

June 29, 2022

**VIA ELECTRONIC FILING**

Mr. William Seuffert  
Executive Secretary  
Minnesota Public Utilities Commission  
121 Seventh Place East, Suite 350  
St. Paul, MN 55101-2147

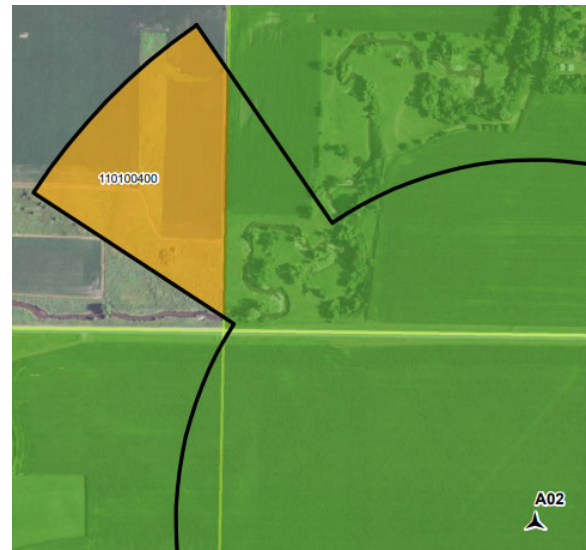
**Re: In the Matter of the Applications of Big Bend Wind, LLC for a Certificate of Need, Site Permit, and Route Permit for an up to 308 MW Wind Farm and Associated 161 kV Transmission Line in Cottonwood, Martin, and Watonwan Counties  
MPUC Docket Nos. IP-7013/CN-19-408, WS-19-619, and TL-19-621  
OAH Docket No. 60-2500-37376**

Dear Mr. Seuffert:

In its May 16, 2022, exceptions to the Administrative Law Judge's Report, the Department of Commerce, Energy Environmental Review and Analysis ("DOC-EERA") recommended that Big Bend Wind, LLC ("Big Bend Wind") "submit a modeled wake loss analysis for Turbine A1 and A2 locations, so the potential impacts to wind rights of neighboring non-participating landowners is identified in the project record prior to considering the approval of the Applicant's wind access buffer waiver request." Big Bend Wind submits this filing in response to DOC-EERA's recommendation.

**1. Background**

Big Bend Wind seeks a waiver of the wind access buffer setback for Turbines A01 and A02; the areas for which Big Bend Wind is seeking a waiver are depicted in yellow on the figures below:



*\*These figures were previously provided in full in Appendix D to Big Bend Wind's Supplemental and Amended Site Permit Application.*

As explained previously in this docket, as part of the Settlement Agreement, in the Supplemental and Amended Site Permit Application, Big Bend Wind requested that the Minnesota Public Utilities Commission ("Commission") waive the wind access buffer setback for four turbines (Turbines A01, A02, A03, and A04). Big Bend Wind was subsequently able to obtain additional land rights related to Turbines A03 and A04 and withdrew its requested waiver for those turbine locations. Turbines A01 and A02 have been identified as alternative locations for the turbine locations which Big Bend Wind agreed to remove and/or seek alternative locations for as part of the Settlement Agreement. In light of the unique circumstances of the Settlement Agreement, the important balancing of interests at stake, and the fact that Turbines A01 and A02 result in only small impacts to the 3-by-5 rotor diameter ("RD") setback, Big Bend Wind continues to respectfully submit that the Commission's waiver of the wind access buffer is warranted here.<sup>1</sup>

## **2. Existing Siting Restrictions**

Big Bend Wind's understanding is that the purpose of 3-by-5 RD setback is to preserve wind access for non-participating landowners. Thus, to conduct DOC-EERA's requested wake loss analysis, which is described in the following section, Big Bend Wind first needed to approximate the location of hypothetical wind turbines landowners may someday install within the wind access buffer setbacks for which Big Bend Wind seeks a waiver. This exercise revealed that hypothetical wind turbines likely could not be sited within these buffers (regardless of the

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<sup>1</sup> See Direct Testimony of Dylan Ikkala at 6-7; Surrebuttal Testimony of Dylan Ikkala at 2-3.

existence of the Big Bend Wind Project) because of other siting restrictions, as shown on **Attachment A**. Specifically, a turbine likely could not be sited in the buffer setback associated with Turbine A01 because of setback restrictions related to residences and public roads. A turbine likely could not be sited in the buffer setback associated with Turbine A02 because of restrictions related to shoreland and public road setbacks and potential Northern Long-Eared Bat habitat.

