

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE APPLICATION OF
CROWNED RIDGE II, LLC FOR A FACILITIES PERMIT TO
CONSTRUCTION 300.6 MEGAWATT WIND FACILITY**

Docket No. EL19-027

**SUPPLEMENT TESTIMONY AND EXHIBITS
OF JAY HALEY**

September 20, 2019

INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jay Haley. My business address is 3100 DeMers Ave., Grand Forks, ND, 58201.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am a Partner in EAPC Wind Energy and work as a Wind Engineer.

Q. WHAT ARE YOUR RESPONSIBILITIES?

A. My responsibility was to conduct the sound and shadow/flicker studies for Crowned Ridge Wind, LLC ("CRW").

Q. ARE YOU THE SAME JAY HALEY WHO SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING ON JULY 9, 2019?

A. Yes.

Q. HAS THIS TESTIMONY BEEN PREPARED BY YOU OR UNDER YOUR DIRECT SUPERVISION?

A. Yes.

PURPOSE OF TESTIMONY

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR SUPPLEMENTAL TESTIMONY.

A. The purpose of my supplemental testimony is to provide: (1) an updated sound and shadow flicker report based on the inclusion of five additional turbine locations and the

1 use of Low Noise Trailing Edge (“LNTE”) blades on all wind turbines; (2) the sound and
2 shadow/flicker results if 100 megawatts (“MW”) of the Crowned Ridge Wind II, LLC
3 (“CRW II”) Project is deferred and constructed at a later date; and (3) the impacts of
4 sound and shadow/flicker on Intervenor.

5
6 **SOUND AND SHADOW FLICKER**

7 **Q. ARE THERE ANY UPDATES TO THE SOUND AND SHADOW FLICKER**
8 **REPORTS YOU SUBMITTED WITH YOUR JULY 9, 2019 DIRECT**
9 **TESTIMONY?**

10
11 **A.** Yes. It is my understanding that CRW II will: (1) now use LNTE blades on all of the
12 turbines, instead only the 34 turbines indicated in the application; (2) add five of the eight
13 alternative locations that were identified as under consideration in the application at page
14 20; (3) move CRII-133 fifty feet to ensure compliance with sound on CRW I; and (4) add
15 back in CRII-126, due to the landowner signing an easement option for that turbine. The
16 results of the sound using these assumptions for the entire 300 MW array are set forth in
17 Exhibit JH-S-1, and the results for shadow flicker for the entire 300 MW array are set
18 forth in Exhibit JH-S-2.

19 With respect to shadow flicker for the entire 300 MW, there is one exceedance of
20 the 30-hour annual limit. The exceedance is for receptor CR2-C98-NP which would
21 experience 32 hours and 22 minutes per year. In this case, it is my understanding from
22 discussions with witnesses Wilhelm and Hart that turbine no. CRII-77 will be curtailed to
23 limit the flicker impacts to less than 30 hours per year.

1 In addition, I have run cumulative impacts of the 300 MW array on Crowned Ridge Wind
2 I, and that shows that if turbine no. CR11-Alt3, is constructed, would need to be curtailed
3 a total of 8.32 hours annually because of its impact on CR1-C10-P. Again, based on my
4 discussions with witness Wilhelm and Hart turbine no. CR11-Alt3 will be curtailed to
5 limit the flicker impacts to less than 30 hours per year at CR1-C10-P.

6
7
8 **Q. THE SUPPLEMENTAL TESTIMONY OF DARYL HART EXPLAINS THAT 100**
9 **MWS OF CRW II MAY BE DEFERRED. IF THE 100 MWS IS DEFERRED,**
10 **PLEASE EXPLAIN HOW THE DEFERRAL IMPACTS THE SOUND RESULTS.**

11 A. If 100 MWs are deferred as shown in witness Hart's testimony and exhibits, during the
12 period of time in which there are only 200 MWs operational the results of the sound
13 study show that all receptors will be in compliance with the noise limits for all three
14 counties. In addition, the non-participating occupied structures in Codington and Deuel
15 Counties are all at or under 45 dBA, and all participating occupied structures are under 50
16 dBA at a distance of 25 feet from the perimeter of the structure, which meets the
17 requirements of Grant County. The sound results for a 200 MW array are provided as
18 Exhibit JH-S-3.

19
20 **Q. IF THE 100 MWS IS DEFERRED, PLEASE EXPLAIN HOW THE DEFERRAL**
21 **IMPACTS THE SHADOW AND FLICKER RESULTS.**

22 A. If 100 MWs are deferred as shown in witness Hart's testimony and exhibits, during the
23 period of time in which there are only 200 MWs operational the results of the shadow
24 flicker study show the exceedance for receptor CR2-C98-NP discussed above remains,

and as I also mentioned it is my understanding that Crowned Ridge Wind will curtail turbine no. CR11-77 will be curtailed to limit the flicker impacts to less than 30 hours per year. The shadow flicker results for a 200 MW array are provided as Exhibit JH-S-4.

IMPACT OF INTERVENORS

Q. UNDER THE CONSTRUCTION OF ALL 300.6 MWS, WHAT ARE THE SOUND AND SHADOW FLICKER IMPACT ON INTERVENORS AT THEIR RESIDENCES?

A. The following table provides the sound and shadow flicker results on Intervenor if all 300.6 MWs are constructed and operating.

	Intervenor for Crowned Ridge Wind II					Dist. To
						Nearest
		UTM NAD83 Z14		Noise	Shadow	Turbine
Receptor #	Name	Easting	Northing	(dBA)	(hr/yr)	(feet)
CR1-C29-NP	CHRISTENSON AMBER KAYE	666571.9	4988867.1	41.1	6:54	2,457
CR1-G70-NP	ROBISH ALLEN E & SHIRLEY	677464.5	4991043.1	30.1	0:00	12,651
CR1-G600-NP	MOGEN PETER & KRISTI	674300.7	5005772.8	28.8	0:00	13,186
CR2-D220-NP	EHLEBRACHT GARRY & CRYAN JODY	670260.3	4967728.0	42.1	3:14	2,211
CR2-D221-NP	GREBER STEVEN W & GREBER MARY C	670351.1	4973543.3	42.8	13:33	2,041
CR2-D222-NP	RALL RICHARD & RALL AMY	672080.5	4973212.3	40.5	13:27	2,264
CR2-D223-NP	KRANZ BRIAN & KRANZ LARETTA TRUST	670227.3	4967454.6	41.2	3:04	2,749

Q. UNDER THE CONSTRUCTION OF 200 MWs, WITH THE DEFERRAL OF 100MWS, WHAT ARE THE SOUND AND SHADOW FLICKER IMPACT ON

**THE INTERVENORS AT THEIR RESIDENCES DURING THE PERIOD OF
TIME IN WHICH THERE ARE ONLY 200 MWS OPERATIONAL?**

A. The following table provides the sound and shadow flicker results on Intervenor's if only 200 MWs are operational. I used the 200 MW array in witness Hart's testimony to calculate these results.

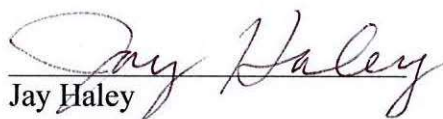
	Intervenor's for Crowned Ridge Wind II					Dist. To
						Nearest
		UTM NAD83 Z14		Noise	Shadow	Turbine
Receptor #	Name	Easting	Northing	(dBA)	(hr/yr)	(feet)
CR1-C29-NP	CHRISTENSON AMBER KAYE	666571.9	4988867.1	41.0	6:54	2,457
CR1-G70-NP	ROBISH ALLEN E & SHIRLEY	677464.5	4991043.1	29.9	0:00	12,651
CR1-G600-NP	MOGEN PETER & KRISTI	674300.7	5005772.8	28.8	0:00	13,186
CR2-D220-NP	EHLEBRACHT GARRY & CRYAN JODY	670260.3	4967728.0	36.5	0:00	4,042
CR2-D221-NP	GREBER STEVEN W & GREBER MARY C	670351.1	4973543.3	42.5	11:51	2,041
CR2-D222-NP	RALL RICHARD & RALL AMY	672080.5	4973212.3	36.7	4:38	3,779
CR2-D223-NP	KRANZ BRIAN & KRANZ LARETTA TRUST	670227.3	4967454.6	35.3	0:00	4,934

Q. DOES THIS CONCLUDE YOUR SUPPLEMENTAL TESTIMONY?

A. Yes, it does.

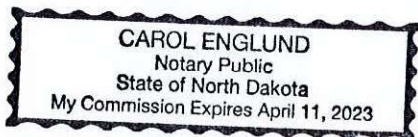
STATE OF NORTH DAKOTA)
) ss
COUNTY OF GRAND FORKS)

I, Jay Haley, being duly sworn on oath, depose and state that I am the witness identified in the foregoing prepared testimony and I am familiar with its contents, and that the facts set forth are true to the best of my knowledge, information and belief.


Jay Haley

Subscribed and sworn to before me this 19th day of
September, 2019.

SEAL




Notary Public

My Commission Expires April 11, 2023



Final Report
Crowned Ridge II Wind Farm
Sound Study
Codington, Deuel and Grant Counties, SD

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2019

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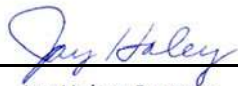

Jay Haley, Partner

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Report Update

EAPC bears no responsibility to update this report for any changes occurring subsequent to the final issuance of this report.

Revision History

Revision No.	Revision Purpose	Date	Revised By
0	Original	7/4/2019	J. Haley
1	Update land status Several corrections	7/9/2019	J. Haley
2	Updated array	9/18/2019	J. Haley

Executive Summary

The scope of this report includes all proposed turbines included in the Crowned Ridge II project that will be permitted through the South Dakota Public Utilities Commission. Locations of area occupied structures and a wind turbine layout (138 turbines) using a mixture of wind turbines manufactured by General Electric (GE) were provided to EAPC by Crowned Ridge Wind II, LLC. Locations of the adjacent Crowned Ridge wind farm (142 turbines) were supplied to EAPC by Crowned Ridge Wind, LLC. The adjacent Deuel Harvest wind farm consisting of a mixture of GE wind turbines (124 turbines) was also included even though the impacts are minimal due to the long distances from Crowned Ridge Wind II receptors. A computer model was built combining digital elevation data with the information supplied by Crowned Ridge Wind II, LLC to generate sound models for the site. The resulting models were then used to perform sound calculations for the 404 turbines. Cumulative sound pressure levels were calculated, including the effects from all three wind farms, and site-wide realistic sound maps were produced.

The Crowned Ridge II wind farm project was modeled for all counties within the turbine layout and is described in this report as one project. However, for purposes of organization and because of the differences in compliance criteria, the modeling and results of the study are presented individually for each county. The noise ordinances of Codington, Deuel and Grant Counties are not the same. For Codington County the noise limit is 50 dBA at the property boundary of occupied non-participating landowners. For Deuel County the noise limit is 45 dBA at the perimeter of non-participating occupied structures. For Grant County the noise limit is 45 dBA at a distance of 25 feet from the perimeter of non-participating occupied structures and 50 dBA at participating occupied structures.

The scope of this study also includes sound impacts that are not regulated by county ordinances including participating and non-participating occupied structures and participating parcel boundaries in Codington County, and participating occupied structures in Deuel County. The turbine array was arranged so that the sound pressure level 25 ft from the perimeter of all non-participating occupied structures in all three counties would be 45 dBA or less and participating occupied structures would be 50 dBA or less. This is consistent with Grant County's noise ordinance. For all Crowned Ridge and Crowned Ridge II turbines, Low Noise Trailing Edge (LNTE) blades were used.

The model is based on a number of conservative assumptions. It assumes that the wind turbines are always emitting the maximum sound pressure level with an additional 2 dBA added to the wind turbine noise emission profiles. It is also assumed that each wind turbine is always downwind of each receptor and the atmospheric conditions are most favorable for sound transmission. Also, the sound pressure level was calculated at a distance of 50 feet from the perimeter of structures instead of 25 feet. This is also a conservative assumption because the sound pressure levels will be higher at 50 feet than at 25 feet.

Crowned Ridge II Codington County Turbines

Codington County's current Ordinance #68, Section 5.22.03.12.a) notes that the applicable sound limit is 50 dBA at an occupied non-participating property line, which is what has been evaluated in this report for Codington County. Codington County does not have a specific ordinance for sound pressure levels at a participating property boundary; although not required by the county, the sound pressure levels at participating property boundaries and occupied structures within 2 kilometers of a wind turbine were also evaluated. There is also no ordinance for sound pressure levels at any participating or non-participating occupied structures.

Within the Crowned Ridge II project, for Codington County, an evaluation of the sound impacts at 115 occupied land parcel boundaries (28 participating and 87 non-participating) within Codington County was performed. The 115 land parcel boundaries were modeled using an area-type sound sensor so that the highest sound pressure level at the property line could be calculated.

In Codington County, the maximum sound pressure level at a non-participating property boundary is 49.7 dBA, therefore, the project, as modeled, is in compliance with Codington County's allowable sound pressure levels as described in Section 5.03, paragraph 12.a) of the Codington County Zoning Ordinance #68, which is 50 dBA. The maximum sound pressure level at a participating property boundary is 52.6 dBA.

There are 152 occupied structures (39 participating and 113 non-participating) in Codington County within 2 kilometers of a wind turbine, which were modeled using a point-type sound sensor so that the highest sound pressure level at the perimeter of the structures could be calculated. In Codington County, the maximum sound pressure level at the perimeter of a non-participating occupied structure was 44.9 dBA. The maximum sound pressure level at a participating occupied structure was 45.5 dBA.

Crowned Ridge II Deuel County Turbines

Deuel County's current Ordinance B2004-01-23B, Section 1215.03 paragraph 13 a.) sets the limit at 45 dBA at the perimeter of non-participating existing residences.

There are 104 occupied structures (21 participating and 83 non-participating) in Deuel County within 2 kilometers of a wind turbine, which were modeled using a point-type sound sensor so that the highest sound pressure level at the perimeter of the structures could be calculated. In Deuel County, the maximum sound pressure level at the perimeter of a non-participating occupied structure was 44.4 dBA, therefore, the project as modeled, is in compliance with Deuel County's allowable sound pressure levels as described in the current Deuel County Ordinance, which is 45 dBA. The maximum sound pressure level at a participating occupied structure was 45.8 dBA.

Crowned Ridge II Grant County Turbines

Grant County's current Ordinance 2016-01C, Section 1211.04, paragraph 14 of the current Grant County Zoning Ordinance sets the limit at 45 dBA at a distance of 25 feet from the perimeter of non-participating occupied structures and 50 dBA for participating occupied structures.

For Grant County, an evaluation of the noise impacts at 4 (1 participating and 3 non-participating) occupied structures within 2 kilometers within Grant County was performed. The 4 occupied structures were modeled using a point-type sound sensor so that the highest sound pressure level 25 feet from the perimeter of the structures could be calculated. In Grant County, the maximum sound pressure level 25 feet from the perimeter of a non-participating occupied structure is 38.8 dBA, and 39.8 dBA for a participating occupied structure.

Based upon the results presented above, the project as modeled, is in compliance with Grant County's allowable sound pressure levels as described in the current Grant County Ordinance, which is 45 dBA at a distance of 25 feet from the perimeter of non-participating occupied structures and 50 dBA at a distance of 25 feet from the perimeter of participating occupied structures.

1. INTRODUCTION

EAPC was hired to conduct sound studies for the Crowned Ridge II wind farm project located in Codington, Deuel and Grant Counties in northeastern South Dakota. The layout consists of 13 GE 2.1 MW wind turbines with a hub height of 80 meters and 125 GE 2.3 MW wind turbines with a hub height of 90 meters (including 6 alternate turbine locations) for a total of 138 wind turbines. The adjacent Crowned Ridge project consisting of 125 GE 2.3 MW wind turbines with a hub height of 90 meters (including 10 alternate turbine locations) and 13 GE 2.3 MW wind turbines with a hub height of 80 meters for a total of 142 wind turbines was included in the analysis. The adjacent Deuel Harvest wind farm (124 wind turbines) were also included. The array consists of 111 GE 2.82 MW wind turbines with a hub height of 89 meters and 13 GE 2.3 MW wind turbines with an 80 meter hub height. The locations of the proposed Crowned Ridge and Crowned Ridge II wind turbines were supplied by Crowned Ridge Wind II, LLC. The Deuel Harvest wind turbine models and locations were gathered from information from the noise report in the Deuel Harvest permit application submitted to the South Dakota PUC

From the database of existing residences and coordinates supplied by Crowned Ridge Wind II, LLC, 152 occupied structures (39 participating and 113 non-participating) in Codington County and 104 occupied structures (21 participating and 83 non-participating) in Deuel County and 4 occupied structures (1 participating and 3 non-participating) in Grant County, for a total of 260 occupied structures (61 participating and 199 non-participating) were found to be within 2 kilometers of a wind turbine and were included in the sound models. Additionally, 115 occupied land parcel boundaries (28 participating and 87 non-participating) were found to be within 2 kilometers of a wind turbine in Codington County, in line with the Codington County ordinance (see below). At a distance of 2 kilometers from a turbine base, the sound pressure level will be less than 35 dBA (considerably less than ordinance limits) so there is no need to include land parcels or structures beyond that distance. Land parcels were not modeled for Deuel or Grant County as they are not a part of the respective county ordinances.

The area of interest for this study is located in Codington, Deuel and Grant Counties near the town of Watertown in northeastern South Dakota. The surrounding terrain has a change in elevation across the project site ranging from 569 to 616 meters (1,867 to 2,021 feet) at the wind turbine base. The region's vegetation is comprised primarily of prairie grass and agricultural land. The project overview map can be found in Appendix A.

2. BACKGROUND AND COUNTY REGULATIONS

To determine if the layout provided would be compliant for the Crowned Ridge II project and in line with each county's regulations, detailed sound scenarios were analyzed using a computer model. The scenarios assumed that the wind turbines were operating at a wind speed that resulted in the loudest sound being emitted, which is conservative because the turbines would not actually be operating at maximum sound output levels at all times.

Codington County's current Ordinance #68, Section 5.22.03, paragraph 12.a) prescribes sound limits for wind turbine projects as follows:

"12.a) Noise level generated by wind energy system shall not exceed 50 dBA, average A-weighted sound pressure including constructive interference level effects at the property line of existing off-site non participating residences, businesses, and buildings owned and/or maintained by a governmental entity."

Therefore, Codington County's only applicable sound limit is 50 dBA at an occupied non-participating property line, which is what has been evaluated in this report for Codington County. Although not required by the county, the sound pressure levels at participating property boundaries and participating and non-participating occupied structures (i.e., residences, business, and buildings) within 2 kilometers of a wind turbine were also evaluated.

Deuel County's current ordinance B2004-01-23B, Section 1215.03, paragraph 13 a.) prescribes sound limits for wind turbine projects as follows:

"13. a) Noise level shall not exceed 45 dBA average A-weighted sound pressure at the perimeter of existing residences, for non-participating residences."

Therefore, Deuel County's only applicable sound limit is 45 dBA at the perimeter of existing non-participating residences. For purposes of this report, these residences will be referred to as occupied structures.

Grant County's current Ordinance 2016-01C, Section 1211.04, paragraph 14 prescribes sound limits for wind turbine projects as follows:

"14.) Noise. Noise level shall not exceed 45 dBA, average A-weighted Sound pressure including constructive interference effects measured twenty-five (25) feet from the perimeter of existing off-site non-participating residences, businesses, buildings owned and/or maintained by a governmental entity."

"Noise level shall not exceed 50 dBA, average A-weighted Sound pressure including constructive interference effects measured twenty-five (25) feet from the perimeter of participating residences, businesses, and buildings owned and/or maintained by a governmental entity."

Therefore, Grant County's current applicable sound limit is 45 dBA for all non-participating, and 50 dBA for all participating, existing off-site residences, businesses, and buildings owned and/or maintained by a governmental entity. For purposes of this report, these residences, businesses, and buildings will hereafter be referred to as occupied structures.

3. *STUDY METHODOLOGY*

This sound analysis was performed utilizing windPRO¹, which has the ability to calculate detailed sound maps across an entire area of interest or at site-specific locations using sound sensitive receptors.

The analysis used the ISO 9613-2 “Attenuation of sound during propagation outdoors, Part 2” sound calculation model with “General” ground attenuation and an attenuation factor of 0.5, which represents typical mixed vegetation (i.e., prairie grass, weeds, brush) and crop cover. Realistic sound pressure levels were calculated at 1.5 m AGL at the participating and non-participating existing occupied structures and occupied parcel boundaries (Coudington County only). The term “realistic” in this case, means that some amount of ground attenuation is accounted for.

The inputs and assumptions for the windPRO sound calculation include the following:

- Turbine Coordinates
- Turbine Specifications
- Turbine Sound Emission Data
- Sound Receptor Coordinates
- Participation Status
- USGS Digital Elevation Model (DEM) (height contour data)
- Uncertainty Factor
- Meteorological Conditions
- Ground Attenuation

Turbine Coordinates: The location of a wind turbine in relation to a sound receptor is one of the most important factors in determining sound impacts. Sound pressure levels drop as they travel farther from the source of emission. The attenuation comes from atmospheric absorption as well as from absorption by the ground cover between the turbine and the receptor. The sound pressure waves can also be reflected by hard or smooth surfaces such as ice or water. Sound is also absorbed by trees and reflected by structures such as buildings or walls, although these effects (trees and buildings) are ignored in the model.

Turbine Specifications: The Crowned Ridge and Crowned Ridge II GE Wind turbine specifications from the manufacturer were supplied to EAPC by Crowned Ridge Wind II, LLC. Wind turbine specifications included in the model were the power curves, blade types (standard and low noise), hub heights and operational rotational speed of the rotor. For some turbines, Low Noise Trailing Edge (LNTE) blades were used to reduce the sound pressure levels in order to achieve compliance with county regulations by increasing the flexibility in turbine locations to meet setback requirements. The turbine specifications for

¹ windPRO is the world’s leading software tool for designing wind farms, including sound analysis.

the Deuel Harvest wind turbines were obtained from the project's noise report that was submitted with their permit application to the South Dakota PUC. All Deuel Harvest wind turbines have LNTE blades.

Turbine Sound Emission Data: Sound emission data including 1/3rd octave data supplied by the manufacture is used assuming the loudest sound pressure levels are being emitted at the hub height of the turbine. A safety margin of 2 dBA was added to the wind turbine noise emission profiles for the analysis in order to produce more conservative results, meaning that the model will predict higher sound pressure levels.

For the GE 2.1-116, the sound emission specifications for the 2.3-116 were used, which is a conservative assumption since the sound emission levels for the 2.1-116 will likely be lower than for the larger 2.3-116. According to the GE sound documentation provided to EAPC by Crowned Ridge Wind II, LLC, the loudest normal operating sound pressure level emitted from the GE 2.3-116 is 107.5 at 10 m/s and higher at hub height. Since the value is reported at hub height, it is the same value for both 80 meter and 90 meter hub-height turbines.

For the Deuel Harvest GE 2.82-127 with LNTE blades, the loudest normal operating sound pressure level emitted is 108.5 dBA at hub height. For the GE 2.3-116 with LNTE blades, the loudest normal operating sound pressure level is 106 dBA at hub height.

The specifications for the wind turbine models used in this study are included in Table 1 below. The table of Crowned Ridge II wind turbine coordinates is included in Appendix B.

Table 1: Crowned Ridge II energy project wind turbine specifications.

Crowned Ridge, Crowned Ridge II and Deuel Harvest energy project wind turbine specifications							
Manufacturer	Model	Hub Height (m)	Rotor Dia. (m)	Cut-In Wind Speed (m/s)	Cut-Out Wind Speed (m/s)	Max. Sound Press. Level (dBA)	Max. Sound Press. Level LNTE (dBA)
General Electric	GE 2.3	80	116	3	22	107.5	106
General Electric	GE 2.3	90	116	3	22	107.5	106
General Electric	GE 2.1	80	116	3	22	107.5	106
General Electric	GE 2.82	89	127	3	30	-	108.5
General Electric	GE 2.3	80	116	3	22	107.5	106

Sound Receptor Coordinates: As with the wind turbine coordinates, the elevation, and distance of a sound receptor in relation to the wind turbines are the main factors in determining the sound impacts. EAPC was provided with coordinates for all existing residences, and occupied structures found to be located within 2 kilometer of the 133 proposed wind turbine locations by Crowned Ridge Wind II, LLC.

In Grant County, where the point of compliance is 25 feet from the perimeter of the structure, a ring of receptors was modeled 50 feet from the perimeter in order to capture sound levels that would conservatively represent the sound pressure levels 25 feet away from the perimeter.

Receptor Participation Status: A database indicating the participation status of the land parcels and the structures within the wind farm boundary were supplied to EAPC by Crowned Ridge Wind II, LLC.

USGS Digital Elevation Model (DEM) (height contour data): For this study, 3 meter resolution USGS National Elevation Database (NED) DEM's were used to construct 10-foot interval height contour lines for the windPRO sound model. The height contour information is important to the sound calculation since it allows the model to place the wind turbines and the sound receptors at the correct elevations.

Uncertainty Factor: No uncertainty factor was provided by the wind turbine manufacturer. In this situation, it is common practice based on experience and studies to add 2 dBA to the sound pressure levels of each wind turbine. For this analysis, the 2 dBA were added to all wind turbine noise emission profiles.

Meteorological Conditions: A temperature of 10° C (50° F) and a relative humidity of 70% were assumed for the analysis. These conditions represent an atmospheric "worst case" scenario where sound waves will travel farther with less atmospheric absorption. This will lead to more conservative (higher predicted sound levels) results.

All wind turbines are assumed to be operating simultaneously at maximum sound output levels. All turbines are assumed to be downwind of all receptors, which is another conservative (higher predicted sound pressure levels) assumption.

Ground Attenuation: A ground attenuation factor of 0.5 was assumed for this analysis. It represents "mixed ground" consisting of half hard and half soft (porous) ground cover, which is slightly conservative and will result in higher predicted sound levels since the ground cover includes native prairie and agricultural crop land.

No other sources of sound attenuation such as trees, air turbulence or wind shadow effects were assumed in the analysis.

Wind Turbines from Adjacent Projects: The Crowned Ridge II project is adjacent to the Crowned Ridge and Deuel Harvest projects. Because sound impacts are cumulative, there will be impacts from the Crowned Ridge and Deuel Harvest projects that will be additive to the impacts from the Crowned Ridge II project. The Crowned Ridge and Deuel Harvest wind turbine arrays were included in the model to capture the full sound impacts on the receptors, which are included in the current Crowned Ridge II tabular results. The Dakota

Range wind farm, which is adjacent to the Crowned Ridge wind farm, is too far away to have any significant cumulative impacts on the Crowned Ridge II wind farm and therefore is not included in the study. Crowned Ridge Wind II, LLC is not aware of any other operating energy conversion facilities, existing or under construction, or other major industrial facilities under regulation within or adjacent to the Project Area.

4. RESULTS OF ANALYSIS

Although modeled as one project, the noise ordinances of the three counties are not the same. For Codington County, the noise limit is 50 dBA at the property boundary of occupied non-participating landowners. Codington County does not have a specific ordinance for sound pressure levels at a participating property boundary. There is also no ordinance for sound pressure levels at any participating or non-participating occupied structures. Although not required by the county, the sound pressure levels at participating property boundaries and occupied structures within 2 kilometers of a wind turbine were also evaluated.

For Deuel County, the noise limit is 45 dBA at the perimeter of non-participating occupied structures.

For Grant County, the noise limit is 45 dBA at a distance of 25 feet from the perimeter of non-participating occupied structures and 50 dBA at participating occupied structures. Because of the differences in compliance criteria, the results of the study are presented individually for each county.

Crowned Ridge II Codington County Turbines

For the Crowned Ridge II Codington County turbines, the sound study indicates that the highest sound pressure level at a non-participating property boundary is 49.7 dBA. Therefore, the project would be in compliance with Codington County's allowable sound pressure levels as described in Section 5.22.03 paragraph 12.a) of Ordinance #68. Table 2 shows the distribution of sound pressure levels for the project. The maximum sound pressure level at a participating property boundary is 51.4 dBA; however, there is no county ordinance for participating property boundaries. This information is provided for transparency.

Table 2: Codington County property boundary cumulative realistic sound distribution

Realistic Sound (dBA)	Non-Participating Property Boundary	Participating Property Boundary
0 to 25	0	0
25 to 30	0	0
30 to 35	15	1
35 to 40	20	4
40 to 45	30	5
45 to 50	22	8
50+	0	10

Crowned Ridge II Deuel County Turbines

For Deuel County, the sound study indicates that the highest sound pressure level at the perimeter of a non-participating occupied structure is 44.4 dBA. Therefore, the project would be in compliance with Deuel County's allowable sound pressure levels as describes in Section 1215.03, paragraph 13 a.) of the current Deuel County Ordinance B2004-01-23B. Table 3 shows the distribution of sound pressure levels for the project. The maximum sound pressure level at the perimeter of a participating occupied structure is 45.8 dBA; however, there is no county ordinance for participating occupied structures. This information is provided for transparency.

Table 3: Deuel County occupied structure cumulative realistic sound distribution

Realistic Sound (dBA)	Non-Participating Occupied Structures	Participating Occupied Structures
0 to 25	0	0
25 to 30	0	0
30 to 35	7	0
35 to 40	29	6
40 to 45	47	12
45 to 50	0	3
+50	0	0

Crowned Ridge II Grant County Turbines

For Grant County, the sound study indicates that the highest sound pressure level at a distance of 25 feet from the perimeter of a non-participating occupied structure is

38.8 dBA. The highest sound pressure level at a distance of 25 feet from the perimeter of a participating occupied structure is 39.8 dBA. Therefore the project would be in compliance with Grant County's allowable sound pressure levels as described in Section 1211.04, paragraph 14 of the current Grant County Zoning Ordinance 2016-01C. Table 4 shows the distribution of sound pressure levels for the project.

Table 4: Grant County occupied structure cumulative realistic sound distribution

Realistic Sound (dBA)	Non-Participating Occupied Structures	Participating Occupied Structures
0 to 25	0	0
25 to 30	1	0
30 to 35	1	0
35 to 40	1	1
40 to 45	0	0
45+	0	0

Crowned Ridge II Project Summary

The summary results for the Crowned Ridge II project are shown in Table 5 below. The full table of results from the sound study can be found in Appendix C. Table C-1 lists the results sorted by receptor number and Table C-2 lists the results sorted by sound impacts (dBA) from highest to lowest. Table C-3 lists the results of the scenario where Grant County's noise ordinance was modeled for all three counties with results at a distance of 25 ft from the perimeter of the structures. The tabular results include the cumulative impacts from Crowned Ridge, Crowned Ridge II and Deuel Harvest wind farms. The maps showing the sound impact iso-lines for the Crowned Ridge II wind farm are in Appendix D. The maps include adjacent Crowned Ridge wind turbines that are within 2 km of an occupied structure within the Crowned Ridge II footprint, as well as Deuel Harvest wind turbines.

Table 5: Summary of cumulative sound pressure level predictions.

County	Feature	Noise Limit (dBA)	Maximum Predicted (dBA)
Codington	Participating Occupied Structures	N/A	45.5
	Non-Participating Occupied Structures	N/A	44.9
	Participating Occupied Parcel Boundary Lines	N/A	51.4
	Non-participating Occupied Parcel Boundary Lines	50	49.7
Deuel	Participating Occupied Structures	N/A	45.8
	Non-Participating Occupied Structures	45	44.4
Grant	Participating Occupied Structures	50	39.8
	Non-Participating Occupied Structures	45	38.8

5. CONCLUSIONS

The conservative results of this sound study indicate that the Crowned Ridge II project is in compliance with Codington, Deuel and Grant County ordinances.

For Codington County, of the 115 property boundaries modeled, the highest sound pressure level at a non-participating property boundary is 49.7 dBA and none measured more than 50 dBA. Therefore the Crowned Ridge II wind farm would be in compliance with Codington County Ordinance #68.

For Deuel County, the sound study indicates that the highest sound pressure level at the perimeter of a non-participating occupied structure is 44.4 dBA. Therefore the project would be in compliance with the current Deuel County Ordinance B2004-01-23B.

For Grant County, the sound study indicates that the highest sound pressure level 25 feet from the perimeter of a non-participating occupied structure is 38.8 dBA. The highest sound pressure level 25 feet from the perimeter of a participating occupied structure is 39.8 dBA. Therefore the project would be in compliance with the current Grant County Ordinance 2016-01C.

The results of this study are inherently conservative due to the fact that the turbines were modeled as though they were always operating at maximum sound emission levels and in all cases, an additional 2 dBA was added to the sound level being emitted by the turbine during the modeling stage and not to the results of the sound modeling. The turbines were also modeled as though they were always downwind of each receptor, and atmospheric conditions were modeled to be most favorable for sound transmission. In addition, the receptors in Grant County were modeled 50 feet from the perimeter of the

structures where the ordinance specifies 25 feet. Noise levels will be higher farther away from the perimeter.

APPENDIX A: CROWNED RIDGE II ENERGY PROJECT SITE OVERVIEW MAP

APPENDIX B: WIND TURBINE COORDINATES

Crowned Ridge II Wind Farm

GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

WTG	Type	Turbine Model	Easting (m)	Northing (m)	Base Elev. AMSL (m)	Sound Profile
CRII-1	Primary	GE2.3 116RD 90HH r2.madE	671,559	4,962,133	612.0	LNTE
CRII-2	Primary	GE2.3 116RD 90HH r2.madE	672,263	4,962,678	614.9	LNTE
CRII-3	Primary	GE2.3 116RD 90HH r2.madE	672,701	4,962,945	611.2	LNTE
CRII-4	Primary	GE2.3 116RD 90HH r2.madE	671,580	4,962,979	614.7	LNTE
CRII-5	Primary	GE2.3 116RD 90HH r2.madE	670,978	4,963,241	610.6	LNTE
CRII-6	Primary	GE2.3 116RD 90HH r2.madE	671,848	4,963,864	609.0	LNTE
CRII-7	Primary	GE2.3 116RD 90HH r2.madE	669,433	4,963,919	609.0	LNTE
CRII-8	Primary	GE2.3 116RD 90HH r2.madE	675,459	4,964,605	586.7	LNTE
CRII-9	Primary	GE2.3 116RD 90HH r2.madE	672,673	4,964,773	606.0	LNTE
CRII-10	Primary	GE2.3 116RD 90HH r2.madE	671,807	4,964,788	605.1	LNTE
CRII-11	Primary	GE2.3 116RD 90HH r2.madE	671,018	4,964,835	608.3	LNTE
CRII-12	Primary	GE2.3 116RD 90HH r2.madE	675,767	4,965,047	582.5	LNTE
CRII-13	Primary	GE2.3 116RD 90HH r2.madE	661,844	4,965,186	585.0	LNTE
CRII-14	Primary	GE2.3 116RD 90HH r2.madE	670,096	4,965,331	604.8	LNTE
CRII-15	Primary	GE2.3 116RD 90HH r2.madE	673,873	4,965,445	594.0	LNTE
CRII-16	Primary	GE2.3 116RD 90HH r2.madE	670,913	4,965,509	599.1	LNTE
CRII-17	Primary	GE2.3 116RD 90HH r2.madE	674,945	4,965,753	588.8	LNTE
CRII-18	Primary	GE2.3 116RD 90HH r2.madE	672,601	4,965,770	605.8	LNTE
CRII-19	Primary	GE2.3 116RD 90HH r2.madE	661,198	4,965,804	588.0	LNTE
CRII-20	Primary	GE2.3 116RD 90HH r2.madE	673,203	4,965,803	598.0	LNTE
CRII-21	Primary	GE2.3 116RD 90HH r2.madE	669,253	4,966,080	599.3	LNTE
CRII-22	Primary	GE2.3 116RD 90HH r2.madE	662,014	4,966,215	588.0	LNTE
CRII-23	Primary	GE2.3 116RD 90HH r2.madE	662,811	4,966,264	589.7	LNTE
CRII-24	Primary	GE2.3 116RD 90HH r2.madE	675,403	4,966,303	585.0	LNTE
CRII-25	Primary	GE2.3 116RD 90HH r2.madE	661,425	4,966,745	588.0	LNTE
CRII-26	Primary	GE2.3 116RD 90HH r2.madE	660,209	4,966,765	576.7	LNTE
CRII-27	Primary	GE2.3 116RD 90HH r2.madE	667,732	4,966,874	579.0	LNTE
CRII-28	Primary	GE2.3 116RD 90HH r2.madE	664,581	4,966,932	577.5	LNTE
CRII-29	Primary	GE2.3 116RD 90HH r2.madE	672,573	4,966,992	597.0	LNTE
CRII-30	Primary	GE2.3 116RD 90HH r2.madE	675,513	4,967,261	581.4	LNTE
CRII-31	Primary	GE2.3 116RD 90HH r2.madE	674,175	4,967,380	592.7	LNTE
CRII-32	Primary	GE2.3 116RD 90HH r2.madE	671,344	4,967,239	598.9	LNTE
CRII-33	Primary	GE2.3 116RD 90HH r2.madE	674,929	4,967,436	588.6	LNTE
CRII-34	Primary	GE2.3 116RD 90HH r2.madE	667,754	4,967,680	580.6	LNTE
CRII-35	Primary	GE2.3 116RD 90HH r2.madE	675,641	4,967,746	577.3	LNTE
CRII-36	Primary	GE2.3 116RD 90HH r2.madE	669,703	4,968,108	596.8	LNTE
CRII-37	Primary	GE2.3 116RD 90HH r2.madE	673,159	4,968,199	596.9	LNTE
CRII-38	Primary	GE2.3 116RD 90HH r2.madE	673,748	4,968,230	593.9	LNTE
CRII-39	Primary	GE2.3 116RD 90HH r2.madE	664,482	4,968,373	585.0	LNTE
CRII-40	Primary	GE2.3 116RD 90HH r2.madE	663,447	4,968,418	591.0	LNTE
CRII-41	Primary	GE2.3 116RD 90HH r2.madE	665,827	4,968,475	585.6	LNTE

Crowned Ridge II Wind Farm

GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

continued

WTG	Type	Turbine Model	Easting (m)	Northing (m)	Base Elev. AMSL (m)	Sound Profile
CR11-42	Primary	GE2.3 116RD 90HH r2.madE	668,455	4,968,482	595.8	LNTE
CR11-43	Primary	GE2.3 116RD 90HH r2.madE	667,376	4,968,511	586.4	LNTE
CR11-44	Primary	GE2.3 116RD 90HH r2.madE	672,498	4,968,577	600.0	LNTE
CR11-45	Primary	GE2.3 116RD 90HH r2.madE	673,072	4,968,788	597.2	LNTE
CR11-46	Primary	GE2.3 116RD 90HH r2.madE	671,213	4,968,978	600.0	LNTE
CR11-47	Primary	GE2.3 116RD 90HH r2.madE	670,606	4,968,910	597.8	LNTE
CR11-48	Primary	GE2.3 116RD 90HH r2.madE	669,752	4,968,912	594.0	LNTE
CR11-49	Primary	GE2.3 116RD 90HH r2.madE	662,575	4,969,126	594.0	LNTE
CR11-50	Primary	GE2.3 116RD 90HH r2.madE	675,428	4,969,085	577.8	LNTE
CR11-51	Primary	GE2.3 116RD 90HH r2.madE	666,174	4,969,250	597.0	LNTE
CR11-52	Primary	GE2.3 116RD 90HH r2.madE	667,344	4,969,319	598.1	LNTE
CR11-53	Primary	GE2.3 116RD 90HH r2.madE	668,037	4,969,495	597.8	LNTE
CR11-54	Primary	GE2.3 116RD 90HH r2.madE	675,726	4,969,723	570.0	LNTE
CR11-55	Primary	GE2.3 116RD 90HH r2.madE	666,872	4,970,279	606.0	LNTE
CR11-56	Primary	GE2.3 116RD 90HH r2.madE	666,135	4,970,237	593.4	LNTE
CR11-57	Primary	GE2.3 116RD 90HH r2.madE	667,670	4,970,471	608.9	LNTE
CR11-58	Primary	GE2.1 116RD 80HH rev2.mad	671,619	4,972,700	594.0	LNTE
CR11-59	Primary	GE2.3 116RD 90HH r2.madE	668,248	4,973,458	613.5	LNTE
CR11-60	Primary	GE2.3 116RD 90HH r2.madE	670,973	4,973,527	597.0	LNTE
CR11-61	Primary	GE2.3 116RD 90HH r2.madE	667,589	4,973,910	615.0	LNTE
CR11-62	Primary	GE2.3 116RD 90HH r2.madE	670,983	4,974,414	593.9	LNTE
CR11-63	Primary	GE2.3 116RD 90HH r2.madE	668,350	4,974,115	615.7	LNTE
CR11-64	Primary	GE2.3 116RD 90HH r2.madE	666,982	4,974,334	615.0	LNTE
CR11-65	Primary	GE2.3 116RD 90HH r2.madE	661,369	4,974,608	600.0	LNTE
CR11-66	Primary	GE2.3 116RD 90HH r2.madE	667,711	4,974,761	615.0	LNTE
CR11-67	Primary	GE2.3 116RD 90HH r2.madE	662,077	4,974,986	604.1	LNTE
CR11-69	Primary	GE2.3 116RD 90HH r2.madE	666,524	4,975,244	614.7	LNTE
CR11-70	Primary	GE2.3 116RD 90HH r2.madE	672,450	4,975,264	577.0	LNTE
CR11-71	Primary	GE2.3 116RD 90HH r2.madE	659,668	4,975,487	579.4	LNTE
CR11-72	Primary	GE2.3 116RD 90HH r2.madE	660,347	4,975,510	590.7	LNTE
CR11-73	Primary	GE2.3 116RD 90HH r2.madE	670,963	4,975,812	590.8	LNTE
CR11-74	Primary	GE2.3 116RD 90HH r2.madE	669,864	4,975,773	600.0	LNTE
CR11-75	Primary	GE2.3 116RD 90HH r2.madE	665,849	4,975,895	608.1	LNTE
CR11-76	Primary	GE2.3 116RD 90HH r2.madE	663,309	4,976,260	597.0	LNTE
CR11-77	Primary	GE2.3 116RD 90HH r2.madE	660,889	4,976,403	594.0	LNTE
CR11-78	Primary	GE2.1 116RD 80HH rev2.mad	670,593	4,976,444	594.0	LNTE
CR11-79	Primary	GE2.3 116RD 90HH r2.madE	659,556	4,976,577	576.6	LNTE
CR11-80	Primary	GE2.1 116RD 80HH rev2.mad	670,089	4,976,781	597.0	LNTE
CR11-81	Primary	GE2.3 116RD 90HH r2.madE	666,460	4,976,852	615.0	LNTE
CR11-82	Primary	GE2.3 116RD 90HH r2.madE	664,868	4,977,195	606.0	LNTE
CR11-83	Primary	GE2.3 116RD 90HH r2.madE	659,267	4,977,221	570.0	LNTE

Crowned Ridge II Wind Farm

GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

continued

WTG	Type	Turbine Model	Easting (m)	Northing (m)	Base Elev. AMSL (m)	Sound Profile
CR11-84	Primary	GE2.3 116RD 90HH r2.madE	661,202	4,977,297	585.0	LNTE
CR11-85	Primary	GE2.1 116RD 80HH rev2.mad	670,104	4,977,199	594.4	LNTE
CR11-86	Primary	GE2.1 116RD 80HH rev2.mad	668,086	4,977,549	605.9	LNTE
CR11-87	Primary	GE2.1 116RD 80HH rev2.mad	668,884	4,977,561	594.0	LNTE
CR11-88	Primary	GE2.3 116RD 90HH r2.madE	666,503	4,978,327	612.1	LNTE
CR11-89	Primary	GE2.1 116RD 80HH rev2.mad	667,591	4,978,362	615.0	LNTE
CR11-90	Primary	GE2.1 116RD 80HH rev2.mad	670,109	4,978,176	589.0	LNTE
CR11-91	Primary	GE2.1 116RD 80HH rev2.mad	668,348	4,978,315	600.0	LNTE
CR11-92	Primary	GE2.3 116RD 90HH r2.madE	664,354	4,978,724	594.7	LNTE
CR11-93	Primary	GE2.1 116RD 80HH rev2.mad	665,882	4,978,374	609.0	LNTE
CR11-94	Alternate	GE2.3 116RD 90HH r2.madE	667,644	4,978,955	607.9	LNTE
CR11-95	Primary	GE2.3 116RD 90HH r2.madE	666,647	4,979,039	615.0	LNTE
CR11-96	Primary	GE2.3 116RD 90HH r2.madE	665,082	4,979,106	604.6	LNTE
CR11-97	Alternate	GE2.3 116RD 90HH r2.madE	668,163	4,979,177	586.4	LNTE
CR11-98	Primary	GE2.1 116RD 80HH rev2.mad	670,003	4,979,175	585.4	LNTE
CR11-99	Primary	GE2.3 116RD 90HH r2.madE	665,723	4,979,545	607.0	LNTE
CR11-100	Primary	GE2.3 116RD 90HH r2.madE	666,675	4,979,716	613.8	LNTE
CR11-101	Primary	GE2.3 116RD 90HH r2.madE	665,960	4,980,327	606.0	LNTE
CR11-102	Primary	GE2.1 116RD 80HH rev2.mad	667,903	4,980,491	600.1	LNTE
CR11-103	Alternate	GE2.3 116RD 90HH r2.madE	666,467	4,980,722	608.9	LNTE
CR11-104	Primary	GE2.3 116RD 90HH r2.madE	662,560	4,981,078	588.0	LNTE
CR11-105	Primary	GE2.3 116RD 90HH r2.madE	663,201	4,981,245	594.0	LNTE
CR11-106	Primary	GE2.3 116RD 90HH r2.madE	661,170	4,981,296	586.2	LNTE
CR11-107	Primary	GE2.1 116RD 80HH rev2.mad	666,729	4,981,576	598.4	LNTE
CR11-108	Primary	GE2.3 116RD 90HH r2.madE	667,242	4,981,585	592.4	LNTE
CR11-110	Primary	GE2.3 116RD 90HH r2.madE	665,644	4,981,745	609.0	LNTE
CR11-111	Primary	GE2.3 116RD 90HH r2.madE	661,406	4,981,960	591.0	LNTE
CR11-112	Primary	GE2.3 116RD 90HH r2.madE	664,889	4,982,000	612.6	LNTE
CR11-113	Alternate	GE2.3 116RD 90HH r2.madE	665,950	4,982,352	609.9	LNTE
CR11-114	Primary	GE2.3 116RD 90HH r2.madE	665,029	4,982,755	613.5	LNTE
CR11-115	Primary	GE2.3 116RD 90HH r2.madE	667,423	4,982,834	585.7	LNTE
CR11-116	Primary	GE2.3 116RD 90HH r2.madE	664,098	4,982,988	603.0	LNTE
CR11-117	Primary	GE2.3 116RD 90HH r2.madE	666,339	4,983,199	600.6	LNTE
CR11-118	Primary	GE2.3 116RD 90HH r2.madE	665,536	4,983,411	608.1	LNTE
CR11-119	Primary	GE2.3 116RD 90HH r2.madE	664,901	4,983,463	603.4	LNTE
CR11-120	Primary	GE2.3 116RD 90HH r2.madE	662,307	4,983,683	592.9	LNTE
CR11-121	Primary	GE2.3 116RD 90HH r2.madE	666,651	4,983,822	588.7	LNTE
CR11-122	Primary	GE2.3 116RD 90HH r2.madE	662,977	4,983,870	603.9	LNTE
CR11-123	Primary	GE2.3 116RD 90HH r2.madE	663,421	4,984,335	606.6	LNTE
CR11-124	Primary	GE2.3 116RD 90HH r2.madE	664,181	4,984,488	606.0	LNTE
CR11-125	Primary	GE2.3 116RD 90HH r2.madE	664,784	4,984,583	604.2	LNTE

continued

[illegible]

APPENDIX C: TABLE OF SOUND RESULTS

Table C-1: Crowned Ridge II Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C1-NP	Non-P	Boundary	662,584	4,980,838	590.5	48.7	48.9	791
CR2-C3-NP	Non-P	Boundary	664,052	4,964,700	555.0	34.2	34.9	6,552
CR1-C4-NP	Non-P	Boundary	659,890	4,985,620	605.2	40.2	40.4	3,914
CR1-C7-NP	Non-P	Boundary	661,266	4,985,387	591.0	45.1	46.5	1,253
CR2-C7-NP	Non-P	Boundary	666,417	4,966,621	582.0	37.8	38.5	4,393
CR1-C8-P	Participant	Boundary	661,277	4,984,852	597.0	41.7	43.0	2,139
CR1-C9-NP	Non-P	Boundary	665,266	4,985,122	609.0	44.7	45.5	1,801
CR2-C10-NP	Non-P	Boundary	664,808	4,966,574	561.0	43.5	43.7	1,391
CR1-C10-P	Participant	Boundary	662,871	4,985,402	601.7	50.6	51.8	614
CR1-C11-P	Participant	Boundary	664,225	4,984,910	608.6	50.9	51.1	699
CR1-C12-NP	Non-P	Boundary	662,296	4,986,504	605.2	44.8	44.9	1,444
CR1-C13-NP	Non-P	Boundary	664,419	4,986,258	615.0	49.5	50.1	758
CR1-C15-NP	Non-P	Boundary	663,047	4,985,700	612.9	47.4	47.5	968
CR2-C16-NP	Non-P	Boundary	664,794	4,966,949	569.9	49.4	49.4	699
CR1-C16-NP	Non-P	Boundary	661,642	4,985,677	597.0	47.3	48.7	948
CR1-C18-P	Participant	Boundary	664,394	4,987,007	610.2	47.7	49.0	955
CR1-C20-P	Participant	Boundary	663,107	4,987,598	605.1	44.5	44.5	1,834
CR2-C22-NP	Non-P	Boundary	661,457	4,972,769	597.2	34.3	34.5	6,040
CR2-C23-NP	Non-P	Boundary	664,210	4,969,553	594.0	38.2	39.3	3,973
CR2-C24-NP	Non-P	Boundary	662,346	4,969,319	600.0	46.4	46.5	981
CR1-C24-NP	Non-P	Boundary	660,262	4,983,876	599.5	39.3	40.5	2,785
CR2-C26-P	Participant	Boundary	664,502	4,968,179	580.8	50.1	51.6	640
CR2-C27-P	Participant	Boundary	662,571	4,969,314	587.3	50.3	50.3	617
CR1-C28-NP	Non-P	Boundary	665,432	4,989,009	583.9	44.7	40.9	1,483
CR2-C28-P	Participant	Boundary	659,999	4,968,048	567.1	35.0	36.2	4,265
CR2-C29-NP	Non-P	Boundary	662,350	4,969,119	594.7	48.8	48.8	738
CR1-C29-NP	Non-P	Boundary	666,496	4,989,001	574.3	42.4	39.0	1,952
CR2-C30-NP	Non-P	Boundary	659,189	4,967,871	566.6	33.3	34.4	4,938
CR1-C31-NP	Non-P	Boundary	665,639	4,989,013	584.7	44.3	42.8	1,637
CR2-C31-P	Participant	Boundary	662,360	4,973,292	606.0	35.4	35.8	5,407
CR2-C32-P	Participant	Boundary	660,020	4,967,239	573.0	41.7	43.4	1,673
CR2-C33-P	Participant	Boundary	663,452	4,968,137	580.8	47.2	48.8	922
CR2-C35-NP	Non-P	Boundary	659,114	4,975,104	555.7	40.3	40.4	2,208
CR2-C36-NP	Non-P	Boundary	660,716	4,974,757	580.4	42.6	42.6	2,198
CR2-C37-NP	Non-P	Boundary	662,306	4,974,989	606.0	48.8	48.9	751
CR2-C38-NP	Non-P	Boundary	660,926	4,966,838	588.0	43.6	45.3	1,667
CR2-C39-NP	Non-P	Boundary	664,405	4,966,557	563.0	43.7	43.9	1,362
CR2-C40-NP	Non-P	Boundary	659,711	4,975,130	583.9	45.7	45.7	1,178
CR2-C41-P	Participant	Boundary	660,695	4,975,584	598.4	51.4	51.2	617

* Not included in original submittal

Table C-1: Crowned Ridge II Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C42-NP	Non-P	Boundary	665,127	4,975,675	595.6	40.4	41.8	2,474
CR2-C43-NP	Non-P	Boundary	663,896	4,976,057	596.6	41.0	42.5	2,037
CR2-C44-NP	Non-P	Boundary	659,186	4,966,434	555.0	35.4	37.0	3,527
CR2-C45-P	Participant	Boundary	664,019	4,965,873	570.0	37.4	38.3	3,934
CR2-C46-NP	Non-P	Boundary	660,215	4,966,435	582.0	45.7	47.3	1,083
CR2-C47-NP	Non-P	Boundary	662,128	4,975,739	594.0	40.9	41.1	2,477
CR2-C48-NP	Non-P	Boundary	662,312	4,965,660	590.1	43.5	45.3	2,067
CR2-C49-NP	Non-P	Boundary	661,080	4,965,005	582.0	40.4	42.2	2,575
CR2-C50-P	Participant	Boundary	660,674	4,976,401	574.5	49.7	49.6	705
CR2-C51-NP	Non-P	Boundary	662,731	4,964,867	584.2	38.1	39.7	3,091
CR2-C52-NP	Non-P	Boundary	662,432	4,964,852	574.4	40.1	41.8	2,218
CR2-C53-NP	Non-P	Boundary	661,853	4,964,839	578.5	45.3	47.0	1,138
CR2-C54-NP	Non-P	Boundary	662,719	4,976,216	597.0	41.5	42.8	1,939
CR2-C55-NP	Non-P	Boundary	660,848	4,964,816	582.0	37.9	39.6	3,438
CR2-C57-P	Participant	Boundary	666,460	4,976,511	615.0	46.2	46.6	1,119
CR2-C59-P	Participant	Boundary	664,882	4,976,884	603.0	46.5	48.1	1,024
CR2-C60-P	Participant	Boundary	663,492	4,976,270	596.4	50.4	52.0	604
CR2-C61-NP	Non-P	Boundary	660,672	4,976,784	582.9	44.8	45.2	1,440
CR2-C62-NP	Non-P	Boundary	666,705	4,976,925	612.0	48.2	48.4	837
CR2-C63-P	Participant	Boundary	666,292	4,977,116	610.5	46.7	47.1	1,027
CR2-C64-NP	Non-P	Boundary	661,628	4,964,834	577.9	43.9	45.6	1,355
CR2-C65-NP	Non-P	Boundary	665,480	4,978,437	606.1	45.8	47.5	1,335
CR2-C66-NP	Non-P	Boundary	661,906	4,964,061	572.8	35.7	37.2	3,694
CR2-C67-NP	Non-P	Boundary	660,639	4,978,403	556.5	37.0	38.0	4,071
CR2-C68-NP	Non-P	Boundary	662,455	4,963,673	580.3	33.4	34.5	5,354
CR1-C68-P	Participant	Boundary	662,024	4,987,612	604.9	51.0	51.0	640
CR2-C69-NP	Non-P	Boundary	661,200	4,977,610	571.8	46.2	47.7	1,027
CR1-C70-NP	Non-P	Boundary	664,950	4,988,325	596.1	41.7	41.9	2,940
CR2-C70-P	Participant	Boundary	665,711	4,970,192	583.7	44.3	45.9	1,398
CR1-C71-NP	Non-P	Boundary	664,414	4,988,688	600.0	47.8	48.1	909
CR2-C71-NP	Non-P	Boundary	665,511	4,970,237	582.0	41.6	43.1	2,047
CR2-C72-NP	Non-P	Boundary	663,882	4,970,343	599.2	36.0	36.7	5,860
CR1-C73-NP	Non-P	Boundary	663,740	4,982,989	591.6	46.1	47.7	1,175
CR2-C74-NP	Non-P	Boundary	660,737	4,969,659	585.4	33.3	33.6	6,279
CR2-C75-NP	Non-P	Boundary	665,533	4,969,027	576.4	43.4	44.8	2,051
CR2-C77-NP	Non-P	Boundary	663,124	4,969,545	597.9	40.1	40.6	2,264
CR1-C77-P	Participant	Boundary	660,965	4,983,217	584.0	51.1	52.6	558
CR2-C78-P	Participant	Boundary	665,321	4,983,408	608.5	50.7	52.3	705

* Not included in original submittal

Table C-1: Crowned Ridge II Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C78-P	Participant	Boundary	660,509	4,983,361	601.0	43.4	52.3	705
CR2-C79-NP	Non-P	Boundary	666,645	4,984,162	594.4	46.2	47.8	1,119
CR1-C79-NP	Non-P	Boundary	660,498	4,983,685	595.6	42.0	43.4	1,791
CR1-C80-NP	Non-P	Boundary	659,693	4,983,990	603.4	37.3	38.1	4,590
CR2-C80-NP	Non-P	Boundary	665,496	4,971,451	597.0	37.0	37.9	4,501
CR1-C81-NP	Non-P	Boundary	660,516	4,983,200	595.7	42.9	44.5	1,565
CR1-C84-NP	Non-P	Boundary	659,796	4,982,364	594.1	36.8	37.7	5,072
CR1-C85-NP	Non-P	Boundary	659,751	4,981,560	587.4	36.3	37.3	4,734
CR1-C86-P	Participant	Boundary	661,252	4,981,612	589.8	47.9	49.6	1,070
CR1-C87-NP	Non-P	Boundary	662,846	4,982,473	585.1	40.7	42.0	4,193
CR2-C87-NP	Non-P	Boundary	662,990	4,971,076	603.0	34.3	34.6	6,542
CR1-C88-NP	Non-P	Boundary	660,240	4,980,801	571.0	37.4	38.6	3,458
CR2-C89-NP	Non-P	Boundary	662,304	4,970,980	603.0	34.0	34.2	6,145
CR2-C91-NP	Non-P	Boundary	664,274	4,970,519	594.0	36.1	36.9	6,174
CR2-C92-NP	Non-P	Boundary	663,878	4,970,491	597.0	35.7	36.4	6,191
CR2-C93-NP	Non-P	Boundary	659,946	4,973,545	578.6	35.0	35.1	5,827
CR2-C95-NP	Non-P	Boundary	659,720	4,974,150	561.0	36.8	36.8	4,390
CR2-C97-NP	Non-P	Boundary	660,676	4,976,379	589.3	49.7	49.7	702
CR2-C99-P	Participant	Boundary	660,483	4,972,731	585.6	33.6	33.7	6,811
CR2-C100-NP	Non-P	Boundary	660,637	4,972,733	591.0	33.7	33.9	6,604
CR2-C101-NP	Non-P	Boundary	660,765	4,972,985	588.8	34.4	34.7	5,682
CR2-C102-NP	Non-P	Boundary	661,983	4,976,005	591.0	40.3	40.4	3,360
CR2-C104-NP	Non-P	Boundary	662,032	4,972,778	603.0	34.4	34.6	6,388
CR2-C107-NP	Non-P	Boundary	662,229	4,977,633	564.3	38.1	39.1	3,547
CR2-C109-NP	Non-P	Boundary	662,644	4,972,909	606.0	34.5	34.7	6,968
CR2-C112-NP	Non-P	Boundary	666,270	4,972,900	602.5	37.2	38.1	5,253
CR2-C115-NP	Non-P	Boundary	662,993	4,980,847	561.8	45.5	46.7	1,473
CR2-C116-NP	Non-P	Boundary	664,686	4,976,878	598.0	45.2	46.8	1,201
CR2-C118-NP	Non-P	Boundary	665,548	4,975,288	600.2	41.4	42.8	2,224
CR2-C123-P	Participant	Boundary	666,399	4,967,425	573.5	39.9	40.5	3,924
CR2-C128-P	Participant	Boundary	667,185	4,968,243	579.7	47.3	48.2	1,079
CR2-C134-NP	Non-P	Boundary	667,174	4,973,721	610.9	45.0	46.3	1,496
CR2-C135-NP	Non-P	Boundary	667,221	4,966,634	591.0	42.0	43.3	1,854
CR2-C137-NP	Non-P	Boundary	659,035	4,979,157	564.0	34.2	34.8	6,398
CR2-C142-NP	Non-P	Boundary	657,486	4,977,150	549.0	33.5	34.1	5,846
CR2-C143-NP	Non-P	Boundary	657,478	4,977,453	561.6	33.4	34.0	5,919
CR2-C151-NP	Non-P	Boundary	663,729	4,964,513	554.3	34.2	35.0	6,486
CR2-C154-P	Participant	Boundary	660,033	4,966,759	577.9	50.5	52.1	577

