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NOISE IMPACT STUDY FOR WEDDING VENUE BLUES LAKE RD IN LAKE COUNTY AND RECOMMENDATIONS TO MEET COUNTY NOISE STANDARDS

Prepared for

Rancho Novoa
5680 Blue Lake Road
Upper Lake, CA 95485

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

List of Figures (Continued)

1.0 SUMMARY

This report documents the sound impacts to and by the proposed Rancho Novoa wedding venue in Lake County. The project plans for up to 10 events the first year and grow it until there are two events each month. The project site is part of a 27 acre site with access to Blue Lakes south and east of The Narrows Family Resort and with a meadow next to the north property line [1]*. State Route 20 is east of the Blue Lakes and Blue Lakes Road provides access to the site from the State Route. The nearest home is about half a mile south of the project site. The terrain provides significant shielding from the project site. There is a grounds keeper residence at The Narrows Family Resort. The project site is designed with 40 parking spaces and 16 campsites and with restrooms, storage and one care taker home on the property. The wedding venue is expected to play host to between 50 and 300 people at each event. Buses will be used to move over flow guests from a parking facility to the project site. The facility will be open from 10:00 a.m. to 10:00 p.m. The campsite may be used by the wedding party or guests. Thus, the site may not be completely empty after 10:00 p.m. During a site visit and sound testing, a decision was made to place the stage about 200 feet west of the fence along the east side of the site and to direct the speakers to send sound to the west, away from the Resort. The stage would be about 115 feet south of the north property line.

The main sources of sound for campers at the site are road traffic on SR 20 and activities at the resort and on the lake. The same sources influence the project site. The Rancho Novoa Wedding Venue will add new sources including some road traffic, people parking their vehicles, bus traffic, people talking and music played as part of the wedding events. Long term, road traffic will be the dominant sound source in the area.

Sound generated by the project was evaluated based on requirements of **Lake County General *Plan*** [2] and Article 41 [3] and the ***California Environmental Quality Act***, CEQA [4]. The Noise Element only deals with transportation sound sources and is believed to not be applicable to this project. The Article 41 Performance Standards set a limit on the 1-hour average, L_{eq}, sound levels of 55 dB(A). For care taker residences on commercial property, the L_{eq} sound limit is 57 dB(A). For noises with unusual periodic character, the Performance Standard sets daytime sound limits for the median or L_{50} sound pressure levels in octave bands 31.5 Hz (cycles per second) to 8,000 Hz. The definition of "unusual periodic character" is not provided. It is quite possible that the sound of road traffic or activities at the Resort could meet a limit that has not been seen in any other jurisdiction or the California Community Model State Noise Ordinance [5].

Two days of field sound tests were done on September 13 and 14, 2023 to measure existing background sound levels and to set an acceptable L_{eq} sound level at a specified distance from the speakers. A decision was made to aim the speakers to the west away from the Resort and to start with the speakers about 210 feet west of the fence along the east property line and 115 feet south of the north property line. Two sets of line array powered speakers were used, each with three voice speakers and one subwoofer speaker. The voice speakers were set with the top speaker 8 feet above ground level (AGL) and then moved with speaker 16 feet above ground level and tipped so that the top speaker was aimed at the head of a person about 6 feet high 90 feet west of the speakers. After starting the music, initially a random selection of Rock & Roll, Rap and Hip-Hop, the volume was set to produce an L_{eq} sound level of 64 to 65-db(A) at 90 feet west of the speakers. When the speakers were raised to 16 feet, the

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* - *- Number(s) in brackets refer to references listed at the end of this report.*

volume had to be adjusted to get the same L_{eq} sound level. Then the type of music was changed to Latin and the test continued. The music played for 23 minutes with the Rock & Roll and speakers at 8 feet AGL, 41 minutes with the speakers at 16 feet AGL, and the same music and then, the Latin music played for 34 minutes. One meter was 8 feet outside the fence, Position #1, one was 8 feet inside the fence, Position #3, and the third meter was 90 feet west of the speakers, Position #2. The L_{eq} sound level at Position #2 was 64.9 dB(A) with 8 foot speaker height, 64.7 dB(A) with the 16 foot speaker height and 63.6 dB(A) with Latin music with speakers at 16 feet AGL. At Position #1, the L_{eq} sound level was 52 dB(A) for the first test, 52 dB(A) for the second test and 50 dB(A) for the third test. At Position #3, the L_{eq} sound level was 56 dB(A) during the first test, 54 during the second test and 53 dB(A) during the Latin music test. The levels at Position #1 all are less than the County's L_{eq} limit of 55 or 57 dB(A). The predicted L_{50} octave band sound pressure levels at Position #1 meets the County's daytime limit.

Background sound was measured before and after the music tests on the first day of testing at all three positions. The L_{eq} sound level was 50 dB(A) for the first 37 minutes and 50 dB(A) from 6:00 to 7:00 p.m. at Position #1. At Position #2, the L_{eq} sound level was 40 dB(A) from 6 to 7 p.m. The background L_{eq} sound level was 46 dB(A) at Position #3 from 6 to 7 p.m. On the second day of testing, background measurements were made at Positions #1 and #3, and at Position #4, 6 feet east of Blue Lakes Road and 725 feet south of Position #1. The L_{eq} sound level was 62 dB(A) from 1:10 to 2:00 p.m., 53 dB(A) from 2:00 to 3:00 p.m. and 50 dB(A) from 3:00 to 4:00 p.m. All of these levels would have increased the L_{eq} sound level due only to music. At Position #3, the L_{eq} sound level was 57 dB(A) from 1:20 to 2:00 p.m., 46 dB(A) from 2:00 to 3:00 p.m. and 44 dB(A) from 3:00 to 4:00 p.m. The L_{31} sound levels at Position #4 were 53 dB(A) from 1:56 to 2:00 p.m., 54 dB(A) from 2 to 3 p.m., 54 from 3 to 4 p.m. and 51 dB(A) from 4:00 to 4:03 p.m.

The Rancho Novoa wedding venue will have no significant noise impact based on the tests with music and the existing background sound levels. The background L_{eq} sound levels predicted at the care taker's house at The Narrows Family Resort will be higher because of SR 20 traffic than predicted at the west side of the Resort due to wedding venue events. This conclusion assumes that recommendations are considered and requirements are implemented as given in Section 8: Recommendations.

2.0 SOUND CRITERIA

This noise impact study has been done per the requirements of the ***Lake County General Plan.*** The ***Lake County General Plan*** was last updated in 2008, approximately 15 years ago. The State Office of Planning and Research (OPR) recommends that General Plans be comprehensively updated every 10-15 years to reflect changes in community values, economic conditions, and emerging issues and challenges. The County has begun work to update some sections of the General Plan, but a comprehensive plan to do so to all parts was not found.

Sound falls into two general types: Transportation and not-transportation sources. Lake County addresses transportation sources in the ***General Plan*** and the non-transportation noise in **Performance Standard** in the ***Municipal Code***. CEQA requires all local noise regulations to be used to assess the impact of a project. Existing conditions must be established, and then, conditions with the project must be predicted. The County's **Noise Element** of the ***General Plan*** addresses mainly transportation sound sources and focuses on noise and land use compatibility policies. These are guidelines that must be followed. These guidelines set limits or goals for the annual day-night average, L_{dn}, sound level. This sound descriptor represents the average sound level over 24-hours and is directed mainly at transporta-

tion sources. The County's "Noise" section of the Performance Standard [3] sets limits based on a 1-hour average, L_{eq}, sound. This could be any one hour period during the time activity of interest.

2.1 General Plan Noise Element

Acoustic criteria contained in the **Noise Element** are based on the day-night average, L_{dn}, sound level and focus on transportation sound sources. The day-night noise descriptor averages measured or predicted sound levels over 24-hours after applying a 10 dB penalty to nighttime sounds. Hourly average sound levels, L_{eq}, are measured or predicted for each hour of the day or for each hour during which a sound source is present. A 10 dB penalty is added to each hourly average sound level measured or predicted from 10:00 p.m. to 7:00 a.m. The penalty is applied because people trying to sleep during these hours are more sensitive to external sounds. If no events happen during the nighttime, no penalty would be applied. Excluding or including only certain sources is possible. When a source or sources of interest are excluded from the analysis, it is called the Background L_{dn} sound level. An acoustical study could be required when noise-sensitive land uses will be subjected to day-night average sound levels, L_{dn}, greater than 55 dB.

2.2 Performance Noise Ordinance: Non-transportation Sources

The County's Noise Ordinance does not address sound issues except through Performance Standards in Zoning Ordinance of community development programs. The "Purpose" of Article 41, Performance Standards states that "All uses permitted in Chapter 21 of the Lake County Code shall comply with all applicable performance standards of the base zoning district, combining district, and as set forth herein, except as provided in Section 41.3". Section 41.11 addresses noise performance standards. Table 11.1 gives the highest hourly average, L_{eq}, sound level. The L_{eq} sound level limit applies to any property lines beyond the property containing the noise source. The limit does not address how to deal with cases where the background L_{eq} sound level exceeds the limit. The background sound level is defined as the level measured when the source or sources of interest are absent. For example, the background sound at The Narrows Family Resort is the sound measured when there is no wedding activity. A noise study is required if predicted noise from a project will exceed the limits given in Table I.

TABLE I. The Highest 1-hour Average, L_{eq}, Sound Level Limit Based on Receiving Property Zoning District.

	Exterior Sound Level Limits, dB(A)	
Category	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
Residential	55	45
Comercial2	60	55
Industrial	65	60

For land that is zoned commercial but contains noise sensitive property such as a home or a library, the daytime L_{eq} sound level is 57 dB(A) and the nighttime limit is 50 dB(A). That is, the L_{eq} sound limit is increased 2 dB(A) during the day and 5 dB(A) at night compared to the values in Table I.

Noises of usual periodic character shall not exceed the median octave band octave values given in Table II which is taken from Table 11.2 in Article 41. The meaning of usual periodic character is not given beyond the examples of humming, screeching and pure tone. A circular saw in use at The Narrows Family Resort during the testing would be representative of a source that produces a pure tone. A reference for the values shown in this table are not given. The use of such limits has not been seen in any previous noise impact study done in California more than 34 years of experience.

TABLE II. The Median Octave Band Sound Limits for Sources with Unusual Periodic Character.

	Sound Pressure Level, dB, re: 20 µPA								
	Octave Band Center Frequency, Hz								
Time of Day	31.5	63	125	250	500	1,000	2,000	4,000	8,000
7 a.m. to 10 p.m.	68	65	61	55	52	49	46	43	40
10 p.m. to 7 a.m.	65	62	56	50	46	43	40	37	34

3.0 SITE & PROJECT DESCRIPTION

The project site contains about 27 acres with most on the west side of Blue Lakes Road but with access to the Blue Lakes along about 500 feet. The is forested and hilly, except at the north end where there is large meadow that connects to several canyons that run east-west. The meadow is proposed to become a wedding venue called Rancho Novoa. The project will result in the construction of 40 parking spaces, two restrooms, a barn for storage, approximately 16 camp sites, a house with a loft, a fountain and a stage and dance area. These features are shown in Figure 1 along with an 8-foot high fence along Blue Lakes Road. A 30-foot gate on a metal track provides access to the site. As a part of the wedding ceremony, the couple marrying and their guests are expected to listen to music played by a Disk Jockey so they can dance. This will require amplified sound with speakers at the stage. The systems will be temporary and portable. The system could operate from 10:00 a.m. to 10:00 p.m. The events are expected to bring 50 to a maximum 300 people to the site. A bus service will be used to bring guests from a parking area along SR 20 to the site, if the guest list includes more than 40 vehicles. The owners, Amy & Juan Novoa, are expected to have up to 10 events the first year. The goal is to grow it to where there could be two events a month in the long term from April 15 to October 15.

Access to the site is along Blue Lakes Road on the east side of Blue Lakes. The road starts at the north end where in intersects with State Route 20, continuing south for about 2 miles where it ends at the intersection with Wine Road. The road is narrow, barely more than a single lane, but it has recently been paved. At the time of the site visit, the road was closed because PG&E was moving all electrical lines to underground from Wine Road to the entrance to the Rancho Novoa Wedding Venue at 5680 Blue Lakes Road. Because of this, the road was closed from Wine Road to the entrance to The Narrows Family Resort, about 185 feet south of the entrance to Rancho Novoa. One residence that sits about ½ mile south of this Resort, traveled from their home north to the intersection with of SR 20. PG&E construction trucks were on Blue Lakes Road, entering from the north. They turned around at The Narrow Family Resort, then backed up over a mile to where the dumped their load of concrete. They could sit idling, waiting for another truck already at the construction that would leave, passing the PG&E site supervisor and then given permission to back down the road. The only other vehicles on

the road were those coming in to enter The Narrows campground, delivery vehicles and those who were part of the team working at the wedding venue.

The project site is across the road, west of, The Narrows Family Resort. This is a 2-acre commercial site where patrons can bring their recreational vehicles and park them at a camp site and have access to Blue Lakes. Because of a very sharp corner south of the entrance to The Narrows Family Resort, vehicles pulling trailers have to enter Blue Lakes Road from the north and then turn left into the facility. The patrons have access to water activities on Blue Lakes and have events at the camp sites including talking and playing music. SR 20 runs parallel to the lake and Blue Lakes Road and is 500 to 800 feet east of the campsites. Significant activity occurs at The Narrow including construction, maintenance and repair. This included the use of power equipment such as power saws and the use of hammers.

4.0 TEST EQUIPMENT & PROCEDURES

Standard sound measuring equipment was used during the two days of tests. Field sound measurements were made using a Larson-Davis LD 831 (s/n 2579) Sound Analyzer, two CEL 480 (s/n 129858 and s/n 2/112179) Sound Level Meters and an LD720 sound level meter (s/n 294). The LD 831 and the two CEL meters employ ½ inch random incidence condenser microphones. An LD 200 calibrator was used to calibrate these meters and microphones to 114 dB at 1000 Hz before beginning measurements each day. These meters conform to the requirements of a Type I meter per American National Standards Institute [6]. The LD 720 meter was calibrated using the same calibrator and is a Type II meter per the ANSI standard. The calibrators calibration is good until November 3, 2023. A windscreen covered each microphone during all sound measurements. All meters can measure statistical sound levels, L_n, such as the $L_{1.67}$, $L_{8.3}$, L_{25}, L_{50} and L_{90}. These are, respectively, the sound levels exceeded 1.67 percent, 8.3 percent, 25 percent, 50 percent and 90 percent of the time. Over a 1-hour interval, these correspond to 1, 5, 15, 30 and 54 minutes. The sound level meters also capture the maximum sound level, L_{MAX}, and the average sound level, L_{eq}. These meters used the "slow response" as required. The LD 831 was used to collect representative sound level tones in one-third octave bands at the project site at each test position. The fast response was used with the LD 831 meter to better comply with test standards.

Field sound measurements were made on September 13, 2023 between 2:30 p.m. and 7:00 p.m. at three positions at the project site. Three sound level meters with their microphones were mounted on tripods 5.5 to 6 feet above ground level and placed at Positions #1, #2 and #3. On the second day, September 14, 2023, tests were done from 1:00 p.m. to 4:00 p.m. at one new site and two sites used the first day. The meters and microphones again were mounted on tripods 5.5 to 6 feet above ground level. Positions #1 and #3 were reused, but Position #4 was new and placed along Blue Lakes Road.

Lake County only requires the average, L_{eq}, sound level for comparison with the County's Performance Standard. Other statistical descriptors of the sound, labeled L_n, and the maximum sound level, L_{MAX}, were measured at also positions to understand the variation in the amplitude of the sound and the duration with music compared to background sources. Here, L_n represents values such as the L_{50}, L_{25}, $L_{8.3}$ and $L_{1.67}$ as noted above. These sound descriptors give additional information about how sound varied over the test period. That is, it can tell you whether it was a source that was near the site for only a short time or a source that continued over substantial time. Sound levels were measured during consecutive 1-minute intervals to identify sources and variations in sound with time. The average and maximum sound level was also measured in 1-second intervals with CEL 480 meters and 5-second

intervals with LD 720 meter. Continuous measurements were made at all positions. Sound tonal measurements were made at Position #2 during the first day and at Positions #1, #3 and #4 on the second day. Tonal content was measured continuously in 1-minute intervals both days. Tests ran for 40 minutes and 44 minutes on the first day all at Position #2. The second day, the meter ran first for 28 minutes at Position #1, then for last 35 minutes of the testing. At Position #4, tests were don 32 minutes and then for 38 minutes at Position #3. This meter also measured the L_{eq}, L_{MAX}, $L_{1.67}$, $L_{8.33}$, L_{25}, L_{50}, and L_{90} sound level during each interval with a fast response. The L_{eq} and L_{MAX} sound level was also measured every 50 milliseconds or 20 times a second for each interval.

The first day of testing was done to measure the background sound and then the sound that would be generated by a Disk Jockey using a typical system with the speakers place at different heights, always facing up the canyon to the west, away from any campsites at The Narrows and any residence. The portable system consisted of three powered line array speakers with a powered subwoofer at the bottom. The complete system had two sets of these speakers. The three line array speakers point at three angles along the vertical axis. The speakers were first set with the top speaker at 8 feet above ground level. A scaffold was used to place the speaker so that the top speaker was 16 feet above ground level and pointed at the head of a person 90 feet west of the speaker. A variety of Rap, Hip-hop and Rock-n-Roll music was played continuously first with speakers at 8 feet and then 16 feet above ground level. Then with the higher speaker placement, Latin music was played for about 33 minutes. After the music was stopped about 6:00 p.m., background sound was measured at the same three positions.

Measurements were made at three positions on the project site on the second day of testing. Positions #1 and #3 were the same as used on the first day. Position #4 was a new spot on the part of the property close to the shore of Blue Lakes. Only background sound sources were measured on this day including traffic on SR 20, activity at The Narrows Family Resort and general human activity and sound generated by PG&E construction activity.

Figure 1 shows a site plan with the four measurement positions superimposed on the wedding venue plans. An aerial photo of the actual site and the adjacent roads and properties is displayed in Figure 2. A description of each test position follows assuming Ferguson Road runs north-south:

a. Position #1: About 15 feet west of Blue Lakes Road, 20 feet north of the gate and 8 feet east of the fence along the road.
b. Position #2: 90 feet west of the speakers and about 298 feet north of the fence along Blue Lakes Road. This position is about 115 feet south of the north property line
c. Position #3: 200 feet south of speakers and 8 feet west of the fence gate and 19 feet south of the gate.
d. Position #4: 725 feet south of Position #1 and 6 feet east of the near lane of Blue Lakes Road on a very tight corner. Meter was about 3 feet east of the guard rail.

5.0 SOUND SOURCES

5.1 Existing

Major sound sources at the project site are due to traffic on SR 20, heavy cement trucks on Blue Lakes Road and the sound of birds. For people camping at The Narrrows Family Resort, road traffic

on SR 20, activity on the lake, in the campground, maintenance & construction at on the site impact the guests. PG&E moving electrical wire underground is a current source

State Route 20 is a major in Lake County. It is a two-lane road that runs east-west through Lake County. Blue Lakes Road is a local road with only one lane. Traffic counts were obtained from the CalTrans [7, 8]. A summary of the assumptions used to calculate existing conditions are given in Table II.

TABLE III. Roadway Traffic Volumes and Mixes Assumed to Calculate Existing L_{dn} & L_{eq} Sound Levels at The Narrows Family Resort in Lake County.

Road Name	Distance to Near Lane, Ft	Average Daily Volume	Percent Heavy Trucks	Percent Medium Trucks	Percent Trucks at Night	Percent Autos at Night	Vehicle Speed MPH◊
SR 20	≥500	9600	6.0%	3.75%	6%	11.0%	50/45

◊-Automobile and truck speed respectively

5.2 Existing + Project

The existing sound sources will remain after the project is permitted. The project will introduce additional road traffic, music and conversation to that generated by the resort. Traffic volumes will not change significantly.

5.3 Cumulative + Project

Cumulative plus project conditions will see increased road traffic, but other existing sources will remain the same. CEQA requires projections to be 15 to 20 years in the future. Because the project is starting at the end of 2023, predictions were done for the year 2040. The project sound sources will be the same. Road traffic speeds and mixes are expected to remain the same. Table III shows the assumptions used to predict future sound levels due to road traffic assuming a 2 percent increase per year in total traffic..

TABLE IV. Roadway Traffic Volumes and Mixes Assumed to Calculate 2040 Sound Levels for Residential, Resort and Wedding Venue Areas Along Blue Lakes Road in Lake County.

Road Name	Distance to Near Lane, Ft	Average Daily Volume	Percent Heavy Trucks	Percent Medium Trucks	Percent Trucks at Night	Percent Autos at Night	Vehicle Speed MPH◊
SR 20	≥500	13440	6.5%	4.0%	6.00%	11.0%	50/45

◊-Automobile and truck speed respectively

6.0 EXTERIOR ACOUSTIC ENVIRONMENT

6.1 Existing

Field sound measurements were used to evaluate the existing background sound environment and the sound that could be expected to be played by a Disk Jockey at the proposed wedding venue. Mea-

surements were made at a total of four positions on the project property. The Narrows Family Resort is directly across Blue Lakes Road from the proposed Rancho Novoa Wedding venue. The project site is shown in Figure 1 with the project site and adjacent commercial properties shown in Figure 2. There are no adjacent or nearby residences. Averages of the 1-minute test samples were computed for each hour or part of an hour. Two partial days of field measurements were made. The first day included background sound and sound with speakers playing music. The second day, only background sound tests were completed. Table V shows the results of all test interval, both background sound and tests with music playing done on 13-Sep-23.

