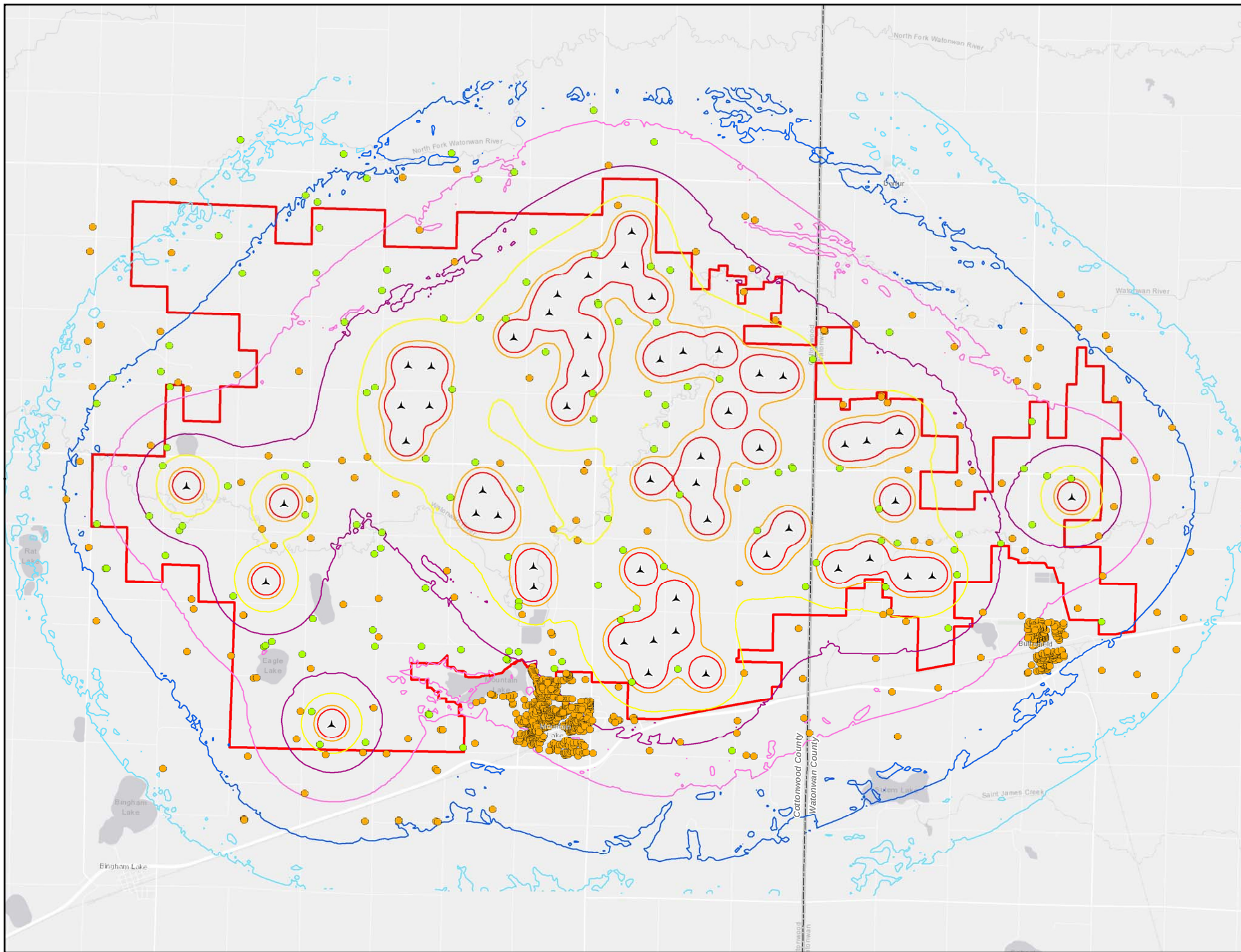


Data Source: Apex Energy, US Census, MDOT, FSA 2017 Imagery

- ▲ V162 Proposed Turbine
- Project Area Boundary
- Participant**
 - Non-Participating (within 1 mile of Project Area)
 - Participating (within 1 mile of Project Area)
- Sound Pressure Levels (Turbine Only)**
 - 20 dBA
 - 25 dBA
 - 30 dBA
 - 35 dBA
 - 40 dBA
 - 45 dBA
 - 47 dBA

