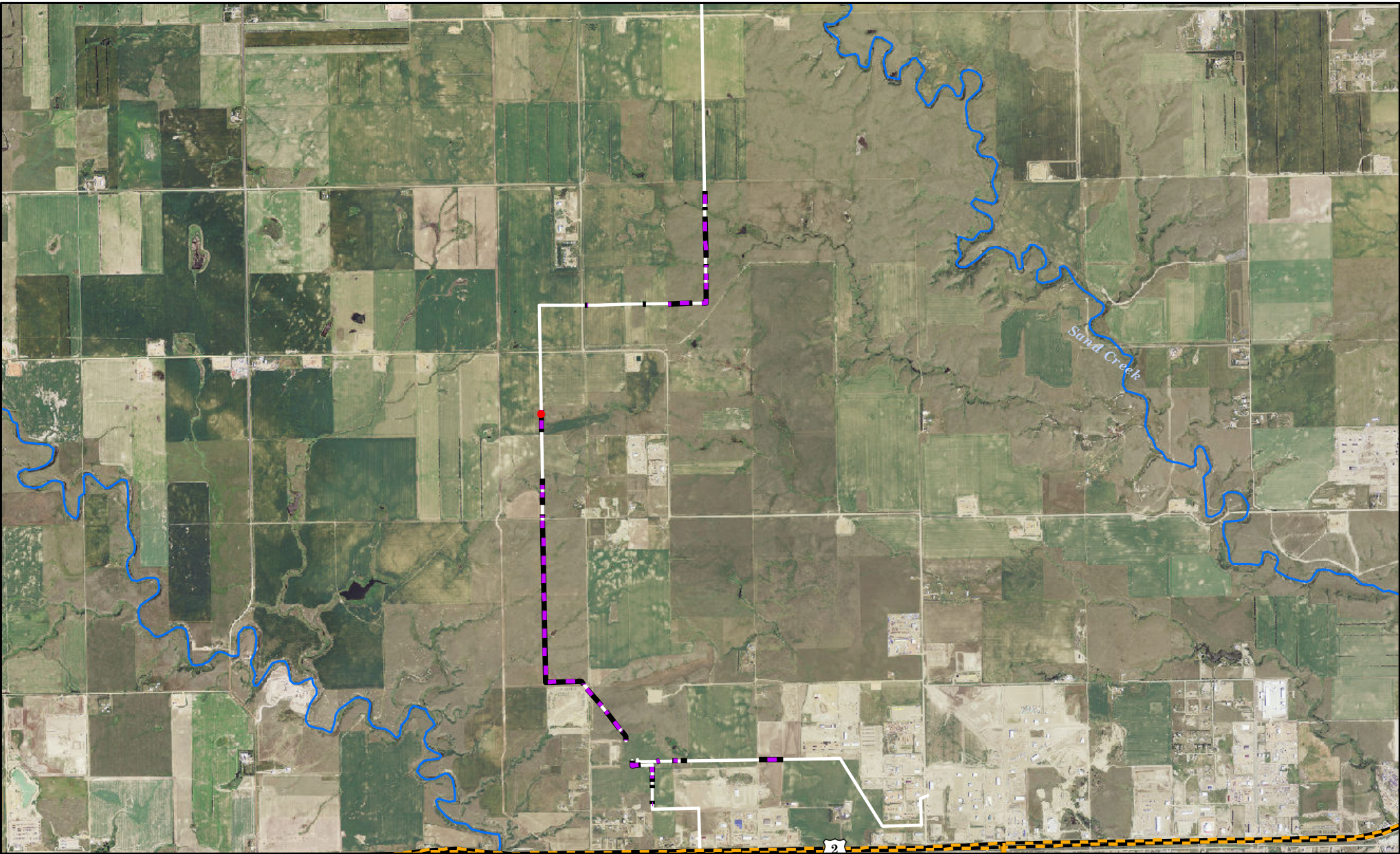
*Tree/Shrub and Grassland
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Map Location





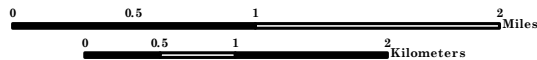
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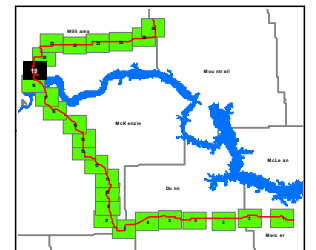
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Transmission Line**