TABLE V. Sound Levels Measured at Three Positions at Wedding Venue for Background and Disk Jockey activities on September 13, 2023 at 5680 Blue Lakes Road , Lake County.

Test Positions	Test Interval	Field Measured Sound Levels, dB(A)							Predicted L_{eq}
		L_{MAX}	$L_{1.67}$	$L_{8.33}$	L_{25}	L_{50}	L_{90}	L_{eq}	Snd, dB(A)
#1	15:10-16:00	74	59	55	50	45	41	52	BG some Music
1	16:00-17:00	65	56	54	53	51	45	52	Mostly Music
1	17:00-18:00	63	54	52	50	47	42	49	Mostly Music
1	18:00-19:00	76	58	48	45	43	39	50	Background
1	19:00-19:04	54	49	45	43	40	35	42	Background
Total Time	15:10-19:04	76	57	54	51	46	41	51	
#2	15:40-16:00	73	71	69	68	66	39	66	Mostly Music
2	16:00-17:00	79	69	68	66	64	46	64	Mostly Music
2	17:00-18:00	72	68	66	64	60	38	62	Mostly Music
2	18:00-19:00	56	47	42	40	37	34	40	Background
Total Time	15:40-19:00	79	69	67	64	55	36	62	
#3	16:03-17:00	64	59	57	55	54	47	54	Mostly Music
3	17:00-18:00	63	57	55	53	49	40	51	Mostly Music
3	18:00-19:00	67	55	45	42	40	38	46	Background
3	19:00-19:03	51	47	44	42	38	35	40	Background
Total Time	16:03-19:03	67	58	56	53	46	39	51	

The purpose of the first day of testing was to establish which direction the speakers should point, the height of the speakers and the sound level or volume that should be used at some specified distance. TAVGI recommended that the speakers face west away from SR 20 and we selected 90 feet from the speakers as the point where the average, L_{eq}, level would be monitored.

Table V shows that at Position #1 outside the 8-foot high fence along the east property next to Blue Lakes Road, the L_{eq} sound level was always less than the 55 dB(A) limit. The $L_{8.33}$ sound level at Position #1 was 55 dB(A) or less and this is the level that was exceeded only for 5-minutes out of every hour. Thus, the County's L_{eq} sound limit of 55 dB(A) was exceeded for only 5-minutes in an hour. The hourly average L_{eq} sound levels was 49 to 52 dB(A) at Position #1 near Blue Lakes Road. This occurred even though it required some time do select and acceptable level as shown in Figure 3 This

figure shows how the L_{eq} sound level varied in 1-second intervals from 3:10 p.m. to 7:04 p.m. A comparison of the various L_n statistical descriptors of sound measured in 1-minute at Position #1 are presented in Figure 4. The variation in the L_{eq} sound level measured in 1-second intervals is shown in Figure 5 for tests at Position #2, 90 feet west of the speakers at the project property. Figure 6 compares the various L_n sound levels at Position #2 measured in 1-minute intervals. The variation is given in Figure 7 for the L_{eq} sound level measure at Position #3 in 1-second intervals. This positions was within the 8-foot high fence, about 200 feet east of the speakers. Figure 8 displays the variation in the L_n statistical sound levels measured in 1-minute intervals at Position #3.

The second day, only background sound measurements were made. Test Positions #1 and #3 were used plus Position #4 used. The hourly L_n sound level are given in Table VI and compared the L_{eq} sound predicted from road traffic on SR 20.

TABLE VI. Background Sound Levels Measured at Three Positions on September 14, 2023 at 5680 Blue Lakes Road, Lake County.

Test Positions	Test Interval	Field Measured Sound Levels, dB(A)							Predicted L_{eq} Snd, dB(A)
		L_{MAX}	$L_{1.67}$	$L_{8.33}$	L_{25}	L_{50}	L_{90}	L_{eq}	
#1	13:10-14:00	77	69	65	65	62	41	62	53
1	14:00-15:00	79	59	49	45	42	38	53	54
1	15:00-16:00	75	56	49	45	43	39	50	53
Total Time	13:10-16:00	79	66	64	48	43	39	58	—
#3	13:20-14:00	74	68	60	59	46	39	57	—
3	14:00-15:00	69	53	47	42	40	37	46	—
3	15:00-16:00	66	51	46	43	40	37	44	—
Total Time	13:20-16:00	74	61	59	44	41	37	52	—
#4	13:56-14:00	58	57	57	54	51	48	53	—
4	14:00-15:00	78	58	55	53	51	46	54	54
4	15:00-16:00	76	59	56	53	51	46	54	*55*
Total Time	16:00-16:03	58	55	54	52	50	47	51	—

The data in Table II regarding the traffic volume on SR 20 was used to predict the hourly sound at Positions #1 and #4. The predicted L_{eq} sound level at Position #1 from 1:00 to 2:00 p.m. is 53 dB(A), but the measured value was 62 dB(A). The reason for the difference was that a heavy concrete truck idling before backing down the road to deliver the concrete to where PG&E was putting the electrical power lines underground. This is seen in Figure 9 that shows the 1-second L_{eq} sound level measured in 1-second intervals at Positions #1. The truck was about 184 feet south of Position #1 and next to the entrance into The Narrows Family Resort. The other peaks are due to concrete trucks passing by or vehicles with trailers pulling into the Resort. A comparison of the L_n sound levels measured in 1-minute intervals at Position #1 is shown in Figure 10. Figures 11 and 12 show the tonal content of the background sound measured at Position #1 on the second day of testing over 1-minute intervals. Several pure tones are shown on each graph. Peaks at 31.5 and 63 Hz (revolutions per second) correspond with 1800 and 3600 RPM motors. The peak at 3,150 Hz corresponds to the singing of birds near the site. The variation in tonal content of the statistical descriptors of the sound measured with a truck moving near Position #1 is sown in Figure 13 for a 1-minute tests at 13:33. The sound was not continuous as seen by the big difference in sound at 50 Hz where the $L_{1.67}$ sound levels is 84 dB, but the L_{eq} sound levels is 73, the L_{25} is 61 dB and the L_{50} is 58 dB. The L_n sound levels for the background sound

at 13:43 is presented in Figure 14 for a 1-minute sample taken at Position #1. Several pure tones are shown here, but the spread is smaller. The $L_{1.67}$ recreants the sound exceeded for 1 second of the 1-minute tests; the $L_{8.33}$ represents the exceeded 5 seconds of the 60 second test; L_{25} is sound exceeded for 15 seconds;, the L_{50} is the sound exceeded 30 seconds, and the L_{90} is either the sound that was exceeded for 54 of the 60 second test or that the sound was less than the given value for 6 seconds.

The variation is presented in Figure 15 for the sound levels measured in 1-second intervals at Position #3 inside the fence. The results are similar to that measured at Position #1 and seen in Figure 9. Figure 16 compares the statistical L_n sound level measured in 1-minute intervals at Position #3. As with Position #1, most of the sound peaks are due to either PG&E activity or activity at The Narrows Family Resort. A comparison is shown in Figure 17 of the L_{eq} and L_{MAX} sound levels measured in 5-second intervals at Position #4 at the southwest edge of the Resort property and the east edge of the Novoa property. Figure 18 displays the variation in the statistical L_n sound metrics measured in 1-minute intervals at Position #4. Since Blue Lakes Road was closed, the only local traffic was one home owner driving northeast to the intersection of SR 20 and the PG&E concrete trucks either backing down to the pour site or driving back north to reach SR 20. Most of the sound came from traffic on SR 20 as seen in Table VI, which shows the predicted hourly L_{eq} sound levels based on traffic volumes, including medium and heavy trucks, obtained from the CalTrans website. Background sound tones measured in 1-minute intervals at Position #4 are given in Figures 19. The test at 2:18 and 2:19 p.m. were due to the cement truck driving by the site. Several pure tones are seen in these measurements. Sound tones are shown in Figure 20 for eight 1-minute intervals at Position #4 for normal background activity without activity on Blue Lakes Road. The variation is given in Figure 21 for the statistical L_n sound tones at Position #4 due to the cement truck at 14:19. The variation in the sound tones measured over a minute at 14:31 is shown in Figure 21. Pure tones at 63, 500 and 3,150 Hz are prevalent in these tests. The latter tone is due to birds chirping.

A comparison is provided in Figure 23 of the L_{eq} sound levels measured 1-second intervals at Positions #1 outside the fence and #3 inside the fence. The fence and slightly larger distance from the road appears to provide about 5 dB(A) reduction, which is a very small amount. Figure 24 compares the L_{eq} sound levels at Positions #1, #3 and #4 measured in 1-minute intervals. Positions #1 and #3 are shielded from traffic on SR 20, but Positions #4 was not, which is why the L_{eq} sound level at this position was about 7 dB(A) higher in general.

The day-night average sound levels was predicted at Positions #1, #4 and at the dock closest to SR 20 at The Narrows Family Resort. The prediction was based on the information in Table II and assuming a distance of 985 feet to Position #1, 825 feet to Position #4 and 520 to the dock at the Resort. The L_{dn} sound levels are given in Table VII for existing conditions.

TABLE VII. Predicted L_{dn} Sound Levels at Two Positions at Rancho Novoa and One Position at The Narrows Family Resort on Blue Lakes Road in Lake County.

Position	#1	#4	TNFR
	L_{dn} Sound Level, dB(A)		
	53	54	56

6.2 Existing + Project

The sound tests on September 13, 2023 were done to understand what sound levels could be produced that would result in acceptable levels at the project site and receiver locations. The sound system was set up with the speakers pointing west away from any receiver and from SR 20. Tests were first done with the speakers 8 feet above ground level (AGL) and then at 16 feet above ground level and pointed to the head of person 90 feet west of the speakers. The volume of the sound was set first by the DJ and then lowered to a level near 64 dB(A) at the request of test engineer. A combination of rap, Hip-Hop and rock and roll were played with the speakers at 8 feet AGL and then 16 feet AGL. Latin music was then played with the speakers at the higher position. Table VII shows the sound levels measured for these three conditions.

TABLE VIII. Sound Levels Measured at Three Positions While Playing Rock & Roll, Hip-Hop and Rap and then Latin Music with the Equipment at Proposed Location and Heights above Ground at the Rancho Novoa Wedding Venue on 13-Sep-23.

Test Positions	Test Interval	Field Measured Sound Levels, dB(A)							Music Type	Speaker Ht, ft.
		L_{MAX}	$L_{1.67}$	$L_{8.33}$	L_{25}	L_{50}	L_{90}	L_{eq}		
1	15:47-16:10	66.4	58.5	56.2	54.5	52.9	47.9	53.6	Rap	8' AGL
1	15:47-16:03	66.4	59.3	56.6	55.1	53.6	47.9	54.1	Rap	8' AGL
1	16:03-16:10	58.5	55.4	54.4	53.3	51.9	48.0	52.1	Rap	8' AGL
1	16:12-16:53	65.3	56.5	54.3	52.5	50.9	45.8	51.6	Rap	16' AGL
1	17:13-17:48	62.7	55.2	52.6	51.0	49.1	43.9	49.9	Latin	16' AGL
2	15:47-16:10	72.8	70.6	69.1	68.0	66.8	62.0	66.8	Rap	8' AGL
2	15:47-16:03	72.8	70.9	69.4	68.3	67.5	64.6	67.5	Rap	8' AGL
2	16:03-16:10	72.6	69.2	68.0	66.3	64.1	59.5	64.9	Rap	8' AGL
2	16:12-16:53	78.9	69.2	67.9	65.5	63.8	59.7	64.7	Rap	16' AGL
2	17:13-17:48	72.8	68.6	66.2	64.7	63.3	57.0	63.6	Latin	16' AGL
3	16:03-16:10	56.0	63.3	60.7	58.3	57.3	55.3	50.7	Rap	8' AGL
3	16:12-16:53	54.3	63.6	58.5	56.9	55.3	53.9	49.9	Rap	16' AGL
3	17:13-17:48	52.7	63.2	57.0	55.2	54.1	52.3	46.3	Latin	16' AGL

This table shows the various statistical L_n sound levels measured at the three positions including the L_{eq} sound level measured at three test sites. Position #1 was outside the 8 feet high solid wood fence along the east side of the project. The test ran for about 16 minutes before the volume was adjusted to the chosen level of approximately 64 dB(A) as seen earlier in Figure 3. The L_{eq} sound level at Position #2, 90 feet west of the speakers that were aimed to the west from 4:03 p.m. until 4:10 p.m. was 64.9 dB(A) as seen in this table and Figure 5. A comparison At Position #1, the average over this 7 minutes was 52.1 dB(A), less than the County's limit of 55 dB(A) during the day. At Position #3, the L_{eq} sound level was 50.7 dB(A) with the speakers 8 feet above ground level as seen in Figure 7 and 8.

A comparison is displayed in Figure 25 of the sound measured on 13-Sep-23 at Positions #1 and #2 with and without the music playing. The three conditions for the DJ tests are marked with vertical

bars in this figure. Position #2 was 90 feet west of the speakers pointed to the west while Position #1 was about 214 feet east of he speakers and outside a wood fence. The influence is seen in this figure as well as showing that background sounds were lower inside the fence than outside fence when the music was off. A comparison of the L_{eq} sound levels measured in 1-minute intervals at Positions #1, #2 and #3 are given in Figure 26.

An example is shown in Figure 27 of the tonal content of the sound measured in 1-minute intervals at Position #2 with the speakers at 16 feet above ground level and the Disk Jockey playing a variety of Hip-Hop, Rap and Rock & Roll music. The curves all have the same general shape. The variation in the statistical L_n sound pressure levels over 1-minute at 16:41 is displayed in Figure 28. This was at Position #2 with Rap, Hip-Hop or Rock & Roll playing through the speakers. A 1-minute test of sound tones was done at 16:52 and is shown in Figure 29. This was done at Position #2 with Rap, Hip-Hop and Rock & Roll playing through the speakers. This figure indicates that there was very little sound from 50 to 125 for at least 6-second. The importance each 1/3-octave band is shown in this figure.

Latin Music was put into the system starting about 5:10 p.m. It took a few minutes to get the L_{eq} sound level to be about 64 dB at Position #2. Figure 30 shows the L_{eq} sound tones measured in 1-minute intervals from 5:16 to 5:23 p.m at this position with Latin music playing. The variation in the statistical L_n sound pressure levels over 1-minute at 17:22 is presented in Figure 31. This was at Position #2 with Latin playing through the speakers. A 1-minute test of sound tones was done at 17:41 and is shown in Figure 32. This was done at Position #2 with Latin music playing through the speakers. This figure indicates that there was less sound from 50 to 125 for at least 6-second. The importance of each 1/3-octave band is shown in this figure. Finally, Figure 33 compares the sound tones of Rap, Hip-Hop & Rock & Roll with the tones from Latin music at Position #2 for two 1-minute tests. The Latin music appears to have slightly less bass and less tones from 200 to 315 Hz than found in the Rap, Hip-Hop & Rock & Roll music that was played.

After moving the speakers to 16 feet AGL, the 41 minute average sound level was 64.7 dB(A) at Position #2. Figures 5 and 6 show that the sound level was variable over this time. At Position #1, the L_{eq} sound level was 51.6 dB(A) and this meets the County's requirements from Article 41 limiting to 55 dB(A) during the day. The L_{eq} sound level at Position #2 was only 0.2 dB less than measured with the speakers moved from 8 to 16 feet above ground level, but the L_{eq} sound level at Position #1 decreased by 0.5 dB(A). Background sound at Position #1 is believed to influence the total sound level since the L_{eq} sound level at Position #3 was 49.9 dB(A), 0.8 dB(A) less than measured with the speakers at 8 feet above ground level. When the type of music was switched to Latin, the average sound level, L_{eq}, over 35 minutes was 63.6 dB(A) at Position #2, 90 feet west of the speakers at 16 feet above ground level. The L_{eq} sound level was 49.9 dB(A) at Position #1 with the Latin music and higher speaker height as seen in Figure 3 and 4. At Position #3, the L_{eq} sound level was 46.3 dB(A), 3.6 dB(A) lower than for the combination Rap, Hip-Hop and Rock and Roll sound with the speakers at the higher elevation and the L_{eq} sound level at Position #2 only 1.1 dB(A) lower. Again, this suggests that the results at Position #1 was influence by activity by PG&E and activity at The Narrows Family Resort.

These results show that the County's daytime noise limits are met with the speakers facing west and the L_{eq} sound level set at a specific volume based on a 90 foot spacing between the speakers and the test site. It is not clear that music would be considered as having an unusual periodic character, but a decision was made to compare predicted sound levels at Position #1 with either Latin or Rap, Hip-

Hop and Rock & Roll playing on the stage with the speakers pointing west. A comparison is given in Figure 34 of the octave-band sound pressure levels at Position #2 with that predicted at Position #1 and with the daytime limits given in Table II. This figure shows that the limit is met at Position #1 with a limit of 65 dB(A) at Position #2.

6.3 Cumulative + Project

Background sound levels will increase over time as additional road traffic will occur as shown in Table IV. The day-night average will increase with more traffic as shown in Table IX. The Wedding Venue has no influence on the L_{dn} sound level. Event has no impact because each will meet the County's noise limit.

TABLE IX. Predicted 2040 L_{dn} Sound Levels at Two Positions at Rancho Novoa and One Position at The Narrows Family Resort on Blue Lakes Road in Lake County.

Position	#1	#4	TNFR
	L_{dn} Sound Level, dB(A)		
	55	56	58

7.0 NOISE IMPACTS

The impact of sound generated by events at the Rancho Novoa Wedding Venue will be insignificant. This assumes that all recommendations and mitigation measures are implemented. This conclusion assumes that requirements for the sound reinforcement systems and their installation are made as part of the project. The recommendations are provided in the following section.

8.0 RECOMMENDATIONS

Impacts are predicted to be insignificant if the requirements for the sound reinforcement system and general requirements are implemented and monitored. All requirements are given in the outline sections that follow.

I. General Requirements

A. General

1. The wedding venue sound reinforcement system shall be operable only until 9:45 p.m. during any Rancho Novoa Wedding events.
2. The speakers shall be place at 208 feet west of the gate about 115 feet south of the north property line.

B. Signage

1. Signs shall be installed near the entrances and parking area to remind guests that a resort lies east of wedding venue.

2. The signs should encourage guests to be aware of the sound generated when closing vehicle doors and that they should be "gentle" when closing.

B. General Sound Level Meter

1. A Type 2 or better sound level meter shall be available and used to set acceptable sound levels at selected receiver locations.
2. The meter shall be capable of measuring and storing the L_{eq}, and L_{MAX} sound levels over a given time interval using the "slow" response.
3. The meter shall be calibrated at the project site just before the tests begin.
4. Measurements shall be made at the specified test position of 90 feet west of the face of the speaker.
5. The volume of the sound shall be adjusted until the average, L_{eq}, is 63 dB(A) after the specified sound source and type are playing.
6. All data will be recorded and stored by the meter.
7. Representative 5-minute samples every 20 minutes shall be made after the activity has begun and the sound reinforcement system is in operation.
8. Additional samples will be taken of both speech and music events.

II. Sound Reinforcement System

A. Wedding Venue Stage Area

1. Speakers will mounted at the front of the state with the top of the speakers at a minimum 16 feet above ground level.
2. The speakers will be tilted so the centerline of the horn speaker is 6 feet above ground level no more than 90 feet west of the speaker face.
3. Ensure that the volume of the speakers are set such that L_{eq} sound level averaged over 5-minute does not exceed 63 dB(A) at 90 feet from the face of the speakers.

9.0 REFERENCES

1. A. & J. Novoa, "Rancho Novoa, 5680 Blue Lakes Road, Upper Lake, Upper Lake, CA 95470," Sheet P-1, July 20, 2023.

2. Anon., **Chapter 8: Noise** from the ***Lake County General Plan***, prepared by Matrix Design Group, Mintier & Associates, adopted September 2008.

3. Anon., "Chapter VIII. Control of Noise and Vibration," from ***County of Santa Clara, Code of Ordinances***, Title B, Regulations, Division B11 Environmental Health, 2018.

4. Title 14. California Code of Regulations, Chapter 3. Guidelines for Implementation of the California Environmental Quality Act, Article 9. Contents of Environmental Impact Reports, Sections 15120 to 15132.

5. Anon., ***Model Community Noise Control Ordinance***, prepared by Office of Noise Control, California Department of Health, Berkeley, Ca, April 1977.

6. American National Standards Institute, ANSI, ***Standard Specification For Sound Level Meters, S1.4-1983 (Precision)***

7. Anon, ***2013, 2018, 2020 & 2021 Traffic Volumes on California State Highways***, from Business, Transportation and Housing Agency, Department of Transportation, Division of Traffic Operations, State of California, https://dot.ca.gov/programs/traffic-operations/census, Excel files.

8. Anon, ***2013, 2018, 2020 & 2021 Truck Traffic Volumes on California State Highways***, from Business, Transportation and Housing Agency, Department of Transportation, Division of Traffic Operations, State of California, https://dot.ca.gov/programs/traffic-operations/census, Excel files.