*Turbines not to scale

Figure 7b
Sound/Noise
Vestas V162

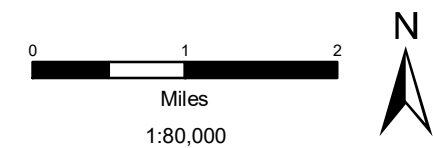
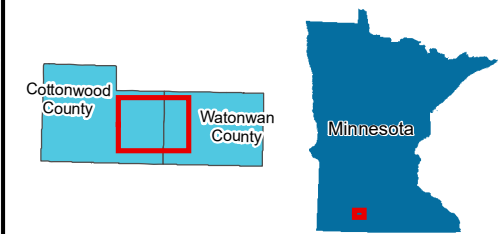
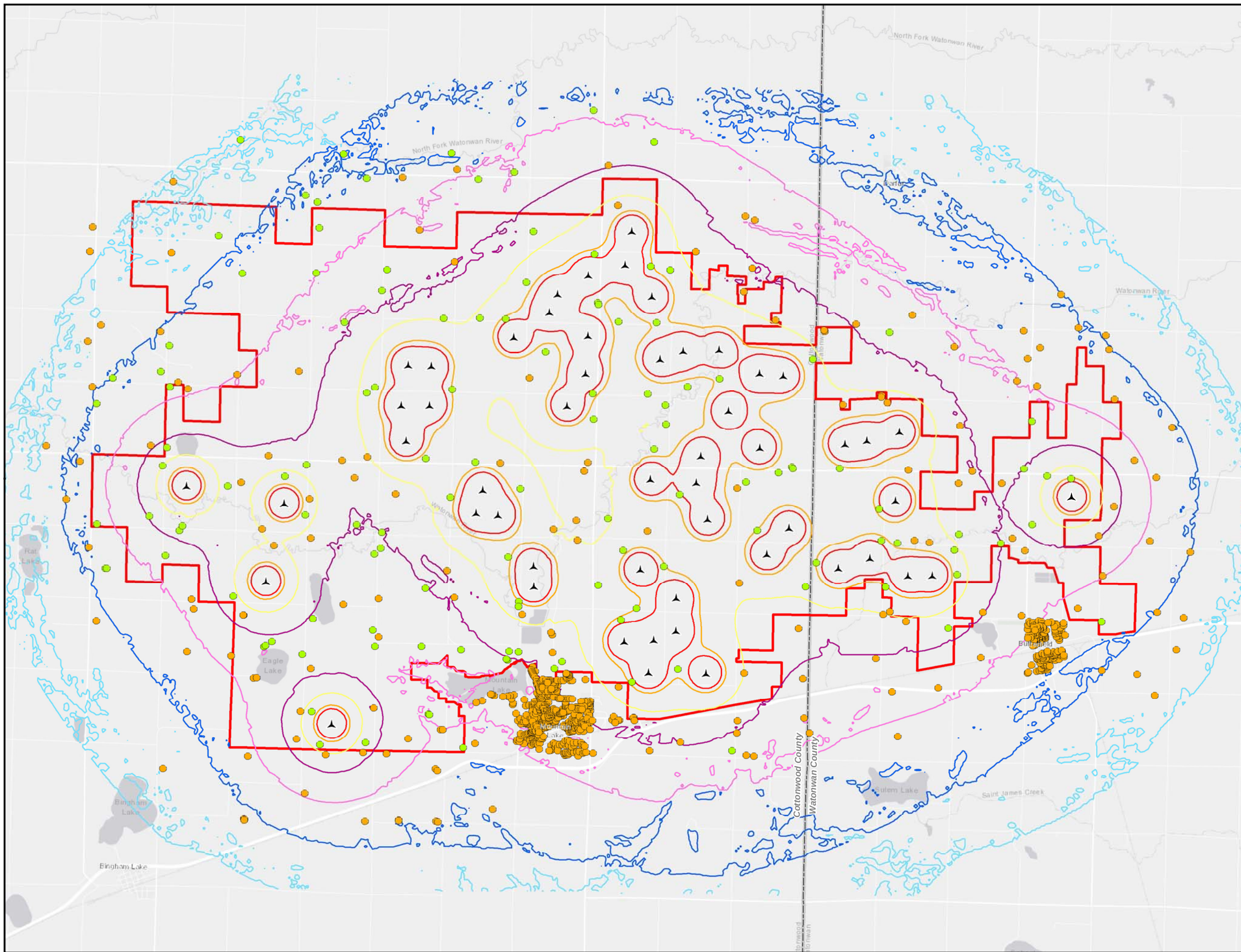
Big Bend Wind Project