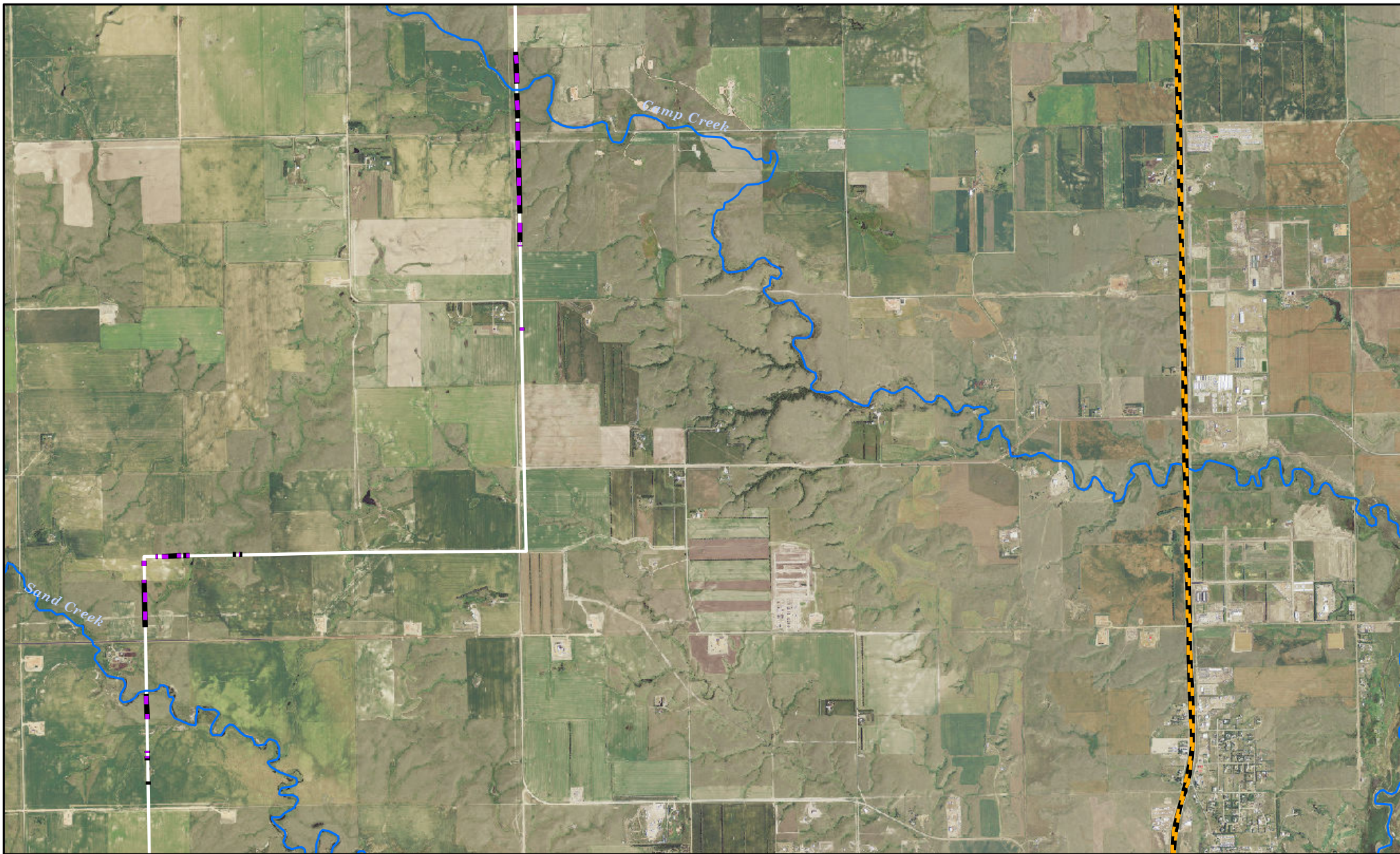
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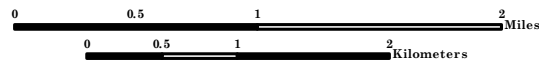
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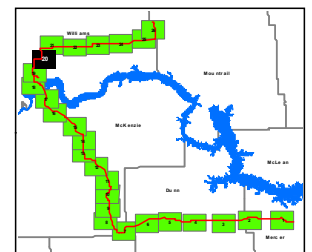
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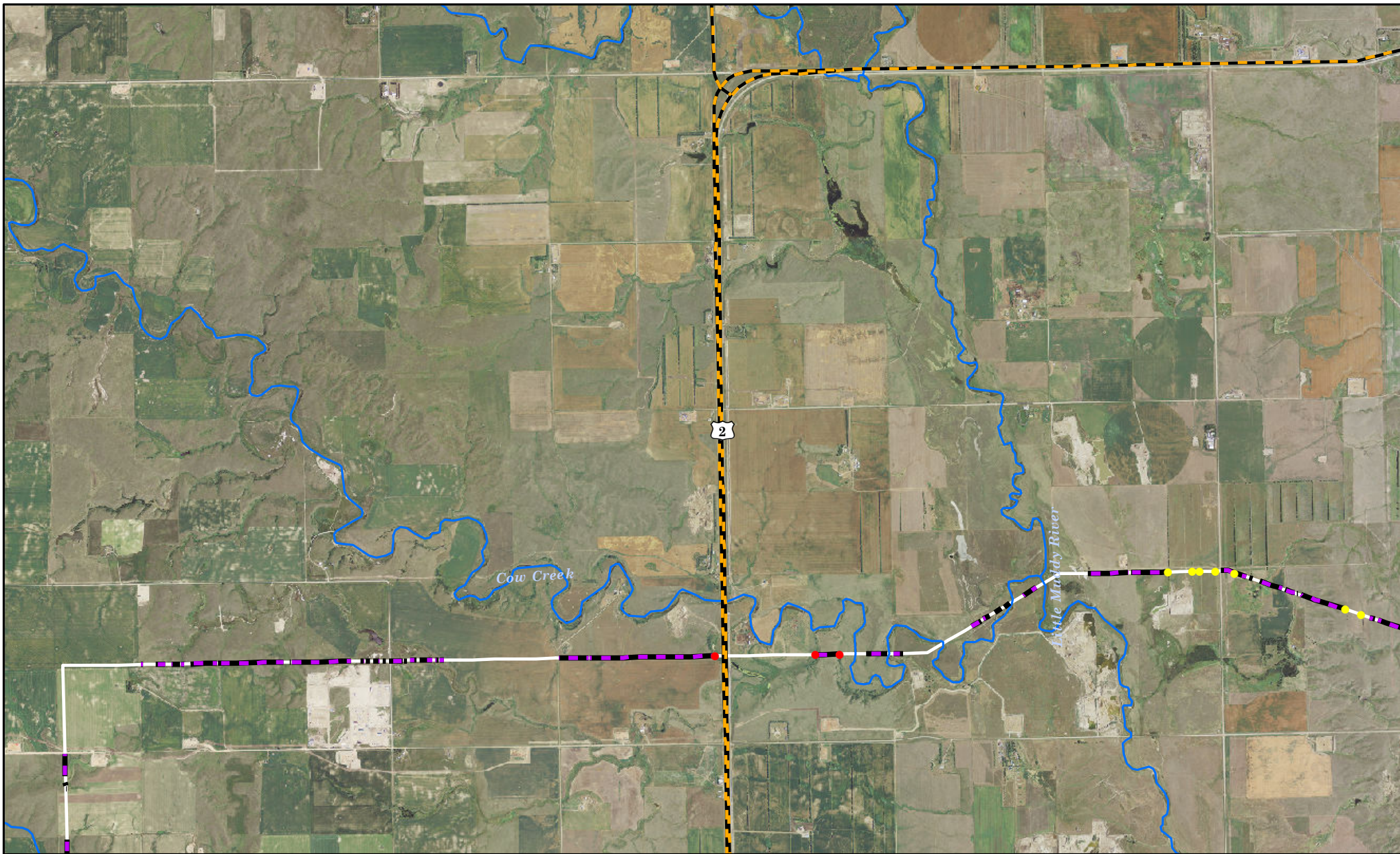
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







