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JUL - 1 2013

Wednesday, June 26, 2013

Maria Masis
Supervising Regional Planner
Los Angeles County
Department of Regional Planning
320 W. Temple St. Room 1346
Los Angeles, CA 90012-3225

SUBJECT: ATHENS SERVICES NOISE AND VIBRATION PHASE II STUDY

Dear Ms. Masis

A noise and vibration study was conducted on Monday, June 17, 2013 by Christopher Jean & Associates, INC. as required by Conditional Use Permit Case Number 97-060-(1) for the allowed tonnage capacity for the Athens Services waste transfer and materials recovery facilities located at 14048 E. Valley Blvd., La Puente, CA. The noise and vibration survey was conducted at a time interval of four hours between the hours of 11 AM and 3 PM, a time of peak usage, at a location near the south west corner of the site, inside the facility wall opposite the nearest residential land use.

The study was conducted by Christopher Jean, Principle of Christopher Jean & Associates, Inc. The study was observed by Cole Landowski of the Los Angeles Department of Public Health for the full time period of the study. Details of the study are contained in the attached report prepared by Christopher Jean & Associates. Mr. Landowski has reviewed the report and has concluded that the Athens Services facility, at 14048 E. Valley Blvd., La Puente, CA is in compliance for noise (Section 12.08.390) and for vibration (Section 12.08.560) of the Los Angeles County Noise Ordinance for current operational limits.

If you have any further questions, please call me at (626) 430-5440.
Very truly yours,

Cole Landowski, MS, CIH, REHS
Program Head, Environmental Hygiene Program

Cc: Cyrus Rangan
Jose Reynoso

CHRISTOPHER JEAN & ASSOCIATES, INC.
ACOUSTICAL CONSULTING SERVICES

June 20, 2013

NOISE AND VIBRATION

MEASUREMENT SURVEY

ATHENS SERVICES FACILITY

COUNTY OF LOS ANGELES

Prepared by:

Christopher Jean, INCE

Prepared for: MR. COLE LANDOWSKI
Environmental Health
COUNTY OF LOS ANGELES
5050 Commerce Drive, Room 115
Baldwin Park, CA 91706

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SUMMARY

This noise and vibration measurement survey has been completed to determine whether the existing operations at the Athens Services waste transfer and materials recovery facility exceed the Title 12 noise and vibration limits of the County of Los Angeles at the project boundaries. The measurement survey found that the current operations do not exceed the Title 12 noise and vibration limits.

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1.0 INTRODUCTION

This noise and vibration measurement survey required by Conditional Use Permit Case Number 97-060-(1) for the current capacity of the Athens Services waste transfer and materials recovery facilities located at 14048 E. Valley Boulevard in the County of Los Angeles was performed on Monday, June 17, 2013. The noise and vibration measurement survey consisted of a minimum of four hours of manned measurement near the (plan) southwest corner of the project site, directly opposite the nearest residential land use.

A vicinity map showing the general location of the project site is presented in Exhibit 1 – Site Location Map. An aerial photograph showing both the location of the measurement position and its relation to the nearest residential uses is shown on Exhibit 2.

2.0 APPLICABLE NOISE CRITERIA

The administrative code of the County of Los Angeles, Title 12, Chapter 12.08 Noise Control requires the Athens operations to conform to the requirements of Table 1 on the following page.

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TABLE 1

APPLICABLE DBA NOISE CRITERIA (1)

DURATION	SYMBOL	EXTERIOR DAY	EXTERIOR NIGHT	INTERIOR DAY	INTERIOR NIGHT
30 minutes in hour	L50	50	45	--	--
15 minutes in hour	L25	55	50	--	--
5 minutes in hour	L08	60	55	45	40
1 minutes in hour	L02	65	60	50	45
Anytime in hour	LMax	70	65	55	50

(1) Please see Noise Rating Methods (Appendix 1) for an explanation of the commonly applicable acoustical terminology.

3.0 APPLICABLE VIBRATION CRITERIA

The administrative code of the County of Los Angeles, Title 12, Chapter 12.08 Noise Control, Part 4 Specific Noise Restrictions, Section 12.08.560 Vibration states, "Operating or permitting the operation of any device that creates vibration which is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property, or at 150 feet (46 meters) from the source if on a public space or public right-of-way is prohibited. The perception threshold shall be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hertz."

