Appendix D

Noise Data

Appendix A: Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
ASTC	Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by +5 dBA and nighttime hours weighted by +10 dBA.
DNL	See definition of Ldn.
IIC	Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
NIC	Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation.
NNIC	Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation.
Noise	Unwanted sound.
NISR	Normalized Impact Sound Rating. Similar to IIC but includes a correction for room reverberation.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
RT60	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
SPC	Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

Appendix B: Continuous Short-Term and Long-Term Ambient Noise Measurement Results

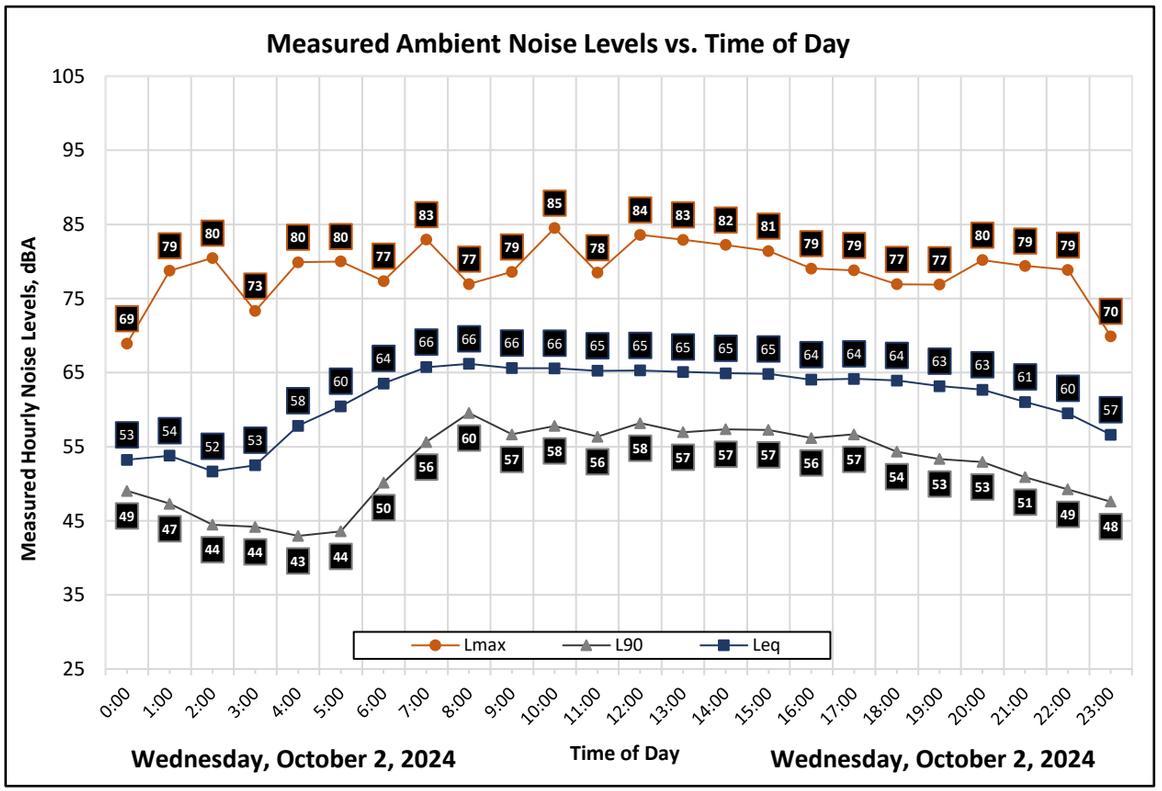


Appendix B1: Continuous Noise Monitoring Results

Site: LT-1
Project: San Anselmo GPU
Meter: LDL 820-7
Location: Eastern Project Boundary
Calibrator: CAL200
Coordinates: (37.9761361, -122.5572092)

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Wednesday, October 2, 2024	0:00	53	69	50	49
Wednesday, October 2, 2024	1:00	54	79	49	47
Wednesday, October 2, 2024	2:00	52	80	46	44
Wednesday, October 2, 2024	3:00	53	73	45	44
Wednesday, October 2, 2024	4:00	58	80	47	43
Wednesday, October 2, 2024	5:00	60	80	54	44
Wednesday, October 2, 2024	6:00	64	77	61	50
Wednesday, October 2, 2024	7:00	66	83	64	56
Wednesday, October 2, 2024	8:00	66	77	65	60
Wednesday, October 2, 2024	9:00	66	79	65	57
Wednesday, October 2, 2024	10:00	66	85	64	58
Wednesday, October 2, 2024	11:00	65	78	64	56
Wednesday, October 2, 2024	12:00	65	84	64	58
Wednesday, October 2, 2024	13:00	65	83	64	57
Wednesday, October 2, 2024	14:00	65	82	64	57
Wednesday, October 2, 2024	15:00	65	81	63	57
Wednesday, October 2, 2024	16:00	64	79	63	56
Wednesday, October 2, 2024	17:00	64	79	63	57
Wednesday, October 2, 2024	18:00	64	77	63	54
Wednesday, October 2, 2024	19:00	63	77	62	53
Wednesday, October 2, 2024	20:00	63	80	60	53
Wednesday, October 2, 2024	21:00	61	79	59	51
Wednesday, October 2, 2024	22:00	60	79	55	49
Wednesday, October 2, 2024	23:00	57	70	51	48

Statistics	Leq	Lmax	L50	L90
Day Average	65	80	63	56
Night Average	58	76	51	47
Day Low	61	77	59	51
Day High	66	85	65	60
Night Low	52	69	45	43
Night High	64	80	61	50
Ldn	66	Day %		88
CNEL	67	Night %		12



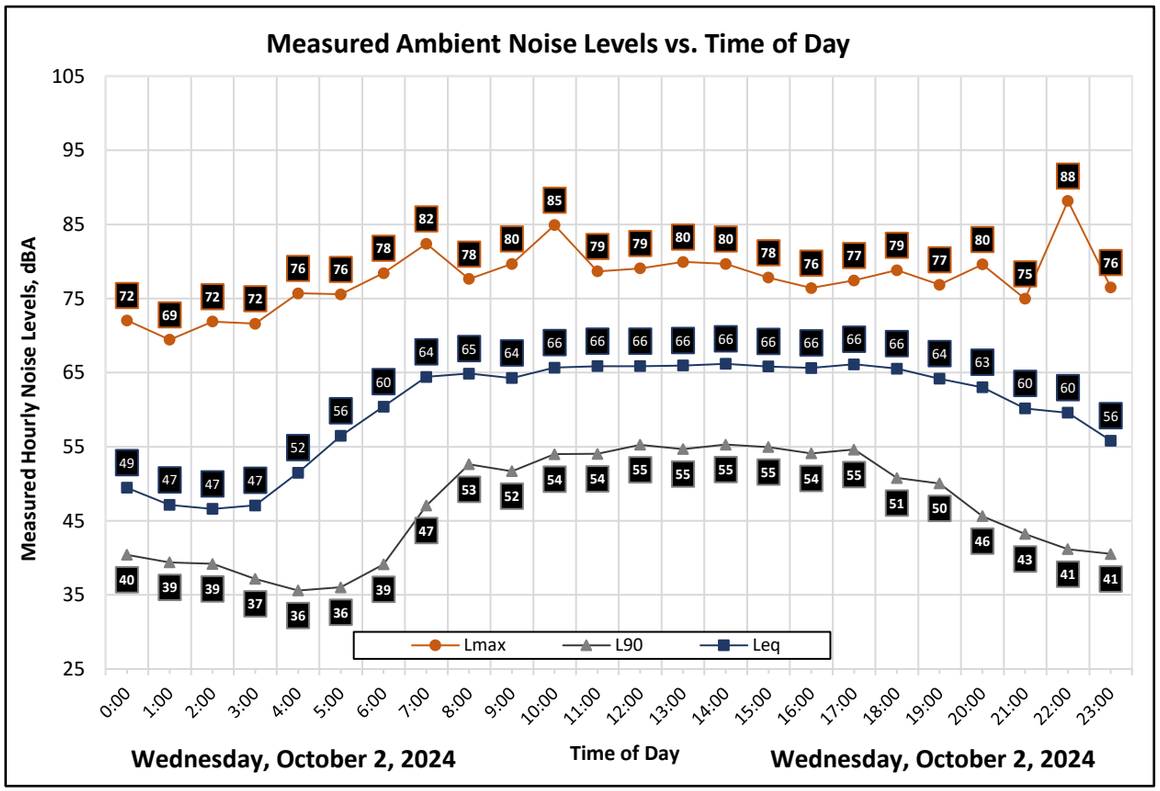


Appendix B2: Continuous Noise Monitoring Results

Site: LT-2
Project: San Anselmo GPU
Meter: LDL 820-1
Location: Western Project Boundary
Calibrator: CAL200
Coordinates: (37.9808900, -122.5745165)