* Not included in original submittal

Table C-1: Crowned Ridge II Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codrington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C1-NP	Non-P	Structure	662,198	4,980,622	591.0	42.1	42.7	1,909
CR2-C2-NP	Non-P	Structure	662,238	4,980,604	590.9	42.1	42.8	1,880
CR2-C3-NP	Non-P	Structure	664,345	4,964,571	556.0	33.7	34.2	7,497
CR1-C4-NP	Non-P	Structure	659,744	4,984,749	606.0	37.9	38.3	5,981
CR1-C5-NP	Non-P	Structure	659,958	4,984,794	604.8	38.2	38.7	5,659
CR1-C7-NP	Non-P	Structure	660,893	4,984,861	593.2	40.1	41.1	3,022
CR2-C7-NP	Non-P	Structure	665,694	4,966,179	570.0	36.6	37.1	4,409
CR1-C8-P	Participant	Structure	660,532	4,984,445	599.4	39.0	39.9	3,740
CR1-C9-NP	Non-P	Structure	665,352	4,985,004	609.0	43.9	44.9	2,280
CR2-C10-NP	Non-P	Structure	665,189	4,966,505	570.0	39.4	39.7	2,438
CR1-C10-P	Participant	Structure	663,510	4,985,195	609.0	45.3	45.8	1,634
CR1-C11-P	Participant	Structure	664,111	4,985,679	609.0	44.8	45.2	1,860
CR1-C12-NP	Non-P	Structure	662,222	4,985,736	603.0	42.8	43.7	2,201
CR1-C12-1-NP	Non-P	Structure	662,199	4,986,047	606.0	42.4	43.0	2,818
CR1-C13-NP	Non-P	Structure	663,792	4,985,785	612.0	43.5	43.9	2,589
CR1-C15-NP	Non-P	Structure	663,291	4,986,026	615.0	42.9	43.2	2,175
CR1-C16-NP	Non-P	Structure	661,960	4,986,288	606.0	42.5	42.9	2,648
CR2-C16-NP	Non-P	Structure	665,418	4,966,866	567.0	39.2	39.6	2,756
CR1-C18-P	Participant	Structure	663,651	4,987,157	610.4	42.2	42.6	3,409
CR1-C20-P	Participant	Structure	663,054	4,987,455	606.0	43.8	43.9	2,336
CR1-C21-P	Participant	Structure	660,756	4,984,086	594.0	40.6	41.9	2,388
CR2-C22-NP	Non-P	Structure	661,202	4,972,711	597.0	34.0	34.3	6,247
CR1-C22-P	Participant	Structure	660,755	4,984,082	594.0	40.6	41.9	2,375
CR2-C23-NP	Non-P	Structure	664,069	4,969,661	594.0	37.8	38.8	4,439
CR1-C23-P	Participant	Structure	660,619	4,984,078	595.8	40.2	41.4	2,523
CR1-C24-NP	Non-P	Structure	660,176	4,983,887	601.1	38.8	39.9	3,038
CR2-C24-NP	Non-P	Structure	661,541	4,969,653	600.0	35.6	36.0	3,809
CR1-C25-P	Participant	Structure	660,190	4,983,788	602.3	39.1	40.3	2,838
CR2-C26-P	Participant	Structure	664,733	4,968,915	591.0	41.9	43.4	1,959
CR2-C27-P	Participant	Structure	662,985	4,968,167	582.0	42.4	43.8	1,726
CR1-C28-NP	Non-P	Structure	665,429	4,988,598	590.9	41.5	40.1	2,831
CR2-C28-P	Participant	Structure	659,208	4,968,159	572.8	32.7	33.7	5,630
CR1-C29-NP	Non-P	Structure	666,572	4,988,867	575.9	41.1	38.6	2,457
CR2-C29-NP	Non-P	Structure	661,223	4,968,144	595.2	36.4	37.6	4,639
CR2-C30-NP	Non-P	Structure	659,100	4,968,023	568.6	32.7	33.7	5,502
CR1-C31-NP	Non-P	Structure	665,939	4,988,950	585.4	43.2	39.6	2,126
CR2-C31-P	Participant	Structure	663,117	4,972,923	606.0	34.4	34.7	7,579
CR2-C32-P	Participant	Structure	659,469	4,967,984	575.2	33.9	35.0	4,678

* Not included in original submittal

Table C-1: Crowned Ridge II Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codrington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C33-P	Participant	Structure	663,878	4,967,612	576.1	40.6	41.8	2,999
CR2-C34-P	Participant	Structure	663,934	4,966,991	570.1	40.9	41.5	2,133
CR2-C35-NP	Non-P	Structure	658,964	4,974,334	566.8	35.6	35.6	4,432
CR2-C36-NP	Non-P	Structure	660,475	4,974,426	578.6	39.9	40.1	2,992
CR2-C37-NP	Non-P	Structure	663,037	4,974,496	606.0	37.6	38.0	3,537
CR2-C38-NP	Non-P	Structure	660,874	4,966,929	585.5	42.9	44.6	1,906
CR2-C39-NP	Non-P	Structure	664,089	4,966,486	566.2	40.4	40.9	2,178
CR2-C40-NP	Non-P	Structure	659,189	4,974,765	578.3	38.5	38.6	2,841
CR2-C41-P	Participant	Structure	660,770	4,975,147	596.4	45.5	43.6	1,532
CR2-C42-NP	Non-P	Structure	664,887	4,975,388	597.0	38.6	39.7	3,566
CR2-C43-NP	Non-P	Structure	664,382	4,975,544	597.0	38.0	39.1	4,232
CR2-C44-NP	Non-P	Structure	659,145	4,966,062	561.4	34.4	35.8	4,183
CR2-C45-P	Participant	Structure	664,058	4,965,862	570.0	37.3	38.2	3,907
CR2-C46-NP	Non-P	Structure	660,435	4,965,627	582.0	39.6	41.3	2,569
CR2-C47-NP	Non-P	Structure	662,200	4,975,837	594.5	40.4	40.7	2,821
CR2-C48-NP	Non-P	Structure	662,370	4,965,588	590.3	42.9	44.7	2,172
CR2-C49-NP	Non-P	Structure	660,907	4,964,846	582.0	38.4	40.1	3,271
CR2-C50-P	Participant	Structure	661,252	4,976,035	597.0	44.7	43.5	1,696
CR2-C51-NP	Non-P	Structure	662,977	4,964,794	584.0	36.7	38.2	3,934
CR2-C52-NP	Non-P	Structure	662,688	4,964,792	585.9	38.0	39.6	3,054
CR2-C53-NP	Non-P	Structure	662,401	4,964,782	582.0	39.8	41.5	2,257
CR2-C54-NP	Non-P	Structure	662,636	4,976,079	597.0	40.7	41.8	2,287
CR2-C55-NP	Non-P	Structure	660,765	4,964,777	582.0	37.3	38.9	3,655
CR2-C56-NP	Non-P	Structure	660,759	4,964,737	582.0	37.0	38.7	3,786
CR2-C57-P	Participant	Structure	666,667	4,976,162	613.8	42.5	43.6	2,362
CR2-C58-NP	Non-P	Structure	660,764	4,964,686	582.0	36.8	38.4	3,904
CR2-C59-P	Participant	Structure	664,952	4,976,698	601.9	43.0	44.6	1,654
CR2-C60-P	Participant	Structure	662,287	4,976,800	594.0	39.0	39.9	3,793
CR2-C61-NP	Non-P	Structure	660,630	4,976,840	582.5	44.0	44.5	1,667
CR2-C62-NP	Non-P	Structure	666,992	4,977,048	615.0	43.1	43.9	1,860
CR2-C63-P	Participant	Structure	665,528	4,977,285	612.0	42.5	43.9	2,185
CR2-C64-NP	Non-P	Structure	660,901	4,964,220	582.0	35.0	36.4	4,429
CR2-C65-NP	Non-P	Structure	665,217	4,977,746	609.0	42.7	44.3	2,139
CR1-C66-NP	Non-P	Structure	659,718	4,985,032	606.0	38.4	38.7	5,800
CR2-C66-NP	Non-P	Structure	662,396	4,963,954	582.0	34.6	35.9	4,429
CR1-C67-NP	Non-P	Structure	659,789	4,985,057	606.0	38.5	38.8	5,791
CR2-C67-NP	Non-P	Structure	660,379	4,978,592	556.1	36.3	37.1	5,033
CR2-C68-NP	Non-P	Structure	662,517	4,963,408	579.0	32.5	33.4	6,237

* Not included in original submittal

Table C-1: Crowned Ridge II Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR1-C68-P	Participant	Structure	662,652	4,987,606	609.0	45.1	45.2	2,146
CR2-C69-NP	Non-P	Structure	661,701	4,978,792	564.0	36.5	37.3	5,171
CR1-C69-P	Participant	Structure	662,685	4,987,619	609.0	45.1	45.1	2,185
CR1-C70-NP	Non-P	Structure	665,135	4,988,293	595.9	41.2	40.9	3,540
CR2-C70-P	Participant	Structure	665,521	4,970,518	588.9	40.8	42.3	2,215
CR1-C71-NP	Non-P	Structure	665,137	4,988,378	595.6	41.3	40.9	3,448
CR2-C71-NP	Non-P	Structure	665,411	4,970,503	586.1	40.0	41.4	2,529
CR1-C72-NP	Non-P	Structure	665,158	4,988,170	594.6	41.1	41.1	3,776
CR2-C72-NP	Non-P	Structure	663,856	4,970,488	597.0	35.7	36.3	6,135
CR1-C73-NP	Non-P	Structure	663,066	4,982,530	591.0	40.9	42.3	3,704
CR1-C74-NP	Non-P	Structure	662,869	4,983,122	595.7	42.7	44.2	2,480
CR2-C74-NP	Non-P	Structure	660,687	4,969,931	586.5	32.9	33.2	6,732
CR1-C75-NP	Non-P	Structure	663,010	4,982,658	588.0	41.1	42.4	3,730
CR2-C75-NP	Non-P	Structure	664,866	4,969,808	583.7	38.5	39.7	4,396
CR1-C76-NP	Non-P	Structure	662,981	4,982,580	588.3	40.9	42.3	3,901
CR2-C76-NP	Non-P	Structure	664,747	4,969,738	584.8	38.4	39.5	4,560
CR2-C77-NP	Non-P	Structure	663,865	4,969,694	597.0	37.6	38.6	4,406
CR1-C77-P	Participant	Structure	661,915	4,983,367	591.0	43.6	45.2	1,654
CR2-C78-P	Participant	Structure	665,273	4,983,933	609.0	45.3	46.9	1,919
CR1-C78-P	Participant	Structure	660,190	4,983,788	602.3	39.1	40.3	2,835
CR2-C79-NP	Non-P	Structure	666,869	4,984,663	587.9	41.5	43.0	2,703
CR1-C79-NP	Non-P	Structure	660,452	4,983,750	595.9	41.1	42.5	2,037
CR1-C80-NP	Non-P	Structure	659,351	4,983,174	604.4	36.2	36.8	5,308
CR2-C80-NP	Non-P	Structure	664,705	4,972,092	597.3	35.1	35.6	7,684
CR1-C81-NP	Non-P	Structure	660,062	4,983,083	597.0	38.5	39.7	3,094
CR1-C84-NP	Non-P	Structure	659,607	4,982,216	594.0	36.2	37.0	5,856
CR1-C85-NP	Non-P	Structure	659,706	4,981,419	588.0	36.1	37.0	4,819
CR2-C86-NP	Non-P	Structure	662,880	4,971,302	603.0	34.0	34.3	7,208
CR1-C86-P	Participant	Structure	662,086	4,982,135	585.0	41.7	43.2	2,306
CR1-C87-NP	Non-P	Structure	662,628	4,982,425	585.4	40.6	41.9	4,258
CR2-C87-NP	Non-P	Structure	662,841	4,971,294	603.0	34.0	34.3	7,165
CR1-C88-NP	Non-P	Structure	660,156	4,980,595	570.9	36.6	37.6	4,045
CR2-C89-NP	Non-P	Structure	662,244	4,971,076	603.0	33.8	34.0	6,489
CR1-C89-P	Participant	Structure	662,062	4,982,029	584.3	42.1	43.5	2,165
CR2-C90-NP	Non-P	Structure	664,088	4,970,672	594.0	35.6	36.3	6,863
CR2-C91-NP	Non-P	Structure	663,938	4,970,546	597.0	35.7	36.3	6,457
CR2-C92-NP	Non-P	Structure	663,855	4,970,535	597.0	35.6	36.3	6,247
CR2-C93-NP	Non-P	Structure	659,203	4,973,158	584.9	33.0	32.9	7,792

* Not included in original submittal

Table C-1: Crowned Ridge II Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C94-NP	Non-P	Structure	659,202	4,973,052	583.9	32.8	32.7	8,133
CR2-C95-NP	Non-P	Structure	659,248	4,974,054	567.0	35.3	35.3	4,898
CR2-C96-NP	Non-P	Structure	659,316	4,974,063	570.6	35.5	35.5	4,813
CR2-C97-NP	Non-P	Structure	660,093	4,976,001	583.8	44.8	44.8	1,814
CR2-C98-NP	Non-P	Structure	660,155	4,976,007	582.8	44.9	44.8	1,749
CR2-C99-P	Participant	Structure	660,584	4,972,570	591.0	33.4	33.5	7,165
CR2-C100-NP	Non-P	Structure	660,592	4,972,602	591.0	33.4	33.5	7,057
CR2-C101-NP	Non-P	Structure	660,732	4,972,807	591.0	33.9	34.1	6,266
CR2-C102-NP	Non-P	Structure	662,025	4,976,085	594.1	40.1	40.3	3,609
CR2-C103-NP	Non-P	Structure	662,046	4,976,067	594.8	40.1	40.3	3,547
CR2-C104-NP	Non-P	Structure	662,109	4,972,735	604.0	34.3	34.5	6,608
CR2-C105-NP	Non-P	Structure	662,122	4,976,029	595.3	40.0	40.3	3,425
CR2-C106-NP	Non-P	Structure	662,165	4,972,711	604.7	34.2	34.5	6,749
CR2-C107-NP	Non-P	Structure	662,265	4,978,194	577.7	37.2	38.0	4,564
CR2-C109-NP	Non-P	Structure	662,699	4,972,874	606.0	34.4	34.7	7,169
CR2-C112-NP	Non-P	Structure	665,928	4,972,630	603.0	36.4	37.1	6,575
CR2-C115-NP	Non-P	Structure	663,555	4,980,564	575.2	40.9	42.1	2,520
CR2-C116-NP	Non-P	Structure	664,640	4,976,142	591.1	39.4	40.7	3,533
CR2-C117-NP	Non-P	Structure	664,742	4,976,142	594.2	39.6	40.9	3,481
CR2-C118-NP	Non-P	Structure	665,014	4,974,639	600.0	37.3	38.2	4,947
CR2-C119-NP	Non-P	Structure	665,052	4,974,682	600.0	37.5	38.4	4,760
CR2-C123-P	Participant	Structure	666,146	4,966,653	579.4	37.6	38.2	5,216
CR2-C126-P	Participant	Structure	666,389	4,966,670	585.0	37.9	38.6	4,455
CR2-C128-P	Participant	Structure	666,636	4,966,649	589.0	38.4	39.3	3,671
CR2-C129-P	Participant	Structure	666,716	4,966,751	591.0	39.0	39.8	3,356
CR2-C130-P	Participant	Structure	666,727	4,966,695	591.0	38.9	39.8	3,350
CR2-C131-NP	Non-P	Structure	666,732	4,984,987	591.0	41.6	43.0	2,287
CR2-C132-NP	Non-P	Structure	666,857	4,985,021	588.2	42.3	43.8	1,883
CR2-C133-P	Participant	Structure	666,992	4,967,681	571.2	42.5	43.0	2,500
CR2-C134-NP	Non-P	Structure	667,097	4,973,011	613.0	39.6	40.8	3,363
CR2-C135-NP	Non-P	Structure	667,172	4,966,196	595.2	38.9	40.0	2,884
CR2-C136-NP	Non-P	Structure	667,209	4,966,166	595.4	38.9	40.0	2,887
CR2-C137-NP	Non-P	Structure	658,951	4,979,194	568.2	34.1	34.6	6,555
CR2-C142-NP	Non-P	Structure	656,697	4,977,269	566.9	31.6	31.8	8,432
CR2-C143-NP	Non-P	Structure	657,016	4,977,505	553.6	32.2	32.5	7,444
CR2-C151-NP	Non-P	Structure	663,934	4,964,475	556.1	33.8	34.6	6,929
CR2-C154-P	Participant	Structure	660,684	4,967,166	588.0	41.5	43.3	2,041
CR2-C155-NP	Non-P	Structure	657,554	4,975,128	554.6	32.8	*	7,034

* Not included in original submittal

Table C-1: Crowned Ridge II Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-D3-NP	Non-P	Structure	672,390	4,963,482	612.0	44.4	44.7	2,037
CR2-D5-NP	Non-P	Structure	668,781	4,964,897	603.0	42.1	39.7	1,923
CR2-D6-P	Participant	Structure	668,762	4,967,671	591.0	41.8	43.1	2,844
CR2-D9-NP	Non-P	Structure	668,597	4,971,999	611.5	37.6	38.6	4,921
CR2-D11-NP	Non-P	Structure	669,646	4,974,534	604.4	42.5	40.8	1,919
CR2-D12-NP	Non-P	Structure	668,558	4,969,840	604.7	42.4	44.0	2,051
CR2-D14-NP	Non-P	Structure	670,351	4,973,543	606.0	42.8	43.1	2,041
CR2-D15-NP	Non-P	Structure	674,387	4,968,515	588.0	42.5	43.3	2,297
CR2-D16-P	Participant	Structure	671,626	4,966,693	601.7	43.0	44.1	2,018
CR2-D17-NP	Non-P	Structure	672,023	4,969,597	597.0	40.0	41.4	3,343
CR2-D18-NP	Non-P	Structure	671,540	4,976,154	582.0	41.7	43.2	2,201
CR2-D19-NP	Non-P	Structure	668,870	4,964,178	606.0	42.1	42.2	2,034
CR2-D20-NP	Non-P	Structure	675,261	4,968,400	579.0	43.0	44.0	2,313
CR2-D21-NP	Non-P	Structure	669,517	4,978,053	596.1	43.8	44.7	1,985
CR2-D22-NP	Non-P	Structure	668,798	4,963,767	603.1	40.7	41.5	2,142
CR2-D23-NP	Non-P	Structure	669,671	4,980,468	573.0	37.7	38.4	4,380
CR2-D30-NP	Non-P	Structure	669,549	4,974,233	611.9	42.2	40.8	2,044
CR2-D36-NP	Non-P	Structure	669,812	4,966,746	591.0	40.8	41.9	2,854
CR2-D37-NP	Non-P	Structure	674,048	4,974,071	573.0	34.3	34.8	6,542
CR2-D38-P	Participant	Structure	667,108	4,982,083	597.0	45.2	46.8	1,693
CR2-D39-P	Participant	Structure	668,443	4,974,627	614.4	44.1	45.6	1,706
CR2-D41-NP	Non-P	Structure	670,437	4,966,409	597.0	41.3	42.2	3,340
CR2-D44-NP	Non-P	Structure	670,434	4,965,956	593.8	43.5	44.3	2,149
CR2-D45-NP	Non-P	Structure	668,018	4,976,064	611.5	39.9	41.0	4,393
CR2-D46-NP	Non-P	Structure	669,797	4,966,804	591.0	40.7	41.8	2,972
CR2-D48-NP	Non-P	Structure	668,923	4,972,998	609.0	40.2	41.4	2,680
CR2-D49-P	Participant	Structure	672,024	4,974,135	583.2	39.5	40.7	3,537
CR2-D50-P	Participant	Structure	672,015	4,967,209	602.8	43.8	44.7	1,965
CR2-D51-NP	Non-P	Structure	675,005	4,970,131	577.8	39.4	40.8	2,717
CR2-D52-NP	Non-P	Structure	667,172	4,971,776	606.0	38.1	39.2	4,583
CR2-D53-P	Participant	Structure	670,392	4,975,925	592.8	45.8	46.9	1,801
CR2-D54-NP	Non-P	Structure	672,012	4,966,477	600.0	42.9	43.6	2,500
CR2-D56-P	Participant	Structure	667,119	4,977,925	612.0	44.3	45.9	2,110
CR2-D62-NP	Non-P	Structure	669,355	4,974,624	609.0	41.1	41.1	2,913
CR2-D63-NP	Non-P	Structure	670,546	4,961,419	615.0	36.4	37.3	4,065
CR2-D64-P	Participant	Structure	669,417	4,978,434	588.0	42.8	43.7	2,425
CR2-D65-NP	Non-P	Structure	670,422	4,966,654	597.0	40.8	41.8	3,583
CR2-D71-NP	Non-P	Structure	669,402	4,979,216	588.0	42.4	43.1	1,975

* Not included in original submittal

Table C-1: Crowned Ridge II Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-D72-NP	Non-P	Structure	671,925	4,970,149	603.0	38.0	39.1	4,495
CR2-D73-NP	Non-P	Structure	672,072	4,971,556	600.0	36.8	37.8	4,035
CR2-D74-NP	Non-P	Structure	668,130	4,976,068	609.2	39.9	41.0	4,505
CR2-D75-NP	Non-P	Structure	669,473	4,981,625	570.0	36.4	37.1	6,355
CR2-D77-NP	Non-P	Structure	672,044	4,966,468	600.0	43.0	43.7	2,444
CR2-D79-NP	Non-P	Structure	672,172	4,974,737	585.0	41.5	43.0	1,955
CR2-D82-NP	Non-P	Structure	669,855	4,970,718	603.0	37.4	38.3	5,935
CR2-D83-NP	Non-P	Structure	675,891	4,966,810	579.0	43.7	44.0	1,929
CR2-D84-NP	Non-P	Structure	667,159	4,972,169	598.2	37.7	38.8	5,535
CR2-D85-NP	Non-P	Structure	669,593	4,976,302	603.0	44.1	44.7	1,949
CR2-D86-NP	Non-P	Structure	673,842	4,966,875	597.0	43.3	43.8	1,985
CR2-D90-NP	Non-P	Structure	670,516	4,962,327	612.0	39.6	40.6	3,360
CR2-D91-NP	Non-P	Structure	667,546	4,976,173	618.0	40.2	41.4	4,203
CR2-D92-NP	Non-P	Structure	671,159	4,971,610	597.2	37.3	38.4	3,881
CR2-D95-NP	Non-P	Structure	671,994	4,971,562	600.0	37.0	38.0	3,930
CR2-D96-NP	Non-P	Structure	672,899	4,971,469	594.0	35.7	36.4	5,827
CR2-D97-NP	Non-P	Structure	667,164	4,972,232	600.0	37.7	38.8	5,371
CR2-D98-P	Participant	Structure	669,757	4,972,426	606.0	37.6	38.3	5,381
CR2-D99-NP	Non-P	Structure	668,148	4,976,230	608.8	40.0	41.1	4,331
CR2-D100-NP	Non-P	Structure	668,589	4,972,064	609.9	37.7	38.7	4,708
CR2-D101-NP	Non-P	Structure	672,538	4,961,910	612.8	40.7	41.2	2,677
CR2-D103-NP	Non-P	Structure	670,588	4,961,119	615.0	35.4	36.2	4,606
CR2-D104-NP	Non-P	Structure	670,443	4,961,600	613.8	36.7	37.6	4,058
CR2-D105-NP	Non-P	Structure	670,348	4,963,826	611.7	41.9	42.8	2,821
CR2-D106-NP	Non-P	Structure	667,315	4,965,297	594.0	36.3	36.7	5,351
CR2-D107-NP	Non-P	Structure	670,405	4,966,321	597.0	41.5	42.4	3,143
CR2-D108-NP	Non-P	Structure	670,354	4,965,949	594.0	43.4	44.2	2,198
CR2-D109-NP	Non-P	Structure	676,885	4,965,806	576.0	37.2	38.1	4,432
CR2-D110-NP	Non-P	Structure	670,260	4,967,728	597.0	42.1	43.6	2,211
CR2-D111-P	Participant	Structure	671,876	4,969,006	600.0	42.8	44.4	2,178
CR2-D112-NP	Non-P	Structure	667,666	4,971,554	604.6	38.7	40.0	3,553
CR2-D113-NP	Non-P	Structure	667,774	4,971,544	606.9	38.7	40.0	3,537
CR2-D115-P	Participant	Structure	670,974	4,969,938	606.0	39.6	41.0	3,245
CR2-D116-NP	Non-P	Structure	673,491	4,972,398	577.8	34.9	35.5	6,220
CR2-D119-P	Participant	Structure	673,378	4,965,126	602.6	44.4	45.1	1,932
CR2-D120-NP	Non-P	Structure	673,401	4,964,165	609.0	40.6	41.4	3,110
CR2-D121-NP	Non-P	Structure	674,461	4,966,734	594.0	43.4	44.1	2,316
CR2-D122-P	Participant	Structure	673,601	4,967,341	594.0	44.0	44.6	1,886

* Not included in original submittal

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* Not included in original submittal

Table C-2: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Coddington County

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C97-NP	Non-P	Boundary	660,676	4,976,379	589.3	49.7	49.7	702
CR1-C13-NP	Non-P	Boundary	664,419	4,986,258	615.0	49.5	50.1	758
CR2-C16-NP	Non-P	Boundary	664,794	4,966,949	569.9	49.4	49.4	699
CR2-C37-NP	Non-P	Boundary	662,306	4,974,989	606.0	48.8	48.9	751
CR2-C29-NP	Non-P	Boundary	662,350	4,969,119	594.7	48.8	48.8	738
CR2-C1-NP	Non-P	Boundary	662,584	4,980,838	590.5	48.7	48.9	791
CR2-C62-NP	Non-P	Boundary	666,705	4,976,925	612.0	48.2	48.4	837
CR1-C71-NP	Non-P	Boundary	664,414	4,988,688	600.0	47.8	48.1	909
CR1-C15-NP	Non-P	Boundary	663,047	4,985,700	612.9	47.4	47.5	968
CR1-C16-NP	Non-P	Boundary	661,642	4,985,677	597.0	47.3	48.7	948
CR2-C24-NP	Non-P	Boundary	662,346	4,969,319	600.0	46.4	46.5	981
CR2-C79-NP	Non-P	Boundary	666,645	4,984,162	594.4	46.2	47.8	1,119
CR2-C69-NP	Non-P	Boundary	661,200	4,977,610	571.8	46.2	47.7	1,027
CR1-C73-NP	Non-P	Boundary	663,740	4,982,989	591.6	46.1	47.7	1,175
CR2-C65-NP	Non-P	Boundary	665,480	4,978,437	606.1	45.8	47.5	1,335
CR2-C40-NP	Non-P	Boundary	659,711	4,975,130	583.9	45.7	45.7	1,178
CR2-C46-NP	Non-P	Boundary	660,215	4,966,435	582.0	45.7	47.3	1,083
CR2-C115-NP	Non-P	Boundary	662,993	4,980,847	561.8	45.5	46.7	1,473
CR2-C53-NP	Non-P	Boundary	661,853	4,964,839	578.5	45.3	47.0	1,138
CR2-C116-NP	Non-P	Boundary	664,686	4,976,878	598.0	45.2	46.8	1,201
CR1-C7-NP	Non-P	Boundary	661,266	4,985,387	591.0	45.1	46.5	1,253
CR2-C134-NP	Non-P	Boundary	667,174	4,973,721	610.9	45.0	46.3	1,496
CR1-C12-NP	Non-P	Boundary	662,296	4,986,504	605.2	44.8	44.9	1,444
CR2-C61-NP	Non-P	Boundary	660,672	4,976,784	582.9	44.8	45.2	1,440
CR1-C28-NP	Non-P	Boundary	665,432	4,989,009	583.9	44.7	40.9	1,483
CR1-C9-NP	Non-P	Boundary	665,266	4,985,122	609.0	44.7	45.5	1,801
CR1-C31-NP	Non-P	Boundary	665,639	4,989,013	584.7	44.3	42.8	1,637
CR2-C64-NP	Non-P	Boundary	661,628	4,964,834	577.9	43.9	45.6	1,355
CR2-C39-NP	Non-P	Boundary	664,405	4,966,557	563.0	43.7	43.9	1,362
CR2-C38-NP	Non-P	Boundary	660,926	4,966,838	588.0	43.6	45.3	1,667
CR2-C10-NP	Non-P	Boundary	664,808	4,966,574	561.0	43.5	43.7	1,391
CR2-C48-NP	Non-P	Boundary	662,312	4,965,660	590.1	43.5	45.3	2,067
CR2-C75-NP	Non-P	Boundary	665,533	4,969,027	576.4	43.4	44.8	2,051
CR1-C81-NP	Non-P	Boundary	660,516	4,983,200	595.7	42.9	44.5	1,565
CR2-C36-NP	Non-P	Boundary	660,716	4,974,757	580.4	42.6	42.6	2,198
CR1-C29-NP	Non-P	Boundary	666,496	4,989,001	574.3	42.4	39.0	1,952
CR2-C135-NP	Non-P	Boundary	667,221	4,966,634	591.0	42.0	43.3	1,854
CR1-C79-NP	Non-P	Boundary	660,498	4,983,685	595.6	42.0	43.4	1,791
CR1-C70-NP	Non-P	Boundary	664,950	4,988,325	596.1	41.7	41.9	2,940

* Not included in original submittal

Table C-2: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Coddington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C71-NP	Non-P	Boundary	665,511	4,970,237	582.0	41.6	43.1	2,047
CR2-C54-NP	Non-P	Boundary	662,719	4,976,216	597.0	41.5	42.8	1,939
CR2-C118-NP	Non-P	Boundary	665,548	4,975,288	600.2	41.4	42.8	2,224
CR2-C43-NP	Non-P	Boundary	663,896	4,976,057	596.6	41.0	42.5	2,037
CR2-C47-NP	Non-P	Boundary	662,128	4,975,739	594.0	40.9	41.1	2,477
CR1-C87-NP	Non-P	Boundary	662,846	4,982,473	585.1	40.7	42.0	4,193
CR2-C42-NP	Non-P	Boundary	665,127	4,975,675	595.6	40.4	41.8	2,474
CR2-C49-NP	Non-P	Boundary	661,080	4,965,005	582.0	40.4	42.2	2,575
CR2-C102-NP	Non-P	Boundary	661,983	4,976,005	591.0	40.3	40.4	3,360
CR2-C35-NP	Non-P	Boundary	659,114	4,975,104	555.7	40.3	40.4	2,208
CR1-C4-NP	Non-P	Boundary	659,890	4,985,620	605.2	40.2	40.4	3,914
CR2-C77-NP	Non-P	Boundary	663,124	4,969,545	597.9	40.1	40.6	2,264
CR2-C52-NP	Non-P	Boundary	662,432	4,964,852	574.4	40.1	41.8	2,218
CR1-C24-NP	Non-P	Boundary	660,262	4,983,876	599.5	39.3	40.5	2,785
CR2-C23-NP	Non-P	Boundary	664,210	4,969,553	594.0	38.2	39.3	3,973
CR2-C107-NP	Non-P	Boundary	662,229	4,977,633	564.3	38.1	39.1	3,547
CR2-C51-NP	Non-P	Boundary	662,731	4,964,867	584.2	38.1	39.7	3,091
CR2-C55-NP	Non-P	Boundary	660,848	4,964,816	582.0	37.9	39.6	3,438
CR2-C7-NP	Non-P	Boundary	666,417	4,966,621	582.0	37.8	38.5	4,393
CR1-C88-NP	Non-P	Boundary	660,240	4,980,801	571.0	37.4	38.6	3,458
CR1-C80-NP	Non-P	Boundary	659,693	4,983,990	603.4	37.3	38.1	4,590
CR2-C112-NP	Non-P	Boundary	666,270	4,972,900	602.5	37.2	38.1	5,253
CR2-C67-NP	Non-P	Boundary	660,639	4,978,403	556.5	37.0	38.0	4,071
CR2-C80-NP	Non-P	Boundary	665,496	4,971,451	597.0	37.0	37.9	4,501
CR1-C84-NP	Non-P	Boundary	659,796	4,982,364	594.1	36.8	37.7	5,072
CR2-C95-NP	Non-P	Boundary	659,720	4,974,150	561.0	36.8	36.8	4,390
CR1-C85-NP	Non-P	Boundary	659,751	4,981,560	587.4	36.3	37.3	4,734
CR2-C91-NP	Non-P	Boundary	664,274	4,970,519	594.0	36.1	36.9	6,174
CR2-C72-NP	Non-P	Boundary	663,882	4,970,343	599.2	36.0	36.7	5,860
CR2-C92-NP	Non-P	Boundary	663,878	4,970,491	597.0	35.7	36.4	6,191
CR2-C66-NP	Non-P	Boundary	661,906	4,964,061	572.8	35.7	37.2	3,694
CR2-C44-NP	Non-P	Boundary	659,186	4,966,434	555.0	35.4	37.0	3,527
CR2-C93-NP	Non-P	Boundary	659,946	4,973,545	578.6	35.0	35.1	5,827
CR2-C109-NP	Non-P	Boundary	662,644	4,972,909	606.0	34.5	34.7	6,968
CR2-C104-NP	Non-P	Boundary	662,032	4,972,778	603.0	34.4	34.6	6,388
CR2-C101-NP	Non-P	Boundary	660,765	4,972,985	588.8	34.4	34.7	5,682
CR2-C22-NP	Non-P	Boundary	661,457	4,972,769	597.2	34.3	34.5	6,040
CR2-C87-NP	Non-P	Boundary	662,990	4,971,076	603.0	34.3	34.6	6,542

* Not included in original submittal

Table C-2: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C3-NP	Non-P	Boundary	664,052	4,964,700	555.0	34.2	34.9	6,552
CR2-C151-NP	Non-P	Boundary	663,729	4,964,513	554.3	34.2	35.0	6,486
CR2-C137-NP	Non-P	Boundary	659,035	4,979,157	564.0	34.2	34.8	6,398
CR2-C89-NP	Non-P	Boundary	662,304	4,970,980	603.0	34.0	34.2	6,145
CR2-C100-NP	Non-P	Boundary	660,637	4,972,733	591.0	33.7	33.9	6,604
CR2-C142-NP	Non-P	Boundary	657,486	4,977,150	549.0	33.5	34.1	5,846
CR2-C68-NP	Non-P	Boundary	662,455	4,963,673	580.3	33.4	34.5	5,354
CR2-C143-NP	Non-P	Boundary	657,478	4,977,453	561.6	33.4	34.0	5,919
CR2-C74-NP	Non-P	Boundary	660,737	4,969,659	585.4	33.3	33.6	6,279
CR2-C30-NP	Non-P	Boundary	659,189	4,967,871	566.6	33.3	34.4	4,938
CR2-C41-P	Participant	Boundary	660,695	4,975,584	598.4	51.4	51.2	617
CR1-C77-P	Participant	Boundary	660,965	4,983,217	584.0	51.1	52.6	558
CR1-C68-P	Participant	Boundary	662,024	4,987,612	604.9	51.0	51.0	640
CR1-C11-P	Participant	Boundary	664,225	4,984,910	608.6	50.9	51.1	699
CR2-C78-P	Participant	Boundary	665,321	4,983,408	608.5	50.7	52.3	705
CR1-C10-P	Participant	Boundary	662,871	4,985,402	601.7	50.6	51.8	614
CR2-C154-P	Participant	Boundary	660,033	4,966,759	577.9	50.5	52.1	577
CR2-C60-P	Participant	Boundary	663,492	4,976,270	596.4	50.4	52.0	604
CR2-C27-P	Participant	Boundary	662,571	4,969,314	587.3	50.3	50.3	617
CR2-C26-P	Participant	Boundary	664,502	4,968,179	580.8	50.1	51.6	640
CR2-C50-P	Participant	Boundary	660,674	4,976,401	574.5	49.7	49.6	705
CR1-C86-P	Participant	Boundary	661,252	4,981,612	589.8	47.9	49.6	1,070
CR1-C18-P	Participant	Boundary	664,394	4,987,007	610.2	47.7	49.0	955
CR2-C128-P	Participant	Boundary	667,185	4,968,243	579.7	47.3	48.2	1,079
CR2-C33-P	Participant	Boundary	663,452	4,968,137	580.8	47.2	48.8	922
CR2-C63-P	Participant	Boundary	666,292	4,977,116	610.5	46.7	47.1	1,027
CR2-C59-P	Participant	Boundary	664,882	4,976,884	603.0	46.5	48.1	1,024
CR2-C57-P	Participant	Boundary	666,460	4,976,511	615.0	46.2	46.6	1,119
CR1-C20-P	Participant	Boundary	663,107	4,987,598	605.1	44.5	44.5	1,834
CR2-C70-P	Participant	Boundary	665,711	4,970,192	583.7	44.3	45.9	1,398
CR2-C78-P	Participant	Boundary	660,509	4,983,361	601.0	43.4	52.3	705
CR1-C8-P	Participant	Boundary	661,277	4,984,852	597.0	41.7	43.0	2,139
CR2-C32-P	Participant	Boundary	660,020	4,967,239	573.0	41.7	43.4	1,673
CR2-C123-P	Participant	Boundary	666,399	4,967,425	573.5	39.9	40.5	3,924
CR2-C45-P	Participant	Boundary	664,019	4,965,873	570.0	37.4	38.3	3,934
CR2-C31-P	Participant	Boundary	662,360	4,973,292	606.0	35.4	35.8	5,407
CR2-C28-P	Participant	Boundary	659,999	4,968,048	567.1	35.0	36.2	4,265
CR2-C99-P	Participant	Boundary	660,483	4,972,731	585.6	33.6	33.7	6,811

* Not included in original submittal

Table C-2: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Coddington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C98-NP	Non-P	Structure	660,155	4,976,007	582.8	44.9	44.8	1,749
CR2-C97-NP	Non-P	Structure	660,093	4,976,001	583.8	44.8	44.8	1,814
CR2-C61-NP	Non-P	Structure	660,630	4,976,840	582.5	44.0	44.5	1,667
CR1-C9-NP	Non-P	Structure	665,352	4,985,004	609.0	43.9	44.9	2,280
CR1-C13-NP	Non-P	Structure	663,792	4,985,785	612.0	43.5	43.9	2,589
CR1-C31-NP	Non-P	Structure	665,939	4,988,950	585.4	43.2	39.6	2,126
CR2-C62-NP	Non-P	Structure	666,992	4,977,048	615.0	43.1	43.9	1,860
CR1-C15-NP	Non-P	Structure	663,291	4,986,026	615.0	42.9	43.2	2,175
CR2-C38-NP	Non-P	Structure	660,874	4,966,929	585.5	42.9	44.6	1,906
CR2-C48-NP	Non-P	Structure	662,370	4,965,588	590.3	42.9	44.7	2,172
CR1-C12-NP	Non-P	Structure	662,222	4,985,736	603.0	42.8	43.7	2,201
CR1-C74-NP	Non-P	Structure	662,869	4,983,122	595.7	42.7	44.2	2,480
CR2-C65-NP	Non-P	Structure	665,217	4,977,746	609.0	42.7	44.3	2,139
CR1-C16-NP	Non-P	Structure	661,960	4,986,288	606.0	42.5	42.9	2,648
CR1-C12-1-NP	Non-P	Structure	662,199	4,986,047	606.0	42.4	43.0	2,818
CR2-C132-NP	Non-P	Structure	666,857	4,985,021	588.2	42.3	43.8	1,883
CR2-C2-NP	Non-P	Structure	662,238	4,980,604	590.9	42.1	42.8	1,880
CR2-C1-NP	Non-P	Structure	662,198	4,980,622	591.0	42.1	42.7	1,909
CR2-C131-NP	Non-P	Structure	666,732	4,984,987	591.0	41.6	43.0	2,287
CR1-C28-NP	Non-P	Structure	665,429	4,988,598	590.9	41.5	40.1	2,831
CR2-C79-NP	Non-P	Structure	666,869	4,984,663	587.9	41.5	43.0	2,703
CR1-C71-NP	Non-P	Structure	665,137	4,988,378	595.6	41.3	40.9	3,448
CR1-C70-NP	Non-P	Structure	665,135	4,988,293	595.9	41.2	40.9	3,540
CR1-C29-NP	Non-P	Structure	666,572	4,988,867	575.9	41.1	38.6	2,457
CR1-C72-NP	Non-P	Structure	665,158	4,988,170	594.6	41.1	41.1	3,776
CR1-C75-NP	Non-P	Structure	663,010	4,982,658	588.0	41.1	42.4	3,730
CR1-C79-NP	Non-P	Structure	660,452	4,983,750	595.9	41.1	42.5	2,037
CR1-C73-NP	Non-P	Structure	663,066	4,982,530	591.0	40.9	42.3	3,704
CR1-C76-NP	Non-P	Structure	662,981	4,982,580	588.3	40.9	42.3	3,901
CR2-C115-NP	Non-P	Structure	663,555	4,980,564	575.2	40.9	42.1	2,520
CR2-C54-NP	Non-P	Structure	662,636	4,976,079	597.0	40.7	41.8	2,287
CR1-C87-NP	Non-P	Structure	662,628	4,982,425	585.4	40.6	41.9	4,258
CR2-C39-NP	Non-P	Structure	664,089	4,966,486	566.2	40.4	40.9	2,178
CR2-C47-NP	Non-P	Structure	662,200	4,975,837	594.5	40.4	40.7	2,821
CR1-C7-NP	Non-P	Structure	660,893	4,984,861	593.2	40.1	41.1	3,022
CR2-C102-NP	Non-P	Structure	662,025	4,976,085	594.1	40.1	40.3	3,609
CR2-C103-NP	Non-P	Structure	662,046	4,976,067	594.8	40.1	40.3	3,547
CR2-C105-NP	Non-P	Structure	662,122	4,976,029	595.3	40.0	40.3	3,425

* Not included in original submittal

Table C-2: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C71-NP	Non-P	Structure	665,411	4,970,503	586.1	40.0	41.4	2,529
CR2-C36-NP	Non-P	Structure	660,475	4,974,426	578.6	39.9	40.1	2,992
CR2-C53-NP	Non-P	Structure	662,401	4,964,782	582.0	39.8	41.5	2,257
CR2-C117-NP	Non-P	Structure	664,742	4,976,142	594.2	39.6	40.9	3,481
CR2-C134-NP	Non-P	Structure	667,097	4,973,011	613.0	39.6	40.8	3,363
CR2-C46-NP	Non-P	Structure	660,435	4,965,627	582.0	39.6	41.3	2,569
CR2-C10-NP	Non-P	Structure	665,189	4,966,505	570.0	39.4	39.7	2,438
CR2-C116-NP	Non-P	Structure	664,640	4,976,142	591.1	39.4	40.7	3,533
CR2-C16-NP	Non-P	Structure	665,418	4,966,866	567.0	39.2	39.6	2,756
CR2-C135-NP	Non-P	Structure	667,172	4,966,196	595.2	38.9	40.0	2,884
CR2-C136-NP	Non-P	Structure	667,209	4,966,166	595.4	38.9	40.0	2,887
CR1-C24-NP	Non-P	Structure	660,176	4,983,887	601.1	38.8	39.9	3,038
CR2-C42-NP	Non-P	Structure	664,887	4,975,388	597.0	38.6	39.7	3,566
CR1-C67-NP	Non-P	Structure	659,789	4,985,057	606.0	38.5	38.8	5,791
CR1-C81-NP	Non-P	Structure	660,062	4,983,083	597.0	38.5	39.7	3,094
CR2-C40-NP	Non-P	Structure	659,189	4,974,765	578.3	38.5	38.6	2,841
CR2-C75-NP	Non-P	Structure	664,866	4,969,808	583.7	38.5	39.7	4,396
CR1-C66-NP	Non-P	Structure	659,718	4,985,032	606.0	38.4	38.7	5,800
CR2-C49-NP	Non-P	Structure	660,907	4,964,846	582.0	38.4	40.1	3,271
CR2-C76-NP	Non-P	Structure	664,747	4,969,738	584.8	38.4	39.5	4,560
CR1-C5-NP	Non-P	Structure	659,958	4,984,794	604.8	38.2	38.7	5,659
CR2-C43-NP	Non-P	Structure	664,382	4,975,544	597.0	38.0	39.1	4,232
CR2-C52-NP	Non-P	Structure	662,688	4,964,792	585.9	38.0	39.6	3,054
CR1-C4-NP	Non-P	Structure	659,744	4,984,749	606.0	37.9	38.3	5,981
CR2-C23-NP	Non-P	Structure	664,069	4,969,661	594.0	37.8	38.8	4,439
CR2-C37-NP	Non-P	Structure	663,037	4,974,496	606.0	37.6	38.0	3,537
CR2-C77-NP	Non-P	Structure	663,865	4,969,694	597.0	37.6	38.6	4,406
CR2-C119-NP	Non-P	Structure	665,052	4,974,682	600.0	37.5	38.4	4,760
CR2-C118-NP	Non-P	Structure	665,014	4,974,639	600.0	37.3	38.2	4,947
CR2-C55-NP	Non-P	Structure	660,765	4,964,777	582.0	37.3	38.9	3,655
CR2-C107-NP	Non-P	Structure	662,265	4,978,194	577.7	37.2	38.0	4,564
CR2-C56-NP	Non-P	Structure	660,759	4,964,737	582.0	37.0	38.7	3,786
CR2-C58-NP	Non-P	Structure	660,764	4,964,686	582.0	36.8	38.4	3,904
CR2-C51-NP	Non-P	Structure	662,977	4,964,794	584.0	36.7	38.2	3,934
CR1-C88-NP	Non-P	Structure	660,156	4,980,595	570.9	36.6	37.6	4,045
CR2-C7-NP	Non-P	Structure	665,694	4,966,179	570.0	36.6	37.1	4,409
CR2-C69-NP	Non-P	Structure	661,701	4,978,792	564.0	36.5	37.3	5,171
CR2-C112-NP	Non-P	Structure	665,928	4,972,630	603.0	36.4	37.1	6,575

* Not included in original submittal

Table C-2: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C29-NP	Non-P	Structure	661,223	4,968,144	595.2	36.4	37.6	4,639
CR2-C67-NP	Non-P	Structure	660,379	4,978,592	556.1	36.3	37.1	5,033
CR1-C80-NP	Non-P	Structure	659,351	4,983,174	604.4	36.2	36.8	5,308
CR1-C84-NP	Non-P	Structure	659,607	4,982,216	594.0	36.2	37.0	5,856
CR1-C85-NP	Non-P	Structure	659,706	4,981,419	588.0	36.1	37.0	4,819
CR2-C72-NP	Non-P	Structure	663,856	4,970,488	597.0	35.7	36.3	6,135
CR2-C91-NP	Non-P	Structure	663,938	4,970,546	597.0	35.7	36.3	6,457
CR2-C24-NP	Non-P	Structure	661,541	4,969,653	600.0	35.6	36.0	3,809
CR2-C35-NP	Non-P	Structure	658,964	4,974,334	566.8	35.6	35.6	4,432
CR2-C92-NP	Non-P	Structure	663,855	4,970,535	597.0	35.6	36.3	6,247
CR2-C90-NP	Non-P	Structure	664,088	4,970,672	594.0	35.6	36.3	6,863
CR2-C96-NP	Non-P	Structure	659,316	4,974,063	570.6	35.5	35.5	4,813
CR2-C95-NP	Non-P	Structure	659,248	4,974,054	567.0	35.3	35.3	4,898
CR2-C80-NP	Non-P	Structure	664,705	4,972,092	597.3	35.1	35.6	7,684
CR2-C64-NP	Non-P	Structure	660,901	4,964,220	582.0	35.0	36.4	4,429
CR2-C66-NP	Non-P	Structure	662,396	4,963,954	582.0	34.6	35.9	4,429
CR2-C109-NP	Non-P	Structure	662,699	4,972,874	606.0	34.4	34.7	7,169
CR2-C44-NP	Non-P	Structure	659,145	4,966,062	561.4	34.4	35.8	4,183
CR2-C104-NP	Non-P	Structure	662,109	4,972,735	604.0	34.3	34.5	6,608
CR2-C106-NP	Non-P	Structure	662,165	4,972,711	604.7	34.2	34.5	6,749
CR2-C137-NP	Non-P	Structure	658,951	4,979,194	568.2	34.1	34.6	6,555
CR2-C86-NP	Non-P	Structure	662,880	4,971,302	603.0	34.0	34.3	7,208
CR2-C87-NP	Non-P	Structure	662,841	4,971,294	603.0	34.0	34.3	7,165
CR2-C22-NP	Non-P	Structure	661,202	4,972,711	597.0	34.0	34.3	6,247
CR2-C101-NP	Non-P	Structure	660,732	4,972,807	591.0	33.9	34.1	6,266
CR2-C151-NP	Non-P	Structure	663,934	4,964,475	556.1	33.8	34.6	6,929
CR2-C89-NP	Non-P	Structure	662,244	4,971,076	603.0	33.8	34.0	6,489
CR2-C3-NP	Non-P	Structure	664,345	4,964,571	556.0	33.7	34.2	7,497
CR2-C100-NP	Non-P	Structure	660,592	4,972,602	591.0	33.4	33.5	7,057
CR2-C93-NP	Non-P	Structure	659,203	4,973,158	584.9	33.0	32.9	7,792
CR2-C74-NP	Non-P	Structure	660,687	4,969,931	586.5	32.9	33.2	6,732
CR2-C94-NP	Non-P	Structure	659,202	4,973,052	583.9	32.8	32.7	8,133
CR2-C155-NP	Non-P	Structure	657,554	4,975,128	554.6	32.8	*	7,034
CR2-C30-NP	Non-P	Structure	659,100	4,968,023	568.6	32.7	33.7	5,502
CR2-C68-NP	Non-P	Structure	662,517	4,963,408	579.0	32.5	33.4	6,237
CR2-C143-NP	Non-P	Structure	657,016	4,977,505	553.6	32.2	32.5	7,444
CR2-C142-NP	Non-P	Structure	656,697	4,977,269	566.9	31.6	31.8	8,432
CR2-C41-P	Participant	Structure	660,770	4,975,147	596.4	45.5	43.6	1,532

* Not included in original submittal

Table C-2: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR1-C10-P	Participant	Structure	663,510	4,985,195	609.0	45.3	45.8	1,634
CR2-C78-P	Participant	Structure	665,273	4,983,933	609.0	45.3	46.9	1,919
CR1-C68-P	Participant	Structure	662,652	4,987,606	609.0	45.1	45.2	2,146
CR1-C69-P	Participant	Structure	662,685	4,987,619	609.0	45.1	45.1	2,185
CR1-C11-P	Participant	Structure	664,111	4,985,679	609.0	44.8	45.2	1,860
CR2-C50-P	Participant	Structure	661,252	4,976,035	597.0	44.7	43.5	1,696
CR1-C20-P	Participant	Structure	663,054	4,987,455	606.0	43.8	43.9	2,336
CR1-C77-P	Participant	Structure	661,915	4,983,367	591.0	43.6	45.2	1,654
CR2-C59-P	Participant	Structure	664,952	4,976,698	601.9	43.0	44.6	1,654
CR2-C133-P	Participant	Structure	666,992	4,967,681	571.2	42.5	43.0	2,500
CR2-C57-P	Participant	Structure	666,667	4,976,162	613.8	42.5	43.6	2,362
CR2-C63-P	Participant	Structure	665,528	4,977,285	612.0	42.5	43.9	2,185
CR2-C27-P	Participant	Structure	662,985	4,968,167	582.0	42.4	43.8	1,726
CR1-C18-P	Participant	Structure	663,651	4,987,157	610.4	42.2	42.6	3,409
CR1-C89-P	Participant	Structure	662,062	4,982,029	584.3	42.1	43.5	2,165
CR2-C26-P	Participant	Structure	664,733	4,968,915	591.0	41.9	43.4	1,959
CR1-C86-P	Participant	Structure	662,086	4,982,135	585.0	41.7	43.2	2,306
CR2-C154-P	Participant	Structure	660,684	4,967,166	588.0	41.5	43.3	2,041
CR2-C34-P	Participant	Structure	663,934	4,966,991	570.1	40.9	41.5	2,133
CR2-C70-P	Participant	Structure	665,521	4,970,518	588.9	40.8	42.3	2,215
CR1-C21-P	Participant	Structure	660,756	4,984,086	594.0	40.6	41.9	2,388
CR1-C22-P	Participant	Structure	660,755	4,984,082	594.0	40.6	41.9	2,375
CR2-C33-P	Participant	Structure	663,878	4,967,612	576.1	40.6	41.8	2,999
CR1-C23-P	Participant	Structure	660,619	4,984,078	595.8	40.2	41.4	2,523
CR1-C78-P	Participant	Structure	660,190	4,983,788	602.3	39.1	40.3	2,835
CR1-C25-P	Participant	Structure	660,190	4,983,788	602.3	39.1	40.3	2,838
CR1-C8-P	Participant	Structure	660,532	4,984,445	599.4	39.0	39.9	3,740
CR2-C129-P	Participant	Structure	666,716	4,966,751	591.0	39.0	39.8	3,356
CR2-C60-P	Participant	Structure	662,287	4,976,800	594.0	39.0	39.9	3,793
CR2-C130-P	Participant	Structure	666,727	4,966,695	591.0	38.9	39.8	3,350
CR2-C128-P	Participant	Structure	666,636	4,966,649	589.0	38.4	39.3	3,671
CR2-C126-P	Participant	Structure	666,389	4,966,670	585.0	37.9	38.6	4,455
CR2-C123-P	Participant	Structure	666,146	4,966,653	579.4	37.6	38.2	5,216
CR2-C45-P	Participant	Structure	664,058	4,965,862	570.0	37.3	38.2	3,907
CR2-C31-P	Participant	Structure	663,117	4,972,923	606.0	34.4	34.7	7,579
CR2-C32-P	Participant	Structure	659,469	4,967,984	575.2	33.9	35.0	4,678
CR2-C99-P	Participant	Structure	660,584	4,972,570	591.0	33.4	33.5	7,165
CR2-C28-P	Participant	Structure	659,208	4,968,159	572.8	32.7	33.7	5,630

* Not included in original submittal

Table C-2: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-D3-NP	Non-P	Structure	672,390	4,963,482	612.0	44.4	44.7	2,037
CR2-D85-NP	Non-P	Structure	669,593	4,976,302	603.0	44.1	44.7	1,949
CR2-D21-NP	Non-P	Structure	669,517	4,978,053	596.1	43.8	44.7	1,985
CR2-D83-NP	Non-P	Structure	675,891	4,966,810	579.0	43.7	44.0	1,929
CR2-D44-NP	Non-P	Structure	670,434	4,965,956	593.8	43.5	44.3	2,149
CR2-D108-NP	Non-P	Structure	670,354	4,965,949	594.0	43.4	44.2	2,198
CR2-D121-NP	Non-P	Structure	674,461	4,966,734	594.0	43.4	44.1	2,316
CR2-D86-NP	Non-P	Structure	673,842	4,966,875	597.0	43.3	43.8	1,985
CR2-D20-NP	Non-P	Structure	675,261	4,968,400	579.0	43.0	44.0	2,313
CR2-D77-NP	Non-P	Structure	672,044	4,966,468	600.0	43.0	43.7	2,444
CR2-D54-NP	Non-P	Structure	672,012	4,966,477	600.0	42.9	43.6	2,500
CR2-D221-NP	Non-P	Structure	670,351	4,973,543	606.0	42.8	43.1	2,041
CR2-D14-NP	Non-P	Structure	670,351	4,973,543	606.0	42.8	43.1	2,041
CR2-D15-NP	Non-P	Structure	674,387	4,968,515	588.0	42.5	43.3	2,297
CR2-D11-NP	Non-P	Structure	669,646	4,974,534	604.4	42.5	40.8	1,919
CR2-D12-NP	Non-P	Structure	668,558	4,969,840	604.7	42.4	44.0	2,051
CR2-D71-NP	Non-P	Structure	669,402	4,979,216	588.0	42.4	43.1	1,975
CR2-D30-NP	Non-P	Structure	669,549	4,974,233	611.9	42.2	40.8	2,044
CR2-D19-NP	Non-P	Structure	668,870	4,964,178	606.0	42.1	42.2	2,034
CR2-D5-NP	Non-P	Structure	668,781	4,964,897	603.0	42.1	39.7	1,923
CR2-D128-NP	Non-P	Structure	668,625	4,967,652	588.0	42.1	43.3	2,779
CR2-D220-NP	Non-P	Structure	670,260	4,967,728	597.0	42.1	43.6	2,211
CR2-D110-NP	Non-P	Structure	670,260	4,967,728	597.0	42.1	43.6	2,211
CR2-D105-NP	Non-P	Structure	670,348	4,963,826	611.7	41.9	42.8	2,821
CR2-D132-NP	Non-P	Structure	669,497	4,974,128	609.0	41.7	40.8	2,264
CR2-D18-NP	Non-P	Structure	671,540	4,976,154	582.0	41.7	43.2	2,201
CR2-D107-NP	Non-P	Structure	670,405	4,966,321	597.0	41.5	42.4	3,143
CR2-D79-NP	Non-P	Structure	672,172	4,974,737	585.0	41.5	43.0	1,955
CR2-D41-NP	Non-P	Structure	670,437	4,966,409	597.0	41.3	42.2	3,340
CR2-D126-NP	Non-P	Structure	670,227	4,967,455	593.3	41.2	42.5	2,749
CR2-D223-NP	Non-P	Structure	670,227	4,967,455	593.3	41.2	42.5	2,749
CR2-D62-NP	Non-P	Structure	669,355	4,974,624	609.0	41.1	41.1	2,913
CR2-D127-NP	Non-P	Structure	668,841	4,969,858	603.0	40.8	42.2	2,894
CR2-D65-NP	Non-P	Structure	670,422	4,966,654	597.0	40.8	41.8	3,583
CR2-D36-NP	Non-P	Structure	669,812	4,966,746	591.0	40.8	41.9	2,854
CR2-D101-NP	Non-P	Structure	672,538	4,961,910	612.8	40.7	41.2	2,677
CR2-D22-NP	Non-P	Structure	668,798	4,963,767	603.1	40.7	41.5	2,142
CR2-D125-NP	Non-P	Structure	670,404	4,966,786	597.0	40.7	41.7	3,422

* Not included in original submittal

Table C-2: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-D46-NP	Non-P	Structure	669,797	4,966,804	591.0	40.7	41.8	2,972
CR2-D120-NP	Non-P	Structure	673,401	4,964,165	609.0	40.6	41.4	3,110
CR2-D130-NP	Non-P	Structure	672,080	4,973,212	591.0	40.5	42.0	2,260
CR2-D222-NP	Non-P	Structure	672,081	4,973,212	591.0	40.5	42.0	2,264
CR2-D224-NP	Non-P	Structure	669,887	4,966,846	590.6	40.5	*	3,261
CR2-D91-NP	Non-P	Structure	667,546	4,976,173	618.0	40.2	41.4	4,203
CR2-D48-NP	Non-P	Structure	668,923	4,972,998	609.0	40.2	41.4	2,680
CR2-D17-NP	Non-P	Structure	672,023	4,969,597	597.0	40.0	41.4	3,343
CR2-D99-NP	Non-P	Structure	668,148	4,976,230	608.8	40.0	41.1	4,331
CR2-D45-NP	Non-P	Structure	668,018	4,976,064	611.5	39.9	41.0	4,393
CR2-D74-NP	Non-P	Structure	668,130	4,976,068	609.2	39.9	41.0	4,505
CR2-D90-NP	Non-P	Structure	670,516	4,962,327	612.0	39.6	40.6	3,360
CR2-D51-NP	Non-P	Structure	675,005	4,970,131	577.8	39.4	40.8	2,717
CR2-D189-NP	Non-P	Structure	667,228	4,971,527	606.0	38.8	40.1	3,757
CR2-D213-NP	Non-P	Structure	667,178	4,971,525	606.0	38.8	40.1	3,816
CR2-D129-NP	Non-P	Structure	669,645	4,973,005	606.0	38.8	39.4	4,511
CR2-D112-NP	Non-P	Structure	667,666	4,971,554	604.6	38.7	40.0	3,553
CR2-D113-NP	Non-P	Structure	667,774	4,971,544	606.9	38.7	40.0	3,537
CR2-D52-NP	Non-P	Structure	667,172	4,971,776	606.0	38.1	39.2	4,583
CR2-D72-NP	Non-P	Structure	671,925	4,970,149	603.0	38.0	39.1	4,495
CR2-D133-NP	Non-P	Structure	669,661	4,980,356	576.0	38.0	38.7	4,035
CR2-D84-NP	Non-P	Structure	667,159	4,972,169	598.2	37.7	38.8	5,535
CR2-D97-NP	Non-P	Structure	667,164	4,972,232	600.0	37.7	38.8	5,371
CR2-D100-NP	Non-P	Structure	668,589	4,972,064	609.9	37.7	38.7	4,708
CR2-D23-NP	Non-P	Structure	669,671	4,980,468	573.0	37.7	38.4	4,380
CR2-D9-NP	Non-P	Structure	668,597	4,971,999	611.5	37.6	38.6	4,921
CR2-D82-NP	Non-P	Structure	669,855	4,970,718	603.0	37.4	38.3	5,935
CR2-D92-NP	Non-P	Structure	671,159	4,971,610	597.2	37.3	38.4	3,881
CR2-D109-NP	Non-P	Structure	676,885	4,965,806	576.0	37.2	38.1	4,432
CR2-D95-NP	Non-P	Structure	671,994	4,971,562	600.0	37.0	38.0	3,930
CR2-D73-NP	Non-P	Structure	672,072	4,971,556	600.0	36.8	37.8	4,035
CR2-D104-NP	Non-P	Structure	670,443	4,961,600	613.8	36.7	37.6	4,058
CR2-D63-NP	Non-P	Structure	670,546	4,961,419	615.0	36.4	37.3	4,065
CR2-D75-NP	Non-P	Structure	669,473	4,981,625	570.0	36.4	37.1	6,355
CR2-D106-NP	Non-P	Structure	667,315	4,965,297	594.0	36.3	36.7	5,351
CR2-D190-NP	Non-P	Structure	675,131	4,970,954	573.0	36.0	36.9	4,485
CR2-D96-NP	Non-P	Structure	672,899	4,971,469	594.0	35.7	36.4	5,827
CR2-D103-NP	Non-P	Structure	670,588	4,961,119	615.0	35.4	36.2	4,606