It must be noted that modern vibration measuring equipment is designed to measure acceleration in units of gravity (g). Thus, the measured data requires a conversion to velocity in inches per second. It was determined that 1 g of acceleration is equivalent to 386.4 inches per second of velocity. As both the analyzer and level recorder produce decibel readings above or below the calibration level, it is also necessary to determine how many decibels below 386.4 inches per second is the Title 12 vibration limit of 0.01 inches per second of velocity. The decibel value of the Title 12 vibration limit was determined using the following equation.

10log(0.01 inches per second/386.4 inches per second) = dB

The above equation determines that the 0.01 inches per second of velocity Title 12 vibration limit is 45.9 dB below the calibration level of 386.4 inches per second or 1 g (-45.9 dB). Thus, a violation of the Title 12 vibration limit would occur any time the measured vibration levels are less than 45.9 dBA below the calibration level.

To the extent feasible, all of the measurement procedures followed recommended ASTM and ANSI practices and standards.

4.0 MEASURED NOISE LEVELS

A noise measurement survey was performed near the (plan) southwest corner of the Athens site directly opposite the nearest residential land use to the Athens Services site. The location was approximately 65 feet from the southwest corner of the Materials Recovery Facility (MRF) structure. The measurements were conducted using a Larson Davis Model 700 Integrating Sound Level Meter field calibrated using a Bruel and Kjaer Type 4230 Sound Level Calibrator prior to the start of the measurements. The noise measurements began at 11 AM and continued until 3 PM. The measurements reported the levels given in Table 2.

TABLE 2

MEASURED DBA NOISE LEVELS

DURATION	SYMBOL	HOUR 1	HOUR 2	HOUR 3	HOUR 4
30 minutes in hour	L50	59.0	61.0	55.5	55.0
15 minutes in hour	L25	62.5	62.0	61.0	58.5
5 minutes in hour	L08	66.0	63.9	65.3	62.5
. 1 minutes in hour	L02	69.0	66.5	69.0	65.5
Anytime in hour	LMax	91.5	83.5	85.0	81.5

The results of Table 1 show that on-site maximum noise levels as high as 91.5 were recorded at the measurement position. Such maximum noise levels were typically caused by truck air brakes and coupling/uncoupling of the truck cabs and trailers at the loading bays along the south face of the MRF structure. However, a property line sound wall 16 feet high exists between the Athens site and the adjacent residential use. The shielding level this wall yields was determined by a calculation contained in Appendix 2. This calculation shows that the worst-case maximum noise levels from the Athens site are successfully reduced to within the County's daytime noise limits. Since the trucking operations at the south end of the building do not occur between 10 PM and 7 AM, then Athens project noise levels remain in compliance with the County noise limits.

5.0 MEASURED VIBRATION LEVELS

A vibration measurement survey was performed near the (plan) southwest corner of the Athens site directly opposite the nearest residential land use to the Athens Services site. The location was approximately 65 feet from the southwest corner of the Materials Recovery Facility (MRF) structure. The entire measurement record is contained in Appendix 3. The measurements were conducted using a Bruel and Kjaer Type 4370 accelerometer, a Larson Davis Model 2800 real time analyzer and a Bruel and Kjaer Type 2306 Portable Level Recorder. The measurement setup was field calibrated using a PCB Model 394B06 calibration shaker prior to the start of the measurements.

A large steel nail approximately 10 inches long was driven about eight inches into the ground, at which point, it was firmly anchored in the soil. A Bruel and Kjaer Type UA 0642 magnetic mount was used to anchor the accelerometer to the flat head of the steel nail. The accelerometer was connected to channel 1 of the analyzer and the portable level recorder was connected to AC Output 1 of the analyzer. The analyzer was initialized and set to the pre-programmed vibration measurement setup. The PCB Model 394B06 calibration shaker was connected to the accelerometer and the analyzer adjusted to give a full-scale reading of 1.0 g of acceleration at 81.25 Hz. The portable level recorder was then adjusted to read 1 g of acceleration at the second heavy black line down from a full-scale reading. At this point, the measurement system was field calibrated.

The accelerometer was disconnected from the calibration shaker and attached to the ground spike using the magnetic mount as shown in Exhibit 3. The analyzer was then started and the input scale adjusted until the ambient vibrations were being recorded in a suitable range on the chart of the portable level recorder. The adjusted input resulted in the second heavy black line from the top of the measurement chart being equal to minus 50 dB.

The measurement period began just before 11 AM on Monday, June 17, 2013, and continued until just after 3 PM of the same day. The observed operations appeared to be representative of typical operations with forklifts and heavy trucks passing the measurement position throughout the measurement period. Several heavy transfer tractor-trailer combinations, container trucks and trash collection trucks passed the measurement position at speeds sometimes approaching 20 miles per hour. Several trailers were parked or picked up from the loading docks.