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Wednesday, October 2, 2024	0:00	49	72	41	40
Wednesday, October 2, 2024	1:00	47	69	40	39
Wednesday, October 2, 2024	2:00	47	72	40	39
Wednesday, October 2, 2024	3:00	47	72	39	37
Wednesday, October 2, 2024	4:00	52	76	37	36
Wednesday, October 2, 2024	5:00	56	76	38	36
Wednesday, October 2, 2024	6:00	60	78	47	39
Wednesday, October 2, 2024	7:00	64	82	62	47
Wednesday, October 2, 2024	8:00	65	78	62	53
Wednesday, October 2, 2024	9:00	64	80	60	52
Wednesday, October 2, 2024	10:00	66	85	64	54
Wednesday, October 2, 2024	11:00	66	79	64	54
Wednesday, October 2, 2024	12:00	66	79	64	55
Wednesday, October 2, 2024	13:00	66	80	65	55
Wednesday, October 2, 2024	14:00	66	80	65	55
Wednesday, October 2, 2024	15:00	66	78	64	55
Wednesday, October 2, 2024	16:00	66	76	64	54
Wednesday, October 2, 2024	17:00	66	77	65	55
Wednesday, October 2, 2024	18:00	66	79	63	51
Wednesday, October 2, 2024	19:00	64	77	62	50
Wednesday, October 2, 2024	20:00	63	80	58	46
Wednesday, October 2, 2024	21:00	60	75	49	43
Wednesday, October 2, 2024	22:00	60	88	44	41
Wednesday, October 2, 2024	23:00	56	76	42	41

Statistics	Leq	Lmax	L50	L90
Day Average	65	79	62	52
Night Average	56	75	41	39
Day Low	60	75	49	43
Day High	66	85	65	55
Night Low	47	69	37	36
Night High	60	88	47	41
Ldn	65	Day %		94
CNEL	66	Night %		6



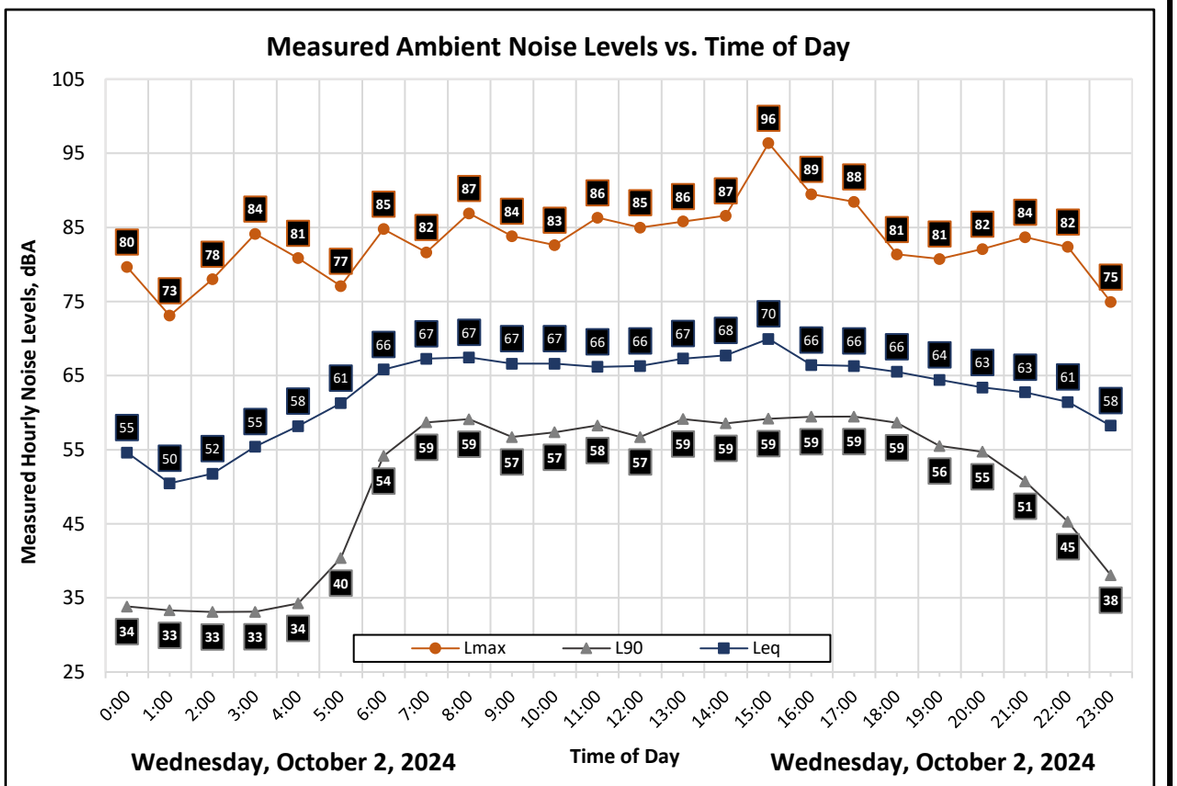


Appendix B3: Continuous Noise Monitoring Results

Site: LT-3
Project: San Anselmo GPU
Meter: LDL 820-3
Location: Northwestern Project Boundary
Calibrator: CAL200
Coordinates: (37.9869132, -122.5783997)

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Wednesday, October 2, 2024	0:00	55	80	36	34
Wednesday, October 2, 2024	1:00	50	73	35	33
Wednesday, October 2, 2024	2:00	52	78	34	33
Wednesday, October 2, 2024	3:00	55	84	35	33
Wednesday, October 2, 2024	4:00	58	81	42	34
Wednesday, October 2, 2024	5:00	61	77	56	40
Wednesday, October 2, 2024	6:00	66	85	62	54
Wednesday, October 2, 2024	7:00	67	82	65	59
Wednesday, October 2, 2024	8:00	67	87	66	59
Wednesday, October 2, 2024	9:00	67	84	63	57
Wednesday, October 2, 2024	10:00	67	83	65	57
Wednesday, October 2, 2024	11:00	66	86	65	58
Wednesday, October 2, 2024	12:00	66	85	63	57
Wednesday, October 2, 2024	13:00	67	86	65	59
Wednesday, October 2, 2024	14:00	68	87	66	59
Wednesday, October 2, 2024	15:00	70	96	65	59
Wednesday, October 2, 2024	16:00	66	89	64	59
Wednesday, October 2, 2024	17:00	66	88	64	59
Wednesday, October 2, 2024	18:00	66	81	64	59
Wednesday, October 2, 2024	19:00	64	81	63	56
Wednesday, October 2, 2024	20:00	63	82	61	55
Wednesday, October 2, 2024	21:00	63	84	60	51
Wednesday, October 2, 2024	22:00	61	82	57	45
Wednesday, October 2, 2024	23:00	58	75	52	38

Statistics	Leq	Lmax	L50	L90
Day Average	67	85	64	57
Night Average	60	79	45	38
Day Low	63	81	60	51
Day High	70	96	66	59
Night Low	50	73	34	33
Night High	66	85	62	54
Ldn	68	Day %		89
CNEL	69	Night %		11



