



## **WETLAND DETERMINATION & DELINEATION REPORT**

*for the*

**BURKE COUNTY TRANSMISSION LINE  
BURKE AND MOUNTRAIL COUNTIES, NORTH DAKOTA**

*Prepared for*

**Burke Wind, LLC  
700 Universe Boulevard MS JES/JB  
Juno Beach, Florida 33408**

**Project Number: 16000947**

**February 4, 2019**

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## **EXECUTIVE SUMMARY**

Burke Wind, LLC (Burke Wind), a wholly-owned, indirect subsidiary of NextEra Energy Resources, LLC (NEER), is in the process of siting the proposed Burke County Transmission Line (Project) associated with the proposed Burke County Wind Energy Center. The Burke County Wind Energy Center has been delineated and is being permitted separately from the Project. Burke Wind contracted Atwell, LLC (Atwell) to conduct wetland determinations within the approximately 37-mile-long, by 1-mile-wide (approximately 23,315 acres) Project “1-Mile Study Area” and wetland delineations within the “Project Corridor” in Burke and Mountrail counties, North Dakota. The Project Corridor includes the 150-foot transmission line construction easement and 200-foot radial bump outs around turning structures. The 1-Mile Study Area is greater than the anticipated construction impact area to support the North Dakota Public Service Commission Route Permit and Certificate of Corridor Compatibility Application. The 1-Mile Study Area was analyzed to assist in Project design and routing to minimize potential impacts to sensitive natural features.

This report summarizes potential U.S. Army Corps of Engineers (USACE) jurisdictional wetlands and watercourses, which would be considered waters of the United States (WOUS) identified within the Project Corridor. The identification process for WOUS consisted of: 1) an offsite Aerial Desktop Review of the features within the 1-Mile Study Area, and 2) onsite WOUS delineations within the proposed Project Corridor. Atwell identified 1,105 wetlands and 39 watercourses within the 1-Mile Study Area as a result of offsite aerial desktop review. The WOUS delineation indicated the presence of approximately 9.03 acres of potentially jurisdictional wetlands and 510 linear feet of intermittent and perennial streams within the Project Corridor.

Burke Wind has a standard approach of avoiding and minimizing impacts to WOUS to the maximum extent practicable. WOUS mapped and examined herein will allow Burke County Wind to site the proposed Project in a manner that would avoid and minimize potential impacts to WOUS. The Burke County Transmission Line will be designed so that it does not exceed Nationwide Permit thresholds and avoids WOUS to the extent feasible. The planned activities will not impact federal or state regulated or protected wetlands, watercourses, floodplains, or open water areas. WOUS are regulated by the USACE and impacts to these features will be avoided by this Project. Based on the results of this wetland delineation, Atwell believes that WOUS within the Project can be avoided through proper structure placement within the Project Corridor.

## 1.0 INTRODUCTION

Burke Wind, LLC (Burke Wind), a wholly-owned, indirect subsidiary of NextEra Energy Resources, LLC (NEER), is in the process of siting the proposed Burke County Transmission Line (Project). The proposed Project consists of a new, approximately 37-mile-long, 345-kilovolt (kV) overhead transmission line. The Project is associated with the proposed Burke County Wind Energy Center and will deliver power from the Burke Wind Energy Center to the electrical grid by connecting to the existing Tande Substation. The Burke County Wind Energy Center has been delineated and is being permitted separately from the.

Burke Wind contracted Atwell, LLC (Atwell) to conduct wetland determinations within the approximately 37-mile-long, by 1-mile-wide (approximately 23,315 acres) Project “1-Mile Study Area” and wetland delineations within the “Project Corridor” in Burke and Mountrail Counties, North Dakota. The Project Corridor includes the 150-foot transmission line construction easement and 200-foot radial bump outs around turning structures. The 1-Mile Study Area is greater than the anticipated construction impact area to support the North Dakota Public Service Commission Route Permit and Certificate of Corridor Compatibility Application. The 1-Mile Study Area was analyzed to assist in project design and routing to minimize potential impacts to sensitive natural features.

The goal of the wetland determination and delineations was to identify potential U.S. Army Corps of Engineers (USACE) jurisdictional wetlands and watercourses, which would be considered waters of the United States (WOUS) within the 1-Mile Study Area and the Project Corridor. The USACE regulates the discharge of dredged or fill material into all WOUS, which includes navigable waters, perennial and intermittent tributaries (watercourses), and wetlands (jurisdictional wetlands) that have a continuous surface connection or unbroken hydrological connection to navigable waters or watercourses. Wetlands and watercourses mapped and examined herein will allow Burke Wind to site the proposed Project in a manner that will avoid impacting WOUS, including wetlands and watercourses, to the maximum extent practicable. All potentially jurisdictional wetlands and watercourses are assumed to be WOUS. Wetlands that lack a continuous surface connection or unbroken hydrological connection to WOUS are identified as likely isolated, but the final jurisdictional determination rests with the USACE.

## 2.0 SITE DESCRIPTION

The 1-Mile Study Area is located within Burke and Mountrail counties, North Dakota. The 1-Mile Study Area is approximately 1.5 miles north of White Earth, 14 miles southwest of Bowbells, 20 miles west of Kenmare, and 36 miles northeast of Williston, North Dakota. The 1-Mile Study Area and surrounding vicinities are sparsely populated with land-use primarily dedicated to agricultural activities (cultivated crops, hayfields, and pasturelands). The northern portion of the 1-Mile Study Area is located within an extensive prairie pothole wetland system that begins to diminish south of the White Earth River and Powers Lake. Forested habitats and

riparian corridors are limited and are concentrated along the streams and rivers. Refer to **Appendix A – Aquatic Resources Site Location Map** for site location.

## **2.1 Ecoregions**

The Project is largely located within the Northern Dark Brown Prairie section of the Northern Glaciated Plains ecoregion. A smaller portion of the Project is located within the Northern Missouri Coteau section of the Northwestern Glaciated Plains ecoregion.

### **2.1.1 Northern Dark Brown Prairie Ecoregion**

This region was carved by receding glaciers leaving behind glacial till and outwash within a relatively level to gently rolling landscape. The climate allows for mixed-grass prairies composed of tall and shortgrass species. This ecoregion generally has less precipitation and less organic matter in the soil than ecoregions to the east, which results in lower biomass production (Bryce et al. 1996).

### **2.1.2 Northern Missouri Coteau Ecoregion**

This region was the westernmost extent of glaciation, which resulted in accumulations of glacial till within a marked by significant micropography. The micropography has resulted in large concentrations of prairie potholes. Wetlands typically dry out earlier in the summer than ecoregions located to the south and east. This region is transitional between the northern boreal climate and the western arid climate (Bryce et al. 1996).

## **3.0 METHODS**

### **3.1 Offsite Aerial Desktop Review**

An offsite aerial desktop review was conducted to identify WOUS within the entire 1-Mile Study Area. The aerial desktop review involved a Geographic Information System (GIS) interpretation of landscape position, vegetative cover, hydrology signatures in aerial photographs (current and historic), U.S. Geological Survey (USGS) topographic maps, and the following geospatial datasets: National Wetland Inventory (NWI), National Hydrography Dataset (NHD), Soil Survey Geographic Database (SSURGO), Hydrologic Unit Code 12 (HUC-12) subwatershed boundaries, and Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). The map produced from this effort depicting potential WOUS within the 1-Mile Study Area is located in the *Aquatic Resources Map* located in **Appendix A**.

#### **3.1.1 Aerial Photography**

Various online resources were accessed to review current and historic aerial imagery. Aerial photography datasets from the USGS (1995); National Aeronautics and Space Administration (NASA; 1995); and the USDA Farm Services Agency (2003, 2005, 2006, 2009, 2010, 2013, and 2016) were interpreted to identify potential WOUS and other significant natural features within the 1-Mile Study Area. Visible landscape types observed included agricultural fields, undeveloped grassland, pasture/rangeland, wetlands, and watercourses.

### 3.1.2 USGS Topographic Map

The USGS 7.5 Minute Topographic Quadrangles indicate that elevations within the 1-Mile Study Area range between approximately 2,116 and 2,493 feet above mean sea level (amsl). The 1-Mile Study Area generally slopes from a primarily northwest to southeast direction. The topographic maps depict numerous buildings, structures, and roads within the 1-Mile Study Area. Water courses, including the White Earth River, are also depicted within the 1-Mile Study Area.

### 3.1.3 National Wetland Inventory (NWI)

Atwell reviewed NWI maps to determine the likely presence, location, size, and type of wetlands that may be located within the 1-Mile Study Area. The U.S. Fish and Wildlife Service (USFWS) maintains and generates NWI maps through aerial photograph interpretation (USFWS 2018). Atwell generally notes that NWI maps may not accurately depict the extent or existence of wetland systems in a specific area, nor do the maps always correctly identify the wetlands present. NWI maps were supplemented with Atwell's aerial interpretation with USFWS NWI features used for preliminary analysis only.

### 3.1.4 National Hydrology Dataset (NHD)

The NHD is a digital dataset that contains features such as lakes, ponds, streams, rivers, canals, dams and stream gages. The data provided is designed for use in general mapping and in the analysis of surface water systems. NHD flowlines are important features in the NHD, as they contain flow direction and form a network of watercourses that share a common drainage point. Atwell relied predominantly on NHD features to determine a significant nexus to a potential WOUS.

### 3.1.5 U.S. Department of Agriculture – National Cooperative Soil Survey Map

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) for Burke and Mountrail Counties were reviewed to determine the extent of hydric soils within the 1-Mile Study Area. Soil map units are made up of consociations, complexes, associations, or undifferentiated groups; these mapping units may be entirely hydric, entirely non-hydric, or partially hydric. Hydric soils are conducive to the growth and regeneration of hydrophytic (i.e., wetland) vegetation because of their tendency to remain saturated for extended periods of time (NRCS 2018).

### 3.1.6 Hydrologic Unit Code 12 (HUC-12) Dataset

Watershed boundaries define the aerial extent of surface water drainage to a particular location. HUC-12 datasets identify boundaries to the subwatershed level, which typically ranges from 10,000 to 40,000 acres in size. Atwell evaluated whether wetland features drain/flow to a potential WOUS or if they drain/flow to a glaciated lake at a low area on the regional landscape.

All seven HUC-12 subwatersheds located within the 1-Mile Study Area (Smishek Lake, Paradise Meadows, Power's Lake, Big Butte, Cottonwood Lake, Beauty Valley, Tioga Municipal Airport)

contain potentially jurisdictional waters. Numerous unnamed tributaries are located within the aforementioned HUC-12 subwatersheds and generally flow in a south-southwest direction into White Earth Creek (relatively permanent water [RPW]), which is located within the 1-Mile Study Area approximately 1.75 miles west of the City of Powers Lake. Multiple wetlands within these HUC-12 subwatersheds are potentially jurisdictional because of potential hydrologic connectivity to WOUS.

### 3.1.7 Floodplain Map

FEMA FIRMs (Flood Insurance Rate Maps) are maps that show floodplain areas along rivers and their tributaries. The maps record the following data: 100-year floodplains (1% chance of annual flooding) and 500-year floodplains (0.2% annual chance of flooding), the height of the base flood elevation, and the risk to premium areas developed across a floodplain. A review of FEMA FIRM (FEMA 2017) floodplain data was conducted to determine the presence, extent, location, and zone of floodplains which may be located within the 1-Mile Study Area.