### 3. Wake Loss Analysis

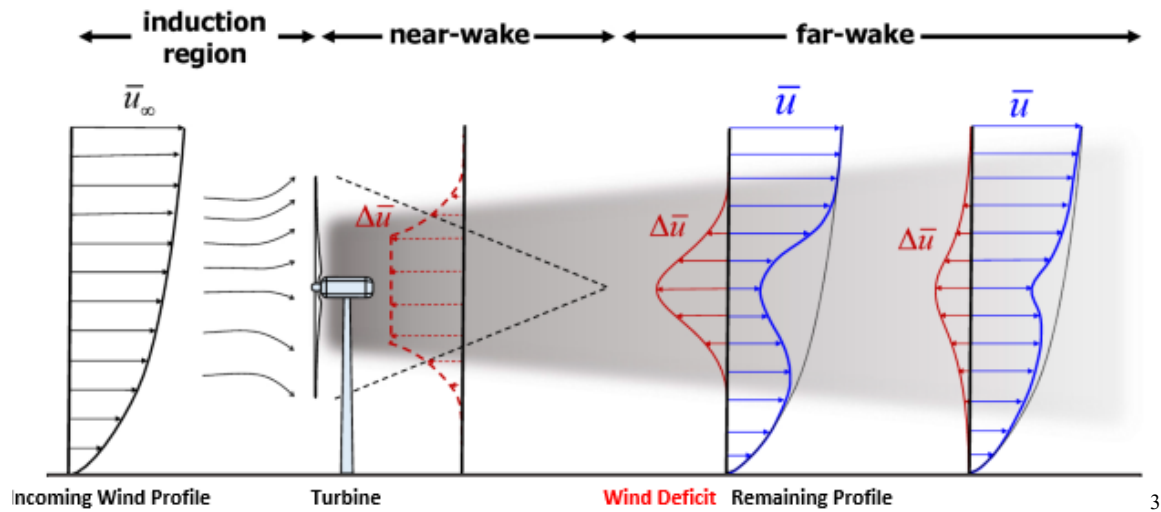
Wake loss is typically described as the space behind a wind turbine with decreased wind power capacity because the turbine itself used that energy in turning its blades. To analyze potential wake loss from Turbines A01 and A02 on the areas for which Big Bend Wind is seeking a waiver of the wind access buffer setback, Big Bend Wind identified the theoretical mean free windspeed if the Project were not constructed on a hypothetical wind turbine within the buffer setback and then compared that windspeed to: (1) the windspeed with the Project as designed (i.e., if the wind access buffer setback waivers were approved); (2) the windspeed within the buffer setback if the turbine at issue (A01 or A02) were constructed at 5RD;<sup>2</sup> and (3) the windspeed within the buffer setback if the turbine at issue (A01 or A02) were not constructed. This analysis is presented in the table below.

|  |                 | A01   | A02   |
|--|-----------------|-------|-------|
| <b>Theoretical mean free windspeed within buffer setback (m/s)</b> |                 | 8.489 | 8.713 |
| <b>Project as designed</b>   | Windspeed (m/s) | 8.233 | 8.362 |
|  | Wake loss (%)   | 4.75  | 6.25  |
| <b>Turbine at 5RD</b>  | Windspeed (m/s) | 8.242 | 8.393 |
|  | Wake loss (%)   | 4.54  | 5.61  |
| <b>Turbine removed</b>   | Windspeed (m/s) | 8.305 | 8.418 |
|  | Wake loss (%)   | 3.21  | 5.07  |

For the purposes of this analysis, Big Bend Wind assumed that the hypothetical wind turbine within the buffer setback would be the same height as the turbines proposed for this Project. This assumption results in a “worst case” (i.e., greatest wake loss) because wake loss would be greatest where turbines are the same height because wake loss is greatest at the hub height of the turbine, as shown in the graphic below. However, as discussed above, due to other existing siting constraints unrelated to the Project, Big Bend Wind does not believe it would be possible to construct turbines of that height within the buffer setbacks at issue here.

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<sup>2</sup> Big Bend Wind conducted this analysis for illustrative purposes only. Because of other siting restrictions, it is not possible to site A01 and A02 at 5RD.



#### 4. Conclusion

With this additional requested information regarding wake loss, Big Bend Wind respectfully requests that the Commission approve its wind access buffer setback waiver requests, consistent with the Settlement Agreement and the entirety of this record.