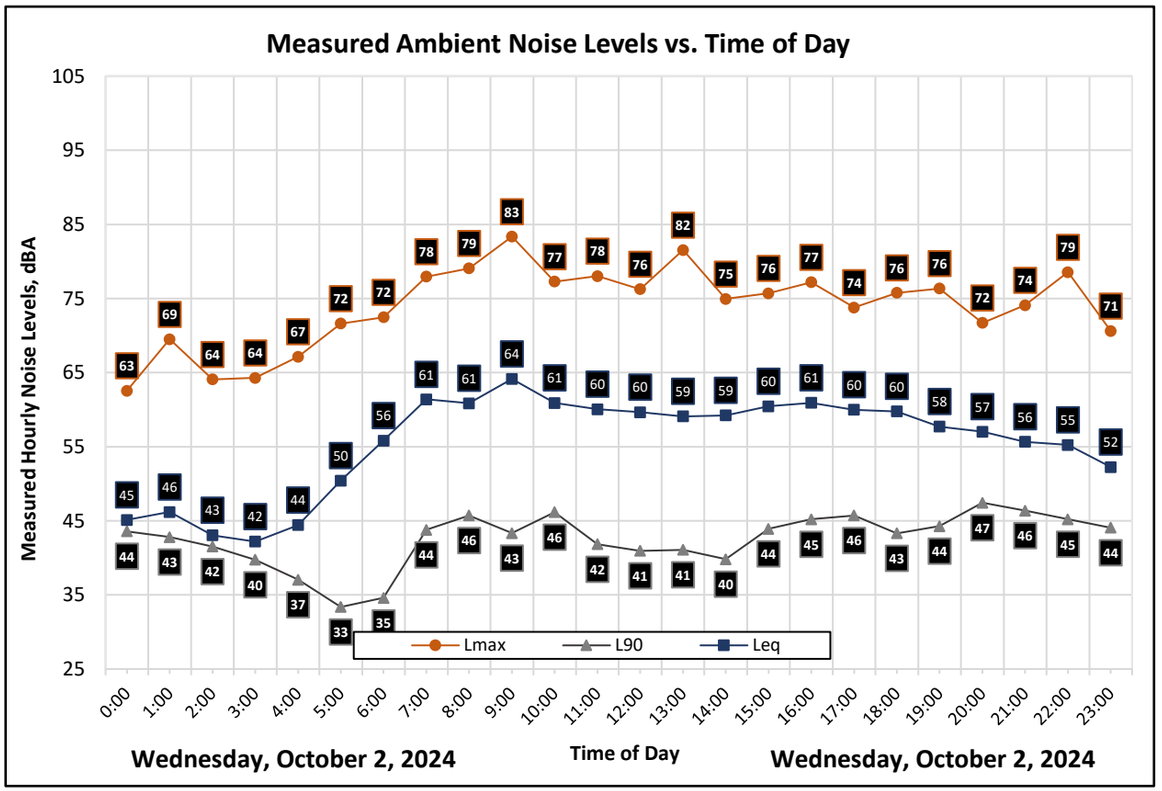


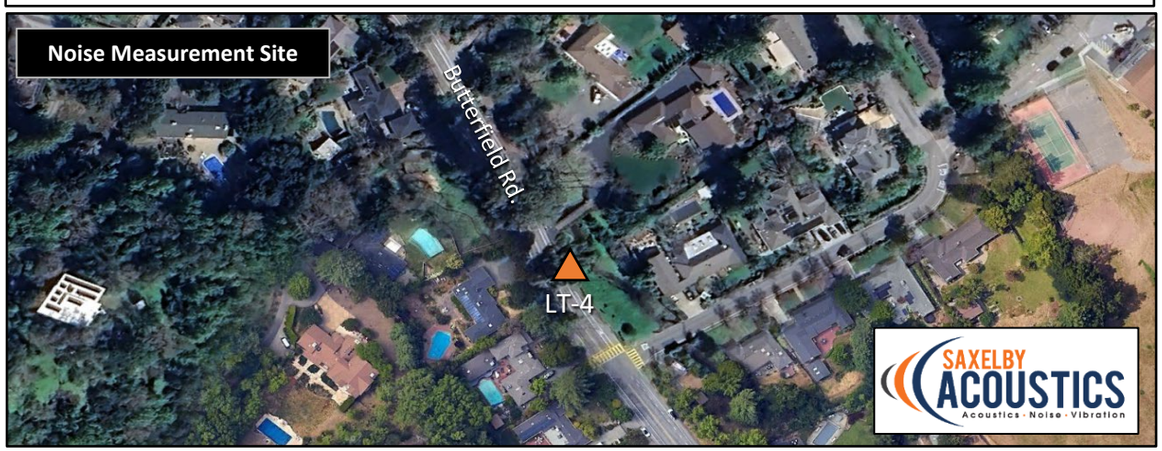
Appendix B4: Continuous Noise Monitoring Results

Site: LT-4
Project: San Anselmo GPU
Meter: LDL 820-5
Location: Northern Project Boundary
Calibrator: CAL200
Coordinates: (38.005341, -122.576455)

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Wednesday, October 2, 2024	0:00	45	63	44	44
Wednesday, October 2, 2024	1:00	46	69	44	43
Wednesday, October 2, 2024	2:00	43	64	42	42
Wednesday, October 2, 2024	3:00	42	64	41	40
Wednesday, October 2, 2024	4:00	44	67	39	37
Wednesday, October 2, 2024	5:00	50	72	36	33
Wednesday, October 2, 2024	6:00	56	72	43	35
Wednesday, October 2, 2024	7:00	61	78	56	44
Wednesday, October 2, 2024	8:00	61	79	57	46
Wednesday, October 2, 2024	9:00	64	83	56	43
Wednesday, October 2, 2024	10:00	61	77	56	46
Wednesday, October 2, 2024	11:00	60	78	53	42
Wednesday, October 2, 2024	12:00	60	76	52	41
Wednesday, October 2, 2024	13:00	59	82	52	41
Wednesday, October 2, 2024	14:00	59	75	53	40
Wednesday, October 2, 2024	15:00	60	76	57	44
Wednesday, October 2, 2024	16:00	61	77	58	45
Wednesday, October 2, 2024	17:00	60	74	57	46
Wednesday, October 2, 2024	18:00	60	76	55	43
Wednesday, October 2, 2024	19:00	58	76	50	44
Wednesday, October 2, 2024	20:00	57	72	50	47
Wednesday, October 2, 2024	21:00	56	74	48	46
Wednesday, October 2, 2024	22:00	55	79	47	45
Wednesday, October 2, 2024	23:00	52	71	45	44

Statistics	Leq	Lmax	L50	L90
Day Average	60	77	54	44
Night Average	51	69	42	40
Day Low	56	72	48	40
Day High	64	83	58	47
Night Low	42	63	36	33
Night High	56	79	47	45
Ldn	61	Day %		93
CNEL	61	Night %		7