Cottonwood and Watonwan
Counties, Minnesota



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Date: (9/17/2021) Source: Z:\Clients\VA_D\Apex\Big Bend\Sites_Permit\Figures\Fig07b_V162_BB_Sound_Noise.mxd



Data Source: Apex Energy, US Census, MDOT, FSA 2017 Imagery

- ▲ GE158 Proposed Turbine
- Project Area Boundary
- Participant**
 - Non-Participating (within 1 mile of Project Area)
 - Participating (within 1 mile of Project Area)
- Sound Pressure Levels (Turbine Only)**
 - 20 dBA
 - 25 dBA
 - 30 dBA
 - 35 dBA
 - 40 dBA
 - 45 dBA
 - 47 dBA

*Turbines not to scale

Figure 7c
Sound/Noise
GE-158

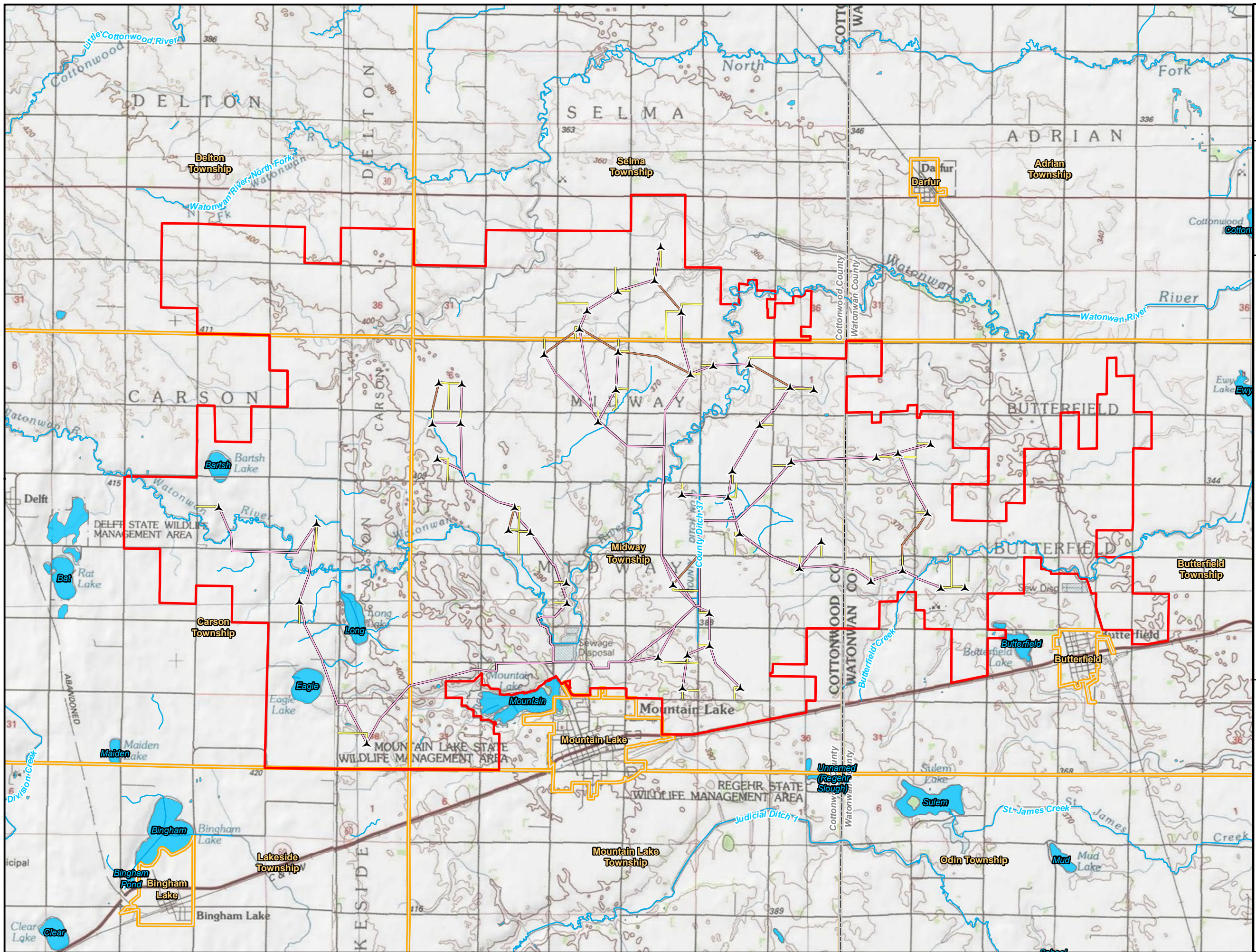
Big Bend Wind Project

Cottonwood and Watonwan Counties, Minnesota



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Date: (9/17/2021) Source: Z:\Clients\VA\Apex\Big Bend\Sites_Permit\Figures\Fig7c_GE158_BB_Sound_Noise.mxd