Please let me know if you have any questions regarding this filing.

Sincerely,

/s/ Christina K. Brusven

Christina K. Brusven

Attorney at Law







Direct Dial: 612.492.7412

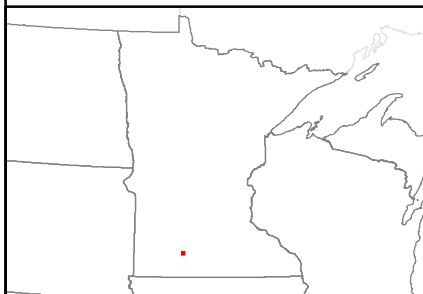
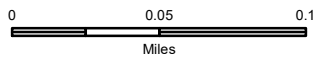
Email: [cbrusven@fredlaw.com](mailto:cbrusven@fredlaw.com)

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<sup>3</sup> Image from: <https://doi.org/10.1007/s10546-019-00473-0>.

# Big Bend

-  Turbine
-  Wind Access Buffer Waiver Request
-  Wind Rose
- Applicable Setbacks**
  -  Road - County ROW
  -  Structure - Occupied
  -  Parcel Boundary

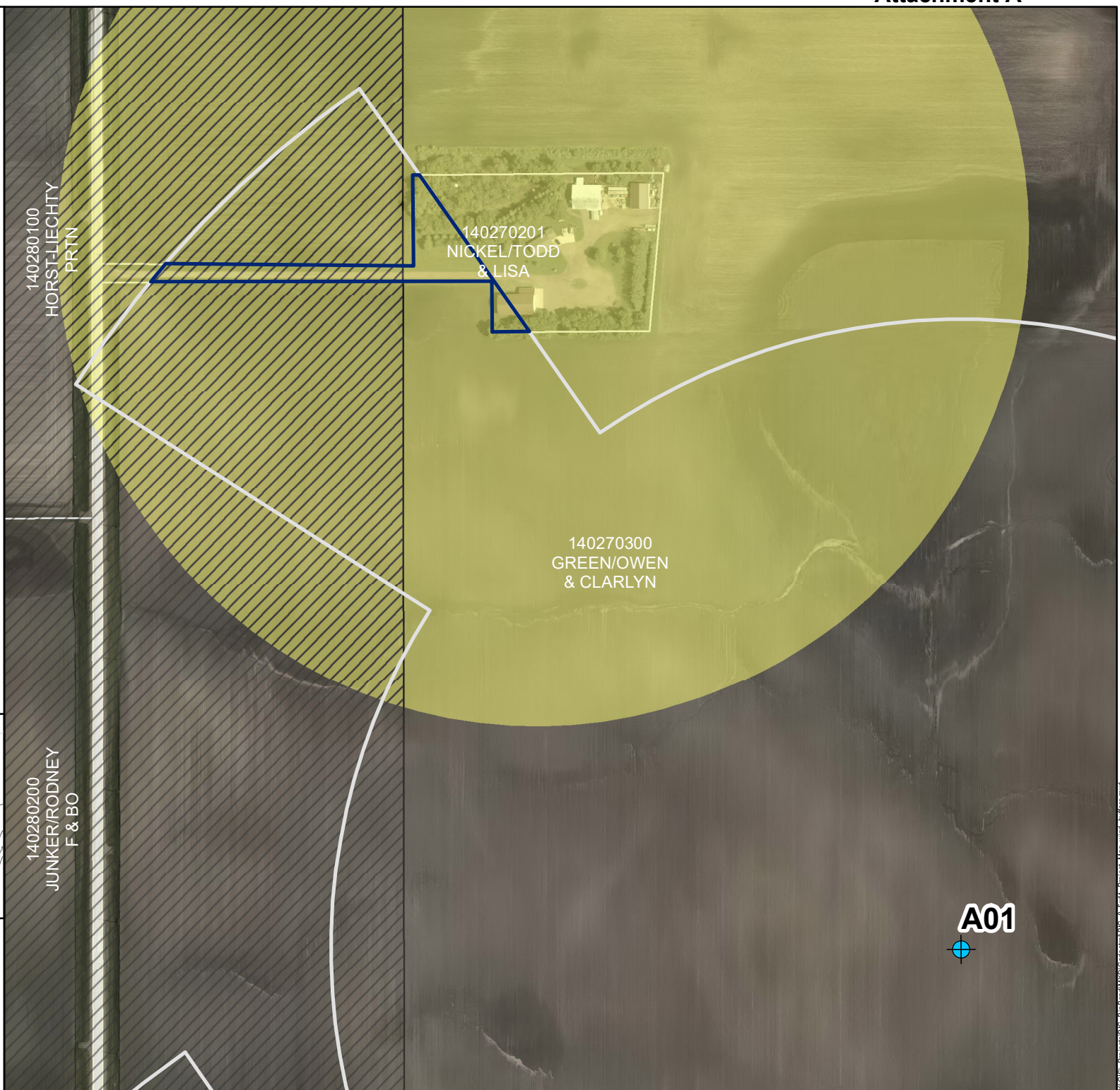


Date: 6/3/2022  
Author: MS










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Projection: Lambert Conformal Conic  
Datum: North American 1983  
Units: Foot US

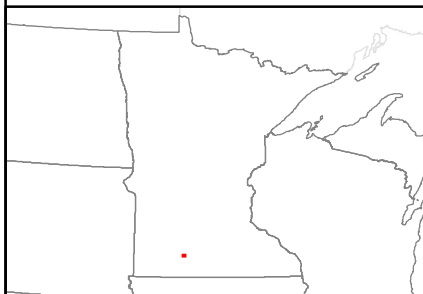
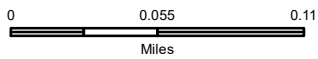
CONFIDENTIAL



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# Big Bend

-  Turbine
-  Wind Access Buffer Waiver Request
-  Wind Rose
-  Potential NLEB Habitat
-  Shoreland
-  County Road
-  Parcel Boundary