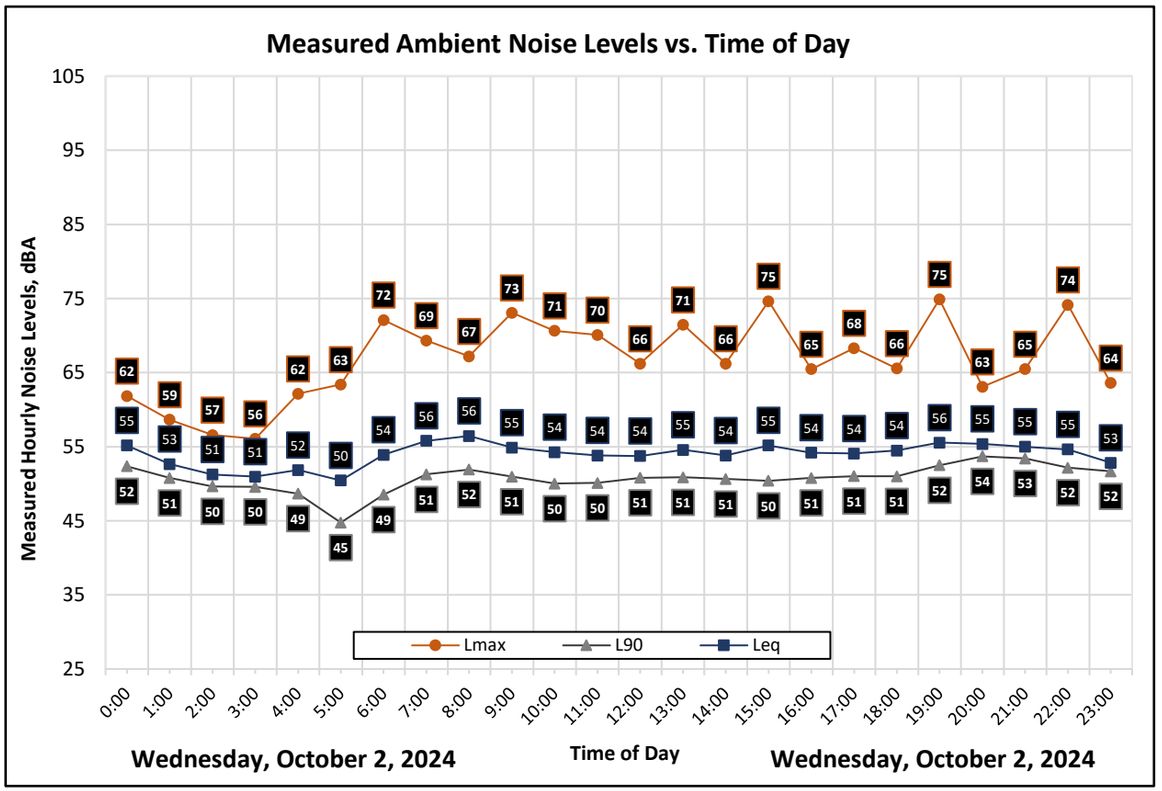


Appendix B5: Continuous Noise Monitoring Results

Site: LT-5
Project: San Anselmo GPU
Meter: LDL 820-6
Location: Eastern Project Boundary
Calibrator: CAL200
Coordinates: (37.9799230, -122.5638155)

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Wednesday, October 2, 2024	0:00	55	62	55	52
Wednesday, October 2, 2024	1:00	53	59	52	51
Wednesday, October 2, 2024	2:00	51	57	51	50
Wednesday, October 2, 2024	3:00	51	56	51	50
Wednesday, October 2, 2024	4:00	52	62	52	49
Wednesday, October 2, 2024	5:00	50	63	49	45
Wednesday, October 2, 2024	6:00	54	72	53	49
Wednesday, October 2, 2024	7:00	56	69	55	51
Wednesday, October 2, 2024	8:00	56	67	55	52
Wednesday, October 2, 2024	9:00	55	73	54	51
Wednesday, October 2, 2024	10:00	54	71	53	50
Wednesday, October 2, 2024	11:00	54	70	53	50
Wednesday, October 2, 2024	12:00	54	66	53	51
Wednesday, October 2, 2024	13:00	55	71	53	51
Wednesday, October 2, 2024	14:00	54	66	53	51
Wednesday, October 2, 2024	15:00	55	75	53	50
Wednesday, October 2, 2024	16:00	54	65	54	51
Wednesday, October 2, 2024	17:00	54	68	54	51
Wednesday, October 2, 2024	18:00	54	66	54	51
Wednesday, October 2, 2024	19:00	56	75	55	52
Wednesday, October 2, 2024	20:00	55	63	55	54
Wednesday, October 2, 2024	21:00	55	65	55	53
Wednesday, October 2, 2024	22:00	55	74	54	52
Wednesday, October 2, 2024	23:00	53	64	53	52

Statistics	Leq	Lmax	L50	L90
Day Average	55	69	54	51
Night Average	53	63	52	50
Day Low	54	63	53	50
Day High	56	75	55	54
Night Low	50	56	49	45
Night High	55	74	55	52
Ldn	60	Day %		72
CNEL	60	Night %		28





Appendix B6 : Short Term Noise Monitoring Results

Site: ST-1
Project: San Anselmo GPU
Location: Eastern Boundary of Project Site
Coordinates: (37.9761428, -122.5619628)
Meter: LDL 831-5
Calibrator: CAL200

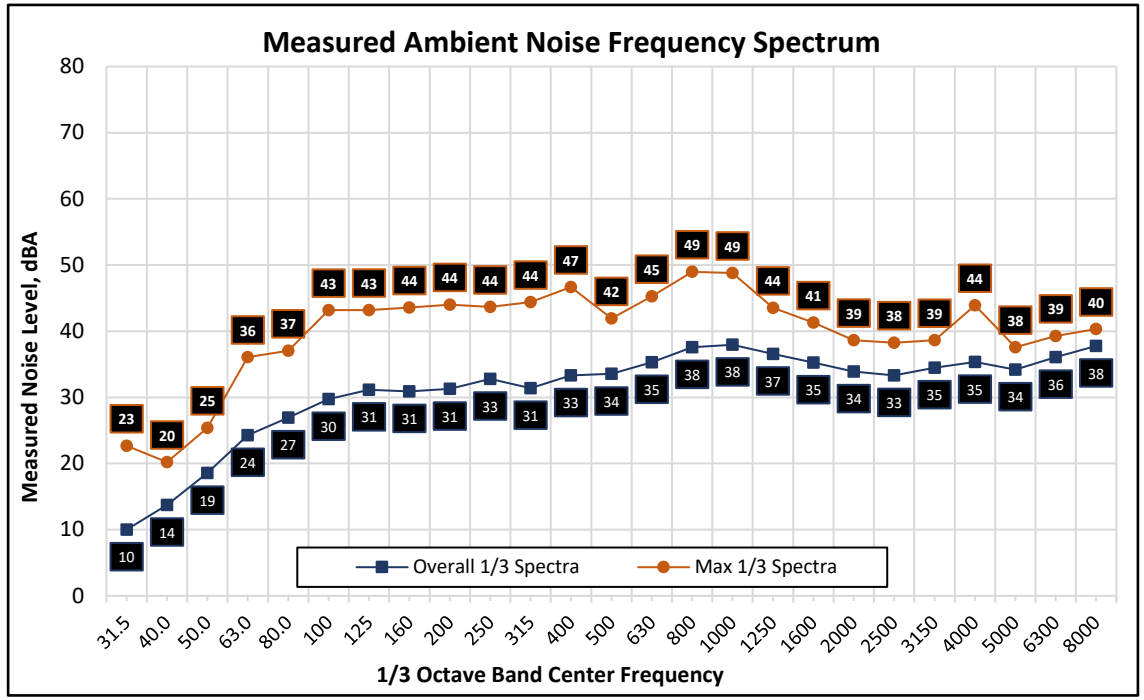
Start: 2024-10-01 14:22:33
Stop: 2024-10-01 14:32:33
SLM: Model 831
Serial: 0002658

Measurement Results, dBA

Duration:	0:10
L_{eq}:	61
L_{max}:	73
L_{min}:	54
L_{50}:	60
L_{90}:	57

Notes

Primary noise source was traffic noise from Center Boulevard and Red Hill Avenue. Secondary noise sources include traffic on Sir Francis Drake Boulevard and distant pedestrians.





