

# Aquatic Resources Summary Report, Proposed Crowned Ridge I Wind Facility, Grant and Codington Counties, South Dakota

MARCH 2019

PREPARED FOR  
**Crowned Ridge Wind, LLC**

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**AQUATIC RESOURCES SUMMARY REPORT,  
PROPOSED CROWNED RIDGE I WIND FACILITY, GRANT  
AND CODINGTON COUNTIES, SOUTH DAKOTA**

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# 1 INTRODUCTION

Crowned Ridge Wind, LLC, a wholly owned indirect subsidiary of NextEra Energy Resources, LLC (NextEra), plans to develop an approximately 300-megawatt (MW) wind facility known as the Crowned Ridge I Wind Energy Facility on 53,186 acres of land in Grant and Codington Counties, South Dakota. For the purposes of this assessment, the wind facility is referred to as the project and the 53,186 acres of land encompassing the wind facility are referred to as the project area. Crowned Ridge Wind, LLC, has entered into a purchase and sale agreement under which it will permit and construct the project (including the off-site generation tie line) and, thereafter, transfer the project, along with its Facility Permits, to Northern States Power at the commercial operations date.

Crowned Ridge Wind, LLC, contracted SWCA Environmental Consultants (SWCA) to complete an aquatic resources assessment for the project. The objectives of the aquatic resources assessment were to identify and evaluate wetlands and other waters of the U.S. within the project area that may be considered jurisdictional and potentially subject to U.S. Army Corps of Engineers (USACE) jurisdiction under Section 404 of the Clean Water Act (CWA). This report provides the methods, results, and conclusions of the aquatic resource assessment that SWCA conducted within multiple survey areas during 2017 and 2018.

## 2 ENVIRONMENTAL SETTING

Ecoregions are delineated based on the continuity of natural resource availability, vegetation communities, and other factors (Bryce et al. 1998). The U.S. Environmental Protection Agency (EPA) and the Commission for Environmental Cooperation (CEC) defined a hierarchy of ecoregions at various scales, with Level I ecoregions being the coarsest level defined at the global scale, through Level III at the national scale (CEC 1997). Bryce et al. (1998) defined smaller Level IV ecoregions at a regional scale within the Level III ecoregions for the states of North and South Dakota.

The project is located within the Level IV Prairie Coteau, Big Sioux Basin, and Prairie Coteau Escarpment ecoregions, which are subdivisions of the Level III Northern Glaciated Plateau ecoregion (Bryce et al. 1998). The Prairie Coteau ecoregion resulted from stagnant glacial ice melting beneath a layer of sediment, and it is dominated by a tightly undulating, hummocky landscape with no drainage pattern. This ecoregion has large chains of lakes and scattered semipermanent or seasonal wetlands (Bryce et al. 1998). The Big Sioux Basin ecoregion is within the surrounding Prairie Coteau ecoregion and differs from that region in that it has a well-defined drainage network and gentler topography (Bryce et al. 1998). The Prairie Coteau Escarpment ecoregion is defined by higher elevations and broken topography that have resulted in cool perennial streams that flow off the escarpment (Bryce et al. 1998).

## 3 METHODS

SWCA completed an aquatic resources assessment for multiple survey areas within the project area using a combination of desktop review and field surveys. A desktop analysis was conducted to identify wetlands and other waterbodies within the project area. Field investigations occurred in multiple survey areas, defined by locations of proposed project infrastructure.

### 3.1 Desktop Analysis

Publicly available data sources were used to complete a desktop analysis to assess the likelihood of wetlands and other waters of the U.S. occurring within the project area:

- Aerial imagery (various years, including publicly available colored-infrared imagery)

- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS 2015) mapping
- U.S. Geological Survey (USGS) national Hydrography Dataset (NHD) (USGS 2013)
- National Land Cover Dataset (NLCD) (Homer et al. 2015)

## 3.2 Field Investigations

SWCA used results of the desktop analysis to inform field investigations in survey areas. To-date, SWCA has conducted aquatic resources field investigations from May 2, 2017, to November 7, 2018, including wetland determinations, in accordance with guidance and information available from the following sources:

- *Corps of Engineers Wetlands Delineation Manual* (USACE 1987)
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Version 2.0) (USACE 2010)
- Field Indicators of Hydric Soils in the United States, Version 8.0 (Natural Resources Conservation Service [NRCS] 2016)
- Revised (December 2, 2008) Guidance on Clean Water Act Jurisdiction following the Supreme Court Decision in *Rapanos v. U.S.* and *Carabell v. U.S.* (revision to the joint memorandum issued by the USACE and the EPA on June 5, 2007) (EPA 2008)

The presence or absence of wetlands was determined in the field using routine determination methods outlined in the *Corps of Engineers Wetlands Delineation Manual* and *Regional Supplement* (USACE 1987, 2010). Wetland delineations use a three-parameter approach, in which wetlands are identified by positive indicators of hydrology, hydrophytic vegetation, and the presence of hydric soils. Under normal conditions, all three parameters must be present for an area to be considered a jurisdictional wetland in accordance with Section 404 of the CWA. Wetland determinations use a more qualitative assessment method. Determinations conducted in the field assumed that areas exhibiting positive indicators of hydrology and hydrophytic vegetation were wetlands. Soil pits typically were not used to assess the presence or absence of hydric soils in the field. In certain situations, normal seasonal or annual variation in environmental conditions or human activities can lead to the development of areas in which wetland vegetation or wetland hydrology may not be readily apparent. Further investigation was completed in such areas when presence of wetlands was suspected. A shovel test was conducted in areas that lacked readily apparent hydrophytic vegetation or indicators of hydrology to assist in an accurate determination of the presence of a wetland based on the presence of hydric soils or other secondary indicators of hydrology present within the soil profile.

Once a wetland was determined to be present, it was classified according to the Cowardin System, as described in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). This is a hierarchical system based on the topographic position and vegetation type of a wetland, which aids resource managers and others by providing uniformity of concepts and terms used to define wetlands according to hydrologic, geomorphologic, chemical, and biological factors.

Wetland hydrology was primarily determined in the field by considering the frequency and duration of inundation, visual observation of saturation, and the presence of primary wetland hydrologic indicators (such as water-stained leaves, water marks, sediment deposits, or algal matting). Secondary indicators used to determine wetland hydrology include, but are not limited to, surface soil cracks, crayfish burrows, geomorphic position, and drainage patterns. Evidence of these secondary indicators is present even during dry periods, and therefore they are useful indicators of a wetland. If the area sampled displayed



one or more primary hydrologic indicators or two or more secondary hydrologic indicators, a positive wetland hydrology determination was made.

Vegetation in survey areas was identified to the species level when possible. The appropriate wetland indicator status, as recorded in *2016 National Wetland Plant List* (Lichvar et al. 2016), was assigned to each species for data recorded. Wetland indicator statuses include:

- Obligate (OBL): almost always occurs in wetlands
- Facultative Wetland (FACW): usually occurs in wetlands, but may occur in non-wetlands
- Facultative (FAC): occurs in wetlands or non-wetlands
- Facultative Upland (FACU): usually occurs in non-wetlands, but may occur in wetlands
- Upland (UPL): almost never occurs in wetlands

Streams (e.g., creeks, rivers, human-made ditches) were identified by the presence of an ordinary high-water mark (OHWM), which is usually identifiable by indicators such as the level of water present, scouring of the channel, or a vegetation line within the channel. The OHWM is a defining element for identifying the lateral limits of non-wetland waters. SWCA biologists recorded the OHWMs of water bodies encountered. Streams were then classified as perennial, intermittent, or ephemeral based on field observations. If an OHWM was not present, the feature was assessed based on wetland criteria.

## **4 RESULTS**

### **4.1 Desktop Analysis**

SWCA reviewed the USFWS NWI mapping to determine the potential presence of wetland features within the project area. Based on this review, 2,871 potential NWI features were located within the project area. The desktop assessment identified 425 NHD line segments and 309 USFWS protected wetland basins within the project area (Appendix A).

#### **4.1.1 Vegetation**

Land cover within the project area consisted primarily of approximately 30,701.5 acres of pastureland. Cultivated crops accounted for approximately 19,049.25 acres, with the predominant crops being soybean, corn, and wheat. SWCA biologists documented vegetation throughout the project area while conducting field visits (Appendix A). Land cover types within survey areas were field-verified to confirm NLCD data (Homer et al. 2015).

#### **4.1.2 Soils**

Desktop analysis identified 101 mapped soil types present within the project area (Appendix A) according to NRCS (2018)(Table 1).

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**Table 1. Mapped Soil Types within the Project Area**

<b>Soil Name</b>	<b>Hydric</b>	<b>Drainage Class</b>	<b>Frequency of Flooding/Ponding</b>	<b>Depth to Water Table (inches)</b>	<b>Acreage within Project Area</b>
Buse-Forman loams, 25 to 40 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	69.6
Buse-Forman-Aastad loams, 4 to 15 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	31.5
Flom clay loam	Predominantly Hydric	Poorly drained	Rare/None	12	7.1
Forman-Aastad loams, 1 to 6 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	65.8
Forman-Aastad loams, 3 to 9 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	60.7
Forman-Aastad loams, 4 to 15 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	57.2
Forman-Buse loams, 6 to 9 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	26.5
Forman-Buse loams, 15 to 25 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	28.1
Forman-Buse extremely stony loams, 9 to 40 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	37.6
Hattie clay loam, 9 to 15 percent slopes	Non-Hydric	Well drained	None/None	80	635.5
Hattie clay loam, 15 to 40 percent slopes	Non-Hydric	Well drained	None/None	80	324
Buse-Sioux complex, 9 to 40 percent slopes	Non-Hydric	Well drained	None/None	78	2.1
Great Bend-Beotia silt loams, 0 to 2 percent slopes	Predominantly Non-Hydric	Well drained	None/None	48.75	2.5
Forman-Aastad complex, 1 to 4 percent slopes	Predominantly Non-Hydric	Well drained	None/None	47	1.3
LaDelle silt loam, channeled	Predominantly Non-Hydric	Moderately well drained	Occasional/None	51	27.4
Ludden silty clay	Hydric	Poorly drained	Frequent/Frequent	0	11.1
Parnell silty clay loam	Hydric	Very poorly drained	None/Frequent	0	32.1
Southam silty clay loam, 0 to 1 percent slopes	Predominantly Hydric	Very poorly drained	None/Frequent	0 to 6	219.2
Peever clay loam, coteau, 0 to 2 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	74

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<b>Soil Name</b>	<b>Hydric</b>	<b>Drainage Class</b>	<b>Frequency of Flooding/Ponding</b>	<b>Depth to Water Table (inches)</b>	<b>Acreage within Project Area</b>
Peever clay loam, coteau, 2 to 6 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	2,181.20
Peever clay loam, 6 to 9 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	875.6
Peever clay loam, 2 to 6 percent slopes	Predominantly Non-Hydric	Well drained	None/None	47	43.5
Playmoor silty clay loam	Predominantly Hydric	Poorly drained	Frequent/None	9	32.6
Tonka silty clay loam, 0 to 1 percent slopes	Predominantly Hydric	Poorly drained	None/Frequent	0 to 18	56.5
Vallers-Parnell complex	Hydric	Poorly drained	Rare/None	12	0.2
Water	Non-Hydric		None/None	78	108.1
Tonka silty clay loam, 0 to 1 percent slopes	Predominantly Hydric	Poorly drained	None/Frequent	0	18.8
Badger-Tonka silty clay loams, coteau, 0 to 1 percent slopes	Partially Hydric	Somewhat poorly drained	Frequent/None	18	8.2
Oldham silty clay loam, coteau, 0 to 1 percent slopes	Predominantly Hydric	Very poorly drained	None/Frequent	0	17.6
Southam silty clay loam, 0 to 1 percent slopes	Predominantly Hydric	Very poorly drained	None/Frequent	0	139.5
Parnell silty clay loam, coteau, 0 to 1 percent slopes	Predominantly Hydric	Very poorly drained	None/Frequent	0	331.2
Vallers loam, coteau, 0 to 1 percent slopes	Predominantly Hydric	Poorly drained	None/Occasional	6	20.7
Vallers-Hamerly loams, coteau, 0 to 2 percent slopes	Partially Hydric	Poorly drained	None/Occasional	6	556.8
Vallers-Parnell complex, coteau, 0 to 2 percent slopes	Predominantly Hydric	Poorly drained	None/Occasional	6 to 18	593.2
Hamerly-Tonka complex, coteau, 0 to 2 percent slopes	Predominantly Non-Hydric	Somewhat poorly drained	None/None	18	1,153.10
Hamerly-Badger complex, coteau, 0 to 2 percent slopes	Predominantly Non-Hydric	Somewhat poorly drained	None/None	18	540.8
McKranz-Hidewood, frequently flooded, silty clay loams, 0 to 2 percent slopes	Predominantly Non-Hydric	Somewhat poorly drained	None/None	18	296.2
McKranz-Badger silty clay loams, 0 to 2 percent slopes	Predominantly Non-Hydric	Somewhat poorly drained	None/None	18	821.1

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<b>Soil Name</b>	<b>Hydric</b>	<b>Drainage Class</b>	<b>Frequency of Flooding/Ponding</b>	<b>Depth to Water Table (inches)</b>	<b>Acreage within Project Area</b>
Hamerly-Balaton loams, coteau, 0 to 3 percent slopes	Predominantly Non-Hydric	Somewhat poorly drained	None/None	18	56.2
Hetland silty clay loam, 2 to 6 percent slopes	Predominantly Non-Hydric	Well drained	None/None	49	36.5
Forman-Aastad loams, coteau, 0 to 2 percent slopes	Predominantly Non-Hydric	Well drained	None/None	49	11.8
Forman-Aastad loams, coteau, 1 to 6 percent slopes	Predominantly Non-Hydric	Well drained	None/None	49	1,861.80
Forman-Buse-Aastad loams, coteau 1 to 6 percent slopes	Predominantly Non-Hydric	Well drained	None/None	49	3,660.20
Forman-Buse-Aastad loams, coteau, 2 to 9 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	3,937.90
Forman-Buse-Aastad loams, coteau, 2 to 15 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	2,140.50
Forman-Buse loams, 2 to 15 percent slopes, very stony	Predominantly Non-Hydric	Well drained	None/None	80	2,321.30
Buse-Langhei complex, 9 to 40 percent slopes, very stony	Predominantly Non-Hydric	Well drained	None/None	80	815.7
Buse-Forman loams, 15-40 percent slopes, very stony	Predominantly Non-Hydric	Well drained	None/None	80	747
Buse-Langhei complex, coteau, 15 to 40 percent slopes	Predominantly Non-Hydric	Well drained	None/None	78	295.3
Barnes-Svea loams, coteau, 0 to 2 percent slopes	Predominantly Non-Hydric	Well drained	None/None	48.75	714.9
Barnes-Svea loams, coteau, 1 to 6 percent slopes	Predominantly Non-Hydric	Well drained	None/None	48.75	1,966.50
Barnes-Buse-Svea loams, coteau, 1 to 6 percent slopes	Predominantly Non-Hydric	Well drained	None/None	48.75	2,361.20
Barnes-Buse-Svea loams, coteau, 2 to 9 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	953.7
Barnes-Buse loams, coteau, 6 to 9 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	1,077.80
Buse-Barnes loams, coteau, 9 to 20 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	93.6

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<b>Soil Name</b>	<b>Hydric</b>	<b>Drainage Class</b>	<b>Frequency of Flooding/Ponding</b>	<b>Depth to Water Table (inches)</b>	<b>Acreage within Project Area</b>
Buse-Barnes loams, coteau, 2 to 15 percent slopes, very stony	Predominantly Non-Hydric	Well drained	None/None	80	2,594.40
Buse-Barnes loams, coteau, 9 to 40 percent slopes, very stony	Predominantly Non-Hydric	Well drained	None/None	80	726
Buse-Lamoure, channeled, frequently flooded, complex, 0 to 40 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	122.5
Buse very stony-Lamoure, channeled, frequently flooded, complex, 0 to 40 percent slopes	Partially Hydric	Well drained	None/None	80	479
Buse-Langhei, very stony-La Prairie, channeled, occasionally flooded, complex, 0 to 60 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	996.1
Rauville silty clay loam, coteau, 0 to 1 percent slopes, frequently flooded	Predominantly Hydric	Very poorly drained	Frequent/None	0 to 12	547.1
Lamoure silty clay loam, coteau, 0 to 1 percent slopes, occasionally flooded	Predominantly Non-Hydric	Somewhat poorly drained	Occasional/None	18 to 30	202.6
Lamoure-Rauville silty clay loams, channeled, 0 to 2 percent slopes, frequently flooded	Predominantly Hydric	Poorly drained	Frequent/None	6 to 18	370.6
Fairdale loam, channeled, 0 to 2 percent slopes, frequently flooded	Predominantly Non-Hydric	Moderately well drained	Frequent/None	30	22.9
Marysland loam, 0 to 1 percent slopes, occasionally flooded	Predominantly Hydric	Poorly drained	Occasional/None	6 to 18	367.3
Divide loam, 0 to 2 percent slopes, occasionally flooded	Predominantly Non-Hydric	Somewhat poorly drained	Occasional/None	16 to 28	537.2
Moritz, occasionally flooded-Lamoure, frequently flooded, complex, 0 to 2 percent slopes	Partially Hydric	Somewhat poorly drained	Occasional/None	18	30
Spottswood loam, 0 to 2 percent slopes, occasionally flooded	Predominantly Non-Hydric	Somewhat poorly drained	Occasional/None	16 to 28	108.3
La Prairie loam, coteau, 0 to 2 percent	Predominantly Non-Hydric	Moderately well drained	Occasional/None	30 to 41	13.9

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<b>Soil Name</b>	<b>Hydric</b>	<b>Drainage Class</b>	<b>Frequency of Flooding/Ponding</b>	<b>Depth to Water Table (inches)</b>	<b>Acreage within Project Area</b>
slopes, occasionally flooded					
Fordtown loam, 0 to 2 percent slopes, rarely flooded	Non-Hydric	Well drained	Rare/None	43	2.4
Renwash loam, 0 to 2 percent slopes, rarely flooded	Non-Hydric	Somewhat excessively drained	Rare/None	43 to 55	78.6
Renshaw-Fordville loams, coteau, 0 to 2 percent slopes	Non-Hydric	Somewhat excessively drained	None/None	80	1950.5
Renshaw-Fordville loams, coteau, 2 to 6 percent slopes	Non-Hydric	Somewhat excessively drained	None/None	80	198.1
Renshaw loam, coteau, 0 to 2 percent slopes	Non-Hydric	Somewhat excessively drained	None/None	80	278.3
Renshaw loam, coteau, 2 to 6 percent slopes	Non-Hydric	Somewhat excessively drained	None/None	80	4
Renshaw-Sioux complex, coteau, 2 to 6 percent slopes	Non-Hydric	Somewhat excessively drained	None/None	80	390
Renshaw-Sioux complex, coteau, 6 to 9 percent slopes	Non-Hydric	Somewhat excessively drained	None/None	80	39.9
Sioux-Renshaw complex, coteau, 9 to 15 percent slopes	Non-Hydric	Excessively drained	None/None	80	60.3
Sioux-Renshaw complex, coteau, 15 to 40 percent slopes	Non-Hydric	Excessively drained	None/None	80	1.9
Renshaw-Sioux complex, 2 to 15 percent slopes, very stony	Non-Hydric	Somewhat excessively drained	None/None	80	84.8
Arvilla-Sandberg sandy loams, coteau, 6 to 9 percent slopes	Non-Hydric	Somewhat excessively drained	None/None	80	7
Udorthents, coteau (gravel pits)	Non-Hydric	Excessively drained	None/None	80	50
Rentill loam, coteau, 0 to 2 percent slopes	Non-Hydric	Well drained	None/None	80	6.4
Sioux-Renshaw complex, 15 to 40 percent slopes, very stony	Non-Hydric	Excessively drained	None/None	80	135.9
Maddock loamy fine sand, 9 to 25 percent slopes	Non-Hydric	Somewhat excessively drained	None/None	80	6.2
Egeland-Emdben complex, coteau, 0 to 2 percent slopes	Non-Hydric	Well drained	None/None	80	16.7

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Egeland-Embsden complex, coteau, 2 to 6 percent slopes	Non-Hydric	Well drained	None/None	80	2
Maddock-Egeland sandy loams, coteau, 2 to 6 percent slopes	Non-Hydric	Somewhat excessively drained	None/None	80	14.9
Maddock-Egeland sandy loams, coteau, 6 to 9 percent slopes	Non-Hydric	Somewhat excessively drained	None/None	80	6.5
Brookings silty clay loam, 0 to 2 percent slopes	Predominantly Non-Hydric	Moderately well drained	None/None	30 to 41	149.9
Vienna-Brookings complex, 0 to 2 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	2,489.90
Vienna-Brookings complex, 1 to 6 percent slopes	Predominantly Non-Hydric	Well drained	None/None	80	1,399.80
Vienna-Buse complex, coteau, 6 to 9 percent slopes	Non-Hydric	Well drained	None/None	80	102.6
Barnes clay loam, coteau, 0 to 2 percent slopes	Predominantly Non-Hydric	Well drained	None/None	49 to 61	1,279.00
Barnes clay loam, coteau, 2 to 6 percent slopes	Predominantly Non-Hydric	Well drained	None/None	49 to 61	3,768.50
Vienna-Forestville loams, coteau, 0 to 2 percent slopes	Predominantly Non-Hydric	Well drained	None/None	49 to 61	131.3
Vienna-Barnes-Forestville loams, 1 to 6 percent slopes	Predominantly Non-Hydric	Well drained	None/None	49 to 61	548.5
Mauvais clay loam, occasionally ponded, 2 to 6 percent slopes, extremely stony	Predominantly Non-Hydric	Somewhat poorly drained	None/Occasional	6	20.2
McKranz silty clay loam, 0 to 2 percent slopes	Predominantly Non-Hydric	Somewhat poorly drained	None/None	18 to 30	120.6
Rauville mucky silty clay loam, ponded, 0 to 1 percent slopes, frequently flooded	Hydric	Very poorly drained	Frequent/Frequent	0 to 6	131.6
Hidewood silty clay loam, 0 to 2 percent slopes, frequently flooded	Predominantly Hydric	Poorly drained	Frequent/None	6	38.9

Source: Natural Resources Conservation Service (2018).

## 4.2 Field Investigations

SWCA biologists conducted field investigations between May 2, 2017, and November 7, 2018, to assess general site characteristics, ground-truth mapped features identified during the desktop analysis, and assess the potential for occurrence of unmapped wetland or other aquatic resources. Representative photographs taken during field investigations are included in Appendix B.

### 4.2.1 Aquatic Resources

During site visits, SWCA biologists performed determinations on potential aquatic resources (NWI, NHD flowlines, and USFWS protected basins) identified during the desktop analysis within the survey areas. Additional aquatic resources not identified during the desktop analysis were recorded within the survey areas if encountered by SWCA biologists. Representative photographs are in Appendix B.

#### 4.2.1.1 WETLANDS

SWCA biologists recorded 369 wetlands encompassing 433.1 acres within the survey areas. The 369 wetlands observed include 165 seasonal wetlands (76.1 acres), 94 semipermanent wetlands (142.9 acres), and 109 permanent wetlands (209.1 acres) (Appendix A). One gravel pit pond (4.9 acres) was also recorded within the survey areas. Table 2 provides additional detail for all field assessed wetlands in the survey areas.

**Table 2. Field Assessed Wetlands Determined for the Survey Areas**

Feature ID	Survey Date	Location		Description	Acreage
		Longitude	Latitude		
WET001	5/2/2017	-96.924911	45.064913	Seasonal	1.22
WET002	5/2/2017	-96.922225	45.064492	Seasonal	0.68
WET003	5/2/2017	-96.914452	45.065043	Seasonal	0.44
WET004	5/2/2017	-96.915293	45.062223	Seasonal	1.11
WET005	5/3/2017	-96.923104	45.059989	Seasonal	0.09
WET006	5/3/2017	-96.923153	45.060458	Seasonal	0.24
WET007	7/13/2017	-96.767259	45.099898	Semipermanent	6.22
WET008	7/13/2017	-96.770715	45.093622	Semipermanent	1.33
WET009	7/13/2017	-96.802031	45.091467	Semipermanent	0.85
WET010	7/13/2017	-96.801158	45.09148	Semipermanent	2.80
WET011	7/13/2017	-96.831493	45.077816	Semipermanent	0.61
WET012	7/13/2017	-96.834394	45.069139	Semipermanent	2.96
WET013	7/13/2017	-96.840144	45.058149	Semipermanent	0.49
WET014	7/13/2017	-96.858347	45.063747	Semipermanent	1.39
WET015	7/14/2017	-96.841698	45.065953	Semipermanent	0.32
WET016	7/14/2017	-96.840276	45.066502	Semipermanent	0.45
WET017	7/14/2017	-96.846297	45.062041	Seasonal	0.13
WET018	7/14/2017	-96.853864	45.062139	Seasonal	0.33
WET019	7/14/2017	-96.855246	45.062634	Seasonal	0.07



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Feature ID	Survey Date	Location		Description	Acreage
		Longitude	Latitude		
WET020	7/14/2017	-96.893903	45.064403	Seasonal	0.23
WET021	7/14/2017	-96.893385	45.064672	Seasonal	0.15
WET022	7/19/2017	-96.850033	45.065578	Seasonal	0.08
WET023	7/19/2017	-96.849984	45.065159	Seasonal	0.16
WET024	7/19/2017	-96.858617	45.062207	Seasonal	0.66
WET025	7/19/2017	-96.86105	45.062399	Semipermanent	2.58
WET026	7/20/2017	-96.796909	45.092497	Seasonal	0.52
WET027	7/27/2017	-96.855944	45.06485	Seasonal	0.11
WET028	7/27/2017	-96.855417	45.065477	Permanent	2.07
WET029	7/27/2017	-96.855961	45.066438	Seasonal	0.14
WET030	8/18/2017	-96.970349	45.149634	Semipermanent	1.00
WET031	8/18/2017	-96.970931	45.147203	Seasonal	0.15
WET032	8/18/2017	-96.995555	45.133423	Semipermanent	0.45
WET033	8/21/2017	-96.979778	45.122435	Permanent	0.11
WET034	8/21/2017	-96.987418	45.130488	Semipermanent	1.79
WET035	8/21/2017	-96.978465	45.131501	Permanent	0.70
WET036	8/21/2017	-96.962695	45.133123	Semipermanent	0.32
WET037	8/21/2017	-96.95781	45.133053	Semipermanent	0.15
WET038	8/22/2017	-96.982668	45.116261	Semipermanent	0.60
WET039	8/22/2017	-96.951747	45.130718	Semipermanent	1.76
WET040	8/22/2017	-96.984184	45.116293	Semipermanent	2.22
WET041	8/22/2017	-96.981336	45.118318	Semipermanent	0.07
WET042	8/22/2017	-96.94646	45.131045	Semipermanent	1.45
WET043	8/23/2017	-96.826287	45.074849	Semipermanent	0.40
WET044	8/23/2017	-96.798887	45.080243	Seasonal	0.46
WET045	8/23/2017	-96.799571	45.081588	Permanent	1.16
WET046	8/23/2017	-96.851357	45.079421	Semipermanent	1.51
WET047	8/23/2017	-96.836296	45.076515	Seasonal	0.35
WET048	8/23/2017	-96.801125	45.080993	Permanent	0.99
WET049	8/23/2017	-96.834602	45.08118	Seasonal	0.38
WET050	8/23/2017	-96.956768	45.082351	Seasonal	0.19
WET051	8/23/2017	-96.823788	45.07576	Semipermanent	1.17
WET052	8/24/2017	-96.897776	45.066553	Permanent	3.16
WET053	8/24/2017	-96.931999	45.059089	Semipermanent	1.82
WET054	8/24/2017	-96.927262	45.040779	Seasonal	0.10
WET055	8/24/2017	-96.853742	45.045201	Seasonal	0.01
WET056	8/24/2017	-96.866794	45.061167	Seasonal	0.16
WET057	8/24/2017	-96.886499	45.046191	Permanent	5.53

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Feature ID	Survey Date	Location		Description	Acreage
		Longitude	Latitude		
WET058	8/23/2017	-96.819431	45.082183	Permanent	3.87
WET059	8/26/2017	-96.930612	45.031952	Semipermanent	0.31
WET060	8/26/2017	-96.917347	45.019189	Semipermanent	1.92
WET061	8/26/2017	-96.938434	45.015909	Seasonal	0.15
WET062	8/26/2017	-96.935558	45.015326	Seasonal	0.39
WET063	8/26/2017	-96.936501	45.015686	Seasonal	0.11
WET064	8/26/2017	-96.936182	45.016191	Seasonal	0.19
WET065	8/26/2017	-96.82627	45.046112	Seasonal	0.17
WET066	8/25/2017	-96.947207	45.04716	Permanent	3.93
WET067	8/25/2017	-96.945025	45.045803	Semipermanent	0.56
WET068	8/25/2017	-96.998303	45.025175	Semipermanent	0.41
WET069	8/25/2017	-97.010196	45.009422	Semipermanent	0.71
WET070	8/27/2017	-96.939613	45.039092	Seasonal	0.54
WET071	8/27/2017	-96.940871	45.039332	Seasonal	0.27
WET072	8/27/2017	-96.928552	45.041985	Seasonal	0.05
WET073	8/27/2017	-96.930539	45.041323	Semipermanent	1.07
WET074	8/27/2017	-96.929516	45.039601	Semipermanent	1.04
WET075	8/27/2017	-96.777226	45.088224	Seasonal	0.54
WET076	8/28/2017	-96.998077	45.110836	Seasonal	1.08
WET077	8/28/2017	-96.996576	45.111516	Seasonal	0.49
WET078	10/29/2017	-96.923334	45.045398	Seasonal	0.18
WET079	10/29/2017	-96.924492	45.023898	Semipermanent	5.01
WET080	10/29/2017	-96.924208	45.015838	Semipermanent	1.01
WET081	10/29/2017	-96.924292	45.017747	Seasonal	0.40
WET082	11/13/2017	-96.961713	45.14193	Semipermanent	1.46
WET083	11/13/2017	-96.992432	45.128334	Seasonal	0.14
WET084	11/13/2017	-96.992839	45.128392	Seasonal	0.05
WET085	11/13/2017	-96.993196	45.128812	Semipermanent	0.69
WET086	11/13/2017	-96.992205	45.126392	Seasonal	0.22
WET087	11/13/2017	-96.992829	45.127009	Seasonal	0.30
WET088	11/13/2017	-96.992487	45.127518	Seasonal	0.42
WET089	11/13/2017	-96.993248	45.127725	Permanent	0.15
WET090	11/14/2017	-97.008051	45.077519	Semipermanent	2.10
WET091	11/14/2017	-97.006779	45.071482	Seasonal	0.26
WET092	11/14/2017	-96.997735	45.042991	Semipermanent	2.75
WET093	11/14/2017	-96.95671	45.032038	Seasonal	12.73
WET094	11/14/2017	-96.925827	45.067317	Semipermanent	3.32
WET095	11/14/2017	-96.927211	45.06817	Seasonal	0.09

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		Longitude	Latitude		
WET096	11/14/2017	-96.930311	45.069394	Seasonal	0.28
WET097	11/14/2017	-96.938413	45.071863	Seasonal	0.25
WET098	11/14/2017	-96.937761	45.073436	Seasonal	3.28
WET099	11/14/2017	-96.942584	45.070339	Semipermanent	0.43
WET100	11/14/2017	-97.007707	45.07354	Seasonal	0.26
WET101	11/29/2017	-96.824459	45.089177	Permanent	8.44
WET102	11/29/2017	-96.826977	45.087475	Semipermanent	4.79
WET103	11/29/2017	-96.839384	45.085809	Semipermanent	1.21
WET104	11/29/2017	-96.849278	45.082359	Seasonal	2.31
WET105	11/30/2017	-96.827735	45.067196	Seasonal	0.63
WET106	11/30/2017	-96.829821	45.066303	Seasonal	0.08
WET107	11/30/2017	-96.830391	45.067618	Semipermanent	0.57
WET108	11/30/2017	-96.836165	45.081044	Seasonal	0.40
WET109	11/30/2017	-96.83386	45.0768	Semipermanent	1.48
WET110	11/30/2017	-96.834534	45.074623	Semipermanent	5.20
WET111	11/30/2017	-96.8885	45.05841	Semipermanent	11.54
WET112	11/30/2017	-96.919284	45.067966	Seasonal	0.26
WET113	11/30/2017	-96.893095	45.062257	Semipermanent	1.15
WET114	5/22/2018	-96.854785	45.060206	Seasonal	0.12
WET115	5/22/2018	-96.856464	45.060502	Permanent	3.62
WET116	5/22/2018	-96.848556	45.052885	Seasonal	0.10
WET117	5/22/2018	-96.849288	45.052362	Semipermanent	1.22
WET118	5/23/2018	-96.964026	45.153332	Seasonal	0.70
WET119	5/24/2018	-96.846792	45.087495	Permanent	7.57
WET120	5/23/2018	-96.89741	45.082357	Permanent	4.03
WET121	5/24/2018	-96.947827	45.023618	Gravel pit pond	4.91
WET122	5/24/2018	-96.935786	45.008553	Seasonal	0.02
WET123	11/30/2017	-96.838002	45.08091	Permanent	1.47
WET124	6/6/2018	-96.859312	45.199715	Semipermanent	2.83
WET125	6/6/2018	-96.849971	45.202047	Seasonal	0.71
WET126	6/7/2018	-96.821051	45.140813	Seasonal	1.33
WET127	6/5/2018	-96.873726	45.190691	Permanent	1.28
WET128	6/7/2018	-96.809125	45.145744	Seasonal	0.60
WET129	6/7/2018	-96.818212	45.141399	Permanent	2.61
WET130	6/5/2018	-96.87185	45.189527	Permanent	0.28
WET131	6/7/2018	-96.820859	45.139797	Seasonal	0.45
WET132	6/7/2018	-96.810402	45.148058	Seasonal	0.31
WET133	6/6/2018	-96.849352	45.201418	Seasonal	0.61

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Feature ID	Survey Date	Location		Description	Acreage
		Longitude	Latitude		
WET134	6/7/2018	-96.807704	45.146554	Semipermanent	1.42
WET135	6/5/2018	-96.837985	45.06566	Permanent	23.81
WET136	6/7/2018	-96.810541	45.187911	Seasonal	0.47
WET137	6/6/2018	-96.85926	45.19811	Semipermanent	0.29
WET138	6/7/2018	-96.808289	45.147985	Permanent	2.11
WET139	6/7/2018	-96.919282	45.060396	Semipermanent	6.01
WET140	6/7/2018	-96.908305	45.071535	Seasonal	0.40
WET141	6/8/2018	-96.990859	45.08425	Permanent	4.18
WET142	6/8/2018	-96.863146	45.143483	Seasonal	0.31
WET143	6/8/2018	-96.829878	45.065471	Seasonal	0.25
WET144	6/8/2018	-96.860115	45.143002	Permanent	3.05
WET145	6/8/2018	-96.862324	45.144673	Permanent	3.04
WET146	6/9/2018	-96.979719	45.06076	Seasonal	0.48
WET147	6/9/2018	-96.967209	45.133434	Seasonal	1.69
WET148	6/8/2018	-96.922393	45.069894	Seasonal	0.13
WET149	6/9/2018	-96.896106	45.190721	Semipermanent	4.31
WET150	6/9/2018	-96.882898	45.169199	Permanent	1.90
WET151	6/10/2018	-96.911397	45.061498	Semipermanent	2.94
WET152	6/12/2018	-96.814521	45.170148	Permanent	4.20
WET153	6/12/2018	-96.814902	45.170926	Seasonal	0.17
WET154	6/12/2018	-96.815086	45.172017	Semipermanent	1.67
WET155	6/12/2018	-96.819713	45.169475	Seasonal	0.93
WET156	6/12/2018	-96.817468	45.168085	Seasonal	0.93
WET157	6/14/2018	-96.868244	45.19113	Permanent	0.17
WET158	6/13/2018	-96.830742	45.167691	Semipermanent	0.45
WET159	6/13/2018	-96.827458	45.167963	Semipermanent	0.88
WET160	6/13/2018	-96.835285	45.166392	Seasonal	0.23
WET161	6/13/2018	-96.827833	45.168844	Seasonal	0.02
WET162	6/13/2018	-96.829908	45.167452	Semipermanent	0.12
WET163	6/13/2018	-96.832491	45.167158	Permanent	0.85
WET164	6/13/2018	-96.827669	45.166178	Seasonal	0.13
WET165	6/13/2018	-96.835013	45.16588	Seasonal	0.15
WET166	6/13/2018	-96.832338	45.166005	Seasonal	0.40
WET167	6/13/2018	-96.834347	45.166662	Semipermanent	0.43
WET168	6/14/2018	-96.878805	45.199609	Permanent	1.39
WET169	6/14/2018	-96.882025	45.196768	Seasonal	1.13
WET170	6/13/2018	-96.83311	45.167877	Semipermanent	0.08
WET171	6/14/2018	-96.87838	45.200851	Seasonal	0.07

