NOISE MEASUREMENTS

Noise Appendix Pieces:

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City of Fresno Noise Ordinance - Partial

ARTICLE 3 NOISE REGULATIONS

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SECTION 8-301. TITLE. This article shall be known as the "Noise Ordinance of the City of Fresno." (Orig. Ord. 1076; Rep. and Added Ord. 72-163, 1972).

SECTION 8-302. DEFINITIONS.

(a) Unless the particular provision or the context requires, the definitions and provisions contained in this section shall govern the construction, meaning, and application of words and phrases used in this article, and, except to the extent that a particular word or phrase is otherwise specifically defined in this section, the definitions and provisions contained in Article 3 (commencing with Section 1-301) of Chapter 1 of this Code shall also govern the construction, meaning, and application of words andphrases used in this article. The definition of each word or phrase shall constitute, to the extent applicable, the definition of each word or phrase which is derivative from it, or from which it is a derivative, as the case may be.

(b) **Ambient Noise.** "Ambient noise" is the all-encompassing noise associated with a given environment, being usually a composite of sounds from many sources near and far. For the purpose of this ordinance, ambient noise level is the level obtained when the noise level is averaged over a period of fifteen minutes, without inclusion of the offending noise, at the location and time of day at which a comparison with the offending noise is to be made. Where the ambient noise level is less than that designated in this section, however, the noise level specified herein shall be deemed to be the ambient noise level for that location.

TABLE INSET:

DISTRICT	TIME	SOUND LEVEL DECIBELS
Residential	10 pm to 7 am	50
Residential	7 pm to 10 pm	55
Residential	7 am to 7 pm	60
Commercial	10 pm to 7 am	60
Commercial	7 am to 10 pm	65
Industrial	anytime	70

(c)**Decibel.** "Decibel" means a unit of sound level when the base of the logarithm is the tenth root of ten and the quantities concerned are proportional to power.

(d)**Emergency Work.** "Emergency work" means work necessary to restore property to a safe condition following a public calamity, work required to repair structures or otherwise protect persons or property from an imminent exposure to danger or damage, or work by private or public utilities when

restoring or repairing utility service.

(e) **Frequency.** "Frequency" of a function periodic in time means the reciprocal of the primitive period. The unit is the hertz and shall be specified.

(f)**Hertz.** "Hertz" shall mean the complete sequence of values of a periodic quantity which occurs during a period.

(g)**Microbar.** "Microbar" means a unit of pressure commonly used in acoustics and is equal to one dyne per square centimeter.

(h) **Period.** "Period" of a periodic quantity means the smallest increment of time for which the function repeats itself.

(i)**Periodic Quantity.** "Periodic quantity" means oscillating quantity, the values of which recur for equal increments of time.

(j)**Sound Level.** "Sound level" (noise level), in decibels (dB) is the sound pressure level as measured with the "A" weighting and slow response by a sound level meter.

(k)**Sound Level Meter.** "Sound level meter" means an instrument including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement of sound levels which satisfies the pertinent specifications published by the American National Standards Institute, New York, New York, in "American Standard Sound Level Meters for Measurement of Noise and Other Sounds," S1.4-1971, or the most recent revision thereof.

(l)**Motor Vehicles.** "Motor vehicles" includes, but is not limited to, minibikes and go-carts.

(m)**Sound Amplifying Equipment.** "Sound amplifying equipment" means any machine or device for the amplification of the human voice, music, or any other sound. "Sound amplifying equipment" shall not include standard automobile radios or tape players when used and heard only by the occupants of the vehicle in which the automobile radio is installed. "Sound amplifying equipment," as used in this article, shall not include warning devices on authorized emergency vehicles, or horns or other warning devices on any vehicle, which are used only for traffic safety purposes.

(n)**Sound Truck.** "Sound Truck" means any motor vehicle, or any other vehicle regardless of motive power, whether in motion or stationary, having mounted thereon, or attached thereto, any sound amplifying equipment. (Orig. Ord. 1076; Rep. and Added Ord. 72-163, 1973).

SECTION 8-303. DECIBEL MEASUREMENT CRITERIA. Decibel measurement made pursuant to the provisions of this article shall be based on a reference sound pressure of 0.0002 microbars as measured with a sound level meter using the "A" weighted network. (Orig. Ord. 1076; Rep. and Added Ord. 72-163, 1972).

SECTION 8-304. MONITORING PROCEDURES. The following procedures shall be employed for monitoring and evaluating noise in the community unless otherwise specified in this Article:

(a) The evaluation shall be conducted any time of the day or night when the offending noise source is being operated.

(b) For outside measurements, the location selected for monitoring shall be at a point at least ten feet from any building, wall, or obstruction (trees, bushes, etc.) whenever possible. In cases where no point on the property line satisfies this criteria, readings will be taken as far as possible from the nearest obstruction and such distance will be noted. For inside measurements, the monitoring location shall be at least three feet from any wall.

(c) The sound level meter shall be equipped with an omnidirectional microphone.

(d) No individual other than the operator shall be within ten feet of the sound level meter during the sample period.

(e) The ambient noise level shall be determined with the offending noise source not in operation, in the following manner:

(1) Calibrate the sound level meter in accordance with the manufacturer's instructions.

(2) Set the sound level meter on the "A" weighted network at slow response.

(3) Without the offending noise source in operation, set the microphone in a vertical position on the complaining party's property with the microphone head approximately four feet above the ground or floor. The operator shall face the noise source and record the meter's instantaneous response (reading) observed at fifteen second intervals for a period of fifteen minutes. The arithmetical average (mean) reading is interpreted as the ambient noise level of that sampling point.

(f) With the offending noise source in operation, the operator shall again record the instantaneous response at the same location at fifteen second intervals for a fifteen minute period, or, for a noise source of less than fifteen minutes, the operator shall record the instantaneous response at fifteen second intervals for the time the offending noise source is in operation. The arithmetical average (mean) response level recorded while the offending noise source is in operation is interpreted as the offending noise level. (Orig. Ord. 1076; Am. Ord. 5331, 1958; Rep. Ord. 5376, 1958; Added Ord. 72-163, 1972).

SECTION 8-305. EXCESSIVE NOISE PROHIBITED. No person shall make, cause, or suffer or permit to be made or caused upon any premises or upon any public street, alley, or place within the city, any sound or noise which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing or working in the area, unless such noise or sound is specifically authorized by or in accordance with this article. The provisions of this section shall apply to, but shall not be limited to, the control, use, and operation of the following noise sources:

(a) Radios, musical instruments, phonographs, television sets, or other machines or devices used for the amplification, production, or reproduction of sound or the human voice.

(b) Animals or fowl creating, generating, or emitting any cry or behavioral sound.

(c) Machinery or equipment, such as fans, pumps, air conditioning units, engines, turbines, compressors, generators, motors or similar devices, equipment, or apparatus.

(d) Construction equipment or work, including the operation, use or employment of pile drivers, hammers, saws, drills, derricks, hoists, or similar construction equipment or tools. This subsection shall not apply to construction equipment or work within the area bounded by the Union Pacific tracks, from Ventura to Tulare; Tulare Street, from Union Pacific tracks to Fulton Mall; Fulton Mall/Street, from Tulare to Ventura; and Ventura Street, from Fulton Street to Union Pacific tracks. This exception shall become null and void on June 1, 2003. (Orig. Ord. 1076; Rep. and Added Ord. 72-163, 1972; Am. Ord. 2001-41, § 1, 5-20-01).

SECTION 8-306. PRIMA FACIE VIOLATION. Any noise or sound exceeding the ambient noise level at the property line of any person offended thereby, or, if a condominium or apartment house, within any adjoining living unit, by more than five decibels shall be deemed to be prima facie evidence of a violation of Section 8-305. (Orig. Ord. 1678; Rep. and Added Ord. 72-163, 1972).

SECTION 8-307. SCHOOLS, HOSPITALS, AND CHURCHES. No person shall create any noise on any street, sidewalk, or public place adjacent to any school, institution of learning, or church while the same is in use, or adjacent to any hospital, which noise unreasonably interferes with the workings of such institution or which disturbs or unduly annoys patients in the hospital, provided conspicuous signs are displayed in such street, sidewalk, or public place indicating the presence of a school, church, or hospital. (Orig. Ord. 3667; Rep. and Added Ord. 72-163, 1972).

SECTION 8-308. PUBLIC ADDRESS SYSTEMS. No person, other than personnel of law enforcement or governmental agencies, shall install, use or operate within the city a loudspeaker or sound amplifying equipment in a fixed or movable position or mounted upon any sound truck for the purposes of giving instructions, directions, talks, addresses, lectures or transmitting music to any person or assemblages of persons in or upon any street, alley, sidewalk, park or other public property without first filing a registration statement and obtaining approval thereof as set forth in this section.

(a)**Registration Statements: Filing.** Every user of such sound amplifying equipment shall file a registration statement with the Controller five days prior to the date on which the sound amplifying equipment is intended to be used, which statement shall contain the following information:

(1) The name, address, and telephone number of both the owner and user of the sound amplifying equipment;

(2) The maximum sound producing power of the sound amplifying equipment which shall include the wattage to be used, the volume in decibels of sound which will be produced, and the approximate distance for which sound will be audible from the sound amplifying equipment;

(3) The license and motor number if a sound truck is to be used;

(4) A general description of the sound amplifying equipment which is to be used; and

(5) The dates and times such equipment is intended to be used.

(b)**Registration Statements: Approval.** The Controller shall return to the applicant within five working days an approved copy of the registration statement unless he finds that:

(1) Use of the equipment would constitute a detriment to traffic or pedestrian safety; or

(2) The registration statement required reveals that the applicant would violate any provisions of this Code.

(c)**Disapproval.** In the event the registration statement is disapproved, the Controller shall endorse upon the statement his reasons for disapproval and return it forthwith to applicant.

(d)**Revocation of Suspension.** Any registration statement approved hereunder shall be revocable and may be revoked by the Controller when a fact is found to exist which would have been a ground for refusal to approve same or when there has been a violation of any of the terms of this article. Said statement may be reinstated by the Controller upon terms or conditions reasonably calculated to alleviate the dereliction.

(e)**Appeal.** Any person aggrieved by any action of the Controller regarding a registration statement may appeal such decision under the procedures in Chapter 1, Article 5. If no appeal is filed within the time prescribed, the action of the Controller shall be final.

(f)**Regulations.** The commercial and noncommercial use of such sound amplifying equipment shall be subject to the following regulations:

(1) The only sound permitted shall be either music or human speech, or both.

(2) The operation of such sound amplifying equipment shall only occur between the hours of 7:00 a.m. and 10:00 p.m. each day.

(3) No sound emanating from such sound amplifying equipment shall exceed fifteen decibels above the ambient noise as measured at any property line.

(4) Notwithstanding the provisions of subdivision (3) of this subsection, such sound amplifying equipment shall not be operated within two hundred feet of churches, schools or hospitals.

(5) In any event, the volume of sound shall be so controlled that it will not be unreasonably loud, raucous, jarring, disturbing, or cause annoyance or discomfort to reasonable persons of normal sensitiveness within the area of audibility.

(g)**Duration of Registration Statement.** Registration statements approved pursuant to this section shall be valid for the period specified thereon by the Controller, which period shall not exceed one year. Statements approved hereunder for a full year shall be automatically renewed from year to year without further application or filing, provided that the Controller may fix an earlier termination date for any such statement at any time following the initial renewal thereof, whenever he deems it in the public interest to do so, by mailing, at least five days prior to the date so fixed, a written notice of such fact to the applicant at the address shown in his application.

(h) Any registration statement requesting approval for the use of a loudspeaker or sound amplifying equipment on any mall street, as defined in Section 10-1901 of this Code, shall be filed with and approved by the Director of Parks and Recreation, rather than the Controller. In all other respects, the procedure set forth in this section shall be followed. The Director of Parks and Recreation shall notify the Controller of each such registration statement he approves. (Orig. Ord. 3667; Rep. and Added Ord. 72-163, 1972; Am. Ord. 75-136, § 2, eff. 1-30-76; Am. Ord. 80-109, § 1, eff. 8-8-80; Am. Ord. 80-171, § 73, eff. 12-26-80; Am. Ord. 98-65, § 19, eff. 10-1-98; Am. Ord. 2005-14, § 37, eff. 4-9-05).

SECTION 8-309. EXCEPTIONS. The provisions of this article shall not apply to:

(a) Construction, repair or remodeling work accomplished pursuant to a building, electrical, plumbing, mechanical, or other construction permit issued by the city or other governmental agency, or to site preparation and grading, provided such work takes place between the hours of 7:00 a.m. and 10:00 p.m. on any day except Sunday.

(b) Emergency work.

(c) Any act or acts which are prohibited by any law of the State of California or the United States. (Added Ord. 72-163, 1972; Am. Ord. 80-171, § 74, eff. 12-26-80).

SECTION 8-310. PERMITS.A permit may be issued authorizing noises prohibited by this article whenever it is found that the public interest will be served thereby or that extreme hardship will result from the strict enforcement hereof, as follows:

(a)**Application for permit.** Application for permits shall be in writing and shall contain the following information:

(1) The name, address, and telephone number of the applicant.

(2) A general description of the equipment, apparatus, or other sound source to be utilized, and the area in which it will be utilized.

(3) An estimate of the maximum sound level which will be generated by the equipment, apparatus, or sound source to be utilized and the basis for such estimate.

(4) The inclusive dates between which the sound will be generated.

(5) Facts showing that the public interest will be served by the issuance of such permit or that extreme hardship will accrue to the applicant if such permit does not issue.

(b)**Criteria.** Applications shall be filed with the Chief Administrative Officer of the City, who shall approve or disapprove same within five working days. The criteria which shall be considered by the Chief Administrative Officer in determining whether the requested permit shall issue will include, but not be limited to, the following:

(1) The level of the noise for which a permit is sought.

(2) The ambient noise level in the vicinity where the sound source will be utilized.

(3) The proximity of the noise to residential sleeping facilities.

(4) The nature and zoning of the area within which the noise will emanate.

(5) The density of the inhabitation of the area within which the noise will emanate.

(6) The time of the day or night the noise will occur.

(7) The duration of the noise.

(8) Whether the noise will be recurrent, intermittent, or constant.

(c)**Issuance of Permit.** The Chief Administrative Officer shall issue the requested permit unless he finds, considering the aforementioned criteria, that the public interest will suffer thereby and that such public detriment exceeds the hardship to be suffered by the applicant if the permit is not issued. In the event the Chief Administrative Officer disapproves the application, he shall return same to the applicant with a statement of the reasons for such action. In approving a permit hereunder, the Chief Administrative Officer may impose such conditions as he deems necessary to protect the public interest.

(d)**Revocation or Suspension.** Any permit issued hereunder shall be revocable and may be revoked by the Chief Administrative Officer when a fact is found to exist which would have been a ground for refusal to approve same or when there has been a violation of any of the terms or conditions thereof.

(e)**Repealed.**

(f)**Repealed.** (Added Ord. 72-163, 1972; Am. Ord. 80-171, §§ 75, 76, eff. 12-26-80; Am. Ord. 81-157, § 28, eff. 12-11-81).

SECTION 8-311. INJUNCTION. In addition to other remedies provided by law, the operation or maintenance of any device, instrument, vehicle or machinery in violation of any provision of this article, which operation or maintenance causes discomfort or annoyance to reasonable persons or normal sensitiveness or which endangers the comfort, repose, health or peace of residents in the area, shall be deemed, and is declared to be, a public nuisance and may be subject to abatement summarily by a restraining order or injunction issued by a court of competent jurisdiction. (Added Ord. 72-163, 1972).

City of Fresno Noise Element

- Any studies done to determine appropriate buffer widths, along with the conclusions and recommendations drawn from the studies, shall be performed by, or be reviewed and approved by, state and federal wildlife agencies before variances from standard buffer zone widths can be granted.
- The vegetation and permitted uses of the buffer zones need to be tailored to the adjacent habitat it is designed to protect. Natural riparian buffer zones should be maintained, rehabilitated, or reestablished with appropriate native plants (seed material and cuttings locally derived).
- Open space uses such as pasture, low-intensity agricultural activities, and the "rough" or marginal areas of golf courses, may be incorporated into buffer zones when they constitute an improvement in habitat over a previous use or degraded area. However, the potential impacts of construction, cultural, and operational practices (such as grading, number of livestock per acre, lighting, and use of pesticides, herbicides, and fertilizers) need to be thoroughly evaluated and addressed before these uses can be used for buffering.

H. NOISE ELEMENT

Challenges

Noise is generally defined as "unwanted sound," which is a subjective determination of measurable physical phenomena. Ambient noise levels are a major determinant of "quality of life." Noise levels not only affect the utility and enjoyability of property, they affect property values and they affect human health. Scientific studies have repeatedly shown that exposure to elevated noise levels is a subtle stressor, leading to elevated blood pressure as well as permanent loss of hearing sensitivity. Control of noise is an important consideration for the planning process. California Government Code Section 65302(f) requires that general plans contain a Noise Element to identify and quantify potential noise problems and to provide effective policies for noise control and mitigation.

Direction

Sound is measured in decibels (dB). For most purposes, sound is measured in the "A scale," the range of frequencies audible to humans, expressed as dB_A. The decibel scale is logarithmic, which means that for every 5 dB_A increase the perceived level of sound doubles. A 50 percent increase in perceived noise would result in only a 2 or 3 dB_A increase. Depending on its level of intensity, a noise may range from almost inaudible (45 dB_A, the approximate loudness of loud whispering), up to actually painful (140 dB_A, the approximate loudness which can cause physical pain and ear damage).

Forty-five dB_A is usually set as the limit on indoor noise detectable from outdoor sound sources. Sixty dB_A is considered to be the sound level of normal conversation and is often used as a limit on outdoor ambient noise levels for residential areas because it is felt that people should be able to hear conversation in their own back yards. Outdoor ambient noise levels are permitted to be higher for commercial sites, and higher still for industrial areas.

For planning purposes, basic sound data are further manipulated, to reflect the fact that night-time sound is more intrusive. The three common units used to describe and quantify noise for planning purposes are:

> **L_{eq}**, for "Level of equivalent [average] sound," which reflects a 24-hour average of sound measured in dB_A;
>
> **L_{dn}**, for "Day-Night Average Level," which modifies the L_{eq} by adding a ten percent (10%) weighting factor for sound occurring during night-time hours (between 10 p.m.and 7 a.m.); and
>
> **CNEL**, for "Community Noise Equivalent Level," which also reflects a 24-hour average of ambient sound but adds only a five percent (5%) weighting factor for both evening (7 to 10 p.m.) and night-time (10 p.m. to 7 a.m.) sound.

CNEL measurements are primarily used for airport noise studies, and L_{dn} units are usually employed for other types of noise studies. The general practice is to identify noise contours around transportation facilities such as airports, rail lines, highways, and major streets, and to identify noise levels at property lines from stationary sources such as industrial equipment.

In the urban environment, noise generators such as transportation corridors and industrial uses occur in close proximity to sensitive noise receivers, such as residential and institutional uses. Some land uses potentially constitute both a noise generator and a simultaneous noise receiver, e.g., recreational sites. The City of Fresno has special noise considerations because it has grown up around two major rail corridors, and many freight trains run through the heart of the city daily. Fresno contains three public airports, and has four state highways running through it, as well as major streets at half-mile and one-mile grid intervals, carrying heavy levels of passenger vehicle and truck traffic. Industrial and public facilities in and around the city also generate noise from processing materials and from the operation of equipment such as large pumps and backup generators. Residential and commercial uses also contribute noise from smaller equipment such as swimming pool pumps and compressors for refrigeration.

Longstanding city policy for stationary sources has been to require enclosure, muffling and/or extra setbacks so that adjacent properties are not exposed to excessive noise levels. Nuisance noise abatement has been accomplished through the city's Noise Ordinance. Noise from transportation facilities has been controlled by distancing sensitive uses from these facilities, and by use of sound-proofing construction measures such as masonry walls and sealed buildings. Title 24 energy conservation requirements (referenced in the Resource Conservation Element/Energy Conservation topic) have also greatly helped mitigate indoor noise levels by requiring dual-pane windows and additional insulation in buildings. Federal Aviation Administration regulations for airports have supported planning and zoning designations which have kept sensitive uses away from the noise attendant upon flight paths.

With the proposed intensification of land uses in the city, noise control will be an increasing consideration for infrastructure and building development projects. The 2025 General Plan maintains the same indoor and outdoor ambient noise limits as the preceding General Plan, but refines noise quantification and control procedures to reflect current planning and sound engineering practice. Specific plans for the three airports in Fresno each have their own noise policies.

Relationship to General Plan Goals

2025 General Plan Goals which relate to noise sources and the control thereof include:

Goal 1: Enhance the quality of life for the citizens of Fresno and plan for the projected population within the moderately expanded Fresno urban boundary in a manner which will respect physical, environmental, fiscal, economic, and social issues.

Goal 14: Protect and improve public health and safety.

H-1. OBJECTIVE: Protect the citizens of the city from the harmful and annoying effects of exposure to excessive noise.

H-1-a. Policy: New noise-sensitive land uses impacted by existing or projected future transportation noise sources shall include mitigation measures so that resulting noise levels do not exceed the standards shown in Table 8 below:

TABLE 8

MAXIMUM ALLOWABLE NOISE EXPOSURE TRANSPORTATION NOISE SOURCES

Land Use [4]	Outdoor Activity Areas[1] L_{dn} dB	Interior Spaces	
		L_{dn} dB	L_{eq} dB[2]
Residential	60[3]	45	---
Transient Lodging	60[3]	45	---
Hospitals, Nursing Homes	60[3]	45	---
Theaters, Auditoriums, Music Halls	---	---	35
Churches, Meeting Halls	60[3]	---	45
Office Buildings	---	---	45
Schools, Libraries, Museums	---	---	45

[1]Where the location of outdoor activity areas is unknown or is not applicable, the exterior noise level standard shall be applied to the property line of the receiving land use.

[2]As determined for a typical worst-case hour during periods of use.

[3]Noise levels up to 65 dB L_{dn} adjacent to the Burlington Northern Santa Fe and Union Pacific mainline tracks may be allowed by the project approving authority when it is determined that it is not possible to achieve 60 dB L_{dn} in outdoor activity areas using a practical application of the best-available noise reduction technology, and when all feasible exterior noise reduction measures have been proposed.

[4] The Planning and Development Director, on a case-by-case basis, may designate land uses other than those shown in this table to be noise-sensitive, and may require appropriate noise mitigation measures.