* Not included in original submittal

[illegible]

* Not included in original submittal

[illegible]

Table C-3: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results 25 ft from occupied structures perimeter
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C98-NP	Non-P	660,155	4,976,007	582.8	45.0	44.9	1,749
CR2-C97-NP	Non-P	660,093	4,976,001	583.8	44.9	44.9	1,814
CR2-C61-NP	Non-P	660,630	4,976,840	582.5	44.1	44.6	1,667
CR1-C9-NP	Non-P	665,352	4,985,004	609.0	44.0	45.0	2,280
CR1-C13-NP	Non-P	663,792	4,985,785	612.0	43.5	44.0	2,589
CR1-C31-NP	Non-P	665,939	4,988,950	585.4	43.3	39.6	2,126
CR2-C62-NP	Non-P	666,992	4,977,048	615.0	43.2	44.0	1,860
CR1-C15-NP	Non-P	663,291	4,986,026	615.0	43.0	43.3	2,175
CR2-C38-NP	Non-P	660,874	4,966,929	585.5	43.0	44.7	1,906
CR2-C48-NP	Non-P	662,370	4,965,588	590.3	43.0	44.8	2,172
CR1-C12-NP	Non-P	662,222	4,985,736	603.0	42.9	43.8	2,201
CR1-C74-NP	Non-P	662,869	4,983,122	595.7	42.8	44.3	2,480
CR2-C65-NP	Non-P	665,217	4,977,746	609.0	42.8	44.4	2,139
CR1-C16-NP	Non-P	661,960	4,986,288	606.0	42.5	42.9	2,648
CR1-C12-1-NP	Non-P	662,199	4,986,047	606.0	42.4	43.0	2,818
CR2-C132-NP	Non-P	666,857	4,985,021	588.2	42.5	44.0	1,883
CR2-C2-NP	Non-P	662,238	4,980,604	590.9	42.3	42.9	1,880
CR2-C1-NP	Non-P	662,198	4,980,622	591.0	42.2	42.9	1,909
CR2-C131-NP	Non-P	666,732	4,984,987	591.0	41.6	43.1	2,287
CR1-C28-NP	Non-P	665,429	4,988,598	590.9	41.6	40.2	2,831
CR2-C79-NP	Non-P	666,869	4,984,663	587.9	41.5	43.0	2,703
CR1-C71-NP	Non-P	665,137	4,988,378	595.6	41.4	40.9	3,448
CR1-C70-NP	Non-P	665,135	4,988,293	595.9	41.3	41.0	3,540
CR1-C29-NP	Non-P	666,572	4,988,867	575.9	41.2	38.7	2,457
CR1-C72-NP	Non-P	665,158	4,988,170	594.6	41.1	41.1	3,776
CR1-C75-NP	Non-P	663,010	4,982,658	588.0	41.1	42.5	3,730
CR1-C79-NP	Non-P	660,452	4,983,750	595.9	41.2	42.7	2,037
CR1-C73-NP	Non-P	663,066	4,982,530	591.0	41.0	42.3	3,704
CR1-C76-NP	Non-P	662,981	4,982,580	588.3	40.9	42.3	3,901
CR2-C115-NP	Non-P	663,555	4,980,564	575.2	41.0	42.2	2,520
CR2-C54-NP	Non-P	662,636	4,976,079	597.0	40.8	41.9	2,287
CR1-C87-NP	Non-P	662,628	4,982,425	585.4	40.6	41.9	4,258
CR2-C39-NP	Non-P	664,089	4,966,486	566.2	40.5	41.1	2,178
CR2-C47-NP	Non-P	662,200	4,975,837	594.5	40.5	40.7	2,821
CR1-C7-NP	Non-P	660,893	4,984,861	593.2	40.2	41.2	3,022
CR2-C102-NP	Non-P	662,025	4,976,085	594.1	40.2	40.3	3,609
CR2-C103-NP	Non-P	662,046	4,976,067	594.8	40.1	40.3	3,547
CR2-C105-NP	Non-P	662,122	4,976,029	595.3	40.1	40.3	3,425
CR2-C71-NP	Non-P	665,411	4,970,503	586.1	40.1	41.5	2,529

* Not included in original submittal

Table C-3: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results 25 ft from occupied structures perimeter
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C36-NP	Non-P	660,475	4,974,426	578.6	40.0	40.2	2,992
CR2-C53-NP	Non-P	662,401	4,964,782	582.0	40.0	41.7	2,257
CR2-C117-NP	Non-P	664,742	4,976,142	594.2	39.6	41.0	3,481
CR2-C134-NP	Non-P	667,097	4,973,011	613.0	39.6	40.9	3,363
CR2-C46-NP	Non-P	660,435	4,965,627	582.0	39.7	41.5	2,569
CR2-C10-NP	Non-P	665,189	4,966,505	570.0	39.5	39.8	2,438
CR2-C116-NP	Non-P	664,640	4,976,142	591.1	39.4	40.8	3,533
CR2-C16-NP	Non-P	665,418	4,966,866	567.0	39.2	39.7	2,756
CR2-C135-NP	Non-P	667,172	4,966,196	595.2	39.0	40.1	2,884
CR2-C136-NP	Non-P	667,209	4,966,166	595.4	39.0	40.1	2,887
CR1-C24-NP	Non-P	660,176	4,983,887	601.1	38.9	40.0	3,038
CR2-C42-NP	Non-P	664,887	4,975,388	597.0	38.6	39.8	3,566
CR1-C67-NP	Non-P	659,789	4,985,057	606.0	38.5	38.8	5,791
CR1-C81-NP	Non-P	660,062	4,983,083	597.0	38.6	39.8	3,094
CR2-C40-NP	Non-P	659,189	4,974,765	578.3	38.7	38.7	2,841
CR2-C75-NP	Non-P	664,866	4,969,808	583.7	38.6	39.8	4,396
CR1-C66-NP	Non-P	659,718	4,985,032	606.0	38.4	38.7	5,800
CR2-C49-NP	Non-P	660,907	4,964,846	582.0	38.5	40.2	3,271
CR2-C76-NP	Non-P	664,747	4,969,738	584.8	38.4	39.6	4,560
CR1-C5-NP	Non-P	659,958	4,984,794	604.8	38.2	38.7	5,659
CR2-C43-NP	Non-P	664,382	4,975,544	597.0	38.1	39.1	4,232
CR2-C52-NP	Non-P	662,688	4,964,792	585.9	38.1	39.7	3,054
CR1-C4-NP	Non-P	659,744	4,984,749	606.0	38.0	38.3	5,981
CR2-C23-NP	Non-P	664,069	4,969,661	594.0	37.8	38.9	4,439
CR2-C37-NP	Non-P	663,037	4,974,496	606.0	37.7	38.1	3,537
CR2-C77-NP	Non-P	663,865	4,969,694	597.0	37.7	38.7	4,406
CR2-C119-NP	Non-P	665,052	4,974,682	600.0	37.5	38.5	4,760
CR2-C118-NP	Non-P	665,014	4,974,639	600.0	37.4	38.3	4,947
CR2-C55-NP	Non-P	660,765	4,964,777	582.0	37.4	39.1	3,655
CR2-C107-NP	Non-P	662,265	4,978,194	577.7	37.2	38.1	4,564
CR2-C56-NP	Non-P	660,759	4,964,737	582.0	37.1	38.8	3,786
CR2-C58-NP	Non-P	660,764	4,964,686	582.0	36.9	38.6	3,904
CR2-C51-NP	Non-P	662,977	4,964,794	584.0	36.8	38.2	3,934
CR1-C88-NP	Non-P	660,156	4,980,595	570.9	36.6	37.7	4,045
CR2-C7-NP	Non-P	665,694	4,966,179	570.0	36.6	37.1	4,409
CR2-C69-NP	Non-P	661,701	4,978,792	564.0	36.6	37.3	5,171
CR2-C112-NP	Non-P	665,928	4,972,630	603.0	36.4	37.1	6,575
CR2-C29-NP	Non-P	661,223	4,968,144	595.2	36.5	37.6	4,639

* Not included in original submittal

Table C-3: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results 25 ft from occupied structures perimeter
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C67-NP	Non-P	660,379	4,978,592	556.1	36.4	37.2	5,033
CR1-C80-NP	Non-P	659,351	4,983,174	604.4	36.2	36.8	5,308
CR1-C84-NP	Non-P	659,607	4,982,216	594.0	36.2	37.1	5,856
CR1-C85-NP	Non-P	659,706	4,981,419	588.0	36.1	37.1	4,819
CR2-C72-NP	Non-P	663,856	4,970,488	597.0	35.7	36.4	6,135
CR2-C91-NP	Non-P	663,938	4,970,546	597.0	35.7	36.4	6,457
CR2-C24-NP	Non-P	661,541	4,969,653	600.0	35.7	36.1	3,809
CR2-C35-NP	Non-P	658,964	4,974,334	566.8	35.7	35.7	4,432
CR2-C92-NP	Non-P	663,855	4,970,535	597.0	35.6	36.3	6,247
CR2-C90-NP	Non-P	664,088	4,970,672	594.0	35.6	36.3	6,863
CR2-C96-NP	Non-P	659,316	4,974,063	570.6	35.6	35.6	4,813
CR2-C95-NP	Non-P	659,248	4,974,054	567.0	35.4	35.4	4,898
CR2-C80-NP	Non-P	664,705	4,972,092	597.3	35.1	35.6	7,684
CR2-C64-NP	Non-P	660,901	4,964,220	582.0	35.1	36.5	4,429
CR2-C66-NP	Non-P	662,396	4,963,954	582.0	34.7	36.0	4,429
CR2-C109-NP	Non-P	662,699	4,972,874	606.0	34.5	34.7	7,169
CR2-C44-NP	Non-P	659,145	4,966,062	561.4	34.5	35.9	4,183
CR2-C104-NP	Non-P	662,109	4,972,735	604.0	34.3	34.6	6,608
CR2-C106-NP	Non-P	662,165	4,972,711	604.7	34.3	34.5	6,749
CR2-C137-NP	Non-P	658,951	4,979,194	568.2	34.1	34.7	6,555
CR2-C86-NP	Non-P	662,880	4,971,302	603.0	34.1	34.3	7,208
CR2-C87-NP	Non-P	662,841	4,971,294	603.0	34.0	34.3	7,165
CR2-C22-NP	Non-P	661,202	4,972,711	597.0	34.1	34.3	6,247
CR2-C101-NP	Non-P	660,732	4,972,807	591.0	34.0	34.2	6,266
CR2-C151-NP	Non-P	663,934	4,964,475	556.1	33.9	34.6	6,929
CR2-C89-NP	Non-P	662,244	4,971,076	603.0	33.8	34.1	6,489
CR2-C3-NP	Non-P	664,345	4,964,571	556.0	33.7	34.3	7,497
CR2-C100-NP	Non-P	660,592	4,972,602	591.0	33.5	33.6	7,057
CR2-C93-NP	Non-P	659,203	4,973,158	584.9	33.0	33.0	7,792
CR2-C74-NP	Non-P	660,687	4,969,931	586.5	32.9	33.2	6,732
CR2-C94-NP	Non-P	659,202	4,973,052	583.9	32.8	32.8	8,133
CR2-C155-NP	Non-P	657,554	4,975,128	554.6	32.9	*	7,034
CR2-C30-NP	Non-P	659,100	4,968,023	568.6	32.8	33.8	5,502
CR2-C68-NP	Non-P	662,517	4,963,408	579.0	32.6	33.4	6,237
CR2-C143-NP	Non-P	657,016	4,977,505	553.6	32.2	32.6	7,444
CR2-C142-NP	Non-P	656,697	4,977,269	566.9	31.6	31.8	8,432
CR2-C41-P	Participant	660,770	4,975,147	596.4	45.6	43.7	1,532
CR1-C10-P	Participant	663,510	4,985,195	609.0	45.4	45.9	1,634

* Not included in original submittal

Table C-3: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results 25 ft from occupied structures perimeter
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C78-P	Participant	665,273	4,983,933	609.0	45.4	47.0	1,919
CR1-C68-P	Participant	662,652	4,987,606	609.0	45.2	45.2	2,146
CR1-C69-P	Participant	662,685	4,987,619	609.0	45.1	45.1	2,185
CR1-C11-P	Participant	664,111	4,985,679	609.0	44.9	45.3	1,860
CR2-C50-P	Participant	661,252	4,976,035	597.0	44.9	43.6	1,696
CR1-C20-P	Participant	663,054	4,987,455	606.0	43.9	44.0	2,336
CR1-C77-P	Participant	661,915	4,983,367	591.0	43.8	45.4	1,654
CR2-C59-P	Participant	664,952	4,976,698	601.9	43.2	44.8	1,654
CR2-C133-P	Participant	666,992	4,967,681	571.2	42.6	43.1	2,500
CR2-C57-P	Participant	666,667	4,976,162	613.8	42.5	43.6	2,362
CR2-C63-P	Participant	665,528	4,977,285	612.0	42.5	44.0	2,185
CR2-C27-P	Participant	662,985	4,968,167	582.0	42.6	44.1	1,726
CR1-C18-P	Participant	663,651	4,987,157	610.4	42.2	42.6	3,409
CR1-C89-P	Participant	662,062	4,982,029	584.3	42.2	43.6	2,165
CR2-C26-P	Participant	664,733	4,968,915	591.0	42.1	43.6	1,959
CR1-C86-P	Participant	662,086	4,982,135	585.0	41.8	43.3	2,306
CR2-C154-P	Participant	660,684	4,967,166	588.0	41.7	43.4	2,041
CR2-C34-P	Participant	663,934	4,966,991	570.1	41.0	41.6	2,133
CR2-C70-P	Participant	665,521	4,970,518	588.9	41.0	42.5	2,215
CR1-C21-P	Participant	660,756	4,984,086	594.0	40.7	42.0	2,388
CR1-C22-P	Participant	660,755	4,984,082	594.0	40.7	42.0	2,375
CR2-C33-P	Participant	663,878	4,967,612	576.1	40.6	41.9	2,999
CR1-C23-P	Participant	660,619	4,984,078	595.8	40.3	41.5	2,523
CR1-C78-P	Participant	660,190	4,983,788	602.3	39.2	40.4	2,835
CR1-C25-P	Participant	660,190	4,983,788	602.3	39.2	40.4	2,838
CR1-C8-P	Participant	660,532	4,984,445	599.4	39.0	40.0	3,740
CR2-C129-P	Participant	666,716	4,966,751	591.0	39.0	39.9	3,356
CR2-C60-P	Participant	662,287	4,976,800	594.0	39.1	39.9	3,793
CR2-C130-P	Participant	666,727	4,966,695	591.0	38.9	39.8	3,350
CR2-C128-P	Participant	666,636	4,966,649	589.0	38.5	39.3	3,671
CR2-C126-P	Participant	666,389	4,966,670	585.0	37.9	38.6	4,455
CR2-C123-P	Participant	666,146	4,966,653	579.4	37.6	38.2	5,216
CR2-C45-P	Participant	664,058	4,965,862	570.0	37.4	38.3	3,907
CR2-C31-P	Participant	663,117	4,972,923	606.0	34.5	34.7	7,579
CR2-C32-P	Participant	659,469	4,967,984	575.2	33.9	35.1	4,678
CR2-C99-P	Participant	660,584	4,972,570	591.0	33.4	33.5	7,165
CR2-C28-P	Participant	659,208	4,968,159	572.8	32.8	33.7	5,630

* Not included in original submittal

Table C-3: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results 25 ft from occupied structures perimeter
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-D3-NP	Non-P	672,390	4,963,482	612.0	44.5	44.8	2,037
CR2-D85-NP	Non-P	669,593	4,976,302	603.0	44.2	44.8	1,949
CR2-D21-NP	Non-P	669,517	4,978,053	596.1	43.8	44.8	1,985
CR2-D83-NP	Non-P	675,891	4,966,810	579.0	43.8	44.2	1,929
CR2-D44-NP	Non-P	670,434	4,965,956	593.8	43.6	44.4	2,149
CR2-D108-NP	Non-P	670,354	4,965,949	594.0	43.5	44.3	2,198
CR2-D121-NP	Non-P	674,461	4,966,734	594.0	43.5	44.2	2,316
CR2-D86-NP	Non-P	673,842	4,966,875	597.0	43.4	43.9	1,985
CR2-D20-NP	Non-P	675,261	4,968,400	579.0	43.0	44.0	2,313
CR2-D77-NP	Non-P	672,044	4,966,468	600.0	43.1	43.7	2,444
CR2-D54-NP	Non-P	672,012	4,966,477	600.0	43.0	43.6	2,500
CR2-D221-NP	Non-P	670,351	4,973,543	606.0	42.9	43.3	2,041
CR2-D14-NP	Non-P	670,351	4,973,543	606.0	42.9	43.3	2,041
CR2-D15-NP	Non-P	674,387	4,968,515	588.0	42.6	43.3	2,297
CR2-D11-NP	Non-P	669,646	4,974,534	604.4	42.7	40.8	1,919
CR2-D12-NP	Non-P	668,558	4,969,840	604.7	42.5	44.1	2,051
CR2-D71-NP	Non-P	669,402	4,979,216	588.0	42.5	43.2	1,975
CR2-D30-NP	Non-P	669,549	4,974,233	611.9	42.3	40.8	2,044
CR2-D19-NP	Non-P	668,870	4,964,178	606.0	42.3	42.4	2,034
CR2-D5-NP	Non-P	668,781	4,964,897	603.0	42.2	39.8	1,923
CR2-D128-NP	Non-P	668,625	4,967,652	588.0	42.1	43.3	2,779
CR2-D220-NP	Non-P	670,260	4,967,728	597.0	42.2	43.7	2,211
CR2-D110-NP	Non-P	670,260	4,967,728	597.0	42.2	43.7	2,211
CR2-D105-NP	Non-P	670,348	4,963,826	611.7	41.9	42.9	2,821
CR2-D132-NP	Non-P	669,497	4,974,128	609.0	41.8	40.9	2,264
CR2-D18-NP	Non-P	671,540	4,976,154	582.0	41.9	43.3	2,201
CR2-D107-NP	Non-P	670,405	4,966,321	597.0	41.6	42.5	3,143
CR2-D79-NP	Non-P	672,172	4,974,737	585.0	41.7	43.2	1,955
CR2-D41-NP	Non-P	670,437	4,966,409	597.0	41.3	42.2	3,340
CR2-D126-NP	Non-P	670,227	4,967,455	593.3	41.2	42.6	2,749
CR2-D223-NP	Non-P	670,227	4,967,455	593.3	41.2	42.6	2,749
CR2-D62-NP	Non-P	669,355	4,974,624	609.0	41.1	41.1	2,913
CR2-D127-NP	Non-P	668,841	4,969,858	603.0	40.8	42.3	2,894
CR2-D65-NP	Non-P	670,422	4,966,654	597.0	40.8	41.8	3,583
CR2-D36-NP	Non-P	669,812	4,966,746	591.0	40.8	42.0	2,854
CR2-D101-NP	Non-P	672,538	4,961,910	612.8	40.8	41.3	2,677
CR2-D22-NP	Non-P	668,798	4,963,767	603.1	40.9	41.7	2,142
CR2-D125-NP	Non-P	670,404	4,966,786	597.0	40.7	41.8	3,422

* Not included in original submittal

Table C-3: Crowned Ridge II Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results 25 ft from occupied structures perimeter
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-D46-NP	Non-P	669,797	4,966,804	591.0	40.7	41.9	2,972
CR2-D120-NP	Non-P	673,401	4,964,165	609.0	40.6	41.5	3,110
CR2-D130-NP	Non-P	672,080	4,973,212	591.0	40.6	42.1	2,260
CR2-D222-NP	Non-P	672,081	4,973,212	591.0	40.6	42.1	2,264
CR2-D224-NP	Non-P	669,887	4,966,846	590.6	40.5	*	3,261
CR2-D91-NP	Non-P	667,546	4,976,173	618.0	40.2	41.4	4,203
CR2-D48-NP	Non-P	668,923	4,972,998	609.0	40.3	41.5	2,680
CR2-D17-NP	Non-P	672,023	4,969,597	597.0	40.1	41.5	3,343
CR2-D99-NP	Non-P	668,148	4,976,230	608.8	40.0	41.1	4,331
CR2-D45-NP	Non-P	668,018	4,976,064	611.5	39.9	41.0	4,393
CR2-D74-NP	Non-P	668,130	4,976,068	609.2	39.9	41.0	4,505
CR2-D90-NP	Non-P	670,516	4,962,327	612.0	39.7	40.7	3,360
CR2-D51-NP	Non-P	675,005	4,970,131	577.8	39.5	40.9	2,717
CR2-D189-NP	Non-P	667,228	4,971,527	606.0	38.9	40.2	3,757
CR2-D213-NP	Non-P	667,178	4,971,525	606.0	38.9	40.2	3,816
CR2-D129-NP	Non-P	669,645	4,973,005	606.0	38.8	39.4	4,511
CR2-D112-NP	Non-P	667,666	4,971,554	604.6	38.8	40.1	3,553
CR2-D113-NP	Non-P	667,774	4,971,544	606.9	38.8	40.0	3,537
CR2-D52-NP	Non-P	667,172	4,971,776	606.0	38.1	39.3	4,583
CR2-D72-NP	Non-P	671,925	4,970,149	603.0	38.0	39.2	4,495
CR2-D133-NP	Non-P	669,661	4,980,356	576.0	38.1	38.7	4,035
CR2-D84-NP	Non-P	667,159	4,972,169	598.2	37.7	38.8	5,535
CR2-D97-NP	Non-P	667,164	4,972,232	600.0	37.8	38.8	5,371
CR2-D100-NP	Non-P	668,589	4,972,064	609.9	37.7	38.7	4,708
CR2-D23-NP	Non-P	669,671	4,980,468	573.0	37.8	38.4	4,380
CR2-D9-NP	Non-P	668,597	4,971,999	611.5	37.6	38.6	4,921
CR2-D82-NP	Non-P	669,855	4,970,718	603.0	37.4	38.3	5,935
CR2-D92-NP	Non-P	671,159	4,971,610	597.2	37.4	38.4	3,881
CR2-D109-NP	Non-P	676,885	4,965,806	576.0	37.3	38.2	4,432
CR2-D95-NP	Non-P	671,994	4,971,562	600.0	37.0	38.0	3,930
CR2-D73-NP	Non-P	672,072	4,971,556	600.0	36.9	37.9	4,035
CR2-D104-NP	Non-P	670,443	4,961,600	613.8	36.8	37.7	4,058
CR2-D63-NP	Non-P	670,546	4,961,419	615.0	36.5	37.4	4,065
CR2-D75-NP	Non-P	669,473	4,981,625	570.0	36.5	37.2	6,355
CR2-D106-NP	Non-P	667,315	4,965,297	594.0	36.3	36.8	5,351
CR2-D190-NP	Non-P	675,131	4,970,954	573.0	36.0	36.9	4,485
CR2-D96-NP	Non-P	672,899	4,971,469	594.0	35.7	36.4	5,827
CR2-D103-NP	Non-P	670,588	4,961,119	615.0	35.5	36.2	4,606

* Not included in original submittal

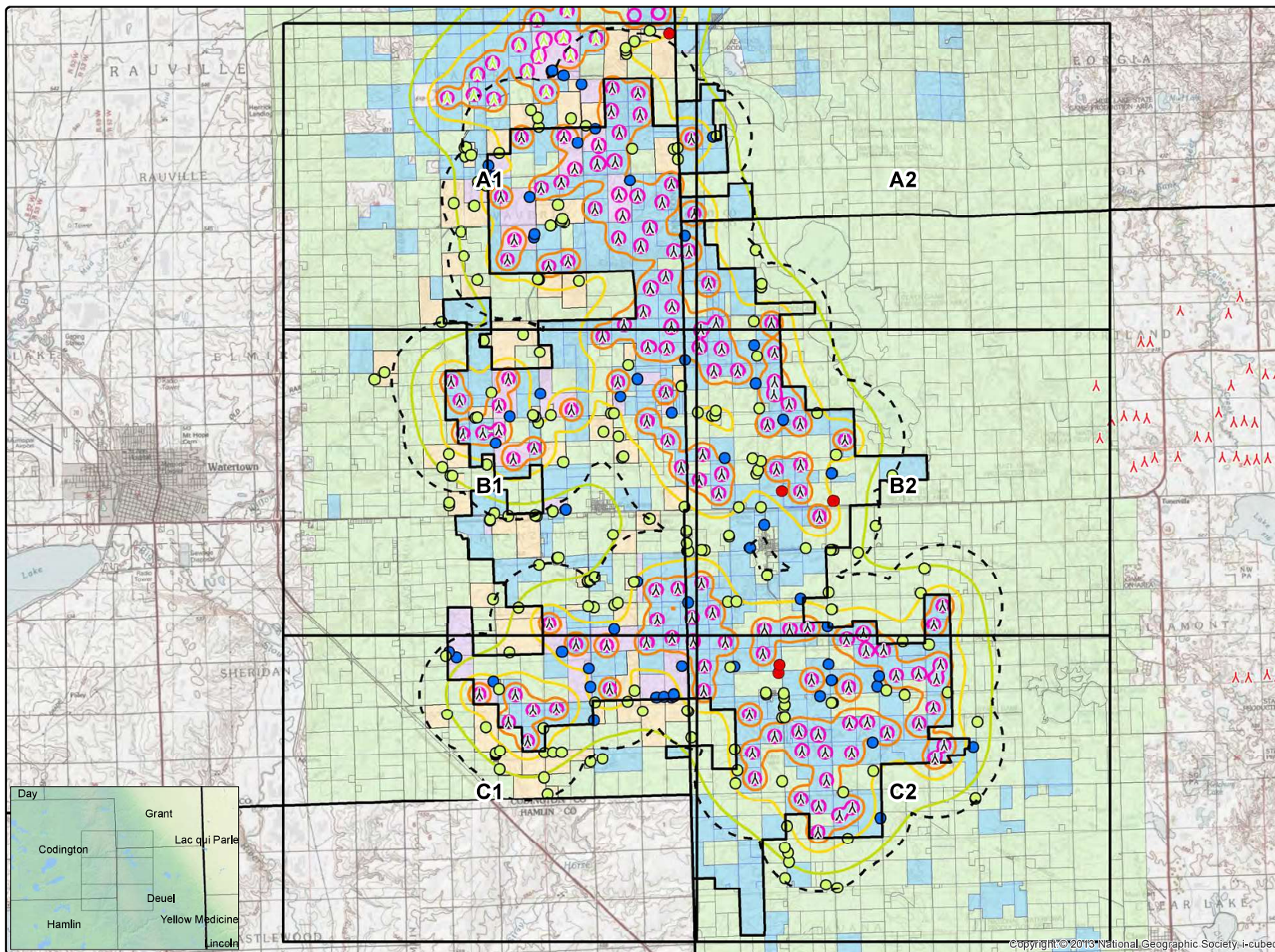
Deuel County
continued

* Not included in original submittal

[illegible]

002806

APPENDIX D: STANDARD RESOLUTION SOUND MAPS





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Crowned Ridge II Wind Farm 300 MW Sound Overview Map

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures and Codington County parcel boundaries within 2 km.

Predicted sound pressure levels at existing residences and Codington County land parcel boundaries.

Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date

Drawn By: AS Checked By: JH

Legend

- △ Crowned Ridge II Turbines
- △ Crowned Ridge Turbines
- △ Deuel Harvest Turbines
- 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Noise
- Participants Noise

Sound Pressure (dBA)

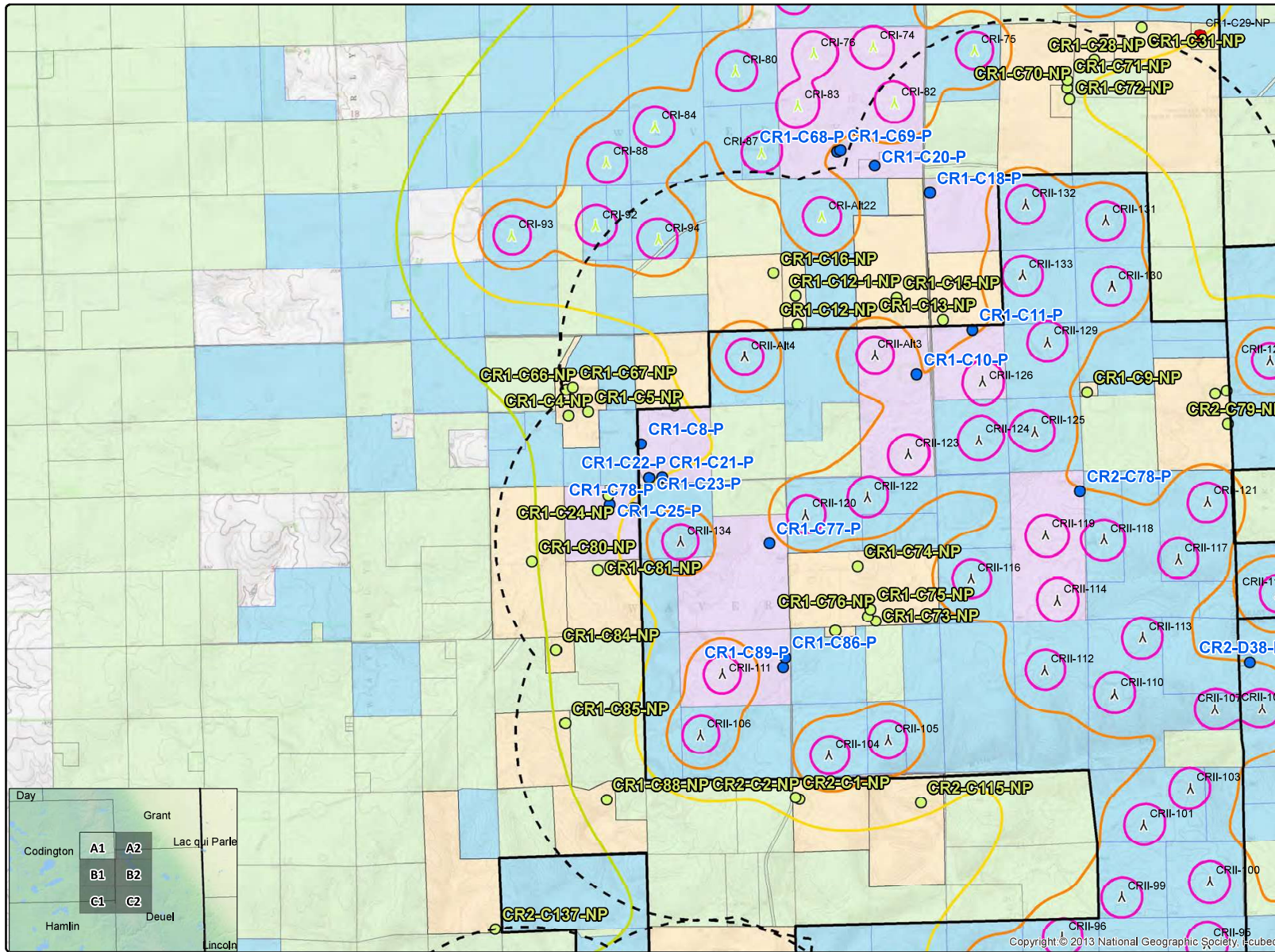
- 30
- 35
- 40
- 45
- 50

- Non-Participating Codington Parcels
- Participating Codington_Parcels
- Non-Participating Parcels
- Participating Parcels

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0 0.75 1.5 3 Mile

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Crowned Ridge II Wind Farm
300 MW
Sound Pressure Iso-Lines

Client
 SWCA Environmental Consultants

Project Description
 Wind turbine layout with occupied structures and Codington County parcel boundaries within 2 km.
 Predicted sound pressure levels at existing residences and Codington County land parcel boundaries.
 Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431
Issue Dates

1	Original	2019.09.18
#	Description	Date
Drawn By:	AS	Checked By: JH

Legend

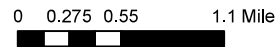
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- △ Crowned Ridge Turbines
- △ Deuel Harvest Turbines
- 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Noise
- Participants Noise

Sound Pressure (dBA)

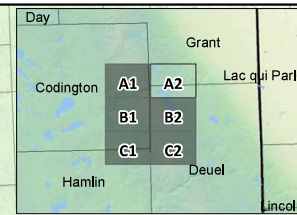
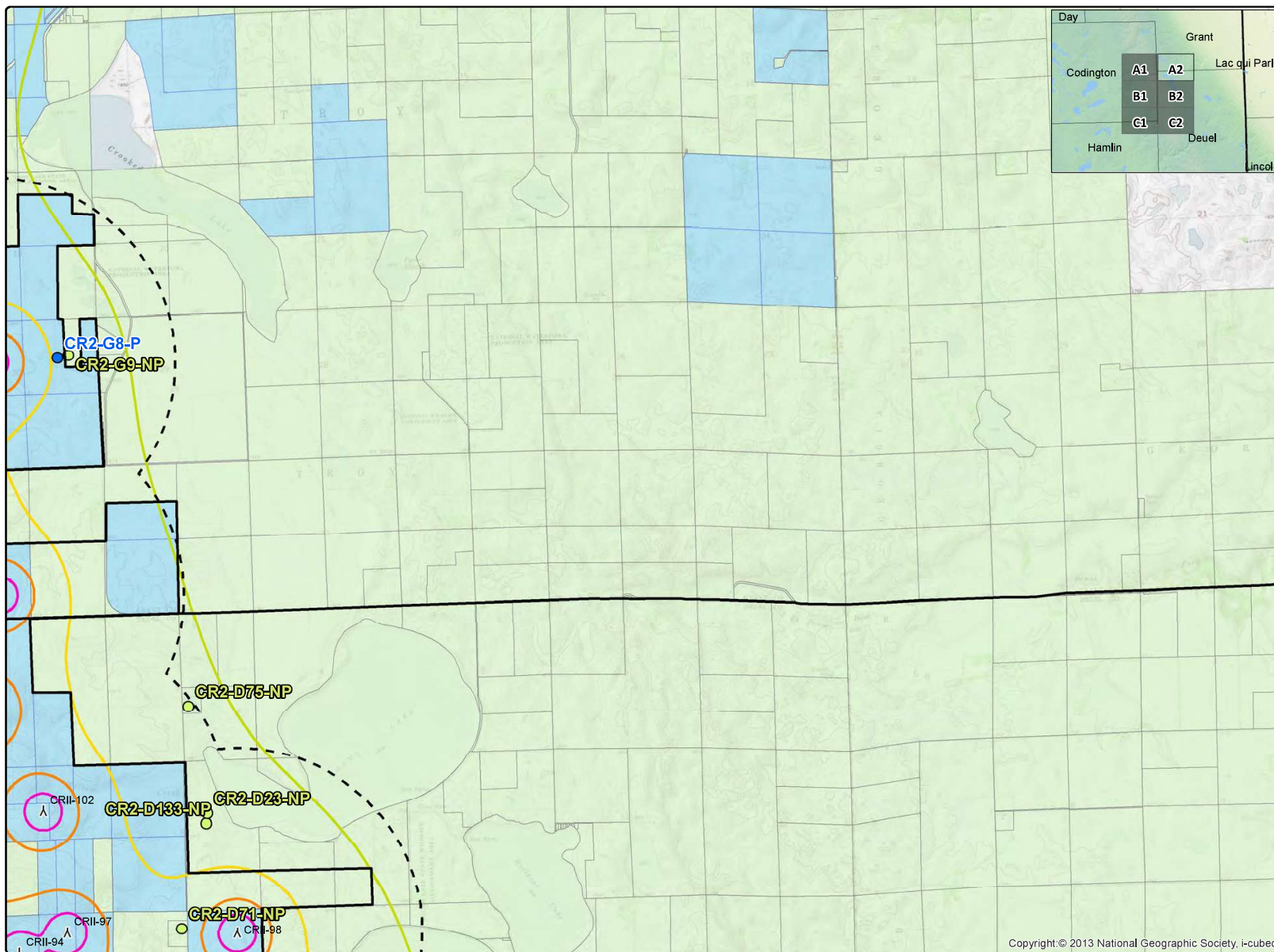
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- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Parcels
- Participating Parcels

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WIND ENERGY

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Crowned Ridge II Wind Farm 300 MW Sound Pressure Iso-Lines

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures and Codrington County parcel boundaries within 2 km.

Predicted sound pressure levels at existing residences and Codrington County land parcel boundaries.

Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431

Issue Dates

#	Description	Date
1	Original	2019.09.18

Drawn By: AS **Checked By:** JH

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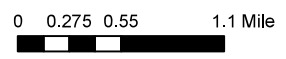
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- ▲ Deuel Harvest Turbines
- 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Noise
- Participants Noise

Sound Pressure (dBA)

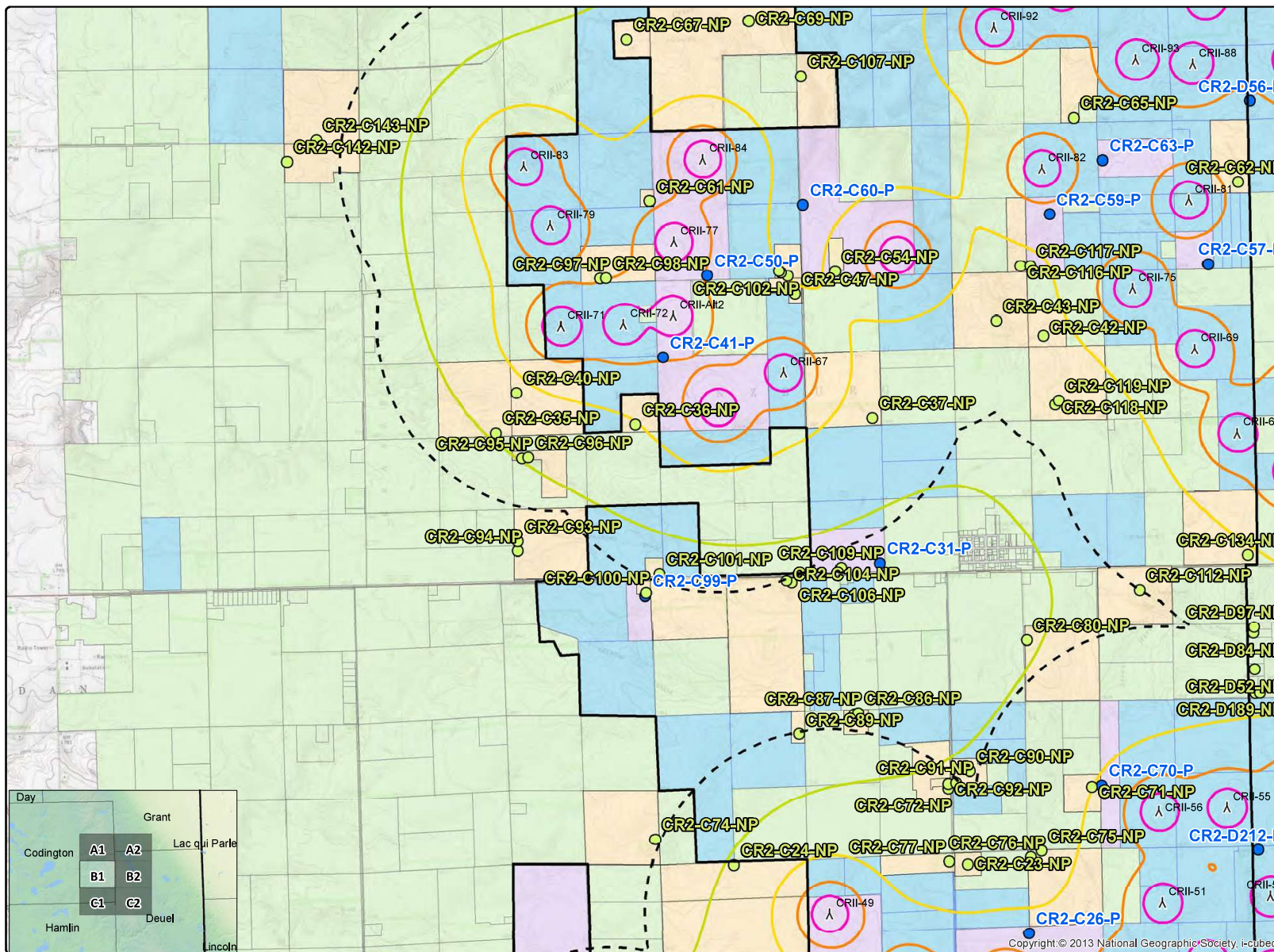
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- Non-Participating Codrington_Parcel
- Participating Codrington_Parcel
- Non-Participating Parcel
- Participating Parcel

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Crowned Ridge II Wind Farm 300 MW Sound Pressure Iso-Lines

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures and Codington County parcel boundaries within 2 km.

Predicted sound pressure levels at existing residences and Codington County land parcel boundaries.

Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date

Drawn By: AS **Checked By:** JH

Legend

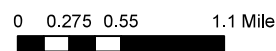
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- ▲ Crowned Ridge Turbines
- ▲ Deuel Harvest Turbines
- 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Noise
- Participants Noise

Sound Pressure (dBA)

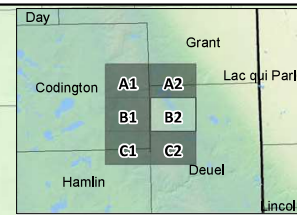
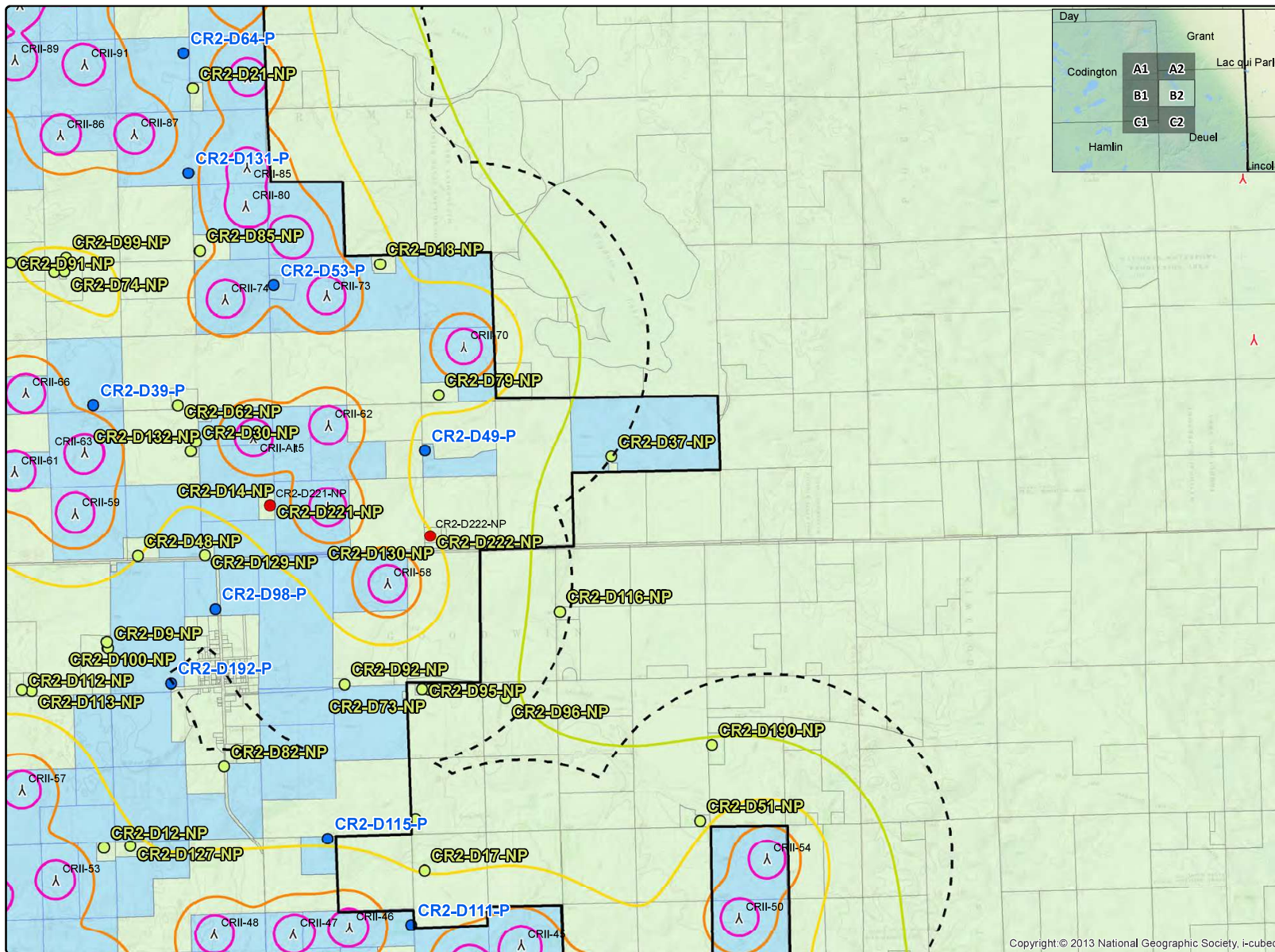
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 Non-Participating Codington Parcels
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 Participating Parcels

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EAPC
WIND ENERGY

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**Crowned Ridge II Wind Farm
300 MW
Sound Pressure Iso-Lines**

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures and Codington County parcel boundaries within 2 km.

Predicted sound pressure levels at existing residences and Codington County land parcel boundaries.

Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date

Drawn By: AS *Checked By:* JH

Legend

- ▲ Crowned Ridge II Turbines
- ▲ Crowned Ridge Turbines
- ▲ Deuel Harvest Turbines
- 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
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- Participants Noise

Sound Pressure (dBA)

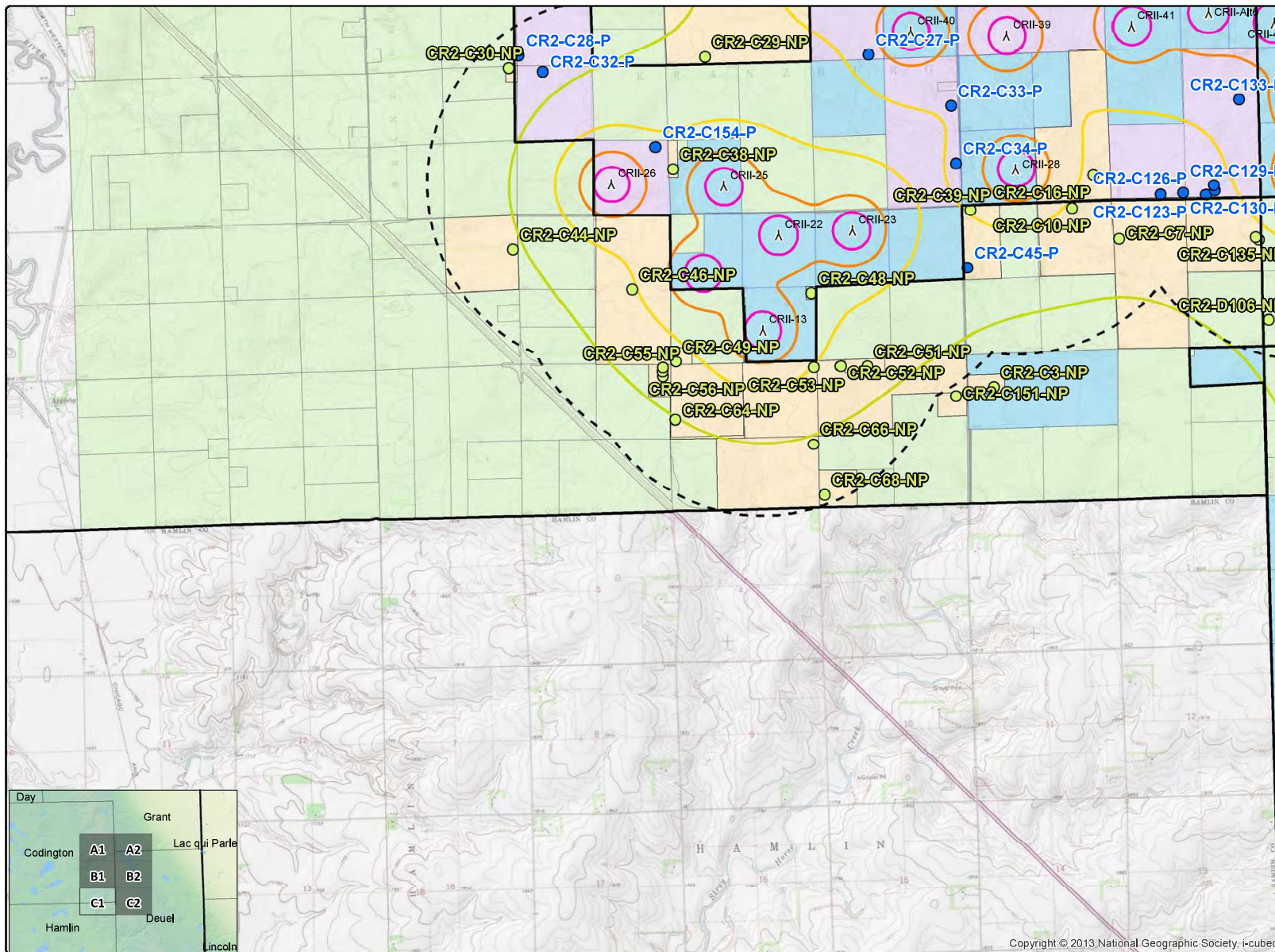
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- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Parcels
- Participating Parcels

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Crowned Ridge II Wind Farm
300 MW
Sound Pressure Iso-Lines

Client
 SWCA Environmental Consultants

Project Description
 Wind turbine layout with occupied structures and Codington County parcel boundaries within 2 km.
 Predicted sound pressure levels at existing residences and Codington County land parcel boundaries.
 Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date

Drawn By: AS *Checked By:* JH

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- ▲ Crowned Ridge II Turbines
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- 2 km Turbine Buffer
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- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Noise
- Participants Noise

Sound Pressure (dBA)

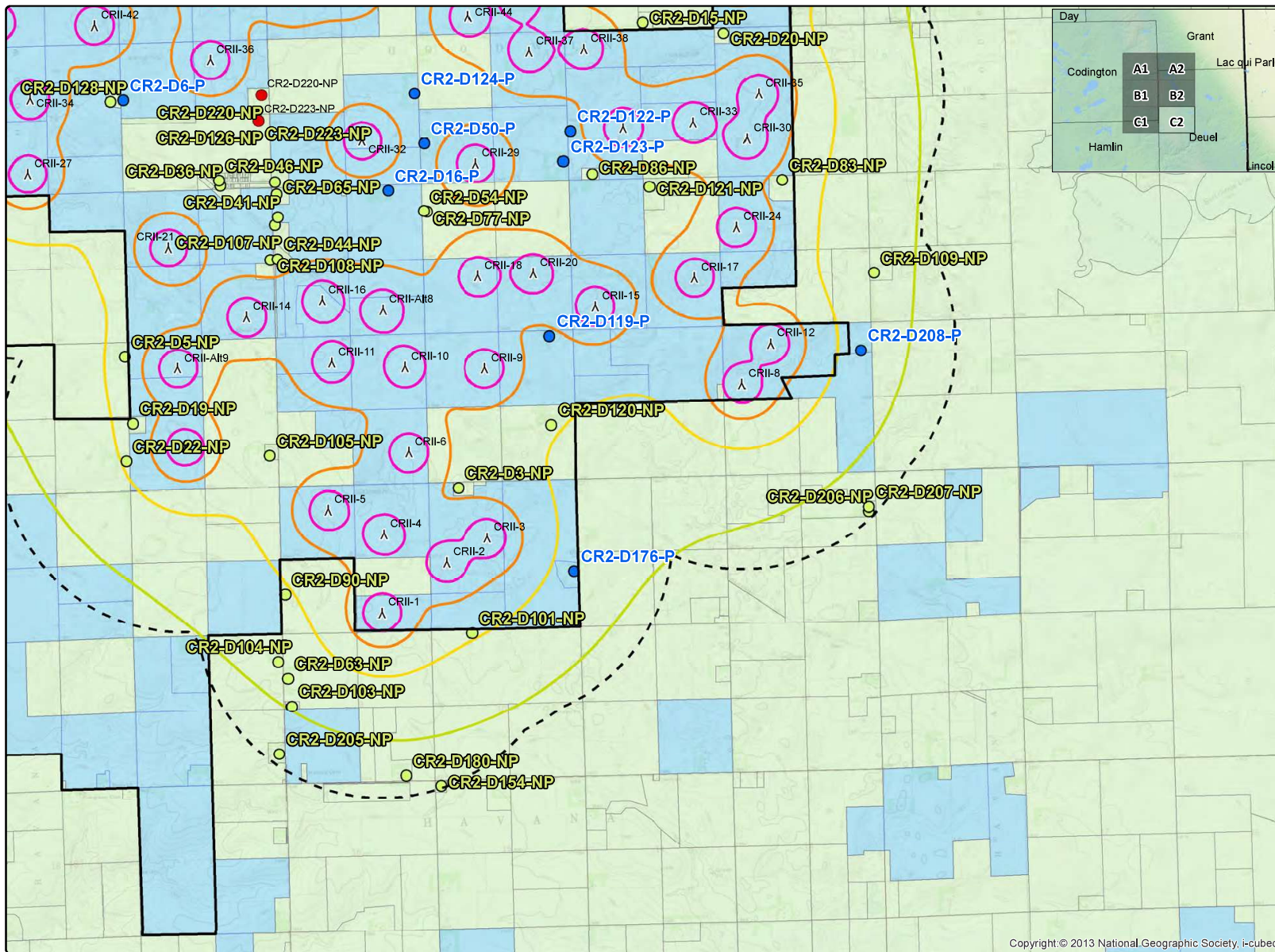
- 30
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- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Parcels
- Participating Parcels

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Crowned Ridge II Wind Farm 300 MW Sound Pressure Iso-Lines

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures and Codington County parcel boundaries within 2 km.

Predicted sound pressure levels at existing residences and Codington County land parcel boundaries.

Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431
Issue Dates

1	Original	2019.09.18
#	Description	Date
Drawn By: AS		Checked By: JH

Legend

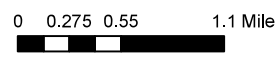
- ▲ Crowned Ridge II Turbines
- ▲ Crowned Ridge Turbines
- ▲ Deuel Harvest Turbines
- 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Noise
- Participants Noise

Sound Pressure (dBA)

- 30
- 35
- 40
- 45
- 50

- Non-Participating Codington Parcels
- Participating Codington_Parcels
- Non-Participating Parcels
- Participating Parcels

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Final Report
Crowned Ridge II Wind Farm
Shadow Flicker Study
Codington, Deuel and Grant Counties, SD

Submitted To:

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Grand Forks, ND, 58201
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September 18,
2019

Author:

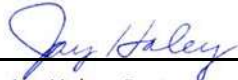

Jay Haley, Partner

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Report Update

EAPC bears no responsibility to update this report for any changes occurring subsequent to the final issuance of this report.

Revision History

Revision No.	Revision Purpose	Date	Revised By
0	Original	7/4/2019	J. Haley
1	Updated land status Several corrections	7/9/2019	J. Haley
2	Updated array	9/18/2019	J. Haley

Executive Summary

EAPC was hired to provide estimates of the potential shadow flicker impacts for a proposed wind turbine layout in Codington, Deuel and Grant Counties of the Crowned Ridge II wind farm project in northeastern South Dakota. The scope of this report includes all proposed turbines included in the Crowned Ridge II project that will be permitted through the South Dakota Public Utilities Commission. Locations of area occupied structures and a wind turbine layout (138 turbines) using a mixture of wind turbines manufactured by General Electric (GE) were provided to EAPC by Crowned Ridge Wind II, LLC. Locations of the adjacent Crowned Ridge wind farm (142 turbines) were supplied to EAPC by Crowned Ridge Wind, LLC. The adjacent Deuel Harvest wind farm was not included because no shadow impacts will be experienced from those turbines due to the long distances from Crowned Ridge Wind II receptors. A computer model was built combining digital elevation data with the information supplied to generate shadow flicker models for the site. The resulting models were then used to perform shadow flicker calculations for the 280 turbines. Cumulative shadow flicker was calculated including the effects from both wind farms, and site-wide realistic shadow flicker maps were produced to predict the shadow flicker at nearby residences within the Crowned Ridge II Project area.

The Crowned Ridge II wind farm project was modeled for all counties within the turbine layout and is described in this report as one project. However, for purposes of organization and because of the differences in compliance criteria, the modeling and results of the study are presented individually for each county.

The model is based on a number of conservative assumptions. No credit was taken for the blocking effects of trees or buildings. The receptors were omni-directional rather than modeling specific facades of buildings, and the study assumes 100% turbine availability.

The scope of this study includes the shadow flicker impacts of the Crowned Ridge II wind farm on the three counties it is located within, Codington, Deuel and Grant. The shadow flicker ordinances of all three counties limit the maximum number of shadow flicker to 30 hours per year at occupied structures.

Crowned Ridge II Codington County Turbines

Codington County's current Ordinance #68 Zoning Ordinance Section 5.22.03.12.a notes that the applicable Shadow flicker limit is 30 hr/yr at an occupied structure, which is what has been evaluated in this report for Codington County.

For the shadow study in Codington County, 131 occupied structures (35 participating and 96 non-participating) were represented in the model by omni-directional shadow receptors that simulate a 1 m x 1 m window at 1 m above ground level.

Crowned Ridge II Deuel County Turbines

Deuel County's current Ordinance B2004-01-23B, Section 1215.03 paragraph 13 b.) sets the limit at 30 hr/yr at the perimeter of existing residences, which is what has been evaluated in this report for Deuel County.

For the shadow study in Deuel County, 104 occupied structures (21 participating and 83 non-participating) were represented in the model by omni-directional shadow receptors that simulate a 1 m x 1 m window at 1 m above ground level.

Crowned Ridge II Grant County Turbines

Grant County's current Ordinance 2016-01C, Section 1211.04, paragraph 9 set the limit at 30 hours per year at occupied structures, which is what has been evaluated in this report for Grant County.

For the shadow study in Grant County, 4 occupied structures (1 participating and 3 non-participating) were represented in the model by omni-directional shadow receptors that simulate a 1 m x 1 m window at 1 m above ground level.

For the Crowned Ridge II turbine array provided, no occupied structures experienced more than 30 hours of shadow flickering per year based on realistic assumptions regarding operational time and sunshine probability, with the exception of 1 participating landowner with 38 hours and 20 minutes of shadow flicker per year and 1 non-participating landowner with 32 hours and 23 minutes of shadow flicker per year. Assuming either curtailment or a signed waiver for these 2 receptors, the Crowned Ridge II wind farm is in compliance with the shadow flicker limitations set forth in Codington County's Section 5.22.03 paragraph 13 of Ordinance #68, Deuel County's Section 1215.03, paragraph 13 b.) of Ordinance B2004-01-23B and Section 1211.04 paragraph 14 of Grant County's Ordinance 2016-01C, which is 30 hours per year.

1. INTRODUCTION

EAPC was hired to conduct shadow flicker studies for the regional development of the Crowned Ridge II wind farm project located in Codington, Deuel and Grant Counties in northeastern South Dakota. The layout consists of 13 GE 2.1 MW wind turbines with a hub height of 80 meters and 125 GE 2.3 MW wind turbines with a hub height of 90 meters (including 6 alternate turbine locations) for a total of 138 wind turbines. The adjacent Crowned Ridge project consisting of 125 GE 2.3 MW wind turbines with a hub height of 90 meters (including 10 alternate turbine locations) and 13 GE 2.3 MW wind turbines with a hub height of 80 meters for a total of 142 wind turbines was included in the analysis. The locations of the proposed wind turbines were supplied by Crowned Ridge Wind II, LLC.

From the database of occupied structures and coordinates supplied by Crowned Ridge Wind II, LLC, 131 occupied structures (35 participating and 96 non-participating) in Codington County and 104 occupied structures (21 participating and 83 non-participating) in Deuel County, and 4 occupied structures (1 participating and 3 non-participating) in Grant County for a total of 239 occupied structures (57 participating and 182 non-participating) were found to be within 2 kilometers of a wind turbine and were included in the shadow models. Shadow flicker does not extend beyond a distance of approximately 1,700 meters from the wind turbine base.

The area of interest for this report is located in Codington, Deuel and Grant Counties near the town of Watertown in northeastern South Dakota. The surrounding terrain has a change in elevation across the project site ranging from 569 to 616 meters (1,867 to 2,021 feet) at the wind turbine base. The region's vegetation is comprised primarily of prairie grass and agricultural land. The project overview map can be found in Appendix A.

2. BACKGROUND AND COUNTY REGULATIONS

To determine if the layout provided would be compliant for the Crowned Ridge II Project and in line with each county's regulations, detailed shadow flicker scenarios were analyzed using a computer model.

