DOCKETED	
Docket Number:	21-AFC-02
Project Title:	Gem Energy Storage Center
TN #:	240768-7
Document Title:	Appendix 5_7A-D_Noise
Description:	N/A
Filer:	Kari Miller
Organization:	Golder Associates USA Inc.
Submitter Role:	Applicant Representative
Submission Date:	12/1/2021 5:37:30 PM
Docketed Date:	12/1/2021

APPENDIX 5.7A

Solid Solutions Noise Reports

Calibration Certificate

Certificate Number 2020010459

Customer:

Golder Associates Inc
Suite 100
6925 Century Avenue
Mississauga, ON L5N 7K2, Canada

Model Number	831	***Procedure Number***	D0001.8378		
Serial Number	0001314	***Technician***	Eric Olson		
Test Results	**Pass**	***Calibration Date***	17 Sep 2020		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	17 Sep 2021		
Description	Larson Davis Model 831 Class 1 Sound Level Meter Firmware Revision: 2.403	***Temperature***	23.71	°C	± 0.25 °C
		Humidity	52.1	%RH	± 2.0 %RH
		Static Pressure	86.6	kPa	± 0.13 kPa

Evaluation Method Tested electrically using Larson Davis PRM831 S/N 0480 and a 12.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8384:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61252:2002	ANSI S1.25 (R2007)
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017. **Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis Model 831 Sound Level Meter Manual, I831.01 Rev S, 2019-09-10

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa; Reference Range: 0 dB gain

Periodic tests were performed in accordance with precedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

Calibration Certificate

Certificate Number 2020010495

Customer:

Golder Associates Inc
Suite 100
6925 Century Avenue
Mississauga, ON L5N 7K2, Canada

Model Number	831	***Procedure Number***	D0001.8384		
Serial Number	0001314	***Technician***	Eric Olson		
Test Results	**Pass**	***Calibration Date***	17 Sep 2020		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	17 Sep 2021		
Description	Larson Davis Model 831 Class 1 Sound Level Meter Firmware Revision: 2.403	***Temperature***	23.62	°C	± 0.25 °C
		Humidity	50.1	%RH	± 2.0 %RH
		Static Pressure	86.57	kPa	± 0.13 kPa

Evaluation Method ***Tested with:*** ***Data reported in dB re 20 µPa.***

Larson Davis PRM831. S/N 0480
PCB 377B20. S/N 137680
Larson Davis CAL200. S/N 9079
Larson Davis CAL291. S/N 0108

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61252:2002	ANSI S1.11 (R2009) Class 1
IEC 61260:2001 Class 1	ANSI S1.25 (R2007)
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Correction data from Larson Davis Model 831 Sound Level Meter Manual, I831.01 Rev O, 2016-09-19

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to

Initial Assessment

Certificate Number 2020010505

Customer:
Golder Associates Inc
Suite 100
6925 Century Avenue
Mississauga, ON L5N 7K2, Canada

Model Number	CAL200	***Procedure Number***	D0001.8386		
Serial Number	4318	***Technician***	Scott Montgomery		
Test Results	**Pass**	***Calibration Date***	18 Sep 2020		
Initial Condition	As Received	***Calibration Due***	18 Sep 2021		
Description	Larson Davis CAL200 Acoustic Calibrator	***Temperature***	25	°C	± 0.3 °C
		Humidity	29	%RH	± 3 %RH
		Static Pressure	101.3	kPa	± 1 kPa

Evaluation Method The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	08/04/2020	08/04/2021	001021
Larson Davis Model 2900 Real Time Analyzer	04/02/2020	04/02/2021	001051
Microphone Calibration System	03/03/2020	03/03/2021	005446
1/2" Preamplifier	08/27/2020	08/27/2021	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/06/2020	08/06/2021	006507
1/2 inch Microphone - RI - 200V	06/04/2020	06/04/2021	006510
Pressure Transducer	10/18/2019	10/18/2020	007204

Calibration Certificate

Certificate Number 2020010507

Customer:
Golder Associates Inc
Suite 100
6925 Century Avenue
Mississauga, ON L5N 7K2, Canada

Model Number	CAL200	***Procedure Number***	D0001.8386		
Serial Number	4318	***Technician***	Scott Montgomery		
Test Results	**Pass**	***Calibration Date***	18 Sep 2020		
Initial Condition	Adjusted	***Calibration Due***	18 Sep 2021		
Description	Larson Davis CAL200 Acoustic Calibrator	***Temperature***	25	°C	± 0.3 °C
		Humidity	29	%RH	± 3 %RH
		Static Pressure	100.9	kPa	± 1 kPa

Evaluation Method The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	08/04/2020	08/04/2021	001021
Larson Davis Model 2900 Real Time Analyzer	04/02/2020	04/02/2021	001051
Microphone Calibration System	03/03/2020	03/03/2021	005446
1/2" Preamplifier	08/27/2020	08/27/2021	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/06/2020	08/06/2021	006507
1/2 inch Microphone - RI - 200V	06/04/2020	06/04/2021	006510
Pressure Transducer	10/18/2019	10/18/2020	007204

CERTIFICATE OF ENVIRONMENTAL TEST

Certificate # 2020-0924-01

Test Date:	22 Sep 2020		
Sound Level Meter:	831	**Serial #:**	0001314
Preamplifier Model:	PRM831	**Serial #:**	0480
Microphone Model:	N/A	**Serial #:**	N/A
Temperature Range:	-40° C to 70°C	**Humidity Range:**	50% to 95%

Calibrated Equipment used durring Test:

Type	Mfg.	Model	Serial	Trace #	Cal Due
Humidity Chamber	Thermotron	SE-1000L	36541	2019-1121-1	21 NOV 2020

ENVIROMENTAL CONDITIONS:

Temperature:	25 °C
Relative Humidity:	30 %
Barometric Pressure:	86 kPa

This "Certificate of Environmental Test" verifies that this system has been tested to the Larson Davis environmental specifications appropriate for the instrument. Copies of the test data are attached for customer review.