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		Longitude	Latitude		
WET172	6/14/2018	-96.83577	45.155141	Semipermanent	2.28
WET173	6/15/2018	-96.818127	45.127513	Seasonal	0.88
WET174	6/14/2018	-96.831887	45.151083	Semipermanent	0.84
WET175	6/15/2018	-96.826451	45.123254	Seasonal	0.69
WET176	6/14/2018	-96.813957	45.054435	Permanent	10.50
WET177	6/15/2018	-96.81908	45.084077	Semipermanent	1.50
WET178	6/15/2018	-96.810843	45.120755	Semipermanent	0.38
WET179	6/15/2018	-97.018616	45.081986	Semipermanent	1.36
WET180	6/16/2018	-96.960746	45.01405	Seasonal	0.41
WET181	6/20/2018	-96.998276	45.114158	Permanent	1.33
WET182	6/21/2018	-96.970051	45.145289	Permanent	4.06
WET183	6/20/2018	-96.981946	45.115589	Permanent	0.52
WET184	6/21/2018	-96.983393	45.126341	Semipermanent	1.52
WET185	6/21/2018	-96.98225	45.124421	Permanent	0.77
WET186	6/20/2018	-96.982752	45.131812	Permanent	1.32
WET187	6/21/2018	-96.946918	45.136417	Permanent	3.32
WET188	6/20/2018	-96.973666	45.152861	Permanent	6.23
WET189	6/21/2018	-96.830619	45.116149	Seasonal	1.85
WET190	6/21/2018	-96.821232	45.11769	Permanent	2.71
WET191	6/21/2018	-96.833854	45.136341	Semipermanent	0.08
WET192	6/21/2018	-96.874503	45.176471	Permanent	0.44
WET193	6/21/2018	-96.829044	45.117251	Permanent	2.08
WET194	6/22/2018	-96.850866	45.169162	Permanent	3.05
WET195	6/22/2018	-96.817321	45.183612	Semipermanent	1.24
WET196	6/21/2018	-96.872665	45.177847	Seasonal	0.14
WET197	6/22/2018	-96.991108	45.089953	Permanent	0.19
WET198	6/21/2018	-96.832	45.117679	Permanent	0.48
WET199	6/21/2018	-96.834725	45.13734	Permanent	0.82
WET200	6/23/2018	-97.01238	45.089112	Seasonal	3.32
WET201	6/23/2018	-97.03028	45.097807	Permanent	1.75
WET202	6/23/2018	-96.96711	45.022023	Semipermanent	5.15
WET203	6/23/2018	-96.867229	45.166271	Semipermanent	2.42
WET204	6/23/2018	-96.870063	45.140919	Permanent	0.31
WET205	6/23/2018	-96.968125	45.089225	Seasonal	0.81
WET206	6/24/2018	-96.939297	45.03333	Permanent	1.68
WET207	6/23/2018	-96.826506	45.073858	Semipermanent	0.31
WET208	6/23/2018	-96.809527	45.04349	Permanent	1.95
WET209	6/25/2018	-96.980381	45.047788	Permanent	7.86

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		Longitude	Latitude		
WET210	6/26/2018	-96.981803	45.015495	Semipermanent	3.10
WET211	6/26/2018	-96.999688	45.012531	Permanent	1.68
WET212	6/25/2018	-96.908086	45.043445	Seasonal	1.85
WET213	6/25/2018	-97.020339	45.073205	Permanent	4.41
WET214	6/25/2018	-96.98697	45.026409	Permanent	1.87
WET215	6/25/2018	-96.987837	45.024318	Permanent	0.23
WET216	6/25/2018	-96.945938	45.042598	Seasonal	0.15
WET217	6/25/2018	-96.94657	45.043212	Semipermanent	1.15
WET218	6/25/2018	-96.947047	45.044392	Seasonal	0.14
WET219	6/26/2018	-96.802511	45.045747	Permanent	0.42
WET220	6/26/2018	-96.804502	45.045737	Permanent	2.63
WET221	6/26/2018	-96.804048	45.047835	Permanent	0.72
WET222	6/26/2018	-96.802976	45.047012	Permanent	0.69
WET223	6/26/2018	-96.803512	45.046	Permanent	0.08
WET224	7/12/2018	-96.971202	45.053217	Seasonal	0.14
WET225	7/13/2018	-96.969309	45.015411	Seasonal	0.32
WET226	7/13/2018	-96.968167	45.014955	Seasonal	0.40
WET227	7/13/2018	-96.967989	45.015911	Seasonal	0.61
WET228	7/24/2018	-96.849797	45.199737	Seasonal	0.04
WET229	7/25/2018	-96.867606	45.168152	Seasonal	0.04
WET231	7/26/2018	-96.802636	45.058941	Seasonal	2.93
WET232	7/26/2018	-96.944849	45.13727	Seasonal	0.05
WET233	7/26/2018	-96.985304	45.117119	Seasonal	0.00
WET234	7/25/2018	-96.859789	45.061091	Seasonal	0.61
WET235	8/2/2018	-96.864365	45.169045	Seasonal	0.19
WET236	8/2/2018	-96.869096	45.168577	Semipermanent	3.87
WET237	8/2/2018	-96.821879	45.116482	Seasonal	0.00
WET238	8/2/2018	-96.865603	45.169443	Seasonal	0.11
WET239	7/28/2018	-97.003294	45.084281	Seasonal	1.00
WET240	8/2/2018	-96.822026	45.116538	Seasonal	0.01
WET241	8/2/2018	-96.82202	45.116068	Seasonal	0.10
WET242	7/28/2018	-97.000271	45.076378	Semipermanent	1.02
WET243	8/1/2018	-96.82125	45.117019	Seasonal	0.15
WET244	8/7/2018	-96.842623	45.09002	Seasonal	0.11
WET245	8/7/2018	-96.842548	45.090231	Seasonal	0.01
WET246	8/8/2018	-96.838364	45.051478	Permanent	0.51
WET247	8/9/2018	-96.911724	45.063793	Semipermanent	0.17
WET248	8/20/2018	-96.854473	45.06578	Seasonal	0.05

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		Longitude	Latitude		
WET249	7/27/2017	-96.854696	45.066255	Seasonal	0.13
WET250	7/25/2018	-96.858136	45.060258	Permanent	1.13
WET251	8/24/2018	-96.84775	45.066527	Seasonal	0.09
WET252	8/27/2018	-96.822094	45.07443	Permanent	0.47
WET253	8/27/2018	-96.832258	45.089784	Permanent	1.41
WET254	8/28/2018	-96.866322	45.169739	Permanent	1.01
WET255	8/28/2018	-96.844959	45.198976	Permanent	0.15
WET256	8/28/2018	-96.847842	45.199452	Permanent	0.00
WET257	8/28/2018	-96.822048	45.154996	Permanent	0.21
WET258	8/28/2018	-96.823115	45.157255	Permanent	1.01
WET259	8/28/2018	-96.82213	45.15689	Permanent	0.38
WET260	8/28/2018	-96.828584	45.136321	Permanent	0.34
WET261	8/29/2018	-96.772781	45.087394	Permanent	0.26
WET262	8/29/2018	-97.000001	45.078327	Permanent	0.08
WET263	9/13/2018	-96.849602	45.070213	Permanent	2.74
WET264	9/13/2018	-96.838676	45.089232	Permanent	3.41
WET265	9/13/2018	-96.788665	45.082212	Semipermanent	1.11
WET266	9/13/2018	-96.841375	45.090388	Permanent	0.74
WET267	9/13/2018	-96.838912	45.090652	Permanent	0.80
WET268	9/15/2018	-97.02299	45.006506	Seasonal	0.98
WET269	9/14/2018	-96.825948	45.139236	Permanent	0.44
WET270	9/14/2018	-96.856273	45.169064	Permanent	2.32
WET271	9/14/2018	-96.897158	45.188607	Permanent	0.59
WET272	9/14/2018	-96.897548	45.189341	Seasonal	0.18
WET273	9/29/2018	-96.963872	45.162709	Seasonal	0.26
WET274	10/1/2018	-96.844547	45.185813	Seasonal	0.01
WET275	10/1/2018	-96.845356	45.185221	Seasonal	0.80
WET276	10/1/2018	-96.844754	45.187548	Seasonal	0.34
WET277	10/2/2018	-96.86432	45.179707	Seasonal	0.15
WET278	10/2/2018	-96.835265	45.090408	Semipermanent	4.21
WET279	10/2/2018	-96.833144	45.089946	Seasonal	0.01
WET280	10/2/2018	-96.821995	45.07472	Seasonal	0.05
WET281	10/3/2018	-96.983142	45.017467	Seasonal	0.14
WET282	10/3/2018	-96.983933	45.018034	Seasonal	0.10
WET283	10/3/2018	-96.791216	45.079355	Seasonal	0.17
WET284	10/3/2018	-96.780939	45.081426	Semipermanent	0.13
WET285	10/3/2018	-96.781433	45.081288	Semipermanent	0.08
WET286	10/3/2018	-96.78102	45.078153	Semipermanent	0.11

*Aquatic Resources Summary Report: Proposed Crowned Ridge I Wind Facility,  
Grant and Codington Counties, South Dakota*

Feature ID	Survey Date	Location		Description	Acreage
		Longitude	Latitude		
WET287	10/3/2018	-96.781264	45.077849	Seasonal	0.06
WET288	10/3/2018	-96.781134	45.077774	Seasonal	0.01
WET289	10/3/2018	-96.8602	45.060741	Seasonal	0.01
WET290	10/4/2018	-96.900301	45.188773	Seasonal	0.05
WET291	10/4/2018	-96.900378	45.188227	Seasonal	0.02
WET292	10/4/2018	-96.902629	45.187273	Semipermanent	0.30
WET293	10/4/2018	-96.846807	45.077846	Semipermanent	0.55
WET294	10/4/2018	-96.818059	45.157357	Semipermanent	0.59
WET295	10/4/2018	-96.819923	45.156417	Seasonal	0.64
WET296	10/9/2018	-96.864796	45.183974	Semipermanent	0.01
WET297	10/9/2018	-96.864745	45.183026	Semipermanent	0.13
WET298	10/11/2018	-96.803833	45.05715	Permanent	2.60
WET299	10/11/2018	-96.801979	45.057196	Semipermanent	0.30
WET300	10/11/2018	-96.805951	45.058936	Seasonal	1.87
WET301	10/11/2018	-96.808354	45.189017	Seasonal	0.00
WET302	10/11/2018	-96.808295	45.189055	Seasonal	0.01
WET303	10/12/2018	-96.840928	45.077584	Seasonal	0.28
WET304	10/12/2018	-96.842943	45.075106	Permanent	1.14
WET305	10/12/2018	-96.833248	45.050249	Semipermanent	1.04
WET306	10/13/2018	-97.020972	45.075211	Seasonal	0.60
WET307	10/13/2018	-97.019539	45.074617	Seasonal	0.51
WET308	10/14/2018	-96.967608	45.016832	Seasonal	0.07
WET309	10/14/2018	-96.969192	45.017052	Seasonal	0.02
WET310	10/18/2018	-96.860197	45.061505	Permanent	0.05
WET311	10/18/2018	-96.816021	45.052344	Seasonal	0.01
WET312	10/18/2018	-96.816017	45.051617	Permanent	0.07
WET313	10/19/2018	-96.835532	45.052137	Permanent	1.10
WET314	10/19/2018	-96.837256	45.051847	Permanent	0.51
WET315	10/19/2018	-96.835926	45.051235	Permanent	1.24
WET316	10/19/2018	-96.839195	45.052943	Seasonal	0.34
WET317	10/19/2018	-96.838877	45.053484	Seasonal	0.14
WET318	10/19/2018	-96.838468	45.054532	Seasonal	0.26
WET319	10/22/2018	-96.77305	45.086932	Permanent	0.35
WET320	10/23/2018	-96.873887	45.17873	Seasonal	0.55
WET321	10/23/2018	-96.828958	45.135646	Permanent	0.16
WET322	10/24/2018	-96.826244	45.121708	Permanent	0.86
WET323	10/24/2018	-96.82298	45.119651	Permanent	0.37
WET324	10/24/2018	-96.985732	45.117493	Semipermanent	0.18



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Feature ID	Survey Date	Location		Description	Acreage
		Longitude	Latitude		
WET325	10/30/2018	-96.94396	45.042299	Semipermanent	0.73
WET326	10/30/2018	-96.967219	45.071306	Permanent	1.80
WET327	10/30/2018	-96.858353	45.056437	Seasonal	0.08
WET328	10/30/2018	-96.857261	45.055893	Seasonal	0.12
WET329	10/30/2018	-96.856533	45.05572	Seasonal	0.60
WET330	10/30/2018	-96.857789	45.056543	Seasonal	0.07
WET331	10/30/2018	-96.853862	45.058655	Seasonal	0.09
WET332	10/30/2018	-96.851709	45.060271	Seasonal	0.04
WET333	10/30/2018	-96.848934	45.061907	Permanent	4.91
WET334	10/30/2018	-96.847757	45.062374	Semipermanent	0.33
WET335	11/1/2018	-96.814831	45.051502	Permanent	0.10
WET336	11/1/2018	-96.84486	45.064191	Permanent	1.59
WET337	11/1/2018	-96.8432	45.06233	Permanent	3.03
WET338	11/1/2018	-96.849059	45.064469	Permanent	1.86
WET339	11/1/2018	-96.812565	45.047928	Permanent	0.19
WET340	11/2/2018	-96.837289	45.089676	Permanent	0.15
WET341	11/2/2018	-96.815882	45.085332	Semipermanent	0.12
WET342	11/2/2018	-96.809266	45.086731	Permanent	1.28
WET343	11/2/2018	-96.806347	45.088806	Permanent	0.08
WET344	11/2/2018	-96.778314	45.114095	Permanent	0.11
WET345	11/2/2018	-96.776579	45.112572	Permanent	0.39
WET346	11/2/2018	-96.828268	45.122035	Permanent	0.08
WET347	11/5/2018	-96.864431	45.178632	Seasonal	0.17
WET348	11/5/2018	-96.864722	45.178827	Seasonal	0.02
WET349	11/5/2018	-96.866264	45.178613	Seasonal	0.09
WET350	11/5/2018	-96.86734	45.178476	Seasonal	0.21
WET351	11/5/2018	-96.868248	45.178209	Seasonal	0.07
WET352	11/5/2018	-96.847703	45.17152	Seasonal	0.18
WET353	11/5/2018	-96.843108	45.168989	Seasonal	0.03
WET354	11/2/2018	-96.841438	45.07248	Seasonal	0.37
WET355	11/2/2018	-96.793459	45.081531	Permanent	0.29
WET356	11/2/2018	-96.775136	45.084667	Permanent	0.17
WET357	11/6/2018	-97.028887	45.090508	Permanent	0.27
WET358	11/6/2018	-96.833123	45.148177	Seasonal	0.07
WET359	11/6/2018	-96.827752	45.146712	Semipermanent	0.33
WET360	11/6/2018	-96.969113	45.083956	Seasonal	0.13
WET361	11/7/2018	-96.970202	45.022166	Seasonal	0.07
WET362	11/7/2018	-96.963565	45.025121	Seasonal	0.09

Feature ID	Survey Date	Location		Description	Acreage
		Longitude	Latitude		
WET363	11/7/2018	-96.953166	45.029694	Semipermanent	0.25
WET364	11/7/2018	-96.945029	45.033938	Seasonal	0.07
WET365	11/7/2018	-96.936276	45.027302	Seasonal	0.03
WET366	11/7/2018	-97.015505	45.08859	Permanent	0.12
WET367	11/7/2018	-97.022723	45.083016	Permanent	0.95
WET368	11/7/2018	-97.010684	45.029161	Permanent	0.25
WET369	11/7/2018	-97.018633	45.008844	Permanent	0.21
WET370	11/7/2018	-96.954225	45.020024	Permanent	5.10
<b>Total</b>					<b>433.1</b>

#### 4.2.1.1.1 Wetland Vegetation and Hydrology

The majority of field assessed wetlands observed were dominated by emergent vegetation. Dominant emergent vegetation included broadleaf cattail (*Typha latifolia*), Baltic rush (*Juncus balticus*), common spike-rush (*Eleocharis palustris*), prairie cord grass (*Spartina pectinata*), softstem bulrush (*Schoenoplectus tabernaemontani*), Nebraska sedge (*Carex nebrascensis*), and several water smartweed species (*Polygonum* spp.). Other dominant species were Kentucky bluegrass (*Poa pratensis*) and timothy-grass (*Phleum pratense*). Seasonal wetlands were recorded in plowed agricultural fields where the presence of hydrophytic vegetation was not always apparent due to disturbance, but secondary indicators suggested that a wetland was present. The primary wetland hydrology indicators were saturation and the presence of surface water. Secondary indicators used for wetland hydrology assessment included geomorphic position, saturation visible on aerial imagery, and water marks. Some wetlands had algal mats and soil cracks. The survey areas feature wetlands classified as riverine and palustrine systems as defined by the Cowardin classification system.

#### 4.2.1.2 STREAMS

SWCA biologists recorded 35 streams within the survey area that exhibited an OHWM at the time of the field visit. The streams were classified as 14 ephemeral streams, 10 intermittent streams, and 11 perennial streams (Appendix A). The cumulative length for all field-assessed streams is 3.2 miles. Table 3 provides additional detail for all field assessed streams in the survey areas.

**Table 3. Field Assessed Streams Determined in Survey Areas**

Feature ID	Survey Date	Location		Description	Length within Survey Area (miles)
		Longitude	Latitude		
STR01	11/14/2017	-97.007375	45.073641	Ephemeral	0.04
STR02	7/24/2018	-96.850958	45.199303	Perennial	0.23
STR03	11/5/2018	-96.848889	45.14569	Perennial	0.02
STR04	11/6/2018	-96.812593	45.120904	Perennial	0.02
STR05	11/7/2018	-97.006623	45.028557	Perennial	0.02
STR06	11/7/2018	-97.009597	45.007421	Perennial	0.02

*Aquatic Resources Summary Report: Proposed Crowned Ridge I Wind Facility,  
Grant and Codington Counties, South Dakota*

Feature ID	Survey Date	Location		Description	Length within Survey Area (miles)
		Longitude	Latitude		
STR07	7/26/2017	-96.772612	45.092763	Perennial	0.04
STR08	8/18/2017	-96.950077	45.155573	Intermittent	0.14
STR09	8/18/2017	-96.995238	45.133185	Ephemeral	0.09
STR10	8/21/2017	-96.980676	45.126097	Perennial	0.03
STR11	8/21/2017	-96.957739	45.132367	Ephemeral	0.04
STR12	8/22/2017	-96.998122	45.111004	Intermittent	0.10
STR13	5/23/2018	-96.963664	45.153464	Ephemeral	0.20
STR14	5/24/2018	-96.844733	45.087296	Perennial	0.13
STR15	6/21/2018	-96.830755	45.138646	Perennial	0.48
STR16	6/25/2018	-96.978592	45.047729	Ephemeral	0.18
STR17	6/25/2018	-96.978097	45.0479	Ephemeral	0.11
STR18	7/26/2018	-96.804929	45.059324	Ephemeral	0.03
STR19	7/29/2018	-96.958109	45.034692	Intermittent	0.07
STR20	7/30/2018	-96.929883	45.048438	Ephemeral	0.21
STR21	9/13/2018	-96.840373	45.089907	Ephemeral	0.14
STR22	9/13/2018	-96.789767	45.080674	Ephemeral	0.10
STR23	9/14/2018	-96.855662	45.16733	Intermittent	0.06
STR24	9/14/2018	-96.854924	45.167727	Intermittent	0.05
STR25	10/2/2018	-96.82805	45.136654	Intermittent	0.09
STR26	10/16/2018	-96.830443	45.051442	Ephemeral	0.07
STR27	10/18/2018	-96.816563	45.051819	Ephemeral	0.03
STR28	10/22/2018	-96.771286	45.08726	Intermittent	0.08
STR29	11/5/2018	-96.858605	45.144108	Ephemeral	0.02
STR30	11/2/2018	-96.775123	45.084699	Perennial	0.03
STR31	11/6/2018	-96.814699	45.123192	Ephemeral	0.02
STR32	11/6/2018	-96.831595	45.147365	Intermittent	0.09
STR33	11/6/2018	-96.827954	45.143474	Intermittent	0.05
STR34	11/6/2018	-96.825426	45.144216	Intermittent	0.04
STR35	11/6/2018	-96.984348	45.06259	Perennial	0.15
<b>Total:</b>					<b>3.2</b>

## 5 CONCLUSIONS

SWCA completed an aquatic resources desktop assessment and field investigation for the Crowned Ridge I Wind facility. Biologists determined the presence of 369 wetlands and 35 streams within the survey areas. The results provided in this report represent SWCA's professional opinion based on SWCA's knowledge and experience with the USACE, including the USACE's regulatory guidance documents and manuals. Crowned Ridge I plans to use this information to avoid impacts to wetlands and

streams to the extent feasible. Any impacts to potentially jurisdictional streams or wetlands that cannot be avoided will be minimized and kept under the thresholds required to comply with Nationwide Permits 12 and 14.

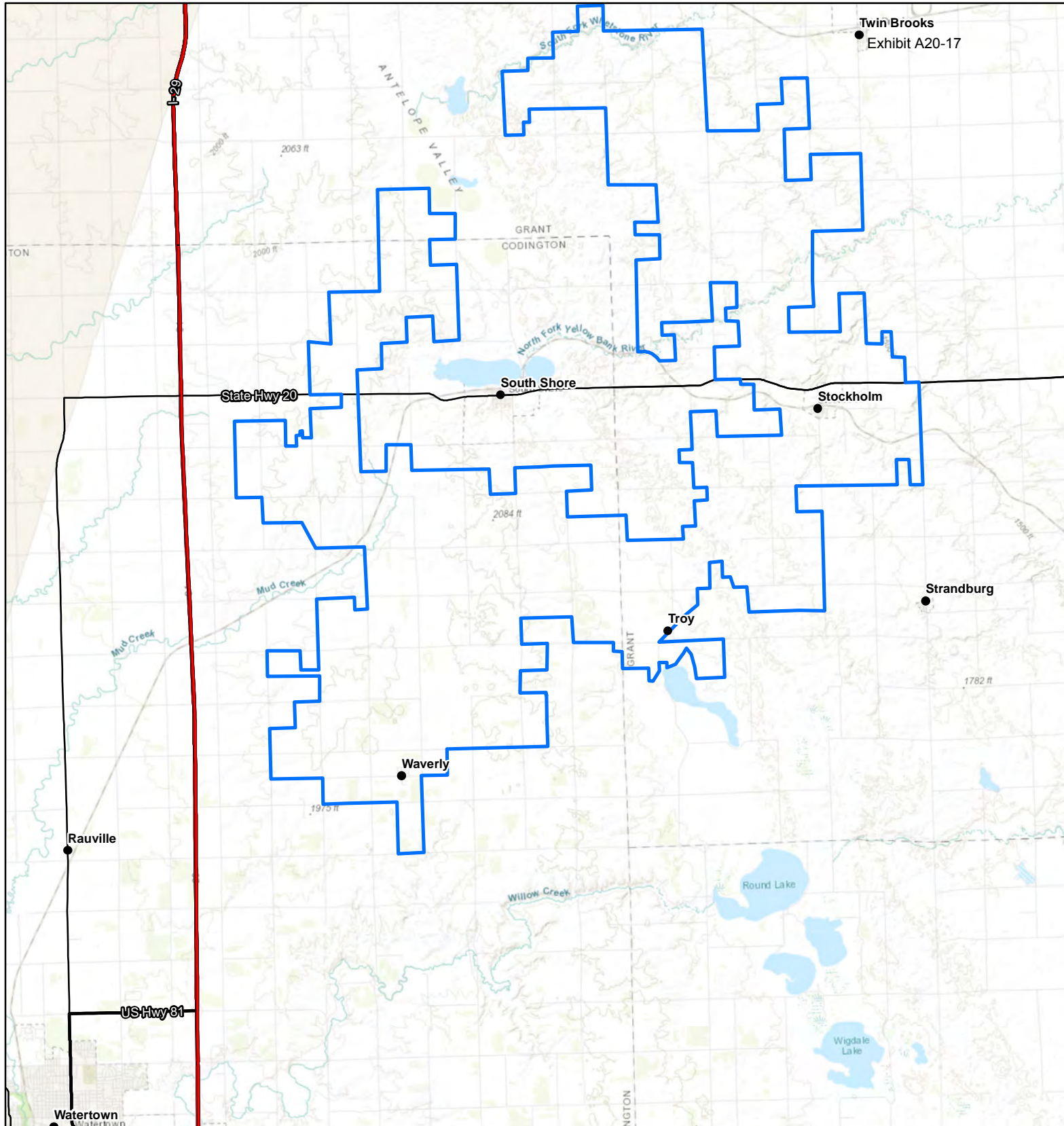
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## **APPENDIX A**

### **Figures**

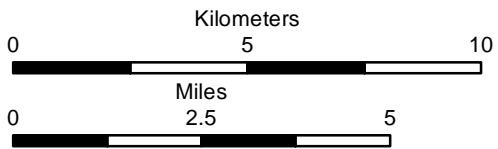




Twin Brooks  
Exhibit A20-17

### Crowned Ridge I Wind Farm

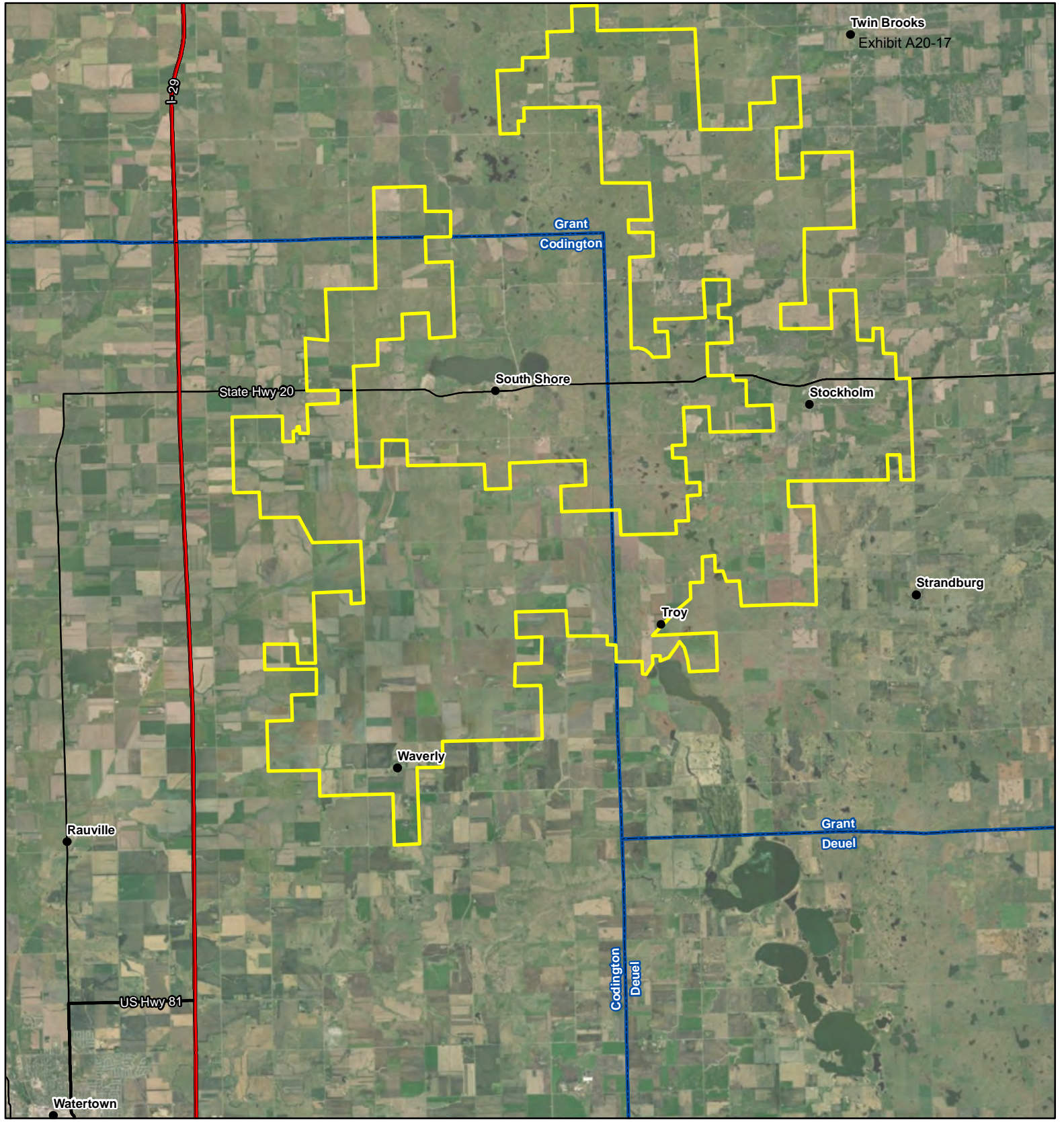
- City
- Interstate Highway
- U.S. Highway
- State Highway
- Project Boundary



Base Map: World Topographic Map  
 Sources: Esri, HERE, Garmin, Intermap, increment P Corp.,  
 GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL,  
 Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),  
 swisstopo, © OpenStreetMap contributors, and the GIS  
 User Community  
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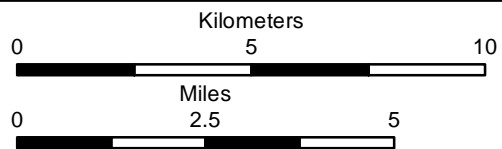
Projection: NAD 1983 UTM Zone 14N



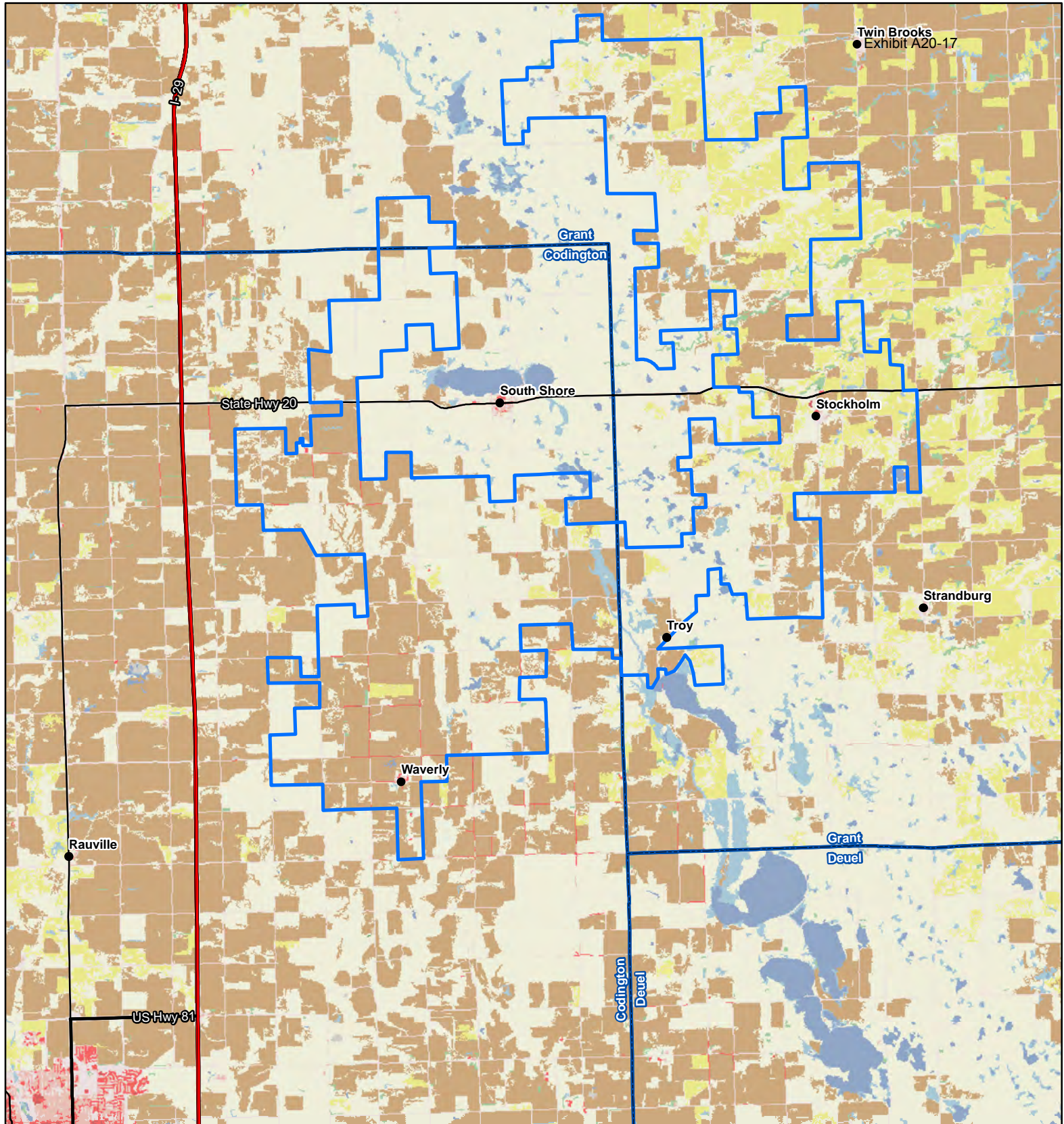


### Crowned Ridge I Wind Farm

- City
- Interstate Highway
- U.S. Highway
- State Highway
- Project Boundary
- County Boundary

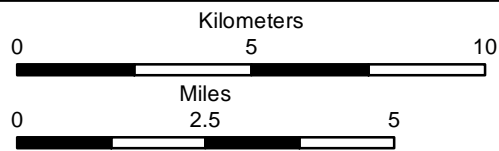


Base Map: World Topographic Map  
 Sources: Esri, HERE, Garmin, Intermap, increment P Corp.,  
 GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL,  
 Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong),  
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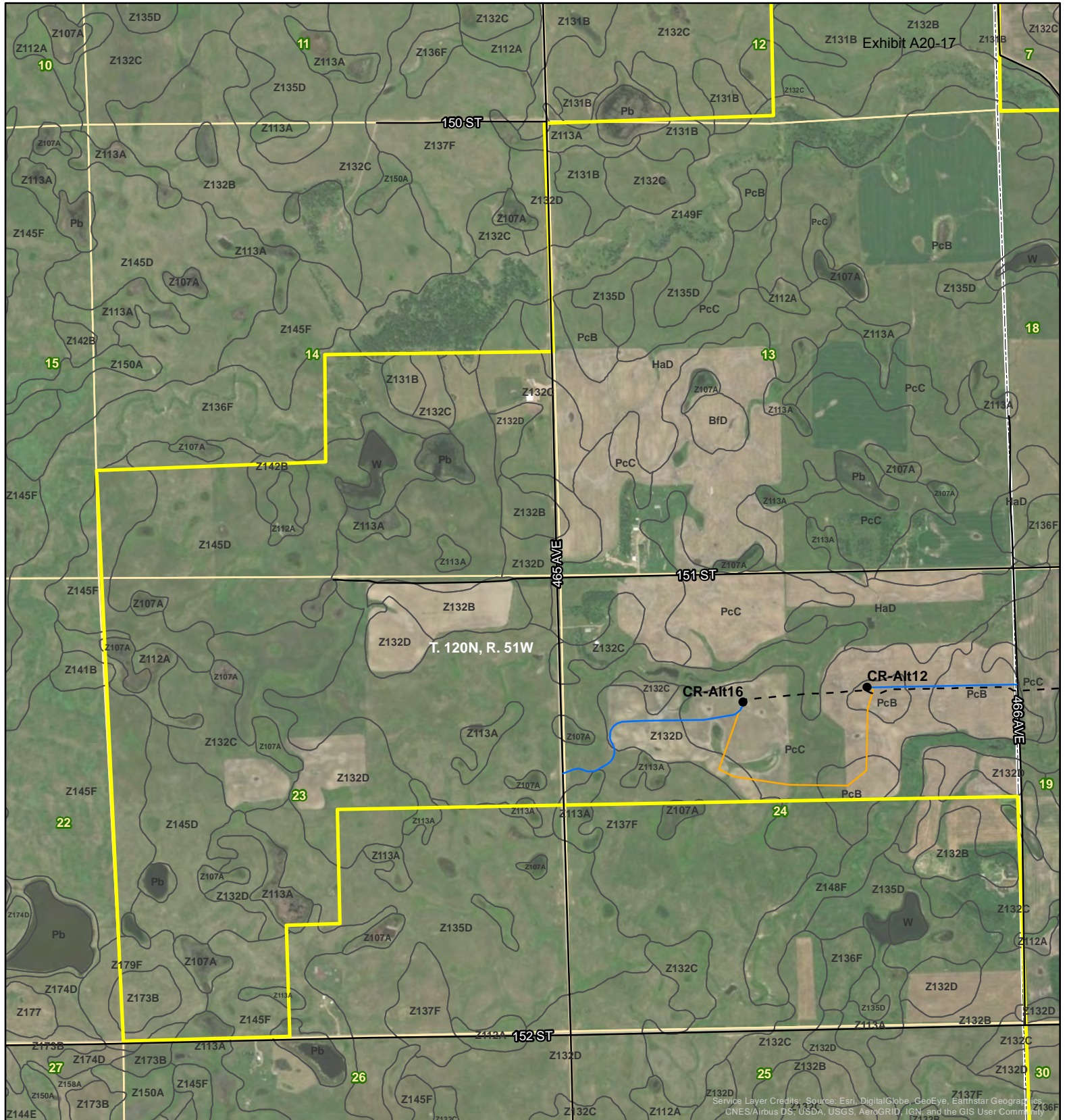
### Crowned Ridge I Wind Farm

- |                      |                              |                 |
|----------------------|------------------------------|-----------------|
| ● City               | Developed, High Intensity    | Hay/Pasture     |
| — Interstate Highway | Developed, Low Intensity     | Herbaceous      |
| — U.S. Highway       | Developed, Medium Intensity  | Mixed Forest    |
| — State Highway      | Developed, Open Space        | Open Water      |
| ▭ Project Boundary   | Emergent Herbaceous Wetlands | Shrub/Scrub     |
| <b>Land Cover</b>    | Evergreen Forest             | Woody Wetlands  |
| ▭ Barren Land        |                              | County Boundary |
| ▭ Cultivated Crops   |                              |                 |
| ▭ Deciduous Forest   |                              |                 |



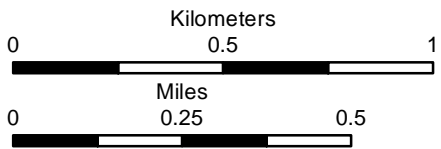
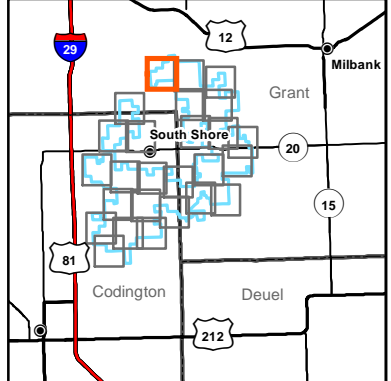
Base Map: National Land Cover Dataset  
 Source: U.S. Geological Survey, 20141010, NLCD 2011 Land Cover (2011 Edition, amended 2014), 3 x 3 Degree: NLCD2011\_LC\_N45W096: U.S. Geological Survey.  
 Codington and Grant Counties, South Dakota