Appendix B7 : Short Term Noise Monitoring Results

Site: ST-2
Project: San Anselmo GPU
Location: Eastern Boundary of Project Site
Coordinates: (37.9835559, -122.5658175)
Meter: LDL 831-5
Calibrator: CAL200

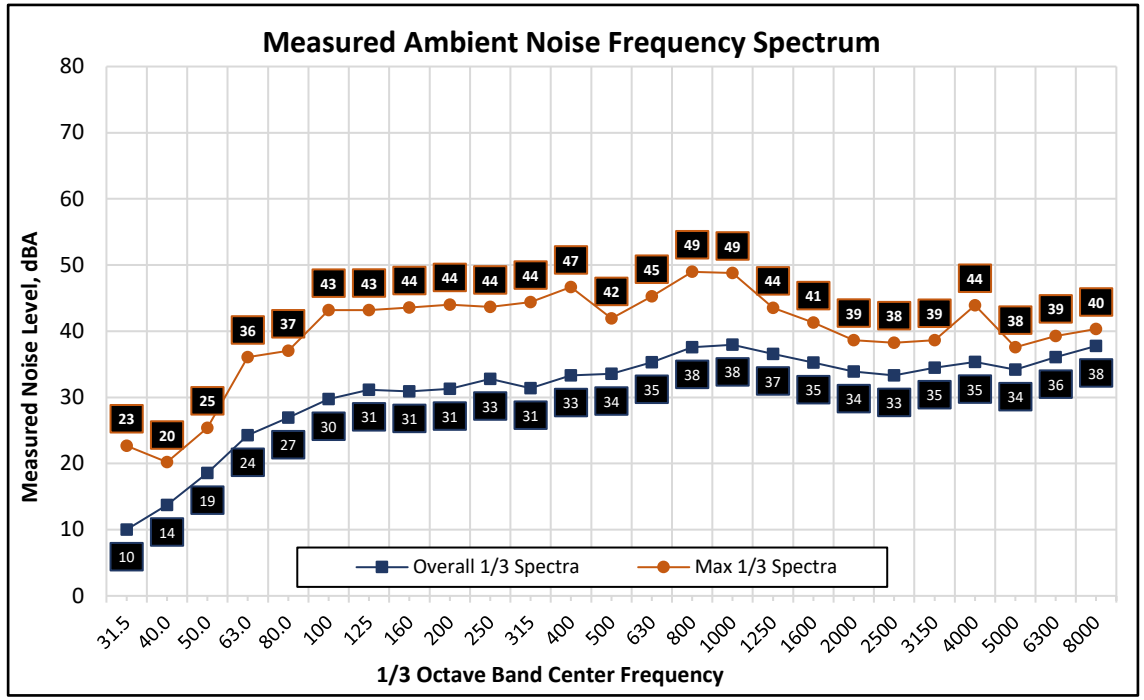
Start: 2024-10-01 15:38:11
Stop: 2024-10-01 15:48:11
SLM: Model 831
Serial: 0002658

Measurement Results, dBA

Duration:	0:10
L_{eq}:	42
L_{max}:	60
L_{min}:	34
L_{50}:	39
L_{90}:	36

Notes

Primary noise source was traffic noise from Sir Francis Drake Boulevard and San Francisco Boulevard. Secondary noise sources include minimal construction noise and distant pedestrians.





Appendix B8 : Short Term Noise Monitoring Results

Site: ST-3
Project: San Anselmo GPU
Meter: LDL 831-5
Location: Western Boundary of Project Site
Calibrator: CAL200
Coordinates: (37.9816513, -122.5710759)

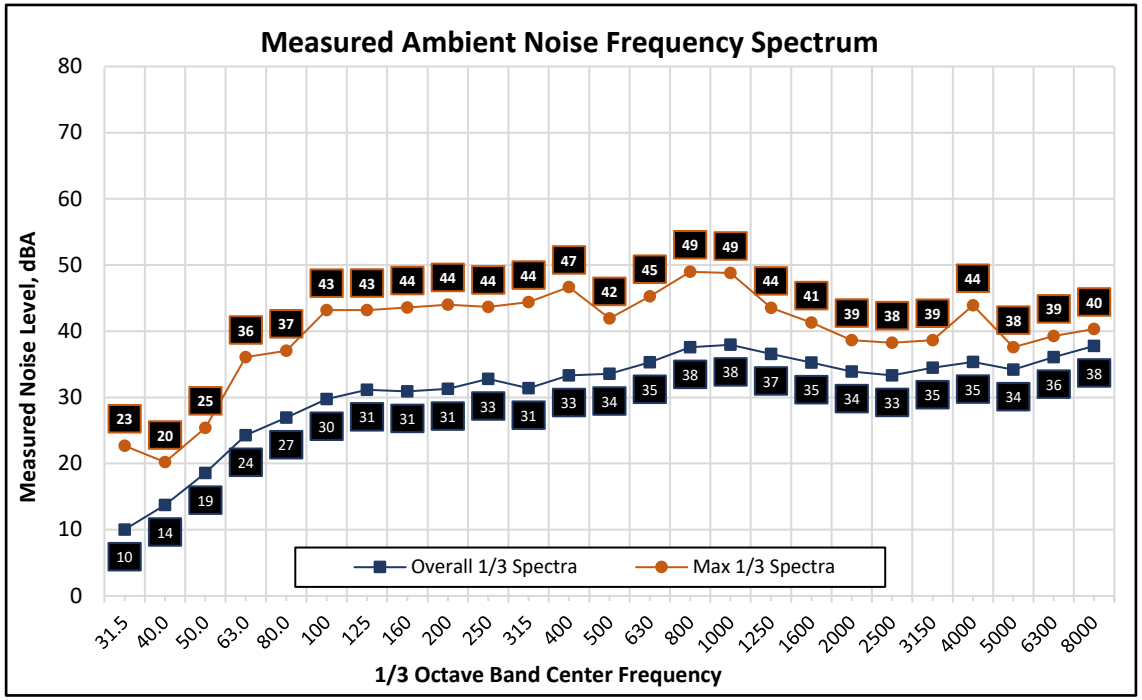
Start: 2024-10-01 15:55:09
Stop: 2024-10-01 16:05:09
SLM: Model 831
Serial: 0002658

Measurement Results, dBA

Duration:	0:10
L_{eq}:	58
L_{max}:	76
L_{min}:	43
L_{50}:	54
L_{90}:	46

Notes

Primary noise source was traffic noise from Sir Francis Drake Boulevard and Saunders Avenue. Secondary noise sources include pedestrains and school activity.





Appendix B9 : Short Term Noise Monitoring Results

Site: ST-4
Project: San Anselmo GPU
Meter: LDL 831-5
Location: Southwestern Boundary of Project Site
Calibrator: CAL200
Coordinates: (37.9737327, -122.5782629)

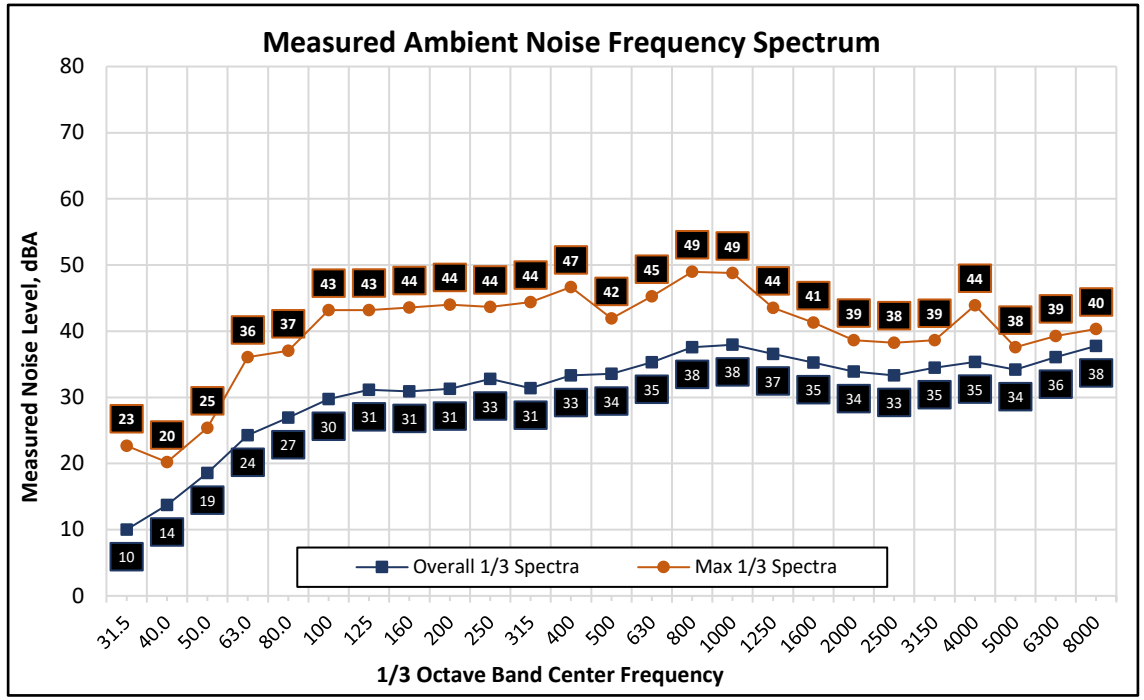
Start: 2024-10-03 13:17:38
Stop: 2024-10-03 13:27:38
SLM: Model 831
Serial: 0002658