## **3.2 Onsite Wetland & Watercourse Delineation**

### 3.2.1 Onsite Wetland Delineation

Onsite wetland delineations were conducted within the proposed Project Corridor dated January 16, 2019. Potentially jurisdictional wetlands were delineated utilizing methods prescribed by the 1987 USACE Wetland Delineation Manual (Environmental Laboratory 1987) and the Great Plains Regional Supplement (Version 2.0; USACE 2010). The determination of wetland presence depends on three inter-related parameters: 1) presence of hydrophytic vegetation; 2) presence of hydric soils; and 3) presence of wetland hydrology. Onsite wetland delineation boundaries were recorded using a Trimble® Geo 7X handheld GPS unit, which provides a spatial error of less than one meter (with overall accuracy being within one [1] meter). Wetland data points were mapped with the GPS unit within each wetland area identified, along with corresponding upland data points outside the wetland boundary. USACE wetland determination data forms were completed for each wetland and upland data point. Wetland boundaries and data points are depicted on the *Aquatic Resource Mapbook* included in **Appendix A**.

### 3.2.2 Onsite Watercourse Assessment

Potentially jurisdictional watercourses were identified and recorded based on the presence of stream morphological characteristics such as a defined Ordinary High Water Mark, bed, banks, and evidence of continued flow or occurrence of water. Any potentially jurisdictional watercourses identified within the Project Corridor are depicted on the *Aquatic Resource Mapbook* included in **Appendix A**.

## 4.0 RESULTS, FINDINGS, AND DISCUSSION

Atwell identified 1,105 wetlands and 39 watercourses within the 1-Mile Study Area as a result of offsite aerial desktop review. Wetlands outside of the Project Corridor, but within the 1-Mile Study Area, were identified in the aerial desktop review but were not classified as potentially jurisdictional or likely isolated. This area was analyzed to assist in project design and routing to minimize potential impacts to sensitive natural features, so no on-site delineations were warranted.

Atwell conducted onsite wetland and watercourse determinations and delineations within the Project Corridor from May 17 – August 9, 2018. Atwell biologists identified approximately 9.03 acres of potentially jurisdictional wetlands (Table 1) and 510 linear feet of intermittent and perennial streams (Table 2) within the Project Corridor. Additionally, 42.79 acres of isolated wetlands were identified within the Project Corridor, and would likely not be considered WOUS. A map depicting potentially jurisdictional wetlands and watercourses is located in the *Aquatic Resources Map* within **Appendix A**. Seven (7) potentially jurisdictional wetlands were identified within the Project Corridor.

### Wetland 1

Wetland 1 is a presumed jurisdictional PEMC wetland that receives surface water runoff from the surrounding area. The wetland vegetation is dominated by spikerush (*Eleocharis* sp.) and Fox-tail Barley (*Hordeum jubatum*). Indicators of wetland hydrology include saturation (A3), hydrogen sulfide odor (C1), geomorphic position (D2), and the FAC-neutral test (D5).

### Wetland 2

Wetland 2 is a presumed jurisdictional PEMC wetland that receives surface water runoff from the surrounding area. The wetland vegetation is dominated by spikerush (*Eleocharis* sp.). Indicators of wetland hydrology include surface water (A1), high water table (A2), saturation (A3), geomorphic position (D2), and the FAC-neutral test (D5).

### Wetland 3

Wetland 3 is a presumed jurisdictional PEMC wetland that receives surface water runoff from the surrounding area. The wetland vegetation is dominated by Water Knotweed (*Polygonum amphibium*). Indicators of wetland hydrology include surface water (A1), saturation (A3), geomorphic position (D2), and the FAC-neutral test (D5).

### Wetland 4

Wetland 4 is a presumed jurisdictional PEMC wetland that receives surface water runoff from the surrounding area. The wetland vegetation is dominated by Reed Canary Grass (*Phalaris arundinacea*). Indicators of wetland hydrology include inundation visible on aerial imagery (B7), geomorphic position (D2), and the FAC-neutral test (D5).

**Wetland 5**

Wetland 5 is a presumed jurisdictional PEMC wetland that receives surface water runoff from the surrounding area. The wetland vegetation is dominated by Reed Canary Grass (*Phalaris arundinacea*). Indicators of wetland hydrology include surface water (A1), saturation (A3), geomorphic position (D2), and the FAC-neutral test (D5).

**Wetland 6**

Wetland 6 is a presumed jurisdictional PEMC wetland that receives surface water runoff from the surrounding area. The wetland vegetation is dominated by cattails (*Typha* spp.) and Softstem bulrush (*Schoenoplectus tabernaemontani*). Indicators of wetland hydrology include surface water (A1), high water table (A2), saturation (A3), geomorphic position (D2), and the FAC-neutral test (D5).

**Wetland 7**

Wetland 7 is a presumed jurisdictional PEMC wetland that receives surface water runoff from the surrounding area. The wetland vegetation is dominated by spikerush (*Eleocharis* sp.) and Seaside Arrowgrass (*Triglochin maritima*). Indicators of wetland hydrology include surface water (A1), high water table (A2), saturation (A3), hydrogen sulfide odor (C1), presence of reduced iron, geomorphic position (D2), and the FAC-neutral test (D5).

**Table 1. The wetland delineation for the Project Corridor was conducted from May 17, 2018 through August 9, 2018. Seven (7) potentially jurisdictional wetlands were identified within the Project Corridor.**

Wetland #	PLSS Location	Latitude (Dec. Deg.)	Longitude (Dec. Deg.)	Cowardin Classification	Area of delineated wetlands within Project Corridor (acres)
1	Sec. 7, T157N, R93W	48.43331006	-102.73340047	PEMC	1.43
2	Sec. 7, T157N, R93W	48.44076136	-102.73197103	PEMC	0.80
3	Sec. 34, T160N, R93W	48.63377354	-102.67816876	PEMC	1.25
4	Sec. 17, T159N, R93W	48.59741109	-102.72155988	PEMC	0.44
5	Sec. 20, T159N, R93W	48.57758663	-102.72013396	PEMC	0.20
6	Sec. 29, T159N, R93W	48.56180470	-102.71455165	PEMC	3.51
7	Sec. 7, T157N, R93W	48.43009937	-102.75616909	PEMC	1.40
				<b>Total</b>	<b>9.03</b>

**Table 2. The watercourse assessment for the Project Corridor was conducted from May 17, 2018 through June 8, 2018. Three (3) watercourses were identified within the Project Corridor.**

Watercourse #	PLSS Location	Latitude (Dec. Deg.)	Longitude (Dec. Deg.)	Local Waterway Name	Watercourse Size within Project Corridor (acres)	Watercourse Length within Project Corridor (feet)
1	Sec. 13, T157N, R94W	48.400281	-102.844174	Tributary to Paulsen Creek	0.08	162
2	Sec. 21, T157N, R94W	48.412624	-102.834882	Tributary to Paulsen Creek	0.12	195
3	Sec. 29, T157N, R94W	48.4302586	-102.757427	White Earth River	0.14	153
<b>Total</b>					<b>0.34</b>	<b>510</b>

## 5.0 Conclusion

Burke Wind has a standard approach of avoiding and minimizing impacts to WOUS to the maximum extent practicable.

Atwell biologists identified approximately 9.03 acres of potential WOUS within the Project Corridor. The transmission line will not impact WOUS as all wetlands and watercourses will be spanned by the transmission line and no new structures will be placed in WOUS. There are no identified WOUS impacts within the footprint of the substation, Operations and Maintenance Office, or the batch plant associated with the Project. Based on the results of this wetland delineation, Atwell believes that WOUS within the Project can be avoided through proper structure placement within the Project Corridor.

The avoidance of WOUS impacts (permanent or temporary) would eliminate the need for Nationwide Permit (NWP) 12 permitting at these locations. However, if WOUS impacts are proposed for the Project as a result of future project design changes, permanent impacts to WOUS will be kept under 1/2 (0.5)-acre in accordance with NWP 12 permit conditions. Pre-construction Notification (PCN) to the USACE district engineer will be required if greater than 1/10-acre of WOUS will be permanently lost. Permanent WOUS impacts will be kept under 1/10 (0.1)-acre; therefore, a PCN will not be required. Temporary impacts have no specific acreage limit but must be restored to pre-construction contours within 12 months of commencing the temporary impacts' construction. All temporary impacts will be restored in accordance with the NWP 12 permit conditions.

## REFERENCES

- Bryce, S.A., J.M. Omernik, D.A. Pater, M. Ulmer, J. Schaar, J. Freeouf, P. Johnson, P. Kuck, and S.H. Azevedo. 1996. "Ecoregions of North Dakota and South Dakota." Reston, Virginia: U.S. Geological Survey.
- Environmental Laboratory. 1987. "Corps of Engineers Wetlands Delineation Manual." Technical Report Y-87-1 (online edition). <http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf>.
- FEMA. 2017. "Floodplain Insurance Rate Maps (FIRM)." Federal Emergency Management Agency. <https://msc.fema.gov/portal>.
- NRCS. 2018. "Hydric Soils - Overview." USDA Natural Resources Conservation Service. 2018. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/use/hydric/?cid=nrcs142p2\\_053985](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/use/hydric/?cid=nrcs142p2_053985).
- USACE. 2010. "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)." ERDC/EL TR-10-1. [http://www.usace.army.mil/missions/civilworks/regulatoryprogramandpermits/reg\\_supp.aspx](http://www.usace.army.mil/missions/civilworks/regulatoryprogramandpermits/reg_supp.aspx).
- USFWS. 2018. "National Wetlands Inventory [NWI]." U.S. Fish and Wildlife Service - NWI Wetland Mapper. 2018. <http://www.fws.gov/wetlands/Data/Mapper.html>.

## COMMON WETLAND DEFINITIONS

Atypical wetland: Areas in which one or more parameters (vegetation, soil and/or hydrology) have been sufficiently altered by human activities or natural events to preclude the presence of wetland indicators of the parameter.

Emergent Wetland: Vegetative classification of a wetland system based on the dominant vegetation, consisting of rooted herbaceous plant species that have parts extending above a water surface.

100-year flood: A flood with a magnitude that has a 1% chance of occurring or being exceeded in any given year.

Floodplain: The area of land adjoining a river or stream that will be inundated by a 100-year flood.

Floodway: The channel of a river or stream and the portions of the floodplain adjoining the channel that is reasonably required to carry and discharge a 100-year flood.

Inland lake or stream: "...any natural or artificial lake, pond or impoundment which has a surface area of 5 acres or greater; a river, stream or creek which may or may not be serving as a drain; any body of water which has definite banks, a bed and visible evidence of a continued flow or continued occurrence of water..." as defined by Part 301, Inland Lakes and Streams, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

Hydric soil: Soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (1991 National Technical Committee on Hydric Soils definition).

Hydrophytes: Plant species that grows in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content; plants typically found in wet habitats.

Scrub-Shrub Wetland: Vegetative classification of a wetland system based on the dominant vegetation consisting of woody plants less than 3 inches in diameter but greater than 3 feet in height.