Projection: NAD 1983 UTM Zone 14N



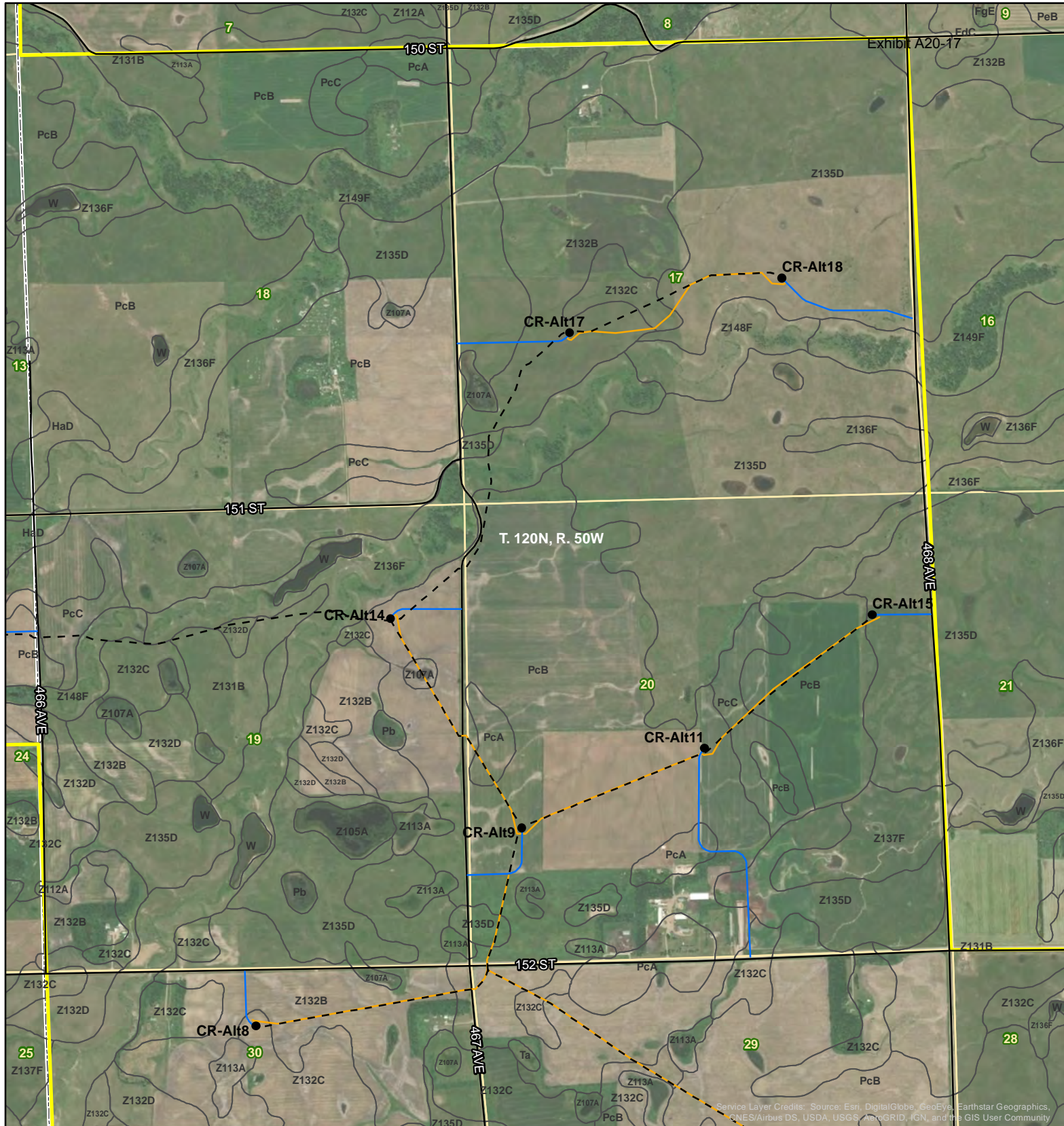
# Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



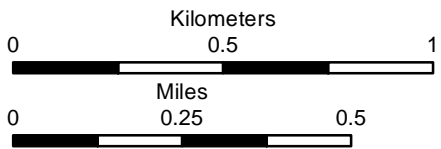
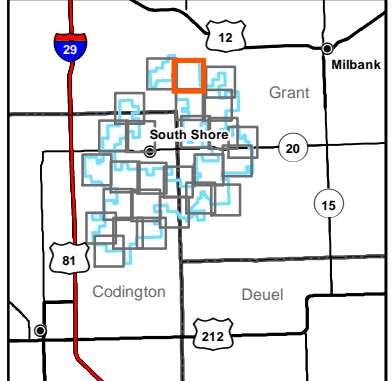
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 Quadrangle: Antelope Valley (1973)  
 Township/Range: T120N, R51W  
 Grant County, South Dakota





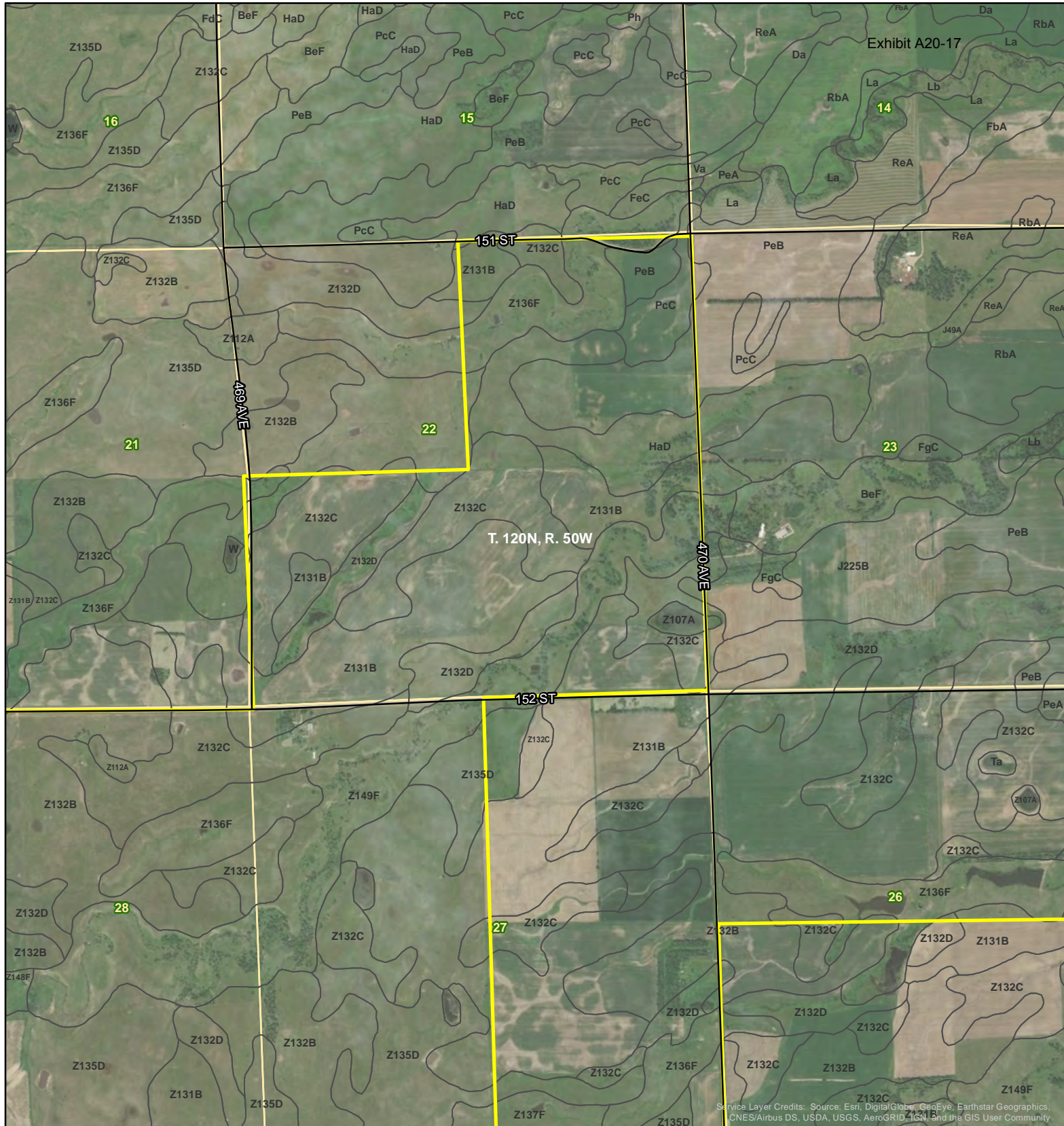
# Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Antelope Valley (1973),  
 Twin Brooks (1973)  
 Township/Range: T120N, R51W &  
 T120N, R50W  
 Grant County, South Dakota

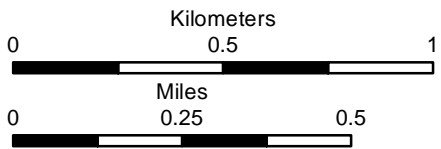
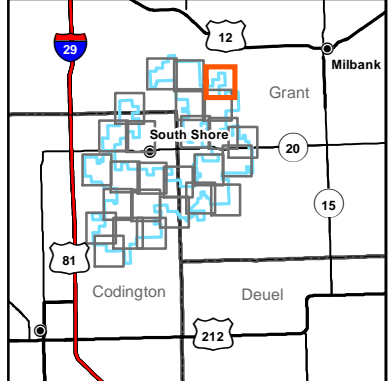




Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

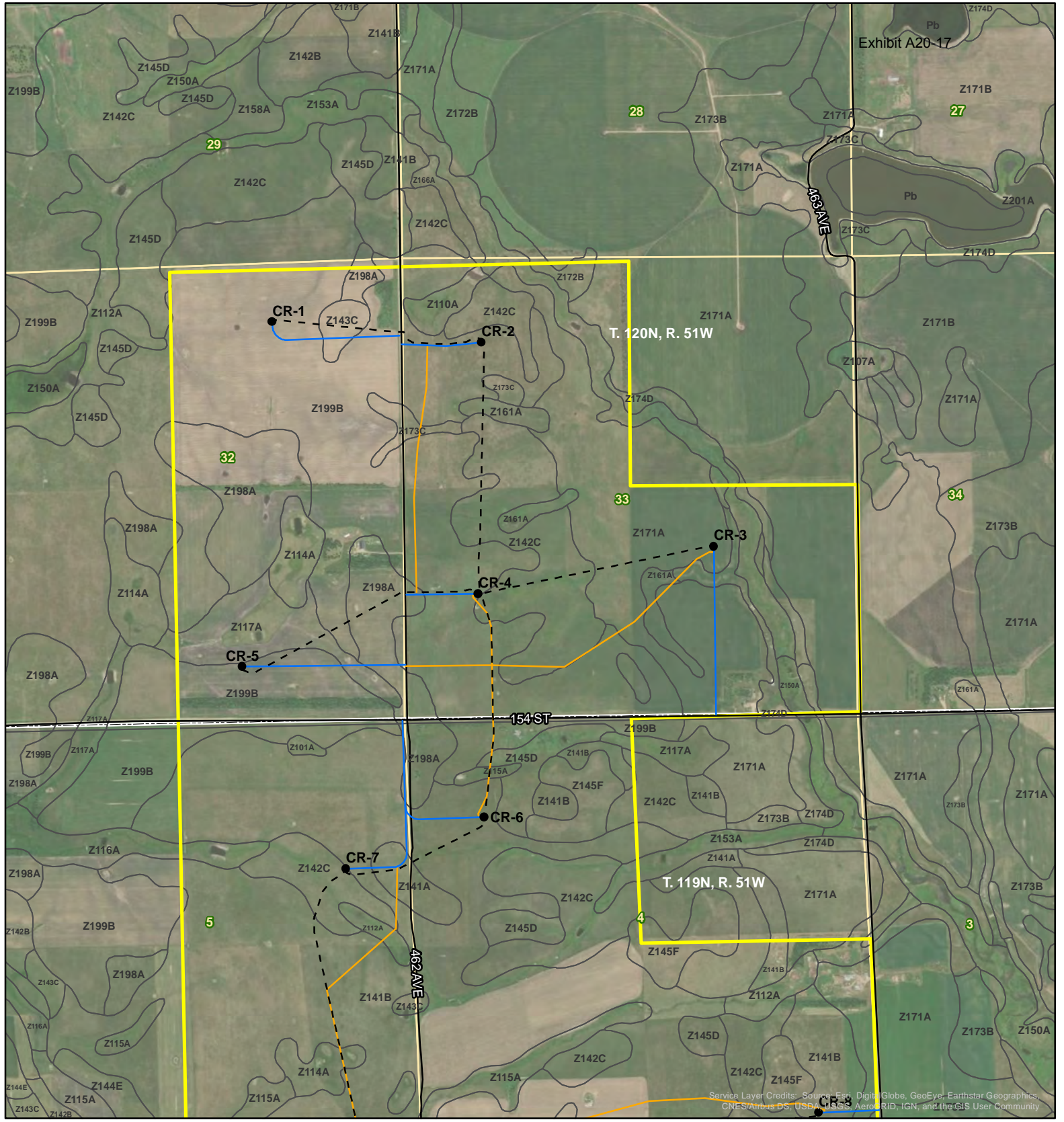
## Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



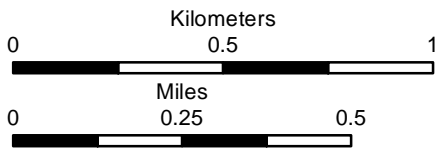
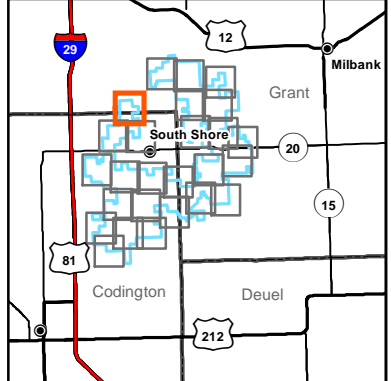
Base Map: World Imagery  
 Quadrangle: Twin Brooks (1973)  
 Township/Range: T120N, R50W  
 Grant County, South Dakota





# Crowned Ridge I Wind Farm

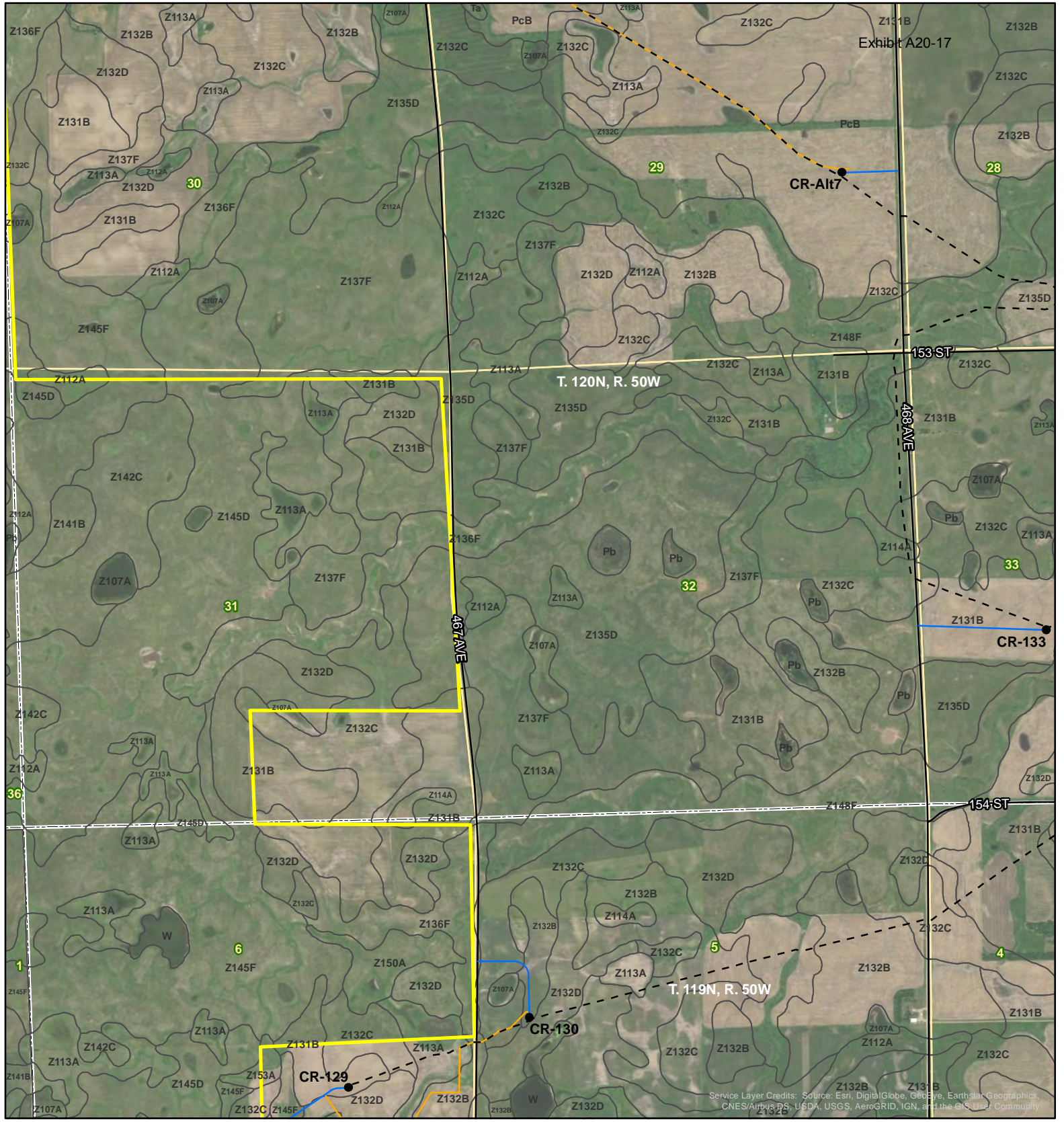
- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Antelope Valley (1973)  
 Township/Range: T120N, R51W & T119N, R51W  
 Codington and Grant Counties, South Dakota

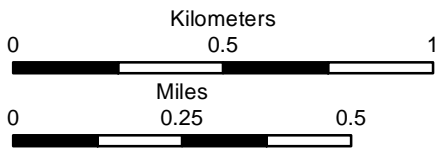
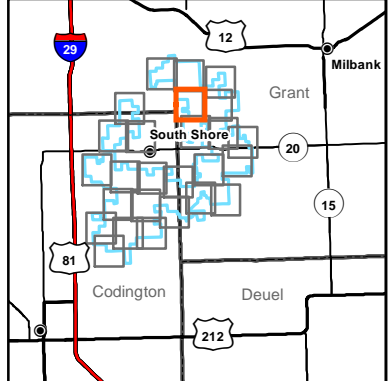
Projection: NAD 1983 UTM Zone 14N





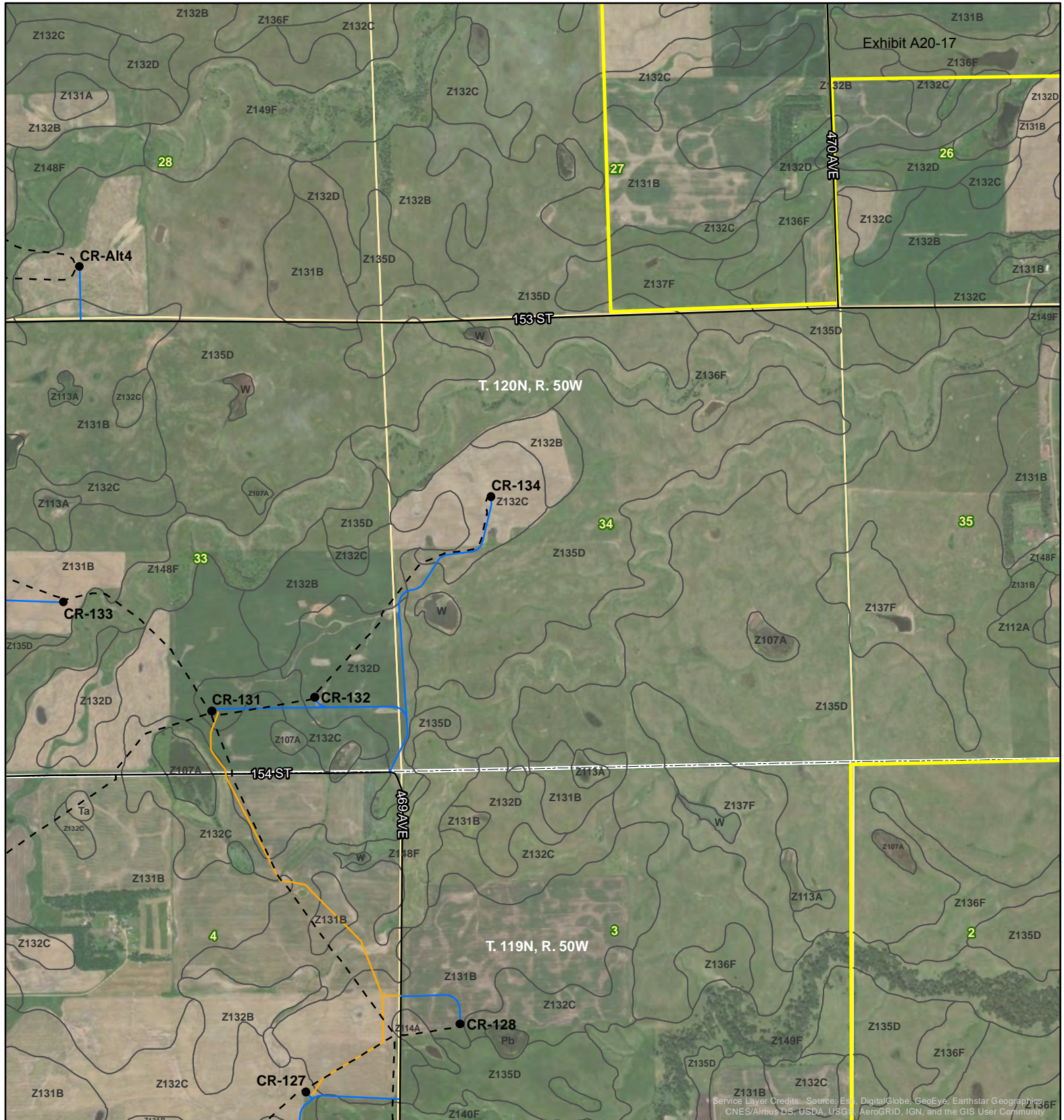
### Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



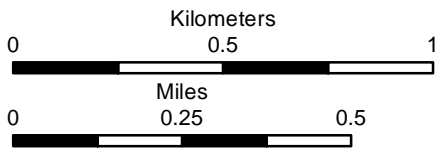
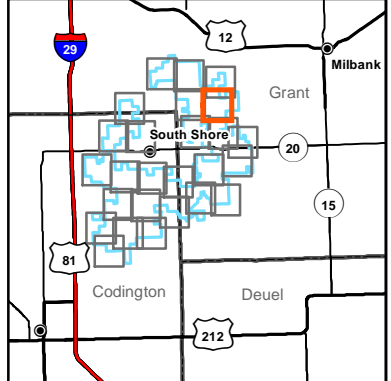
Base Map: World Imagery  
 Quadrangle: Antelope Valley (1973),  
 Twin Brooks (1973)  
 Township/Range: T120N, R50W &  
 T119N, R50W  
 Grant County, South Dakota





### Crowned Ridge I Wind Farm

- Town
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- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
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- Project Boundary
- Township/Range Boundary
- Section Boundary

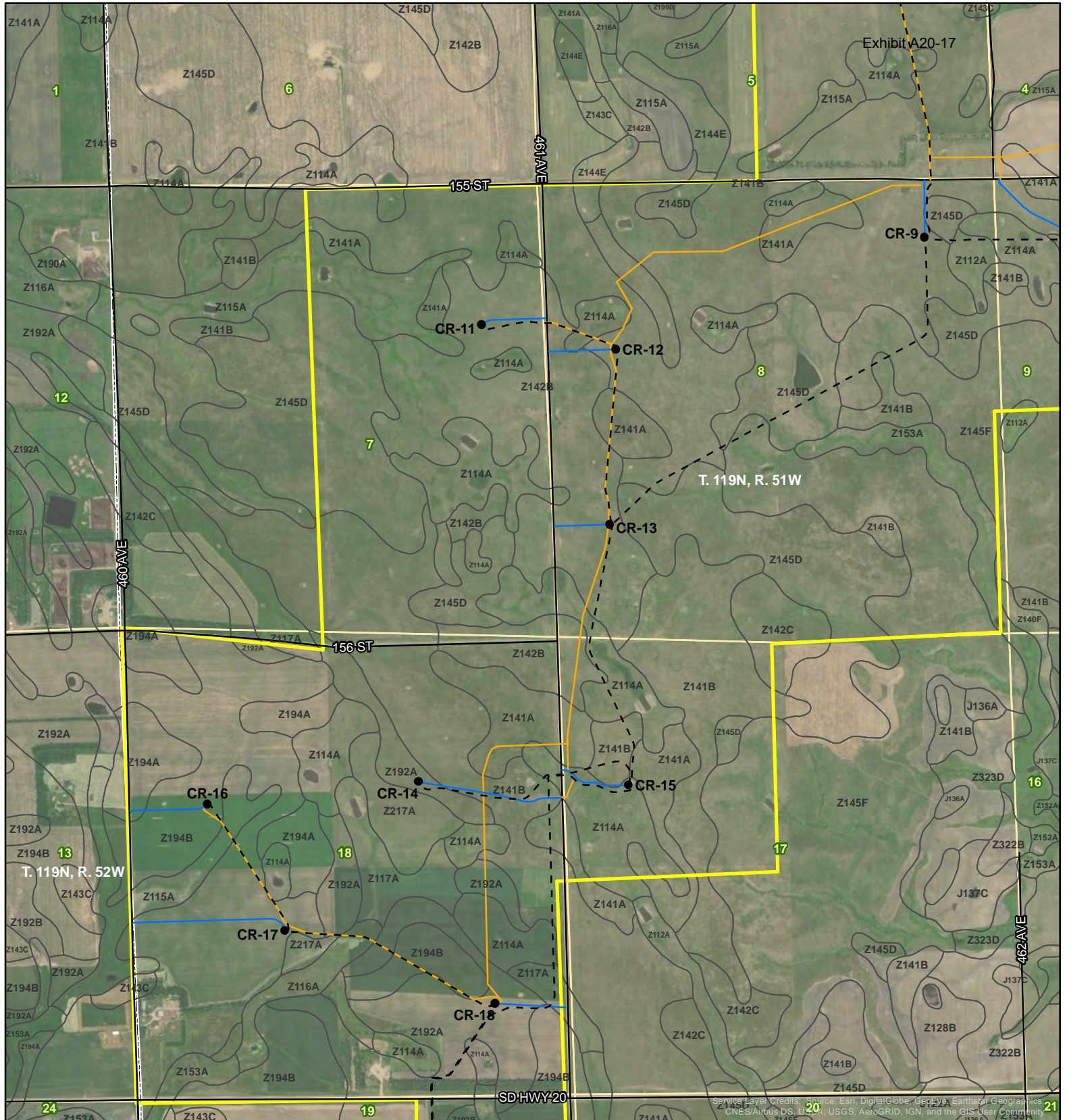


Base Map: World Imagery  
 Quadrangle: Twin Brooks (1973)  
 Township/Range: T120N, R50W & T119N, R50W  
 Grant County, South Dakota

Projection: NAD 1983 UTM Zone 14N

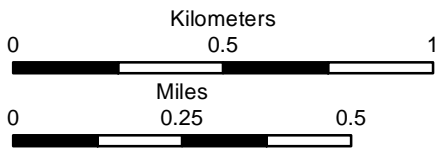
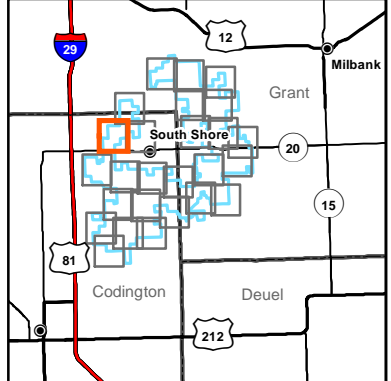






# Crowned Ridge I Wind Farm

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- Crane Path
- Existing Road
- Soil Unit Boundary
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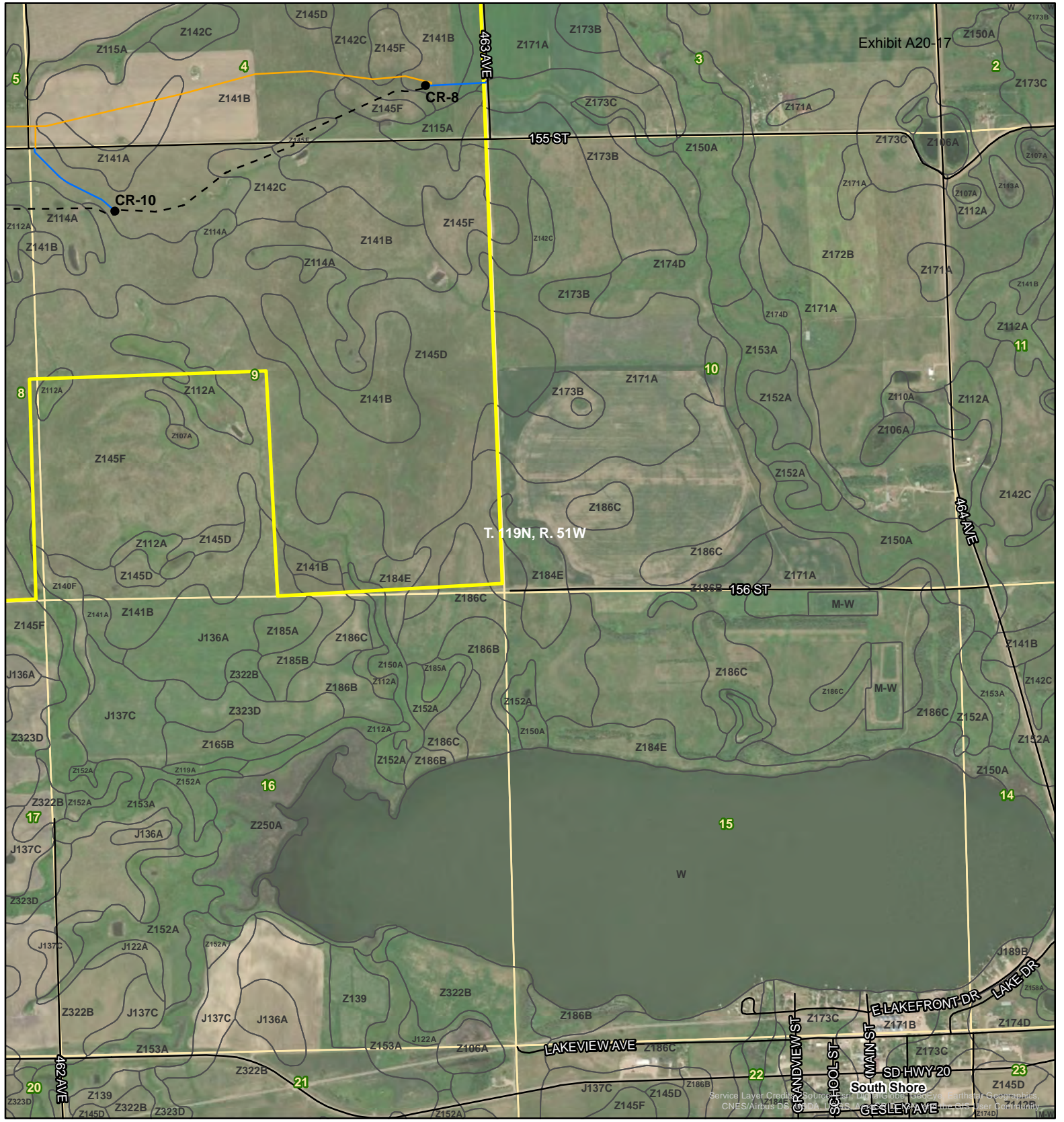


Base Map: World Imagery  
 Quadrangle: Antelope Valley (1973),  
 Still Lake SE (1970), South Shore (1973)  
 Township/Range: T119N, R51W

Codington County, South Dakota

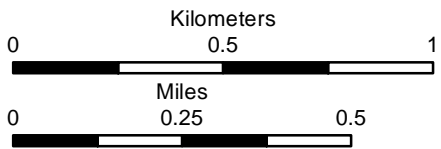
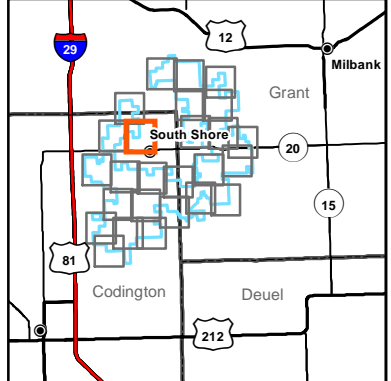
Projection: NAD 1983 UTM Zone 14N



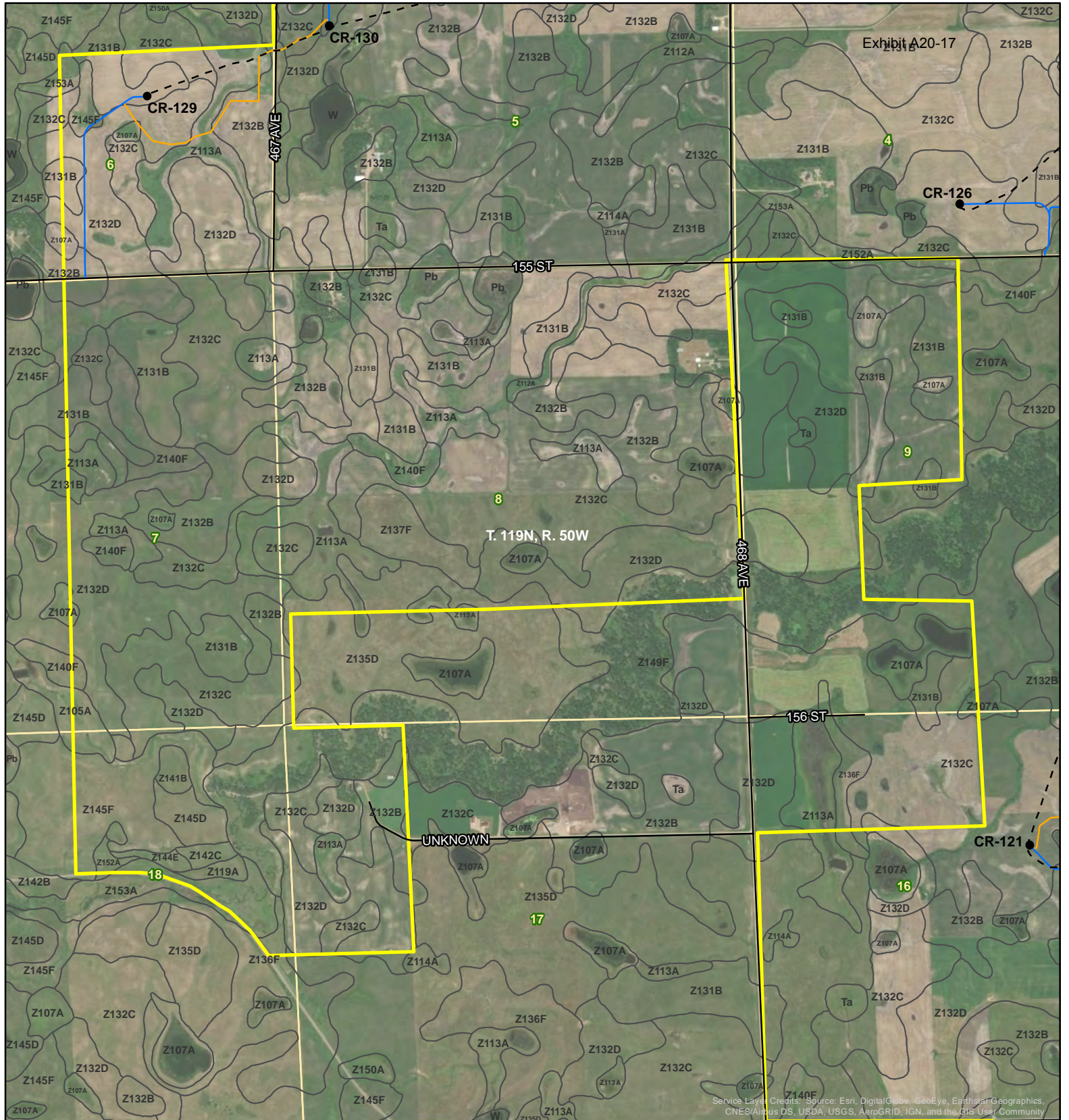


## Crowned Ridge I Wind Farm

- Town
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- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



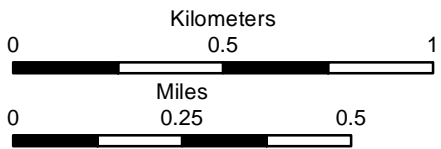
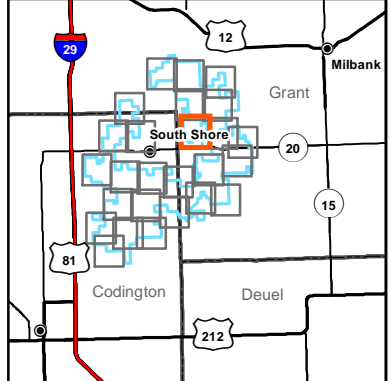
Base Map: World Imagery  
 Quadrangle: Antelope Valley (1973),  
 South Shore (1973)  
 Township/Range: T119N, R51W  
 Codington County, South Dakota