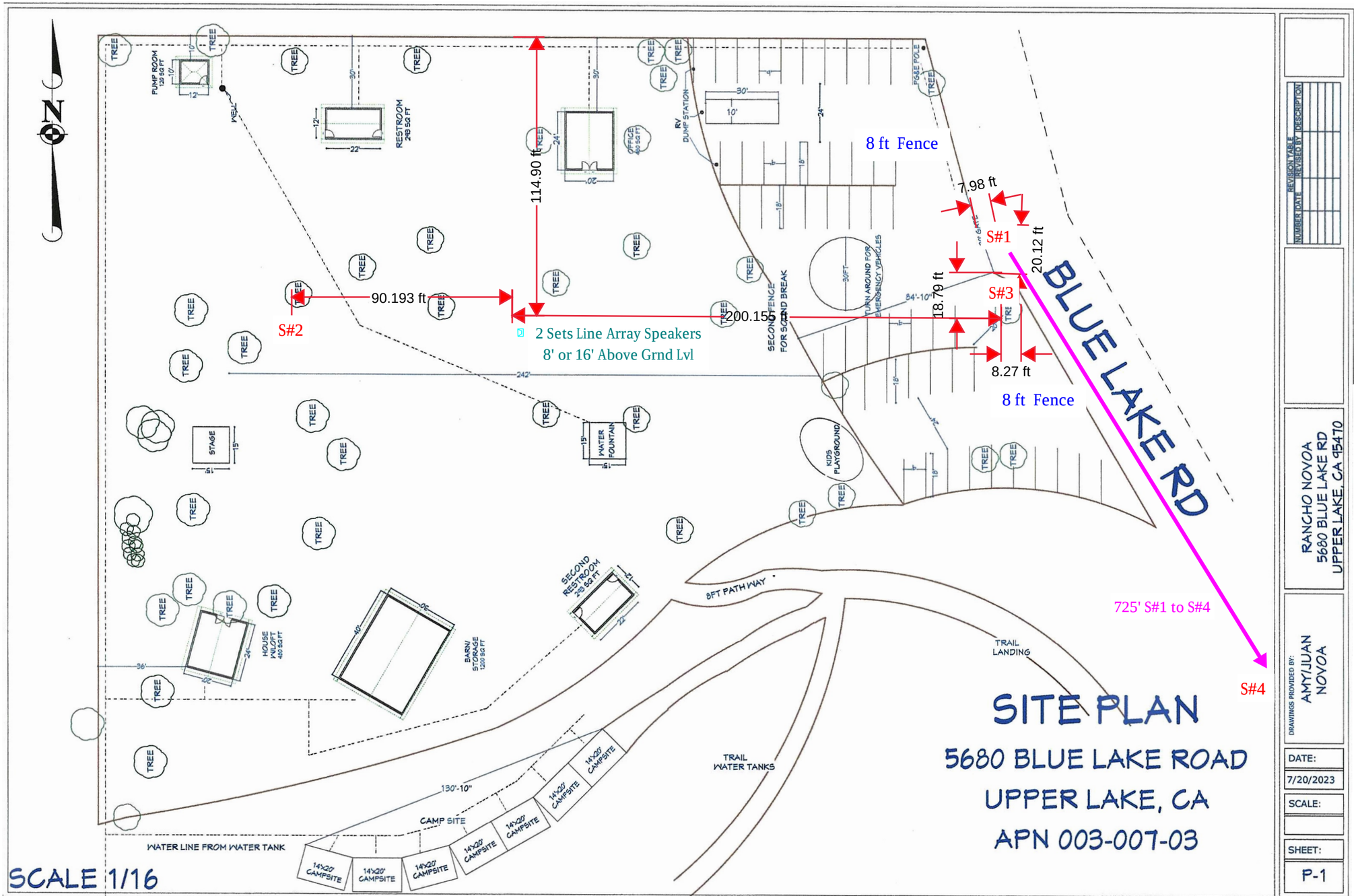

Figure 1. Architectural Site Plan with the Proposed Layout of All Facilities & Showing the Location of the Speakers and Field Sound Test Positions & Sound Monitoring.

Figure 2.. Aerial Image of Project Site, Adjacent Properties & SR 20 with Sound Test Positions.

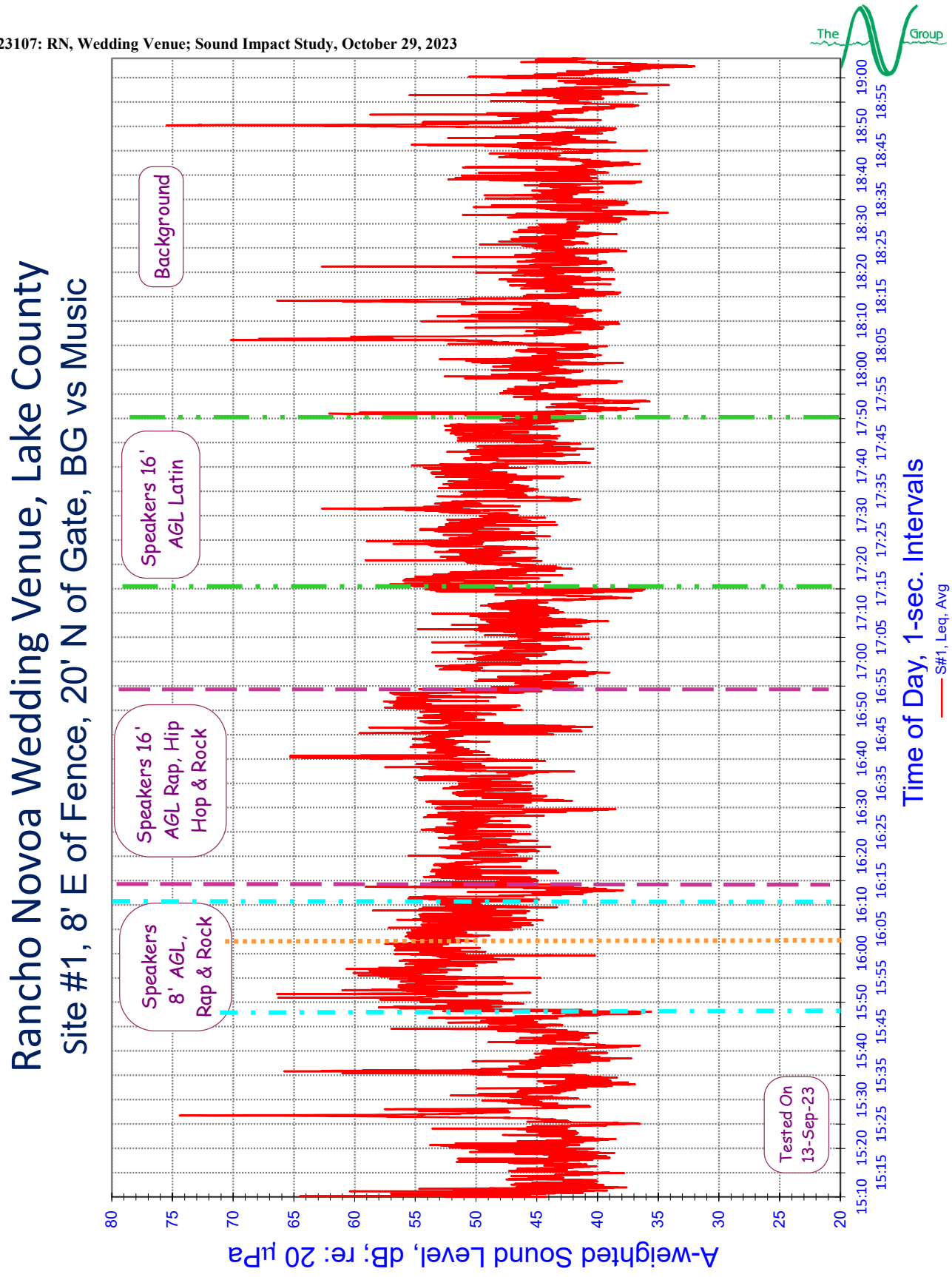

Figure 3 Variation in L_{eq} Sound levels Measured in 1-second Intervals at Position #1 for BG & Three Types of Music.

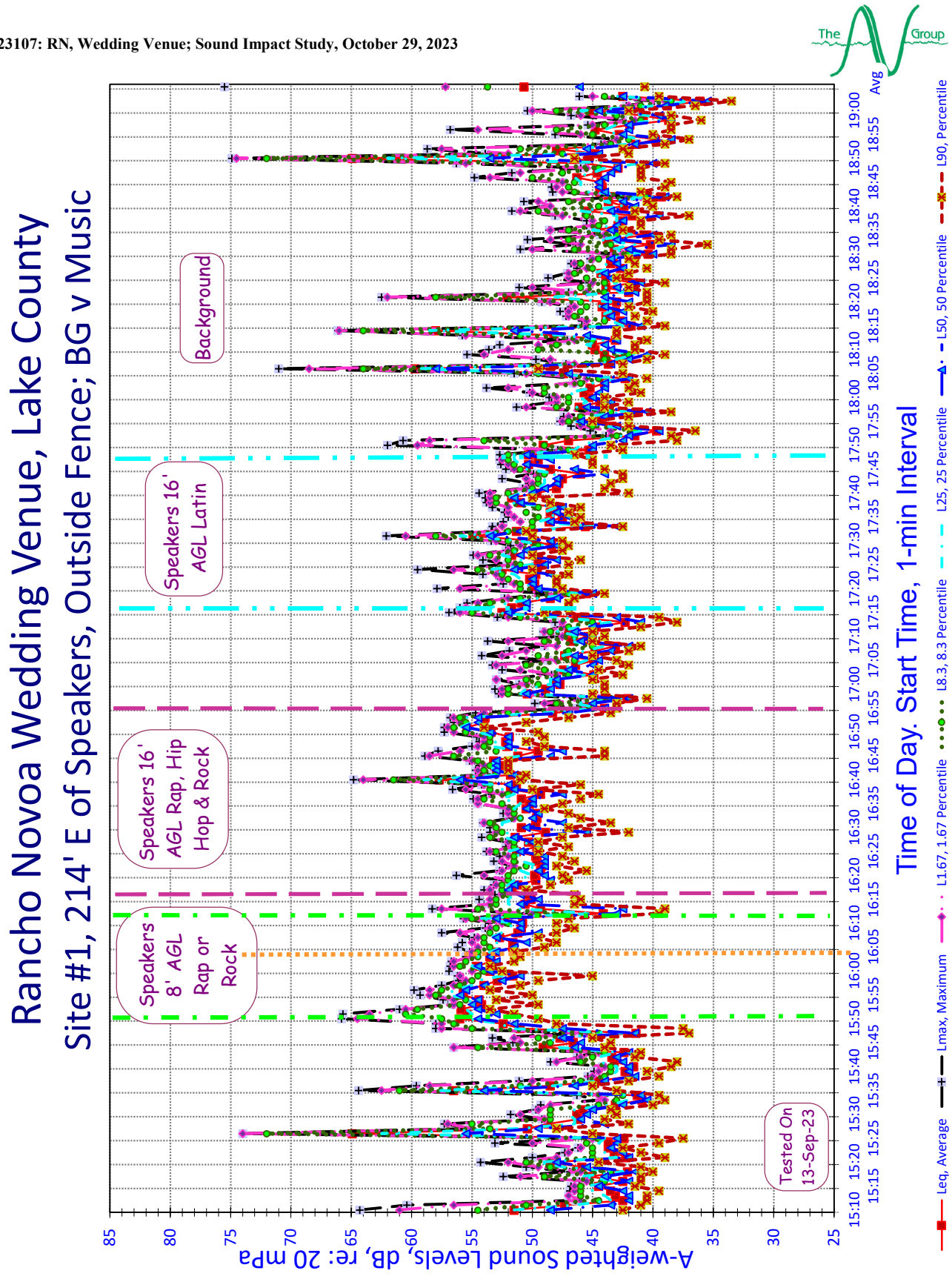

Figure 4. The Statistical L_n Sound Levels Measured in 1-minute Intervals at Site #1 for BG & Three Types of Music.

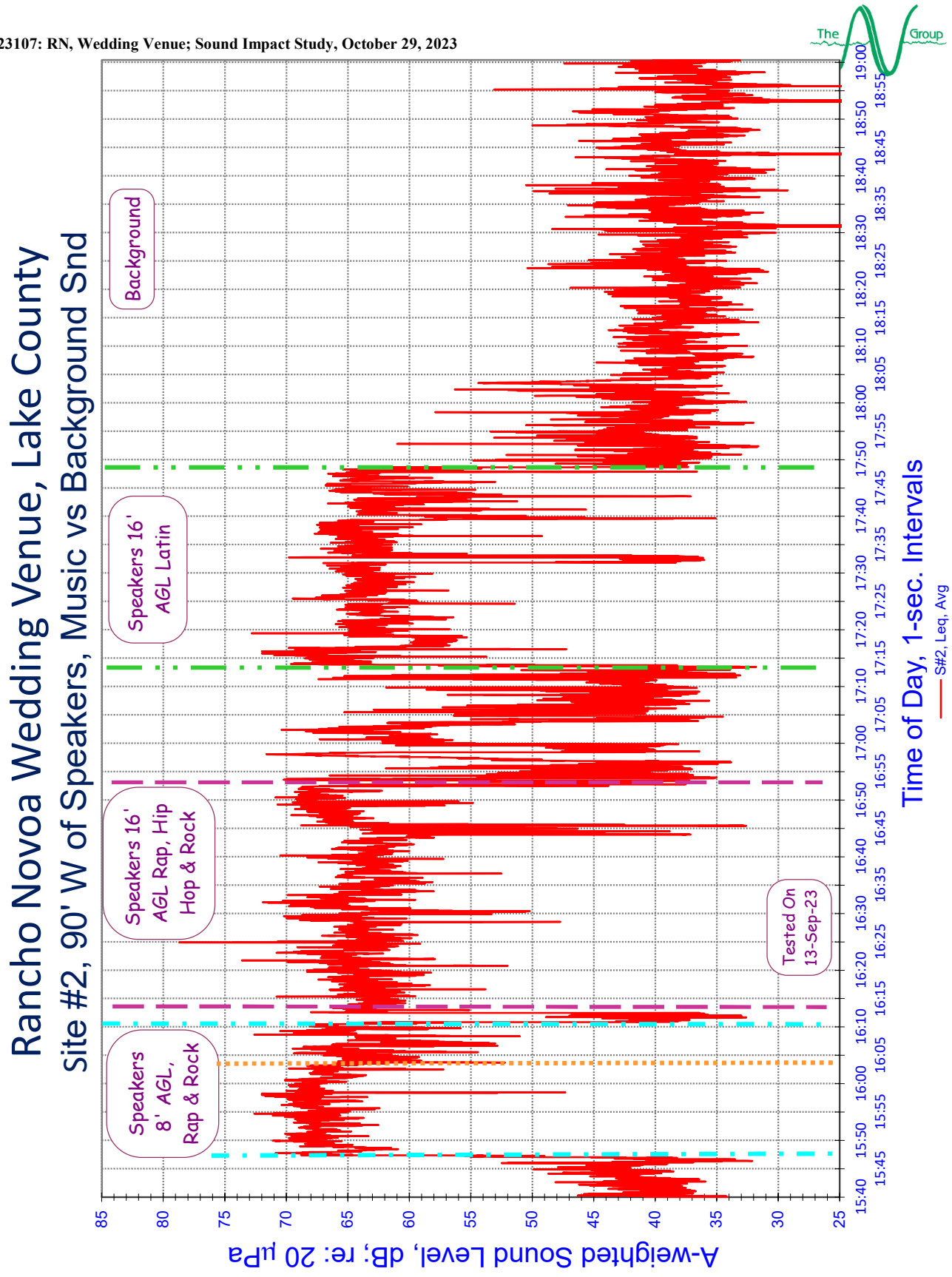

Figure 5. Average Sound Levels Measured in 1-sec Intervals at Position #2 for 3 Music Sections the Background levels.

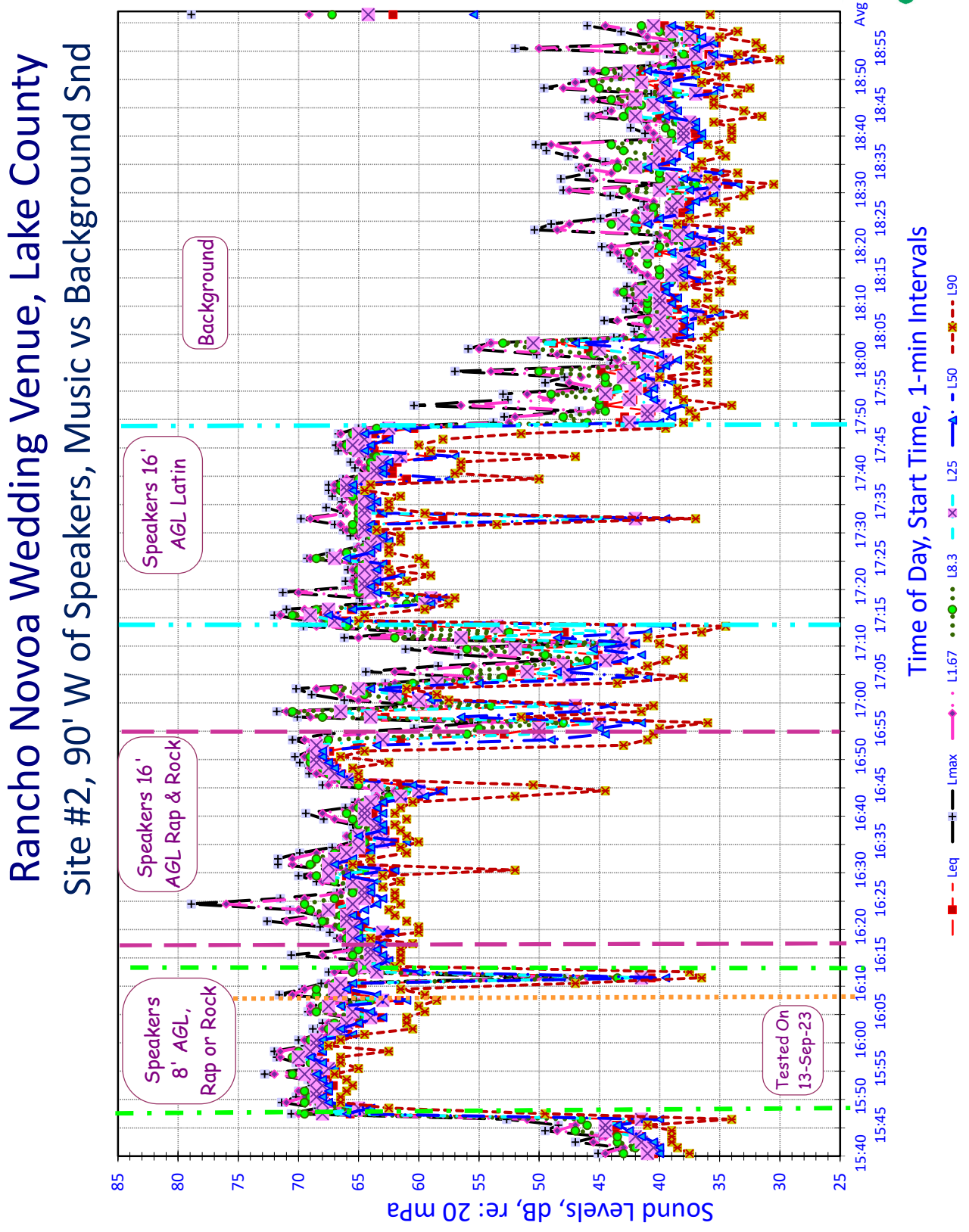

Figure 6. Variation in L_n Sound Levels Measured in 1-minute Intervals at Site #2 for 3 DJ Music Intervals & for BG.

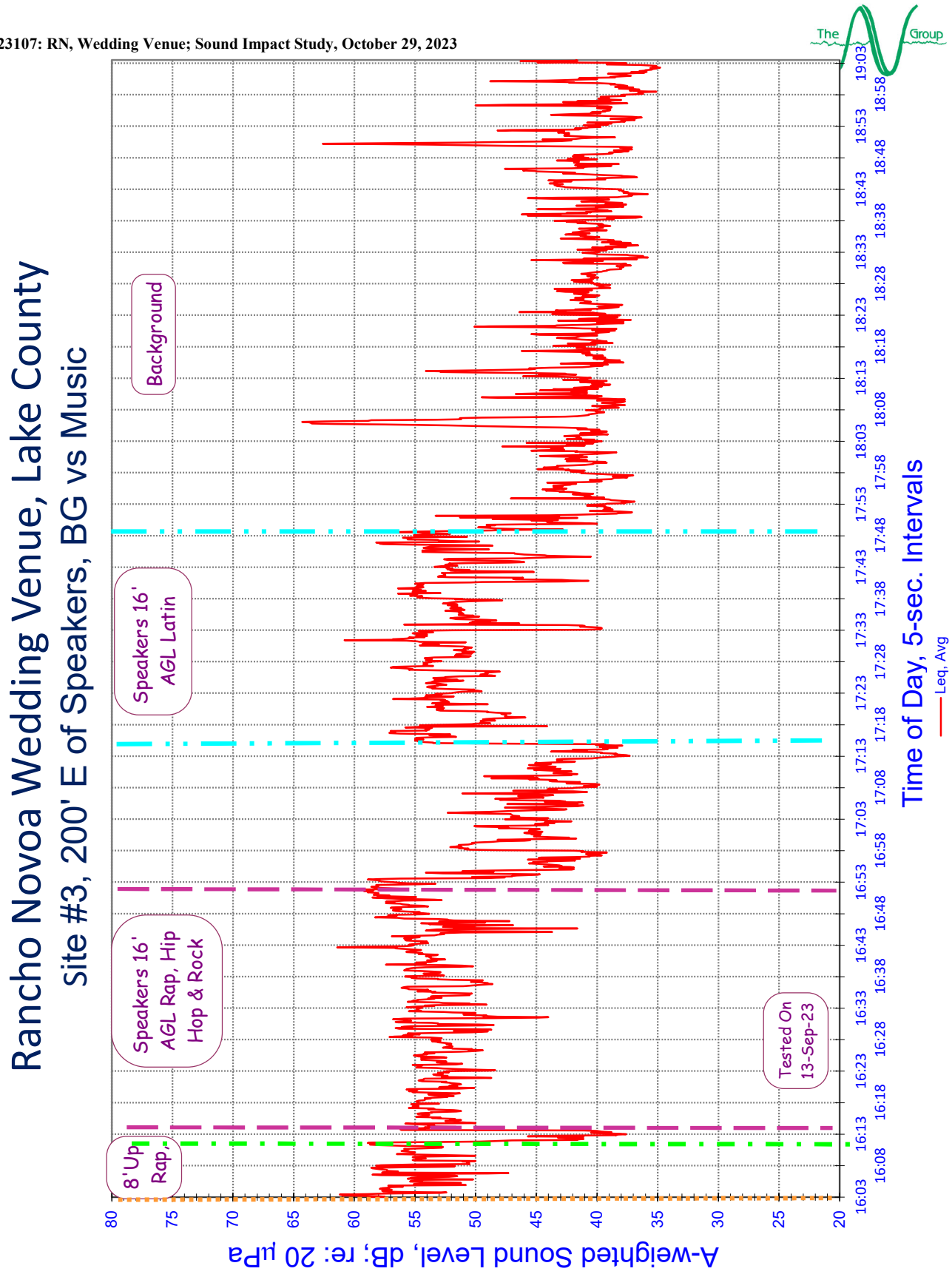

Figure 7. L_{eq} Sound levels Measured in 1-second Intervals at Position #3 for 3 DS Music Intervals & Background Sound.

