Figure 5

Daytime Operational Noise Results – Alternate Option

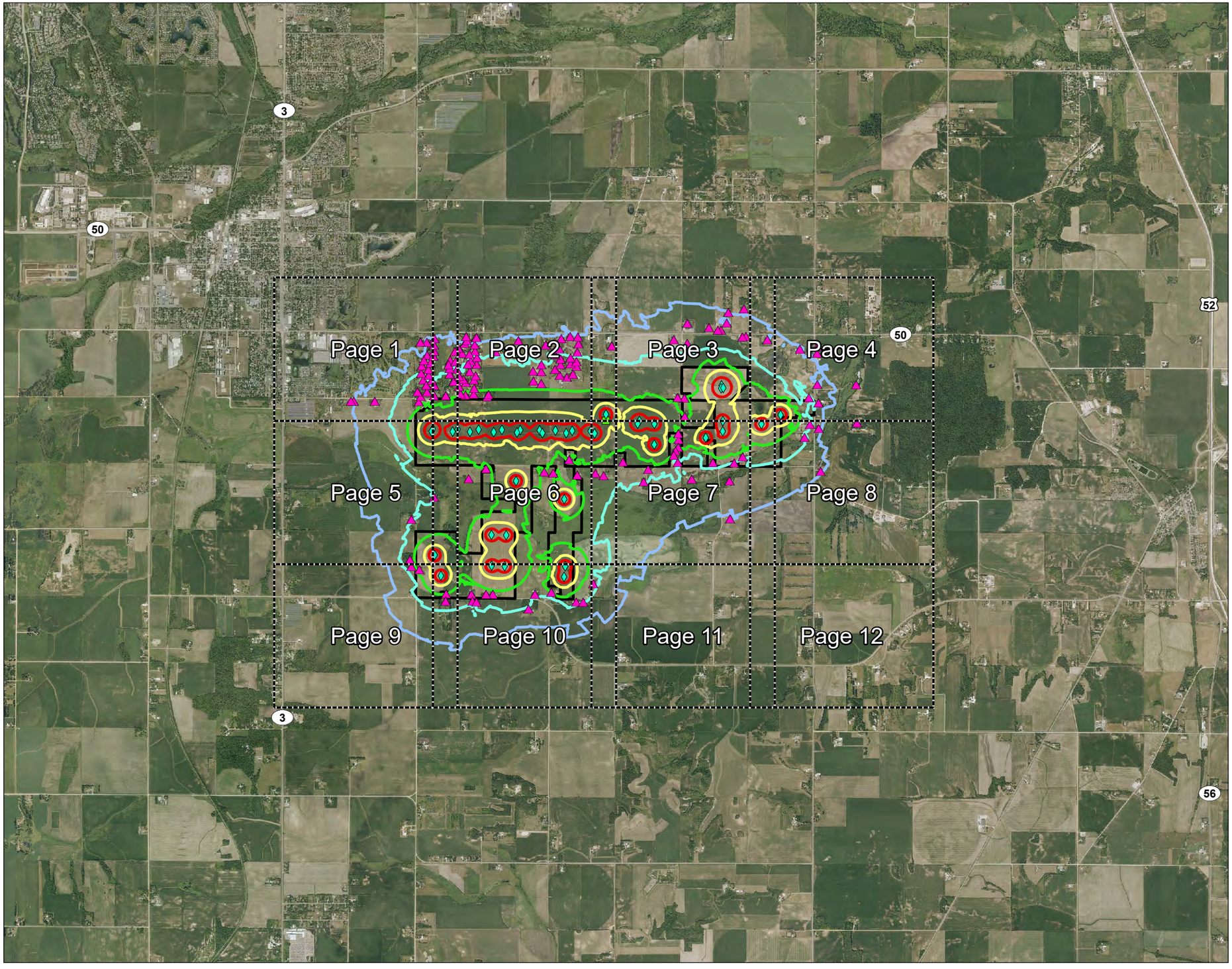


Figure No.

5

Title

Operational Noise Results (Alternate - Daytime)

Client/Project

Matrix Renewables USA LLC
Castle Rock

193709215

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

0 2,000 4,000 Feet

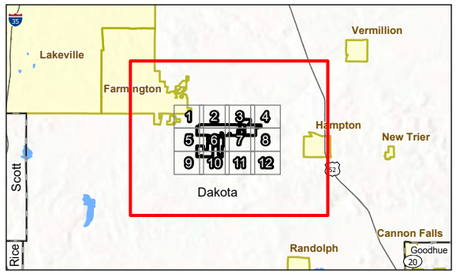
(At original document size of 11x17)
1:48,000

Legend

- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)

- 45
- 50
- 55
- 60
- 65



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

Index Map

V:\1937\Active\193709215\03_data\gis_cad\gis\mxds\Noise\193709215_CastleRock_Noise\193709215_CastleRock_Noise.aprx Revised: 2024-08-28 By: jmarty

Figure No.

5

Title

Operational Noise Results (Alternate - Daytime)

Client/Project 193709215

Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

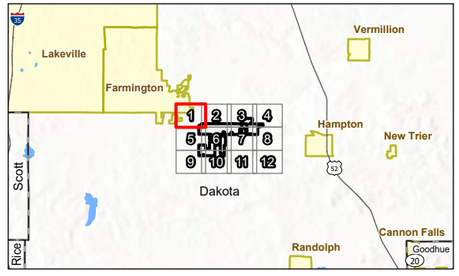
Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

0 300 600 Feet
(At original document size of 11x17)
1:7,200

Legend
- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)
- 45
- 50
- 55
- 60
- 65



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

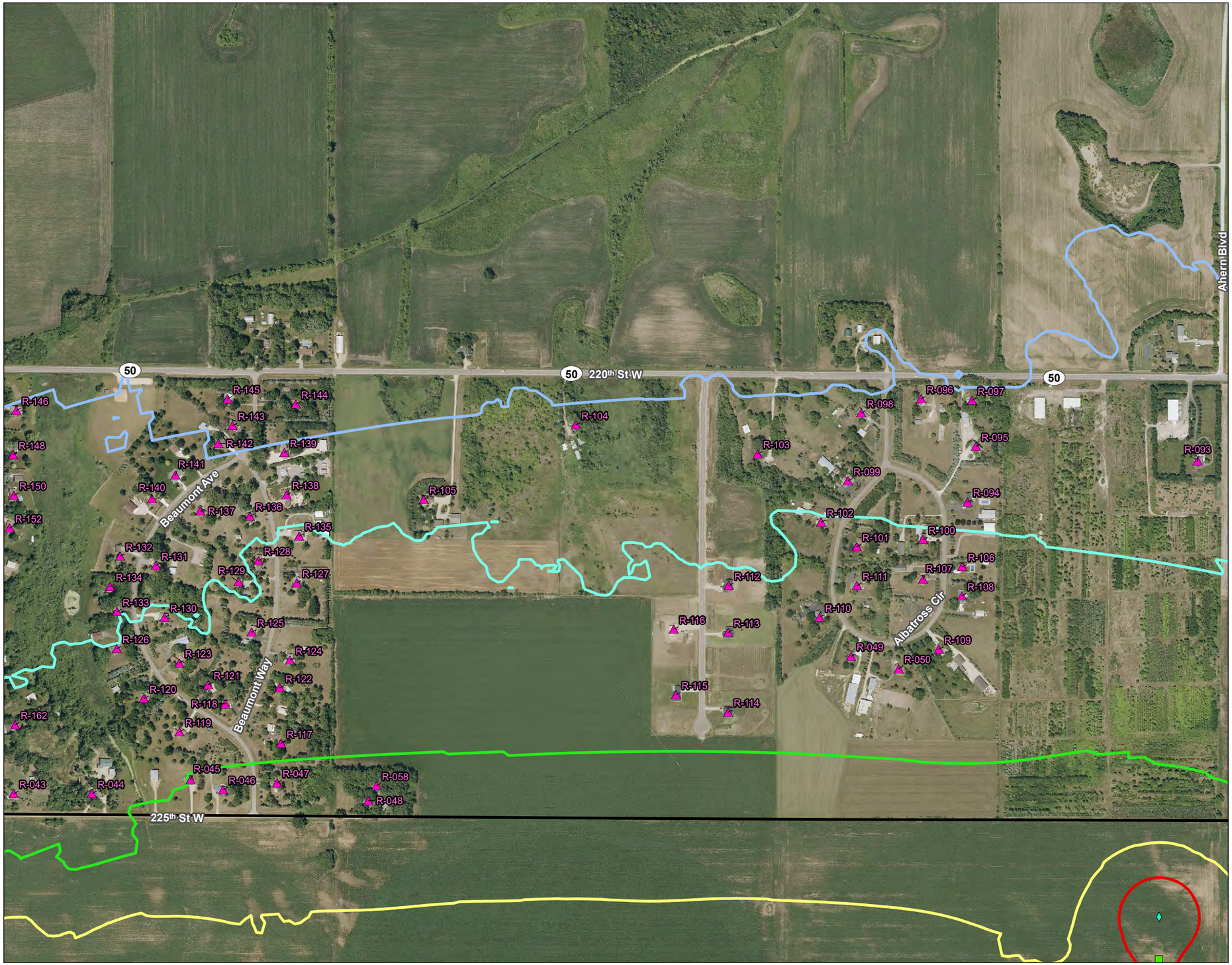


Figure No.

5

Title

Operational Noise Results (Alternate - Daytime)

Client/Project

Matrix Renewables USA LLC
Castle Rock

193709215

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

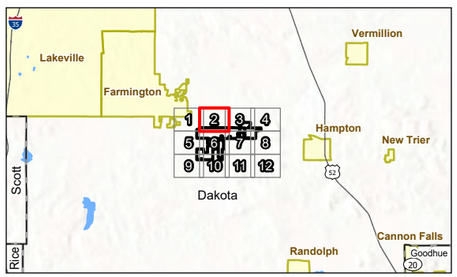
0 300 600 Feet
(At original document size of 11x17)
1:7,200

Legend

- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)