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

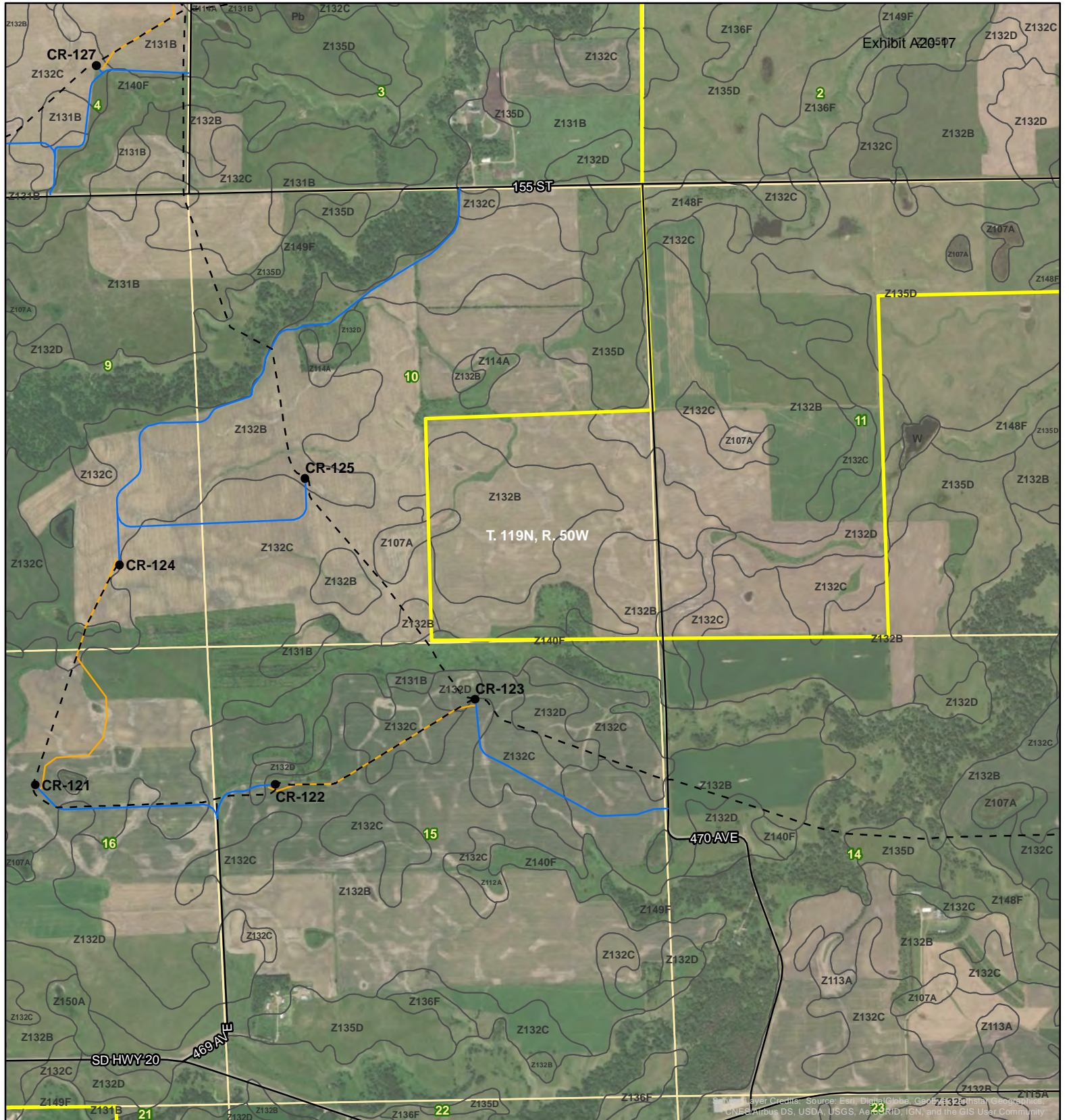
# Crowned Ridge I Wind Farm

- Town
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- Soil Unit Boundary
- Project Boundary
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- Section Boundary



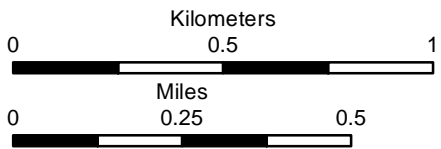
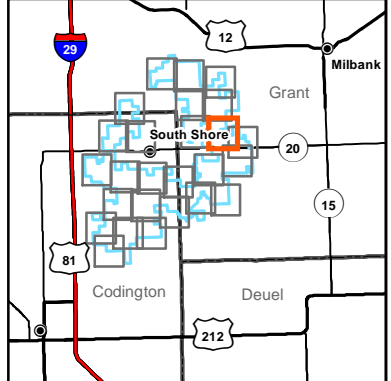
Base Map: World Imagery  
 Quadrangle: Twin Brooks (1973),  
 Stockholm (1973)  
 Township/Range: T119N, R50W  
 Grant County, South Dakota





# Crowned Ridge I Wind Farm

- Town
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- - - Collector Line
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- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Twin Brooks (1973),  
 Stockholm (1973)  
 Township/Range: T119N, R50W  
 Grant County, South Dakota  
 Projection: NAD 1983 UTM Zone 14N



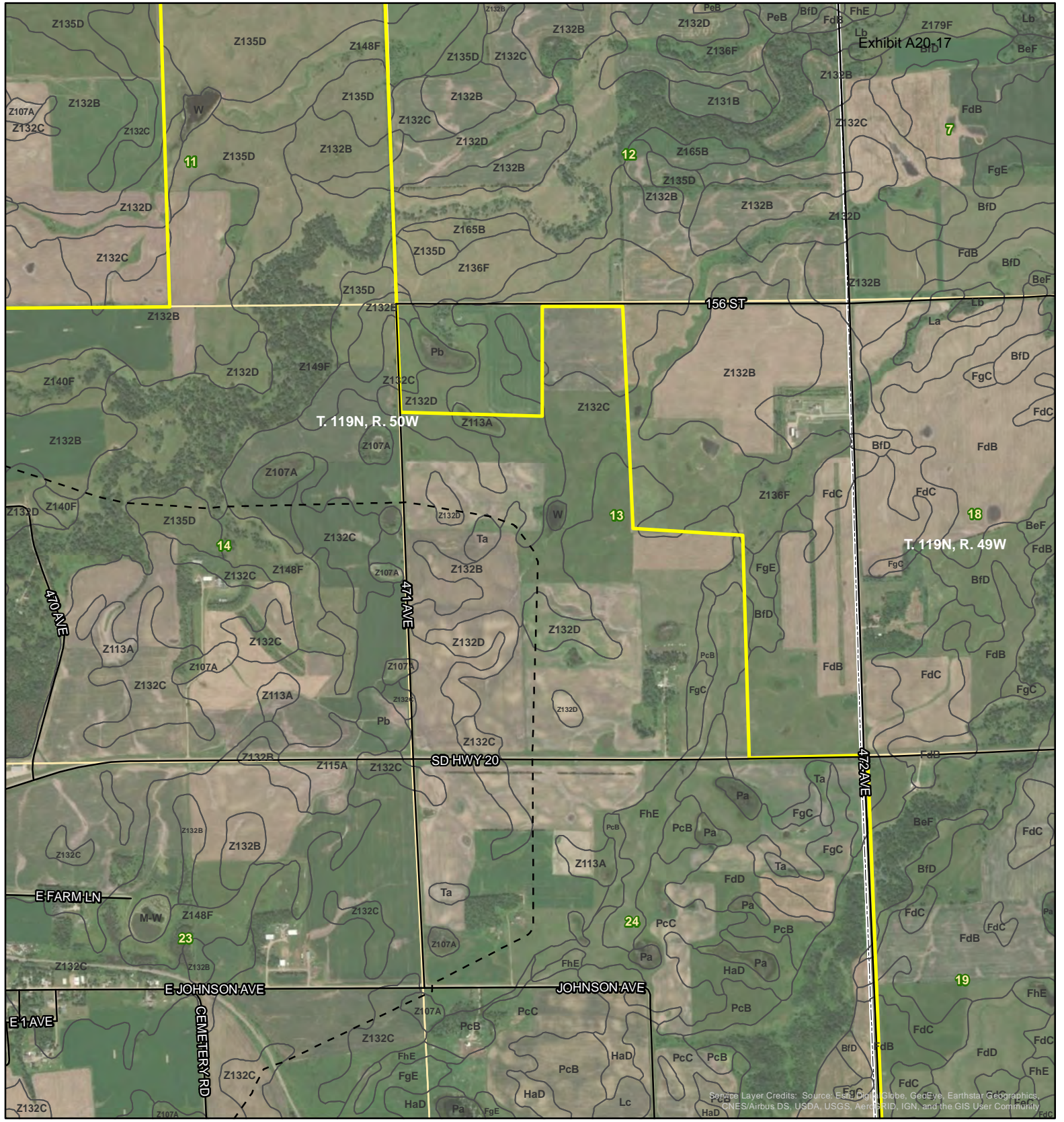
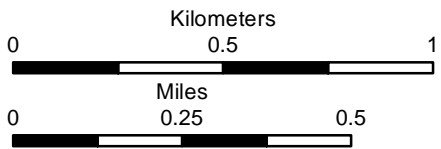
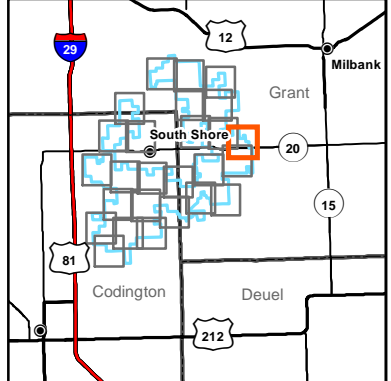


Exhibit A20.17

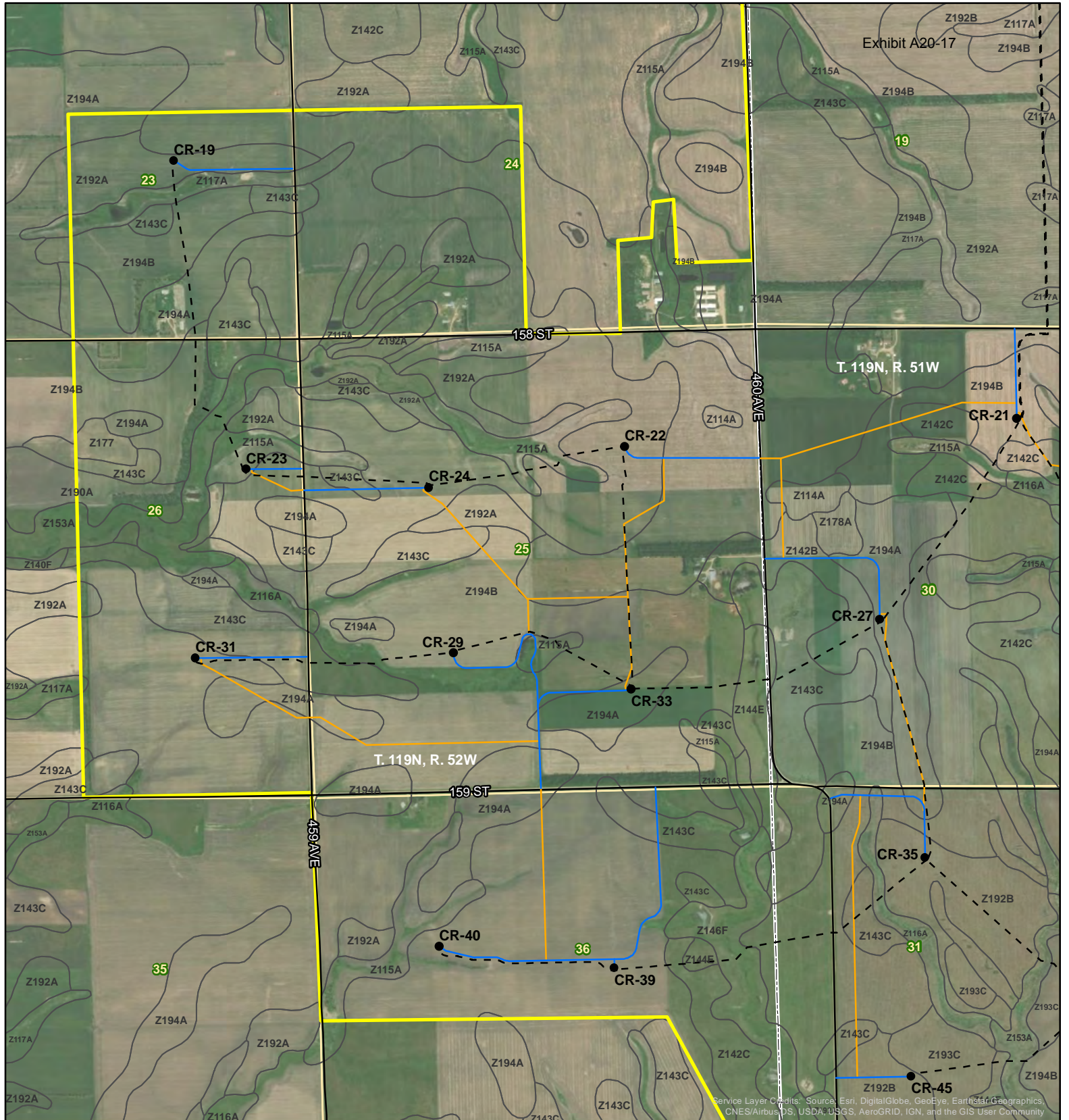
### Crowned Ridge I Wind Farm

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- Existing Road
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- Section Boundary



Base Map: World Imagery  
 Quadrangle: Twin Brooks (1973),  
 Stockholm (1973)  
 Township/Range: T119N, R50W  
 Grant County, South Dakota

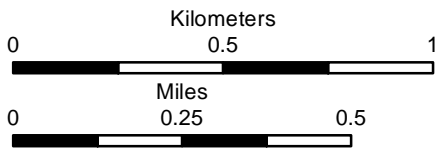
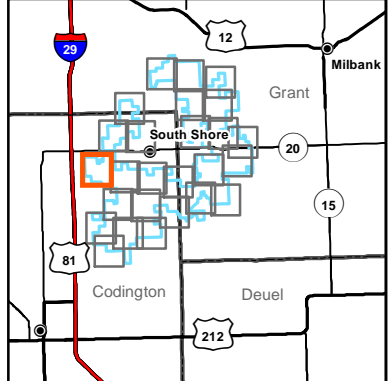




Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA/USGS, AeroGRID, IGN, and the GIS User Community

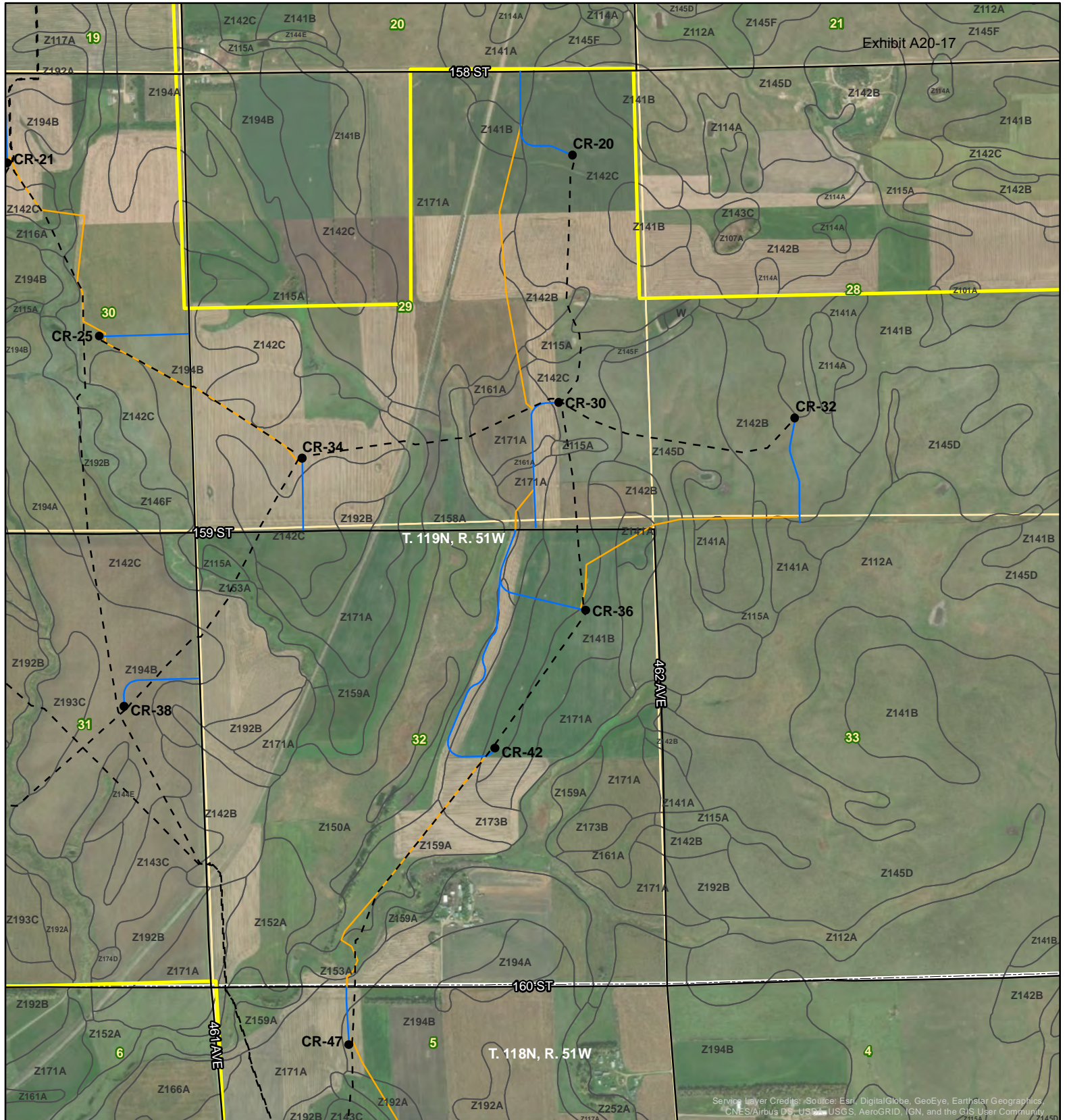
# Crowned Ridge I Wind Farm

- Town
- Turbine
- Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Still Lake SE (1970),  
 South Shore (1973)  
 Township/Range: T119N, R52W &  
 T119N, R51W  
 Codington County, South Dakota

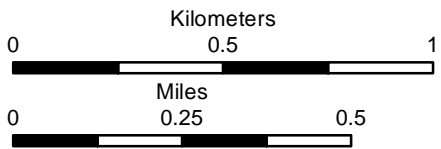
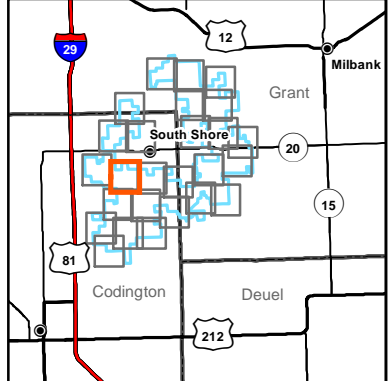




Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

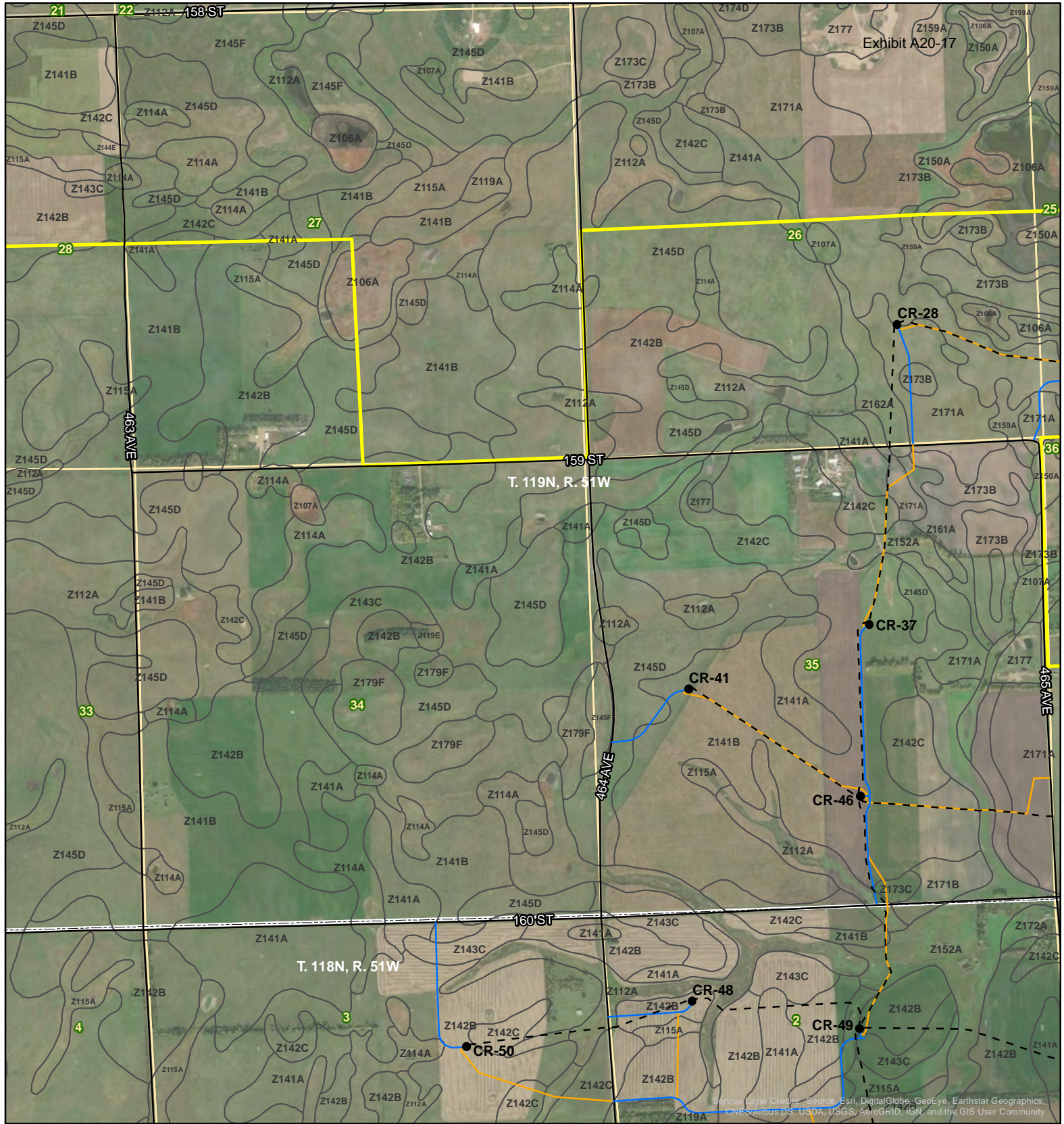
# Crowned Ridge I Wind Farm

- Town
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- Soil Unit Boundary
- Project Boundary
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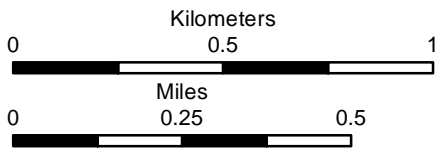
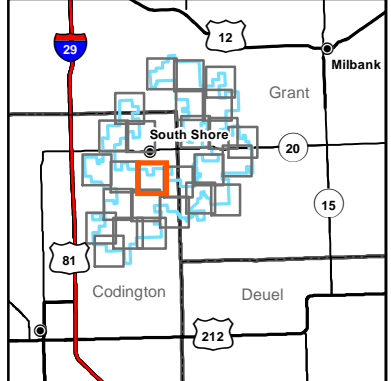
Base Map: World Imagery  
 Quadrangle: South Shore (1973)  
 Township/Range: T119N, R51W  
 Codington County, South Dakota





# Crowned Ridge I Wind Farm

- Town
- Turbine
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- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: South Shore (1973)  
 Township/Range: T119N, R51W  
 Codington County, South Dakota





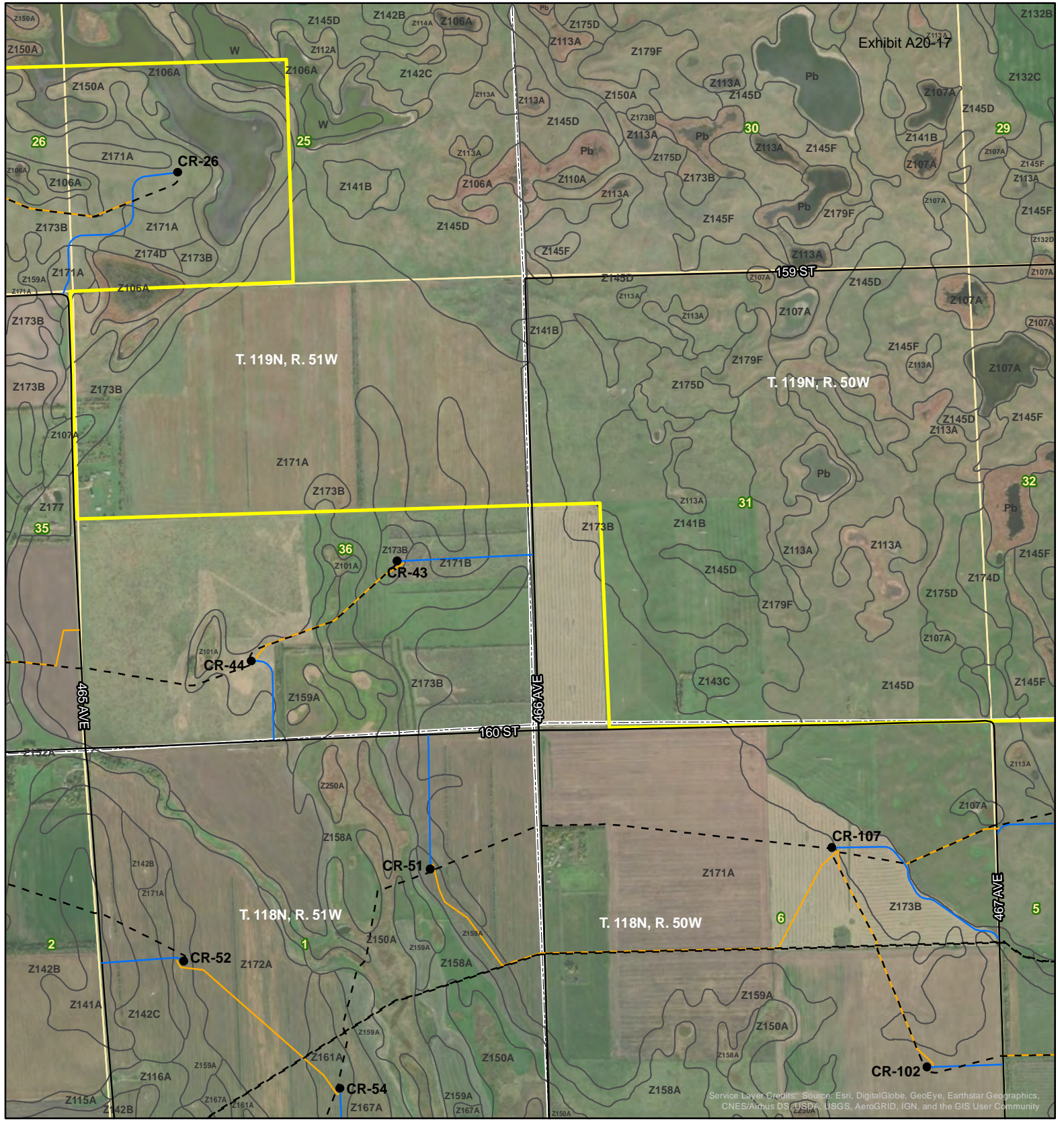


Exhibit A20-17

T. 119N, R. 51W

T. 119N, R. 50W

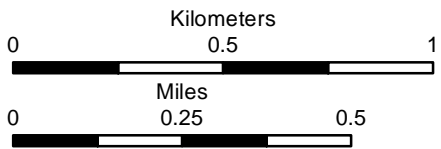
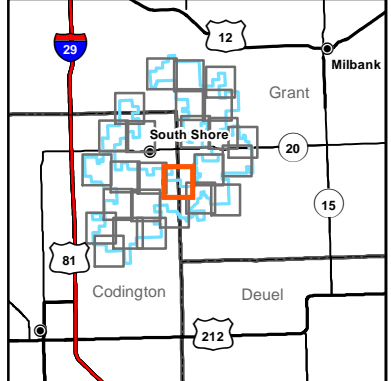
T. 118N, R. 51W

T. 118N, R. 50W

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

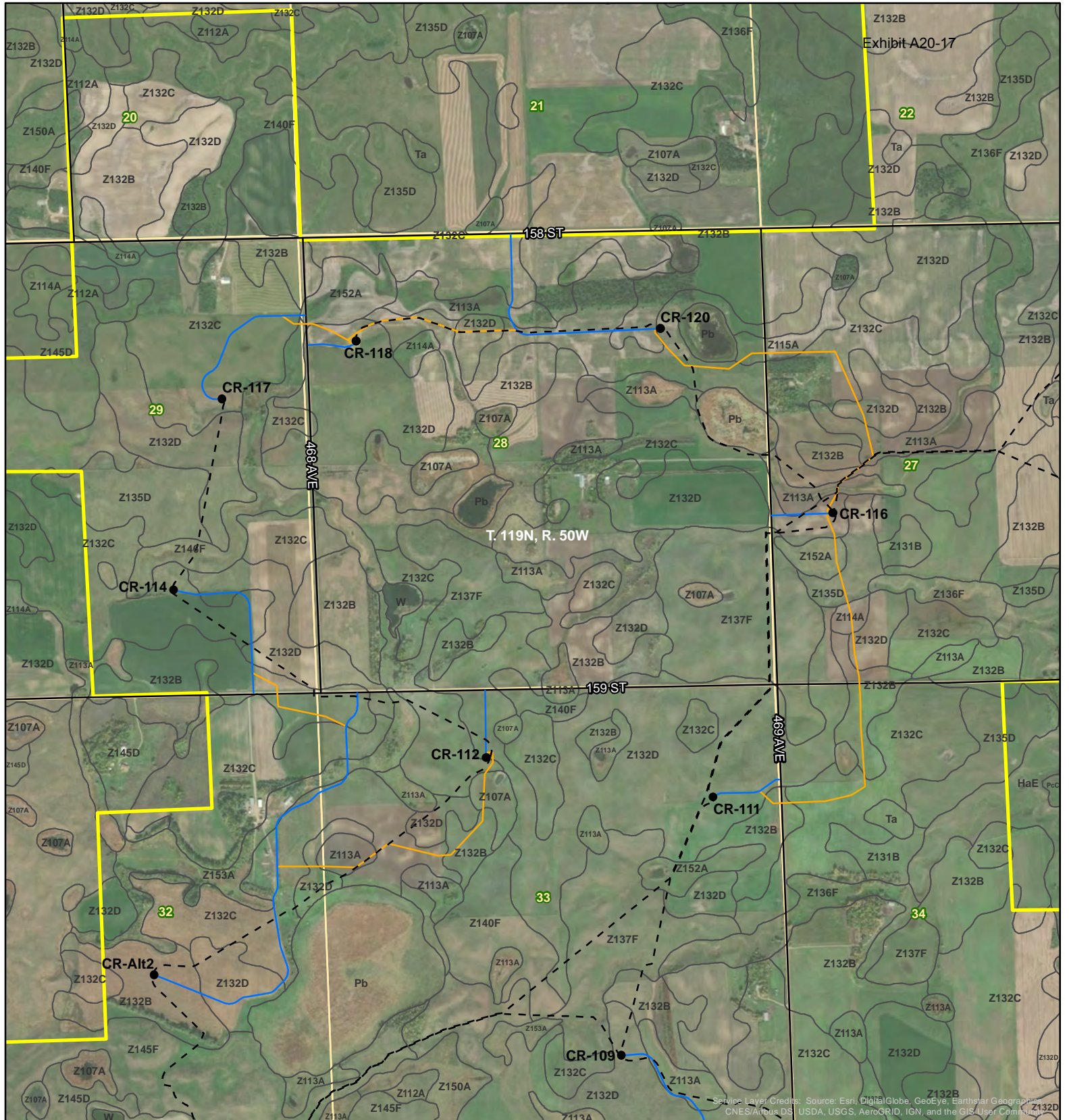
# Crowned Ridge I Wind Farm

- Town
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- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
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- Section Boundary



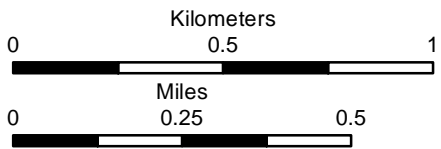
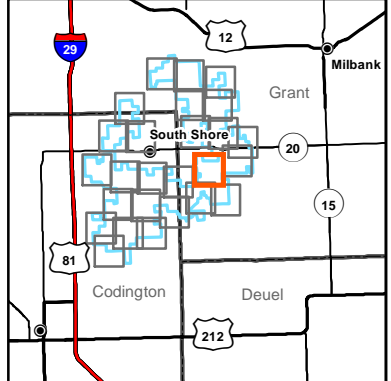
Base Map: World Imagery  
 Quadrangle: South Shore (1973),  
 Stockholm (1973)  
 Township/Range: T119N, R51W & T119N, R50W &  
 T118N, R51W & T118N, R50W  
 Codington and Grant Counties, South Dakota





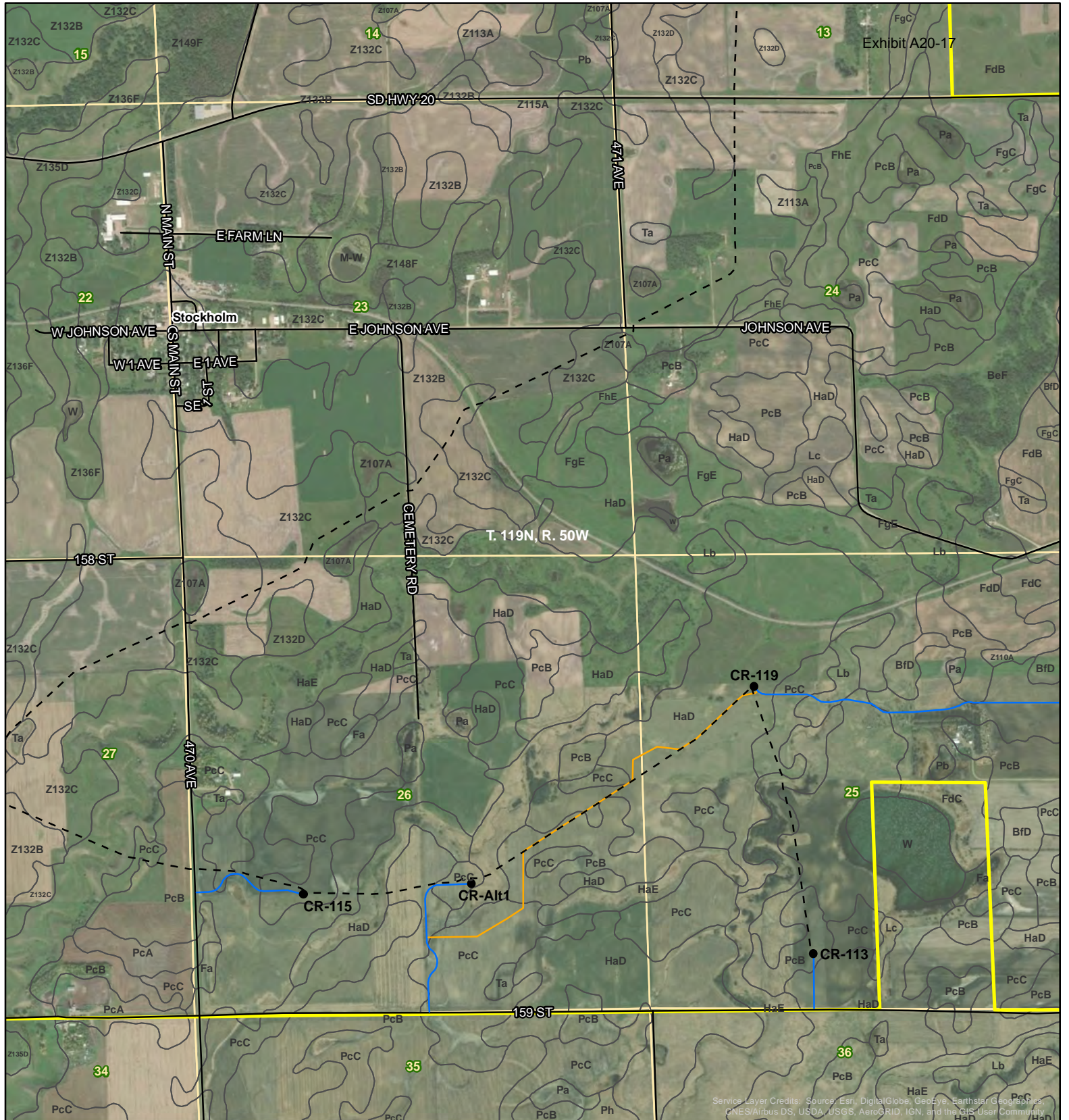
# Crowned Ridge I Wind Farm

- Town
- Turbine
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- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
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- Section Boundary



Base Map: World Imagery  
 Quadrangle: Stockholm (1973)  
 Township/Range: T119N, R50W  
 Grant County, South Dakota  
 Projection: NAD 1983 UTM Zone 14N

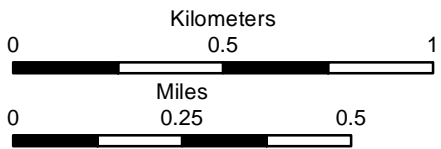
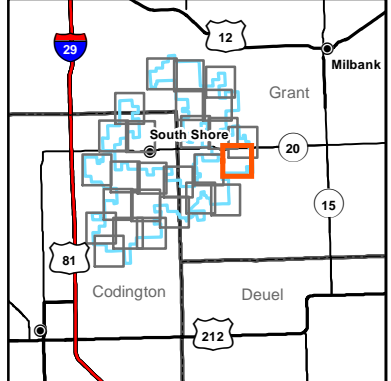




Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

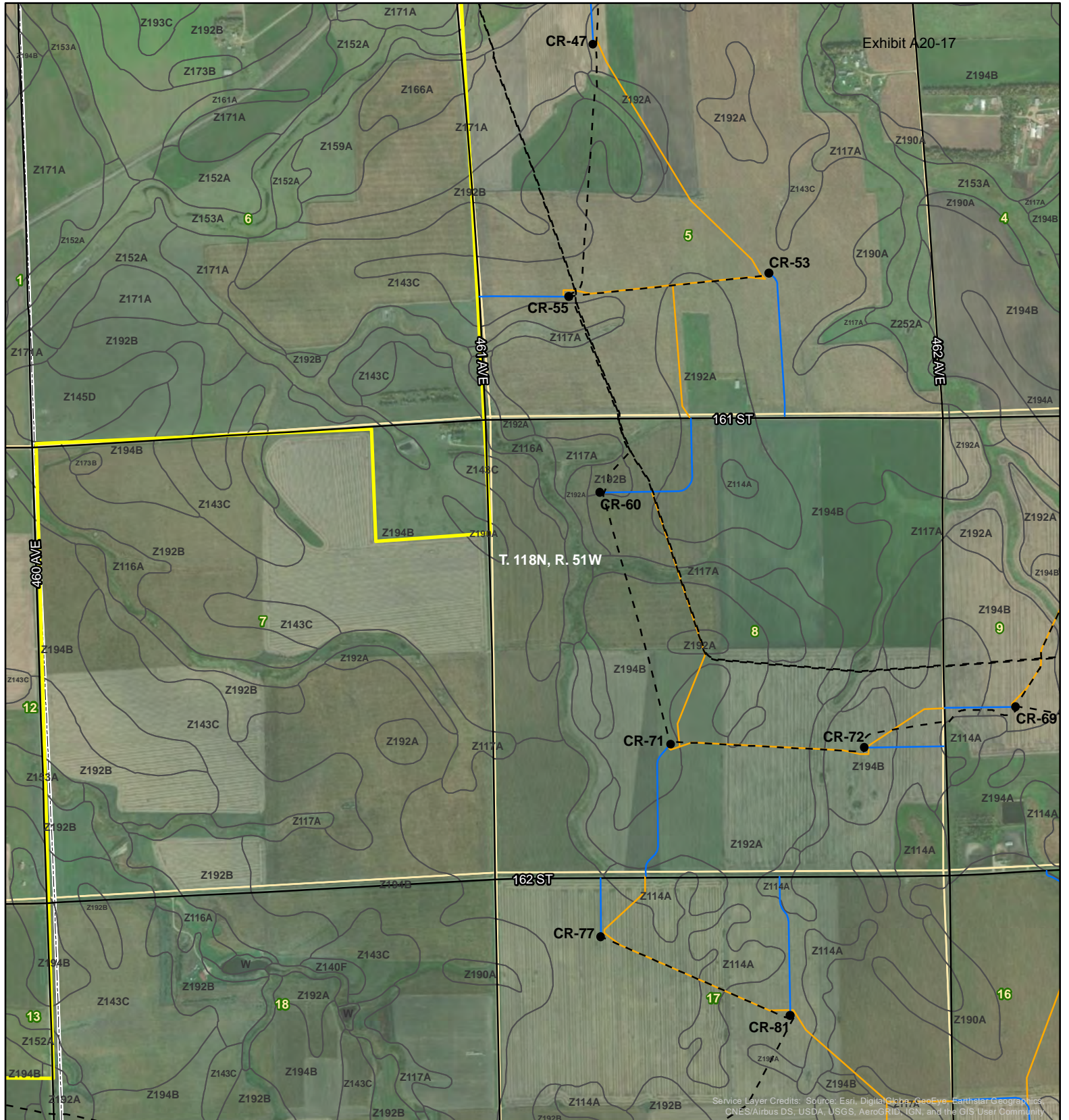
## Crowned Ridge I Wind Farm

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- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



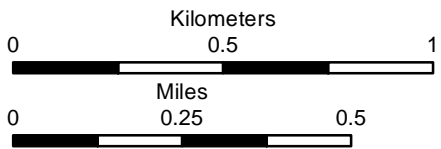
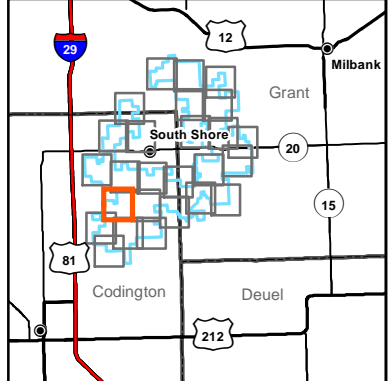
Base Map: World Imagery  
 Quadrangle: Stockholm (1973)  
 Township/Range: T119N, R50W  
 Grant County, South Dakota





# Crowned Ridge I Wind Farm

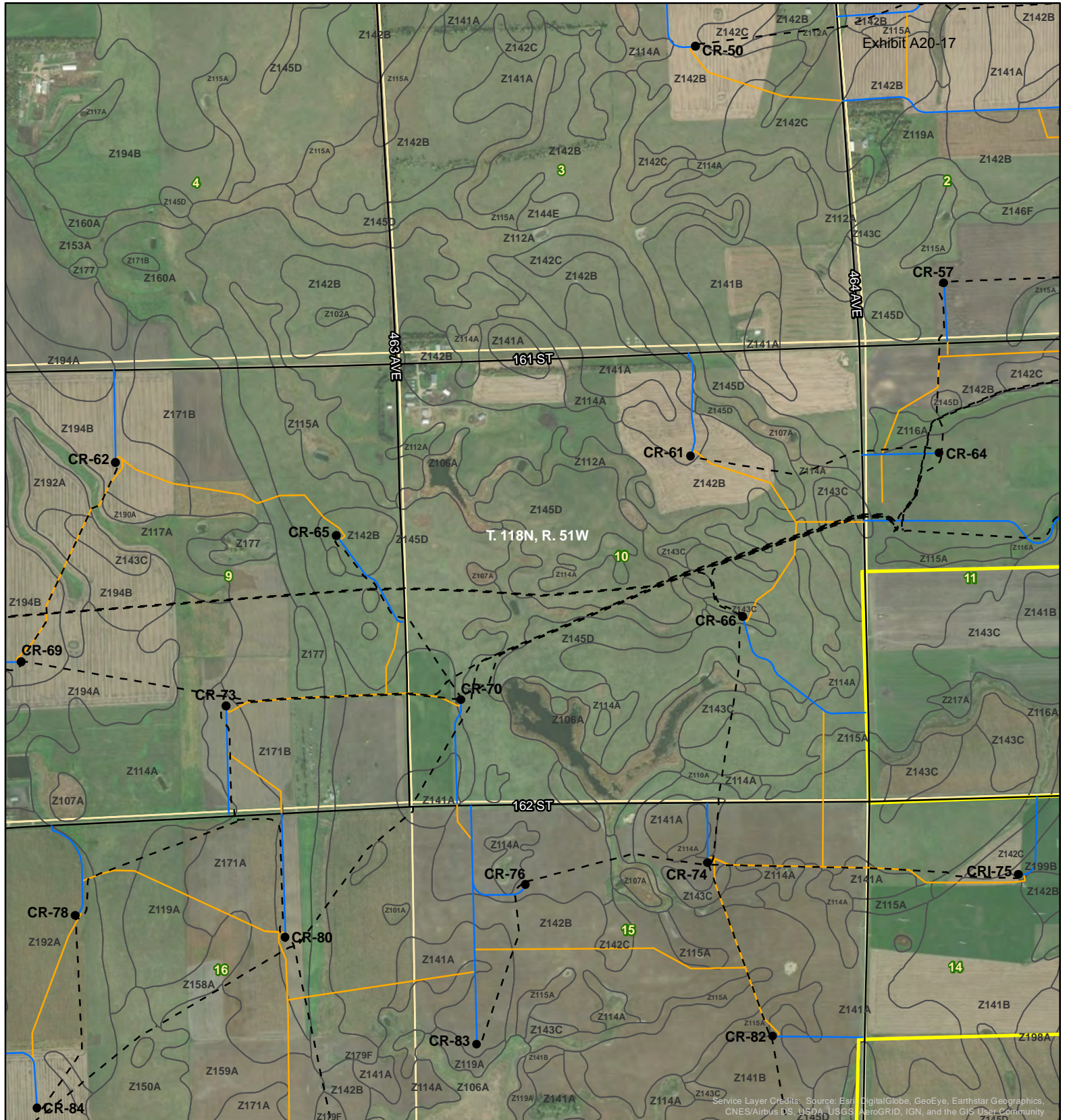
- Town
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- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Still Lake SE (1970),  
 South Shore (1973)  
 Township/Range: T118N, R51W  
 Codington County, South Dakota

Projection: NAD 1983 UTM Zone 14N

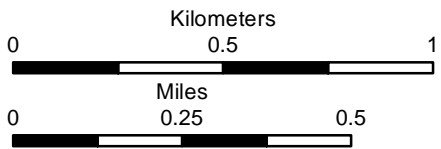
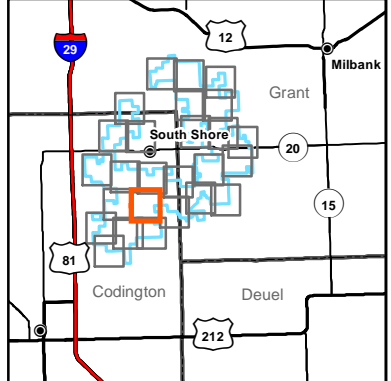




Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

# Crowned Ridge I Wind Farm

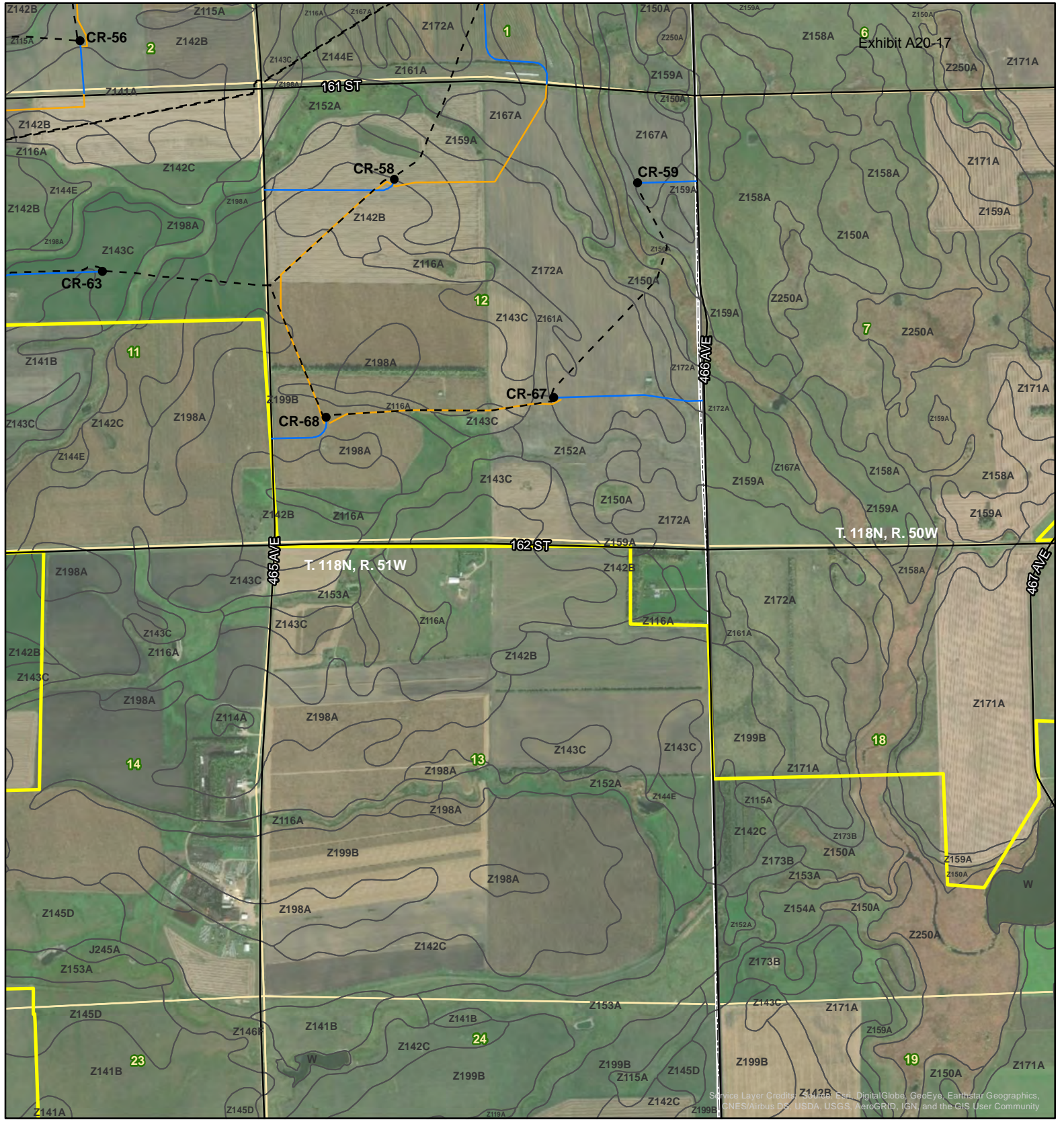
- Town
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- Existing Road
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- Project Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: South Shore (1973)  
 Township/Range: T118N, R51W  
 Codington County, South Dakota

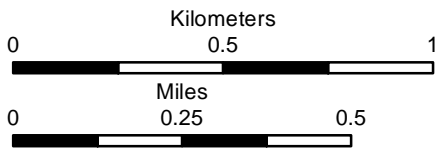
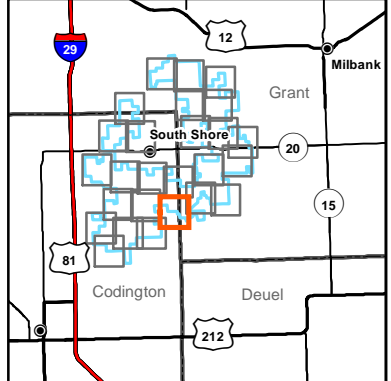
Projection: NAD 1983 UTM Zone 14N





# Crowned Ridge I Wind Farm

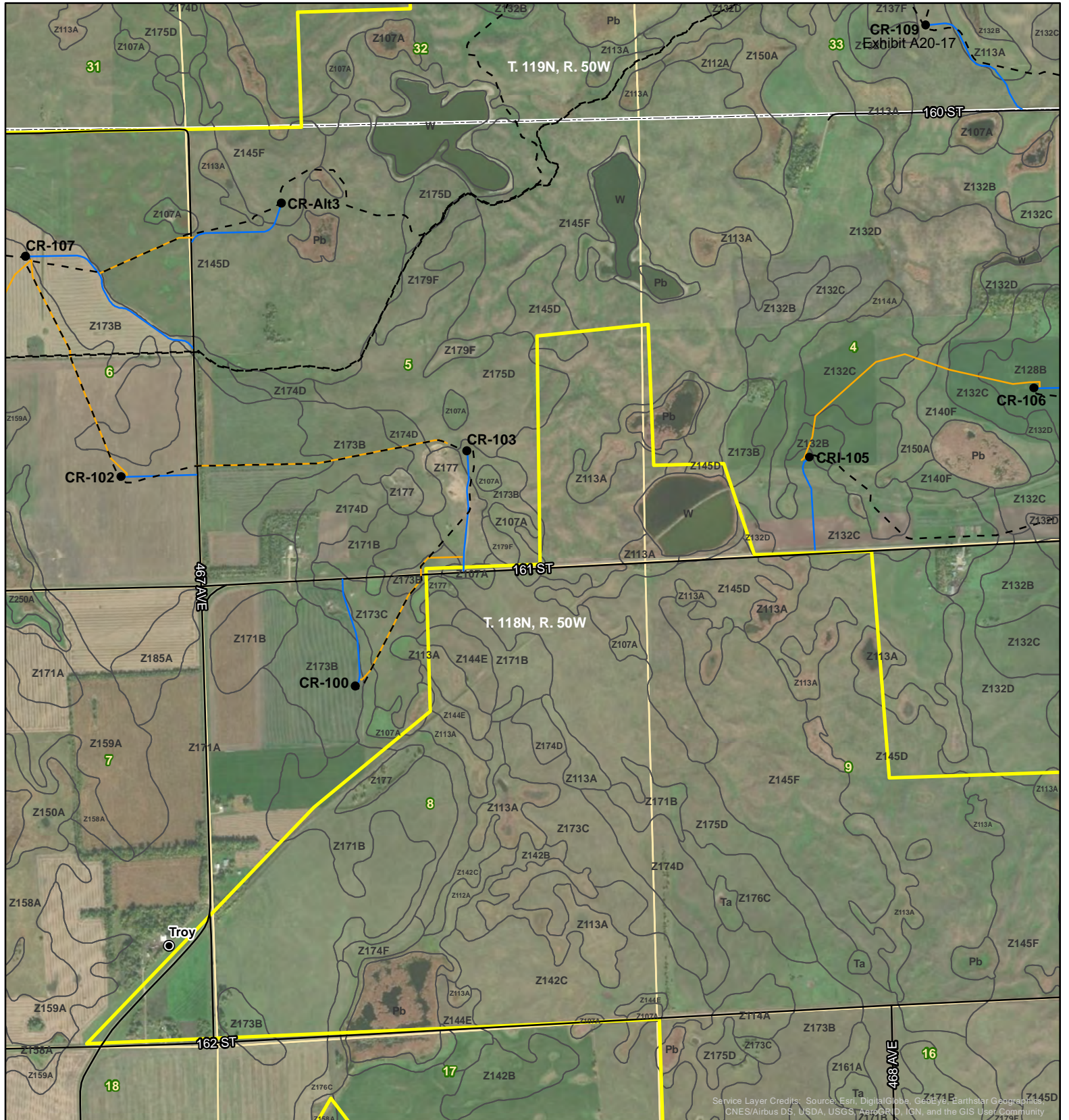
- Town
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- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: South Shore (1973),  
 Stockholm (1973)  
 Township/Range: T118N, R51W &  
 T118N, R50W  
 Codington and Grant Counties, South Dakota

Projection: NAD 1983 UTM Zone 14N

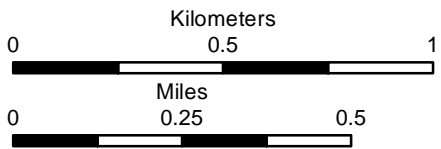
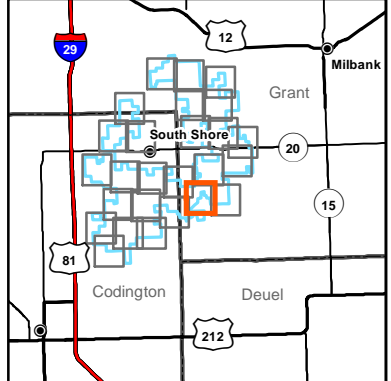




Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

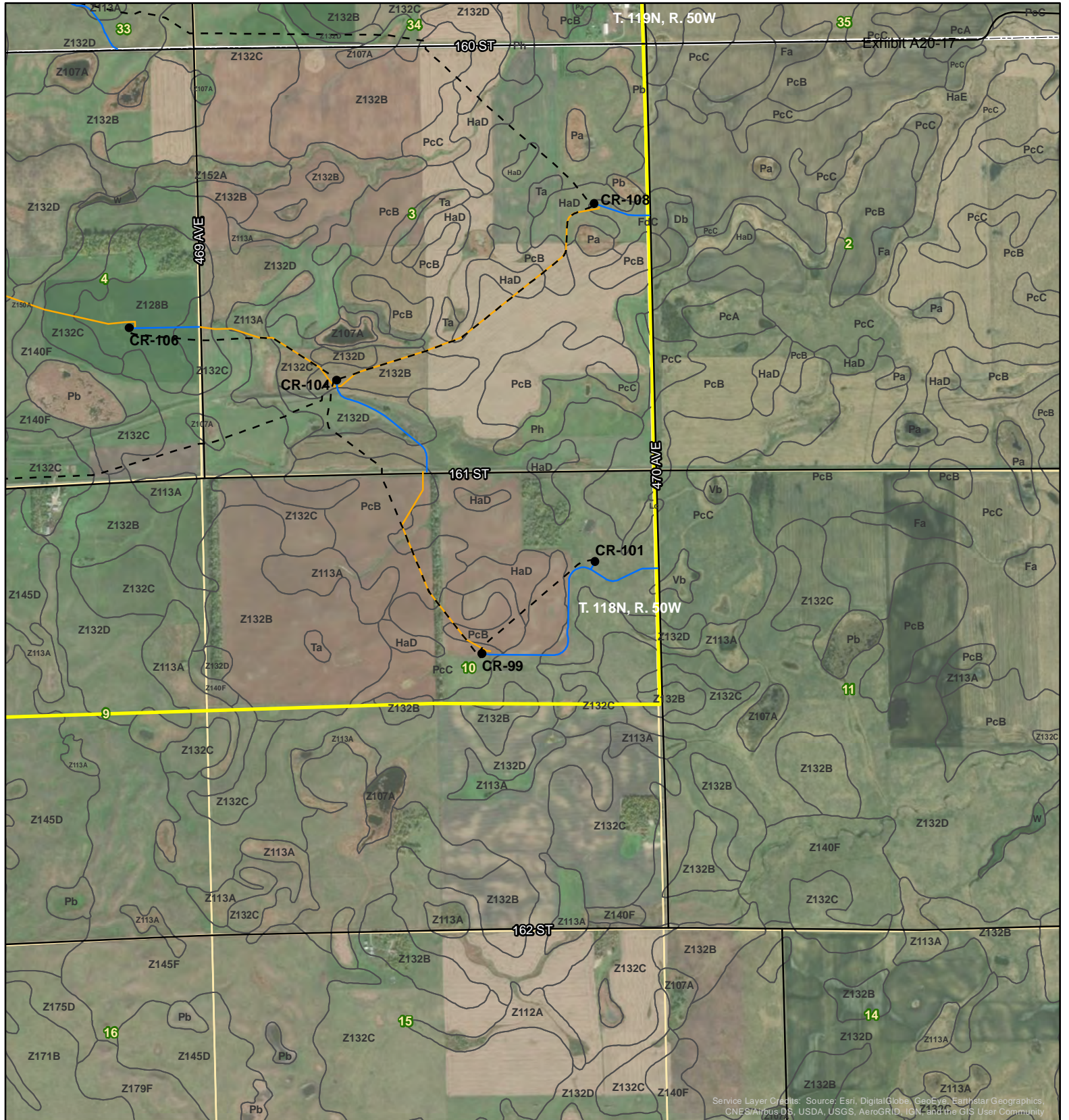
# Crowned Ridge I Wind Farm

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- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Stockholm (1973)  
 Township/Range: T119N, R50W & T118N, R50W  
 Grant County, South Dakota

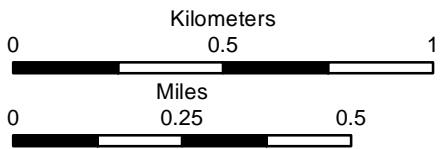
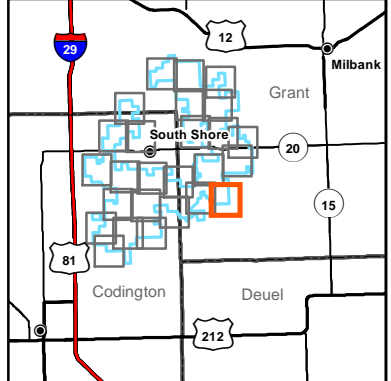




Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

# Crowned Ridge I Wind Farm

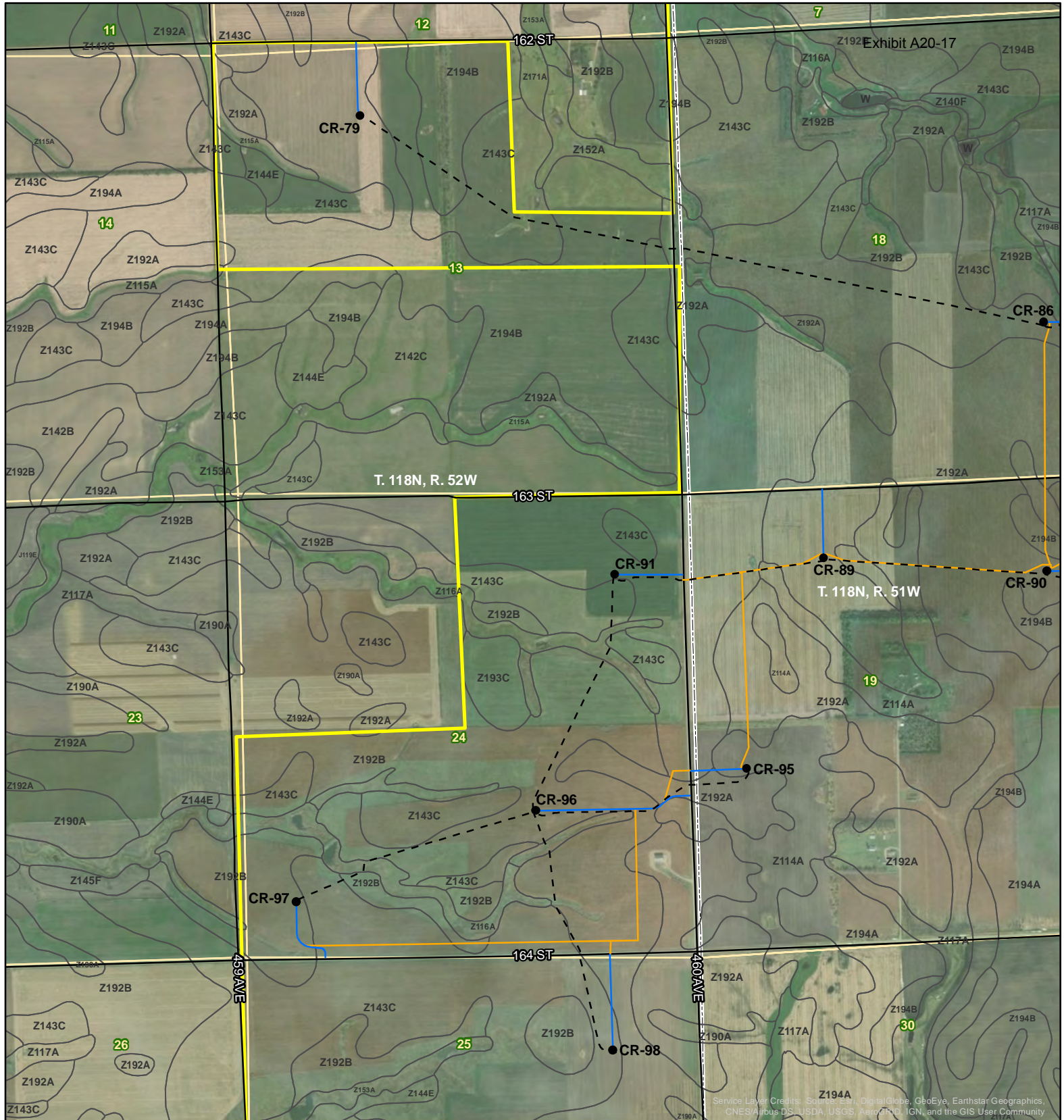
- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Stockholm (1973)  
 Township/Range: T118N, R50W  
 Grant County, South Dakota



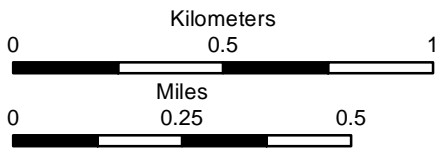
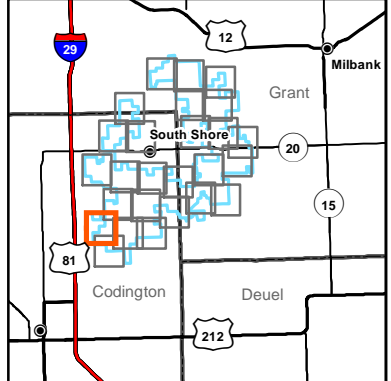




Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

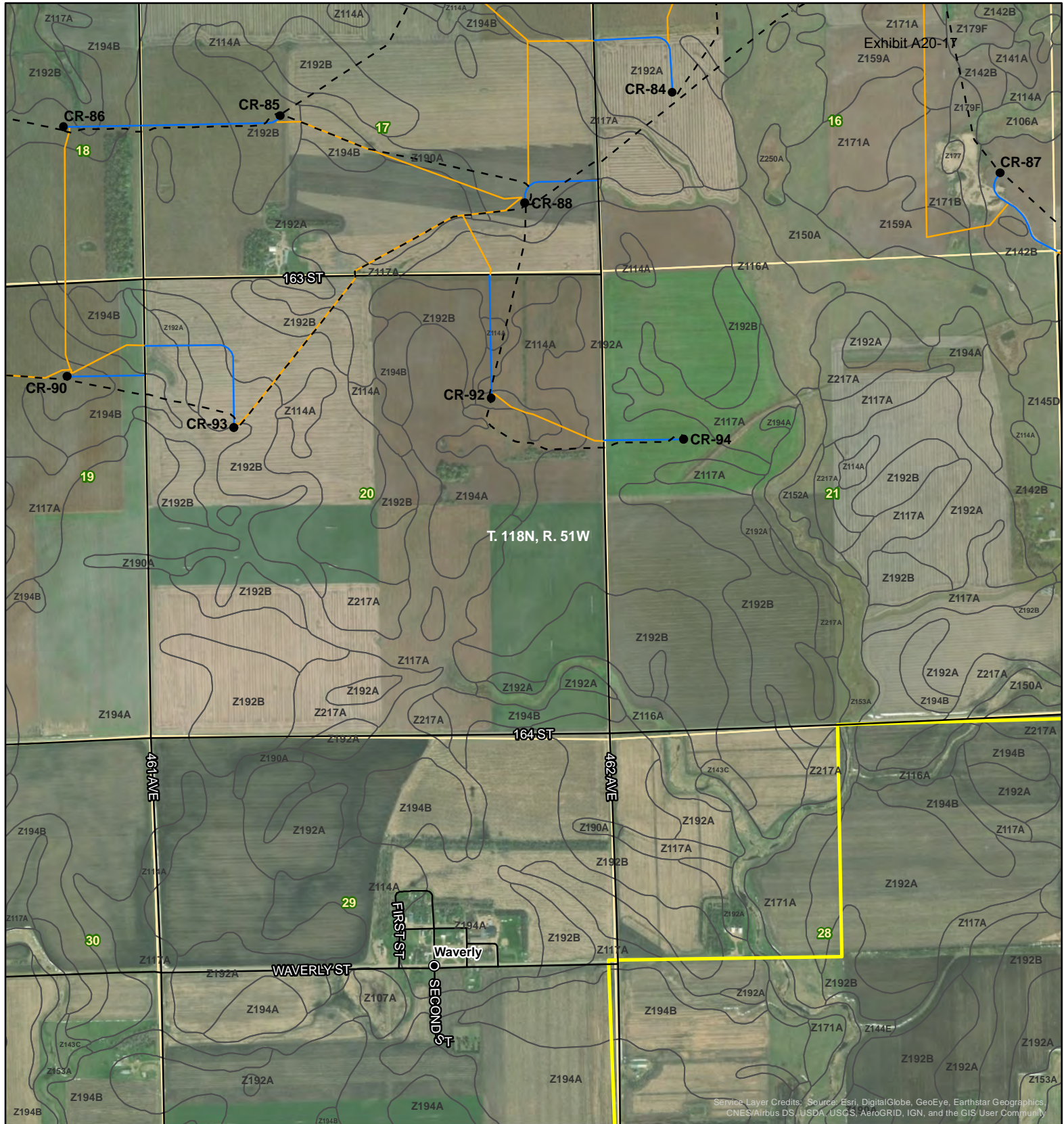
## Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



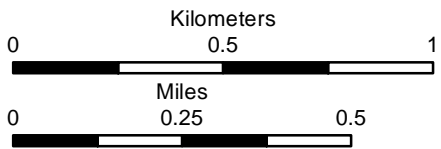
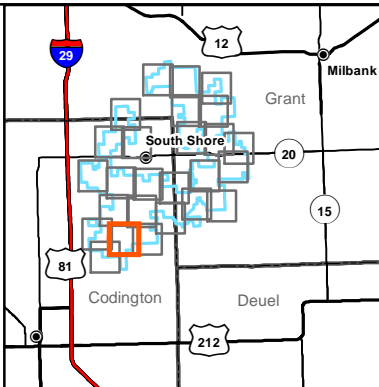
Base Map: World Imagery  
 Quadrangle: Still Lake SE (1970),  
 South Shore (1973)  
 Township/Range: T118N, R52W &  
 T118N, R51W  
 Codington County, South Dakota





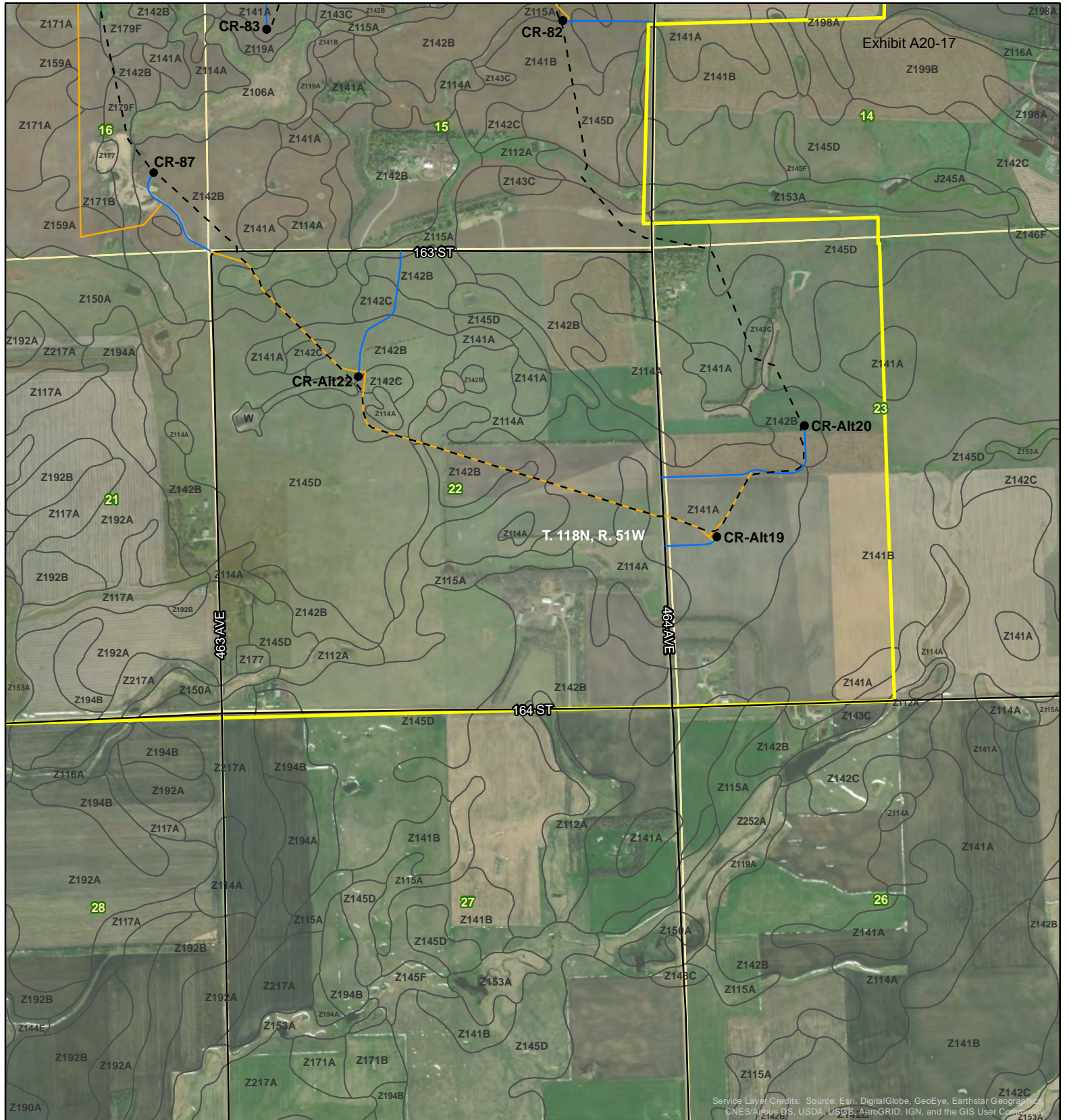
# Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- - - Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: South Shore (1973)  
 Township/Range: T118N, R51W  
 Codington County, South Dakota  
 Projection: NAD 1983 UTM Zone 14N

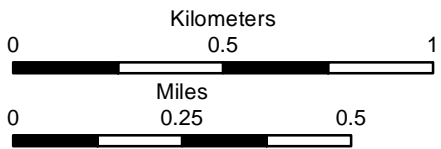
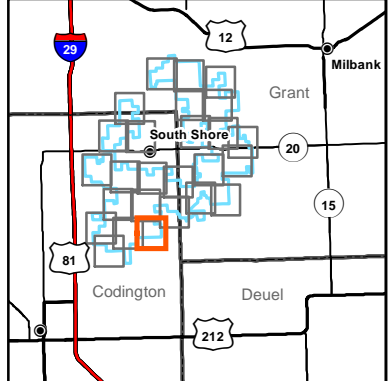




Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus, BS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

# Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



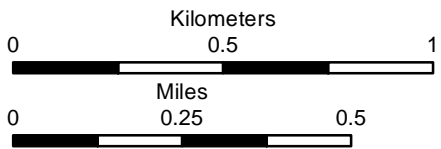
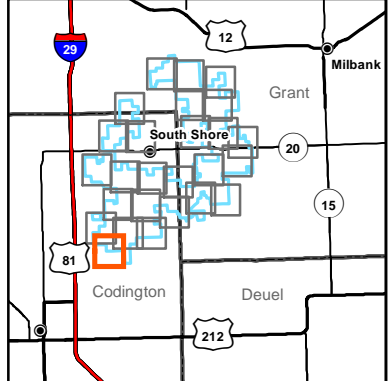
Base Map: World Imagery  
 Quadrangle: South Shore (1973)  
 Township/Range: T118N, R51W  
 Codington County, South Dakota