This calibration complies with the requirements of ISO 9001.

The results documented in this certificate relate only to the system that was verified and tested. Calibration interval assignment and adjustment is the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of Larson Davis.

Eric Olson, Technician

Test preformed at: Larson Davis, a division of PCB Piezotronics, Inc
1681 West 820 North, Provo Utah 84601

Larson Davis, a division of PCB Piezotronics, Inc
Tel: 716 684-0001 www.LarsonDavis.com

Calibration Certificate

Certificate Number 2020001094

Customer:
Golder Associates Inc
6026 Northwest 1st Place
Gainesville, FL 32607, United States

Model Number	824	***Procedure Number***	D0001.8442		
Serial Number	A3106	***Technician***	Sean Childs		
Test Results	**Pass**	***Calibration Date***	23 Jan 2020		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	23 Jan 2021		
Description	Larson Davis Model 824	***Temperature***	23.27	°C	± 0.01 °C
	Firmware Revision: 4.290	***Humidity***	53	%RH	± 0.5 %RH
		Static Pressure	86.98	kPa	± 0.03 kPa

Evaluation Method Tested electrically using Larson Davis PRM902 S/N 3275 and an ADP005 input adaptor substituted for the microphone.
Data reported in dB re 20 µPa assuming a microphone sensitivity of 44.5 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications and the following standards:

IEC 61672:2002 Class 1	ANSI S1.4-1983 Type 1
IEC 61260:2001 Class 1	ANSI S1.11-1986 Type 1D
IEC 60651:2001 Type 1	IEC 60804:2000 Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with JCGM 100:2008 (ISO/IEC Guide 98-3:2008) Evaluation of measurement data - Guide to the expression of uncertainty in measurement. A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Hart Scientific 2626-S Humidity/Temperature Sensor	07/18/2019	07/18/2020	006946
SRS DS360 Ultra Low Distortion Generator	03/04/2019	03/04/2020	007635

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1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Calibration Certificate

Certificate Number 2020000951

Customer:
Golder Associates
6026 Northwest 1st Place
Gainesville, FL 32607, United States

Model Number	2560	***Procedure Number***	D0001.8387		
Serial Number	3424	***Technician***	Abraham Ortega		
Test Results	**Pass**	***Calibration Date***	21 Jan 2020		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	21 Jan 2021		
Description	1/2 inch Microphone - RI - 200V	***Temperature***	23.1	°C	± 0.01 °C
		Humidity	30.5	%RH	± 0.5 %RH
		Static Pressure	101.50	kPa	± 0.03 kPa

Evaluation Method Tested electrically using an electrostatic actuator.

Compliance Standards Compliant to Manufacturer Specifications.

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	07/01/2019	07/01/2020	001230
Microphone Calibration System	08/27/2019	08/27/2020	001233
1/2" Preamplifier	12/17/2019	12/17/2020	001274
Agilent 34401A DMM	12/06/2019	12/06/2020	001329
Larson Davis CAL250 Acoustic Calibrator	12/23/2019	12/23/2020	003030
1/2" Preamplifier	04/12/2019	04/12/2020	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/08/2019	07/08/2020	006507
1/2 inch Microphone - RI - 200V	05/21/2019	05/21/2020	006510
1/2 inch Microphone - RI - 200V	08/06/2019	08/06/2020	006519
Larson Davis 1/2" Preamplifier 7-pin LEMO	07/08/2019	07/08/2020	006530
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/14/2019	08/14/2020	006531

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1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Calibration Certificate

Certificate Number 2020001093
Customer:
Golder Associates Inc
6026 Northwest 1st Place
Gainesville, FL 32607, United States

Model Number	PRM902	***Procedure Number***	D0001.8383	
Serial Number	3275	***Technician***	Sean Childs	
Test Results	**Pass**	***Calibration Date***	23 Jan 2020	
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	23 Jan 2021	
Description	Larson Davis 1/2" Preamplifier 7-pin LEMO	***Temperature***	23.31 °C	± 0.01 °C
		Humidity	52.5 %RH	± 0.5 %RH
		Static Pressure	86.98 kPa	± 0.03 kPa

Evaluation Method Tested electrically using an 18.0 pF capacitor to simulate microphone capacitance. Data reported in dB re 20 µPa assuming a microphone sensitivity of 50.0 mV/Pa.

Compliance Standards Compliant to Manufacturer Specifications

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Larson Davis Model 2900 Real Time Analyzer	01/10/2020	01/10/2021	003062
Hart Scientific 2626-S Humidity/Temperature Sensor	07/18/2019	07/18/2020	006946
Agilent 34401A DMM	07/11/2019	07/11/2020	007172
SRS DS360 Ultra Low Distortion Generator	03/04/2019	03/04/2020	007635

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1681 West 820 North
Provo, UT 84601, United States
716-684-0001

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LARSON DAVIS A PCB PIEZOTRONICS DIV.