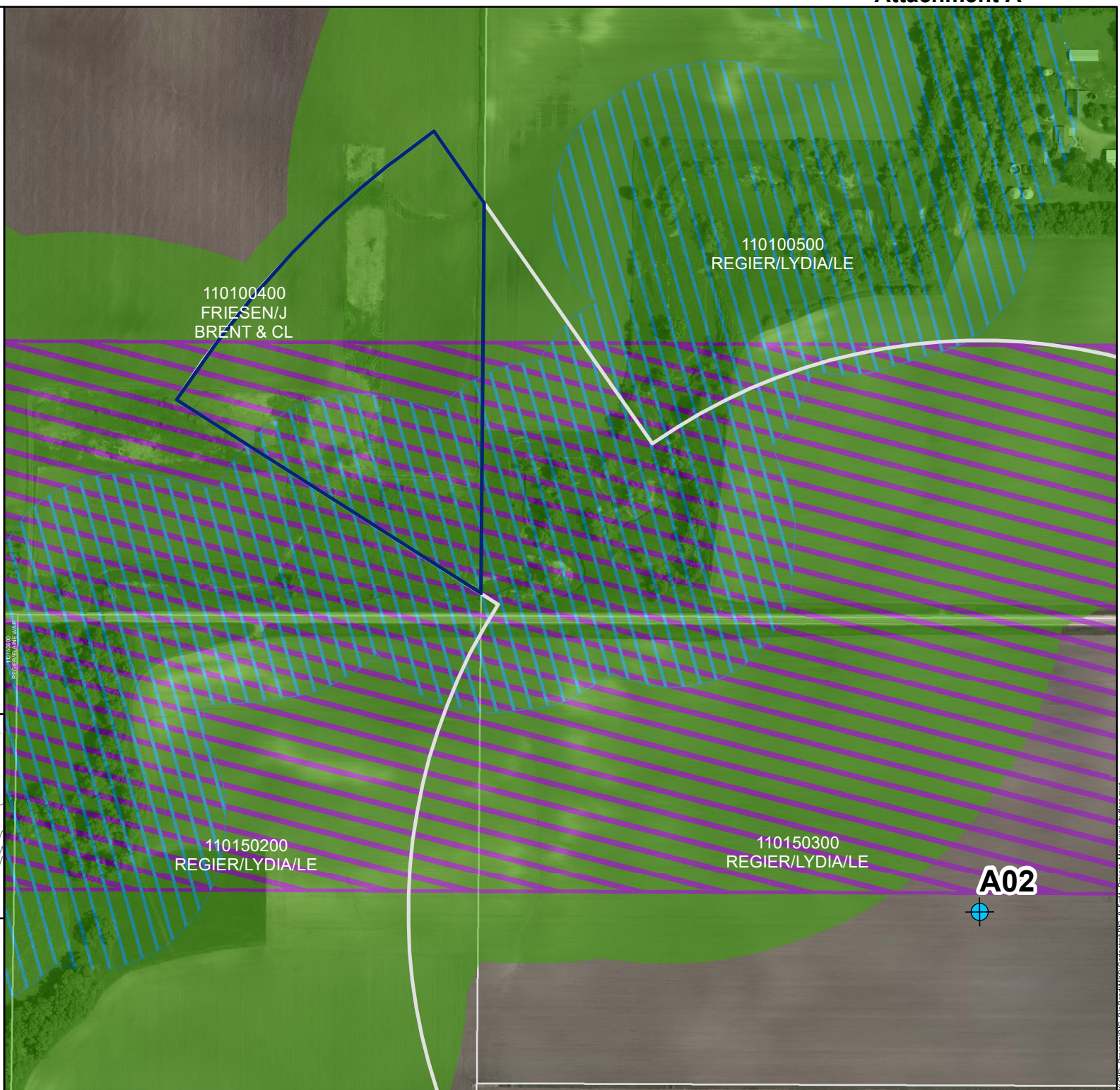


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**In the Matter of the Applications of Big Bend Wind, LLC for a Certificate of Need, Site Permit, and Route Permit for an up to 308 MW Wind Farm and Associated 161 kV Transmission Line in Cottonwood, Martin, and Watonwan Counties**

**MPUC Docket Nos. IP-7013/CN-19-408,  
WS-19-619, and TL-19-621**

**OAH Docket No. 60-2500-37376**

**CERTIFICATE OF SERVICE**

Breann L. Jurek certifies that on the 29<sup>th</sup> day of June 2022, she e-filed a true and correct copy Big Bend Wind, LLC's Response to EERA Request for Wake Loss Analysis and attachments via eDockets ([www.edockets.state.mn.us](http://www.edockets.state.mn.us)):

Said documents were also served as designated on the Official Service Lists on file with the Minnesota Public Utilities Commission and as attached hereto.

Executed on: June 29, 2022

*Signed: /s/ Breann L. Jurek*

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Breann L. Jurek  
Fredrikson & Byron, P.A.  
200 South Sixth Street  
Suite 4000  
Minneapolis, MN 55402

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| Sarah          | Beimers            | sarah.beimers@state.mn.us            | Department of Administration - State Historic Preservation Office | 50 Sherburne Avenue<br>Suite 203<br>St. Paul,<br>MN<br>55155  | Electronic Service | No                | OFF_SL_19-408_19-408 |
| Christina      | Brusven            | cbrusven@fredlaw.com                 | Fredrikson Byron  | 200 S 6th St Ste 4000<br><br>Minneapolis,<br>MN<br>554021425  | Electronic Service | Yes               | OFF_SL_19-408_19-408 |