Shadow flicker from wind turbines occurs when rotating wind turbine blades move between the sun and the observer. Shadow flicker is generally experienced in areas near wind turbines where the distance between the observer and wind turbine blade is short enough that sunlight has not been significantly diffused by the atmosphere. When the blades rotate, this shadow creates a pulsating effect, known as shadow flicker. If the blade's shadow is passing over the window of a building, it will have the effect of increasing and decreasing the light intensity in the room at a low frequency in the range of 0.4 to 0.78 Hz, hence the term "flicker." In this case, with a maximum rotational speed of 15.6 rpm for the GE 2.3-116, the frequency would be 0.78 Hz. This flickering effect can also be experienced outdoors, but the effect is typically less intense, and becomes less intense when farther from the wind turbine causing the flicker.

This flickering effect is most noticeable within approximately 1,000 meters of the turbine, and becomes more and more diffused as the distance increases. Beyond 1,700 meters, the shadow flicker effects are indistinguishable. There are no uniform standards defining what distance from the turbine is regarded as an acceptable limit beyond which the shadow flicker is considered to be insignificant. The same applies to the number of hours of flickering that is deemed to be acceptable. For this study, in the interest of being conservative, any occupied structure within 2,000 meters of a wind turbine was included in the analysis.

Shadow flicker is typically greatest in the winter months when the angle of the sun is lower and casts longer shadows. The effect is also more pronounced around sunrise and sunset when the sun is near the horizon and the shadows are longer. A number of factors influence the amount of shadow flicker on the shadow receptors.

One consideration is the environment around the shadow receptor. Obstacles such as terrain, trees or buildings between the wind turbine and the receptor can significantly reduce or eliminate shadow flicker effects. Deciduous trees may block the shadow flickering effect to some degree, depending on the tree density, species present and time of year. Deciduous trees can lead to a reduction of shadow flicker during the summer when the trees are bearing leaves. However, during the winter months, these trees are without their leaves and their impact on shadow flicker is not as significant. Coniferous trees tend to provide mitigation from shadow flicker year round. For this study, no credit was taken for any potential shading effects from any type of trees or other obstacles that would reduce the number of shadow flickering hours at the structures which will make the shadow flicker prediction more conservative (higher than in reality).

Another consideration is the time of day when shadow flicker occurs. For example, it may be more acceptable for private homes to experience the shadow flickering during daytime hours when family members may be at work or school. Likewise, a commercial property would not be significantly affected if all the shadow flicker impact occurred before or after business hours.

The climate also needs to be considered when assessing shadow flicker. In areas with a significant amount of overcast weather, there would be less shadow flicker, as there are no shadows if the sun is blocked by clouds. Also, if the wind is not blowing, the turbines would not be operational and therefore not creating shadow flickering.

Crowned Ridge II Codington County Regulations

Codington County's current Ordinance #68 Zoning Ordinance Section 5.22.03, paragraph 13 prescribes shadow flicker limits for wind turbine projects as follows:

"13. Flicker Analysis. A Flicker Analysis shall include the duration and location of flicker potential for all schools, churches, businesses and occupied dwellings within a one (1) mile radius of each turbine within a project. The applicant shall provide a site map identifying the locations of shadow flicker that may be caused by the project and the

expected durations of the flicker at these locations from sun-rise to sun-set over the course of a year. The analysis shall account for topography but not for obstacles such as accessory structures and trees. Flicker at any receptor shall not exceed thirty (30) hours per year within the analysis area.”

Therefore, Codington County’s only applicable shadow flicker limit is 30 hr/yr at schools, churches, businesses and occupied dwellings, which is what has been evaluated in this report for Codington County. For purposes of this report, these residences will be referred to as occupied structures.

Crowned Ridge II Deuel County Regulations

Deuel County’s current ordinance B2004-01-23B, Section 1215.03, paragraph 13 b.) prescribes shadow flicker limits for wind turbine projects as follows:

“b. Limit for allowable shadow flicker at existing residences to no more than 30 hours annually.”

Therefore, Deuel County’s only applicable shadow flicker limit is 30 hr/yr at the perimeter of existing residences. For purposes of this report, these residences will be referred to as occupied structures.

Crowned Ridge II Grant County Regulations

Grant County’s current Ordinance 2016-01C, Section 1211.04, paragraph 9 prescribes shadow flicker limits for wind turbine projects as follows:

“9. Flicker Analysis. A Flicker Analysis shall include the duration and location of flicker potential for all schools, churches, businesses and occupied dwellings within a one (1) mile radius of each turbine within a project. The applicant shall provide a site map identifying the locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations from sun-rise to sun-set over the course of a year. The analysis shall account for topography but not for obstacles such as accessory structures and trees. Flicker at any receptor shall not exceed thirty (30) hours per year within the analysis area.”

Therefore, Grant County’s current applicable shadow flicker limit is 30 hr/yr for all schools, churches, businesses and occupied dwellings within a one (1) mile radius of each turbine within a project. For purposes of this report, these schools, churches, residences, businesses, and occupied dwellings will hereafter be referred to as occupied structures.

3. STUDY METHODOLOGY

This shadow flicker analysis was performed utilizing windPRO, which has the ability to calculate detailed shadow flicker maps across an entire area of interest or at site-specific locations using shadow receptors.

Shadow maps which indicate where the shadows will be cast and for how long, are generated using windPRO, calculating the shadow flicker in varying user-defined resolutions. Standard resolution was used for this study and represents shadow flicker being calculated every three minutes of every day over the period of an entire year over a grid with a 20 m by 20 m resolution.

In addition to generating a shadow flicker map, the amount of shadow flicker that may occur at a specific point can be calculated more precisely by placing a shadow receptor at the location of interest and essentially “recording” the shadow flicker that occurs as the relative sunrise to sunset motion of the sun is simulated throughout an entire year.

The point-specific shadow flicker calculation is run at a higher resolution as compared to the shadow flicker map calculation to utilize the highest precision available within windPRO. Shadow flicker at each shadow receptor location is calculated every minute of every day for an entire year. Shadow receptors can be configured to represent an omnidirectional window of a specific size at a specific point (greenhouse mode) or a window facing a single direction of a specific size at a specific point (single direction mode). The shadow receptors used in this analysis were configured as greenhouse-mode receptors representing a 1 m x 1 m window located 1 m above ground level. This represents more of a “worst-case” scenario and thus will produce more conservative results since it assumes that all windows are always in direct line of sight with the turbines and the sun.

As a part of the calculation method, windPRO must determine whether or not a turbine will be visible at the receptor locations and not blocked by local topography or obstacles. It does this by performing a preliminary Zones of Visual Influence (ZVI) calculation, utilizing 10 m grid spacing. If a particular turbine is not visible within the 10 m x 10 m area that the shadow receptor is contained within, then that turbine is not included in the shadow flicker calculation for that receptor.

The inputs for the windPRO shadow flicker calculation include the following:

- Turbine Coordinates
- Turbine Specifications
- Shadow Receptor Coordinates
- Monthly Sunshine Probabilities
- Joint Wind Speed and Direction Frequency Distribution
- USGS Digital Elevation Model (DEM) (height contour data)

A description of each input variable and how they affect the shadow flicker calculation are included below.

Turbine Coordinates: The location of a wind turbine in relation to a shadow receptor is one of the most important factors in determining shadow flicker impacts. A line-of-sight is required for shadow flicker to occur. The intensity of the shadow flicker is dependent

upon the distance from the wind turbine and weather conditions. The table of Crowned Ridge II wind turbine coordinates can be found in Appendix B.

Turbine Specifications: A wind turbine's total height and rotor diameter will be included in the windPRO shadow flicker model. The taller the wind turbine, the more likely shadow flicker could have an impact on local shadow receptors as the ability to clear obstacles (such as hills or trees) is greater, although in this analysis, no credit is taken for any such blockage from trees. The larger the rotor diameter is, the wider the area where shadows will be cast. Also included with the turbine specifications are the cut-in and cut-out wind speeds within which the wind turbine is operational. If the wind speed is below the cut-in threshold or above the cut-out threshold, the turbine rotor will not be spinning and thus shadow flicker will not occur.

Shadow Receptor Coordinates: As with the wind turbine coordinates, the elevation, distance and orientation of a shadow receptor in relation to the wind turbines and the sun are the main factors in determining the impact of shadow flicker. EAPC was provided with coordinates for all participating and non-participating occupied structures found to be located within 2 kilometers of the 133 proposed wind turbine locations.

Monthly Sunshine Probabilities: windPRO calculates sunrise and sunset times to determine the total annual hours of daylight for the modeled area. To further refine the shadow flicker calculations, the monthly probability of sunshine is included to account for cloud cover. The greater the probability of cloud cover, the less of an impact from shadow flicker. The monthly sunshine probabilities for many of the larger cities across the United States are available from the National Climatic Data Center (NCDC). For this study, 18 years' worth of monthly sunshine probability data were retrieved for Huron, SD, which was the closest, most representative station, to create the long-term representative monthly sunshine probabilities. The long-term representative monthly average sunshine probabilities are presented below in Table 1.

Table 1: Huron, SD monthly sunshine probabilities

Huron, SD Monthly Sunshine Probabilities (1965-1983)												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sunshine %	0.62	0.62	0.62	0.59	0.66	0.69	0.76	0.74	0.69	0.59	0.51	0.51
retrieved from: http://www1.ncdc.noaa.gov/pub/data/ccd-data/pctpos15.dat												

Joint Wind Speed and Direction Frequency Distribution: A set of long-term corrected wind distributions was provided by Crowned Ridge Wind II, LLC to represent the annual wind speed and direction distribution for the project site. This data was used to estimate the probable number of operational hours for the wind turbines from each of the 12 wind direction sectors. During operation, the wind turbine rotors will always be assumed to face into the wind and automatically orient themselves as the wind direction changes. Shadow flicker can only occur when the blades are turning and the wind turbine

rotor is between the sun and the receptor. Shadow flicker is most significant when the rotor is facing the sun.

USGS Digital Elevation Model (DEM) (height contour data): For this study, 3 meter resolution USGS National Elevation Database (NED) DEM's were used to construct 10-foot interval height contour lines for the windPRO shadow flicker model. The height contour information is important to the shadow flicker calculation since it allows the model to place the wind turbines and the shadow receptors at the correct elevations. The height contour lines also allow the model to include the topography of the site when calculating the zones of visual influence surrounding the wind turbine and shadow receptor locations.

Wind Turbines from Adjacent Projects: The Crowned Ridge project is adjacent to the Crowned Ridge II project. Because shadow flicker impacts are cumulative, there will be impacts from the Crowned Ridge project that will be additive to the impacts from the Crowned Ridge II project. The Crowned Ridge wind turbine array was included in the model to capture the full shadow flicker impacts on the receptors. The Dakota Range and Deuel Harvest wind farms, which are adjacent to the Crowned Ridge wind farm are too far away to have any significant cumulative impacts on The Crowned Ridge II wind farm and therefore are not included in the study. Crowned Ridge Wind II, LLC is not aware of any other operating energy conversion facilities, existing or under construction, or other major industrial facilities under regulation within or adjacent to the Project Area.

The actual calculation of potential shadow flicker at a given shadow receptor is carried out by simulating the environment near the wind turbines and the shadow receptors. The position of the sun relative to the turbine rotor disk and the resulting shadow is calculated in time steps of one minute throughout an entire year. If the shadow of the rotor disk (which in the calculation is assumed solid) at any time casts a shadow on a receptor window, then this step will be registered as one minute of shadow flicker. The calculation also requires that the sun must be at least 3.0° above the horizon in order to register shadow flicker. When the sun angle is less than 3.0°, the shadow quickly becomes too diffuse to be distinguishable since the amount of atmosphere that the light must pass through is 15 times greater than when the sun is directly overhead.

The sun's path with respect to each wind turbine location is calculated by the software to determine the paths of cast shadows for every minute of every day over a full year. The turbine runtime and direction are calculated from the site's long-term wind speed and direction distribution. Finally, the effects of cloud cover are calculated using long-term reference data (monthly sunshine probability) to arrive at the projected annual flicker time at each receptor.

4. RESULTS OF ANALYSIS

The term "realistic" as used in this report means that turbine operational hours and direction as well as local sunshine probabilities have been factored in, but no blocking or shading effects due to trees or structures have been accounted for. This means that the

realistic estimates are still inherently conservative values. Also, the realistic shadow flicker hours predicted by windPRO assumes an availability factor of 100% which is very unlikely to be the case. Actual availability factors will likely be in the range of 95-98%, however, with a conservative approach to estimating shadow flicker totals, the realistic estimates are not discounted accordingly.

Crowned Ridge II Codington County Turbines

For Codington County, a total of 131 occupied structures (35 participating and 96 non-participating) within 2 kilometers of a wind turbine were analyzed and standard resolution realistic shadow flicker maps were generated for the turbine array.

The 131 shadow receptors were then modeled as greenhouse-mode receptors and the estimated shadow flicker was calculated for the array. No shadow receptors are expected to experience more than 30 hours of shadow flicker per year except for one non-participating receptor (CR2-C98-NP) with 32 hours and 23 minutes of shadow flicker per year, and one participating receptor (CR1-C10-P) with 38 hours and 20 minutes of shadow flicker per year. Assuming curtailment will be used to limit the shadow flicker at receptor CR2-C98-NP, the Crowned Ridge II wind farm would be in compliance with Section 5.22.03 paragraph 13 of Ordinance #68. Of the 131 receptors, the number that registered no shadow flicker hours was 35 (26.7%).

The maximum modeled expected shadow flicker at a participating receptor is 39 hours and 20 minutes and the maximum modeled expected shadow flicker at a non-participating receptor is 32 hours and 23 minutes. Table 2 contains the realistic shadow flicker distribution of the 131 occupied residences.

Table 2: Codington County occupied structures cumulative realistic shadow flicker distribution.

Realistic Shadow Flicker (hrs/year)	Number of Non-Participating Occupied Structures	Number of Participating Occupied Structures
0	31	4
0 to 5	27	10
5 to 10	20	5
10 to 15	9	8
15 to 20	5	4
20 to 25	1	1
25 to 30	2	2
30+	1	1

Crowned Ridge II Deuel County Turbines

For Deuel County, 104 occupied structures (21 participating and 83 non-participating) within 2 kilometers of a wind turbine were found and analyzed. Standard resolution realistic shadow flicker maps were generated for the turbine array.

The 104 shadow receptors were then modeled as greenhouse-mode receptors and the estimated shadow flicker was calculated for the array. No occupied structures are expected to experience more than 29 hours and 32 minutes of shadow flicker per year. Therefore, the Crowned Ridge II wind farm would be in compliance with Section 1215.03, paragraph 13 b.) of Deuel County Ordinance B2004-01-23B. Of the 102 occupied structures, the number that registered no shadow flicker hours was 32 (31.4%).

The maximum modeled expected shadow flicker at a participating receptor is 29 hours and 32 minutes and the maximum modeled expected shadow flicker at a non-participating receptor is 28 hours and 59 minutes. Table 3 contains the realistic shadow flicker distribution of the 103 occupied structures.

Table 3: Deuel County occupied structures cumulative realistic shadow flicker distribution.

Realistic Shadow Flicker (hrs/year)	Number of Non-Participating Occupied Structures	Number of Participating Occupied Structures
0	32	2
0 to 5	16	1
5 to 10	9	5
10 to 15	13	3
15 to 20	7	6
20 to 25	4	1
25 to 30	2	3
30+	0	0

Crowned Ridge II Grant County Turbines

For Grant County, 4 (1 participating and 3 non-participating) occupied structures within 2 kilometers of a wind turbine were found and analyzed. Standard resolution realistic shadow flicker maps were generated for the turbine array.

The 4 shadow receptors were then modeled as greenhouse-mode receptors and the estimated shadow flicker was calculated for the array. No occupied structures are expected to experience more than 8 hours and 56 minutes of shadow flicker per year.

Therefore, the Crowned Ridge II wind farm would be in compliance with Section 1211.04 paragraph 14 of Grant County's Ordinance 2016-01C.

The maximum modeled expected shadow flicker at a participating receptor is 8 hours and 56 minutes and the maximum modeled expected shadow flicker at a non-participating receptor is 6 hours and 29 minutes. Table 3 contains the realistic shadow flicker distribution of the 2 occupied structures.

Table 4: Grant County occupied structures cumulative realistic shadow flicker distribution.

Realistic Shadow Flicker (hrs/year)	Number of Non-Participating Occupied Structures	Number of Participating Occupied Structures
0	2	0
0 to 5	0	0
5 to 10	1	1
10 to 15	0	0
15 to 20	0	0
20 to 25	0	0
25 to 30	0	0
30+	0	0

Crowned Ridge II Turbines Summary

For the Crowned Ridge II Project, no occupied structures are expected to experience more than 30 hours of shadow flicker per year, for all three counties, except for one non-participating receptor (CR2-C98-NP) with 32 hours and 23 minutes of shadow flicker per year, and one participating receptor (CR1-C10-P) with 38 hours and 20 minutes of shadow flicker per year. The summary of results is shown in table 4 below. The full table of results from the realistic shadow flicker study can be found in Appendix C. Table C-1 lists the results sorted by receptor number and Table C-2 lists the results sorted by shadow flicker hours from highest to lowest. The Crowned Ridge wind turbine array was included in the model to capture the full shadow flicker impacts on the receptors, which are included in the tabular results. The maps showing the shadow flicker impact iso-lines for the Crowned Ridge II wind farm are in Appendix D. The maps include adjacent wind farm turbines that are within 2 km of an occupied structure within the Crowned Ridge II footprint.

Table 5: Summary of shadow flicker predictions.

County	Feature	Shadow Limit (hr/yr)	Maximum Predicted (hr/yr)
Codington	Participating Occupied Structures	30	38:20
	Non-Participating Occupied Structures	30	32:23
Deuel	Participating Occupied Structures	30	29:32
	Non-Participating Occupied Structures	30	28:59
Grant	Participating Occupied Structures	30	8:56
	Non-Participating Occupied Structures	30	6:29

5. CONCLUSIONS

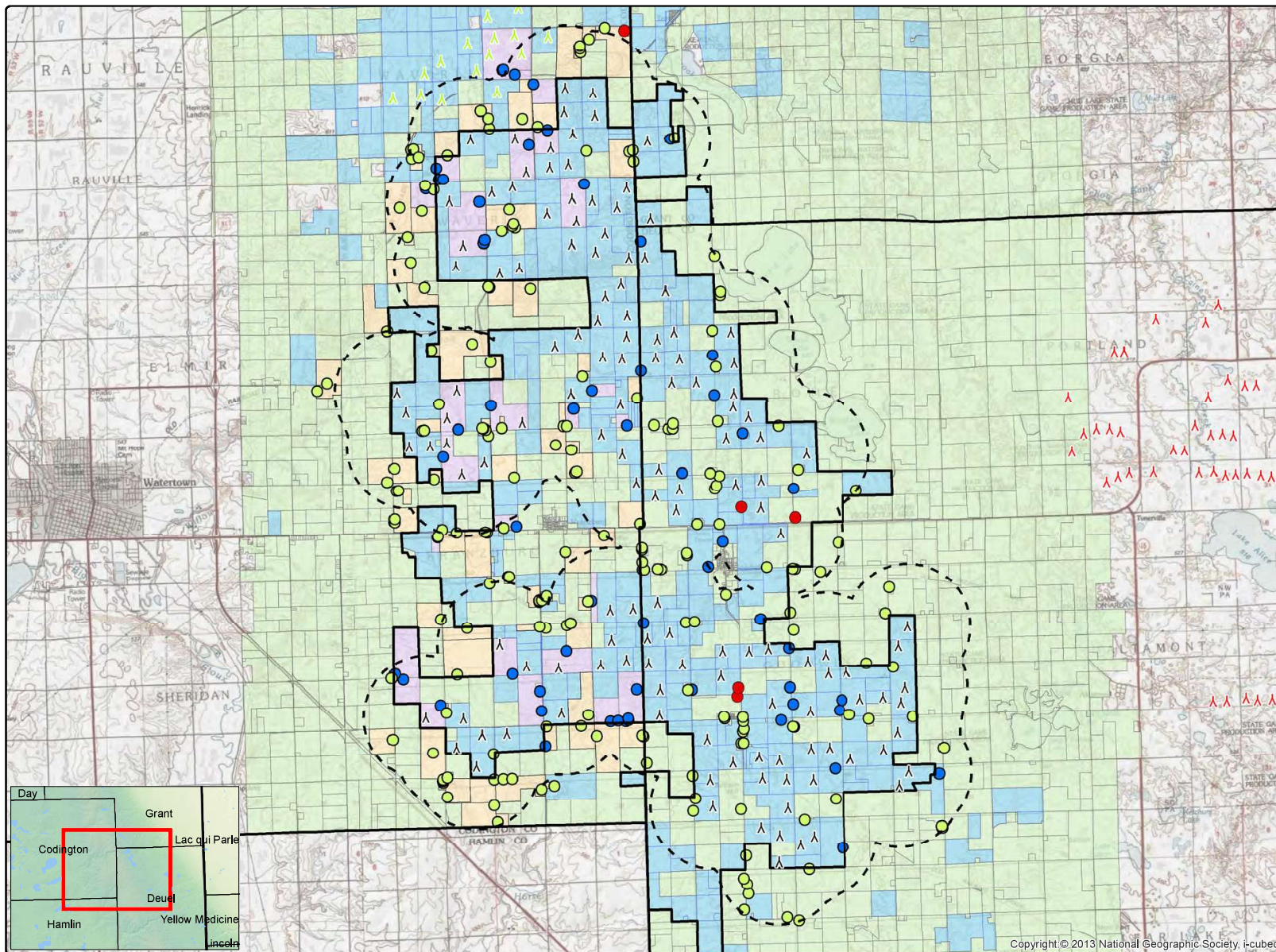
The shadow flicker impact on the receptors was calculated with reductions due to turbine operational direction and sunshine probabilities included. For all three counties, no occupied structures are expected to experience more than 30 hours of shadow flicker per year, except for two receptors in Codington County, one non-participating receptor (CR2-C98-NP) with 32 hours and 23 minutes of shadow flicker per year, and one participating receptor (CR1-C10-P) with 38 hours and 20 minutes of shadow flicker per year. Assuming curtailment will be used to limit the shadow flicker at receptor CR2-C98-NP, the Crowned Ridge II wind farm would be in compliance with Section 5.22.03 paragraph 13 of Codington County Ordinance #68.

This shadow flicker analysis is based on a number of conservative assumptions including:

- No credit was taken for the blocking effects of trees or buildings.
- The receptors were omni-directional rather than modeling specific facades of buildings.
- Study assumes 100% turbine availability
- Study assumes all turbine locations, including alternates, are built and operating

The overall effect of using these conservative assumptions indicate that realistically, the number of hours of shadow flicker that would be observed will be less than those predicted by this study.

APPENDIX A: CROWNED RIDGE II WIND ENERGY PROJECT SITE OVERVIEW MAP





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WIND ENERGY

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**Crowned Ridge II Wind Farm
300 MW
Overview Map**

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with land parcels within the project footprint and existing occupied structures.

Codington County land parcels within 2 km of a wind turbine.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date

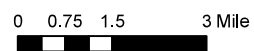
Drawn By: AS **Checked By:** JH

Legend

- ▲ Crowned Ridge II Turbines
- ▲ Crowned Ridge Turbines
- ▲ Deuel Harvest Turbines
- - - 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Noise
- Participants Noise
- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Parcels
- Participating Parcels

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APPENDIX B: WIND TURBINE COORDINATES

Crowned Ridge II Wind Farm

GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

WTG	Type	Turbine Model	Easting (m)	Northing (m)	Base Elev. AMSL (m)	Sound Profile
CR11-1	Primary	GE2.3 116RD 90HH r2.madE	671,559	4,962,133	612.0	LNTE
CR11-2	Primary	GE2.3 116RD 90HH r2.madE	672,263	4,962,678	614.9	LNTE
CR11-3	Primary	GE2.3 116RD 90HH r2.madE	672,701	4,962,945	611.2	LNTE
CR11-4	Primary	GE2.3 116RD 90HH r2.madE	671,580	4,962,979	614.7	LNTE
CR11-5	Primary	GE2.3 116RD 90HH r2.madE	670,978	4,963,241	610.6	LNTE
CR11-6	Primary	GE2.3 116RD 90HH r2.madE	671,848	4,963,864	609.0	LNTE
CR11-7	Primary	GE2.3 116RD 90HH r2.madE	669,433	4,963,919	609.0	LNTE
CR11-8	Primary	GE2.3 116RD 90HH r2.madE	675,459	4,964,605	586.7	LNTE
CR11-9	Primary	GE2.3 116RD 90HH r2.madE	672,673	4,964,773	606.0	LNTE
CR11-10	Primary	GE2.3 116RD 90HH r2.madE	671,807	4,964,788	605.1	LNTE
CR11-11	Primary	GE2.3 116RD 90HH r2.madE	671,018	4,964,835	608.3	LNTE
CR11-12	Primary	GE2.3 116RD 90HH r2.madE	675,767	4,965,047	582.5	LNTE
CR11-13	Primary	GE2.3 116RD 90HH r2.madE	661,844	4,965,186	585.0	LNTE
CR11-14	Primary	GE2.3 116RD 90HH r2.madE	670,096	4,965,331	604.8	LNTE
CR11-15	Primary	GE2.3 116RD 90HH r2.madE	673,873	4,965,445	594.0	LNTE
CR11-16	Primary	GE2.3 116RD 90HH r2.madE	670,913	4,965,509	599.1	LNTE
CR11-17	Primary	GE2.3 116RD 90HH r2.madE	674,945	4,965,753	588.8	LNTE
CR11-18	Primary	GE2.3 116RD 90HH r2.madE	672,601	4,965,770	605.8	LNTE
CR11-19	Primary	GE2.3 116RD 90HH r2.madE	661,198	4,965,804	588.0	LNTE
CR11-20	Primary	GE2.3 116RD 90HH r2.madE	673,203	4,965,803	598.0	LNTE
CR11-21	Primary	GE2.3 116RD 90HH r2.madE	669,253	4,966,080	599.3	LNTE
CR11-22	Primary	GE2.3 116RD 90HH r2.madE	662,014	4,966,215	588.0	LNTE
CR11-23	Primary	GE2.3 116RD 90HH r2.madE	662,811	4,966,264	589.7	LNTE
CR11-24	Primary	GE2.3 116RD 90HH r2.madE	675,403	4,966,303	585.0	LNTE
CR11-25	Primary	GE2.3 116RD 90HH r2.madE	661,425	4,966,745	588.0	LNTE
CR11-26	Primary	GE2.3 116RD 90HH r2.madE	660,209	4,966,765	576.7	LNTE
CR11-27	Primary	GE2.3 116RD 90HH r2.madE	667,732	4,966,874	579.0	LNTE
CR11-28	Primary	GE2.3 116RD 90HH r2.madE	664,581	4,966,932	577.5	LNTE
CR11-29	Primary	GE2.3 116RD 90HH r2.madE	672,573	4,966,992	597.0	LNTE
CR11-30	Primary	GE2.3 116RD 90HH r2.madE	675,513	4,967,261	581.4	LNTE
CR11-31	Primary	GE2.3 116RD 90HH r2.madE	674,175	4,967,380	592.7	LNTE
CR11-32	Primary	GE2.3 116RD 90HH r2.madE	671,344	4,967,239	598.9	LNTE
CR11-33	Primary	GE2.3 116RD 90HH r2.madE	674,929	4,967,436	588.6	LNTE
CR11-34	Primary	GE2.3 116RD 90HH r2.madE	667,754	4,967,680	580.6	LNTE
CR11-35	Primary	GE2.3 116RD 90HH r2.madE	675,641	4,967,746	577.3	LNTE
CR11-36	Primary	GE2.3 116RD 90HH r2.madE	669,703	4,968,108	596.8	LNTE
CR11-37	Primary	GE2.3 116RD 90HH r2.madE	673,159	4,968,199	596.9	LNTE
CR11-38	Primary	GE2.3 116RD 90HH r2.madE	673,748	4,968,230	593.9	LNTE
CR11-39	Primary	GE2.3 116RD 90HH r2.madE	664,482	4,968,373	585.0	LNTE
CR11-40	Primary	GE2.3 116RD 90HH r2.madE	663,447	4,968,418	591.0	LNTE
CR11-41	Primary	GE2.3 116RD 90HH r2.madE	665,827	4,968,475	585.6	LNTE

Crowned Ridge II Wind Farm

GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

continued

WTG	Type	Turbine Model	Easting (m)	Northing (m)	Base Elev. AMSL (m)	Sound Profile
CR11-42	Primary	GE2.3 116RD 90HH r2.madE	668,455	4,968,482	595.8	LNTE
CR11-43	Primary	GE2.3 116RD 90HH r2.madE	667,376	4,968,511	586.4	LNTE
CR11-44	Primary	GE2.3 116RD 90HH r2.madE	672,498	4,968,577	600.0	LNTE
CR11-45	Primary	GE2.3 116RD 90HH r2.madE	673,072	4,968,788	597.2	LNTE
CR11-46	Primary	GE2.3 116RD 90HH r2.madE	671,213	4,968,978	600.0	LNTE
CR11-47	Primary	GE2.3 116RD 90HH r2.madE	670,606	4,968,910	597.8	LNTE
CR11-48	Primary	GE2.3 116RD 90HH r2.madE	669,752	4,968,912	594.0	LNTE
CR11-49	Primary	GE2.3 116RD 90HH r2.madE	662,575	4,969,126	594.0	LNTE
CR11-50	Primary	GE2.3 116RD 90HH r2.madE	675,428	4,969,085	577.8	LNTE
CR11-51	Primary	GE2.3 116RD 90HH r2.madE	666,174	4,969,250	597.0	LNTE
CR11-52	Primary	GE2.3 116RD 90HH r2.madE	667,344	4,969,319	598.1	LNTE
CR11-53	Primary	GE2.3 116RD 90HH r2.madE	668,037	4,969,495	597.8	LNTE
CR11-54	Primary	GE2.3 116RD 90HH r2.madE	675,726	4,969,723	570.0	LNTE
CR11-55	Primary	GE2.3 116RD 90HH r2.madE	666,872	4,970,279	606.0	LNTE
CR11-56	Primary	GE2.3 116RD 90HH r2.madE	666,135	4,970,237	593.4	LNTE
CR11-57	Primary	GE2.3 116RD 90HH r2.madE	667,670	4,970,471	608.9	LNTE
CR11-58	Primary	GE2.1 116RD 80HH rev2.mad	671,619	4,972,700	594.0	LNTE
CR11-59	Primary	GE2.3 116RD 90HH r2.madE	668,248	4,973,458	613.5	LNTE
CR11-60	Primary	GE2.3 116RD 90HH r2.madE	670,973	4,973,527	597.0	LNTE
CR11-61	Primary	GE2.3 116RD 90HH r2.madE	667,589	4,973,910	615.0	LNTE
CR11-62	Primary	GE2.3 116RD 90HH r2.madE	670,983	4,974,414	593.9	LNTE
CR11-63	Primary	GE2.3 116RD 90HH r2.madE	668,350	4,974,115	615.7	LNTE
CR11-64	Primary	GE2.3 116RD 90HH r2.madE	666,982	4,974,334	615.0	LNTE
CR11-65	Primary	GE2.3 116RD 90HH r2.madE	661,369	4,974,608	600.0	LNTE
CR11-66	Primary	GE2.3 116RD 90HH r2.madE	667,711	4,974,761	615.0	LNTE
CR11-67	Primary	GE2.3 116RD 90HH r2.madE	662,077	4,974,986	604.1	LNTE
CR11-69	Primary	GE2.3 116RD 90HH r2.madE	666,524	4,975,244	614.7	LNTE
CR11-70	Primary	GE2.3 116RD 90HH r2.madE	672,450	4,975,264	577.0	LNTE
CR11-71	Primary	GE2.3 116RD 90HH r2.madE	659,668	4,975,487	579.4	LNTE
CR11-72	Primary	GE2.3 116RD 90HH r2.madE	660,347	4,975,510	590.7	LNTE
CR11-73	Primary	GE2.3 116RD 90HH r2.madE	670,963	4,975,812	590.8	LNTE
CR11-74	Primary	GE2.3 116RD 90HH r2.madE	669,864	4,975,773	600.0	LNTE
CR11-75	Primary	GE2.3 116RD 90HH r2.madE	665,849	4,975,895	608.1	LNTE
CR11-76	Primary	GE2.3 116RD 90HH r2.madE	663,309	4,976,260	597.0	LNTE
CR11-77	Primary	GE2.3 116RD 90HH r2.madE	660,889	4,976,403	594.0	LNTE
CR11-78	Primary	GE2.1 116RD 80HH rev2.mad	670,593	4,976,444	594.0	LNTE
CR11-79	Primary	GE2.3 116RD 90HH r2.madE	659,556	4,976,577	576.6	LNTE
CR11-80	Primary	GE2.1 116RD 80HH rev2.mad	670,089	4,976,781	597.0	LNTE
CR11-81	Primary	GE2.3 116RD 90HH r2.madE	666,460	4,976,852	615.0	LNTE
CR11-82	Primary	GE2.3 116RD 90HH r2.madE	664,868	4,977,195	606.0	LNTE
CR11-83	Primary	GE2.3 116RD 90HH r2.madE	659,267	4,977,221	570.0	LNTE

Crowned Ridge II Wind Farm

GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

continued

WTG	Type	Turbine Model	Easting (m)	Northing (m)	Base Elev. AMSL (m)	Sound Profile
CR11-84	Primary	GE2.3 116RD 90HH r2.madE	661,202	4,977,297	585.0	LNTE
CR11-85	Primary	GE2.1 116RD 80HH rev2.mad	670,104	4,977,199	594.4	LNTE
CR11-86	Primary	GE2.1 116RD 80HH rev2.mad	668,086	4,977,549	605.9	LNTE
CR11-87	Primary	GE2.1 116RD 80HH rev2.mad	668,884	4,977,561	594.0	LNTE
CR11-88	Primary	GE2.3 116RD 90HH r2.madE	666,503	4,978,327	612.1	LNTE
CR11-89	Primary	GE2.1 116RD 80HH rev2.mad	667,591	4,978,362	615.0	LNTE
CR11-90	Primary	GE2.1 116RD 80HH rev2.mad	670,109	4,978,176	589.0	LNTE
CR11-91	Primary	GE2.1 116RD 80HH rev2.mad	668,348	4,978,315	600.0	LNTE
CR11-92	Primary	GE2.3 116RD 90HH r2.madE	664,354	4,978,724	594.7	LNTE
CR11-93	Primary	GE2.1 116RD 80HH rev2.mad	665,882	4,978,374	609.0	LNTE
CR11-94	Alternate	GE2.3 116RD 90HH r2.madE	667,644	4,978,955	607.9	LNTE
CR11-95	Primary	GE2.3 116RD 90HH r2.madE	666,647	4,979,039	615.0	LNTE
CR11-96	Primary	GE2.3 116RD 90HH r2.madE	665,082	4,979,106	604.6	LNTE
CR11-97	Alternate	GE2.3 116RD 90HH r2.madE	668,163	4,979,177	586.4	LNTE
CR11-98	Primary	GE2.1 116RD 80HH rev2.mad	670,003	4,979,175	585.4	LNTE
CR11-99	Primary	GE2.3 116RD 90HH r2.madE	665,723	4,979,545	607.0	LNTE
CR11-100	Primary	GE2.3 116RD 90HH r2.madE	666,675	4,979,716	613.8	LNTE
CR11-101	Primary	GE2.3 116RD 90HH r2.madE	665,960	4,980,327	606.0	LNTE
CR11-102	Primary	GE2.1 116RD 80HH rev2.mad	667,903	4,980,491	600.1	LNTE
CR11-103	Alternate	GE2.3 116RD 90HH r2.madE	666,467	4,980,722	608.9	LNTE
CR11-104	Primary	GE2.3 116RD 90HH r2.madE	662,560	4,981,078	588.0	LNTE
CR11-105	Primary	GE2.3 116RD 90HH r2.madE	663,201	4,981,245	594.0	LNTE
CR11-106	Primary	GE2.3 116RD 90HH r2.madE	661,170	4,981,296	586.2	LNTE
CR11-107	Primary	GE2.1 116RD 80HH rev2.mad	666,729	4,981,576	598.4	LNTE
CR11-108	Primary	GE2.3 116RD 90HH r2.madE	667,242	4,981,585	592.4	LNTE
CR11-110	Primary	GE2.3 116RD 90HH r2.madE	665,644	4,981,745	609.0	LNTE
CR11-111	Primary	GE2.3 116RD 90HH r2.madE	661,406	4,981,960	591.0	LNTE
CR11-112	Primary	GE2.3 116RD 90HH r2.madE	664,889	4,982,000	612.6	LNTE
CR11-113	Alternate	GE2.3 116RD 90HH r2.madE	665,950	4,982,352	609.9	LNTE
CR11-114	Primary	GE2.3 116RD 90HH r2.madE	665,029	4,982,755	613.5	LNTE
CR11-115	Primary	GE2.3 116RD 90HH r2.madE	667,423	4,982,834	585.7	LNTE
CR11-116	Primary	GE2.3 116RD 90HH r2.madE	664,098	4,982,988	603.0	LNTE
CR11-117	Primary	GE2.3 116RD 90HH r2.madE	666,339	4,983,199	600.6	LNTE
CR11-118	Primary	GE2.3 116RD 90HH r2.madE	665,536	4,983,411	608.1	LNTE
CR11-119	Primary	GE2.3 116RD 90HH r2.madE	664,901	4,983,463	603.4	LNTE
CR11-120	Primary	GE2.3 116RD 90HH r2.madE	662,307	4,983,683	592.9	LNTE
CR11-121	Primary	GE2.3 116RD 90HH r2.madE	666,651	4,983,822	588.7	LNTE
CR11-122	Primary	GE2.3 116RD 90HH r2.madE	662,977	4,983,870	603.9	LNTE
CR11-123	Primary	GE2.3 116RD 90HH r2.madE	663,421	4,984,335	606.6	LNTE
CR11-124	Primary	GE2.3 116RD 90HH r2.madE	664,181	4,984,488	606.0	LNTE
CR11-125	Primary	GE2.3 116RD 90HH r2.madE	664,784	4,984,583	604.2	LNTE

GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
continued

[illegible]

APPENDIX C: TABLE OF SHADOW FLICKER RESULTS

Table C-1: Crowned Ridge II Shadow Flicker Tabular Results Sorted by Receptor ID

Realistic case shadow results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Codington County

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Real Case Results	Distance to Nearest Turbine (ft)
CR2-C1-NP	Non-P	662,198.00	4,980,622.00	591.0	3:51	3:51	1,909
CR2-C2-NP	Non-P	662,238.00	4,980,604.00	590.9	1:03	1:03	1,880
CR1-C4-NP	Non-P	659,744.00	4,984,749.00	606.0	0:00	0:00	5,981
CR1-C5-NP	Non-P	659,958.00	4,984,794.00	604.8	0:00	0:00	5,659
CR1-C7-NP	Non-P	660,893.00	4,984,861.00	593.2	0:00	0:00	3,022
CR2-C7-NP	Non-P	665,694.00	4,966,179.00	570.0	0:00	0:00	4,409
CR1-C8-P	Participant	660,532.00	4,984,445.00	599.4	0:00	0:00	3,740
CR1-C9-NP	Non-P	665,352.00	4,985,004.00	609.0	18:09	18:08	2,280
CR1-C10-P	Participant	663,510.00	4,985,195.00	609.0	38:20	38:22	1,634
CR2-C10-NP	Non-P	665,189.00	4,966,505.00	570.0	0:00	0:00	2,438
CR1-C11-P	Participant	664,111.00	4,985,679.00	609.0	10:27	10:27	1,860
CR1-C12-NP	Non-P	662,222.00	4,985,736.00	603.0	17:08	17:08	2,201
CR1-C12-1-NP	Non-P	662,199.00	4,986,047.00	606.0	10:34	10:34	2,818
CR1-C13-NP	Non-P	663,792.00	4,985,785.00	612.0	18:58	18:16	2,589
CR1-C15-NP	Non-P	663,291.00	4,986,026.00	615.0	2:16	2:20	2,175
CR2-C16-NP	Non-P	665,418.00	4,966,866.00	567.0	7:30	7:29	2,756
CR1-C16-NP	Non-P	661,960.00	4,986,288.00	606.0	6:17	6:17	2,648
CR1-C18-P	Participant	663,651.00	4,987,157.00	610.4	5:58	5:58	3,409
CR1-C20-P	Participant	663,054.00	4,987,455.00	606.0	14:38	14:37	2,336
CR1-C21-P	Participant	660,756.00	4,984,086.00	594.0	1:00	1:00	2,388
CR1-C22-P	Participant	660,755.00	4,984,082.00	594.0	1:01	1:01	2,375
CR2-C22-NP	Non-P	661,202.00	4,972,711.00	597.0	0:00	0:00	6,247
CR2-C23-NP	Non-P	664,069.00	4,969,661.00	594.0	0:58	0:58	4,439
CR1-C23-P	Participant	660,619.00	4,984,078.00	595.8	0:00	0:00	2,523
CR1-C24-NP	Non-P	660,176.00	4,983,887.00	601.1	7:45	7:45	3,038
CR2-C24-NP	Non-P	661,541.00	4,969,653.00	600.0	3:21	3:21	3,809
CR1-C25-P	Participant	660,189.79	4,983,788.29	602.3	6:43	6:43	2,838
CR2-C26-P	Participant	664,733.00	4,968,915.00	591.0	6:09	6:09	1,959
CR2-C27-P	Participant	662,985.00	4,968,167.00	582.0	18:06	18:06	1,726
CR1-C28-NP	Non-P	665,429.00	4,988,598.00	590.9	2:43	2:43	2,831
CR2-C28-P	Participant	659,208.00	4,968,159.00	572.8	0:00	0:00	5,630
CR1-C29-NP	Non-P	666,572.00	4,988,867.00	575.9	6:54	*	2,457
CR2-C29-NP	Non-P	661,223.00	4,968,144.00	595.2	0:00	0:00	4,639
CR2-C30-NP	Non-P	659,100.00	4,968,023.00	568.6	0:00	0:00	5,502
CR2-C32-P	Participant	659,469.00	4,967,984.00	575.2	0:00	0:00	4,678
CR2-C33-P	Participant	663,878.00	4,967,612.00	576.1	2:28	2:28	2,999
CR2-C34-P	Participant	663,934.00	4,966,991.00	570.1	14:11	14:11	2,133
CR2-C35-NP	Non-P	658,964.00	4,974,334.00	566.8	0:00	0:00	4,432
CR2-C36-NP	Non-P	660,475.00	4,974,426.00	578.6	8:20	8:20	2,992

* Not included in original submittal

Table C-1: Crowned Ridge II Shadow Flicker Tabular Results Sorted by Receptor ID

Realistic case shadow results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Codington County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Real Case Results	Distance to Nearest Turbine (ft)
CR2-C37-NP	Non-P	663,037.00	4,974,496.00	606.0	9:34	9:34	3,537
CR2-C38-NP	Non-P	660,874.00	4,966,929.00	585.5	25:57	25:57	1,906
CR2-C39-NP	Non-P	664,089.00	4,966,486.00	566.2	2:27	2:27	2,178
CR2-C40-NP	Non-P	659,189.00	4,974,765.00	578.3	1:38	1:33	2,841
CR2-C41-P	Participant	660,770.00	4,975,147.00	596.4	17:22	17:22	1,532
CR2-C42-NP	Non-P	664,887.00	4,975,388.00	597.0	12:14	12:14	3,566
CR2-C43-NP	Non-P	664,382.00	4,975,544.00	597.0	1:42	1:42	4,232
CR2-C44-NP	Non-P	659,145.00	4,966,062.00	561.4	0:43	0:43	4,183
CR2-C45-P	Participant	664,058.00	4,965,862.00	570.0	4:12	4:12	3,907
CR2-C46-NP	Non-P	660,435.00	4,965,627.00	582.0	12:08	12:00	2,569
CR2-C47-NP	Non-P	662,200.00	4,975,837.00	594.5	9:41	7:58	2,821
CR2-C48-NP	Non-P	662,370.00	4,965,588.00	590.3	19:13	19:14	2,172
CR2-C49-NP	Non-P	660,907.00	4,964,846.00	582.0	6:36	6:36	3,271
CR2-C50-P	Participant	661,252.00	4,976,035.00	597.0	19:23	4:27	1,696
CR2-C51-NP	Non-P	662,977.00	4,964,794.00	584.0	4:41	4:41	3,934
CR2-C52-NP	Non-P	662,688.00	4,964,792.00	585.9	14:32	14:32	3,054
CR2-C53-NP	Non-P	662,401.00	4,964,782.00	582.0	0:00	0:00	2,257
CR2-C54-NP	Non-P	662,636.00	4,976,079.00	597.0	12:36	12:36	2,287
CR2-C55-NP	Non-P	660,765.00	4,964,777.00	582.0	4:36	4:36	3,655
CR2-C56-NP	Non-P	660,759.00	4,964,737.00	582.0	4:54	4:54	3,786
CR2-C57-P	Participant	666,667.00	4,976,162.00	613.8	5:03	5:03	2,362
CR2-C58-NP	Non-P	660,764.00	4,964,686.00	582.0	5:51	5:51	3,904
CR2-C59-P	Participant	664,952.00	4,976,698.00	601.9	4:30	4:30	1,654
CR2-C60-P	Participant	662,287.00	4,976,800.00	594.0	13:54	13:54	3,793
CR2-C61-NP	Non-P	660,630.00	4,976,840.00	582.5	12:08	12:08	1,667
CR2-C62-NP	Non-P	666,992.00	4,977,048.00	615.0	16:54	16:54	1,860
CR2-C63-P	Participant	665,528.00	4,977,285.00	612.0	14:41	14:41	2,185
CR2-C64-NP	Non-P	660,901.00	4,964,220.00	582.0	0:00	0:00	4,429
CR2-C65-NP	Non-P	665,217.00	4,977,746.00	609.0	7:16	7:16	2,139
CR1-C66-NP	Non-P	659,718.00	4,985,032.00	606.0	0:00	0:00	5,800
CR2-C66-NP	Non-P	662,396.00	4,963,954.00	582.0	0:00	0:00	4,429
CR1-C67-NP	Non-P	659,789.00	4,985,057.00	606.0	0:00	0:00	5,791
CR2-C67-NP	Non-P	660,379.00	4,978,592.00	556.1	0:00	0:00	5,033
CR2-C68-NP	Non-P	662,517.00	4,963,408.00	579.0	0:00	0:00	6,237
CR2-C69-NP	Non-P	661,701.00	4,978,792.00	564.0	0:00	0:00	5,171
CR2-C70-P	Participant	665,521.00	4,970,518.00	588.9	13:57	13:57	2,215
CR1-C70-NP	Non-P	665,135.00	4,988,293.00	595.9	12:01	12:01	3,540
CR2-C71-NP	Non-P	665,411.00	4,970,503.00	586.1	10:14	10:14	2,529

* Not included in original submittal

Table C-1: Crowned Ridge II Shadow Flicker Tabular Results Sorted by Receptor ID

Realistic case shadow results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Grant County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Real Case Results	Distance to Nearest Turbine (ft)
CR1-C71-NP	Non-P	665,137.00	4,988,378.00	595.6	7:23	7:23	3,448
CR1-C72-NP	Non-P	665,158.00	4,988,170.00	594.6	7:39	7:39	3,776
CR2-C72-NP	Non-P	663,856.00	4,970,488.00	597.0	0:00	0:00	6,135
CR1-C73-NP	Non-P	663,066.00	4,982,530.00	591.0	6:57	6:57	3,704
CR1-C74-NP	Non-P	662,869.00	4,983,122.00	595.7	2:34	2:34	2,480
CR2-C75-NP	Non-P	664,866.00	4,969,808.00	583.7	5:05	5:05	4,396
CR1-C75-NP	Non-P	663,010.00	4,982,658.00	588.0	4:25	4:25	3,730
CR1-C76-NP	Non-P	662,981.00	4,982,580.00	588.3	5:26	5:26	3,901
CR2-C76-NP	Non-P	664,747.00	4,969,738.00	584.8	3:53	3:53	4,560
CR1-C77-P	Participant	661,915.00	4,983,367.00	591.0	12:12	12:12	1,654
CR2-C77-NP	Non-P	663,865.00	4,969,694.00	597.0	1:28	1:28	4,406
CR2-C78-P	Participant	665,273.00	4,983,933.00	609.0	25:17	25:17	1,919
CR1-C78-P	Participant	660,190.00	4,983,788.00	602.3	6:43	6:43	2,835
CR1-C79-NP	Non-P	660,452.00	4,983,750.00	595.9	22:38	22:37	2,037
CR2-C79-NP	Non-P	666,869.00	4,984,663.00	587.9	0:00	0:00	2,703
CR1-C80-NP	Non-P	659,351.00	4,983,174.00	604.4	0:40	0:40	5,308
CR1-C81-NP	Non-P	660,062.00	4,983,083.00	597.0	6:15	6:15	3,094
CR1-C84-NP	Non-P	659,607.00	4,982,216.00	594.0	0:00	0:00	5,856
CR1-C85-NP	Non-P	659,706.00	4,981,419.00	588.0	1:22	1:22	4,819
CR1-C86-P	Participant	662,086.00	4,982,135.00	585.0	16:51	16:51	2,306
CR1-C87-NP	Non-P	662,628.00	4,982,425.00	585.4	4:09	4:09	4,258
CR1-C88-NP	Non-P	660,156.00	4,980,595.00	570.9	0:00	0:00	4,045
CR1-C89-P	Participant	662,062.00	4,982,029.00	584.3	21:39	21:39	2,165
CR2-C89-NP	Non-P	662,244.00	4,971,076.00	603.0	0:00	0:00	6,489
CR2-C91-NP	Non-P	663,938.00	4,970,546.00	597.0	0:00	0:00	6,457
CR2-C92-NP	Non-P	663,855.00	4,970,535.00	597.0	0:00	0:00	6,247
CR2-C95-NP	Non-P	659,248.00	4,974,054.00	567.0	0:00	0:00	4,898
CR2-C96-NP	Non-P	659,316.00	4,974,063.00	570.6	0:00	0:00	4,813
CR2-C97-NP	Non-P	660,093.00	4,976,001.00	583.8	29:21	21:50	1,814
CR2-C98-NP	Non-P	660,155.00	4,976,007.00	582.8	32:23	23:19	1,749
CR2-C101-NP	Non-P	660,732.00	4,972,807.00	591.0	0:00	0:00	6,266
CR2-C102-NP	Non-P	662,025.00	4,976,085.00	594.1	8:29	6:09	3,609
CR2-C103-NP	Non-P	662,046.00	4,976,067.00	594.8	8:17	6:06	3,547
CR2-C105-NP	Non-P	662,122.00	4,976,029.00	595.3	7:46	5:58	3,425
CR2-C107-NP	Non-P	662,265.00	4,978,194.00	577.7	4:21	4:21	4,564
CR2-C115-NP	Non-P	663,555.00	4,980,564.00	575.2	8:18	8:18	2,520
CR2-C116-NP	Non-P	664,640.00	4,976,142.00	591.1	4:50	4:50	3,533
CR2-C117-NP	Non-P	664,742.00	4,976,142.00	594.2	4:53	4:53	3,481

*** Not included in original submittal**

Realistic case shadow results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Grant County
continued

* Not included in original submittal

Table C-1: Crowned Ridge II Shadow Flicker Tabular Results Sorted by Receptor ID

Realistic case shadow results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Deuel County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Real Case Results	Distance to Nearest Turbine (ft)
CR2-D3-NP	Non-P	672,390.00	4,963,482.00	612.0	6:47	6:47	2,037
CR2-D5-NP	Non-P	668,781.00	4,964,897.00	603.0	15:51	2:14	1,923
CR2-D6-P	Participant	668,762.00	4,967,671.00	591.0	17:17	17:16	2,844
CR2-D9-NP	Non-P	668,597.00	4,971,999.00	611.5	0:00	0:00	4,921
CR2-D11-NP	Non-P	669,646.00	4,974,534.00	604.4	21:54	5:51	1,919
CR2-D12-NP	Non-P	668,558.00	4,969,840.00	604.7	18:07	18:07	2,051
CR2-D14-NP	Non-P	670,351.11	4,973,543.31	606.0	13:33	14:04	2,041
CR2-D15-NP	Non-P	674,387.00	4,968,515.00	588.0	24:01	24:00	2,297
CR2-D16-P	Participant	671,626.00	4,966,693.00	601.7	5:21	5:21	2,018
CR2-D17-NP	Non-P	672,023.00	4,969,597.00	597.0	13:45	13:44	3,343
CR2-D18-NP	Non-P	671,540.00	4,976,154.00	582.0	22:04	22:04	2,201
CR2-D19-NP	Non-P	668,870.00	4,964,178.00	606.0	13:59	13:59	2,034
CR2-D20-NP	Non-P	675,261.00	4,968,400.00	579.0	3:00	3:00	2,313
CR2-D21-NP	Non-P	669,517.00	4,978,053.00	596.1	28:59	28:59	1,985
CR2-D22-NP	Non-P	668,798.00	4,963,767.00	603.1	14:21	14:20	2,142
CR2-D23-NP	Non-P	669,671.00	4,980,468.00	573.0	0:00	0:00	4,380
CR2-D30-NP	Non-P	669,549.00	4,974,233.00	611.9	17:10	6:03	2,044
CR2-D36-NP	Non-P	669,812.00	4,966,746.00	591.0	2:59	2:59	2,854
CR2-D37-NP	Non-P	674,048.00	4,974,071.00	573.0	0:00	0:00	6,542
CR2-D38-P	Participant	667,108.00	4,982,083.00	597.0	9:01	9:01	1,693
CR2-D39-P	Participant	668,443.00	4,974,627.00	614.4	18:50	18:50	1,706
CR2-D41-NP	Non-P	670,437.00	4,966,409.00	597.0	2:06	2:06	3,340
CR2-D44-NP	Non-P	670,434.00	4,965,956.00	593.8	24:03	20:58	2,149
CR2-D45-NP	Non-P	668,018.00	4,976,064.00	611.5	0:55	0:55	4,393
CR2-D46-NP	Non-P	669,797.00	4,966,804.00	591.0	1:23	1:23	2,972
CR2-D48-NP	Non-P	668,923.00	4,972,998.00	609.0	0:00	0:00	2,680
CR2-D49-P	Participant	672,024.00	4,974,135.00	583.2	8:42	8:42	3,537
CR2-D50-P	Participant	672,015.00	4,967,209.00	602.8	24:58	24:57	1,965
CR2-D51-NP	Non-P	675,005.00	4,970,131.00	577.8	8:27	8:27	2,717
CR2-D52-NP	Non-P	667,172.00	4,971,776.00	606.0	0:00	0:00	4,583
CR2-D53-P	Participant	670,392.00	4,975,925.00	592.8	27:37	27:36	1,801
CR2-D54-NP	Non-P	672,012.00	4,966,477.00	600.0	5:15	5:15	2,500
CR2-D56-P	Participant	667,119.00	4,977,925.00	612.0	8:10	8:47	2,110
CR2-D62-NP	Non-P	669,355.00	4,974,624.00	609.0	10:56	5:02	2,913
CR2-D63-NP	Non-P	670,546.00	4,961,419.00	615.0	0:00	0:00	4,065
CR2-D64-P	Participant	669,417.00	4,978,434.00	588.0	14:03	14:01	2,425
CR2-D65-NP	Non-P	670,422.00	4,966,654.00	597.0	5:26	5:26	3,583
CR2-D71-NP	Non-P	669,402.00	4,979,216.00	588.0	18:30	18:11	1,975

*** Not included in original submittal**

Table C-1: Crowned Ridge II Shadow Flicker Tabular Results Sorted by Receptor ID

Realistic case shadow results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Deuel County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Real Case Results	Distance to Nearest Turbine (ft)
CR2-D72-NP	Non-P	671,925.00	4,970,149.00	603.0	0:00	0:00	4,495
CR2-D73-NP	Non-P	672,072.00	4,971,556.00	600.0	0:00	0:00	4,035
CR2-D74-NP	Non-P	668,130.00	4,976,068.00	609.2	0:00	0:00	4,505
CR2-D75-NP	Non-P	669,473.00	4,981,625.00	570.0	0:00	0:00	6,355
CR2-D77-NP	Non-P	672,044.00	4,966,468.00	600.0	5:58	5:58	2,444
CR2-D79-NP	Non-P	672,172.00	4,974,737.00	585.0	2:16	2:16	1,955
CR2-D82-NP	Non-P	669,855.00	4,970,718.00	603.0	0:00	0:00	5,935
CR2-D83-NP	Non-P	675,891.00	4,966,810.00	579.0	12:25	12:25	1,929
CR2-D84-NP	Non-P	667,159.00	4,972,169.00	598.2	0:00	0:00	5,535
CR2-D85-NP	Non-P	669,593.00	4,976,302.00	603.0	4:36	4:36	1,949
CR2-D86-NP	Non-P	673,842.00	4,966,875.00	597.0	12:07	12:06	1,985
CR2-D90-NP	Non-P	670,516.00	4,962,327.00	612.0	7:36	7:36	3,360
CR2-D91-NP	Non-P	667,546.00	4,976,173.00	618.0	2:59	2:59	4,203
CR2-D92-NP	Non-P	671,159.00	4,971,610.00	597.2	0:00	0:00	3,881
CR2-D95-NP	Non-P	671,994.00	4,971,562.00	600.0	0:00	0:00	3,930
CR2-D96-NP	Non-P	672,899.00	4,971,469.00	594.0	0:00	0:00	5,827
CR2-D97-NP	Non-P	667,164.00	4,972,232.00	600.0	0:00	0:00	5,371
CR2-D98-P	Participant	669,757.00	4,972,426.00	606.0	0:00	0:00	5,381
CR2-D99-NP	Non-P	668,148.00	4,976,230.00	608.8	0:00	0:00	4,331
CR2-D100-NP	Non-P	668,589.00	4,972,064.00	609.9	0:00	0:00	4,708
CR2-D101-NP	Non-P	672,538.00	4,961,910.00	612.8	5:29	5:29	2,677
CR2-D103-NP	Non-P	670,588.00	4,961,119.00	615.0	0:00	0:00	4,606
CR2-D104-NP	Non-P	670,443.00	4,961,600.00	613.8	5:06	5:06	4,058
CR2-D105-NP	Non-P	670,348.00	4,963,826.00	611.7	17:56	17:56	2,821
CR2-D106-NP	Non-P	667,315.00	4,965,297.00	594.0	0:00	0:00	5,351
CR2-D107-NP	Non-P	670,405.00	4,966,321.00	597.0	6:22	2:27	3,143
CR2-D108-NP	Non-P	670,354.00	4,965,949.00	594.0	25:37	23:04	2,198
CR2-D109-NP	Non-P	676,885.00	4,965,806.00	576.0	4:51	4:51	4,432
CR2-D110-NP	Non-P	670,260.25	4,967,728.02	597.0	3:14	3:14	2,211
CR2-D111-P	Participant	671,876.00	4,969,006.00	600.0	29:32	29:32	2,178
CR2-D112-NP	Non-P	667,666.00	4,971,554.00	604.6	0:00	0:00	3,553
CR2-D113-NP	Non-P	667,774.00	4,971,544.00	606.9	0:00	0:00	3,537
CR2-D115-P	Participant	670,974.00	4,969,938.00	606.0	2:04	2:04	3,245
CR2-D116-NP	Non-P	673,491.00	4,972,398.00	577.8	0:00	0:00	6,220
CR2-D119-P	Participant	673,378.00	4,965,126.00	602.6	16:30	16:30	1,932
CR2-D120-NP	Non-P	673,401.00	4,964,165.00	609.0	2:19	2:19	3,110
CR2-D121-NP	Non-P	674,461.00	4,966,734.00	594.0	12:06	12:06	2,316
CR2-D122-P	Participant	673,601.00	4,967,341.00	594.0	18:17	18:17	1,886

*** Not included in original submittal**

Realistic case shadow results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

* Not included in original submittal

continued

* Not included in original submittal

Table C-2: Crowned Ridge II Shadow Flicker Tabular Results Sorted by Real Case Shadow Flicker Hours/Year

Realistic case shadow results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Codington County