Calibration Certificate

Certificate Number 2020001115

Customer:
Golder Associates Inc
6026 Northwest 1st Place
Gainesville, FL 32607, United States

Model Number	CAL200	***Procedure Number***	D0001.8386		
Serial Number	5636	***Technician***	Scott Montgomery		
Test Results	**Pass**	***Calibration Date***	23 Jan 2020		
Initial Condition	Adjusted	***Calibration Due***	23 Jan 2021		
Description	Larson Davis CAL200 Acoustic Calibrator	***Temperature***	24	°C	± 0.3 °C
		Humidity	29	%RH	± 3 %RH
		Static Pressure	101.2	kPa	± 1 kPa

Evaluation Method The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	08/15/2019	08/15/2020	001021
Larson Davis Model 2900 Real Time Analyzer	04/02/2019	04/02/2020	001051
Microphone Calibration System	03/04/2019	03/04/2020	005446
1/2" Preamplifier	09/17/2019	09/17/2020	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/06/2019	08/06/2020	006507
1/2 inch Microphone - RI - 200V	05/21/2019	05/21/2020	006510
Pressure Transducer	06/24/2019	06/24/2020	007310

APPENDIX 5.7B

Gem Construction Noise Model Inputs/Noise Model Receptors

Gem Construction Noise Model Inputs

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Li			Correction			Sound Reduction		Attenuat	Operating Time			K0	Freq.	Direct.	Moving Pt. Src		
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number		
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night
Diesel Generators			113.4	113.4	113.4	58.9	58.9	58.9	Lw	GenSet		0	0	0				480	0	0	0		(none)			
Pick-Up Trucks			117.5	117.5	117.5	63	63	63	Lw	PickUps		0	0	0				240	0	0	0		(none)			
CivilWork			131.9	131.9	131.9	77.4	77.4	77.4	Lw	CivilCalc		0	0	0				240	0	0	0		(none)			
Turbine Hall			119	119	119	71.2	71.2	71.2	Lw	Turbine_Spheres		0	0	0				360	0	0	0		(none)			
Sheres			119	119	119	74.5	74.5	74.5	Lw	Turbine_Spheres		0	0	0				480	0	0	0		(none)			
Cavern Const			120.3	120.3	120.3	76.2	76.2	76.2	Lw	CavernCalc_1		0	0	0				660	0	0	0		(none)			
Cavern Const_2			122.4	122.4	122.4	78.3	78.3	78.3	Lw	Cavern_2		0	0	0				240	0	0	0		(none)			

Gem Construction Noise Model Receptors

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
Site 1		RD_GEM00019	67	-80.2	0	0		x	Total	2	r	382005.59	3861730.9	802
Site 2		RD_GEM00019	66.1	-80.2	0	0		x	Total	2	r	382926.44	3861898.4	802
Site 3		RD_GEM00019	52.2	-80.2	0	0		x	Total	2	r	381981.83	3862670.8	811.64
Site 4		RD_GEM00019	46.1	-80.2	0	0		x	Total	2	r	380848.29	3861910.3	802.32
Site 5		RD_GEM00019	44.5	-80.2	0	0		x	Total	2	r	381822.36	3860738	792
NSA_01		RD_GEM00005	66.1	-80.2	0	0		x	Total	2	r	382087.6	3861630.8	802
NSA_02		RD_GEM00006	64	-80.2	0	0		x	Total	2	r	381963.75	3861691.6	802
NSA_03		RD_GEM00007	60.6	-80.2	0	0		x	Total	2	r	382105.11	3861348.4	802
NSA_04		RD_GEM00008	47.6	-80.2	0	0		x	Total	2	r	382068.11	3860826.4	809.09
NSA_05		RD_GEM00004	65	-80.2	0	0		x	Total	2	r	382960.78	3861824	802
NSA_06		RD_GEM00009	46.3	-80.2	0	0		x	Total	2	r	381968.11	3860753.4	804.08
NSA_07		RD_GEM00016	46.1	-80.2	0	0		x	Total	2	r	383698.87	3861529.9	815.04
NSA_08		RD_GEM00010	41.1	-80.2	0	0		x	Total	2	r	381699.11	3860399.4	780.71
NSA_09		RD_GEM00011	37.1	-80.2	0	0		x	Total	2	r	381927.11	3860282.4	778.58
NSA_10		RD_GEM00001	52.9	-80.2	0	0		x	Total	2	r	382133.79	3862674.6	811.09
NSA_11		RD_GEM00015	48.5	-80.2	0	0		x	Total	2	r	383652.68	3861829.7	801.31
NSA_12		RD_GEM00002	48.2	-80.2	0	0		x	Total	2	r	381795.34	3862677.9	812
NSA_13		RD_GEM00003	51.6	-80.2	0	0		x	Total	2	r	382488.13	3862757.8	809.98
NSA_14		RD_GEM00052	45.2	-80.2	0	0		x	Total	2	r	380745.91	3861962.9	804.08
NSA_15		RD_GEM00017	46.3	-80.2	0	0		x	Total	2	r	382105.47	3863176.3	815.43
NSA_16		RD_GEM00018	44.8	-80.2	0	0		x	Total	2	r	381683.06	3863166.9	816.43
NSA_17		RD_GEM00019	44.9	-80.2	0	0		x	Total	2	r	382859.25	3863433.7	815.88
Long Term		RD_GEM00019	79.4	-80.2	0	0		x	Total	2	r	382680.48	3861856.8	802
Site 6		RD_GEM00019	17.4	-80.2	0	0		x	Total	2	r	373899.31	3860339.7	616.49
Site 7		RD_GEM00019	27.8	-80.2	0	0		x	Total	2	r	378694.86	3860315.9	780.24