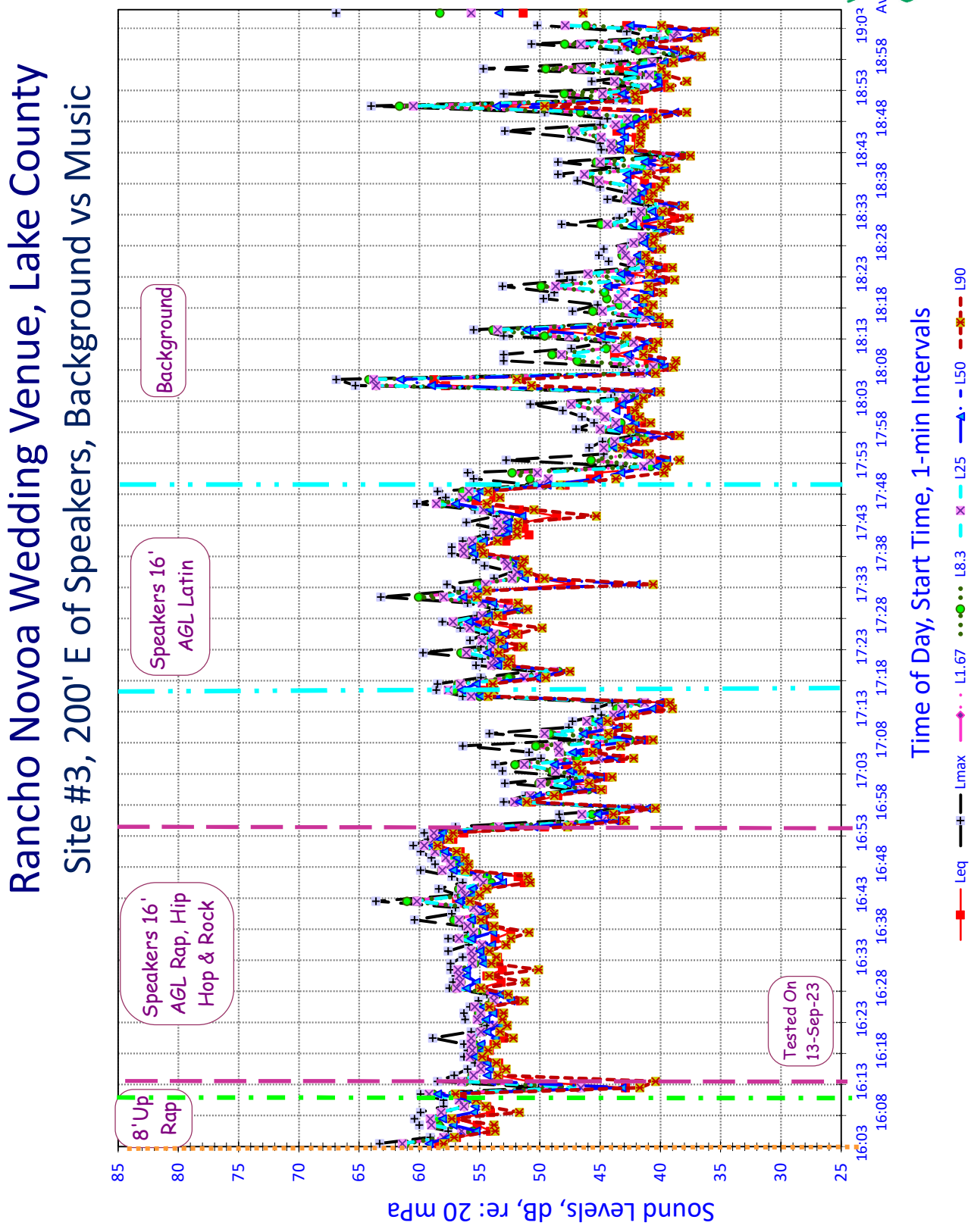

Figure 8. Variation in Sound Metrics Measured in 1-minute Intervals at Position #3 for 3 DJ Music Intervals & BG.

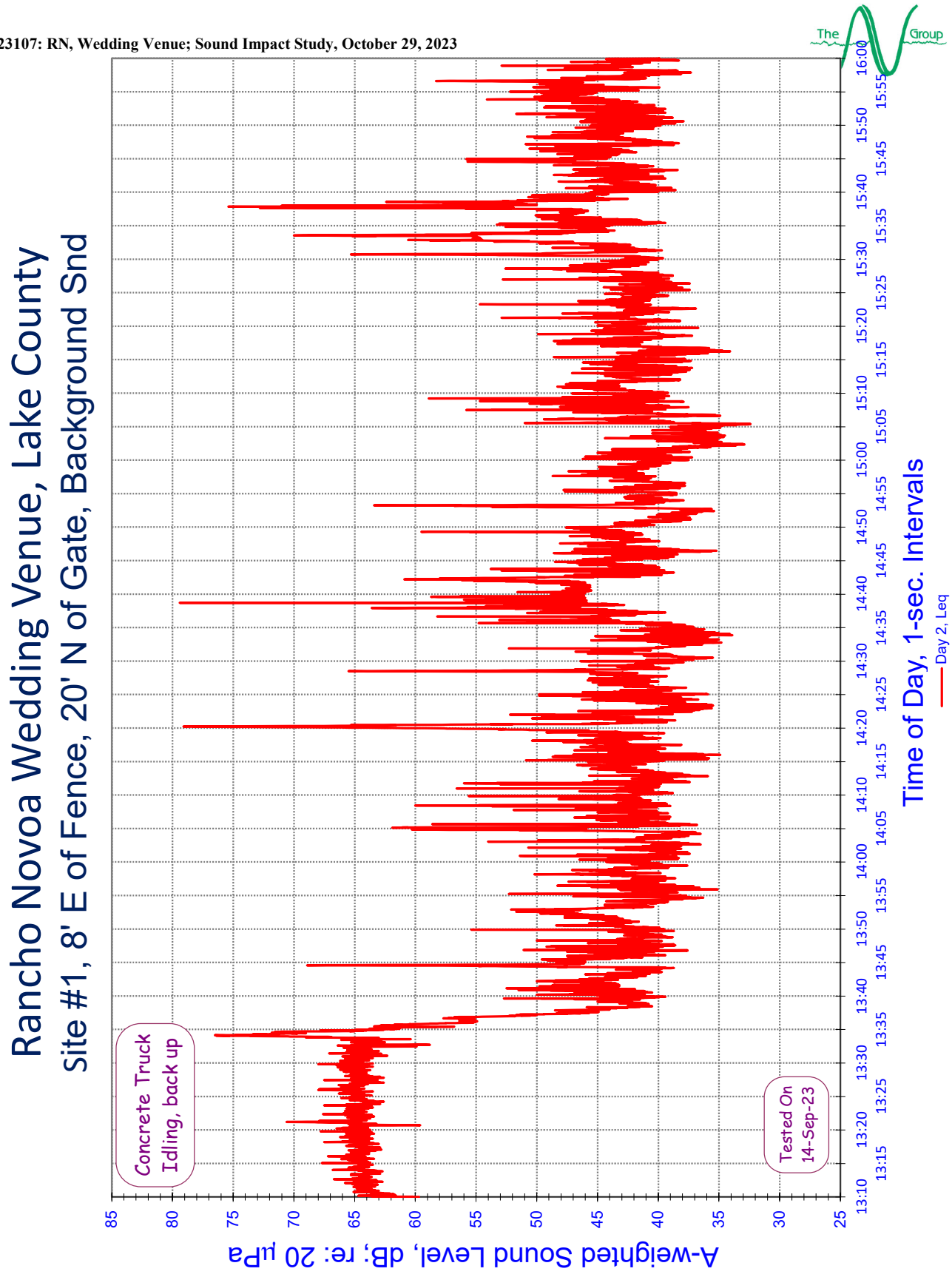

Figure 9. Background L_{eq} Sound Level Measured in 1-second Intervals at Position #1 Next to Blue Lakes Road.

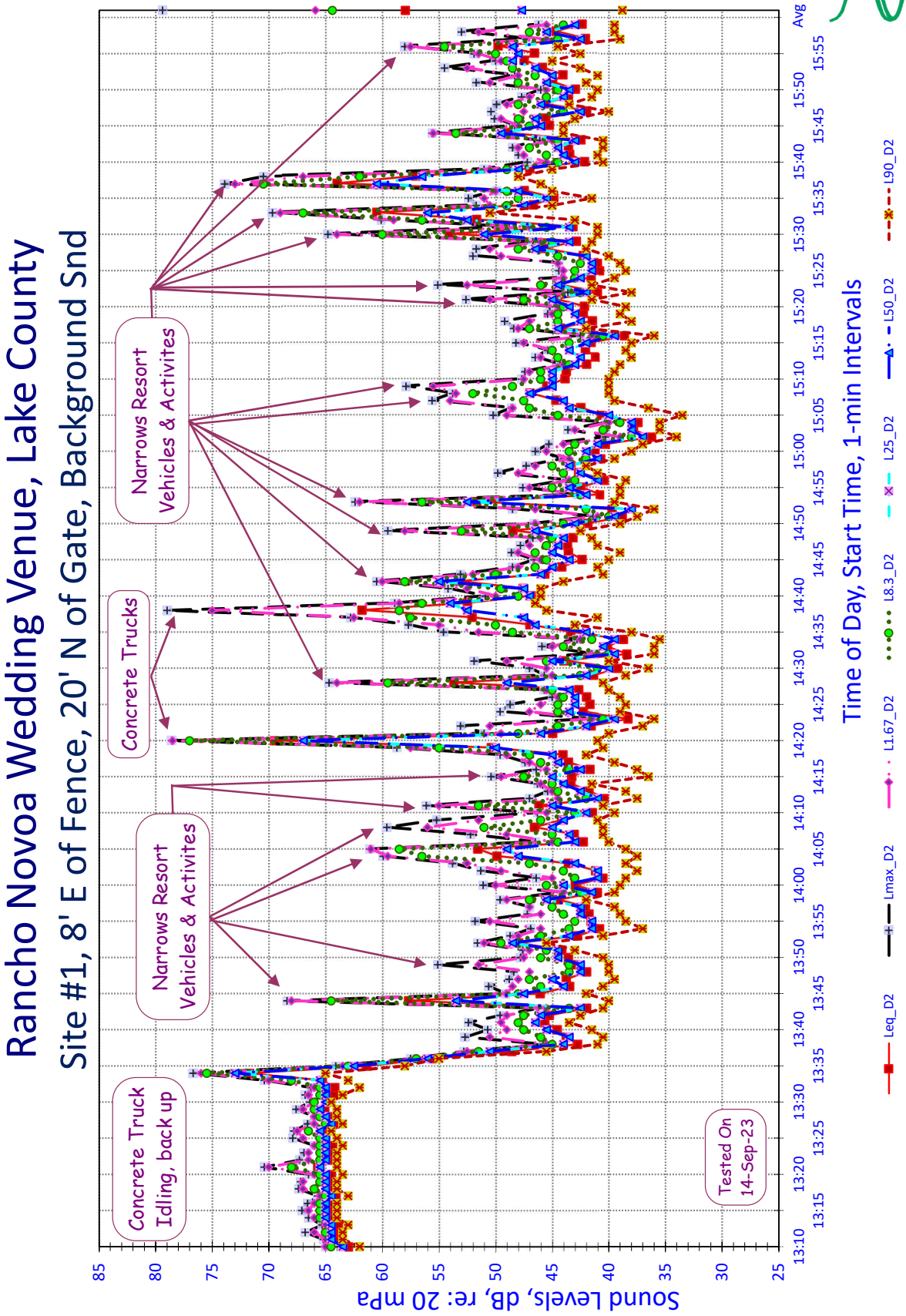

Figure 10. Variation in Sound Metrics Measured in 1-minute Intervals at Position #1 for Background Sound Sources.

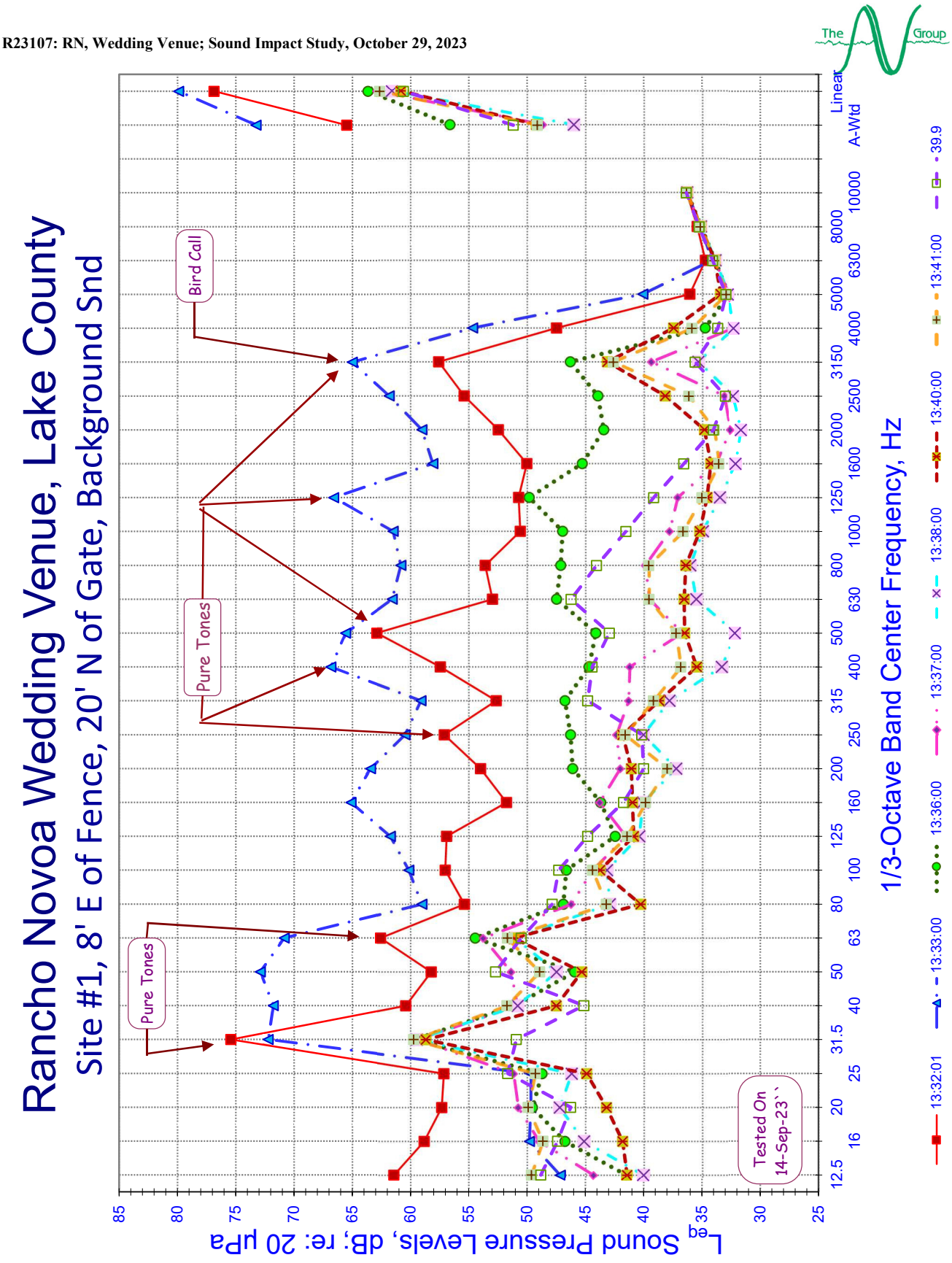

Figure 11 Tonal Content of General Background Activity & Heave Trucks Measured in 1-minute Intervals at Site #2.

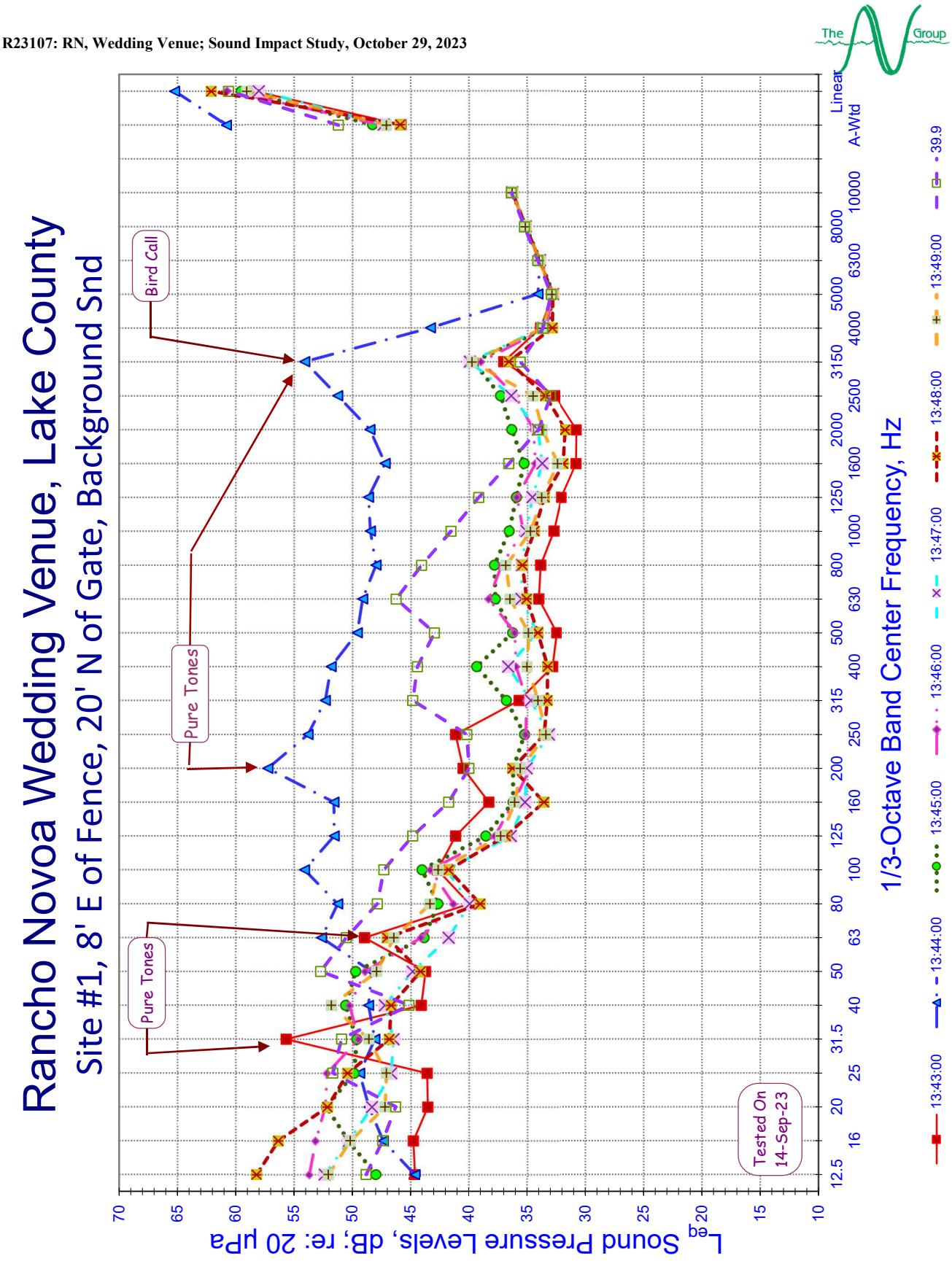

Figure 12. Comparison of Sound Tones measured in 1-Min. Intervals at Position #2 for Regular Activity & Events.