| Generic Notice | Commerce Attorneys | commerce.attorneys@ag.state.mn.us    | Office of the Attorney General-DOC                                | 445 Minnesota Street Suite 1400<br><br>St. Paul,<br>MN<br>55101   | Electronic Service | Yes               | OFF_SL_19-408_19-408 |
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| Adam           | Duininck           | aduininck@ncsrcc.org                 | North Central States Regional Council of Carpenters               | 700 Olive Street<br><br>St. Paul,<br>MN<br>55130  | Electronic Service | No                | OFF_SL_19-408_19-408 |
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| Annie          | Felix Gerth        | annie.felix-gerth@state.mn.us        |   | Board of Water & Soil Resources<br>520 Lafayette Rd<br>Saint Paul,<br>MN<br>55155                               | Electronic Service | No                | OFF_SL_19-408_19-408 |
| Sharon         | Ferguson           | sharon.ferguson@state.mn.us          | Department of Commerce  | 85 7th Place E Ste 280<br><br>Saint Paul,<br>MN<br>551012198  | Electronic Service | No                | OFF_SL_19-408_19-408 |
| Lucas          | Franco             | lfranco@liunagroc.com                | LIUNA   | 81 Little Canada Rd E<br><br>Little Canada,<br>MN<br>55117  | Electronic Service | No                | OFF_SL_19-408_19-408 |
| Brenna         | Gunderson          | Brenna.gunderson@apexcleanenergy.com | Apex Clean Eenergy  | 8665 Hudson Blvd N Ste 110<br><br>Lake Elmo,<br>MN<br>55042   | Electronic Service | Yes               | OFF_SL_19-408_19-408 |