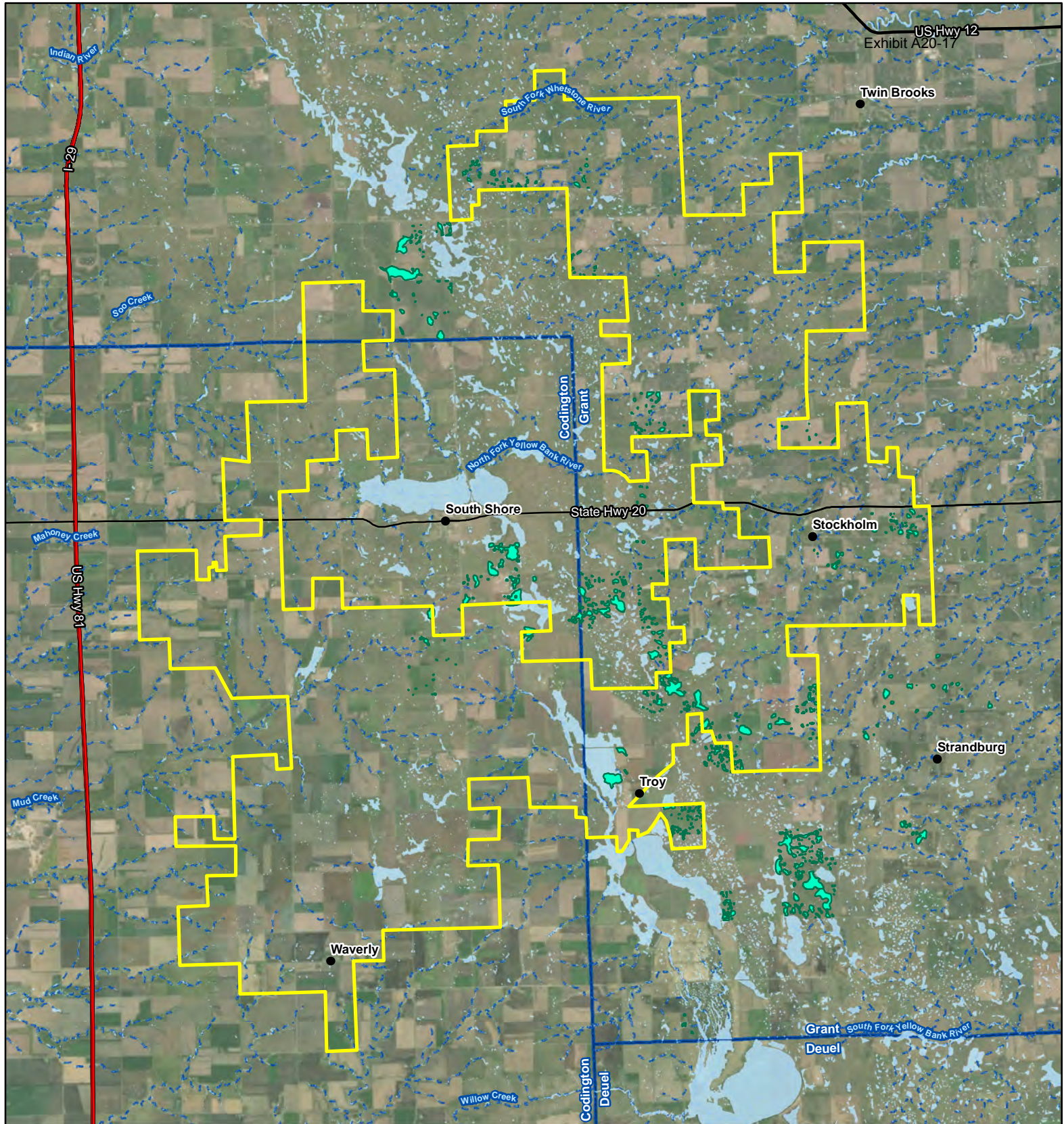
# Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Soil Unit Boundary
- Project Boundary
- Township/Range Boundary
- Section Boundary



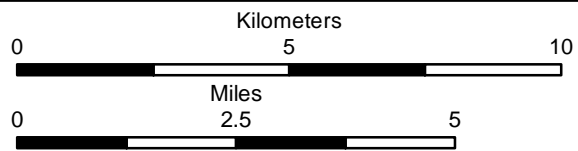
Base Map: World Imagery  
 Quadrangle: Still Lake SE (1970), South Shore (1973),  
 Watertown East (1969), Kranzburg (1970)  
 Township/Range: T118N, R52W &  
 T118N, R51W  
 Codington County, South Dakota



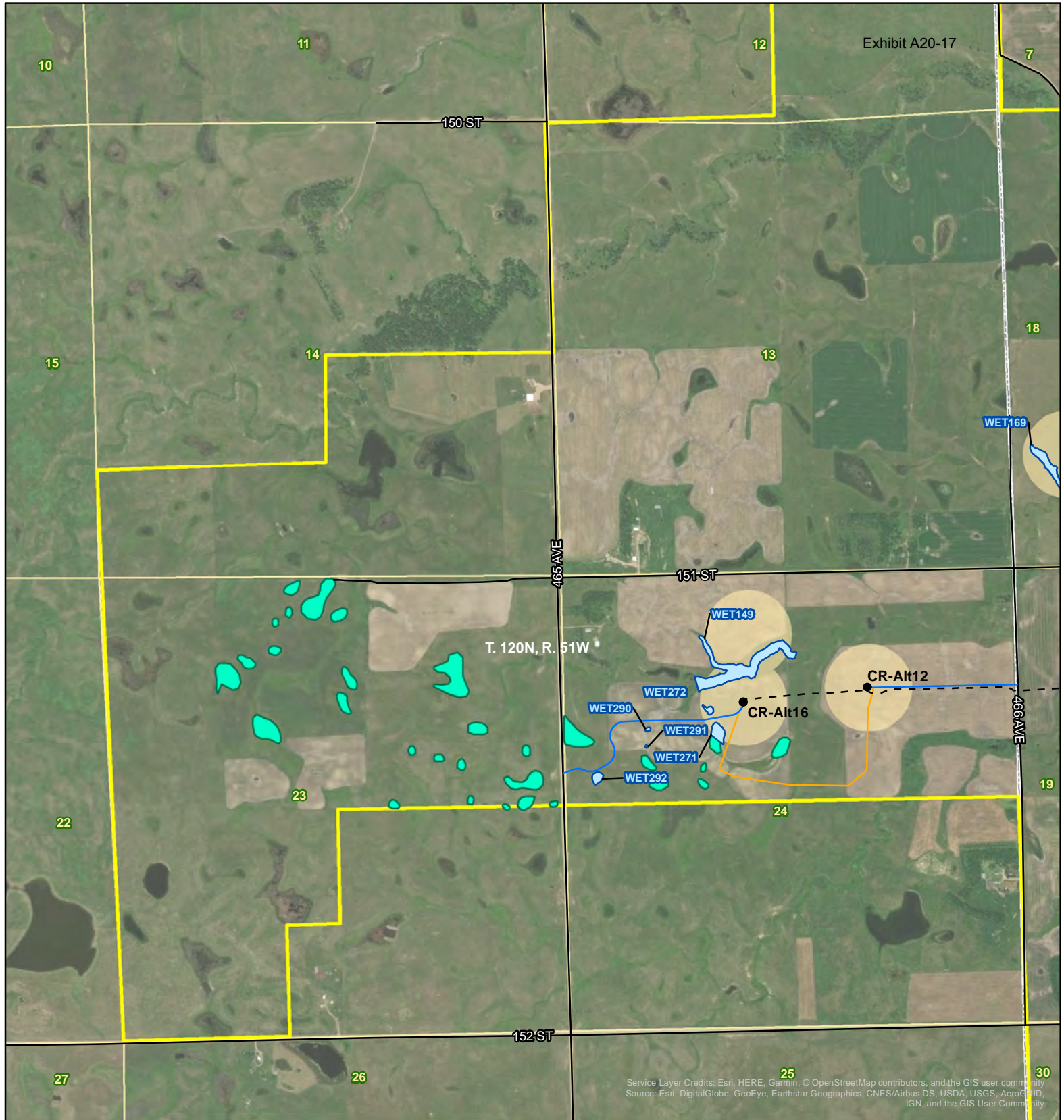


### Crowned Ridge I Wind Farm

- City
- NHDFlowline
- Interstate Highway
- U.S. Highway
- State Highway
- USFWS Protected Basin
- NWI Wetland
- Project Boundary
- County Boundary



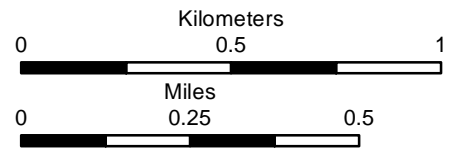
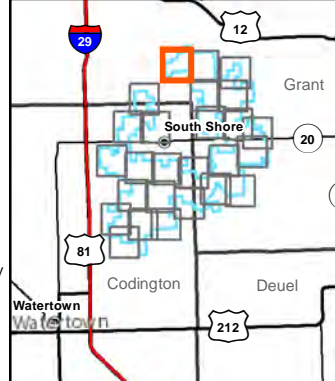
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 Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community  
 Codington and Grant Counties, South Dakota



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 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

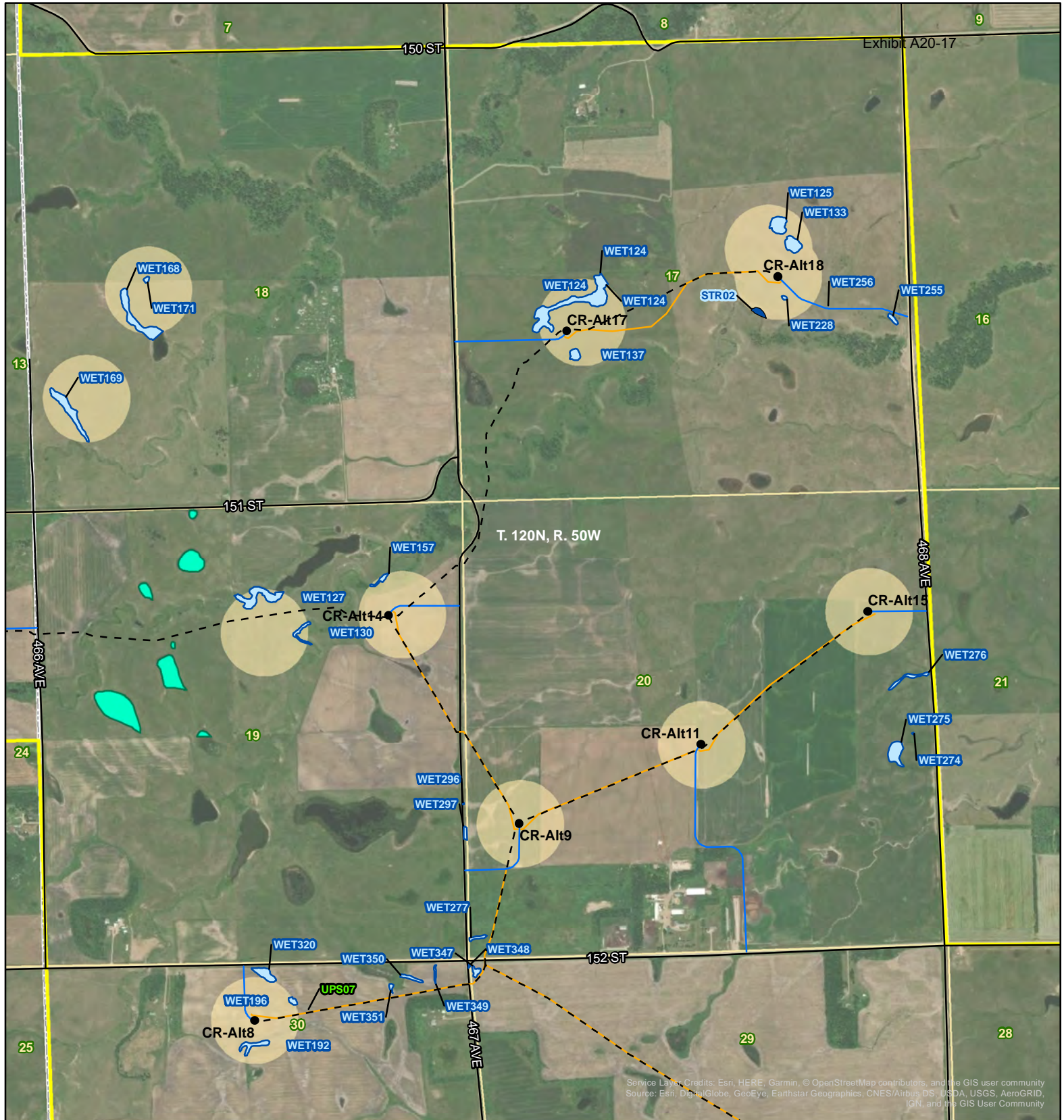
### Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
- Surveyed Area
- USFWS Protected Basin
- Project Boundary
- County Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Antelope Valley (1973)  
 Township/Range: T120N, R51W  
 Grant County, South Dakota

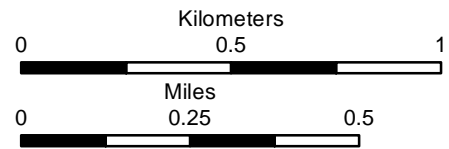
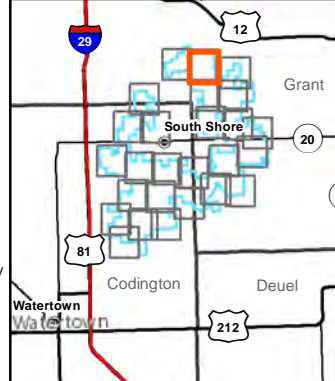




Service Layer Credits: Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community  
 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

### Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
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- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
- Surveyed Area
- USFWS Protected Basin
- Project Boundary
- County Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Antelope Valley (1973),  
 Twin Brooks (1973)  
 Township/Range: T120N, R51W &  
 T120N, R50W  
 Grant County, South Dakota



16

15

14

151 ST

149 AVE

WET302

WET136

WET301

21

22

23

WET195

T. 120N, R. 50W

470 AVE

152 ST

28

WET154

27

WET155

WET153

WET152

26

WET161

WET170

WET158

WET159

WET167

WET163

WET162

WET167

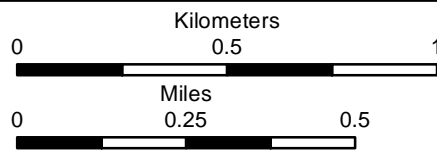
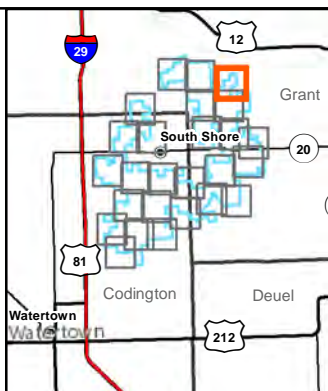
WET166

WET164

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

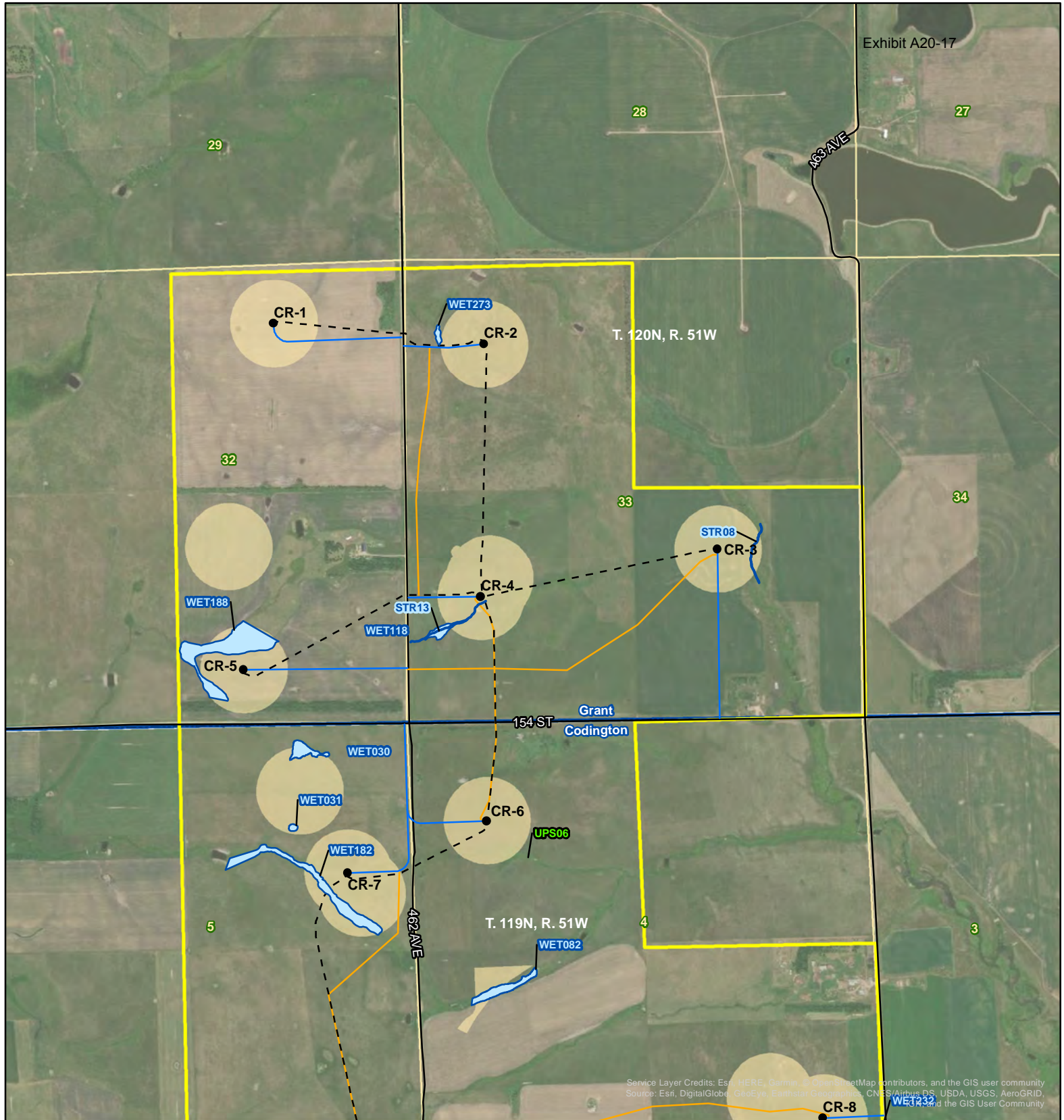
### Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
- Surveyed Area
- USFWS Protected Basin
- Project Boundary
- County Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Twin Brooks (1973)  
 Township/Range: T120N, R50W  
 Grant County, South Dakota

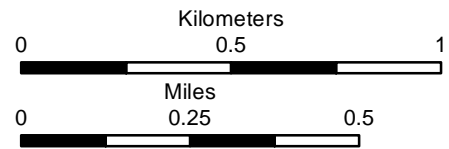
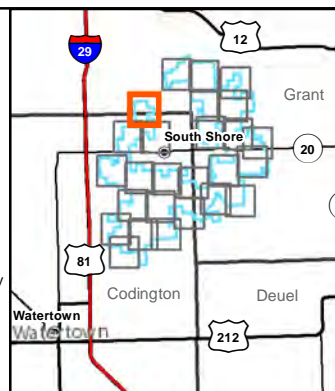




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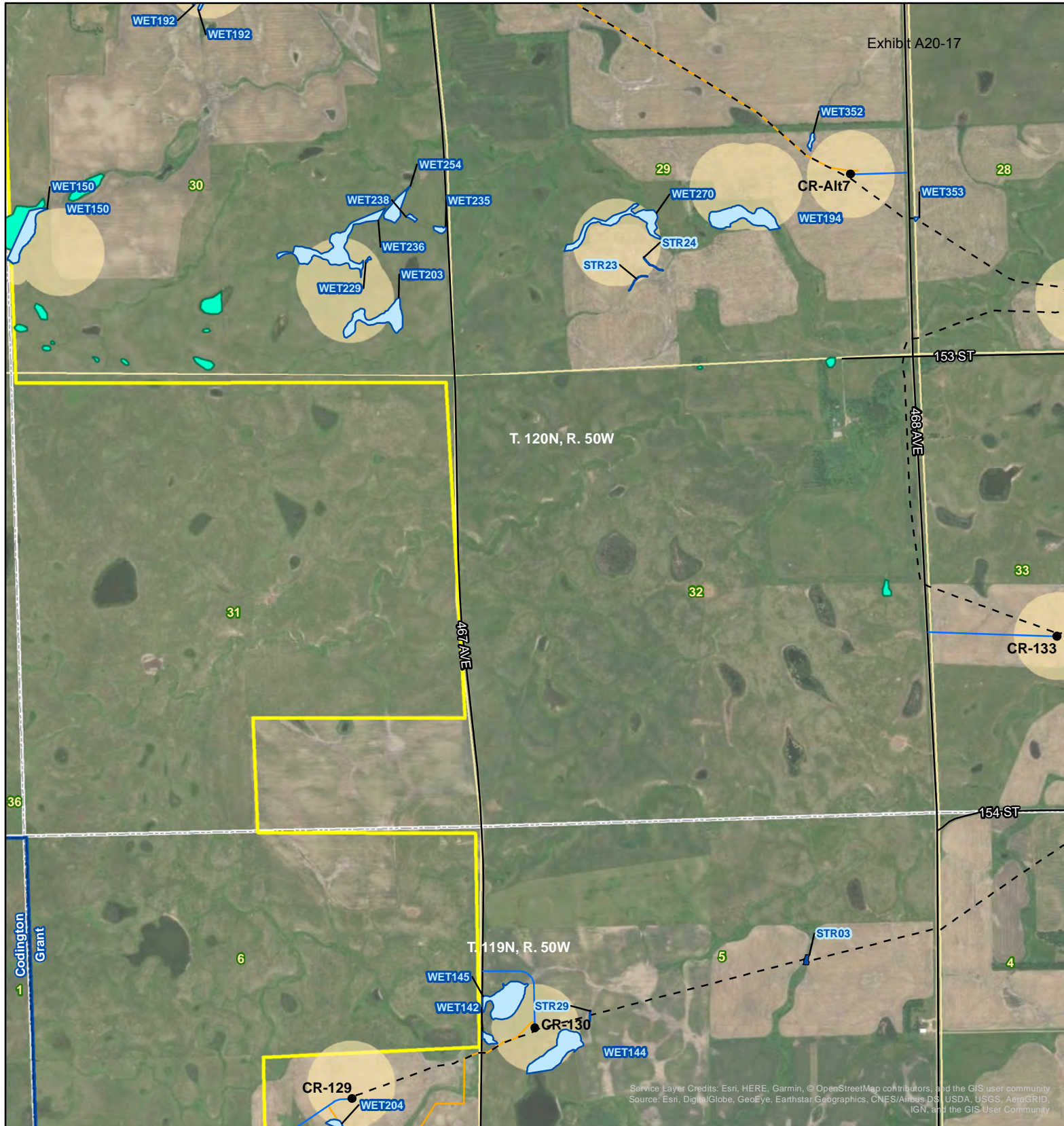
### Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
- Surveyed Area
- USFWS Protected Basin
- Project Boundary
- County Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Antelope Valley (1973)  
 Township/Range: T120N, R51W & T119N, R51W  
 Codington and Grant Counties, South Dakota

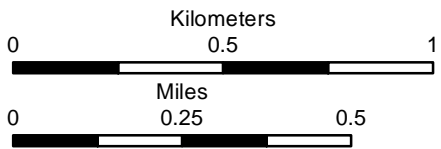
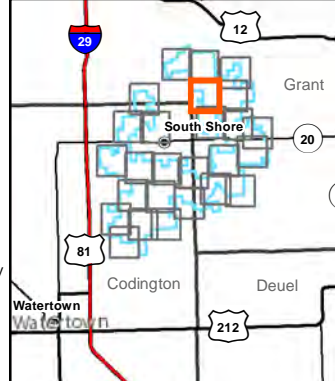
Projection: NAD 1983 UTM Zone 14N



Service Layer Credits: Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community  
 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

### Crowned Ridge I Wind Farm

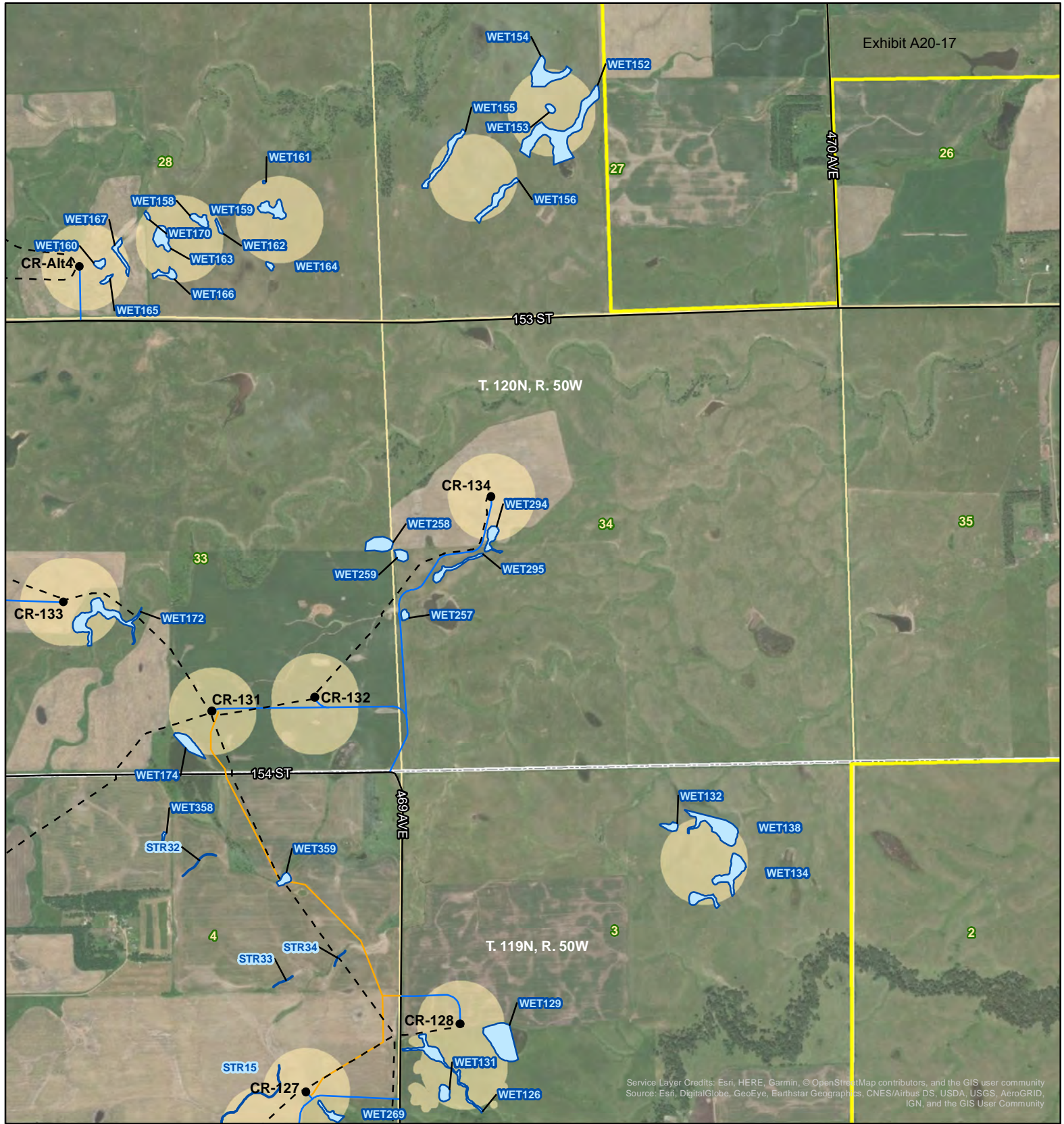
- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
- Surveyed Area
- USFWS Protected Basin
- Project Boundary
- County Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Antelope Valley (1973),  
 Twin Brooks (1973)  
 Township/Range: T120N, R50W &  
 T119N, R50W  
 Grant County, South Dakota



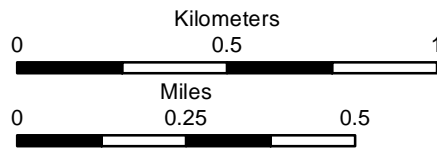
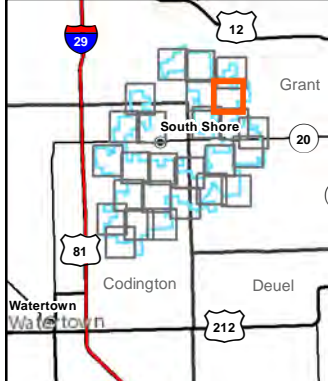
Projection: NAD 1983 UTM Zone 14N



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 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

### Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
- Surveyed Area
- USFWS Protected Basin
- Project Boundary
- County Boundary
- Township/Range Boundary
- Section Boundary

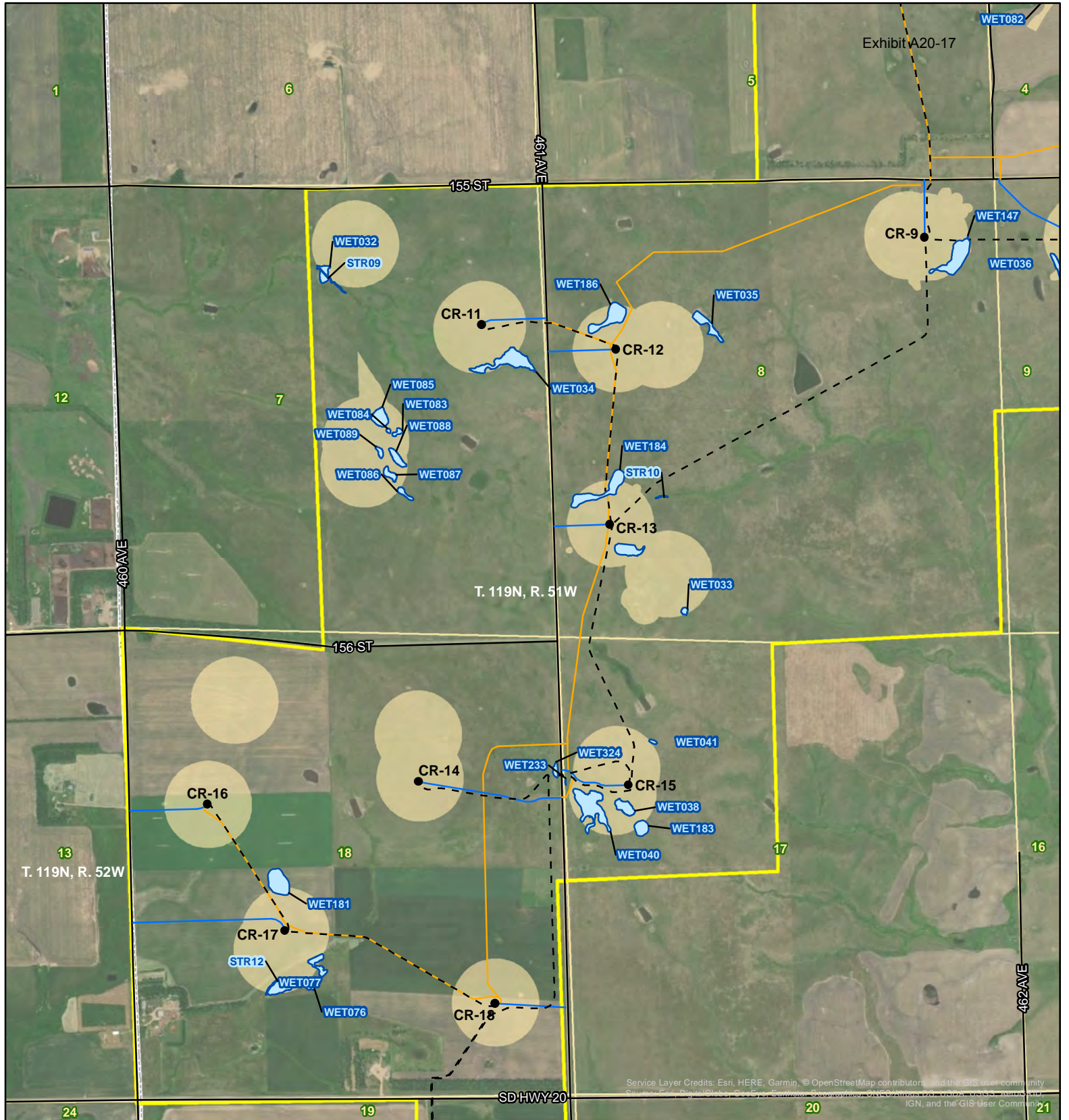


Base Map: World Imagery  
 Quadrangle: Twin Brooks (1973)

Township/Range: T120N, R50W & T119N, R50W  
 Grant County, South Dakota

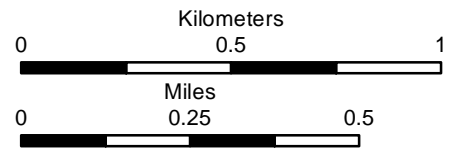
Projection: NAD 1983 UTM Zone 14N





### Crowned Ridge I Wind Farm

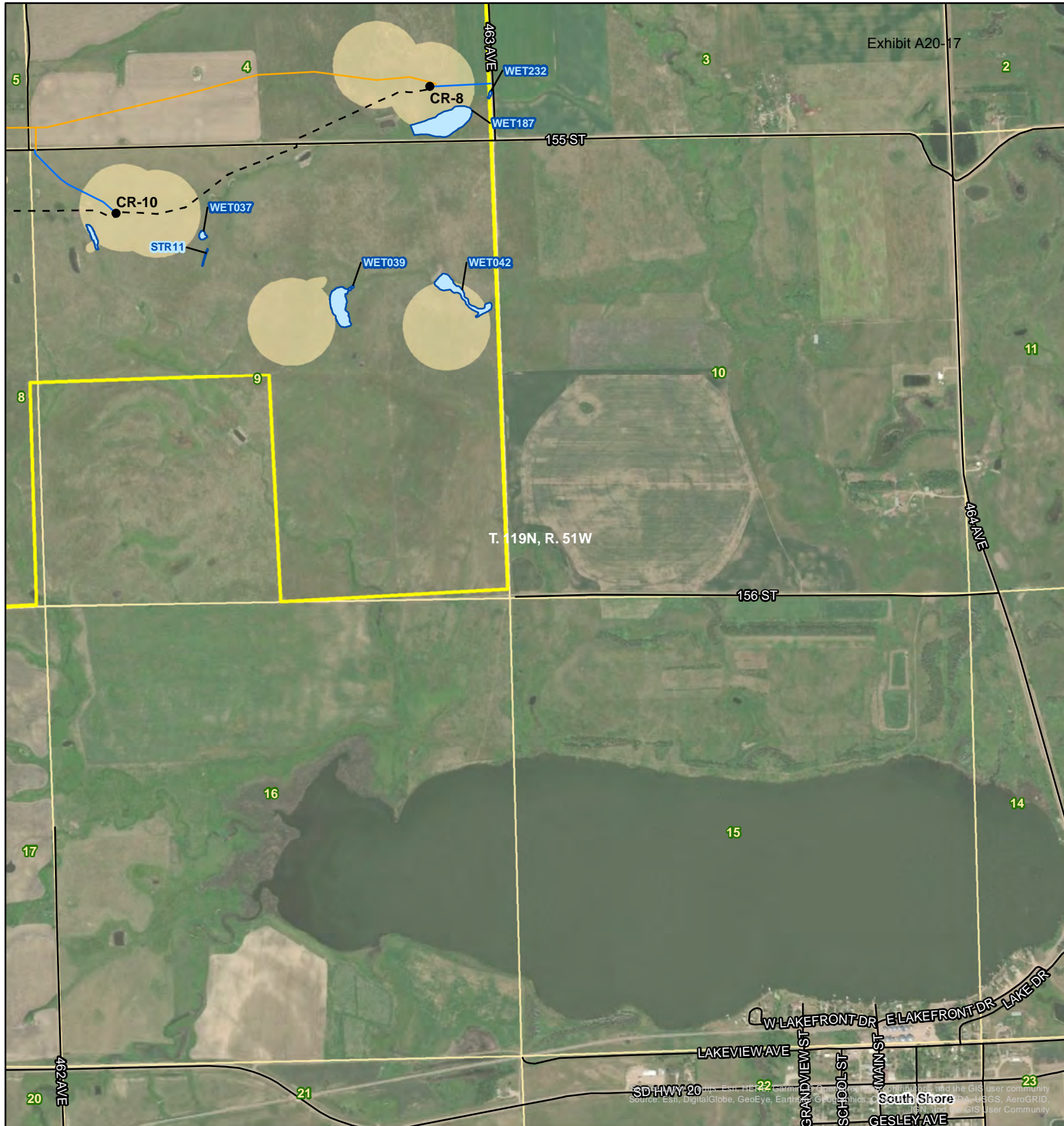
- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
- Surveyed Area
- USFWS Protected Basin
- Project Boundary
- County Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Antelope Valley (1973),  
 Still Lake SE (1970), South Shore (1973)  
 Township/Range: T119N, R51W

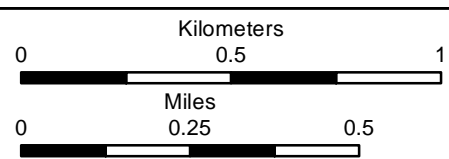
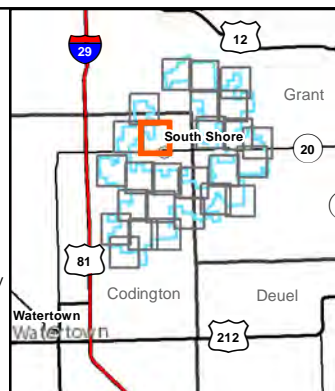
Codington County, South Dakota