Typical situation: That, which normally, usually, or commonly occurs.

Vernal Pool: Shallow, intermittently-flooded forested wetland, generally dry for most of the summer and fall.

Wooded (Forested) Wetland: Vegetative classification of a wetland system based on the dominant vegetation consisting of woody plants 3 inches in diameter or greater regardless of height.

Wetland: "...land characterized by the presence of water at a frequency and duration sufficient to support and that under normal circumstances does support wetland vegetation or aquatic life and is commonly referred to as a bog, swamp, or marsh..." as defined by Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451.

Wetland hydrology: Hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season.

Wetland Indicator Status:

*OBL:* Obligate wetland plant that occurs almost always, 99% of the time, in wetlands under natural conditions, but which rarely occur in non-wetlands.

*FACW:* Facultative wetland plant that occurs usually, 67% to 99% of the time, in wetlands, but also occurs 1% to 33% of the time in non-wetlands.

*FAC:* Facultative plant that occurs in both wetlands and non-wetlands 33% to 67% of the time.

*FACU:* Plant that occurs sometimes, 1% to 33% of the time, in wetlands but occurs more often, 67% to 99% of the time, in non-wetlands.

**APPENDIX A**

Aquatic Resources Site Location Map

Aquatic Resources Index Map

Aquatic Resources Map

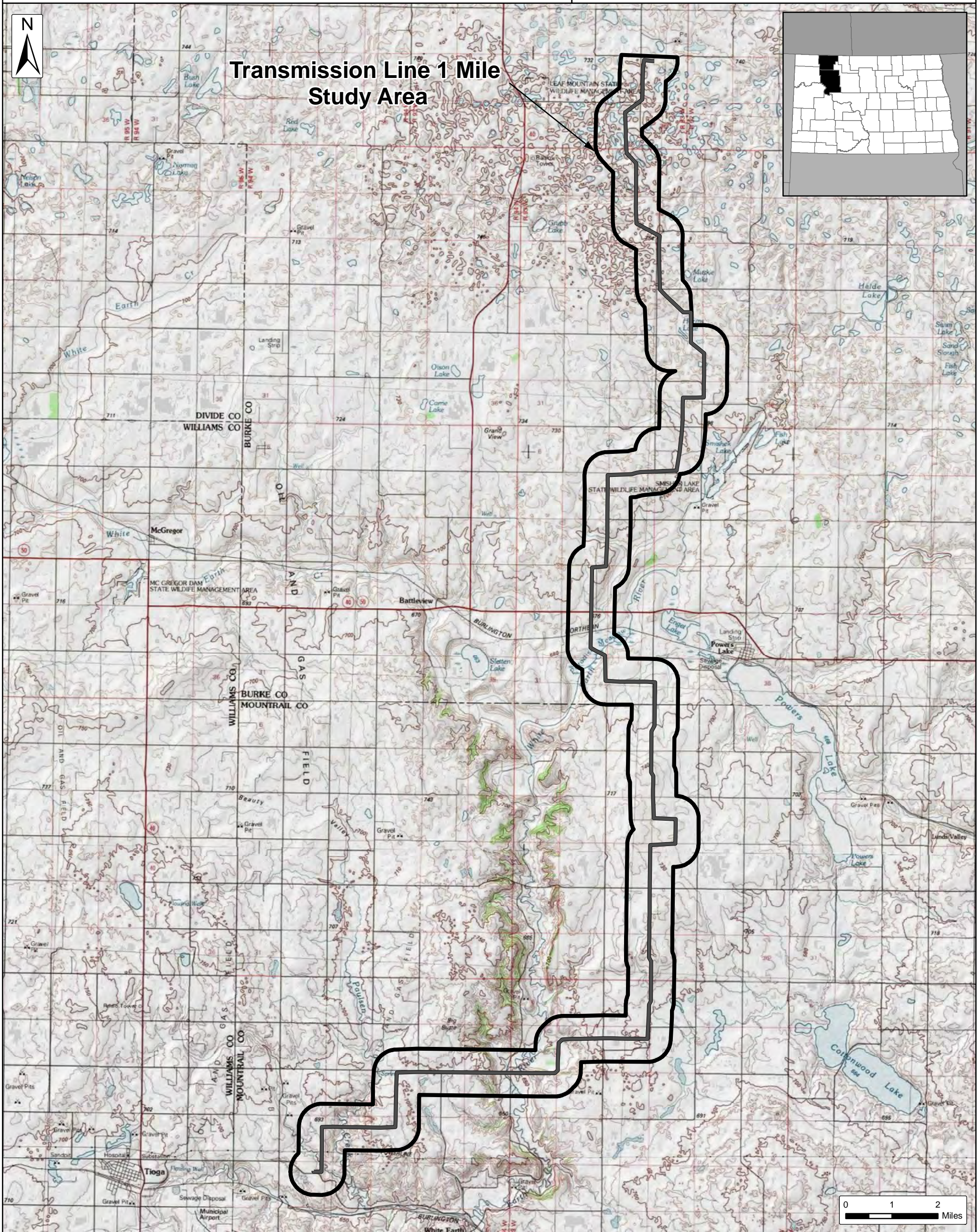




# Burke Wind Transmission Line Aquatic Resources Site Location Map

Burke County & Mountrail County, North Dakota

Client:  
**Burke Wind, LLC**

Issue Date:  
2/3/2019  
Atwell, LLC Project:  
16000947



-  Transmission Line
-  Transmission Line 1 Mile Study Area



*The information contained on this map is proprietary and confidential. The use or disclosure of this information by you to third parties is prohibited by law and may give rise to civil or criminal liability.*

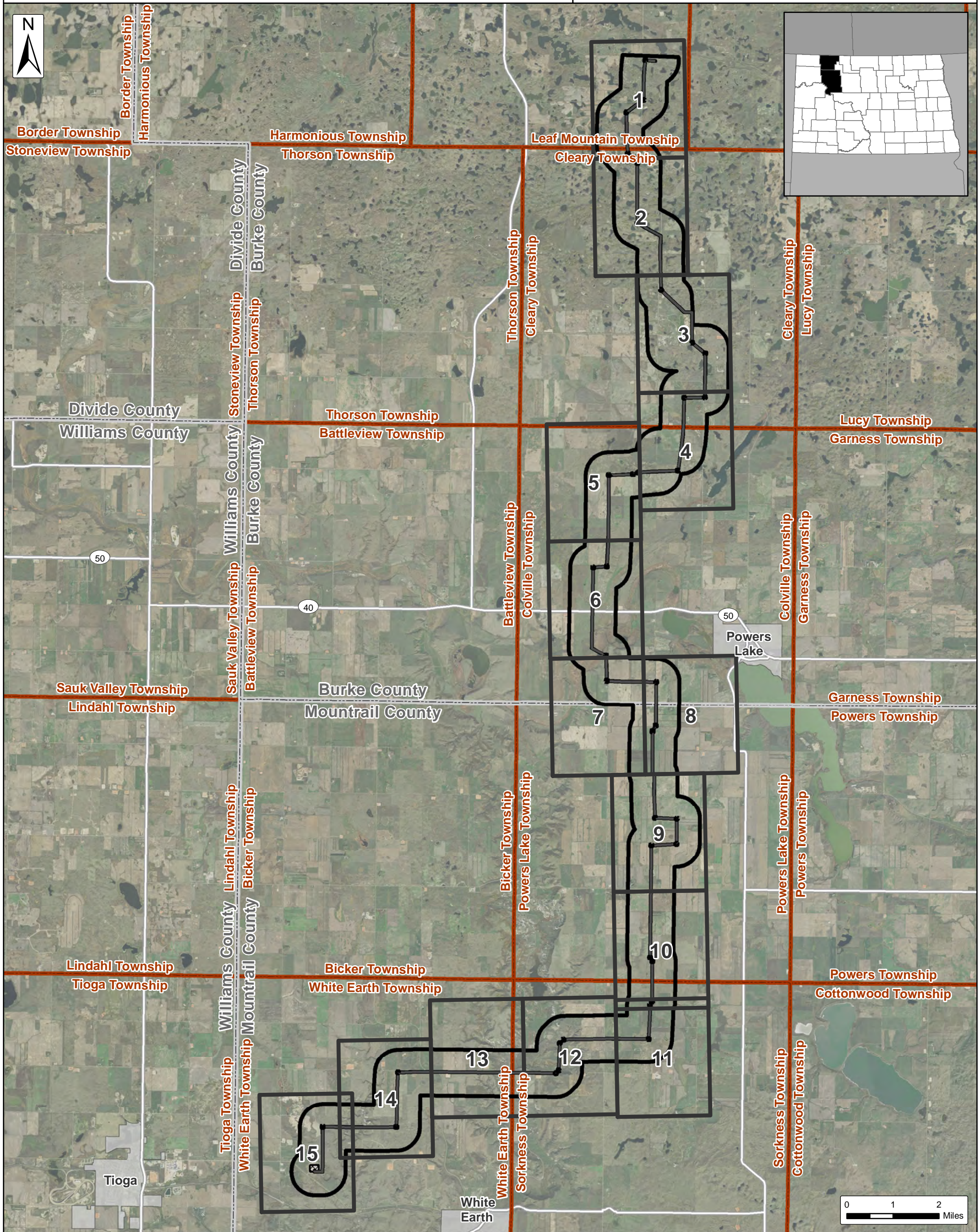
# Burke Wind Transmission Line

## Aquatic Resources Index Map

Burke County & Mountrail County, North Dakota

Client:  
**Burke Wind, LLC**

Issue Date:  
2/3/2019  
Atwell, LLC Project:  
16000947



- Transmission Line
- 200 ft. Turning Structure Radius
- Transmission Line 150 ft. Project Corridor
- Transmission Line 1 Mile Study Area
- Existing Tande Substation
- Cities
- Townships
- Counties
- Map Pages



*The information contained on this map is proprietary and confidential. The use or disclosure of this information by you to third parties is prohibited by law and may give rise to civil or criminal liability.*