- 45
- 50
- 55
- 60
- 65



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

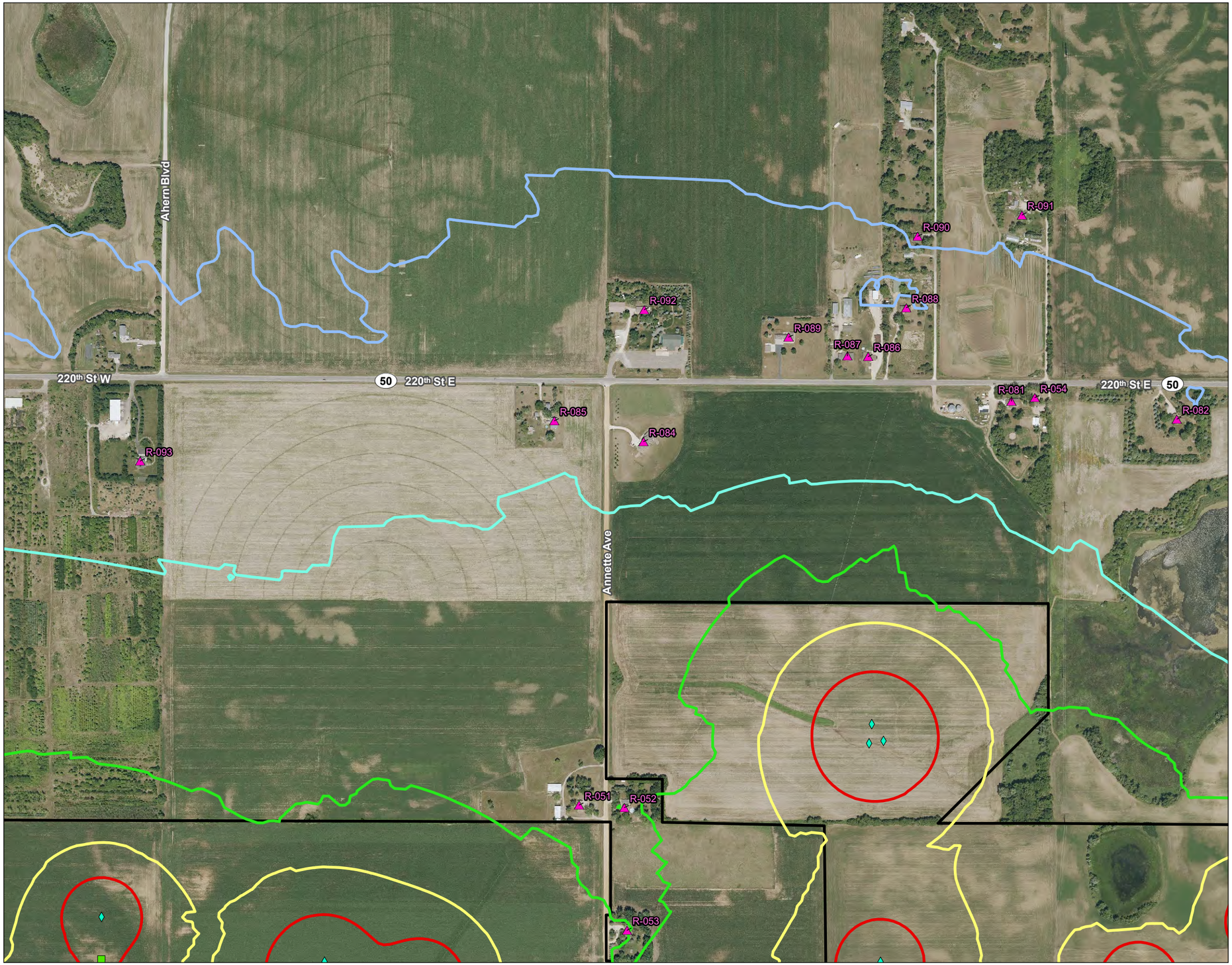


Figure No.

5

Title

Operational Noise Results (Alternate - Daytime)

Client/Project 193709215

Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

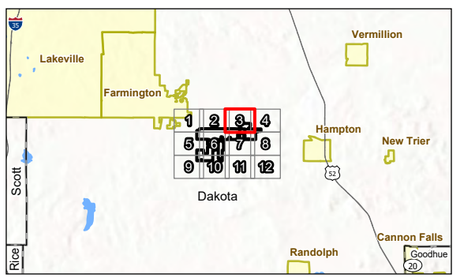
0 300 600 Feet
(At original document size of 11x17)
1:7,200

Legend

- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)

- 45
- 50
- 55
- 60
- 65



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

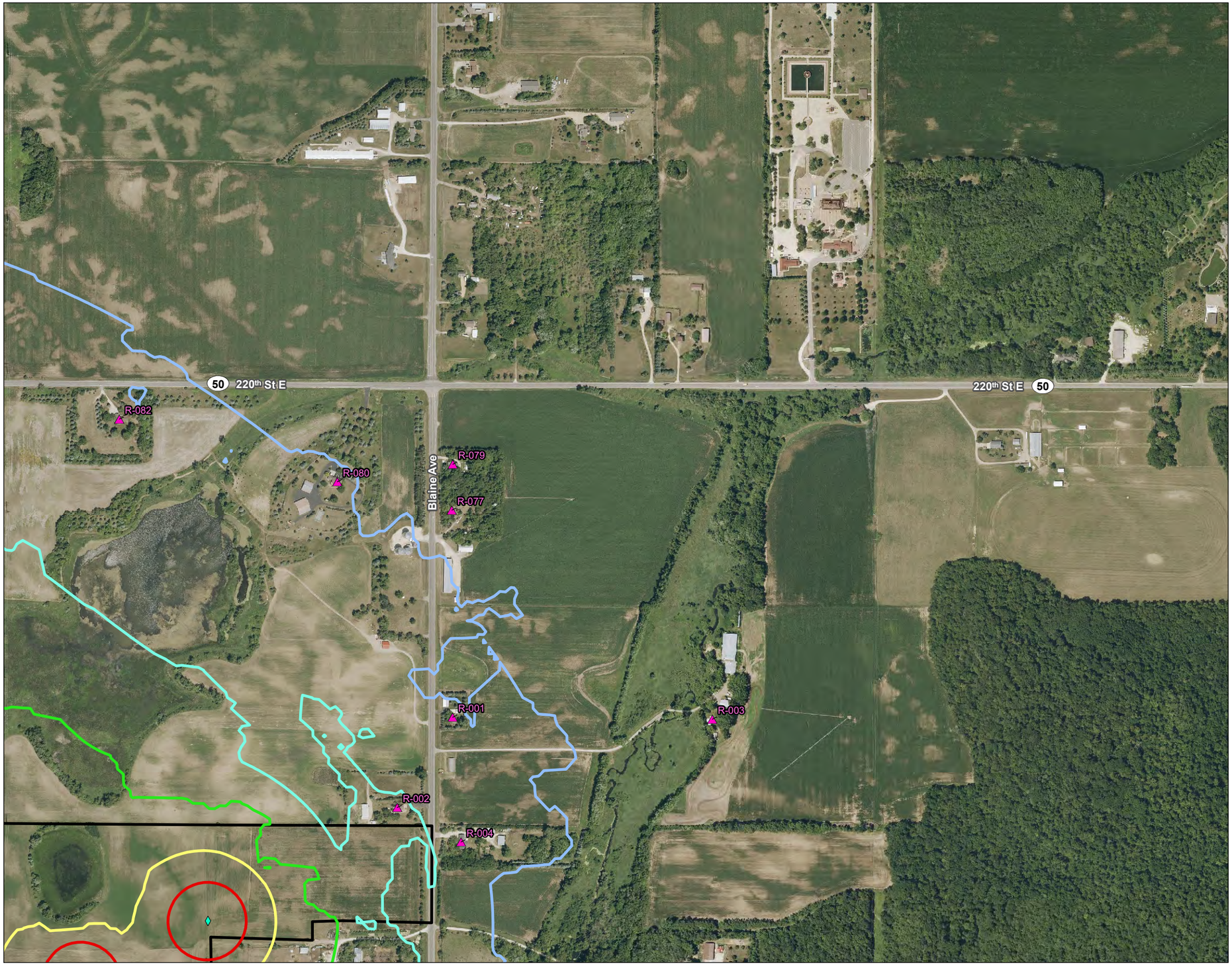


Figure No.
5

Title
Operational Noise Results (Alternate - Daytime)

Client/Project
Matrix Renewables USA LLC
Castle Rock
193709215

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

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0 300 600 Feet
(At original document size of 11x17)
1:7,200

Legend
- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)
- 45
- 50
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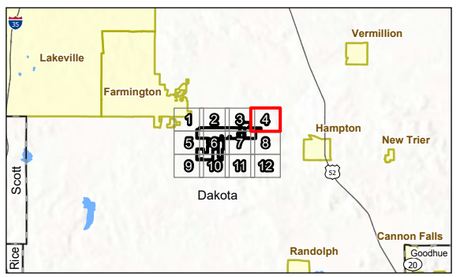
- 60
- 65



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

V:\1937\Active\193709215\03_data\gis_cad\gis\mxds\Noise\193709215_CastleRock_Noise.aprx Revised: 2024-08-26 By: jmarty

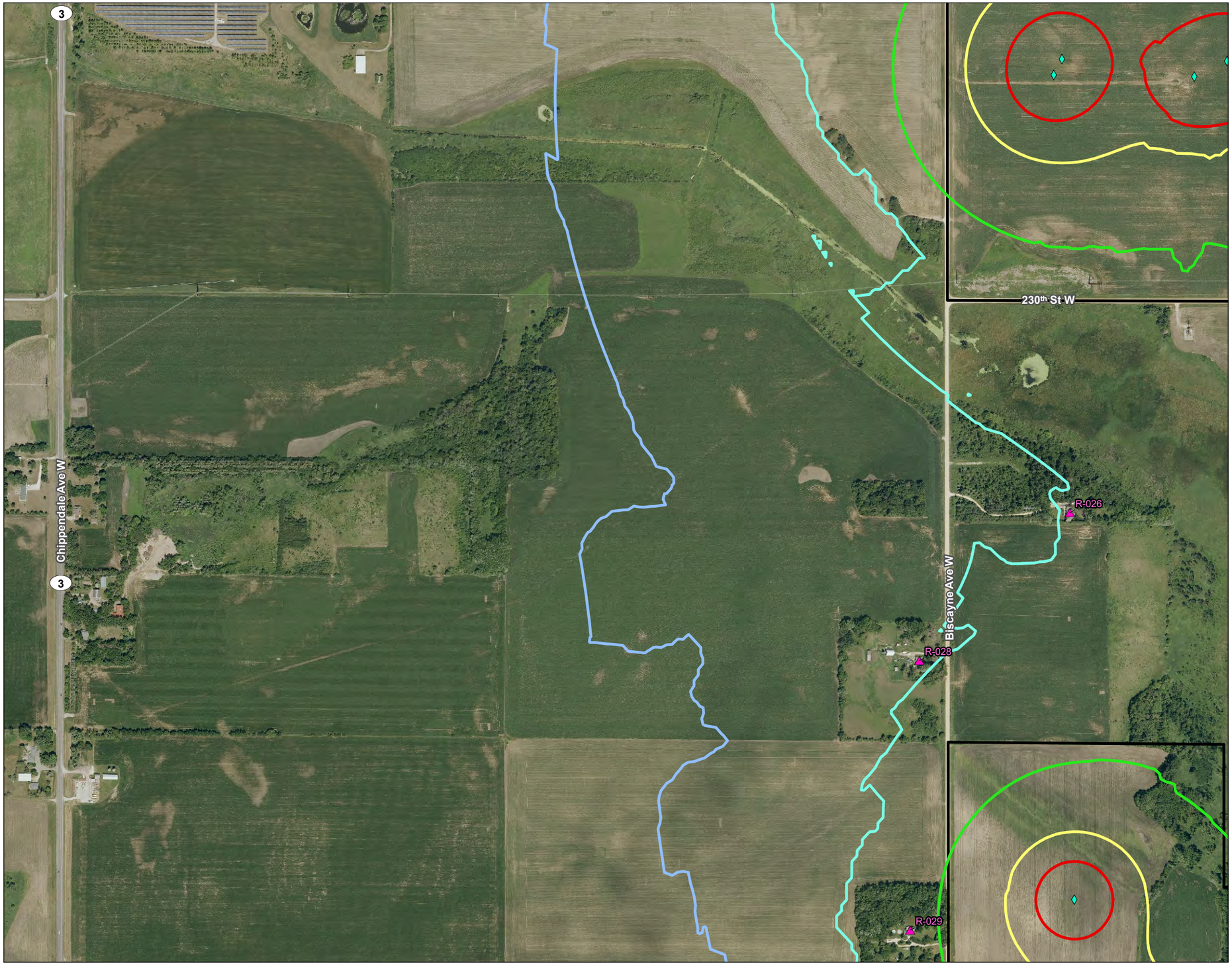


Figure No.