APPENDIX 5.7C

Gem Operational Noise Model Inputs

Gem Operational Noise Model Inputs - Point Sources

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Stack 1			85.5	85.5	85.5	Lw	HRSGStack2		0	0	0							0		Chimney (VDI 3	38.09	r	382250.22	3861780.5	838.09
Stack 2			85.5	85.5	85.5	Lw	HRSGStack2		0	0	0							0		Chimney (VDI 3	38.09	r	382332.11	3861780	838.09
Stack 3			85.5	85.5	85.5	Lw	HRSGStack2		0	0	0							0		Chimney (VDI 3	38.09	r	382414.16	3861779.3	838.09
Stack 4			85.5	85.5	85.5	Lw	HRSGStack2		0	0	0							0		Chimney (VDI 3	38.09	r	382496.44	3861777.9	838.09
Stack 5			85.5	85.5	85.5	Lw	HRSGStack2		0	0	0							0		Chimney (VDI 3	38.09	r	382577.45	3861777.7	838.09
Transformer 350/420 MVA			104.3	104.3	104.3	Lw	STGX1		0	0	0							0		(none)	3	r	382073.49	3861767.1	803
Transformer 350/420 MVA			104.3	104.3	104.3	Lw	STGX1		0	0	0							0		(none)	3	r	382097.25	3861766.2	803
Transformer 125 MVA			102.3	102.3	102.3	Lw	GTGX1		0	0	0							0		(none)	3	r	382246.15	3861846	803
Transformer 125 MVA			102.3	102.3	102.3	Lw	GTGX1		0	0	0							0		(none)	3	r	382267.76	3861845.7	803
Transformer 125 MVA			102.3	102.3	102.3	Lw	GTGX1		0	0	0							0		(none)	3	r	382327.61	3861845	803
Transformer 125 MVA			102.3	102.3	102.3	Lw	GTGX1		0	0	0							0		(none)	3	r	382408.85	3861843.9	803
Transformer 125 MVA			102.3	102.3	102.3	Lw	GTGX1		0	0	0							0		(none)	3	r	382431.43	3861843.9	803
Transformer 125 MVA			102.3	102.3	102.3	Lw	GTGX1		0	0	0							0		(none)	3	r	382491.31	3861843.3	803
Transformer 125 MVA			102.3	102.3	102.3	Lw	GTGX1		0	0	0							0		(none)	3	r	382513.59	3861843.2	803
Transformer 125 MVA			102.3	102.3	102.3	Lw	GTGX1		0	0	0							0		(none)	3	r	382573.15	3861842.7	803
Transformer 125 MVA			102.3	102.3	102.3	Lw	GTGX1		0	0	0							0		(none)	3	r	382595.73	3861842.7	803
Transformer 15/20 MVA			96.4	96.4	96.4	Lw	Transformer_10MW		0	0	0							0		(none)	2	r	382051.3	3861852.1	802
Transformer 15/20 MVA			96.4	96.4	96.4	Lw	Transformer_10MW		0	0	0							0		(none)	2	r	382064.77	3861851.7	802
Transformer 15/20 MVA			96.4	96.4	96.4	Lw	Transformer_10MW		0	0	0							0		(none)	2	r	382107.43	3861851.3	802
Transformer 15/20 MVA			96.4	96.4	96.4	Lw	Transformer_10MW		0	0	0							0		(none)	2	r	382120.53	3861851.7	802
Air Dryer Package			103.2	103.2	103.2	Lw	AirDryer		0	0	0							0		(none)	2	r	382623.32	3861773.3	802
Makeup Pump			102.8	102.8	102.8	Lw	CoolingCirc_pump		0	0	0							0		(none)	2	r	382702.66	3861677.8	806.67
Air Dryer Package			102.8	102.8	102.8	Lw	CoolingCirc_pump		0	0	0							0		(none)	2	r	382705.56	3861677.9	806.71
Charge Pump 1			106.8	106.8	106.8	Lw	ThermalCirc_pump		0	0	0							0		(none)	2	r	382686.64	3861745.8	803.56
Charge Pump 2			106.8	106.8	106.8	Lw	ThermalCirc_pump		0	0	0							0		(none)	2	r	382686.77	3861756.9	803.1
Discharge Pump 1			102.8	102.8	102.8	Lw	CoolingCirc_pump		0	0	0							0		(none)	2	r	382686.7	3861760.6	802.94
Discharge Pump 2			102.8	102.8	102.8	Lw	CoolingCirc_pump		0	0	0							0		(none)	2	r	382686.54	3861753.1	803.25
Discharge Pump 3			102.8	102.8	102.8	Lw	CoolingCirc_pump		0	0	0							0		(none)	2	r	382686.58	3861749.4	803.41
Discharge Pump 4			102.8	102.8	102.8	Lw	CoolingCirc_pump		0	0	0							0		(none)	2	r	382686.54	3861742	803.72
Cold Thermal Fluid Pump 1			103.5	103.5	103.5	Lw	Pump_2000Hp		0	0	0							0		(none)	2	r	382677.84	3861798.4	802
Cold Thermal Fluid Pump 2			103.5	103.5	103.5	Lw	Pump_2000Hp		0	0	0							0		(none)	2	r	382677.97	3861802.5	802
Cold Thermal Fluid Pump 3			103.5	103.5	103.5	Lw	Pump_2000Hp		0	0	0							0		(none)	2	r	382678.15	3861806.6	802
Cold Thermal Fluid Pump 4			103.5	103.5	103.5	Lw	Pump_2000Hp		0	0	0							0		(none)	2	r	382678.21	3861810.4	802
Transformer 125 MVA			102.3	102.3	102.3	Lw	GTGX1		0	0	0							0		(none)	3	r	382349.74	3861844.4	803