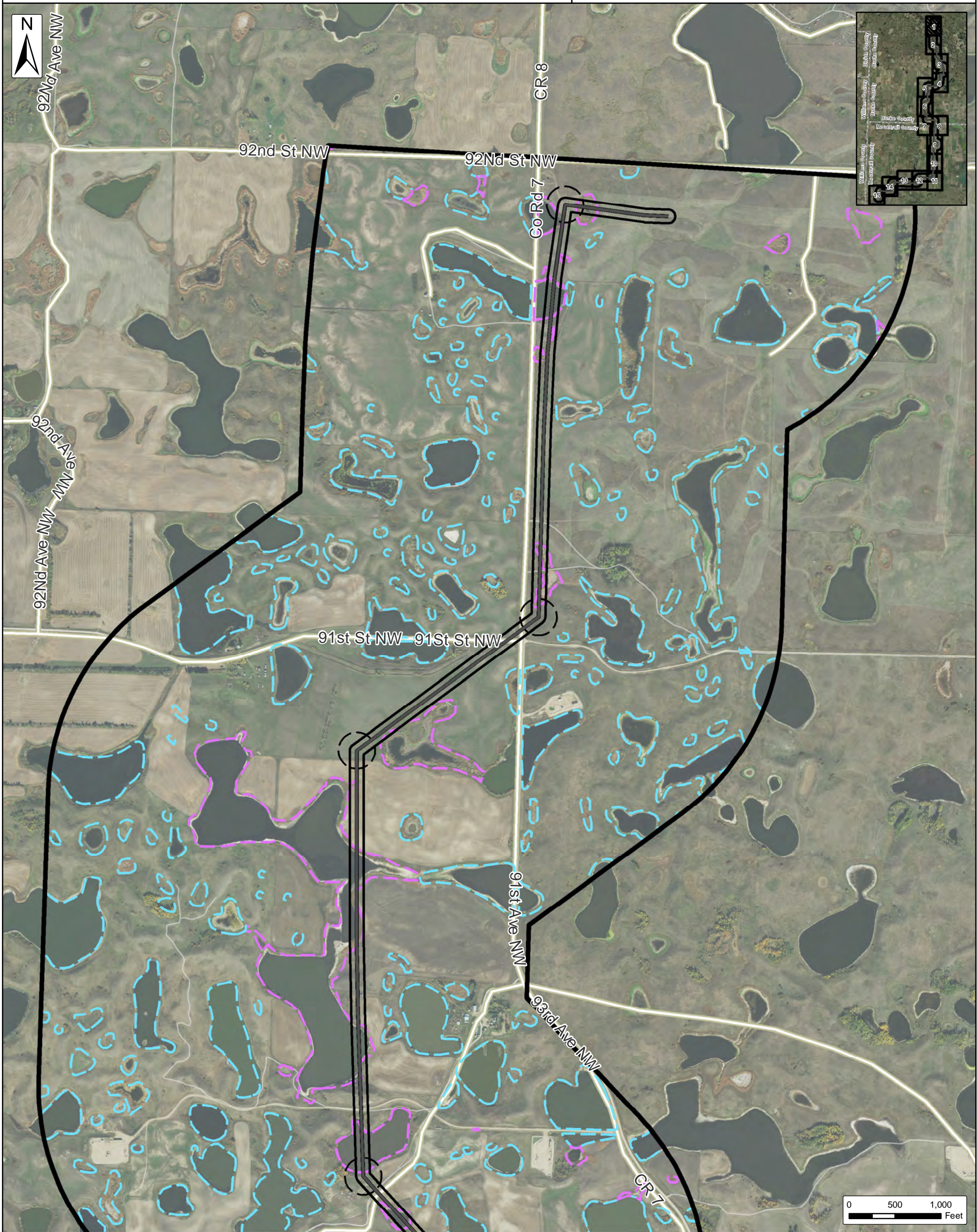
SOURCE: USDA NAIP 2017 IMAGERY

# Burke Wind Transmission Line Aquatic Resources Map

Burke County & Mountrail County, North Dakota

Client:  
**Burke Wind, LLC**

Issue Date:  
2/3/2019  
Atwell, LLC Project:  
16000947



- |   |                            |  |
|---|----------------------------|--|
| Watercourses (Atwell Desktop Review & Field Verified) | Wetlands Classifications   | Transmission Line                          |
| Intermittent Watercourses                             | Potentially Jurisdictional | 200 ft. Turning Structure Radius           |
| Perennial Watercourses                                | Likely Isolated            | Transmission Line 150 ft. Project Corridor |
|   | Not Classified             | Transmission Line 1 Mile Study Area        |
|   |                            | Existing Tande Substation                  |
|   |                            | Counties                                   |



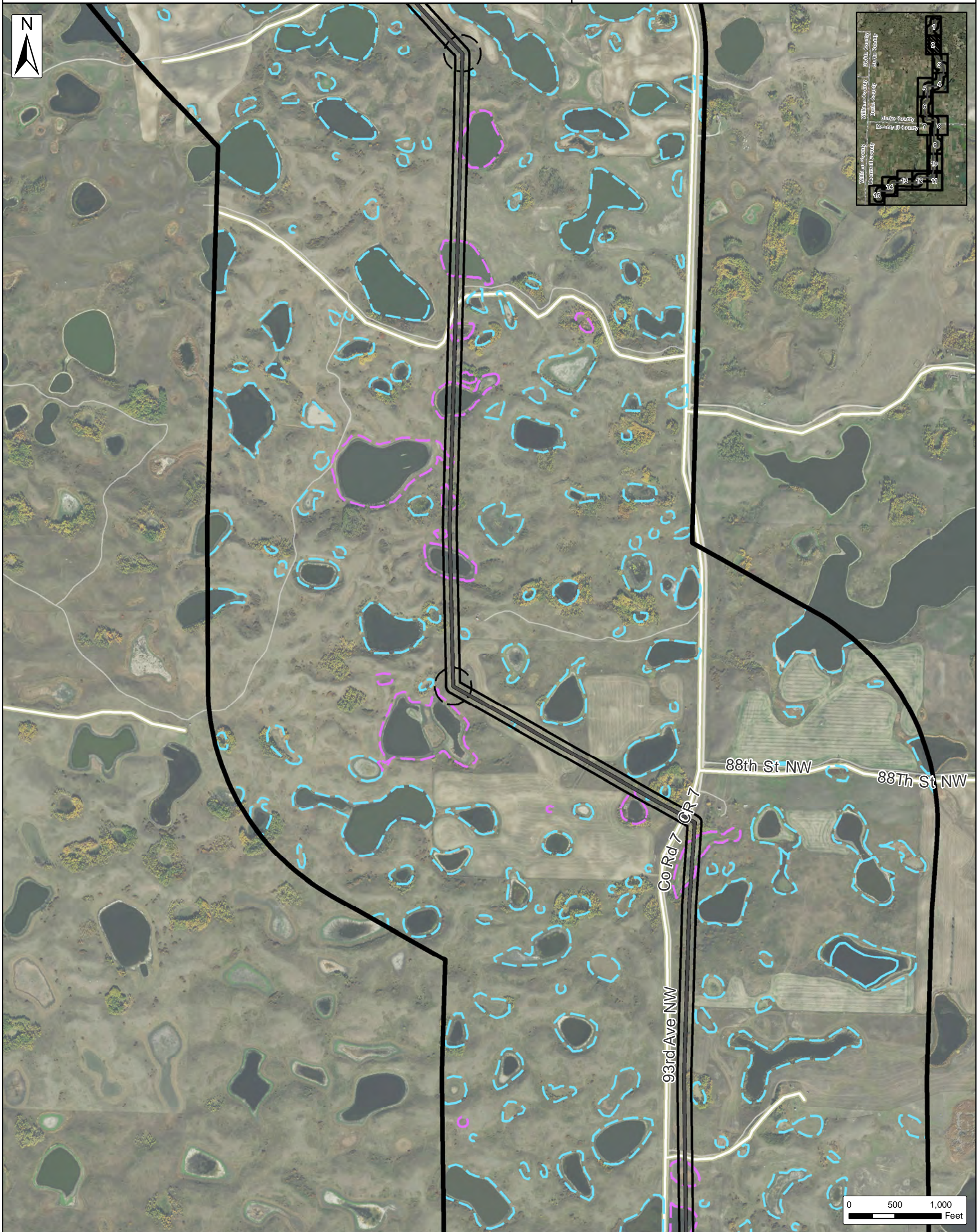
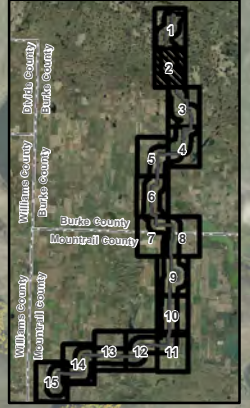
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# Burke Wind Transmission Line Aquatic Resources Map

Burke County & Mountrail County, North Dakota

Client:  
**Burke Wind, LLC**

Issue Date:  
2/3/2019  
Atwell, LLC Project:  
16000947



- |   |                            |                                  |
|---|----------------------------|----------------------------------|
| Watercourses (Atwell Desktop Review & Field Verified) | Wetlands Classifications   | Transmission Line                |
| Intermittent Watercourses                             | Potentially Jurisdictional | 200 ft. Turning Structure Radius |
| Perennial Watercourses                                | Likely Isolated            | Transmission Line                |
|   | Not Classified             | 150 ft. Project Corridor         |
|   |                            | Transmission Line                |
|   |                            | 1 Mile Study Area                |
|   |                            | Existing Tande Substation        |
|   |                            | Counties                         |



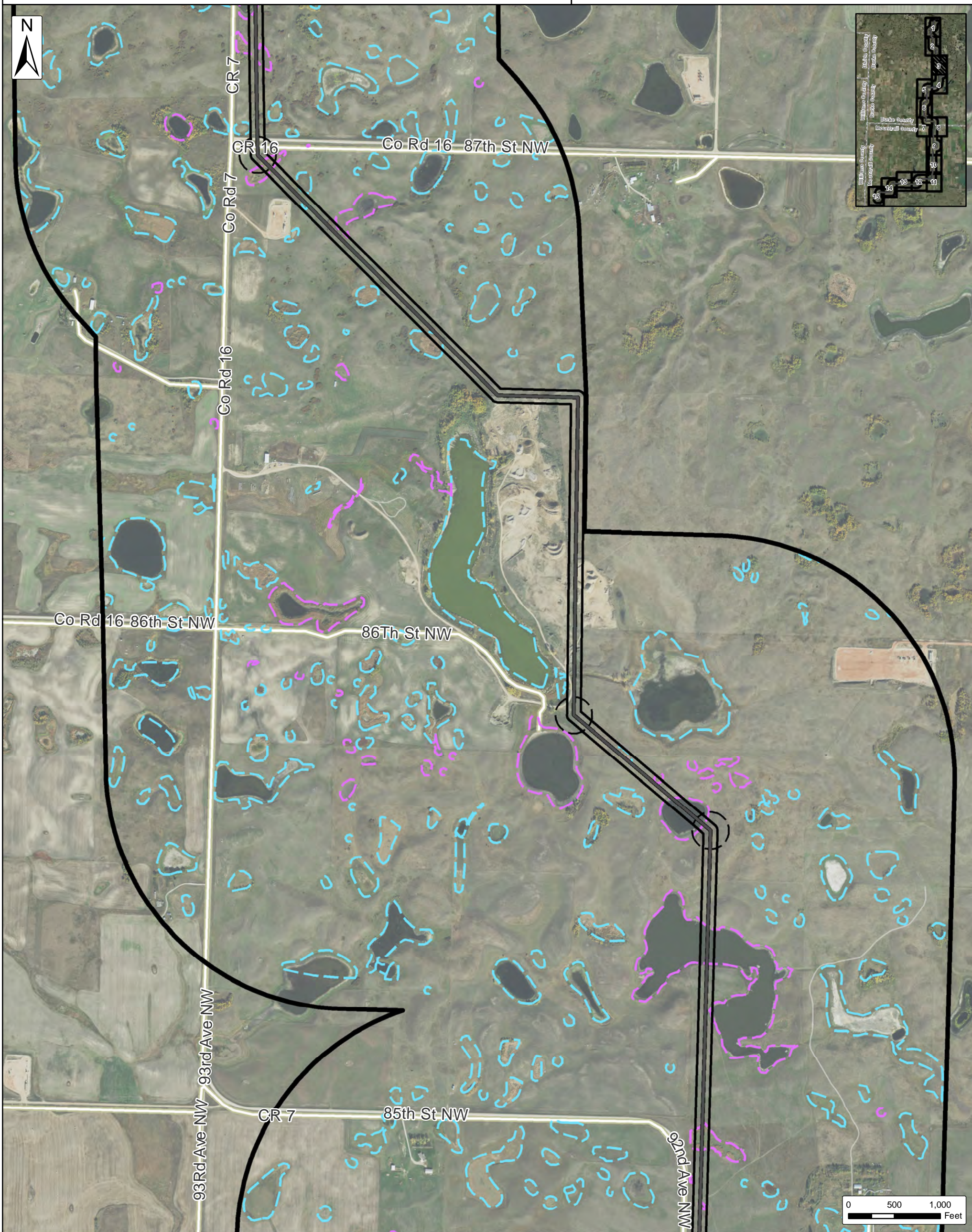
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# Burke Wind Transmission Line Aquatic Resources Map