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| Kate M     | Heins     | kate.heins@apexcleanenergy.com        | Apex Clean Energy                       | 310 4th St NE Ste 200<br><br>Charlottesville,<br>VA<br>22902                  | Electronic Service | Yes               | OFF_SL_19-408_19-408 |
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| Dylan      | Ikkala    | dylan.ikkala@apexcleanenergy.com      | Apex Clean Energy                       | 8665 Hudson Blvd N Ste 110<br><br>Lake Elmo,<br>MN<br>55042                   | Electronic Service | Yes               | OFF_SL_19-408_19-408 |
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| James      | LaFave    | james.lafave@state.mn.us              | Office of Administrative Hearings       | 600 N Robert Street<br><br>St. Paul,<br>MN<br>55164-0620                      | Electronic Service | No                | OFF_SL_19-408_19-408 |
| Kevin      | Maijala   | Kevin.Maijala@mnhs.org                | Minnesota Historical Society            | N/A   | Electronic Service | No                | OFF_SL_19-408_19-408 |
| Samantha J | Odegard   | samanthao@uppergiouxcommunity-nsn.gov | Upper Sioux Tribal Community            | PO Box 147<br><br>Granite Falls,<br>MN<br>56241                               | Electronic Service | No                | OFF_SL_19-408_19-408 |
| Kevin      | Pranis    | kpranis@liunagroc.com                 | Laborers' District Council of MN and ND | 81 E Little Canada Road<br><br>St. Paul,<br>Minnesota<br>55117                | Electronic Service | No                | OFF_SL_19-408_19-408 |
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| Janet          | Shaddix Elling                 | jshaddix@janetshaddix.co<br>m            | Shaddix And Associates                | 7400 Lyndale Ave S Ste<br>190<br><br>Richfield,<br>MN<br>55423              | Electronic Service | Yes               | OFF_SL_19-408_19-408 |
| Cheyenne       | St. John                       | cheyenne.stjohn@lowersio<br>ux.com       | Lower Sioux Tribal<br>Community       | 39527 Reservation Hwy 1<br><br>Morton,<br>MN<br>56270                       | Electronic Service | No                | OFF_SL_19-408_19-408 |
| Haley          | Waller Pitts                   | hwallerpitts@fredlaw.com                 | Fredrikson & Byron, P.A.              | 200 S 6th St Ste 4000<br><br>Minneapolis,<br>MN<br>55402                    | Electronic Service | Yes               | OFF_SL_19-408_19-408 |
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| Cynthia    | Warzecha  | cynthia.warzecha@state.mn.us | Minnesota Department of Natural Resources | 500 Lafayette Road<br>Box 25<br>St. Paul,<br>Minnesota<br>55155-4040 | Electronic Service | No                | OFF_SL_19-408_19-408 |

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| Sarah          | Beimers            | sarah.beimers@state.mn.us            | Department of Administration - State Historic Preservation Office | 50 Sherburne Avenue<br>Suite 203<br>St. Paul,<br>MN<br>55155  | Electronic Service | No                | OFF_SL_19-619_19-619 |
| Christina      | Brusven            | cbrusven@fredlaw.com                 | Fredrikson Byron  | 200 S 6th St Ste 4000<br><br>Minneapolis,<br>MN<br>554021425  | Electronic Service | Yes               | OFF_SL_19-619_19-619 |
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| Brenna         | Gunderson          | Brenna.gunderson@apexcleanenergy.com | Apex Clean Eenergy  | 8665 Hudson Blvd N Ste 110<br><br>Lake Elmo,<br>MN<br>55042   | Electronic Service | Yes               | OFF_SL_19-619_19-619 |
| Kate M         | Heins              | kate.heins@apexcleanenergy.com       | Apex Clean Energy   | 310 4th St NE Ste 200<br><br>Charlottesville,<br>VA<br>22902  | Electronic Service | Yes               | OFF_SL_19-619_19-619 |
| Valerie        | Herring            | vherring@taftlaw.com                 | Taft Stettinius & Hollister LLP                                   | 2200 IDS Center<br>80 S. Eighth Street<br>Minneapolis,<br>MN<br>55402   | Electronic Service | No                | OFF_SL_19-619_19-619 |
| Dylan          | Ikkala             | dylan.ikkala@apexcleanenergy.com     | Apex Clean Energy   | 8665 Hudson Blvd N Ste 110<br><br>Lake Elmo,<br>MN<br>55042   | Electronic Service | Yes               | OFF_SL_19-619_19-619 |