Cottonwood County Watonwan County



Miles
1:80,000

▲ Proposed Turbine

— Access Road

— Collection Line

— Crane Path

▭ Project Area Boundary

▭ City/Township

▭ County Boundary

~ River/Stream

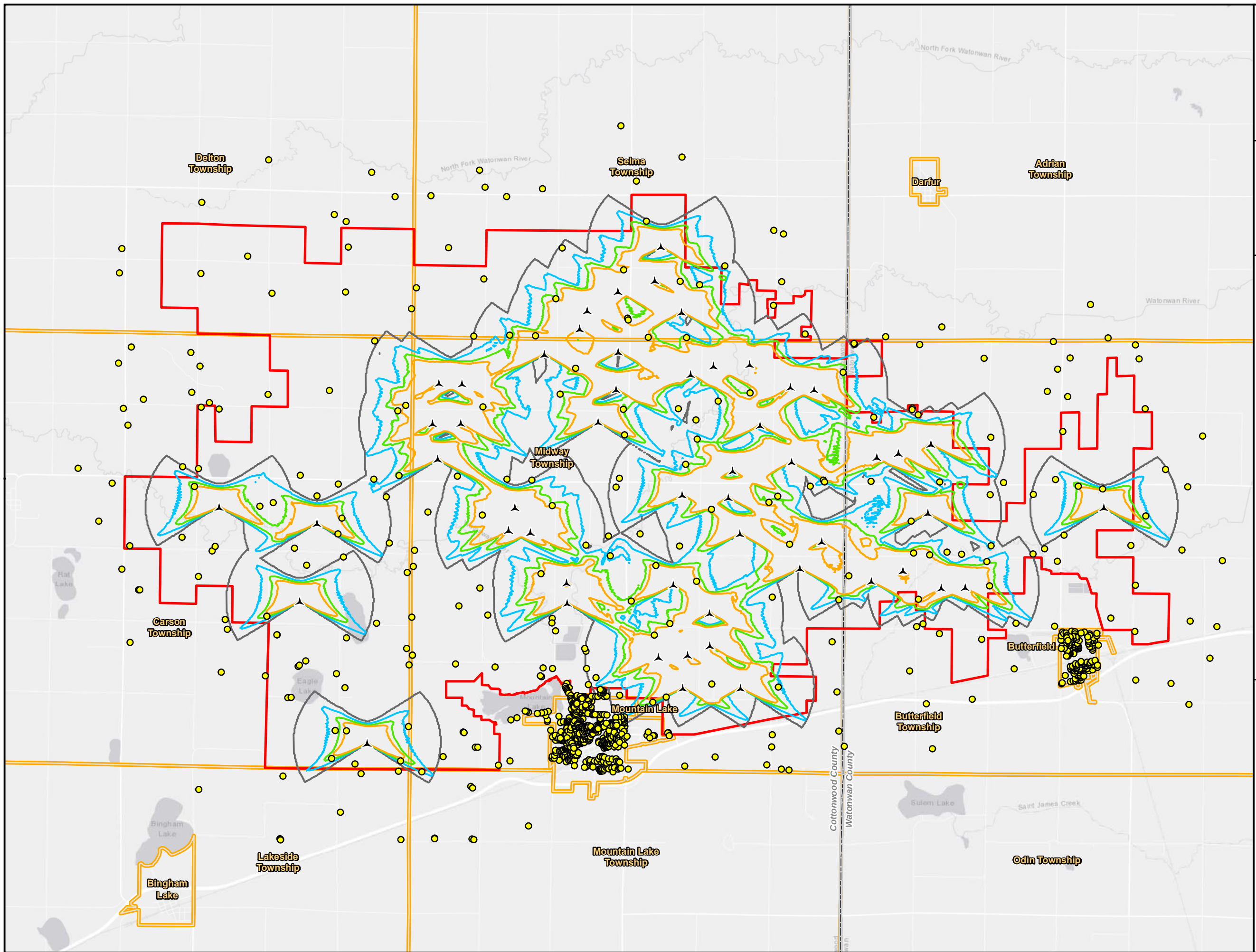
⬮ Lake, Pond, or Reservoir

Data Source: Apex Energy, US Census, MDOT, FSA 2017 Imagery

*Turbines not to scale

Figure 8
Topographic Map
Big Bend Wind Project
Cottonwood and Watonwan Counties, Minnesota

Date: (9/9/2021) Source: Z:\Clients\A_D\Apex\Big_Bend\Site_Permit\Figures\Fig08_BB_Topographic_Map.mxd





Cottonwood County
Watonwan County
Minnesota

0 1 2
Miles
1:80,000

N

Data Source: Apex Energy, US Census, MDOT, FSA 2017 Imagery

▲ N163 Proposed Turbine (Primary)

● Residential Structure (within 1 mile of Project Area)