Burke County & Mountrail County, North Dakota

Client:  
**Burke Wind, LLC**

Issue Date:  
2/3/2019  
Atwell, LLC Project:  
16000947



- |   |                            |  |
|---|----------------------------|--|
| Watercourses (Atwell Desktop Review & Field Verified) | Wetlands Classifications   | Transmission Line                          |
| Intermittent Watercourses                             | Potentially Jurisdictional | 200 ft. Turning Structure Radius           |
| Perennial Watercourses                                | Likely Isolated            | Transmission Line 150 ft. Project Corridor |
|   | Not Classified             | Transmission Line 1 Mile Study Area        |
|   |                            | Existing Tande Substation                  |
|   |                            | Counties                                   |



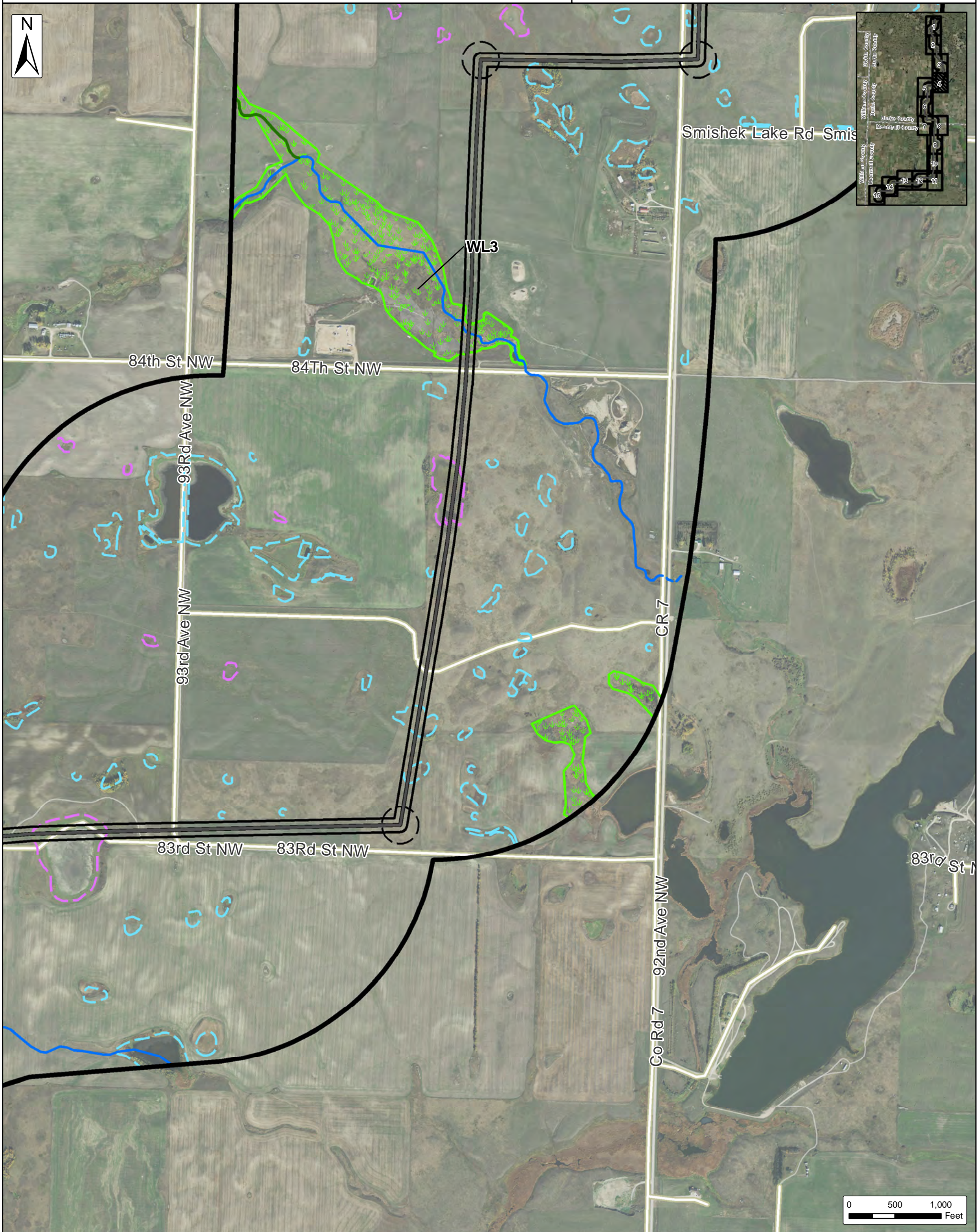
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# Burke Wind Transmission Line Aquatic Resources Map

Burke County & Mountrail County, North Dakota

Client:  
**Burke Wind, LLC**

Issue Date:  
2/3/2019  
Atwell, LLC Project:  
16000947



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|---|----------------------------|-------------------------------------|
| Watercourses (Atwell Desktop Review & Field Verified) | Wetlands Classifications   | Transmission Line                   |
| Intermittent Watercourses                             | Potentially Jurisdictional | 200 ft. Turning Structure Radius    |
| Perennial Watercourses                                | Likely Isolated            | 150 ft. Project Corridor            |
|   | Not Classified             | Transmission Line 1 Mile Study Area |
|   |                            | Existing Tande Substation           |
|   |                            | Counties                            |

SOURCE: USDA NAIP 2017 IMAGERY



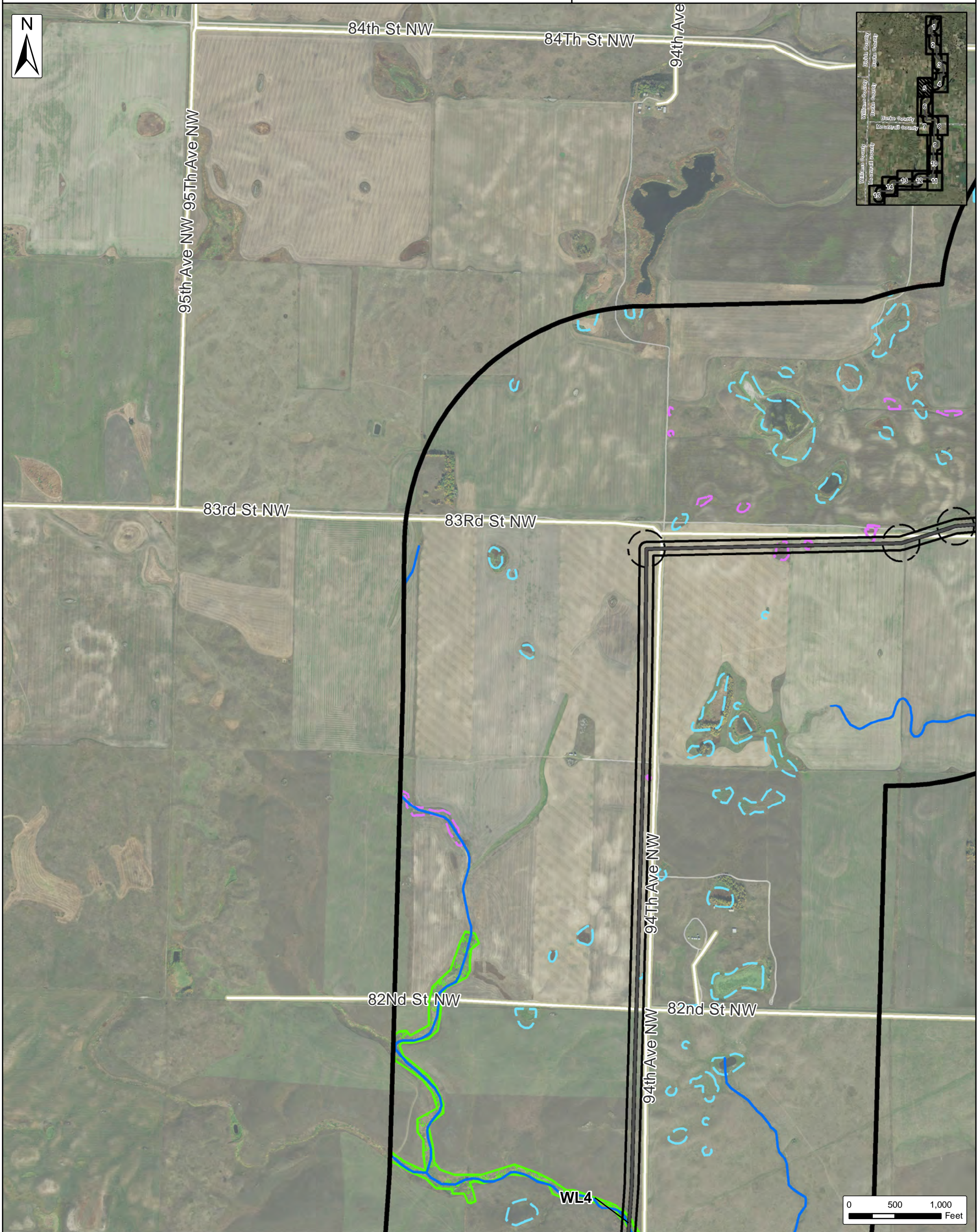
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# Burke Wind Transmission Line Aquatic Resources Map