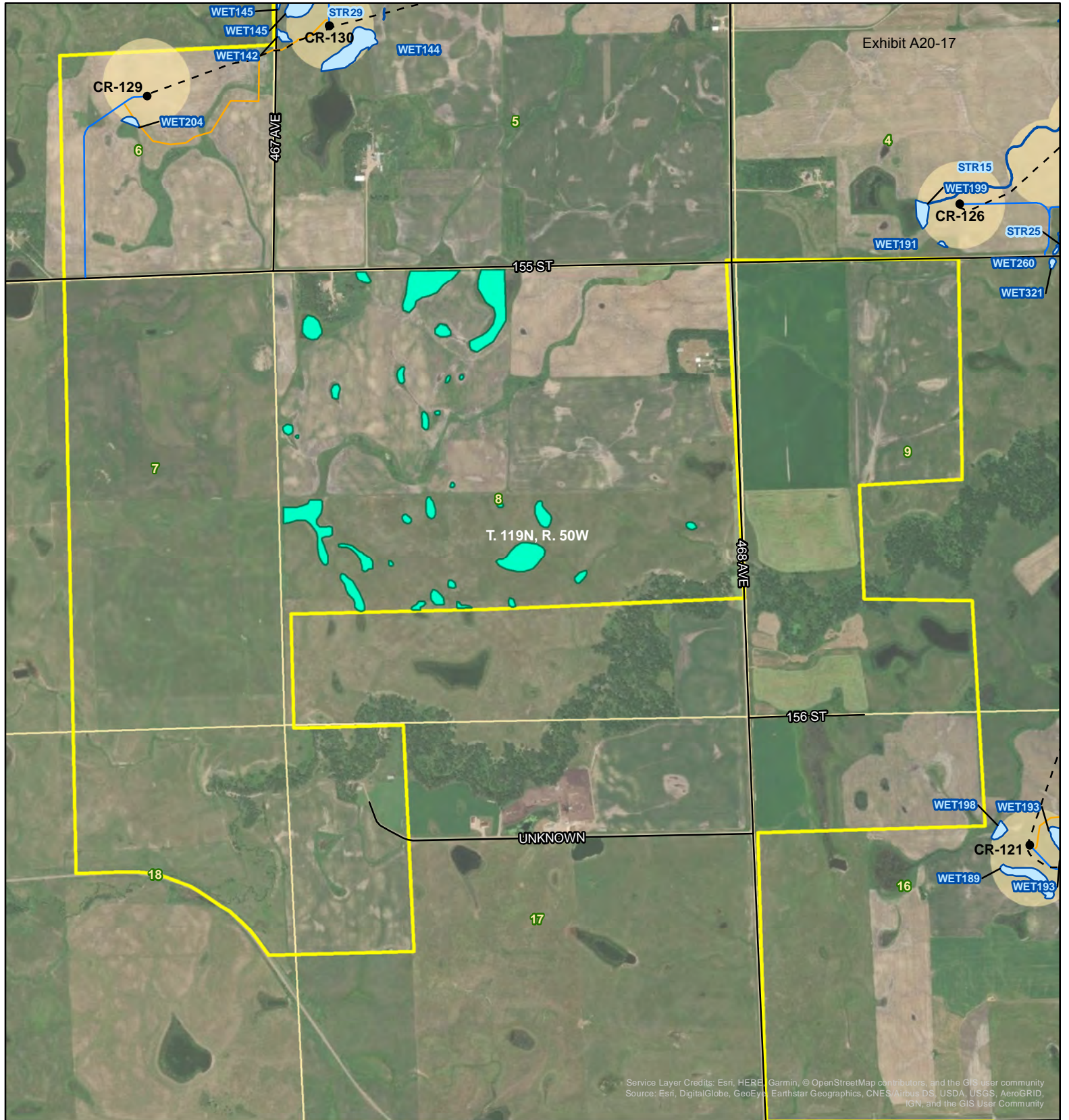
### Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
- Surveyed Area
- USFWS Protected Basin
- Project Boundary
- County Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Antelope Valley (1973),  
 South Shore (1973)  
 Township/Range: T119N, R51W  
 Codington County, South Dakota

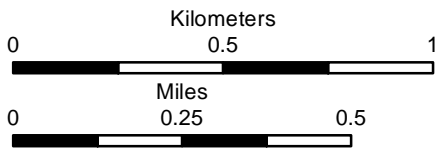
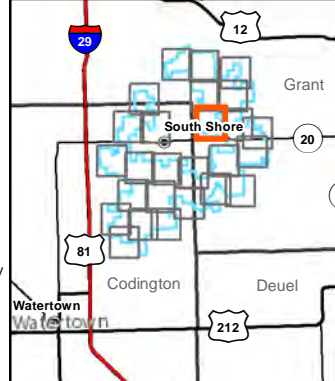




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 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

### Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
- Surveyed Area
- USFWS Protected Basin
- Project Boundary
- County Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Twin Brooks (1973),  
 Stockholm (1973)  
 Township/Range: T119N, R50W

Grant County, South Dakota

Projection: NAD 1983 UTM Zone 14N



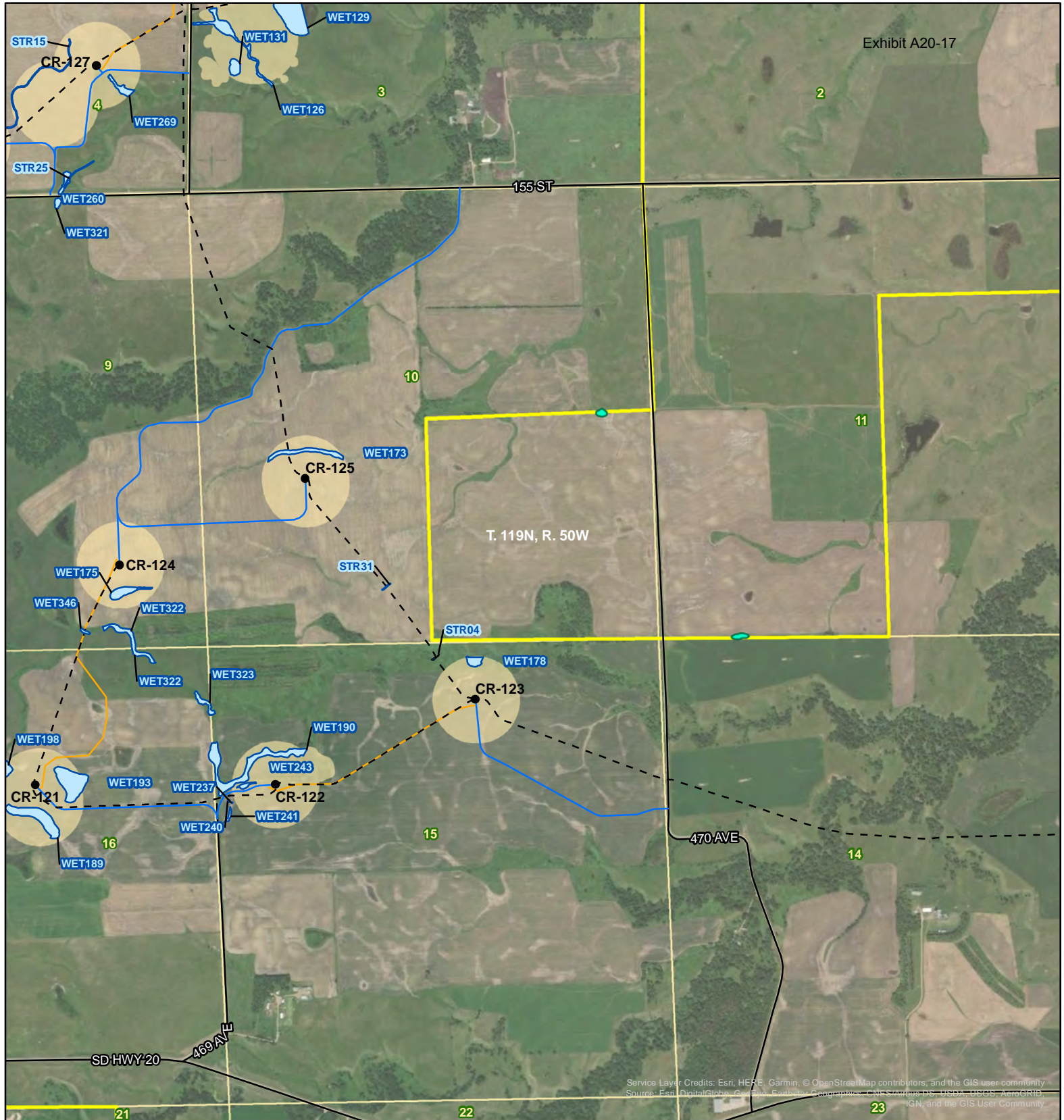


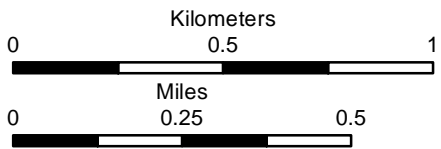
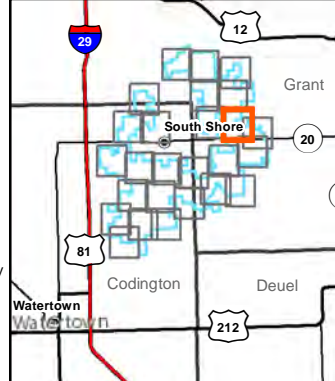
Exhibit A20-17

T. 119N, R. 50W

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 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

### Crowned Ridge I Wind Farm

- Town
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- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
- Surveyed Area
- USFWS Protected Basin
- Project Boundary
- County Boundary
- Township/Range Boundary
- Section Boundary

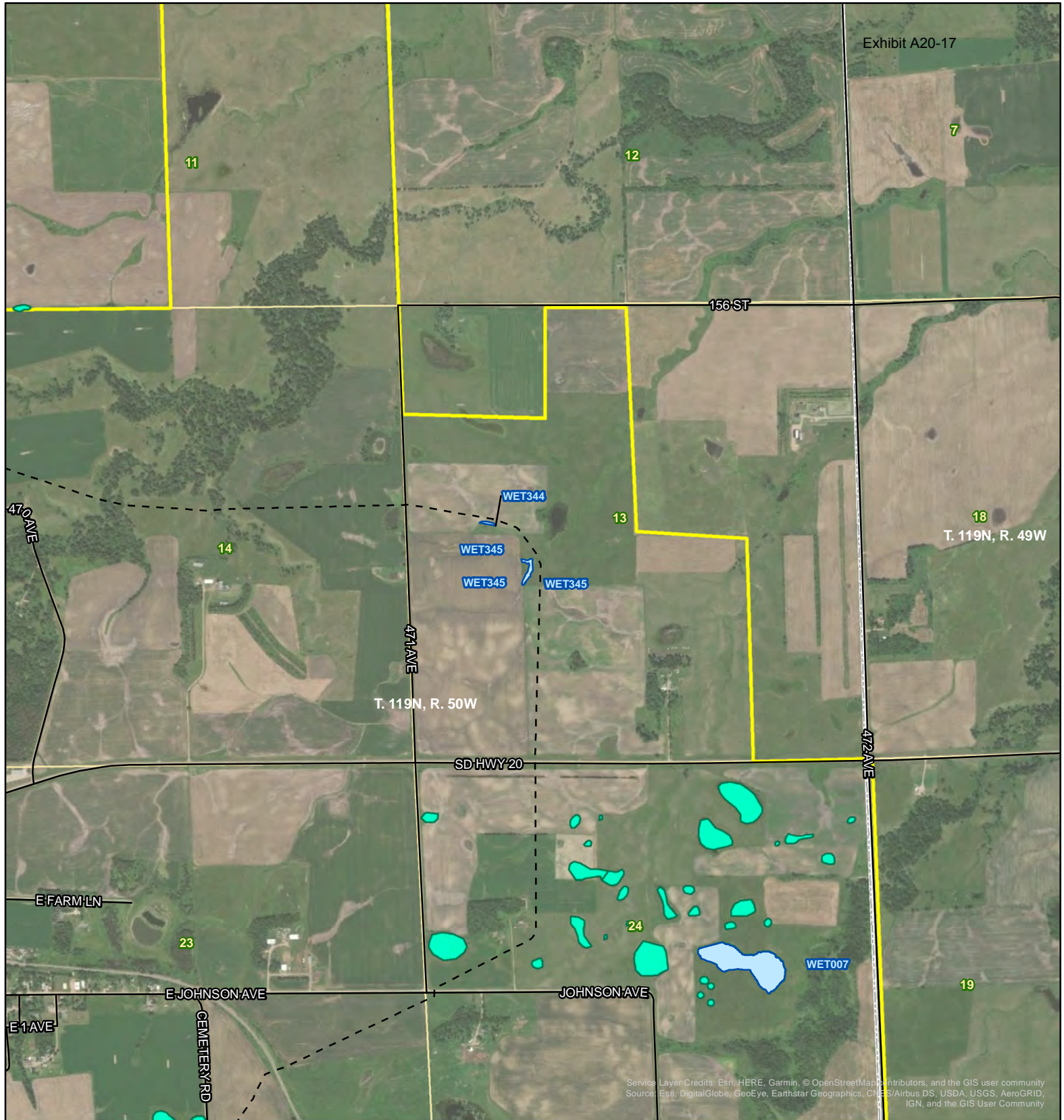


Base Map: World Imagery  
 Quadrangle: Twin Brooks (1973),  
 Stockholm (1973)  
 Township/Range: T119N, R50W

Grant County, South Dakota



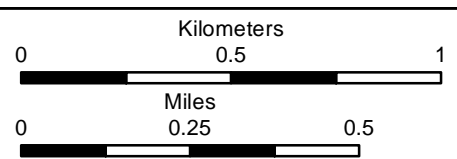
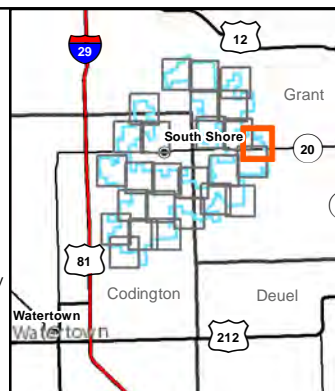
Projection: NAD 1983 UTM Zone 14N



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 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

### Crowned Ridge I Wind Farm

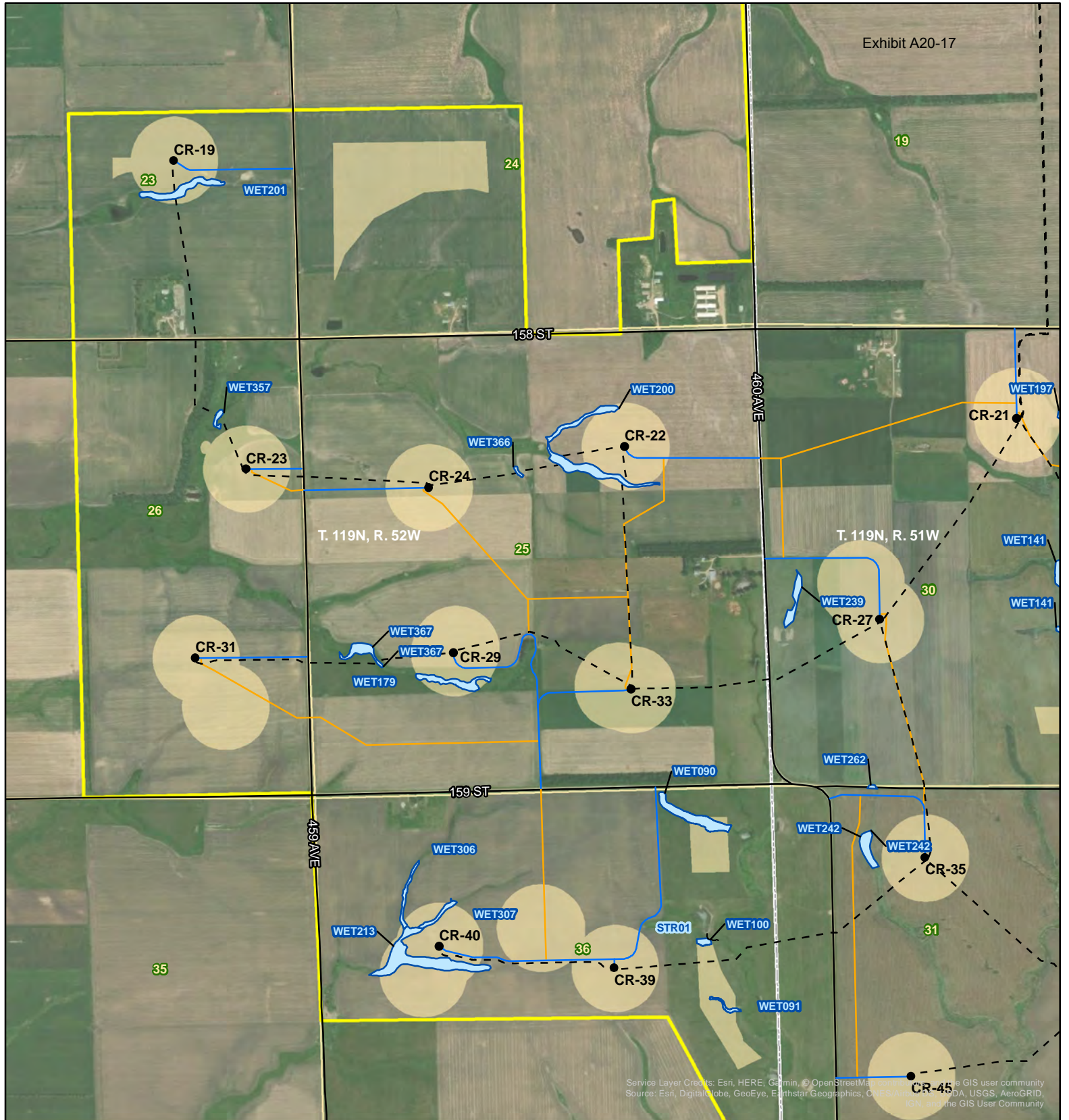
- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
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- Section Boundary



Base Map: World Imagery  
 Quadrangle: Twin Brooks (1973),  
 Stockholm (1973)  
 Township/Range: T119N, R50W  
 Grant County, South Dakota

Projection: NAD 1983 UTM Zone 14N

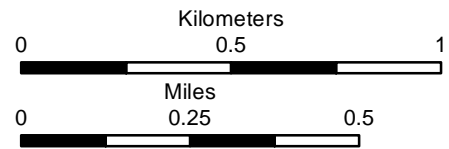
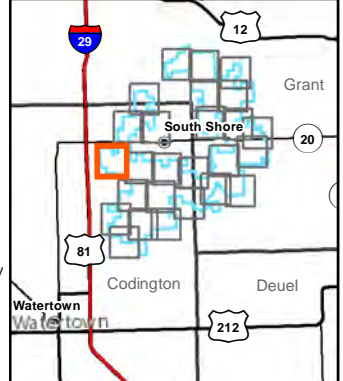




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### Crowned Ridge I Wind Farm

- Town
- Turbine
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- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
- Surveyed Area
- USFWS Protected Basin
- Project Boundary
- County Boundary
- Township/Range Boundary
- Section Boundary



Base Map: World Imagery  
 Quadrangle: Still Lake SE (1970),  
 South Shore (1973)  
 Township/Range: T119N, R52W &  
 T119N, R51W  
 Codington County, South Dakota



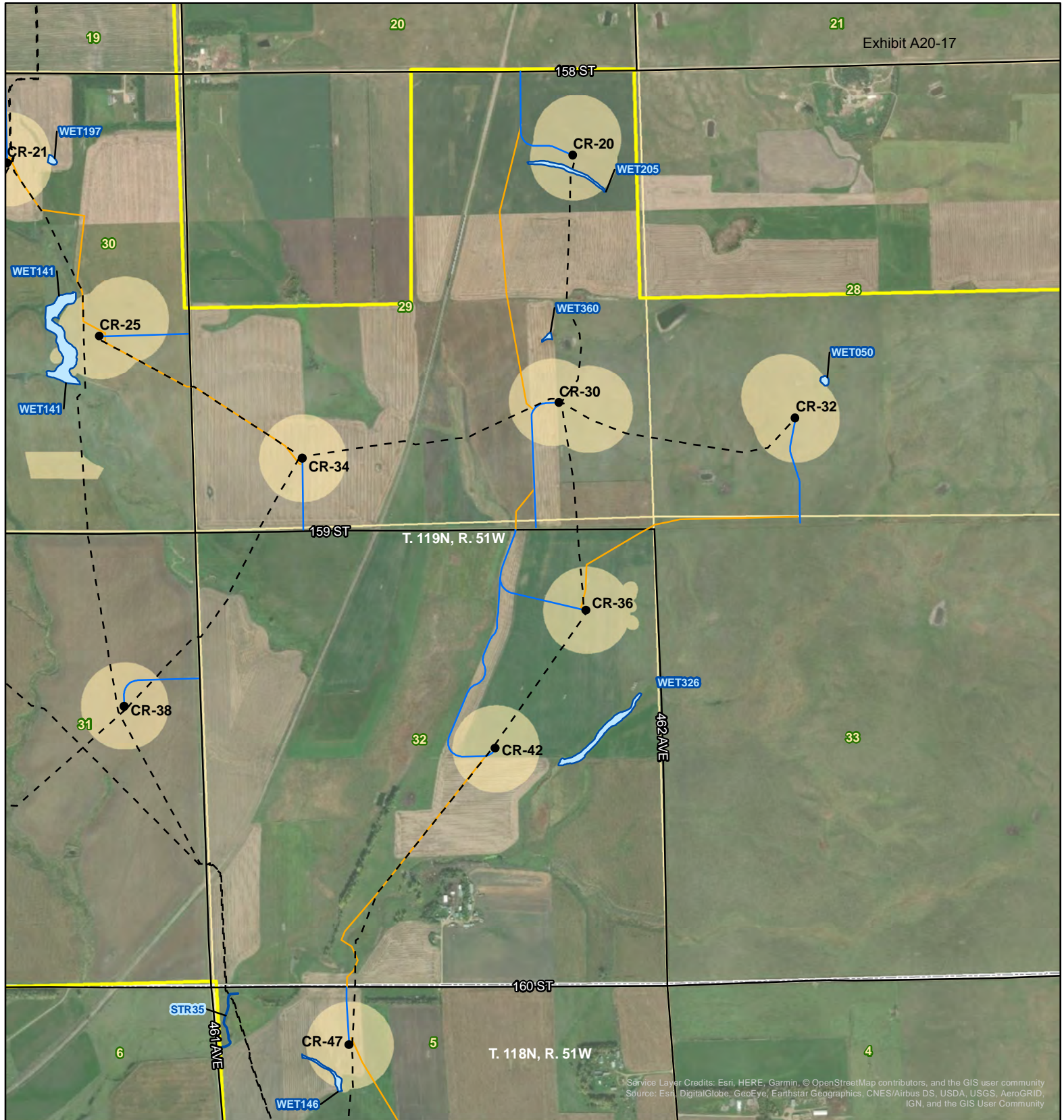
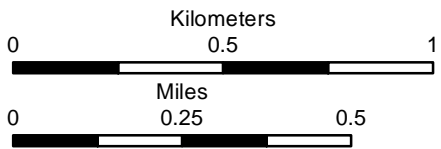
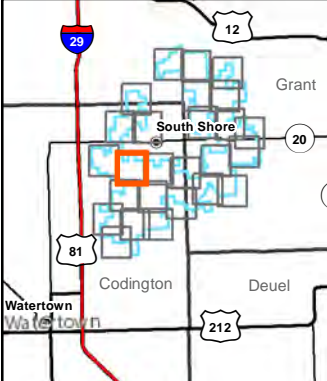


Exhibit A20-17

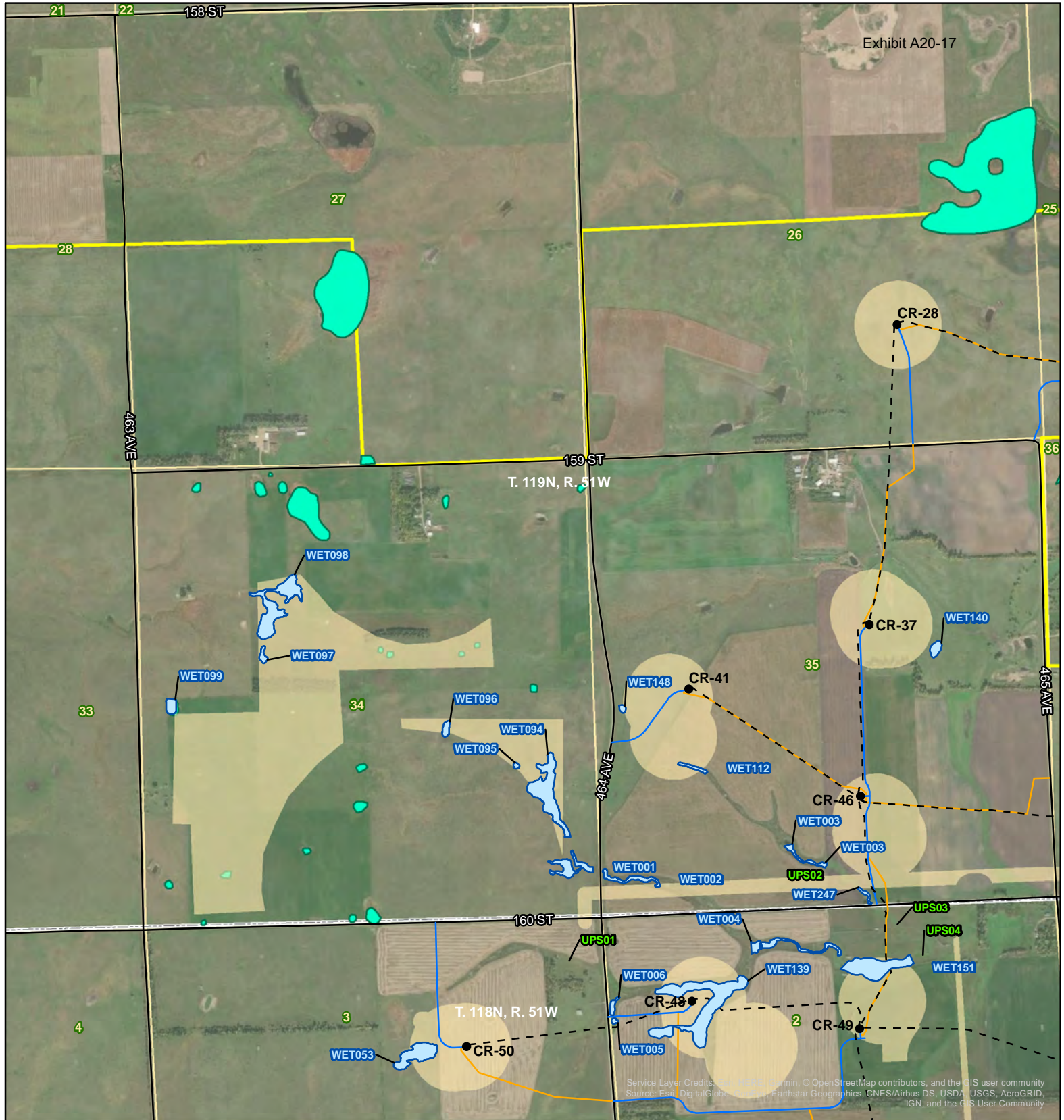
### Crowned Ridge I Wind Farm

- Town
- Turbine
- - - Collector Line
- Proposed Turbine Access Road
- Crane Path
- Existing Road
- Field Assessed Stream
- Field Assessed Wetland
- Field Assessed Stream
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- Project Boundary
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- Township/Range Boundary
- Section Boundary



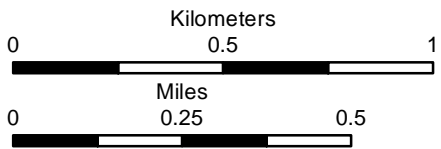
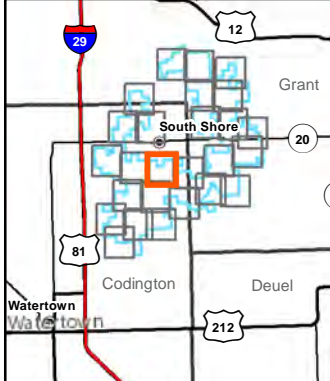
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 Codington County, South Dakota





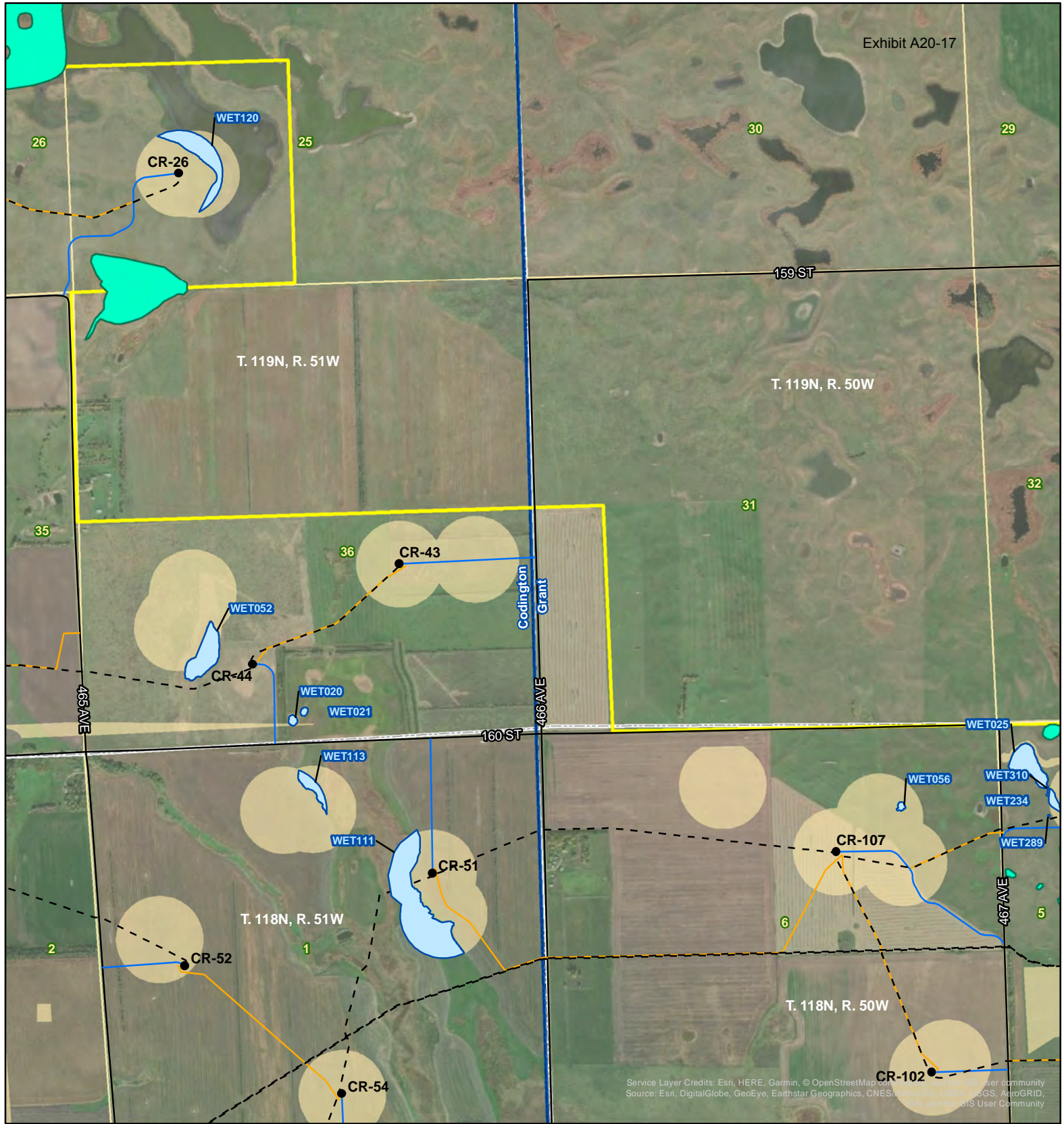
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Base Map: World Imagery  
 Quadrangle: South Shore (1973)  
 Township/Range: T119N, R51W  
 Codington County, South Dakota

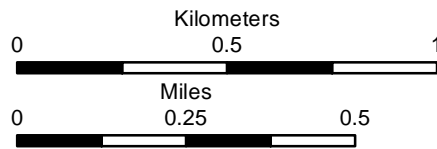
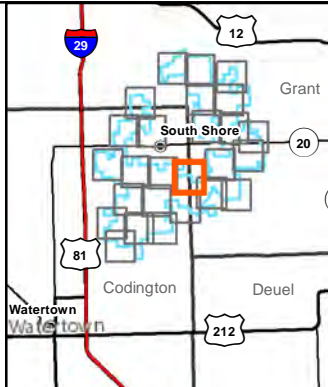
Projection: NAD 1983 UTM Zone 14N



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 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

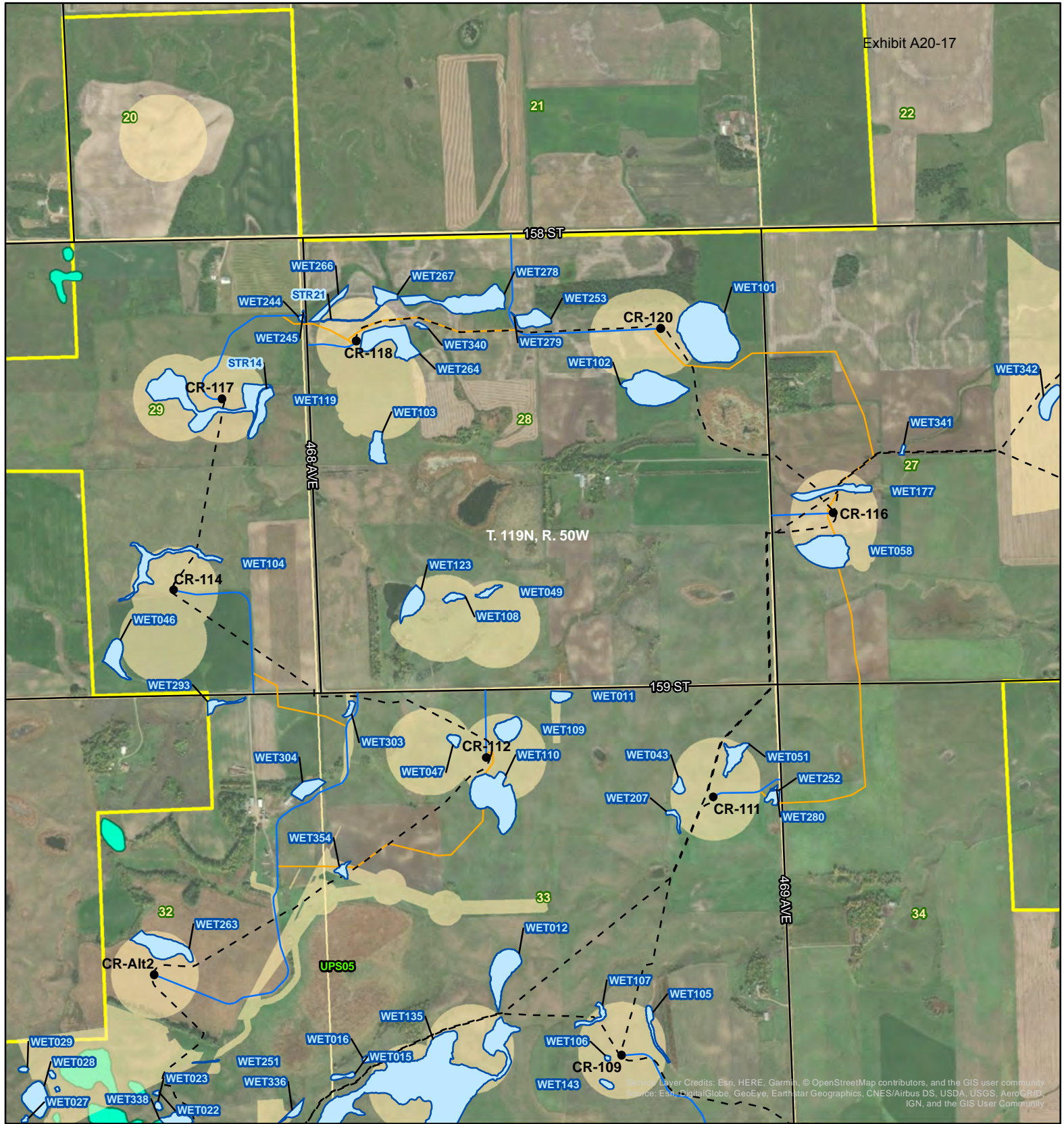
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Base Map: World Imagery  
 Quadrangle: South Shore (1973),  
 Stockholm (1973)  
 Township/Range: T119N, R51W & T119N, R50W &  
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 Codington and Grant Counties, South Dakota

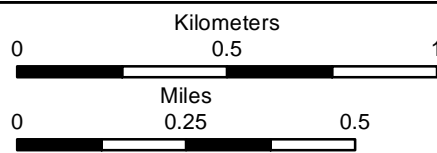
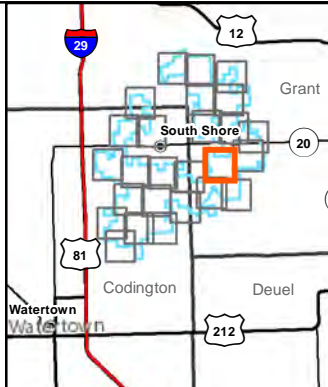
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 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