Gem Operational Noise Model Inputs - Line Sources

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src			
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number			Speed
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night	(km/h)
Exhaust Duct 1			86.9	86.9	86.9	76.7	76.7	76.7	Lw'	New2		0	0	0			R26				0		(none)				
Exhaust Duct 2			86.9	86.9	86.9	76.7	76.7	76.7	Lw'	New2		0	0	0			R26				0		(none)				
Exhaust Duct 3			86.9	86.9	86.9	76.7	76.7	76.7	Lw'	New2		0	0	0			R26				0		(none)				
Exhaust Duct 4			86.9	86.9	86.9	76.7	76.7	76.7	Lw'	New2		0	0	0			R26				0		(none)				
Exhaust Duct 5			86.9	86.9	86.9	76.7	76.7	76.7	Lw'	New2		0	0	0			R26				0		(none)				

Gem Operational Noise Model Inputs - Horizontal Area Sources

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src			
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number			
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night	
Turbine Hall Roof			98.4	98.4	98.4	59.1	59.1	59.1	Lw''	TurbHall_r		0	0	0			R28				0		(none)				
Thermal Cooler 1			102.2	102.2	102.2	74.1	74.1	74.1	Lw	ThermalCoolers		0	0	0							0		(none)				
Thermal Cooler 2			102.2	102.2	102.2	74.1	74.1	74.1	Lw	ThermalCoolers		0	0	0							0		(none)				
Thermal Cooler 3			102.2	102.2	102.2	74.1	74.1	74.1	Lw	ThermalCoolers		0	0	0							0		(none)				
Thermal Cooler 4			102.2	102.2	102.2	74.1	74.1	74.1	Lw	ThermalCoolers		0	0	0							0		(none)				
Thermal Cooler 5			102.2	102.2	102.2	74.1	74.1	74.1	Lw	ThermalCoolers		0	0	0							0		(none)				
Medium Cooler			106.2	106.2	106.2	70.8	70.8	70.8	Lw	CoolerMedium		0	0	0							0		(none)				

Gem Operational Noise Model Inputs - Vertical Area Sources

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night			
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)	
Air Inlet 01			100.2	100.2	100.2	83.5	83.5	83.5	Lw	GT_Inlet		0	0	0							3		(none)
Air Inlet 02			100.2	100.2	100.2	83.5	83.5	83.5	Lw	GT_Inlet		0	0	0							3		(none)
Air Inlet 03			100.2	100.2	100.2	83.6	83.6	83.6	Lw	GT_Inlet		0	0	0							3		(none)
Air Inlet 04			100.2	100.2	100.2	83.6	83.6	83.6	Lw	GT_Inlet		0	0	0							3		(none)
Air Inlet 05			100.2	100.2	100.2	83.6	83.6	83.6	Lw	GT_Inlet		0	0	0							3		(none)
TurbHall South			89.9	89.9	89.9	49.6	49.6	49.6	Lw''	TurbHall_r		0	0	0			R29				3		(none)
TurbHall North			88.5	88.5	88.5	50.6	50.6	50.6	Lw''	TurbHall_n		0	0	0			R29				3		(none)
TurbHall East1			84.7	84.7	84.7	59.3	59.3	59.3	Lw''	TurbHall_e		0	0	0			R29				3		(none)
TurbHall East2			81.1	81.1	81.1	59.3	59.3	59.3	Lw''	TurbHall_e		0	0	0			R29				3		(none)
Turb Hall Door east		PROPOSED_ TRANSMISSION_ ROUTES00013	89.1	89.1	89.1	72.5	72.5	72.5	Lw''	TurbHall_d		0	0	0			R26				3		(none)

Sychronous Motor (50 MW) and Generator (100 MW) Sound Power Calculations
If power of motor is greater than 300 kW (i.e., greater than 402 hp) use this section

Motor power [kW]	100000	** input the motor power rating in kW that was provided by client/vendor/supplier
Motor RPM	3600	** input the motor RPM - if unknown, enter 1800
Motor power [kW]	100000	
Adjustment [dB]	3	** for motors between 300 and 750 kW subtract 3 dB; for motors above 4000 kW add 3 dB - see section 11.14.2 in (Bies and Hansen 2003)

Octave-Band Frequency	31.5	63	125	250	500	1000	2000	4000	8000		Total	
Raw PWL 1800 or 3600 RPM [dB]	94	96	98	98	98	98	98	95	88		106.2153	** see Table 11.25 from (Bies and Hansen 2003)
Raw PWL 1200 RPM [dB]	88	90	92	93	93	93	98	88	81		102.11336	** see Table 11.25 from (Bies and Hansen 2003)
Raw PWL 900 RPM [dB]	88	90	92	93	93	96	96	88	81		102.02089	** see Table 11.25 from (Bies and Hansen 2003)
Raw PWL <720 RPM [dB]	88	90	92	93	93	98	92	83	75		101.85599	** see Table 11.25 from (Bies and Hansen 2003)
Motor PWL [dB]	97	99	101	101	101	101	101	98	91		109.2	
A-weights [dB]	-39.4	-26.2	-16.1	-8.6	-3.2	0	1.2	1	-1.1			** see Table 3.1 from (Bies and Hansen 2003)
Motor PWL [dBA]	57.6	72.8	84.9	92.4	97.8	101	102.2	99	89.9		106.6	** these values can be used directly in a computer model or in indoor-outdoor calculation

Referece: Bies, D.A., and C.H. Hansen [2003]. Engineering Noise Control 3 rd Ed. Spon Press: New York, NY.