Burke County & Mountrail County, North Dakota

Client:  
**Burke Wind, LLC**

Issue Date:  
2/3/2019  
Atwell, LLC Project:  
16000947



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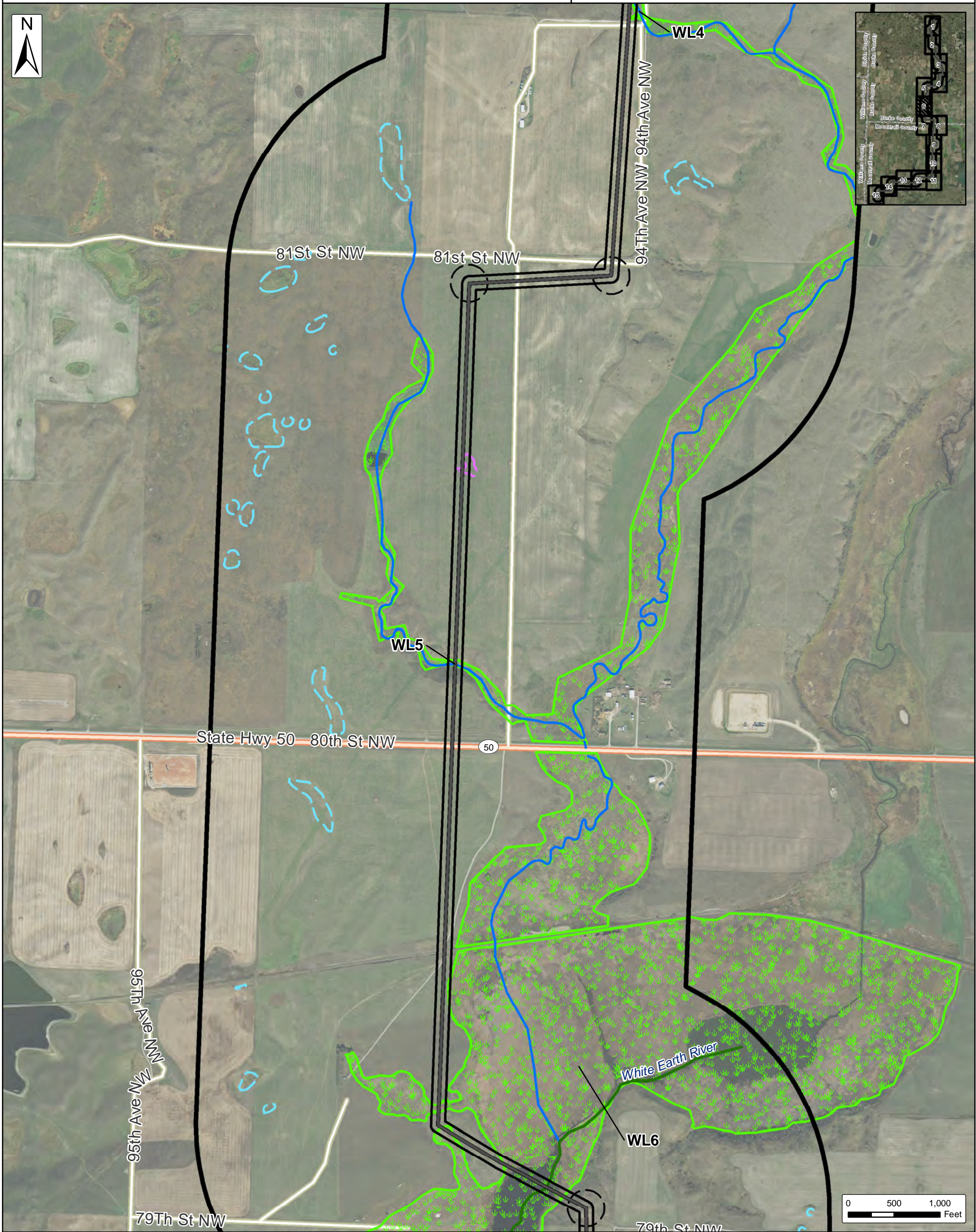
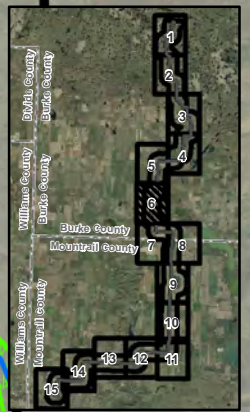
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Burke County & Mountrail County, North Dakota

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| Watercourses (Atwell Desktop Review & Field Verified) | Wetlands Classifications   | Transmission Line                          |
| Intermittent Watercourses                             | Potentially Jurisdictional | 200 ft. Turning Structure Radius           |
| Perennial Watercourses                                | Likely Isolated            | Transmission Line 150 ft. Project Corridor |
| Not Classified  | Not Classified             | Transmission Line 1 Mile Study Area        |
|   |                            | Existing Tande Substation                  |
|   |                            | Counties                                   |



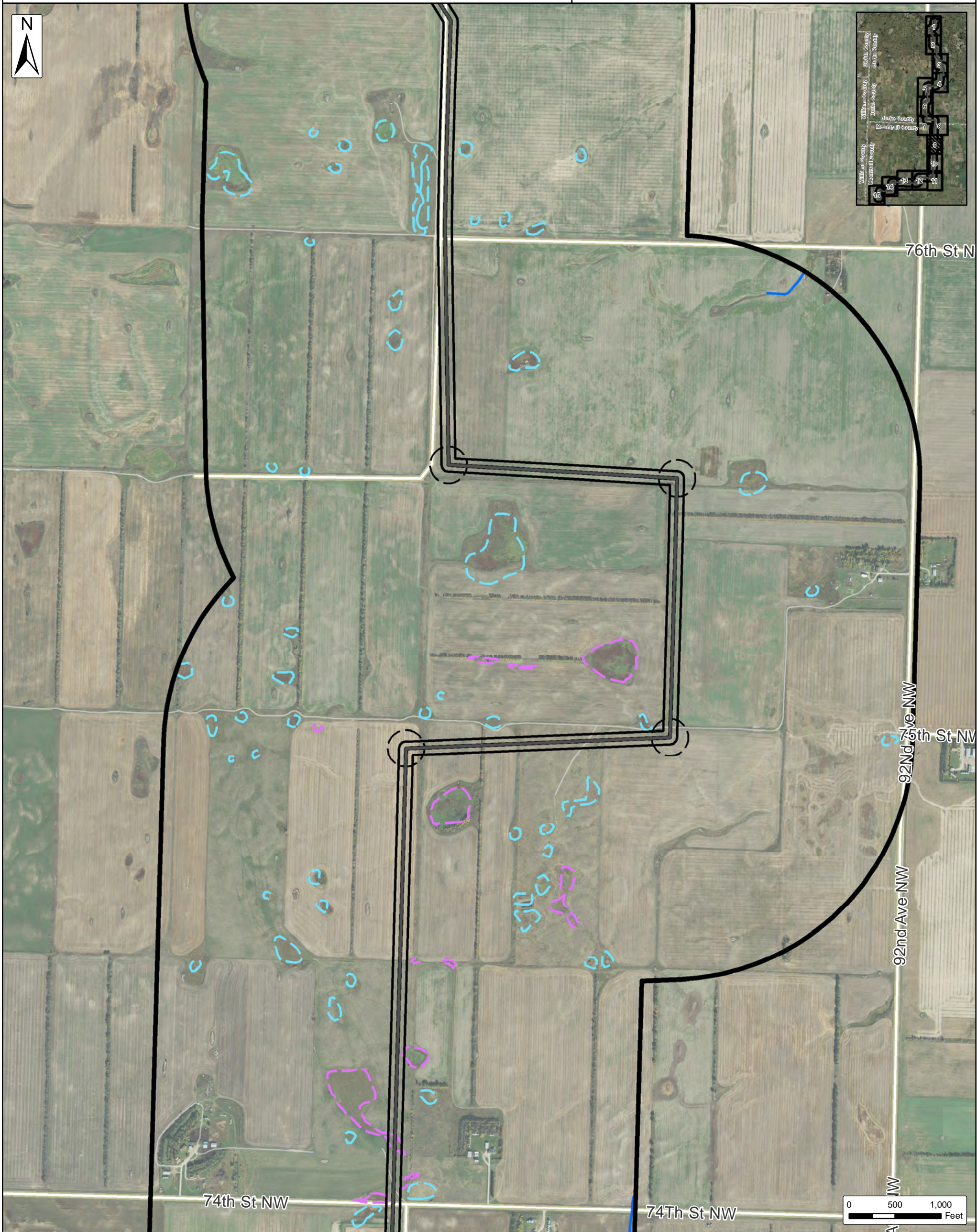
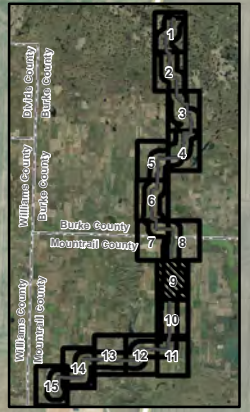
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Burke County & Mountrail County, North Dakota

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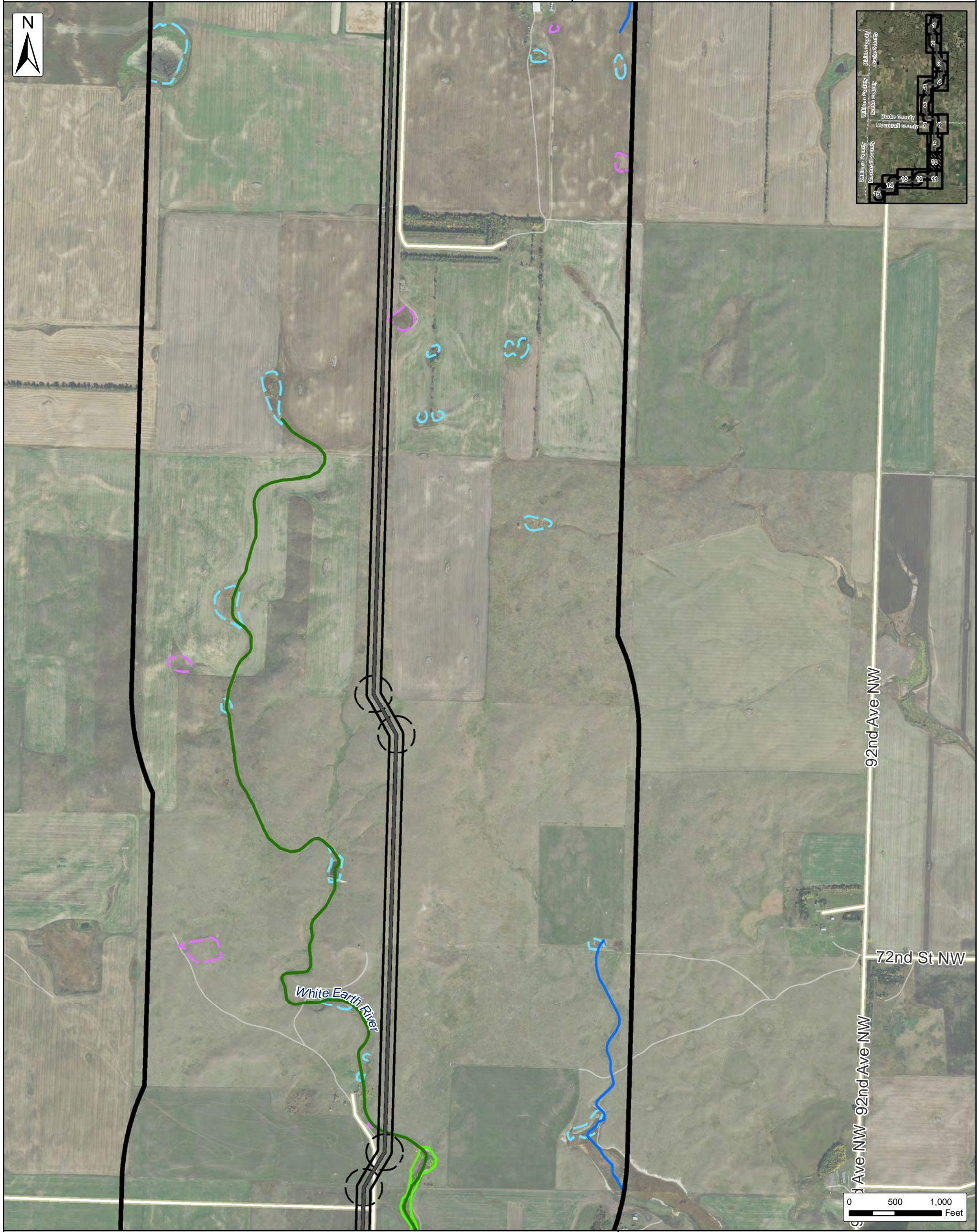
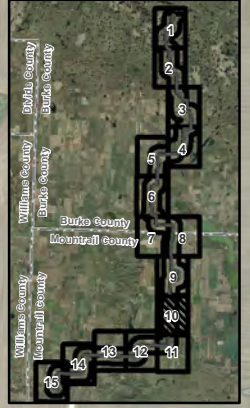
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Burke County & Mountrail County, North Dakota