5

Title

Operational Noise Results (Alternate - Daytime)

Client/Project 193709215

Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
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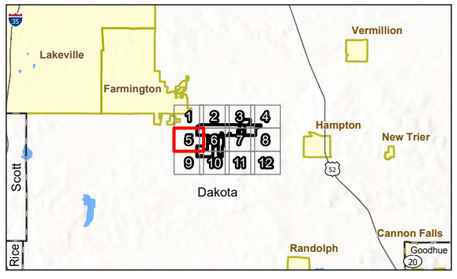
- 65



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
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3. Background: NAIP 2023

Stantec

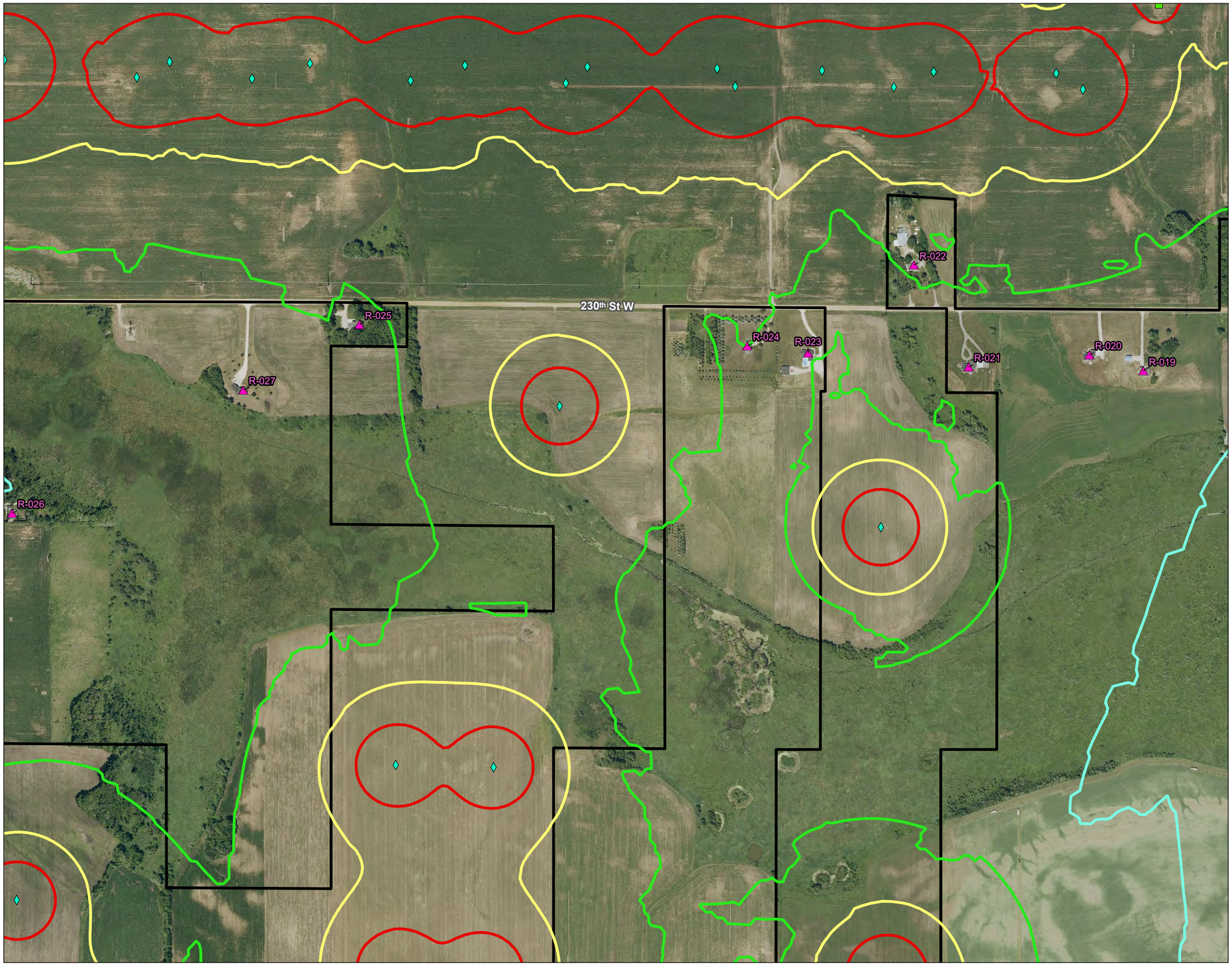

Figure No.
5

Title
Operational Noise Results (Alternate - Daytime)

Client/Project
193709215
Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
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IR by XX on 2024-XX-XX

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Noise Contour (dBA)
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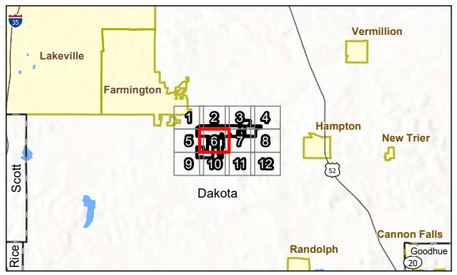
- 65



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1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

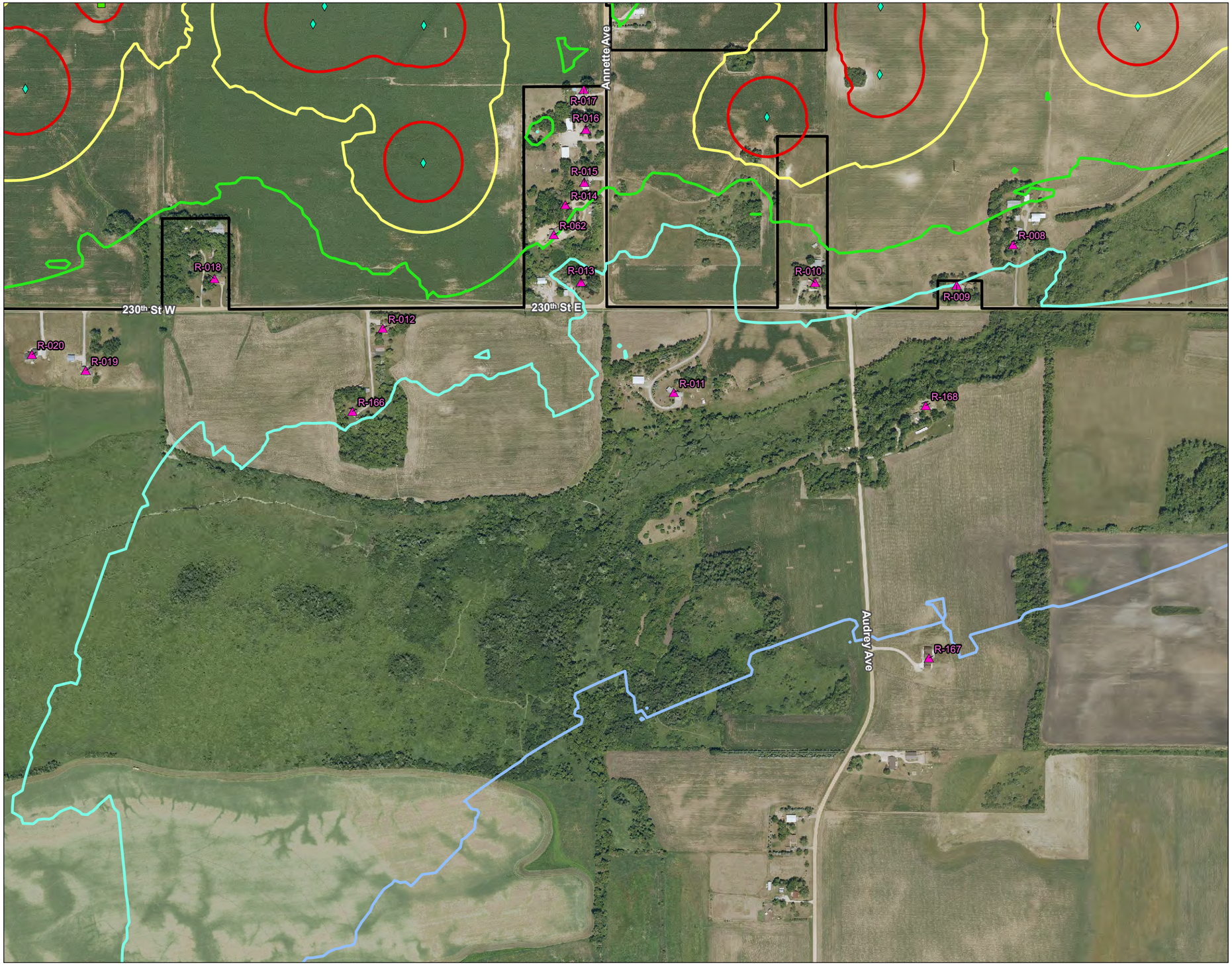

Figure No.

5

Title

Operational Noise Results (Alternate - Daytime)

Client/Project 193709215

Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
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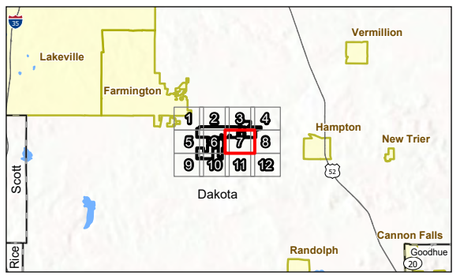

Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

Figure No.

5

Title

Operational Noise Results (Alternate - Daytime)

Client/Project
193709215
Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

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0 300 600 Feet
(At original document size of 11x17)
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Legend
- Project Boundary
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Noise Contour (dBA)
- 45
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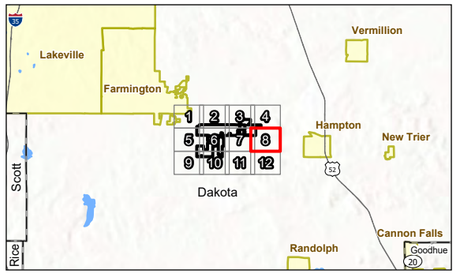


Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

Figure No.