Cooling Medium Cooler - Propeller-Type Cooling Tower Sound Power Calculations, 40 Horse Power

	Fan 1	Fan 2	Fan 3	Fan 4	
Fan Horse Power	40	40	40		** input the horse power that was provided by client/vendor/supplier
Motor PWL [dB]	96.6	96.6	96.6		
Motor PWL [dBA]	87.6	87.6	87.6		

Octave-Band Frequency	31.5	63	125	250	500	1000	2000	4000	8000		Total	
Frequency Adjustment	-8	-5	-5	-8	-11	-15	-18	-21	-29			** see Table 7 from (Guyer, 2013)
Raw PWL Fan 1 [dB]	88.6	91.6	91.6	88.6	85.6	81.6	78.6	75.6	67.6		97.0	
Raw PWL Fan 2 [dB]	88.6	91.6	91.6	88.6	85.6	81.6	78.6	75.6	67.6		97.0	
Raw PWL Fan 3 [dB]	88.6	91.6	91.6	88.6	85.6	81.6	78.6	75.6	67.6		97.0	
Thermal PWL [dB]	93.4	96.4	96.4	93.4	90.4	86.4	83.4	80.4	72.4		101.8	
A-weights [dB]	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1			
Motor PWL [dBA]	52.2	68.4	78.5	83.0	85.4	84.6	82.8	79.6	69.5		92.6	** these values can be used directly in a computer model or in indoor-outdoor calculation

Reference: Guyer, J. Paul [2013]. An Introduciton to Sound Level Data for Mechancal and Electrical Equipment. Continuing Education and Development, Inc.: Stony Point, NY.

Thermal Fluid Cooler - Propeller-Type Cooling Tower Sound Power Calculations, 40 Horse Power

	Fan 1	Fan 2	Fan 3	Fan 4	
Fan Horse Power	40	40			** input the horse power that was provided by client/vendor/supplier
Motor PWL [dB]	96.6	96.6			
Motor PWL [dBA]	87.6	87.6			

Octave-Band Frequency	31.5	63	125	250	500	1000	2000	4000	8000		Total	
Frequency Adjustment	-8	-5	-5	-8	-11	-15	-18	-21	-29			** see Table 7 from (Guyer, 2013)
Raw PWL Fan 1 [dB]	88.6	91.6	91.6	88.6	85.6	81.6	78.6	75.6	67.6		97.0	
Raw PWL Fan 2 [dB]	88.6	91.6	91.6	88.6	85.6	81.6	78.6	75.6	67.6		97.0	
Thermal PWL [dB]	91.6	94.6	94.6	91.6	88.6	84.6	81.6	78.6	70.6		100.0	
A-weights [dB]	-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1			
Motor PWL [dBA]	52.2	68.4	78.5	83.0	85.4	84.6	82.8	79.6	69.5		90.8	** these values can be used directly in a computer model or in indoor-outdoor calculation

Source: Guyer, 2013 Guyer, J. Paul [2013]. An Introduciton to Sound Level Data for Mechancal and Electrical Equipment. Continuing Education and Development, Inc.: Stony Point, NY.

Gem Operational Noise Model Sound Reduction Indicies

Name	ID	Oktave Spectrum (dB)										Source	
		31.5	63	125	250	500	1000	2000	4000	8000	Rw		
steel sheet with trapezoidal corrugations mineral fiber 120 mm	R28			15	20	28	37	43	40		32	VDI 2571	
steel sheet with double-trapezoidal corrugations mineral fiber190 mm	R29			20	29	43	48	56	57		41	VDI 2571	
steel sheet with trapezoidal corrugations 45 mm	R26			14	16	20	25	29	23		25	VDI 2571	

