

## **Appendix M**

### **AM/FM Radio Report**

# Wind Power GeoPlanner™

## AM and FM Radio Report

### Tatanka Wind Project



Prepared on Behalf of  
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## 1. Introduction

Comsearch analyzed AM and FM radio broadcast stations whose service could potentially be affected by the proposed Tatanka Wind Project in Deuel County, South Dakota.

## 2. Summary of Results

### AM Radio Analysis

Comsearch did not find any database records<sup>1</sup> for AM stations within 30 kilometers of the Tatanka Wind Project.

ID	Call Sign	Status	Frequency (kHz)	Transmit ERP (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Required Separation Distance (km)	Distance to Nearest Turbine (km)
No AM Stations Found within 30 km of Project Area of Interest								

*Table 1: AM Radio Stations within 30 Kilometers of Project Area*

<sup>1</sup> Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data presented in this report is derived from the AM/FM station's FCC license and governed by Comsearch's data license notification and agreement located at [http://www.comsearch.com/files/data\\_license.pdf](http://www.comsearch.com/files/data_license.pdf).

## FM Radio Analysis

Comsearch determined that there were seven database records for FM stations within 30 kilometers of the Tatanka Wind Project, as shown in Table 2 and Figure 2. Only three of these stations are currently licensed and operating, two of which are translators that broadcast with limited range.

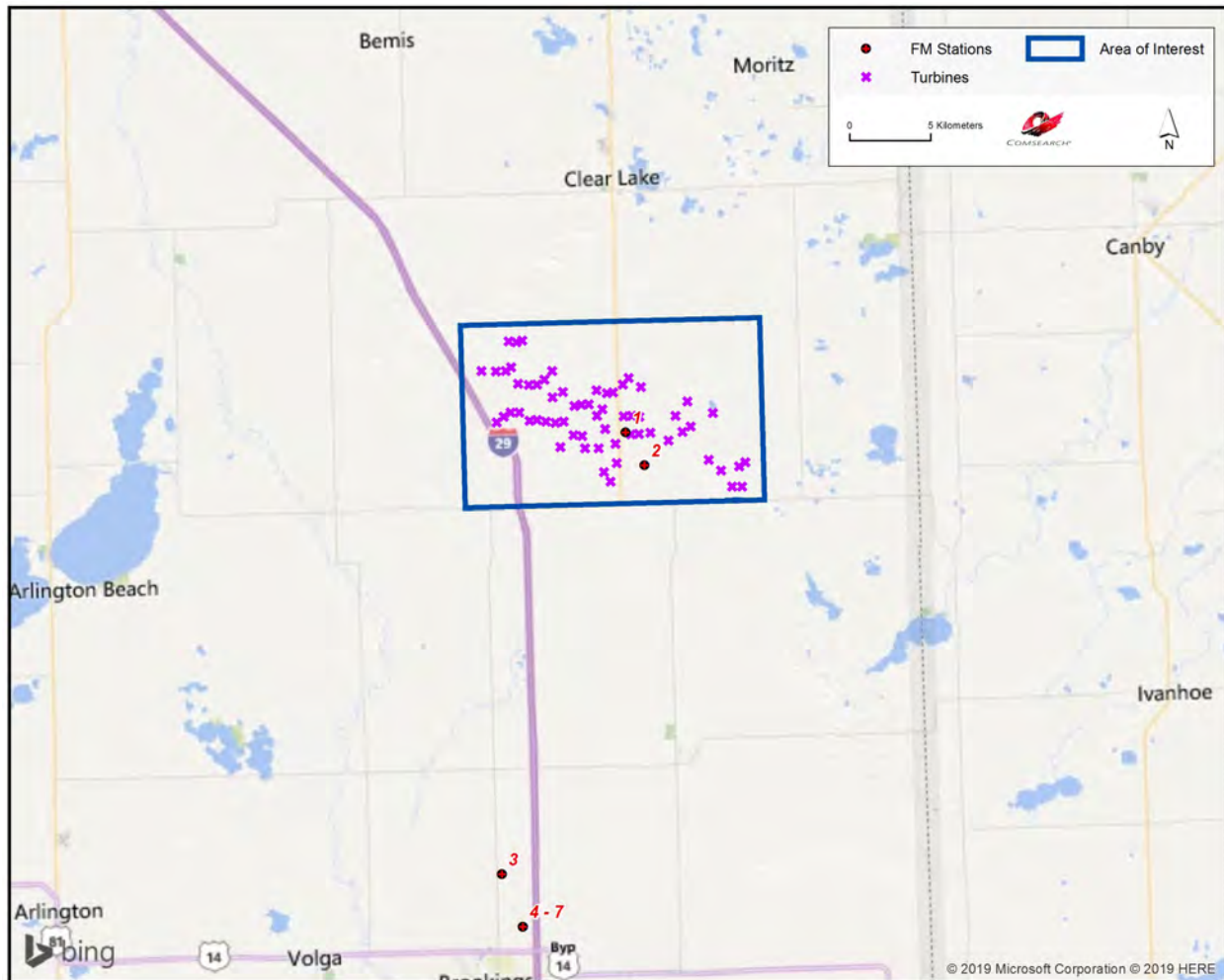
ID	Call Sign	Status <sup>2</sup>	Service <sup>3</sup>	Frequency (MHz)	Transmit ERP <sup>4</sup> (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Nearest Turbine (km)
1	KDBX	LIC	FM	107.1	9.8	44.612222	-96.678056	0.35
2	KDBX	CP	FM	107.1	9.9	44.593611	-96.663889	1.76
3	K205FL	LIC	FX	88.9	0.044	44.368889	-96.783611	25.13
4	K205FL	APP	FX	88.9	0.01	44.339472	-96.768556	27.98
5	K205FL	CP MOD	FX	89.1	0.25	44.339472	-96.768556	27.98
6	K209DX	LIC	FX	89.7	0.25	44.339444	-96.768611	27.98
7	K233BR	CP	FX	94.5	0.25	44.339444	-96.768611	27.98