5

Title

Operational Noise Results (Alternate - Daytime)

Client/Project 193709215

Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

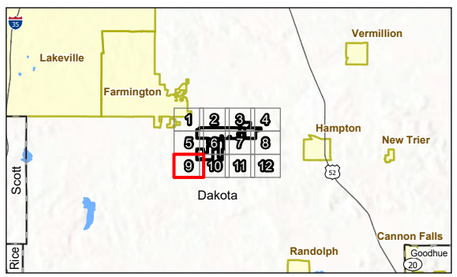
0 300 600 Feet
(At original document size of 11x17)
1:7,200

Legend

- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)

- 45
- 50
- 55
- 60
- 65



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

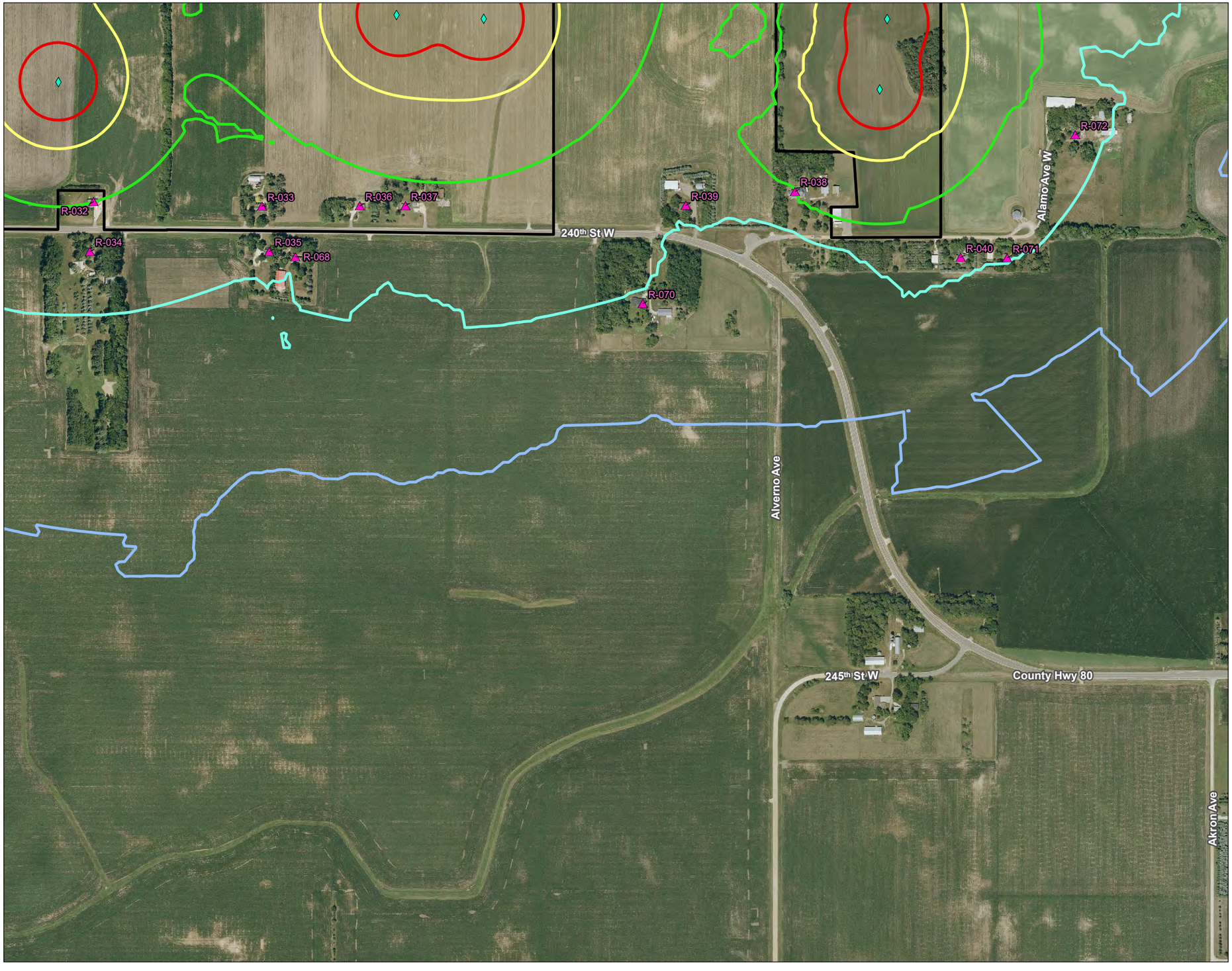


Figure No.
5

Title
Operational Noise Results (Alternate - Daytime)

Client/Project 193709215
Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

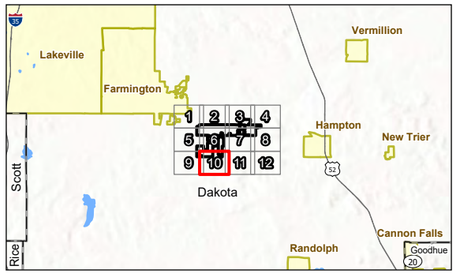
Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

0 300 600 Feet
(At original document size of 11x17)
1:7,200

Legend
- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)
- 45
- 50
- 55
- 60
- 65



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

V:\1937\Active\193709215\03_data\gis_cad\gis\mxds\Noise\193709215_CastleRock_Noise\193709215_CastleRock_Noise.aprx Revised: 2024-08-28 By: jmarty

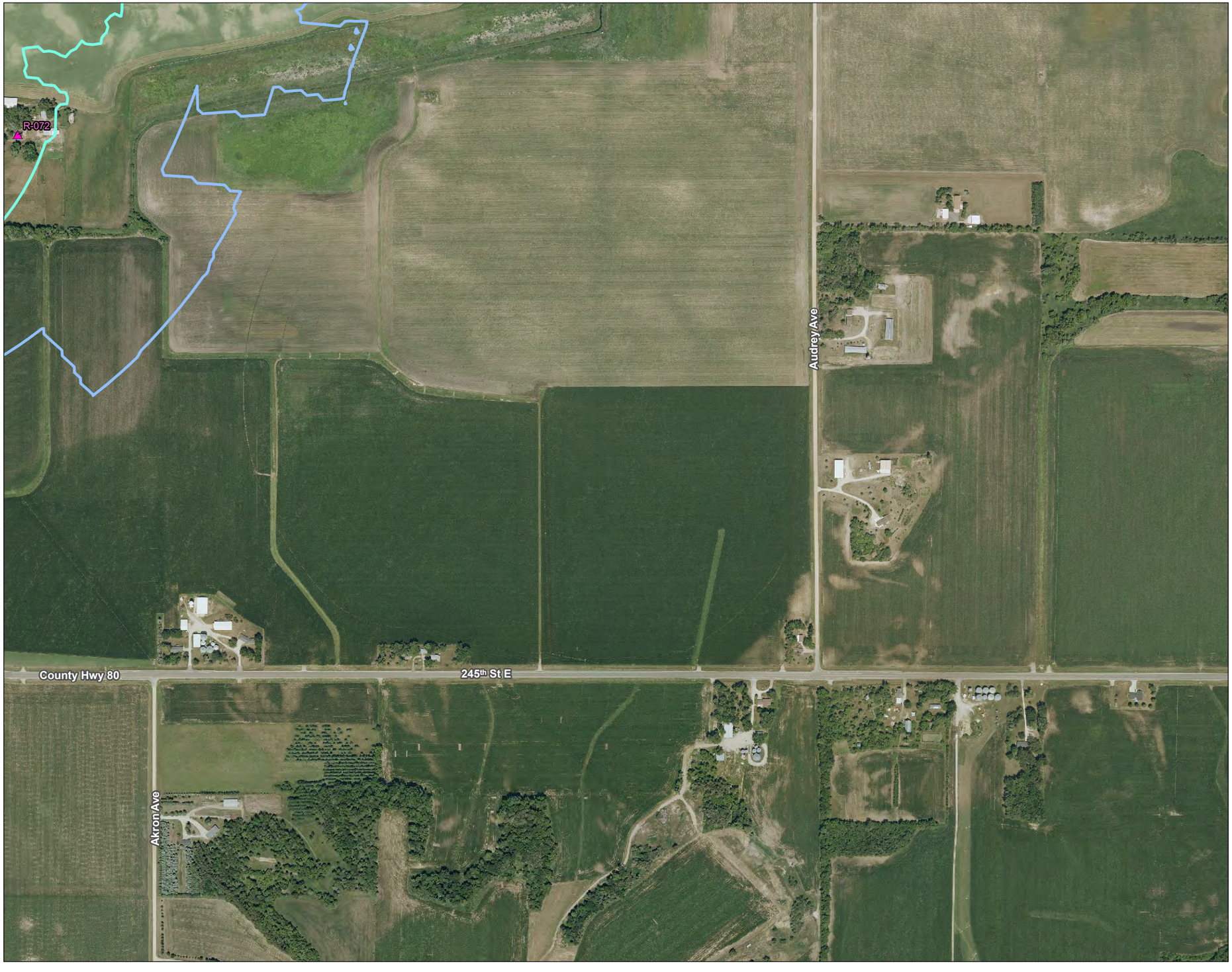


Figure No.

5

Title

Operational Noise Results (Alternate - Daytime)

Client/Project 193709215

Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

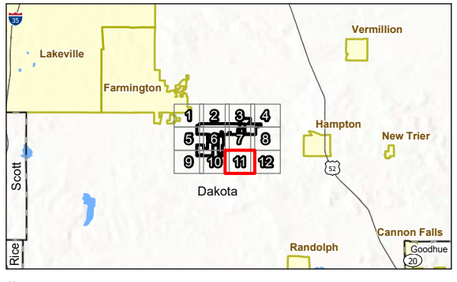
Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

0 300 600 Feet
(At original document size of 11x17)
1:7,200

Legend
- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)
- 45
- 50
- 55
- 60
- 65



Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

Figure No.

5

Title

Operational Noise Results (Alternate - Daytime)

Client/Project 193709215

Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

0 300 600 Feet

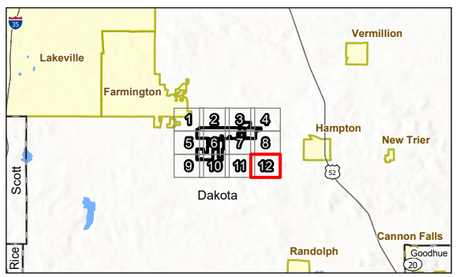
(At original document size of 11x17)
1:7,200

Legend

- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)