Examination of the measurement chart shows that the existing vibration levels at the measurement point average around minus 68 to minus 72 dB, or 0.00002 to 0.00006 inches per second of velocity. The absolute one-time maximum vibration level measured was minus 54 dB, or 0.0015 inches per second of velocity.

The one time maximum vibration level of minus 54 dB was caused by a sweeper truck passing within a few feet of the measurement position. The next highest events occurred for truck air brake applications as well as from the uncoupling/coupling of truck tractors and trailers. It was

also noted that the propane tank refueling pump used the refuel a forklift produced vibration levels ranging from minus 74 to minus 62 dB.

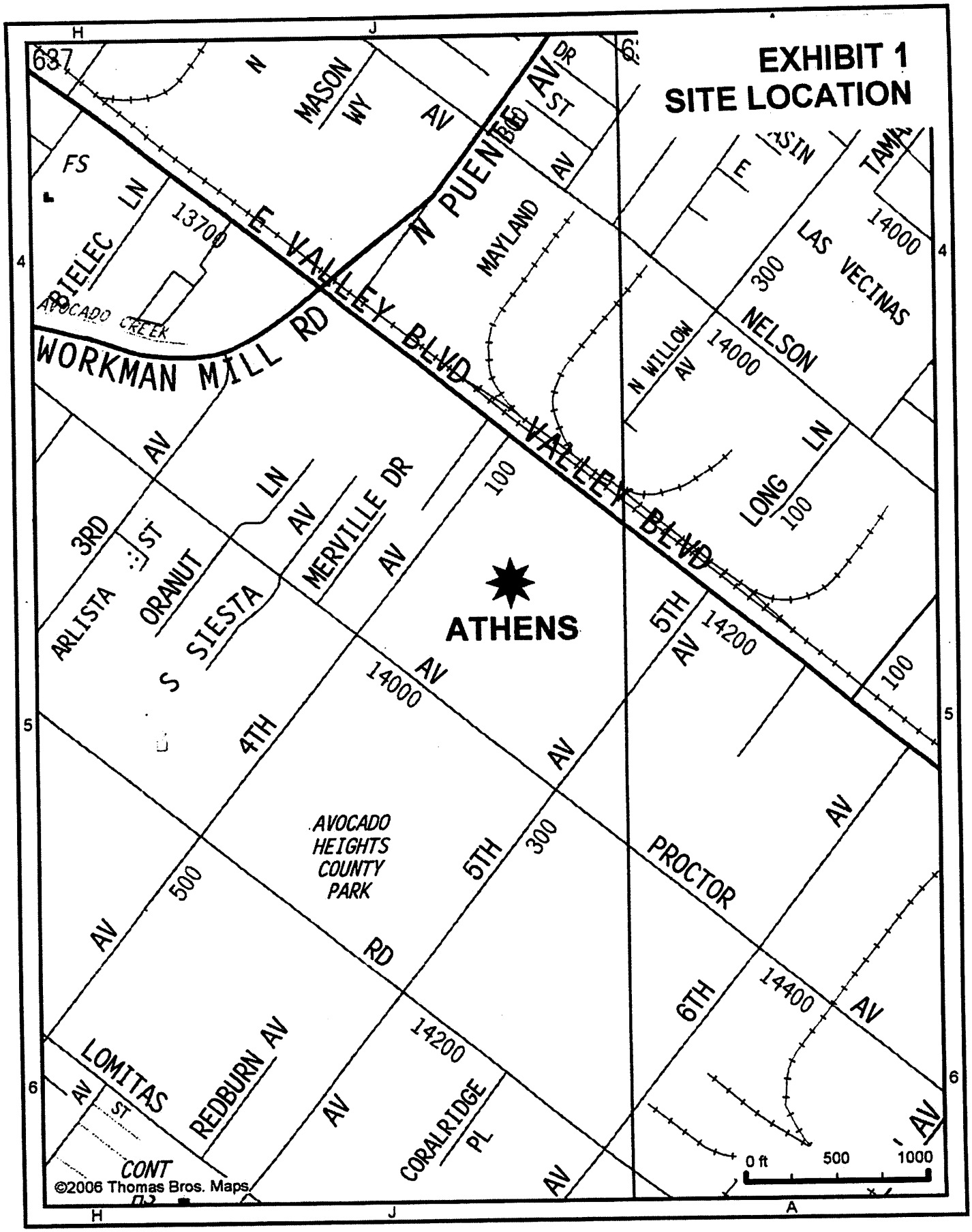
6.0 CONCLUSIONS

6.1 NOISE LEVELS

The measurement survey found the existing Athens operations to be in compliance with the daytime noise limits of the County of Los Angeles. As the trucking operations around the south side of the MRF building do not commence prior to 7 AM or continue past 10 PM, the Athens operations would also be in compliance with the nighttime noise limits.