*Table 2: FM Radio Stations within 30 Kilometers*

<sup>2</sup> LIC = Licensed and operational station; APP = Application for construction permit; CP=Construction permit granted; CP MOD = Modification of construction permit.

<sup>3</sup> FM = FM broadcast station; FX = FM translator station; FL = Low-power FM station; FS = FM auxiliary (backup) station; FB = FM booster station.

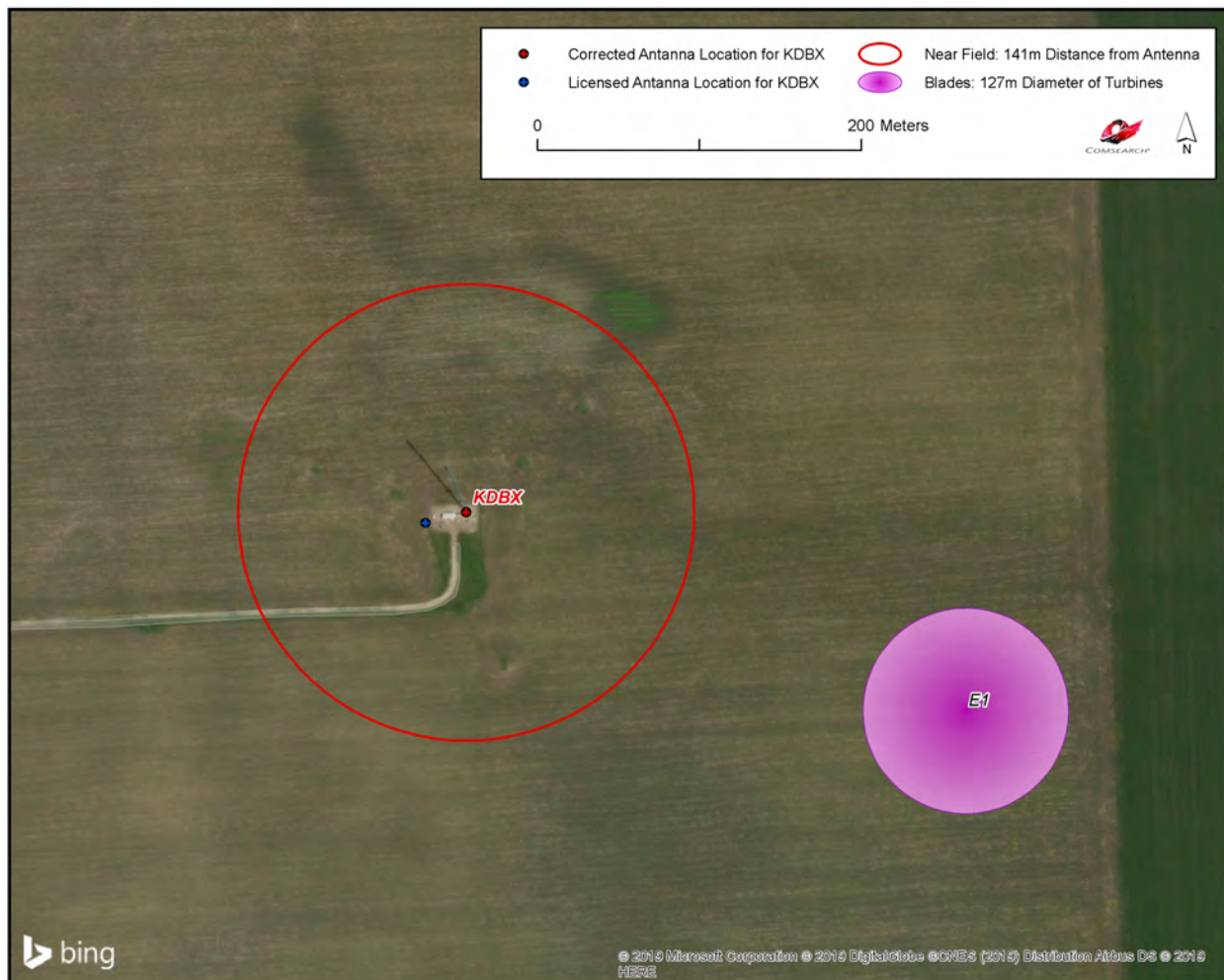
<sup>4</sup> ERP = Transmit Effective Radiated Power.