Measurement Results, dBA

Duration:	0:10
L_{eq}:	40
L_{max}:	59
L_{min}:	29
L_{50}:	32
L_{90}:	30

Notes

Primary noise source was traffic noise from Redwood Road. Secondary noise sources include natural noise such as birds and wind.





Appendix B10 : Short Term Noise Monitoring Results

Site: ST-5
Project: San Anselmo GPU
Meter: LDL 831-5
Location: Northern Boundary of Project Site
Calibrator: CAL200
Coordinates: (38.0163045, -122.5865134)

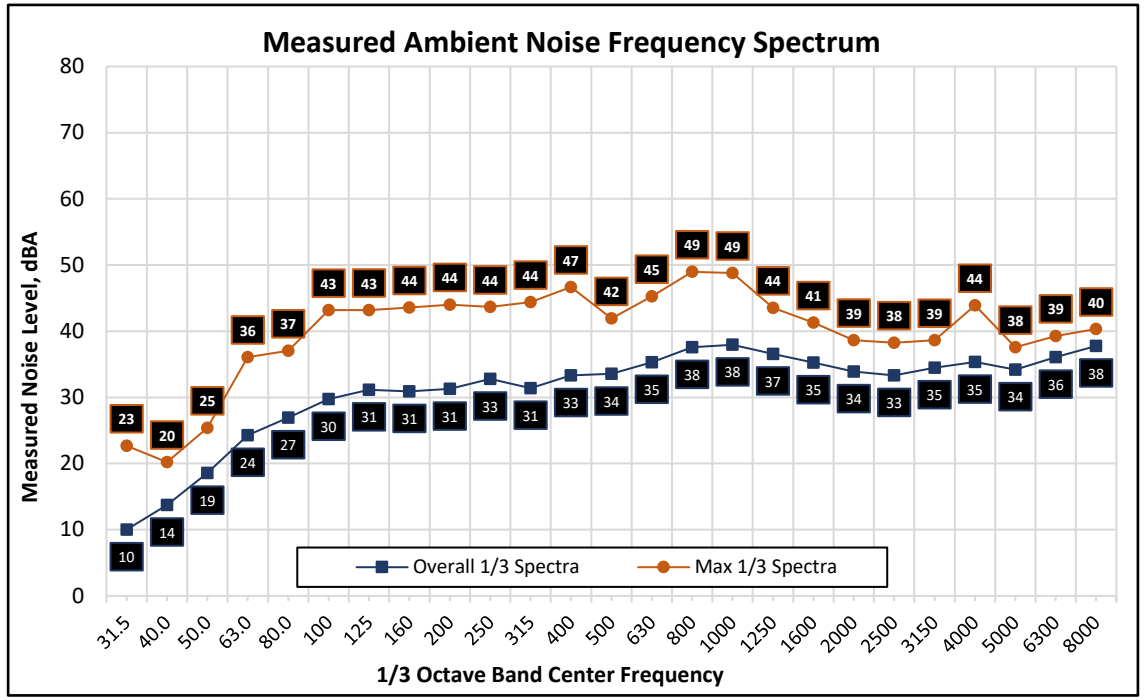
Start: 2024-10-01 15:55:09
Stop: 2024-10-01 16:05:09
SLM: Model 831
Serial: 0002658

Measurement Results, dBA

Duration:	0:10
L_{eq}:	58
L_{max}:	76
L_{min}:	43
L_{50}:	54
L_{90}:	46

Notes

Primary noise source was traffic noise from Butterfield Road and nearby parking lot. Secondary noise sources include pedestrains and nearby school activity.





Appendix B11 : Short Term Noise Monitoring Results

Site: ST-6
Project: San Anselmo GPU
Meter: LDL 831-5
Location: Northern Boundary of Project Site
Calibrator: CAL200
Coordinates: (37.9931234, -122.5682268)

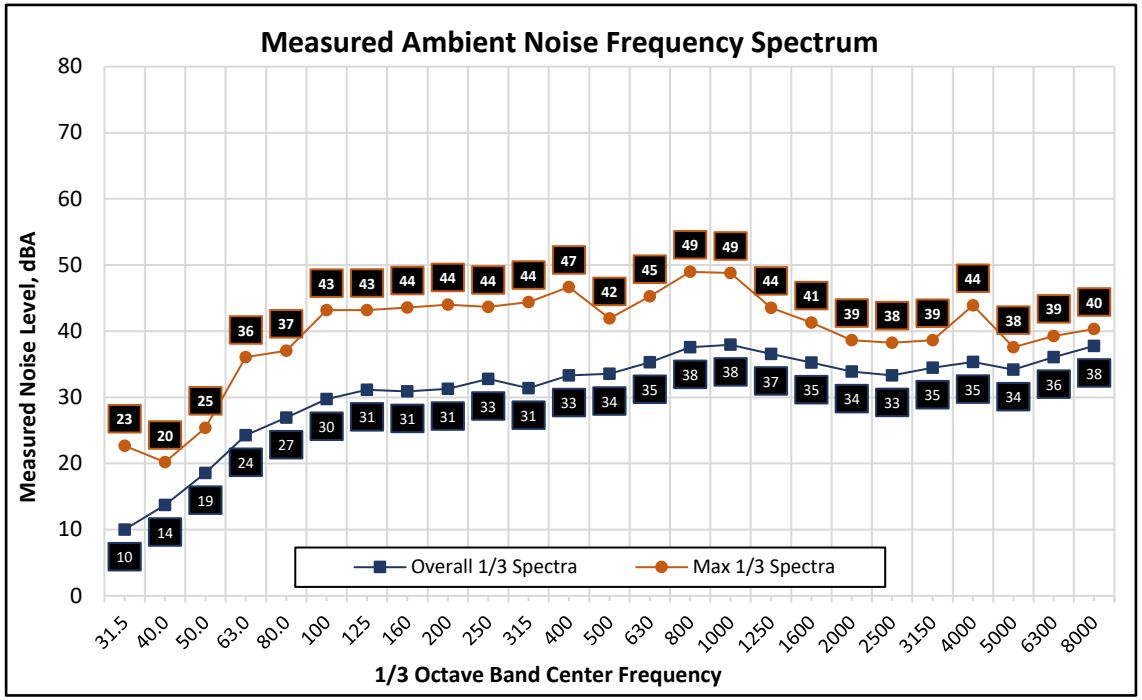
Start: 2024-10-03 14:20:38
Stop: 2024-10-03 14:30:38
SLM: Model 831
Serial: 0002658

Measurement Results, dBA

Duration:	0:10
L_{eq}:	46
L_{max}:	58
L_{min}:	36
L_{50}:	44
L_{90}:	41

Notes

Primary noise source was traffic noise from Tomahawk Drive and nearby construction. Secondary noise sources include natural noise such as birds.