Client:  
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Issue Date:  
2/3/2019  
Atwell, LLC Project:  
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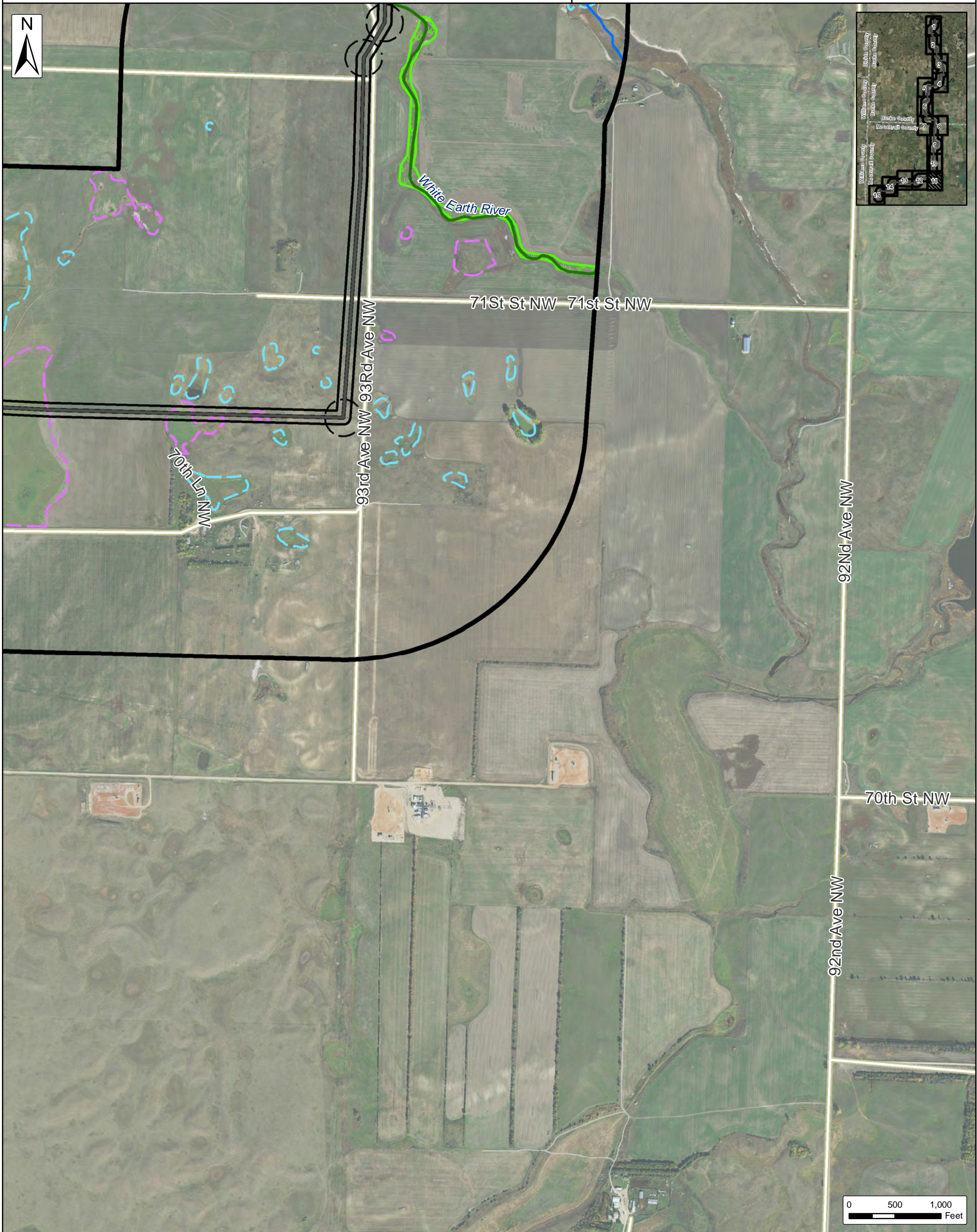
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|---|----------------------------|--|
| Watercourses (Atwell Desktop Review & Field Verified) | Wetlands Classifications   | Transmission Line                          |
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# Burke Wind Transmission Line Aquatic Resources Map

Burke County & Mountrail County, North Dakota



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|--|--|---|
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|--|--|---|

SOURCE: USDA NAIP 2017 IMAGERY



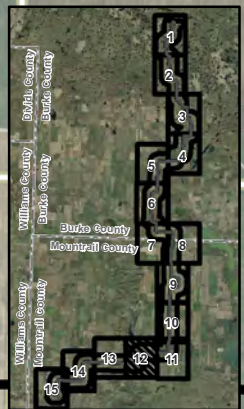
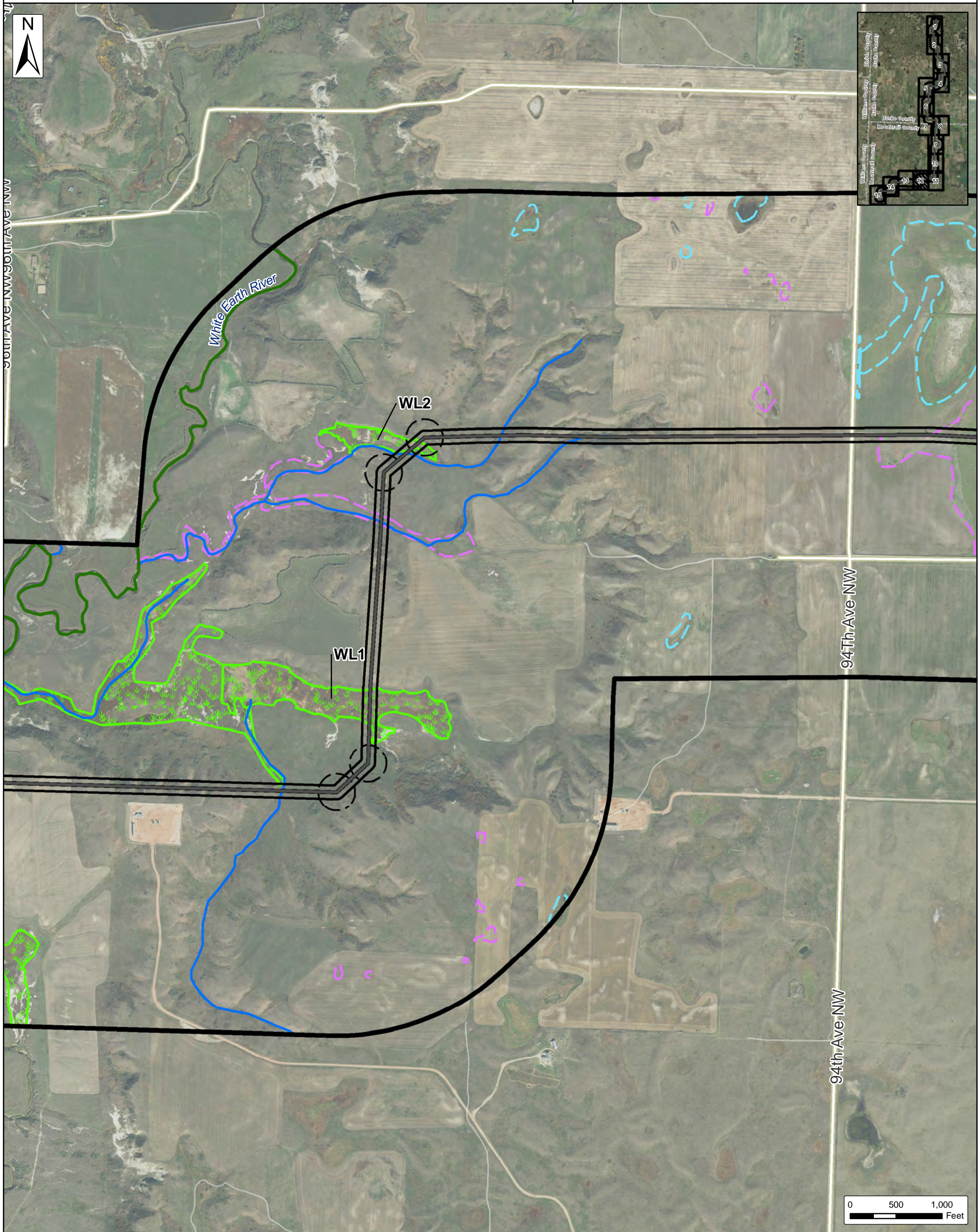
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Burke County & Mountrail County, North Dakota