▭ Project Area Boundary

▭ City/Township

▭ County Boundary

Shadow Hours Per Year

— 0

— 10

— 20

— 30

*Turbines not to scale

Figure 9a
Shadow Flicker
Nordex N-163

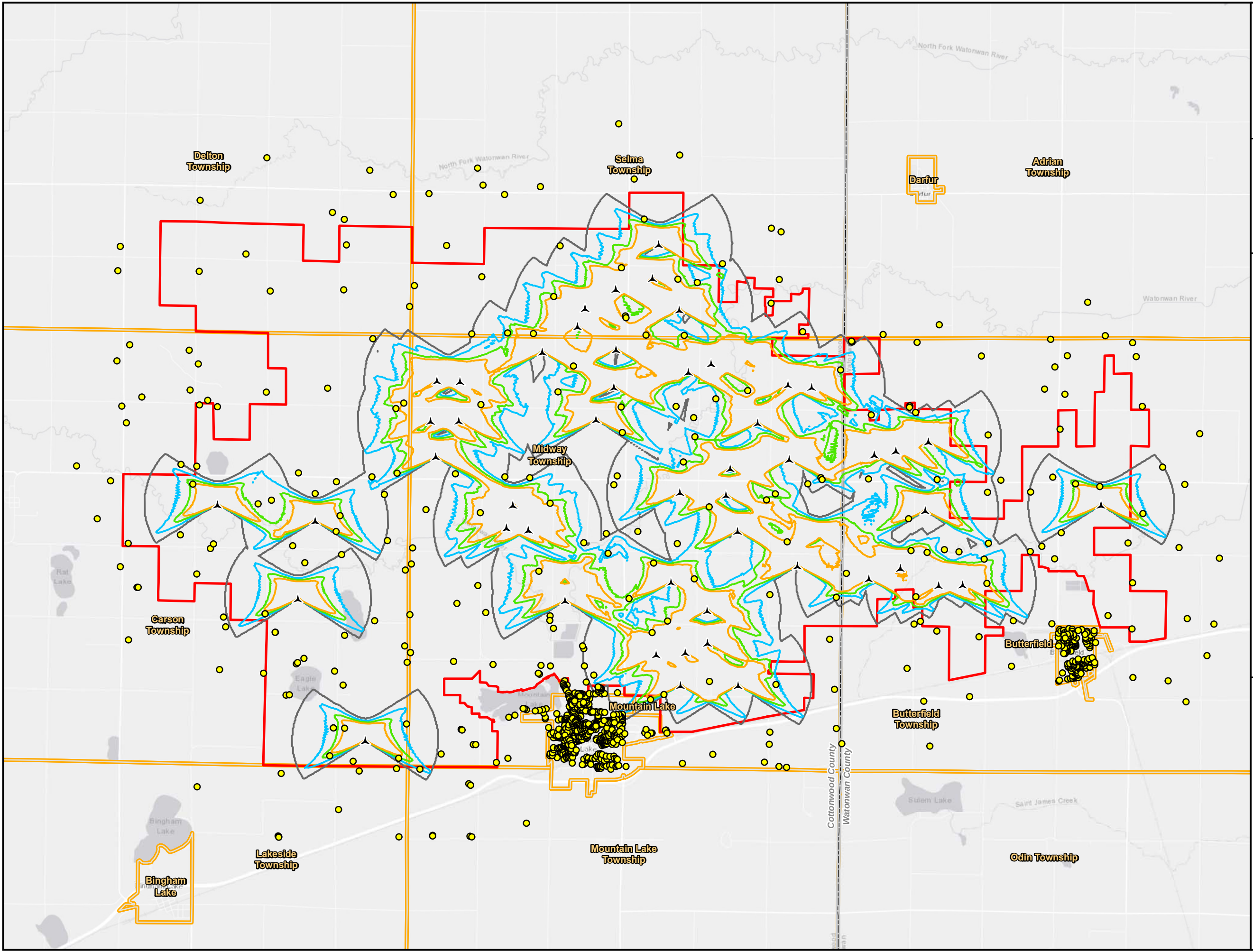
Big Bend Wind Project

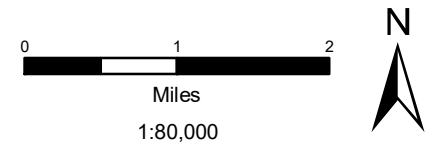
Cottonwood and Watonwan Counties, Minnesota



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Date: (9/17/2021) Source: Z:\Clients\VA_D\Apex\Big Bend\Sites_Permit\Figures\Fig09a_N163_BB_Shadow_Flicker.mxd





0 1 2
Miles
1:80,000

North Arrow

Data Source: Apex Energy, US Census, MDOT, FSA 2017 Imagery

- ▲ V162 Proposed Turbine (Primary)
- Residential Structure (within 1 mile of Project Area)
- ▭ Project Area Boundary
- ▭ City/Township
- ▭ County Boundary