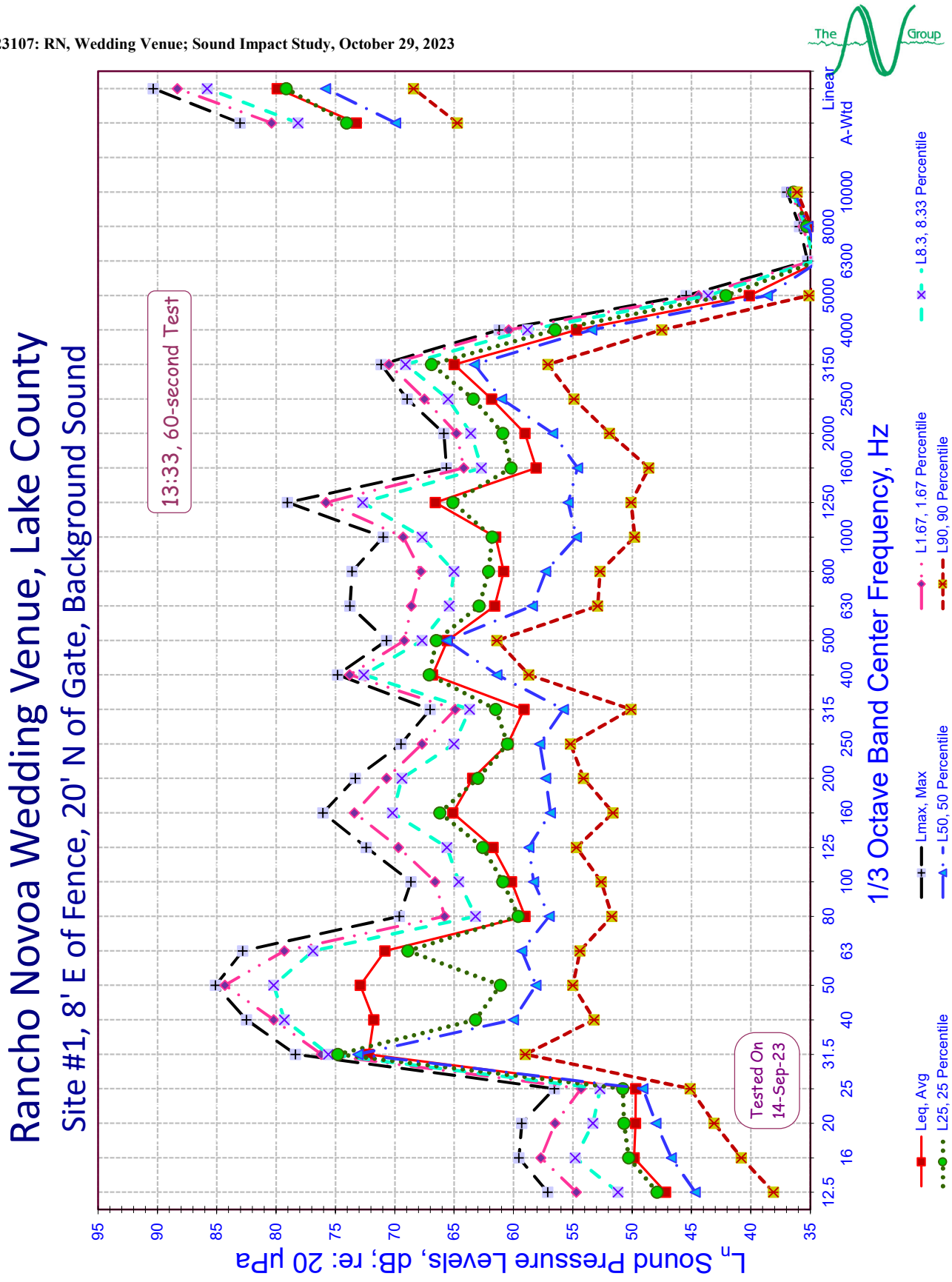

Figure 13. Statistical BG L_n Sound Tones at Site #1 Measured over a 1-minute Interval at 13:33 for General Activity.

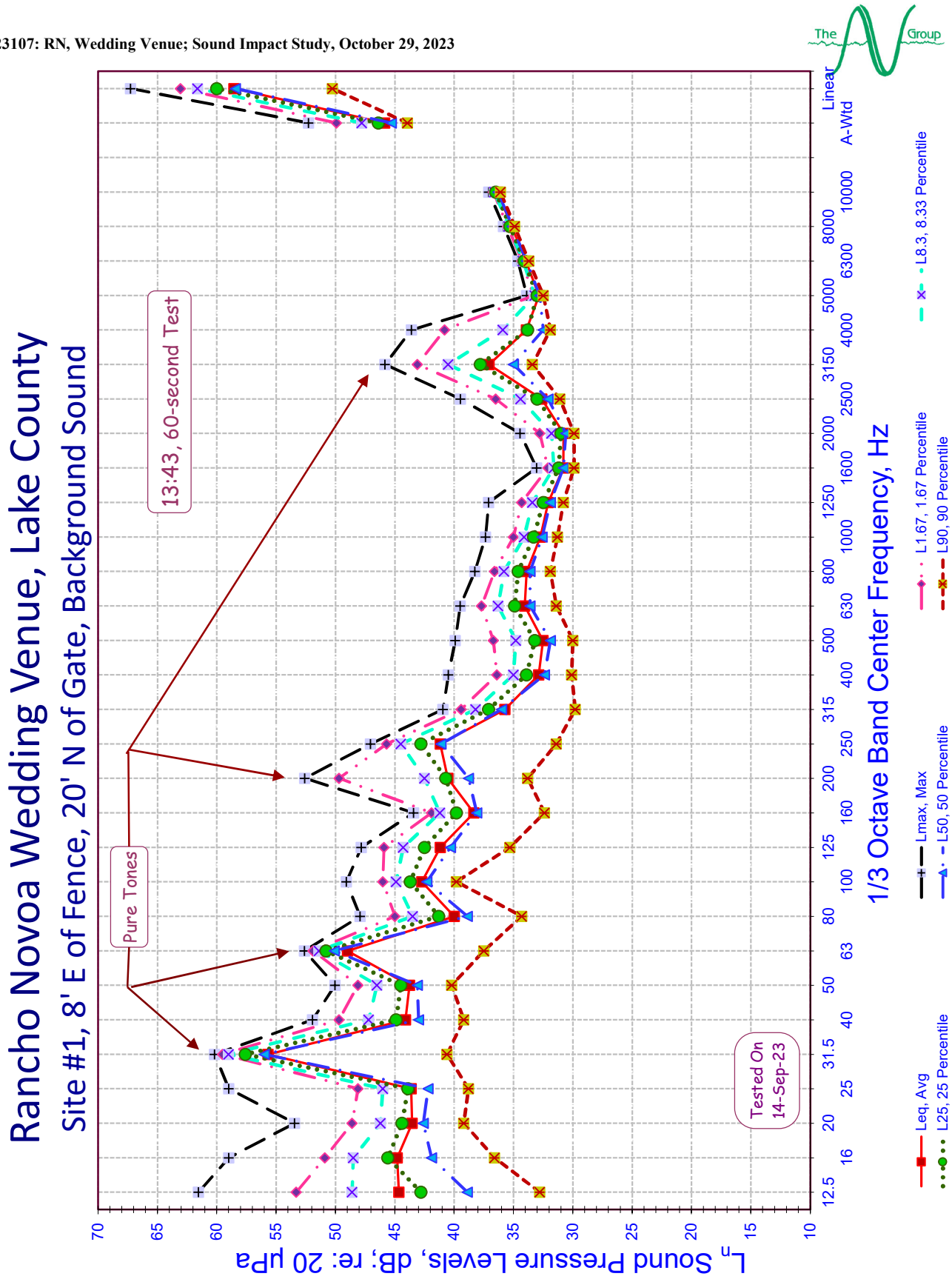

Figure 14. Background L_n Sound Tones Measured over a 1-minute Interval 13:43 at Position #1 for Normal Activity.

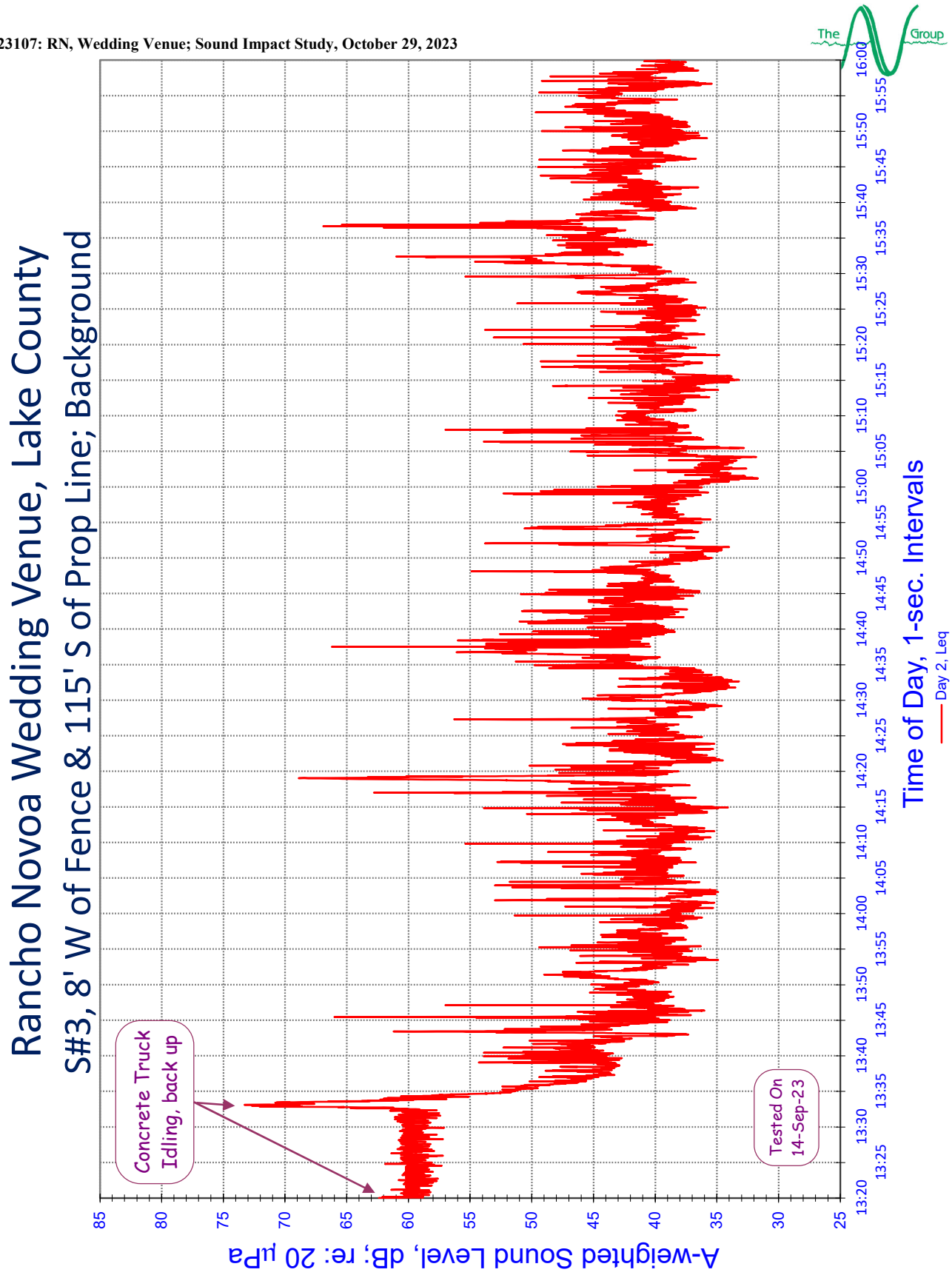

Figure 15. Variation in Background Sound Levels Measured in 1-second Intervals at Position #3, for Normal Activity.

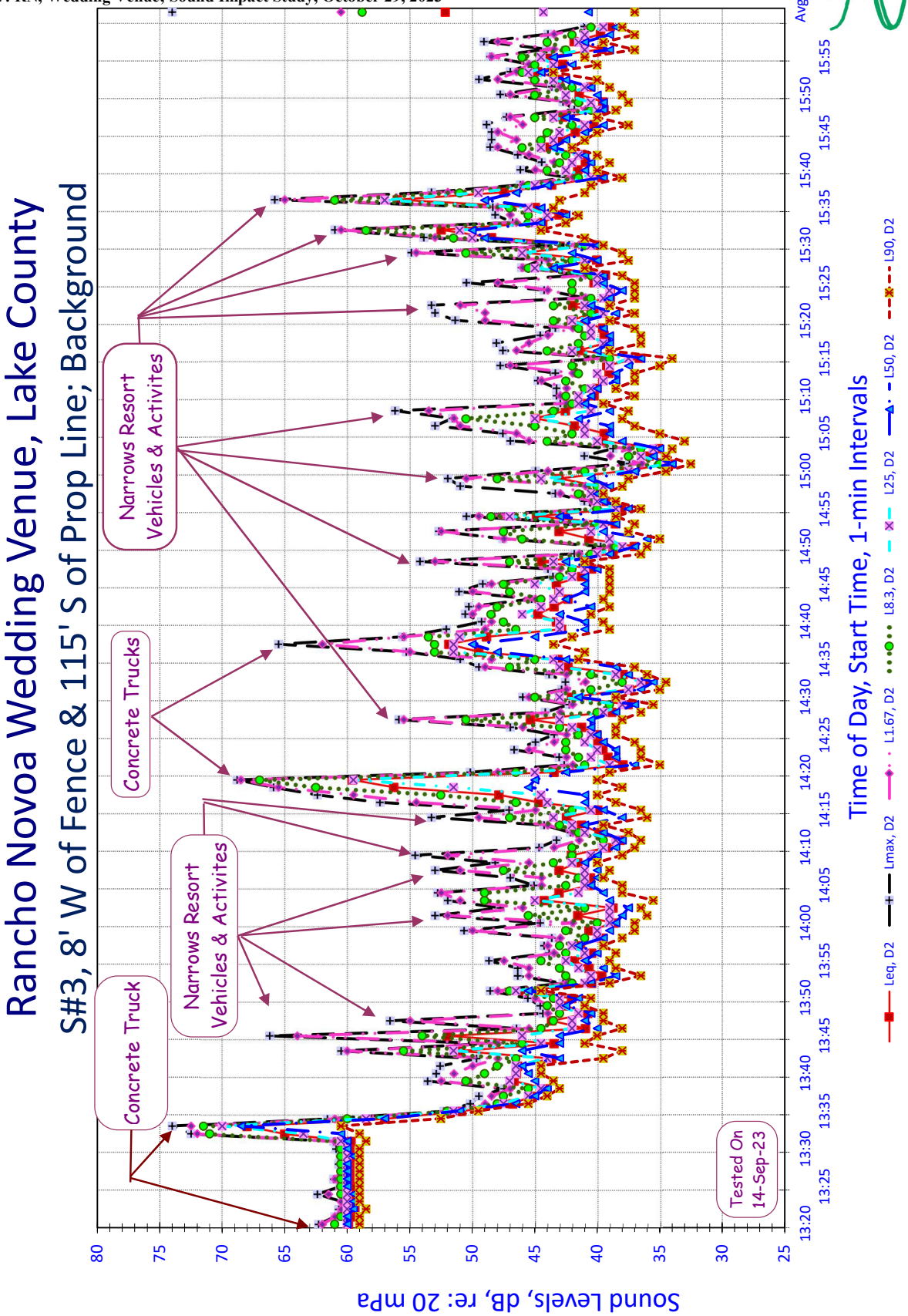

Figure 16. Comparison of Background L_n Sound Measured in 1-min Intervals at Site #3 with Normal Activity.

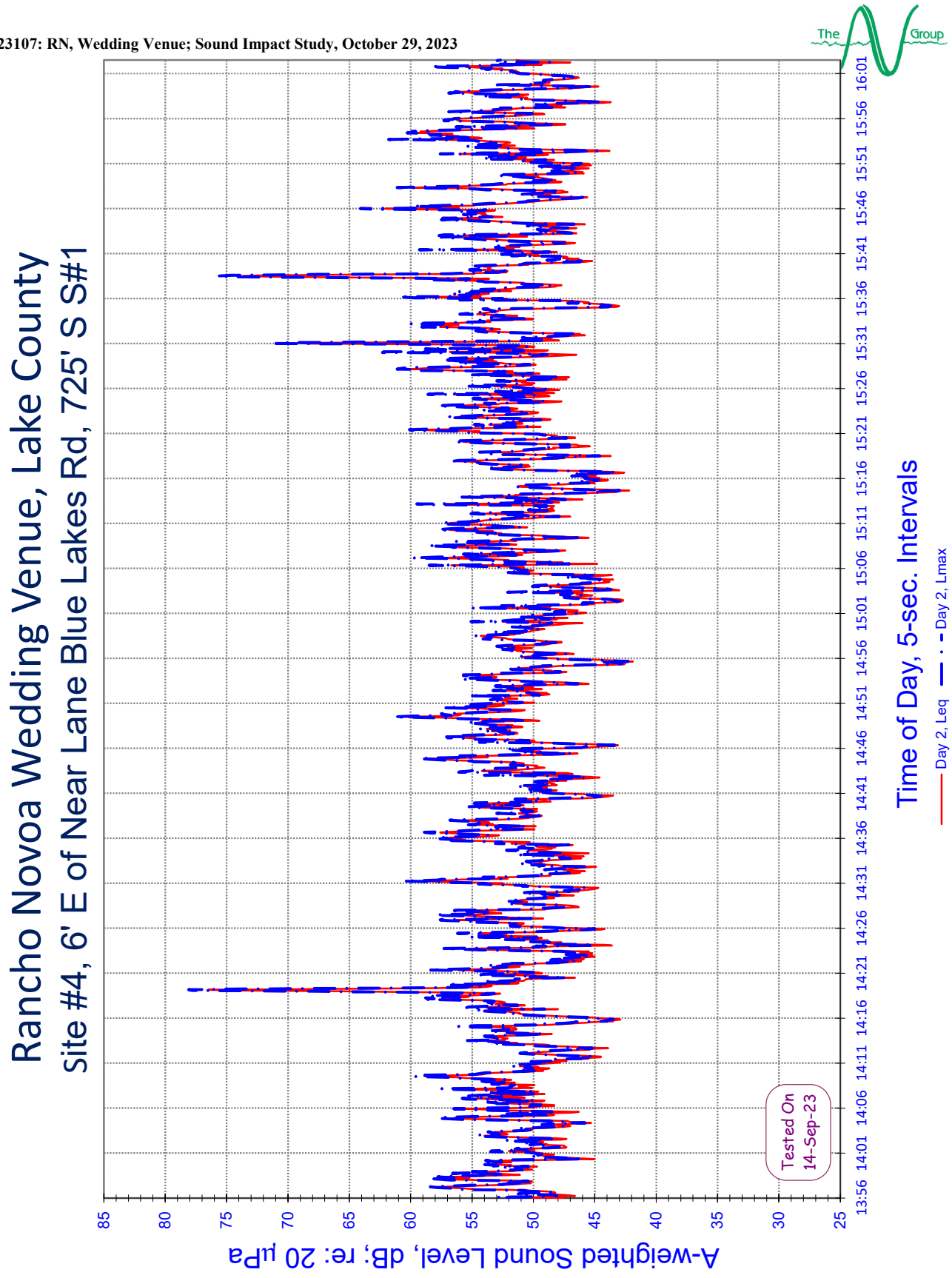

Figure 17. Average & Max Background Sound Level measured in 5-second Intervals at Site #4 for Normal Activity.

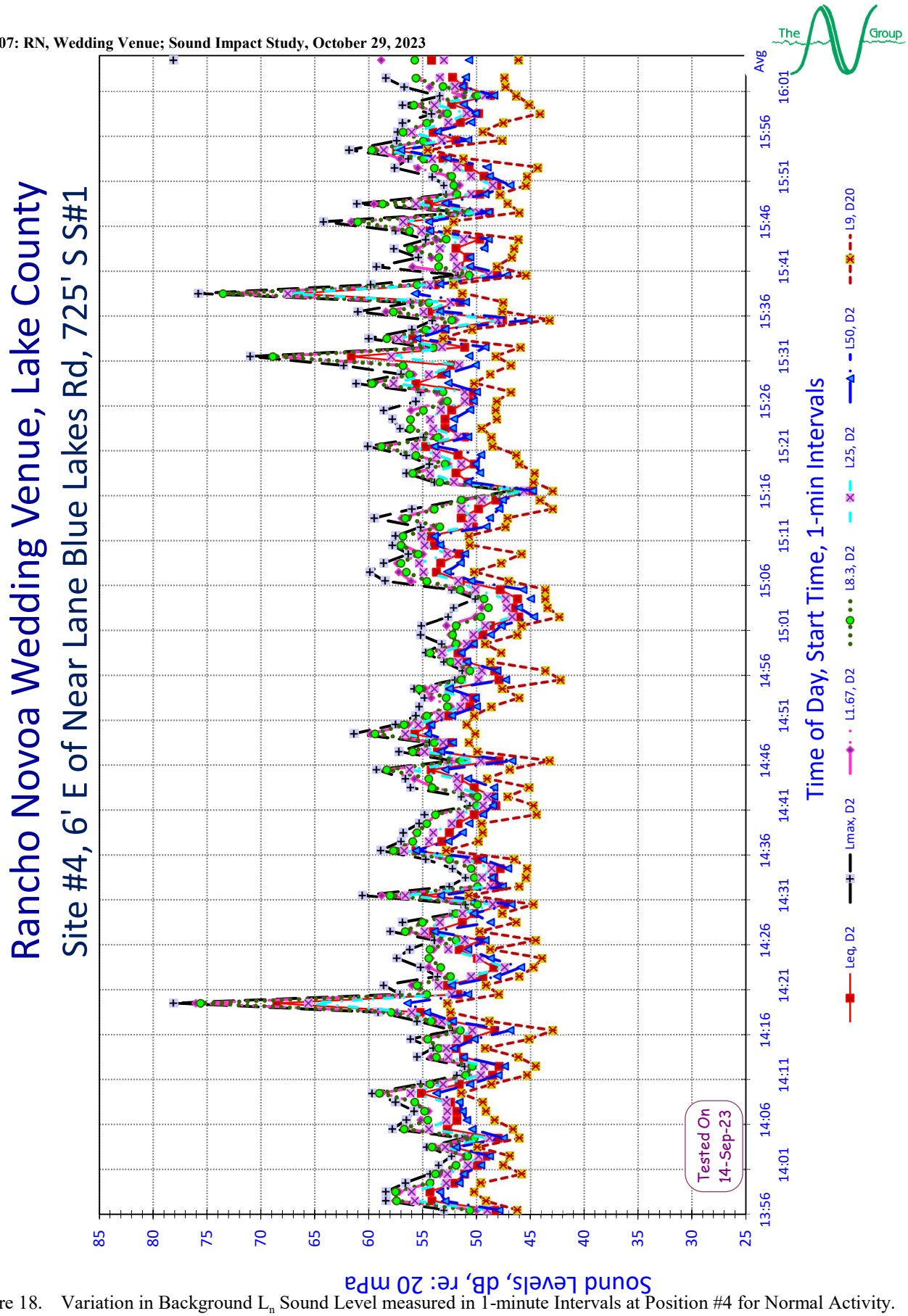

Figure 18. Variation in Background L_n Sound Level measured in 1-minute Intervals at Position #4 for Normal Activity.