- 45
- 50
- 55
- 60
- 65



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

Figure 6

Nighttime Operational Noise Results – Alternate Option

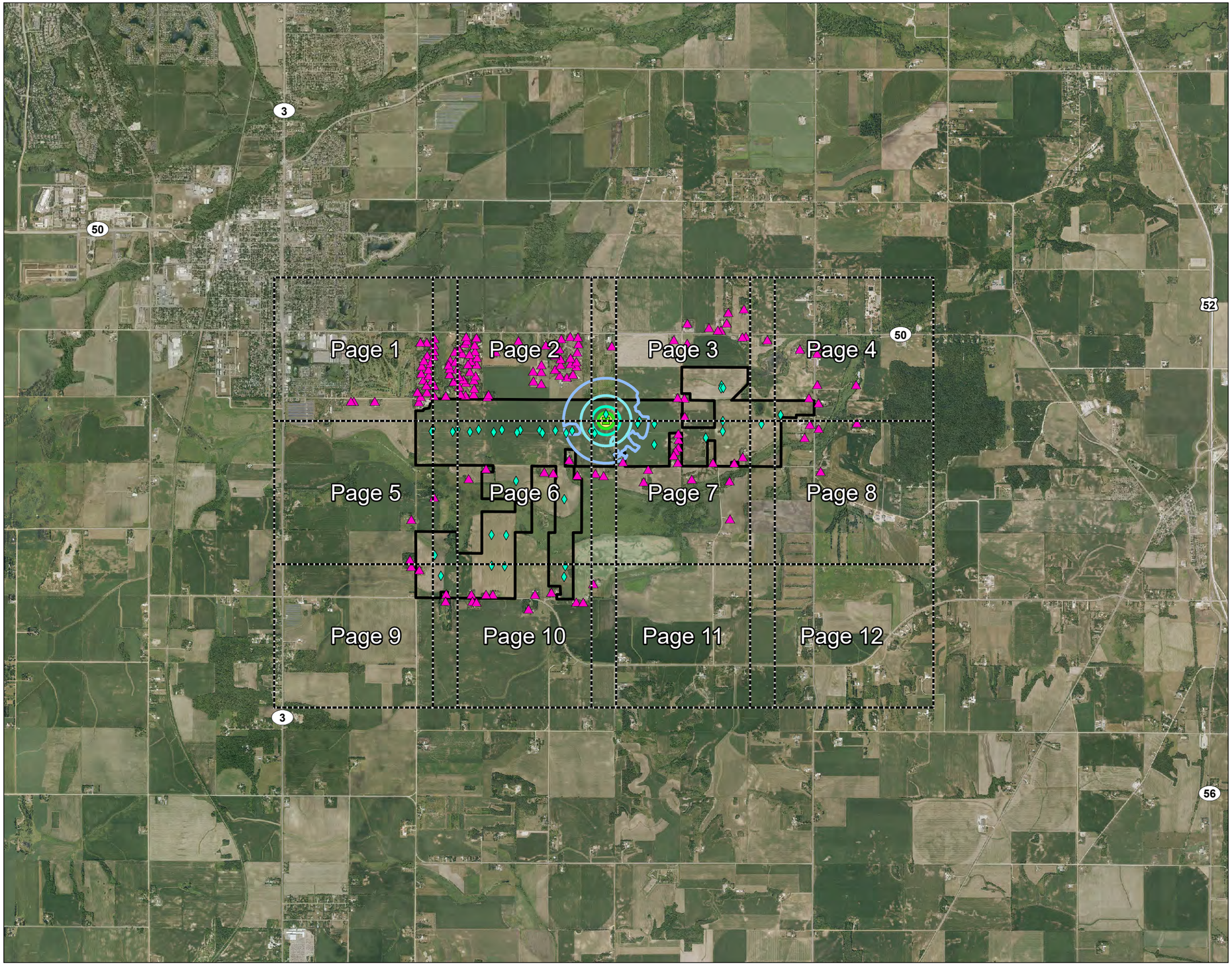


Figure No.

6

Title

Operational Noise Results (Alternate - Nighttime)

Client/Project 193709215

Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

0 2,000 4,000 Feet

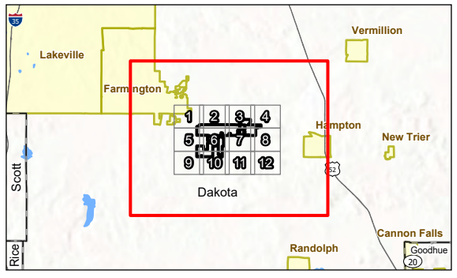
(At original document size of 11x17)
1:48,000

Legend

- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)

- 35
- 40
- 45
- 50
- 55
- 60
- 65



Index Map

Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

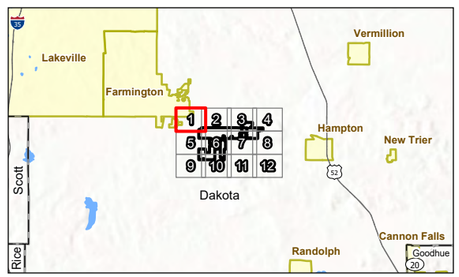


Figure No.

6

Title

Operational Noise Results (Alternate - Nighttime)

Client/Project

Matrix Renewables USA LLC
Castle Rock

193709215

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

0 300 600 Feet

(At original document size of 11x17)
1:7,200

Legend

- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)

- 35
- 40
- 45
- 50
- 55
- 60
- 65

Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

Figure No.

6

Title

Operational Noise Results (Alternate - Nighttime)

Client/Project

193709215

Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

0 300 600 Feet

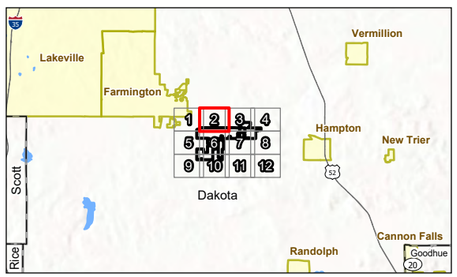
(At original document size of 11x17)
1:7,200

Legend

- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)

- 35
- 40
- 45
- 50
- 55
- 60
- 65



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

Figure No.

6

Title

Operational Noise Results (Alternate - Nighttime)

Client/Project 193709215

Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

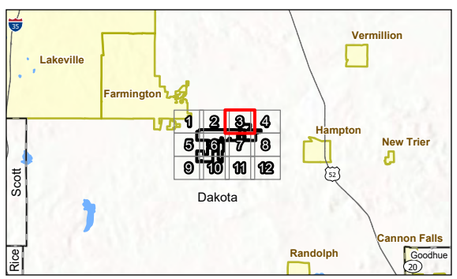
0 300 600 Feet
(At original document size of 11x17)
1:7,200

Legend

- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)

- 35
- 40
- 45
- 50
- 55
- 60
- 65



Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

Figure No.

6

Title

Operational Noise Results (Alternate - Nighttime)

Client/Project 193709215

Matrix Renewables USA LLC
Castle Rock

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
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0 300 600 Feet
(At original document size of 11x17)
1:7,200

Legend

- Project Boundary
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- Inverter
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Noise Contour (dBA)

- 35
- 40
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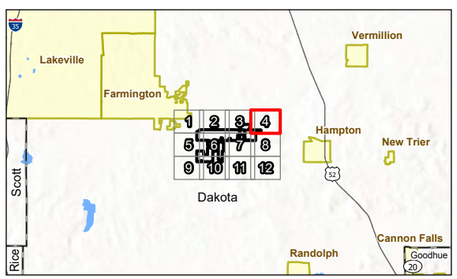


Notes

1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, Matrix Renewables USA, NADS, Dakota Co., USGS
3. Background: NAIP 2023

Stantec

Figure No.

6

Title

Operational Noise Results (Alternate - Nighttime)

Client/Project

Matrix Renewables USA LLC
Castle Rock

193709215

Project Location
T. of Castle Rock
Dakota Co., MN

Prepared by JM on 2024-08-26
TR by ML on 2024-08-27
IR by XX on 2024-XX-XX

N

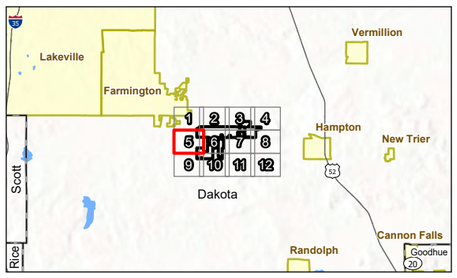
0 300 600 Feet
(At original document size of 11x17)
1:7,200

Legend

- Project Boundary
- Sensitive Receptor
- Inverter
- Substation

Noise Contour (dBA)

- 35
- 40
- 45
- 50
- 55
- 60
- 65



Notes

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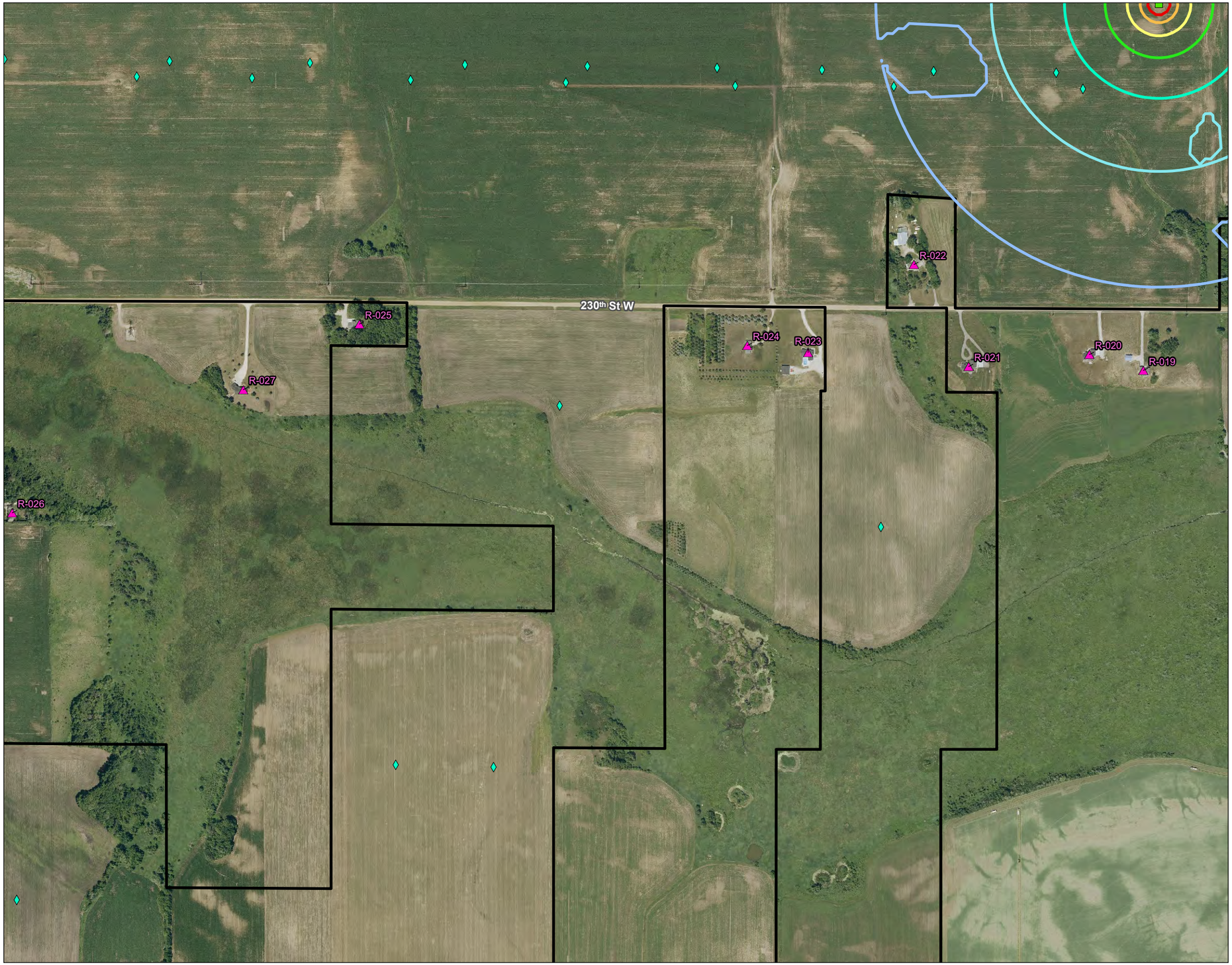

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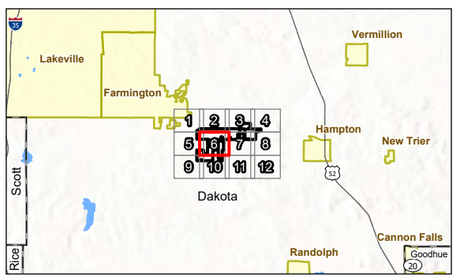

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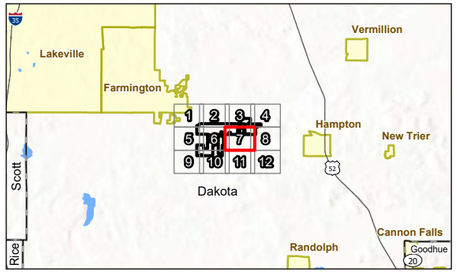