H-1-b. Policy: For purposes of city analyses of noise impacts, and for determining appropriate noise mitigation, a significant increase in ambient noise levels is assumed if the project causes ambient noise levels to exceed the following:

- the ambient noise level is less than 60 dB Ldn and the project increases noise levels by 5 dB or more.
- the ambient noise level is 60-65 dB Ldn and the project increases noise levels by 3 dB or more.
- the ambient noise level is greater than 65 dB Ldn and the project increases noise levels by 1.5 dB or more.

H-1-c. Policy: The city shall review new public and private development proposals to determine conformance with the policies of this Noise Element.

H-1-d. Policy: The city shall require an acoustical analysis in those cases where a project potentially threatens to expose existing or proposed noise-sensitive land uses to excessive noise levels. The presumption of potentially excessive noise levels shall be based on the location of new noise-sensitive uses to known noise sources or staff's professional judgement that a potential for adverse noise impacts exists. Acoustical analyses shall be required early in the review process so that noise mitigation may be included in the project design. For development not subject to environmental review, the requirements for an acoustical analysis shall be implemented prior to the issuance of building permits. The requirements for the content of an acoustical analysis are established by the Planning and Development Department in conjunction with environmental health agencies.

H-1-e. Policy: The city shall develop and employ procedures to ensure that noise mitigation measures required pursuant to an acoustical analysis are implemented in the development review and building permit processes.

H-1-f. Policy: The city shall develop and employ procedures to monitor compliance with the policies of the Noise Element after completion of projects where noise mitigation measures have been required.

H-1-g. Policy: The city shall enforce the State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code (UBC) concerning interior noise exposure for multi-family housing, hotels and motels.

H-1-h. Policy: The city shall request the California Highway Patrol, the Sheriff's and Police Department to actively enforce the California Vehicle Code sections relating to adequate vehicle mufflers and modified exhaust systems, and sound systems in vehicles.

H-1-i. Policy: The city shall review and update the Noise Element and the Noise Ordinance to ensure that noise exposure information and specific policies and ordinances are consistent with changing conditions within the city and with noise control regulations or policies enacted after the adoption of this element.

H-1-j. Policy: Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so that resulting noise levels do not exceed the adopted standards at noise-sensitive land uses.

H-1-k. Policy: New noise-sensitive land uses impacted by stationary noise sources shall include mitigation measures so that resulting noise levels do not exceed the standards show in Table 9 as follows:

TABLE 9

MAXIMUM ALLOWABLE NOISE EXPOSURE-STATIONARY NOISE SOURCES[1]

	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Equivalent Sound Level (L_{eq}), dB	50	45
Maximum Sound Level (L_{max}), dB	70	65

[1]As determined at outdoor activity areas. Where the location of outdoor activity areas is unknown or not applicable, the noise exposure standard shall be applied at the property line of the receiving land use. When ambient noise levels exceed or equal the levels in this table, mitigation shall only be required to limit noise to the ambient plus five (5) dB.

H-1-1. Policy: Noise created by new proposed stationary noise sources or existing stationary noise sources which undergo modifications that may increase noise levels shall be mitigated so as not to exceed the noise level standards of Table 9 at noise-sensitive land uses.

H-1-m. Policy: As a guideline, noise barriers (walls, earth berms, or berm/wall combinations) shall not exceed 15 feet in height as measured from the elevation of the nearest building pad. The Planning and Development Director, on a case-by-case basis, may allow noise barrier heights differing from this guideline. However, resulting noise levels must satisfy the maximum allowable noise exposure standards.

Cumulative Impacts Table

Methodology
Cumulative Impacts for the Bullard Energy Center
9.12.2006

The project list was compiled by comparing the 2005 City of Fresno aerial photographs and the City Official Zoning Map (Assessor's Parcel Number books at front counter) within a 1-mile radius of the BEC. The parcels that have existing development were omitted from consideration, as they could not have an effect on future, cumulative impacts. The parcels that did not show development on the aerials but did have permit activity were noted for further research.

The completed list had permits dating back to 1993. It was determined that only projects that have occurred since 2005 would be considered. The reason for this is that the aerial photos were taken in 2005; therefore, the 2005 aerials could not account for any permits applied for since this point in time.

The completed list is attached, for informational purposes.

Application	Status	Location	Project	Zone
R-06-14 Tract 5690 C-06-52	Pending: Map not yet accepted			
A-05-24 R-05-122	At City Council on July 25, 2006	9.14 acres Southeast corner of N Polk and W Dante	118-unit condominium development	Plan Amendment <u>from</u> neighborhood commercial for 9.17 acres and medium-high density residential for 3.21 acres <u>to</u> the medium-high density residential for 9.17 acres and medium density residential for 3.21 acres Rezone from C-1/UGM to R-1 and R-2/UGM
C-06-117 Tract 5755/UGM	In review and comment period of process			
C-05-48	At City Council on August 23, 2005; Approved	6.5 acres northeast corner of N Polk and W Palo Alto	80-unit multiple family residential development	R-2/UGM/cz
A-05-25 R-05-123	At City Council on July 25, 2006; Approved	9.51 acres north side of W Bullard between N Grantland and N Bryan	65-dwelling planned unit development	Plan Amendment from medium density residential to medium-high density residential Rezone from AE-20 to R-2/UGM
A-06-19 R-06-55	Filed 8-31-06	47.46 acres south side of W Barstow between N Grantland and Veterans Blvd alignment	Delete N Bryan Ave between Veterans Blvd alignment and W Shaw Ave	Plan Amendment from collector to local street Rezone from AE-5/UGM to R-2/UGM

Ambient Noise Survey Data

BULLARD ENERGY CENTER
L1 - off Bullard Ave (near neighborhood)
LD820 sn1590
Cal: 94/94
Leq: Slow, dBA

Date	Start Time	End Time	Leq	Lmin	Lmax	L(10)	L(50)	L(90)
8/9/2006	3:00 PM	4:00 PM	51.5	47.7	63.5	53.3	51.2	50.6
8/9/2006	4:00 PM	5:00 PM	57.1	47.0	80.1	56.6	51.3	49.9
8/9/2006	5:00 PM	6:00 PM	51.6	47	71.3	52.7	50.2	48.6
8/9/2006	6:00 PM	7:00 PM	60.5	47.2	84.7	58.9	50.1	48.5
8/9/2006	7:00 PM	8:00 PM	55.5	48	80.6	55.9	52.6	49.8
8/9/2006	8:00 PM	9:00 PM	59	49.1	82.8	58.9	56	53.3
8/9/2006	9:00 PM	10:00 PM	56.6	48.9	67.7	58.6	56.1	53.6
8/9/2006	10:00 PM	11:00 PM	64	48.9	89.6	58.4	55	52.3
8/9/2006	11:00 PM	12:00 AM	53.8	46.9	64	55.9	53.2	50.5
8/10/2006	12:00 AM	1:00 AM	62.1	46.6	87.7	55.9	52.7	50
8/10/2006	1:00 AM	2:00 AM	54.2	48	62.7	56.9	53.3	50.4
8/10/2006	2:00 AM	3:00 AM	55.2	47.1	61.5	58.1	54.3	50.7
8/10/2006	3:00 AM	4:00 AM	58.2	48.1	84.5	57.7	53.9	51.1
8/10/2006	4:00 AM	5:00 AM	61.8	47.5	87.2	57	54.8	52.4
8/10/2006	5:00 AM	6:00 AM	66.8	51.5	89.2	64.6	56.8	54.2
8/10/2006	6:00 AM	7:00 AM	63.7	51.3	90.6	60.9	57.8	55.5
8/10/2006	7:00 AM	8:00 AM	59.7	49.3	84.2	59	54.6	52.1
8/10/2006	8:00 AM	9:00 AM	59.5	45.3	83.1	55.8	49.8	46.9
8/10/2006	9:00 AM	10:00 AM	55	39.8	83.6	54.7	47.6	42.8
8/10/2006	10:00 AM	11:00 AM	58.7	40.2	82.8	55.6	45.4	42.2
8/10/2006	11:00 AM	12:00 PM	61.8	44.5	85.1	57.5	49.1	47.1
8/10/2006	12:00 PM	1:00 PM	60.5	46	86.5	59.1	51.7	48.4
8/10/2006	1:00 PM	2:00 PM	50.6	44.4	64.3	52.7	49	46.7
8/10/2006	2:00 PM	3:00 PM	49.2	45.6	57.7	50.9	48.7	47
8/10/2006	3:00 PM	4:00 PM	53.3	45.7	74.5	54	49.7	47.5
8/10/2006	4:00 PM	5:00 PM	51	47.2	60.7	52.7	50.5	49
8/10/2006	5:00 PM	6:00 PM	58.2	48.5	82.1	58.8	51.7	50.1
8/10/2006	6:00 PM	7:00 PM	54.5	48.4	73.5	54.3	51.5	50
8/10/2006	7:00 PM	8:00 PM	54.1	48.4	63.9	56.2	53.6	51.3
8/10/2006	8:00 PM	9:00 PM	57.3	50.5	78.3	57.6	55.5	53.3
8/10/2006	9:00 PM	10:00 PM	55.6	48.9	68.5	57.2	55.3	53.2
8/10/2006	10:00 PM	11:00 PM	54.7	49.6	64.7	56.3	54.5	52.3
8/10/2006	11:00 PM	12:00 AM	59	47.1	83.3	57.3	54.6	51.7
8/11/2006	12:00 AM	1:00 AM	61.5	46.9	86.7	61.6	52.7	50.1
8/11/2006	1:00 AM	2:00 AM	50.7	44.2	58	52.4	50.4	48.4
8/11/2006	2:00 AM	3:00 AM	56.5	45.4	78.3	55.9	52.7	50
8/11/2006	3:00 AM	4:00 AM	60	47.4	86.4	57.4	54.2	51.4
8/11/2006	4:00 AM	5:00 AM	57.2	49.9	73.2	59	55.4	52.8
8/11/2006	5:00 AM	6:00 AM	61.2	52.2	85.7	58.9	56.8	55.1
8/11/2006	6:00 AM	7:00 AM	58.2	52.8	78.5	59	57.1	55.3
8/11/2006	7:00 AM	8:00 AM	60.2	50	83.6	59.8	56.5	53.9
8/11/2006	8:00 AM	9:00 AM	54.9	46.9	77.8	54.6	51.2	48.5
8/11/2006	9:00 AM	10:00 AM	51	42.7	75.9	51.9	47.3	44.7
8/11/2006	10:00 AM	11:00 AM	54.2	44.4	77.3	52	47.9	45.9
8/11/2006	11:00 AM	12:00 PM	49.9	42.4	73.9	50.9	46.2	44.2
8/11/2006	12:00 PM	1:00 PM	54.9	42.9	82.5	53.2	48.3	45.8
8/11/2006	1:00 PM	2:00 PM	50.5	44.9	72.7	51.3	48.6	46.7
8/11/2006	2:00 PM	3:00 PM	56.3	45.9	74.3	59.1	50.6	48.2
8/11/2006	3:00 PM	4:00 PM	51.6	47.4	70.1	53	50.9	49.3
8/11/2006	4:00 PM	5:00 PM	60.7	48.8	88.4	54.8	52.4	50.7
8/11/2006	5:00 PM	6:00 PM	55.8	48.6	75.6	54.7	51.5	50.1

BULLARD ENERGY CENTER
L2 - off Carnegie Ave (near neighborhood)
LD820 sn1378
Cal: 94/94
Leq: Slow, dBA

Date	Start Time	End Time	Leq	Lmin	Lmax	L(10)	L(50)	L(90)
8/9/2006	3:00 PM	4:00 PM	67.0	49.1	86.0	70.4	65.1	61.4
8/9/2006	4:00 PM	5:00 PM	73.6	49.6	95.7	71.7	66.8	61.8
8/9/2006	5:00 PM	6:00 PM	67.7	47.9	84.4	71.3	65.8	54.2
8/9/2006	6:00 PM	7:00 PM	71.6	47.6	98	72.4	64	53.2
8/9/2006	7:00 PM	8:00 PM	66.6	49	92.1	69	59.5	53.4
8/9/2006	8:00 PM	9:00 PM	65.8	50.5	84.9	69.2	61.2	56.8
8/9/2006	9:00 PM	10:00 PM	64.7	50.9	82.1	68.3	60.3	56.3
8/9/2006	10:00 PM	11:00 PM	70.3	50.8	99.9	68.5	58.5	55
8/9/2006	11:00 PM	12:00 AM	61.4	47.9	81.6	65	56.4	52.3
8/10/2006	12:00 AM	1:00 AM	66.8	45.1	93	63.3	54.5	50.4
8/10/2006	1:00 AM	2:00 AM	58.4	45.9	75.7	60.3	54.3	50.7
8/10/2006	2:00 AM	3:00 AM	56.5	45.1	76.8	58.7	53.2	49.2
8/10/2006	3:00 AM	4:00 AM	60.5	45	81.7	61.3	51.6	48
8/10/2006	4:00 AM	5:00 AM	71	44	100.8	61.7	52.6	48.6
8/10/2006	5:00 AM	6:00 AM	67.4	49.6	91.3	70.8	58.7	52
8/10/2006	6:00 AM	7:00 AM	73.1	49.7	97.1	68.9	62.5	55.3
8/10/2006	7:00 AM	8:00 AM	68.2	49.4	90.5	70.7	61.9	55.8
8/10/2006	8:00 AM	9:00 AM	69.2	42.8	97.3	69.7	59.9	48.4
8/10/2006	9:00 AM	10:00 AM	62.8	42.2	82.5	66.7	56.7	45.2
8/10/2006	10:00 AM	11:00 AM	74	41	101.3	69.3	56.7	45.3
8/10/2006	11:00 AM	12:00 PM	75.5	43	101.3	70.1	58.5	48.5
8/10/2006	12:00 PM	1:00 PM	65.4	46.3	87.5	69.5	58.8	50
8/10/2006	1:00 PM	2:00 PM	64.4	45.5	89.3	68.2	57	48.9
8/10/2006	2:00 PM	3:00 PM	65.2	46.3	83.6	69.3	60.1	51.3
8/10/2006	3:00 PM	4:00 PM	70.2	48.1	95.6	71.1	63.1	53.5
8/10/2006	4:00 PM	5:00 PM	68.8	49.7	93.5	71.3	63.6	54.4
8/10/2006	5:00 PM	6:00 PM	71.9	50.2	97.3	71.9	67.3	57.8
8/10/2006	6:00 PM	7:00 PM	67.6	49.3	87	71.4	63	54.3
8/10/2006	7:00 PM	8:00 PM	66.5	49.6	89.9	69	59.9	54
8/10/2006	8:00 PM	9:00 PM	65.4	52.1	87.2	68.9	60.8	56.7
8/10/2006	9:00 PM	10:00 PM	64.6	51.6	84.3	68.5	59.5	56.1
8/10/2006	10:00 PM	11:00 PM	62.4	51.7	81.8	66.2	58.6	55.3
8/10/2006	11:00 PM	12:00 AM	69.3	50.3	97.1	67.3	58.1	54.5
8/11/2006	12:00 AM	1:00 AM	70.2	48.9	96.2	69.5	56.1	52.6
8/11/2006	1:00 AM	2:00 AM	58.7	46.6	82.3	59.7	52.9	50.7
8/11/2006	2:00 AM	3:00 AM	61.4	47.9	83.7	61.3	55.3	52.3
8/11/2006	3:00 AM	4:00 AM	66.9	48.3	95.5	61.9	56.6	53.6
8/11/2006	4:00 AM	5:00 AM	63	51.2	84.9	66.4	58.8	55
8/11/2006	5:00 AM	6:00 AM	72.7	55.5	99	66.5	60.9	58.1
8/11/2006	6:00 AM	7:00 AM	66.5	56.2	90.3	68.2	62.4	59
8/11/2006	7:00 AM	8:00 AM	71.6	55.6	98.4	70.6	64.3	59.7
8/11/2006	8:00 AM	9:00 AM	66.5	50.3	93.5	68.8	60.5	54.3
8/11/2006	9:00 AM	10:00 AM	65	45.4	86.8	68.2	58.6	49.5
8/11/2006	10:00 AM	11:00 AM	66.3	46.3	88.7	69.5	58	50
8/11/2006	11:00 AM	12:00 PM	66.2	44.5	91.1	68.7	59.1	48.5
8/11/2006	12:00 PM	1:00 PM	69.9	45.6	99.4	69.1	59.3	50.7
8/11/2006	1:00 PM	2:00 PM	66.3	46.4	90.4	68.9	58.9	51
8/11/2006	2:00 PM	3:00 PM	69.1	49.6	94	71.6	63.3	55.8
8/11/2006	3:00 PM	4:00 PM	66.1	49.9	83.1	70	62	54.3
8/11/2006	4:00 PM	5:00 PM	70.4	51.3	96	71.3	65.2	56.6

BULLARD ENERGY CENTER
L3 - Brentwood Ranch
LD820 sn1406
Cal: 94/94
Leq: Slow, dBA

Date	Start Time	End Time	Leq	Lmin	Lmax	L(10)	L(50)	L(90)
8/9/2006	6:00 PM	7:00 PM	51.5	45.1	63	53.6	50.9	48
8/9/2006	7:00 PM	8:00 PM	51	44.5	61.6	53.2	50.5	47.7
8/9/2006	8:00 PM	9:00 PM	52.7	45.4	65.1	55.1	51.9	49.1
8/9/2006	9:00 PM	10:00 PM	52.4	46.5	63.6	54.5	52	49.4
8/9/2006	10:00 PM	11:00 PM	54.1	45.3	75.2	55.6	52.3	49.1
8/9/2006	11:00 PM	12:00 AM	53.5	46.2	60.8	55.7	53.1	50.2
8/10/2006	12:00 AM	1:00 AM	56.9	46	77.6	55.9	52.6	49.1
8/10/2006	1:00 AM	2:00 AM	52	41.7	65.6	54.8	50.9	47
8/10/2006	2:00 AM	3:00 AM	53.9	42.3	61.1	56.4	53.4	49.2
8/10/2006	3:00 AM	4:00 AM	53.5	46.8	58.9	55.7	53.2	50.1
8/10/2006	4:00 AM	5:00 AM	55.1	45.2	68.1	57	54.7	51.5
8/10/2006	5:00 AM	6:00 AM	59.3	52.2	77.7	59.8	57.6	55.6
8/10/2006	6:00 AM	7:00 AM	59	55	74.9	59.8	58.4	57
8/10/2006	7:00 AM	8:00 AM	56	49.2	82	57.3	54.5	52.7
8/10/2006	8:00 AM	9:00 AM	62.4	49	81	66.4	57.7	52.5
8/10/2006	9:00 AM	10:00 AM	66.5	46.3	86.5	67.9	54.2	50.5
8/10/2006	10:00 AM	11:00 AM	64.4	46.4	83	67.3	55.9	52.6
8/10/2006	11:00 AM	12:00 PM	59.3	41.4	75.5	61.7	53.9	48.6
8/10/2006	12:00 PM	1:00 PM	51.4	42.5	67.3	53.7	49.4	46.4
8/10/2006	1:00 PM	2:00 PM	57.6	42.8	66.3	61.4	53.5	47.6
8/10/2006	2:00 PM	3:00 PM	62.8	50	69	65.6	62.9	53.5
8/10/2006	3:00 PM	4:00 PM	58.1	44.9	72.9	63.3	53.8	49.2
8/10/2006	4:00 PM	5:00 PM	53.6	49.5	63	55.5	53.1	51.3
8/10/2006	5:00 PM	6:00 PM	54.8	45.5	74.5	56.1	53.3	50.3
8/10/2006	6:00 PM	7:00 PM	53.2	45.8	62.8	55.4	52.5	49.7
8/10/2006	7:00 PM	8:00 PM	52.2	44.9	60.7	54.2	51.7	49.1
8/10/2006	8:00 PM	9:00 PM	53.9	46	78.1	55.2	52.4	49.4
8/10/2006	9:00 PM	10:00 PM	53.8	45.5	62.7	56	53.3	50.5
8/10/2006	10:00 PM	11:00 PM	53.7	45.9	61.2	56	53.3	50.1
8/10/2006	11:00 PM	12:00 AM	55.9	46.1	72.2	58.6	54.9	51.1
8/11/2006	12:00 AM	1:00 AM	53.6	43.2	69.6	56.4	52.5	48.5
8/11/2006	1:00 AM	2:00 AM	51.5	41.7	60.4	54.7	50.5	45.6
8/11/2006	2:00 AM	3:00 AM	51.3	41.1	59.9	54	50.4	46.5
8/11/2006	3:00 AM	4:00 AM	54.6	42.6	69.6	57.5	53.5	49
8/11/2006	4:00 AM	5:00 AM	54.3	45.2	64.1	57.1	53.2	49.9
8/11/2006	5:00 AM	6:00 AM	56	46.9	63.7	58.2	55.6	53.1
8/11/2006	6:00 AM	7:00 AM	57.2	51.8	67.7	59.2	56.6	54.6
8/11/2006	7:00 AM	8:00 AM	61.2	51.3	87.3	60.4	57.2	54.9
8/11/2006	8:00 AM	9:00 AM	66.1	49.6	82.5	69.9	60.1	53.6
8/11/2006	9:00 AM	10:00 AM	61.8	48.9	79.7	60.9	56.6	53.8
8/11/2006	10:00 AM	11:00 AM	68.3	47.4	86.3	71.5	58.6	53.8
8/11/2006	11:00 AM	12:00 PM	76	45.9	95.7	79.9	70.5	52.5
8/11/2006	12:00 PM	1:00 PM	62.1	42.9	83.4	62.9	51.9	48.1
8/11/2006	1:00 PM	2:00 PM	62.8	42.4	86	64.5	51.8	47.2
8/11/2006	2:00 PM	3:00 PM	63.3	44.8	91.5	57	51	47.7
8/11/2006	3:00 PM	4:00 PM	52	44.2	65.1	53.9	51.1	48.5
8/11/2006	4:00 PM	5:00 PM	54.3	48.4	63.2	56.5	53.8	51.3
8/11/2006	5:00 PM	6:00 PM	57.4	49.2	73	58.7	55.7	53.1
8/11/2006	6:00 PM	7:00 PM	56.1	45.5	76.3	58.3	55.3	52.3
8/11/2006	7:00 PM	8:00 PM	55.8	46.8	75.7	57.7	55	52.2