6.2 VIBRATION LEVELS

The absolute, one time maximum vibration level recorded during the measurement period was well below the Title 12 vibration limit of the County of Los Angeles. Since the Athens operations did not exceed the Title 12 vibration limit at the project boundary, it is safe to assume that the vibration limit is not exceeded at distances beyond the project boundary.



ATHENS: 637 - J5

EXHIBIT 2
AERIAL PHOTO

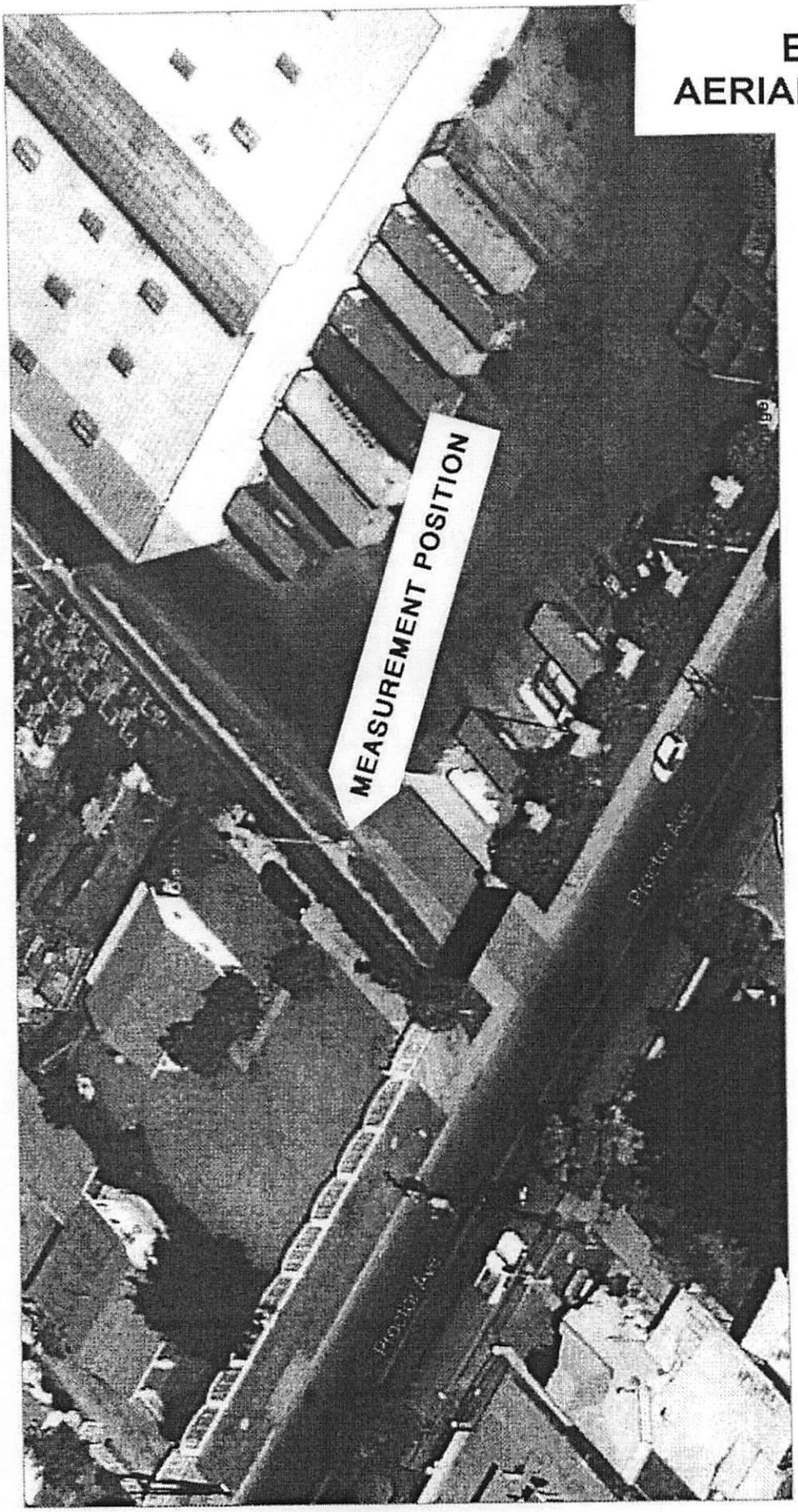
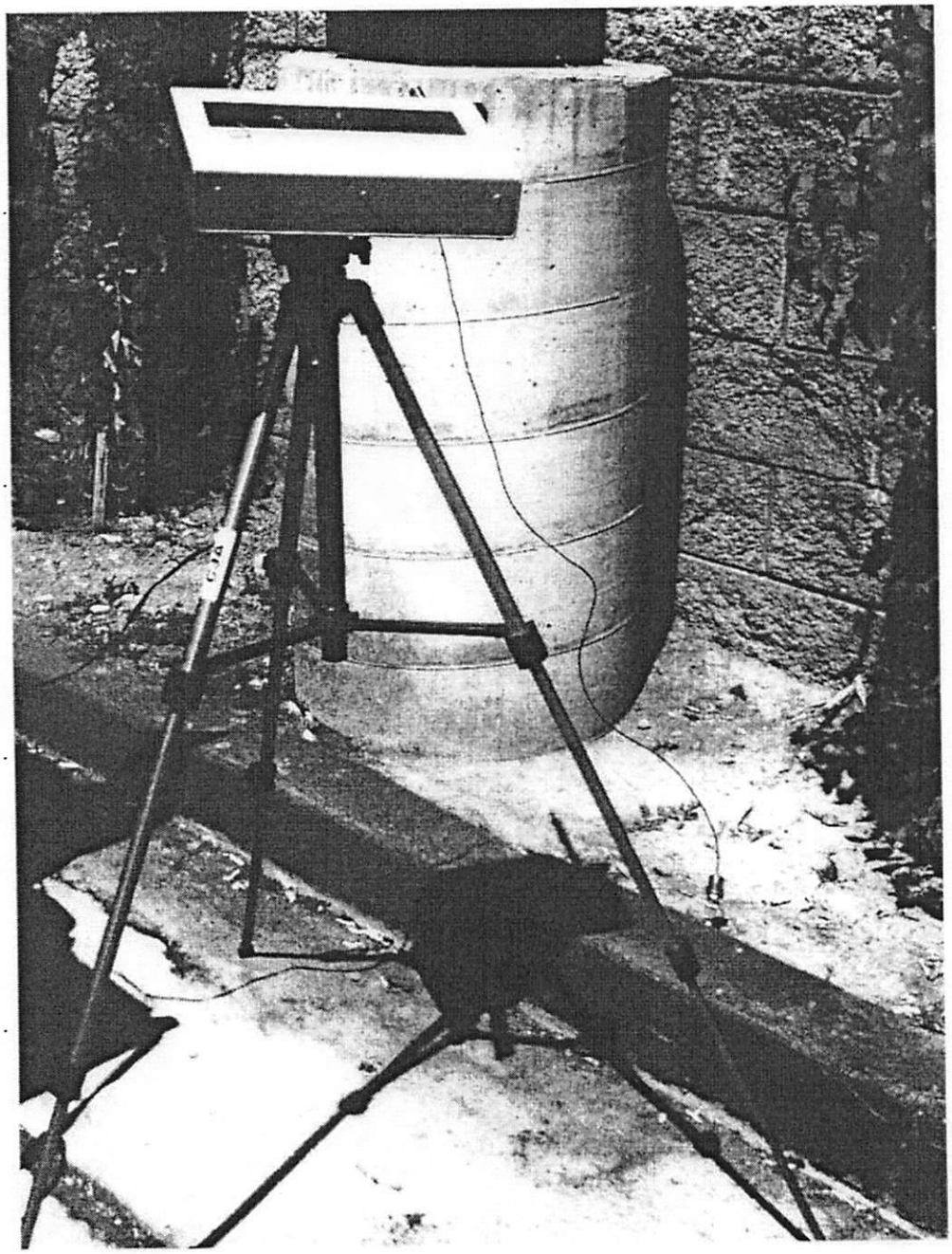


EXHIBIT 3
MEASUREMENT SETUP



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APPENDIX 1

NOISE RATING METHODOLOGY

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NOISE RATING METHODOLOGY

The A-weighted decibel (dBA) or "A" scale on a sound level meter is typically used for environmental noise measurements because the weighting characteristics of the "A" scale approximate the subjective response of the human ear to a broad frequency band noise source by discriminating against the very low and very high frequencies of the audible sound spectrum.