Appendix B12 : Short Term Noise Monitoring Results

Site: ST-7
Project: San Anselmo GPU
Location: Southern Boundary of Project Site
Coordinates: (37.9741088, -122.5620463)
Meter: LDL 831-5
Calibrator: CAL200

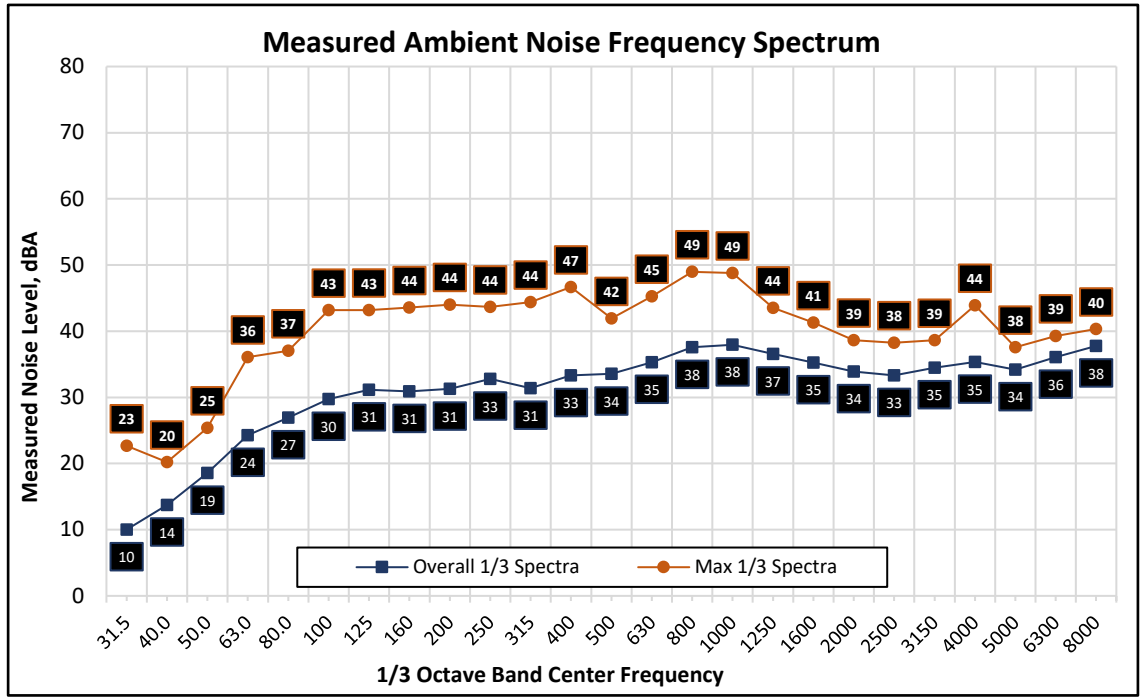
Start: 2024-10-01 14:08:01
Stop: 2024-10-01 14:18:01
SLM: Model 831
Serial: 0002658

Measurement Results, dBA

Duration:	0:10
L_{eq}:	65
L_{max}:	80
L_{min}:	51
L_{50}:	63
L_{90}:	57

Notes

Primary noise source was traffic noise from Sir Francis Drake Boulevard and San Anselmo Avenue. Secondary noise sources include pedestrains.





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Appendix C: Traffic Noise Calculation Inputs and Results



Appendix C-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 240904 San Anselmo GPU
Description: Existing Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Sir Fraces Drake Blvd	Between Mountain View Ave and Cordone Dr	30,400	89	0	11	1.0%	1.0%	30	120	-5	156	73	34	56.7
2	Center Blvd	Between San Anselmo and Saunders Blvd	10,100	94	0	6	1.0%	1.0%	30	45	0	63	29	14	62.2
3	Butterfield Rd	North of Sir Francis Drake Blvd	11,900	93	0	7	1.0%	1.0%	25	90	-5	57	27	12	52.1
4	San Francisco Blvd	North of Sir Francis Drake Blvd	3,200	72	0	28	1.0%	1.0%	25	120	-5	40	18	9	47.8
5	Greenfield Ave	Between the Hub and Spring Grove Ave	1,600	88	0	12	1.0%	1.0%	25	105	-5	18	8	4	43.4
6	San Anselmo Ave	Between Tunstead Ave and Magnolia Ave	5,700	88	0	12	1.0%	1.0%	25	25	0	41	19	9	63.3

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Appendix C-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 240904 San Anselmo GPU
Description: Future Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Sir Fraces Drake Blvd	Between Mountain View Ave and Cordone Dr	35,724	89	0	11	1.0%	1.0%	30	120	-5	174	81	37	57.4
2	Center Blvd	Between San Anselmo and Saunders Blvd	11,859	94	0	6	1.0%	1.0%	30	45	0	70	33	15	62.9
3	Butterfield Rd	North of Sir Francis Drake Blvd	13,984	93	0	7	1.0%	1.0%	25	90	-5	64	30	14	52.8
4	San Francisco Blvd	North of Sir Francis Drake Blvd	3,760	72	0	28	1.0%	1.0%	25	120	-5	44	21	10	48.5
5	Greenfield Ave	Between the Hub and Spring Grove Ave	1,880	88	0	12	1.0%	1.0%	25	105	-5	20	9	4	44.1
6	San Anselmo Ave	Between Tunstead Ave and Magnolia Ave	6,698	88	0	12	1.0%	1.0%	25	25	0	46	21	10	64.0

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Appendix C-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 240904 San Anselmo GPU
Description: Future Plus Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Sir Fraces Drake Blvd	Between Mountain View Ave and Cordone Dr	39,575	89	0	11	1.0%	1.0%	30	120	-5	186	86	40	57.9
2	Center Blvd	Between San Anselmo and Saunders Blvd	13,529	94	0	6	1.0%	1.0%	30	45	0	77	36	17	63.5
3	Butterfield Rd	North of Sir Francis Drake Blvd	14,452	93	0	7	1.0%	1.0%	25	90	-5	65	30	14	52.9
4	San Francisco Blvd	North of Sir Francis Drake Blvd	4,267	72	0	28	1.0%	1.0%	25	120	-5	48	22	10	49.1
5	Greenfield Ave	Between the Hub and Spring Grove Ave	3,048	88	0	12	1.0%	1.0%	25	105	-5	27	13	6	46.2
6	San Anselmo Ave	Between Tunstead Ave and Magnolia Ave	7,121	88	0	12	1.0%	1.0%	25	25	0	48	22	10	64.2

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Appendix D: Example Loading Dock Noise Barrier Reductions



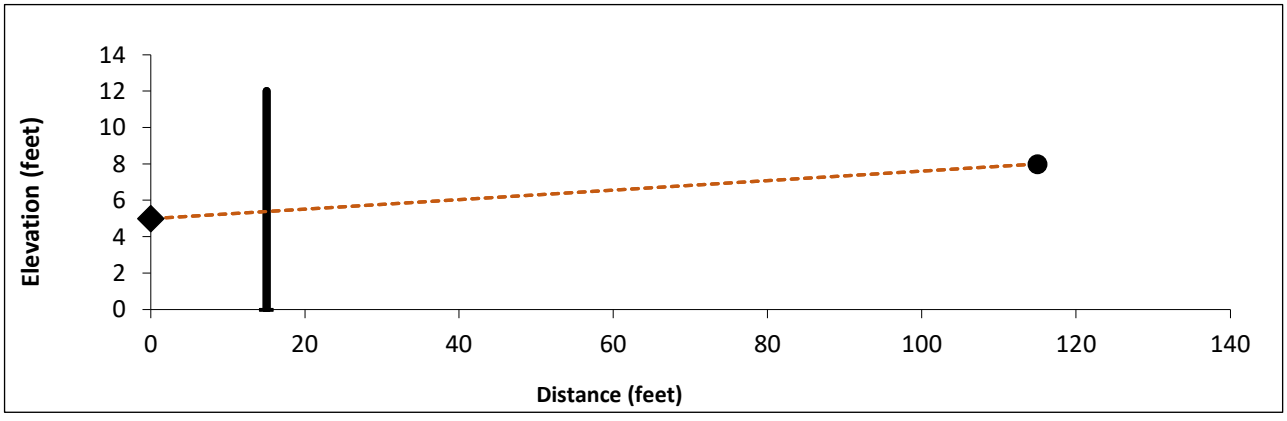
Appendix D-1 : Barrier Insertion Loss Calculation