BULLARD ENERGY CENTER
S1 - off Bullard Ave (near neighborhood)
LD824, Cal: 94/94, Overal levels (dBA), Spectrum (dB)

Rec #	S1	S1	S1	S1		Rec #	S1	S1	S1	S1
Date	8/10/06	8/10/06	8/11/06	8/11/06		Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	3:38 AM	3:26 PM	2:39 AM	2:05 PM		Time	3:38 AM	3:26 PM	2:39 AM	2:05 PM
Leq (dBA)	54.1	50.1	52.2	50.7		L50 (dBA)	52.1	48.9	51.8	48.8
Lmin (dBA)	48.5	46.3	46.2	46		L90 (dBA)	50.1	47.3	49.4	47.1
Lmax (dBA)	68.4	67.4	60	66.3		L95 (dBA)	49.6	47.0	48.6	46.6
L5 (dBA)	56.6	52.4	54.8	53.6		L99 (dBA)	49.0	46.3	47.1	46.1
L10 (dBA)	55.4	51.0	54.0	51.6						

L90 Spectrum (dB)

Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	3:38 AM	3:26 PM	2:39 AM	2:05 PM
12.5Hz	46.5	50.5	49	51
16Hz	51.5	53.5	51.5	52.5
20Hz	51.5	54	51	53
25Hz	50	53.5	50	51
31.5Hz	51.5	53.5	49.5	52.5
40Hz	52	54.5	50	54.5
50Hz	52.5	52	53	50.5
63Hz	52.5	53.5	50.5	51.5
80Hz	55	54	51.5	52
100Hz	50.5	48.5	47	46
125Hz	49	45.5	45	45.5
160Hz	46.5	42.5	44.5	43
200Hz	45.5	41	42	40.5
250Hz	42.5	40.5	39	40.5
315Hz	40	37.5	38	39
400Hz	38	37	38.5	37.5
500Hz	40.5	39	41.5	37
630Hz	40.5	38	40.5	36.5
800Hz	41.5	37	41.5	36.5
1KHz	40.5	37	41.5	36.5
1.25KHz	37	35	38	34.5
1.6KHz	34.5	31.5	35.5	31.5
2KHz	33	30.5	33	31
2.5KHz	30.5	30	30.5	31
3.15KHz	23	24.5	24	26
4KHz	24.5	24	23.5	25.5
5KHz	28	25.5	25.5	26.5
6.3KHz	21.5	22.5	21.5	23.5
8KHz	25.5	25.5	25.5	25.5
10KHz	26	26	26	26
12.5KHz	21.5	22	21.5	22
16KHz	25.5	26	26	26
20KHz	28.5	29	28	29

Leq Spectrum (dB)

Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	3:38 AM	3:26 PM	2:39 AM	2:05 PM
12.5Hz	49.9	55	52	55.4
16Hz	55.6	56.7	55.5	56.4
20Hz	55.3	57.2	54.4	55.8
25Hz	53.8	57.1	53.4	53.7
31.5Hz	54	56.1	53.2	55.2
40Hz	55.6	58.3	54.8	57.2
50Hz	55.7	58.8	58.1	55.8
63Hz	57.3	57	55.2	58.2
80Hz	59.8	58.1	57.5	58.4
100Hz	55.5	54.6	51.1	53.9
125Hz	54.9	52.8	50.6	51.1
160Hz	52.2	51	49.8	49.7
200Hz	51.4	48.3	47	46.4
250Hz	54.8	46.2	43.2	45.8
315Hz	49.4	42.3	41.9	44.1
400Hz	44.9	41.3	44	42.7
500Hz	44.9	41.4	45.5	42.6
630Hz	45.5	40.2	44.6	41.7
800Hz	45.9	40.5	45.2	41.8
1KHz	44.8	40.3	45	41.6
1.25KHz	40.8	38.7	41.2	39.7
1.6KHz	38.7	35	38.3	37.2
2KHz	35.9	33.8	35.8	35.1
2.5KHz	33	34	32.6	33.7
3.15KHz	29.5	30.1	28.9	30.8
4KHz	28.8	28.6	27.8	30.1
5KHz	38.9	28.9	29.1	30.4
6.3KHz	27.8	28.8	27.7	30.5
8KHz	29.3	29.5	29.3	30.3
10KHz	29.5	29.7	29.5	30.1
12.5KHz	29.5	29.8	29.4	29.9
16KHz	31	31.2	31.2	31.2
20KHz	32.2	32.4	32	32.4

BULLARD ENERGY CENTER
S2 - off Carnegie Ave
LD824, Cal: 94/94, Overal levels (dBA), Spectrum (dB)

Rec #	S2	S2	S2	S2		Rec #	S2	S2	S2	S2
Date	8/10/06	8/10/06	8/11/06	8/11/06		Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	3:18 AM	3:08 PM	2:20 AM	1:45 PM		Time	3:18 AM	3:08 PM	2:20 AM	1:45 PM
Leq (dBA)	55.7	73.9	67.4	64		L50 (dBA)	51.0	64.4	55.7	57.1
Lmin (dBA)	47.9	49.3	50.6	49.3		L90 (dBA)	49.2	54.3	52.5	50.9
Lmax (dBA)	74.6	96.5	88.8	77.9		L95 (dBA)	48.8	52.3	51.9	50.3
L5 (dBA)	59.9	75.0	73.7	70.4		L99 (dBA)	48.1	50.2	50.9	49.4
L10 (dBA)	55.7	72.0	72.0	68.6						

L90 Spectrum (dB)

Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	3:18 AM	3:08 PM	2:20 AM	1:45 PM
12.5Hz	48.5	53	50.5	50.5
16Hz	51	54.5	54.5	53
20Hz	51.5	55	52.5	53.5
25Hz	50	54.5	53	52.5
31.5Hz	51.5	56	51.5	54
40Hz	54	55.5	55	54
50Hz	54.5	54	70	51
63Hz	53.5	56	52.5	52.5
80Hz	54	57.5	54.5	54
100Hz	53	53.5	53	49.5
125Hz	50	51.5	48.5	48.5
160Hz	47.5	51	48	45.5
200Hz	47	49.5	47.5	45
250Hz	42.5	51	45.5	48
315Hz	40.5	46	41.5	42.5
400Hz	39	45	40.5	42
500Hz	39.5	46	41.5	42.5
630Hz	38.5	44.5	43	41.5
800Hz	39	45	43.5	41.5
1KHz	38.5	44.5	44	41.5
1.25KHz	36	42	41.5	40
1.6KHz	33	39.5	38.5	38
2KHz	32	37	35.5	35
2.5KHz	30	34.5	32	33
3.15KHz	23.5	31.5	27.5	28
4KHz	25.5	28.5	24.5	26
5KHz	32.5	27	39	26
6.3KHz	21.5	24	22.5	23
8KHz	25.5	26	25	25.5
10KHz	26.5	26	26	26
12.5KHz	21.5	22.5	21.5	22.5
16KHz	25.5	26.5	26	26
20KHz	28.5	29	28	29

Leq Spectrum (dB)

Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	3:18 AM	3:08 PM	2:20 AM	1:45 PM
12.5Hz	52	64.4	70.3	56.2
16Hz	55.1	67.1	68.6	57.6
20Hz	54.3	65	69	57.3
25Hz	54.6	67	68.3	56.7
31.5Hz	57	68.4	68.3	58.2
40Hz	57.2	67.9	70.9	59.6
50Hz	62.4	68.9	74.2	60.7
63Hz	60.2	73.6	69.3	66.8
80Hz	61.3	79.7	67.1	64.5
100Hz	57.9	71.1	64	65.8
125Hz	54.8	66.5	62.4	64.4
160Hz	53.3	65.4	64.3	61.8
200Hz	51.3	64.8	64.7	59.3
250Hz	48.3	63.5	63.4	60.7
315Hz	47.1	62	63.7	56.9
400Hz	46.2	61.5	60.4	55.5
500Hz	46.6	62.2	61.5	54.9
630Hz	47	60.6	61.2	55.3
800Hz	48.4	64.1	56.8	56.4
1KHz	48.2	66.8	58.8	56.4
1.25KHz	46.4	68.3	54.3	54
1.6KHz	43.8	65.8	53.2	51.4
2KHz	39.8	54.3	51.5	48.2
2.5KHz	37.6	53.1	51.4	45.8
3.15KHz	35.8	50.2	48.8	43.5
4KHz	34.3	47.8	46.8	41
5KHz	35.5	43.9	45.3	38.7
6.3KHz	31.4	41	39.9	37.1
8KHz	31.1	37.6	37	35.1
10KHz	30.1	34.4	32.9	32.4
12.5KHz	29.7	32.4	30.7	31.2
16KHz	31.1	33.6	31.9	31.7
20KHz	32.1	33.6	32.7	32.7

BULLARD ENERGY CENTER
S3 - Brentwood Ranch
LD824, Cal: 94/94, Overal levels (dBA), Spectrum (dB)

Rec #	S3	S3	S3	S3		Rec #	S3	S3	S3	S3
Date	8/10/06	8/10/06	8/11/06	8/11/06		Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	2:06 AM	1:51 PM	1:10 AM	12:35 PM		Time	2:06 AM	1:51 PM	1:10 AM	12:35 PM
Leq (dBA)	53.3	55.1	52.9	64		L50 (dBA)	53.1	54.7	52.0	52.6
Lmin (dBA)	45.9	47.8	45.4	47.4		L90 (dBA)	49.6	51.2	47.4	48.9
Lmax (dBA)	58.7	64.4	60.3	83		L95 (dBA)	48.7	50.1	46.5	48.3
L5 (dBA)	56.0	57.8	56.7	72.6		L99 (dBA)	46.8	48.9	45.4	47.4
L10 (dBA)	55.5	57.0	55.8	65.4						

L90 Spectrum (dB)

Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	2:06 AM	1:51 PM	1:10 AM	12:35 PM
12.5Hz	51.5	55	51	54
16Hz	53.5	56	53.5	55
20Hz	53	56.5	52.5	55.5
25Hz	52	59	52	55
31.5Hz	51	55.5	51	55.5
40Hz	50.5	50	51	57
50Hz	49.5	54	52	53.5
63Hz	50.5	59	52.5	58
80Hz	53.5	61.5	53	58
100Hz	46.5	52	49.5	53
125Hz	44	52	46	50.5
160Hz	42	49	43	47.5
200Hz	39	45.5	40.5	43.5
250Hz	36	43.5	38	40.5
315Hz	35.5	41	37	38
400Hz	37	39	37.5	38
500Hz	40.5	39.5	38	40
630Hz	40	40	37	37.5
800Hz	40	41	37	37.5
1KHz	41.5	40.5	37.5	37.5
1.25KHz	40	38.5	36	36.5
1.6KHz	36.5	36	33	34
2KHz	34.5	35	31.5	32
2.5KHz	32	33.5	29.5	32
3.15KHz	26.5	29.5	23	29
4KHz	24.5	26.5	23.5	26.5
5KHz	25	26	25.5	26
6.3KHz	21.5	23	21.5	23.5
8KHz	25.5	25	25.5	25.5
10KHz	26	26	26	26
12.5KHz	21.5	22	21.5	22
16KHz	26.5	26	26.5	26
20KHz	28	29	28	29

Leq Spectrum (dB)

Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	2:06 AM	1:51 PM	1:10 AM	12:35 PM
12.5Hz	56.3	59.6	54.5	60.2
16Hz	59.1	62.1	57.9	61.1
20Hz	59.1	62.7	57.9	59.9
25Hz	58.3	64.9	58.8	61
31.5Hz	57.6	61.3	57.4	60.4
40Hz	56.3	54.4	56.2	61.7
50Hz	55.6	58.2	56.7	59.8
63Hz	62.3	66.2	60.3	64.4
80Hz	62	68.1	62.2	64
100Hz	52.4	61	55.7	62.3
125Hz	49.3	57.9	50.9	59.5
160Hz	47.2	55.1	48	55.7
200Hz	46	52.2	44.9	58
250Hz	41.1	48.6	41.5	53.8
315Hz	39.7	47.4	40.1	55.2
400Hz	41.3	46.8	40.7	56
500Hz	46.2	45.4	43	60.2
630Hz	45.8	44.7	42.4	54.2
800Hz	44.8	45.1	43.8	53
1KHz	46.5	44.8	45.2	53.7
1.25KHz	44.4	43.4	45	53.6
1.6KHz	40.7	41.9	43	53.1
2KHz	38.4	41	38.8	51.7
2.5KHz	35.3	40.2	36.4	50.5
3.15KHz	31.3	36.8	33	48.8
4KHz	28.8	33.5	29.8	47.1
5KHz	28.1	31.8	28.7	44.5
6.3KHz	27.9	29.8	27.9	41.9
8KHz	29.3	29.5	29.2	38.6
10KHz	29.5	29.5	29.5	34.5
12.5KHz	29.4	29.7	29.4	31.5
16KHz	31.3	31.2	31.3	31.6
20KHz	32	32.4	32	32.6

BULLARD ENERGY CENTER
S4– Victory Life Church, 5303 Market Street
LD824, Cal: 94/94, Overal levels (dBA), Spectrum (dB)

Rec #	S4	S4	S4	S4		Rec #	S4	S4	S4	S4
Date	8/10/06	8/10/06	8/11/06	8/11/06		Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	1:37 AM	1:14 PM	12:47 AM	12:10 PM		Time	1:37 AM	1:14 PM	12:47 AM	12:10 PM
Leq (dBA)	55.2	49	54.6	53		L50 (dBA)	54.9	48.8	52.6	52.0
Lmin (dBA)	49.7	46.1	47.5	49		L90 (dBA)	52.4	47.2	50.3	50.2
Lmax (dBA)	59.4	55.3	66.6	63.7		L95 (dBA)	51.7	47.0	49.7	49.8
L5 (dBA)	57.9	50.9	59.5	56.5		L99 (dBA)	50.3	46.2	48.4	49.1
L10 (dBA)	57.3	50.5	57.9	54.8						

L90 Spectrum (dB)

Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	1:37 AM	1:14 PM	12:47 AM	12:10 PM
12.5Hz	46.5	52	47	52.5
16Hz	48.5	53	48	54
20Hz	48	52.5	48	54
25Hz	47	52	47.5	52
31.5Hz	48.5	52	48	52.5
40Hz	47.5	53.5	49.5	53.5
50Hz	49	50	50	50
63Hz	52	51	51.5	51
80Hz	52	49	50.5	51
100Hz	48.5	45.5	48	45.5
125Hz	47.5	44	47	44
160Hz	46	40.5	45.5	43.5
200Hz	44.5	40	43.5	41
250Hz	42	37.5	40.5	40.5
315Hz	41	37	38	40
400Hz	41.5	36.5	38	39.5
500Hz	45	37	40.5	41
630Hz	44	37.5	40	40
800Hz	44	37.5	42	41
1KHz	44	37.5	42.5	41
1.25KHz	42	35.5	40.5	40
1.6KHz	39.5	33.5	37.5	37
2KHz	36.5	32.5	34.5	35
2.5KHz	33	31	31.5	33.5
3.15KHz	27.5	26	27	30
4KHz	26.5	25	26.5	28
5KHz	29	25.5	30.5	27
6.3KHz	22	22	22	24
8KHz	25.5	25.5	25.5	26
10KHz	26	26	26	26
12.5KHz	21.5	21.5	21.5	21.5
16KHz	26.5	25.5	26.5	25.5
20KHz	28	28.5	28	28.5

Leq Spectrum (dB)

Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	1:37 AM	1:14 PM	12:47 AM	12:10 PM
12.5Hz	53	56.9	53.2	58.5
16Hz	55.6	58.5	55.5	60.9
20Hz	54.9	58.3	54.8	59.7
25Hz	55.3	57.4	54.5	58.8
31.5Hz	53.9	56.4	53.1	58.3
40Hz	52.5	56	53.4	60.6
50Hz	51.9	53.4	53.2	57.6
63Hz	55.9	55.6	57.1	57.1
80Hz	55.7	53.9	56.5	56.1
100Hz	52	51.1	52.3	51.4
125Hz	49.8	49.1	50.4	52.5
160Hz	48.7	44.2	49.2	51.2
200Hz	48.8	43.2	46.2	47.7
250Hz	45.9	43.6	43	49.6
315Hz	45.6	41.4	42.6	45.9
400Hz	45.9	40.2	48.3	45
500Hz	48.8	40.3	51.7	45.1
630Hz	47.1	40.2	44.5	43.9
800Hz	47.4	40.5	46	44.3
1KHz	48.6	40.5	46.1	44.8
1.25KHz	46.4	38.2	45	43.2
1.6KHz	43.5	36.3	42.1	40.4
2KHz	40	34.5	39.4	37.5
2.5KHz	36.3	32.8	35.8	35.8
3.15KHz	31.9	31	31.5	33.2
4KHz	29.9	29.6	30	32.6
5KHz	31.2	28.2	32.7	29.7
6.3KHz	27.8	28.2	28.6	29.4
8KHz	29.3	29.3	29.4	29.7
10KHz	29.5	29.5	29.5	29.6
12.5KHz	29.5	29.5	29.5	29.6
16KHz	31.4	31	31.3	31
20KHz	32	32.2	32	32.2

BULLARD ENERGY CENTER

S5 - off Bullard Ave (industrial area - representative of Single Residence at 6330 Golden State Ave.)

LD824, Cal: 94/94, Overal levels (dBA), Spectrum (dB)

Rec #	S5	S5	S5	S5		Rec #	S5	S5	S5	S5
Date	8/10/06	8/10/06	8/11/06	8/11/06		Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	2:58 AM	2:47 PM	2:01 AM	1:25 PM		Time	2:58 AM	2:47 PM	2:01 AM	1:25 PM
Leq (dBA)	58.3	56.9	59.5	61.5		L50 (dBA)	57.2	56.7	59.0	60.3
Lmin (dBA)	51.1	53.1	51.5	55.8		L90 (dBA)	53.4	54.7	55.0	57.5
Lmax (dBA)	65.1	61.4	64.7	76.7		L95 (dBA)	52.4	54.2	53.9	57.0
L5 (dBA)	62.3	59.1	62.7	63.8		L99 (dBA)	51.3	53.4	52.4	56.2
L10 (dBA)	61.4	58.7	62.0	63.0						

L90 Spectrum (dB)

Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	2:58 AM	2:47 PM	2:01 AM	1:25 PM
12.5Hz	50.5	54	51.5	55.5
16Hz	53.5	56	54	57
20Hz	54	55.5	54	57.5
25Hz	54.5	55.5	53	57
31.5Hz	54	58	52	57
40Hz	52.5	56	52.5	58
50Hz	51	54.5	52	57.5
63Hz	53	61	52.5	58.5
80Hz	52.5	57	53.5	59.5
100Hz	45	52.5	46.5	54
125Hz	43	49	43.5	52.5
160Hz	39.5	54.5	39.5	50
200Hz	41.5	47.5	40	45
250Hz	39	43	39	45
315Hz	40	41	41	41
400Hz	41	42	44.5	42.5
500Hz	44	42.5	48	46
630Hz	45.5	44	47.5	47
800Hz	46.5	47	47.5	49
1KHz	45.5	46.5	46.5	50
1.25KHz	43	45.5	44	49
1.6KHz	41	44	42.5	47
2KHz	38.5	41	39	44.5
2.5KHz	35	37.5	35.5	42.5
3.15KHz	30.5	34	31.5	39
4KHz	27	30	28	35.5
5KHz	27.5	27.5	28	32.5
6.3KHz	22	24	22	29
8KHz	25.5	26	25.5	27
10KHz	26.5	26	26	26.5
12.5KHz	21.5	22.5	21.5	22.5
16KHz	25.5	26.5	26.5	26.5
20KHz	28	29	28	29

Leq Spectrum (dB)

Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	2:58 AM	2:47 PM	2:01 AM	1:25 PM
12.5Hz	54.9	60.3	55	62.7
16Hz	59.4	62	58.9	63.7
20Hz	58.4	60.3	58.5	62.8
25Hz	59.2	60.4	57.7	62
31.5Hz	58.9	60.6	56.6	61.6
40Hz	57.3	59.4	56.5	61.7
50Hz	56	61	56.5	62.3
63Hz	60.6	64.9	61.7	66.8
80Hz	61.3	63.1	60.7	67.4
100Hz	51.1	58.3	52.1	62.6
125Hz	48.4	53.7	48.7	59.8
160Hz	46.1	55.9	46.1	56.9
200Hz	45.2	48.9	44.8	52.3
250Hz	43.4	44.7	42.7	50
315Hz	43.5	43.2	44.9	49.2
400Hz	45.9	44.2	48	49.5
500Hz	51.1	45.6	52.8	52.1
630Hz	51.7	46.9	53.4	51.6
800Hz	52.3	49.3	54	52.9
1KHz	51.4	49.5	53	54
1.25KHz	48.6	48.5	48.9	53
1.6KHz	46.5	47.2	47	51.3
2KHz	43.7	43.8	43.7	49.2
2.5KHz	41.1	40.4	40	46.8
3.15KHz	37.1	36.9	36.6	44.2
4KHz	33.6	33.4	33	41.4
5KHz	32	30.9	31.2	38.3
6.3KHz	29	29.9	28.6	35.2
8KHz	29.4	30.3	29.3	32.3
10KHz	29.6	30.2	29.5	30.4
12.5KHz	29.5	30.3	29.5	30.2
16KHz	31	31.5	31.3	31.4
20KHz	32.1	32.5	32	32.5

BULLARD ENERGY CENTER

S6 - Hampden Renaissance Neighborhood (Bryan Ave)

LD824, Cal: 94/94, Overal levels (dBA), Spectrum (dB)

Rec #	S6	S6	S6	S6		Rec #	S6	S6	S6	S6
Date	8/10/06	8/10/06	8/11/06	8/11/06		Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	2:35 AM	2:22 PM	1:37 AM	1:02 PM		Time	2:35 AM	2:22 PM	1:37 AM	1:02 PM
Leq (dBA)	52.9	47.5	49.5	51.7		L50 (dBA)	52.7	46.7	49.2	49.8
Lmin (dBA)	48.5	44.6	46.3	46.7		L90 (dBA)	50.6	45.4	47.5	47.6
Lmax (dBA)	56.8	61.2	54.3	63.2		L95 (dBA)	49.9	45.2	47.2	47.3
L5 (dBA)	55.4	50.2	51.8	55.6		L99 (dBA)	48.9	45.0	46.3	46.7
L10 (dBA)	54.7	49.0	51.1	53.6						

L90 Spectrum (dB)

Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	2:35 AM	2:22 PM	1:37 AM	1:02 PM
12.5Hz	50	52.5	48	51
16Hz	52	53.5	52	53
20Hz	52	52.5	51.5	52.5
25Hz	51.5	52	52	51.5
31.5Hz	51.5	52.5	52	53
40Hz	49.5	54.5	51.5	54.5
50Hz	47.5	51.5	51	53.5
63Hz	48.5	50	49	51
80Hz	50	49	49.5	50
100Hz	48.5	43	47	45
125Hz	46.5	41.5	45.5	45.5
160Hz	45.5	38.5	42	46
200Hz	46	38	40	43.5
250Hz	41	35	36.5	37.5
315Hz	38	34	35	36
400Hz	36	33	36	37.5
500Hz	39.5	33.5	39	40
630Hz	41	34	39.5	37.5
800Hz	43.5	35.5	40	38.5
1KHz	43.5	36.5	38.5	38
1.25KHz	40	35	35	35.5
1.6KHz	35.5	32	32.5	33
2KHz	34	31	32	31.5
2.5KHz	31	29.5	29.5	31.5
3.15KHz	24.5	24	21.5	26
4KHz	23.5	23.5	22.5	25
5KHz	26.5	25	26.5	25.5
6.3KHz	21	22	21.5	22.5
8KHz	25.5	25	25.5	25.5
10KHz	26	26	26	26
12.5KHz	21.5	22	21.5	22
16KHz	26	26	26.5	26
20KHz	28	29	28.5	29

Leq Spectrum (dB)

Date	8/10/06	8/10/06	8/11/06	8/11/06
Time	2:35 AM	2:22 PM	1:37 AM	1:02 PM
12.5Hz	53.4	58	51.8	57.3
16Hz	55.5	58.4	56.8	57.5
20Hz	56.1	56.4	55.2	56.7
25Hz	55.8	55.5	55.7	56
31.5Hz	54.7	55.1	54.6	57
40Hz	52.1	56.6	54	57.7
50Hz	49.9	53.7	53.1	59.3
63Hz	52.5	54.9	53.6	56.5
80Hz	52.8	53.9	52.9	56.2
100Hz	50.5	47.2	49.9	54.2
125Hz	48.5	45.5	47.9	53.5
160Hz	48.4	42.6	44.2	53.3
200Hz	48.9	42.1	44.4	49
250Hz	44.2	39.3	38.9	47.7
315Hz	42.1	37.6	37.4	42.8
400Hz	41.4	36.7	38.9	43.5
500Hz	44.6	37.4	42.6	44.8
630Hz	44	36.6	42.6	42.4
800Hz	46.2	37.9	43.1	42.3
1KHz	47	39.1	42.1	41.8
1.25KHz	43.8	38.5	37.5	39.9
1.6KHz	39.7	35.1	35.1	37.9
2KHz	36.6	33	33.5	36.5
2.5KHz	33.6	32	31	36.5
3.15KHz	30.1	29	26.6	33.9
4KHz	28.5	27.9	26.7	31.5
5KHz	29.2	27.9	28.4	30
6.3KHz	27.6	28.2	27.6	29
8KHz	29.2	29.1	29.2	29.5
10KHz	29.5	29.4	29.5	29.5
12.5KHz	29.4	29.7	29.4	29.6
16KHz	31.2	31.2	31.3	31.1
20KHz	32	32.4	32.1	32.3

Ldn and CNEL Calculations

LDN and CNEL Calculation

L1 LDN			L1 CNEL		
Day 1 =	68.0	dBA	**Day 1 =**	68.1	dBA
Day 2 =	64.7	dBA	**Day 2 =**	64.9	dBA

Date	Time	Duration	LEQ	LDN Penalty	"10^(x/10)"	CNEL Penalty	"10^(x/10)"
09Aug 06	15:00:00	3600	51.5	51.52	141952.52	51.52	141952.52
09Aug 06	16:00:00	3600	57.1	57.12	514726.45	57.12	514726.45
09Aug 06	17:00:00	3600	51.6	51.6	144543.98	51.6	144543.98
09Aug 06	18:00:00	3600	60.5	60.5	1122018.45	60.5	1122018.45
09Aug 06	19:00:00	3600	55.5	55.5	354813.39	60.5	1122018.45
09Aug 06	20:00:00	3600	59	59	794328.23	64	2511886.43
09Aug 06	21:00:00	3600	56.6	56.6	457088.19	61.6	1445439.77
09Aug 06	22:00:00	3600	64	74	25118864.32	74	25118864.32
09Aug 06	23:00:00	3600	53.8	63.8	2398832.92	63.8	2398832.92
10Aug 06	0:00:00	3600	62.1	72.1	16218100.97	72.1	16218100.97
10Aug 06	1:00:00	3600	54.2	64.2	2630267.99	64.2	2630267.99
10Aug 06	2:00:00	3600	55.2	65.2	3311311.21	65.2	3311311.21
10Aug 06	3:00:00	3600	58.2	68.2	6606934.48	68.2	6606934.48
10Aug 06	4:00:00	3600	61.8	71.8	15135612.48	71.8	15135612.48
10Aug 06	5:00:00	3600	66.8	76.8	47863009.23	76.8	47863009.23
10Aug 06	6:00:00	3600	63.7	73.7	23442288.15	73.7	23442288.15
10Aug 06	7:00:00	3600	59.7	59.7	933254.3	59.7	933254.3
10Aug 06	8:00:00	3600	59.5	59.5	891250.94	59.5	891250.94
10Aug 06	9:00:00	3600	55	55	316227.77	55	316227.77
10Aug 06	10:00:00	3600	58.7	58.7	741310.24	58.7	741310.24
10Aug 06	11:00:00	3600	61.8	61.8	1513561.25	61.8	1513561.25
10Aug 06	12:00:00	3600	60.5	60.5	1122018.45	60.5	1122018.45
10Aug 06	13:00:00	3600	50.6	50.6	114815.36	50.6	114815.36
10Aug 06	14:00:00	3600	49.2	49.2	83176.38	49.2	83176.38
10Aug 06	15:00:00	3600	53.3	53.3	213796.21	53.3	213796.21
10Aug 06	16:00:00	3600	51	51	125892.54	51	125892.54
10Aug 06	17:00:00	3600	58.2	58.2	660693.45	58.2	660693.45
10Aug 06	18:00:00	3600	54.5	54.5	281838.29	54.5	281838.29
10Aug 06	19:00:00	3600	54.1	54.1	257039.58	59.1	812830.52
10Aug 06	20:00:00	3600	57.3	57.3	537031.8	62.3	1698243.65
10Aug 06	21:00:00	3600	55.6	55.6	363078.05	60.6	1148153.62
10Aug 06	22:00:00	3600	54.7	64.7	2951209.23	64.7	2951209.23
10Aug 06	23:00:00	3600	59	69	7943282.35	69	7943282.35
11Aug 06	0:00:00	3600	61.5	71.5	14125375.45	71.5	14125375.45
11Aug 06	1:00:00	3600	50.7	60.7	1174897.55	60.7	1174897.55
11Aug 06	2:00:00	3600	56.5	66.5	4466835.92	66.5	4466835.92
11Aug 06	3:00:00	3600	60	70	10000000	70	10000000
11Aug 06	4:00:00	3600	57.2	67.2	5248074.6	67.2	5248074.6
11Aug 06	5:00:00	3600	61.2	71.2	13182567.39	71.2	13182567.39
11Aug 06	6:00:00	3600	58.2	68.2	6606934.48	68.2	6606934.48
11Aug 06	7:00:00	3600	60.2	60.2	1047128.55	60.2	1047128.55
11Aug 06	8:00:00	3600	54.9	54.9	309029.54	54.9	309029.54
11Aug 06	9:00:00	3600	51	51	125892.54	51	125892.54
11Aug 06	10:00:00	3600	54.2	54.2	263026.8	54.2	263026.8
11Aug 06	11:00:00	3600	49.9	49.9	97723.72	49.9	97723.72
11Aug 06	12:00:00	3600	54.9	54.9	309029.54	54.9	309029.54
11Aug 06	13:00:00	3600	50.5	50.5	112201.85	50.5	112201.85
11Aug 06	14:00:00	3600	56.3	56.3	426579.52	56.3	426579.52

LDN and CNEL Calculation

L2 LDN			L2 CNEL		
Day 1 =	74.8	dBA	**Day 1 =**	74.9	dBA
Day 2 =	74.2	dBA	**Day 2 =**	74.4	dBA

Date	Time	Duration	LEQ	LDN Penalty	"10^(x/10)"	CNEL Penalty	"10^(x/10)"
09Aug 06	15:00:00	3600	67.0	67.05	5066184.29	67.05	5066184.29
09Aug 06	16:00:00	3600	73.6	73.62	22988333.54	73.62	22988333.54
09Aug 06	17:00:00	3600	67.7	67.7	5888436.55	67.7	5888436.55
09Aug 06	18:00:00	3600	71.6	71.6	14454397.71	71.6	14454397.71
09Aug 06	19:00:00	3600	66.6	66.6	4570881.9	71.6	14454397.71
09Aug 06	20:00:00	3600	65.8	65.8	3801893.96	70.8	12022644.35
09Aug 06	21:00:00	3600	64.7	64.7	2951209.23	69.7	9332543.01
09Aug 06	22:00:00	3600	70.3	80.3	107151930.52	80.3	107151930.52
09Aug 06	23:00:00	3600	61.4	71.4	13803842.65	71.4	13803842.65
10Aug 06	0:00:00	3600	66.8	76.8	47863009.23	76.8	47863009.23
10Aug 06	1:00:00	3600	58.4	68.4	6918309.71	68.4	6918309.71
10Aug 06	2:00:00	3600	56.5	66.5	4466835.92	66.5	4466835.92
10Aug 06	3:00:00	3600	60.5	70.5	11220184.54	70.5	11220184.54
10Aug 06	4:00:00	3600	71	81	125892541.18	81	125892541.18
10Aug 06	5:00:00	3600	67.4	77.4	54954087.39	77.4	54954087.39
10Aug 06	6:00:00	3600	73.1	83.1	204173794.47	83.1	204173794.47
10Aug 06	7:00:00	3600	68.2	68.2	6606934.48	68.2	6606934.48
10Aug 06	8:00:00	3600	69.2	69.2	8317637.71	69.2	8317637.71
10Aug 06	9:00:00	3600	62.8	62.8	1905460.72	62.8	1905460.72
10Aug 06	10:00:00	3600	74	74	25118864.32	74	25118864.32
10Aug 06	11:00:00	3600	75.5	75.5	35481338.92	75.5	35481338.92
10Aug 06	12:00:00	3600	65.4	65.4	3467368.5	65.4	3467368.5
10Aug 06	13:00:00	3600	64.4	64.4	2754228.7	64.4	2754228.7
10Aug 06	14:00:00	3600	65.2	65.2	3311311.21	65.2	3311311.21
10Aug 06	15:00:00	3600	70.2	70.2	10471285.48	70.2	10471285.48
10Aug 06	16:00:00	3600	68.8	68.8	7585775.75	68.8	7585775.75
10Aug 06	17:00:00	3600	71.9	71.9	15488166.19	71.9	15488166.19
10Aug 06	18:00:00	3600	67.6	67.6	5754399.37	67.6	5754399.37
10Aug 06	19:00:00	3600	66.5	66.5	4466835.92	71.5	14125375.45
10Aug 06	20:00:00	3600	65.4	65.4	3467368.5	70.4	10964781.96
10Aug 06	21:00:00	3600	64.6	64.6	2884031.5	69.6	9120108.39
10Aug 06	22:00:00	3600	62.4	72.4	17378008.29	72.4	17378008.29
10Aug 06	23:00:00	3600	69.3	79.3	85113803.82	79.3	85113803.82
11Aug 06	0:00:00	3600	70.2	80.2	104712854.81	80.2	104712854.81
11Aug 06	1:00:00	3600	58.7	68.7	7413102.41	68.7	7413102.41
11Aug 06	2:00:00	3600	61.4	71.4	13803842.65	71.4	13803842.65
11Aug 06	3:00:00	3600	66.9	76.9	48977881.94	76.9	48977881.94
11Aug 06	4:00:00	3600	63	73	19952623.15	73	19952623.15
11Aug 06	5:00:00	3600	72.7	82.7	186208713.67	82.7	186208713.67
11Aug 06	6:00:00	3600	66.5	76.5	44668359.22	76.5	44668359.22
11Aug 06	7:00:00	3600	71.6	71.6	14454397.71	71.6	14454397.71
11Aug 06	8:00:00	3600	66.5	66.5	4466835.92	66.5	4466835.92
11Aug 06	9:00:00	3600	65	65	3162277.66	65	3162277.66
11Aug 06	10:00:00	3600	66.3	66.3	4265795.19	66.3	4265795.19
11Aug 06	11:00:00	3600	66.2	66.2	4168693.83	66.2	4168693.83
11Aug 06	12:00:00	3600	69.9	69.9	9772372.21	69.9	9772372.21
11Aug 06	13:00:00	3600	66.3	66.3	4265795.19	66.3	4265795.19
11Aug 06	14:00:00	3600	69.1	69.1	8128305.16	69.1	8128305.16

LDN and CNEL Calculation

L3 LDN			L3 CNEL		
Day 1 =	63.2	dBA	**Day 1 =**	63.3	dBA
Day 2 =	65.6	dBA	**Day 2 =**	65.7	dBA

Date	Time	Duration	LEQ	LDN Penalty	"10^(x/10)"	CNEL Penalty	"10^(x/10)"
09Aug 06	18:00:00	3600	51.5	51.5	141253.75	51.5	141253.75
09Aug 06	19:00:00	3600	51	51	125892.54	56	398107.17
09Aug 06	20:00:00	3600	52.7	52.7	186208.71	57.7	588843.66
09Aug 06	21:00:00	3600	52.4	52.4	173780.08	57.4	549540.87
09Aug 06	22:00:00	3600	54.1	64.1	2570395.78	64.1	2570395.78
09Aug 06	23:00:00	3600	53.5	63.5	2238721.14	63.5	2238721.14
10Aug 06	0:00:00	3600	56.9	66.9	4897788.19	66.9	4897788.19
10Aug 06	1:00:00	3600	52	62	1584893.19	62	1584893.19
10Aug 06	2:00:00	3600	53.9	63.9	2454708.92	63.9	2454708.92
10Aug 06	3:00:00	3600	53.5	63.5	2238721.14	63.5	2238721.14
10Aug 06	4:00:00	3600	55.1	65.1	3235936.57	65.1	3235936.57
10Aug 06	5:00:00	3600	59.3	69.3	8511380.38	69.3	8511380.38
10Aug 06	6:00:00	3600	59	69	7943282.35	69	7943282.35
10Aug 06	7:00:00	3600	56	56	398107.17	56	398107.17
10Aug 06	8:00:00	3600	62.4	62.4	1737800.83	62.4	1737800.83
10Aug 06	9:00:00	3600	66.5	66.5	4466835.92	66.5	4466835.92
10Aug 06	10:00:00	3600	64.4	64.4	2754228.7	64.4	2754228.7
10Aug 06	11:00:00	3600	59.3	59.3	851138.04	59.3	851138.04
10Aug 06	12:00:00	3600	51.4	51.4	138038.43	51.4	138038.43
10Aug 06	13:00:00	3600	57.6	57.6	575439.94	57.6	575439.94
10Aug 06	14:00:00	3600	62.8	62.8	1905460.72	62.8	1905460.72
10Aug 06	15:00:00	3600	58.1	58.1	645654.23	58.1	645654.23
10Aug 06	16:00:00	3600	53.6	53.6	229086.77	53.6	229086.77
10Aug 06	17:00:00	3600	54.8	54.8	301995.17	54.8	301995.17
10Aug 06	18:00:00	3600	53.2	53.2	208929.61	53.2	208929.61
10Aug 06	19:00:00	3600	52.2	52.2	165958.69	57.2	524807.46
10Aug 06	20:00:00	3600	53.9	53.9	245470.89	58.9	776247.12
10Aug 06	21:00:00	3600	53.8	53.8	239883.29	58.8	758577.58
10Aug 06	22:00:00	3600	53.7	63.7	2344228.82	63.7	2344228.82
10Aug 06	23:00:00	3600	55.9	65.9	3890451.45	65.9	3890451.45
11Aug 06	0:00:00	3600	53.6	63.6	2290867.65	63.6	2290867.65
11Aug 06	1:00:00	3600	51.5	61.5	1412537.54	61.5	1412537.54
11Aug 06	2:00:00	3600	51.3	61.3	1348962.88	61.3	1348962.88
11Aug 06	3:00:00	3600	54.6	64.6	2884031.5	64.6	2884031.5
11Aug 06	4:00:00	3600	54.3	64.3	2691534.8	64.3	2691534.8
11Aug 06	5:00:00	3600	56	66	3981071.71	66	3981071.71
11Aug 06	6:00:00	3600	57.2	67.2	5248074.6	67.2	5248074.6
11Aug 06	7:00:00	3600	61.2	61.2	1318256.74	61.2	1318256.74
11Aug 06	8:00:00	3600	66.1	66.1	4073802.78	66.1	4073802.78
11Aug 06	9:00:00	3600	61.8	61.8	1513561.25	61.8	1513561.25
11Aug 06	10:00:00	3600	68.3	68.3	6760829.75	68.3	6760829.75
11Aug 06	11:00:00	3600	76	76	39810717.06	76	39810717.06
11Aug 06	12:00:00	3600	62.1	62.1	1621810.1	62.1	1621810.1
11Aug 06	13:00:00	3600	62.8	62.8	1905460.72	62.8	1905460.72
11Aug 06	14:00:00	3600	63.3	63.3	2137962.09	63.3	2137962.09
11Aug 06	15:00:00	3600	52	52	158489.32	52	158489.32
11Aug 06	16:00:00	3600	54.3	54.3	269153.48	54.3	269153.48
11Aug 06	17:00:00	3600	57.4	57.4	549540.87	57.4	549540.87

LDN and CNEL Calculation
All levels in dBA

Position	Lowest Daytime LEQ	Lowest Nighttime LEQ	LDN	CNEL
S4	49	55	60.9	63.4
S5	57	58	64.3	69.3
S6	48	50	56.2	60.6

Fresno Noise Element Compliance Assessment
All Noise Levels in dBA

H-1-B

Position	Lowest LDN	Fresno General Plan Noise Element H-1-b Allowable Ambient Increase	Allowable Future Noise Level (Ambient + Facility) (LDN)	Allowable Facility Noise Level (LDN)
L1	65	3	68	65
L2	74	1.5	76	70
L3	63	3	66	63
S4	61	3	64	61
S5	64	3	67	64
S6	56	5	61	59

H-1-L

Position	Lowest Daytime LEQ	Lowest Nighttime LEQ	Daytime Allowable Facility Level	Nighttime Allowable Facility Level
L1	49	51	50	56
L2	43	57	50	62
L3	51	51	56	56
S4	49	55	50	61
S5	57	58	62	63
S6	48	50	53	55