Client:  
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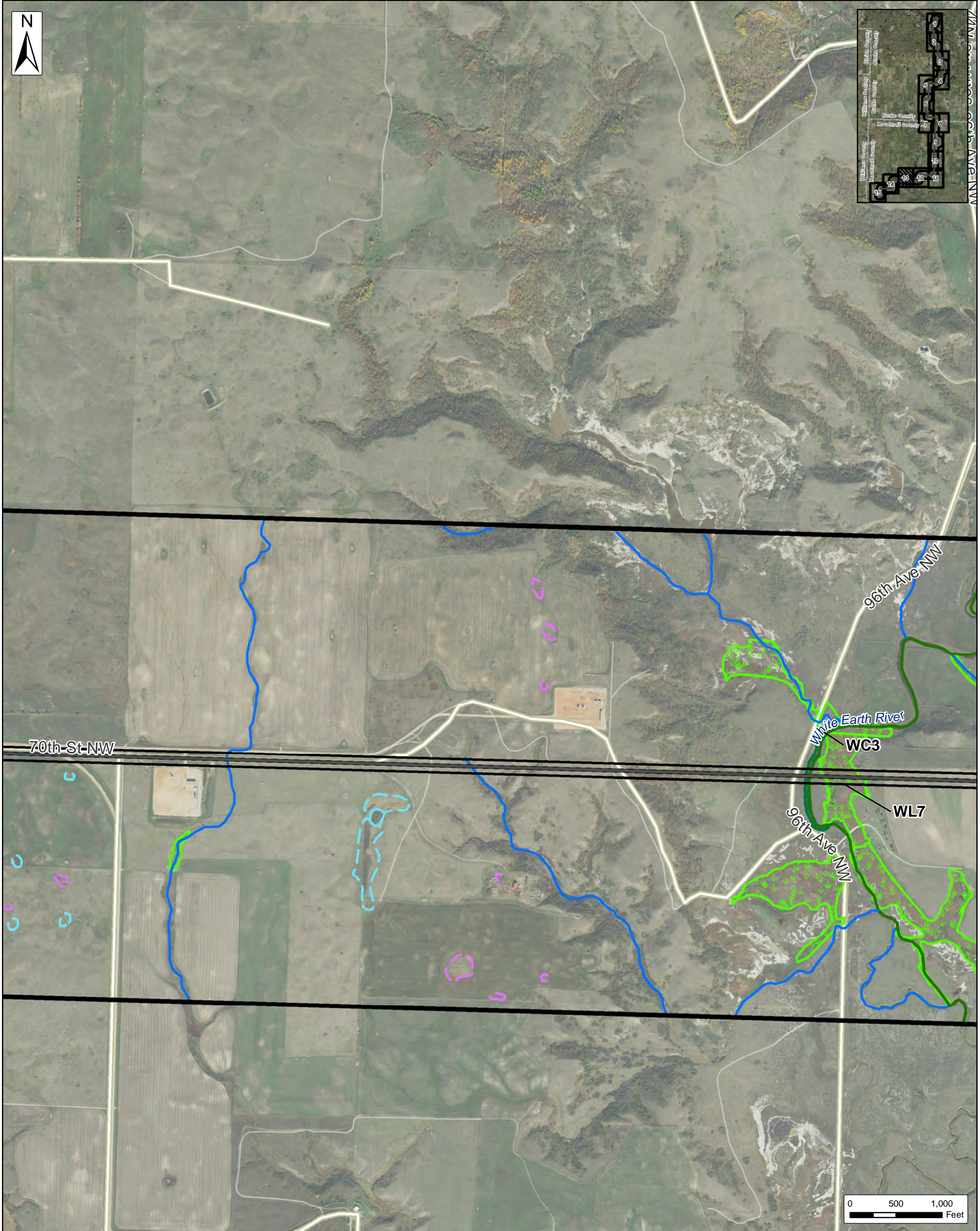
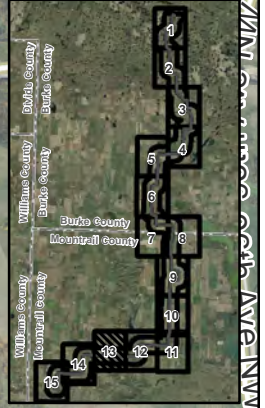
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# Burke Wind Transmission Line Aquatic Resources Map

Burke County & Mountrail County, North Dakota

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|   |                            | Counties                                   |

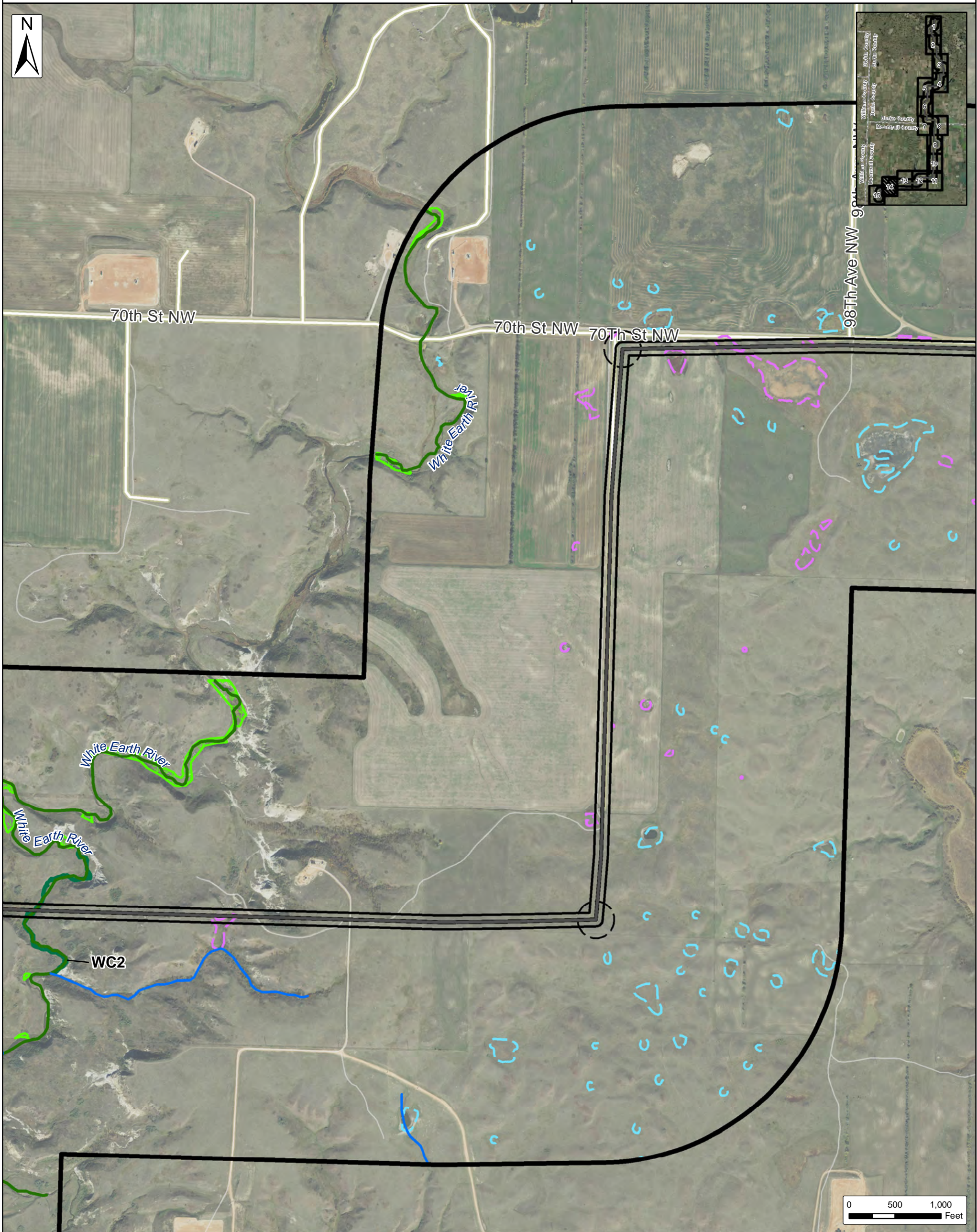
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# Burke Wind Transmission Line Aquatic Resources Map

Burke County & Mountrail County, North Dakota



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|---|----------------------------|--|
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|   |                            | Counties                                   |



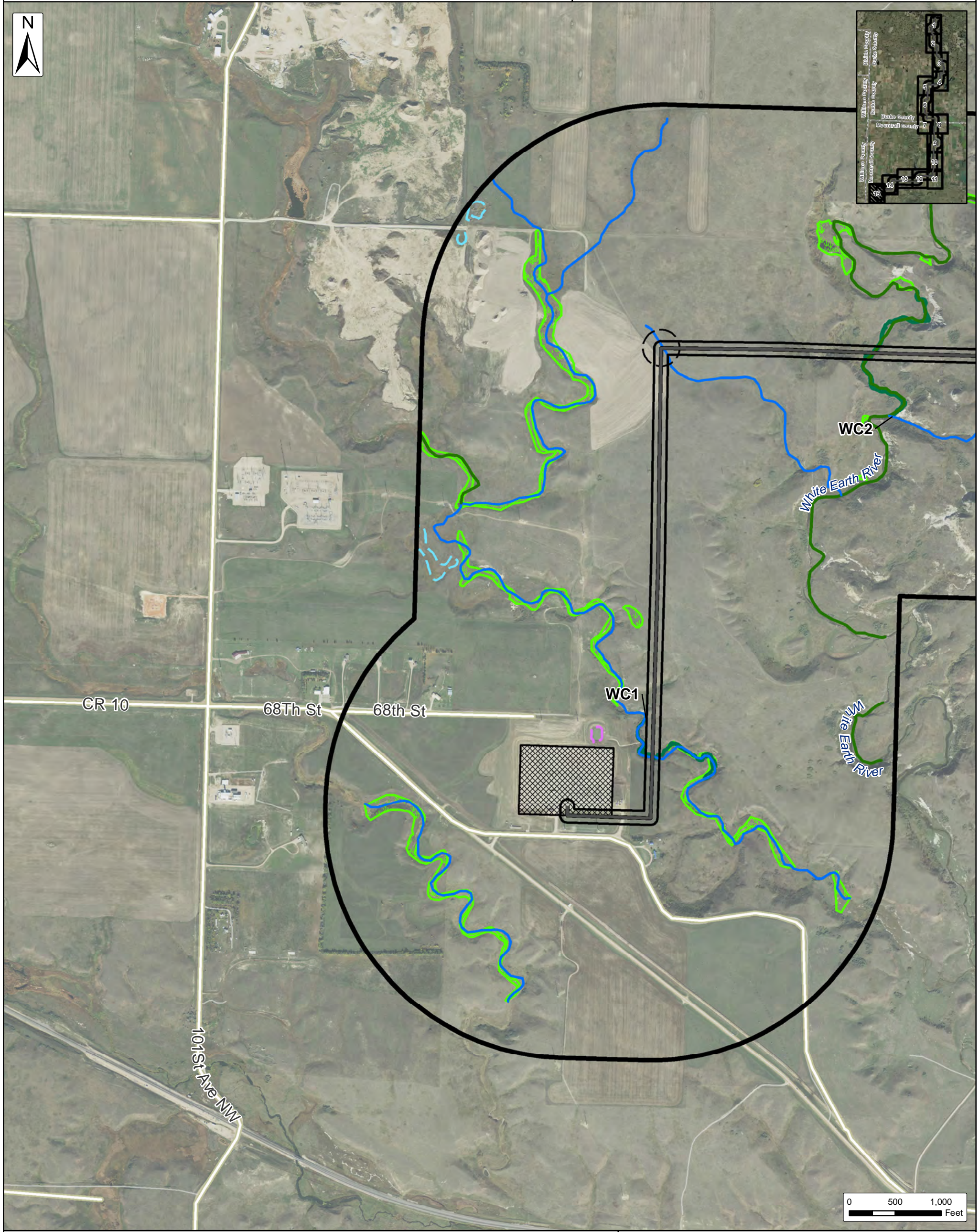
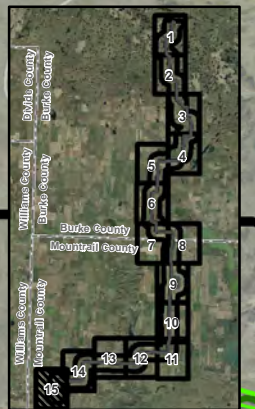
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# Burke Wind Transmission Line Aquatic Resources Map

Burke County & Mountrail County, North Dakota

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- |   |                            |                                  |
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| Watercourses (Atwell Desktop Review & Field Verified) | Wetlands Classifications   | Transmission Line                |
| Intermittent Watercourses                             | Potentially Jurisdictional | 200 ft. Turning Structure Radius |
| Perennial Watercourses                                | Likely Isolated            | Transmission Line                |
| Not Classified  | Not Classified             | 150 ft. Project Corridor         |
|   |                            | Transmission Line                |
|   |                            | Existing Tande Substation        |
|   |                            | Counties                         |



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