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Map Location





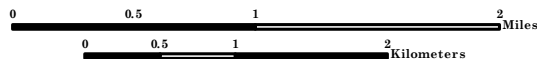
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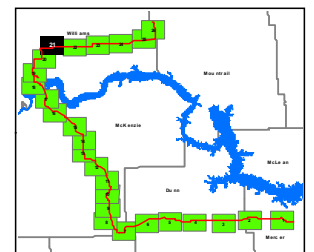
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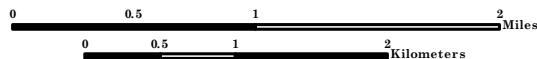
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- Natural ● Riparian
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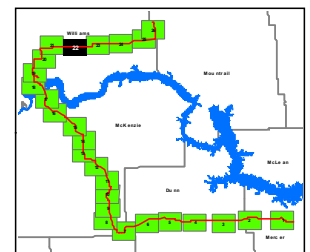
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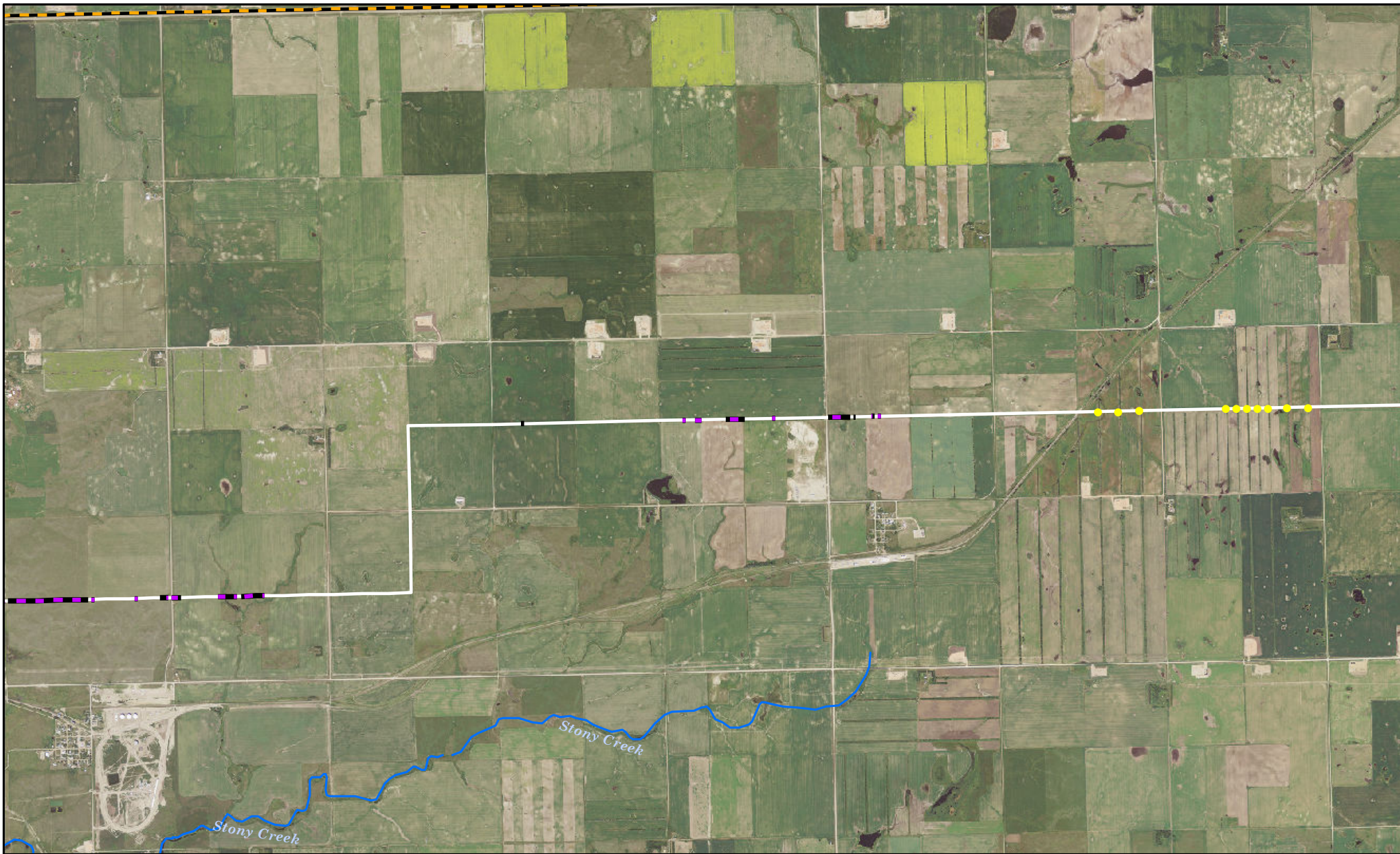
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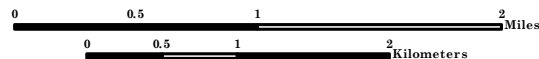
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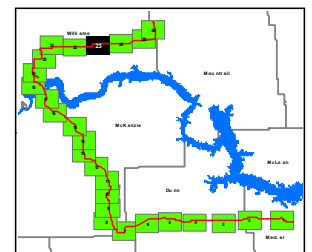