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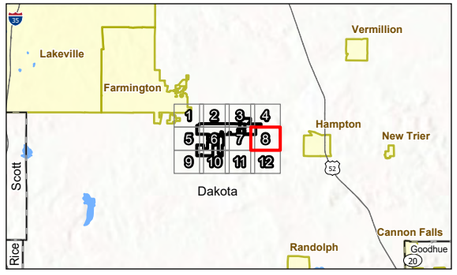

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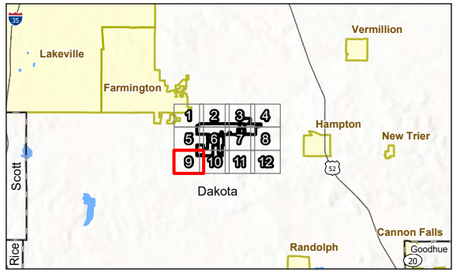

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3. Background: NAIP 2023

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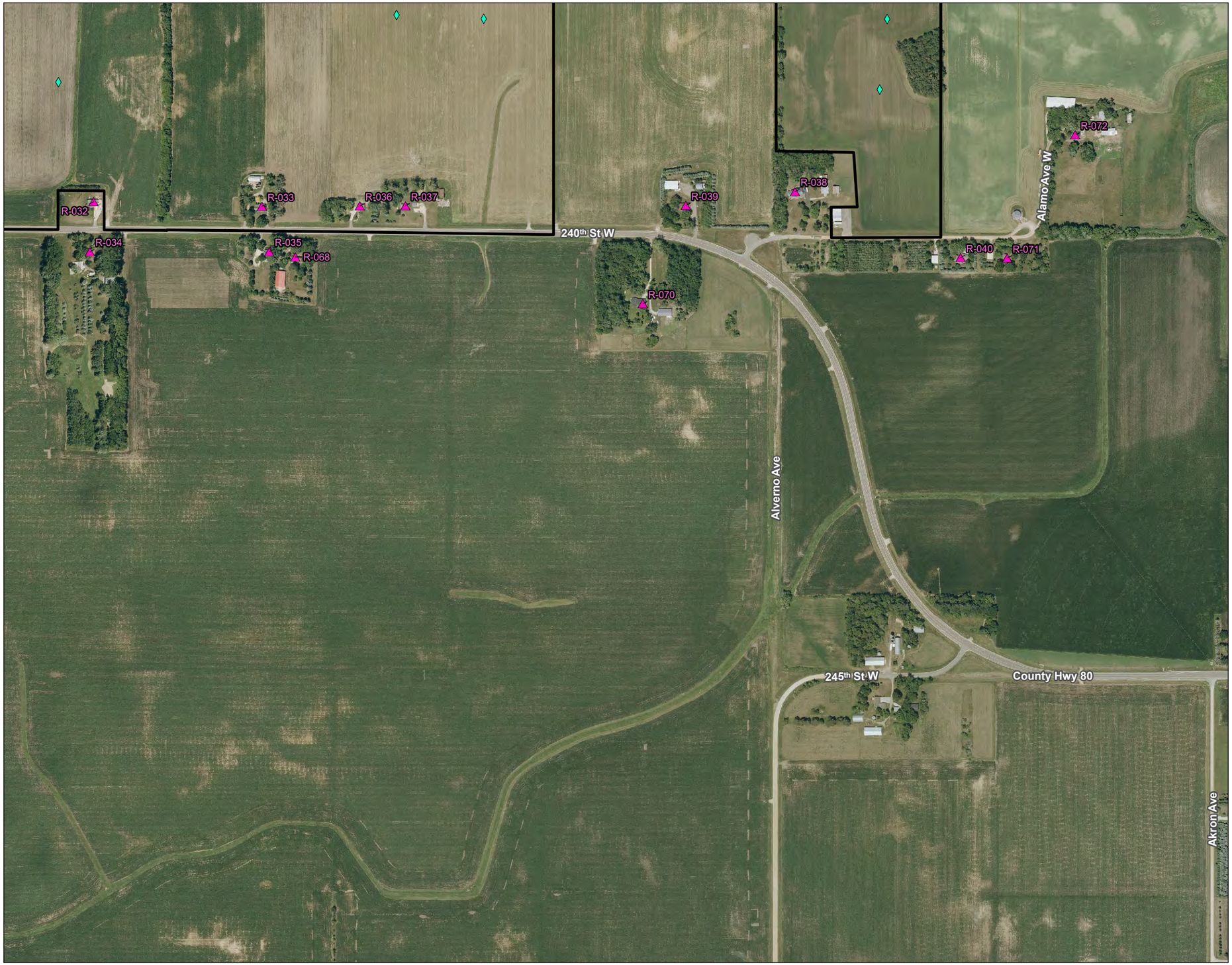

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Dakota Co., MN

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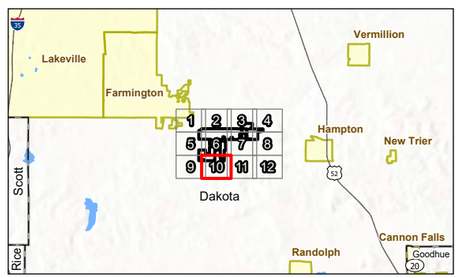

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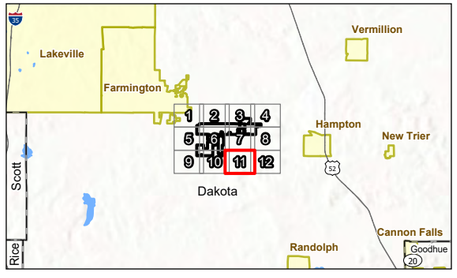

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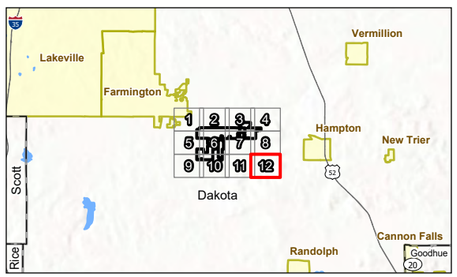

Notes

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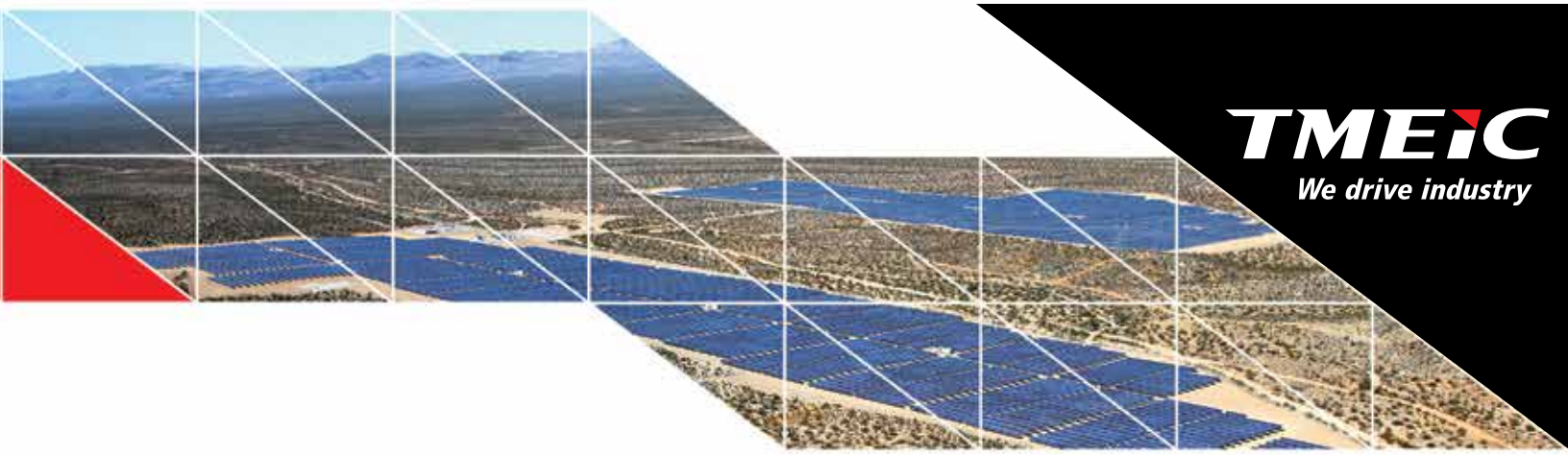
Stantec

Appendix A

Equipment Specifications



TMEiC
We drive industry

Solar Ware Ninja™

PV and Energy Storage Solutions

WWW.TMEIC.COM

JAPAN | NORTH AMERICA | SOUTH AMERICA | EUROPE | SOUTHEAST ASIA | INDIA | CHINA | MIDDLE EAST | AUSTRALIA

Multiple Configurations for Maximum Flexibility

TMEIC's Solar Ware Ninja is the latest evolution of the highly successful Solar Ware family of inverters, joining over 43GW of TMEIC's globally installed photovoltaic inverters. Continuing the legacy of high efficiency, cutting-edge features, and unmatched reliability, the new Ninja modular inverter system is the culmination of input from utilities, developers, and technicians.

The Ninja is a global product, performing the duties of both generation and energy storage. The modular system introduces multiple layers of flexibility to allow designers an almost unlimited number of options for every project. The advanced controls system is packed with features to meet not only today's smart inverter requirements, but also new requirements as they are introduced. Like the award-winning Samurai series of inverters, the Ninja utilizes the same highly reliable IGBT based power conversion system.

Solar Ware Ninja™

		PV-PCS		
Type		PVU-L0800GR-2	PVU-L0840GR-2	PVU-L0880GR-2
Output side (AC)	Rated Power@25°C	800kW	840kW	880kW
	Rated Power@50°C	730kW	765kW	800kW
	Rated Voltage	600V +10%, -12%	630V +10%, -12%	660V +10%, -12%
	Rated Frequency	50Hz / 60Hz (+0.5Hz, -0.7Hz)		
	Rated Power Factor	>0.99		
	Reactive Capability	±421 kVAR	±442 kVAR	±464 kVAR
	Rated Current	702 Arms @50 °C		
	Maxium Current	770 Arms @25 °C		
	Maximum Efficiency	98.72%*		
	CEC Efficiency	98%*		
Input side (DC)	Maximum Voltage	1500 Vdc		
	MPPT Operation Range	875-1300VDC	915-1300VDC	960-1300VDC
Environ. Conditions	Ingress Protection Ratings	NEMA3R		
	Installation	Outdoor		
	Ambient Temperature Range	-25° to 50°C		
	Altitude	Full power up to 2000 meters. Consult TMEIC for altitude above 2000 meters		
Protective Functions	Input (DC) Side	DC Protection: Input Fuses (see below for available sizes), Ground Fault Detection, DC Reverse Current, Over Voltage, Over Current		
	Input Fuses	160 - 500A		
	Grid (AC) Side	AC protection and isolation: Fuse and Contactor, Anti-islanding, Over/Under Voltage, Over/Under Frequency, Over Current		
	Grid Assistance	Reactive/Active Power Control, Power Factor Control, Fault Ride Through (optional)		
Harmonic Distortion of AC Current		≤ 3% THD (at rated power)		
Communication		Modbus/TCP		
Fault Analysis		Fault Event Log, Waveform Acquisition via memory card		
Compliance		UL1741, UL1741SA / IEEE1547 / NEC2020 / IEC62109-1,2 / IEC61000-6-2,4 / IEC61727, IEC62116 / IEC61400, BDEW / IEC61683 / IEC60068		
Cooling Method		Heat Pipes and Forced Air Cooling		
Number of Inputs		Up to 6 inputs per inverter		
Standard Control Power Supply		Control Power Supply from Inverter output and Capacitor backup circuit (3 sec. compensation)		
Short Circuit Withstand Current		AC side : 65kA; DC side : 30kA		
Weight		<1000kgs		
Dimensions (H x W x D)		1991 X 1100 X 1100 mm (H x W x D)		
Floor Space		1875.5 sq. in. (1.21 m^2)		
Color		Cabinet: Munsell N7.0, Roof: Munsell N4.5		