Gem Operational Noise Model Receptors

Name	M.	ID	Level Lr Day (dBA)	Night (dBA)	Limit. Value Day (dBA)	Night (dBA)	Land Use Type	Auto	Height Noise Type	(m)		Coordinates X (m)	Y (m)	Z (m)
Site 1		RD_GEM00019	50.8	50.8	0	0		x	Total	2	r	382006	3861731	802
Site 2		RD_GEM00019	43.4	43.4	0	0		x	Total	2	r	382926	3861898	802
Site 3		RD_GEM00019	41.4	41.4	0	0		x	Total	2	r	381982	3862671	811.64
Site 4		RD_GEM00019	31.9	31.9	0	0		x	Total	2	r	380848	3861910	802.32
Site 5		RD_GEM00019	34.8	34.8	0	0		x	Total	2	r	381822	3860738	792
Site 6		RD_GEM00019	9.5	9.5	0	0		x	Total	2	r	373899	3860340	616.49
Site 7		RD_GEM00019	22	22	0	0		x	Total	2	r	378695	3860316	780.24
NSA_01		RD_GEM00005	50.9	50.9	0	0		x	Total	2	r	382088	3861631	802
NSA_02		RD_GEM00006	49	49	0	0		x	Total	2	r	381964	3861692	802
NSA_03		RD_GEM00007	44.5	44.5	0	0		x	Total	2	r	382105	3861348	802
NSA_04		RD_GEM00008	37.4	37.4	0	0		x	Total	2	r	382068	3860826	809.09
NSA_05		RD_GEM00004	39.2	39.2	0	0		x	Total	2	r	382961	3861824	802
NSA_06		RD_GEM00009	36.4	36.4	0	0		x	Total	2	r	381968	3860753	804.08
NSA_07		RD_GEM00016	32.9	32.9	0	0		x	Total	2	r	383699	3861530	815.04
NSA_08		RD_GEM00010	31.2	31.2	0	0		x	Total	2	r	381699	3860399	780.71
NSA_09		RD_GEM00011	29.4	29.4	0	0		x	Total	2	r	381927	3860282	778.58
NSA_10		RD_GEM00001	42.3	42.3	0	0		x	Total	2	r	382134	3862675	811.09
NSA_11		RD_GEM00015	31.9	31.9	0	0		x	Total	2	r	383653	3861830	801.31
NSA_12		RD_GEM00002	36.6	36.6	0	0		x	Total	2	r	381795	3862678	812
NSA_13		RD_GEM00003	36.3	36.3	0	0		x	Total	2	r	382488	3862758	809.98
NSA_14		RD_GEM00052	31.1	31.1	0	0		x	Total	2	r	380746	3861963	804.08
NSA_15		RD_GEM00017	31.8	31.8	0	0		x	Total	2	r	382105	3863176	815.43
NSA_16		RD_GEM00018	32.4	32.4	0	0		x	Total	2	r	381683	3863167	816.43
NSA_17		RD_GEM00019	34.7	34.7	0	0		x	Total	2	r	382859	3863434	815.88
Long Term		RD_GEM00019	46.2	46.2	0	0		x	Total	2	r	382680	3861857	802

APPENDIX 5.7D

Hourly Weather Data – 25 Hour Noise Monitoring

Appendix 5.7D Hourly Weather Data - 25 Hour Noise Monitoring

Device Name	**WEATHER - 2189720**
Device Model	**5500L**
Serial Number	**2189720**

FORMATTED DATE-TIME	Direction â€“ True (Â°)	Wind Speed (mph)	Crosswind Speed (mph)	Headwind Speed (mph)	Temperature (Â°F)	Wind Chill (Â°F)	Relative Humidity (%)	Heat Stress Index (Â°F)	Dew Point (Â°F)	Psychro Wet Bulb Temperature (Â°F)	Station Pressure (inHg)	Barometric Pressure (in Hg)	Altitude (ft)	Density Altitude (ft)	Direction â€“ Mag (Â°)
7/8/2021 11:00	183	3.9	0.2	-3.9	100.1	100	23.6	100.9	56.3	70.2	27.21	27.21	2595	5941	182
7/8/2021 12:00	143	9.6	5.8	-7.6	101.5	101.5	21.9	102.2	55.5	70.2	27.22	27.22	2589	6014	142
7/8/2021 13:00	170	11	2	-10.9	106.7	106.7	21.9	110.3	59.7	73.6	27.21	27.21	2595	6354	169
7/8/2021 14:00	209	9.2	4.5	-8.1	105	104.9	21.9	107.4	58.4	72.5	27.21	27.21	2602	6252	209
7/8/2021 15:00	214	12.3	6.8	-10.2	102.7	102.6	21.3	103.5	55.7	70.7	27.2	27.2	2608	6101	213
7/8/2021 16:00	199	13.5	4.4	-12.8	104.7	104.7	21.3	106.7	57.3	72	27.2	27.2	2608	6233	198
7/8/2021 17:00	217	16.8	10.2	-13.4	102.9	102.7	21.2	103.8	55.7	70.7	27.19	27.19	2614	6121	217
7/8/2021 18:00	192	20	4.2	-19.6	102.8	102.7	21.3	103.8	55.8	70.7	27.19	27.19	2623	6126	191
7/8/2021 19:00	236	21.5	17.9	-11.9	99.2	99.1	21.2	98.4	52.6	68.4	27.18	27.18	2626	5900	236
7/8/2021 20:00	219	18.2	11.5	-14.1	96.5	96.4	21.1	94.8	50.3	66.4	27.19	27.19	2623	5717	219
7/8/2021 21:00	230	8.3	6.4	-5.3	92.7	92.7	20.9	89.6	47	63.9	27.19	27.19	2617	5471	230
7/8/2021 22:00	198	7.2	2.2	-6.9	90.9	90.9	20.7	87.4	45.2	62.6	27.21	27.2	2602	5333	198
7/8/2021 23:00	207	6.3	2.9	-5.6	89.2	89.1	20.4	85.3	43.5	61.5	27.22	27.22	2587	5200	207
7/9/2021 0:00	189	5.9	0.9	-5.9	88.1	88	20.3	84	42.4	60.6	27.22	27.22	2583	5128	188
7/9/2021 1:00	169	3.6	0.7	-3.5	86.6	86.5	20.2	82.4	40.9	59.7	27.23	27.23	2580	5025	169
7/9/2021 2:00	331	0.8	0.4	0.7	76.9	76.8	19.7	72.3	32.5	53.4	27.22	27.22	2587	4414	331
7/9/2021 3:00	31	0	0	0	78	77.9	19.4	73.4	33	53.9	27.22	27.22	2587	4479	31
7/9/2021 4:00	58	2.5	2.1	1.4	77.6	77.5	19.2	73	32.4	53.6	27.22	27.22	2583	4451	57
7/9/2021 5:00	89	3.6	3.6	0.1	78.4	78.4	19.1	73.8	32.9	53.9	27.24	27.23	2573	4490	88
7/9/2021 6:00	62	2.7	2.4	1.3	73.4	73.4	18.9	69.4	28.6	50.9	27.25	27.25	2561	4152	62
7/9/2021 7:00	96	0	0	0	73.3	73.2	19	69.3	28.6	50.9	27.27	27.26	2545	4124	96
7/9/2021 8:00	117	0	0	0	85.5	85.5	19.6	81.1	39.4	58.8	27.27	27.27	2539	4908	117
7/9/2021 9:00	209	3.9	1.9	-3.4	88.6	88.5	20.6	84.6	43.2	61.3	27.29	27.29	2521	5094	208
7/9/2021 10:00	212	4.6	2.4	-3.9	94	93.9	21.5	91.6	48.8	65.1	27.29	27.29	2521	5449	211
7/9/2021 11:00	203	4.4	1.7	-4.1	99.9	99.9	22.6	100.2	55	69.6	27.28	27.28	2524	5838	202
7/9/2021 12:00	210	1.6	0.8	-1.4	103.4	103.3	23.5	106.2	59	72.5	27.29	27.29	2521	6074	209
7/9/2021 13:00	179	14.9	0.2	-14.9	103.6	103.5	23.9	106.7	59.6	72.9	27.3	27.3	2510	6074	179
7/9/2021 14:00	209	10.7	5.1	-9.3	103.1	103.1	23.8	106	59.1	72.3	27.3	27.3	2513	6041	208
7/9/2021 15:00	219	8.1	5.1	-6.3	104.5	104.4	23.9	108.1	60.4	73.4	27.29	27.29	2513	6134	218
7/9/2021 16:00	242	8.8	7.8	-4.1	102.6	102.6	23.8	105.3	58.7	72	27.28	27.28	2527	6022	242
7/9/2021 17:00	220	11.4	7.3	-8.8	106.4	106.3	24	111.4	62	74.7	27.26	27.26	2548	6296	219
7/9/2021 18:00	40	1.3	0.8	1	108	108	19	109.9	56.8	72.7	27.3	27.3	2510	6302	39
7/9/2021 19:00	357	0	0	0	105.7	105.6	17.9	105.4	53.3	70.5	27.52	27.52	2292	5876	357
7/9/2021 20:00	72	0	0	0	100.8	100.8	16.9	98.2	47.9	66.7	27.16	27.16	2645	5987	71
7/9/2021 21:00	70	0	0	0	92.9	92.8	15.9	88.2	40	62.2	29.2	29.2	667	3074	69