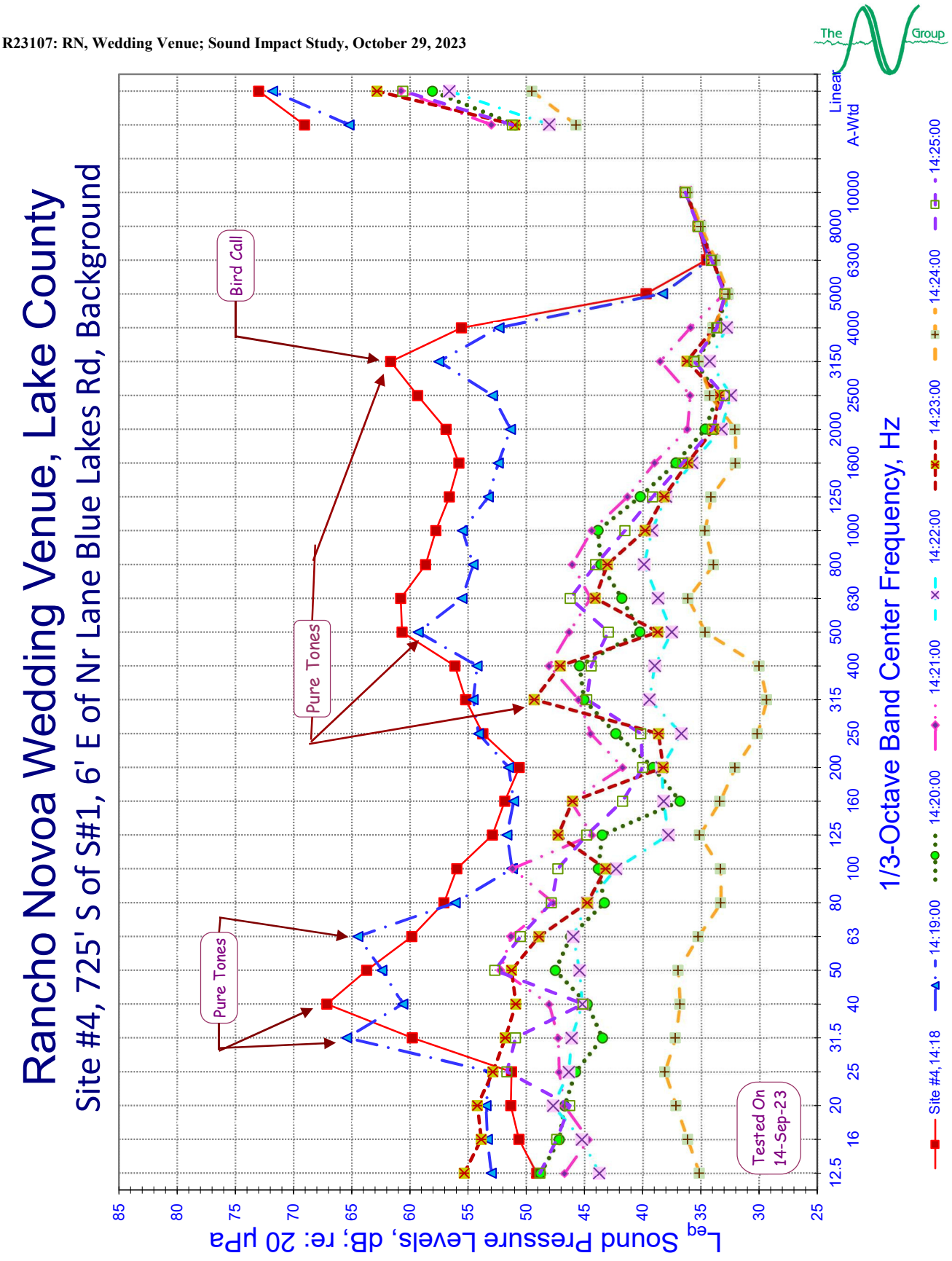

Figure 19. Average Sound Tones Measured in 1-minute Intervals at Position #4 for Normal Background Activity.

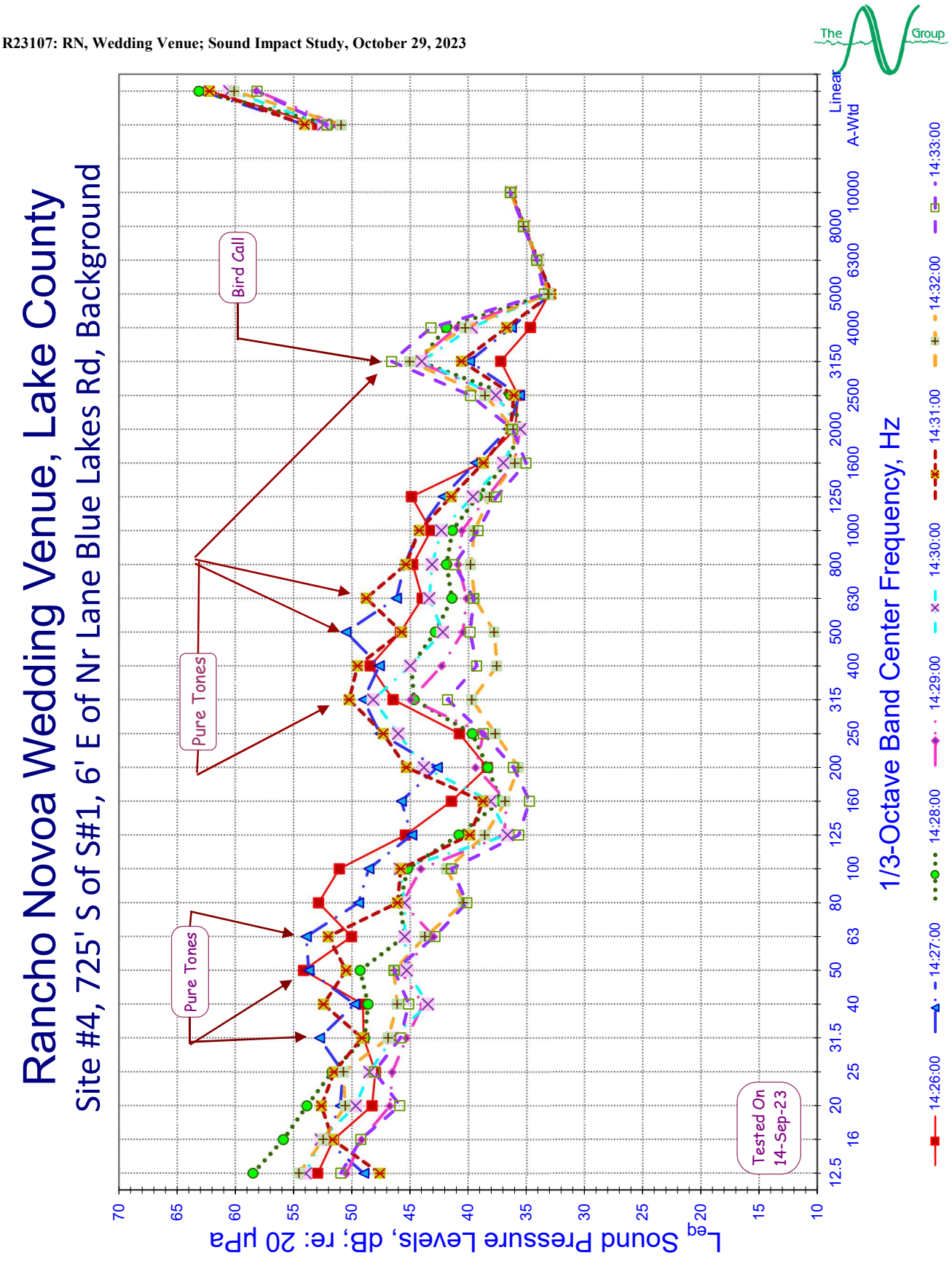

Figure 20. Tonal Content of General Activity on SR 20 Measured over 1-minute Intervals at Position #4.

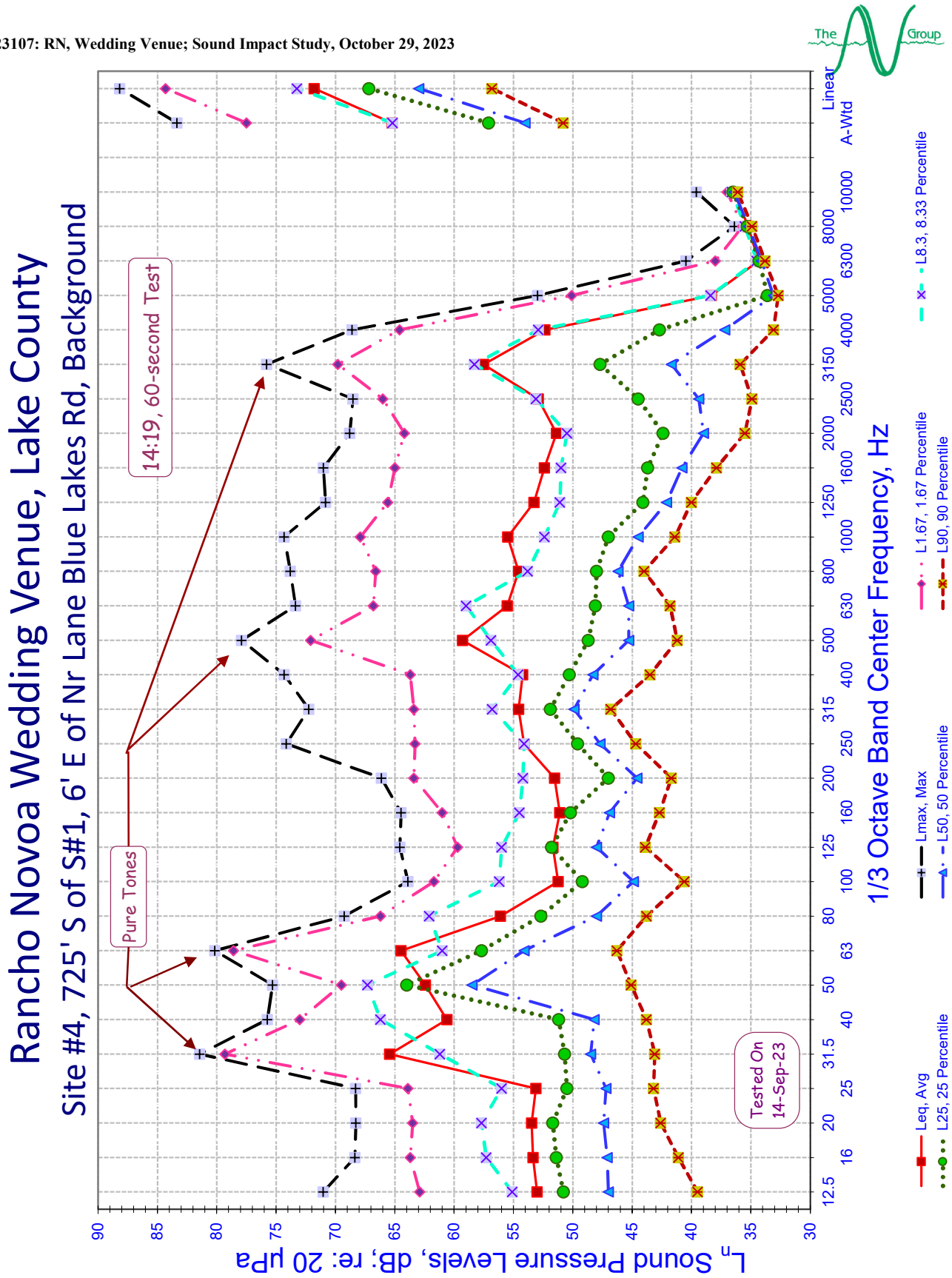

Figure 21. Comparison of Statistical L_n Sound Tones measured over 60 seconds at Position #4 for General Activity.

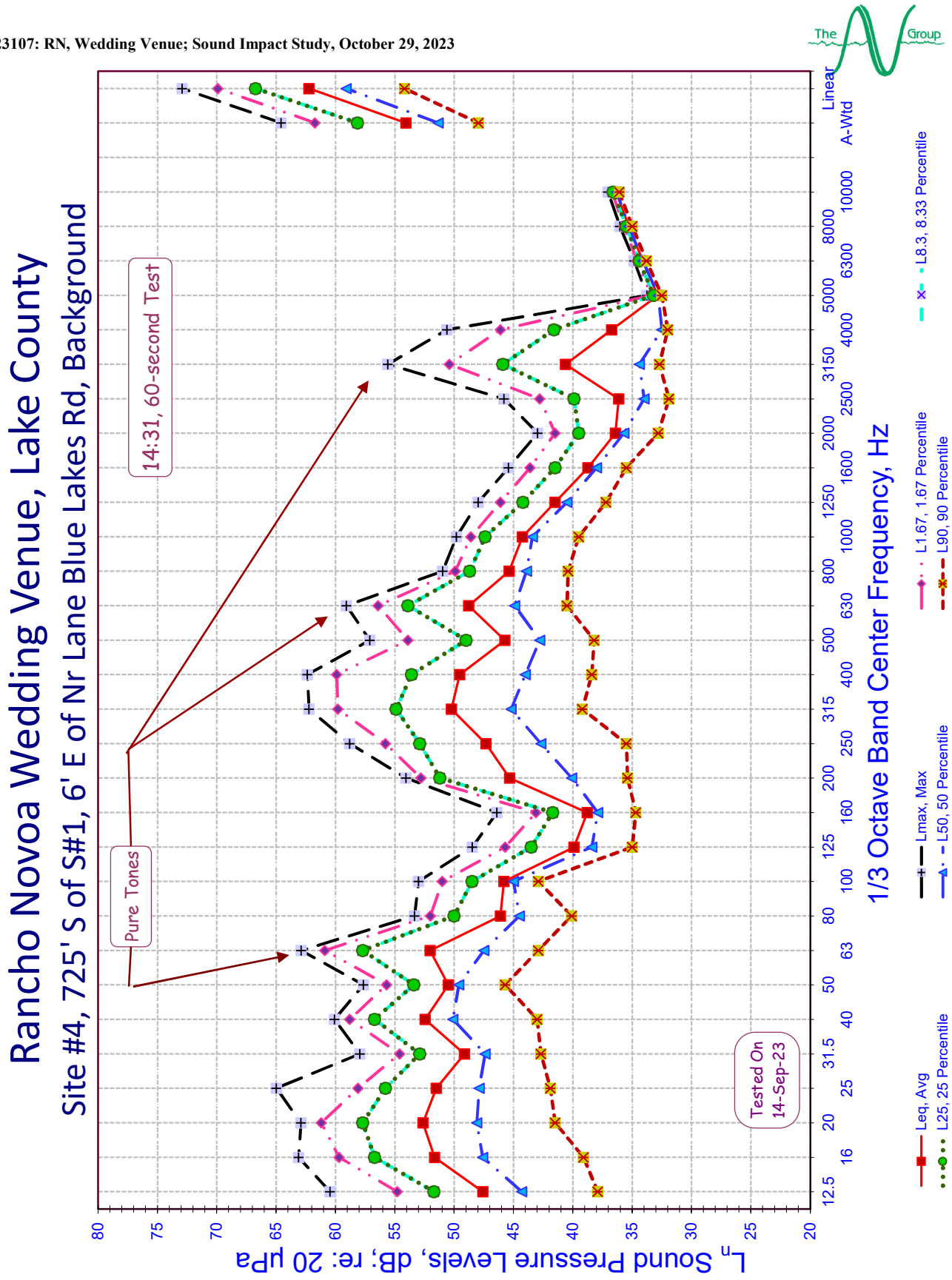

Figure 22. Background Sound Tones Measured at Position #4 for a 60-second Test at 14:31 with Normal Activity.

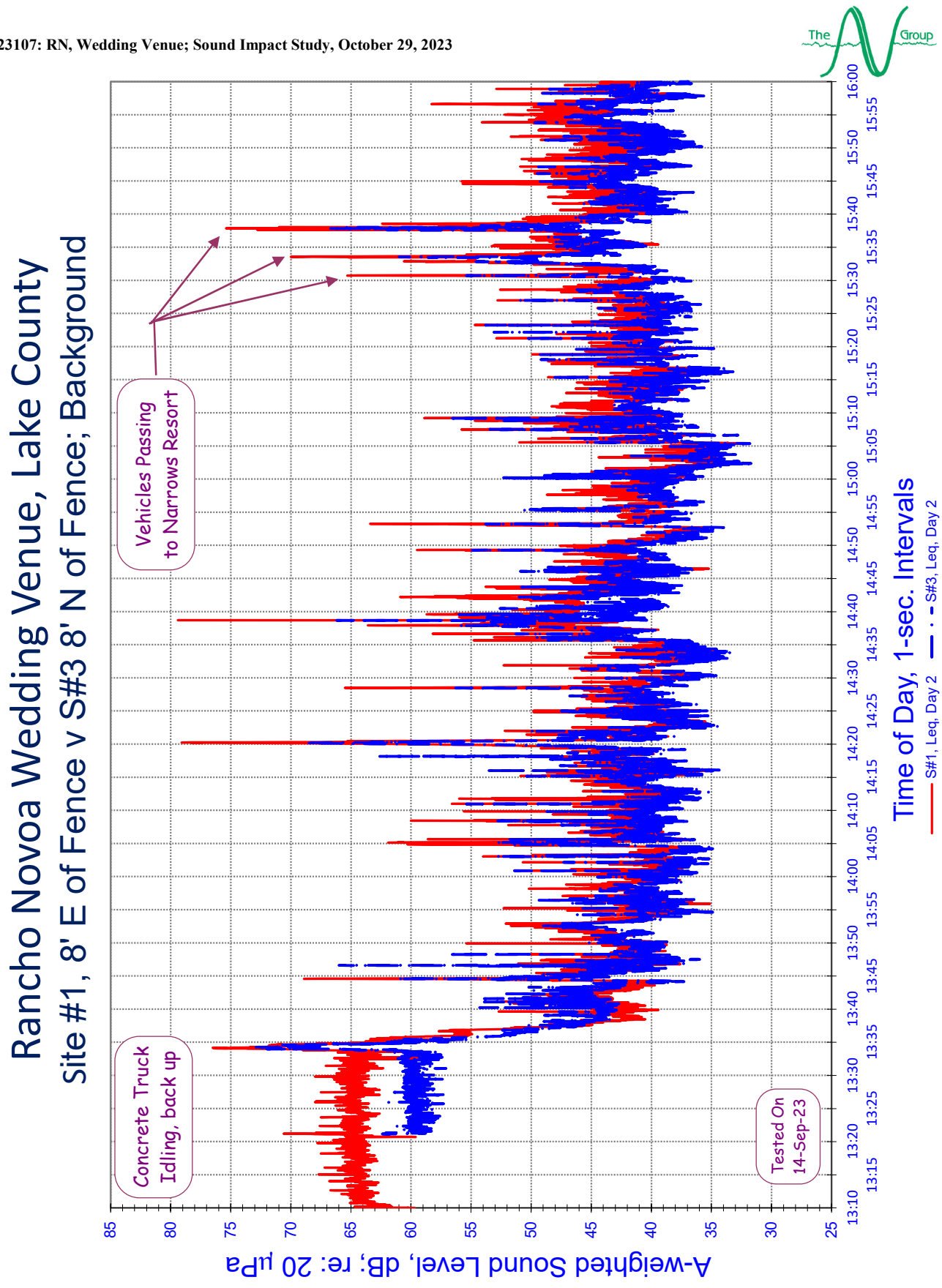

Figure 23. Comparison of L_{eq} Background Sound Levels Measured in 1-sec Intervals at Sites #1 & #3 for Normal Activity.

