

Appendix H:
Noise Supporting Information

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Mobile Construction Activity Noise Calculation

Receptor: Receiving residential property line		Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements									
No.	Equipment Description	Reference (dBA) 50 ft	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	Calculated (dBA)		Energy	
		Lmax						Leq			
1	Grader	85	1	40	35	1	8	80.1	77.7	58447490.8	
2	Excavator	85	1	40	85	1	8	72.4	66.1	4080498.544	
3	Front End Loader	80	1	40	85	1	8	67.4	61.1	1290366.939	
4	Backhoe	80	1	40	85	1	8	67.4	61.1	1290366.939	
5											
6											
7											
8											
9											
10											
								Lmax[4]	80	Leq	78

Notes:

- [1] Percentage of time activity occurs each hour
- [2] Soft ground terrain between project site and receptor.
- [3] Shielding due to terrain or structures
- [4] Calculated Lmax is the Loudest value.

8-hour Average Calculation					
	Time	Hourly Leq	Leq ¹	0.1*Leq	antiLog
Night	12:00 AM	0.0	0.0	0	1
	1:00 AM	0.0	0.0	0	1
	2:00 AM	0.0	0.0	0	1
	3:00 AM	0.0	0.0	0	1
	4:00 AM	0.0	0.0	0	1
	5:00 AM	0.0	0.0	0	1
	6:00 AM	0.0	0.0	0	1
	7:00 AM	0.0	0.0	0	1
Day	8:00 AM	78.1	78.1	7.813639179	65108723.22
	9:00 AM	78.1	78.1	7.813639179	65108723.22
	10:00 AM	78.1	78.1	7.813639179	65108723.22
	11:00 AM	78.1	78.1	7.813639179	65108723.22
	12:00 PM	78.1	78.1	7.813639179	65108723.22
	1:00 PM	78.1	78.1	7.813639179	65108723.22
	2:00 PM	78.1	78.1	7.813639179	65108723.22
	3:00 PM	78.1	78.1	7.813639179	65108723.22
	4:00 PM	0.0	0.0	0	1
	5:00 PM	0.0	0.0	0	1
	6:00 PM	0.0	0.0	0	1
	7:00 PM	0.0	0.0	0	1
Evening	8:00 PM	0.0	0.0	0	1
	9:00 PM	0.0	0.0	0	1
	10:00 PM	0.0	0.0	0	1
Night	11:00 PM	0.0	0.0	0	1
Sum					520869801.8
Sum/8					65108725.22
Log10(Sum/8)					7.813639192
10*Log10(Sum/8)					78.13639192
8-Hour Average					78

Mechanical Equipment Noise Calculation

Receptor: Receiving residential property line		Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements									
No.	Equipment Description	Reference (dBA) 5 ft	Quantity	Usage factor[1]	Distance to Receptor	Ground Effect[2]	Shielding (dBA)[3]	Calculated (dBA)		Energy	
		Lmax						Lmax	Leq		
1	Residential grade mechanical ventilation equipment	70	1	100	25	1	6	50.0	43.0	20095.09145	
2	Residential grade mechanical ventilation equipment	70	1	100	50	1	6	44.0	34.0	2511.886432	
3	Residential grade mechanical ventilation equipment	70	1	100	70	1	6	41.1	29.6	915.4105071	
4	Residential grade mechanical ventilation equipment	70	1	100	90	1	6	38.9	26.3	430.70755	
5	Residential grade mechanical ventilation equipment	70	1	100	110	1	6	37.2	23.7	235.9021818	
6											
7											
8											
9											
10											
								Lmax[4]	50	Leq	44

Notes:

- [1] Percentage of time activity occurs each hour
- [2] Soft ground terrain between project site and receptor.
- [3] Shielding due to rooftop parapet and soundwall shielding
- [4] Calculated Lmax is the Loudest value.

TABLE Existing-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/22/2023
ROADWAY SEGMENT: Busch Road - Valley Avenue to Ironwood Drive
NOTES: Arroyo Lago - Existing

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2400 SPEED (MPH): 35 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 56.49

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	0.0	0.0	91.2

TABLE Existing-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/22/2023
ROADWAY SEGMENT: Busch Road - Ironwood Drive to Project Site
NOTES: Arroyo Lago - Existing

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1000 SPEED (MPH): 35 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 54.19

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	0.0	0.0	0.0

TABLE Existing with Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/22/2023

ROADWAY SEGMENT: Busch Road - Valley Avenue to Ironwood Drive

NOTES: Arroyo Lago - Existing with Project

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 4800 SPEED (MPH): 35 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.50