Shadow Hours Per Year

- 0
- 10
- 20
- 30

*Turbines not to scale

Figure 9b
Shadow Flicker
Vestas V162

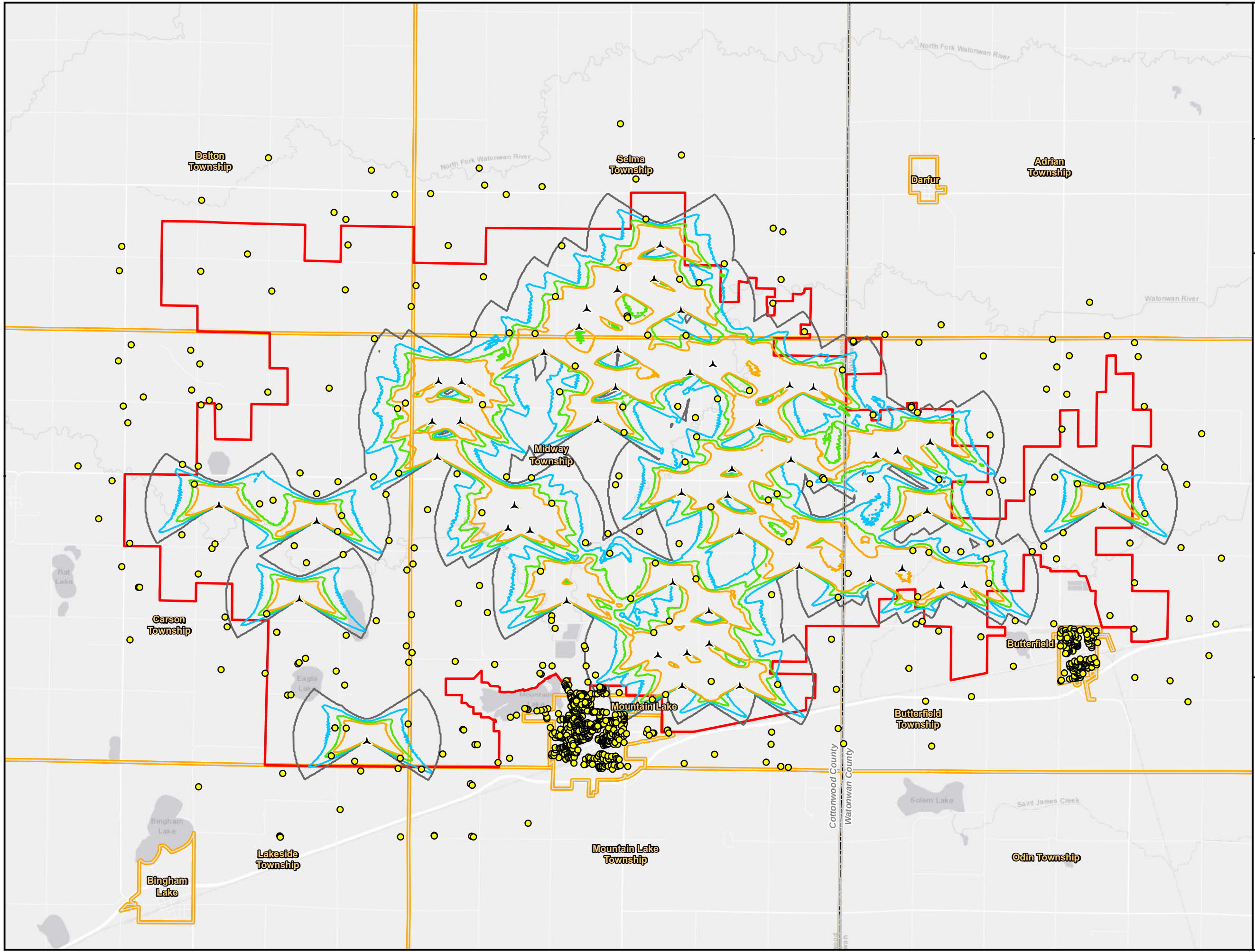
Big Bend Wind Project

Cottonwood and Watonwan Counties, Minnesota



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Date: (9/17/2021) Source: Z:\Clients\VA_D\Apex\Big Bend\Sites_Permit\Figures\Fig9b_V162_BB_Shadow_Flicker.mxd





Cottonwood County Watonwan County

0 1 2
Miles
1:80,000



Data Source: Apex Energy, US Census, MDOT, FSA 2017 Imagery

▲ GE158 Proposed Turbine (Primary)

● Residential Structure (within 1 mile of Project Area)