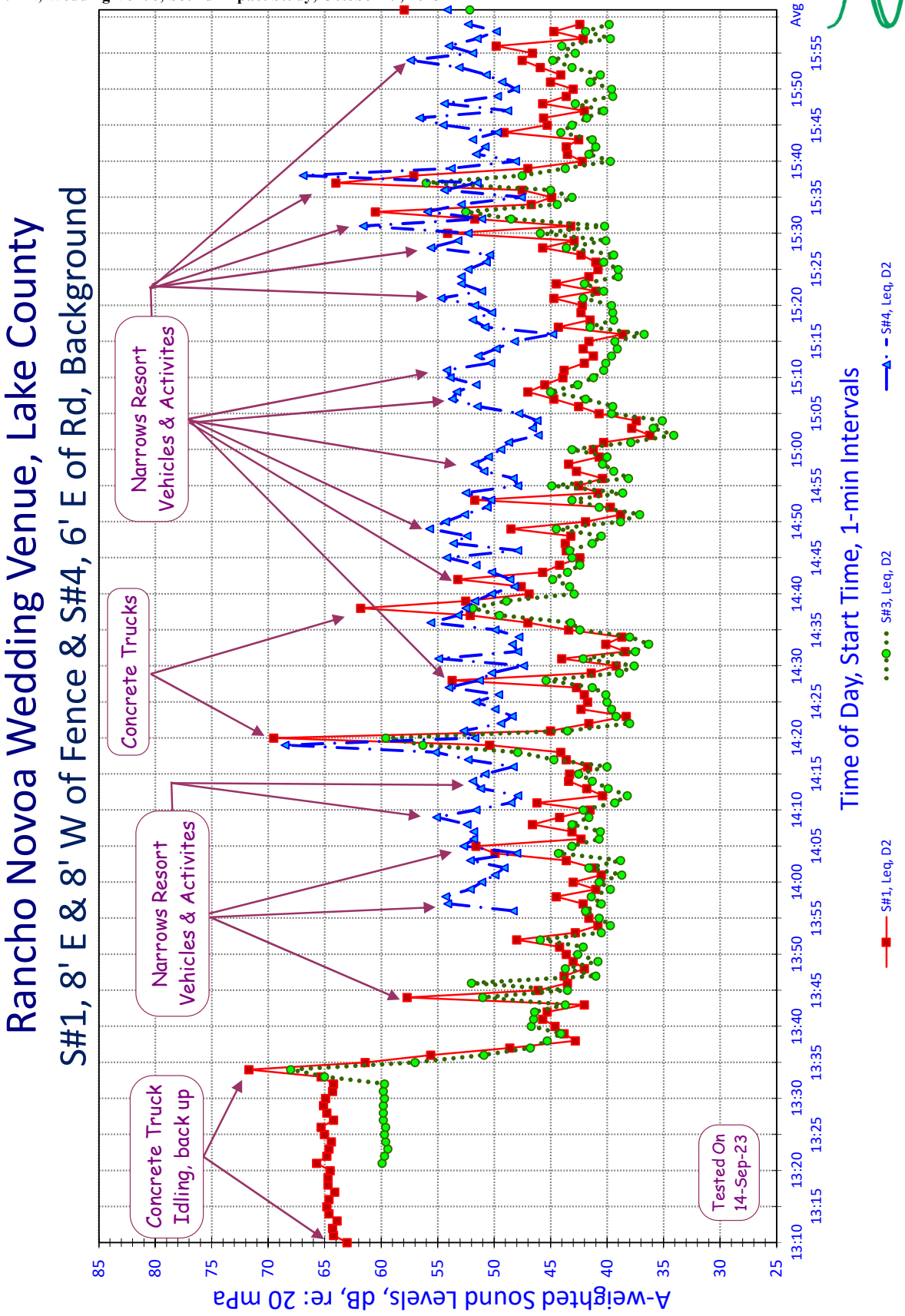

Figure 24. Variation in Background Sound Levels Measured in 5-min Intervals at Site #3, 254 ft. South of Greenback Ln.

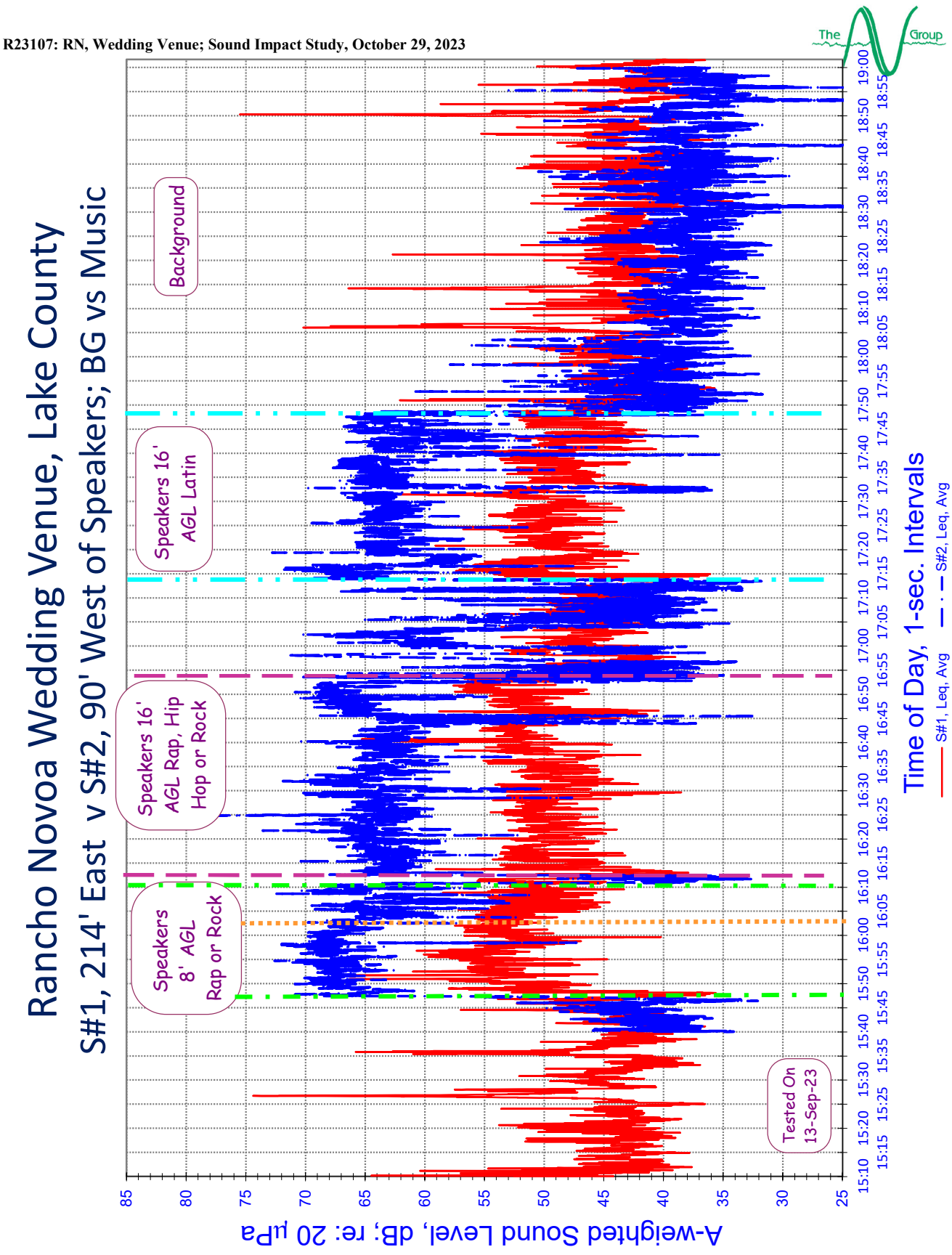

Figure 25. L_{eq} Sound Level Measured in 1-second Intervals at Sites #1 & #2 for 3 DJ Music Types vs Background Sound.

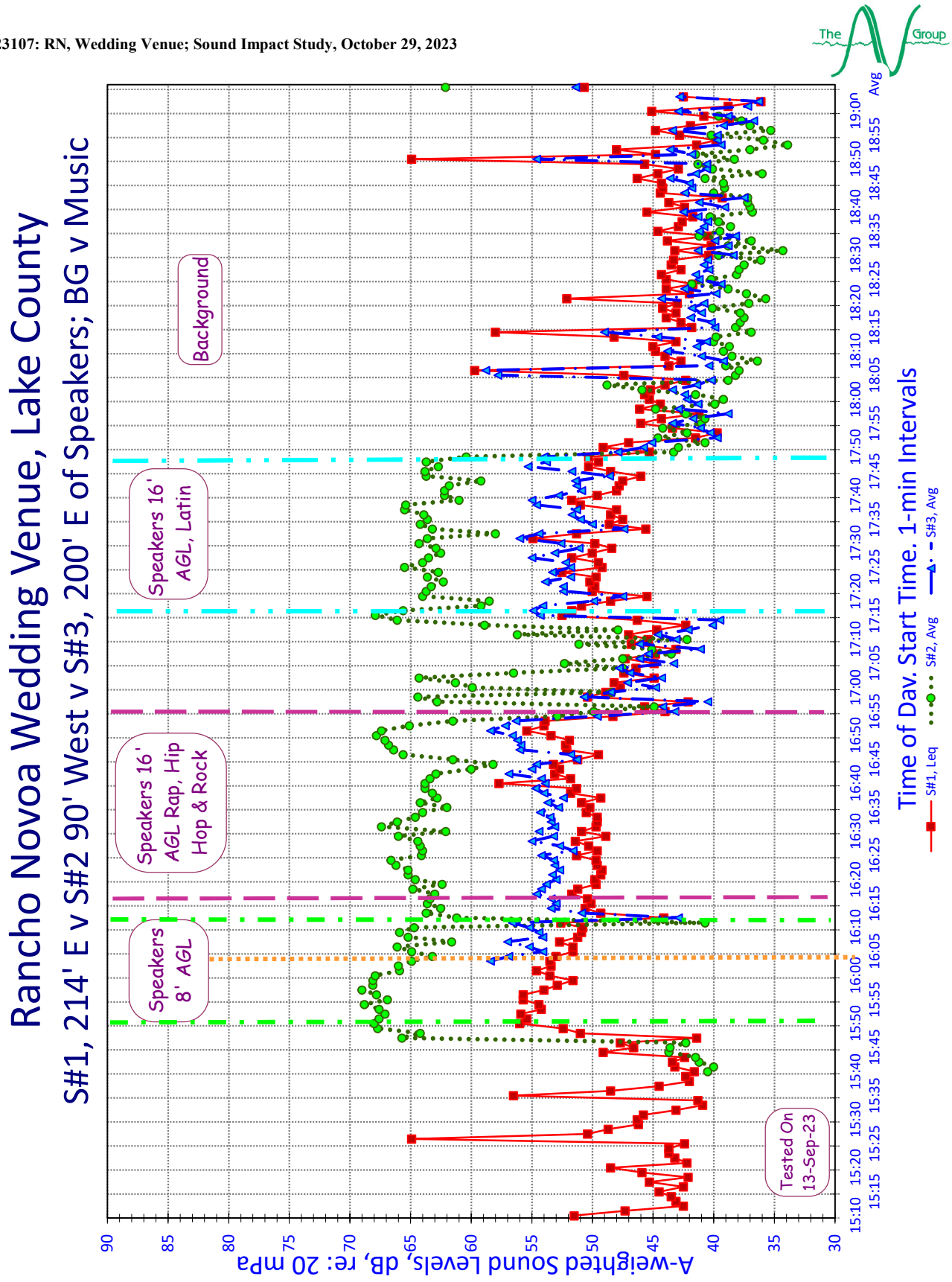

Figure 26. Variation in L_{eq} Sound Level Measured in 1-minute Intervals at Sites #1, #2 & #3 for Musical Events v BG.

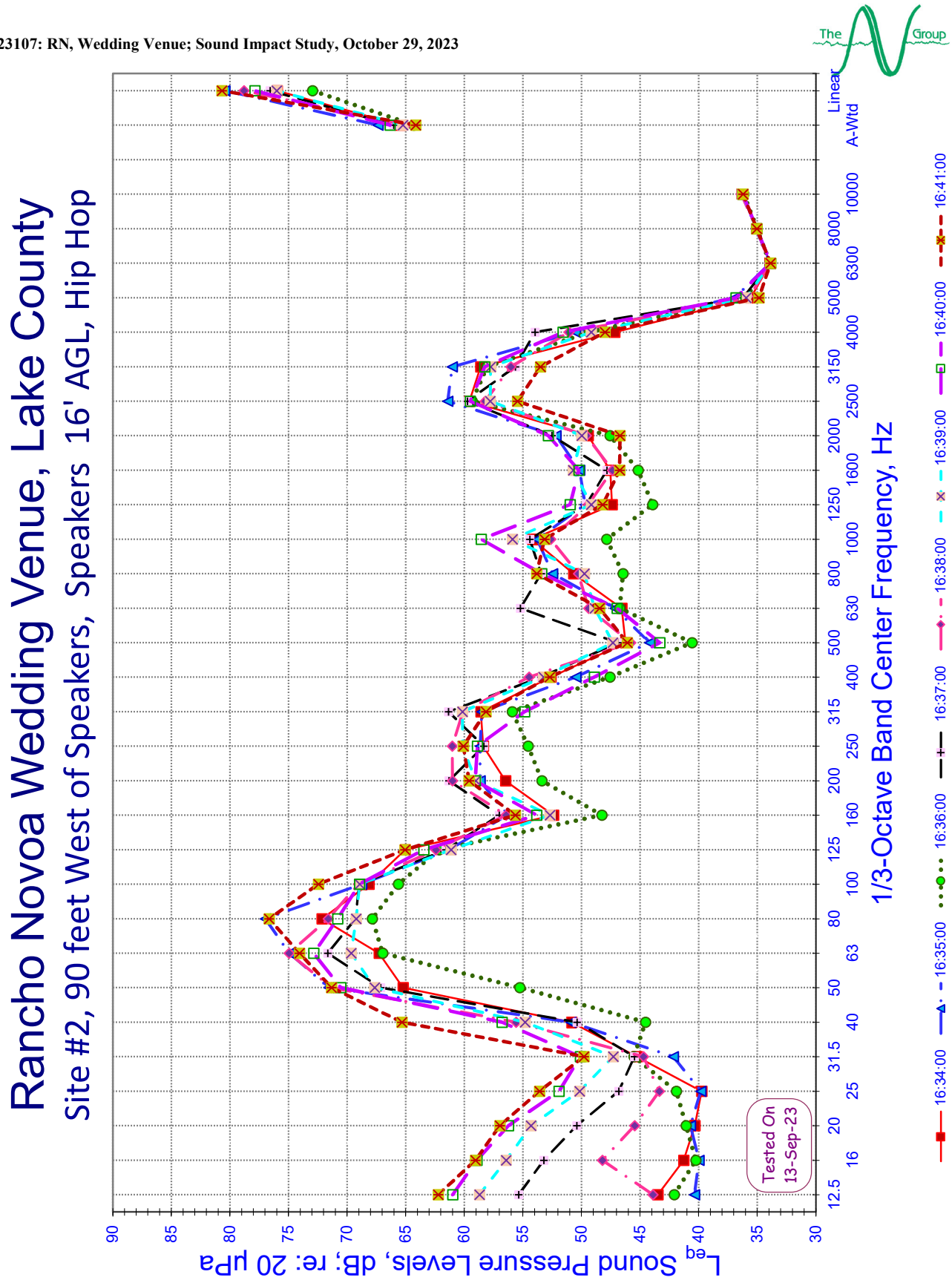

Figure 27. Comparison of L_{ea} Sound Tonal Content Measured in 1-minute Intervals at Site #2 fir Hip-Hop & R&R Music.

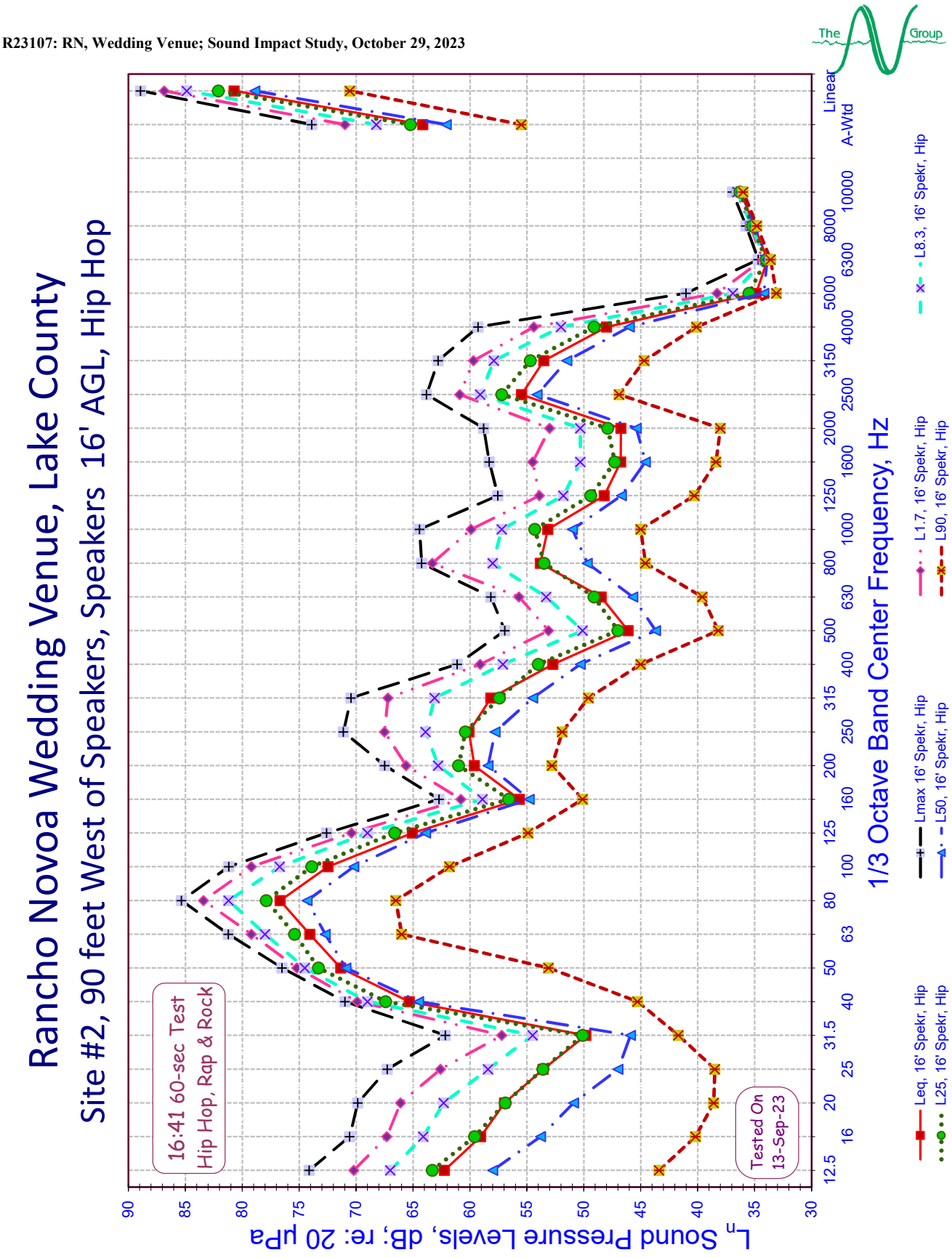

Figure 28 L_n Tonal Content Measured over a 1-minute Intervals at 16:41 at Site #2 for Hip-Hop, Rap or Rock & Roll.

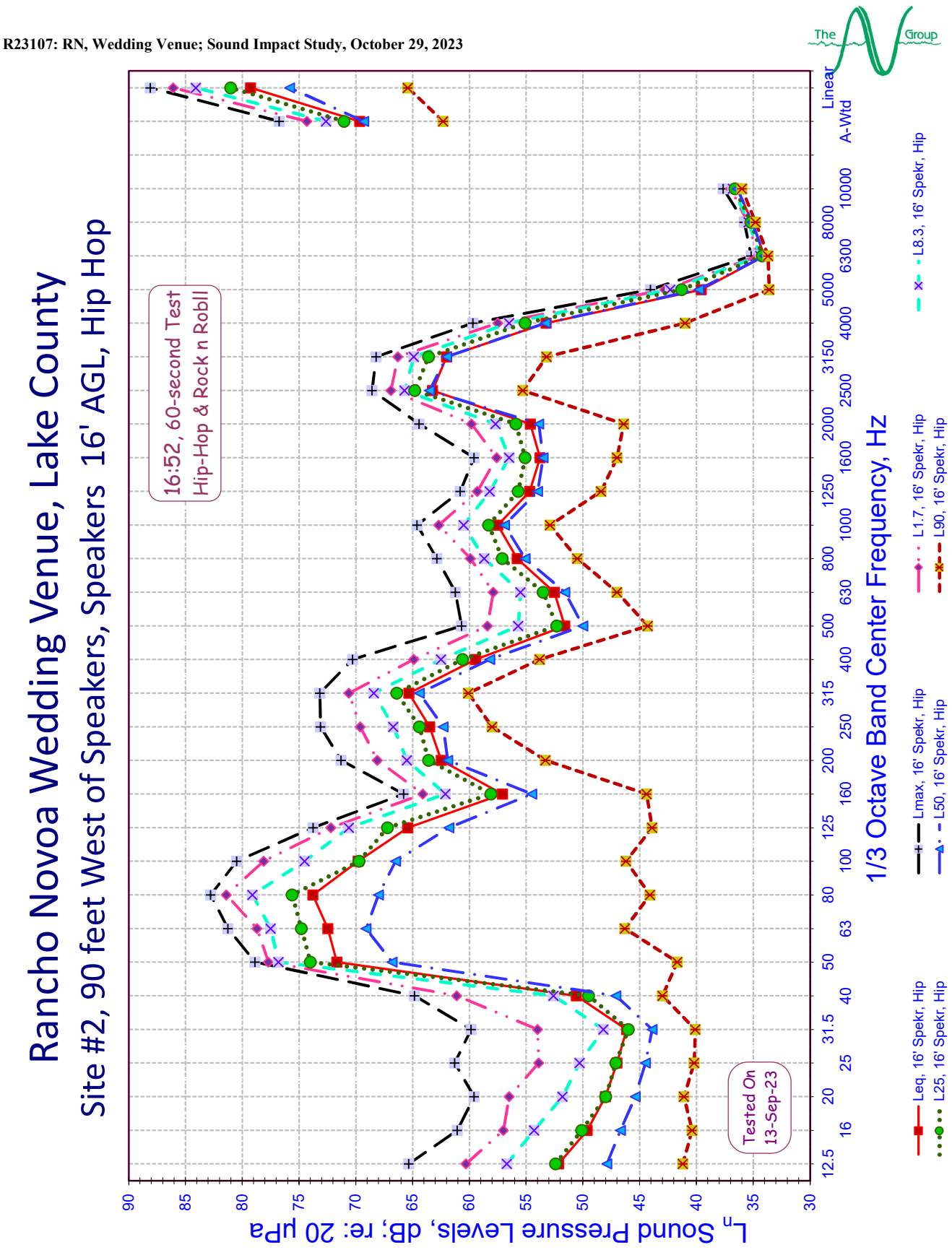

Figure 29. Comparison of Sound Tones measured over a 1-minute Intervals at Site #2 at 16:52 for Hip-Hop, Rap or Rock.