Since community noise is seldom constant, varying from moment to moment and throughout the day, the "A" weighted noise level needs to be further described to provide meaningful data. The Environmental Protection Agency, the Federal Department of Transportation, several foreign countries and many private consultants are now using three time-exceeded percentile figures to describe noise, which are:

(1) L_{90} is the noise level that is exceeded 90 percent of any sample measurement period (such as 24 hours) and is often used to describe the background or ambient noise level.

(2) L_{50} is the noise level that is exceeded 50 percent of any sample measurement period. It is generally considered to represent the median noise level.

(3) L_{10} is the noise level that is exceeded 10 percent of any sample measurement period. It is a good descriptor of fluctuating noise sources such as vehicular traffic. It indicates the near-maximum noise levels that occur for groups of single noise events. Being related to the subjective annoyance to community noise, the L_{10} is a good design tool in the planning of acoustical barriers.

More recent noise assessment methods are based on the equivalent energy concept where Leq(x) represents the average energy content of a fluctuating noise source over a sample measurement period. The subscript (x) represents the period over which the energy is computed and/or measured. Current practice references the time quantity to either one (1) hour, eight (8) hours, or twenty-four (24) hours. When referenced to one (1) hour, Leq is also called the HNL (Hourly Noise Level).

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Since Leq is the summation of the functional products of noise level and duration, many different combinations of noise levels, duration times and time histories can produce similar Leq values. Thus a value of Leq(24) equals 50 means only that the average noise level is 50 dB. During that 24-hour period, there can be times when the noise level is higher than 50 dB and times when it is lower than 50 dB.

If the period of the measurement is only a single event, the energy content is not averaged. The energy expression for a single event is simply the sum of the functional product of the noise level and duration time of the event. This term is called the Le or SENEL (Single Event Noise Exposure Level). The summation of Le values averaged over one hour is Leq(1), over eight hours is Leq(8), over 24 hours is Leq(24), etc.

Leq is further refined into Ldn (Level Day-Night) and CNEL (Community Noise Equivalent Level), where noise that occurs during certain hours of the day are weighted (or penalized) in an attempt to compensate for the general perception that such noise is more annoying during these time periods (typically evening and nighttime hours).

(1) Ldn is the sound level in dBA that corresponds to the average energy content of the noise being measured over a 24-hour period but includes a ten (10) dBA weighting penalty for noise that occurs during the nighttime hours between 10:00 PM and 7:00 AM. The Ldn is a noise rating method recommended by the Environmental Protection Agency because it takes into account those subjectively more annoying noise events that occur during normal sleeping hours.

(2) CNEL is the sound level in dBA that corresponds to the average energy content of the noise being measured over a 24-hour period but includes a five (5) dBA penalty for noise that occurs during the evening hours between 7:00 PM and 10:00 PM, and a ten (10) dBA penalty for noise that occurs during the nighttime hours between 10:00 PM and 7:00 AM. For typical highway vehicular traffic situations, computer analysis has shown that the Ldn and CNEL values correlate within 0.5 dBA.

The percentile figures L_{10}, L_{50} and L_{90} can be directly scaled from a graphical recording of the measured noise sample over a particular time period. These figures can also be measured directly using modern automatic noise measuring equipment. Measurement of the parameters Le, Leq, Ldn and CNEL requires even more sophisticated and correspondingly expensive noise measuring equipment. As a result, engineers have devised ways of estimating Leq (and hence, Ldn) using standard instrumentation and methods.

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APPENDIX 2

PROPERTY LINE WALL SHIELDING CALCULATION

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POINT SOURCE BARRIER REDUCTION, WALL HEIGHT VARIABLE

---

50 FT. SOURCE REFERENCE LEVEL.....= 85.5

PROJECT.....ATHENS SERVICES
DESCRIPTION..WEST PROPERTY LINE SOUND WALL
SOURCE HEIGHT..... 3
SOURCE ELEVATION..... 0
RECEIVER ELEVATION..... 0
BARRIER ELEVATION..... 0
RECEIVER HEIGHT..... 5
DISTANCE TO SOURCE..... 25
DISTANCE TO RECEIVER... 5
NOISE LEVEL AT RECEIVER W/O BARRIER..... 89.9

WALL HEIGHT		TNL	TIL
16.0	69.9	69.9	20.1
FN	%10.1928		