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	0.0	69.1	141.7

TABLE Existing with Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/22/2023

ROADWAY SEGMENT: Busch Road - Ironwood Drive to Project Site

NOTES: Arroyo Lago - Existing with Project

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3100 SPEED (MPH): 35 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.11

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	0.0	0.0	104.7

TABLE Future-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/22/2023
ROADWAY SEGMENT: Busch Road - Valley Avenue to Ironwood Drive
NOTES: Arroyo Lago - Future

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 14800 SPEED (MPH): 35 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.39

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	68.1	139.4	296.7

TABLE Future-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/22/2023
ROADWAY SEGMENT: Busch Road - Ironwood Drive to Project Site
NOTES: Arroyo Lago - Future

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 13300 SPEED (MPH): 35 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.36

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	62.1	129.2	276.2

TABLE Future with Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/22/2023
ROADWAY SEGMENT: Busch Road - Valley Avenue to Ironwood Drive
NOTES: Arroyo Lago - Future with Project

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 16800 SPEED (MPH): 35 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 24 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.94

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	73.4	151.3	322.7

TABLE Future with Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 11/22/2023

ROADWAY SEGMENT: Busch Road - Ironwood Drive to Project Site

NOTES: Arroyo Lago - Future with Project

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 15300 SPEED (MPH): 35 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
	---	-----	-----
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.97

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
-----	-----	-----	-----
0.0	67.7	141.6	303.1



Project Number: 5824.0001 Sheet of
 Project Name: Arroyo Leyo Residential Project
 Test Personnel: Hervique Zha

NOISE MEASUREMENT SURVEY

Site Number: ST1 Date: 02/23/23 Time: From 13:04 To 13:21

Site Location: In the NW corner of project site, approx. 100 ft from gravel road by Lake I, and 50 ft from residences west.

Primary Noise Sources: Lawn-mowing and other residential noises, distant industrial noises from truck & business south

Measurement Results

	dB(A)
Leq	45.2
Lmax	58.3
Lmin	40.3
Lpeak	81.2
L5	48.2
L10	47.2
L50	43.7
L90	41.9
SEL	

Observed Noise Sources/Events

Time	Noise Source/Event	dB(A)

Comments: _____

Equipment: LxT2 Measured Difference: 0.03 dB(A)
 Settings: A-Weighted Other Slow Fast Windscreen

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)
<u>7.6</u>	<u>2.7</u>	<u>47.8</u>	
Comments: _____			



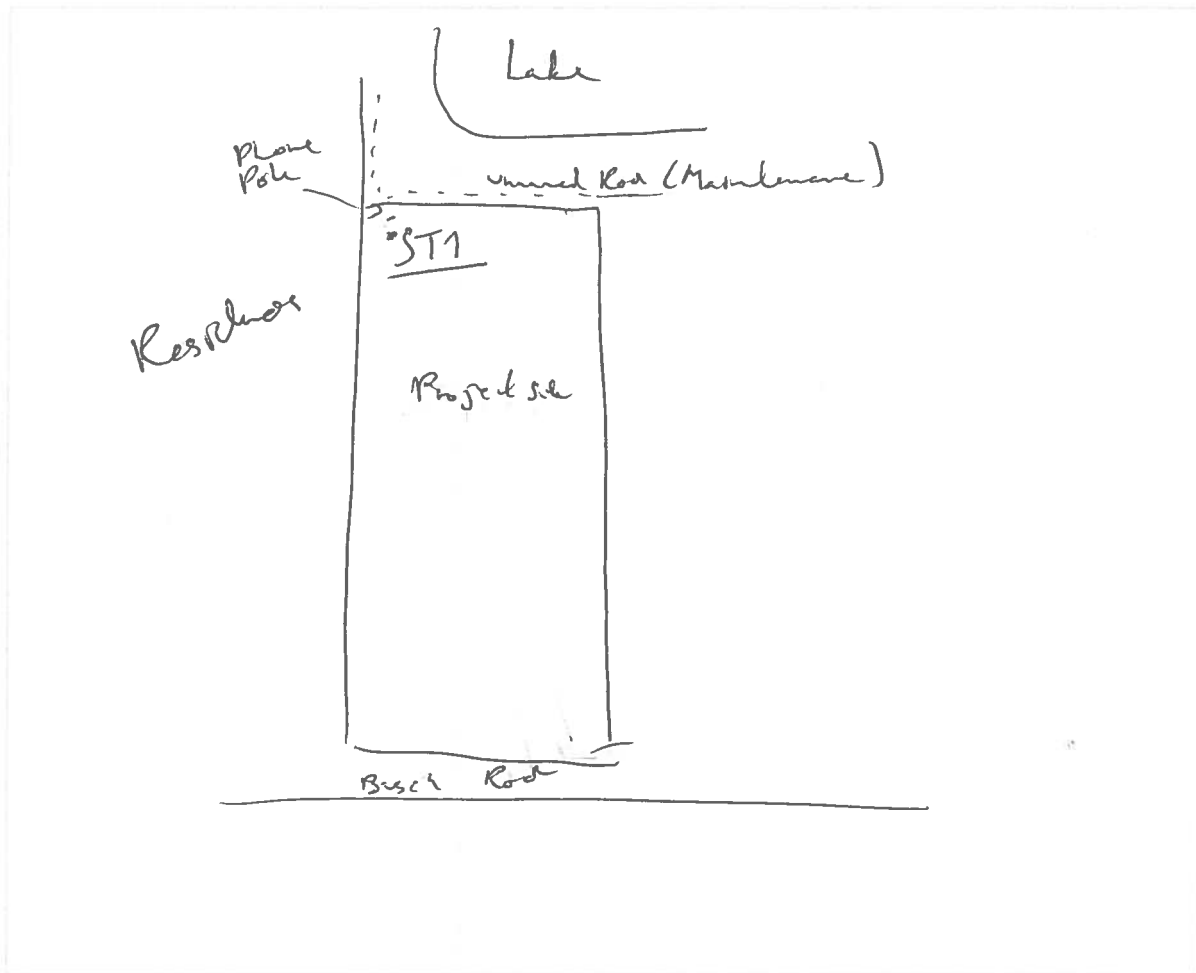
Photos Taken:

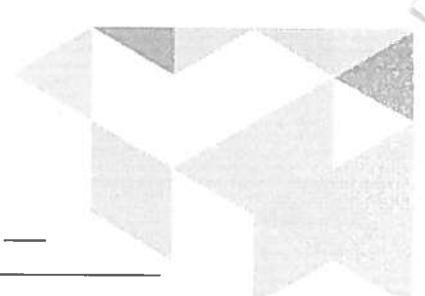
Photo Number	Location/Description
1	Facing N
2	" E
3	" S
4	" W

Traffic Description:

Roadway	# Lanes	Posted Speed	Average Speed	NB/EB Counts	SB/WB Counts
None					

Diagram/Further Comments:





Project Number: 5824.0001 Sheet of
 Project Name: Arroyo Lago Residential Project
 Test Personnel: Henrique Z...

NOISE MEASUREMENT SURVEY

Site Number: ST2 Date: 02/23/2027 Time: From 14:54 To 15:11

Site Location: On southeast corner of project site, approx. 20 ft north of Busch Road. Opposite Pleasanton Garbage Service transfer station

Primary Noise Sources: Busch Road Traffic, Transfer Station operations, birds on site, private truck north side adjacent to garbage station

Measurement Results

	dB(A)
L _{eq}	57.1
L _{max}	72.1
L _{min}	47.0
L _{peak}	78.0
L ₅	62.2
L ₁₀	59.8
L ₅₀	53.8
L ₉₀	50.0
SEL	

Observed Noise Sources/Events

Time	Noise Source/Event	dB(A)

Comments: _____

Equipment: LxT2 Measured Difference: 0.02 dB(A)
 Settings: A-Weighted Other _____ Slow Fast Windscreen

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)
11.0	5.4	50.9	
Comments: _____			



Photos Taken:

Photo Number	Location/Description
1	Facing N
2	" E
3	" S
4	" W

Traffic Description:

Roadway	# Lanes	Posted Speed	Average Speed	NB/EB Counts	SB/WB Counts
Busch Rd	2	35	20		

Diagram/Further Comments:





Project Number: 5824-0601 Sheet of
 Project Name: Arroyo Lago Residential Project
 Test Personnel: Hemique Zhu

NOISE MEASUREMENT SURVEY

Site Number: ST3 Date: 02/23/2023 Time: From 15:16 To 15:33

Site Location: On the SW corner of the project site, approx. 30 ft from Busch Rd, and 20 ft from water facilities west of site.