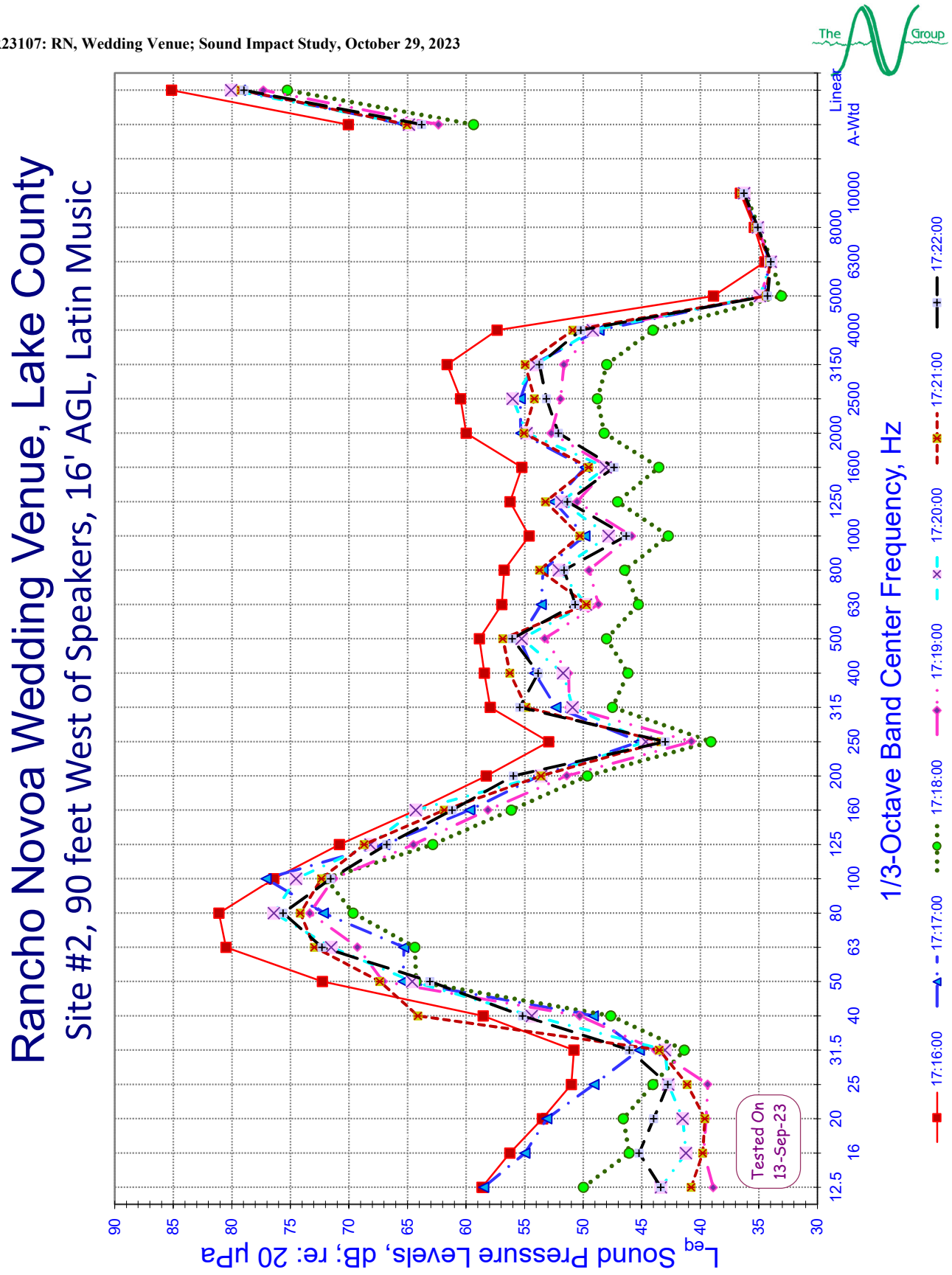

Figure 30. L_{eq} Sound Tones Measured over Seven 1-minute intervals at Site #2 While DJ Was Playing Latin Music.

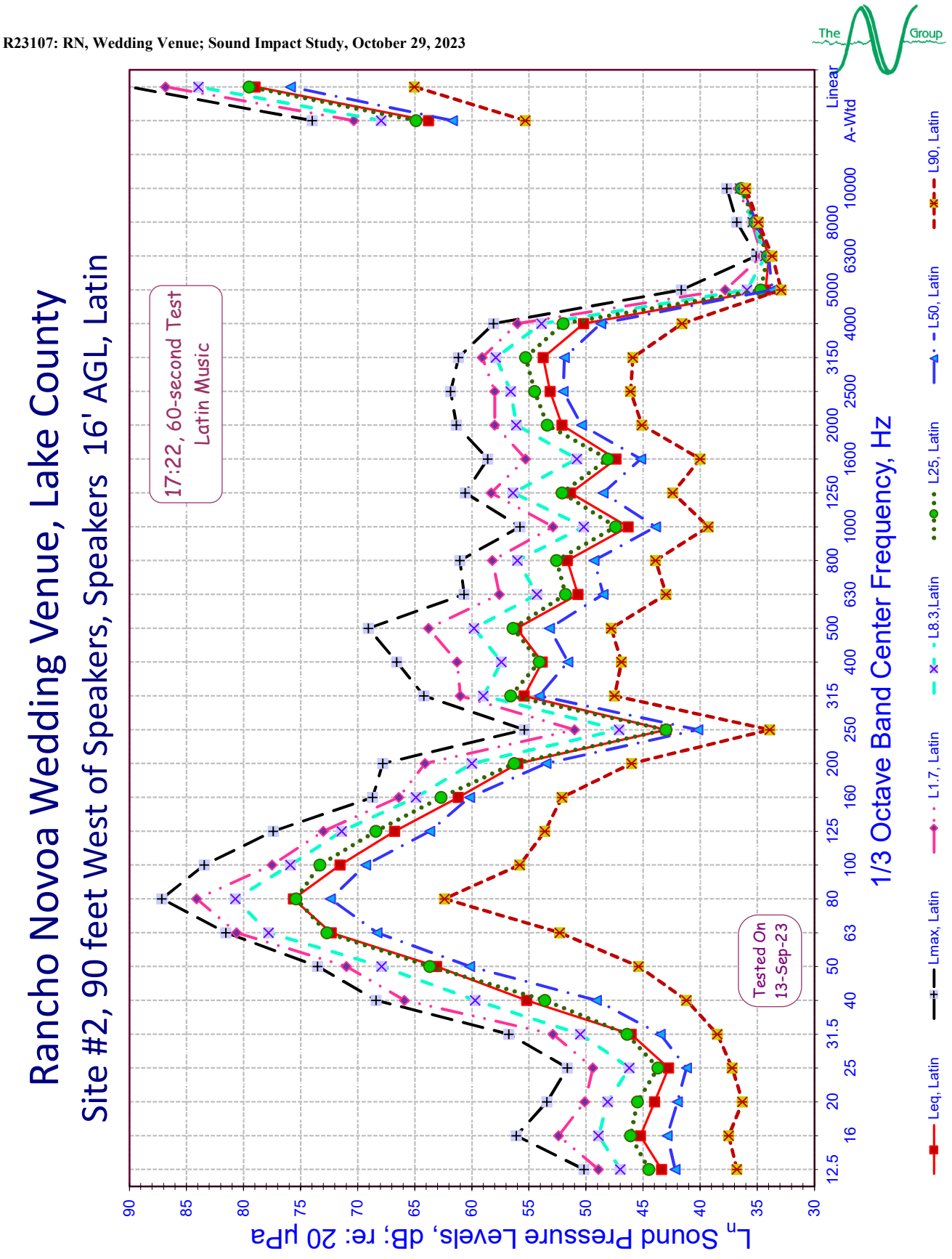

Figure 31. Comparison of L_n Sound Tones Measured at Site #2 at 17:22 While the Disk Jockey Was Playing Latin Music.

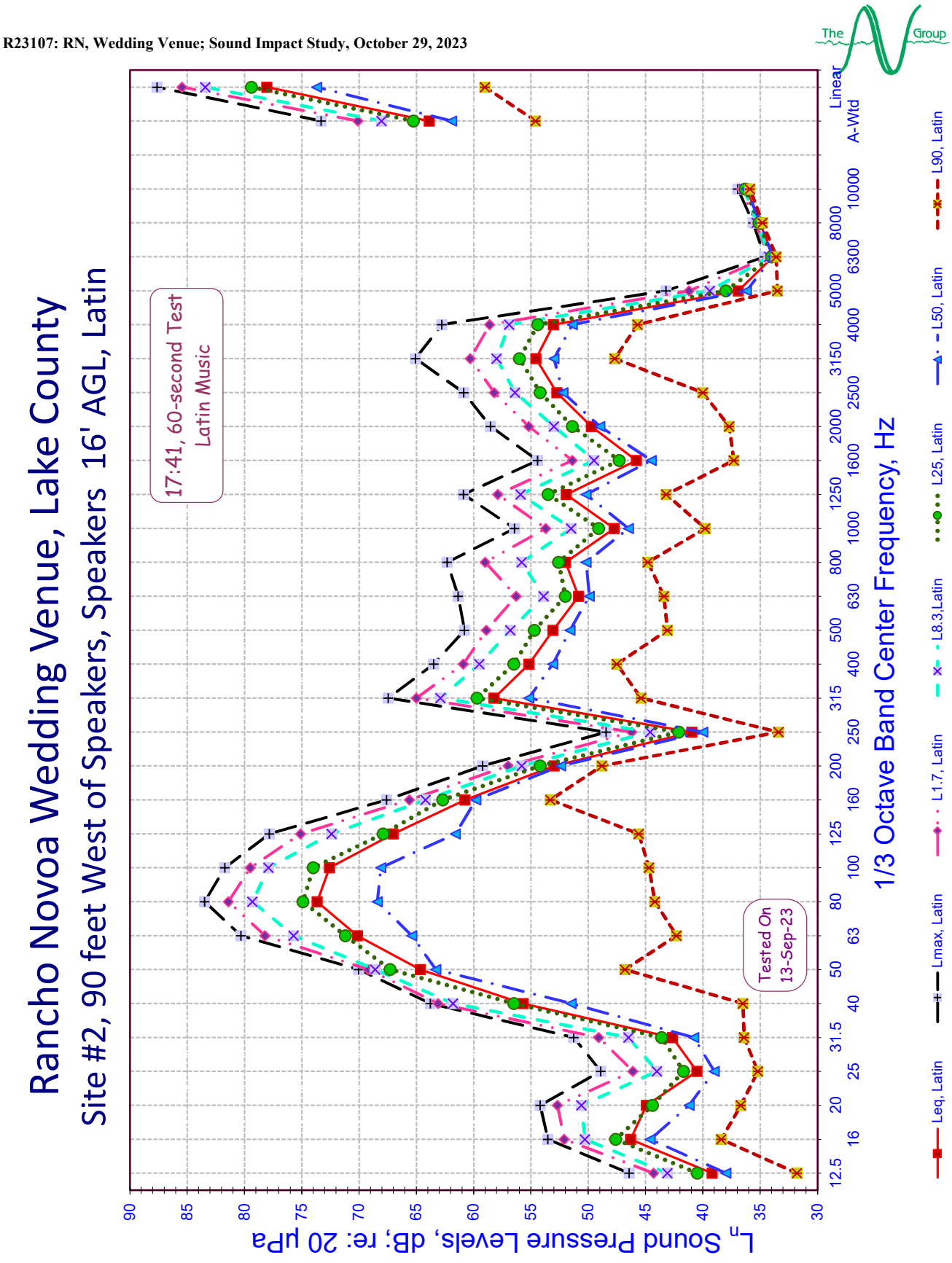

Figure 32. Various L_n Sound Tones Measured at 17:41 over a 1-minute Interval at Site #2 with Latin Music Playing.

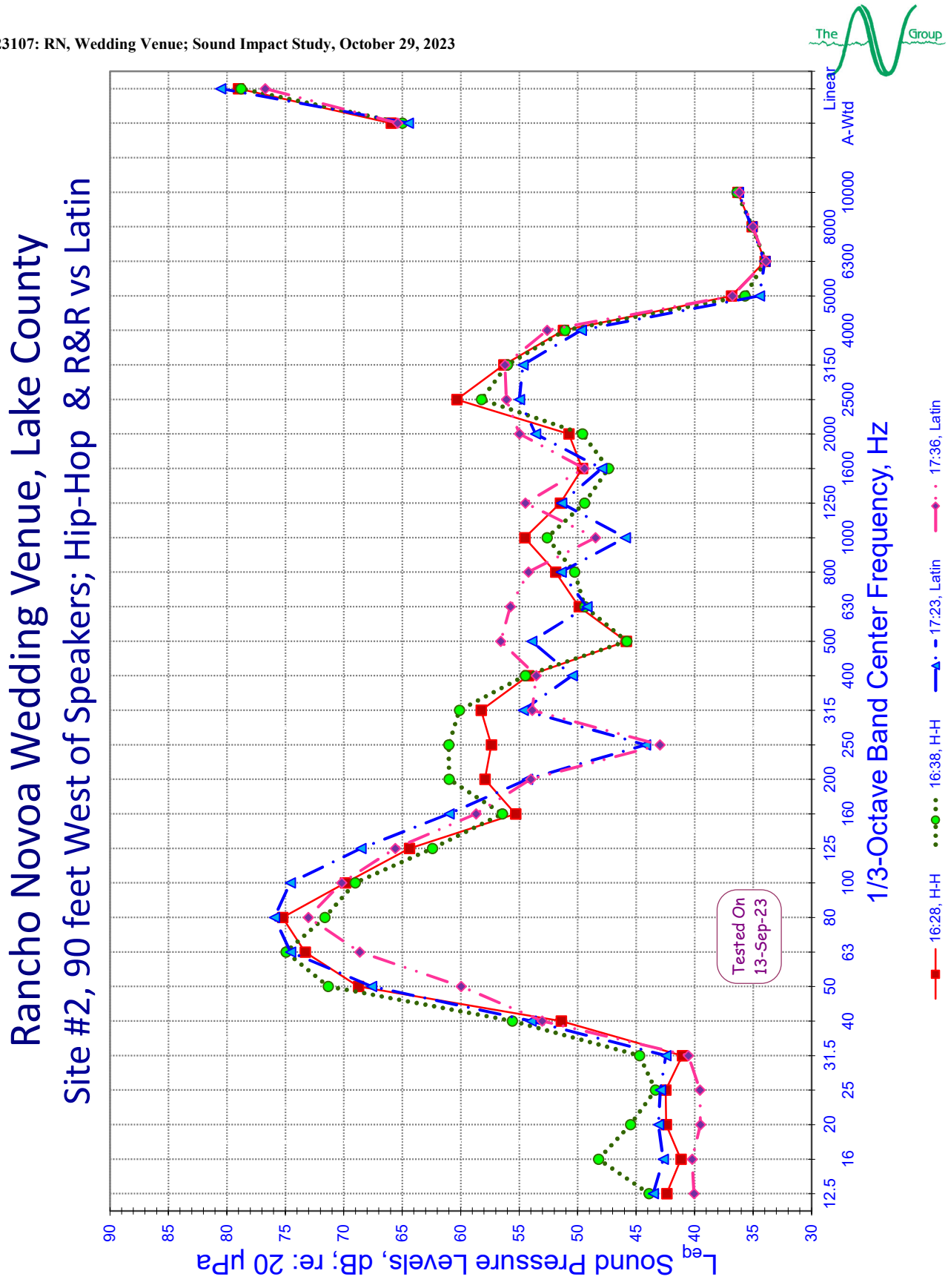

Figure 33, Comparison of L_n Sound Tones for Hip-Hop & Latin Music Measured in 1-minute Intervals at Position #2.

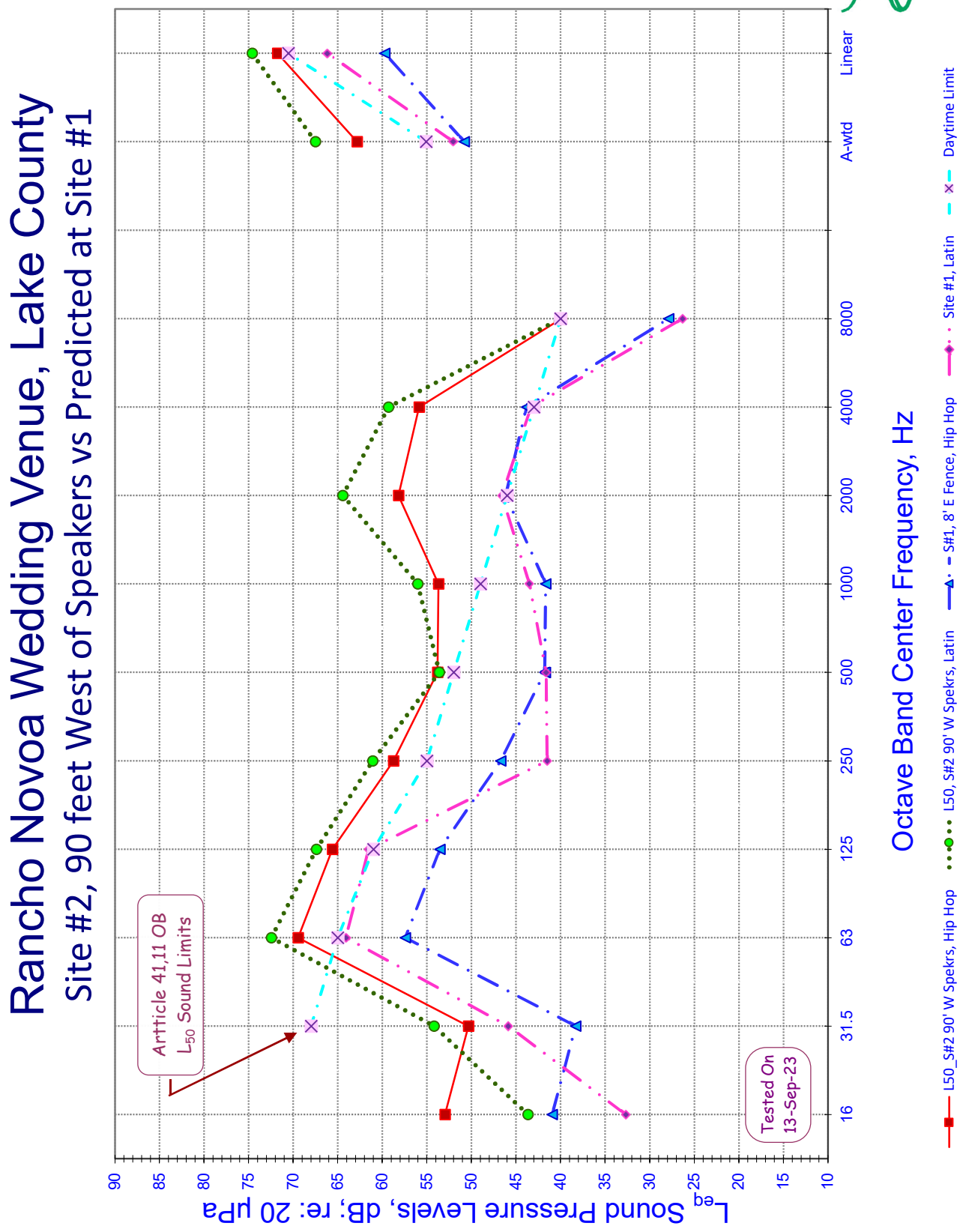

Figure 34 Measured Hip-Hop & Latin Sound Tones at Site #2 Compared with Predicted Tones at Site #1 & Limits.