▭ Project Area Boundary

▭ City/Township

▭ County Boundary

Shadow Hours Per Year

— 0

— 10

— 20

— 30

*Turbines not to scale

Figure 9c
Shadow Flicker
GE-158

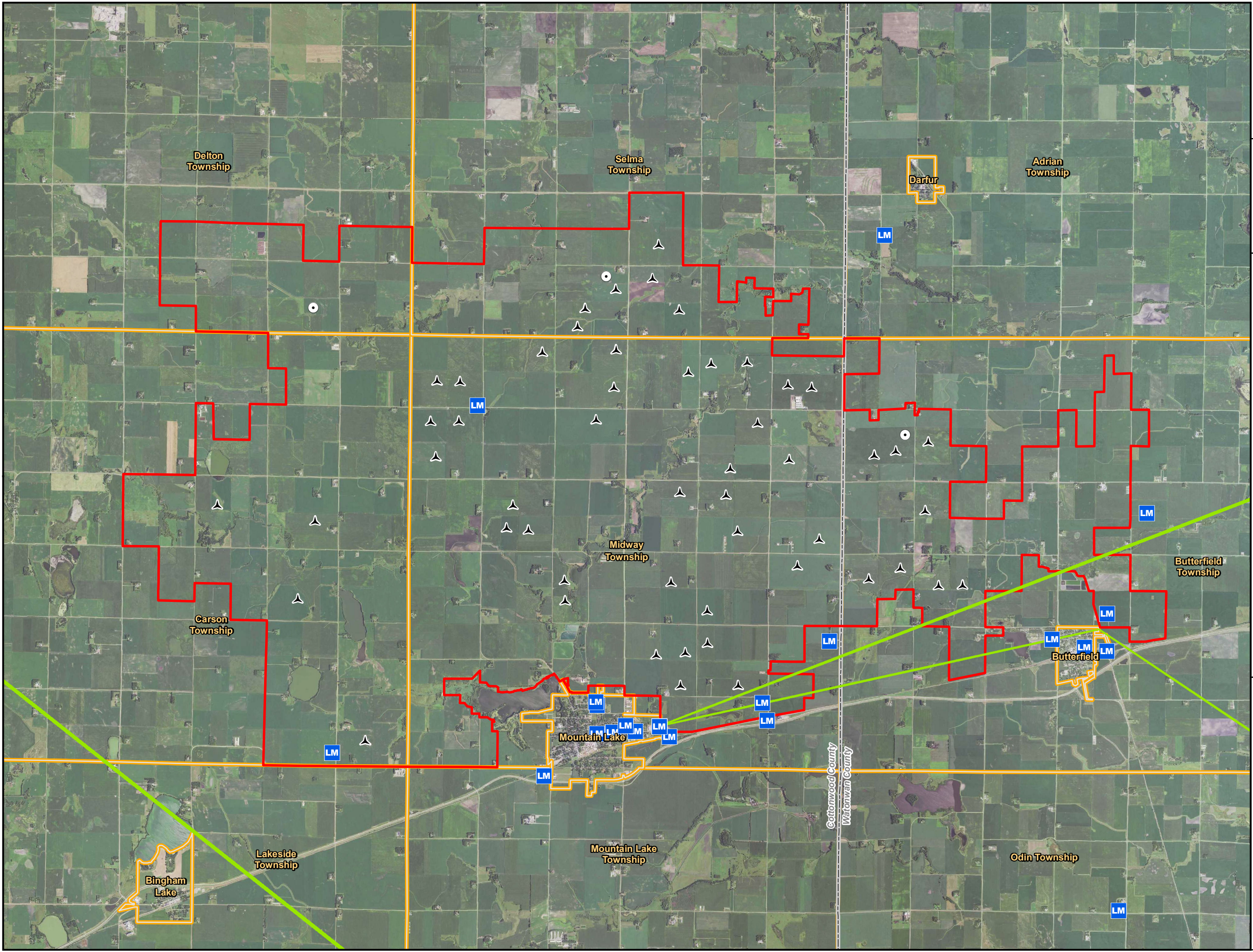
Big Bend Wind Project

Cottonwood and Watonwan Counties, Minnesota



Date: (9/17/2021)

Source: Z:\Clients\VA\Apex\Big Bend\Sites_Permit\Figures\Fig9c_GE158_BB_Shadow_Flicker.mxd





Cottonwood County Watonwan County

0 1 2

Miles

1:80,000

N

Data Source: Apex Energy, US Census, MDOT, FSA 2017 Imagery

-  Proposed Turbine
-  Met Tower
-  Land Mobile
-  Project Area
-  City/Township
-  County Boundary
-  Microwave Beam Path

*Turbines not to scale

Figure 10

Microwave Beam Path

Big Bend Wind Project

Cottonwood and Watonwan Counties, Minnesota



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