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Real Case Results	Distance to Nearest Turbine (ft)
CR1-C10-P	Participant	663,510.00	4,985,195.00	609.0	38:20	38:22	1,634
CR2-C98-NP	Non-P	660,155.00	4,976,007.00	582.8	32:23	23:19	1,749
CR2-C154-P	Participant	660,684.34	4,967,166.18	588.0	30:00	30:00	2,041
CR2-C97-NP	Non-P	660,093.00	4,976,001.00	583.8	29:21	21:50	1,814
CR2-C38-NP	Non-P	660,874.00	4,966,929.00	585.5	25:57	25:57	1,906
CR2-C78-P	Participant	665,273.00	4,983,933.00	609.0	25:17	25:17	1,919
CR1-C79-NP	Non-P	660,452.00	4,983,750.00	595.9	22:38	22:37	2,037
CR1-C89-P	Participant	662,062.00	4,982,029.00	584.3	21:39	21:39	2,165
CR2-C50-P	Participant	661,252.00	4,976,035.00	597.0	19:23	4:27	1,696
CR2-C48-NP	Non-P	662,370.00	4,965,588.00	590.3	19:13	19:14	2,172
CR1-C13-NP	Non-P	663,792.00	4,985,785.00	612.0	18:58	18:16	2,589
CR1-C9-NP	Non-P	665,352.00	4,985,004.00	609.0	18:09	18:08	2,280
CR2-C27-P	Participant	662,985.00	4,968,167.00	582.0	18:06	18:06	1,726
CR2-C41-P	Participant	660,770.00	4,975,147.00	596.4	17:22	17:22	1,532
CR1-C12-NP	Non-P	662,222.00	4,985,736.00	603.0	17:08	17:08	2,201
CR2-C62-NP	Non-P	666,992.00	4,977,048.00	615.0	16:54	16:54	1,860
CR1-C86-P	Participant	662,086.00	4,982,135.00	585.0	16:51	16:51	2,306
CR2-C63-P	Participant	665,528.00	4,977,285.00	612.0	14:41	14:41	2,185
CR1-C20-P	Participant	663,054.00	4,987,455.00	606.0	14:38	14:37	2,336
CR2-C52-NP	Non-P	662,688.00	4,964,792.00	585.9	14:32	14:32	3,054
CR2-C34-P	Participant	663,934.00	4,966,991.00	570.1	14:11	14:11	2,133
CR2-C70-P	Participant	665,521.00	4,970,518.00	588.9	13:57	13:57	2,215
CR2-C60-P	Participant	662,287.00	4,976,800.00	594.0	13:54	13:54	3,793
CR2-C133-P	Participant	666,992.00	4,967,681.00	571.2	13:37	13:37	2,500
CR2-C54-NP	Non-P	662,636.00	4,976,079.00	597.0	12:36	12:36	2,287
CR2-C42-NP	Non-P	664,887.00	4,975,388.00	597.0	12:14	12:14	3,566
CR1-C77-P	Participant	661,915.00	4,983,367.00	591.0	12:12	12:12	1,654
CR2-C46-NP	Non-P	660,435.00	4,965,627.00	582.0	12:08	12:00	2,569
CR2-C61-NP	Non-P	660,630.00	4,976,840.00	582.5	12:08	12:08	1,667
CR1-C70-NP	Non-P	665,135.00	4,988,293.00	595.9	12:01	12:01	3,540
CR1-C12-1-NP	Non-P	662,199.00	4,986,047.00	606.0	10:34	10:34	2,818
CR1-C11-P	Participant	664,111.00	4,985,679.00	609.0	10:27	10:27	1,860
CR2-C71-NP	Non-P	665,411.00	4,970,503.00	586.1	10:14	10:14	2,529
CR2-C131-NP	Non-P	666,732.00	4,984,987.00	591.0	10:06	10:06	2,287
CR2-C47-NP	Non-P	662,200.00	4,975,837.00	594.5	9:41	7:58	2,821
CR2-C37-NP	Non-P	663,037.00	4,974,496.00	606.0	9:34	9:34	3,537
CR2-C102-NP	Non-P	662,025.00	4,976,085.00	594.1	8:29	6:09	3,609
CR2-C36-NP	Non-P	660,475.00	4,974,426.00	578.6	8:20	8:20	2,992
CR2-C115-NP	Non-P	663,555.00	4,980,564.00	575.2	8:18	8:18	2,520

* Not included in original submittal

Table C-2: Crowned Ridge II Shadow Flicker Tabular Results Sorted by Real Case Shadow Flicker Hours/Year
Realistic case shadow results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Real Case Results	Distance to Nearest Turbine (ft)
CR2-C103-NP	Non-P	662,046.00	4,976,067.00	594.8	8:17	6:06	3,547
CR2-C105-NP	Non-P	662,122.00	4,976,029.00	595.3	7:46	5:58	3,425
CR1-C24-NP	Non-P	660,176.00	4,983,887.00	601.1	7:45	7:45	3,038
CR1-C72-NP	Non-P	665,158.00	4,988,170.00	594.6	7:39	7:39	3,776
CR2-C16-NP	Non-P	665,418.00	4,966,866.00	567.0	7:30	7:29	2,756
CR1-C71-NP	Non-P	665,137.00	4,988,378.00	595.6	7:23	7:23	3,448
CR2-C65-NP	Non-P	665,217.00	4,977,746.00	609.0	7:16	7:16	2,139
CR1-C73-NP	Non-P	663,066.00	4,982,530.00	591.0	6:57	6:57	3,704
CR1-C29-NP	Non-P	666,572.00	4,988,867.00	575.9	6:54	*	2,457
CR1-C78-P	Participant	660,190.00	4,983,788.00	602.3	6:43	6:43	2,835
CR1-C25-P	Participant	660,189.79	4,983,788.29	602.3	6:43	6:43	2,838
CR2-C49-NP	Non-P	660,907.00	4,964,846.00	582.0	6:36	6:36	3,271
CR1-C16-NP	Non-P	661,960.00	4,986,288.00	606.0	6:17	6:17	2,648
CR1-C81-NP	Non-P	660,062.00	4,983,083.00	597.0	6:15	6:15	3,094
CR2-C26-P	Participant	664,733.00	4,968,915.00	591.0	6:09	6:09	1,959
CR1-C18-P	Participant	663,651.00	4,987,157.00	610.4	5:58	5:58	3,409
CR2-C58-NP	Non-P	660,764.00	4,964,686.00	582.0	5:51	5:51	3,904
CR1-C76-NP	Non-P	662,981.00	4,982,580.00	588.3	5:26	5:26	3,901
CR2-C75-NP	Non-P	664,866.00	4,969,808.00	583.7	5:05	5:05	4,396
CR2-C57-P	Participant	666,667.00	4,976,162.00	613.8	5:03	5:03	2,362
CR2-C56-NP	Non-P	660,759.00	4,964,737.00	582.0	4:54	4:54	3,786
CR2-C117-NP	Non-P	664,742.00	4,976,142.00	594.2	4:53	4:53	3,481
CR2-C116-NP	Non-P	664,640.00	4,976,142.00	591.1	4:50	4:50	3,533
CR2-C51-NP	Non-P	662,977.00	4,964,794.00	584.0	4:41	4:41	3,934
CR2-C55-NP	Non-P	660,765.00	4,964,777.00	582.0	4:36	4:36	3,655
CR2-C59-P	Participant	664,952.00	4,976,698.00	601.9	4:30	4:30	1,654
CR1-C75-NP	Non-P	663,010.00	4,982,658.00	588.0	4:25	4:25	3,730
CR2-C107-NP	Non-P	662,265.00	4,978,194.00	577.7	4:21	4:21	4,564
CR2-C45-P	Participant	664,058.00	4,965,862.00	570.0	4:12	4:12	3,907
CR1-C87-NP	Non-P	662,628.00	4,982,425.00	585.4	4:09	4:09	4,258
CR2-C76-NP	Non-P	664,747.00	4,969,738.00	584.8	3:53	3:53	4,560
CR2-C1-NP	Non-P	662,198.00	4,980,622.00	591.0	3:51	3:51	1,909
CR2-C130-P	Participant	666,727.00	4,966,695.00	591.0	3:42	3:42	3,350
CR2-C134-NP	Non-P	667,097.00	4,973,011.00	613.0	3:42	3:42	3,363
CR2-C129-P	Participant	666,716.00	4,966,751.00	591.0	3:31	3:31	3,356
CR2-C24-NP	Non-P	661,541.00	4,969,653.00	600.0	3:21	3:21	3,809

* Not included in original submittal

Table C-2: Crowned Ridge II Shadow Flicker Tabular Results Sorted by Real Case Shadow Flicker Hours/Year
Realistic case shadow results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Real Case Results	Distance to Nearest Turbine (ft)
CR2-C128-P	Participant	666,636.00	4,966,649.00	589.0	3:00	3:00	3,671
CR1-C28-NP	Non-P	665,429.00	4,988,598.00	590.9	2:43	2:43	2,831
CR1-C74-NP	Non-P	662,869.00	4,983,122.00	595.7	2:34	2:34	2,480
CR2-C33-P	Participant	663,878.00	4,967,612.00	576.1	2:28	2:28	2,999
CR2-C39-NP	Non-P	664,089.00	4,966,486.00	566.2	2:27	2:27	2,178
CR1-C15-NP	Non-P	663,291.00	4,986,026.00	615.0	2:16	2:20	2,175
CR2-C123-P	Participant	666,146.00	4,966,653.00	579.4	2:13	2:13	5,216
CR2-C119-NP	Non-P	665,052.00	4,974,682.00	600.0	2:06	2:06	4,760
CR2-C118-NP	Non-P	665,014.00	4,974,639.00	600.0	1:57	1:57	4,947
CR2-C132-NP	Non-P	666,857.00	4,985,021.00	588.2	1:47	1:47	1,883
CR2-C43-NP	Non-P	664,382.00	4,975,544.00	597.0	1:42	1:42	4,232
CR2-C126-P	Participant	666,389.00	4,966,670.00	585.0	1:40	1:40	4,455
CR2-C40-NP	Non-P	659,189.00	4,974,765.00	578.3	1:38	1:33	2,841
CR2-C77-NP	Non-P	663,865.00	4,969,694.00	597.0	1:28	1:28	4,406
CR1-C85-NP	Non-P	659,706.00	4,981,419.00	588.0	1:22	1:22	4,819
CR2-C2-NP	Non-P	662,238.00	4,980,604.00	590.9	1:03	1:03	1,880
CR1-C22-P	Participant	660,755.00	4,984,082.00	594.0	1:01	1:01	2,375
CR1-C21-P	Participant	660,756.00	4,984,086.00	594.0	1:00	1:00	2,388
CR2-C23-NP	Non-P	664,069.00	4,969,661.00	594.0	0:58	0:58	4,439
CR2-C44-NP	Non-P	659,145.00	4,966,062.00	561.4	0:43	0:43	4,183
CR1-C80-NP	Non-P	659,351.00	4,983,174.00	604.4	0:40	0:40	5,308
CR2-C137-NP	Non-P	658,951.00	4,979,194.00	568.2	0:00	0:00	6,555
CR1-C23-P	Participant	660,619.00	4,984,078.00	595.8	0:00	0:00	2,523
CR1-C4-NP	Non-P	659,744.00	4,984,749.00	606.0	0:00	0:00	5,981
CR1-C5-NP	Non-P	659,958.00	4,984,794.00	604.8	0:00	0:00	5,659
CR1-C66-NP	Non-P	659,718.00	4,985,032.00	606.0	0:00	0:00	5,800
CR1-C67-NP	Non-P	659,789.00	4,985,057.00	606.0	0:00	0:00	5,791
CR1-C7-NP	Non-P	660,893.00	4,984,861.00	593.2	0:00	0:00	3,022
CR1-C84-NP	Non-P	659,607.00	4,982,216.00	594.0	0:00	0:00	5,856
CR1-C88-NP	Non-P	660,156.00	4,980,595.00	570.9	0:00	0:00	4,045
CR1-C8-P	Participant	660,532.00	4,984,445.00	599.4	0:00	0:00	3,740
CR2-C101-NP	Non-P	660,732.00	4,972,807.00	591.0	0:00	0:00	6,266
CR2-C10-NP	Non-P	665,189.00	4,966,505.00	570.0	0:00	0:00	2,438
CR2-C135-NP	Non-P	667,172.00	4,966,196.00	595.2	0:00	0:00	2,884
CR2-C136-NP	Non-P	667,209.00	4,966,166.00	595.4	0:00	0:00	2,887
CR2-C28-P	Participant	659,208.00	4,968,159.00	572.8	0:00	0:00	5,630
CR2-C29-NP	Non-P	661,223.00	4,968,144.00	595.2	0:00	0:00	4,639
CR2-C30-NP	Non-P	659,100.00	4,968,023.00	568.6	0:00	0:00	5,502

* Not included in original submittal

continued

* Not included in original submittal

Table C-2: Crowned Ridge II Shadow Flicker Tabular Results Sorted by Real Case Shadow Flicker Hours/Year
Realistic case shadow results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Real Case Results	Distance to Nearest Turbine (ft)
CR2-D111-P	Participant	671,876.00	4,969,006.00	600.0	29:32	29:32	2,178
CR2-D21-NP	Non-P	669,517.00	4,978,053.00	596.1	28:59	28:59	1,985
CR2-D53-P	Participant	670,392.00	4,975,925.00	592.8	27:37	27:36	1,801
CR2-D108-NP	Non-P	670,354.00	4,965,949.00	594.0	25:37	23:04	2,198
CR2-D131-P	Participant	669,471.00	4,977,139.00	597.5	25:29	25:29	2,087
CR2-D50-P	Participant	672,015.00	4,967,209.00	602.8	24:58	24:57	1,965
CR2-D44-NP	Non-P	670,434.00	4,965,956.00	593.8	24:03	20:58	2,149
CR2-D15-NP	Non-P	674,387.00	4,968,515.00	588.0	24:01	24:00	2,297
CR2-D18-NP	Non-P	671,540.00	4,976,154.00	582.0	22:04	22:04	2,201
CR2-D11-NP	Non-P	669,646.00	4,974,534.00	604.4	21:54	5:51	1,919
CR2-D123-P	Participant	673,527.00	4,967,015.00	596.7	19:44	19:44	2,441
CR2-D39-P	Participant	668,443.00	4,974,627.00	614.4	18:50	18:50	1,706
CR2-D71-NP	Non-P	669,402.00	4,979,216.00	588.0	18:30	18:11	1,975
CR2-D122-P	Participant	673,601.00	4,967,341.00	594.0	18:17	18:17	1,886
CR2-D12-NP	Non-P	668,558.00	4,969,840.00	604.7	18:07	18:07	2,051
CR2-D105-NP	Non-P	670,348.00	4,963,826.00	611.7	17:56	17:56	2,821
CR2-D6-P	Participant	668,762.00	4,967,671.00	591.0	17:17	17:16	2,844
CR2-D30-NP	Non-P	669,549.00	4,974,233.00	611.9	17:10	6:03	2,044
CR2-D132-NP	Non-P	669,497.00	4,974,128.00	609.0	16:49	6:45	2,264
CR2-D119-P	Participant	673,378.00	4,965,126.00	602.6	16:30	16:30	1,932
CR2-D128-NP	Non-P	668,625.00	4,967,652.00	588.0	15:58	15:58	2,779
CR2-D5-NP	Non-P	668,781.00	4,964,897.00	603.0	15:51	2:14	1,923
CR2-D124-P	Participant	671,911.00	4,967,745.00	603.0	15:47	15:47	2,493
CR2-D22-NP	Non-P	668,798.00	4,963,767.00	603.1	14:21	14:20	2,142
CR2-D64-P	Participant	669,417.00	4,978,434.00	588.0	14:03	14:01	2,425
CR2-D19-NP	Non-P	668,870.00	4,964,178.00	606.0	13:59	13:59	2,034
CR2-D17-NP	Non-P	672,023.00	4,969,597.00	597.0	13:45	13:44	3,343
CR2-D221-NP	Non-P	670,351.11	4,973,543.31	606.0	13:33	14:04	2,041
CR2-D14-NP	Non-P	670,351.11	4,973,543.31	606.0	13:33	14:04	2,041
CR2-D130-NP	Non-P	672,080.49	4,973,212.28	591.0	13:27	15:12	2,260
CR2-D222-NP	Non-P	672,080.49	4,973,212.28	591.0	13:27	15:12	2,264
CR2-D125-NP	Non-P	670,404.00	4,966,786.00	597.0	13:11	13:11	3,422
CR2-D212-P	Participant	667,211.00	4,969,816.00	608.3	12:55	12:55	1,686
CR2-D83-NP	Non-P	675,891.00	4,966,810.00	579.0	12:25	12:25	1,929
CR2-D86-NP	Non-P	673,842.00	4,966,875.00	597.0	12:07	12:06	1,985
CR2-D121-NP	Non-P	674,461.00	4,966,734.00	594.0	12:06	12:06	2,316
CR2-D176-P	Participant	673,641.00	4,962,583.00	609.0	12:02	12:02	3,304
CR2-D127-NP	Non-P	668,841.00	4,969,858.00	603.0	11:40	11:40	2,894

* Not included in original submittal

Table C-2: Crowned Ridge II Shadow Flicker Tabular Results Sorted by Real Case Shadow Flicker Hours/Year
Realistic case shadow results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Real Case Results	Distance to Nearest Turbine (ft)
CR2-D62-NP	Non-P	669,355.00	4,974,624.00	609.0	10:56	5:02	2,913
CR2-D38-P	Participant	667,108.00	4,982,083.00	597.0	9:01	9:01	1,693
CR2-D49-P	Participant	672,024.00	4,974,135.00	583.2	8:42	8:42	3,537
CR2-D51-NP	Non-P	675,005.00	4,970,131.00	577.8	8:27	8:27	2,717
CR2-D56-P	Participant	667,119.00	4,977,925.00	612.0	8:10	8:47	2,110
CR2-D90-NP	Non-P	670,516.00	4,962,327.00	612.0	7:36	7:36	3,360
CR2-D3-NP	Non-P	672,390.00	4,963,482.00	612.0	6:47	6:47	2,037
CR2-D208-P	Participant	676,741.00	4,964,971.00	579.0	6:43	6:42	3,205
CR2-D107-NP	Non-P	670,405.00	4,966,321.00	597.0	6:22	2:27	3,143
CR2-D77-NP	Non-P	672,044.00	4,966,468.00	600.0	5:58	5:58	2,444
CR2-D101-NP	Non-P	672,538.00	4,961,910.00	612.8	5:29	5:29	2,677
CR2-D65-NP	Non-P	670,422.00	4,966,654.00	597.0	5:26	5:26	3,583
CR2-D16-P	Participant	671,626.00	4,966,693.00	601.7	5:21	5:21	2,018
CR2-D54-NP	Non-P	672,012.00	4,966,477.00	600.0	5:15	5:15	2,500
CR2-D104-NP	Non-P	670,443.00	4,961,600.00	613.8	5:06	5:06	4,058
CR2-D109-NP	Non-P	676,885.00	4,965,806.00	576.0	4:51	4:51	4,432
CR2-D85-NP	Non-P	669,593.00	4,976,302.00	603.0	4:36	4:36	1,949
CR2-D129-NP	Non-P	669,645.00	4,973,005.00	606.0	4:30	4:30	4,511
CR2-D220-NP	Non-P	670,260.25	4,967,728.02	597.0	3:14	3:14	2,211
CR2-D110-NP	Non-P	670,260.25	4,967,728.02	597.0	3:14	3:14	2,211
CR2-D126-NP	Non-P	670,227.27	4,967,454.62	593.3	3:04	3:04	2,749
CR2-D223-NP	Non-P	670,227.27	4,967,454.62	593.3	3:04	3:04	2,749
CR2-D20-NP	Non-P	675,261.00	4,968,400.00	579.0	3:00	3:00	2,313
CR2-D91-NP	Non-P	667,546.00	4,976,173.00	618.0	2:59	2:59	4,203
CR2-D36-NP	Non-P	669,812.00	4,966,746.00	591.0	2:59	2:59	2,854
CR2-D120-NP	Non-P	673,401.00	4,964,165.00	609.0	2:19	2:19	3,110
CR2-D79-NP	Non-P	672,172.00	4,974,737.00	585.0	2:16	2:16	1,955
CR2-D41-NP	Non-P	670,437.00	4,966,409.00	597.0	2:06	2:06	3,340
CR2-D115-P	Participant	670,974.00	4,969,938.00	606.0	2:04	2:04	3,245
CR2-D224-NP	Non-P	669,886.93	4,966,846.04	590.6	1:40	*	3,261
CR2-D46-NP	Non-P	669,797.00	4,966,804.00	591.0	1:23	1:23	2,972
CR2-D45-NP	Non-P	668,018.00	4,976,064.00	611.5	0:55	0:55	4,393
CR2-D154-NP	Non-P	672,205.00	4,960,261.00	610.8	0:00	0:00	6,496
CR2-D180-NP	Non-P	671,823.00	4,960,368.00	615.0	0:00	0:00	5,856
CR2-D103-NP	Non-P	670,588.00	4,961,119.00	615.0	0:00	0:00	4,606
CR2-D63-NP	Non-P	670,546.00	4,961,419.00	615.0	0:00	0:00	4,065
CR2-D106-NP	Non-P	667,315.00	4,965,297.00	594.0	0:00	0:00	5,351
CR2-D112-NP	Non-P	667,666.00	4,971,554.00	604.6	0:00	0:00	3,553

* Not included in original submittal

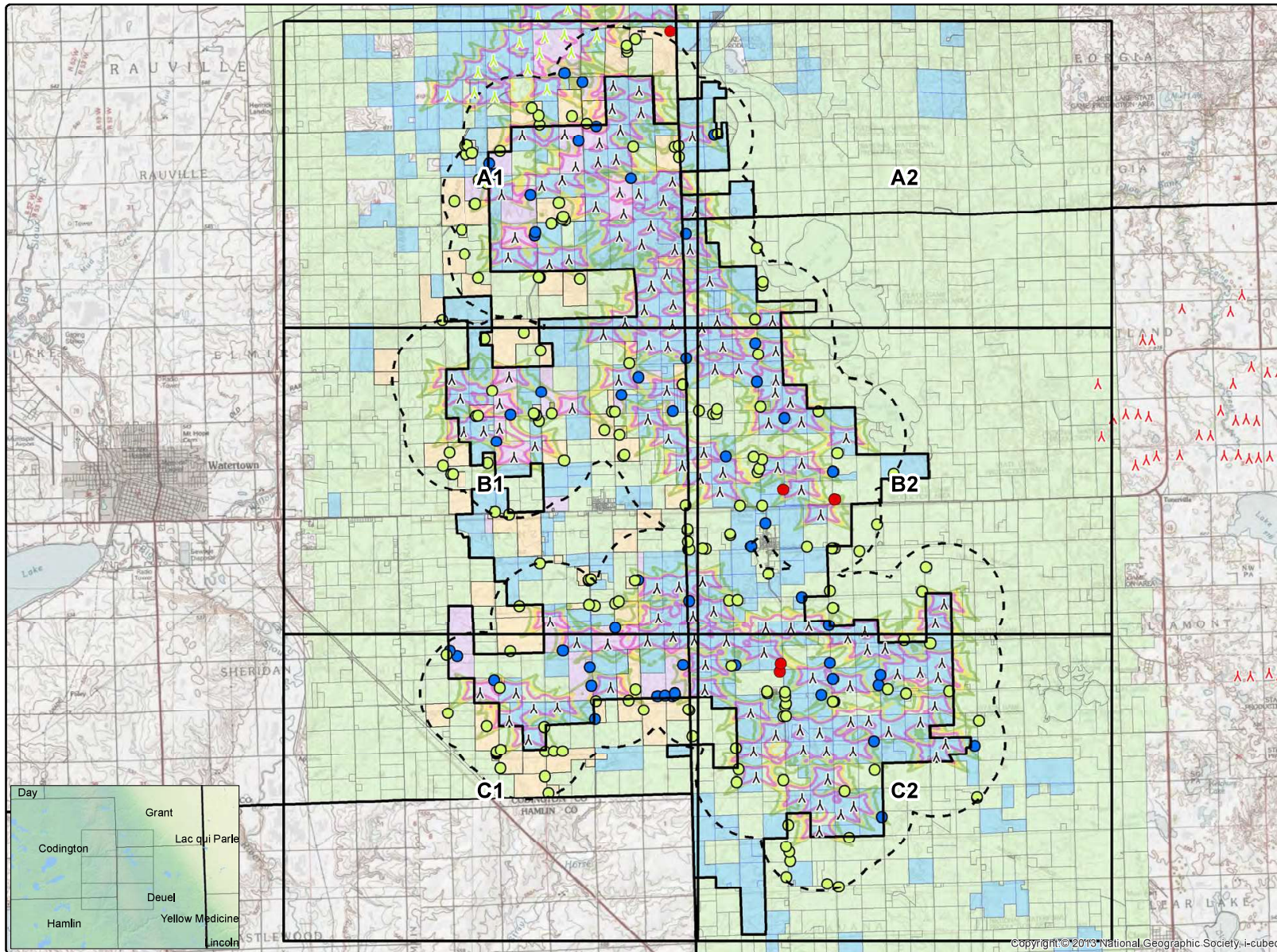
Realistic case shadow results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

* Not included in original submittal

continued

* Not included in original submittal

APPENDIX D: STANDARD RESOLUTION SHADOW FLICKER MAPS



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Crowned Ridge II Wind Farm 300 MW Shadow Overview Map

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures within 2 km.

Predicted shadow flicker levels at existing residences.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date
Drawn By:	AS	Checked By: JH

Legend

- △ Crowned Ridge II Turbines
- △ Crowned Ridge Turbines
- △ Deuel Harvest Turbines
- 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Shadow
- Participants Shadow
- Shadow Flicker (hr/yr)**
 - 10
 - 15
 - 20
 - 25
 - 30
- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Parcels
- Participating Parcels

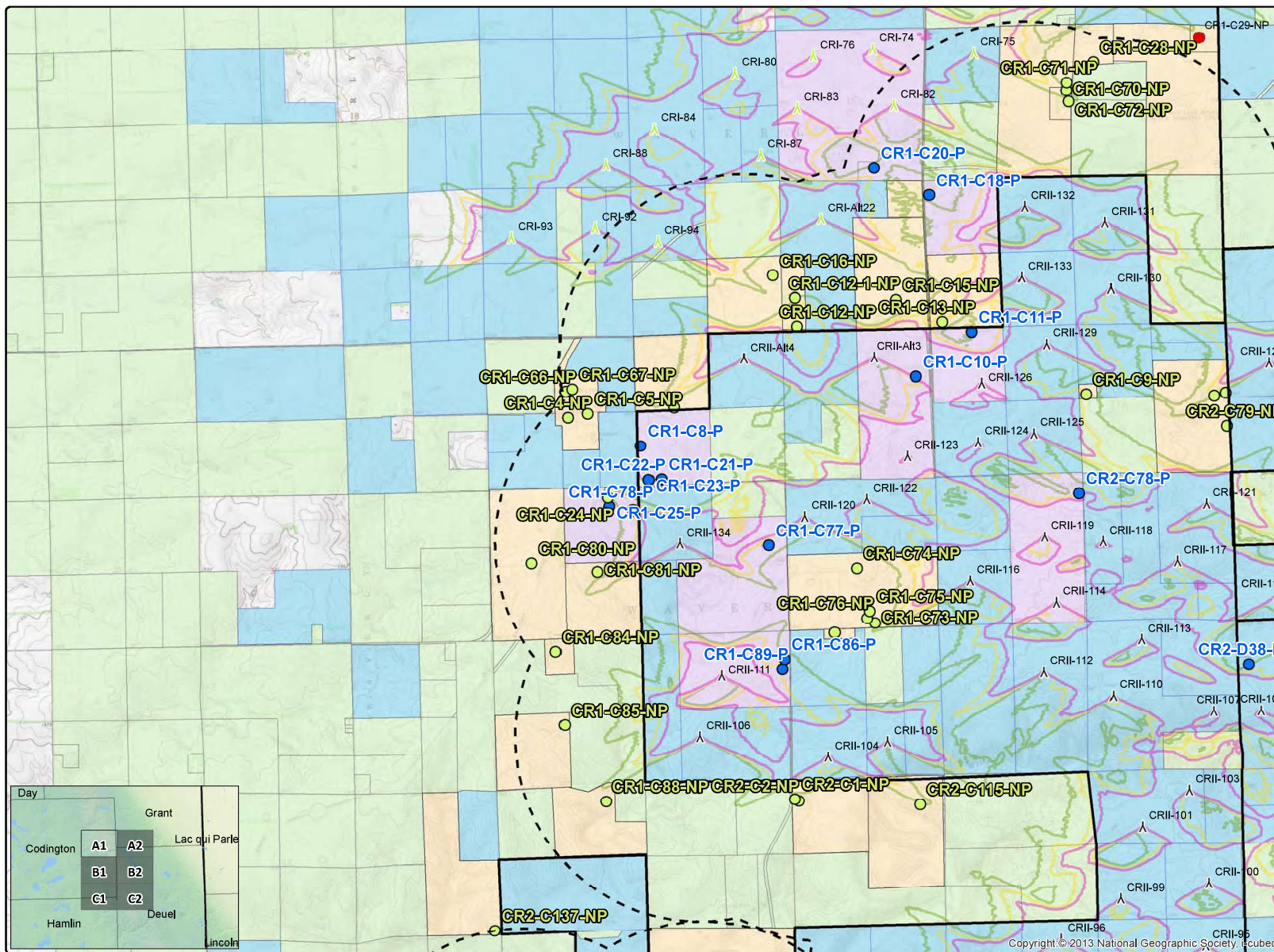
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0 0.75 1.5 3 Mile



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Crowned Ridge II Wind Farm 300 MW Shadow Flicker Iso-Lines

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures within 2 km.

Predicted shadow flicker levels at existing residences.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date

Drawn By: AS Checked By: JH

Legend

- ▲ Crowned Ridge II Turbines
- ▲ Crowned Ridge Turbines
- ▲ Deuel Harvest Turbines
- 2 km Turbine Buffer
- ▬ County Lines
- ▬ CR II Project Boundary
- CR2 Intervenor
- Non-Participants Shadow
- Participants Shadow

Shadow Flicker (hr/yr)

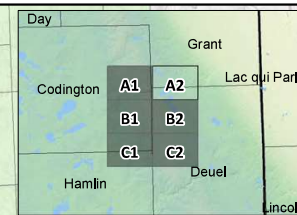
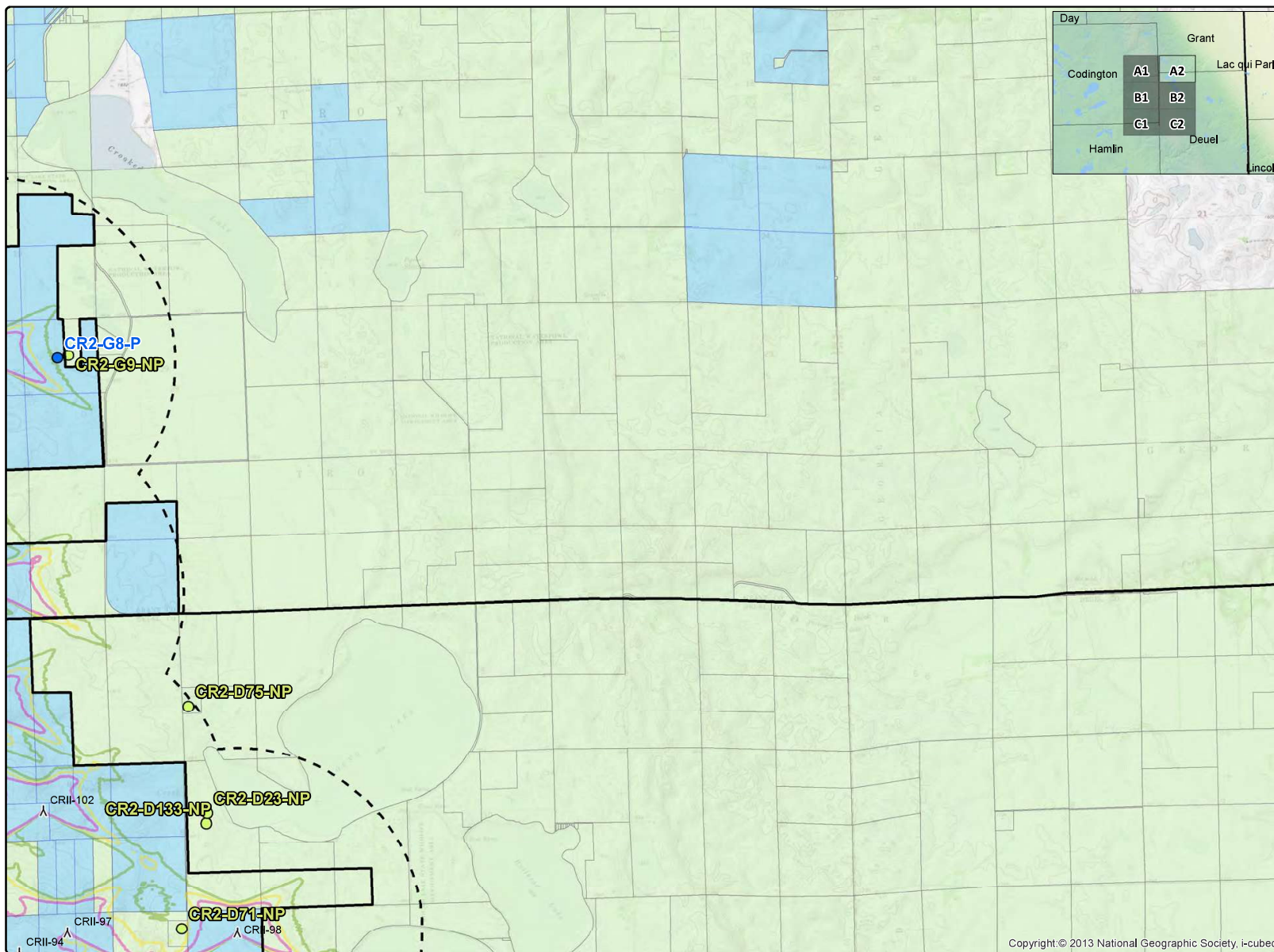
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Non-Participating Codington Parcels
 Participating Codington Parcels
 Non-Participating Parcels
 Participating Parcels

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Crowned Ridge II Wind Farm 300 MW Shadow Flicker Iso-Lines

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures within 2 km.

Predicted shadow flicker levels at existing residences.

Location: Watertown, SD
Project #: 20174431

Issue Dates		
1	Original	2019.09.18
#	Description	Date
Drawn By:	AS	Checked By: JH

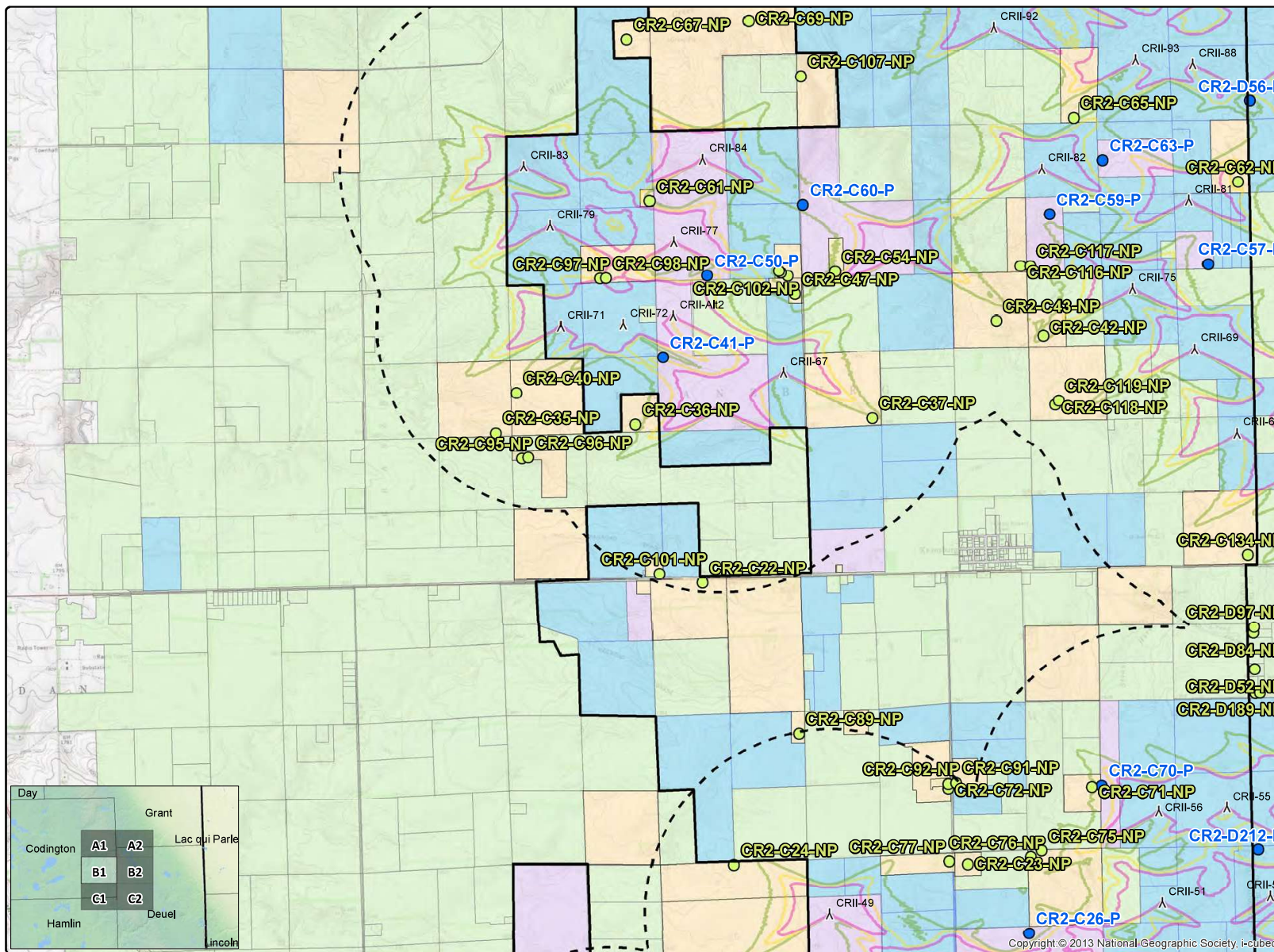
- Legend**
- ▲ Crowned Ridge II Turbines
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 - ▲ Deuel Harvest Turbines
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 - CR II Project Boundary
 - CR2 Intervenor
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Participating Codington Parcels
Non-Participating Parcels
Participating Parcels

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**Crowned Ridge II Wind Farm
300 MW
Shadow Flicker Iso-Lines**

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures within 2 km.

Predicted shadow flicker levels at existing residences.

Location: Watertown, SD
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Drawn By: AS Checked By: JH

Legend

- ▲ Crowned Ridge II Turbines
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- Non-Participants Shadow
- Participants Shadow

Shadow Flicker (hr/yr)

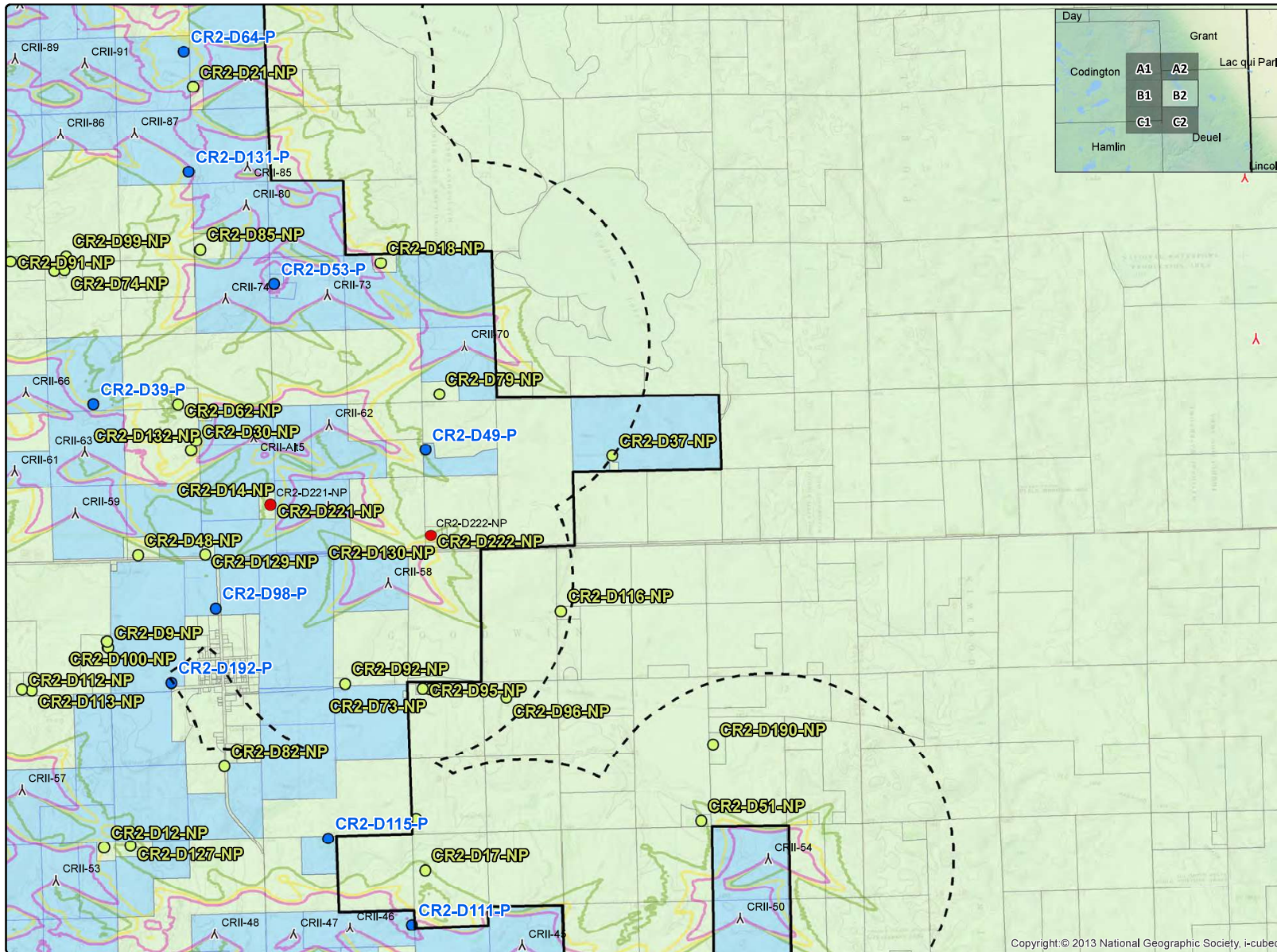
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- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Parcels
- Participating Parcels

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**Crowned Ridge II Wind Farm
300 MW
Shadow Flicker Iso-Lines**

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures within 2 km.

Predicted shadow flicker levels at existing residences.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date

Drawn By: AS **Checked By:** JH

Legend

- ▲ Crowned Ridge II Turbines
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- Participants Shadow

Shadow Flicker (hr/yr)

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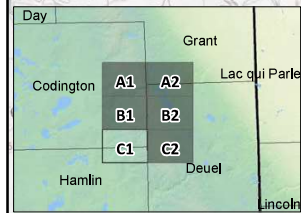
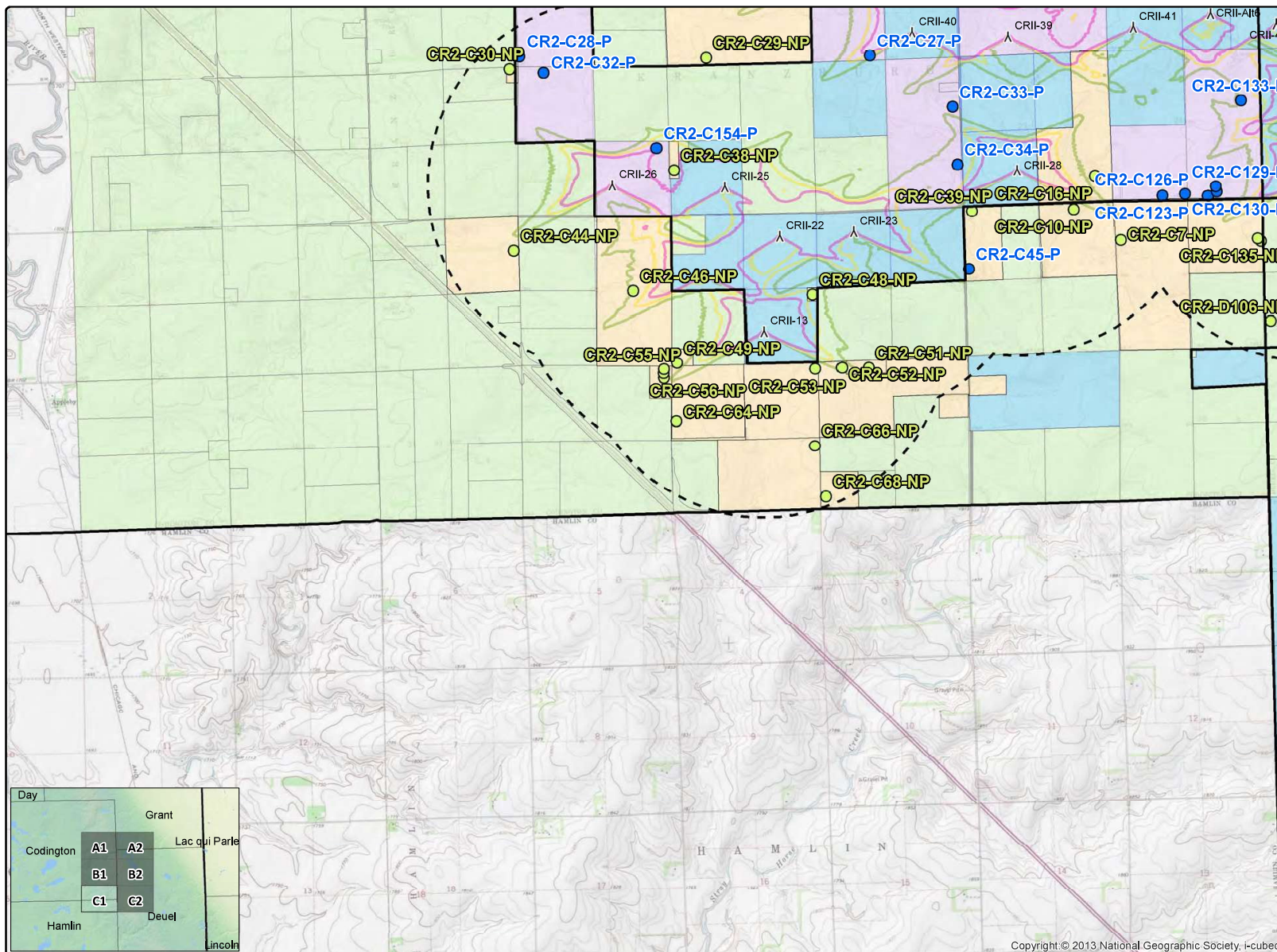
Non-Participating Codington Parcels
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Crowned Ridge II Wind Farm 300 MW Shadow Flicker Iso-Lines

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures within 2 km.

Predicted shadow flicker levels at existing residences.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date
Drawn By:	AS	Checked By: JH

Legend

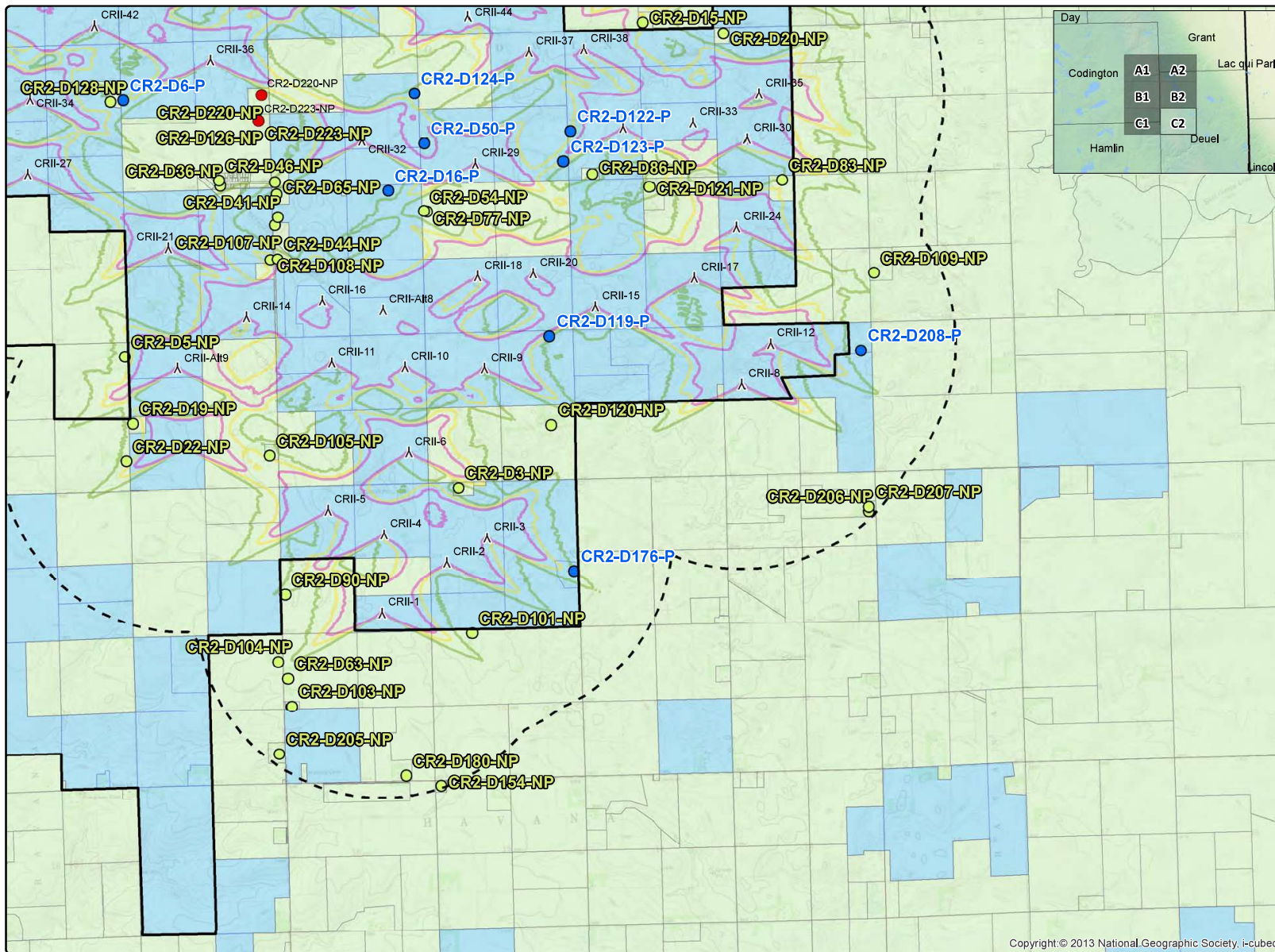
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- ▲ Crowned Ridge Turbines
- ▲ Deuel Harvest Turbines
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- Non-Participating Codington Parcels
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**Crowned Ridge II Wind Farm
300 MW
Shadow Flicker Iso-Lines**

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures within 2 km.

Predicted shadow flicker levels at existing residences.

Location: Watertown, SD
Project #: 20174431
Issue Dates

1	Original	2019.09.18
#	Description	Date

Drawn By: AS *Checked By:* JH

Legend

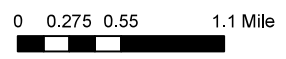
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- ▲ Crowned Ridge Turbines
- ▲ Deuel Harvest Turbines
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- CR2 Intervenor
- Non-Participants Shadow
- Participants Shadow

Shadow Flicker (hr/yr)

- 10
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- 25
- 30

- Non-Participating Codington Parcels
- Participating Codington_Parcels
- Non-Participating Parcels
- Participating Parcels

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Table C-1: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C1-NP	Non-P	Boundary	662,584	4,980,838	590.5	48.7	48.9	791
CR2-C3-NP	Non-P	Boundary	664,052	4,964,700	555.0	33.4	34.9	6,552
CR1-C4-NP	Non-P	Boundary	659,890	4,985,620	605.2	40.1	40.4	3,914
CR1-C7-NP	Non-P	Boundary	661,266	4,985,387	591.0	45.0	46.5	1,253
CR2-C7-NP	Non-P	Boundary	665,612	4,966,608	582.0	37.1	38.5	3,547
CR1-C8-P	Participant	Boundary	661,277	4,984,852	597.0	41.5	43.0	2,139
CR1-C9-NP	Non-P	Boundary	665,266	4,985,122	609.0	44.6	45.5	1,801
CR2-C10-NP	Non-P	Boundary	664,808	4,966,574	561.0	43.4	43.7	1,391
CR1-C10-P	Participant	Boundary	662,977	4,984,084	601.7	50.2	51.8	702
CR1-C11-P	Participant	Boundary	664,225	4,984,910	608.6	50.8	51.1	699
CR1-C12-NP	Non-P	Boundary	662,296	4,986,504	605.2	44.6	44.9	1,444
CR1-C13-NP	Non-P	Boundary	664,419	4,986,258	615.0	49.4	50.1	758
CR1-C15-NP	Non-P	Boundary	662,794	4,986,895	612.9	47.0	47.5	1,017
CR2-C16-NP	Non-P	Boundary	664,794	4,966,949	569.9	49.4	49.4	699
CR1-C16-NP	Non-P	Boundary	661,642	4,985,677	597.0	47.2	48.7	948
CR1-C18-P	Participant	Boundary	664,394	4,987,007	610.2	47.6	49.0	955
CR1-C20-P	Participant	Boundary	663,107	4,987,598	605.1	44.4	44.5	1,834
CR2-C22-NP	Non-P	Boundary	661,457	4,972,769	597.2	34.0	34.5	6,040
CR2-C23-NP	Non-P	Boundary	663,922	4,969,541	594.0	37.9	39.3	3,999
CR2-C24-NP	Non-P	Boundary	662,346	4,969,319	600.0	46.4	46.5	981
CR1-C24-NP	Non-P	Boundary	660,262	4,983,876	599.5	39.2	40.5	2,785
CR2-C26-P	Participant	Boundary	664,502	4,968,179	580.8	50.1	51.6	640
CR2-C27-P	Participant	Boundary	662,571	4,969,314	587.3	50.2	50.3	617
CR1-C28-NP	Non-P	Boundary	665,432	4,989,009	583.9	44.6	40.9	1,483
CR2-C28-P	Participant	Boundary	659,999	4,968,048	567.1	34.8	36.2	4,265
CR2-C29-NP	Non-P	Boundary	662,350	4,969,119	594.7	48.8	48.8	738
CR1-C29-NP	Non-P	Boundary	666,496	4,989,001	574.3	42.4	39.0	1,952
CR2-C30-NP	Non-P	Boundary	659,189	4,967,871	566.6	33.1	34.4	4,938
CR1-C31-NP	Non-P	Boundary	665,639	4,989,013	584.7	44.2	42.8	1,637
CR2-C31-P	Participant	Boundary	662,360	4,973,292	606.0	35.2	35.8	5,407
CR2-C32-P	Participant	Boundary	660,020	4,967,239	573.0	41.7	43.4	1,673
CR2-C33-P	Participant	Boundary	663,452	4,968,137	580.8	47.2	48.8	922
CR2-C35-NP	Non-P	Boundary	659,114	4,975,104	555.7	40.2	40.4	2,208
CR2-C36-NP	Non-P	Boundary	660,716	4,974,757	580.4	42.5	42.6	2,198
CR2-C37-NP	Non-P	Boundary	662,306	4,974,989	606.0	48.8	48.9	751
CR2-C38-NP	Non-P	Boundary	660,926	4,966,838	588.0	43.5	45.3	1,667
CR2-C39-NP	Non-P	Boundary	664,405	4,966,557	563.0	43.6	43.9	1,362
CR2-C40-NP	Non-P	Boundary	659,711	4,975,130	583.9	45.7	45.7	1,178
CR2-C41-P	Participant	Boundary	660,695	4,975,584	598.4	51.4	51.2	617

* Not included in original submittal

Table C-1: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C42-NP	Non-P	Boundary	665,127	4,975,675	595.6	40.2	41.8	2,474
CR2-C43-NP	Non-P	Boundary	663,896	4,976,057	596.6	40.9	42.5	2,037
CR2-C44-NP	Non-P	Boundary	659,186	4,966,434	555.0	35.3	37.0	3,527
CR2-C45-P	Participant	Boundary	664,019	4,965,873	570.0	37.0	38.3	3,934
CR2-C46-NP	Non-P	Boundary	660,215	4,966,435	582.0	45.6	47.3	1,083
CR2-C47-NP	Non-P	Boundary	662,128	4,975,739	594.0	40.9	41.1	2,477
CR2-C48-NP	Non-P	Boundary	662,312	4,965,660	590.1	43.4	45.3	2,067
CR2-C49-NP	Non-P	Boundary	661,080	4,965,005	582.0	40.3	42.2	2,575
CR2-C50-P	Participant	Boundary	660,674	4,976,401	574.5	49.7	49.6	705
CR2-C51-NP	Non-P	Boundary	662,731	4,964,867	584.2	37.9	39.7	3,091
CR2-C52-NP	Non-P	Boundary	662,432	4,964,852	574.4	40.0	41.8	2,218
CR2-C53-NP	Non-P	Boundary	661,853	4,964,839	578.5	45.3	47.0	1,138
CR2-C54-NP	Non-P	Boundary	662,719	4,976,216	597.0	41.4	42.8	1,939
CR2-C55-NP	Non-P	Boundary	660,848	4,964,816	582.0	37.8	39.6	3,438
CR2-C57-P	Participant	Boundary	666,460	4,976,511	615.0	46.1	46.6	1,119
CR2-C59-P	Participant	Boundary	664,882	4,976,884	603.0	46.4	48.1	1,024
CR2-C60-P	Participant	Boundary	663,492	4,976,270	596.4	50.4	52.0	604
CR2-C61-NP	Non-P	Boundary	660,672	4,976,784	582.9	44.7	45.2	1,440
CR2-C62-NP	Non-P	Boundary	666,705	4,976,925	612.0	48.1	48.4	837
CR2-C63-P	Participant	Boundary	666,292	4,977,116	610.5	46.6	47.1	1,027
CR2-C64-NP	Non-P	Boundary	661,628	4,964,834	577.9	43.9	45.6	1,355
CR2-C65-NP	Non-P	Boundary	665,066	4,978,501	606.1	43.3	47.5	1,985
CR2-C66-NP	Non-P	Boundary	661,881	4,964,060	572.8	35.5	37.2	3,694
CR2-C67-NP	Non-P	Boundary	660,639	4,978,403	556.5	36.9	38.0	4,071
CR2-C68-NP	Non-P	Boundary	662,455	4,963,673	580.3	32.9	34.5	5,354
CR1-C68-P	Participant	Boundary	662,024	4,987,612	604.9	51.0	51.0	640
CR2-C69-NP	Non-P	Boundary	661,200	4,977,610	571.8	46.2	47.7	1,027
CR1-C70-NP	Non-P	Boundary	664,950	4,988,325	596.1	41.4	41.9	2,940
CR2-C70-P	Participant	Boundary	665,711	4,970,192	583.7	43.9	45.9	1,398
CR1-C71-NP	Non-P	Boundary	664,414	4,988,688	600.0	47.8	48.1	909
CR2-C71-NP	Non-P	Boundary	665,511	4,970,237	582.0	41.1	43.1	2,047
CR2-C72-NP	Non-P	Boundary	663,882	4,970,343	599.2	35.5	36.7	5,860
CR1-C73-NP	Non-P	Boundary	663,740	4,982,989	591.6	46.0	47.7	1,175
CR2-C74-NP	Non-P	Boundary	660,737	4,969,659	585.4	32.9	33.6	6,279
CR2-C75-NP	Non-P	Boundary	665,533	4,969,027	576.4	43.1	44.8	2,051
CR2-C77-NP	Non-P	Boundary	663,124	4,969,545	597.9	39.9	40.6	2,264
CR1-C77-P	Participant	Boundary	660,965	4,983,217	584.0	51.1	52.6	558
CR2-C78-P	Participant	Boundary	665,321	4,983,408	608.5	50.7	52.3	705

* Not included in original submittal

Table C-1: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C78-P	Participant	Boundary	660,509	4,983,361	601.0	43.4	52.3	705
CR2-C79-NP	Non-P	Boundary	666,645	4,984,162	594.4	46.2	47.8	1,119
CR1-C79-NP	Non-P	Boundary	660,498	4,983,685	595.6	41.9	43.4	1,791
CR1-C80-NP	Non-P	Boundary	659,693	4,983,990	603.4	37.2	38.1	4,590
CR2-C80-NP	Non-P	Boundary	665,496	4,971,451	597.0	36.1	37.9	4,501
CR1-C81-NP	Non-P	Boundary	660,516	4,983,200	595.7	42.9	44.5	1,565
CR1-C84-NP	Non-P	Boundary	659,796	4,982,364	594.1	36.6	37.7	5,072
CR1-C85-NP	Non-P	Boundary	659,751	4,981,560	587.4	36.2	37.3	4,734
CR1-C86-P	Participant	Boundary	661,252	4,981,612	589.8	47.9	49.6	1,070
CR1-C87-NP	Non-P	Boundary	662,846	4,982,473	585.1	40.6	42.0	4,193
CR2-C87-NP	Non-P	Boundary	662,990	4,971,076	603.0	33.8	34.6	6,542
CR1-C88-NP	Non-P	Boundary	660,240	4,980,801	571.0	37.3	38.6	3,458
CR2-C89-NP	Non-P	Boundary	662,304	4,970,980	603.0	33.5	34.2	6,145
CR2-C91-NP	Non-P	Boundary	664,274	4,970,519	594.0	35.5	36.9	6,174
CR2-C92-NP	Non-P	Boundary	663,878	4,970,491	597.0	35.2	36.4	6,191
CR2-C93-NP	Non-P	Boundary	659,946	4,973,545	578.6	34.8	35.1	5,827
CR2-C95-NP	Non-P	Boundary	659,720	4,974,150	561.0	36.7	36.8	4,390
CR2-C97-NP	Non-P	Boundary	660,676	4,976,379	589.3	49.7	49.7	702
CR2-C99-P	Participant	Boundary	660,483	4,972,731	585.6	33.3	33.7	6,811
CR2-C100-NP	Non-P	Boundary	660,637	4,972,733	591.0	33.4	33.9	6,604
CR2-C101-NP	Non-P	Boundary	660,765	4,972,985	588.8	34.2	34.7	5,682
CR2-C102-NP	Non-P	Boundary	661,983	4,976,005	591.0	40.3	40.4	3,360
CR2-C104-NP	Non-P	Boundary	661,882	4,972,775	603.0	34.1	34.6	6,243
CR2-C107-NP	Non-P	Boundary	662,229	4,977,633	564.3	38.0	39.1	3,547
CR2-C109-NP	Non-P	Boundary	662,644	4,972,909	606.0	34.2	34.7	6,968
CR2-C112-NP	Non-P	Boundary	666,270	4,972,900	602.5	36.8	38.1	5,253
CR2-C115-NP	Non-P	Boundary	662,993	4,980,847	561.8	45.4	46.7	1,473
CR2-C116-NP	Non-P	Boundary	664,686	4,976,878	598.0	45.1	46.8	1,201
CR2-C118-NP	Non-P	Boundary	665,548	4,975,288	600.2	41.2	42.8	2,224
CR2-C123-P	Participant	Boundary	665,581	4,967,412	573.5	39.0	40.5	3,579
CR2-C128-P	Participant	Boundary	667,185	4,968,243	579.7	46.8	48.2	1,079
CR2-C134-NP	Non-P	Boundary	667,174	4,973,721	610.9	44.9	46.3	1,496
CR2-C135-NP	Non-P	Boundary	667,221	4,966,634	591.0	41.0	43.3	1,854
CR2-C137-NP	Non-P	Boundary	659,035	4,979,157	564.0	34.1	34.8	6,398
CR2-C142-NP	Non-P	Boundary	657,486	4,977,150	549.0	33.4	34.1	5,846
CR2-C143-NP	Non-P	Boundary	657,478	4,977,453	561.6	33.2	34.0	5,919
CR2-C151-NP	Non-P	Boundary	663,729	4,964,513	554.3	33.5	35.0	6,486
CR2-C154-P	Participant	Boundary	660,033	4,966,759	577.9	50.5	52.1	577