Meteorological Data

Time	Temp F	Dewpoint F	Pressure In	WindDirection	WindDirectionDegrees	WindSpeedMPH	WindSpeedGustMPH	Humidity	HourlyPrecipIn	Conditions	Clouds	dailyrainin	SoftwareType
8/9/2006 21:59	83.3	41.7	29.5	WNW	286	0	2	23	0		CLR		VWS V12.08
8/9/2006 22:04	83.3	41.7	29.5	NW	314	0	3	23	0		CLR		VWS V12.08
8/9/2006 22:09	83.1	41.5	29.5	WNW	302	0	4	23	0		CLR		VWS V12.08
8/9/2006 22:14	82.8	42.3	29.5	WNW	297	0	4	24	0		CLR		VWS V12.08
8/9/2006 22:19	82.6	42.2	29.5	West	281	0	4	24	0		CLR		VWS V12.08
8/9/2006 22:24	82.2	42.9	29.5	NW	307	0	0	25	0		CLR		VWS V12.08
8/9/2006 22:29	81.9	42.6	29.5	NNW	346	0	0	25	0		CLR		VWS V12.08
8/9/2006 22:34	81.1	43	29.5	NNW	346	0	0	26	0		CLR		VWS V12.08
8/9/2006 22:39	80.4	43.4	29.5	NNW	334	0	0	27	0		CLR		VWS V12.08
8/9/2006 22:44	79.9	44.8	29.5	NNW	334	0	0	29	0		CLR		VWS V12.08
8/9/2006 22:49	79.2	45.1	29.53	NNW	334	0	0	30	0		CLR		VWS V12.08
8/9/2006 22:54	78.4	45.3	29.53	NNW	334	0	0	31	0		CLR		VWS V12.08
8/9/2006 22:59	77.7	44.7	29.53	NNW	334	0	0	31	0		CLR		VWS V12.08
8/9/2006 23:04	77.2	45.9	29.53	NNW	334	0	0	33	0		CLR		VWS V12.08
8/9/2006 23:09	76.8	46.3	29.53	NNW	334	0	0	34	0		CLR		VWS V12.08
8/9/2006 23:14	76.5	46.8	29.53	NNW	334	0	0	35	0		CLR		VWS V12.08
8/9/2006 23:19	76.3	46.7	29.53	NNW	334	0	0	35	0		CLR		VWS V12.08
8/9/2006 23:24	76.1	46.5	29.53	NNW	334	0	0	35	0		CLR		VWS V12.08
8/9/2006 23:59	74.5	49.3	29.53	NNW	334	0	0	41	0		CLR		VWS V12.08
8/10/2006 0:00	74.3	49.1	29.53	NNW	334	0	0	41	0		CLR		VWS V12.08
8/10/2006 0:04	74.1	49.6	29.53	NNW	334	0	0	42	0		CLR		VWS V12.08
8/10/2006 0:09	73.9	49.4	29.53	NNW	334	0	0	42	0		CLR		VWS V12.08
8/10/2006 0:14	73.8	49.9	29.53	NNW	334	0	0	43	0		CLR		VWS V12.08
8/10/2006 0:19	73.6	50.3	29.53	NNW	334	0	0	44	0		CLR		VWS V12.08
8/10/2006 0:20	73.4	50.2	29.53	NNW	334	0	0	44	0		CLR		VWS V12.08
8/10/2006 0:24	73.2	50.6	29.53	NNW	334	0	0	45	0		CLR		VWS V12.08
8/10/2006 0:28	73	50.5	29.53	NNW	334	0	0	45	0		CLR		VWS V12.08
8/10/2006 0:33	72.7	50.7	29.53	NNW	334	0	0	46	0		CLR		VWS V12.08
8/10/2006 0:38	72.5	51.2	29.53	NNW	334	0	0	47	0		CLR		VWS V12.08
8/10/2006 0:40	72.5	51.2	29.53	NNW	334	0	0	47	0		CLR		VWS V12.08
8/10/2006 0:43	72.5	51.2	29.53	NNW	334	0	0	47	0		CLR		VWS V12.08
8/10/2006 0:48	72.5	51.7	29.53	NNW	334	0	0	48	0		CLR		VWS V12.08
8/10/2006 0:53	72.3	51.5	29.53	NNW	334	0	0	48	0		CLR		VWS V12.08
8/10/2006 0:58	72.3	52.1	29.53	NNW	334	0	0	49	0		CLR		VWS V12.08
8/10/2006 1:00	72.3	52.1	29.53	NNW	334	0	0	49	0		CLR		VWS V12.08
8/10/2006 1:03	72.3	52.1	29.53	NNW	334	0	0	49	0		CLR		VWS V12.08
8/10/2006 1:08	72.1	52.5	29.53	NNW	334	0	0	50	0		CLR		VWS V12.08
8/10/2006 1:13	72.1	52.5	29.53	NNW	334	0	0	50	0		CLR		VWS V12.08
8/10/2006 1:18	72.3	52.1	29.53	NNW	334	0	0	49	0		CLR		VWS V12.08
8/10/2006 1:20	72.3	52.7	29.53	NNW	334	0	0	50	0		CLR		VWS V12.08
8/10/2006 1:23	72.3	52.7	29.53	NNW	334	0	0	50	0		CLR		VWS V12.08
8/10/2006 1:28	72.1	51.9	29.53	NNW	334	0	0	49	0		CLR		VWS V12.08
8/10/2006 1:33	72.1	51.9	29.53	NNW	334	0	0	49	0		CLR		VWS V12.08
8/10/2006 1:38	72.1	51.9	29.53	NNW	334	0	0	49	0		CLR		VWS V12.08
8/10/2006 1:40	72	51.8	29.53	NNW	334	0	0	49	0		CLR		VWS V12.08
8/10/2006 1:43	72	52.3	29.53	NNW	334	0	0	50	0		CLR		VWS V12.08
8/10/2006 1:48	71.8	52.2	29.53	NNW	334	0	0	50	0		CLR		VWS V12.08
8/10/2006 1:53	71.6	52	29.53	NNW	334	0	0	50	0		CLR		VWS V12.08
8/10/2006 1:58	71.8	52.2	29.53	NNW	334	0	0	50	0		CLR		VWS V12.08
8/10/2006 2:00	71.8	52.2	29.53	NNW	334	0	0	50	0		CLR		VWS V12.08
8/10/2006 2:03	71.8	52.2	29.53	NNW	334	0	0	50	0		CLR		VWS V12.08
8/10/2006 2:08	71.6	52.5	29.53	NNW	334	0	0	51	0		CLR		VWS V12.08
8/10/2006 2:13	71.2	52.7	29.53	NNW	334	0	0	52	0		CLR		VWS V12.08
8/10/2006 2:18	71.2	52.7	29.53	NNW	334	0	0	52	0		CLR		VWS V12.08
8/10/2006 2:20	71.1	53.1	29.53	NNW	334	0	0	53	0		CLR		VWS V12.08
8/10/2006 2:23	70.9	52.9	29.53	NNW	334	0	0	53	0		CLR		VWS V12.08
8/10/2006 2:28	70.9	52.9	29.53	ESE	105	0	0	53	0		CLR		VWS V12.08
8/10/2006 2:33	70.9	52.4	29.53	ESE	105	0	0	52	0		CLR		VWS V12.08
8/10/2006 2:38	70.9	52.4	29.53	ESE	105	0	0	52	0		CLR		VWS V12.08
8/10/2006 2:40	70.7	52.2	29.53	East	100	0	0	52	0		CLR		VWS V12.08
8/10/2006 2:43	70.7	52.2	29.53	East	100	0	0	52	0		CLR		VWS V12.08
8/10/2006 2:48	70.5	52.1	29.53	East	87	0	0	52	0		CLR		VWS V12.08

8/10/2006 2:53	70.3	51.9	29.53	East	87	0	0	52	0	CLR	VWS V12.08
8/10/2006 2:58	70.3	52.4	29.53	East	87	0	0	53	0	CLR	VWS V12.08
8/10/2006 3:00	70.2	52.2	29.53	East	87	0	0	53	0	CLR	VWS V12.08
8/10/2006 3:03	70.2	52.2	29.53	East	87	0	0	53	0	CLR	VWS V12.08
8/10/2006 21:59	83.8	48.2	29.47	NW	318	5	8	29	0	CLR	VWS V12.08
8/10/2006 22:04	82.9	48.3	29.47	WNW	295	5	6	30	0	CLR	VWS V12.08
8/10/2006 22:09	82.6	48.9	29.47	NW	311	5	6	31	0	CLR	VWS V12.08
8/10/2006 22:14	82.2	48.6	29.47	WNW	297	5	6	31	0	CLR	VWS V12.08
8/10/2006 22:19	81.9	49.1	29.47	NW	314	4	6	32	0	CLR	VWS V12.08
8/10/2006 22:24	81.5	48.8	29.47	WNW	283	3	5	32	0	CLR	VWS V12.08
8/10/2006 22:29	81.3	49.5	29.47	NW	316	4	5	33	0	CLR	VWS V12.08
8/10/2006 22:34	81.1	49.3	29.47	West	281	3	5	33	0	CLR	VWS V12.08
8/10/2006 22:39	81	50	29.47	NW	312	5	5	34	0	CLR	VWS V12.08
8/10/2006 22:44	80.6	50.5	29.47	West	276	2	6	35	0	CLR	VWS V12.08
8/10/2006 22:49	80.6	50.5	29.47	WNW	296	4	6	35	0	CLR	VWS V12.08
8/10/2006 22:54	80.6	49.7	29.47	West	276	4	6	34	0	CLR	VWS V12.08
8/10/2006 22:59	80.4	50.3	29.47	NW	325	5	7	35	0	CLR	VWS V12.08
8/10/2006 23:04	80.6	49.7	29.47	NW	323	5	5	34	0	CLR	VWS V12.08
8/10/2006 23:09	80.4	50.3	29.47	NW	306	5	7	35	0	CLR	VWS V12.08
8/10/2006 23:14	80.2	50.9	29.47	NW	310	5	8	36	0	CLR	VWS V12.08
8/10/2006 23:19	79.9	50.6	29.47	NW	307	4	8	36	0	CLR	VWS V12.08
8/10/2006 23:24	79.3	50.8	29.47	WNW	284	7	8	37	0	CLR	VWS V12.08
8/10/2006 23:29	79	51.2	29.47	West	279	4	8	38	0	CLR	VWS V12.08
8/10/2006 23:34	78.6	51.6	29.47	WNW	303	4	8	39	0	CLR	VWS V12.08
8/10/2006 23:39	78.4	50.8	29.47	West	266	4	8	38	0	CLR	VWS V12.08
8/10/2006 23:44	78.3	49.9	29.47	North	357	4	4	37	0	CLR	VWS V12.08
8/10/2006 23:49	78.3	49.9	29.47	WNW	295	5	5	37	0	CLR	VWS V12.08
8/10/2006 23:54	78.3	49.1	29.47	WNW	303	4	7	36	0	CLR	VWS V12.08
8/10/2006 23:59	78.1	49.7	29.47	NNW	327	4	7	37	0	CLR	VWS V12.08
8/11/2006 0:04	77.9	49.6	29.47	NW	305	3	4	37	0	CLR	VWS V12.08
8/11/2006 0:09	77.2	49.6	29.47	NW	304	3	5	38	0	CLR	VWS V12.08
8/11/2006 0:14	76.6	50.5	29.47	NW	326	2	5	40	0	CLR	VWS V12.08
8/11/2006 0:19	76.1	50.7	29.47	NNW	331	2	5	41	0	CLR	VWS V12.08
8/11/2006 0:24	75.6	50.2	29.47	NNW	342	3	3	41	0	CLR	VWS V12.08
8/11/2006 0:29	75.4	50.1	29.47	NW	316	3	4	41	0	CLR	VWS V12.08
8/11/2006 0:34	75.4	49.4	29.47	North	349	3	4	40	0	CLR	VWS V12.08
8/11/2006 0:39	75.4	49.4	29.47	NNW	348	3	4	40	0	CLR	VWS V12.08
8/11/2006 0:44	75.2	48.6	29.47	NW	316	3	4	39	0	CLR	VWS V12.08
8/11/2006 0:49	74.8	48.2	29.47	WNW	298	3	4	39	0	CLR	VWS V12.08
8/11/2006 0:54	74.8	48.2	29.47	WNW	283	3	4	39	0	CLR	VWS V12.08
8/11/2006 0:59	75	47.7	29.47	WNW	288	6	6	38	0	CLR	VWS V12.08
8/11/2006 1:04	75	47	29.47	NW	307	0	6	37	0	CLR	VWS V12.08
8/11/2006 1:09	74.8	47.6	29.47	North	353	2	6	38	0	CLR	VWS V12.08
8/11/2006 1:14	74.3	47.8	29.47	WNW	300	3	6	39	0	CLR	VWS V12.08
8/11/2006 1:19	73.9	48.8	29.47	North	353	3	6	41	0	CLR	VWS V12.08
8/11/2006 1:24	73.6	48.5	29.47	NNW	334	2	2	41	0	CLR	VWS V12.08
8/11/2006 1:29	73.4	48.3	29.47	NNW	337	0	2	41	0	CLR	VWS V12.08
8/11/2006 1:34	73	48.6	29.5	NW	322	0	2	42	0	CLR	VWS V12.08
8/11/2006 1:39	73	48.6	29.5	WNW	297	2	3	42	0	CLR	VWS V12.08
8/11/2006 1:44	73	48.6	29.5	WNW	300	2	4	42	0	CLR	VWS V12.08
8/11/2006 1:49	73.2	49.4	29.47	North	0	0	4	43	0	CLR	VWS V12.08

8/11/2006 1:54	73.2	49.4	29.47	WNW	302	5	5	43	0	CLR	VWS V12.08
8/11/2006 1:59	73.2	48.8	29.47	NW	320	3	5	42	0	CLR	VWS V12.08
8/11/2006 2:04	73.2	49.4	29.47	North	350	2	3	43	0	CLR	VWS V12.08
8/11/2006 2:09	72.9	49.1	29.47	NNW	332	3	4	43	0	CLR	VWS V12.08
8/11/2006 2:14	72.3	49.8	29.47	NW	307	4	5	45	0	CLR	VWS V12.08
8/11/2006 2:18	72.3	49.2	29.47	NW	316	0	5	44	0	CLR	VWS V12.08
8/11/2006 2:23	72.3	48.6	29.47	NW	304	4	5	43	0	CLR	VWS V12.08
8/11/2006 2:28	72.3	49.2	29.47	NW	318	2	6	44	0	CLR	VWS V12.08
8/11/2006 2:33	72	49.5	29.47	WNW	285	3	6	45	0	CLR	VWS V12.08
8/11/2006 2:38	72	48.3	29.47	NW	304	5	6	43	0	CLR	VWS V12.08
8/11/2006 2:43	72.1	49	29.47	WNW	299	3	4	44	0	CLR	VWS V12.08
8/11/2006 2:48	72.3	48	29.47	NNW	334	4	5	42	0	CLR	VWS V12.08
8/11/2006 2:53	72.5	47.5	29.47	NNW	338	5	8	41	0	CLR	VWS V12.08
8/11/2006 2:58	72.5	47.5	29.47	NW	318	3	8	41	0	CLR	VWS V12.08
8/11/2006 3:03	72.5	48.1	29.47	NW	306	2	4	42	0	CLR	VWS V12.08
8/11/2006 3:08	72.1	48.4	29.47	North	9	4	4	43	0	CLR	VWS V12.08
8/11/2006 3:13	72.1	47.8	29.47	WNW	299	5	6	42	0	CLR	VWS V12.08
8/11/2006 3:18	72.3	48	29.47	NW	306	4	6	42	0	CLR	VWS V12.08
8/11/2006 3:23	72	47.6	29.47	WNW	298	4	6	42	0	CLR	VWS V12.08
8/11/2006 3:28	72	47.6	29.47	WNW	296	4	6	42	0	CLR	VWS V12.08
8/11/2006 3:33	71.8	48.1	29.47	WNW	301	5	6	43	0	CLR	VWS V12.08
8/11/2006 3:38	71.6	47.3	29.47	NW	310	6	6	42	0	CLR	VWS V12.08
8/11/2006 3:43	71.4	47.2	29.47	NNW	337	3	4	42	0	CLR	VWS V12.08
8/11/2006 3:48	71.1	47.5	29.47	NW	307	0	4	43	0	CLR	VWS V12.08
8/11/2006 3:53	70.9	47.3	29.47	WNW	293	2	4	43	0	CLR	VWS V12.08
8/11/2006 3:58	70.7	47.1	29.47	NW	319	2	4	43	0	CLR	VWS V12.08
8/11/2006 4:04	70.7	47.1	29.47	NNW	331	3	4	43	0	CLR	VWS V12.08
8/11/2006 4:09	70.5	47	29.47	NW	315	3	4	43	0	CLR	VWS V12.08
8/11/2006 4:14	70.3	46.8	29.47	WNW	297	3	4	43	0	CLR	VWS V12.08
8/11/2006 4:19	70.2	47.2	29.5	NW	310	0	5	44	0	CLR	VWS V12.08
8/11/2006 4:24	70.2	47.2	29.5	WNW	302	0	0	44	0	CLR	VWS V12.08
8/11/2006 4:29	70	47.1	29.5	WNW	302	0	0	44	0	CLR	VWS V12.08
8/11/2006 4:34	70	47.1	29.5	WNW	293	2	4	44	0	CLR	VWS V12.08
8/11/2006 4:39	69.8	46.9	29.5	NW	311	3	4	44	0	CLR	VWS V12.08
8/11/2006 4:44	69.8	47.5	29.5	WNW	290	0	3	45	0	CLR	VWS V12.08
8/11/2006 4:49	69.8	46.9	29.5	NW	311	2	3	44	0	CLR	VWS V12.08
8/11/2006 4:54	69.8	46.9	29.5	NW	314	0	4	44	0	CLR	VWS V12.08
8/11/2006 4:59	69.6	47.4	29.5	NW	314	2	4	45	0	CLR	VWS V12.08
8/11/2006 5:04	69.6	47.4	29.5	WNW	297	0	3	45	0	CLR	VWS V12.08
8/11/2006 5:09	69.4	47.2	29.5	WNW	291	2	4	45	0	CLR	VWS V12.08
8/11/2006 5:14	69.1	47.5	29.5	NW	319	2	4	46	0	CLR	VWS V12.08
8/11/2006 5:19	68.5	47.5	29.5	WNW	291	3	4	47	0	CLR	VWS V12.08
8/11/2006 5:24	68.4	47.9	29.5	WNW	296	0	0	48	0	CLR	VWS V12.08
8/11/2006 5:29	68.4	47.9	29.5	NNW	328	2	4	48	0	CLR	VWS V12.08
8/11/2006 5:34	68.2	47.2	29.5	NNW	327	2	4	47	0	CLR	VWS V12.08
8/11/2006 5:39	68.2	47.2	29.5	NW	314	2	4	47	0	CLR	VWS V12.08
8/11/2006 5:44	68.2	46.6	29.5	NW	312	2	5	46	0	CLR	VWS V12.08
8/11/2006 5:49	68.5	47	29.5	North	353	2	5	46	0	CLR	VWS V12.08
8/11/2006 5:54	68.5	46.4	29.5	NW	322	2	5	45	0	CLR	VWS V12.08
8/11/2006 5:59	68.4	46.2	29.5	NW	316	3	5	45	0	CLR	VWS V12.08
8/11/2006 6:04	68.2	46	29.5	NW	321	3	4	45	0	CLR	VWS V12.08
8/11/2006 6:09	68.2	46	29.5	NW	305	4	4	45	0	CLR	VWS V12.08
8/11/2006 6:14	68	45.9	29.5	North	353	2	4	45	0	CLR	VWS V12.08
8/11/2006 6:19	67.8	46.3	29.5	NW	314	3	4	46	0	CLR	VWS V12.08
8/11/2006 6:24	67.6	46.1	29.5	NW	325	2	3	46	0	CLR	VWS V12.08
8/11/2006 6:28	67.6	46.1	29.5	NNW	342	2	3	46	0	CLR	VWS V12.08
8/11/2006 6:33	67.6	46.1	29.5	WNW	295	2	3	46	0	CLR	VWS V12.08
8/11/2006 6:38	67.6	45.6	29.5	NNW	339	2	3	45	0	CLR	VWS V12.08
8/11/2006 6:43	68	45.9	29.5	NW	323	2	3	45	0	CLR	VWS V12.08
8/11/2006 6:48	68	45.9	29.5	NNW	335	0	3	45	0	CLR	VWS V12.08
8/11/2006 6:53	68.2	44.9	29.5	North	0	3	5	43	0	CLR	VWS V12.08
8/11/2006 6:58	68.4	45	29.5	NNW	343	3	5	43	0	CLR	VWS V12.08
8/11/2006 7:03	68.5	44.6	29.5	NNW	328	3	3	42	0	CLR	VWS V12.08

Instrument Specifications

Larson Davis Model 824

Larson•Davis Incorporated
1681 West 820 North
Provo, UT 84601-1341
(801) 375-0177
www.lardav.com

Type

The Larson•Davis Model 824 with attached PRM 902 preamp and Model 2551 microphone is a combination Type 1 sound spectrum analyzer that measures broadband SPL, LEQ, SEL, Min, Max, Peak, with all frequency weights (A, C, Flat) and with all detectors (slow, fast, impulse, peak and Leq) simultaneously plus 1/1 and 1/3 octave data stored in time and interval histories at storage rates as fast as 8 times per second. Included also are Ln data showing 6 Ln values, a graph of L1 through L99 (broadband), and spectral Lns.

Standards Met

- ANSI S1.4-1983 Type 1
- ANSI S1.25-1991 Type 1
- IEC 651 Type 1
- IEC 804 Type 1
- Directive 86/188/EEC
- Directive IEC/TC-29

Larson Davis Model 820

Larson•Davis Incorporated
1681 West 820 North
Provo, UT 84601-1341
(801) 375-0177
www.lardav.com

Type

The Larson•Davis Model 820 with attached PRM 828 preamp and Model 2541 microphone is a combination Type 1 precision integrating sound level meter and statistical data logger. The Model 820 can also be used with any of the Larson•Davis 1/2" condenser microphones. They may also be used with any Larson•Davis 1/4" or 1" microphones provided they are used with an ADP011 (1/4"to 1/2"preamp adapter) or an ADP008 (1" to1/2" preamp adapter) attached to the PRM 828. The Model 820 polarization voltage can be set to either 200V or 28V.

Standards Met

- ANSI S1.4-1983 Type 1
- ANSI S1.25-1991 Type 1
- IEC 651 Type 1
- IEC 804 Type 1
- Directive 86/188/EEC
- Directive IEC/TC-29

Larson Davis Model CAL200

Larson•Davis Incorporated
1681 West 820 North
Provo, UT 84601-1341
(801) 375-0177
www.lardav.com

Type

The Larson Davis Model CAL200 is a Class 1 microphone calibrator intended for the Larson Davis 1/2" or 1/4" diameter microphones. The CAL200 provides a choice of calibration sound pressure levels, 94.0 and 114.0 dB (switch selectable) at a frequency of 1 kHz.

Specifications

Calibration Sound Pressure Level	94.0 and 114.0 dB re: 20 µPa (±0.2dB) @ 1013 millibars and 23° C,and 50% relative humidity.
Equivalent free-field level	-.015dB for 1/2" free-field microphones.
Frequency	1 kHz ±1%
Harmonic Distortion	<2%
Stability	±0.1 dB after 2 seconds
Barometric Pressure Range	650 to 1080 mbar SPL will be within ±0.3 dB.
Temperature Range	SPL variation ±0.3 dB (typically 0.005 dB/° C) Frequency variation ±2% over the range -10 to 50° C
Humidity Range	SPL variation < ±0.3 dB over the range 10 to 90% relative humidity Frequency variation ±2% over the range 10 to 90% relative humidity
Storage Temperature	-40 to 60.0° C
Storage Humidity	0 to 99% relative humidity (non-condensing)
Effective Volume of Calibrator & Microphone	3.48 cm^3 (0.21 in^3)
Battery	9 V NEDA 1604A or IEC 6LR61 With sufficient battery voltage, calibrator will run (after releasing ON button) for 1 to 1.5 minutes before automatic shutdown. With insufficient battery voltage, calibrator will not remain ON after release of button.
Traceability	Utilize the Larson Davis 1/2" Model 2559 or 2560 precision condenser microphone in conjunction with other traceable measuring instruments to estalish traceabiity of the output level and frequency of the Model CAL200.
Standards met	ANSI S1.40-1984 - Specification for Acoustic Calibrators IEC60942-2003 Class 1 - Sound Calibrators.
CE	CE-mark indicates compliance with: EMC Directive.
EMC Emission	EN 50081-1: Generic emission standard . Part 1: Residential, commerical and light industry.
EMC Immunity	EN 50082-2: Generic immunity standard. Part 2: Industrial environment.