*Figure 1: FM Radio Stations within 30 Kilometers*



Due to its close proximity to the proposed wind turbines, Comsearch used aerial imagery to verify the location of FM station KDBX<sup>5</sup>. The station's actual location was identified at 44.612238° N, 96.678068° W (NAD 83), approximately 26 meters northeast of the location defined by the coordinates listed on the station's FCC license (see Figure 2). This places KDBX within 333 meters of the nearest turbine in the Tatanka Wind Project, E1.



*Figure 2: Location of FM Station KRXL with Respect to Location Listed on FCC License*

<sup>5</sup> A small amount of variance between a station's actual geographic coordinates and those reported on the station's license is fairly typical.

### 3. Impact Assessment

The exclusion distance for AM broadcast stations varies as a function of the antenna type and broadcast frequency. For directional antennas, the exclusion distance is calculated by taking the lesser of 10 wavelengths or 3 kilometers. For non-directional antennas, the exclusion distance is simply equal to 1 wavelength. Potential problems with AM broadcast coverage are only anticipated when AM broadcast stations are located within their respective exclusion distance limit from wind turbine towers. As there were no stations found within 3 kilometers of project, which is the maximum possible exclusion distance based on a directional AM antenna broadcasting at 1000 KHz or less, the project should not impact the coverage of local AM stations.

The coverage of FM stations is generally not susceptible to interference caused by large objects, such as wind turbines, especially when they are sited in the *far field* region of the radiating FM antenna, which mitigates the risk of distorting the antenna's radiation pattern. However, within the antenna's *near field* region, radiation pattern distortion can become a factor. Signal attenuation is also possible but can be difficult to quantify without precise field measurements.

The closest operational station to the Tatanka Wind Project, KDBX, is located approximately 332.5 meters from the nearest turbine (E1). After considering the rotational sweep of the turbine blades (63.5 meters), the total separation distance between the station antenna and the tip of turbine blades reduces to 269 meters. Based on the antenna configuration indicated on the license of FM station KDBX<sup>6</sup>, a conservative near field radius was calculated at 141 meters. Station KDBX and its proximity to the proposed turbines are depicted above in Figure 2. Because the blade sweep of turbine E1 clears the near field of station KDBX by approximately 128 meters, the station should not be impacted by the proposed turbines.

The next closest operational FM station to the project, K205FL, is more than 25.1 kilometers from the nearest turbine and well out of range of impact.

### 4. Recommendations

Since our analysis did not identify any impact to the AM or FM broadcast stations, no recommendations or mitigation techniques are required for this project.

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<sup>6</sup> KDBX employs ERI model LPX-5E with five bays.





## **5. Contact**

For questions or information regarding the AM and FM Radio Report, please contact:

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