Primary Noise Sources: Busch Rd traffic, Tractor trailer queuing, power brooms, generators, drills south, highway traffic in distance, overhead planes

Measurement Results

	dB(A)
L _{eq}	54.8
L _{max}	68.6
L _{min}	45.4
L _{peak}	87.8 86.6
L ₅	61.1
L ₁₀	58.3
L ₅₀	50.4
L ₉₀	47.4
SEL	

Observed Noise Sources/Events

Time	Noise Source/Event	dB(A)

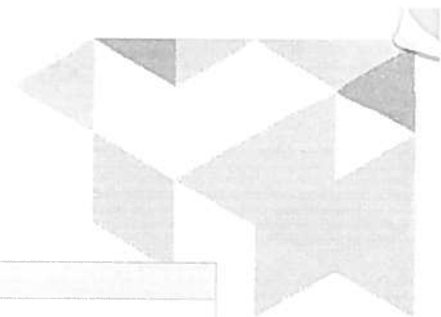
Comments: _____

Equipment: LxT2 Measured Difference: 0.02 dB(A)
 Settings: A-Weighted Other Slow Fast Windscreen

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)
<u>10.9</u>	<u>4.4</u>	<u>54.0</u>	

Comments: _____



Photos Taken:

Photo Number	Location/Description
1	Facing N
2	" E
3	" S
4	" W

Traffic Description:

Roadway	# Lanes	Posted Speed	Average Speed	NB/EB Counts	SB/WB Counts
Busch Rd	2	35	20		

Diagram/Further Comments:





Project Number: 5824.0001

Sheet ___ of ___

Project Name: Henrique 2h

Test Personnel: Arroso Lago Residential Project

NOISE MEASUREMENT SURVEY

Site Number: LT1 Date: 03-18-23 to 03-18 Time: From 16:15 To (17:10)+1 day

Site Location: SW corner of project site, 20 ft off Busch Road. On SW corner Gate post.

Primary Noise Sources: Busch Road traffic, Fire Dept. Training Centre, Trucks from industrial use South, Pleasanton Garbage station

Measurement Results

	dB(A)
L _{eq}	59.0
L _{max}	85.2
L _{min}	36.3
L _{peak}	103.3
L ₅	66.0
L ₁₀	62.1
L ₅₀	48.0
L ₉₀	39.9
SEL	

Observed Noise Sources/Events

Time	Noise Source/Event	dB(A)

Comments: _____

Equipment: LxT2
Settings: A-Weighted Other

Measured Difference: 0.07 dB(A)
Slow Fast Windscreen

Atmospheric Conditions:

Maximum Wind Velocity (mph)	Average Wind Velocity (mph)	Temperature (F)	Relative Humidity (%)
Comments: _____			



Photos Taken:

Photo Number	Location/Description	
1	Fairly	N
2	"	E
3	"	W

Traffic Description:

Roadway	# Lanes	Posted Speed	Average Speed	NB/EB Counts	SB/WB Counts
Brosch Rd	2	35	25-30	_____	_____

Diagram/Further Comments:



Measurement Report

Report Summary

Meter's File Name	LxT_Data.253.s	Computer's File Name	LxT_0004397-20230315 151557-LxT_Data.253.ldbin		
Meter	LxT2 0004397	Firmware	2.301		
User		Location			
Job Description					
Note					
Start Time	15-03-2023 15:15:57	Duration	24:52:52.1		
End Time	16-03-2023 16:08:49	Run Time	24:52:52.1	Pause Time	0:00:00.0
Pre-Calibration	15-03-2023 15:12:59	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA _{eq}	59.0 dB		
LAE	108.5 dB	SEA	--- dB
EA	7.9 mPa²h		
EA8	2.5 mPa²h		
EA40	12.7 mPa²h		
LAS _{peak}	103.3 dB		15-03-2023 15:16:28
LAS _{max}	85.2 dB		16-03-2023 07:27:05
LAS _{min}	36.3 dB		16-03-2023 01:13:01
LA _{eq}	59.0 dB		
LC _{eq}	68.9 dB	LC _{eq} - LA _{eq}	9.9 dB
LAI _{eq}	61.5 dB	LAI _{eq} - LA _{eq}	2.5 dB

Exceedances

	Count	Duration
LAS > 85.0 dB	1	0:00:00.8
LAS > 115.0 dB	0	0:00:00.0
LASpeak > 135.0 dB	0	0:00:00.0
LASpeak > 137.0 dB	0	0:00:00.0
LASpeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
64.2 dB	59.6 dB	0.0 dB	
LDEN	LDay	LEve	LNight
64.3 dB	60.4 dB	51.8 dB	57.4 dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L _{eq}	59.0 dB		--- dB		--- dB	
L _{S(max)}	85.2 dB	16-03-2023 07:27:05	--- dB	None	--- dB	None
L _{S(min)}	36.3 dB	16-03-2023 01:13:01	--- dB	None	--- dB	None
L _{Peak(max)}	103.3 dB	15-03-2023 15:16:28	--- dB	None	--- dB	None

Overloads

Count	Duration
0	0:00:00.0

Statistics

LAS 5.0	66.0 dB
LAS 10.0	62.1 dB
LAS 33.3	51.0 dB
LAS 50.0	48.0 dB
LAS 66.6	45.2 dB
LAS 90.0	39.9 dB

Time History