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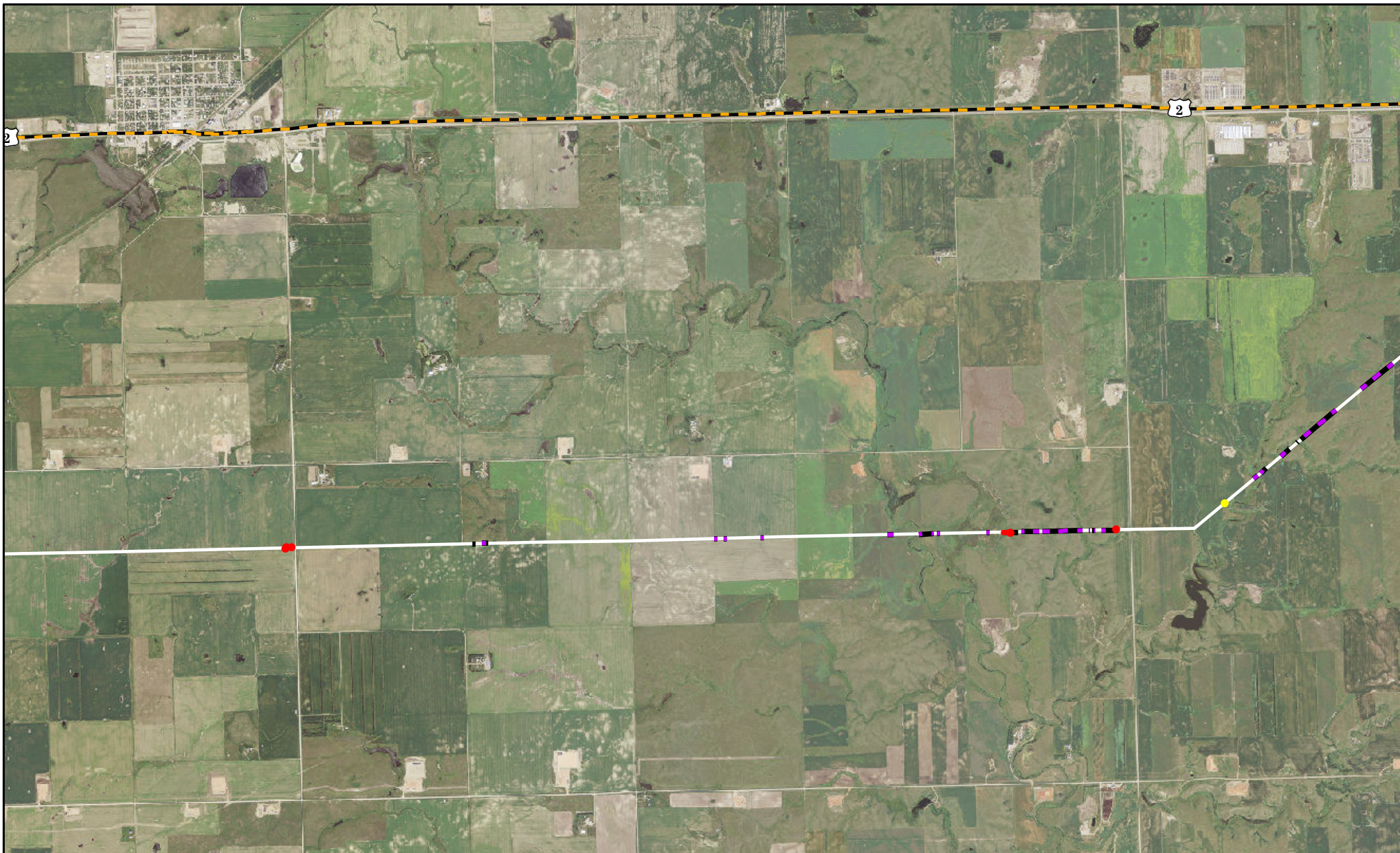
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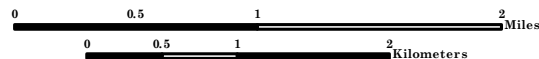
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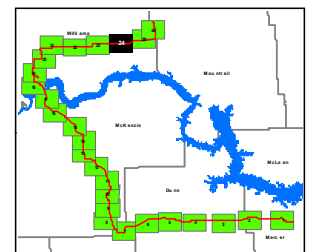
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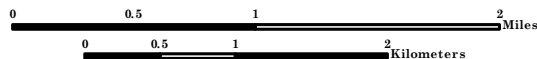