* Not included in original submittal

Table C-1: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C1-NP	Non-P	Structure	662,198	4,980,622	591.0	42.0	42.7	1,909
CR2-C2-NP	Non-P	Structure	662,238	4,980,604	590.9	42.1	42.8	1,880
CR2-C3-NP	Non-P	Structure	664,345	4,964,571	556.0	32.7	34.2	7,497
CR1-C4-NP	Non-P	Structure	659,744	4,984,749	606.0	37.8	38.3	5,981
CR1-C5-NP	Non-P	Structure	659,958	4,984,794	604.8	38.1	38.7	5,659
CR1-C7-NP	Non-P	Structure	660,893	4,984,861	593.2	39.9	41.1	3,022
CR2-C7-NP	Non-P	Structure	665,694	4,966,179	570.0	35.6	37.1	4,409
CR1-C8-P	Participant	Structure	660,532	4,984,445	599.4	38.9	39.9	3,740
CR1-C9-NP	Non-P	Structure	665,352	4,985,004	609.0	43.7	44.9	2,280
CR2-C10-NP	Non-P	Structure	665,189	4,966,505	570.0	38.9	39.7	2,438
CR1-C10-P	Participant	Structure	663,510	4,985,195	609.0	43.2	45.8	2,346
CR1-C11-P	Participant	Structure	664,111	4,985,679	609.0	44.5	45.2	1,860
CR1-C12-NP	Non-P	Structure	662,222	4,985,736	603.0	42.0	43.7	2,201
CR1-C12-1-NP	Non-P	Structure	662,199	4,986,047	606.0	41.8	43.0	2,818
CR1-C13-NP	Non-P	Structure	663,792	4,985,785	612.0	42.6	43.9	2,589
CR1-C15-NP	Non-P	Structure	663,291	4,986,026	615.0	41.0	43.2	3,907
CR1-C16-NP	Non-P	Structure	661,960	4,986,288	606.0	42.2	42.9	2,648
CR2-C16-NP	Non-P	Structure	665,418	4,966,866	567.0	38.7	39.6	2,756
CR1-C18-P	Participant	Structure	663,651	4,987,157	610.4	41.9	42.6	3,409
CR1-C20-P	Participant	Structure	663,054	4,987,455	606.0	43.7	43.9	2,336
CR1-C21-P	Participant	Structure	660,756	4,984,086	594.0	40.5	41.9	2,388
CR2-C22-NP	Non-P	Structure	661,202	4,972,711	597.0	33.8	34.3	6,247
CR1-C22-P	Participant	Structure	660,755	4,984,082	594.0	40.5	41.9	2,375
CR2-C23-NP	Non-P	Structure	664,069	4,969,661	594.0	37.4	38.8	4,439
CR1-C23-P	Participant	Structure	660,619	4,984,078	595.8	40.1	41.4	2,523
CR1-C24-NP	Non-P	Structure	660,176	4,983,887	601.1	38.7	39.9	3,038
CR2-C24-NP	Non-P	Structure	661,541	4,969,653	600.0	35.4	36.0	3,809
CR1-C25-P	Participant	Structure	660,190	4,983,788	602.3	39.0	40.3	2,838
CR2-C26-P	Participant	Structure	664,733	4,968,915	591.0	41.7	43.4	1,959
CR2-C27-P	Participant	Structure	662,985	4,968,167	582.0	42.3	43.8	1,726
CR1-C28-NP	Non-P	Structure	665,429	4,988,598	590.9	41.3	40.1	2,831
CR2-C28-P	Participant	Structure	659,208	4,968,159	572.8	32.4	33.7	5,630
CR1-C29-NP	Non-P	Structure	666,572	4,988,867	575.9	41.0	38.6	2,457
CR2-C29-NP	Non-P	Structure	661,223	4,968,144	595.2	36.2	37.6	4,639
CR2-C30-NP	Non-P	Structure	659,100	4,968,023	568.6	32.5	33.7	5,502
CR1-C31-NP	Non-P	Structure	665,939	4,988,950	585.4	43.1	39.6	2,126
CR2-C31-P	Participant	Structure	663,117	4,972,923	606.0	34.1	34.7	7,579
CR2-C32-P	Participant	Structure	659,469	4,967,984	575.2	33.6	35.0	4,678

* Not included in original submittal

Table C-1: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C33-P	Participant	Structure	663,878	4,967,612	576.1	40.4	41.8	2,999
CR2-C34-P	Participant	Structure	663,934	4,966,991	570.1	40.7	41.5	2,133
CR2-C35-NP	Non-P	Structure	658,964	4,974,334	566.8	35.5	35.6	4,432
CR2-C36-NP	Non-P	Structure	660,475	4,974,426	578.6	39.8	40.1	2,992
CR2-C37-NP	Non-P	Structure	663,037	4,974,496	606.0	37.5	38.0	3,537
CR2-C38-NP	Non-P	Structure	660,874	4,966,929	585.5	42.8	44.6	1,906
CR2-C39-NP	Non-P	Structure	664,089	4,966,486	566.2	40.2	40.9	2,178
CR2-C40-NP	Non-P	Structure	659,189	4,974,765	578.3	38.5	38.6	2,841
CR2-C41-P	Participant	Structure	660,770	4,975,147	596.4	45.4	43.6	1,532
CR2-C42-NP	Non-P	Structure	664,887	4,975,388	597.0	38.4	39.7	3,566
CR2-C43-NP	Non-P	Structure	664,382	4,975,544	597.0	37.8	39.1	4,232
CR2-C44-NP	Non-P	Structure	659,145	4,966,062	561.4	34.2	35.8	4,183
CR2-C45-P	Participant	Structure	664,058	4,965,862	570.0	36.9	38.2	3,907
CR2-C46-NP	Non-P	Structure	660,435	4,965,627	582.0	39.5	41.3	2,569
CR2-C47-NP	Non-P	Structure	662,200	4,975,837	594.5	40.3	40.7	2,821
CR2-C48-NP	Non-P	Structure	662,370	4,965,588	590.3	42.8	44.7	2,172
CR2-C49-NP	Non-P	Structure	660,907	4,964,846	582.0	38.3	40.1	3,271
CR2-C50-P	Participant	Structure	661,252	4,976,035	597.0	44.7	43.5	1,696
CR2-C51-NP	Non-P	Structure	662,977	4,964,794	584.0	36.4	38.2	3,934
CR2-C52-NP	Non-P	Structure	662,688	4,964,792	585.9	37.8	39.6	3,054
CR2-C53-NP	Non-P	Structure	662,401	4,964,782	582.0	39.7	41.5	2,257
CR2-C54-NP	Non-P	Structure	662,636	4,976,079	597.0	40.6	41.8	2,287
CR2-C55-NP	Non-P	Structure	660,765	4,964,777	582.0	37.1	38.9	3,655
CR2-C56-NP	Non-P	Structure	660,759	4,964,737	582.0	36.9	38.7	3,786
CR2-C57-P	Participant	Structure	666,667	4,976,162	613.8	42.4	43.6	2,362
CR2-C58-NP	Non-P	Structure	660,764	4,964,686	582.0	36.7	38.4	3,904
CR2-C59-P	Participant	Structure	664,952	4,976,698	601.9	42.9	44.6	1,654
CR2-C60-P	Participant	Structure	662,287	4,976,800	594.0	38.9	39.9	3,793
CR2-C61-NP	Non-P	Structure	660,630	4,976,840	582.5	43.9	44.5	1,667
CR2-C62-NP	Non-P	Structure	666,992	4,977,048	615.0	42.9	43.9	1,860
CR2-C63-P	Participant	Structure	665,528	4,977,285	612.0	42.0	43.9	2,185
CR2-C64-NP	Non-P	Structure	660,901	4,964,220	582.0	34.8	36.4	4,429
CR2-C65-NP	Non-P	Structure	665,217	4,977,746	609.0	42.0	44.3	2,139
CR1-C66-NP	Non-P	Structure	659,718	4,985,032	606.0	38.3	38.7	5,800
CR2-C66-NP	Non-P	Structure	662,396	4,963,954	582.0	34.3	35.9	4,429
CR1-C67-NP	Non-P	Structure	659,789	4,985,057	606.0	38.4	38.8	5,791
CR2-C67-NP	Non-P	Structure	660,379	4,978,592	556.1	36.2	37.1	5,033
CR2-C68-NP	Non-P	Structure	662,517	4,963,408	579.0	31.9	33.4	6,237

* Not included in original submittal

Table C-1: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR1-C68-P	Participant	Structure	662,652	4,987,606	609.0	45.1	45.2	2,146
CR2-C69-NP	Non-P	Structure	661,701	4,978,792	564.0	36.4	37.3	5,171
CR1-C69-P	Participant	Structure	662,685	4,987,619	609.0	45.0	45.1	2,185
CR1-C70-NP	Non-P	Structure	665,135	4,988,293	595.9	40.9	40.9	3,540
CR2-C70-P	Participant	Structure	665,521	4,970,518	588.9	40.2	42.3	2,215
CR1-C71-NP	Non-P	Structure	665,137	4,988,378	595.6	41.1	40.9	3,448
CR2-C71-NP	Non-P	Structure	665,411	4,970,503	586.1	39.4	41.4	2,529
CR1-C72-NP	Non-P	Structure	665,158	4,988,170	594.6	40.7	41.1	3,776
CR2-C72-NP	Non-P	Structure	663,856	4,970,488	597.0	35.2	36.3	6,135
CR1-C73-NP	Non-P	Structure	663,066	4,982,530	591.0	40.8	42.3	3,704
CR1-C74-NP	Non-P	Structure	662,869	4,983,122	595.7	42.6	44.2	2,480
CR2-C74-NP	Non-P	Structure	660,687	4,969,931	586.5	32.5	33.2	6,732
CR1-C75-NP	Non-P	Structure	663,010	4,982,658	588.0	40.9	42.4	3,730
CR2-C75-NP	Non-P	Structure	664,866	4,969,808	583.7	38.0	39.7	4,396
CR1-C76-NP	Non-P	Structure	662,981	4,982,580	588.3	40.8	42.3	3,901
CR2-C76-NP	Non-P	Structure	664,747	4,969,738	584.8	37.9	39.5	4,560
CR2-C77-NP	Non-P	Structure	663,865	4,969,694	597.0	37.3	38.6	4,406
CR1-C77-P	Participant	Structure	661,915	4,983,367	591.0	43.6	45.2	1,654
CR2-C78-P	Participant	Structure	665,273	4,983,933	609.0	45.3	46.9	1,919
CR1-C78-P	Participant	Structure	660,190	4,983,788	602.3	39.0	40.3	2,835
CR2-C79-NP	Non-P	Structure	666,869	4,984,663	587.9	41.3	43.0	2,703
CR1-C79-NP	Non-P	Structure	660,452	4,983,750	595.9	41.0	42.5	2,037
CR1-C80-NP	Non-P	Structure	659,351	4,983,174	604.4	36.0	36.8	5,308
CR2-C80-NP	Non-P	Structure	664,705	4,972,092	597.3	34.4	35.6	7,684
CR1-C81-NP	Non-P	Structure	660,062	4,983,083	597.0	38.4	39.7	3,094
CR1-C84-NP	Non-P	Structure	659,607	4,982,216	594.0	36.0	37.0	5,856
CR1-C85-NP	Non-P	Structure	659,706	4,981,419	588.0	36.0	37.0	4,819
CR2-C86-NP	Non-P	Structure	662,880	4,971,302	603.0	33.5	34.3	7,208
CR1-C86-P	Participant	Structure	662,086	4,982,135	585.0	41.7	43.2	2,306
CR1-C87-NP	Non-P	Structure	662,628	4,982,425	585.4	40.5	41.9	4,258
CR2-C87-NP	Non-P	Structure	662,841	4,971,294	603.0	33.5	34.3	7,165
CR1-C88-NP	Non-P	Structure	660,156	4,980,595	570.9	36.5	37.6	4,045
CR2-C89-NP	Non-P	Structure	662,244	4,971,076	603.0	33.4	34.0	6,489
CR1-C89-P	Participant	Structure	662,062	4,982,029	584.3	42.0	43.5	2,165
CR2-C90-NP	Non-P	Structure	664,088	4,970,672	594.0	35.0	36.3	6,863
CR2-C91-NP	Non-P	Structure	663,938	4,970,546	597.0	35.1	36.3	6,457
CR2-C92-NP	Non-P	Structure	663,855	4,970,535	597.0	35.1	36.3	6,247
CR2-C93-NP	Non-P	Structure	659,203	4,973,158	584.9	32.7	32.9	7,792

* Not included in original submittal

Table C-1: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C94-NP	Non-P	Structure	659,202	4,973,052	583.9	32.5	32.7	8,133
CR2-C95-NP	Non-P	Structure	659,248	4,974,054	567.0	35.2	35.3	4,898
CR2-C96-NP	Non-P	Structure	659,316	4,974,063	570.6	35.4	35.5	4,813
CR2-C97-NP	Non-P	Structure	660,093	4,976,001	583.8	44.8	44.8	1,814
CR2-C98-NP	Non-P	Structure	660,155	4,976,007	582.8	44.9	44.8	1,749
CR2-C99-P	Participant	Structure	660,584	4,972,570	591.0	33.1	33.5	7,165
CR2-C100-NP	Non-P	Structure	660,592	4,972,602	591.0	33.1	33.5	7,057
CR2-C101-NP	Non-P	Structure	660,732	4,972,807	591.0	33.7	34.1	6,266
CR2-C102-NP	Non-P	Structure	662,025	4,976,085	594.1	40.0	40.3	3,609
CR2-C103-NP	Non-P	Structure	662,046	4,976,067	594.8	40.0	40.3	3,547
CR2-C104-NP	Non-P	Structure	662,109	4,972,735	604.0	34.0	34.5	6,608
CR2-C105-NP	Non-P	Structure	662,122	4,976,029	595.3	39.9	40.3	3,425
CR2-C106-NP	Non-P	Structure	662,165	4,972,711	604.7	33.9	34.5	6,749
CR2-C107-NP	Non-P	Structure	662,265	4,978,194	577.7	37.0	38.0	4,564
CR2-C109-NP	Non-P	Structure	662,699	4,972,874	606.0	34.1	34.7	7,169
CR2-C112-NP	Non-P	Structure	665,928	4,972,630	603.0	35.8	37.1	6,575
CR2-C115-NP	Non-P	Structure	663,555	4,980,564	575.2	40.7	42.1	2,520
CR2-C116-NP	Non-P	Structure	664,640	4,976,142	591.1	39.2	40.7	3,533
CR2-C117-NP	Non-P	Structure	664,742	4,976,142	594.2	39.4	40.9	3,481
CR2-C118-NP	Non-P	Structure	665,014	4,974,639	600.0	37.1	38.2	4,947
CR2-C119-NP	Non-P	Structure	665,052	4,974,682	600.0	37.2	38.4	4,760
CR2-C123-P	Participant	Structure	666,146	4,966,653	579.4	36.4	38.2	5,216
CR2-C126-P	Participant	Structure	666,389	4,966,670	585.0	36.6	38.6	4,455
CR2-C128-P	Participant	Structure	666,636	4,966,649	589.0	37.0	39.3	3,671
CR2-C129-P	Participant	Structure	666,716	4,966,751	591.0	37.6	39.8	3,356
CR2-C130-P	Participant	Structure	666,727	4,966,695	591.0	37.5	39.8	3,350
CR2-C131-NP	Non-P	Structure	666,732	4,984,987	591.0	41.4	43.0	2,287
CR2-C132-NP	Non-P	Structure	666,857	4,985,021	588.2	42.2	43.8	1,883
CR2-C133-P	Participant	Structure	666,992	4,967,681	571.2	40.7	43.0	3,002
CR2-C134-NP	Non-P	Structure	667,097	4,973,011	613.0	39.3	40.8	3,363
CR2-C135-NP	Non-P	Structure	667,172	4,966,196	595.2	37.4	40.0	2,884
CR2-C136-NP	Non-P	Structure	667,209	4,966,166	595.4	37.3	40.0	2,887
CR2-C137-NP	Non-P	Structure	658,951	4,979,194	568.2	33.9	34.6	6,555
CR2-C142-NP	Non-P	Structure	656,697	4,977,269	566.9	31.4	31.8	8,432
CR2-C143-NP	Non-P	Structure	657,016	4,977,505	553.6	32.0	32.5	7,444
CR2-C151-NP	Non-P	Structure	663,934	4,964,475	556.1	33.0	34.6	6,929
CR2-C154-P	Participant	Structure	660,684	4,967,166	588.0	41.5	43.3	2,041
CR2-C155-NP	Non-P	Structure	657,554	4,975,128	554.6	32.6	*	7,034

* Not included in original submittal

Table C-1: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-D3-NP	Non-P	Structure	672,390	4,963,482	612.0	27.5	44.7	18,746
CR2-D5-NP	Non-P	Structure	668,781	4,964,897	603.0	31.2	39.7	7,342
CR2-D6-P	Participant	Structure	668,762	4,967,671	591.0	39.2	43.1	2,844
CR2-D9-NP	Non-P	Structure	668,597	4,971,999	611.5	36.8	38.6	4,921
CR2-D11-NP	Non-P	Structure	669,646	4,974,534	604.4	42.4	40.8	1,919
CR2-D12-NP	Non-P	Structure	668,558	4,969,840	604.7	41.8	44.0	2,051
CR2-D14-NP	Non-P	Structure	670,351	4,973,543	606.0	42.5	43.1	2,041
CR2-D15-NP	Non-P	Structure	674,387	4,968,515	588.0	29.8	43.3	12,474
CR2-D16-P	Participant	Structure	671,626	4,966,693	601.7	31.2	44.1	8,005
CR2-D17-NP	Non-P	Structure	672,023	4,969,597	597.0	33.5	41.4	5,167
CR2-D18-NP	Non-P	Structure	671,540	4,976,154	582.0	41.6	43.2	2,201
CR2-D19-NP	Non-P	Structure	668,870	4,964,178	606.0	29.9	42.2	9,600
CR2-D20-NP	Non-P	Structure	675,261	4,968,400	579.0	29.4	44.0	15,364
CR2-D21-NP	Non-P	Structure	669,517	4,978,053	596.1	43.7	44.7	1,985
CR2-D22-NP	Non-P	Structure	668,798	4,963,767	603.1	29.3	41.5	10,777
CR2-D23-NP	Non-P	Structure	669,671	4,980,468	573.0	37.1	38.4	4,380
CR2-D30-NP	Non-P	Structure	669,549	4,974,233	611.9	42.0	40.8	2,044
CR2-D36-NP	Non-P	Structure	669,812	4,966,746	591.0	33.8	41.9	6,837
CR2-D37-NP	Non-P	Structure	674,048	4,974,071	573.0	33.1	34.8	6,542
CR2-D38-P	Participant	Structure	667,108	4,982,083	597.0	44.0	46.8	1,693
CR2-D39-P	Participant	Structure	668,443	4,974,627	614.4	44.0	45.6	1,706
CR2-D41-NP	Non-P	Structure	670,437	4,966,409	597.0	32.1	42.2	8,225
CR2-D44-NP	Non-P	Structure	670,434	4,965,956	593.8	31.3	44.3	9,363
CR2-D45-NP	Non-P	Structure	668,018	4,976,064	611.5	39.7	41.0	4,393
CR2-D46-NP	Non-P	Structure	669,797	4,966,804	591.0	33.9	41.8	6,778
CR2-D48-NP	Non-P	Structure	668,923	4,972,998	609.0	39.8	41.4	2,680
CR2-D49-P	Participant	Structure	672,024	4,974,135	583.2	38.8	40.7	3,537
CR2-D50-P	Participant	Structure	672,015	4,967,209	602.8	31.4	44.7	7,247
CR2-D51-NP	Non-P	Structure	675,005	4,970,131	577.8	30.2	40.8	14,977
CR2-D52-NP	Non-P	Structure	667,172	4,971,776	606.0	37.1	39.2	4,583
CR2-D53-P	Participant	Structure	670,392	4,975,925	592.8	45.8	46.9	1,801
CR2-D54-NP	Non-P	Structure	672,012	4,966,477	600.0	30.4	43.6	9,219
CR2-D56-P	Participant	Structure	667,119	4,977,925	612.0	44.0	45.9	2,110
CR2-D62-NP	Non-P	Structure	669,355	4,974,624	609.0	40.9	41.1	2,913
CR2-D63-NP	Non-P	Structure	670,546	4,961,419	615.0	26.4	37.3	20,138
CR2-D64-P	Participant	Structure	669,417	4,978,434	588.0	42.7	43.7	2,425
CR2-D65-NP	Non-P	Structure	670,422	4,966,654	597.0	32.7	41.8	7,424
CR2-D71-NP	Non-P	Structure	669,402	4,979,216	588.0	42.3	43.1	1,975

* Not included in original submittal

Table C-1: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Receptor ID
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-D72-NP	Non-P	Structure	671,925	4,970,149	603.0	33.3	39.1	5,938
CR2-D73-NP	Non-P	Structure	672,072	4,971,556	600.0	33.2	37.8	7,405
CR2-D74-NP	Non-P	Structure	668,130	4,976,068	609.2	39.7	41.0	4,505
CR2-D75-NP	Non-P	Structure	669,473	4,981,625	570.0	35.7	37.1	7,319
CR2-D77-NP	Non-P	Structure	672,044	4,966,468	600.0	30.4	43.7	9,298
CR2-D79-NP	Non-P	Structure	672,172	4,974,737	585.0	41.3	43.0	1,955
CR2-D82-NP	Non-P	Structure	669,855	4,970,718	603.0	35.6	38.3	5,935
CR2-D83-NP	Non-P	Structure	675,891	4,966,810	579.0	28.6	44.0	18,658
CR2-D84-NP	Non-P	Structure	667,159	4,972,169	598.2	37.0	38.8	5,535
CR2-D85-NP	Non-P	Structure	669,593	4,976,302	603.0	44.0	44.7	1,949
CR2-D86-NP	Non-P	Structure	673,842	4,966,875	597.0	29.2	43.8	12,542
CR2-D90-NP	Non-P	Structure	670,516	4,962,327	612.0	27.1	40.6	17,493
CR2-D91-NP	Non-P	Structure	667,546	4,976,173	618.0	40.0	41.4	4,203
CR2-D92-NP	Non-P	Structure	671,159	4,971,610	597.2	34.3	38.4	6,319
CR2-D95-NP	Non-P	Structure	671,994	4,971,562	600.0	33.3	38.0	7,264
CR2-D96-NP	Non-P	Structure	672,899	4,971,469	594.0	32.2	36.4	9,249
CR2-D97-NP	Non-P	Structure	667,164	4,972,232	600.0	37.1	38.8	5,371
CR2-D98-P	Participant	Structure	669,757	4,972,426	606.0	36.6	38.3	5,381
CR2-D99-NP	Non-P	Structure	668,148	4,976,230	608.8	39.8	41.1	4,331
CR2-D100-NP	Non-P	Structure	668,589	4,972,064	609.9	36.9	38.7	4,708
CR2-D101-NP	Non-P	Structure	672,538	4,961,910	612.8	26.4	41.2	22,667
CR2-D103-NP	Non-P	Structure	670,588	4,961,119	615.0	26.2	36.2	21,079
CR2-D104-NP	Non-P	Structure	670,443	4,961,600	613.8	26.6	37.6	19,455
CR2-D105-NP	Non-P	Structure	670,348	4,963,826	611.7	28.6	42.8	13,179
CR2-D106-NP	Non-P	Structure	667,315	4,965,297	594.0	33.2	36.7	5,351
CR2-D107-NP	Non-P	Structure	670,405	4,966,321	597.0	32.0	42.4	8,520
CR2-D108-NP	Non-P	Structure	670,354	4,965,949	594.0	31.4	44.2	9,121
CR2-D109-NP	Non-P	Structure	676,885	4,965,806	576.0	28.2	38.1	22,979
CR2-D110-NP	Non-P	Structure	670,260	4,967,728	597.0	36.5	43.6	4,042
CR2-D111-P	Participant	Structure	671,876	4,969,006	600.0	34.5	44.4	4,180
CR2-D112-NP	Non-P	Structure	667,666	4,971,554	604.6	37.8	40.0	3,553
CR2-D113-NP	Non-P	Structure	667,774	4,971,544	606.9	37.8	40.0	3,537
CR2-D115-P	Participant	Structure	670,974	4,969,938	606.0	36.3	41.0	3,583
CR2-D116-NP	Non-P	Structure	673,491	4,972,398	577.8	32.3	35.5	9,055
CR2-D119-P	Participant	Structure	673,378	4,965,126	602.6	28.3	45.1	15,390
CR2-D120-NP	Non-P	Structure	673,401	4,964,165	609.0	27.7	41.4	18,067
CR2-D121-NP	Non-P	Structure	674,461	4,966,734	594.0	28.9	44.1	14,524
CR2-D122-P	Participant	Structure	673,601	4,967,341	594.0	29.7	44.6	11,092

* Not included in original submittal

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Table C-2: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level

Realistic case sound results at land parcel boundaries and occupied structures

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Codington County

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C97-NP	Non-P	Boundary	660,676	4,976,379	589.3	49.7	49.7	702
CR1-C13-NP	Non-P	Boundary	664,419	4,986,258	615.0	49.4	50.1	758
CR2-C16-NP	Non-P	Boundary	664,794	4,966,949	569.9	49.4	49.4	699
CR2-C37-NP	Non-P	Boundary	662,306	4,974,989	606.0	48.8	48.9	751
CR2-C29-NP	Non-P	Boundary	662,350	4,969,119	594.7	48.8	48.8	738
CR2-C1-NP	Non-P	Boundary	662,584	4,980,838	590.5	48.7	48.9	791
CR2-C62-NP	Non-P	Boundary	666,705	4,976,925	612.0	48.1	48.4	837
CR1-C71-NP	Non-P	Boundary	664,414	4,988,688	600.0	47.8	48.1	909
CR1-C16-NP	Non-P	Boundary	661,642	4,985,677	597.0	47.2	48.7	948
CR1-C15-NP	Non-P	Boundary	662,794	4,986,895	612.9	47.0	47.5	1,017
CR2-C24-NP	Non-P	Boundary	662,346	4,969,319	600.0	46.4	46.5	981
CR2-C79-NP	Non-P	Boundary	666,645	4,984,162	594.4	46.2	47.8	1,119
CR2-C69-NP	Non-P	Boundary	661,200	4,977,610	571.8	46.2	47.7	1,027
CR1-C73-NP	Non-P	Boundary	663,740	4,982,989	591.6	46.0	47.7	1,175
CR2-C40-NP	Non-P	Boundary	659,711	4,975,130	583.9	45.7	45.7	1,178
CR2-C46-NP	Non-P	Boundary	660,215	4,966,435	582.0	45.6	47.3	1,083
CR2-C115-NP	Non-P	Boundary	662,993	4,980,847	561.8	45.4	46.7	1,473
CR2-C53-NP	Non-P	Boundary	661,853	4,964,839	578.5	45.3	47.0	1,138
CR2-C116-NP	Non-P	Boundary	664,686	4,976,878	598.0	45.1	46.8	1,201
CR1-C7-NP	Non-P	Boundary	661,266	4,985,387	591.0	45.0	46.5	1,253
CR2-C134-NP	Non-P	Boundary	667,174	4,973,721	610.9	44.9	46.3	1,496
CR2-C61-NP	Non-P	Boundary	660,672	4,976,784	582.9	44.7	45.2	1,440
CR1-C28-NP	Non-P	Boundary	665,432	4,989,009	583.9	44.6	40.9	1,483
CR1-C12-NP	Non-P	Boundary	662,296	4,986,504	605.2	44.6	44.9	1,444
CR1-C9-NP	Non-P	Boundary	665,266	4,985,122	609.0	44.6	45.5	1,801
CR1-C31-NP	Non-P	Boundary	665,639	4,989,013	584.7	44.2	42.8	1,637
CR2-C64-NP	Non-P	Boundary	661,628	4,964,834	577.9	43.9	45.6	1,355
CR2-C39-NP	Non-P	Boundary	664,405	4,966,557	563.0	43.6	43.9	1,362
CR2-C38-NP	Non-P	Boundary	660,926	4,966,838	588.0	43.5	45.3	1,667
CR2-C10-NP	Non-P	Boundary	664,808	4,966,574	561.0	43.4	43.7	1,391
CR2-C48-NP	Non-P	Boundary	662,312	4,965,660	590.1	43.4	45.3	2,067
CR2-C65-NP	Non-P	Boundary	665,066	4,978,501	606.1	43.3	47.5	1,985
CR2-C75-NP	Non-P	Boundary	665,533	4,969,027	576.4	43.1	44.8	2,051
CR1-C81-NP	Non-P	Boundary	660,516	4,983,200	595.7	42.9	44.5	1,565
CR2-C36-NP	Non-P	Boundary	660,716	4,974,757	580.4	42.5	42.6	2,198
CR1-C29-NP	Non-P	Boundary	666,496	4,989,001	574.3	42.4	39.0	1,952
CR1-C79-NP	Non-P	Boundary	660,498	4,983,685	595.6	41.9	43.4	1,791
CR1-C70-NP	Non-P	Boundary	664,950	4,988,325	596.1	41.4	41.9	2,940
CR2-C54-NP	Non-P	Boundary	662,719	4,976,216	597.0	41.4	42.8	1,939

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C118-NP	Non-P	Boundary	665,548	4,975,288	600.2	41.2	42.8	2,224
CR2-C71-NP	Non-P	Boundary	665,511	4,970,237	582.0	41.1	43.1	2,047
CR2-C135-NP	Non-P	Boundary	667,221	4,966,634	591.0	41.0	43.3	1,854
CR2-C47-NP	Non-P	Boundary	662,128	4,975,739	594.0	40.9	41.1	2,477
CR2-C43-NP	Non-P	Boundary	663,896	4,976,057	596.6	40.9	42.5	2,037
CR1-C87-NP	Non-P	Boundary	662,846	4,982,473	585.1	40.6	42.0	4,193
CR2-C102-NP	Non-P	Boundary	661,983	4,976,005	591.0	40.3	40.4	3,360
CR2-C49-NP	Non-P	Boundary	661,080	4,965,005	582.0	40.3	42.2	2,575
CR2-C42-NP	Non-P	Boundary	665,127	4,975,675	595.6	40.2	41.8	2,474
CR2-C35-NP	Non-P	Boundary	659,114	4,975,104	555.7	40.2	40.4	2,208
CR1-C4-NP	Non-P	Boundary	659,890	4,985,620	605.2	40.1	40.4	3,914
CR2-C52-NP	Non-P	Boundary	662,432	4,964,852	574.4	40.0	41.8	2,218
CR2-C77-NP	Non-P	Boundary	663,124	4,969,545	597.9	39.9	40.6	2,264
CR1-C24-NP	Non-P	Boundary	660,262	4,983,876	599.5	39.2	40.5	2,785
CR2-C107-NP	Non-P	Boundary	662,229	4,977,633	564.3	38.0	39.1	3,547
CR2-C23-NP	Non-P	Boundary	663,922	4,969,541	594.0	37.9	39.3	3,999
CR2-C51-NP	Non-P	Boundary	662,731	4,964,867	584.2	37.9	39.7	3,091
CR2-C55-NP	Non-P	Boundary	660,848	4,964,816	582.0	37.8	39.6	3,438
CR1-C88-NP	Non-P	Boundary	660,240	4,980,801	571.0	37.3	38.6	3,458
CR1-C80-NP	Non-P	Boundary	659,693	4,983,990	603.4	37.2	38.1	4,590
CR2-C7-NP	Non-P	Boundary	665,612	4,966,608	582.0	37.1	38.5	3,547
CR2-C67-NP	Non-P	Boundary	660,639	4,978,403	556.5	36.9	38.0	4,071
CR2-C112-NP	Non-P	Boundary	666,270	4,972,900	602.5	36.8	38.1	5,253
CR2-C95-NP	Non-P	Boundary	659,720	4,974,150	561.0	36.7	36.8	4,390
CR1-C84-NP	Non-P	Boundary	659,796	4,982,364	594.1	36.6	37.7	5,072
CR1-C85-NP	Non-P	Boundary	659,751	4,981,560	587.4	36.2	37.3	4,734
CR2-C80-NP	Non-P	Boundary	665,496	4,971,451	597.0	36.1	37.9	4,501
CR2-C66-NP	Non-P	Boundary	661,881	4,964,060	572.8	35.5	37.2	3,694
CR2-C91-NP	Non-P	Boundary	664,274	4,970,519	594.0	35.5	36.9	6,174
CR2-C72-NP	Non-P	Boundary	663,882	4,970,343	599.2	35.5	36.7	5,860
CR2-C44-NP	Non-P	Boundary	659,186	4,966,434	555.0	35.3	37.0	3,527
CR2-C92-NP	Non-P	Boundary	663,878	4,970,491	597.0	35.2	36.4	6,191
CR2-C93-NP	Non-P	Boundary	659,946	4,973,545	578.6	34.8	35.1	5,827
CR2-C101-NP	Non-P	Boundary	660,765	4,972,985	588.8	34.2	34.7	5,682
CR2-C109-NP	Non-P	Boundary	662,644	4,972,909	606.0	34.2	34.7	6,968
CR2-C104-NP	Non-P	Boundary	661,882	4,972,775	603.0	34.1	34.6	6,243
CR2-C137-NP	Non-P	Boundary	659,035	4,979,157	564.0	34.1	34.8	6,398
CR2-C22-NP	Non-P	Boundary	661,457	4,972,769	597.2	34.0	34.5	6,040

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C87-NP	Non-P	Boundary	662,990	4,971,076	603.0	33.8	34.6	6,542
CR2-C89-NP	Non-P	Boundary	662,304	4,970,980	603.0	33.5	34.2	6,145
CR2-C151-NP	Non-P	Boundary	663,729	4,964,513	554.3	33.5	35.0	6,486
CR2-C3-NP	Non-P	Boundary	664,052	4,964,700	555.0	33.4	34.9	6,552
CR2-C142-NP	Non-P	Boundary	657,486	4,977,150	549.0	33.4	34.1	5,846
CR2-C100-NP	Non-P	Boundary	660,637	4,972,733	591.0	33.4	33.9	6,604
CR2-C143-NP	Non-P	Boundary	657,478	4,977,453	561.6	33.2	34.0	5,919
CR2-C30-NP	Non-P	Boundary	659,189	4,967,871	566.6	33.1	34.4	4,938
CR2-C74-NP	Non-P	Boundary	660,737	4,969,659	585.4	32.9	33.6	6,279
CR2-C68-NP	Non-P	Boundary	662,455	4,963,673	580.3	32.9	34.5	5,354
CR2-C41-P	Participant	Boundary	660,695	4,975,584	598.4	51.4	51.2	617
CR1-C77-P	Participant	Boundary	660,965	4,983,217	584.0	51.1	52.6	558
CR1-C68-P	Participant	Boundary	662,024	4,987,612	604.9	51.0	51.0	640
CR1-C11-P	Participant	Boundary	664,225	4,984,910	608.6	50.8	51.1	699
CR2-C78-P	Participant	Boundary	665,321	4,983,408	608.5	50.7	52.3	705
CR2-C154-P	Participant	Boundary	660,033	4,966,759	577.9	50.5	52.1	577
CR2-C60-P	Participant	Boundary	663,492	4,976,270	596.4	50.4	52.0	604
CR1-C10-P	Participant	Boundary	662,977	4,984,084	601.7	50.2	51.8	702
CR2-C27-P	Participant	Boundary	662,571	4,969,314	587.3	50.2	50.3	617
CR2-C26-P	Participant	Boundary	664,502	4,968,179	580.8	50.1	51.6	640
CR2-C50-P	Participant	Boundary	660,674	4,976,401	574.5	49.7	49.6	705
CR1-C86-P	Participant	Boundary	661,252	4,981,612	589.8	47.9	49.6	1,070
CR1-C18-P	Participant	Boundary	664,394	4,987,007	610.2	47.6	49.0	955
CR2-C33-P	Participant	Boundary	663,452	4,968,137	580.8	47.2	48.8	922
CR2-C128-P	Participant	Boundary	667,185	4,968,243	579.7	46.8	48.2	1,079
CR2-C63-P	Participant	Boundary	666,292	4,977,116	610.5	46.6	47.1	1,027
CR2-C59-P	Participant	Boundary	664,882	4,976,884	603.0	46.4	48.1	1,024
CR2-C57-P	Participant	Boundary	666,460	4,976,511	615.0	46.1	46.6	1,119
CR1-C20-P	Participant	Boundary	663,107	4,987,598	605.1	44.4	44.5	1,834
CR2-C70-P	Participant	Boundary	665,711	4,970,192	583.7	43.9	45.9	1,398
CR2-C78-P	Participant	Boundary	660,509	4,983,361	601.0	43.4	52.3	705
CR2-C32-P	Participant	Boundary	660,020	4,967,239	573.0	41.7	43.4	1,673
CR1-C8-P	Participant	Boundary	661,277	4,984,852	597.0	41.5	43.0	2,139
CR2-C123-P	Participant	Boundary	665,581	4,967,412	573.5	39.0	40.5	3,579
CR2-C45-P	Participant	Boundary	664,019	4,965,873	570.0	37.0	38.3	3,934
CR2-C31-P	Participant	Boundary	662,360	4,973,292	606.0	35.2	35.8	5,407
CR2-C28-P	Participant	Boundary	659,999	4,968,048	567.1	34.8	36.2	4,265
CR2-C99-P	Participant	Boundary	660,483	4,972,731	585.6	33.3	33.7	6,811

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C98-NP	Non-P	Structure	660,155	4,976,007	582.8	44.9	44.8	1,749
CR2-C97-NP	Non-P	Structure	660,093	4,976,001	583.8	44.8	44.8	1,814
CR2-C61-NP	Non-P	Structure	660,630	4,976,840	582.5	43.9	44.5	1,667
CR1-C9-NP	Non-P	Structure	665,352	4,985,004	609.0	43.7	44.9	2,280
CR1-C31-NP	Non-P	Structure	665,939	4,988,950	585.4	43.1	39.6	2,126
CR2-C62-NP	Non-P	Structure	666,992	4,977,048	615.0	42.9	43.9	1,860
CR2-C38-NP	Non-P	Structure	660,874	4,966,929	585.5	42.8	44.6	1,906
CR2-C48-NP	Non-P	Structure	662,370	4,965,588	590.3	42.8	44.7	2,172
CR1-C13-NP	Non-P	Structure	663,792	4,985,785	612.0	42.6	43.9	2,589
CR1-C74-NP	Non-P	Structure	662,869	4,983,122	595.7	42.6	44.2	2,480
CR1-C16-NP	Non-P	Structure	661,960	4,986,288	606.0	42.2	42.9	2,648
CR2-C132-NP	Non-P	Structure	666,857	4,985,021	588.2	42.2	43.8	1,883
CR2-C2-NP	Non-P	Structure	662,238	4,980,604	590.9	42.1	42.8	1,880
CR1-C12-NP	Non-P	Structure	662,222	4,985,736	603.0	42.0	43.7	2,201
CR2-C65-NP	Non-P	Structure	665,217	4,977,746	609.0	42.0	44.3	2,139
CR2-C1-NP	Non-P	Structure	662,198	4,980,622	591.0	42.0	42.7	1,909
CR1-C12-1-NP	Non-P	Structure	662,199	4,986,047	606.0	41.8	43.0	2,818
CR2-C131-NP	Non-P	Structure	666,732	4,984,987	591.0	41.4	43.0	2,287
CR1-C28-NP	Non-P	Structure	665,429	4,988,598	590.9	41.3	40.1	2,831
CR2-C79-NP	Non-P	Structure	666,869	4,984,663	587.9	41.3	43.0	2,703
CR1-C71-NP	Non-P	Structure	665,137	4,988,378	595.6	41.1	40.9	3,448
CR1-C15-NP	Non-P	Structure	663,291	4,986,026	615.0	41.0	43.2	3,907
CR1-C29-NP	Non-P	Structure	666,572	4,988,867	575.9	41.0	38.6	2,457
CR1-C79-NP	Non-P	Structure	660,452	4,983,750	595.9	41.0	42.5	2,037
CR1-C70-NP	Non-P	Structure	665,135	4,988,293	595.9	40.9	40.9	3,540
CR1-C75-NP	Non-P	Structure	663,010	4,982,658	588.0	40.9	42.4	3,730
CR1-C73-NP	Non-P	Structure	663,066	4,982,530	591.0	40.8	42.3	3,704
CR1-C76-NP	Non-P	Structure	662,981	4,982,580	588.3	40.8	42.3	3,901
CR1-C72-NP	Non-P	Structure	665,158	4,988,170	594.6	40.7	41.1	3,776
CR2-C115-NP	Non-P	Structure	663,555	4,980,564	575.2	40.7	42.1	2,520
CR2-C54-NP	Non-P	Structure	662,636	4,976,079	597.0	40.6	41.8	2,287
CR1-C87-NP	Non-P	Structure	662,628	4,982,425	585.4	40.5	41.9	4,258
CR2-C47-NP	Non-P	Structure	662,200	4,975,837	594.5	40.3	40.7	2,821
CR2-C39-NP	Non-P	Structure	664,089	4,966,486	566.2	40.2	40.9	2,178
CR2-C102-NP	Non-P	Structure	662,025	4,976,085	594.1	40.0	40.3	3,609
CR2-C103-NP	Non-P	Structure	662,046	4,976,067	594.8	40.0	40.3	3,547
CR1-C7-NP	Non-P	Structure	660,893	4,984,861	593.2	39.9	41.1	3,022
CR2-C105-NP	Non-P	Structure	662,122	4,976,029	595.3	39.9	40.3	3,425

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C36-NP	Non-P	Structure	660,475	4,974,426	578.6	39.8	40.1	2,992
CR2-C53-NP	Non-P	Structure	662,401	4,964,782	582.0	39.7	41.5	2,257
CR2-C46-NP	Non-P	Structure	660,435	4,965,627	582.0	39.5	41.3	2,569
CR2-C117-NP	Non-P	Structure	664,742	4,976,142	594.2	39.4	40.9	3,481
CR2-C71-NP	Non-P	Structure	665,411	4,970,503	586.1	39.4	41.4	2,529
CR2-C134-NP	Non-P	Structure	667,097	4,973,011	613.0	39.3	40.8	3,363
CR2-C116-NP	Non-P	Structure	664,640	4,976,142	591.1	39.2	40.7	3,533
CR2-C10-NP	Non-P	Structure	665,189	4,966,505	570.0	38.9	39.7	2,438
CR1-C24-NP	Non-P	Structure	660,176	4,983,887	601.1	38.7	39.9	3,038
CR2-C16-NP	Non-P	Structure	665,418	4,966,866	567.0	38.7	39.6	2,756
CR2-C40-NP	Non-P	Structure	659,189	4,974,765	578.3	38.5	38.6	2,841
CR1-C67-NP	Non-P	Structure	659,789	4,985,057	606.0	38.4	38.8	5,791
CR1-C81-NP	Non-P	Structure	660,062	4,983,083	597.0	38.4	39.7	3,094
CR2-C42-NP	Non-P	Structure	664,887	4,975,388	597.0	38.4	39.7	3,566
CR1-C66-NP	Non-P	Structure	659,718	4,985,032	606.0	38.3	38.7	5,800
CR2-C49-NP	Non-P	Structure	660,907	4,964,846	582.0	38.3	40.1	3,271
CR1-C5-NP	Non-P	Structure	659,958	4,984,794	604.8	38.1	38.7	5,659
CR2-C75-NP	Non-P	Structure	664,866	4,969,808	583.7	38.0	39.7	4,396
CR2-C76-NP	Non-P	Structure	664,747	4,969,738	584.8	37.9	39.5	4,560
CR1-C4-NP	Non-P	Structure	659,744	4,984,749	606.0	37.8	38.3	5,981
CR2-C43-NP	Non-P	Structure	664,382	4,975,544	597.0	37.8	39.1	4,232
CR2-C52-NP	Non-P	Structure	662,688	4,964,792	585.9	37.8	39.6	3,054
CR2-C37-NP	Non-P	Structure	663,037	4,974,496	606.0	37.5	38.0	3,537
CR2-C135-NP	Non-P	Structure	667,172	4,966,196	595.2	37.4	40.0	2,884
CR2-C23-NP	Non-P	Structure	664,069	4,969,661	594.0	37.4	38.8	4,439
CR2-C136-NP	Non-P	Structure	667,209	4,966,166	595.4	37.3	40.0	2,887
CR2-C77-NP	Non-P	Structure	663,865	4,969,694	597.0	37.3	38.6	4,406
CR2-C119-NP	Non-P	Structure	665,052	4,974,682	600.0	37.2	38.4	4,760
CR2-C118-NP	Non-P	Structure	665,014	4,974,639	600.0	37.1	38.2	4,947
CR2-C55-NP	Non-P	Structure	660,765	4,964,777	582.0	37.1	38.9	3,655
CR2-C107-NP	Non-P	Structure	662,265	4,978,194	577.7	37.0	38.0	4,564
CR2-C56-NP	Non-P	Structure	660,759	4,964,737	582.0	36.9	38.7	3,786
CR2-C58-NP	Non-P	Structure	660,764	4,964,686	582.0	36.7	38.4	3,904
CR1-C88-NP	Non-P	Structure	660,156	4,980,595	570.9	36.5	37.6	4,045
CR2-C51-NP	Non-P	Structure	662,977	4,964,794	584.0	36.4	38.2	3,934
CR2-C69-NP	Non-P	Structure	661,701	4,978,792	564.0	36.4	37.3	5,171
CR2-C29-NP	Non-P	Structure	661,223	4,968,144	595.2	36.2	37.6	4,639
CR2-C67-NP	Non-P	Structure	660,379	4,978,592	556.1	36.2	37.1	5,033

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR1-C80-NP	Non-P	Structure	659,351	4,983,174	604.4	36.0	36.8	5,308
CR1-C84-NP	Non-P	Structure	659,607	4,982,216	594.0	36.0	37.0	5,856
CR1-C85-NP	Non-P	Structure	659,706	4,981,419	588.0	36.0	37.0	4,819
CR2-C112-NP	Non-P	Structure	665,928	4,972,630	603.0	35.8	37.1	6,575
CR2-C7-NP	Non-P	Structure	665,694	4,966,179	570.0	35.6	37.1	4,409
CR2-C35-NP	Non-P	Structure	658,964	4,974,334	566.8	35.5	35.6	4,432
CR2-C24-NP	Non-P	Structure	661,541	4,969,653	600.0	35.4	36.0	3,809
CR2-C96-NP	Non-P	Structure	659,316	4,974,063	570.6	35.4	35.5	4,813
CR2-C72-NP	Non-P	Structure	663,856	4,970,488	597.0	35.2	36.3	6,135
CR2-C95-NP	Non-P	Structure	659,248	4,974,054	567.0	35.2	35.3	4,898
CR2-C91-NP	Non-P	Structure	663,938	4,970,546	597.0	35.1	36.3	6,457
CR2-C92-NP	Non-P	Structure	663,855	4,970,535	597.0	35.1	36.3	6,247
CR2-C90-NP	Non-P	Structure	664,088	4,970,672	594.0	35.0	36.3	6,863
CR2-C64-NP	Non-P	Structure	660,901	4,964,220	582.0	34.8	36.4	4,429
CR2-C80-NP	Non-P	Structure	664,705	4,972,092	597.3	34.4	35.6	7,684
CR2-C66-NP	Non-P	Structure	662,396	4,963,954	582.0	34.3	35.9	4,429
CR2-C44-NP	Non-P	Structure	659,145	4,966,062	561.4	34.2	35.8	4,183
CR2-C109-NP	Non-P	Structure	662,699	4,972,874	606.0	34.1	34.7	7,169
CR2-C104-NP	Non-P	Structure	662,109	4,972,735	604.0	34.0	34.5	6,608
CR2-C137-NP	Non-P	Structure	658,951	4,979,194	568.2	33.9	34.6	6,555
CR2-C106-NP	Non-P	Structure	662,165	4,972,711	604.7	33.9	34.5	6,749
CR2-C22-NP	Non-P	Structure	661,202	4,972,711	597.0	33.8	34.3	6,247
CR2-C101-NP	Non-P	Structure	660,732	4,972,807	591.0	33.7	34.1	6,266
CR2-C86-NP	Non-P	Structure	662,880	4,971,302	603.0	33.5	34.3	7,208
CR2-C87-NP	Non-P	Structure	662,841	4,971,294	603.0	33.5	34.3	7,165
CR2-C89-NP	Non-P	Structure	662,244	4,971,076	603.0	33.4	34.0	6,489
CR2-C100-NP	Non-P	Structure	660,592	4,972,602	591.0	33.1	33.5	7,057
CR2-C151-NP	Non-P	Structure	663,934	4,964,475	556.1	33.0	34.6	6,929
CR2-C3-NP	Non-P	Structure	664,345	4,964,571	556.0	32.7	34.2	7,497
CR2-C93-NP	Non-P	Structure	659,203	4,973,158	584.9	32.7	32.9	7,792
CR2-C155-NP	Non-P	Structure	657,554	4,975,128	554.6	32.6	*	7,034
CR2-C30-NP	Non-P	Structure	659,100	4,968,023	568.6	32.5	33.7	5,502
CR2-C74-NP	Non-P	Structure	660,687	4,969,931	586.5	32.5	33.2	6,732
CR2-C94-NP	Non-P	Structure	659,202	4,973,052	583.9	32.5	32.7	8,133
CR2-C143-NP	Non-P	Structure	657,016	4,977,505	553.6	32.0	32.5	7,444
CR2-C68-NP	Non-P	Structure	662,517	4,963,408	579.0	31.9	33.4	6,237
CR2-C142-NP	Non-P	Structure	656,697	4,977,269	566.9	31.4	31.8	8,432
CR2-C41-P	Participant	Structure	660,770	4,975,147	596.4	45.4	43.6	1,532

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C78-P	Participant	Structure	665,273	4,983,933	609.0	45.3	46.9	1,919
CR1-C68-P	Participant	Structure	662,652	4,987,606	609.0	45.1	45.2	2,146
CR1-C69-P	Participant	Structure	662,685	4,987,619	609.0	45.0	45.1	2,185
CR2-C50-P	Participant	Structure	661,252	4,976,035	597.0	44.7	43.5	1,696
CR1-C11-P	Participant	Structure	664,111	4,985,679	609.0	44.5	45.2	1,860
CR1-C20-P	Participant	Structure	663,054	4,987,455	606.0	43.7	43.9	2,336
CR1-C77-P	Participant	Structure	661,915	4,983,367	591.0	43.6	45.2	1,654
CR1-C10-P	Participant	Structure	663,510	4,985,195	609.0	43.2	45.8	2,346
CR2-C59-P	Participant	Structure	664,952	4,976,698	601.9	42.9	44.6	1,654
CR2-C57-P	Participant	Structure	666,667	4,976,162	613.8	42.4	43.6	2,362
CR2-C27-P	Participant	Structure	662,985	4,968,167	582.0	42.3	43.8	1,726
CR1-C89-P	Participant	Structure	662,062	4,982,029	584.3	42.0	43.5	2,165
CR2-C63-P	Participant	Structure	665,528	4,977,285	612.0	42.0	43.9	2,185
CR1-C18-P	Participant	Structure	663,651	4,987,157	610.4	41.9	42.6	3,409
CR1-C86-P	Participant	Structure	662,086	4,982,135	585.0	41.7	43.2	2,306
CR2-C26-P	Participant	Structure	664,733	4,968,915	591.0	41.7	43.4	1,959
CR2-C154-P	Participant	Structure	660,684	4,967,166	588.0	41.5	43.3	2,041
CR2-C133-P	Participant	Structure	666,992	4,967,681	571.2	40.7	43.0	3,002
CR2-C34-P	Participant	Structure	663,934	4,966,991	570.1	40.7	41.5	2,133
CR1-C21-P	Participant	Structure	660,756	4,984,086	594.0	40.5	41.9	2,388
CR1-C22-P	Participant	Structure	660,755	4,984,082	594.0	40.5	41.9	2,375
CR2-C33-P	Participant	Structure	663,878	4,967,612	576.1	40.4	41.8	2,999
CR2-C70-P	Participant	Structure	665,521	4,970,518	588.9	40.2	42.3	2,215
CR1-C23-P	Participant	Structure	660,619	4,984,078	595.8	40.1	41.4	2,523
CR1-C78-P	Participant	Structure	660,190	4,983,788	602.3	39.0	40.3	2,835
CR1-C25-P	Participant	Structure	660,190	4,983,788	602.3	39.0	40.3	2,838
CR1-C8-P	Participant	Structure	660,532	4,984,445	599.4	38.9	39.9	3,740
CR2-C60-P	Participant	Structure	662,287	4,976,800	594.0	38.9	39.9	3,793
CR2-C129-P	Participant	Structure	666,716	4,966,751	591.0	37.6	39.8	3,356
CR2-C130-P	Participant	Structure	666,727	4,966,695	591.0	37.5	39.8	3,350
CR2-C128-P	Participant	Structure	666,636	4,966,649	589.0	37.0	39.3	3,671
CR2-C45-P	Participant	Structure	664,058	4,965,862	570.0	36.9	38.2	3,907
CR2-C126-P	Participant	Structure	666,389	4,966,670	585.0	36.6	38.6	4,455
CR2-C123-P	Participant	Structure	666,146	4,966,653	579.4	36.4	38.2	5,216
CR2-C31-P	Participant	Structure	663,117	4,972,923	606.0	34.1	34.7	7,579
CR2-C32-P	Participant	Structure	659,469	4,967,984	575.2	33.6	35.0	4,678
CR2-C99-P	Participant	Structure	660,584	4,972,570	591.0	33.1	33.5	7,165
CR2-C28-P	Participant	Structure	659,208	4,968,159	572.8	32.4	33.7	5,630

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-D85-NP	Non-P	Structure	669,593	4,976,302	603.0	44.0	44.7	1,949
CR2-D21-NP	Non-P	Structure	669,517	4,978,053	596.1	43.7	44.7	1,985
CR2-D221-NP	Non-P	Structure	670,351	4,973,543	606.0	42.5	43.1	2,041
CR2-D14-NP	Non-P	Structure	670,351	4,973,543	606.0	42.5	43.1	2,041
CR2-D11-NP	Non-P	Structure	669,646	4,974,534	604.4	42.4	40.8	1,919
CR2-D71-NP	Non-P	Structure	669,402	4,979,216	588.0	42.3	43.1	1,975
CR2-D30-NP	Non-P	Structure	669,549	4,974,233	611.9	42.0	40.8	2,044
CR2-D12-NP	Non-P	Structure	668,558	4,969,840	604.7	41.8	44.0	2,051
CR2-D18-NP	Non-P	Structure	671,540	4,976,154	582.0	41.6	43.2	2,201
CR2-D132-NP	Non-P	Structure	669,497	4,974,128	609.0	41.5	40.8	2,264
CR2-D79-NP	Non-P	Structure	672,172	4,974,737	585.0	41.3	43.0	1,955
CR2-D62-NP	Non-P	Structure	669,355	4,974,624	609.0	40.9	41.1	2,913
CR2-D91-NP	Non-P	Structure	667,546	4,976,173	618.0	40.0	41.4	4,203
CR2-D127-NP	Non-P	Structure	668,841	4,969,858	603.0	39.9	42.2	2,894
CR2-D99-NP	Non-P	Structure	668,148	4,976,230	608.8	39.8	41.1	4,331
CR2-D48-NP	Non-P	Structure	668,923	4,972,998	609.0	39.8	41.4	2,680
CR2-D45-NP	Non-P	Structure	668,018	4,976,064	611.5	39.7	41.0	4,393
CR2-D74-NP	Non-P	Structure	668,130	4,976,068	609.2	39.7	41.0	4,505
CR2-D128-NP	Non-P	Structure	668,625	4,967,652	588.0	39.5	43.3	2,779
CR2-D129-NP	Non-P	Structure	669,645	4,973,005	606.0	38.1	39.4	4,511
CR2-D112-NP	Non-P	Structure	667,666	4,971,554	604.6	37.8	40.0	3,553
CR2-D113-NP	Non-P	Structure	667,774	4,971,544	606.9	37.8	40.0	3,537
CR2-D189-NP	Non-P	Structure	667,228	4,971,527	606.0	37.7	40.1	3,757
CR2-D213-NP	Non-P	Structure	667,178	4,971,525	606.0	37.6	40.1	3,816
CR2-D133-NP	Non-P	Structure	669,661	4,980,356	576.0	37.4	38.7	4,035
CR2-D97-NP	Non-P	Structure	667,164	4,972,232	600.0	37.1	38.8	5,371
CR2-D52-NP	Non-P	Structure	667,172	4,971,776	606.0	37.1	39.2	4,583
CR2-D23-NP	Non-P	Structure	669,671	4,980,468	573.0	37.1	38.4	4,380
CR2-D84-NP	Non-P	Structure	667,159	4,972,169	598.2	37.0	38.8	5,535
CR2-D100-NP	Non-P	Structure	668,589	4,972,064	609.9	36.9	38.7	4,708
CR2-D9-NP	Non-P	Structure	668,597	4,971,999	611.5	36.8	38.6	4,921
CR2-D130-NP	Non-P	Structure	672,080	4,973,212	591.0	36.7	42.0	3,776
CR2-D222-NP	Non-P	Structure	672,081	4,973,212	591.0	36.7	42.0	3,779
CR2-D220-NP	Non-P	Structure	670,260	4,967,728	597.0	36.5	43.6	4,042
CR2-D110-NP	Non-P	Structure	670,260	4,967,728	597.0	36.5	43.6	4,042
CR2-D75-NP	Non-P	Structure	669,473	4,981,625	570.0	35.7	37.1	7,319
CR2-D82-NP	Non-P	Structure	669,855	4,970,718	603.0	35.6	38.3	5,935
CR2-D126-NP	Non-P	Structure	670,227	4,967,455	593.3	35.3	42.5	4,934