Instrument Calibration Certificates

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 1999, ANSI/NCSL Z540:1994 Part 1 and relevant requirements of ISO 9002:1994 ACCREDITED by NVLAP (an ILAC and APLAC signatory)

NVLAP®

NVLAP Lab Code: 200625-0

Calibration Certificate No.14752

Instrument:	**Sound Level Meter**	*Date Calibrated:*	**6/12/2006**
Model:	**824**	*Status*	**Received** / **Sent**
Manufacturer:	**Larson Davis**	*In tolerance*	**X** / **X**
Serial number:	**1244**	*Out of tolerance*	
Tested with:	**Microphone 2551 s/n 138**	*See comments*	
	Preamplifier PRM902 s/n 1764	*Contains non-accredited tests:*	__Yes X No
Type (class):	**1**	*Calibration service:*	__ Basic X Standard
Customer:	**Hankard Environmental**	*Address:*	**103 East Simpson St.**
Tel/Fax:	**303-666-0617/-1053**		**Lafayette CO 80026**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., 06/07/2005
SLM & Dosimeters – Acoustical Tests, Scantek Inc., 06/15/2005

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal date	Traceability evidence Cal. Lab / Accreditation
483B-Norsonic	SME Cal Unit	25747	Feb 22, 2006	Scantek, Inc.
DS-360-SRS	Function Generator	33584	Dec.6, 2005	Transcat / A2LA
34401A-Agilent Technologies	Digital Voltmeter	MY41022043	Nov.16, 2005	Transcat / A2LA
DPI140-Druck	Pressure Indicator	790/00	Oct.14, 2004	Transcat / A2LA
HMP233-Vaisala Oyj	Humidity & Temp. Transmitter	V3820001	Nov.30, 2005	Transcat / A2LA
PC Program 1019 Norsonic	Calibration software	v.44	Validated May 2006	-
1253-Norsonic	Calibrator	25726	Feb 22, 2006	Scantek, Inc.

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23.4 °C	100.019 kPa	39.6 %RH

Calibrated by	Marc Nguessan	**Checked by**	Mariana Buzduga
Signature	[illegible]	Signature	[illegible]
Date	6/12/2006	Date	6/12/06

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.
Document stored as: C:\Nor1504\SlmCal\2006\LD824_1244_M1.doc

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 1999, ANSI/NCSL Z540:1994 Part 1 and relevant requirements of ISO 9002:1994 ACCREDITED by NVLAP (an ILAC and APLAC signatory)

NVLAP®

NVLAP Lab Code: 200625-0

Calibration Certificate No.14751

Instrument:	**Acoustical Calibrator**	*Date Calibrated:*	**6/9/2006**	
Model:	**CAL200**	*Status:*	**Received**	**Sent**
Manufacturer:	**Larson Davis**	*In tolerance*	**X**	**X**
Serial number:	**3527**	*Out of tolerance:*		
Class (IEC 60942):	**1L**	*See comments:*		
Barometer type:		*Contains non-accredited tests:*	**__Yes _X_ No**	
Barometer s/n:				

Customer:	**Hankard Environmental**	*Address:*	**103 East Simpson St.**
Tel/Fax:	**303-666-0617/-1053**		**Lafayette CO 80026**

Tested in accordance with the following procedures and standards:
Calibration of Acoustical Calibrators, Scantek Inc., 06/06/2005

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal date	Traceability evidence
				Cal.Lab / Accreditation
483B-Norsonic	SME Cal Unit	25747	Feb 22, 2006	Scantek, Inc.
DS-360-SRS	Function Generator	33584	Dec.6, 2005	Transcat / A2LA
34401A-Agilent Technologies	Digital Voltmeter	MY41022043	Nov.16, 2005	Transcat / A2LA
DPI140-Druck	Pressure Indicator	790/00	Oct.14, 2004	Transcat / A2LA
8903-HP	Audio Analyzer	2514A05691	Oct.26, 2004	Transcat / A2LA
HMP233-Vaisala Oyj	Humidity & Temp. Transmitter	V3820001	Nov.30, 2005	Transcat / A2LA
PC Program 1018 Norsonic	Calibration software	v.44	Validated May 2006	-
1253-Norsonic	Calibrator	22909	May 23, 2005	NPL (UK)
1203-Norsonic	Preamplifier	14059	Feb 22, 2006	Scantek, Inc./NVLAP
4180-Bruel&Kjaer	Microphone	2246115	May 19, 2005	NPL (UK)

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK)

Calibrated by	Marc Nguessan	**Checked by**	Mariana Buzduga
Signature	[signature]	Signature	[signature]
Date	6/9/06	Date	6/12/06

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.
Document stored as: C:\Nor1504\CalCal\2006\LDCAL200_3527_M1.doc

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 1999, ANSI/NCSL Z540:1994 Part 1 and relevant requirements of ISO 9002:1994 ACCREDITED by NVLAP (a NACLA approved body)

NVLAP®

NVLAP Lab Code: 200625-0

Calibration Certificate No.14349

Instrument:	**Sound Level Meter**	*Date Calibrated:*	**3/6/2006**	
Model:	**LD 820**	*Status*	**Received**	**Sent**
Manufacturer:	**Larson Davis**	*In tolerance*	**X**	**X**
Serial number:	**1406**	*Out of tolerance*		
Tested with:	**Microphone 2541 s/n 7801**	*See comments*		
	Preamplifier PRM 828 s/n 2129	*Contains non-accredited tests:*	**__Yes X No**	
Type (class):	**1**	*Calibration service:*	**__ Basic X Standard**	
Customer:	**Hankard Environmental**	*Address:*	**306 Rose Finch Cir.**	
Tel/Fax:	**303-666-0617/-600-0282**		**Littleton, CO 80129**	

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., 06/07/2005
SLM & Dosimeters – Acoustical Tests, Scantek Inc., 06/15/2005

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal date	Traceability evidence Cal. Lab / Accreditation
483B-Norsonic	SME Cal Unit	25747	Feb 22, 2006	Scantek, Inc.
DS-360-SRS	Function Generator	33584	Dec.6, 2005	Transcat / A2LA
34401A-Agilent Technologies	Digital Voltmeter	MY41022043	Nov.16, 2005	Transcat / A2LA
DPI140-Druck	Pressure Indicator	790/00	Oct.14, 2004	Transcat / A2LA
HMP233-Vaisala Oyj	Humidity & Temp. Transmitter	V3820001	Nov.30, 2005	Transcat / A2LA
PC Program 1019 Norsonic	Calibration software	v.4.24g	Validated Jan 2004	-
1253-Norsonic	Calibrator	25726	Feb 22, 2006	Scantek, Inc.

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23 ±1.1°C	100.181 ±0.008kPa	39.7 ±2.5%RH

Calibrated by	Mariana Buzduga	**Checked by**	Richard J. Peppin
Signature	[illegible]	Signature	[illegible]
Date	3/6/06	Date	06-03-06

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This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.
Document stored as: C:\Nor1504\SlmCal\2006\LD820_1406_M1.doc

Certificate of Calibration and Conformance

Certificate Number 2006-76619

Instrument Model 820, Serial Number 1590, was calibrated on 02FEB2006. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

New Instrument
Date Calibrated: 02FEB2006
Calibration due: 02APR2007

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2209	0589 / 0103	12 Months	05DEC2006	2005-74821

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 23 ° Centigrade

Relative Humidity: 27 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

Signed: Ron Harris

Technician: Ron Harris

Larson Davis A PCB GROUP CO.

Larson Davis, Inc. is an ISO 9001-2000 Registered Company

1681 West 820 North • Provo, UT 84601 U.S.A. • 801.375.0177 • Fax: 801.375.0182 • www.larsondavis.com

Acoustical Modeling Results

Bullard - Receiver Sound Levels
Base Analysis - A-Weighted - Optimized

Name	SPL dB(A)
Property Line East	58.7
Property Line North	65.9
Property Line South	67.0
S1/L1	46.3
S2/L2	48.8
S3/L3	50.5
S4	37.8
S5	46.8
S6	39.6

Bullard - Receiver Spectra
Base Analysis - Linear - Optimized

31 Hz dB	63 Hz dB	125 Hz dB	250 Hz dB	500 Hz dB	1 kHz dB	2 kHz dB	4 kHz dB	8 kHz dB
Property Line East		SPL 76.2	dB(_)					
71.97	72.83	67.09	61.36	51.71	49.36	50.92	46.94	33.66
Property Line North		SPL 82.7	dB(_)					
80.96	75.79	71.56	66.94	61.78	58.71	57.10	56.39	48.75
Property Line South		SPL 83.1	dB(_)					
80.95	76.46	74.02	68.62	64.44	59.98	56.52	54.33	43.03
S1/L1		SPL 66.1	dB(_)					
63.48	61.41	55.72	48.39	42.61	38.52	34.55	27.28	-5.51
S2/L2		SPL 68.9	dB(_)					
66.99	63.23	56.89	49.85	45.34	42.21	38.56	31.03	-0.45
S3/L3		SPL 71.3	dB(_)					
69.49	65.24	59.67	51.52	47.36	43.43	38.98	33.69	3.78
S4		SPL 61.2	dB(_)					
59.72	55.16	46.98	39.89	34.88	29.78	20.65	-6.94	
S5		SPL 68.6	dB(_)					
67.19	61.91	55.53	48.77	43.54	39.24	35.29	27.66	-10.97
S6		SPL 62.9	dB(_)					
61.48	56.45	49.02	42.27	35.93	31.15	25.24	9.23	-59.64

Michael Theriault Acoustics, Inc.
15 Riverplace Drive, Suite 1538
South Portland, ME 04106
(207) 799-0140

Bullard - Source List
Base Analysis - A-Weighted - Optimized

Source	PWL	SrcType	I or S	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Air Compressor Skid	103.1	Point		56.6	76.8	84.9	92.4	94.8	97.0	97.2	96.0	89.9
Ammonia Forwarding Pumps	98.1	Point		51.6	75.8	79.9	87.4	89.8	92.0	92.2	91.0	84.9
Ammonia Injection Skid	98.1	Point		51.6	75.8	79.9	87.4	89.8	92.0	92.2	91.0	84.9
Ammonia Injection Skid	98.1	Point		51.6	75.8	79.9	87.4	89.8	92.0	92.2	91.0	84.9
Ammonia Vaporizer	98.1	Point		51.6	75.8	79.9	87.4	89.8	92.0	92.2	91.0	84.9
Ammonia Vaporizer	98.1	Point		51.6	75.8	79.9	87.4	89.8	92.0	92.2	91.0	84.9
Auxiliary Transformer	89.4	Point		46.6	65.8	77.9	80.4	85.8	83.0	79.2	74.0	64.9
CTG Auxiliary Skid	103.1	Point		56.6	76.8	84.9	92.4	94.8	97.0	97.2	96.0	89.9
CTG Auxiliary Skid	103.1	Point		56.6	76.8	84.9	92.4	94.8	97.0	97.2	96.0	89.9
CTG Transformer 1 - 1	92.6	Area	22.91	49.8	69.0	81.1	83.6	89.0	86.2	82.4	77.2	68.1
CTG Transformer 1 - 2	91.6	Area	18.30	48.8	68.0	80.1	82.6	88.0	85.2	81.4	76.2	67.1
CTG Transformer 1 - 3	92.6	Area	22.92	49.8	69.0	81.1	83.6	89.0	86.2	82.4	77.2	68.1
CTG Transformer 1 - 4	91.6	Area	18.30	48.8	68.0	80.1	82.6	88.0	85.2	81.4	76.2	67.1
CTG Transformer 1 - Roof	92.1	Area	20.34	49.3	68.5	80.6	83.1	88.5	85.7	81.9	76.7	67.6
CTG Transformer 2 - 1	92.6	Area	22.91	49.8	69.0	81.1	83.6	89.0	86.2	82.4	77.2	68.1
CTG Transformer 2 - 2	91.6	Area	18.30	48.8	68.0	80.1	82.6	88.0	85.2	81.4	76.2	67.1
CTG Transformer 2 - 3	92.6	Area	22.92	49.8	69.0	81.1	83.6	89.0	86.2	82.4	77.2	68.1
CTG Transformer 2 - 4	91.6	Area	18.30	48.8	68.0	80.1	82.6	88.0	85.2	81.4	76.2	67.1
CTG Transformer 2 - Roof	92.1	Area	20.34	49.3	68.5	80.6	83.1	88.5	85.7	81.9	76.7	67.6
Circulating Water Pump	103.1	Point		56.6	76.8	84.9	92.4	94.8	97.0	97.2	96.0	89.9
Circulating Water Pump	103.1	Point		56.6	76.8	84.9	92.4	94.8	97.0	97.2	96.0	89.9
Cooling Tower Fan	104.5	Area	40.94	68.2	81.4	91.5	97.1	99.5	99.8	93.5	89.2	83.1
Cooling Tower Fan	104.5	Area	40.94	68.2	81.4	91.5	97.1	99.5	99.8	93.5	89.2	83.1
Cooling Tower Fan	104.5	Area	40.94	68.2	81.4	91.5	97.1	99.5	99.8	93.5	89.2	83.1
Cooling Tower Inlet - N	100.8	Area	66.61	56.3	75.7	81.8	87.7	88.6	93.5	94.4	95.7	92.5
Cooling Tower Inlet - S	100.8	Area	66.61	56.3	75.7	81.8	87.7	88.6	93.5	94.4	95.7	92.5
Cooling/Purge Air Fans	95.4	Point		8.6	60.8	84.9	84.4	89.8	92.0	83.2	78.0	77.9
Cooling/Purge Air Fans	95.4	Point		8.6	60.8	84.9	84.4	89.8	92.0	83.2	78.0	77.9
Cooling/Purge Air Fans	95.4	Point		8.6	60.8	84.9	84.4	89.8	92.0	83.2	78.0	77.9
Cooling/Purge Air Fans	95.4	Point		8.6	60.8	84.9	84.4	89.8	92.0	83.2	78.0	77.9
Demin Water Pumps	98.1	Point		51.6	75.8	79.9	87.4	89.8	92.0	92.2	91.0	84.9
Exhaust Diffuser 1 - 1	93.9	Area	34.16	71.6	83.8	85.9	87.4	87.8	86.0	82.2	78.0	70.9
Exhaust Diffuser 1 - 2	93.9	Area	34.27	71.6	83.8	85.9	87.4	87.8	86.0	82.2	78.0	70.9

Michael Theriault Acoustics, Inc.
15 Riverplace Drive, Suite 1538
South Portland, ME 04106
(207) 799-0140

Bullard - Source List
Base Analysis - A-Weighted - Optimized

Source	PWL	SrcType	l or S	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Exhaust Diffuser 2 - 1	93.9	Area	34.16	71.6	83.8	85.9	87.4	87.8	86.0	82.2	78.0	70.9
Exhaust Diffuser 2 - 2	93.9	Area	34.27	71.6	83.8	85.9	87.4	87.8	86.0	82.2	78.0	70.9
Firewater Pump Building - 1	79.0	Area	21.57	53.9	70.1	74.2	75.7	67.1	61.3	55.5	49.3	46.2
Firewater Pump Building - 2	81.0	Area	33.65	55.8	72.0	76.1	77.6	69.0	63.2	57.4	51.2	48.1
Firewater Pump Building - 3	79.0	Area	21.57	53.9	70.1	74.2	75.7	67.1	61.3	55.5	49.3	46.2
Firewater Pump Building - 4	80.9	Area	32.96	55.7	71.9	76.0	77.5	68.9	63.1	57.3	51.1	48.0
Firewater Pump Building - Roof	83.4	Area	59.46	58.3	74.5	78.6	80.1	71.5	65.7	59.9	53.7	50.6
Fuel Gas Compressor Box 1 - 1	83.8	Area	64.65	58.6	74.8	78.9	80.4	71.8	66.0	60.2	54.0	50.9
Fuel Gas Compressor Box 1 - 2	82.0	Area	43.17	56.9	73.1	77.2	78.7	70.1	64.3	58.5	52.3	49.2
Fuel Gas Compressor Box 1 - 3	83.9	Area	65.37	58.7	74.9	79.0	80.5	71.9	66.1	60.3	54.1	51.0
Fuel Gas Compressor Box 1 - 4	82.1	Area	43.52	56.9	73.1	77.2	78.7	70.1	64.3	58.5	52.3	49.2
Fuel Gas Compressor Box 1 - Roof	87.1	Area	137.27	61.9	78.1	82.2	83.7	75.1	69.3	63.5	57.3	54.2
Fuel Gas Compressor Box 3 - 1	83.9	Area	65.73	58.7	74.9	79.0	80.5	71.9	66.1	60.3	54.1	51.0
Fuel Gas Compressor Box 3 - 2	82.1	Area	43.88	56.9	73.1	77.2	78.7	70.1	64.3	58.5	52.3	49.2
Fuel Gas Compressor Box 3 - 3	83.8	Area	65.02	58.6	74.8	78.9	80.4	71.8	66.0	60.2	54.0	50.9
Fuel Gas Compressor Box 3 - 4	82.2	Area	44.25	57.0	73.2	77.3	78.8	70.2	64.4	58.6	52.4	49.3
Fuel Gas Compressor Box 3 - Roof	87.2	Area	140.33	62.0	78.2	82.3	83.8	75.2	69.4	63.6	57.4	54.3
Fuel Gas Metering Area	99.0	Point		-49.0	-35.8	-25.7	69.8	77.2	85.4	96.6	94.4	84.3
Gas Compressor Aftercooler	94.0	Area	20.71	60.6	73.8	82.9	87.4	87.8	89.0	84.2	78.0	69.9
Gas Compressor Aftercooler	94.0	Area	20.38	60.6	73.8	82.9	87.4	87.8	89.0	84.2	78.0	69.9
Generator 1 - 1	92.4	Area	58.08	64.6	76.8	86.9	82.4	82.8	87.0	84.2	75.0	72.9
Generator 1 - 2	92.4	Area	58.05	64.6	76.8	86.9	82.4	82.8	87.0	84.2	75.0	72.9
Generator 2 - 1	92.4	Area	58.08	64.6	76.8	86.9	82.4	82.8	87.0	84.2	75.0	72.9
Generator 2 - 2	92.4	Area	58.05	64.6	76.8	86.9	82.4	82.8	87.0	84.2	75.0	72.9
Generator Vent Fan	93.8	Point		71.6	76.8	91.9	87.4	77.8	78.0	78.2	76.0	74.9
Generator Vent Fan	93.8	Point		71.6	76.8	91.9	87.4	77.8	78.0	78.2	76.0	74.9
Generator Vent Fan Casing	88.3	Point		62.6	75.8	85.9	82.4	74.8	73.0	72.2	69.0	63.9
Generator Vent Fan Casing	88.3	Point		62.6	75.8	85.9	82.4	74.8	73.0	72.2	69.0	63.9
Intercooler Skid 1 - 1	74.9	Area	12.91	49.7	65.9	70.0	71.5	62.9	57.1	51.3	45.1	42.0
Intercooler Skid 1 - 2	80.5	Area	47.07	55.3	71.5	75.6	77.1	68.5	62.7	56.9	50.7	47.6
Intercooler Skid 1 - 3	74.9	Area	12.91	49.7	65.9	70.0	71.5	62.9	57.1	51.3	45.1	42.0
Intercooler Skid 1 - 4	80.5	Area	47.15	55.3	71.5	75.6	77.1	68.5	62.7	56.9	50.7	47.6
Intercooler Skid 1 - Roof	80.3	Area	45.07	55.1	71.3	75.4	76.9	68.3	62.5	56.7	50.5	47.4

Bullard - Source List
Base Analysis - A-Weighted - Optimized

Source	PWL	SrcType	l or S	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Intercooler Skid 2 - 1	74.9	Area	12.91	49.7	65.9	70.0	71.5	62.9	57.1	51.3	45.1	42.0
Intercooler Skid 2 - 2	80.5	Area	47.07	55.3	71.5	75.6	77.1	68.5	62.7	56.9	50.7	47.6
Intercooler Skid 2 - 3	74.9	Area	12.91	49.7	65.9	70.0	71.5	62.9	57.1	51.3	45.1	42.0
Intercooler Skid 2 - 4	80.5	Area	47.15	55.3	71.5	75.6	77.1	68.5	62.7	56.9	50.7	47.6
Intercooler Skid 2 - Roof	80.3	Area	45.07	55.1	71.3	75.4	76.9	68.3	62.5	56.7	50.5	47.4
Raw Water Pumps	98.1	Point		51.6	75.8	79.9	87.4	89.8	92.0	92.2	91.0	84.9
Rooftop Ventilation Fan	87.8	Point		55.6	68.8	74.9	78.4	80.8	82.0	81.2	77.0	74.9
Rooftop Ventilation Fan	87.8	Point		55.6	68.8	74.9	78.4	80.8	82.0	81.2	77.0	74.9
Rooftop Ventilation Fan	87.8	Point		55.6	68.8	74.9	78.4	80.8	82.0	81.2	77.0	74.9
Rooftop Ventilation Fan	87.8	Point		55.6	68.8	74.9	78.4	80.8	82.0	81.2	77.0	74.9
Rooftop Ventilation Fan	87.8	Point		55.6	68.8	74.9	78.4	80.8	82.0	81.2	77.0	74.9
SCR - Side 1	96.9	Area	165.61	73.6	74.8	83.9	92.4	92.8	87.0	85.2	82.0	60.9
SCR - Side 1	96.9	Area	165.61	73.6	74.8	83.9	92.4	92.8	87.0	85.2	82.0	60.9
SCR - Side 2	96.9	Area	165.67	73.6	74.8	83.9	92.4	92.8	87.0	85.2	82.0	60.9
SCR - Side 2	96.9	Area	165.67	73.6	74.8	83.9	92.4	92.8	87.0	85.2	82.0	60.9
Stack Exhaust	115.7	Point		87.6	95.8	102.9	105.4	104.8	102.0	105.2	113.0	104.9
Stack Exhaust	115.7	Point		87.6	95.8	102.9	105.4	104.8	102.0	105.2	113.0	104.9
Turbine 1 - 1	94.6	Area	176.71	68.6	78.8	84.9	86.4	87.8	84.0	86.2	88.0	81.9
Turbine 1 - 2	94.6	Area	176.72	68.6	78.8	84.9	86.4	87.8	84.0	86.2	88.0	81.9
Turbine 2 - 1	94.6	Area	176.71	68.6	78.8	84.9	86.4	87.8	84.0	86.2	88.0	81.9
Turbine 2 - 2	94.6	Area	176.72	68.6	78.8	84.9	86.4	87.8	84.0	86.2	88.0	81.9
Turbine Air Inlet	94.3	Area	85.66	68.6	79.8	84.9	82.4	67.8	66.0	78.2	91.0	88.9
Turbine Air Inlet	94.3	Area	85.66	68.6	79.8	84.9	82.4	67.8	66.0	78.2	91.0	88.9
Turbine Vent Fan Casing	95.5	Point		61.6	71.8	82.9	90.4	87.8	89.0	85.2	86.0	78.9
Turbine Vent Fan Casing	95.5	Point		61.6	71.8	82.9	90.4	87.8	89.0	85.2	86.0	78.9
Turbine Vent Fan Discharge	93.1	Point		63.6	78.8	81.9	87.4	80.8	85.0	87.2	84.0	74.9
Turbine Vent Fan Discharge	93.1	Point		63.6	78.8	81.9	87.4	80.8	85.0	87.2	84.0	74.9
WTB - Facade 1	81.0	Area	52.59	55.8	72.0	76.1	77.6	69.0	63.2	57.4	51.2	48.1
WTB - Facade 2	86.4	Area	183.43	61.2	77.4	81.5	83.0	74.4	68.6	62.8	56.6	53.5
WTB - Facade 3	84.0	Area	106.24	58.9	75.1	79.2	80.7	72.1	66.3	60.5	54.3	51.2
WTB - Facade 4	88.1	Area	270.97	62.9	79.1	83.2	84.7	76.1	70.3	64.5	58.3	55.2
WTB - Facade 5	85.8	Area	158.94	60.6	76.8	80.9	82.4	73.8	68.0	62.2	56.0	52.9
WTB - Facade 6	83.1	Area	84.60	57.9	74.1	78.2	79.7	71.1	65.3	59.5	53.3	50.2