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| David          | Kelliher                       | david.kelliher@mnhs.org               |                                    | 345 Kellogg Blvd W<br><br>SAINT PAUL,<br>MN<br>55102                         | Electronic Service | No                | OFF_SL_19-619_19-619 |
| James          | LaFave                         | james.lafave@state.mn.us              | Office of Administrative Hearings  | 600 N Robert Street<br><br>St. Paul,<br>MN<br>55164-0620                     | Electronic Service | No                | OFF_SL_19-619_19-619 |
| Kevin          | Maijala                        | Kevin.Maijala@mnhs.org                | Minnesota Historical Society       | N/A  | Electronic Service | No                | OFF_SL_19-619_19-619 |
| Samantha J     | Odegard                        | samanthao@uppersiouxcommunity-nsn.gov | Upper Sioux Tribal Community       | PO Box 147<br><br>Granite Falls,<br>MN<br>56241                              | Electronic Service | No                | OFF_SL_19-619_19-619 |
| Peter          | Rademacher                     | prademacher@hogenadams.com            |                                    | 1935 County Road B2 West<br><br>Suite 460<br>St. Paul,<br>Minnesota<br>55113 | Electronic Service | No                | OFF_SL_19-619_19-619 |
| Leif           | Rasmussen                      | leif@steffensandrasmusse n.com        | Steffens & Rasmussen               | 6600 France Ave South<br><br>Edina,<br>MN<br>55435                           | Electronic Service | No                | OFF_SL_19-619_19-619 |
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| Ronald C       | Schirmer                       | ronald.schirmer@mnsu.edu              | Department of Anthropology         | 359 Trafton Science Center N<br><br>Mankato,<br>MN<br>56001                  | Electronic Service | No                | OFF_SL_19-619_19-619 |
| Will           | Seuffert                       | Will.Seuffert@state.mn.us             | Public Utilities Commission        | 121 7th PI E Ste 350<br><br>Saint Paul,<br>MN<br>55101                       | Electronic Service | Yes               | OFF_SL_19-619_19-619 |
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| First Name | Last Name    | Email                              | Company Name                                 | Address  | Delivery Method    | View Trade Secret | Service List Name    |
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| Cheyanne   | St. John     | cheyanne.stjohn@lowersio<br>ux.com | Lower Sioux Tribal<br>Community              | 39527 Reservation Hwy 1<br><br>Morton,<br>MN<br>56270                | Electronic Service | No                | OFF_SL_19-619_19-619 |
| Haley      | Waller Pitts | hwallerpitts@fredlaw.com           | Fredrikson & Byron, P.A.                     | 200 S 6th St Ste 4000<br><br>Minneapolis,<br>MN<br>55402             | Electronic Service | Yes               | OFF_SL_19-619_19-619 |
| Cynthia    | Warzecha     | cynthia.warzecha@state.m<br>n.us   | Minnesota Department of<br>Natural Resources | 500 Lafayette Road<br>Box 25<br>St. Paul,<br>Minnesota<br>55155-4040 | Electronic Service | No                | OFF_SL_19-619_19-619 |

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| Christina      | Brusven            | cbrusven@fredlaw.com                 | Fredrikson Byron  | 200 S 6th St Ste 4000<br><br>Minneapolis,<br>MN<br>554021425  | Electronic Service | Yes               | OFF_SL_19-621_19-621 |
| Generic Notice | Commerce Attorneys | commerce.attorneys@ag.state.mn.us    | Office of the Attorney General-DOC                                | 445 Minnesota Street Suite 1400<br><br>St. Paul,<br>MN<br>55101   | Electronic Service | Yes               | OFF_SL_19-621_19-621 |
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| Sharon         | Ferguson           | sharon.ferguson@state.mn.us          | Department of Commerce  | 85 7th Place E Ste 280<br><br>Saint Paul,<br>MN<br>551012198  | Electronic Service | No                | OFF_SL_19-621_19-621 |
| Lucas          | Franco             | lfranco@liunagroc.com                | LIUNA   | 81 Little Canada Rd E<br><br>Little Canada,<br>MN<br>55117  | Electronic Service | No                | OFF_SL_19-621_19-621 |
| Brenna         | Gunderson          | Brenna.gunderson@apexcleanenergy.com | Apex Clean Eenergy  | 8665 Hudson Blvd N Ste 110<br><br>Lake Elmo,<br>MN<br>55042   | Electronic Service | No                | OFF_SL_19-621_19-621 |
| Kate M         | Heins              | kate.heins@apexcleanenergy.com       | Apex Clean Energy   | 310 4th St NE Ste 200<br><br>Charlottesville,<br>VA<br>22902  | Electronic Service | No                | OFF_SL_19-621_19-621 |
| Chris          | Kunkle             | chris.kunkle@apexcleanenergy.com     | Apex Clean Energy   | 8665 Hudson Blvd North, Suite 110<br><br>Lake Elmo,<br>MN<br>55042  | Electronic Service | No                | OFF_SL_19-621_19-621 |
| James          | LaFave             | james.lafave@state.mn.us             | Office of Administrative Hearings                                 | 600 N Robert Street<br><br>St. Paul,<br>MN<br>55164-0620  | Electronic Service | No                | OFF_SL_19-621_19-621 |