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level
Realistic case sound results at land parcel boundaries and occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Type	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-D223-NP	Non-P	Structure	670,227	4,967,455	593.3	35.3	42.5	4,934
CR2-D92-NP	Non-P	Structure	671,159	4,971,610	597.2	34.3	38.4	6,319
CR2-D46-NP	Non-P	Structure	669,797	4,966,804	591.0	33.9	41.8	6,778
CR2-D224-NP	Non-P	Structure	669,887	4,966,846	590.6	33.9	*	6,795
CR2-D36-NP	Non-P	Structure	669,812	4,966,746	591.0	33.8	41.9	6,837
CR2-D17-NP	Non-P	Structure	672,023	4,969,597	597.0	33.5	41.4	5,167
CR2-D72-NP	Non-P	Structure	671,925	4,970,149	603.0	33.3	39.1	5,938
CR2-D95-NP	Non-P	Structure	671,994	4,971,562	600.0	33.3	38.0	7,264
CR2-D106-NP	Non-P	Structure	667,315	4,965,297	594.0	33.2	36.7	5,351
CR2-D73-NP	Non-P	Structure	672,072	4,971,556	600.0	33.2	37.8	7,405
CR2-D37-NP	Non-P	Structure	674,048	4,974,071	573.0	33.1	34.8	6,542
CR2-D125-NP	Non-P	Structure	670,404	4,966,786	597.0	33.0	41.7	7,001
CR2-D65-NP	Non-P	Structure	670,422	4,966,654	597.0	32.7	41.8	7,424
CR2-D116-NP	Non-P	Structure	673,491	4,972,398	577.8	32.3	35.5	9,055
CR2-D96-NP	Non-P	Structure	672,899	4,971,469	594.0	32.2	36.4	9,249
CR2-D41-NP	Non-P	Structure	670,437	4,966,409	597.0	32.1	42.2	8,225
CR2-D107-NP	Non-P	Structure	670,405	4,966,321	597.0	32.0	42.4	8,520
CR2-D108-NP	Non-P	Structure	670,354	4,965,949	594.0	31.4	44.2	9,121
CR2-D44-NP	Non-P	Structure	670,434	4,965,956	593.8	31.3	44.3	9,363
CR2-D5-NP	Non-P	Structure	668,781	4,964,897	603.0	31.2	39.7	7,342
CR2-D190-NP	Non-P	Structure	675,131	4,970,954	573.0	30.5	36.9	16,043
CR2-D77-NP	Non-P	Structure	672,044	4,966,468	600.0	30.4	43.7	9,298
CR2-D54-NP	Non-P	Structure	672,012	4,966,477	600.0	30.4	43.6	9,219
CR2-D51-NP	Non-P	Structure	675,005	4,970,131	577.8	30.2	40.8	14,977
CR2-D19-NP	Non-P	Structure	668,870	4,964,178	606.0	29.9	42.2	9,600
CR2-D15-NP	Non-P	Structure	674,387	4,968,515	588.0	29.8	43.3	12,474
CR2-D20-NP	Non-P	Structure	675,261	4,968,400	579.0	29.4	44.0	15,364
CR2-D22-NP	Non-P	Structure	668,798	4,963,767	603.1	29.3	41.5	10,777
CR2-D86-NP	Non-P	Structure	673,842	4,966,875	597.0	29.2	43.8	12,542
CR2-D121-NP	Non-P	Structure	674,461	4,966,734	594.0	28.9	44.1	14,524
CR2-D105-NP	Non-P	Structure	670,348	4,963,826	611.7	28.6	42.8	13,179
CR2-D83-NP	Non-P	Structure	675,891	4,966,810	579.0	28.6	44.0	18,658
CR2-D109-NP	Non-P	Structure	676,885	4,965,806	576.0	28.2	38.1	22,979
CR2-D120-NP	Non-P	Structure	673,401	4,964,165	609.0	27.7	41.4	18,067
CR2-D3-NP	Non-P	Structure	672,390	4,963,482	612.0	27.5	44.7	18,746
CR2-D90-NP	Non-P	Structure	670,516	4,962,327	612.0	27.1	40.6	17,493
CR2-D206-NP	Non-P	Structure	676,828	4,963,231	588.0	27.1	34.4	27,637
CR2-D207-NP	Non-P	Structure	676,828	4,963,280	588.0	27.1	34.6	27,529

* Not included in original submittal

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Table C-3: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level**Realistic case sound results 25 ft from occupied structures perimeter****Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's****UTM NAD83 Zone 14****Codington County**

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C98-NP	Non-P	660,155	4,976,007	582.8	45.0	44.9	1,749
CR2-C97-NP	Non-P	660,093	4,976,001	583.8	44.9	44.9	1,814
CR2-C61-NP	Non-P	660,630	4,976,840	582.5	44.1	44.6	1,667
CR1-C9-NP	Non-P	665,352	4,985,004	609.0	43.8	45.0	2,280
CR1-C31-NP	Non-P	665,939	4,988,950	585.4	43.2	39.6	2,126
CR2-C62-NP	Non-P	666,992	4,977,048	615.0	43.0	44.0	1,860
CR2-C38-NP	Non-P	660,874	4,966,929	585.5	42.9	44.7	1,906
CR2-C48-NP	Non-P	662,370	4,965,588	590.3	42.9	44.8	2,172
CR1-C13-NP	Non-P	663,792	4,985,785	612.0	42.6	44.0	2,589
CR1-C74-NP	Non-P	662,869	4,983,122	595.7	42.6	44.3	2,480
CR1-C16-NP	Non-P	661,960	4,986,288	606.0	42.2	42.9	2,648
CR2-C132-NP	Non-P	666,857	4,985,021	588.2	42.3	44.0	1,883
CR2-C2-NP	Non-P	662,238	4,980,604	590.9	42.3	42.9	1,880
CR1-C12-NP	Non-P	662,222	4,985,736	603.0	42.1	43.8	2,201
CR2-C65-NP	Non-P	665,217	4,977,746	609.0	42.0	44.4	2,139
CR2-C1-NP	Non-P	662,198	4,980,622	591.0	42.2	42.9	1,909
CR1-C12-1-NP	Non-P	662,199	4,986,047	606.0	41.8	43.0	2,818
CR2-C131-NP	Non-P	666,732	4,984,987	591.0	41.5	43.1	2,287
CR1-C28-NP	Non-P	665,429	4,988,598	590.9	41.4	40.2	2,831
CR2-C79-NP	Non-P	666,869	4,984,663	587.9	41.3	43.0	2,703
CR1-C71-NP	Non-P	665,137	4,988,378	595.6	41.1	40.9	3,448
CR1-C15-NP	Non-P	663,291	4,986,026	615.0	41.1	43.3	3,907
CR1-C29-NP	Non-P	666,572	4,988,867	575.9	41.1	38.7	2,457
CR1-C79-NP	Non-P	660,452	4,983,750	595.9	41.2	42.7	2,037
CR1-C70-NP	Non-P	665,135	4,988,293	595.9	40.9	41.0	3,540
CR1-C75-NP	Non-P	663,010	4,982,658	588.0	41.0	42.5	3,730
CR1-C73-NP	Non-P	663,066	4,982,530	591.0	40.8	42.3	3,704
CR1-C76-NP	Non-P	662,981	4,982,580	588.3	40.8	42.3	3,901
CR1-C72-NP	Non-P	665,158	4,988,170	594.6	40.7	41.1	3,776
CR2-C115-NP	Non-P	663,555	4,980,564	575.2	40.8	42.2	2,520
CR2-C54-NP	Non-P	662,636	4,976,079	597.0	40.7	41.9	2,287
CR1-C87-NP	Non-P	662,628	4,982,425	585.4	40.5	41.9	4,258
CR2-C47-NP	Non-P	662,200	4,975,837	594.5	40.4	40.7	2,821
CR2-C39-NP	Non-P	664,089	4,966,486	566.2	40.3	41.1	2,178
CR2-C102-NP	Non-P	662,025	4,976,085	594.1	40.1	40.3	3,609
CR2-C103-NP	Non-P	662,046	4,976,067	594.8	40.1	40.3	3,547
CR1-C7-NP	Non-P	660,893	4,984,861	593.2	40.0	41.2	3,022
CR2-C105-NP	Non-P	662,122	4,976,029	595.3	40.0	40.3	3,425
CR2-C36-NP	Non-P	660,475	4,974,426	578.6	39.9	40.2	2,992

*** Not included in original submittal**

Table C-3: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level

Realistic case sound results 25 ft from occupied structures perimeter

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Codington County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-C53-NP	Non-P	662,401	4,964,782	582.0	39.9	41.7	2,257
CR2-C46-NP	Non-P	660,435	4,965,627	582.0	39.6	41.5	2,569
CR2-C117-NP	Non-P	664,742	4,976,142	594.2	39.4	41.0	3,481
CR2-C71-NP	Non-P	665,411	4,970,503	586.1	39.5	41.5	2,529
CR2-C134-NP	Non-P	667,097	4,973,011	613.0	39.4	40.9	3,363
CR2-C116-NP	Non-P	664,640	4,976,142	591.1	39.2	40.8	3,533
CR2-C10-NP	Non-P	665,189	4,966,505	570.0	39.1	39.8	2,438
CR1-C24-NP	Non-P	660,176	4,983,887	601.1	38.8	40.0	3,038
CR2-C16-NP	Non-P	665,418	4,966,866	567.0	38.8	39.7	2,756
CR2-C40-NP	Non-P	659,189	4,974,765	578.3	38.6	38.7	2,841
CR1-C67-NP	Non-P	659,789	4,985,057	606.0	38.4	38.8	5,791
CR1-C81-NP	Non-P	660,062	4,983,083	597.0	38.5	39.8	3,094
CR2-C42-NP	Non-P	664,887	4,975,388	597.0	38.4	39.8	3,566
CR1-C66-NP	Non-P	659,718	4,985,032	606.0	38.3	38.7	5,800
CR2-C49-NP	Non-P	660,907	4,964,846	582.0	38.4	40.2	3,271
CR1-C5-NP	Non-P	659,958	4,984,794	604.8	38.1	38.7	5,659
CR2-C75-NP	Non-P	664,866	4,969,808	583.7	38.1	39.8	4,396
CR2-C76-NP	Non-P	664,747	4,969,738	584.8	37.9	39.6	4,560
CR1-C4-NP	Non-P	659,744	4,984,749	606.0	37.8	38.3	5,981
CR2-C43-NP	Non-P	664,382	4,975,544	597.0	37.8	39.1	4,232
CR2-C52-NP	Non-P	662,688	4,964,792	585.9	37.9	39.7	3,054
CR2-C37-NP	Non-P	663,037	4,974,496	606.0	37.5	38.1	3,537
CR2-C135-NP	Non-P	667,172	4,966,196	595.2	37.5	40.1	2,884
CR2-C23-NP	Non-P	664,069	4,969,661	594.0	37.4	38.9	4,439
CR2-C136-NP	Non-P	667,209	4,966,166	595.4	37.5	40.1	2,887
CR2-C77-NP	Non-P	663,865	4,969,694	597.0	37.4	38.7	4,406
CR2-C119-NP	Non-P	665,052	4,974,682	600.0	37.3	38.5	4,760
CR2-C118-NP	Non-P	665,014	4,974,639	600.0	37.1	38.3	4,947
CR2-C55-NP	Non-P	660,765	4,964,777	582.0	37.3	39.1	3,655
CR2-C107-NP	Non-P	662,265	4,978,194	577.7	37.0	38.1	4,564
CR2-C56-NP	Non-P	660,759	4,964,737	582.0	37.0	38.8	3,786
CR2-C58-NP	Non-P	660,764	4,964,686	582.0	36.8	38.6	3,904
CR1-C88-NP	Non-P	660,156	4,980,595	570.9	36.5	37.7	4,045
CR2-C51-NP	Non-P	662,977	4,964,794	584.0	36.5	38.2	3,934
CR2-C69-NP	Non-P	661,701	4,978,792	564.0	36.4	37.3	5,171
CR2-C29-NP	Non-P	661,223	4,968,144	595.2	36.3	37.6	4,639
CR2-C67-NP	Non-P	660,379	4,978,592	556.1	36.2	37.2	5,033
CR1-C80-NP	Non-P	659,351	4,983,174	604.4	36.1	36.8	5,308

* Not included in original submittal

Table C-3: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level

Realistic case sound results 25 ft from occupied structures perimeter

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Codington County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR1-C84-NP	Non-P	659,607	4,982,216	594.0	36.1	37.1	5,856
CR1-C85-NP	Non-P	659,706	4,981,419	588.0	36.0	37.1	4,819
CR2-C112-NP	Non-P	665,928	4,972,630	603.0	35.8	37.1	6,575
CR2-C7-NP	Non-P	665,694	4,966,179	570.0	35.6	37.1	4,409
CR2-C35-NP	Non-P	658,964	4,974,334	566.8	35.6	35.7	4,432
CR2-C24-NP	Non-P	661,541	4,969,653	600.0	35.5	36.1	3,809
CR2-C96-NP	Non-P	659,316	4,974,063	570.6	35.5	35.6	4,813
CR2-C72-NP	Non-P	663,856	4,970,488	597.0	35.2	36.4	6,135
CR2-C95-NP	Non-P	659,248	4,974,054	567.0	35.3	35.4	4,898
CR2-C91-NP	Non-P	663,938	4,970,546	597.0	35.2	36.4	6,457
CR2-C92-NP	Non-P	663,855	4,970,535	597.0	35.1	36.3	6,247
CR2-C90-NP	Non-P	664,088	4,970,672	594.0	35.1	36.3	6,863
CR2-C64-NP	Non-P	660,901	4,964,220	582.0	34.8	36.5	4,429
CR2-C80-NP	Non-P	664,705	4,972,092	597.3	34.5	35.6	7,684
CR2-C66-NP	Non-P	662,396	4,963,954	582.0	34.3	36.0	4,429
CR2-C44-NP	Non-P	659,145	4,966,062	561.4	34.3	35.9	4,183
CR2-C109-NP	Non-P	662,699	4,972,874	606.0	34.1	34.7	7,169
CR2-C104-NP	Non-P	662,109	4,972,735	604.0	34.0	34.6	6,608
CR2-C137-NP	Non-P	658,951	4,979,194	568.2	34.0	34.7	6,555
CR2-C106-NP	Non-P	662,165	4,972,711	604.7	33.9	34.5	6,749
CR2-C22-NP	Non-P	661,202	4,972,711	597.0	33.8	34.3	6,247
CR2-C101-NP	Non-P	660,732	4,972,807	591.0	33.7	34.2	6,266
CR2-C86-NP	Non-P	662,880	4,971,302	603.0	33.6	34.3	7,208
CR2-C87-NP	Non-P	662,841	4,971,294	603.0	33.5	34.3	7,165
CR2-C89-NP	Non-P	662,244	4,971,076	603.0	33.4	34.1	6,489
CR2-C100-NP	Non-P	660,592	4,972,602	591.0	33.2	33.6	7,057
CR2-C151-NP	Non-P	663,934	4,964,475	556.1	33.1	34.6	6,929
CR2-C3-NP	Non-P	664,345	4,964,571	556.0	32.7	34.3	7,497
CR2-C93-NP	Non-P	659,203	4,973,158	584.9	32.8	33.0	7,792
CR2-C155-NP	Non-P	657,554	4,975,128	554.6	32.7	#N/A	7,034
CR2-C30-NP	Non-P	659,100	4,968,023	568.6	32.5	33.8	5,502
CR2-C74-NP	Non-P	660,687	4,969,931	586.5	32.6	33.2	6,732
CR2-C94-NP	Non-P	659,202	4,973,052	583.9	32.6	32.8	8,133
CR2-C143-NP	Non-P	657,016	4,977,505	553.6	32.0	32.6	7,444
CR2-C68-NP	Non-P	662,517	4,963,408	579.0	31.9	33.4	6,237
CR2-C142-NP	Non-P	656,697	4,977,269	566.9	31.4	31.8	8,432
CR2-C41-P	Participant	660,770	4,975,147	596.4	45.6	43.7	1,532
CR2-C78-P	Participant	665,273	4,983,933	609.0	45.4	47.0	1,919

*** Not included in original submittal**

Table C-3: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level

Realistic case sound results 25 ft from occupied structures perimeter

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Codington County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR1-C68-P	Participant	662,652	4,987,606	609.0	45.1	45.2	2,146
CR1-C69-P	Participant	662,685	4,987,619	609.0	45.1	45.1	2,185
CR2-C50-P	Participant	661,252	4,976,035	597.0	44.8	43.6	1,696
CR1-C11-P	Participant	664,111	4,985,679	609.0	44.6	45.3	1,860
CR1-C20-P	Participant	663,054	4,987,455	606.0	43.8	44.0	2,336
CR1-C77-P	Participant	661,915	4,983,367	591.0	43.7	45.4	1,654
CR1-C10-P	Participant	663,510	4,985,195	609.0	43.3	45.9	2,346
CR2-C59-P	Participant	664,952	4,976,698	601.9	43.1	44.8	1,654
CR2-C57-P	Participant	666,667	4,976,162	613.8	42.4	43.6	2,362
CR2-C27-P	Participant	662,985	4,968,167	582.0	42.5	44.1	1,726
CR1-C89-P	Participant	662,062	4,982,029	584.3	42.1	43.6	2,165
CR2-C63-P	Participant	665,528	4,977,285	612.0	42.1	44.0	2,185
CR1-C18-P	Participant	663,651	4,987,157	610.4	41.9	42.6	3,409
CR1-C86-P	Participant	662,086	4,982,135	585.0	41.8	43.3	2,306
CR2-C26-P	Participant	664,733	4,968,915	591.0	41.9	43.6	1,959
CR2-C154-P	Participant	660,684	4,967,166	588.0	41.6	43.4	2,041
CR2-C133-P	Participant	666,992	4,967,681	571.2	40.8	43.1	3,002
CR2-C34-P	Participant	663,934	4,966,991	570.1	40.9	41.6	2,133
CR1-C21-P	Participant	660,756	4,984,086	594.0	40.6	42.0	2,388
CR1-C22-P	Participant	660,755	4,984,082	594.0	40.6	42.0	2,375
CR2-C33-P	Participant	663,878	4,967,612	576.1	40.5	41.9	2,999
CR2-C70-P	Participant	665,521	4,970,518	588.9	40.4	42.5	2,215
CR1-C23-P	Participant	660,619	4,984,078	595.8	40.2	41.5	2,523
CR1-C78-P	Participant	660,190	4,983,788	602.3	39.1	40.4	2,835
CR1-C25-P	Participant	660,190	4,983,788	602.3	39.1	40.4	2,838
CR1-C8-P	Participant	660,532	4,984,445	599.4	38.9	40.0	3,740
CR2-C60-P	Participant	662,287	4,976,800	594.0	39.0	39.9	3,793
CR2-C129-P	Participant	666,716	4,966,751	591.0	37.6	39.9	3,356
CR2-C130-P	Participant	666,727	4,966,695	591.0	37.5	39.8	3,350
CR2-C128-P	Participant	666,636	4,966,649	589.0	37.1	39.3	3,671
CR2-C45-P	Participant	664,058	4,965,862	570.0	37.0	38.3	3,907
CR2-C126-P	Participant	666,389	4,966,670	585.0	36.6	38.6	4,455
CR2-C123-P	Participant	666,146	4,966,653	579.4	36.4	38.2	5,216
CR2-C31-P	Participant	663,117	4,972,923	606.0	34.1	34.7	7,579
CR2-C32-P	Participant	659,469	4,967,984	575.2	33.7	35.1	4,678
CR2-C99-P	Participant	660,584	4,972,570	591.0	33.1	33.5	7,165
CR2-C28-P	Participant	659,208	4,968,159	572.8	32.5	33.7	5,630

*** Not included in original submittal**

Table C-3: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level

Realistic case sound results 25 ft from occupied structures perimeter

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Deuel County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-D85-NP	Non-P	669,593	4,976,302	603.0	44.1	44.8	1,949
CR2-D21-NP	Non-P	669,517	4,978,053	596.1	43.7	44.8	1,985
CR2-D221-NP	Non-P	670,351	4,973,543	606.0	42.6	43.3	2,041
CR2-D14-NP	Non-P	670,351	4,973,543	606.0	42.6	43.3	2,041
CR2-D11-NP	Non-P	669,646	4,974,534	604.4	42.5	40.8	1,919
CR2-D71-NP	Non-P	669,402	4,979,216	588.0	42.4	43.2	1,975
CR2-D30-NP	Non-P	669,549	4,974,233	611.9	42.1	40.8	2,044
CR2-D12-NP	Non-P	668,558	4,969,840	604.7	42.0	44.1	2,051
CR2-D18-NP	Non-P	671,540	4,976,154	582.0	41.8	43.3	2,201
CR2-D132-NP	Non-P	669,497	4,974,128	609.0	41.6	40.9	2,264
CR2-D79-NP	Non-P	672,172	4,974,737	585.0	41.5	43.2	1,955
CR2-D62-NP	Non-P	669,355	4,974,624	609.0	40.9	41.1	2,913
CR2-D91-NP	Non-P	667,546	4,976,173	618.0	40.0	41.4	4,203
CR2-D127-NP	Non-P	668,841	4,969,858	603.0	40.0	42.3	2,894
CR2-D99-NP	Non-P	668,148	4,976,230	608.8	39.8	41.1	4,331
CR2-D48-NP	Non-P	668,923	4,972,998	609.0	40.0	41.5	2,680
CR2-D45-NP	Non-P	668,018	4,976,064	611.5	39.7	41.0	4,393
CR2-D74-NP	Non-P	668,130	4,976,068	609.2	39.7	41.0	4,505
CR2-D128-NP	Non-P	668,625	4,967,652	588.0	39.6	43.3	2,779
CR2-D129-NP	Non-P	669,645	4,973,005	606.0	38.2	39.4	4,511
CR2-D112-NP	Non-P	667,666	4,971,554	604.6	37.8	40.1	3,553
CR2-D113-NP	Non-P	667,774	4,971,544	606.9	37.8	40.0	3,537
CR2-D189-NP	Non-P	667,228	4,971,527	606.0	37.7	40.2	3,757
CR2-D213-NP	Non-P	667,178	4,971,525	606.0	37.7	40.2	3,816
CR2-D133-NP	Non-P	669,661	4,980,356	576.0	37.5	38.7	4,035
CR2-D97-NP	Non-P	667,164	4,972,232	600.0	37.1	38.8	5,371
CR2-D52-NP	Non-P	667,172	4,971,776	606.0	37.1	39.3	4,583
CR2-D23-NP	Non-P	669,671	4,980,468	573.0	37.1	38.4	4,380
CR2-D84-NP	Non-P	667,159	4,972,169	598.2	37.0	38.8	5,535
CR2-D100-NP	Non-P	668,589	4,972,064	609.9	37.0	38.7	4,708
CR2-D9-NP	Non-P	668,597	4,971,999	611.5	36.9	38.6	4,921
CR2-D130-NP	Non-P	672,080	4,973,212	591.0	36.8	42.1	3,776
CR2-D222-NP	Non-P	672,081	4,973,212	591.0	36.8	42.1	3,779
CR2-D220-NP	Non-P	670,260	4,967,728	597.0	36.6	43.7	4,042
CR2-D110-NP	Non-P	670,260	4,967,728	597.0	36.6	43.7	4,042
CR2-D75-NP	Non-P	669,473	4,981,625	570.0	35.7	37.2	7,319
CR2-D82-NP	Non-P	669,855	4,970,718	603.0	35.7	38.3	5,935
CR2-D126-NP	Non-P	670,227	4,967,455	593.3	35.4	42.6	4,934

*** Not included in original submittal**

Table C-3: Crowned Ridge II 200 MW Sound Level Tabular Results Sorted by Sound Level

Realistic case sound results 25 ft from occupied structures perimeter

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Deuel County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Sound (dB(A))	7/9/19 Appendix I Report Results	Distance to Nearest Turbine (ft)
CR2-D223-NP	Non-P	670,227	4,967,455	593.3	35.4	42.6	4,934
CR2-D92-NP	Non-P	671,159	4,971,610	597.2	34.3	38.4	6,319
CR2-D46-NP	Non-P	669,797	4,966,804	591.0	34.0	41.9	6,778
CR2-D224-NP	Non-P	669,887	4,966,846	590.6	33.9	#N/A	6,795
CR2-D36-NP	Non-P	669,812	4,966,746	591.0	33.8	42.0	6,837
CR2-D17-NP	Non-P	672,023	4,969,597	597.0	33.6	41.5	5,167
CR2-D72-NP	Non-P	671,925	4,970,149	603.0	33.3	39.2	5,938
CR2-D95-NP	Non-P	671,994	4,971,562	600.0	33.4	38.0	7,264
CR2-D106-NP	Non-P	667,315	4,965,297	594.0	33.3	36.8	5,351
CR2-D73-NP	Non-P	672,072	4,971,556	600.0	33.3	37.9	7,405
CR2-D37-NP	Non-P	674,048	4,974,071	573.0	33.1	34.8	6,542
CR2-D125-NP	Non-P	670,404	4,966,786	597.0	33.0	41.8	7,001
CR2-D65-NP	Non-P	670,422	4,966,654	597.0	32.7	41.8	7,424
CR2-D116-NP	Non-P	673,491	4,972,398	577.8	32.4	35.5	9,055
CR2-D96-NP	Non-P	672,899	4,971,469	594.0	32.3	36.4	9,249
CR2-D41-NP	Non-P	670,437	4,966,409	597.0	32.2	42.2	8,225
CR2-D107-NP	Non-P	670,405	4,966,321	597.0	32.0	42.5	8,520
CR2-D108-NP	Non-P	670,354	4,965,949	594.0	31.5	44.3	9,121
CR2-D44-NP	Non-P	670,434	4,965,956	593.8	31.4	44.4	9,363
CR2-D5-NP	Non-P	668,781	4,964,897	603.0	31.3	39.8	7,342
CR2-D190-NP	Non-P	675,131	4,970,954	573.0	30.5	36.9	16,043
CR2-D77-NP	Non-P	672,044	4,966,468	600.0	30.4	43.7	9,298
CR2-D54-NP	Non-P	672,012	4,966,477	600.0	30.4	43.6	9,219
CR2-D51-NP	Non-P	675,005	4,970,131	577.8	30.2	40.9	14,977
CR2-D19-NP	Non-P	668,870	4,964,178	606.0	29.9	42.4	9,600
CR2-D15-NP	Non-P	674,387	4,968,515	588.0	29.8	43.3	12,474
CR2-D20-NP	Non-P	675,261	4,968,400	579.0	29.4	44.0	15,364
CR2-D22-NP	Non-P	668,798	4,963,767	603.1	29.3	41.7	10,777
CR2-D86-NP	Non-P	673,842	4,966,875	597.0	29.2	43.9	12,542
CR2-D121-NP	Non-P	674,461	4,966,734	594.0	28.9	44.2	14,524
CR2-D105-NP	Non-P	670,348	4,963,826	611.7	28.6	42.9	13,179
CR2-D83-NP	Non-P	675,891	4,966,810	579.0	28.6	44.2	18,658
CR2-D109-NP	Non-P	676,885	4,965,806	576.0	28.2	38.2	22,979
CR2-D120-NP	Non-P	673,401	4,964,165	609.0	27.7	41.5	18,067
CR2-D3-NP	Non-P	672,390	4,963,482	612.0	27.5	44.8	18,746
CR2-D90-NP	Non-P	670,516	4,962,327	612.0	27.1	40.7	17,493
CR2-D206-NP	Non-P	676,828	4,963,231	588.0	27.1	34.5	27,637
CR2-D207-NP	Non-P	676,828	4,963,280	588.0	27.1	34.6	27,529

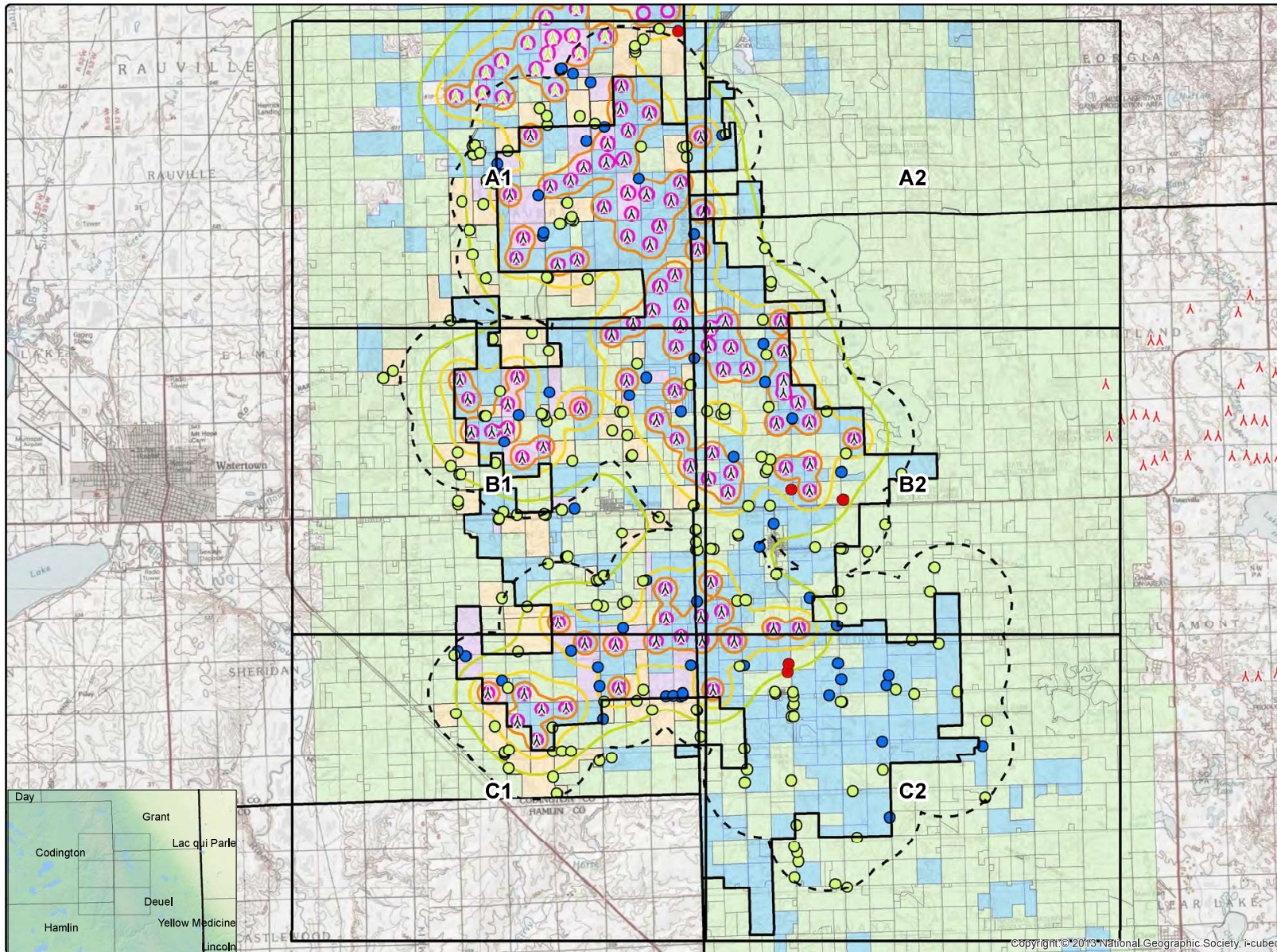
*** Not included in original submittal**

continued

* Not included in original submittal

continued

* Not included in original submittal



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Crowned Ridge II Wind Farm 200 MW Sound Overview Map

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures and Codington County parcel boundaries within 2 km.

Predicted sound pressure levels at existing residences and Codington County land parcel boundaries.

Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date
Drawn By:	AS	Checked By: JH

Legend

- △ Crowned Ridge II Turbines
- △ Crowned Ridge Turbines
- △ Deuel Harvest Turbines
- 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Noise
- Participants Noise
- Sound Pressure (dBA)**
- 30
- 35
- 40
- 45
- 50
- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Parcels
- Participating Parcels

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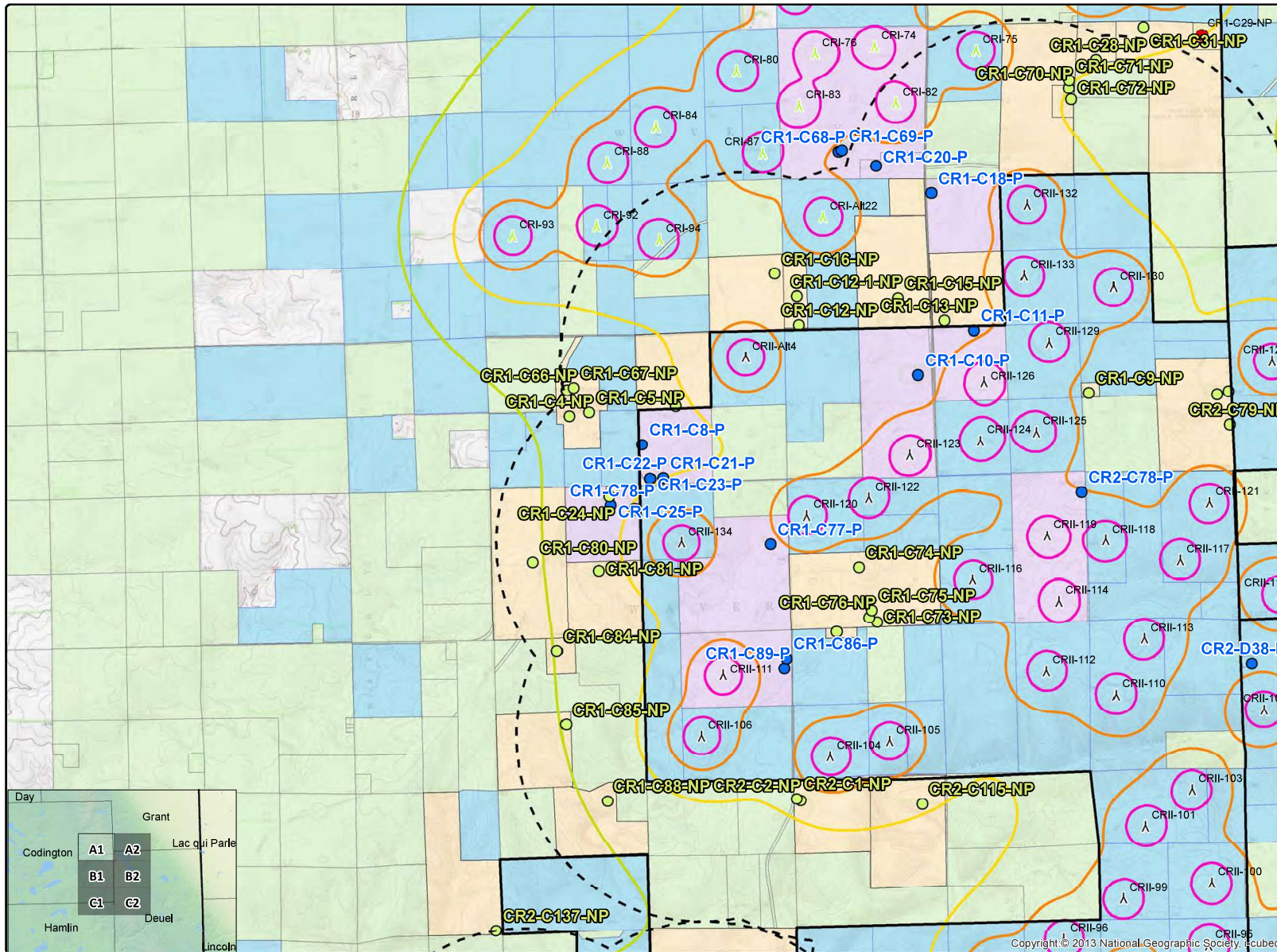


0 0.75 1.5 3 Mile



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Crowned Ridge II Wind Farm 200 MW Sound Iso-Lines

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures and Codington County parcel boundaries within 2 km.

Predicted sound pressure levels at existing residences and Codington County land parcel boundaries.

Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431
Issue Dates

1	Original	2019.09.18
#	Description	Date
Drawn By:	AS	Checked By: JH

Legend

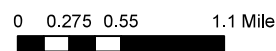
- ▲ Crowned Ridge II Turbines
- ▲ Crowned Ridge Turbines
- ▲ Deuel Harvest Turbines
- 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Noise
- Participants Noise

Sound Pressure (dBA)

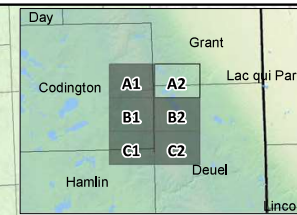
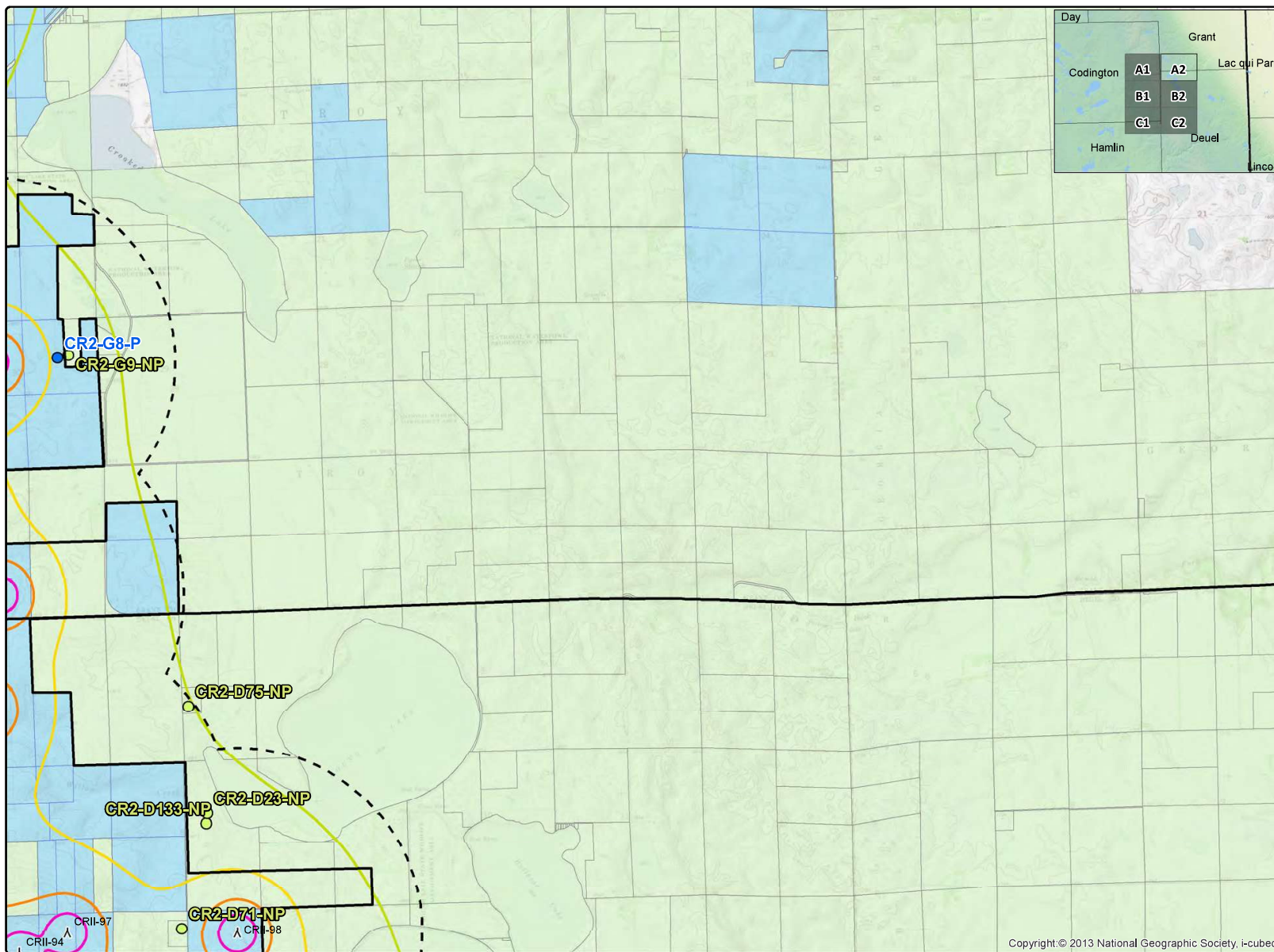
- 30
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- 45
- 50

- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Parcels
- Participating Parcels

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Crowned Ridge II Wind Farm 200 MW Sound Iso-Lines

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures and Codington County parcel boundaries within 2 km.

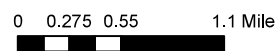
Predicted sound pressure levels at existing residences and Codington County land parcel boundaries.
Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431

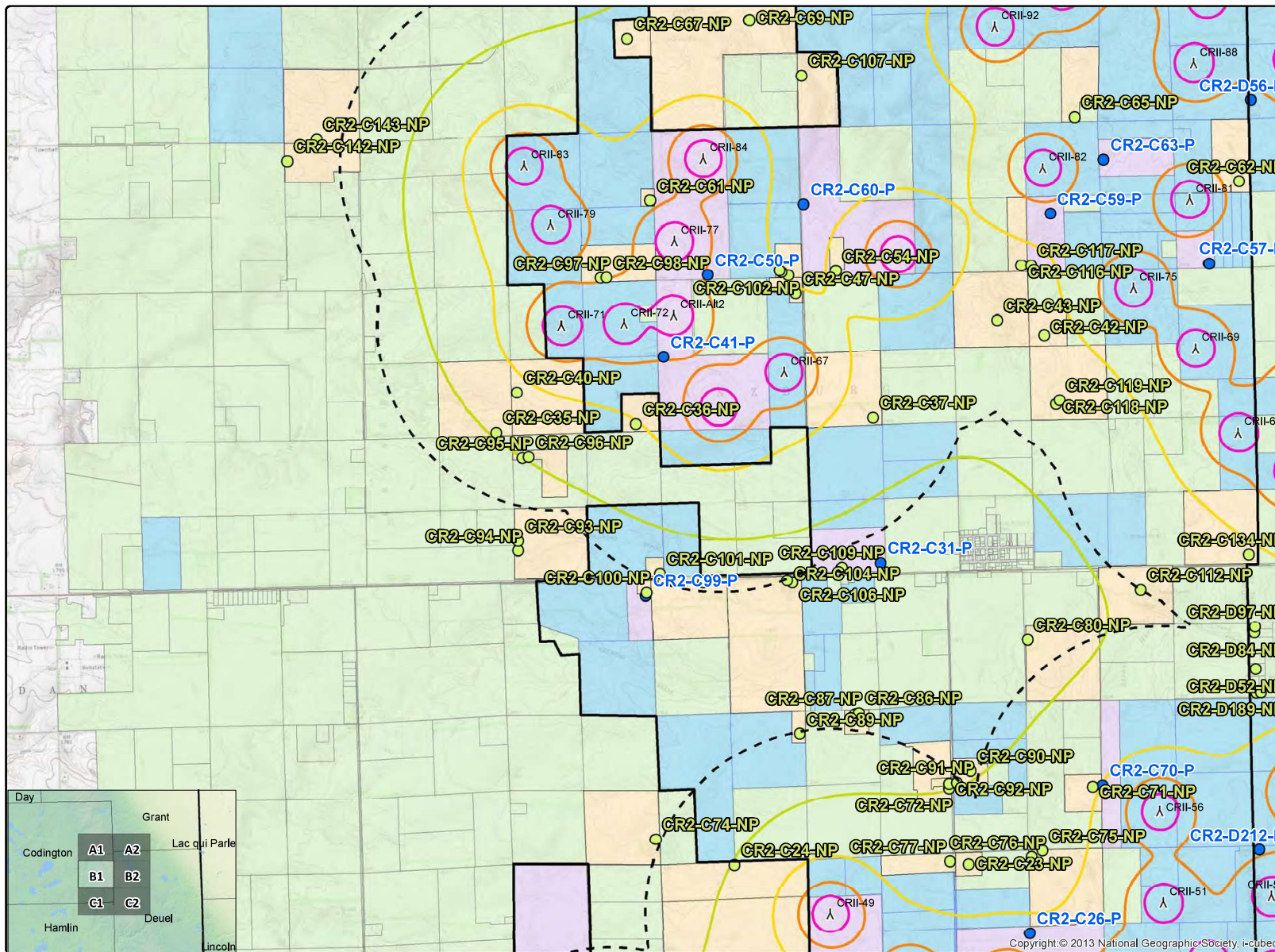
Issue Dates		
1	Original	2019.09.18
#	Description	Date
Drawn By:	AS	Checked By: JH

- Legend**
- ▲ Crowned Ridge II Turbines
 - ▲ Crowned Ridge Turbines
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Participating Codington Parcels
Non-Participating Parcels
Participating Parcels

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Crowned Ridge II Wind Farm
200 MW
Sound Iso-Lines

Client
 SWCA Environmental Consultants

Project Description
 Wind turbine layout with occupied structures and Codington County parcel boundaries within 2 km.

 Predicted sound pressure levels at existing residences and Codington County land parcel boundaries.

 Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date

Drawn By: AS *Checked By:* JH

Legend

- ▲ Crowned Ridge II Turbines
- ▲ Crowned Ridge Turbines
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- County Lines
- CR II Project Boundary
- CR2 Intervenor
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- Participants Noise

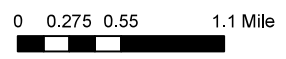
Sound Pressure (dBA)

- 30
- 35
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- 50

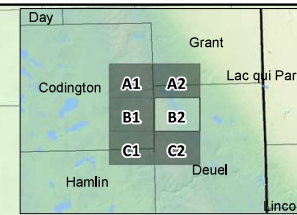
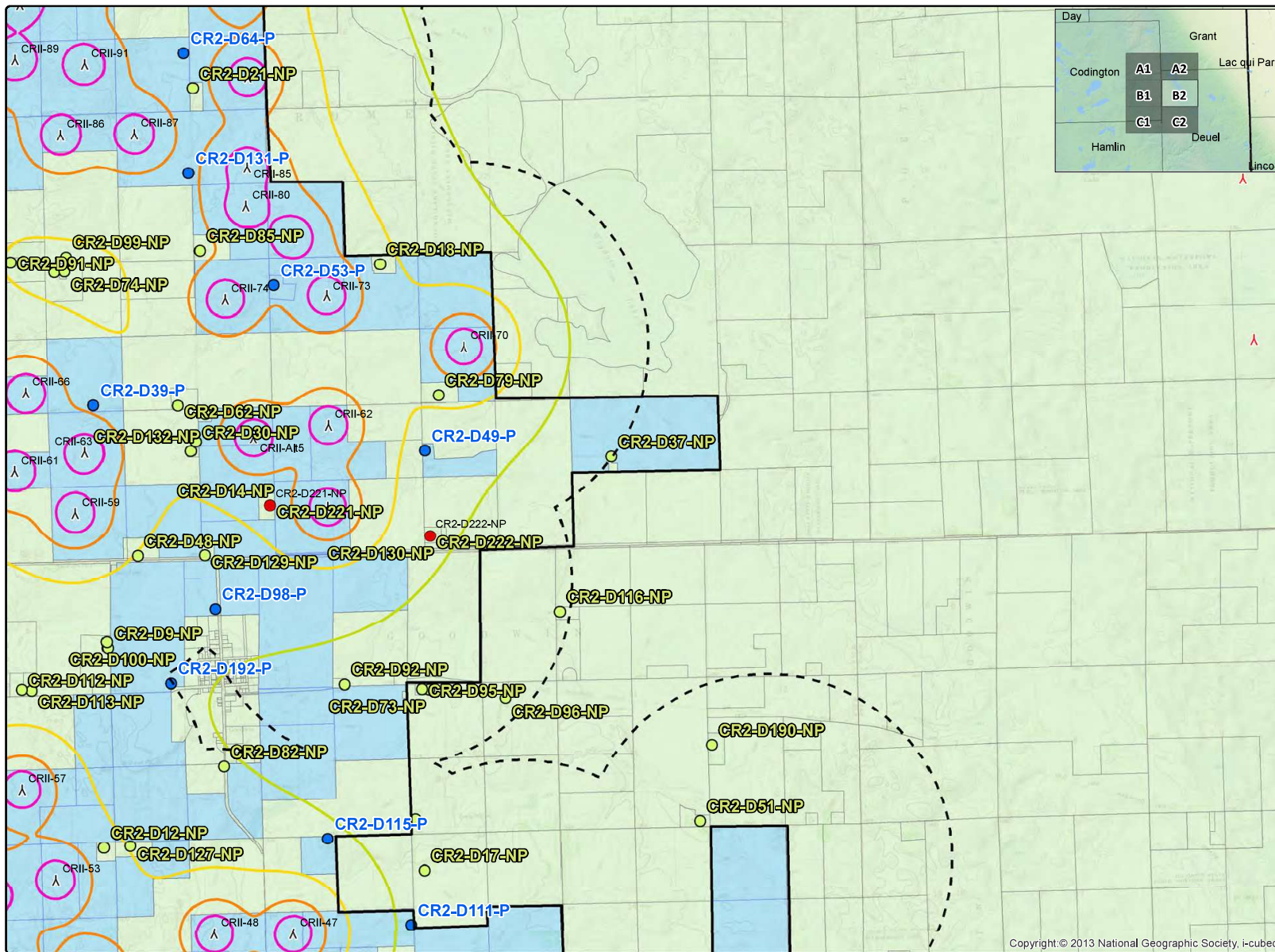
- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Land Parcels
- Participating Land Parcels

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Crowned Ridge II Wind Farm 200 MW Sound Iso-Lines

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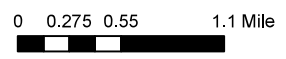
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Issue Dates

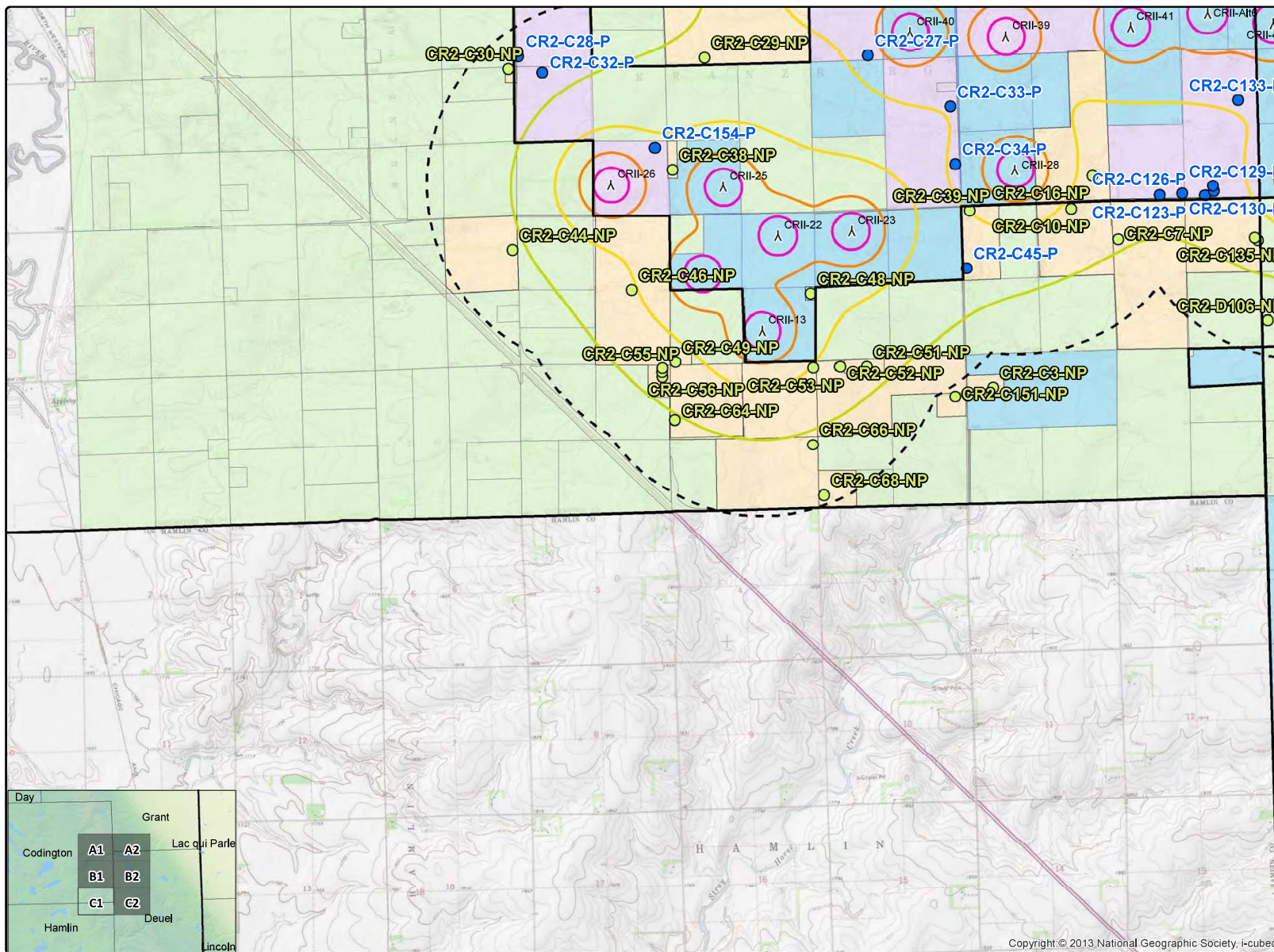
1	Original	2019.09.18
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Crowned Ridge II Wind Farm 200 MW Sound Iso-Lines

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures and Codington County parcel boundaries within 2 km.
Predicted sound pressure levels at existing residences and Codington County land parcel boundaries.
Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431

Issue Dates

#	Description	Date
1	Original	2019.09.18

Drawn By: AS **Checked By:** JH

Legend

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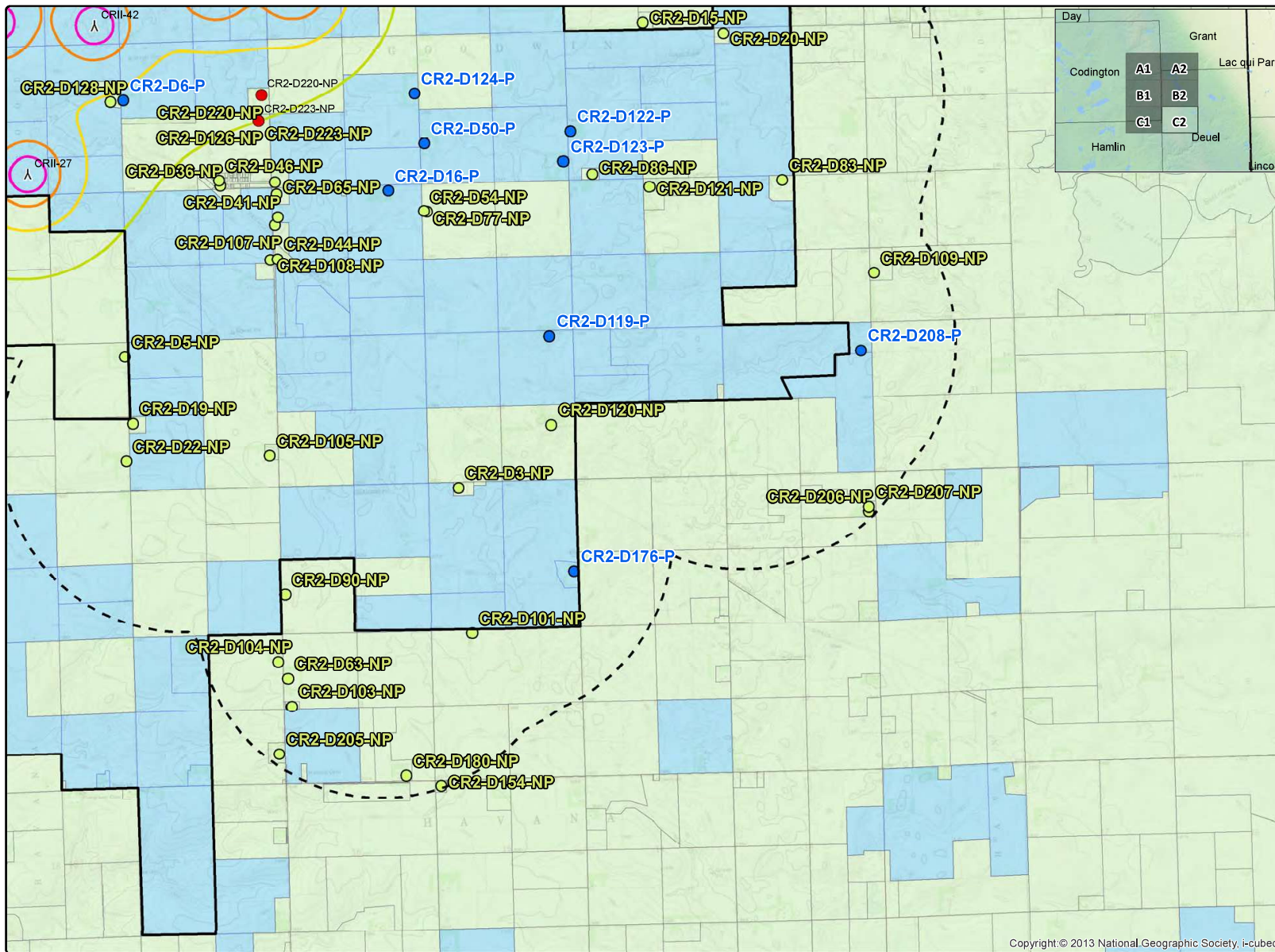
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0 0.275 0.55 1.1 Mile

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Crowned Ridge II Wind Farm 200 MW Sound Iso-Lines

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures and Codington County parcel boundaries within 2 km.

Predicted sound pressure levels at existing residences and Codington County land parcel boundaries.

Additional 2 dBA added.