Note: Standard configuration not limited configuration. Contact TMEIC for detailed information.
*CEC efficiency based on testing done on 840kW inverter

		ESS-PCS		
Type		BSU-L0640GR	BSU-L0800GR	BSU-L0840GR
Output side (AC)	Rated Power@25°C	640kW	800kW	840kW
	Rated Power@50°C	550kW	730kW	765kW
	Rated Voltage	480V +10%, -12%	600V +10%, -12%	630V +10%, -12%
	Rated Frequency	50Hz / 60Hz (+0.5Hz, -0.7Hz)		
	Rated Power Factor	>0.99		
	Reactive Capability	±448 kVAR	±560 kVAR	±588 kVAR
	Rated Current	702 Arms @50 °C		
	Maxium Current	770 Arms @25 °C		
	Maximum Efficiency	98.72%*		
	CEC Efficiency	98%*		
Input side (DC)	Maximum Voltage	1500 Vdc		
Environ. Conditions	Ingress Protection Ratings	NEMA3R		
	Installation	Outdoor		
	Ambient Temperature Range	-25° to 50°C		
	Altitude	Full power up to 2000 meters. Consult TMEIC for altitude above 2000 meters		
Protective Functions	Input (DC) Side	DC Protection: Input Fuses, Ground Fault Detection, DC Reverse Current, Over Voltage, Over Current		
	Input Fuses	Up to 1100A		
	Grid (AC) Side	AC protection and isolation: Fuse and Contactor, Anti-islanding, Over/Under Voltage, Over/Under Frequency, Over Current		
	Grid Assistance	Reactive/Active Power Control, Power Factor Control, Fault Ride Through (optional)		
Harmonic Distortion of AC Current		≤ 5% THD (at rated power)		
Communication		Modbus/TCP		
Fault Analysis		Fault Event Log, Waveform Acquisition via memory card		
Compliance		UL1741, UL1741SA / IEEE1547 / NEC2020 / IEC62109-1,2 / IEC61000-6-2,4 / IEC61727, IEC62116 / IEC61400, BDEW / IEC61683 / IEC60068		
Cooling Method		Heat Pipes and Forced Air Cooling		
Number of Inputs		1 per Inverter		
Standard Control Power Supply		Control Power Supply from Inverter output and Capacitor backup circuit (3 sec. compensation)		
Short Circuit Withstand Current		AC side : 65kA; DC side : 100kA		
Weight		<1000kgs		
Dimensions (H x W x D)		1991 X 1100 X 1100 mm (H x W x D)		
Floor Space		1875.5 sq. in. (1.21 m^2)		
Color		Cabinet: Munsell N7.0, Roof: Munsell N4.5		

Note: Standard configuration not limited configuration. Contact TMEIC for detailed information.
*CEC efficiency based on testing done on 840kW inverter

Customizable Block

Up to 6 Ninja units on the same skid. Able to combine PV and ESS inverters in the same lineup. A skid controller will manage output of the Ninja power station.

- Fully Modular design means:
  - Completely independent inverters for increased availability
  - Individual MPPT for greater energy yield
  - Latest generation of Smart Inverter controls platform
  - 640kW-5280kW integrated skid sizes
- DC Zone monitoring is standard
- UL or IEC certified global design
- PV or Energy Storage (bi-directional)
- Outdoor rated enclosure

TMEIC is Bankable

- Stable, with multi-billion $USD revenue
- Diversified, with decades of power electronics experience in a variety of heavy industries, including metals, oil & gas, mining, and container cranes industries
- Manufacturing in the US and several other locations

TMEIC is Reliable

- Over 43GW of PV and ESS inverters globally
- Own exclusive use of Mitsubishi Electric's 3 level NPS technology
- Industry-leading fleet availability

TMEIC is Support

- Interconnect Application and Modeling Support
- 24/7 US-based hot line
- Over 30 years PV inverter manufacturing and R&D experience
- Comprehensive customer training programs
- Authorized Service Provider program available

Round The Clock

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www.tmeic.com/customer-support

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We drive industry

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Mailing
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Salem, VA, 24153, U.S.A.

Houston
15810 Park Ten Place, Suite 370,
Houston, TX, 77084, U.S.A.

Manufacturing
25390 Clay Road
Katy, TX, 77439, U.S.A.

Customer Support and Service

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Intl: +1 540-283-2010
www.tmeic.com/customer-support

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P-SolarWareNinja-0523

Appendix B

Project Equipment Locations

Castle Rock Solar Project - Noise Study
Appendix B.1 - Project Equipment Locations (Preferred)

Source ID	Coordinates (UTM 15N)			Height above ground
	X	Y	Z (ground)	
	m	m	m	m
SS-01	491,960	4,940,528	288	3.0
I-01	490,970	4,940,742	286	2.0
I-02	491,272	4,940,739	282	2.0
I-03	491,528	4,940,736	286	2.0
I-04	491,810	4,940,732	287	2.0
I-05	492,033	4,940,729	286	2.0
I-06	492,270	4,940,726	287	2.0
I-07	492,520	4,940,723	288	2.0
I-08	492,743	4,940,721	287	2.0
I-09	493,039	4,940,717	288	2.0
I-10	493,066	4,940,717	288	2.0
I-11	493,051	4,940,688	287	2.0
I-12	492,756	4,940,692	287	2.0
I-13	492,383	4,940,694	288	2.0
I-14	492,217	4,940,698	287	2.0
I-15	491,711	4,940,704	285	2.0
I-16	491,422	4,940,708	288	2.0
I-17	491,212	4,940,710	286	2.0
I-18	490,956	4,940,714	285	2.0
I-19	491,983	4,940,111	276	2.0
I-20	492,569	4,939,890	279	2.0
I-21	491,684	4,939,457	280	2.0
I-22	491,862	4,939,452	278	2.0
I-23	491,685	4,939,082	281	2.0
I-24	491,844	4,939,075	280	2.0
I-25	492,580	4,939,074	280	2.0
I-26	492,566	4,938,946	282	2.0
I-27	490,993	4,939,210	281	2.0
I-28	491,069	4,938,960	281	2.0
I-29	493,482	4,940,839	290	2.0
I-30	493,461	4,940,806	290	2.0
I-31	493,663	4,940,804	290	2.0
I-32	493,662	4,940,553	283	2.0
I-33	494,965	4,940,802	275	2.0
I-34	495,198	4,940,913	275	2.0
I-35	494,480	4,941,272	273	2.0
I-36	494,475	4,941,237	272	2.0
I-37	494,501	4,941,241	272	2.0
I-38	494,496	4,940,839	276	2.0
I-39	494,289	4,940,637	283	2.0
I-40	494,494	4,940,714	278	2.0

Notes: SS = Substation Transformer
I = Inverter

Castle Rock Solar Project - Noise Study
Appendix B.2 - Project Equipment Locations (Alternate)

Source ID	Coordinates (UTM 15N)			Height above ground
	X	Y	Z (ground)	
	m	m	m	m
SS-01 B	493,075	4,940,843	292	3.0
I-01	490,970	4,940,742	286	2.0
I-02	491,272	4,940,739	282	2.0
I-03	491,528	4,940,736	286	2.0
I-04	491,810	4,940,732	287	2.0
I-05	492,033	4,940,729	286	2.0
I-06	492,270	4,940,726	287	2.0
I-07 B	493,076	4,940,920	286	2.0
I-08 B	492,937	4,940,688	286	2.0
I-09 B	492,888	4,940,718	288	2.0
I-10 B	492,665	4,940,720	286	2.0
I-11 B	492,592	4,940,692	286	2.0
I-12 B	492,461	4,940,723	288	2.0
I-13 B	492,303	4,940,694	288	2.0
I-14 B	491,994	4,940,700	287	2.0
I-15	491,711	4,940,704	285	2.0
I-16	491,422	4,940,708	288	2.0
I-17	491,212	4,940,710	286	2.0
I-18	490,956	4,940,714	285	2.0
I-19	491,983	4,940,111	276	2.0
I-20	492,569	4,939,890	279	2.0
I-21	491,684	4,939,457	280	2.0
I-22	491,862	4,939,452	278	2.0
I-23	491,685	4,939,082	281	2.0
I-24	491,844	4,939,075	280	2.0
I-25	492,580	4,939,074	280	2.0
I-26	492,566	4,938,946	282	2.0
I-27	490,993	4,939,210	281	2.0
I-28	491,069	4,938,960	281	2.0
I-29	493,482	4,940,839	290	2.0
I-30	493,461	4,940,806	290	2.0
I-31	493,663	4,940,804	290	2.0
I-32	493,662	4,940,553	283	2.0
I-33	494,965	4,940,802	275	2.0
I-34	495,198	4,940,913	275	2.0
I-35	494,480	4,941,272	273	2.0
I-36	494,475	4,941,237	272	2.0
I-37	494,501	4,941,241	272	2.0
I-38	494,496	4,940,839	276	2.0
I-39	494,289	4,940,637	283	2.0
I-40	494,494	4,940,714	278	2.0