Bullard - Source List
Base Analysis - Linear - Optimized

Source	PWL	SrcType	I or S	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Air Compressor Skid	108.4	Point		96.0	103.0	101.0	101.0	98.0	97.0	96.0	95.0	91.0
Ammonia Forwarding Pumps	105.0	Point		91.0	102.0	96.0	96.0	93.0	92.0	91.0	90.0	86.0
Ammonia Injection Skid	105.0	Point		91.0	102.0	96.0	96.0	93.0	92.0	91.0	90.0	86.0
Ammonia Injection Skid	105.0	Point		91.0	102.0	96.0	96.0	93.0	92.0	91.0	90.0	86.0
Ammonia Vaporizer	105.0	Point		91.0	102.0	96.0	96.0	93.0	92.0	91.0	90.0	86.0
Ammonia Vaporizer	105.0	Point		91.0	102.0	96.0	96.0	93.0	92.0	91.0	90.0	86.0
Auxiliary Transformer	98.0	Point		86.0	92.0	94.0	89.0	89.0	83.0	78.0	73.0	66.0
CTG Auxiliary Skid	108.4	Point		96.0	103.0	101.0	101.0	98.0	97.0	96.0	95.0	91.0
CTG Auxiliary Skid	108.4	Point		96.0	103.0	101.0	101.0	98.0	97.0	96.0	95.0	91.0
CTG Transformer 1 - 1	101.3	Area	22.91	89.2	95.2	97.2	92.2	92.2	86.2	81.2	76.2	69.2
CTG Transformer 1 - 2	100.3	Area	18.30	88.2	94.2	96.2	91.2	91.2	85.2	80.2	75.2	68.2
CTG Transformer 1 - 3	101.3	Area	22.92	89.2	95.2	97.2	92.2	92.2	86.2	81.2	76.2	69.2
CTG Transformer 1 - 4	100.3	Area	18.30	88.2	94.2	96.2	91.2	91.2	85.2	80.2	75.2	68.2
CTG Transformer 1 - Roof	100.7	Area	20.34	88.7	94.7	96.7	91.7	91.7	85.7	80.7	75.7	68.7
CTG Transformer 2 - 1	101.3	Area	22.91	89.2	95.2	97.2	92.2	92.2	86.2	81.2	76.2	69.2
CTG Transformer 2 - 2	100.3	Area	18.30	88.2	94.2	96.2	91.2	91.2	85.2	80.2	75.2	68.2
CTG Transformer 2 - 3	101.3	Area	22.92	89.2	95.2	97.2	92.2	92.2	86.2	81.2	76.2	69.2
CTG Transformer 2 - 4	100.3	Area	18.30	88.2	94.2	96.2	91.2	91.2	85.2	80.2	75.2	68.2
CTG Transformer 2 - Roof	100.7	Area	20.34	88.7	94.7	96.7	91.7	91.7	85.7	80.7	75.7	68.7
Circulating Water Pump	108.4	Point		96.0	103.0	101.0	101.0	98.0	97.0	96.0	95.0	91.0
Circulating Water Pump	108.4	Point		96.0	103.0	101.0	101.0	98.0	97.0	96.0	95.0	91.0
Cooling Tower Fan	113.8	Area	40.94	107.6	107.6	107.6	105.7	102.7	99.8	92.3	88.2	84.2
Cooling Tower Fan	113.8	Area	40.94	107.6	107.6	107.6	105.7	102.7	99.8	92.3	88.2	84.2
Cooling Tower Fan	113.8	Area	40.94	107.6	107.6	107.6	105.7	102.7	99.8	92.3	88.2	84.2
Cooling Tower Inlet - N	106.1	Area	66.61	95.7	101.9	97.9	96.3	91.8	93.5	93.2	94.7	93.6
Cooling Tower Inlet - S	106.1	Area	66.61	95.7	101.9	97.9	96.3	91.8	93.5	93.2	94.7	93.6
Cooling/Purge Air Fans	102.8	Point		48.0	87.0	101.0	93.0	93.0	92.0	82.0	77.0	79.0
Cooling/Purge Air Fans	102.8	Point		48.0	87.0	101.0	93.0	93.0	92.0	82.0	77.0	79.0
Cooling/Purge Air Fans	102.8	Point		48.0	87.0	101.0	93.0	93.0	92.0	82.0	77.0	79.0
Cooling/Purge Air Fans	102.8	Point		48.0	87.0	101.0	93.0	93.0	92.0	82.0	77.0	79.0
Demin Water Pumps	105.0	Point		91.0	102.0	96.0	96.0	93.0	92.0	91.0	90.0	86.0
Exhaust Diffuser 1 - 1	113.9	Area	34.16	111.0	110.0	102.0	96.0	91.0	86.0	81.0	77.0	72.0
Exhaust Diffuser 1 - 2	113.9	Area	34.27	111.0	110.0	102.0	96.0	91.0	86.0	81.0	77.0	72.0

Bullard - Source List
Base Analysis - Linear - Optimized

Source	PWL	SrcType	l or S	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Exhaust Diffuser 2 - 1	113.9	Area	34.16	111.0	110.0	102.0	96.0	91.0	86.0	81.0	77.0	72.0
Exhaust Diffuser 2 - 2	113.9	Area	34.27	111.0	110.0	102.0	96.0	91.0	86.0	81.0	77.0	72.0
Firewater Pump Building - 1	98.9	Area	21.57	93.3	96.3	90.3	84.3	70.3	61.3	54.3	48.3	47.3
Firewater Pump Building - 2	100.8	Area	33.65	95.2	98.2	92.2	86.2	72.2	63.2	56.2	50.2	49.2
Firewater Pump Building - 3	98.9	Area	21.57	93.3	96.3	90.3	84.3	70.3	61.3	54.3	48.3	47.3
Firewater Pump Building - 4	100.7	Area	32.96	95.1	98.1	92.1	86.1	72.1	63.1	56.1	50.1	49.1
Firewater Pump Building - Roof	103.3	Area	59.46	97.7	100.7	94.7	88.7	74.7	65.7	58.7	52.7	51.7
Fuel Gas Compressor Box 1 - 1	103.6	Area	64.65	98.0	101.0	95.0	89.0	75.0	66.0	59.0	53.0	52.0
Fuel Gas Compressor Box 1 - 2	101.9	Area	43.17	96.3	99.3	93.3	87.3	73.3	64.3	57.3	51.3	50.3
Fuel Gas Compressor Box 1 - 3	103.7	Area	65.37	98.1	101.1	95.1	89.1	75.1	66.1	59.1	53.1	52.1
Fuel Gas Compressor Box 1 - 4	101.9	Area	43.52	96.3	99.3	93.3	87.3	73.3	64.3	57.3	51.3	50.3
Fuel Gas Compressor Box 1 - Roof	106.9	Area	137.27	101.3	104.3	98.3	92.3	78.3	69.3	62.3	56.3	55.3
Fuel Gas Compressor Box 3 - 1	103.7	Area	65.73	98.1	101.1	95.1	89.1	75.1	66.1	59.1	53.1	52.1
Fuel Gas Compressor Box 3 - 2	101.9	Area	43.88	96.3	99.3	93.3	87.3	73.3	64.3	57.3	51.3	50.3
Fuel Gas Compressor Box 3 - 3	103.6	Area	65.02	98.0	101.0	95.0	89.0	75.0	66.0	59.0	53.0	52.0
Fuel Gas Compressor Box 3 - 4	102.0	Area	44.25	96.4	99.4	93.4	87.4	73.4	64.4	57.4	51.4	50.4
Fuel Gas Compressor Box 3 - Roof	107.0	Area	140.33	101.4	104.4	98.4	92.4	78.4	69.4	62.4	56.4	55.4
Fuel Gas Metering Area	98.1	Point		-9.6	-9.6	-9.6	78.4	80.4	85.4	95.4	93.4	85.4
Gas Compressor Aftercooler	105.3	Area	20.71	100.0	100.0	99.0	96.0	91.0	89.0	83.0	77.0	71.0
Gas Compressor Aftercooler	105.3	Area	20.38	100.0	100.0	99.0	96.0	91.0	89.0	83.0	77.0	71.0
Generator 1 - 1	108.3	Area	58.08	104.0	103.0	103.0	91.0	86.0	87.0	83.0	74.0	74.0
Generator 1 - 2	108.3	Area	58.05	104.0	103.0	103.0	91.0	86.0	87.0	83.0	74.0	74.0
Generator 2 - 1	108.3	Area	58.08	104.0	103.0	103.0	91.0	86.0	87.0	83.0	74.0	74.0
Generator 2 - 2	108.3	Area	58.05	104.0	103.0	103.0	91.0	86.0	87.0	83.0	74.0	74.0
Generator Vent Fan	113.3	Point		111.0	103.0	108.0	96.0	81.0	78.0	77.0	75.0	76.0
Generator Vent Fan	113.3	Point		111.0	103.0	108.0	96.0	81.0	78.0	77.0	75.0	76.0
Generator Vent Fan Casing	106.9	Point		102.0	102.0	102.0	91.0	78.0	73.0	71.0	68.0	65.0
Generator Vent Fan Casing	106.9	Point		102.0	102.0	102.0	91.0	78.0	73.0	71.0	68.0	65.0
Intercooler Skid 1 - 1	94.7	Area	12.91	89.1	92.1	86.1	80.1	66.1	57.1	50.1	44.1	43.1
Intercooler Skid 1 - 2	100.3	Area	47.07	94.7	97.7	91.7	85.7	71.7	62.7	55.7	49.7	48.7
Intercooler Skid 1 - 3	94.7	Area	12.91	89.1	92.1	86.1	80.1	66.1	57.1	50.1	44.1	43.1
Intercooler Skid 1 - 4	100.3	Area	47.15	94.7	97.7	91.7	85.7	71.7	62.7	55.7	49.7	48.7
Intercooler Skid 1 - Roof	100.1	Area	45.07	94.5	97.5	91.5	85.5	71.5	62.5	55.5	49.5	48.5

Bullard - Source List
Base Analysis - Linear - Optimized

Source	PWL	SrcType	l or S	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Intercooler Skid 2 - 1	94.7	Area	12.91	89.1	92.1	86.1	80.1	66.1	57.1	50.1	44.1	43.1
Intercooler Skid 2 - 2	100.3	Area	47.07	94.7	97.7	91.7	85.7	71.7	62.7	55.7	49.7	48.7
Intercooler Skid 2 - 3	94.7	Area	12.91	89.1	92.1	86.1	80.1	66.1	57.1	50.1	44.1	43.1
Intercooler Skid 2 - 4	100.3	Area	47.15	94.7	97.7	91.7	85.7	71.7	62.7	55.7	49.7	48.7
Intercooler Skid 2 - Roof	100.1	Area	45.07	94.5	97.5	91.5	85.5	71.5	62.5	55.5	49.5	48.5
Raw Water Pumps	105.0	Point		91.0	102.0	96.0	96.0	93.0	92.0	91.0	90.0	86.0
Rooftop Ventilation Fan	99.4	Point		95.0	95.0	91.0	87.0	84.0	82.0	80.0	76.0	76.0
Rooftop Ventilation Fan	99.4	Point		95.0	95.0	91.0	87.0	84.0	82.0	80.0	76.0	76.0
Rooftop Ventilation Fan	99.4	Point		95.0	95.0	91.0	87.0	84.0	82.0	80.0	76.0	76.0
Rooftop Ventilation Fan	99.4	Point		95.0	95.0	91.0	87.0	84.0	82.0	80.0	76.0	76.0
Rooftop Ventilation Fan	99.4	Point		95.0	95.0	91.0	87.0	84.0	82.0	80.0	76.0	76.0
SCR - Side 1	113.8	Area	165.61	113.0	101.0	100.0	101.0	96.0	87.0	84.0	81.0	62.0
SCR - Side 1	113.8	Area	165.61	113.0	101.0	100.0	101.0	96.0	87.0	84.0	81.0	62.0
SCR - Side 2	113.8	Area	165.67	113.0	101.0	100.0	101.0	96.0	87.0	84.0	81.0	62.0
SCR - Side 2	113.8	Area	165.67	113.0	101.0	100.0	101.0	96.0	87.0	84.0	81.0	62.0
Stack Exhaust	129.0	Point		127.0	122.0	119.0	114.0	108.0	102.0	104.0	112.0	106.0
Stack Exhaust	129.0	Point		127.0	122.0	119.0	114.0	108.0	102.0	104.0	112.0	106.0
Turbine 1 - 1	110.5	Area	176.71	108.0	105.0	101.0	95.0	91.0	84.0	85.0	87.0	83.0
Turbine 1 - 2	110.5	Area	176.72	108.0	105.0	101.0	95.0	91.0	84.0	85.0	87.0	83.0
Turbine 2 - 1	110.5	Area	176.71	108.0	105.0	101.0	95.0	91.0	84.0	85.0	87.0	83.0
Turbine 2 - 2	110.5	Area	176.72	108.0	105.0	101.0	95.0	91.0	84.0	85.0	87.0	83.0
Turbine Air Inlet	110.7	Area	85.66	108.0	106.0	101.0	91.0	71.0	66.0	77.0	90.0	90.0
Turbine Air Inlet	110.7	Area	85.66	108.0	106.0	101.0	91.0	71.0	66.0	77.0	90.0	90.0
Turbine Vent Fan Casing	105.7	Point		101.0	98.0	99.0	99.0	91.0	89.0	84.0	85.0	80.0
Turbine Vent Fan Casing	105.7	Point		101.0	98.0	99.0	99.0	91.0	89.0	84.0	85.0	80.0
Turbine Vent Fan Discharge	108.0	Point		103.0	105.0	98.0	96.0	84.0	85.0	86.0	83.0	76.0
Turbine Vent Fan Discharge	108.0	Point		103.0	105.0	98.0	96.0	84.0	85.0	86.0	83.0	76.0
WTB - Facade 1	100.8	Area	52.59	95.2	98.2	92.2	86.2	72.2	63.2	56.2	50.2	49.2
WTB - Facade 2	106.2	Area	183.43	100.6	103.6	97.6	91.6	77.6	68.6	61.6	55.6	54.6
WTB - Facade 3	103.9	Area	106.24	98.3	101.3	95.3	89.3	75.3	66.3	59.3	53.3	52.3
WTB - Facade 4	107.9	Area	270.97	102.3	105.3	99.3	93.3	79.3	70.3	63.3	57.3	56.3
WTB - Facade 5	105.6	Area	158.94	100.0	103.0	97.0	91.0	77.0	68.0	61.0	55.0	54.0
WTB - Facade 6	102.9	Area	84.60	97.3	100.3	94.3	88.3	74.3	65.3	58.3	52.3	51.3

Bullard - Source List
Base Analysis - Linear - Optimized

Source	PWL	SrcType	l or S	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
WTB - Roof	116.2	Area	1838.88	110.6	113.6	107.6	101.6	87.6	78.6	71.6	65.6	64.6
Wastewater Forwarding Pumps	105.0	Point		91.0	102.0	96.0	96.0	93.0	92.0	91.0	90.0	86.0

Bullard - Source List
Base Analysis - A-Weighted - Optimized

Source	PWL	SrcType	I or S	31 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
WTB - Roof	96.4	Area	1838.88	71.2	87.4	91.5	93.0	84.4	78.6	72.8	66.6	63.5
Wastewater Forwarding Pumps	98.1	Point		51.6	75.8	79.9	87.4	89.8	92.0	92.2	91.0	84.9

Bullard - Mean Propogation
Base Analysis - A-Weighted - Optimized

Source	PWL dB(A)	PWL/unit dB(A)	Non-Sphere dB	Distance m	Spreading dB	Ground Effct. dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB(A)	SPL dB(A)	Awind dB
S3/L3 SPL 50.5 dB(A)												
Air Compressor Skid	103.1	103.1	0.0	373.64	62.4	-3.6	17.7	1.2	0.0		25.3	
Ammonia Forwarding Pumps	98.1	98.1	0.0	293.48	60.3	-3.2	4.5	2.5	0.0	35.1	37.6	
Ammonia Injection Skid	98.1	98.1	0.0	325.52	61.2	-3.4	8.4	1.3	0.0	26.5	32.0	
Ammonia Injection Skid	98.1	98.1	0.0	381.41	62.6	-3.6	12.1	1.3	0.0	20.9	26.9	
Ammonia Vaporizer	98.1	98.1	0.0	322.77	61.2	-3.4	0.0	2.8	0.0	35.8	39.7	
Ammonia Vaporizer	98.1	98.1	0.0	378.01	62.5	-3.6	18.0	1.1	0.0		20.1	
Auxiliary Transformer	89.4	89.4	0.0	385.41	62.7	-2.5	17.0	0.8	0.0		11.4	
CTG Auxiliary Skid	103.1	103.1	0.0	343.64	61.7	-3.5	21.6	1.2	0.0		22.0	
CTG Auxiliary Skid	103.1	103.1	0.0	399.35	63.0	-3.7	23.3	1.8	0.0		18.7	
CTG Transformer 1 - 1	92.6	79.0	3.0	329.31	61.3	-2.9	0.0	1.3	0.0	22.9	36.1	
CTG Transformer 1 - 2	91.6	79.0	3.0	331.86	61.4	-3.0	12.9	0.7	0.0	20.9	24.8	
CTG Transformer 1 - 3	92.6	79.0	3.0	329.34	61.3	-2.9	4.4	1.2	0.0	5.3	31.5	
CTG Transformer 1 - 4	91.6	79.0	3.0	326.78	61.3	-2.7	0.0	1.3	0.0	13.1	34.8	
CTG Transformer 1 - Roof	92.1	79.0	0.0	328.74	61.3	-2.2	7.0	1.1	0.0	23.4	27.2	
CTG Transformer 2 - 1	92.6	79.0	3.0	385.38	62.7	-3.1	4.7	1.4	0.0		29.8	
CTG Transformer 2 - 2	91.6	79.0	3.0	387.89	62.8	-3.0	18.0	0.6	0.0		16.2	
CTG Transformer 2 - 3	92.6	79.0	3.0	385.33	62.7	-3.1	14.3	0.8	0.0		20.8	
CTG Transformer 2 - 4	91.6	79.0	3.0	382.80	62.7	-3.1	14.0	0.9	0.0		20.2	
CTG Transformer 2 - Roof	92.1	79.0	0.0	385.58	62.7	-2.5	15.2	0.8	0.0		15.9	
Circulating Water Pump	103.1	103.1	0.0	435.24	63.8	-3.2	9.0	2.2	0.0		31.3	
Circulating Water Pump	103.1	103.1	0.0	432.30	63.7	-3.2	7.9	2.6	0.0		32.1	
Cooling Tower Fan	104.5	88.4	0.0	437.50	63.8	-1.2	0.0	1.7	8.1		32.2	
Cooling Tower Fan	104.5	88.4	0.0	439.95	63.9	-1.2	0.0	1.7	8.0		32.2	
Cooling Tower Fan	104.5	88.4	0.0	442.53	63.9	-1.2	0.0	1.7	8.0		32.1	
Cooling Tower Inlet - N	100.8	82.6	3.0	444.98	64.0	-3.9	24.8	2.7	0.0		16.2	
Cooling Tower Inlet - S	100.8	82.6	3.0	434.49	63.8	-3.9	6.7	4.3	0.0	19.0	33.1	
Cooling/Purge Air Fans	95.4	95.4	0.0	333.19	61.4	-3.2	0.0	1.4	0.0	34.6	38.3	
Cooling/Purge Air Fans	95.4	95.4	0.0	332.41	61.4	-3.2	4.8	1.0	0.0	25.1	32.3	
Cooling/Purge Air Fans	95.4	95.4	0.0	388.64	62.8	-3.4	9.1	0.9	0.0	21.5	27.3	
Cooling/Purge Air Fans	95.4	95.4	0.0	389.17	62.8	-3.4	10.7	1.0	0.0	15.9	24.9	
Demin Water Pumps	98.1	98.1	0.0	465.43	64.3	-3.8	17.6	1.5	0.0		18.5	