Project Information:	Project Name: San Anselmo GPU Location(s): Example Loading Dock - 100' with 12' sound wall
Noise Level Data:	Source Description: Loading Dock Source Noise Level, dBA Leq: 66.0 Source Frequency (Hz): 1000 Source Height (ft): 8
Site Geometry:	Receiver Description: Sensitive Use Source to Barrier Distance (C_1): 100 Barrier to Receiver Distance (C_2): 15 Pad/Ground Elevation at Receiver: 0 Receiver Elevation[1]: 5 Base of Barrier Elevation: 0 Starting Barrier Height 12

Barrier Effectiveness

Top of Barrier Elevation (ft)	Barrier Height (ft)	Insertion Loss, dB	Noise Level, dB	Barrier Breaks Line of Site to Source?
12	12	-13	53	Yes
13	13	-14	52	Yes
14	14	-15	51	Yes
15	15	-15	51	Yes
16	16	-16	50	Yes
17	17	-17	49	Yes
18	18	-17	49	Yes
19	19	-17	49	Yes
20	20	-17	49	Yes
21	21	-17	49	Yes
22	22	-17	49	Yes

Notes: [1] Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)



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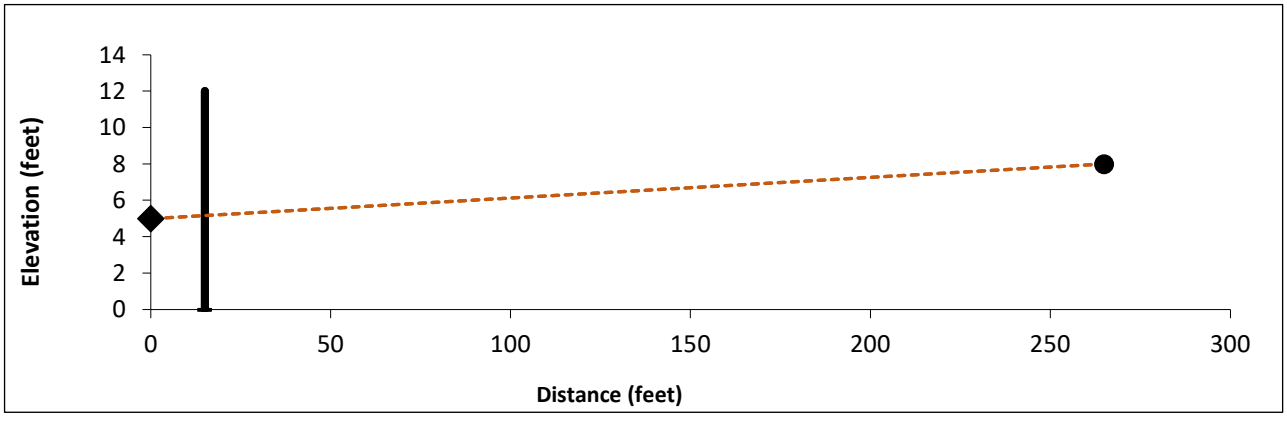
Appendix D-2 : Barrier Insertion Loss Calculation

Project Information:	Project Name: San Anselmo GPU Location(s): Example Loading Dock - 250' with 12' sound wall
Noise Level Data:	Source Description: Loading Dock Source Noise Level, dBA Leq: 58.0 Source Frequency (Hz): 1000 Source Height (ft): 8
Site Geometry:	Receiver Description: Sensitive Use Source to Barrier Distance (C_1): 250 Barrier to Receiver Distance (C_2): 15 Pad/Ground Elevation at Receiver: 0 Receiver Elevation[1]: 5 Base of Barrier Elevation: 0 Starting Barrier Height 12

Barrier Effectiveness

Top of Barrier Elevation (ft)	Barrier Height (ft)	Insertion Loss, dB	Noise Level, dB	Barrier Breaks Line of Site to Source?
12	12	-13	45	Yes
13	13	-14	44	Yes
14	14	-15	43	Yes
15	15	-15	43	Yes
16	16	-16	42	Yes
17	17	-16	42	Yes
18	18	-17	41	Yes
19	19	-17	41	Yes
20	20	-17	41	Yes
21	21	-17	41	Yes
22	22	-17	41	Yes

Notes: [1] Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)



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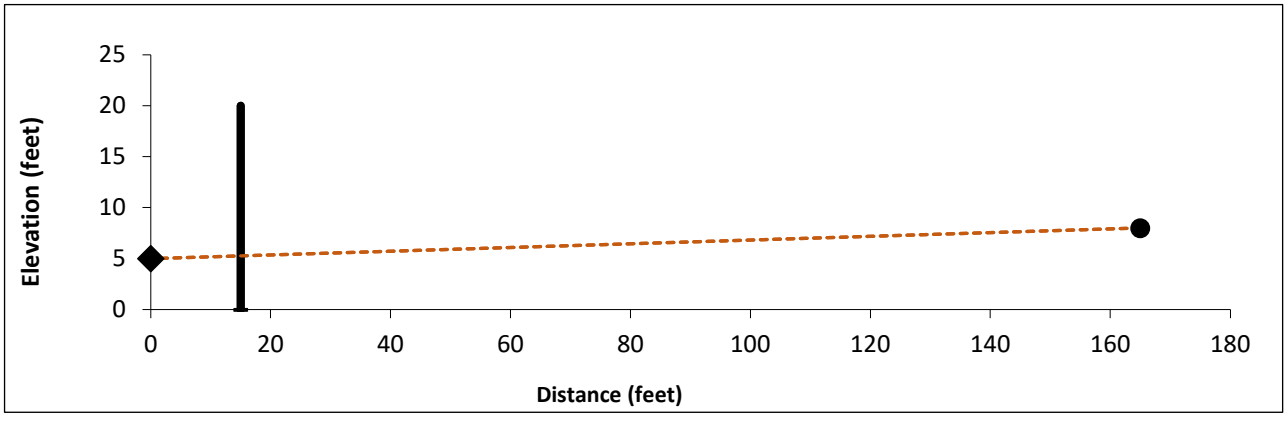
Appendix D-3 : Barrier Insertion Loss Calculation

Project Information:	Project Name: San Anselmo GPU Location(s): Example Loading Dock - 150' with building shielding
Noise Level Data:	Source Description: Loading Dock Source Noise Level, dBA Leq: 62.5 Source Frequency (Hz): 1000 Source Height (ft): 8
Site Geometry:	Receiver Description: Sensitive Use Source to Barrier Distance (C_1): 150 Barrier to Receiver Distance (C_2): 15 Pad/Ground Elevation at Receiver: 0 Receiver Elevation[1]: 5 Base of Barrier Elevation: 0 Starting Barrier Height 20

Barrier Effectiveness

Top of Barrier Elevation (ft)	Barrier Height (ft)	Insertion Loss, dB	Noise Level, dB	Barrier Breaks Line of Site to Source?
20	20	-17	45	Yes
21	21	-17	45	Yes
22	22	-17	45	Yes
23	23	-17	45	Yes
24	24	-17	45	Yes
25	25	-17	45	Yes
26	26	-18	44	Yes
27	27	-18	44	Yes
28	28	-18	44	Yes
29	29	-18	44	Yes
30	30	-18	44	Yes

Notes: [1] Standard receiver elevation is five feet above grade/pad elevations at the receiver location(s)



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