Notes: SS = Substation Transformer
I = Inverter

Appendix C

Receptor Locations and Operational Noise Results

Receptor ID	Coordinates (UTM 15N)			Height above ground	Estimated Project Operational Noise Level Preferred		Estimated Project Operational Noise Level Alternate		Project Operational Noise Limit	
	X	Y	Z (ground)		Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
	m	m	m	m	dBA L_{eq}	dBA L_{eq}	dBA L_{eq}	dBA L_{eq}	dBA	dBA
R-001	495,644	4,941,284	272	1.5	47	8	47	17	60	50
R-002	495,543	4,941,120	274	1.5	51	8	51	17	60	50
R-003	496,117	4,941,281	270	1.5	40	6	40	10	60	50
R-004	495,659	4,941,057	274	1.5	49	8	49	17	60	50
R-005	496,127	4,940,815	276	1.5	44	6	44	14	60	50
R-007	495,489	4,940,638	275	1.5	51	8	51	13	60	50
R-008	494,738	4,940,405	278	1.5	54	12	54	18	60	50
R-009	494,635	4,940,331	274	1.5	50	12	50	18	60	50
R-010	494,377	4,940,335	278	1.5	51	13	51	20	60	50
R-011	494,119	4,940,135	275	1.5	49	15	49	21	60	50
R-012	493,589	4,940,252	286	1.5	54	18	53	31	60	50
R-013	493,950	4,940,336	279	1.5	49	16	49	24	60	50
R-014	493,921	4,940,477	288	1.5	56	16	56	29	60	50
R-015	493,956	4,940,518	288	1.5	56	16	56	29	60	50
R-016	493,959	4,940,614	286	1.5	57	16	57	25	60	50
R-017	493,955	4,940,688	285	1.5	56	16	56	25	60	50
R-018	493,281	4,940,343	282	1.5	55	21	53	35	60	50
R-019	493,047	4,940,175	282	1.5	54	22	53	32	60	50
R-020	492,949	4,940,204	282	1.5	54	23	53	33	60	50
R-021	492,728	4,940,182	280	1.5	55	26	54	31	60	50
R-022	492,629	4,940,368	288	1.5	57	28	56	33	60	50
R-023	492,436	4,940,208	288	1.5	55	34	55	29	60	50
R-024	492,325	4,940,221	287	1.5	55	36	55	28	60	50
R-025	491,618	4,940,260	280	1.5	55	37	55	19	60	50
R-026	490,985	4,939,916	280	1.5	50	27	50	14	60	50
R-027	491,406	4,940,140	280	1.5	54	32	54	17	60	50
R-028	490,711	4,939,646	284	1.5	50	23	50	12	60	50
R-029	490,694	4,939,155	290	1.5	54	21	54	15	60	50
R-030	490,711	4,939,073	290	1.5	54	21	54	15	60	50
R-031	490,808	4,939,031	288	1.5	56	21	56	15	60	50
R-032	491,133	4,938,742	284	1.5	55	16	55	11	60	50
R-033	491,440	4,938,733	290	1.5	53	21	53	16	60	50
R-034	491,127	4,938,651	286	1.5	52	15	53	15	60	50
R-035	491,454	4,938,651	290	1.5	52	20	52	16	60	50
R-036	491,619	4,938,734	287	1.5	54	21	54	17	60	50
R-037	491,702	4,938,734	286	1.5	54	21	54	17	60	50
R-038	492,412	4,938,760	288	1.5	55	21	55	19	60	50
R-039	492,213	4,938,735	290	1.5	51	21	51	18	60	50
R-040	492,714	4,938,640	282	1.5	52	20	52	19	60	50
R-041	490,802	4,941,074	284	1.5	54	25	54	18	60	50
R-042	490,901	4,941,192	282	1.5	52	26	52	19	60	50
R-043	490,988	4,941,145	281	1.5	53	27	53	19	60	50
R-044	491,130	4,941,145	278	1.5	54	23	54	20	60	50
R-045	491,310	4,941,170	279	1.5	55	25	55	17	60	50
R-046	491,369	4,941,152	280	1.5	56	25	56	22	60	50
R-047	491,468	4,941,165	282	1.5	56	26	56	22	60	50
R-048	491,634	4,941,132	282	1.5	56	28	56	24	60	50
R-049	492,514	4,941,395	282	1.5	53	24	53	31	60	50
R-050	492,601	4,941,373	282	1.5	53	23	53	32	60	50
R-051	493,946	4,941,124	288	1.5	54	15	54	29	60	50
R-052	494,029	4,941,119	286	1.5	55	15	55	28	60	50
R-053	494,034	4,940,896	284	1.5	56	15	56	29	60	50

Receptor ID	Coordinates (UTM 15N)			Height above ground	Estimated Project Operational Noise Level Preferred		Estimated Project Operational Noise Level Alternate		Project Operational Noise Limit	
	X	Y	Z (ground)		Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
	m	m	m	m	dBA L_{eq}	dBA L_{eq}	dBA L_{eq}	dBA L_{eq}	dBA	dBA
R-054	494,777	4,941,867	276	1.5	48	10	48	20	60	50
R-056	490,785	4,941,193	284	1.5	53	25	53	18	60	50
R-057	490,824	4,941,137	283	1.5	54	25	54	18	60	50
R-058	491,649	4,941,160	282	1.5	56	28	56	24	60	50
R-062	493,900	4,940,422	287	1.5	55	16	55	29	60	50
R-064	495,554	4,940,797	276	1.5	52	8	52	17	60	50
R-065	495,660	4,940,750	274	1.5	46	8	46	13	60	50
R-068	491,501	4,938,641	290	1.5	51	20	51	16	60	50
R-070	492,134	4,938,556	290	1.5	50	20	50	17	60	50
R-071	492,799	4,938,639	281	1.5	51	20	51	19	60	50
R-072	492,923	4,938,863	280	1.5	52	20	51	20	60	50
R-074	495,685	4,940,230	272	1.5	45	8	45	12	60	50
R-077	495,642	4,941,662	276	1.5	44	7	44	16	60	50
R-079	495,644	4,941,745	273	1.5	42	7	42	12	60	50
R-080	495,434	4,941,713	276	1.5	46	8	46	13	60	50
R-081	494,735	4,941,860	275	1.5	47	10	47	20	60	50
R-082	495,036	4,941,827	275	1.5	46	9	46	19	60	50
R-084	494,064	4,941,786	278	1.5	49	13	49	25	60	50
R-085	493,901	4,941,824	280	1.5	49	14	49	25	60	50
R-086	494,473	4,941,941	280	1.5	48	11	48	21	60	50
R-087	494,436	4,941,943	280	1.5	48	11	48	22	60	50
R-088	494,543	4,942,030	276	1.5	45	11	45	17	60	50
R-089	494,328	4,941,977	280	1.5	47	12	47	22	60	50
R-090	494,563	4,942,160	278	1.5	45	10	45	20	60	50
R-091	494,754	4,942,199	278	1.5	44	10	44	19	60	50
R-092	494,065	4,942,027	282	1.5	47	13	47	23	60	50
R-093	493,146	4,941,751	282	1.5	48	18	48	29	60	50
R-094	492,727	4,941,676	282	1.5	49	20	50	29	60	50
R-095	492,742	4,941,778	281	1.5	48	24	49	28	60	50
R-096	492,642	4,941,864	281	1.5	48	24	48	27	60	50
R-097	492,735	4,941,862	278	1.5	45	19	45	27	60	50
R-098	492,533	4,941,839	281	1.5	48	24	48	27	60	50
R-099	492,509	4,941,715	282	1.5	49	25	50	28	60	50
R-100	492,645	4,941,608	282	1.5	50	21	50	30	60	50
R-101	492,525	4,941,595	282	1.5	50	26	51	29	60	50
R-102	492,460	4,941,640	282	1.5	50	26	50	28	60	50
R-103	492,344	4,941,764	282	1.5	49	25	49	26	60	50
R-104	492,013	4,941,817	274	1.5	45	21	45	24	60	50
R-105	491,735	4,941,681	280	1.5	49	26	50	23	60	50
R-106	492,717	4,941,558	282	1.5	50	21	51	31	60	50
R-107	492,645	4,941,535	282	1.5	51	22	51	30	60	50
R-108	492,716	4,941,505	282	1.5	51	21	51	31	60	50
R-109	492,674	4,941,408	282	1.5	52	22	52	32	60	50
R-110	492,457	4,941,467	282	1.5	52	27	52	30	60	50
R-111	492,525	4,941,524	282	1.5	51	27	51	30	60	50
R-112	492,291	4,941,524	281	1.5	51	28	51	28	60	50
R-113	492,290	4,941,439	282	1.5	52	28	52	28	60	50
R-114	492,290	4,941,293	282	1.5	54	30	54	29	60	50
R-115	492,195	4,941,325	282	1.5	53	30	54	28	60	50
R-116	492,191	4,941,445	282	1.5	52	29	52	27	60	50
R-117	491,475	4,941,237	282	1.5	54	25	55	22	60	50
R-118	491,373	4,941,309	282	1.5	53	24	54	22	60	50

Receptor ID	Coordinates (UTM 15N)			Height above ground	Estimated Project Operational Noise Level Preferred		Estimated Project Operational Noise Level Alternate		Project Operational Noise Limit	
	X	Y	Z (ground)		Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
	m	m	m	m	dBA L_{eq}	dBA L_{eq}	dBA L_{eq}	dBA L_{eq}	dBA	dBA
R-119	491,290	4,941,258	280	1.5	53	24	54	17	60	50
R-120	491,225	4,941,319	278	1.5	52	23	52	16	60	50
R-121	491,342	4,941,343	282	1.5	53	24	53	21	60	50
R-122	491,473	4,941,338	282	1.5	53	24	53	22	60	50
R-123	491,289	4,941,383	280	1.5	52	23	52	21	60	50
R-124	491,491	4,941,388	282	1.5	53	24	53	22	60	50
R-125	491,422	4,941,439	282	1.5	52	23	52	22	60	50
R-126	491,176	4,941,409	276	1.5	50	22	50	16	60	50
R-127	491,504	4,941,529	282	1.5	51	23	51	22	60	50
R-128	491,434	4,941,570	281	1.5	50	22	51	21	60	50
R-129	491,397	4,941,531	280	1.5	48	22	48	21	60	50
R-130	491,263	4,941,466	280	1.5	51	22	51	21	60	50
R-131	491,247	4,941,560	276	1.5	47	21	47	16	60	50
R-132	491,182	4,941,578	276	1.5	48	21	48	16	60	50
R-133	491,176	4,941,476	277	1.5	50	22	50	16	60	50
R-134	491,164	4,941,522	275	1.5	48	21	48	16	60	50
R-135	491,508	4,941,614	282	1.5	50	22	50	22	60	50
R-136	491,418	4,941,650	279	1.5	48	21	48	17	60	50
R-137	491,328	4,941,660	280	1.5	49	21	49	20	60	50
R-138	491,485	4,941,690	280	1.5	48	21	49	21	60	50
R-139	491,481	4,941,766	276	1.5	45	21	45	17	60	50
R-140	491,240	4,941,682	275	1.5	46	20	46	16	60	50
R-141	491,282	4,941,726	276	1.5	46	20	46	16	60	50
R-142	491,361	4,941,783	274	1.5	45	20	45	16	60	50
R-143	491,387	4,941,816	274	1.5	45	20	45	16	60	50
R-144	491,502	4,941,855	274	1.5	44	20	45	17	60	50
R-145	491,377	4,941,865	274	1.5	44	20	44	16	60	50
R-146	490,992	4,941,843	274	1.5	45	18	45	14	60	50
R-147	490,899	4,941,796	275	1.5	46	18	46	14	60	50
R-148	490,986	4,941,763	274	1.5	46	19	46	14	60	50
R-149	490,821	4,941,797	274	1.5	43	18	43	13	60	50
R-150	490,988	4,941,689	276	1.5	47	19	47	14	60	50
R-151	490,904	4,941,638	280	1.5	48	19	48	18	60	50
R-152	490,980	4,941,629	276	1.5	47	19	47	14	60	50
R-153	490,940	4,941,545	277	1.5	48	20	49	19	60	50
R-154	490,862	4,941,576	280	1.5	48	19	48	18	60	50
R-155	490,838	4,941,509	282	1.5	49	19	49	18	60	50
R-156	490,918	4,941,467	277	1.5	49	20	49	19	60	50
R-157	490,830	4,941,418	281	1.5	49	24	49	18	60	50
R-158	490,922	4,941,393	278	1.5	49	20	49	19	60	50
R-159	490,856	4,941,340	282	1.5	51	25	51	18	60	50
R-160	490,959	4,941,334	277	1.5	50	21	50	19	60	50
R-161	490,893	4,941,272	280	1.5	51	25	51	19	60	50
R-162	490,990	4,941,271	278	1.5	51	22	51	19	60	50
R-163	490,265	4,941,080	284	1.5	47	21	47	15	60	50
R-164	490,012	4,941,081	284	1.5	45	16	45	14	60	50
R-165	489,976	4,941,080	284	1.5	44	15	45	14	60	50
R-166	493,533	4,940,101	284	1.5	52	18	51	30	60	50
R-167	494,584	4,939,651	274	1.5	45	12	45	16	60	50
R-168	494,578	4,940,111	272	1.5	49	12	49	18	60	50

Notes: R = Sensitive Receptor Location