Bullard - Mean Propogation
Base Analysis - A-Weighted - Optimized

Source	PWL dB(A)	PWL/unit dB(A)	Non-Sphere dB	Distance m	Spreading dB	Ground Effct. dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB(A)	SPL dB(A)	Awind dB
Exhaust Diffuser 1 - 1	93.9	78.5	3.0	333.01	61.4	-2.5	7.3	0.4	0.0	-2.9	30.2	
Exhaust Diffuser 1 - 2	93.9	78.5	3.0	333.35	61.5	-2.5	9.9	0.3	0.0	14.1	27.9	
Exhaust Diffuser 2 - 1	93.9	78.5	3.0	389.12	62.8	-2.8	12.4	0.3	0.0		24.2	
Exhaust Diffuser 2 - 2	93.9	78.5	3.0	389.41	62.8	-2.8	16.5	0.2	0.0		20.1	
Firewater Pump Building - 1	79.0	65.7	3.0	511.17	65.2	-2.8	9.8	0.3	0.0		9.6	
Firewater Pump Building - 2	81.0	65.7	3.0	514.02	65.2	-2.8	15.1	0.3	0.0		6.2	
Firewater Pump Building - 3	79.0	65.7	3.0	510.65	65.2	-2.8	6.6	0.3	0.0		12.8	
Firewater Pump Building - 4	80.9	65.7	3.0	507.77	65.1	-2.8	6.2	0.3	0.0		15.0	
Firewater Pump Building - Roof	83.4	65.7	0.0	510.90	65.2	-2.4	8.0	0.4	0.0		12.3	
Fuel Gas Compressor Box 1 - 1	83.8	65.7	3.0	436.72	63.8	-2.6	4.0	0.3	0.0	14.7	22.1	
Fuel Gas Compressor Box 1 - 2	82.0	65.7	3.0	443.98	63.9	-2.6	13.7	0.2	0.0	10.7	13.3	
Fuel Gas Compressor Box 1 - 3	83.9	65.7	3.0	436.87	63.8	-2.6	7.9	0.2	0.0		17.5	
Fuel Gas Compressor Box 1 - 4	82.1	65.7	3.0	429.64	63.7	-2.6	5.5	0.3	0.0	1.6	18.3	
Fuel Gas Compressor Box 1 -	87.1	65.7	0.0	437.03	63.8	-2.1	7.2	0.4	0.0	12.6	18.9	
Fuel Gas Compressor Box 3 - 1	83.9	65.7	3.0	438.61	63.8	-2.6	7.7	0.3	0.0		17.7	
Fuel Gas Compressor Box 3 - 2	82.1	65.7	3.0	446.29	64.0	-2.6	14.5	0.2	0.0		9.0	
Fuel Gas Compressor Box 3 - 3	83.8	65.7	3.0	439.53	63.9	-2.6	13.4	0.2	0.0	23.2	23.5	
Fuel Gas Compressor Box 3 - 4	82.2	65.7	3.0	431.90	63.7	-2.6	9.2	0.3	0.0		14.6	
Fuel Gas Compressor Box 3 -	87.2	65.7	0.0	439.30	63.8	-2.1	7.4	0.4	0.0		17.7	
Fuel Gas Metering Area	99.0	99.0	0.0	548.89	65.8	-4.5	22.0	5.4	0.0		10.3	
Gas Compressor Aftercooler	94.0	80.8	0.0	441.09	63.9	-3.1	6.9	1.0	6.4		18.9	
Gas Compressor Aftercooler	94.0	80.9	0.0	443.96	63.9	-3.1	10.6	1.0	6.2	22.7	23.4	
Generator 1 - 1	92.4	74.7	3.0	339.66	61.6	-2.8	12.2	0.3	0.0	20.9	25.7	
Generator 1 - 2	92.4	74.7	3.0	335.35	61.5	-2.8	1.2	1.2	0.0	4.0	34.2	
Generator 2 - 1	92.4	74.7	3.0	395.60	62.9	-3.0	16.9	0.4	0.0	17.3	20.7	
Generator 2 - 2	92.4	74.7	3.0	391.29	62.8	-3.0	6.4	0.7	0.0	6.4	28.4	
Generator Vent Fan	93.8	93.8	0.0	337.67	61.6	-0.8	0.1	0.5	0.0		32.4	
Generator Vent Fan	93.8	93.8	0.0	393.40	62.9	-1.0	5.4	0.8	0.0		25.8	
Generator Vent Fan Casing	88.3	88.3	0.0	337.55	61.6	-0.8	0.1	0.4	0.0		27.0	
Generator Vent Fan Casing	88.3	88.3	0.0	393.45	62.9	-1.1	5.6	0.6	0.0		20.4	
Intercooler Skid 1 - 1	74.9	63.8	3.0	352.57	61.9	-2.5	8.6	0.2	0.0	2.2	10.4	
Intercooler Skid 1 - 2	80.5	63.8	3.0	354.85	62.0	-2.5	13.1	0.1	0.0	-1.5	11.0	

Bullard - Mean Propogation
Base Analysis - A-Weighted - Optimized

Source	PWL dB(A)	PWL/unit dB(A)	Non-Sphere dB	Distance m	Spreading dB	Ground Effct. dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB(A)	SPL dB(A)	Awind dB
Intercooler Skid 1 - 3	74.9	63.8	3.0	353.72	62.0	-2.5	11.9	0.2	0.0		6.3	
Intercooler Skid 1 - 4	80.5	63.8	3.0	351.31	61.9	-2.5	10.3	0.2	0.0	-6.7	13.7	
Intercooler Skid 1 - Roof	80.3	63.8	0.0	353.03	61.9	-2.0	11.5	0.2	0.0	-4.2	8.9	
Intercooler Skid 2 - 1	74.9	63.8	3.0	408.45	63.2	-2.6	9.2	0.2	0.0		7.8	
Intercooler Skid 2 - 2	80.5	63.8	3.0	410.73	63.3	-2.6	14.5	0.2	0.0		8.2	
Intercooler Skid 2 - 3	74.9	63.8	3.0	409.45	63.2	-2.6	14.5	0.2	0.0		2.5	
Intercooler Skid 2 - 4	80.5	63.8	3.0	407.18	63.2	-2.6	12.4	0.2	0.0		10.3	
Intercooler Skid 2 - Roof	80.3	63.8	0.0	408.97	63.2	-2.2	14.4	0.3	0.0		4.7	
Raw Water Pumps	98.1	98.1	0.0	464.78	64.3	-3.8	13.9	1.8	0.0		21.8	
Rooftop Ventilation Fan	87.8	87.8	0.0	504.76	65.1	-2.6	2.2	2.6	0.0		20.5	
Rooftop Ventilation Fan	87.8	87.8	0.0	504.76	65.1	-3.1	7.6	1.9	0.0		16.4	
Rooftop Ventilation Fan	87.8	87.8	0.0	480.74	64.6	-3.0	15.8	1.1	0.0		9.2	
Rooftop Ventilation Fan	87.8	87.8	0.0	488.22	64.8	-3.1	12.7	1.2	0.0		12.2	
Rooftop Ventilation Fan	87.8	87.8	0.0	515.92	65.2	-3.1	11.4	1.3	0.0	-48.7	13.0	
SCR - Side 1	96.9	74.7	3.0	324.62	61.2	-1.2	4.6	1.0	0.0	28.8	35.4	
SCR - Side 1	96.9	74.7	3.0	380.75	62.6	-1.5	8.6	1.0	0.0		29.3	
SCR - Side 2	96.9	74.7	3.0	325.10	61.2	-1.3	6.7	0.8	0.0	26.6	33.5	
SCR - Side 2	96.9	74.7	3.0	381.18	62.6	-1.5	16.6	0.6	0.0		21.6	
Stack Exhaust	115.7	115.7	0.0	317.48	61.0	-1.6	0.0	4.9	7.7		43.6	
Stack Exhaust	115.7	115.7	0.0	373.13	62.4	-1.6	0.0	5.4	7.5		41.9	
Turbine 1 - 1	94.6	72.1	3.0	341.25	61.7	-2.8	17.2	0.6	0.0	9.4	21.2	
Turbine 1 - 2	94.6	72.1	3.0	336.33	61.5	-2.7	1.5	2.5	0.0	-0.2	34.9	
Turbine 2 - 1	94.6	72.1	3.0	397.18	63.0	-3.0	19.6	0.7	0.0	15.0	19.3	
Turbine 2 - 2	94.6	72.1	3.0	392.26	62.9	-3.0	9.7	1.1	0.0		26.9	
Turbine Air Inlet	94.3	75.0	0.0	338.16	61.6	-1.7	15.4	1.6	0.0	-8.2	17.5	
Turbine Air Inlet	94.3	75.0	0.0	397.03	63.0	-1.8	19.6	2.7	0.0		10.7	
Turbine Vent Fan Casing	95.5	95.5	0.0	338.85	61.6	-1.0	0.0	1.9	0.0		33.0	
Turbine Vent Fan Casing	95.5	95.5	0.0	394.79	62.9	-1.4	5.1	2.4	0.0		26.4	
Turbine Vent Fan Discharge	93.1	93.1	0.0	339.13	61.6	-1.3	0.1	2.2	0.0		30.5	
Turbine Vent Fan Discharge	93.1	93.1	0.0	395.07	62.9	-1.7	5.3	2.7	0.0		23.8	
WTB - Facade 1	81.0	63.8	3.0	491.28	64.8	-2.7	16.5	0.3	0.0	-56.7	5.1	
WTB - Facade 2	86.4	63.8	3.0	522.62	65.4	-2.6	10.9	0.3	0.0	-54.2	15.5	

Bullard - Mean Propogation
Base Analysis - A-Weighted - Optimized

Source	PWL dB(A)	PWL/unit dB(A)	Non-Sphere dB	Distance m	Spreading dB	Ground Effct. dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB(A)	SPL dB(A)	Awind dB
WTB - Facade 3	84.0	63.8	3.0	535.84	65.6	-2.7	16.0	0.3	0.0		7.9	
WTB - Facade 4	88.1	63.8	3.0	502.84	65.0	-2.7	9.6	0.2	0.0	23.1	24.5	
WTB - Facade 5	85.8	63.8	3.0	472.06	64.5	-2.6	8.7	0.3	0.0	15.2	19.8	
WTB - Facade 6	83.1	63.8	3.0	480.87	64.6	-2.7	5.7	0.3	0.0	-34.8	18.0	
WTB - Roof	96.4	63.8	0.0	499.61	65.0	-2.3	8.8	0.4	0.0	-29.4	24.5	
Wastewater Forwarding Pumps	98.1	98.1	0.0	463.18	64.3	-3.8	20.2	1.5	0.0	31.4	31.5	

Bullard - Source Contribution
Base Analysis - A-Weighted - Optimized

Group	Lr dB(A)
Property Line East SPL 58.7 dB(A)	
Water Treatment Building	54.7
Fuel Gas Metering Area	52.1
Air Compressor Skid	50.0
Stack Exhausts	47.2
Circulating Water Pumps	43.8
Cooling Tower Fans	42.1
Wastewater Forwarding Pumps	42.0
Ammonia Forwarding Pumps	41.4
Rooftop Ventilation Fans	41.2
Turbine Ventilation Fans	41.1
Firewater Pump Building	38.7
Turbine Air Inlets	38.2
SCRs	37.9
LMS100	37.4
Fuel Gas Compressors	37.2
Gas Compressor Aftercoolers	36.0
Demin Water Pumps	33.9
Cooling Tower Inlets	32.7
CTG Auxiliary Skids	32.1
Raw Water Pumps	31.8
Step Up Transformers	29.4
Cooing/Purge Air Fans	24.9
Intercooler Skids	24.8
Ammonia Vaporizer	24.5
Ammonia Injection Skids	22.2
Auxiliary Transformer	18.6
Property Line North SPL 65.9 dB(A)	
Ammonia Forwarding Pumps	62.8
Stack Exhausts	59.9
SCRs	54.9
Ammonia Vaporizer	53.1

Bullard - Source Contribution
Base Analysis - A-Weighted - Optimized

Group	Lr dB(A)
LMS100	52.0
Cooing/Purge Air Fans	51.4
Turbine Ventilation Fans	51.3
CTG Auxiliary Skids	45.0
Step Up Transformers	41.1
Turbine Air Inlets	38.6
Cooling Tower Fans	38.1
Ammonia Injection Skids	35.6
Water Treatment Building	34.5
Air Compressor Skid	31.6
Fuel Gas Compressors	31.4
Circulating Water Pumps	31.3
Cooling Tower Inlets	30.1
Intercooler Skids	28.1
Wastewater Forwarding Pumps	27.2
Rooftop Ventilation Fans	26.8
Demin Water Pumps	26.5
Gas Compressor Aftercoolers	25.4
Fuel Gas Metering Area	23.5
Raw Water Pumps	19.6
Firewater Pump Building	18.5
Auxiliary Transformer	17.8
Property Line South SPL 67.0 dB(A)	
Stack Exhausts	59.4
Cooling Tower Fans	59.3
Step Up Transformers	59.3
CTG Auxiliary Skids	57.5
LMS100	56.0
SCRs	55.3
Ammonia Injection Skids	54.8
Circulating Water Pumps	53.3
Cooing/Purge Air Fans	52.6

Bullard - Source Contribution
Base Analysis - A-Weighted - Optimized

Group	Lr dB(A)
Turbine Ventilation Fans	52.1
Cooling Tower Inlets	51.1
Ammonia Vaporizer	48.5
Auxiliary Transformer	46.7
Fuel Gas Compressors	42.8
Intercooler Skids	40.9
Air Compressor Skid	39.5
Raw Water Pumps	38.9
Firewater Pump Building	38.5
Rooftop Ventilation Fans	36.7
Water Treatment Building	34.7
Ammonia Forwarding Pumps	34.6
Gas Compressor Aftercoolers	33.0
Demin Water Pumps	28.4
Turbine Air Inlets	26.5
Wastewater Forwarding Pumps	24.5
Fuel Gas Metering Area	15.5
S1/L1 SPL 46.3 dB(A)	
Stack Exhausts	41.5
Cooling Tower Fans	37.2
Circulating Water Pumps	36.4
Cooling Tower Inlets	36.2
SCRs	34.1
Water Treatment Building	33.9
Turbine Ventilation Fans	33.7
Step Up Transformers	32.1
LMS100	32.1
Rooftop Ventilation Fans	29.5
Firewater Pump Building	27.2
CTG Auxiliary Skids	26.7
Fuel Gas Compressors	25.4
Air Compressor Skid	25.1

Bullard - Source Contribution
Base Analysis - A-Weighted - Optimized

Group	Lr dB(A)
Fuel Gas Metering Area	24.7
Ammonia Forwarding Pumps	23.1
Auxiliary Transformer	22.2
Raw Water Pumps	21.3
Wastewater Forwarding Pumps	20.9
Demin Water Pumps	19.3
Gas Compressor Aftercoolers	18.9
Ammonia Injection Skids	18.5
Cooing/Purge Air Fans	17.3
Intercooler Skids	16.1
Ammonia Vaporizer	16.1
Turbine Air Inlets	10.9
S2/L2 SPL 48.8 dB(A)	
Stack Exhausts	42.7
Circulating Water Pumps	42.4
Cooling Tower Fans	38.5
SCRs	36.4
Ammonia Injection Skids	35.8
Turbine Ventilation Fans	35.6
Step Up Transformers	35.5
LMS100	35.1
Cooling Tower Inlets	34.7
Water Treatment Building	33.2
Raw Water Pumps	30.6
Air Compressor Skid	30.5
CTG Auxiliary Skids	30.5
Rooftop Ventilation Fans	30.0
Fuel Gas Compressors	30.0
Cooing/Purge Air Fans	29.2
Firewater Pump Building	27.9
Wastewater Forwarding Pumps	26.3
Ammonia Vaporizer	25.7

Bullard - Source Contribution
Base Analysis - A-Weighted - Optimized

Group	Lr dB(A)
Intercooler Skids	22.4
Fuel Gas Metering Area	22.0
Gas Compressor Aftercoolers	20.7
Ammonia Forwarding Pumps	20.1
Auxiliary Transformer	20.0
Demin Water Pumps	19.3
Turbine Air Inlets	14.0
S3/L3 SPL 50.5 dB(A)	
Stack Exhausts	45.8
Step Up Transformers	40.2
LMS100	39.8
Ammonia Vaporizer	39.8
Cooing/Purge Air Fans	39.7
SCRs	38.3
Turbine Ventilation Fans	38.2
Ammonia Forwarding Pumps	37.6
Cooling Tower Fans	36.9
Circulating Water Pumps	34.7
Cooling Tower Inlets	33.1
Ammonia Injection Skids	33.1
Wastewater Forwarding Pumps	31.5
Water Treatment Building	28.9
Fuel Gas Compressors	28.8
Air Compressor Skid	25.3
Gas Compressor Aftercoolers	24.7
CTG Auxiliary Skids	23.6
Rooftop Ventilation Fans	23.0
Raw Water Pumps	21.8
Intercooler Skids	19.4
Firewater Pump Building	19.1
Demin Water Pumps	18.5
Turbine Air Inlets	18.3

Bullard - Source Contribution
Base Analysis - A-Weighted - Optimized

Group	Lr dB(A)
Auxiliary Transformer	11.4
Fuel Gas Metering Area	10.3
S4 SPL 37.8 dB(A)	
Stack Exhausts	31.7
LMS100	30.1
CTG Auxiliary Skids	29.8
SCRs	26.4
Step Up Transformers	26.2
Cooling Tower Fans	25.0
Turbine Ventilation Fans	24.8
Air Compressor Skid	23.3
Ammonia Injection Skids	22.7
Cooing/Purge Air Fans	22.5
Water Treatment Building	20.2
Ammonia Forwarding Pumps	19.0
Circulating Water Pumps	17.2
Intercooler Skids	17.1
Cooling Tower Inlets	16.6
Demin Water Pumps	16.4
Raw Water Pumps	16.0
Fuel Gas Compressors	15.6
Rooftop Ventilation Fans	14.5
Firewater Pump Building	14.4
Ammonia Vaporizer	12.7
Wastewater Forwarding Pumps	7.6
Turbine Air Inlets	5.5
Auxiliary Transformer	4.0
Gas Compressor Aftercoolers	3.0
Fuel Gas Metering Area	2.5
S5 SPL 46.8 dB(A)	
Stack Exhausts	42.3
Circulating Water Pumps	36.7

Bullard - Source Contribution
Base Analysis - A-Weighted - Optimized

Group	Lr dB(A)
SCRs	36.3
LMS100	35.7
Turbine Ventilation Fans	35.7
CTG Auxiliary Skids	35.1
Cooling Tower Fans	34.7
Ammonia Vaporizer	31.2
Air Compressor Skid	31.0
Water Treatment Building	30.6
Ammonia Forwarding Pumps	28.6
Cooing/Purge Air Fans	28.4
Cooling Tower Inlets	28.0
Wastewater Forwarding Pumps	25.7
Rooftop Ventilation Fans	25.6
Fuel Gas Compressors	25.6
Demin Water Pumps	25.4
Turbine Air Inlets	25.0
Raw Water Pumps	24.1
Intercooler Skids	19.6
Gas Compressor Aftercoolers	19.4
Fuel Gas Metering Area	18.5
Step Up Transformers	17.6
Firewater Pump Building	14.7
Ammonia Injection Skids	10.2
Auxiliary Transformer	6.9
S6 SPL 39.6 dB(A)	
Stack Exhausts	35.5
Turbine Ventilation Fans	29.3
Cooling Tower Fans	27.9
SCRs	27.9
CTG Auxiliary Skids	27.4
LMS100	27.4
Circulating Water Pumps	26.5

Bullard - Source Contribution
Base Analysis - A-Weighted - Optimized

Group	Lr dB(A)
Water Treatment Building	25.8
Wastewater Forwarding Pumps	25.4
Air Compressor Skid	23.2
Cooling Tower Inlets	22.9
Ammonia Vaporizer	20.9
Rooftop Ventilation Fans	20.4
Fuel Gas Compressors	20.3
Step Up Transformers	19.3
Demin Water Pumps	18.8
Turbine Air Inlets	18.4
Ammonia Forwarding Pumps	17.6
Raw Water Pumps	17.6
Firewater Pump Building	17.0
Gas Compressor Aftercoolers	13.8
Intercooler Skids	13.5
Fuel Gas Metering Area	13.1
Cooing/Purge Air Fans	11.4
Auxiliary Transformer	9.1
Ammonia Injection Skids	3.7

Bullard - Source Contribution
Construction Analysis - A-Weighted

Group	Lr dB(A)
S1/L1	
01 - Grading	59.7
02 - Concrete Pouring	55.7
03 - Steel Erection	59.7
04 - Equipment Installation	54.7
05 - Finishing	49.7
S2/L2	
01 - Grading	60.5
02 - Concrete Pouring	56.5
03 - Steel Erection	60.5
04 - Equipment Installation	55.5
05 - Finishing	50.5
S3/L3	
01 - Grading	62.8
02 - Concrete Pouring	58.8
03 - Steel Erection	62.8
04 - Equipment Installation	57.8
05 - Finishing	52.8
S4	
01 - Grading	47.3
02 - Concrete Pouring	43.3
03 - Steel Erection	47.3
04 - Equipment Installation	42.3
05 - Finishing	37.3
S5	
01 - Grading	59.2
02 - Concrete Pouring	55.2
03 - Steel Erection	59.2
04 - Equipment Installation	54.2
05 - Finishing	49.2
S6	

Bullard - Source Contribution
Construction Analysis - A-Weighted

Group	Lr dB(A)
01 - Grading	52.2
02 - Concrete Pouring	48.2
03 - Steel Erection	52.2
04 - Equipment Installation	47.2
05 - Finishing	42.2

Bullard - Receiver Sound Levels
Linears Construction Analysis - A-Weighted

Name	SPL dB(A)	
Receiver at 50 Feet	86.7	
Receiver at 780 Feet	61.7	

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Bullard - Source Contribution
Cumulative Impact Analysis - A-Weighted

Source	SPL dB(A)
Name S1/L1 SPL 54.7 dB(A)	
01 - 118-Unit Condo	52.8
02 - 80-Unit Multi-Family	48.0
03 - 65-Unit Development	46.0
Name S2/L2 SPL 53.1 dB(A)	
01 - 118-Unit Condo	51.0
02 - 80-Unit Multi-Family	46.3
03 - 65-Unit Development	45.3
Name S3/L3 SPL 51.7 dB(A)	
01 - 118-Unit Condo	44.8
02 - 80-Unit Multi-Family	42.0
03 - 65-Unit Development	50.0
Name S4 SPL 46.1 dB(A)	
01 - 118-Unit Condo	43.2
02 - 80-Unit Multi-Family	40.3
03 - 65-Unit Development	39.4
Name S5 SPL 54.9 dB(A)	
01 - 118-Unit Condo	46.1
02 - 80-Unit Multi-Family	43.8
03 - 65-Unit Development	53.8
Name S6 SPL 53.3 dB(A)	
01 - 118-Unit Condo	48.5
02 - 80-Unit Multi-Family	47.1
03 - 65-Unit Development	49.6

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Logarithmic Operations

"Rule of Thumb" Decibel Addition

Difference Between Two Sound Levels	Decibel(s) to Add to Higher Level
0 to 1	3
2 to 3	2
4 to 9	1
10 or more	0

Decibel Addition Example 1

- Two pieces of equipment each produce 53 dBA at 400 feet. The total sound level is:
  - Step 1 53 dBA - 53 dBA = 0
  - Step 2 53 dBA + 3 dBA = 56

Decibel Addition Example 2

- A third piece of equipment is added, which also produces 53 dBA at 400 feet. The total sound level becomes:
  - Step 1 56 dBA - 53 dBA = 3 dBA
  - Step 2 56 dBA + 2 dBA = 58 dBA

Decibel Addition Example 3

- Finally, a fourth unit is added. The total becomes:
  - Step 1 58 dBA - 53 dBA = 5 dBA
  - Step 2 58 dBA + 1 dBA = 59 dBA