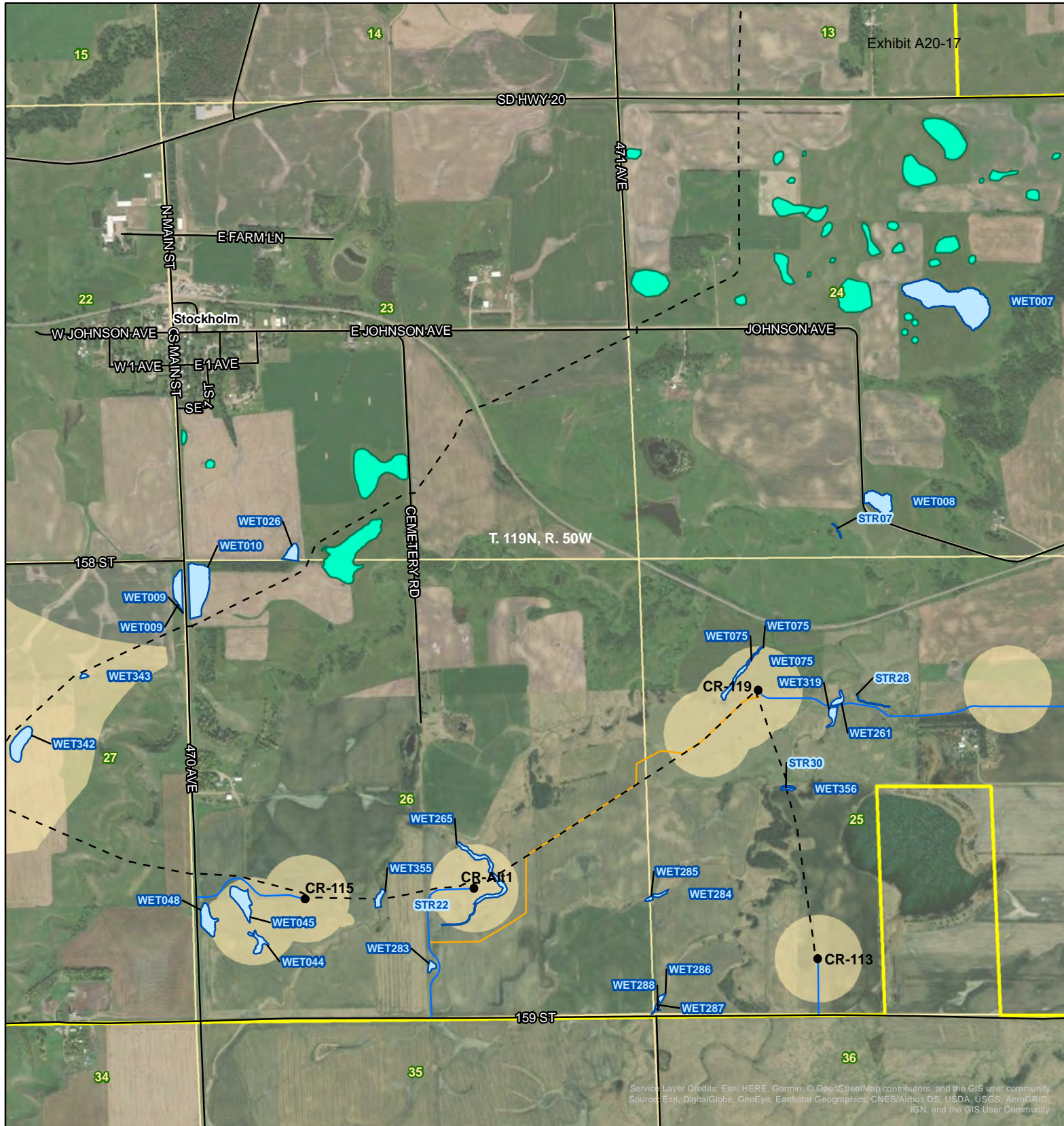
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Base Map: World Imagery  
 Quadrangle: Stockholm (1973)  
 Township/Range: T119N, R50W  
 Grant County, South Dakota

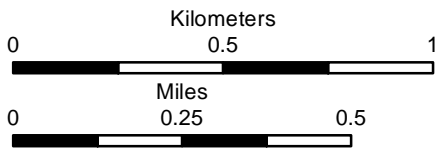




Service Layer Credits: Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community  
 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

### Crowned Ridge I Wind Farm

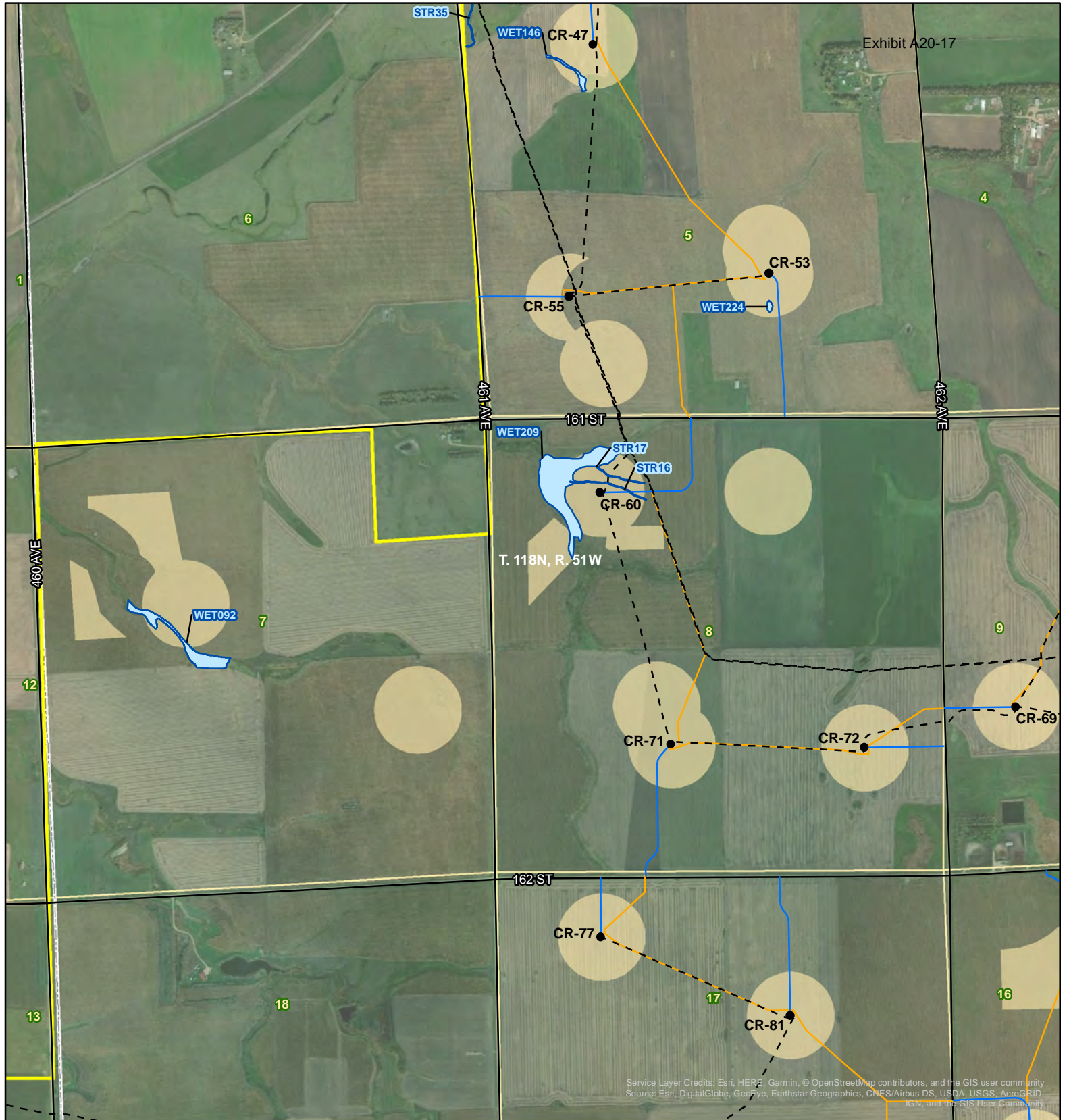
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Base Map: World Imagery  
 Quadrangle: Stockholm (1973)  
 Township/Range: T119N, R50W  
 Grant County, South Dakota

Projection: NAD 1983 UTM Zone 14N

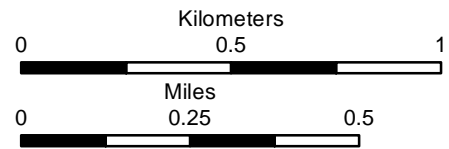
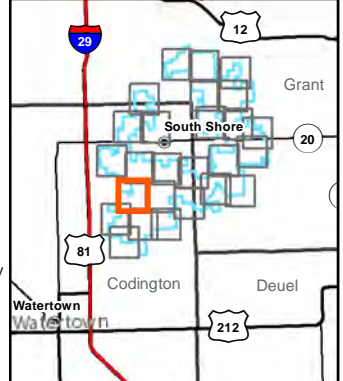




Service Layer Credits: Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community  
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### Crowned Ridge I Wind Farm

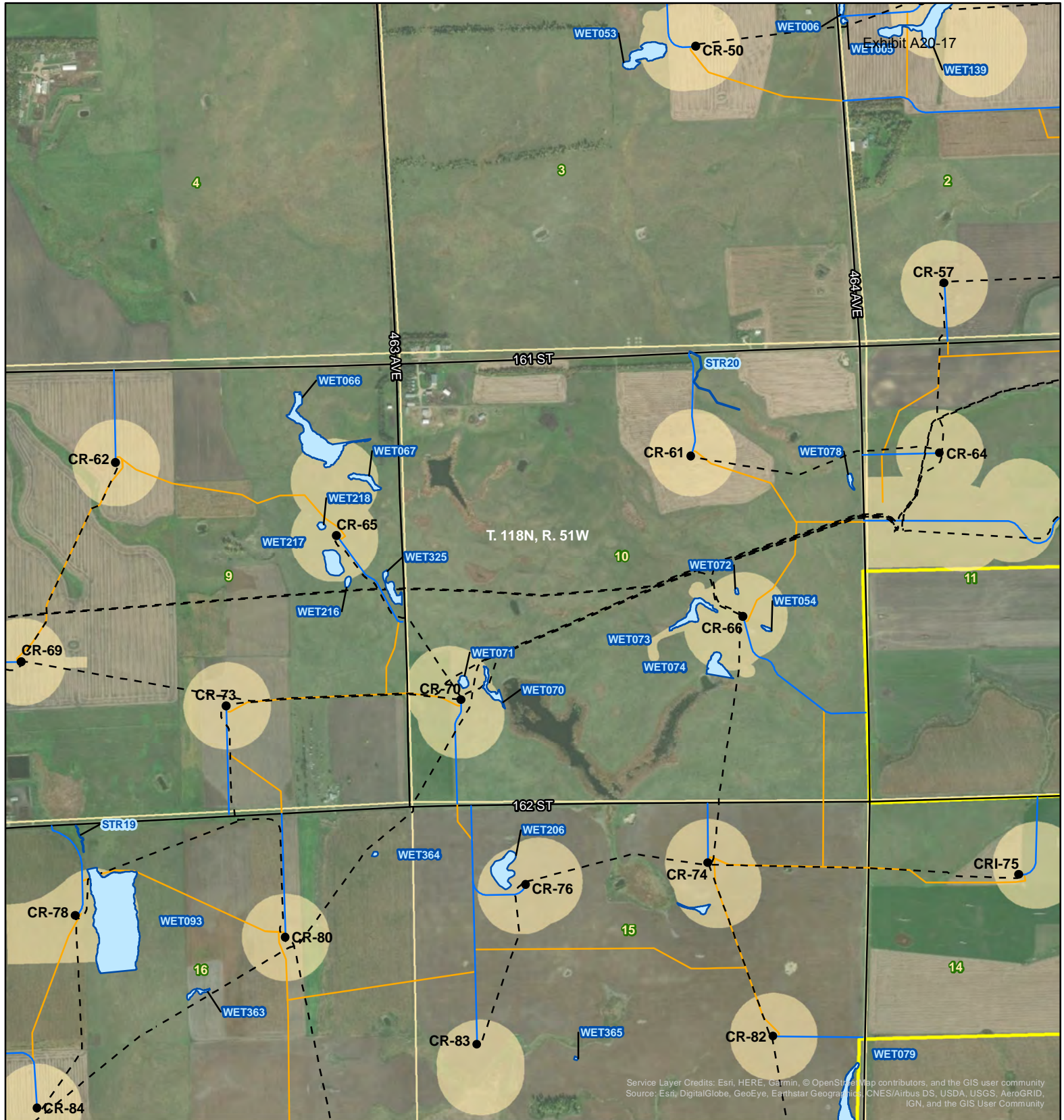
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Base Map: World Imagery  
 Quadrangle: Still Lake SE (1970),  
 South Shore (1973)  
 Township/Range: T118N, R51W  
 Codington County, South Dakota

Projection: NAD 1983 UTM Zone 14N

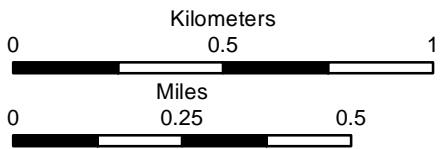
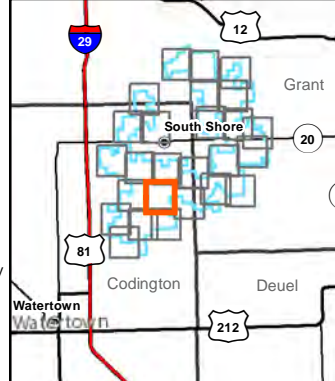




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 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Base Map: World Imagery  
 Quadrangle: South Shore (1973)  
 Township/Range: T118N, R51W  
 Codington County, South Dakota







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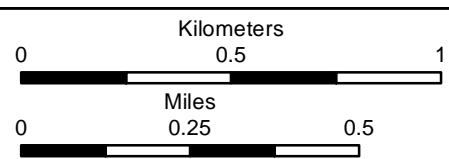
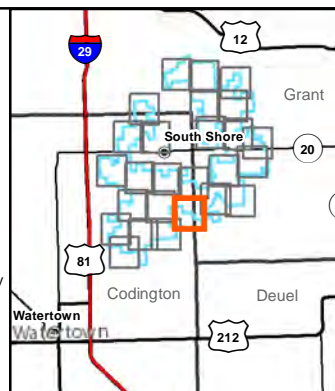
T. 118N, R. 50W

T. 118N, R. 51W

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### Crowned Ridge I Wind Farm

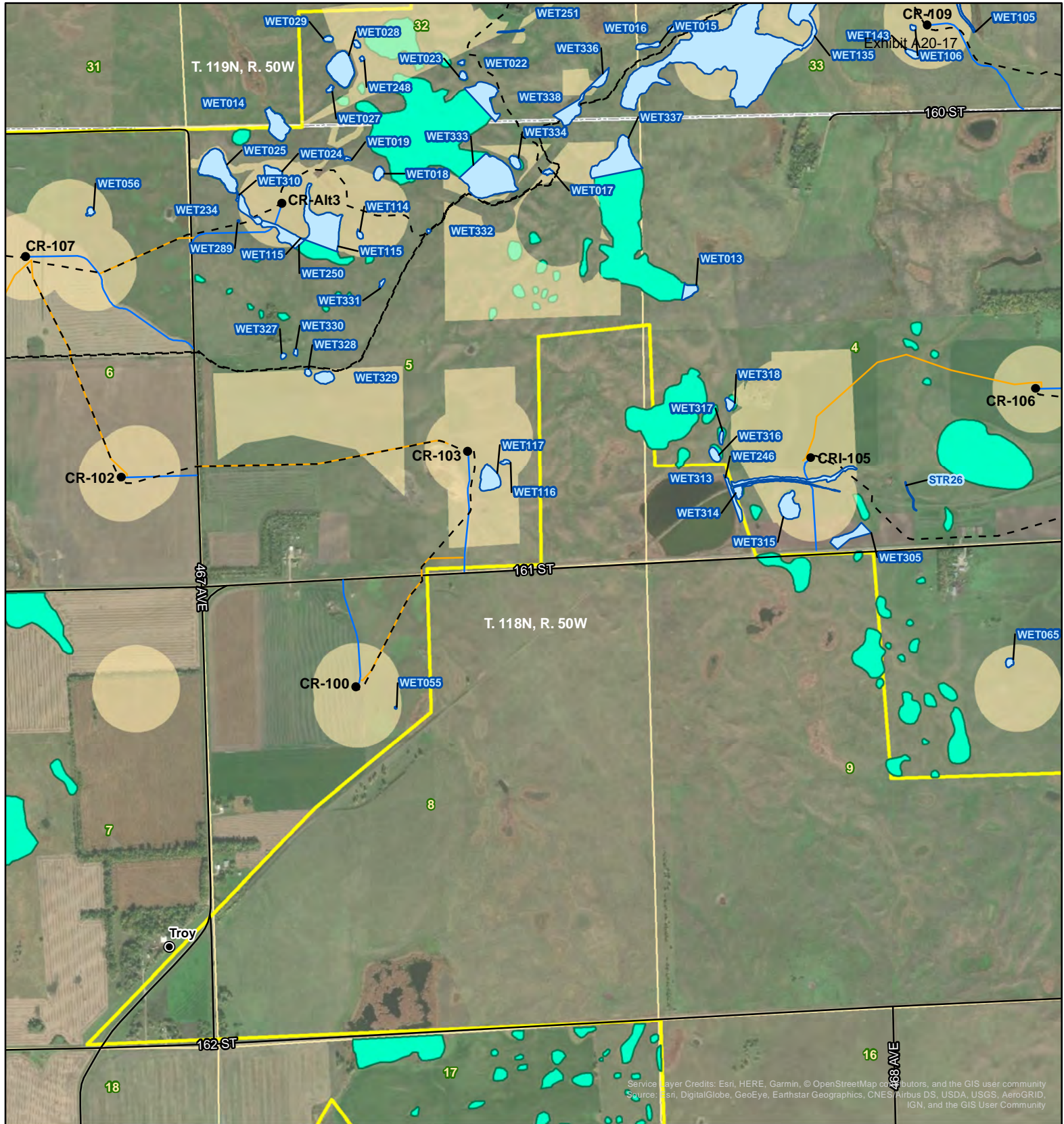
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Base Map: World Imagery  
 Quadrangle: South Shore (1973),  
 Stockholm (1973)  
 Township/Range: T118N, R51W &  
 T118N, R50W  
 Codington and Grant Counties, South Dakota



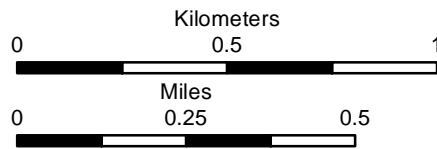
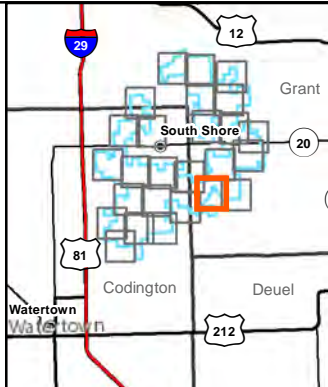
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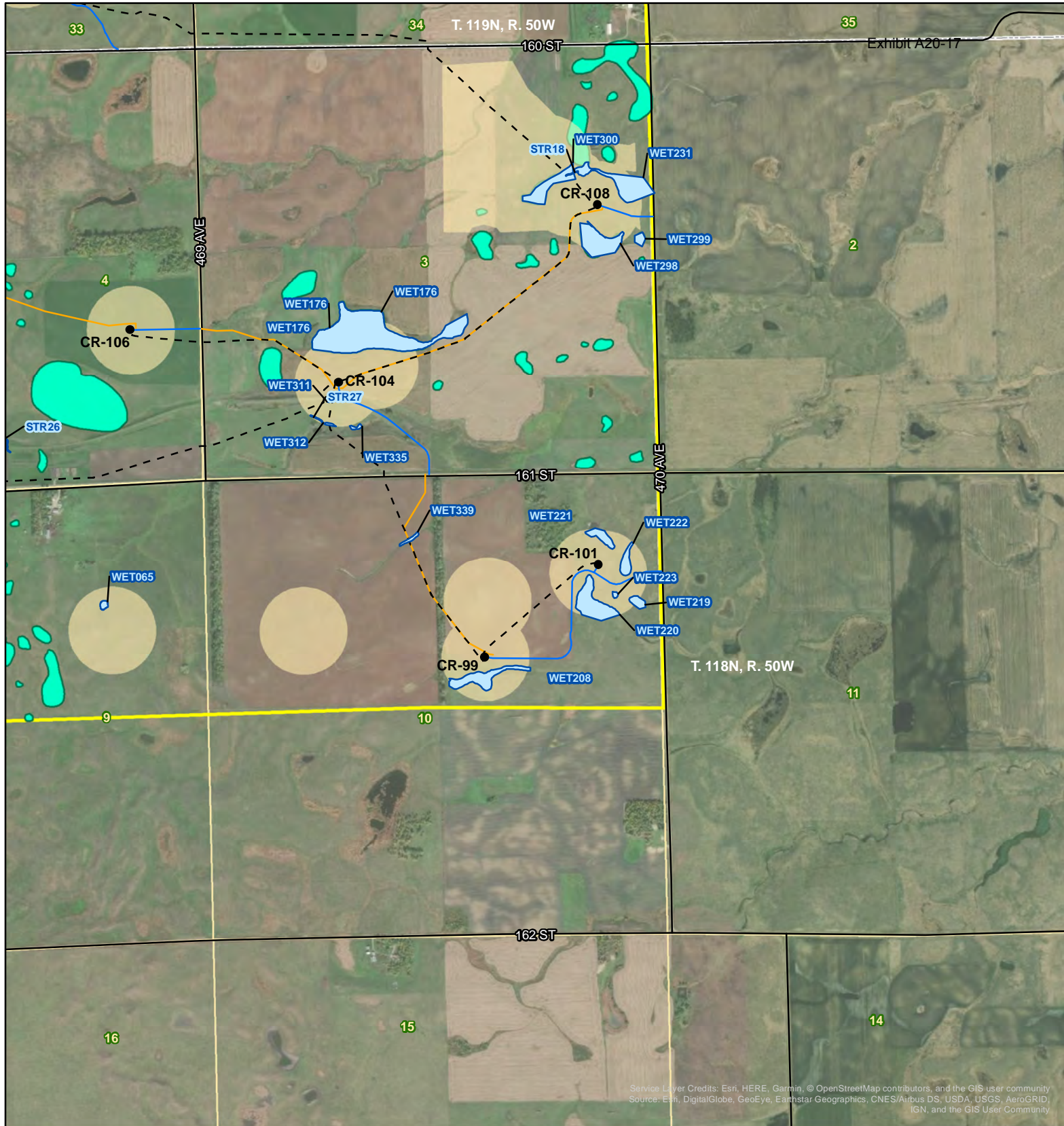
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Base Map: World Imagery  
 Quadrangle: Stockholm (1973)  
 Township/Range: T119N, R50W & T118N, R50W  
 Grant County, South Dakota

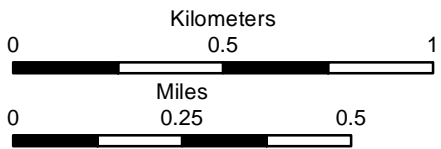
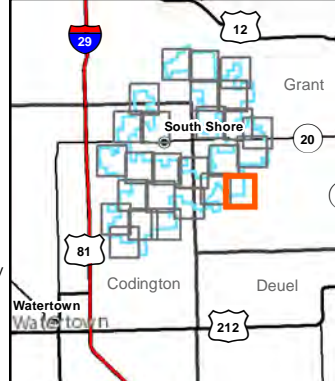
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 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

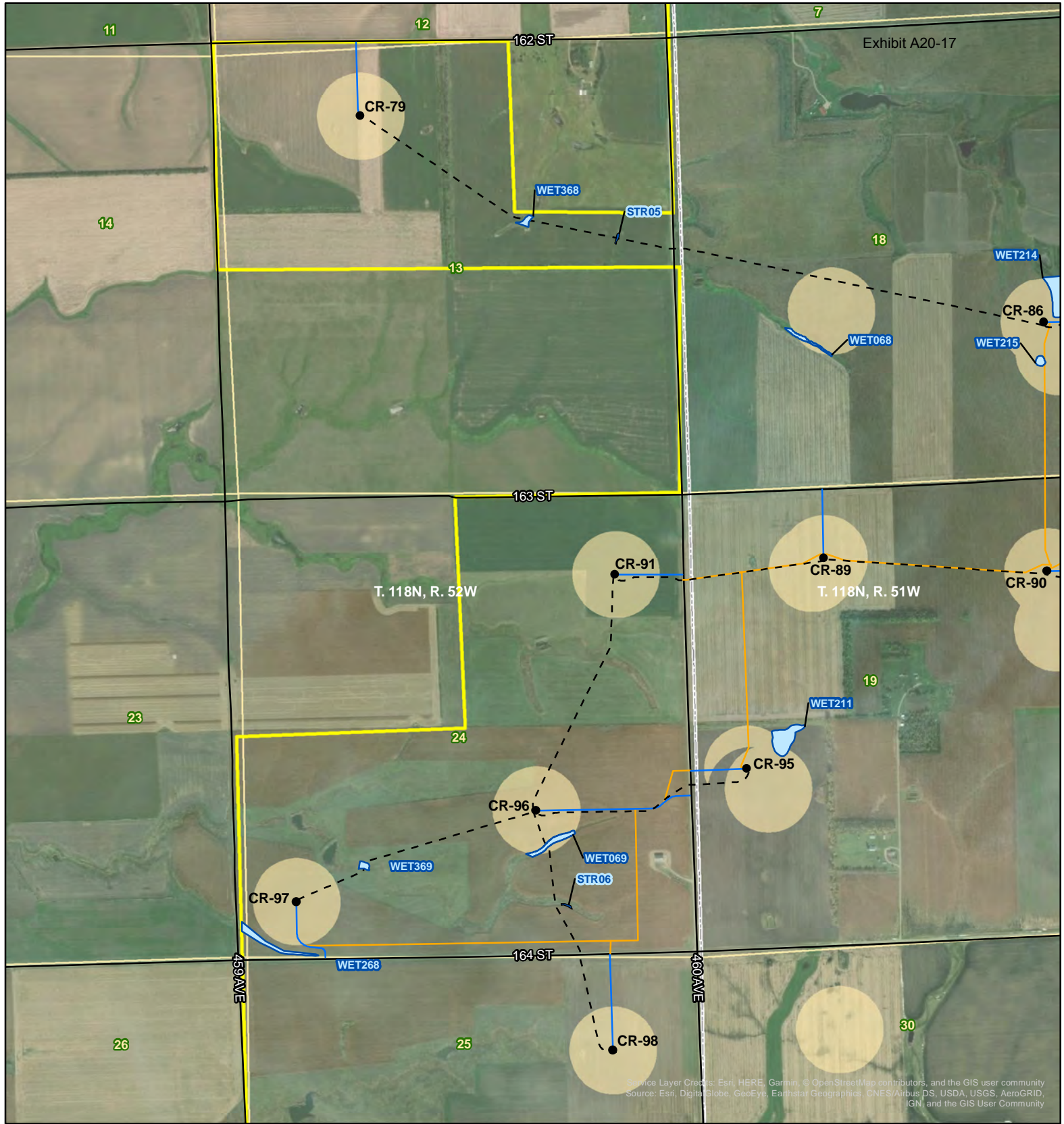
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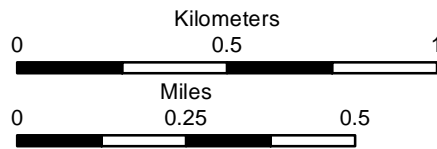
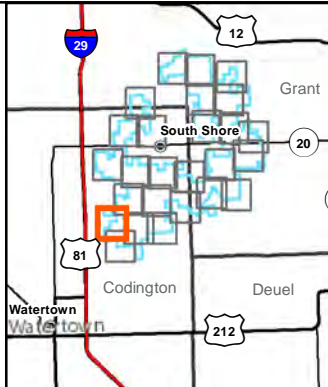
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 Quadrangle: Stockholm (1973)  
 Township/Range: T118N, R50W  
 Grant County, South Dakota





### Crowned Ridge I Wind Farm

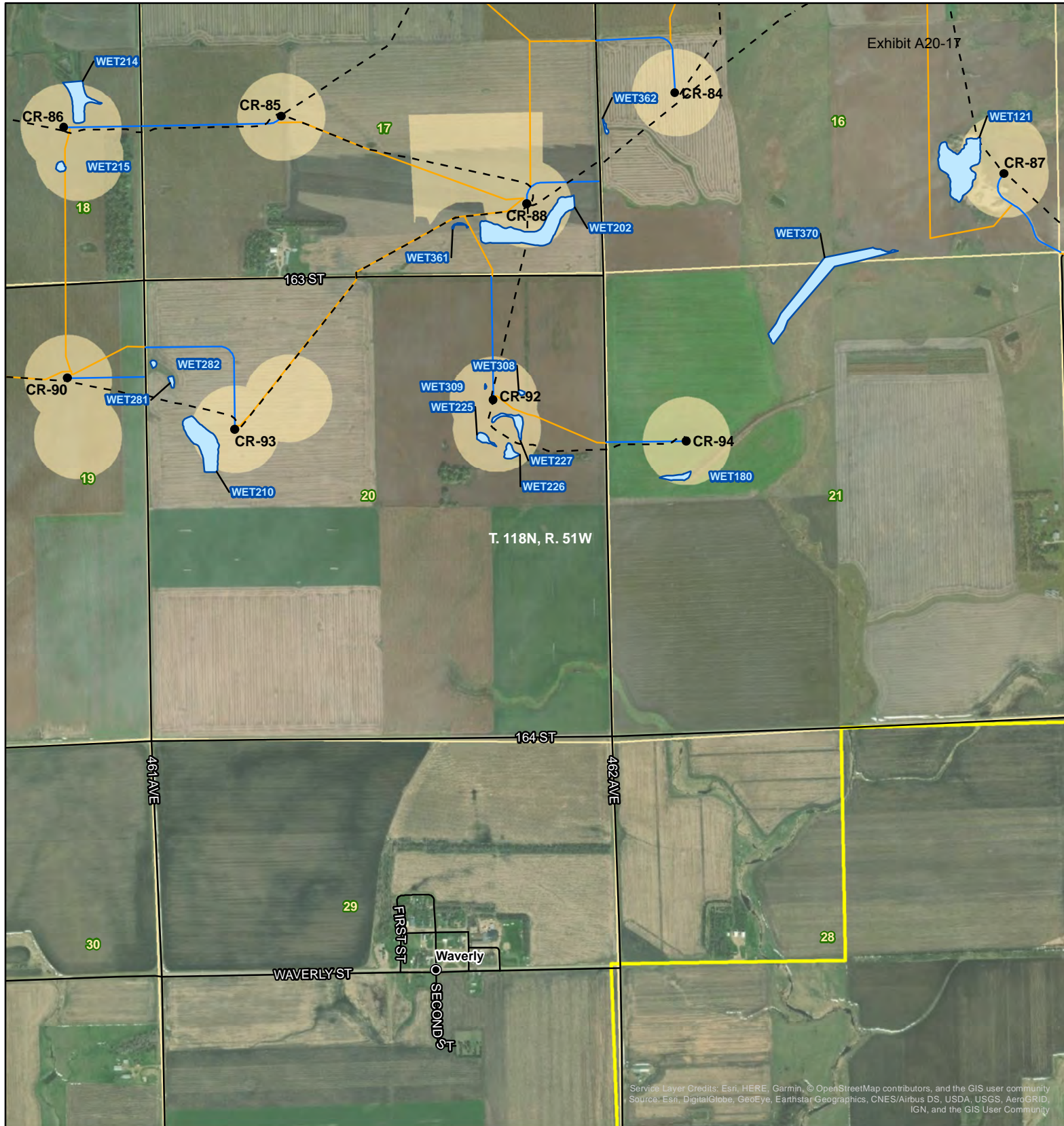
- Town
- Turbine
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- Proposed Turbine Access Road
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Base Map: World Imagery  
 Quadrangle: Still Lake SE (1970),  
 South Shore (1973)  
 Township/Range: T118N, R52W &  
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 Codington County, South Dakota

Projection: NAD 1983 UTM Zone 14N

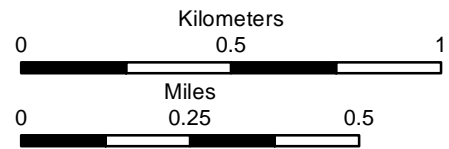
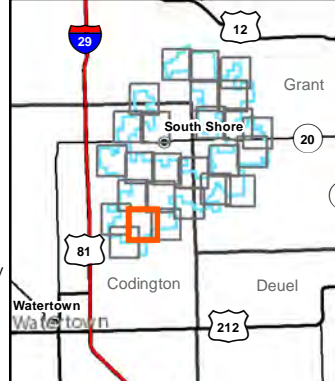




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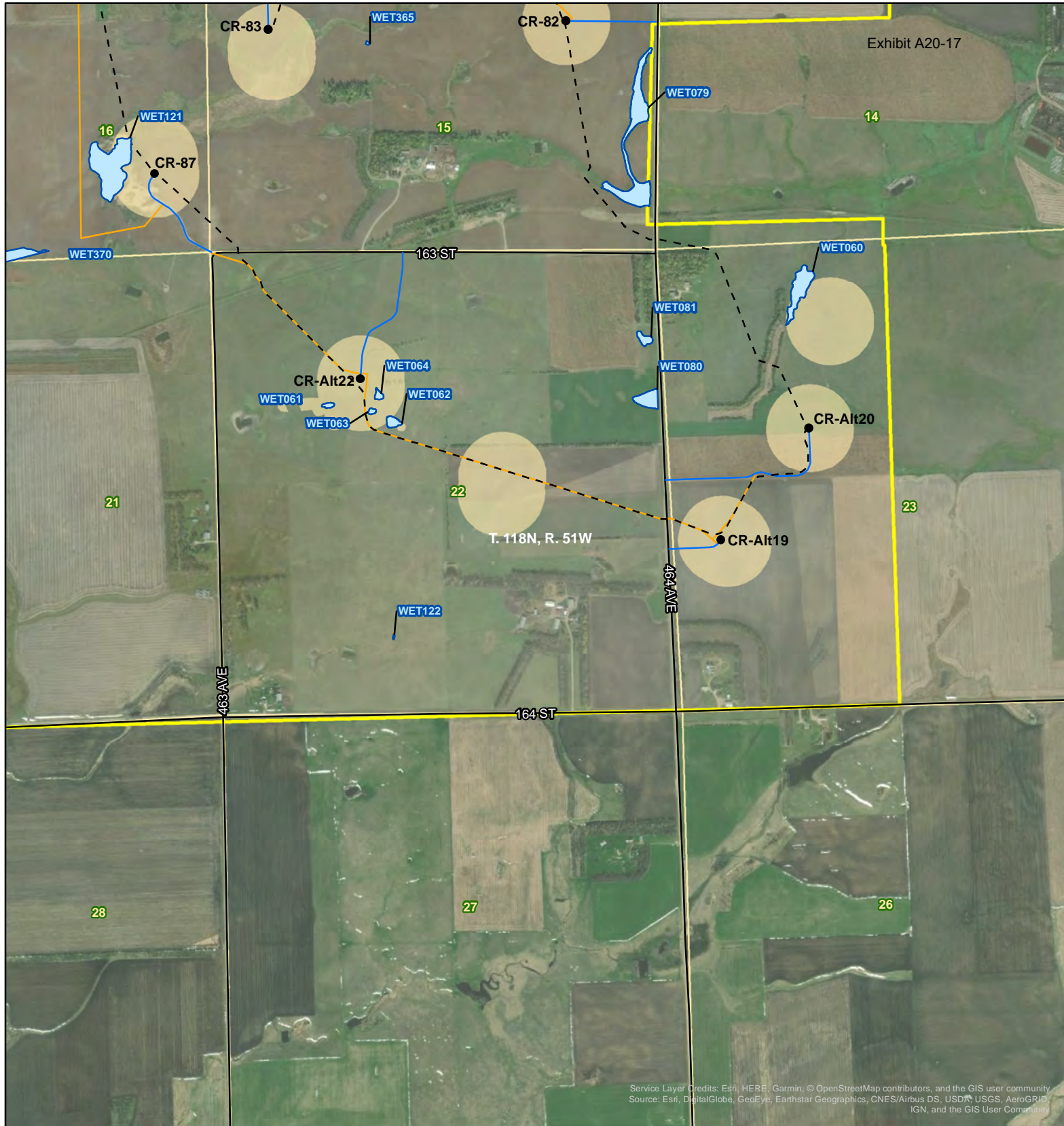
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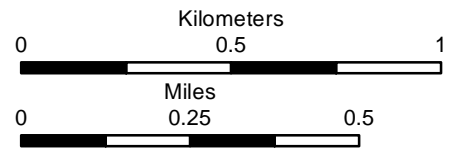
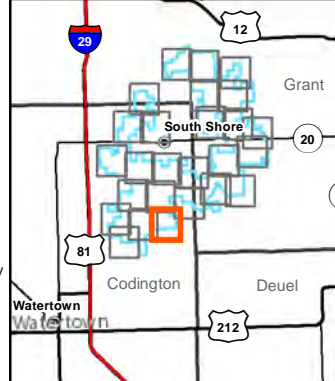




Service Layer Credits: Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community  
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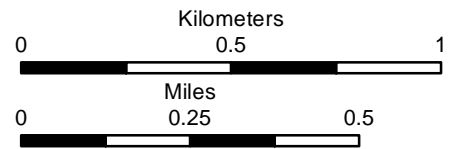
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 Quadrangle: South Shore (1973)  
 Township/Range: T118N, R51W  
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Base Map: World Imagery  
 Quadrangle: Still Lake SE (1970), South Shore (1973),  
 Watertown East (1969), Kranzburg (1970)  
 Township/Range: T118N, R52W &  
 T118N, R51W  
 Codington County, South Dakota



**APPENDIX B**  
**Representative Photographs**







**Figure 1. Seasonal wetland recorded on August 18, 2017. Photograph taken looking north.**



**Figure 2. Seasonal wetland recorded on August 22, 2017. Photograph taken looking south.**



**Figure 3. Seasonal wetland recorded on May 24, 2018. Photograph taken looking east.**



**Figure 4. Semipermanent wetland recorded on August 21, 2017. Photograph taken looking north.**



**Figure 5. Semipermanent wetland recorded on August 18, 2017. Photograph taken looking east.**



**Figure 6. Semipermanent wetland recorded on May 22, 2018. Photograph taken looking south.**



**Figure 7. Permanent wetland recorded on August 27, 2017. Photograph taken looking west.**



**Figure 8. Permanent wetland recorded on August 23, 2017. Photograph taken looking northwest.**



**Figure 9. Ephemeral stream recorded on November 11, 2017. Photograph taken looking south.**



**Figure 10. Perennial stream recorded on July 27, 2018. Photograph taken looking east.**