Location: Watertown, SD
Project #: 20174431
Issue Dates

1	Original	2019.09.18
#	Description	Date

Drawn By: AS Checked By: JH

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0 0.275 0.55 1.1 Mile

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Table C-1: Crowned Ridge II 200 MW Shadow Flicker Tabular Results Sorted by Receptor ID

Realistic case shadow results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Codington County

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Report Real Case Results	Distance to Nearest Turbine (ft)
CR2-C1-NP	Non-P	662,198.00	4,980,622.00	591.0	3:51	3:51	1,909
CR2-C2-NP	Non-P	662,238.00	4,980,604.00	590.9	1:03	1:03	1,880
CR1-C4-NP	Non-P	659,744.00	4,984,749.00	606.0	0:00	0:00	5,981
CR1-C5-NP	Non-P	659,958.00	4,984,794.00	604.8	0:00	0:00	5,659
CR1-C7-NP	Non-P	660,893.00	4,984,861.00	593.2	0:00	0:00	3,022
CR2-C7-NP	Non-P	665,694.00	4,966,179.00	570.0	0:00	0:00	4,409
CR1-C8-P	Participant	660,532.00	4,984,445.00	599.4	0:00	0:00	3,740
CR1-C9-NP	Non-P	665,352.00	4,985,004.00	609.0	18:08	18:08	2,280
CR2-C10-NP	Non-P	665,189.00	4,966,505.00	570.0	0:00	0:00	2,438
CR1-C10-P	Participant	663,510.00	4,985,195.00	609.0	12:25	38:22	2,346
CR1-C11-P	Participant	664,111.00	4,985,679.00	609.0	7:36	10:27	1,860
CR1-C12-NP	Non-P	662,222.00	4,985,736.00	603.0	10:53	17:08	2,201
CR1-C12-1-NP	Non-P	662,199.00	4,986,047.00	606.0	1:28	10:34	2,818
CR1-C13-NP	Non-P	663,792.00	4,985,785.00	612.0	12:30	18:16	2,589
CR1-C15-NP	Non-P	663,291.00	4,986,026.00	615.0	2:16	2:20	3,907
CR2-C16-NP	Non-P	665,418.00	4,966,866.00	567.0	7:30	7:29	2,756
CR1-C16-NP	Non-P	661,960.00	4,986,288.00	606.0	2:19	6:17	2,648
CR1-C18-P	Participant	663,651.00	4,987,157.00	610.4	5:58	5:58	3,409
CR1-C20-P	Participant	663,054.00	4,987,455.00	606.0	14:38	14:37	2,336
CR1-C21-P	Participant	660,756.00	4,984,086.00	594.0	1:00	1:00	2,388
CR2-C22-NP	Non-P	661,202.00	4,972,711.00	597.0	0:00	0:00	6,247
CR1-C22-P	Participant	660,755.00	4,984,082.00	594.0	1:01	1:01	2,375
CR2-C23-NP	Non-P	664,069.00	4,969,661.00	594.0	0:58	0:58	4,439
CR1-C23-P	Participant	660,619.00	4,984,078.00	595.8	0:00	0:00	2,523
CR1-C24-NP	Non-P	660,176.00	4,983,887.00	601.1	7:45	7:45	3,038
CR2-C24-NP	Non-P	661,541.00	4,969,653.00	600.0	3:21	3:21	3,809
CR1-C25-P	Participant	660,189.79	4,983,788.29	602.3	6:43	6:43	2,838
CR2-C26-P	Participant	664,733.00	4,968,915.00	591.0	6:09	6:09	1,959
CR2-C27-P	Participant	662,985.00	4,968,167.00	582.0	18:06	18:06	1,726
CR1-C28-NP	Non-P	665,429.00	4,988,598.00	590.9	2:43	2:43	2,831
CR2-C28-P	Participant	659,208.00	4,968,159.00	572.8	0:00	0:00	5,630
CR1-C29-NP	Non-P	666,572.00	4,988,867.00	575.9	6:54	*	2,457
CR2-C29-NP	Non-P	661,223.00	4,968,144.00	595.2	0:00	0:00	4,639
CR2-C30-NP	Non-P	659,100.00	4,968,023.00	568.6	0:00	0:00	5,502
CR2-C32-P	Participant	659,469.00	4,967,984.00	575.2	0:00	0:00	4,678
CR2-C33-P	Participant	663,878.00	4,967,612.00	576.1	2:28	2:28	2,999
CR2-C34-P	Participant	663,934.00	4,966,991.00	570.1	14:11	14:11	2,133
CR2-C35-NP	Non-P	658,964.00	4,974,334.00	566.8	0:00	0:00	4,432
CR2-C36-NP	Non-P	660,475.00	4,974,426.00	578.6	8:20	8:20	2,992

* Not included in original submittal

Table C-1: Crowned Ridge II 200 MW Shadow Flicker Tabular Results Sorted by Receptor ID

Realistic case shadow results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Codington County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Report Real Case Results	Distance to Nearest Turbine (ft)
CR2-C37-NP	Non-P	663,037.00	4,974,496.00	606.0	9:34	9:34	3,537
CR2-C38-NP	Non-P	660,874.00	4,966,929.00	585.5	25:57	25:57	1,906
CR2-C39-NP	Non-P	664,089.00	4,966,486.00	566.2	2:27	2:27	2,178
CR2-C40-NP	Non-P	659,189.00	4,974,765.00	578.3	1:38	1:33	2,841
CR2-C41-P	Participant	660,770.00	4,975,147.00	596.4	17:22	17:22	1,532
CR2-C42-NP	Non-P	664,887.00	4,975,388.00	597.0	12:14	12:14	3,566
CR2-C43-NP	Non-P	664,382.00	4,975,544.00	597.0	1:42	1:42	4,232
CR2-C44-NP	Non-P	659,145.00	4,966,062.00	561.4	0:43	0:43	4,183
CR2-C45-P	Participant	664,058.00	4,965,862.00	570.0	4:12	4:12	3,907
CR2-C46-NP	Non-P	660,435.00	4,965,627.00	582.0	12:08	12:00	2,569
CR2-C47-NP	Non-P	662,200.00	4,975,837.00	594.5	9:41	7:58	2,821
CR2-C48-NP	Non-P	662,370.00	4,965,588.00	590.3	19:13	19:14	2,172
CR2-C49-NP	Non-P	660,907.00	4,964,846.00	582.0	6:36	6:36	3,271
CR2-C50-P	Participant	661,252.00	4,976,035.00	597.0	19:23	4:27	1,696
CR2-C51-NP	Non-P	662,977.00	4,964,794.00	584.0	4:41	4:41	3,934
CR2-C52-NP	Non-P	662,688.00	4,964,792.00	585.9	14:32	14:32	3,054
CR2-C53-NP	Non-P	662,401.00	4,964,782.00	582.0	0:00	0:00	2,257
CR2-C54-NP	Non-P	662,636.00	4,976,079.00	597.0	12:36	12:36	2,287
CR2-C55-NP	Non-P	660,765.00	4,964,777.00	582.0	4:36	4:36	3,655
CR2-C56-NP	Non-P	660,759.00	4,964,737.00	582.0	4:54	4:54	3,786
CR2-C57-P	Participant	666,667.00	4,976,162.00	613.8	5:03	5:03	2,362
CR2-C58-NP	Non-P	660,764.00	4,964,686.00	582.0	5:51	5:51	3,904
CR2-C59-P	Participant	664,952.00	4,976,698.00	601.9	4:30	4:30	1,654
CR2-C60-P	Participant	662,287.00	4,976,800.00	594.0	13:54	13:54	3,793
CR2-C61-NP	Non-P	660,630.00	4,976,840.00	582.5	12:08	12:08	1,667
CR2-C62-NP	Non-P	666,992.00	4,977,048.00	615.0	16:54	16:54	1,860
CR2-C63-P	Participant	665,528.00	4,977,285.00	612.0	14:41	14:41	2,185
CR2-C64-NP	Non-P	660,901.00	4,964,220.00	582.0	0:00	0:00	4,429
CR2-C65-NP	Non-P	665,217.00	4,977,746.00	609.0	7:16	7:16	2,139
CR1-C66-NP	Non-P	659,718.00	4,985,032.00	606.0	0:00	0:00	5,800
CR2-C66-NP	Non-P	662,396.00	4,963,954.00	582.0	0:00	0:00	4,429
CR1-C67-NP	Non-P	659,789.00	4,985,057.00	606.0	0:00	0:00	5,791
CR2-C67-NP	Non-P	660,379.00	4,978,592.00	556.1	0:00	0:00	5,033
CR2-C68-NP	Non-P	662,517.00	4,963,408.00	579.0	0:00	0:00	6,237
CR2-C69-NP	Non-P	661,701.00	4,978,792.00	564.0	0:00	0:00	5,171
CR1-C70-NP	Non-P	665,135.00	4,988,293.00	595.9	12:01	12:01	3,540
CR2-C70-P	Participant	665,521.00	4,970,518.00	588.9	11:52	13:57	2,215
CR2-C71-NP	Non-P	665,411.00	4,970,503.00	586.1	8:28	10:14	2,529

*** Not included in original submittal**

Table C-1: Crowned Ridge II 200 MW Shadow Flicker Tabular Results Sorted by Receptor ID

Realistic case shadow results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Codington County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Report Real Case Results	Distance to Nearest Turbine (ft)
CR1-C71-NP	Non-P	665,137.00	4,988,378.00	595.6	7:23	7:23	3,448
CR1-C72-NP	Non-P	665,158.00	4,988,170.00	594.6	7:39	7:39	3,776
CR2-C72-NP	Non-P	663,856.00	4,970,488.00	597.0	0:00	0:00	6,135
CR1-C73-NP	Non-P	663,066.00	4,982,530.00	591.0	6:57	6:57	3,704
CR1-C74-NP	Non-P	662,869.00	4,983,122.00	595.7	2:34	2:34	2,480
CR2-C75-NP	Non-P	664,866.00	4,969,808.00	583.7	5:05	5:05	4,396
CR1-C75-NP	Non-P	663,010.00	4,982,658.00	588.0	4:25	4:25	3,730
CR1-C76-NP	Non-P	662,981.00	4,982,580.00	588.3	5:26	5:26	3,901
CR2-C76-NP	Non-P	664,747.00	4,969,738.00	584.8	3:53	3:53	4,560
CR2-C77-NP	Non-P	663,865.00	4,969,694.00	597.0	1:28	1:28	4,406
CR1-C77-P	Participant	661,915.00	4,983,367.00	591.0	12:12	12:12	1,654
CR2-C78-P	Participant	665,273.00	4,983,933.00	609.0	25:17	25:17	1,919
CR1-C78-P	Participant	660,190.00	4,983,788.00	602.3	6:43	6:43	2,835
CR1-C79-NP	Non-P	660,452.00	4,983,750.00	595.9	22:38	22:37	2,037
CR2-C79-NP	Non-P	666,869.00	4,984,663.00	587.9	0:00	0:00	2,703
CR1-C80-NP	Non-P	659,351.00	4,983,174.00	604.4	0:40	0:40	5,308
CR1-C81-NP	Non-P	660,062.00	4,983,083.00	597.0	6:15	6:15	3,094
CR1-C84-NP	Non-P	659,607.00	4,982,216.00	594.0	0:00	0:00	5,856
CR1-C85-NP	Non-P	659,706.00	4,981,419.00	588.0	1:22	1:22	4,819
CR1-C86-P	Participant	662,086.00	4,982,135.00	585.0	16:51	16:51	2,306
CR1-C87-NP	Non-P	662,628.00	4,982,425.00	585.4	4:09	4:09	4,258
CR1-C88-NP	Non-P	660,156.00	4,980,595.00	570.9	0:00	0:00	4,045
CR2-C89-NP	Non-P	662,244.00	4,971,076.00	603.0	0:00	0:00	6,489
CR1-C89-P	Participant	662,062.00	4,982,029.00	584.3	21:39	21:39	2,165
CR2-C91-NP	Non-P	663,938.00	4,970,546.00	597.0	0:00	0:00	6,457
CR2-C92-NP	Non-P	663,855.00	4,970,535.00	597.0	0:00	0:00	6,247
CR2-C95-NP	Non-P	659,248.00	4,974,054.00	567.0	0:00	0:00	4,898
CR2-C96-NP	Non-P	659,316.00	4,974,063.00	570.6	0:00	0:00	4,813
CR2-C97-NP	Non-P	660,093.00	4,976,001.00	583.8	29:21	21:50	1,814
CR2-C98-NP	Non-P	660,155.00	4,976,007.00	582.8	32:23	23:19	1,749
CR2-C101-NP	Non-P	660,732.00	4,972,807.00	591.0	0:00	0:00	6,266
CR2-C102-NP	Non-P	662,025.00	4,976,085.00	594.1	8:29	6:09	3,609
CR2-C103-NP	Non-P	662,046.00	4,976,067.00	594.8	8:17	6:06	3,547
CR2-C105-NP	Non-P	662,122.00	4,976,029.00	595.3	7:46	5:58	3,425
CR2-C107-NP	Non-P	662,265.00	4,978,194.00	577.7	4:21	4:21	4,564
CR2-C115-NP	Non-P	663,555.00	4,980,564.00	575.2	8:18	8:18	2,520
CR2-C116-NP	Non-P	664,640.00	4,976,142.00	591.1	4:50	4:50	3,533
CR2-C117-NP	Non-P	664,742.00	4,976,142.00	594.2	4:53	4:53	3,481

*** Not included in original submittal**

continued

* Not included in original submittal

Table C-1: Crowned Ridge II 200 MW Shadow Flicker Tabular Results Sorted by Receptor ID

Realistic case shadow results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Deuel County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Report Real Case Results	Distance to Nearest Turbine (ft)
CR2-D3-NP	Non-P	672,390.00	4,963,482.00	612.0	0:00	6:47	18,746
CR2-D5-NP	Non-P	668,781.00	4,964,897.00	603.0	0:00	2:14	7,342
CR2-D6-P	Participant	668,762.00	4,967,671.00	591.0	3:35	17:16	2,844
CR2-D9-NP	Non-P	668,597.00	4,971,999.00	611.5	0:00	0:00	4,921
CR2-D11-NP	Non-P	669,646.00	4,974,534.00	604.4	21:54	5:51	1,919
CR2-D12-NP	Non-P	668,558.00	4,969,840.00	604.7	18:07	18:07	2,051
CR2-D14-NP	Non-P	670,351.11	4,973,543.31	606.0	11:51	14:04	2,041
CR2-D15-NP	Non-P	674,387.00	4,968,515.00	588.0	0:00	24:00	12,474
CR2-D16-P	Participant	671,626.00	4,966,693.00	601.7	0:00	5:21	8,005
CR2-D17-NP	Non-P	672,023.00	4,969,597.00	597.0	1:06	13:44	5,167
CR2-D18-NP	Non-P	671,540.00	4,976,154.00	582.0	22:04	22:04	2,201
CR2-D19-NP	Non-P	668,870.00	4,964,178.00	606.0	0:00	13:59	9,600
CR2-D20-NP	Non-P	675,261.00	4,968,400.00	579.0	0:00	3:00	15,364
CR2-D21-NP	Non-P	669,517.00	4,978,053.00	596.1	28:59	28:59	1,985
CR2-D22-NP	Non-P	668,798.00	4,963,767.00	603.1	0:00	14:20	10,777
CR2-D23-NP	Non-P	669,671.00	4,980,468.00	573.0	0:00	0:00	4,380
CR2-D30-NP	Non-P	669,549.00	4,974,233.00	611.9	17:10	6:03	2,044
CR2-D36-NP	Non-P	669,812.00	4,966,746.00	591.0	0:00	2:59	6,837
CR2-D37-NP	Non-P	674,048.00	4,974,071.00	573.0	0:00	0:00	6,542
CR2-D38-P	Participant	667,108.00	4,982,083.00	597.0	5:20	9:01	1,693
CR2-D39-P	Participant	668,443.00	4,974,627.00	614.4	18:50	18:50	1,706
CR2-D41-NP	Non-P	670,437.00	4,966,409.00	597.0	0:00	2:06	8,225
CR2-D44-NP	Non-P	670,434.00	4,965,956.00	593.8	0:00	20:58	9,363
CR2-D45-NP	Non-P	668,018.00	4,976,064.00	611.5	0:55	0:55	4,393
CR2-D46-NP	Non-P	669,797.00	4,966,804.00	591.0	0:00	1:23	6,778
CR2-D48-NP	Non-P	668,923.00	4,972,998.00	609.0	0:00	0:00	2,680
CR2-D49-P	Participant	672,024.00	4,974,135.00	583.2	8:42	8:42	3,537
CR2-D50-P	Participant	672,015.00	4,967,209.00	602.8	0:00	24:57	7,247
CR2-D51-NP	Non-P	675,005.00	4,970,131.00	577.8	0:00	8:27	14,977
CR2-D52-NP	Non-P	667,172.00	4,971,776.00	606.0	0:00	0:00	4,583
CR2-D53-P	Participant	670,392.00	4,975,925.00	592.8	27:37	27:36	1,801
CR2-D54-NP	Non-P	672,012.00	4,966,477.00	600.0	0:00	5:15	9,219
CR2-D56-P	Participant	667,119.00	4,977,925.00	612.0	5:18	8:47	2,110
CR2-D62-NP	Non-P	669,355.00	4,974,624.00	609.0	10:56	5:02	2,913
CR2-D63-NP	Non-P	670,546.00	4,961,419.00	615.0	0:00	0:00	20,138
CR2-D64-P	Participant	669,417.00	4,978,434.00	588.0	14:03	14:01	2,425
CR2-D65-NP	Non-P	670,422.00	4,966,654.00	597.0	0:00	5:26	7,424
CR2-D71-NP	Non-P	669,402.00	4,979,216.00	588.0	18:30	18:11	1,975

*** Not included in original submittal**

Table C-1: Crowned Ridge II 200 MW Shadow Flicker Tabular Results Sorted by Receptor ID

Realistic case shadow results at occupied structures

Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's

UTM NAD83 Zone 14

Deuel County

continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Report Real Case Results	Distance to Nearest Turbine (ft)
CR2-D72-NP	Non-P	671,925.00	4,970,149.00	603.0	0:00	0:00	5,938
CR2-D73-NP	Non-P	672,072.00	4,971,556.00	600.0	0:00	0:00	7,405
CR2-D74-NP	Non-P	668,130.00	4,976,068.00	609.2	0:00	0:00	4,505
CR2-D75-NP	Non-P	669,473.00	4,981,625.00	570.0	0:00	0:00	7,319
CR2-D77-NP	Non-P	672,044.00	4,966,468.00	600.0	0:00	5:58	9,298
CR2-D79-NP	Non-P	672,172.00	4,974,737.00	585.0	2:16	2:16	1,955
CR2-D82-NP	Non-P	669,855.00	4,970,718.00	603.0	0:00	0:00	5,935
CR2-D83-NP	Non-P	675,891.00	4,966,810.00	579.0	0:00	12:25	18,658
CR2-D84-NP	Non-P	667,159.00	4,972,169.00	598.2	0:00	0:00	5,535
CR2-D85-NP	Non-P	669,593.00	4,976,302.00	603.0	4:36	4:36	1,949
CR2-D86-NP	Non-P	673,842.00	4,966,875.00	597.0	0:00	12:06	12,542
CR2-D90-NP	Non-P	670,516.00	4,962,327.00	612.0	0:00	7:36	17,493
CR2-D91-NP	Non-P	667,546.00	4,976,173.00	618.0	2:59	2:59	4,203
CR2-D92-NP	Non-P	671,159.00	4,971,610.00	597.2	0:00	0:00	6,319
CR2-D95-NP	Non-P	671,994.00	4,971,562.00	600.0	0:00	0:00	7,264
CR2-D96-NP	Non-P	672,899.00	4,971,469.00	594.0	0:00	0:00	9,249
CR2-D97-NP	Non-P	667,164.00	4,972,232.00	600.0	0:00	0:00	5,371
CR2-D98-P	Participant	669,757.00	4,972,426.00	606.0	0:00	0:00	5,381
CR2-D99-NP	Non-P	668,148.00	4,976,230.00	608.8	0:00	0:00	4,331
CR2-D100-NP	Non-P	668,589.00	4,972,064.00	609.9	0:00	0:00	4,708
CR2-D101-NP	Non-P	672,538.00	4,961,910.00	612.8	0:00	5:29	22,667
CR2-D103-NP	Non-P	670,588.00	4,961,119.00	615.0	0:00	0:00	21,079
CR2-D104-NP	Non-P	670,443.00	4,961,600.00	613.8	0:00	5:06	19,455
CR2-D105-NP	Non-P	670,348.00	4,963,826.00	611.7	0:00	17:56	13,179
CR2-D106-NP	Non-P	667,315.00	4,965,297.00	594.0	0:00	0:00	5,351
CR2-D107-NP	Non-P	670,405.00	4,966,321.00	597.0	0:00	2:27	8,520
CR2-D108-NP	Non-P	670,354.00	4,965,949.00	594.0	0:00	23:04	9,121
CR2-D109-NP	Non-P	676,885.00	4,965,806.00	576.0	0:00	4:51	22,979
CR2-D110-NP	Non-P	670,260.25	4,967,728.02	597.0	0:00	3:14	4,042
CR2-D111-P	Participant	671,876.00	4,969,006.00	600.0	2:01	29:32	4,180
CR2-D112-NP	Non-P	667,666.00	4,971,554.00	604.6	0:00	0:00	3,553
CR2-D113-NP	Non-P	667,774.00	4,971,544.00	606.9	0:00	0:00	3,537
CR2-D115-P	Participant	670,974.00	4,969,938.00	606.0	2:04	2:04	3,583
CR2-D116-NP	Non-P	673,491.00	4,972,398.00	577.8	0:00	0:00	9,055
CR2-D119-P	Participant	673,378.00	4,965,126.00	602.6	0:00	16:30	15,390
CR2-D120-NP	Non-P	673,401.00	4,964,165.00	609.0	0:00	2:19	18,067
CR2-D121-NP	Non-P	674,461.00	4,966,734.00	594.0	0:00	12:06	14,524
CR2-D122-P	Participant	673,601.00	4,967,341.00	594.0	0:00	18:17	11,092

*** Not included in original submittal**

continued

* Not included in original submittal

continued

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Shadow Flicker Tabular Results Sorted by Real Case Shadow Flicker Hours/Year
Realistic case shadow results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Report Real Case Results	Distance to Nearest Turbine (ft)
CR2-C98-NP	Non-P	660,155.00	4,976,007.00	582.8	32:23	23:19	1,749
CR2-C97-NP	Non-P	660,093.00	4,976,001.00	583.8	29:21	21:50	1,814
CR2-C38-NP	Non-P	660,874.00	4,966,929.00	585.5	25:57	25:57	1,906
CR1-C79-NP	Non-P	660,452.00	4,983,750.00	595.9	22:38	22:37	2,037
CR2-C48-NP	Non-P	662,370.00	4,965,588.00	590.3	19:13	19:14	2,172
CR1-C9-NP	Non-P	665,352.00	4,985,004.00	609.0	18:08	18:08	2,280
CR2-C62-NP	Non-P	666,992.00	4,977,048.00	615.0	16:54	16:54	1,860
CR2-C52-NP	Non-P	662,688.00	4,964,792.00	585.9	14:32	14:32	3,054
CR2-C54-NP	Non-P	662,636.00	4,976,079.00	597.0	12:36	12:36	2,287
CR1-C13-NP	Non-P	663,792.00	4,985,785.00	612.0	12:30	18:16	2,589
CR2-C42-NP	Non-P	664,887.00	4,975,388.00	597.0	12:14	12:14	3,566
CR2-C46-NP	Non-P	660,435.00	4,965,627.00	582.0	12:08	12:00	2,569
CR2-C61-NP	Non-P	660,630.00	4,976,840.00	582.5	12:08	12:08	1,667
CR1-C70-NP	Non-P	665,135.00	4,988,293.00	595.9	12:01	12:01	3,540
CR1-C12-NP	Non-P	662,222.00	4,985,736.00	603.0	10:53	17:08	2,201
CR2-C131-NP	Non-P	666,732.00	4,984,987.00	591.0	10:06	10:06	2,287
CR2-C47-NP	Non-P	662,200.00	4,975,837.00	594.5	9:41	7:58	2,821
CR2-C37-NP	Non-P	663,037.00	4,974,496.00	606.0	9:34	9:34	3,537
CR2-C102-NP	Non-P	662,025.00	4,976,085.00	594.1	8:29	6:09	3,609
CR2-C71-NP	Non-P	665,411.00	4,970,503.00	586.1	8:28	10:14	2,529
CR2-C36-NP	Non-P	660,475.00	4,974,426.00	578.6	8:20	8:20	2,992
CR2-C115-NP	Non-P	663,555.00	4,980,564.00	575.2	8:18	8:18	2,520
CR2-C103-NP	Non-P	662,046.00	4,976,067.00	594.8	8:17	6:06	3,547
CR2-C105-NP	Non-P	662,122.00	4,976,029.00	595.3	7:46	5:58	3,425
CR1-C24-NP	Non-P	660,176.00	4,983,887.00	601.1	7:45	7:45	3,038
CR1-C72-NP	Non-P	665,158.00	4,988,170.00	594.6	7:39	7:39	3,776
CR2-C16-NP	Non-P	665,418.00	4,966,866.00	567.0	7:30	7:29	2,756
CR1-C71-NP	Non-P	665,137.00	4,988,378.00	595.6	7:23	7:23	3,448
CR2-C65-NP	Non-P	665,217.00	4,977,746.00	609.0	7:16	7:16	2,139
CR1-C73-NP	Non-P	663,066.00	4,982,530.00	591.0	6:57	6:57	3,704
CR1-C29-NP	Non-P	666,572.00	4,988,867.00	575.9	6:54	*	2,457
CR2-C49-NP	Non-P	660,907.00	4,964,846.00	582.0	6:36	6:36	3,271
CR1-C81-NP	Non-P	660,062.00	4,983,083.00	597.0	6:15	6:15	3,094
CR2-C58-NP	Non-P	660,764.00	4,964,686.00	582.0	5:51	5:51	3,904
CR1-C76-NP	Non-P	662,981.00	4,982,580.00	588.3	5:26	5:26	3,901
CR2-C75-NP	Non-P	664,866.00	4,969,808.00	583.7	5:05	5:05	4,396
CR2-C56-NP	Non-P	660,759.00	4,964,737.00	582.0	4:54	4:54	3,786
CR2-C117-NP	Non-P	664,742.00	4,976,142.00	594.2	4:53	4:53	3,481
CR2-C116-NP	Non-P	664,640.00	4,976,142.00	591.1	4:50	4:50	3,533

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Shadow Flicker Tabular Results Sorted by Real Case Shadow Flicker Hours/Year
Realistic case shadow results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Report Real Case Results	Distance to Nearest Turbine (ft)
CR2-C51-NP	Non-P	662,977.00	4,964,794.00	584.0	4:41	4:41	3,934
CR2-C55-NP	Non-P	660,765.00	4,964,777.00	582.0	4:36	4:36	3,655
CR1-C75-NP	Non-P	663,010.00	4,982,658.00	588.0	4:25	4:25	3,730
CR2-C107-NP	Non-P	662,265.00	4,978,194.00	577.7	4:21	4:21	4,564
CR1-C87-NP	Non-P	662,628.00	4,982,425.00	585.4	4:09	4:09	4,258
CR2-C76-NP	Non-P	664,747.00	4,969,738.00	584.8	3:53	3:53	4,560
CR2-C1-NP	Non-P	662,198.00	4,980,622.00	591.0	3:51	3:51	1,909
CR2-C134-NP	Non-P	667,097.00	4,973,011.00	613.0	3:42	3:42	3,363
CR2-C24-NP	Non-P	661,541.00	4,969,653.00	600.0	3:21	3:21	3,809
CR1-C28-NP	Non-P	665,429.00	4,988,598.00	590.9	2:43	2:43	2,831
CR1-C74-NP	Non-P	662,869.00	4,983,122.00	595.7	2:34	2:34	2,480
CR2-C39-NP	Non-P	664,089.00	4,966,486.00	566.2	2:27	2:27	2,178
CR1-C16-NP	Non-P	661,960.00	4,986,288.00	606.0	2:19	6:17	2,648
CR1-C15-NP	Non-P	663,291.00	4,986,026.00	615.0	2:16	2:20	3,907
CR2-C119-NP	Non-P	665,052.00	4,974,682.00	600.0	2:06	2:06	4,760
CR2-C118-NP	Non-P	665,014.00	4,974,639.00	600.0	1:57	1:57	4,947
CR2-C132-NP	Non-P	666,857.00	4,985,021.00	588.2	1:47	1:47	1,883
CR2-C43-NP	Non-P	664,382.00	4,975,544.00	597.0	1:42	1:42	4,232
CR2-C40-NP	Non-P	659,189.00	4,974,765.00	578.3	1:38	1:33	2,841
CR1-C12-1-NP	Non-P	662,199.00	4,986,047.00	606.0	1:28	10:34	2,818
CR2-C77-NP	Non-P	663,865.00	4,969,694.00	597.0	1:28	1:28	4,406
CR1-C85-NP	Non-P	659,706.00	4,981,419.00	588.0	1:22	1:22	4,819
CR2-C2-NP	Non-P	662,238.00	4,980,604.00	590.9	1:03	1:03	1,880
CR2-C23-NP	Non-P	664,069.00	4,969,661.00	594.0	0:58	0:58	4,439
CR2-C44-NP	Non-P	659,145.00	4,966,062.00	561.4	0:43	0:43	4,183
CR1-C80-NP	Non-P	659,351.00	4,983,174.00	604.4	0:40	0:40	5,308
CR2-C137-NP	Non-P	658,951.00	4,979,194.00	568.2	0:00	0:00	6,555
CR1-C4-NP	Non-P	659,744.00	4,984,749.00	606.0	0:00	0:00	5,981
CR1-C5-NP	Non-P	659,958.00	4,984,794.00	604.8	0:00	0:00	5,659
CR1-C66-NP	Non-P	659,718.00	4,985,032.00	606.0	0:00	0:00	5,800
CR1-C67-NP	Non-P	659,789.00	4,985,057.00	606.0	0:00	0:00	5,791
CR1-C7-NP	Non-P	660,893.00	4,984,861.00	593.2	0:00	0:00	3,022
CR1-C84-NP	Non-P	659,607.00	4,982,216.00	594.0	0:00	0:00	5,856
CR1-C88-NP	Non-P	660,156.00	4,980,595.00	570.9	0:00	0:00	4,045
CR2-C101-NP	Non-P	660,732.00	4,972,807.00	591.0	0:00	0:00	6,266
CR2-C10-NP	Non-P	665,189.00	4,966,505.00	570.0	0:00	0:00	2,438

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Shadow Flicker Tabular Results Sorted by Real Case Shadow Flicker Hours/Year
Realistic case shadow results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Codington County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Report Real Case Results	Distance to Nearest Turbine (ft)
CR2-C135-NP	Non-P	667,172.00	4,966,196.00	595.2	0:00	0:00	2,884
CR2-C136-NP	Non-P	667,209.00	4,966,166.00	595.4	0:00	0:00	2,887
CR2-C29-NP	Non-P	661,223.00	4,968,144.00	595.2	0:00	0:00	4,639
CR2-C30-NP	Non-P	659,100.00	4,968,023.00	568.6	0:00	0:00	5,502
CR2-C35-NP	Non-P	658,964.00	4,974,334.00	566.8	0:00	0:00	4,432
CR2-C53-NP	Non-P	662,401.00	4,964,782.00	582.0	0:00	0:00	2,257
CR2-C64-NP	Non-P	660,901.00	4,964,220.00	582.0	0:00	0:00	4,429
CR2-C66-NP	Non-P	662,396.00	4,963,954.00	582.0	0:00	0:00	4,429
CR2-C67-NP	Non-P	660,379.00	4,978,592.00	556.1	0:00	0:00	5,033
CR2-C68-NP	Non-P	662,517.00	4,963,408.00	579.0	0:00	0:00	6,237
CR2-C69-NP	Non-P	661,701.00	4,978,792.00	564.0	0:00	0:00	5,171
CR2-C72-NP	Non-P	663,856.00	4,970,488.00	597.0	0:00	0:00	6,135
CR2-C79-NP	Non-P	666,869.00	4,984,663.00	587.9	0:00	0:00	2,703
CR2-C7-NP	Non-P	665,694.00	4,966,179.00	570.0	0:00	0:00	4,409
CR2-C89-NP	Non-P	662,244.00	4,971,076.00	603.0	0:00	0:00	6,489
CR2-C91-NP	Non-P	663,938.00	4,970,546.00	597.0	0:00	0:00	6,457
CR2-C92-NP	Non-P	663,855.00	4,970,535.00	597.0	0:00	0:00	6,247
CR2-C95-NP	Non-P	659,248.00	4,974,054.00	567.0	0:00	0:00	4,898
CR2-C96-NP	Non-P	659,316.00	4,974,063.00	570.6	0:00	0:00	4,813
CR2-C22-NP	Non-P	661,202.00	4,972,711.00	597.0	0:00	0:00	6,247
CR2-C155-NP	Non-P	657,554.63	4,975,127.34	554.6	0:00	*	7,034
CR2-C154-P	Participant	660,684.34	4,967,166.18	588.0	30:00	30:00	2,041
CR2-C78-P	Participant	665,273.00	4,983,933.00	609.0	25:17	25:17	1,919
CR1-C89-P	Participant	662,062.00	4,982,029.00	584.3	21:39	21:39	2,165
CR2-C50-P	Participant	661,252.00	4,976,035.00	597.0	19:23	4:27	1,696
CR2-C27-P	Participant	662,985.00	4,968,167.00	582.0	18:06	18:06	1,726
CR2-C41-P	Participant	660,770.00	4,975,147.00	596.4	17:22	17:22	1,532
CR1-C86-P	Participant	662,086.00	4,982,135.00	585.0	16:51	16:51	2,306
CR2-C63-P	Participant	665,528.00	4,977,285.00	612.0	14:41	14:41	2,185
CR1-C20-P	Participant	663,054.00	4,987,455.00	606.0	14:38	14:37	2,336
CR2-C34-P	Participant	663,934.00	4,966,991.00	570.1	14:11	14:11	2,133
CR2-C60-P	Participant	662,287.00	4,976,800.00	594.0	13:54	13:54	3,793
CR1-C10-P	Participant	663,510.00	4,985,195.00	609.0	12:25	38:22	2,346
CR1-C77-P	Participant	661,915.00	4,983,367.00	591.0	12:12	12:12	1,654
CR2-C70-P	Participant	665,521.00	4,970,518.00	588.9	11:52	13:57	2,215
CR1-C11-P	Participant	664,111.00	4,985,679.00	609.0	7:36	10:27	1,860
CR1-C78-P	Participant	660,190.00	4,983,788.00	602.3	6:43	6:43	2,835
CR1-C25-P	Participant	660,189.79	4,983,788.29	602.3	6:43	6:43	2,838

* Not included in original submittal

continued

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Shadow Flicker Tabular Results Sorted by Real Case Shadow Flicker Hours/Year
Realistic case shadow results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Report Real Case Results	Distance to Nearest Turbine (ft)
CR2-D21-NP	Non-P	669,517.00	4,978,053.00	596.1	28:59	28:59	1,985
CR2-D18-NP	Non-P	671,540.00	4,976,154.00	582.0	22:04	22:04	2,201
CR2-D11-NP	Non-P	669,646.00	4,974,534.00	604.4	21:54	5:51	1,919
CR2-D71-NP	Non-P	669,402.00	4,979,216.00	588.0	18:30	18:11	1,975
CR2-D12-NP	Non-P	668,558.00	4,969,840.00	604.7	18:07	18:07	2,051
CR2-D30-NP	Non-P	669,549.00	4,974,233.00	611.9	17:10	6:03	2,044
CR2-D132-NP	Non-P	669,497.00	4,974,128.00	609.0	16:49	6:45	2,264
CR2-D221-NP	Non-P	670,351.11	4,973,543.31	606.0	11:51	14:04	2,041
CR2-D14-NP	Non-P	670,351.11	4,973,543.31	606.0	11:51	14:04	2,041
CR2-D127-NP	Non-P	668,841.00	4,969,858.00	603.0	11:40	11:40	2,894
CR2-D62-NP	Non-P	669,355.00	4,974,624.00	609.0	10:56	5:02	2,913
CR2-D128-NP	Non-P	668,625.00	4,967,652.00	588.0	4:53	15:58	2,779
CR2-D130-NP	Non-P	672,080.49	4,973,212.28	591.0	4:38	15:12	3,776
CR2-D222-NP	Non-P	672,080.49	4,973,212.28	591.0	4:38	15:12	3,779
CR2-D85-NP	Non-P	669,593.00	4,976,302.00	603.0	4:36	4:36	1,949
CR2-D129-NP	Non-P	669,645.00	4,973,005.00	606.0	4:30	4:30	4,511
CR2-D91-NP	Non-P	667,546.00	4,976,173.00	618.0	2:59	2:59	4,203
CR2-D79-NP	Non-P	672,172.00	4,974,737.00	585.0	2:16	2:16	1,955
CR2-D17-NP	Non-P	672,023.00	4,969,597.00	597.0	1:06	13:44	5,167
CR2-D45-NP	Non-P	668,018.00	4,976,064.00	611.5	0:55	0:55	4,393
CR2-D154-NP	Non-P	672,205.00	4,960,261.00	610.8	0:00	0:00	26,194
CR2-D101-NP	Non-P	672,538.00	4,961,910.00	612.8	0:00	5:29	22,667
CR2-D180-NP	Non-P	671,823.00	4,960,368.00	615.0	0:00	0:00	25,213
CR2-D103-NP	Non-P	670,588.00	4,961,119.00	615.0	0:00	0:00	21,079
CR2-D63-NP	Non-P	670,546.00	4,961,419.00	615.0	0:00	0:00	20,138
CR2-D104-NP	Non-P	670,443.00	4,961,600.00	613.8	0:00	5:06	19,455
CR2-D22-NP	Non-P	668,798.00	4,963,767.00	603.1	0:00	14:20	10,777
CR2-D19-NP	Non-P	668,870.00	4,964,178.00	606.0	0:00	13:59	9,600
CR2-D5-NP	Non-P	668,781.00	4,964,897.00	603.0	0:00	2:14	7,342
CR2-D90-NP	Non-P	670,516.00	4,962,327.00	612.0	0:00	7:36	17,493
CR2-D105-NP	Non-P	670,348.00	4,963,826.00	611.7	0:00	17:56	13,179
CR2-D106-NP	Non-P	667,315.00	4,965,297.00	594.0	0:00	0:00	5,351
CR2-D107-NP	Non-P	670,405.00	4,966,321.00	597.0	0:00	2:27	8,520
CR2-D108-NP	Non-P	670,354.00	4,965,949.00	594.0	0:00	23:04	9,121
CR2-D109-NP	Non-P	676,885.00	4,965,806.00	576.0	0:00	4:51	22,979
CR2-D83-NP	Non-P	675,891.00	4,966,810.00	579.0	0:00	12:25	18,658
CR2-D112-NP	Non-P	667,666.00	4,971,554.00	604.6	0:00	0:00	3,553
CR2-D113-NP	Non-P	667,774.00	4,971,544.00	606.9	0:00	0:00	3,537

* Not included in original submittal

Table C-2: Crowned Ridge II 200 MW Shadow Flicker Tabular Results Sorted by Real Case Shadow Flicker Hours/Year
Realistic case shadow results at occupied structures
Results using GE 2.3-116-90 m HH, GE 2.1-116-80 m HH WTG's
UTM NAD83 Zone 14
Deuel County
continued

Receptor ID	Participation Status	Easting (m)	Northing (m)	Elevation AMSL (m)	Real Case Shadow (hrs/year)	7/9/19 App. J Report Real Case Results	Distance to Nearest Turbine (ft)
CR2-D20-NP	Non-P	675,261.00	4,968,400.00	579.0	0:00	3:00	15,364
CR2-D15-NP	Non-P	674,387.00	4,968,515.00	588.0	0:00	24:00	12,474
CR2-D189-NP	Non-P	667,228.00	4,971,527.00	606.0	0:00	0:00	3,757
CR2-D51-NP	Non-P	675,005.00	4,970,131.00	577.8	0:00	8:27	14,977
CR2-D72-NP	Non-P	671,925.00	4,970,149.00	603.0	0:00	0:00	5,938
CR2-D84-NP	Non-P	667,159.00	4,972,169.00	598.2	0:00	0:00	5,535
CR2-D97-NP	Non-P	667,164.00	4,972,232.00	600.0	0:00	0:00	5,371
CR2-D96-NP	Non-P	672,899.00	4,971,469.00	594.0	0:00	0:00	9,249
CR2-D100-NP	Non-P	668,589.00	4,972,064.00	609.9	0:00	0:00	4,708
CR2-D9-NP	Non-P	668,597.00	4,971,999.00	611.5	0:00	0:00	4,921
CR2-D190-NP	Non-P	675,131.00	4,970,954.00	573.0	0:00	0:00	16,043
CR2-D95-NP	Non-P	671,994.00	4,971,562.00	600.0	0:00	0:00	7,264
CR2-D116-NP	Non-P	673,491.00	4,972,398.00	577.8	0:00	0:00	9,055
CR2-D92-NP	Non-P	671,159.00	4,971,610.00	597.2	0:00	0:00	6,319
CR2-D73-NP	Non-P	672,072.00	4,971,556.00	600.0	0:00	0:00	7,405
CR2-D82-NP	Non-P	669,855.00	4,970,718.00	603.0	0:00	0:00	5,935
CR2-D3-NP	Non-P	672,390.00	4,963,482.00	612.0	0:00	6:47	18,746
CR2-D205-NP	Non-P	670,455.00	4,960,601.00	611.6	0:00	0:00	22,437
CR2-D120-NP	Non-P	673,401.00	4,964,165.00	609.0	0:00	2:19	18,067
CR2-D206-NP	Non-P	676,828.00	4,963,231.00	588.0	0:00	0:00	27,637
CR2-D207-NP	Non-P	676,828.00	4,963,280.00	588.0	0:00	0:00	27,529
CR2-D41-NP	Non-P	670,437.00	4,966,409.00	597.0	0:00	2:06	8,225
CR2-D44-NP	Non-P	670,434.00	4,965,956.00	593.8	0:00	20:58	9,363
CR2-D77-NP	Non-P	672,044.00	4,966,468.00	600.0	0:00	5:58	9,298
CR2-D121-NP	Non-P	674,461.00	4,966,734.00	594.0	0:00	12:06	14,524
CR2-D86-NP	Non-P	673,842.00	4,966,875.00	597.0	0:00	12:06	12,542
CR2-D125-NP	Non-P	670,404.00	4,966,786.00	597.0	0:00	13:11	7,001
CR2-D126-NP	Non-P	670,227.27	4,967,454.62	593.3	0:00	3:04	4,934
CR2-D52-NP	Non-P	667,172.00	4,971,776.00	606.0	0:00	0:00	4,583
CR2-D213-NP	Non-P	667,178.00	4,971,525.00	606.0	0:00	0:00	3,816
CR2-D99-NP	Non-P	668,148.00	4,976,230.00	608.8	0:00	0:00	4,331
CR2-D48-NP	Non-P	668,923.00	4,972,998.00	609.0	0:00	0:00	2,680
CR2-D74-NP	Non-P	668,130.00	4,976,068.00	609.2	0:00	0:00	4,505
CR2-D133-NP	Non-P	669,661.00	4,980,356.00	576.0	0:00	0:00	4,035
CR2-D75-NP	Non-P	669,473.00	4,981,625.00	570.0	0:00	0:00	7,319
CR2-D37-NP	Non-P	674,048.00	4,974,071.00	573.0	0:00	0:00	6,542
CR2-D65-NP	Non-P	670,422.00	4,966,654.00	597.0	0:00	5:26	7,424
CR2-D54-NP	Non-P	672,012.00	4,966,477.00	600.0	0:00	5:15	9,219

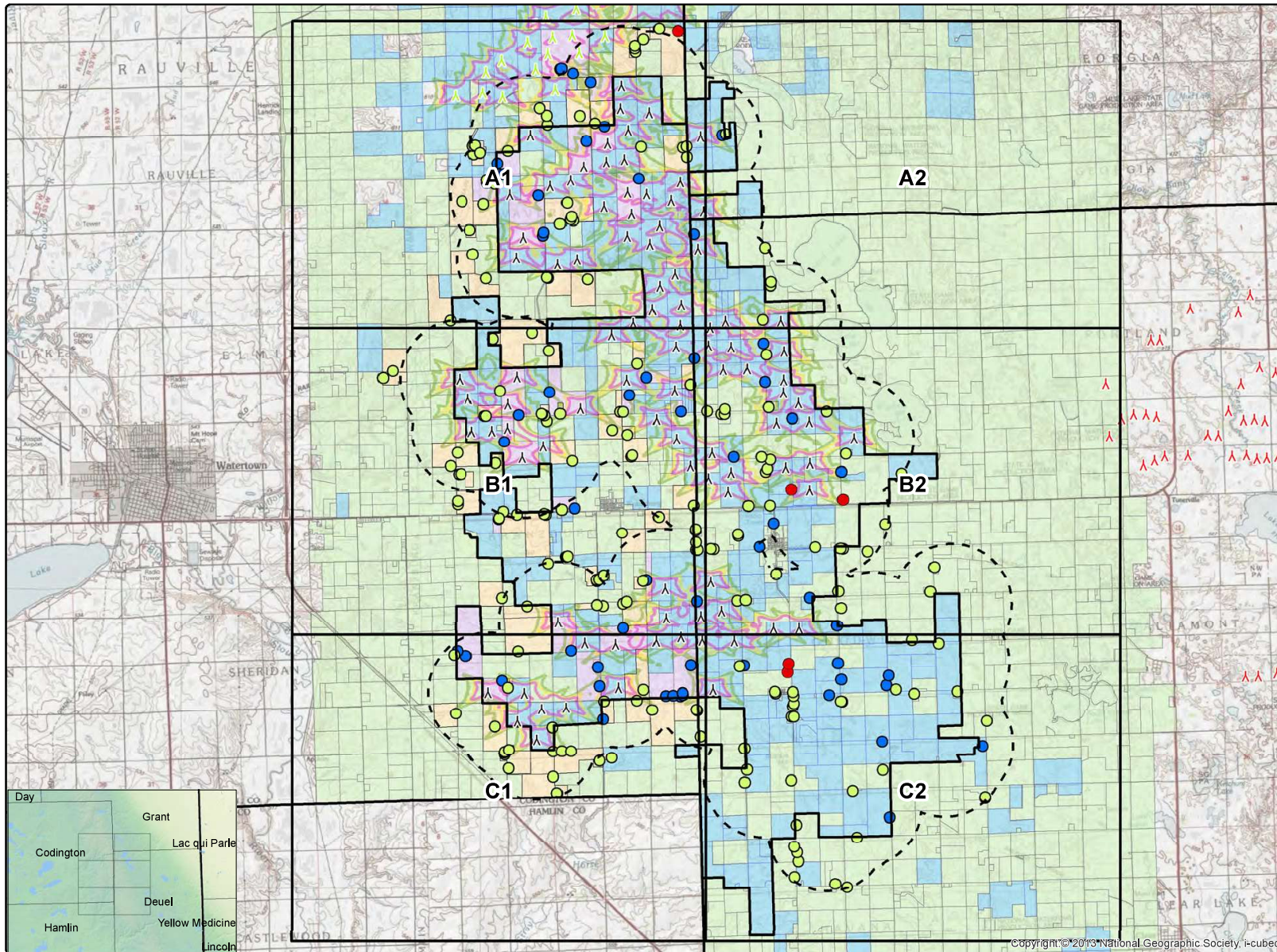
* Not included in original submittal

[illegible]

002913

continued

* Not included in original submittal



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Crowned Ridge II Wind Farm 200 MW Shadow Overview Map

Client

SWCA Environmental Consultants

Project Description

Wind turbine layout with occupied structures within 2 km.

Predicted shadow flicker levels at existing residences.

Location: Watertown, SD

Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date
Drawn By:	AS	Checked By: JH

Legend

- ▲ Crowned Ridge II Turbines
- ▲ Crowned Ridge Turbines
- ▲ Deuel Harvest Turbines
- 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Noise
- Participants Noise
- Shadow Flicker (hr/yr)**
 - 10
 - 15
 - 20
 - 25
 - 30
- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Parcels
- Participating Parcels

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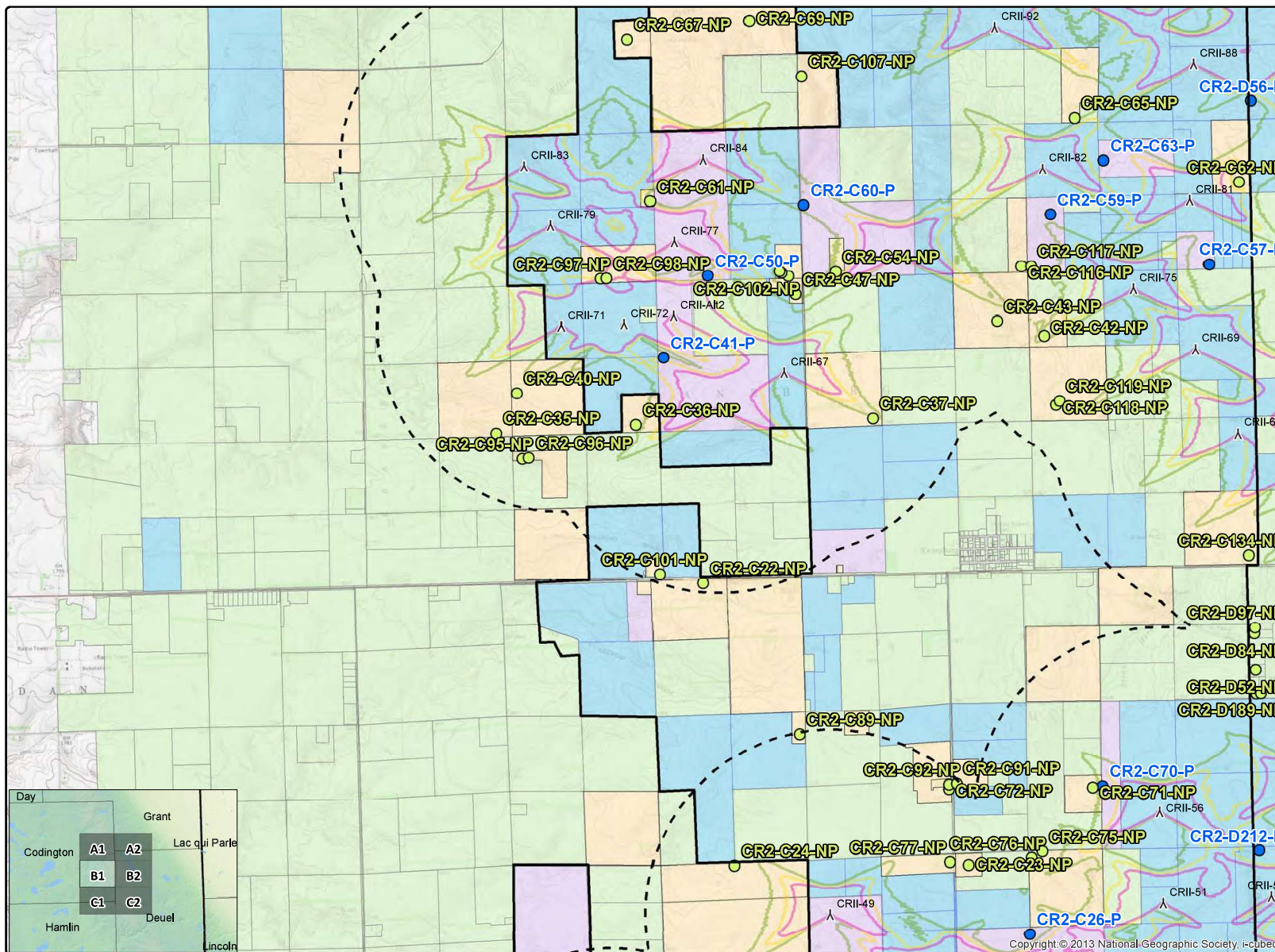


0 0.75 1.5 3 Mile



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002915





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WIND ENERGY

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**Crowned Ridge II Wind Farm
200 MW
Shadow Iso-Lines**

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures within 2 km.

Predicted shadow flicker levels at existing residences.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date

Drawn By: AS Checked By: JH

Legend

- ▲ Crowned Ridge II Turbines
- ▲ Crowned Ridge Turbines
- ▲ Deuel Harvest Turbines
- 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Shadow
- Participants Shadow

Shadow Flicker (hr/yr)

- 10
- 15
- 20
- 25
- 30

- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Parcels
- Participating Parcels

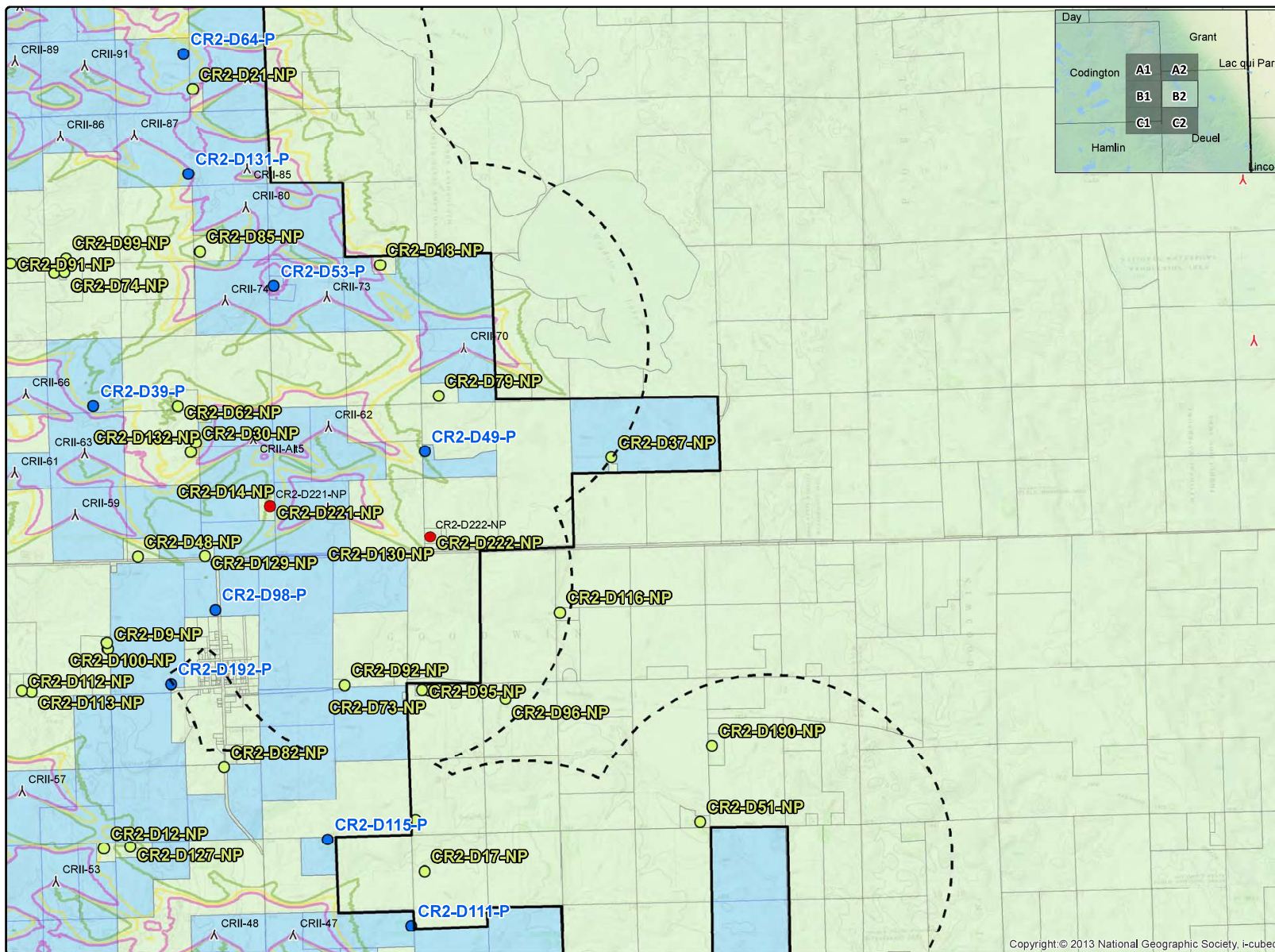
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0 0.275 0.55 1.1 Mile

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Crowned Ridge II Wind Farm 200 MW Shadow Iso-Lines

Client

SWCA Environmental Consultants

Project Description

Wind turbine layout with occupied structures within 2 km.

Predicted shadow flicker levels at existing residences.

Location: Watertown, SD

Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date
Drawn By:	AS	Checked By: JH

Legend

- ▲ Crowned Ridge II Turbines
- ▲ Crowned Ridge Turbines
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- County Lines
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- CR2 Intervenor
- Non-Participants Shadow
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- Shadow Flicker (hr/yr)
 - 10
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- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Parcels
- Participating Parcels

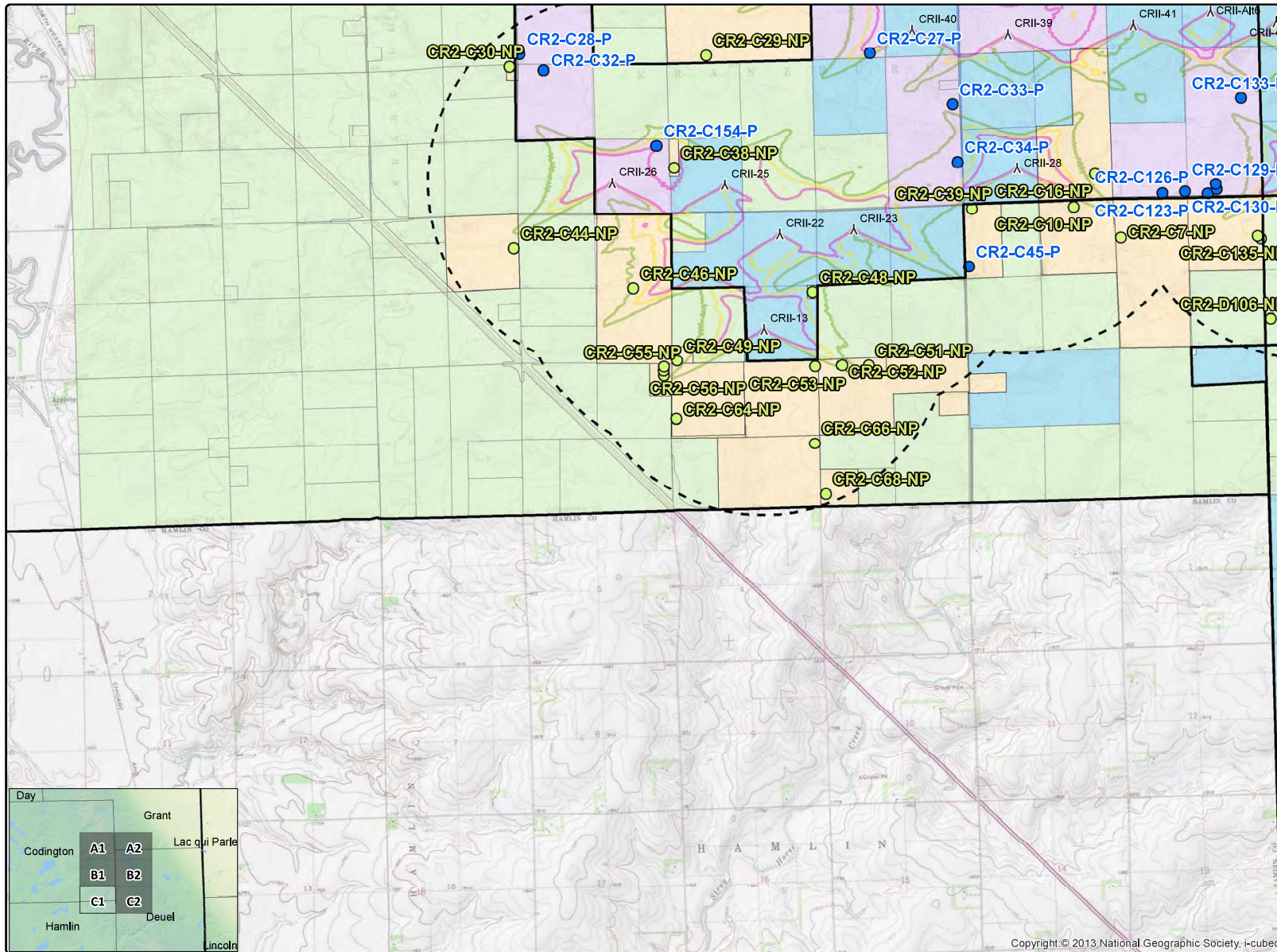
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0 0.275 0.55 1.1 Mile

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002919



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Crowned Ridge II Wind Farm
200 MW
Shadow Iso-Lines

Client
 SWCA Environmental Consultants

Project Description
 Wind turbine layout with occupied structures within 2 km.
 Predicted shadow flicker levels at existing residences.

Location: Watertown, SD
Project #: 20174431

Issue Dates

1	Original	2019.09.18
#	Description	Date

Drawn By: AS Checked By: JH

Legend

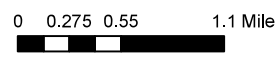
- ▲ Crowned Ridge II Turbines
- ▲ Crowned Ridge Turbines
- ▲ Deuel Harvest Turbines
- 2 km Turbine Buffer
- County Lines
- CR II Project Boundary
- CR2 Intervenor
- Non-Participants Shadow
- Participants Shadow

Shadow Flicker (hr/yr)

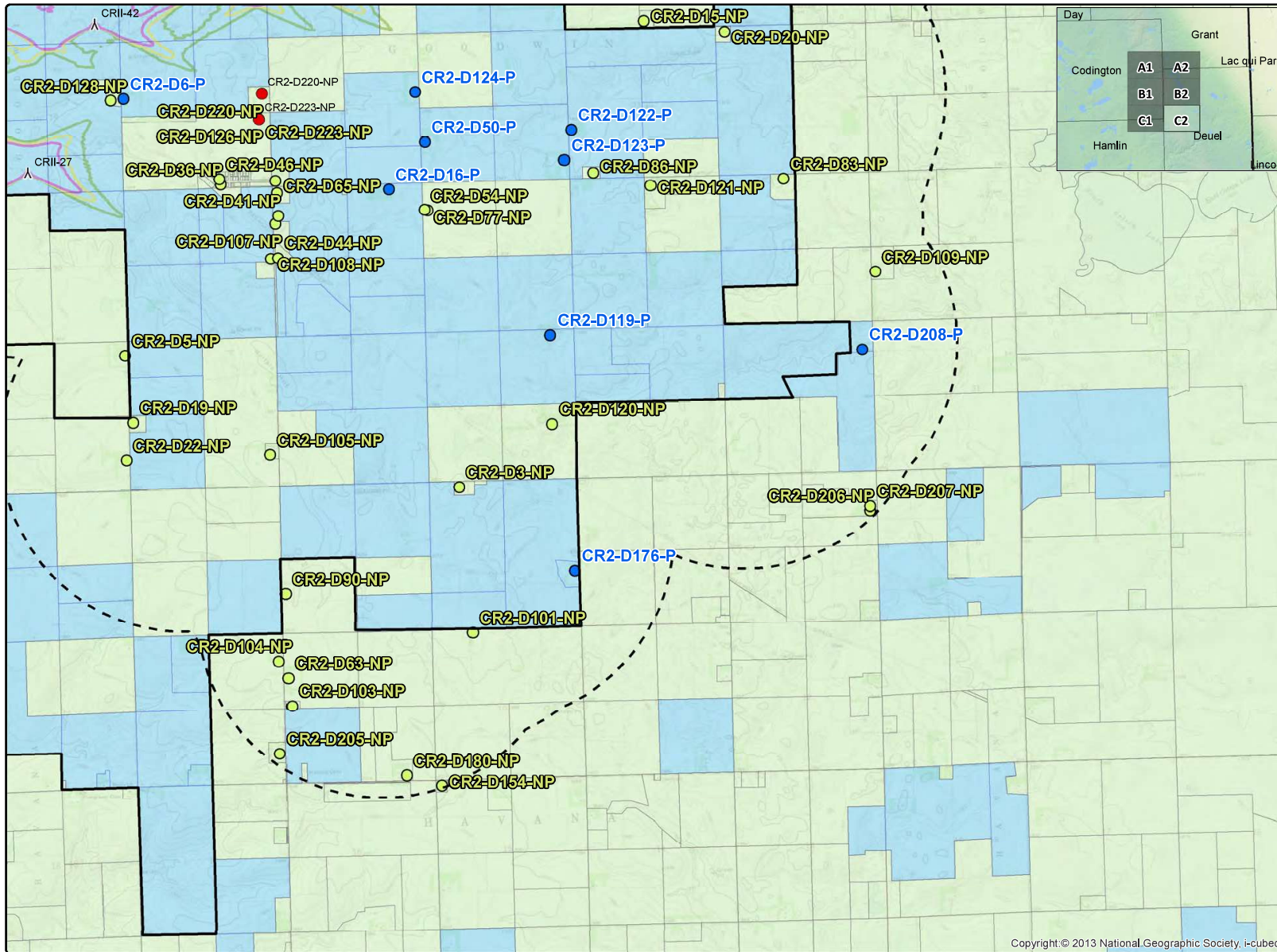
- 10
- 15
- 20
- 25
- 30

- Non-Participating Codington Parcels
- Participating Codington Parcels
- Non-Participating Parcels
- Participating Parcels

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Crowned Ridge II Wind Farm 200 MW Shadow Iso-Lines

Client
SWCA Environmental Consultants

Project Description
Wind turbine layout with occupied structures within 2 km.

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Location: Watertown, SD
Project #: 20174431
Issue Dates

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Drawn By: AS Checked By: JH

Legend

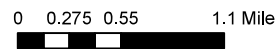
- ▲ Crowned Ridge II Turbines
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Shadow Flicker (hr/yr)

- 10
- 15
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Non-Participating Codington Parcels
Participating Codington Parcels
Non-Participating Parcels
Participating Parcels

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