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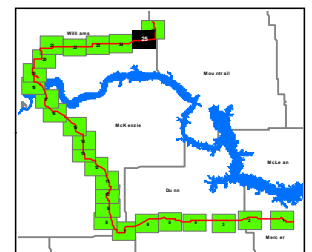
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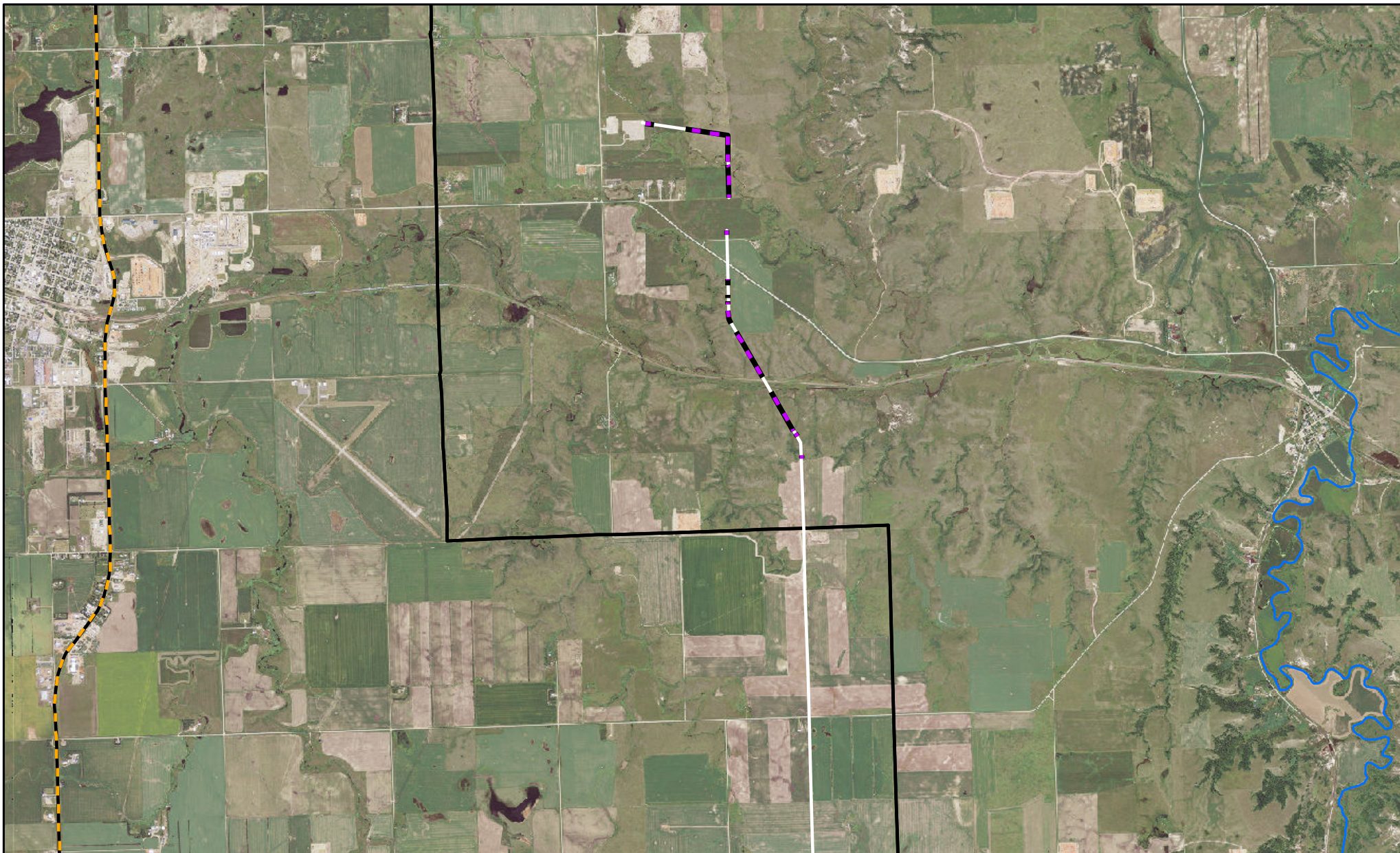
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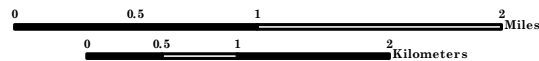
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