Appendix 5.7D Hourly Weather Data - 25 Hour Noise Monitoring

Device Name	**WEATHER - 2189720**
Device Model	**5500L**
Serial Number	**2189720**

FORMATTED DATE-TIME	Direction â€“ True (Â°)	Wind Speed (mph)	Crosswind Speed (mph)	Headwind Speed (mph)	Temperature (Â°F)	Wind Chill (Â°F)	Relative Humidity (%)	Heat Stress Index (Â°F)	Dew Point (Â°F)	Psychro Wet Bulb Temperature (Â°F)	Station Pressure (inHg)	Barometric Pressure (in Hg)	Altitude (ft)	Density Altitude (ft)	Direction â€“ Mag (Â°)
7/9/2021 22:00	72	0	0	0	88.5	88.3	15	83.3	35	58.8	28.34	28.34	1485	3787	72
7/9/2021 23:00	71	0	0	0	84.9	84.9	14.8	79.7	31.8	57.2	29.79	29.79	115	1882	71
7/10/2021 0:00	88	0	0	0	81.6	81.5	14.5	76.3	28.6	55	29.68	29.68	215	1785	87
7/10/2021 1:00	88	0	0	0	80.3	80.2	14.5	75	27.6	54.1	29.67	29.67	223	1711	88
7/10/2021 2:00	88	0	0	0	78.8	78.6	14.4	73.6	26.3	53.4	29.67	29.66	228	1623	88
7/10/2021 3:00	88	0	0	0	76.5	76.5	14.3	71.6	24.4	52	29.66	29.66	235	1482	88
7/10/2021 4:00	88	0	0	0	74	73.9	14.2	69.4	22.2	50.5	29.65	29.65	240	1330	88
7/10/2021 5:00	88	0	0	0	71.8	71.6	14	67.5	20.1	49.1	29.65	29.65	244	1184	88
7/10/2021 6:00	88	0	0	0	69.7	69.6	13.8	65.1	18.2	47.8	29.65	29.65	243	1050	88
7/10/2021 7:00	89	0	0	0	67.9	67.8	13.7	62.6	16.5	46.6	29.67	29.67	221	907	88
7/10/2021 8:00	89	0	0	0	66.6	66.6	13.6	60.6	15.3	45.8	29.69	29.69	210	805	88
7/10/2021 9:00	89	0	0	0	68.3	68.2	14	63	17.3	46.7	29.7	29.69	205	902	88
7/10/2021 10:00	88	0	0	0	77	77	15.5	72.1	26.7	52.7	29.69	29.69	206	1485	88
7/10/2021 11:00	354	0	0	0	85	84.9	24.4	81.3	44.6	61.3	29.96	29.96	-34	1751	353