| First Name     | Last Name                      | Email                                 | Company Name                       | Address  | Delivery Method    | View Trade Secret | Service List Name    |
|----------------|--------------------------------|---------------------------------------|------------------------------------|--|--------------------|-------------------|----------------------|
| Kevin          | Maijala                        | Kevin.Maijala@mnhs.org                | Minnesota Historical Society       | N/A  | Electronic Service | No                | OFF_SL_19-621_19-621 |
| Samantha J     | Odegard                        | samanthao@uppersiouxcommunity-nsn.gov | Upper Sioux Tribal Community       | PO Box 147<br><br>Granite Falls, MN 56241                              | Electronic Service | No                | OFF_SL_19-621_19-621 |
| Peter          | Rademacher                     | prademacher@hogenadams.com            |                                    | 1935 County Road B2 West<br><br>Suite 460<br>St. Paul, Minnesota 55113 | Electronic Service | No                | OFF_SL_19-621_19-621 |
| Leif           | Rasmussen                      | leif@steffensandrasmusse n.com        | Steffens & Rasmussen               | 6600 France Ave South<br><br>Edina, MN 55435                           | Electronic Service | No                | OFF_SL_19-621_19-621 |
| Generic Notice | Residential Utilities Division | residential.utilities@ag.state.mn.us  | Office of the Attorney General-RUD | 1400 BRM Tower<br>445 Minnesota St<br>St. Paul, MN 551012131           | Electronic Service | Yes               | OFF_SL_19-621_19-621 |
| Ronald C       | Schirmer                       | ronald.schirmer@mnsu.edu              | Department of Anthropology         | 359 Trafton Science Center N<br><br>Mankato, MN 56001                  | Electronic Service | No                | OFF_SL_19-621_19-621 |
| Will           | Seuffert                       | Will.Seuffert@state.mn.us             | Public Utilities Commission        | 121 7th PI E Ste 350<br><br>Saint Paul, MN 55101                       | Electronic Service | Yes               | OFF_SL_19-621_19-621 |
| Janet          | Shaddix Elling                 | jshaddix@janetshaddix.com             | Shaddix And Associates             | 7400 Lyndale Ave S Ste 190<br><br>Richfield, MN 55423                  | Electronic Service | Yes               | OFF_SL_19-621_19-621 |
| Cheyenne       | St. John                       | cheyenne.stjohn@lowersioux.com        | Lower Sioux Tribal Community       | 39527 Reservation Hwy 1<br><br>Morton, MN 56270                        | Electronic Service | No                | OFF_SL_19-621_19-621 |
| Haley          | Waller Pitts                   | hwallerpitts@fredlaw.com              | Fredrikson & Byron, P.A.           | 200 S 6th St Ste 4000<br><br>Minneapolis, MN 55402                     | Electronic Service | No                | OFF_SL_19-621_19-621 |

| First Name | Last Name | Email                        | Company Name                              | Address  | Delivery Method    | View Trade Secret | Service List Name    |
|------------|-----------|------------------------------|---|--|--------------------|-------------------|----------------------|
| Cynthia    | Warzecha  | cynthia.warzecha@state.mn.us | Minnesota Department of Natural Resources | 500 Lafayette Road<br>Box 25<br>St. Paul,<br>Minnesota<br>55155-4040 | Electronic Service | No                | OFF_SL_19-621_19-621 |